COBB COUNTY PURCHASING DEPARTMENT
1772 County Services Parkway
Marietta, Georgia 30008-4012
(770) 528-8400 /FAX (770) 528-1154
Email: purchasing @cobbcounty.org
www.purchasing.cobbcountyga.gov

IMPORTANT NOTICE – PLEASE READ CAREFULLY!!

ALL bids ***MUST*** be received at the Cobb County Purchasing Department**.**

BIDS MUST BE RECEIVED BEFORE 12:00 (NOON) ON BID OPENING DAY

Any bid received later than 12:00 (noon) will not be accepted. The County accepts no responsibility for delays in the mail. Bids are to be mailed or delivered to:

COBB COUNTY PURCHASING DEPARTMENT
1772 COUNTY SERVICES PARKWAY
MARIETTA, GA 30008-4012

All bid prices shall be submitted on the Bid Form included in the bid/proposal.
Any revisions made on the outside of the envelope *WILL NOT* be considered.

PLEASE CHECK bid specifications and advertisement for document requirements.
Documents/Forms listed below ***MUST*** be submitted when required.

Omission of these documents /forms will cause your bid/proposal to be declared **NON-RESPONSIVE.**

- **BID SUBMITTAL FORM**
  ► *Official Signature is required on this form guaranteeing the quotation.*
- **CONTRACTOR AFFIDAVIT and AGREEMENT – Exhibit A (REQUIRED)**
  ► *Affidavit **MUST** be signed, notarized and submitted with any bid requiring the performance of physical services. If the affidavit is not submitted at the time of the bid, bid will be determined non-responsive and will be disqualified.*
- **BID BOND (REQUIRED)**

If your firm is classified as a Disadvantaged Business Enterprise (DBE) please complete Exhibit B with bid response. A Disadvantaged Business Enterprise (DBE) is generally defined as a Female, Black American, Hispanic American and any other minority owned business.

All vendors are required to submit the ORIGINAL AND AT LEAST one (1) duplicated copy of any bid submitted to Cobb County. Please refer to your bid specifications to determine if more than one (1) copy is required. Non-submission of a duplicate copy may disqualify your bid/proposal.

A **"SEALED BID LABEL"** has been enclosed to affix to your bid. This label ***MUST*** be affixed to the outside of the envelope or package, **even if it is a "NO BID" response**. Failure to attach the label may result in your bid being opened in error or not routed to the proper location for consideration. No bid will be accepted after the date and time specified.
Thank you in advance for your cooperation.

INVITATION TO BID

COBB COUNTY PURCHASING DEPARTMENT
BID OPENING DATE:

April 12, 2012 @ 2:00 P.M.

Cobb County will receive Sealed Bids before **12:00 NOON, April 12, 2012** in the Cobb County Purchasing Department, 1772 County Services Parkway, Marietta, Georgia 30008 from licensed **General Contractors**.

SEALED BID # 12-5658
MOUNTAIN VIEW AQUATIC CENTER
AIR QUALITY IMPROVEMENTS AND INTERIOR RENOVATIONS

Furnishing all labor, materials, equipment, etc. pursuant to the plans, specifications, conditions and addenda.

Pre-bid meeting will be held at the
Mountain View Aquatic Center
2650 Gordy Parkway
Marietta, Georgia 30066
on **March 27, 2012 @ 9:00 A.M. E.S.T.**

NO BIDS WILL BE ACCEPTED AFTER THE 12:00 NOON DEADLINE.

Bids are opened at 2:00 p.m. in the Cobb County Purchasing Department Bid Room, 1772 County Services Parkway, Marietta, Georgia 30008.

An electronic complete set of bidding documents may be obtained from the Cobb County Purchasing website: http://purchasing.cobbcountyga.gov/. Bidders may download and print the plans and specifications from this web site.

If preferred, a hard copy complete set of bidding documents may be obtained by contacting the office of Moreland Altobelli Associates, Inc 1800 Roswell Road, Suite 1050, Marietta Ga. 30062. PHONE: 770-565-8520 / FAX: 770-565-8042. Bidding Documents will be forwarded upon receipt of a non-refundable fee of **$75.00** for each set of documents. If bidder requests shipment by overnight delivery service, bidder is responsible for paying cost of shipment. Bid documents may also be examined in the offices of Cobb County Purchasing Department, 1772 County Services Parkway, Marietta, Ga. 30008 or at the office of Moreland Altobelli Associates at the address above.

Proposals must be accompanied by Bid Security in the amount not less than five percent (5%) of the Base Bid. Performance Bond and Labor and Material Payment Bond, each in the amount equal to 100% of the contract sum, will be required of the successful bidder. Bonds must be written by a surety company licensed to do business in the State of Georgia, have a "Best's" rating of "A" or better, appear on the current U.S. Treasury Department List of Sureties that are acceptable on bonds for the Federal Government (Circular 570), and have recommended bond limits equal to or in excess of those required for this Project; or otherwise acceptable to the Owner.

In order to insure compliance with OCGA 13-10-91, the proposal must be accompanied by an executed copy of Contractor Affidavit & Agreement form (Exhibit A of Contract for Construction).

No bid may be withdrawn for a period of sixty (60) days after date of bid opening, unless otherwise specified. The competency and responsibility of bidders will be considered by the Owner in making the award. The Board of County Commissioners reserves the right to reject any and all bids, to waive any informality, to reject portions of the bid, to waive technicalities and to award contracts in a manner consistent with the interest of the Owner and the laws of the State of Georgia. All inquiries are to be directed via email to **purchasing@cobbcounty.org.**

Advertise: March 16, 23, 30, 2012
April 6, 2012

BID SUBMITTAL FORM

SUBMIT BID/PROPOSAL TO:
COBB COUNTY PURCHASING DEPARTMENT
1772 COUNTY SERVICES PARKWAY
MARIETTA, GA 30008-4012

BID/PROJECT NUMBER: 12-5658
MOUNTAIN VIEW AQUATIC CENTER
AIR QUALITY IMPROVEMENTS AND INTERIOR RENOVATIONS
COBB COUNTY PARKS, RECREATION AND CULTURAL AFFAIRS DEPARTMENT

DELIVERY DEADLINE: APRIL 12, 2012 BEFORE 12:00 (NOON) EST
(NO BIDS/PROPOSALS WILL BE ACCEPTED AFTER THIS DEADLINE).

BID OPENING DATE: APRIL 12, 2012 @ 2:00 P.M. IN THE PURCHASING DEPARTMENT BID ROOM.

BUSINESS NAME AND ADDRESS INFORMATION:

Company name: _____

Contact name: _____

Company address: _____

E-mail address: _____

Phone number: _____ **Fax number:** _____

NAME AND OFFICIAL TITLE OF OFFICER GUARANTEEING THIS QUOTATION:

_____ _____
(PLEASE PRINT/TYPE) NAME TITLE

SIGNATURE OF OFFICER ABOVE: _____
(SIGNATURE)

TELEPHONE: _____ FAX: _____

BIDDER WILL INDICATE TIME PAYMENT DISCOUNT: _____

BIDDER SHALL INDICATE MAXIMUM DELIVERY DATE: _____

Bids received after the date and time indicated will not be considered. Cobb County reserves the right to reject any and all bids, to waive informalities, to reject portions of the bid, to waive technicalities and to award contracts in a manner consistent with the county and the laws governing the state of Georgia.

The enclosed (or attached) bid is in response to Bid Number **12-5658**; is a firm offer, **as defined by section O.C.G.A. (s) 11-2-205 of the code of Georgia (Georgia laws 1962 pages 156-178),** by the undersigned bidder. This offer shall remain open for acceptance for a period of 60 days calendar days from the bid opening date, as set forth in this invitation to bid unless otherwise specified in the bid documents.

NOTICE TO BIDDERS - - BID QUOTES MUST INCLUDE INSIDE DELIVERY CHARGES

Advertise Dates: March 16, 23, 30, 2012
April 6, 2012

SEALED BID LABEL

SEALED BID ENCLOSED

DELIVER TO:
COBB COUNTY PURCHASING
1772 County Services Parkway
Marietta, GA 30008-4012

_____

SEALED BID # 12-5658 DATE: APRIL 12, 2012

BIDS MUST BE RECEIVED BEFORE 12:00 NOON

DESCRIPTION: MOUNTAIN VIEW AQUATIC CENTER
AIR QUALITY IMPROVEMENTS AND INTERIOR RENOVATIONS

PLEASE ATTACH LABEL TO OUTSIDE OF BID PACKAGE

Cobb County...Expect the Best!

"STATEMENT OF NO BID"

COBB COUNTY PURCHASING DEPARTMENT
1772 COUNTY SERVICES PARKWAY
MARIETTA, GA 30008

TO ALL PROSPECTIVE BIDDERS:

Because of the many requests to be placed on our vendors' list, we are continuously updating the list. While we want to include all bona fide vendors, we do not want to mail bids to those vendors who may no longer be interested in participating in our bidding process.

If you do not choose to respond to the attached Invitation to Bid/Request for Proposal, please fill out the form below indicating whether or not you want to be retained on our current vendor list.

Vendors who do not respond in any way (by either submitting a bid or by returning this form) over a period of one year may be removed from the current vendor list.

Vendors who do not wish to bid often return the entire bid package, sometimes at considerable postage expense. Returning the entire bid package is not necessary. Simply return this form.

Thank you for your cooperation.
Cobb County Purchasing Department

"STATEMENT OF NO BID"
SEALED BID NUMBER 12-5658
MOUNTAIN VIEW AQUATIC CENTER
AIR QUALITY IMPROVEMENTS AND INTERIOR RENOVATIONS
COBB COUNTY PARKS, RECREATION AND CULTURAL AFFAIRS DEPARTMENT

If you do not wish to respond to the attached Invitation to Bid/Request for Proposal, please complete this form and mail/fax to: **Cobb County Purchasing Department, Attention: Sealed Bid Department, 1772 County Services Parkway, Marietta, GA. Fax # 770-528-1154**

I do not wish to submit a bid/proposal on this solicitation.

I wish to be retained on the vendor list for this commodity or service: Yes_____ No ____

Please PRINT the following:

_____ _____
Company Representative

You are invited to list reasons for your decision not to bid: _____

_____

_____

Cobb County...Expect the Best!

INVITATION TO BID

SEALED BID # 12-5658
MOUNTAIN VIEW AQUATIC CENTER
AIR QUALITY IMPROVEMENTS AND INTERIOR RENOVATIONS
COBB COUNTY PARKS, RECREATION AND CULTURAL AFFAIRS DEPARTMENT

BID OPENING DATE: APRIL 12, 2012

PRE-PROPOSAL CONFERENCE: March 27, 2012 @ 9:00 A.M. (E.S.T.)
MOUNTAIN VIEW AQUATIC ENCTER
2650 GORDY PARKWAY
MARIETTA, GA 30066

BIDS ARE RECEIVED IN THE
COBB COUNTY PURCHASING DEPARTMENT
1772 COUNTY SERVICES PARKWAY
MARIETTA, GEORGIA 30008
BEFORE 12:00 (NOON) BY THE BID OPENING DATE

BIDS WILL BE OPENED IN THE COBB COUNTY PURCHASING DEPARTMENT
BID/MEETING ROOM AT 2:00 P.M.

VENDORS ARE REQUIRED TO SUBMIT THE ORIGINAL AND 1 COPIES OF BID
(UNLESS OTHERWISE SPECIFIED IN BID SPECIFICATIONS)

N.I.G.P. COMMODITY CODE: 91455

NAME: _____

ADDRESS: _____

_____

REPRESENTATIVE: _____

PHONE: _____ FAX: _____

E-MAIL _____

NOTE: The Cobb County Purchasing Department will not be responsible for the accuracy or completeness of the content of any Cobb County Invitation to Bid or Request for Proposal or subsequent addenda thereto received from a source other than the Cobb County Purchasing Department.

PROJECT MANUAL

MOUNTAIN VIEW AQUATIC CENTER AIR QUALITY IMPROVEMENTS AND INETERIOR RENOVATIONS

BOARD OF COMMISSIONERS
COBB COUNTY, GEORGIA

100 Cherokee Street, Marietta, Georgia 30060

Sealed Bid #12-5658

Mountain View Aquatic Center
Air Quality Improvements and Interior Renovations
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INVITATION TO BID

COBB COUNTY PURCHASING DEPARTMENT
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SEALED BID # 12-5658

MOUNTAIN VIEW AQUATIC CENTER
AIR QUALITY IMPROVEMENTS AND INTERIOR RENOVATIONS
Cobb County Parks, Recreation and Cultural Affairs Department

Furnishing all labor, materials, equipment, etc. pursuant to the plans, specifications, conditions and addenda.

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In order to insure compliance with OCGA 13-10-91, the proposal must be accompanied by an executed copy of Contractor Affidavit & Agreement form (Exhibit A of Contract for Construction).

No bid may be withdrawn for a period of sixty (60) days after date of bid opening, unless otherwise specified. The competency and responsibility of bidders will be considered by the Owner in making the award. The Board of County Commissioners reserves the right to reject any and all bids, to waive any informality, to reject portions of the bid, to waive technicalities and to award contracts in a manner consistent with the interest of the Owner and the laws of the State of Georgia. All inquiries are to be directed via email to **purchasing@cobbcounty.org.**

END OF SECTION

SPECIAL TERMS AND CONDITIONS

In the event there are any discrepancies between the following provisions and other provisions in these documents, the following provisions shall prevail.

1. Minimum Required Qualifications

Successful completion of this project requires the General Contractor and all major Subcontractors to work within significant technical and scheduling constraints. The technical constraints are related to the use of specific materials and construction techniques which will stand up over time under the conditions of high humidity and corrosive atmosphere typical of a large indoor natatorium. The scheduling constraints relate to the very limited time that the facility will be closed to the public for construction activities, and the hard date on which the facility must be reopened.

Given these and other constraints, the County cannot tolerate “on the job” training of the General Contractor and major Subcontractors. ”Major Subcontractors” in this context will be defined as Mechanical, Electrical, Plumbing and the Pool Contractor involved in marcite resurfacing, deck modifications, gutter and bulkhead work.

The County reserves the right to accept or reject any and all submittals, waive technicalities and informalities in order to select the firm that best meets the County’s needs.

Proposers must meet the following Minimum Required Qualifications for their proposal to be considered to be responsible and responsive.

Submit the following information in this section of the Bid to demonstrate the specialized expertise and resources of the Bidder, as illustrated by past work on similar contracts. **This information shall be submitted on the CONTRACTOR’S QUALIFICATION STATEMENT AND THE MAJOR SUBCONTRACTOR’S QUALIFICAITON STATEMENT forms included after the BID FORM**. If the General Contractor intends to self perform any of the work categorized as a MAJOR SUBCONTRACTOR, indicate so and provide previous experience. Include the project status, and highlight relevant experience, qualifications, and expertise. Firms with multiple offices shall submit information exhibiting the experience of the local office charged with the administration of this particular contract.

General Contractor MUST meet all of the following minimum qualifications:

- Direct experience within the past 10 years with complex new commercial construction or renovation projects with a compressed time schedule requiring close management, supervision and coordination of ALL subcontractors and employees resulting in a timely completion. Any pool related experience should be provided.

- Provide summary project descriptions, completion dates, and reference contact information including current phone number and email address of the reference contact

- Be a currently licensed Commercial General Contractor by the State of Georgia. Provide evidence of license status.

ALL major Subcontractors MUST meet all of the following minimum Qualifications:

Direct experience within the past 10 years with new construction or renovation projects in commercial natatorium facilities, of similar scale and scope to this project.

- Provide summary project descriptions, completion dates, and reference contact information including current phone number and email address of the reference contact.

- Bidders shall provide listing of ALL major Subcontractors, for review and acceptance by the County. Listing shall include summary project descriptions, completion dates and reference contact information for the subcontractor including current phone number and email address for reference contract.

- Mechanical, Electrical, Plumbing Subcontractors must hold the appropriate Professional Contracting License in good standing in the State of Georgia.

- Pool Subcontractor shall be an experienced commercial pool subcontractor.

2. All references to "Engineer", “Professional”, "Landscape Architect", "Architect", or "Owner" in the General Conditions, drawings or in specifications are deemed to mean the "Owner's representative", as designated by the County.

3. METHOD OF AWARD

The Contract will be awarded to the lowest responsive, responsible Bidder submitting the Bid complying with the Contract Documents which is in the best interest of the County, as determined by the County. Determination of the low bid will be based on the total of the Base Bid Lump Sum Amount AND the total of all alternates determined by the County to be included in the Work.

4. TIME OF WORK

The Contractor will be allowed access to the building to work any hours necessary to substantially complete the project by October 8, 2012.

5. PROJECT DURATION

The project shall be substantially complete no later than October 8, 2012. Failure to substantially complete the work by October 8, 2012 will result in liquidated damages being withheld. The Owner shall occupy the building starting October 8, 2012 including moving furniture back into the building.

6. CONTRACT DRAWINGS

Contractor will receive two (2) complete sets of full-size plans and specifications and one (1) half-size copy of the plans from the County. The Contractor will also have access to the drawings in a .pdf format at no cost. Additional drawings and specifications for Contractor’s use during construction may be purchased from the County at no cost to Owner.

7. APPROVED VENDORS

All references to vendors and "approved manufacturers" are included for description of quality and content of the designated equipment/materials. Equivalent items may be accepted if they meet all standards of quality and purpose for the intended use, as determined by Cobb County.

8. LANGUAGE

There shall be at least one person in a position of responsibility representing the Contractor, on site at all times, that is capable of translating from English to the language used by the workforce.

1. FINAL ACCEPTANCE

All references to guarantee, warranty or payments that are commencing upon “Final Approval”, “Final Certificate for Payment”, or “Substantial Completion” or other similar wording shall commence upon acceptance of portions of the Work by the County as identified for intermediate completion dates.

10. COORDINATION

The General Contractor is responsible for becoming familiar with the requirements of all construction documents, which includes drawings, bid and contract documents, specifications and all addenda.

Letter prefixes for each drawing sheet indicating the engineering discipline are for convenience only. Information affecting the scope of work for all trades will be found throughout all documents and is not limited to only those documents with the appropriate letter prefix. The General Contractor is responsible for providing subcontractors all necessary information and drawings.

11. UTLITIES DURING CONSTRUCTION

The contractor will not be responsible for payment of utilities during the construction of the project. However, the contractor shall use the existing utilities only as needed for the construction and conserve utilities as much as possible. The use of the utilities will be monitored and the contractor will be responsible for blatant abuse of utilities.

12. BUILDING UP KEEP

The contractor is responsible for keeping the building clean during the course of the project.

13. NO EXTENSION DUE TO WEATHER DELAY

Refer to Article 17.4, Excusable Delay, in Chapter 3 of the Builders Agreement. The article allows an extension of time for abnormal inclement weather. No extension of time will be allowed for inclement weather, either normal or abnormal, for this project. The majority of the work occurs inside and the facility must be reopened on October 15th for a scheduled event.

14. AS BUILT DRAWINGS OF EXISTING FACILITY

The as built drawings of the existing facility that have been provided as part of the bid package are from the original construction of the project. These drawings are being provided for information only. The contractor is responsible for verifying existing conditions and incorporating any conditions affecting the construction into the scope of work.

15. PERMITTING COSTS

The contractor shall pay all permitting costs associated with the work.

15. BUILDING INSPECTION

Bidders may visit the project during the bidding period. All bidders visiting the project must sign in at the front desk and provide name, address, company, telephone number and email address.

End of Section

Cobb County General Instructions For Bidders, Terms and Conditions

I. Preparation Of Bids

Each bidder shall examine the drawings, specifications, schedule and all instructions. Failure to do so will be at the bidder's risk, as the bidder will be held accountable for their bid response.

Unit price for each quotation shall be shown and such price shall include packing unless otherwise specified, along with a total and grand total where applicable. In case of discrepancy between a unit price and extended price, the unit price will be presumed correct.

Each bidder shall furnish all information required by the bid form or document. Each bidder shall sign the bid and print or type his or her name on the schedule. The person signing the bid must initial erasures or other changes. An authorized agent of the company must sign bids.

Invitations to Bid issued by Cobb County are advertised on the Cobb County Internet site (www.purchasing.cobbcounty.ga.gov) and every Friday in the Cobb County legal organ, the Marietta Daily Journal.

II. Delivery

Each bidder should state the time of proposed delivery of goods or services. Words such as "immediate", "as soon as possible", etc. shall not be used. The known earliest date or the minimum number of calendar days required after receipt of order (delivery A.R.O.) shall be stated (if calendar days are used, include Saturday, Sunday and holidays in the number).

III. Explanation to Bidders

Any explanation desired by a bidder regarding the meaning or interpretation of the invitation for bids, drawings, specifications, etc. must be received in writing **by 5:00 pm on Tuesday, April 3, 2012** in order for a reply to reach all bidders before the close of the bid. Any information concerning an Invitation to Bid (ITB) will be furnished to all prospective bidders as an addendum if such information is necessary or if the lack of such information would be prejudicial to uninformed bidders.

Submit questions in writing to:
Cobb County Purchasing Department
1772 County Services Parkway
Marietta, GA 30008
Fax: 770-528-1154
Email: purchasing@cobbcounty.org

The written bid documents supersede any verbal or written communication between parties. Addenda are posted on the Purchasing web site: www.purchasing.cobbcounty.ga.gov. Receipt of addenda should be acknowledged in the bid. It is the bidder's ultimate responsibility to ensure that they have all **applicable addenda prior to bid submittal.**

IV. Submission of Bids

Bids shall be enclosed in sealed envelopes, addressed to the Cobb County Purchasing Department with the name of the bidder, the date and hour of opening and the invitation to bid number on the face of the envelope. Bids must be received in the Purchasing Department no later than the date and time (determined by the date/time stamp in the department) set forth in the Invitation to Bid. It is the sole responsibility of the bidder to ensure that his or her bid reaches the Purchasing Department. Telegraphic/faxed bids will not be considered. Any addenda should be enclosed in the sealed envelopes as well. **All bids shall be submitted on the Bid Proposal Form. Any revisions made on the outside of the envelope will not be accepted.** The bids will be publicly opened and read at the time and place set forth in the Invitation to Bid.

Please submit an original and one copy to the Cobb County Purchasing Department

Samples of items, when required, must be submitted within the time specified and, unless otherwise specified by the County, at no expense to the County. Unless otherwise specified, samples will be returned at the bidder's request and expense if items are not destroyed by testing. Items offered must meet required specifications and must be of a quality, which will adequately serve the use and purpose for which intended.

Full identification of each item bid upon, including brand name, model, catalog number, etc. must be furnished to identify exactly what the bidder is offering. The bidder must certify that items to be furnished are new and that the quality has not deteriorated so as to impair its usefulness.

If no items are bid on, the "Statement of No Bid" must be returned, with the envelope plainly marked "No Bid" including the bid number. Where more than one item is listed, any items not bid upon must be indicated "No Bid".

Unsigned bids will not be considered except in cases where bid is enclosed with other documents, which have been signed. The County will determine this.

Cobb County is exempt from federal excise tax and Georgia sales tax with regards to goods and services purchased directly by Cobb County. Suppliers and contractors are responsible for federal excise tax and sales tax, including any taxes for materials incorporated in county construction projects. Suppliers and contractors should contact the State of Georgia Sales Tax Division for additional information. Tax Exemption Certificates will be furnished upon request.

Information submitted by a bidder in the bidding process shall be subject to disclosure after the public opening in accordance with the Georgia Open Records Act. Each page of proprietary information must be identified. Entire bid may not be deemed proprietary.

V. Withdraw Bid Due To Errors

The bidder shall give notice in writing of his claim of right to withdraw his bid without penalty due to an error within two (2) business days (48 hours) after the conclusion of the bid opening. Bids may be withdrawn from consideration if the price was substantially lower than the other bids due solely to a mistake therein, provided the bid was submitted in good faith, and the mistake was a clerical mistake as

opposed to a judgment mistake, and was actually due to an unintentional arithmetic error or an unintentional omission of a quantity of work, labor or material made directly in the compilation of the bid, which unintentional arithmetic or unintentional omission can be clearly shown by objective evidence drawn from inspection of original work papers, documents and materials used in the preparation of the bid sought to be withdrawn. The bidder's original work papers shall be the sole acceptable evidence of error and mistake if he elects to withdraw his bid. If a bid is withdrawn under the authority of this provision, the lowest remaining responsive bid shall be deemed to be low bid. Bid withdrawal is not automatically granted and will be allowed solely at the discretion of Cobb County.

No bidder who is permitted to withdraw a bid shall, for compensation, supply any material or labor or perform any subcontract or other work agreement for the person or firm to whom the contract is awarded or otherwise benefit, directly or indirectly, from the performance of the project for which the withdrawn bid was submitted.

Supplier has up to forty-eight (48) hours to notify the Cobb County Purchasing Department of an obvious clerical error made in calculation of bid in order to withdraw a bid after bid opening. Withdrawal of bid for this reason must be done in writing within the forty-eight (48) hour period. Suppliers who fail to request the withdrawal of bid by the required forty-eight (48) hours shall automatically forfeit bid bond. Bid may not be withdrawn otherwise. Bid withdrawal is not automatically granted and will be allowed solely at the discretion of Cobb County.

VI. Testing and Inspection

Since tests may require several days for completion, the County reserves the right to use a portion of any supplies before the results of tests are determined. Cost of inspections and tests of any item, which fails to meet specifications, shall be borne by the bidder.

VII. F.O.B. Point

Unless otherwise stated in the Invitation to Bid and any resulting contract, or unless qualified by the bidder, items shall be shipped F.O.B. Destination. The seller shall retain title for the risk of transportation, including the filing for loss or damages. The invoice covering the items is not payable until items are delivered and the contract of carriage has been completed. Unless the F.O.B. clause states otherwise, the seller assumes transportation and related charges either by payment or allowance.

VIII. Patent Indemnity

The contractor guarantees to hold the County, its agents, officers, or employees harmless from liability of any nature or kind for use of any copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, articles or appliances furnished or used in the performance of contract, for which the contractor is not the patentee, assignee or licensee.

IX. Bid, Pay, & Performance Bonds

A five percent (5%) bid bond, one hundred percent (100%) performance bond, and a one hundred percent (100%) payment bond shall be furnished to Cobb County for any bid as required in bid package or document. Failure to submit appropriate bonding will result in automatic rejection of bid. Bonding

company must be authorized to do business in Georgia by the Georgia Insurance Commission, listed in the Department of the Treasury's publication of companies holding certificates of authority as acceptable surety on Federal bonds and as acceptable reinsuring companies, and have an A.M. Best rating as stated in the insurance requirements of the solicitation. The bonds shall be increased as the contract amount is increased.

XI. Insurance

Insurance requirements: Contractor shall procure and maintain for the duration of the contract, insurance against claims for injuries to persons or damages to property that may arise from or in connection with performance of the Work hereunder by the Contractor, his agents, representatives, employees, or subcontractors.

A. MINIMUM LIMITS OF INSURANCE

Contractor shall maintain limits no less than:

1. General Liability: $1,000,000 combined single limit per occurrence for comprehensive coverage including bodily injury, personal injury and property damage for premises/operations, products/completed operations, contractual liability, independent contractors, broad-from property damage, and underground, explosion and collapse hazard.

2. Automobile Liability: $1,000,000 combined single limit per accident for bodily injury and property damage including all owned, hired, and non-owned.

3. Workers' Compensation and Employers Liability: Workers' Compensation limits as required by the Labor code of the State of Georgia and Employers Liability of $100,000 per accident.

4. Umbrella Liability: $5,000,000 combined single limits per occurrence.

5. Builders Risk Insurance, if applicable: All Risk coverage on any buildings, structure of work and material in an amount equal to 100 per cent of the value of the contract. Coverage is to cover Cobb County interest and Cobb County shall be named as Loss Payee.

B. DEDUCTIBLES AND SELF-INSURED RETENTION

Any deductibles or self-insurance retentions must be declared to and approved by the Owner. At the option of the Owner, either: The insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the Owner, its officers officials, and employees; or the Contractor shall procure a bond guaranteeing payment of losses related to investigations, claim administration and defense expenses.

C. OTHER INSURANCE PROVISIONS

1. General Liability, Automobile Liability, and Umbrella Liability Coverages.
The Owner and its officers, officials, employees and volunteers are to be covered as additional insureds as respects: liability arising out of activities performed by or on behalf of the Contractor.

Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the Owner and its officers, officials, employees and volunteers.

The Contractor is responsible for insuring its own property and equipment.

2. Workers' Compensation and Employers Liability Coverage. The insurer shall agree to waive all rights of subrogation against the Owner and its officers, officials, employees and volunteers for losses arising from the work performed by the Contractor for the Owner.

3. All Coverages: Each insurance policy required by this clause shall be endorsed to state that coverage shall not be changed, cancelled, suspended, terminated or non-renewed except after thirty (30) days prior written notice by certified mail, return receipt requested, has been given to Cobb County of said change of coverage, cancellation, suspension, termination / or non-renewal.

D. ACCEPTABILITY.

Insurance is to be placed with insurers with a Best's rating of no less than
A: VII, or otherwise acceptable to the Owner.

E. VERIFICATION OF COVERAGE.

Contractor shall furnish the Owner with certificates of insurance and with original endorsements effecting coverage required by this clause. These certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The certificates and endorsements are to be received and approved by the Owner before any work commences. The Owner reserves the right to require complete, certified copies of all required insurance policies at any time.

F. SUBCONTRACTORS

Subcontractor means one not in the employment of the Contractor who is performing all or part of the services under this Agreement under a separate contract with the Contractor.

Contractor shall include all subcontractors as an additional insured under its insurance or shall ensure that subcontractors have met the insurance requirements of this agreement. Owner may request evidence of subcontractor’s insurance.

Contractor is responsible for having all subcontractors comply with all terms and conditions of the Invitation to Bid.

G. WAIVER OF SUBROGATION

Vendor shall require all insurance policies in any way related to the work and secured and maintained by Vendor to include clauses stating each underwriter shall waive all rights of recovery, under subrogation or otherwise, against Customer. Vendor shall require of subcontractors, by appropriate written agreements, similar waivers each in favor of all parties enumerated in this section.

XII. Award

Award will be made to the lowest responsive and responsible bidder. Conditional bids are not acceptable. The quality of articles to be supplied, their conformity with the specifications, their suitability to the requirements of the County, and the delivery terms will be taken into consideration in making the award. The County may make such investigations as it deems necessary to determine the ability of the bidder to perform, and the bidder shall furnish to the County all such information and data for this purpose as the County may request. The County reserves the right to reject any bid if the evidence submitted by, or investigation of such bidder fails to satisfy the County that such bidder is properly qualified to carry out the obligations of the contract. The County reserves the right to reject or accept any or all bids and to waive technicalities, informalities, and minor irregularities in bids received.

The County reserves the right to purchase the goods or services described herein from other sources. The Bidder does not have the exclusive right to fill all of the County's requirements for the goods or services awarded nor will the County be obligated to purchase the estimated annual quantity or any quantity contained in the bid document.

The County reserves the right to make an award as deemed in its best interest, which may include awarding a bid to a single bidder or multiple bidders; or to award the whole bid, only part of the bid, or none of the bid to single or multiple bidders, based on its sole discretion of its best interest. In case of tie bid, the award will be made as follows:

1. The bid will be awarded to the in-county vendor.
2. The bid will be awarded to the in-state vendor.
3. The bid will be awarded to the vendor with the lesser total dollar volume.

The County reserves the right to award by line item to more than one vendor. The County reserves the right to negotiate a lower price than the bid award price on any line item with the successful vendor, should the quantity required significantly exceed those on the Invitation to Bid. If the County is unable to negotiate an acceptable price, it reserves the right to rebid the item(s) involved. If after the award of the bid there is a decrease in the price of a product from the manufacturer, or a rebate, the successful bidder will pass that price decrease and/or rebate onto the County.

Time payment discounts will be considered in arriving at net prices and in award of bids. Offers of discount for payment within ten (10) days following the end of the month are preferred.

XIII. Delivery Failures

Failure of a contractor to deliver within the time specified or within reasonable time as interpreted by the Purchasing Director, or failure to make replacement of rejected articles/services when so requested, immediately or as directed by the Purchasing Director, shall constitute authority for the Purchasing Director to purchase in the open market articles/services of comparable grade to replace the articles/services rejected or not delivered. On all such purchases, the contractor shall reimburse the County within a reasonable time specified by the Purchasing Director for any expense incurred in excess of contract prices, or the County shall have the right to deduct such amount from monies owed the defaulting contractor. Alternatively, the County may penalize the contractor one percent (1%) per day for a period of up to ten (10) days for each day that delivery or replacement is late. Should public

necessity demand it, the County reserves the right to use or consume articles delivered which are substandard in quality, subject to an adjustment in price to be determined by the Purchasing Director.

XIV. County Furnished Property

No material, labor or facilities will be furnished by the County unless so provided in the invitation to bid.

XV. Reject And Withdraw Bids

Failure to observe any of the instructions or conditions in this invitation to bid may constitute grounds for rejection of bid.

XVI. Contract

Each bid is received with the understanding that the acceptance in writing by the County of the offer to furnish any or all commodities or services described therein shall constitute a contract between the bidder and the County which shall bind the bidder on his part to furnish and deliver the articles quoted at the prices stated in accordance with the conditions of said accepted bid. The County, on its part, may order from such contractor, except for cause beyond reasonable control, and to pay for, at the agreed prices, all articles specified and delivered. The County's normal payment terms are net thirty (30) days after receipt of invoice.

The Price and all unit prices shown shall be deemed to include all costs of Contractor's performance of the Work as set forth in the Bid Documents, including, but not limited to, the costs of labor, supervision, travel, services, materials, equipment, tools, scaffolds, hoisting, transportation, storage, insurance and taxes.

Upon receipt of a bid package, containing a Cobb County "Sample Contract" as part of the requirements, it is understood that the bidder has reviewed the documents with the understanding that Cobb County requires all agreements between the parties must be entered into via this document. If any exceptions are taken to any part, each must be stated in detail and submitted as part of the bid. If no exceptions are stated, it is assumed that the bidder fully agrees to the provisions contained in the "Sample Contract" in its entirety.

When the contractor has performed in accordance with the provisions of this agreement, Cobb County shall pay the contractor, within thirty (30) days of receipt of any payment request based upon work completed or service provided pursuant to the contract, the sum so requested, less the retainage stated in this agreement, if any.

XVII. Non-Collusion

By submission of a bid, the vendor certifies, under penalty of perjury, that to the best of its knowledge and belief:

(a) The prices in the proposal have been arrived at independently without collusion, consultation, communications, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other vendor or with any competitor.

(b) Unless otherwise required by law, the prices which have been quoted in the proposal have not been knowingly disclosed by the vendor prior to opening, directly or indirectly, to any other vendor or to any competitor.

(c) No attempt has been made, or will be made, by the vendor to induce any other person, partnership or corporation to submit or not to submit a proposal for the purpose of restricting competition.

Collusions and fraud in bid preparation shall be reported to the State of Georgia Attorney General and the United States Justice Department.

XVIII. Conflict of Interest, Etc.

By submission of a bid, the responding firm certifies, under penalty of perjury, that to the best of its knowledge and belief:

1. No circumstances exist which cause a Conflict of Interest in performing the services required by this ITB, and
2. That no employee of the County, nor any member thereof, not any public agency or official affected by this ITB, has any pecuniary interest in the business of the responding firm or his sub-consultant(s) has any interest that would conflict in any manner or degree with the performance related to this ITB.

By submission of a bid, the vendor certifies under penalty of perjury, that to the best of its knowledge and belief:

(a) The prices in the bid have been arrived at independently without collusion, consultation, communications, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other vendor or with any competitor.

(b) Unless otherwise required by law, the prices which have been quoted in the bid have not knowingly been disclosed by the vendor prior to opening, directly or indirectly, to any other vendor or competitor.

(c) No attempt has been made, or will be made, by the vendor to induce any other person, partnership or cooperation to submit or not to submit a bid for the purpose of restricting competition.

For any breach or violation of this provision, the County shall have the right to terminate any related contract or agreement without liability and at its discretion to deduct from the price, or otherwise recover, the full amount of such fee, commission, percentage, gift, payment or consideration.

The successful responding firm shall require each of its sub-consultant(s) to sign a statement certifying to and agreeing to comply with the terms of the Sub-sections above.

XIX. Default

The contract may be cancelled or annulled by the Purchasing Director in whole or in part by written notice of default to the contractor upon non-performance or violation of contract terms. An award may be made to the next low responsive and responsible bidder, or articles specified may be purchased on the open market similar to those so terminated. In either event, the defaulting contractor (or his surety) shall be liable to the County for costs to the County in excess of the defaulted contract prices; provided, however, that the contractor shall continue the performance of this contract to the extent not terminated

under the provisions of this clause. Failure of the contractor to deliver materials or services within the time stipulated on his bid, unless extending in writing by the Purchasing Director, shall constitute contract default.

XX. Disputes

Except as otherwise provided in the contract documents, any dispute concerning a question of fact arising under the contract which is not disposed of shall be decided after a hearing by the Purchasing Director, who shall reduce his/her decision to writing and mail or otherwise furnish a copy thereof to the contractor. The decision of the Purchasing Director shall be final and binding; however, the contractor shall have the right to appeal said decision to a court of competent jurisdiction.

XXI. Substitutions

Bidders offering and quoting on substitutions or who are deviating from the attached specifications shall list such deviations on a separate sheet to be submitted with their bid. The absence of such a substitution list shall indicate that the bidder has taken no exception to the specifications contained herein.

XXII. Ineligible Bidders

The County may choose not to accept the bid of a bidder who is in default on the payment of taxes, licenses, or other monies due to the County. Failure to respond three (3) consecutive times for any given commodity/service may result in removal from the supplier list under that commodity/service.

In compliance with the Americans With Disabilities Act (ADA), Cobb County provides reasonable accommodations to permit a qualified applicant with a disability to enjoy the privileges of employment equal to those employees without disabilities. Disabled individuals must satisfy job requirements for education background, employment experience, and must be able to perform those tasks that are essential to the job with or without reasonable accommodations.

XXIII. Alterations Of Documents

Alterations of County documents are strictly prohibited and will result in automatic disqualification of the firm's solicitation response. If there are "exceptions" or comments to any of the solicitation requirements or other language, then the firm may make notes to those areas, but may not materially alter any document language.

XXIV. Termination For Convenience

The County, by written notice, may terminate this contract, in whole or in part, when it is in the County's interest. If this contract is terminated, the County shall be liable only for goods or services delivered or accepted. The County Notice of Termination may provide the contractor thirty (30) days prior notice before it becomes effective. However, at the County's sole option a termination of convenience may be effective immediately and may apply to delivery orders (if applicable) or to the contract in whole.

XXV. Inter-governmental Agreement

Other cities and Authorities located in Cobb County will be allowed to purchase identical items at the same price and upon the same terms and conditions, pursuant to the Intergovernmental Cooperative Purchasing Agreements entered into between the BOC and Cobb County Governmental entities listed under the Intergovernmental Cooperative Purchasing Program. These entities include the Cobb County Board of Education and Cities of Acworth, Austell, Kennesaw, Smyrna, Marietta, and Powder Springs and the Cobb County-Marietta Water Authority and the Cobb-Marietta Coliseum and Exhibit Hall Authority.

XXVI. Indemnification and Hold Harmless

By submission of a bid, the selected responding firm agrees to the fullest extent permitted by law to indemnify Cobb County and protect, defend, indemnify and hold harmless Cobb County, its officers, officials, employees and volunteers from and against all claims, actions, liabilities, losses (including economic losses), or costs arising out of any actual or alleged a) bodily injury, sickness, disease, or death; or injury to or destruction of tangible property including the loss of use resulting there from; or any other damage or loss arising out of or resulting claims resulting in whole or part from any actual or alleged act or omission of the responding firm, sub-consultant, anyone directly or indirectly employed by any firm or sub-consultant; or anyone for whose acts any of them may be liable in the performance of work; b) violation of any law, statute, ordinance, governmental administrative order, rule, regulation, or infringements of patent rights or other intellectual property rights by the responding firm in the performance of work; or c) liens, claims or actions made by the responding firm or other party performing the work, as approved by Cobb County. The indemnification obligations herein shall not be limited by any limitation on the amount, type of damages, compensation, or benefits payable by or for the responding firm or its sub-consultant(s), as approved by the County, under workers' compensation acts, disability benefit acts, other employee benefit acts, or any statutory bar or insurance.

XXVII. Special Terms and Conditions

Should these General Terms and Conditions be in conflict with any attached Special Terms and Conditions, the Special Terms and Conditions will control.

XXV. Disadvantaged Business Enterprises (DBE): The following provisions should be carefully read to determine applicability to your business.

Cobb County Government encourages the participation of all businesses in offering their services and/or products. The Cobb County Government has the goal to fairly and competitively procure the best product at the most reasonable cost.

A Disadvantaged Business Enterprise (DBE) is generally defined as a Female, Black American, Hispanic American and any other minority owned business. The Federal Government has long had program in place to ensure participation of DBE vendors and suppliers. The State of Georgia has established a similar program whereby DBE firms are defined, certified and made known. This effort is managed by the Georgia Department of Transportation (GDOT). More information can be obtained from GDOT web site:

1. http://www.dot.state.ga.us/eeo-div/index.shtml

The Cobb County Government addresses DBE business participation (frequency and dollar value) in the following ways:

1. Cobb County wishes to identify all DBE participation; both at the contractor and sub-contractor levels in the following ways.

    a. DBE businesses are requested to identify such status at the time they register as a vendor.

    b. DBE businesses are requested to identify themselves at the time they propose to do business. Please complete **EXHIBIT B** if applicable and return with bid submittal.

    c. All businesses will receive with each Purchase Order an instruction sheet for use of the furnished *Cobb County Government DBE Participation Report,* **EXHIBIT C.** Businesses are requested to complete this report and submit it with each invoice for the time period billed.

2. Cobb County has established a Disadvantaged Business Enterprise Plan in accordance with the regulations of the U.S. Department of Transportation (U. S. Department of Transportation (USDOT), 49 CFR Part 26.) The Cobb County Department of Transportation is the lead agency for implementing the USDOT DBE Program for the County.

The Plan applies only to projects which are clearly indicated by the County.

XXVIII. Compliance with Georgia Security and Immigration Compliance Act
PROCEDURES & REQUIREMENTS
(Effective 10-28-2010 - Supersedes All Previous Versions)

BACKGROUND

Pursuant to the "Georgia Security and Immigration Compliance Act," Cobb County cannot enter into a contract for the physical performance of services unless the contractor registers and participates in the federal work authorization program to verify information of all newly hired employees or subcontractors. Neither may any contractor or subcontractor enter a contract with the county in connection with the physical performance of services unless the contractor and/or subcontractor registers and participates in the federal work authorization program to verify information of all new employees. O.C.G.A. § 13-10-91.

Before any bid for the physical performance of services is considered, the bid must include a signed, notarized affidavit from the contractor attesting to the following: (1) the affiant has registered with and is authorized to use the federal work authorization program; (2) the user ID number and date of authorization for the affiant; and (3) the affiant is using and will continue to use the federal work authorization program throughout the contract period. O.C.G.A. § 13-10-91 (b) (1). Affidavits shall be maintained for five years from the date of receipt. O.C.G.A. § 13-10-91 (b) (1).

Upon contracting with a new subcontractor, a contractor or subcontractor shall, as a condition of the contract or subcontract, provide Cobb County with notice of the identity of any and all subsequent subcontractors hired or contracted by that contractor or subcontractor within five (5) business days of entering into a contract or agreement for hire with any subcontractor. Such notice shall include an affidavit including the subcontractor's name, address, user ID number, and date of authorization to use the federal work authorization program. O.C.G.A. § 13-10-91 (b) (3).

Based upon the County's experience and desire for full compliance, no work may be commenced by any subsequent subcontractor prior to notice being received by the County that the subcontractor (regardless of tier) is in compliance with the law and the attached Procedures & Requirements, including the preparation and submission of the Contractor (or Subcontractor) Affidavit & Agreement AND the Immigration Compliance Certificate PRIOR to the commencement of any work.

DEFINITIONS

Affidavit – a written statement made or taken under oath before an officer of the court or a notary public or other person who duly has been authorized so to act.

Affiant – the person who makes and subscribes to a statement made under oath (affidavit).

Physical Performance of Services – the building, altering, repairing, improving, or demolishing of any public structure or building or other public improvements of any kind to public real property, including the construction, reconstruction, or maintenance of all or part of a public road; or any other performance of labor for a public employer under a contract or other bidding process.

PROCEDURES & REQUIREMENTS

1. Bid Documents: Bid documents should contain information regarding the contract language and contractual requirements described below.

2. Responsive Bid Documents: Responsive bid documents MUST INCLUDE a signed, notarized affidavit from the contractor in the form attached as EXHIBIT A (CONTRACTOR AFFIDAVIT & AGREEMENT). **If the affidavit is not submitted at the time of the bid, the applicant will be disqualified.**

THIS AFFIDAVIT MUST BE SIGNED, NOTARIZED AND SUBMITTED WITH ANY BID REQUIRING THE PERFORMANCE OF PHYSICAL SERVICES.
IF THE AFFIDAVIT IS NOT SUBMITTED AT THE TIME OF THE BID, THE BID WILL BE DETERMINED TO BE NON-RESPONSIVE AND WILL BE DISQUALIFIED.

3. Contract Language & Contractual Requirements: Affirmative language shall be contained in agreements for the performance of services to cover all statutory and County requirements; such language shall require:

(a) That affidavits in the form attached to these "Procedures & Requirements" be executed from a contractor (and any subcontractors, regardless of tier) and notarized, showing compliance with the requirements of O.C.G.A. § 13-10-91 and that such be made part of the contract and/or subcontracts;
(b) That the contractor (and any subcontractors, regardless of tier) fully comply with the requirements for completing and submitting the "Immigration Compliance Certification" and that such certification be received by the County prior to the commencement of any work under the contract or subcontract;
(c) That the contractor (or any subcontractor, regardless of tier) notify the County within five (5) business days of entering into a contract or other agreement for hire with any subcontractor(s), regardless of tier;
(d) That the contractor be responsible for obtaining and providing to the County the "Subcontractor Affidavit & Agreement" and "Immigration Compliance Certification" attached to and required under these "Procedures & Requirements" from each subcontractor, regardless of tier, employed or retained for work under the contract prior to the commencement of any work under the contract or any subcontract;
(e) That Cobb County, Georgia, reserves the right to dismiss, or require the dismissal of, any contractor or subcontractor for failing to provide the required affidavit or certification and/or for failure to comply with the statutory requirements of O.C.G.A. § 13-10-91 and/or for providing false or misleading information upon the required affidavit(s) or certification(s);
(f) That any contractor and/or subcontractor retaining any other subcontractor to perform services under the contract provide legal notice to any subcontractor of the requirements of Cobb County for immigration compliance and further provide notice that Cobb County, Georgia, reserves the right to dismiss, or require the dismissal of, any contractor or subcontractor for failing to provide the required affidavit or certification and/or for failure to comply with the statutory requirements of O.C.G.A. § 13-10-91 and/or for providing false or misleading information upon the required affidavit(s) or certification(s);
(g) That failure to comply with any of the requirements and procedures of the County (i.e., failure to timely supply required affidavits or compliance certification documents; failure to utilize federal work authorization procedures; failure to permit or facilitate audits or reviews of records by County or State officials upon request; and/or failure to continue to meet any of the statutory or County obligations during the life of the contract) shall constitute a material breach of the agreement and shall entitle the County to dismiss any general contractor or to require the

dismissal of any subcontractor or sub/subcontractor (irrespective of tier) for failing to fully comply with these requirements;

(h) That upon notice of a material breach of these provisions, the contractor (or subcontractor, regardless of tier) shall be entitled to cure the breach within ten (10) days and provide evidence of such cure. Should the breach not be cured, the County shall be entitled to all available remedies, including termination of the contract, the requirement that a subcontractor be dismissed from performing work under the contract, and any and all damages permissible by law.

4. Immigration Compliance Certification: Prior to commencing work under any contract for the physical performance of services, the contractor shall complete the "IMMIGRATION COMPLIANCE CERTIFICATION" form attached to these "Procedures & Requirements" and submit the same to the County.

Prior to allowing any other subcontractor to perform work under the contract, the contractor shall obtain a completed "IMMIGRATION COMPLIANCE CERTIFICATION" from each subcontractor (regardless of tier) and submit the same to the County.

FORM ATTACHMENTS:

1. CONTRACTOR AFFIDAVIT & AGREEMENT (EXHIBIT A);
2. SUBCONTRACTOR AFFIDAVIT & AGREEMENT (EXHIBIT A-1);
3. IMMIGRATION COMPLIANCE CERTIFICATION (EXHIBIT A-2).

CONTRACTOR AFFIDAVIT & AGREEMENT
(EXHIBIT A)

This affidavit must be signed, notarized and submitted with any bid requiring the performance of physical services. If the affidavit is not submitted at the time of the bid, the bid will be determined non-responsive and will be disqualified.

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is contracting with Cobb County, Georgia, has registered with, is authorized to use, and is participating in a federal work authorization program (an electronic verification of work authorization program operated by the U.S. Department of Homeland Security or any equivalent federal work authorization program operated by the U.S. Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986(IRCA)http://www.uscis.gov/portal/site/uscis/menuitem.eb1d4c2a3e5b9ac89243c6a7543f6d1a/?vgnextoid=75bce2e261405110VgnVCM1000004718190aRCRD&vgnextchannel=75bce2e261405110VgnVCM1000004718190aRCRD).
The undersigned contractor further attests that it will continue to use the federal Employment Eligibility Verification (EEV) work authorization program throughout the contract period.

The undersigned further agrees that should it employ or contract with any subcontractor(s) or should its subcontractor(s) employ other subcontractor(s) for the physical performance of services pursuant to the contract with Cobb County, Georgia, the contractor or subcontractor will:

(1) Notify the County within five business days of entering into a contract or agreement for hire with any subcontractor(s);
(2) Secure from any subcontractor(s) and/or their subcontractor(s) verification of compliance with O.C.G.A. § 13-10-91 on the attached Subcontractor Affidavit (EXHIBIT A-1) prior to the commencement of any work under the contract/agreement;
(3) Secure from any subcontractor(s) and/or their subcontractor(s) a completed Immigration Compliance Certification (EXHIBIT A-2) prior to the commencement of any work under the contract/agreement;
(4) Provide the subcontractor(s) with legal notice that Cobb County, Georgia, reserves the right to dismiss, or require the dismissal of, any contractor or subcontractor for failing to provide the affidavit and/or for failure to comply with the requirements referenced in the affidavit;
(5) Maintain records of such compliance and provide a copy of each such verification to Cobb County, Georgia, at the time the subcontractor(s) is retained to perform such services or upon any request from Cobb County, Georgia; and
(6) Maintain such records for a period of five (5) years.

_____ _____
EEV (E-Verify) Program User ID Number EEV Program Date of Authorization

_____ _____
BY: Authorized Officer or Agent Contractor Business Name
[Contractor Name]

_____ _____
Printed Name Date

SWORN AND SUBSCRIBED BEFORE ME
ON THIS THE ____ DAY OF _____, 201_

_____

Notary Public Commission Expires: _____

Effective 10-28-2010

SUBCONTRACTOR AFFIDAVIT & AGREEMENT
(EXHIBIT A-1)

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services on behalf of Cobb County, Georgia, has registered with, is authorized to use, and is participating in a federal work authorization program (an electronic verification of work authorization program operated by the U.S. Department of Homeland Security or any equivalent federal work authorization program operated by the U.S. Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA)). The undersigned contractor further attests that it will continue to use the federal Employment Eligibility Verification (EEV) work authorization program throughout the contract period.

The undersigned further agrees that should it employ or contract with any subcontractor(s) or should its subcontractor(s) employ other subcontractor(s) for the physical performance of services pursuant to the contract with Cobb County, Georgia, the undersigned subcontractor will:

(1) Notify the County within five business days of entering into a contract or agreement for hire with any subcontractor(s);
(2) Secure from any subcontractor(s) and/or their subcontractor(s) verification of compliance with O.C.G.A. § 13-10-91 on this Subcontractor Affidavit form (EXHIBIT A-1) prior to the commencement of any work under the contract/agreement;
(3) Secure from any subcontractor(s) and/or their subcontractor(s) a completed Immigration Compliance Certification (EXHIBIT A-2) prior to the commencement of any work under the contract/agreement;
(4) Provide the subcontractor(s) with legal notice that Cobb County, Georgia, reserves the right to dismiss, or require the dismissal of, any contractor or subcontractor for failing to provide the affidavit and/or for failure to comply with the requirements referenced in the affidavit;
(5) Maintain records of such compliance and provide a copy of each such verification to Cobb County, Georgia, at the time the subcontractor(s) is retained to perform such services or upon any request from Cobb County, Georgia; and
(6) Maintain such records for a period of five (5) years.

_____ _____
EEV (E-Verify) Program User ID Number EEV Program Date of Authorization

_____ _____
BY: Authorized Officer or Agent Subcontractor Business Name
[Subcontractor Name]

_____ _____
Printed Name Date

SWORN AND SUBSCRIBED BEFORE ME
ON THIS THE ____ DAY OF _____, 201_

_____

Notary Public Commission Expires: _____

Effective 10-28-2010

IMMIGRATION COMPLIANCE CERTIFICATION
(Required to be completed by Contractors and all Subcontractors)
(EXHIBIT A-2)

I certify to the Cobb County Board of Commissioners that the following employees will be assigned to:

_____
(Project Name/Description)

_____ _____ _____

_____ _____ _____

_____ _____ _____

I further certify to Cobb County, Georgia the following:

- The E-Verify program was used to verify the employment eligibility of each of the above-listed employees hired after the effective date of our contract to use the program;
- We have not received a Final Nonconfirmation response from E-Verify for any of the employees listed.
- If we receive a Final Nonconfirmation response from E-Verify for any of the employees listed above, we will immediately terminate that employee's involvement with the project.
- I have confirmed that we have an I-9 on file for every employee listed above and that to the best of my knowledge all the I-9's are accurate.
- To the best of my knowledge and belief, all of the employees on the above list are legally authorized to work in the United States.
- If any other employee is assigned to this Cobb County project, a certification will be provided for said employee prior to the employee commencing work on the project.

To the best of my knowledge and belief, the above certification is true, accurate and complete.

Sworn to by: **Employer Name & Address:**

_____ _____
Signature of Officer

_____ _____
Printed Name/Title

_____ _____
Date

SWORN AND SUBSCRIBED BEFORE ME
ON THIS THE ____ DAY OF _____, 201_

Notary Public
Commission Expires: _____

Effective 10-28-2010

EXHIBIT B

DISADVANTAGED BUSINESS ENTERPRISE (DBE) IDENTIFICATION FORM

A Disadvantaged Business Enterprise (DBE) is generally defined as a Female, Black American, Hispanic American and any other minority owned business. If your firm is classified as a Disadvantaged Business Enterprise (DBE), please complete this form and submit with bid response or send to:

Cobb County Purchasing Department
Attn: Purchasing Director
1772 County Services Parkway
Marietta, GA 30008
Fax: 770-528-1154
Email: purchasing@cobbcounty.org

Name of Business: _____

Address: _____

_____

_____

Telephone: _____

Fax: _____

Email: _____

Certification Number: _____

Name of Organization Certification _____

This information is acquired for informational purposes only and will have no bearing on the award unless otherwise stated

Instructions for Completing Exhibit C
Disadvantaged Business Enterprise (DBE)
Participation Report

All Cobb County Government contractors or vendors are requested to complete a report descriptive of any DBE subcontractor involvement in work for which the government is making payment. If otherwise specified in an RFP/ITB or contract, additional reporting forms may be

The objective of this request is to assist in the identification of Disadvantaged Business Enterprise (DBE) business participation with the Cobb County Government and to quantify that participation.

The Cobb County Government does not administer a DBE Certification Program. The principle certification agency for the State of Georgia is the Georgia Department of Transportation. As a Contractor/Vendor you are not responsible for verification of any DBE Certification information of your subcontractor.

*** Instructions ***

1. Contractor/Vendor is furnished the one-page ***DBE Monthly Participation Report*** with each Cobb County Government-issued Purchase Order.

2. Contractor/Vendor completes this report for each billing period and attaches it to the invoice to then be sent to the County department/agency receiving the service or product.

3. Upon receipt of a Contractor/Vendor invoice and DBE report, the County department/agency receiving the service or product should keep a copy of the completed DBE report for their reporting process. In order to add or verify the prime contractor is registered as a DBE vendor in AMS, the County department/agency should send a copy of the DBE report to:

Cobb County Purchasing Division
Attn.: DBE Report

A Disadvantaged Business Enterprise (DBE) is a firm that is under the control of someone in an ownership position (at least 51%) that:

1. Has membership in one or more of the following groups: Female, Black American, Hispanic American, Native American, Subcontinent Asian American and Asian-Pacific America. There may be other groups that may be eligible to be certified as DBE.
2. Is a U.S. citizen or lawfully admitted permanent resident of the U.S.
3. Has a personal net worth which does not exceed $750,000.
4. The business meets the Small Business Administration's size standard for a small business. Its annual gross receipts for the three previous fiscal years cannot have exceeded $22,410,000. Depending on the type of work the business performs, other size standards may apply.
5. The business is organized as a for-profit business.
6. The business may also be DBE eligible as a certified U.S. Small Business Administration 8

Exhibit C

Cobb County Government Disadvantaged Business Enterprise Participation

Monthly Report

Contractor/Vendor: Please keep this blank report to make copies as needed. Print or type in the report, then send the completed report to the County department/agency receiving the service or product.

County Departments: Keep a copy of this completed report and use the dollar figures to input into your quarterly DBE report to the DBE Liaison (Records Management Division). If you already have a similar reporting method of gathering the dollar figures continue to use it. Send a copy of this completed report to the Purchasing Division (Attn: DBE Report) to add or verify the prime contractor is registered as a DBE vendor in AMS.

Submitted by: _____ Month Invoiced: _____

Name of Prime Contractor/Vendor **From/To:**

Cobb County Project Name: _____ Bid or P.O. Number: _____

Cobb County Department or Agency receiving service or product: _____

Description of Purchased Service/Product: _____

_____

Full Contracted Amount: $_____ Payment amount requested at this time: $_____

1. **Are YOU, the Prime Contractor a DBE business? YES _____ NO _____**
2. **Are YOUR subcontractors DBE vendors? YES _____ NO_____**

Please provide information below for each participating DBE subcontractor(s).

DBE Subcontractor Business Name	Type Service or Product Supplied	DBE Subcontractor Business/Contact Tel. Number	Actual Dollar Value of DBE Subcontractor Participation this Reporting Month
			$
			$
			$
			$
			$
			$

Submitted by: _____

Printed Name

Title or position: _____

Signature of Authorized Representative

Date Completed: _____

Mountain View Aquatic Center Air Quality Improvements and Interior Renovations

BID FORM

BIDDERS NAME AND ADDRESS _____

_____

_____

TO: COBB COUNTY BOARD OF COMMISSIONERS

THE UNDERSIGNED HAVING EXAMINED THE PROPOSED CONTRACT DOCUMENTS TITLED:

MOUNTAIN VIEW AQUATIC CENTER AIR QUALITY IMPROVEMENTS AND INTERIOR RENOVATIONS
2650 Gordy Parkway, Marietta, GA 30066

SEALED BID # 12-5658

AND HAVING VISITED THE SITE AND EXAMINED THE CONDITIONS AFFECTING THE WORK, HEREBY PROPOSES AND AGREES TO FURNISH ALL LABOR AND MATERIALS, EQUIPMENT, AND APPLIANCES AND TO PERFORM THE OPERATIONS NECESSARY TO COMPLETE THE WORK AS REQUIRED BY SAID PROPOSED CONTRACT DOCUMENTS, FOR ALL OF THE WORK IDENTIFIED AS TOTAL LUMP SUM QUOTE FOR ALL ITEMS AS SPECIFIED FOR THE STIPULATED SUM OF:

BASE BID AMOUNT

_____ **Dollars ($_____)**

ALLOWANCE

Ten Thousand Dollars ($10,000.00)

TOTAL BID (Base Bid Plus Allowance)

_____ **Dollars ($_____)**

ALTERNATES (Refer to section 01030 for additional information)

Alternate #1 Provide Painting in the spaces identified in Section 01030 Alternates

Add Dollars ($_____)

Alternate#2 – Replace toilet partitions and urinal screens in Rooms 120 and 125

Add Dollars ($_____)

Alternate #3 – Remove and Replace wall and floor tile grout in Rooms 119, 120, 121, 122, 123, 124 and 125

ADD _____ Dollars ($_____)

Alternate#4 – Remove existing floor covering material and replace with the specified carpet in Rooms 107, 108, 109, 110 & 111

Add _____ Dollars ($_____)

Alternate#5 – Replace Counter in lobby Room 102

Add _____ Dollars ($_____)

Alternate #6 – Paint structure and underside of canopy adjacent to Entrance 101

Add _____ Dollars ($_____)

Alternate#7 – Replace pool filters PF-1, PF-2 and PF-3 with the specified filter (design/build)

Add _____ Dollars ($_____)

Alternate#8 – Replace pool filter PF-4 with the specified filter (design/build)

Add _____ Dollars ($_____)

The undersigned understands and agrees also to comply with and be bound by the entire contents of the Project Manual.

The undersigned acknowledges receipt of Addenda numbers:

_____

Company Name:_____

Signed: _____

Title: _____

Address:_____

END OF BID FORM

Mountain View Aquatic Center Air Quality Improvements and Interior Renovations

QUALIFICATION STATEMENTS

GENERAL CONTRACTOR'S QUALIFICATION STATEMENT – Use additional pages if necessary

I. CONTRACTOR

Name of Contractor: _____

Address of Contractor: _____

Primary Contact Person: _____

Telephone Number: _____

II. BANK REFERENCE

Primary Bank: _____

Relationship officer responsible for account: _____

Telephone Number: _____

III. BACKGROUND

Has Contractor ever done business under a different name? _____

If so, provide names: _____

Prior projects with Cobb County: _____

SIMILAR PROJECT EXPERIENCE WITHIN THE PAST 10 YEARS –REFER TO SPECIAL TERMS AND CONDITIONS FOR QUALIFICATION REQUIREMENTS (Provide additional sheets if needed)

1. Name of project: _____
   Summary Project Description: _____
   Address of project: _____
   Contact person with Owner: _____
   Current phone number and email address _____
   Completion date: _____
2. Name of project: _____
   Summary Project Description: _____
   Address of project: _____
   Contact person with Owner: _____
   Current phone number and email address _____
   Completion date: _____

Mountain View Aquatic Center Air Quality Improvements and Interior Renovations

QUALIFICATION STATEMENTS

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3. Name of project: _____
   Summary Project Description: _____
   Address of project: _____
   Contact person with Owner: _____
   Current phone number and email address _____
   Completion date: _____

Bonding Co. _____

Bonding Co. Agency _____

General Contractor License #:

_____

Type of Business Entity:

_____ (Corporation, Sole Proprietorship, Partnership, LLC, P.C.)

Individual Members of the Firm

_____

_____

President of the Corporation

_____

Secretary of the Corporation

_____

Corporation is organized under the Laws of the State of _____

Bid dated this _____ day of _____ 2012

Mountain View Aquatic Center Air Quality Improvements and Interior Renovations

QUALIFICATION STATEMENTS

MAJOR SUBCONTRACTOR'S QUALIFICATION STATEMENT (MECHANICAL) Use additional pages if necessary

I. SUBCONTRACTOR

Name of Subcontractor:_____

Address of Subcontractor:_____

Primary Contact Person:_____

Telephone Number:_____

III. BACKGROUND

Has Subcontractor ever done business under a different name?_____

If so, provide names:_____

Prior projects with Cobb County:_____

SIMILAR PROJECT EXPERIENCE WITHIN THE PAST 10 YEARS –REFER TO SPECIAL TERMS AND CONDITIONS FOR QUALIFICATION REQUIREMENTS (Provide additional sheets if needed)

1. Name of project:_____
   Summary Project Description: _____
   Address of project:_____
   Contact person with Owner:_____
   Current phone number and email address_____
   Completion date: _____

2. Name of project:_____
   Summary Project Description: _____
   Address of project:_____
   Contact person with Owner:_____
   Current phone number and email address_____
   Completion date: _____

3. Name of project:_____
   Summary Project Description: _____
   Address of project:_____
   Contact person with Owner:_____
   Current phone number and email address_____
   Completion date: _____

Mountain View Aquatic Center Air Quality Improvements and Interior Renovations

QUALIFICATION STATEMENTS

Individual Members of the Firm

_____

_____

President of the Corporation

_____

Secretary of the Corporation

_____

Corporation is organized under the Laws of the State of_____

Bid dated this _____ day of _____2012

Mountain View Aquatic Center Air Quality Improvements and Interior Renovations

QUALIFICATION STATEMENTS

MAJOR SUBCONTRACTOR'S QUALIFICATION STATEMENT (ELECTRICAL) Use additional pages if necessary

I. SUBCONTRACTOR

Name of Subcontractor:_____

Address of Subcontractor:_____

Primary Contact Person:_____

Telephone Number:_____

III. BACKGROUND

Has Subcontractor ever done business under a different name?_____

If so, provide names:_____

Prior projects with Cobb County:_____

SIMILAR PROJECT EXPERIENCE WITHIN THE PAST 10 YEARS –REFER TO SPECIAL TERMS AND CONDITIONS FOR QUALIFICATION REQUIREMENTS (Provide additional sheets if needed)

1. Name of project:_____
   Summary Project Description: _____
   Address of project:_____
   Contact person with Owner:_____
   Current phone number and email address_____
   Completion date: _____
2. Name of project:_____
   Summary Project Description: _____
   Address of project:_____
   Contact person with Owner:_____
   Current phone number and email address_____
   Completion date: _____

3. Name of project:_____
   Summary Project Description: _____
   Address of project:_____
   Contact person with Owner:_____
   Current phone number and email address_____
   Completion date: _____

Mountain View Aquatic Center Air Quality Improvements and Interior Renovations

QUALIFICATION STATEMENTS

Individual Members of the Firm

_____

_____

President of the Corporation

_____

Secretary of the Corporation

_____

Corporation is organized under the Laws of the State of _____

Bid dated this _____ day of _____ 2012

Mountain View Aquatic Center Air Quality Improvements and Interior Renovations

QUALIFICATION STATEMENTS

MAJOR SUBCONTRACTOR'S QUALIFICATION STATEMENT (PLUMBING) Use additional pages if necessary.

I. SUBCONTRACTOR

Name of Subcontractor:_____

Address of Subcontractor:_____

Primary Contact Person:_____

Telephone Number:_____

III. BACKGROUND

Has Subcontractor ever done business under a different name?_____

If so, provide names:_____

Prior projects with Cobb County:_____

SIMILAR PROJECT EXPERIENCE WITHIN THE PAST 10 YEARS –REFER TO SPECIAL TERMS AND CONDITIONS FOR QUALIFICATION REQUIREMENTS (Provide additional sheets if needed)

1. Name of project:_____
   Summary Project Description: _____
   Address of project:_____
   Contact person with Owner:_____
   Current phone number and email address_____
   Completion date: _____

2. Name of project:_____
   Summary Project Description: _____
   Address of project:_____
   Contact person with Owner:_____
   Current phone number and email address_____
   Completion date: _____

3. Name of project:_____
   Summary Project Description: _____
   Address of project:_____
   Contact person with Owner:_____
   Current phone number and email address_____
   Completion date: _____

Mountain View Aquatic Center Air Quality Improvements and Interior Renovations

QUALIFICATION STATEMENTS

Individual Members of the Firm

_____

_____

President of the Corporation

_____

Secretary of the Corporation

_____

Corporation is organized under the Laws of the State of_____

Bid dated this _____ day of _____ 2012

Mountain View Aquatic Center Air Quality Improvements and Interior Renovations

QUALIFICATION STATEMENTS

MAJOR SUBCONTRACTOR'S QUALIFICATION STATEMENT (POOL) – Use additional pages if necessary

I. SUBCONTRACTOR

Name of Subcontractor:_____

Address of Subcontractor:_____

Primary Contact Person:_____

Telephone Number:_____

III. BACKGROUND

Has Subcontractor ever done business under a different name?_____

If so, provide names:_____

Prior projects with Cobb County:_____

SIMILAR PROJECT EXPERIENCE WITHIN THE PAST 10 YEARS –REFER TO SPECIAL TERMS AND CONDITIONS FOR QUALIFICATION REQUIREMENTS (Provide additional sheets if needed)

1. Name of project:_____
   Summary Project Description: _____
   Address of project:_____
   Contact person with Owner:_____
   Current phone number and email address_____
   Completion date: _____

2. Name of project:_____
   Summary Project Description: _____
   Address of project:_____
   Contact person with Owner:_____
   Current phone number and email address_____
   Completion date: _____

3. Name of project:_____
   Summary Project Description: _____
   Address of project:_____
   Contact person with Owner:_____
   Current phone number and email address_____
   Completion date: _____

Mountain View Aquatic Center Air Quality Improvements and Interior Renovations

QUALIFICATION STATEMENTS

Individual Members of the Firm

_____

_____

President of the Corporation

_____

Secretary of the Corporation

_____

Corporation is organized under the Laws of the State of_____

Bid dated this_____ day of _____ 2012

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned,

_____ as Principal, and

_____ as Surety, are hereby held and firmly bound unto _____

_____ as the OWNER, in the penal sum of

$_____ for payment of which, well and truly made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed this _____ day of _____, 20_____. The Principal has submitted to _____

_____ a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing for the

_____

_____.

NOW, THEREFORE, If said BID shall be rejected or

(a) If said BID shall be accepted and the principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BID), and shall furnish a BOND for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID,

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The surety, for value received, hereby stipulates and agree that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

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

_____ (L.S.)
Principal

_____ Seal
Surety

By: _____ Seal

IMPORTANT - Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

CHAPTER 1

COBB COUNTY
BOARD OF COMMISSIONERS

SAMPLE CONTRACT FOR CONSTRUCTION
(General Contractor's Fixed Price Form)

CHAPTER 1
BUILDER'S AGREEMENT

This Contract For Construction is entered into between:

"OWNER" COBB COUNTY BOARD OF COMMISSIONERS
100 Cherokee Street, Marietta, GA 30060

And

"GENERAL CONTRACTOR"

This Contract For Construction is executed under seal, and shall be effective on the date signed by the Owner.

ADDRESSES AND AUTHORIZED REPRESENTATIVES

The authorized representatives and addresses of the Owner, the General Contractor and the Professional are:

OWNER: COBB COUNTY BOARD OF COMMISSIONERS
- Representative: Tom Bills
- Address: COBB COUNTY PARKS, RECREATION & CULTURAL AFFAIRS
  1792 County Services Parkway
- City, State, Zip: Marietta, GA 30008-4026
- Office: Fax: 770.528.8807; 770.528.8814 (fax)
- E-mail: tom.bills@cobbcounty.org

GENERAL CONTRACTOR:
- Representative:
- Address:
- City, State, Zip:
- Office: Mobile: Fax:
- E-mail:
- General Contractor's FEIN :

PROFESSIONAL (Mechanical/Electrical Designer): Kirkpatrick Engineers
- Representative: Jerry Kirkpatrick
- Address: 2141 Kingston Ct. Suite 111
- City, State, Zip: Marietta, GA 30067
- Office: Fax: 770.933.8842; 770.984.2817
- E-mail: jerryk@ainweb.net

Whenever this Contract For Construction refers to "Professional" in the singular, such reference shall mean the Owner's designated representative.

OWNER'S PROJECT IDENTIFICATION INFORMATION:

Project Title: Mountain View Aquatic Center
Air Quality Improvements and Interior Renovations

Project Location: Mountain View Aquatic Center
Address: 2650 Gordy Parkway, Marietta, GA

GENERAL PROJECT DESCRIPTION:

1. Air Quality Improvements including installation of new dehumidifiers and evacuators and associated mechanical and electrical work; miscellaneous interior renovations including, but not limited to: painting, floor coverings, ceiling tiles and miscellaneous pool work

TIME FOR PERFORMANCE:

A. Commencement of Construction:

The owner's anticipated schedule for the project is as follows: Project bid - April 12, 2011; Board of Commissioners Consideration for Award- May 8, 2012; Contract Issue – May 9, 2012; Return of Signed Contracts, Bonds and Insurance – May 18, 2012; Construction start date – July 11, 2012; Project Substantial Completion – October 8, 2012; Owner occupancy – October 8 through October 15, 2012. Project Final Completion – October 15, 2012.

If the project is awarded by the Board of Commissioners on May 8, 2012 a contract will be issued immediately thereafter to the Contractor. The Contractor shall endeavor to return all required signed contracts, bonds and insurance to the County by May 18, 2012. The Contract will be signed and a Notice to Proceed will be issued as soon as possible thereafter. The time period between the award of the contract and the start of Construction (July 11, 2012) shall be utilized to identify and order any long lead items, finalize agreements with subcontractors, process submittals and prepare the project schedule. Special attention shall be given to long lead items to ensure orders are placed to expedite delivery of materials and mobilization of subcontractors in a prompt fashion.

The building will be available for the General Contractor to start work on July 11, 2012. The General Contractor shall commence **construction** of its scope of the Work on July 11, 2012. Administrative work, shop drawings, planning, etc. shall begin immediately after the Notice to Proceed is issue.

B. Substantial Completion:

The General Contractor shall accomplish Substantial Completion of its scope of the Work by October 8, 2012.

C. Final Completion:

The General contractor shall accomplish Final Completion by October 15, 2012.

RECITALS

A. The Owner intends to construct the Project and is engaging the General Contractor to perform certain labor, supervision and services and provide certain equipment, goods and materials for the Project.

B. The Owner and General Contractor each acknowledges that it will act in good faith in carrying out its duties and obligations.

C. The Owner's engagement of the General Contractor is based upon the General Contractor's representations to the Owner that it (i) is experienced in the type of labor and services the Owner is engaging the General Contractor to perform; (ii) is authorized and licensed to perform the type of labor and services for which it is being engaged in the State and locality in which the Project is located; (iii) is qualified, willing and able to perform general construction services for the Project; and (iv) has the expertise and ability to provide general construction services which will meet the Owner's objectives and requirements, and which will comply with the requirements of all governmental, public and quasi-public authorities and agencies having or asserting jurisdiction over the Project.

D. The Owner and General Contractor each acknowledges that it has reviewed and familiarized itself with this Contract For Construction, including the documents enumerated in Article 1, and agrees to be bound by the terms and conditions contained therein.

E. The Owner has engaged one or more Professionals to perform architectural and/or engineering services for the Project, including preparation of Site-specific Construction Documents.

NOW, THEREFORE, for good and valuable consideration, the parties agree as follows:

ARTICLE 1
CONTRACT DOCUMENTS

1.1 The "Contract For Construction" is comprised of the following documents:

This "Chapter 1 - Builder's Agreement (General Contractor's Form)" (hereafter "Chapter 1"), including the foregoing recitals A. through E., and all attached documents, appendices and addenda;

"Chapter 2 - Builder's Required Services (General Contractor's Form)" (hereafter "Chapter 2"), and all attached documents, appendices and addenda;

"Chapter 3 – General Terms and Conditions of Builder's Contracts" (hereafter "Chapter 3") and all attached documents, appendices and addenda;

Special conditions, if any;

Proposal(s) submitted by the General Contractor and accepted by the Owner, if any;

Proposed modifications, if any, dated **NA**;

The Construction Documents, now existing or issued hereafter, including but not limited to:

Construction Drawings and Project Manual dated _____.

Any amendments or addenda executed by the Owner and the General Contractor hereafter;

Approved Change Order(s) or field orders; and

Additional documents listed hereafter, if any:
LIST ADDENDA HERE

1.2 Documents not included or expressly contemplated in this Article 1 do not, and shall not, form any part of this Contract For Construction.

1.3 The Owner shall furnish the General Contractor with one reproducible copy of the Construction Documents.

ARTICLE 2
NOTICES

2.1 Unless otherwise provided, all notices shall be in writing and considered duly given if original is (i) hand delivered; (ii) delivered by facsimile with facsimile transmission receipt, or telecopy; or (iii) sent by U.S. Mail, postage prepaid. All notices shall be given to the addresses set forth above. Notices hand delivered or delivered by facsimile, shall be deemed given the next business day following the date of delivery. Notices given by U.S. Mail shall be deemed given as of the second business day following the date of posting.

ARTICLE 3
SCOPE OF GENERAL CONTRACTOR'S WORK

3.1 The General Contractor shall furnish or cause to be furnished, and pay for out of the Construction Price, all management, supervision, financing, goods, products, materials, equipment, systems, labor, services, permits, licenses, construction machinery, water, heat, utilities, transportation and other facilities necessary for proper execution and completion of its scope of the Work in accordance with all of the terms and conditions of this Contract For Construction intended language; responsible for all; owner's faces at same time.

The Contractor is responsible for the entire project.

ARTICLE 4
COMPENSATION OF GENERAL CONTRACTOR

4.1 **Construction Price.** The Owner shall pay and the General Contractor shall accept, as full and complete payment for the General Contractor's timely, complete, and acceptable performance of its obligations hereunder the fixed price of: **$** _____Dollars. The amount set forth above is the Construction Price and includes the aggregate amount of all allowances and any unit price items to be furnished or installed pursuant to those shown on plats and specifications.

Construction Price includes in Unit Price and Lump Sum Allowances.

4.2 **Compensation Schedule.** Within 10 calendar days after receipt of Notice to Proceed, the General Contractor shall prepare and present to the Owner and the designated Professional, as Appendix A, the General Contractor's Compensation Schedule which includes, as applicable: *[Check applicable items]*

X A. Schedule Of Values for payment of the Construction Price on a lump sum basis;

☐ B. Time Schedule for payment of the Construction Price on a lump sum basis;

☐ C. Unit prices and estimated number of units for compensation for services rendered and goods supplied on a unit-price basis; and

☐ D. Rates for compensation for services rendered on a time and material basis.

☐ E. Compensation for goods furnished on a time and material basis.

× F. Allowances, if any.

4.3 **Payment.**

4.4 **Compensation For Change Orders.**

4.4.1 For change orders directed by a Professional to be performed by the General Contractor on a time and materials basis pursuant to Subparagraph 9.5.1 of Chapter 3, the General Contractor shall be reimbursed the actual incurred cost and expense plus a markup of fifteen percent (15%) for the change order Work performed by its forces.

4.4.2 When additional Work by the General Contractor's subcontractors and suppliers is required and approved pursuant to Subparagraph 9.5.3 of Chapter 3, the General Contractor shall be reimbursed the actual incurred costs and expenses paid to those subcontractors and suppliers, plus a markup of seven and one half percent (7 ½ %).

4.4.3 If the General Contractor disputes a change order decision pursuant to Paragraph 9.7 of Chapter 3, it must give the Owner its written notice of dispute, including the reasons therefore, within two (2) business days of the disputed decision.

4.5 **Liquidated Damages.** If liquidated damages are assessed pursuant to Chapter 3, Article 17, damages shall be calculated at the rate of five hundred ($ 500.00) Dollars per calendar day for failure to meet the required date of Substantial Completion and one hundred ($100.00) Dollars per calendar day for failure to meet the required date of Final Completion. If both the Substantial Completion and Final Completion dates have not been achieved, liquidated damages for default on the Substantial Completion and the Final Completion dates shall be added and shall be: six hundred dollars ($600.00) per calendar day until Substantial Completion is achieved; after which, the amount for failure to achieve Final Completion will continue to be paid as liquidated damages to the Owner until Final Completion.

ARTICLE 5
SPECIFIC INSURANCE REQUIREMENTS

5.1 The General Contractor shall purchase and maintain, at its expense, from a company or companies authorized to do business in the state in which the Project is located, insurance policies containing the following selected types of coverage's and minimum limits of liability protecting from claims which may arise out of or result from the performance or non-performance of services under this Contract For Construction by the General Contractor or by anyone directly or indirectly employed by it, or by anyone for whose acts it may be liable:

(i) Workers' Compensation, Disability Benefit, or similar employee benefit act coverage, and employer's liability coverage, as required by the state in which the Project is located.

(ii) Commercial General Liability which (i) includes premises/operations, product/completed operations, contractual liability, independent contractors, broad-form property damage, underground, explosion and collapse hazard, and personal / advertising injury; and (ii) names the Owner and the Owner's Related Parties as additional insureds, with per-occurrence limits of not less than One Million ($1,000,000) Dollars.

(iii) Commercial Comprehensive Automobile Liability which includes contractual liability coverage and coverage for all owned, hired and non-owned vehicles with limits of not less than One Million ($1,000,000) Dollars. per accident for bodily injury and property damage, or One Million ($1,000,000) Dollars combined single limit.

(iv) Builder's Risk Insurance which (i) includes without duplication, but is not limited to, fire (with extended coverage), theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal; and (ii) names the Owner and the Owner's Related Parties, with coverage for one hundred (100%) percent of the insurable value of the General Contractor's scope of the Work.

(v) Other Insurance:

Refer to document titled ***Cobb County General Instructions For Bidders, Terms and Conditions***

5.2 Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given the County.

The Certificates must include the Cobb County Project Name and Project Number. The Certificate Holder must be shown as:

Cobb County Board of Commissioners
Cobb County, Georgia
100 Cherokee Street
Marietta, GA 30060

The endorsements on the certificates must read as follows:

(i) The certificate for All Coverage shall include the following Cancellation endorsement, worded exactly as follows: *"Should any coverage be suspended, voided, cancelled or, reduced in coverage or in limits, thirty (30) days prior written notice delivered by certified mail, return receipt requested, will be given to the Certificate Holder."*

(ii) The certificate for Worker's Compensation and Employers' Liability coverage shall include the following endorsement, worded exactly as follows: *"The insurer agrees to waive all rights of subrogation with respect to Worker's Compensation and Employers' Liability Coverage against the Owner, its officers, officials, employees, and volunteers for losses arising from work performed by the Design/Builder for the Owner."*

ARTICLE 6
PERSONNEL, SUBCONTRACTOR, SUPPLIER AND CONSULTANT CHARTS

6.1 The General Contractor shall prepare and attach as Appendix B to this Chapter the General Contractor's Personnel Chart which lists by name, job category and responsibility the General Contractor's primary employees who will work on the Project, including a 24-hour contact number for each primary employee. The General Contractor shall promptly inform the Owner in writing of any proposed replacements, the reasons therefore, and the name(s) and qualification(s) of proposed replacement(s). The Owner shall have the right to reject any proposed replacement.

6.2 The General Contractor (i) shall prepare and attach as Appendix C to this Chapter the General Contractor's Subcontractors And Suppliers Chart which lists by name and general Project responsibility each subcontractor and supplier who will be utilized by the General Contractor to provide goods or services with respect to the Project, including a 24-hour contact number for each Subcontractor and Supplier; (ii) shall not enter into any agreement with any subcontractor or supplier to which the Owner raises a reasonable, timely objection; and (iii) shall promptly inform the Owner in writing of any proposed replacements, the reasons therefore, and the name(s) and qualification(s) of proposed replacement(s). The Owner shall have the right to reject any proposed replacement.

6.3 The Owner shall prepare and attach as Appendix D to this Chapter the Owner's Consultants Chart which lists by name and general duties each consultant retained by the Owner to provide services with respect to the Project. The Owner reserves the right to engage any other consultants which it may deem necessary or desirable.

ARTICLE 7
CONSTRUCTION SCHEDULE AND SPECIFIC BOND REQUIREMENTS

7.1 **Time For Performance.**

7.1.1 **Commencement Of Construction.** The General Contractor shall commence construction of its scope of the Work on July 11 , 2012 . (the "Commencement Date").

7.1.2. **Substantial Completion.** The General Contractor shall accomplish Substantial Completion of its scope of the Work on or before: October 8, 2012
(the "required date of Substantial Completion").

7.1.3. **Final Completion.** The General contractor shall accomplish Final Completion of its scope of the Work on or before October 15, 2012 (the "required date of Final Completion").

7.2 **Construction Schedule.** The General Contractor shall prepare and submit a final Construction Schedule to the Owner and the Professional for their review and acceptance pursuant to Chapter 3, Paragraph 16.1 of this Contract For Construction no later than 10 days from receipt of the Notice to Proceed

7.3 **Bond Requirements.**

7.3.1 The General Contractor shall be required to provide payment and performance bonds. The amount of the premiums for such bonds shall be included in the Construction Price.

ARTICLE 8
AMENDMENTS TO CHAPTER 3

8.1 The following additions to, deletions from and/or modifications to the specifically referenced articles and paragraphs of Chapter 3 shall take precedence over the provisions of those referenced articles and paragraphs as follows:

Cobb County General Instructions For Bidders, Terms and Condition**s**

Special Terms and Conditions

CONTRACTOR: _____

By: _____ Date: _____

Title: _____
(SEAL, IF INCORPORATED)

COUNTY:
COBB COUNTY, GEORGIA

By: _____ Date: _____

Tim Lee
Title: Chairman, Cobb County Board of Commissioners
(COUNTY SEAL)

APPROVED AS TO FORM:
COUNTY ATTORNEY'S OFFICE

By: _____ Date: _____
Deborah L. Dance
Title: Assistant County Attorney

APPENDIX A
GENERAL CONTRACTOR'S COMPENSATION SCHEDULE

[*Insert information as appropriate based on payment method selected*]

A. Schedule of Values for payment of the Construction Price on a lump sum basis

(Separate attachment furnished by Contractor)

B. Allowances:

Description	Quantity Included in Base Bid	Unit Price	Units	Amount in Base Bid
UNIT PRICE ALLOWANCE SCHEDULE				
A.		$		$0.00
LUMP SUM ALLOWANCE SCHEDULE				
B. Amount for unforeseen changes.	Lump Sum			$ 10,000.00
TOTAL ALLOWANCES INCLUDED IN THE BASE BID (A through B):				$10,000.00

C. Unit prices and estimated number of units for compensation for services rendered and goods supplied on a unit price basis: See Unit Price Allowance Schedule above.

See Unit Price Allowance Schedule above

APPENDIX B
GENERAL CONTRACTOR'S PERSONNEL CHART

[*Insert information as required]*

For each of the General Contractor's primary employees working on the Project, list:

1) Name:

Job Category:

Responsibility:

24 hour contact number:

2) Name:

Job Category:

Responsibility:

24-hour contact number:

3) Name:

Job Category:

Responsibility:

24-hour contact number:

APPENDIX C
GENERAL CONTRACTOR'S
SUBCONTRACTORS AND SUPPLIERS CHART

[*Insert information as required]*

(Subcontractor list to be attached later.)

APPENDIX D
OWNER'S CONSULTANTS CHART

[*Insert information as required*]

Lists by name and general duties each consultant retained by the Owner to provide services with respect to the Project.

Program Manager:	Moreland Altobelli Associates, Inc. 1792 County Services Parkway Marietta, GA 30008-4026 770. 528. 8818 770. 528. 8814 FAX Contact: Russell Small
Mechanical/Electrical Engineer:	Kirkpatrick Engineers 2141 Kingston Ct., Suite 111 Marietta, Ga. 30067 770.933.8842 770.984-2817 FAX Contact: Jerry Kirkpatrick

CHAPTER 2

COBB COUNTY
BOARD OF COMMISSIONERS

CONTRACT FOR CONSTRUCTION
(General Contractor's Fixed Price Form)
CHAPTER 2
BUILDER'S REQUIRED SERVICES
ARTICLE 1
GENERAL PROJECT SERVICES

1.1 **Essential Services.** The General Contractor agrees to provide all services required to professionally complete its scope of the Work in an expeditious and economical manner consistent with this Contract For Construction and the best interests of the Owner.

1.2 **Compliance With Contractual Requirements.** At all times the General Contractor is performing services, it shall comply with the requirements set forth in Chapter 1, Chapter 2 and Chapter 3 of this Contract For Construction.

1.3 **Cooperative Effort.** The General Contractor shall, in consultation with the Owner, Professional(s), and the subcontractors, endeavor to develop, implement and maintain a spirit of cooperation, collegiality, and open communication among the parties so that the goals and objectives of each are clearly understood, potential problems are resolved promptly, and, upon completion, the Project is deemed a success by all parties.

1.4 **Relationship To Professional.** The Owner's designated professional will be the Owner's representative in dealing with the General Contractor on all design and technical matters, and will administer this Contract For Construction. Unless otherwise directed by the Owner, the Owner and the General Contractor shall communicate with each other in the first instance through the designated Professional. The Owner's instructions to the General Contractor will be issued through the designated Professional.

1.5.1 **Additional Or Modified Required Services.** Additional or modified required services, if any, included in General Project Services are listed in Appendix 1 and incorporated herein by reference.

ARTICLE 2
PRE-CONSTRUCTION SERVICES

2.1 **Construction Documents Review.**

2.1.1 Prior to commencement of construction activities the General Contractor shall review the Construction Documents for clarity, adequacy of detail, consistency, accuracy and completeness to identify:

(i) conflicts, omissions or overlaps, and unusual design details affecting construction cost and schedules; and

(ii) factors with the potential to impact the Construction Schedule such as materials with long lead time, the unavailability of required labor, and other factors and make suggestions for acceptable alternatives.

2.1.2 Upon completion of its review of the Construction Documents, the General Contractor shall:

(i) notify the Professional in writing of all problems, conflicts, defects, omissions, overlaps or deficiencies of which it became aware; and

(ii) assist the Professional with the resolution of the identified problems, conflicts, defects, omissions, overlaps and deficiencies.

2.2 **Scheduling.** The General Contractor understands and acknowledges the Owner's intent that the Project will be complete by the Date of Substantial Completion. The General Contractor shall timely prepare and submit the Construction Schedule for the Owner's review and approval.

2.3 **Additional Or Modified Required Services.** Additional or modified required services, if any, included in Pre-Construction Services are listed in Appendix 1 and incorporated herein by reference.

ARTICLE 3
CONSTRUCTION SERVICES

3.1 **Construction Supervision.**

3.1.1 The General Contractor shall supervise and direct its scope of the Work at the Site. The General Contractor shall, at a minimum, staff the Project Site with personnel who shall:

(i) supervise and coordinate the General Contractor's personnel and act as its primary liaison with the Owner and the Owner's Consultant(s).

(ii) coordinate trade contractors and suppliers, and supervise Site construction services.

(iii) be familiar with all trade divisions and trade contractors' scopes of Work, all applicable building codes, the Construction Documents, and this Contract For Construction.

(iv) check and review shop drawings and materials delivered to the Site, regularly review the Work to determine its compliance with the Construction Documents and this Contract For Construction, periodically confer with the appropriate Owner's consultant(s) to assure acceptable levels of quality; and

(v) prepare and maintain Project records, process documents, and staff the Site field office.

3.1.2 The General Contractor shall promptly reject any Work (a) which does not conform to the Construction Documents; or (b) which does not comply with any applicable law, statute, building code, rule or regulation of any public authority or agency of which it is aware.

3.1.3 The General Contractor shall comply with and cause its subcontractors and suppliers to comply with the Project Construction Schedule and applicable sub-schedules. The General Contractor shall obtain and review schedules from subcontractors and suppliers, coordinate sub-schedules with the Construction Schedule, and enforce compliance with all applicable schedules to insure timely completion of the Work. If at any time a Project is delayed, the General Contractor shall immediately notify the Owner of the probable cause(s) and possible alternatives, and make recommendations to minimize expense to the Owner.

3.1.4 The Professional will visit the Project Site at intervals appropriate to the stage of construction and with sufficient frequency to familiarize itself with the progress and quality of the Work and to inspect the Work. The Professional's interpretations and decisions shall be final regarding the Construction Documents and the Work.

3.2 **General Contractor's On-Site Facilities.** Commencing at the Date of Commencement and terminating on the Date Of Final Completion, the General Contractor shall provide a Site field office and toilet facilities at the Project Site.

3.2.1 The field office facilities shall be large enough to accommodate required meetings and shall include office furnishings and equipment such as desks, telephones, computers, copiers and other similar office equipment.

3.2.2 The General Contractor shall maintain in the Site field office, on a current basis, all necessary Construction Documents, schedules, shop drawings, product data, samples, purchase orders, maintenance manuals and instructions, daily logs, correspondence, memoranda, and all other Project-related documents.

3.2.3 The General Contractor shall provide temporary toilets at the Site for all workers for the duration of the construction period.

3.3 **Additional Or Modified Required Services.** Additional or modified required services, if any, included in Construction Services are listed in Appendix 1 and incorporated herein by reference.

ARTICLE 4
EXTRA SERVICES

4.1 **Initiation Of Extra Services.** The General Contractor shall provide such Extra Services as are initiated and authorized in writing by the Owner prior to performance. The services described in this Article 4 are not included in Required Services unless identified as an "Additional Or Modified Required Service".

4.2 **Definition Of Extra Services.** Extra services include, but are not limited to:

(i) services performed after the Date Of Final Completion, except when required as Basic Services.

(ii) services for preparation for and attendance at deposition, discovery or court or other dispute resolution proceedings on behalf of the Owner, except when such proceedings involve issues of fault, neglect or alleged liability of the General Contractor, or its agents, employees, or consultants.

(iii) other services not included in Required Services mutually agreed to by the Owner and the General Contractor in writing.

4.3 Payment of the General Contractor for Extra Services shall be in accordance with applicable provisions of Chapter 1.

APPENDIX 1
ADDITIONAL OR MODIFIED REQUIRED SERVICES

GENERAL PROJECT SERVICES [¶ 1.5]
[Insert and identify with specificity all Additional Required Services, Modified Required Services, or state “None”]

PRE-CONSTRUCTION SERVICES [¶ 2.3]
[Insert and identify with specificity all Additional Required Services, Modified Required Services, or state “None”]

CONSTRUCTION SERVICES [¶ 3.3]
[Insert and identify with specificity all Additional Required Services, Modified Required Services, or state “None”]

CHAPTER 3 - TABLE OF CONTENTS

COBB COUNTY
BOARD OF COMMISSIONERS

CONTRACT FOR CONSTRUCTION
CHAPTER 3
GENERAL TERMS AND CONDITIONS
ARTICLE 1
CONTRACT DOCUMENTS

1.1 **Additional Sets Of Documents.** Any additional copies of the Construction Documents required by the Builder for execution of the Work shall be made by the Builder at its cost and expense from the reproducible set(s) furnished by the Owner.

1.2 **Return Of Documents To Owner.** The Builder shall return to the Owner the reproducible set(s), and all copies, of the Construction Documents upon Final Completion of the Work or termination of this Contract For Construction.

1.3 **Electronic Media.** Unless otherwise specified in this Contract For Construction, the Builder may request that the Construction Documents required by the Builder for the Work be furnished to it on electronic media. To the extent that such documents are available on electronic media, the Builder will be furnished one set of the requested information on electronic media. Any additional electronic copies of Construction Documents required by the Builder for execution of the Work shall be made by the Builder at the Builder's cost and expense. The Builder shall return one copy of electronic Construction Documents to the Owner upon final acceptance of the Work or termination of this Contract For Construction, whichever occurs first, and shall destroy all remaining electronic copies of the documents within its possession.

1.4 **Minimum Requirements.** In every case, requirements established by the Construction Documents shall be considered as the minimum which will be accepted.

1.5 **Owner Disclaimer Of Warranty.** The Owner has requested that its Professional(s) prepare documents for the Project, including the plans and specifications for the Project, which are to be complete, accurate, coordinated, and adequate for bidding, negotiating and constructing the Work. However, the Owner makes no representation or warranty of any nature whatsoever to the Builder concerning such documents. The Builder hereby acknowledges and represents that it has not relied, and does not and will not rely, upon any representations or warranties by the Owner concerning such documents, as no such representations or warranties have been or are hereby made.

1.6 **Conflicts In Documents.** In the event of any conflict, discrepancy, or inconsistency among any of the documents which make up this Contract For Construction, the following shall control:

1.6.1 As between figures given on plans and scaled measurements, the figures shall govern;

1.6.2 As between large-scale plans and small-scale plans, the large-scale plans shall govern;

1.6.3 As between plans and specifications, the requirements of the specifications shall govern;

1.6.4 As between this document and the plans, specifications, general conditions or general requirements, this document shall govern.

1.7 **Shop Drawings And Submittals.** Shop drawings and other submittals from the Builder or its subcontractors and suppliers do not constitute a part of this Contract For Construction.

1.8 **Contract Changes.** The Builder understands and agrees that this Contract For Construction cannot be changed except as provided herein. No act, omission or course of dealing by the parties shall alter the requirement that modifications of this Contract For Construction can be accomplished only by written documents signed by the parties.

ARTICLE 2
BUILDER'S REVIEWS AND EVALUATIONS

2.1 **Sufficiency Of Construction Documents And Drawings.** The Builder acknowledges its continuing duty to review and evaluate the Construction Documents during the performance of its services and shall immediately notify the Owner and the Professional(s) about any (i) problems, conflicts, defects, deficiencies, inconsistencies or omissions it discovers in or between the Construction Documents; and (ii) variances it discovers between the Construction Documents and applicable laws, statutes, building codes, rules and regulations.

2.1.1 If the Builder performs any Work which it knows or should have known involves (i) a recognized problem, conflict, defect, deficiency, inconsistency or omission in the Construction Documents; or (ii) a variance between the Construction Documents and requirements of applicable laws, statutes, building codes, rules and regulations, without notifying the Professional(s) and prior to receiving written authorization from the appropriate Professional(s) to proceed, the Builder shall be responsible for the consequences of such performance.

2.1.2 Drawings are generally drawn to scale; however, the figured dimensions or notes thereon shall govern. Before ordering any materials or doing any Work, the Builder and subcontractors shall verify all measurements at the Site and shall be responsible for the correctness of same. Discrepancies shall be reported in writing to the Professional prior to proceeding with the Work. No extra charge or compensation will be entertained due to differences between actual measurements and dimensions indicated on drawings, if such differences do not result in a change in the scope of Work or if the Professional failed to receive written notice before the Work was performed.

2.2 **Sufficiency Of Site.** Prior to signing this Contract For Construction, the Builder has

(i) visited the Site and become familiar with local conditions under which the Project is to be constructed and operated; and

(ii) reviewed and familiarized itself with the Site survey and any existing structures on the Site, and gathered all other information necessary for a full understanding of the Work.

In addition, if the Work involves modifications to or remodeling of an existing structure(s) or other man-made feature(s) on the Site, the Builder has also

(iii) reviewed all available as-built and record drawings, plans and specifications; and

(iv) thoroughly inspected the structure(s) and man-made feature(s) to be modified or remodeled prior to submission of bid, if any, but in all events prior to signing this Contract For Construction.

Claims resulting from the Builder's failure to familiarize itself with the Site or pertinent documents shall be deemed waived.

ARTICLE 3
BUILDER'S DUTIES, OBLIGATIONS AND RESPONSIBILITIES

3.1 **Performance Of Work.** The Builder shall perform and complete its obligations under this Contract For Construction using its best skill and attention, and covenants with the Owner to furnish management, supervision, coordination, labor and services (i) which expeditiously, economically and properly completes the Work in the manner most consistent with the Owner's interests and objectives; (ii) which comply with the Construction Documents and this Contract For Construction; and (iii) in accordance with the highest standards currently practiced by persons and entities performing or providing management, supervision, coordination, labor and services on projects similar in size, complexity and cost to the Project.

3.1.1 The Builder shall not be required to provide professional services which constitute the practice of architecture or engineering.

3.1.2. All services rendered by the Builder for the Project shall be performed by or under the immediate supervision of persons possessing expertise in the discipline of the service being rendered.

3.1.3 The Builder shall, in the course of providing the Work, cooperate and communicate with the Owner and all other persons or entities as required for satisfactory completion of the Project.

3.1.4 The Builder understands and acknowledges that the Work referred to in this Contract For Construction may be only part of the Project and that the Project may include the construction of other structures or other construction activities on the same Site. The Builder shall conduct all its activities so as not to interfere with the construction of, or operations within or from, other structures on the Site.

3.1.5 The Builder shall not damage, endanger, compromise or destroy any part of the Project or the Site, including by way of example and not limitation, work being performed by others on the Site, monuments, stakes, benchmarks and other survey points, utility services, and existing features or structures on the Site. Should the Builder damage, compromise or destroy any part of the Project or the Site, the Builder shall be fully and exclusively responsible for and bear all costs associated therewith.

3.2 **Compliance With Governmental Requirements.** The Builder shall:

(i) comply with all applicable laws, statutes, building codes, rules, regulations and lawful orders of all governmental, public and quasi-public authorities and agencies having jurisdiction over the Project;

(ii) prepare and file documents required to obtain, and shall obtain, all necessary approvals and permits, including building permit(s), of all governmental authorities having jurisdiction over the Work; and

(iii) give all notices required of it by governmental authorities relating to the Project.

3.3 **Safety.** Safety shall be a prime concern of the Builder at all times. The Builder shall be solely responsible for and have control over the means, methods, techniques, sequences and procedures for coordinating and constructing the Work, including Site safety and safety precautions and programs.

3.4 **Concurrent Records.** The Builder shall, concurrently with performance, maintain detailed records of activities on the Site. The Builder shall keep full and accurate records of all costs incurred and items billed in connection with the performance of the Work, which records shall be open to audit by the County or its authorized representatives during the performance of the Work and until three (3) years after Final Payment. In addition the Builder shall make it a condition of all subcontracts relating to the Work that any and all Subcontractors will keep accurate records of costs incurred and items billed in connection with their work and that such records shall be open to audit by the County or its authorized representatives during performance of the Work and until two (2) years after its completion.

3.5 **As-Built Drawings.** The Builder shall maintain at the Site one copy of all drawings, specifications, addenda, approved shop drawings, change orders, submittals, and other modifications in good order and

accurately marked depicting all changes as they occur during construction. The as-built drawings shall be available at all times to the Owner, the Professional(s), the Owner's consultants, and quality control and testing agency personnel. The drawings shall be neatly and clearly marked in color during construction to record all variations made during construction, and the Builder shall include such supplementary notes and details necessary to clearly and accurately represent as-built construction.

3.6 **Bribes And Kick-Backs.** The Builder shall not by any means:

(i) induce any person or entity employed in the construction of the Project to give up any part of the compensation to which that person or entity is entitled;

(ii) confer on any governmental, public or quasi-public official having any authority or influence over the Project, any payment, loan, subscription, advance, deposit of money, services or anything of value, present or promised;

(iii) offer nor accept any bribes or kick-backs in connection with the Project from or to any individual or entity, including any of its trade contractors, subcontractors, consultants, suppliers or manufacturers of Project goods and materials; or

(iv) without the express written permission of the Owner, call for or by exclusion require or recommend the use of any subcontractor, consultant, product, material, equipment, system, process or procedure in which the Builder has a direct or indirect proprietary or other pecuniary interest.

3.7 **Quality Control And Testing.** The Builder shall develop and implement a quality management program to insure quality construction. Unless otherwise specified in this Contract For Construction, the Owner shall select the quality control and testing agencies and pay for the cost of specified measures and tests required by the Construction Documents. The Builder shall coordinate all tests and inspections required by the Construction Documents, and the Builder shall arrange for tests and inspections to be conducted as necessary to avoid any interference with the progress of Work. No claims for extension of time or extra costs will be allowed on account of any testing, retesting, inspection, re-inspection, or rejection of Work when defective or deficient Work is found.

3.8 **Incident Reporting.** The Builder shall immediately notify the Owner and Professional(s), both orally and in writing, of the nature and details of all incidents which may adversely affect the quality or progress of the Work including, but not limited to, union jurisdictional disputes, accidents, delays, damages to Work and other significant occurrences.

3.9 **Hazardous Substances.** The Builder shall immediately notify the Owner and the Professional(s), both orally and in writing, of the presence and location of any physical evidence of, or information regarding, environmental contamination on the Site (including but not limited to Hazardous Substances and petroleum releases) of which it becomes, or reasonably should have become, aware. If the Builder encounters environmental contamination (including but not limited to Hazardous Substances and petroleum releases), the Builder shall (i) immediately stop performance of Work or that portion of the Work affected by or affecting such contamination; (ii) secure the contaminated area against intrusion; (iii) not disturb or remove the contamination; (iv) not proceed, or allow any subcontractor or supplier to proceed, with any Work or other activities in the area affected by such contamination until directed to do so by the Owner; and (v) take any other steps necessary to protect life and health.

3.10 **Owner's Use Of And Access To The Site.** The Builder shall perform the Work so as not to interrupt any operations of the Owner on the Site.

3.10.1 The Builder understands and acknowledges that the Owner may need access to or use of certain areas of the Site or Work prior to the Builder's achievement of Substantial Completion, and that such occupancy, access or use shall not constitute the Owner's acceptance of any Work.

3.10.2 The Builder shall not enter any Owner-occupied area of the Site or Project unless first approved and scheduled by the Owner. The Builder understands and acknowledges that the Owner may incur damages if the Owner's operations on the Site are interrupted or impaired as a result of the Work.

3.10.3 The Builder shall afford the Owner's own forces, and other consultants, trade contractors, subcontractors and suppliers, access to the Site for performance of their activities, and shall

connect and coordinate its construction and operations with theirs as required by the Construction Documents.

3.11 **Commissioning.** The Builder shall, through the Owner's Representative, schedule and coordinate all equipment and systems start-ups and Project commissioning within its scope of the Work.

3.11.1 The Builder shall provide the Owner with operation and maintenance manuals and other operational documentation not less than twenty-eight calendar days prior to the required date of Substantial Completion to allow adequate time for training prior to commissioning and the Owner's occupancy of the Project.

3.11.2 The Builder shall meet with the Owner's personnel not less than twenty-eight (28) calendar days prior to the required date of Substantial Completion to familiarize and train them with respect to maintenance and use of the Project. The appropriate Professional(s) will attend and assist with such familiarization and training.

ARTICLE 4
BUILDER'S PERSONNEL, SUBCONTRACTORS, SUPPLIERS AND SITE FACILITIES

4.1 **Project Staffing.** The Builder shall staff the Project with qualified and designated individuals and entities responsible for its obligations and performance.

4.1.1 The Builder shall name a representative (the "Builder's Representative") to serve as its primary communication contact with the Owner and the Professional(s).

4.1.2 The Builder shall employ persons skilled in the tasks assigned to them and shall contract with subcontractors and suppliers skilled in the tasks assigned to them and capable of working harmoniously with all trades, crafts and other individuals on the Project. The Builder shall use its best efforts to minimize the likelihood of any strike, work stoppage or other labor disturbance.

4.1.3 The Builder shall immediately remove from the Site, for the duration of the Project, any person making an inappropriate religious, racial, sexual or ethnic comment, statement or gesture toward any other individual.

4.1.4 The Builder shall immediately remove from the Site, for the duration of the Project, any person who is incompetent, careless, or not working in harmony.

4.1.5 The Builder shall be responsible to the Owner for the acts and omissions of its agents and employees, consultants, subcontractors and suppliers.

4.2 **Subcontractor/Supplier Contracts.** The Builder shall enter into written contracts with its subcontractors and suppliers, and those written contracts shall be consistent with this Contract For Construction. It is the intent of the Owner and the Builder that the obligations of the Builder's subcontractors and suppliers inure to the benefit of the Owner and the Builder, and that the Owner be a third-party beneficiary of the Builder's agreements with its subcontractors and suppliers.

4.2.1 The Builder shall make available to each subcontractor and supplier, prior to the execution of written contracts with any of them, a copy of the pertinent portions of this Contract For Construction, including those portions of the Construction Documents to which the subcontractor or supplier will be bound, and shall require that each subcontractor and supplier shall similarly make copies of applicable parts of such documents available to its respective subcontractors and suppliers.

4.2.2 The Builder shall include in its written contracts with its subcontractors and suppliers a provision which contains the acknowledgment and agreement of the subcontractor or supplier that it has received and reviewed the applicable terms, conditions and requirements of this Contract For Construction that are included by reference in its written contract with the Builder, and that it will abide by those terms, conditions and requirements.

4.2.3 The Builder's written contracts with its subcontractors and suppliers shall preserve and protect the rights of the Owner and include the acknowledgment and agreement of each subcontractor or

supplier that the Owner is a third-party beneficiary of the contract. The Builder's agreements with its subcontractors and suppliers shall require that in the event of default under, or termination of, this Contract For Construction, and upon request of the Owner, the Builder's subcontractors and suppliers will perform services for the Owner.

4.3 **Resolution Of Trade Disputes.** The Builder shall promptly resolve claims, complaints, labor disputes and disputes over assignment of work tasks by and among its subcontractors and suppliers.

ARTICLE 5
GOODS, PRODUCTS AND MATERIALS

5.1 **Quality Of Materials.** The Builder shall furnish goods, products, materials, equipment and systems which:

(i) comply with this Contract For Construction;
(ii) conform to applicable specifications, descriptions, instructions, drawings, data and samples;
(iii) are new (unless otherwise specified or permitted) and without apparent damage;
(iv) are of quality, strength, durability, capacity or appearance equal to or higher than that required by the Construction Documents;
(v) are merchantable;
(vi) are free from defects; and
(vii) are beyond and in addition to those required by manufacturers' or suppliers' specifications where such additional items are required by the Construction Documents.

5.2 **Installation And Use Of Materials.** All goods, products, materials, equipment and systems named or described in the Construction Documents, and all others furnished as equal thereto shall, unless specifically stated otherwise, be furnished, used, installed, employed and protected in strict compliance with the specifications, recommendations and instructions of the manufacturer or supplier, unless such specifications, recommendations or instructions deviate from accepted construction practices, or the Construction Documents, in which case the Builder shall so inform the Owner and the appropriate Professional and shall proceed as directed by that Professional, unless otherwise directed by the Owner. The Builder shall coordinate and interrelate all trade contracts, and subcontracts to ensure compatibility of goods, products, materials, equipment and systems, and validity of all warranties and guarantees, required by the Construction Documents for the Work.

5.3 **Unsuitable Materials.** The Builder shall inform the Owner of goods, products, materials, equipment or systems which the Builder knows or should have known are unsuitable or unavailable at the time of bid submission, and claims relating to or arising out of claims that goods, products, materials, equipment or systems are unsuitable or unavailable shall not be entertained by the Owner unless the Builder, subcontractor, or supplier notified the Owner in writing at the time of bid submission, along with proposed alternatives. Approval by the Owner and a Professional of substitute goods, products, materials, equipment or systems does not mean or imply final acceptance by the Owner and Professional if such items should be defective or not as previously represented. Should the Builder furnish any approved goods, products, materials, equipment or systems different from or in addition to those required by the Construction Documents which require supplemental materials or installation procedures different from or in addition to those required for specified items, the Builder shall provide such at no increased cost to the Owner.

5.4 **Security For The Project.** The Builder shall provide security for the Project, including but not limited to security for its Work in progress and for the goods, products, materials, equipment, systems, construction machinery, tools, devices and other items required, used or to be used for its scope of the Work.

ARTICLE 6

DOCUMENTS AND INFORMATION

6.1 **Information From Owner.** The Owner shall provide the Builder with information reasonably necessary to assist the Builder in performing its services including, if applicable:

(i) the Site legal description and any required survey;

(ii) all written and tangible material in its possession concerning conditions below ground at the Site;

(iii) if the Project involves an existing structure, all available as-built drawings, record drawings, plans, specifications and structure system information with respect to such structure; and

(iv) the Owner's pertinent Project dates and key milestone dates.

6.2 **Resolution Of Questions.** The Builder shall resolve all questions concerning the Construction Documents with the Professional who has prepared the documents.

6.3 **Processing Of Documents.** When requested to do so by the Owner, the Builder shall process documents, and provide other reasonably required drawings, services and certifications, necessary to enable the Owner to (i) obtain financing or insurance for the Project; (ii) obtain approvals, permits and Certificates of Occupancy for the Project not otherwise required to be obtained by Builder; and (iii) represent that the Work complies with requirements of governmental agencies having jurisdiction over the Project.

6.4 **Sufficiency Of Owner Information.** The furnishing of information by the Owner to the Builder shall not relieve the Builder of responsibilities contained elsewhere in this Contract For Construction to evaluate information and documents provided by the Owner and the Builder shall timely notify the Owner in writing of any additional information needed or services required from the Owner in order for the Builder to perform the Work.

ARTICLE 7
SUBMITTALS

7.1 **Submittal Schedule.** The Builder shall timely prepare and transmit to the designated Professional a schedule for provision of all anticipated submittals. The schedule shall (i) include submittals required by the specifications; (ii) be in a format acceptable to the Professional; and (iii) set forth specific dates for submission of the listed submittals. The Builder shall review and approve all submittals prior to submission to a Professional.

7.2 **Processing Of Submittals.** The Builder shall in timely fashion review, approve if appropriate and forward submittals to the Professional(s) for review and approval along with such detail and information as the Professional requires. No part of the Work dealt with by a submittal shall be fabricated or performed until such approval has been given.

7.2.1 A Professional is responsible to the Owner, but not to the Builder, to verify that the submittals conform to the design concept and functional requirements of the plans and specifications, that the detailed design portrayed in shop drawings and proposed equipment and materials shown in submittals are of the quality specified and will function properly, and that the submittals comply with the Contract For Construction.

7.2.2 All Work shall be performed in accordance with approved submittals. Approval of submittals by a Professional shall not relieve the Builder from complying with this Contract For Construction, including all plans and specifications, except as changed by Change Order.

ARTICLE 8
BUILDER'S INSPECTION AND CORRECTION OF DEFECTIVE OR INCOMPLETE WORK

8.1 **Rejection And Correction Of Work In Progress.** During the course of Project, the Builder shall inspect and promptly reject any Work (i) which does not conform to the Construction Documents; or (ii) which does not comply with any applicable law, statute, building code, rule or regulation of any governmental, public and quasi-public authorities and agencies having jurisdiction over the Project.

8.1.1 The Builder shall promptly correct or require the correction of all rejected Work, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Builder shall bear all costs of correcting such Work, including additional testing and inspections and compensation for all services and expenses necessitated by such correction.

8.1.2 The Builder shall bear the cost of correcting destroyed or damaged Work, whether completed or partially completed, of the Owner or other trade contractors or subcontractors caused by the Builder 's correction or removal of rejected Work.

8.2 **Covered Or Concealed Work.** If a portion of the Work has been covered, the Builder shall, if notified to do so by the Owner or a Professional, uncover the designated portion for observation and then replace it.

8.2.1 If the designated portion of the Work was covered contrary to the request of the Owner or the Professional, or to requirements specifically expressed in the Construction Documents, the Builder shall receive no additional compensation for the costs of uncovering and replacement or modification of the Construction Schedule.

8.2.2 If the designated portion of the Work was covered prior to a specific request by the Owner or the Professional that it remain uncovered or continuing to the requirements of the Contract Documents, the Builder shall receive additional compensation for the costs of uncovering and replacement or modification of the Construction Schedule(s) only if the designated portion of the Work was in conformance with the Construction Documents.

ARTICLE 9
CHANGE ORDERS AND CHANGES TO THE WORK

9.1 **Change Order Requests.** Any party to the construction process may request changes to the Work, compensation or applicable schedules.

9.1.1 With respect to such requests for changes by the Builder, the Builder shall prepare and submit change order requests to the designated Professional.

9.1.2 With respect to requests for changes by parties other than the Builder, the Builder shall promptly review and respond to change order requests submitted by a Professional.

9.1.3 When requested to do so, the Builder shall prepare and submit to a Professional drawings, specifications or other data in support of a change order request.

9.1.4 Each change order shall include time and monetary impacts of the change, whether the change order is considered alone, or with all other changes during the course of the Project.

9.2 **Owner-Directed Changes.** The Owner may unilaterally direct the Builder to implement changes in the Work so long as the Work the Owner is requiring is not outside of the general scope of this Contract For Construction, and the Builder, upon written direction from the Owner, shall proceed with such change.

9.3 **Professional-Directed Changes.** The Professional, without the Owner's prior approval, may authorize or direct the Builder to make minor changes in the Work which are consistent with the intent of the Construction Documents and which do not involve a change in Project cost, time for construction, scope, or approved design elements, and the Builder shall promptly carry out such changes. Any such minor changes shall be implemented by written field order and executed by the Builder.

9.3A **Construction Change Directives.**

9.3A.1 A Construction Change Directive is a writing prepared by the Professional and signed by the Owner and Professional, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both. Without invalidating the Contract, the Owner may order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions by way of a Construction Change Directive, the Contract Sum and Contract Time being adjusted accordingly.

9.3A.2 A Construction Change Directive shall be used when there is an absence of total agreement on the terms of a Change Order.

9.3A.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

1. mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data;
2. unit prices stated in the Contract Documents or subsequently agreed upon;
3. cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
4. as provided in Subparagraph 9.4A6.

9.3A.4 Upon receipt of a Construction Change Directive, the Builder shall promptly proceed with the change in the Work involved and advise the Professional of the Builder's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract for Construction Sum or Contract Time.

9.3A.5 A Construction Change Directive by the Builder indicates the agreement of the Builder to its terms. Such agreement shall be effective immediately and shall be recorded as a Change Order.

9.3A.6 If the Builder does not respond promptly or disagrees with or rejects the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the Professional on the basis of reasonable expenditures and savings of those performing the Work related to the change, including, a reasonable allowance for overhead and profit if applicable. The Builder shall keep and present, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Construction Contract Documents, costs for the purposes of this section shall be limited to the following:

1. costs of labor;
2. costs of materials, supplies and equipment;
3. rental costs of machinery and equipment;
4. costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
5. additional costs of supervision and field office personnel directly attributable to the change.

9.3A.7 Pending final determination of cost to the Owner, amounts not in dispute may be included in Applications for Payment. The amount of credit for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Professional. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

9.4 **Administration Of Changes.** The Professional will administer and manage all change order requests and change orders and will prepare required drawings, specifications and other supporting data as necessary in connection with minor changes, change order requests, change directives, and change orders.

9.5 **Compensation For Changes.** With respect to all change order requests and change directives involving credit to the Owner or additional compensation to the Builder, the Builder shall (i) obtain from subcontractors and suppliers the best possible price quotations; (ii) review such quotations to ascertain whether they are reasonable; (iii) prepare an itemized accounting together with appropriate supporting data, including reasonable expenditures by, and savings to, those performing the Work involved in the proposed change; and (iv) provide a reasonable price quotation to the Professional.

9.5.1 If price quotations for change order requests are determined by the Professional to be unreasonable, the Builder shall, in writing, justify said quotations or provide additional back-up materials. If after review of the additional information the Professional determines the quotation is unreasonable, the Owner may require the subject Work be performed on a time and material basis.

9.5.2 The Builder and its subcontractors and suppliers shall be allowed no additional compensation for any costs, fees or expenses incurred in performing services already required by this Contract For Construction, and shall not be entitled to additional reimbursement for home-office, other non-job-site or indirect overhead expenses, or tools necessary for construction.

9.5.3 It is the responsibility of the Builder to review and approve all pricing of additional work required of its subcontractors and suppliers.

9.6 **Performance Of Changes.** Upon receipt of a field order or change order or change directive, changes in the Work shall be promptly performed. All changes in the Work shall be performed under applicable conditions of the Construction Documents.

9.7 **Disputes Regarding Changes.**

9.7.1 Regardless if there is a dispute (i) that a change has occurred; (ii) whether a change in the Work will result in adjustment of compensation or applicable schedules; or (iii) as to the amount of any adjustment of compensation or applicable schedules, the change shall be carried out if the Owner so directs. No claim shall be prejudiced by performance of the Work so long as the Owner is notified of the claim in writing prior to performance of the Work which is the subject of the dispute and the party disputing the decision of the Owner recites the reasons for its dispute in the written notice. Failure to notify the Owner in writing shall constitute a waiver of any claim resulting from the change.

9.7.2 In the event a change order request is approved by the Owner in the absence of an agreement as to cost, time, or both, the appropriate Professional will (i) receive and maintain all documentation pertaining thereto; (ii) examine such documentation on the Owner's behalf; (iii) take such other action as may be reasonably necessary or as the Owner may request; and (iv) make a written recommendation to the Owner concerning any appropriate adjustment in the Construction Price or time.

9.8 **Necessity For Signed Writing.** No act, omission or course of dealing shall alter the requirement that change orders shall be in writing and signed by the Owner, and that change orders are the exclusive method for effecting any adjustment to compensation or applicable schedules. The Builder understands and agrees, on behalf of itself and its subcontractors and suppliers, that neither compensation nor applicable schedules can be changed by implication, oral agreement, or unwritten change order.

ARTICLE 10
FINANCIAL CLAIMS AND LIENS

10.1 **Notification Regarding Liens.** The Builder shall immediately notify the Owner and Professional(s), both orally and in writing, of the nature and details of any mechanics' liens, construction liens, builder's trust fund claims, or claims of any type made by anyone against the Owner, the Professional(s), the Builder or any subcontractor or supplier of any of them or against the Project whether or not such claims arise from the Work.

10.2 **Discharge Of Liens.** The Builder shall take all action necessary to obtain the prompt discharge of any liens or claims filed against the Project. If any lien or claim filed against the Project is not discharged and released by the claimant, the Builder shall, within a reasonable period of time, but in no event more than fourteen calendar days after request and at its own cost, promptly obtain discharge and release of, or indemnity for, such lien or claim by providing or filing, as appropriate, the requisite bond. If the Builder fails to have any such lien or claim discharged and released, or fails to provide or file the requisite bond,

the Owner shall have the right to pay all sums necessary to obtain such a discharge and release, and the Builder shall bear all expenses incurred by the Owner in so doing.

ARTICLE 11
OWNER'S CONSULTANT(S), PROFESSIONAL(S) AND CONSTRUCTION ADMINISTRATION

11.1 **Owner's Designated Professional Representative.** Unless otherwise directed by the Owner, one designated Professional shall act as the Owner's representative from the effective date of this Contract For Construction until one year from the date of achievement of Substantial Completion.

11.1.1 The Professional so designated will be the Owner's design representative during performance of the Work and will consult with and advise the Owner on all design and technical matters.

11.1.2 The designated Professional will act as initial interpreter of the requirements of this Contract For Construction and as the Owner's advisor on claims.

11.2 **Professional Site Visits.** The Architect shall visit the Site at intervals appropriate to the stage of construction to become fully aware of the progress and quality of the completed Work and to determine if the Work is being performed in a manner indicating that the Work, when completed, will be in accordance with the Contract Documents. On the basis of on-site observations as an Architect, the Architect shall keep the County informed of progress of the Work, and shall guard the County against defects and deficiencies in the Work.

11.3 **Professional Rejection Of Work.** The Professional(s) may in accordance with the Professional's Contract disapprove or reject Work which does not comply with (i) this Contract For Construction including approved shop drawings and other submittals; or (ii) applicable laws, statutes, building codes, rules or regulations of any governmental, public and quasi-public authorities and agencies having or asserting jurisdiction over the Project.

11.4 **Professional Evaluations.**

11.4.1 The Professional(s) will review and evaluate the results of all inspections, tests and written reports required by this Contract For Construction and by any governmental entity having or asserting jurisdiction over the Project. The Professional(s) will take appropriate action on test results, including acceptance, rejection, requiring additional testing or corrective work, or such other action deemed appropriate by the Professional(s). The Professional(s) will promptly reject Work which does not conform to and comply with testing requirements.

11.4.2 The Professional(s) may require inspection or testing of any Work in addition to that required by this Contract For Construction or governmental entities having or asserting jurisdiction over the Project when such additional inspections and testing is necessary or advisable, whether or not such Work is then fabricated, installed or completed. The Professional(s) will take appropriate action on all such special testing and inspection reports, including acceptance, rejection, requiring additional testing or corrective work, or such other action deemed appropriate by the Professional(s).

11.5 **Professional Submittal Activities.** The Professional(s) will review and approve, reject or take other appropriate action on submittals such as shop drawings, product data, samples and proposed equal materials or equipment and requested substitutions within not more than fourteen calendar days, and will not approve any submittals unless such submittals conform with (i) the Project design concept; (ii) this Contract For Construction; and (iii) the Owner's budgeted Total Project Construction Cost. A Professional's review of submittals shall not constitute final acceptance of materials or equipment furnished or installed if such materials or equipment should be defective or not as represented by approved submittals or as otherwise required by the Construction Documents. The Builder remains responsible for details and accuracy, for confirming and correlating all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performance of the Work.

11.6 **Professional Interpretations.** A Professional will, when requested to do so in writing by the Builder, promptly and so as to cause no unnecessary delay, render written or graphic interpretations and decisions necessary for the proper execution of the Work. A Professional's interpretations and decisions relating to artistic effect shall be final if not inconsistent with this Contract For Construction.

11.7 **Professional Change Order Activities.** The Professional(s) will consult with and advise the Owner concerning, and will administer and manage, all change order requests and change orders and directives on behalf of the Owner.

11.8 **Professional Pay Application Activities.** The Professional will review applications for payment, including such accompanying data, information and schedules as the Professional requires, to determine the amounts due to the Builder and shall authorize payment by the Owner to the Builder in writing. After the Work is determined to be finally complete and the Professional determines that the Builder has completed the Work, the Professional will determine whether the Builder is entitled to final payment, and if so will so certify to the Owner in writing.

11.9 **Professional Relationship To Builder.** The duties, obligations and responsibilities of the Builder under this Contract For Construction shall not be changed, abridged, altered, discharged, released, or satisfied by any duty, obligation or responsibility of any Professional. The Builder shall not be a third-party beneficiary of any agreement by and between the Owner and any Professional. The duties of the Builder to the Owner shall be independent of, and shall not be diminished by, any duties or obligations of any Professional to the Owner.

ARTICLE 12
INSPECTION, CORRECTION OF WORK, AND PROJECT CLOSE OUT

12.1 **Substantial Completion.** Substantial Completion of the Work shall be deemed to have occurred on the later of the dates that the Work passes a Substantial Completion inspection, and the required Substantial Completion documentation and items have been produced.

12.1.1 When the Builder believes that the Work is substantially complete, it shall notify the Owner and the appropriate Professional that its Work is ready for a Substantial Completion inspection.

12.1.2 At or prior to the Substantial Completion inspection, the Builder will prepare and furnish to the Professional a Declaration of Substantial Completion, which at a minimum must:

(i) contain a blank for entry of the date of Substantial Completion, which date will fix the commencement date of warranties and guaranties and allocate between the Owner and the Builder responsibility for security, utilities, damage to the Work and insurance;

(ii) include a list of items to be completed or corrected and state the time within which the listed items will be completed or corrected; and

(iii) contain signature lines for the Owner, the Builder and the Professional.

12.1.3 Upon receipt of notification from the Builder, the Professional will coordinate with the Owner and the Builder a date for inspection of the Work to determine whether the Work is substantially complete.

12.1.4 At inspection(s) to determine whether the Work is substantially complete, the Professional will:

(i) inspect the Work;

(ii) list additional items to be completed or corrected; and

(iii) determine, in consultation with the Owner, whether Substantial Completion of the Work has occurred.

12.1.5 If the Work is determined not to be substantially complete, the Work shall be prosecuted until the Work is substantially complete and the inspection process shall be repeated at no additional cost to the Owner until the Work is determined to be substantially complete.

12.1.6 On or prior to the required date of Substantial Completion, the Builder shall deliver to the appropriate Professional keys, permits, the certificate of occupancy, and other necessary and customary documents and items pre-requisite for the Owner's occupancy and use of the Work for its intended purpose. The Professional will obtain and review Substantial Completion documentation and items, and will inform the Builder of any deficiencies.

12.1.7 When the Owner, the Builder and the appropriate Professional agree that the Work has passed the Substantial Completion inspection and the Builder has produced the required Substantial Completion documentation and items, they shall each sign the Declaration of Substantial Completion declaring the Work substantially complete and establishing the actual date of Substantial Completion. The Declaration of Substantial Completion shall also include a list of and timeline for the completion of Work needing completion and correction which shall be set no longer than 60 calendar days between Substantial Completion and Final Completion (to reach Final Completion).

12.2 **Final Completion.** Final Completion of the Work shall be deemed to have occurred on the later of the dates that the Work passes a Final Completion inspection and that the Builder has produced all required Final Completion close-out documentation and items. Final Completion shall not be deemed to have occurred and no final payment shall be due the Builder or any of its subcontractors or suppliers until the Work has passed the Final Completion inspection and all required Final Completion close-out documentation and items have been produced to the Owner by the Builder.

12.2.1 When the Builder believes the Work is finally complete, the Builder shall notify the Owner and the appropriate Professional that the Work is ready for Final Completion inspection.

12.2.2 Upon receipt of such notification from the Builder, the Professional will coordinate with the Owner and the Builder a date for inspection of the Work to determine whether the Work is finally complete.

12.2.3 At the Final Completion inspection to determine whether the Work is finally complete, the Professional will:

(i) inspect the Work;

(ii) determine whether all items on the list included with the Declaration of Substantial Completion have been satisfactorily completed and corrected;

(iii) determine whether the Work complies with (a) this Contract For Construction; (b) applicable laws, statutes, building codes, rules or regulations of all governmental, public and quasi-public authorities and agencies having jurisdiction over the Project; and (c) applicable installation and workmanship standards;

(iv) determine whether required inspections and approvals by the official(s) having or asserting jurisdiction over the Project have been satisfactorily completed; and

(v) determine, in consultation with the Owner, whether the Work is finally complete.

12.2.4 If the Work is not finally complete, the Builder shall continue to prosecute the Work, and the inspection process shall be repeated at no additional cost to the Owner, until the Work is finally complete.

12.2.5 On or prior to the date of Final Completion, the Builder shall deliver to the appropriate Professional the following Final Completion close-out documentation and items:

(i) all operating and instruction manuals not previously produced during commissioning and required maintenance stocks;

(ii) two (2) sets of as-built drawings and markups;

(iii) certification and affidavit that all insurance required of the Builder beyond final payment, if any, is in effect and will not be canceled or allowed to expire without notice to the Owner;

(iv) written consent of the surety(ies), if any, to final payment;

(v) full, final and unconditional waivers of mechanics or construction liens, releases of builder's trust fund or similar claims, and release of security interests or encumbrances on the Project property from each contractor, subcontractor, supplier or other person or entity who has, or might have a claim against the Owner or the Owner's property;

(vi) full, final and unconditional certification and affidavit that all of the Builder's obligations to contractors, subcontractors, suppliers and other third parties for payment for labor, materials or equipment related to the Project have been paid or otherwise satisfied;

(vii) all written warranties and guarantees relating to the labor, goods, products, materials, equipment and systems incorporated into the Work, endorsed, countersigned, and assigned as necessary;

(viii) affidavits, releases, bonds, waivers, permits and other documents necessary for final close-out of Work;

(ix) a list of any item(s) due but unable to be delivered and the reason for non-delivery; and

(x) any other documents reasonably and customarily required or expressly required herein for full and final close-out of the Work.

(xi) all documentation evidencing completion of required demonstrations and training.

12.2.6 The appropriate Professional will review and determine the sufficiency of all Final Completion close-out documentation and items required for Final Completion which are submitted by the Builder, and will immediately inform the Builder about any deficiencies and omissions.

ARTICLE 13
BUILDER'S WARRANTIES AND GUARANTEES

13.1 **One-Year Warranty.** In addition to the warranties and guarantees set forth elsewhere in this Contract For Construction, the Builder, upon request by the Owner or the Professional, shall promptly correct all failures or defects in the Work for a period of one year after the actual date of Substantial Completion.

13.1.1 The Builder shall schedule, coordinate and participate in a walk-through inspection of the Work one month prior to the expiration of the one-year correction period, and shall notify the Owner, the appropriate Professional(s), and any necessary subcontractors and suppliers of the date of, and request their participation in, the walk-through inspection. The purpose of the walk-through inspection will be to determine if there are defects or failures which require correction.

13.1.2 Should the Builder fail to promptly correct any failure or defect, the Owner may take whatever actions it deems necessary to remedy the failure or defect and the Builder shall promptly reimburse the Owner for any expenses or damages it incurs as a result of the Builder 's failure to correct the failure or defect.

13.2 **Express Warranties And Guarantees – Builder.** In addition to the warranties and guarantees set forth elsewhere herein, the Builder expressly warrants and guarantees to the Owner:

(i) that the Work complies with (a) the Construction Documents; and (b) all applicable laws including by not limited to the American with Disabilities Act, statutes, building codes, rules and regulations of all governmental, public and quasi-public authorities and agencies having jurisdiction over the Project.

(ii) that all goods, products, materials, equipment and systems incorporated into the Work conform to applicable specifications, descriptions, instructions, drawings, data and samples and shall be and are (a) new (unless otherwise specified or permitted) and without apparent damage or defect; (b) of quality equal to or higher than that required by the Construction Documents; and (c) merchantable; and

(iii) that all management, supervision, labor and services required for the Work shall comply with this Contract For Construction and shall be and are performed in a workmanlike manner.

13.3 **Express Warranties And Guarantees - Subcontractors And Suppliers.** The Builder shall require that all of its subcontractors and suppliers provide written warranties, guarantees and other undertakings to the Owner and the Builder in a form identical to the warranties, guarantees and other undertakings set forth in this Contract For Construction, including the warranties, guarantees and undertakings set forth in this Article, which warranties, guarantees and undertakings shall run to the benefit of the Owner as well as the Builder.

13.4 **Non-Exclusivity And Survival.** The warranties and guarantees set forth in this Article shall be in addition to all other warranties, express, implied or statutory, and shall survive the Owner's payment, acceptance, inspection of or failure to inspect the Work, and review of the Construction Documents.

13.5 **Non-Limitation.** Nothing contained in Paragraph 13.1, shall be construed to establish a period of limitation with respect to the Builder's obligations under this Contract For Construction. Paragraph 13.1 relates only to the Builder's specific obligations with respect to the Work, and has no relationship to the time within which the Builder's contractual obligations under this Contract For Construction may be enforced, nor to the time within which proceedings may be commenced to establish the Builder 's liability with respect to any contractual obligations pursuant to Paragraph 13.1 or contained elsewhere herein.

13.6 **Commencement Of Obligations.** Unless otherwise specified, all of the Builder's warranty and guaranty obligations, including the time period(s) for all written warranties and guarantees of specifically designated equipment required by the Construction Documents, shall begin on the actual date of Substantial Completion or the date of acceptance by the Owner, whichever is later.

13.7 The Contractor for itself and for its Subcontractors, laborers and materialmen and all others directly or indirectly acting for, through or under it or any of them covenants and agrees that no mechanics' liens or claims will be filed or maintained against the Project, the Premises, or any part thereof, or any interest therein or any improvements thereon, or the County or against any monies due or to become due from the County to the Contractor, for or on account of any work, labor, services, materials, equipment or other items and its Subcontractors, laborers and materialmen and all others above mentioned does hereby expressly waive, release and relinquish all rights to file or maintain such liens and claims and agrees further that this waiver of the right to file or maintain mechanics' liens and claims shall be an independent covenant and shall apply as well to work, labor and services performed and materials, equipment and other items furnished under any change order or supplemental agreement for extra or additional work in connection with the Project as to the original Work covered by the Contract Documents. If any Subcontractor, laborer or materialman of the Contractor or any other person directly or indirectly acting for, through or under it or any of them files or maintains a mechanics' lien or claim as aforesaid the Contractor agrees to cause such liens and claims to be satisfied, removed or discharged at its own expense by bond, payment or otherwise within ten (10) days from the date of the filing thereof, and upon its failure so to do, the County shall have the right, in addition to all other rights and remedies provided under the Contract Documents or by law, to cause such liens or claims to be satisfied, removed or discharged by whatever means the County chooses, at the entire cost and expense of the Contractor (such cost and expense to include reasonable attorney's fees and disbursements). The Contractor agrees to indemnify, protect and save harmless the County from and against any and all such liens and claims and actions brought or judgments rendered thereon, and from and against any and all loss, damages, liability, costs and expenses, including reasonable attorney's fees and disbursements, which the County may sustain or incur in connection therewith.

ARTICLE 14
OWNER'S DUTIES, OBLIGATIONS AND RESPONSIBILITIES

14.1 **Timely Compensation Of Builder.** The Owner shall timely compensate the Builder in accordance with this Contract For Construction.

14.2 **Payment For Testing.** Unless otherwise required to be provided by the Builder in its scope of services, Owner shall secure and pay for all Project testing.

14.3 **Owner Review Of Documents.** The Owner shall review documents prepared by the Builder in a timely manner and in accordance with schedule requirements. Review by the Owner shall be solely for the purpose of determining whether such documents are generally consistent with the Owner's intent. No review of such documents shall relieve the Builder of any of its responsibilities.

14.4 **Status Of Owner.** The Owner shall not have control or charge of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, nor shall the Builder, for any of the foregoing purposes, be deemed the agent of the Owner.

14.5 **Owner's Utilities.** The Owner shall provide water, gas and electrical energy only as they exist at the Site prior to the start of construction. The Builder shall be responsible to provide and pay for connections to, extensions from and means of using these utilities.

14.5.1 The Owner will pay utility company bills for water, gas and electrical energy which is required for the Project and which passes through the Owner's meters. However, the Owner shall not pay for (i) water which is expended without proper regard for ecological and conservation considerations; (ii) electrical energy expended in electric heating devices; or (iii) utilities for Builder's field offices.

14.5.2 Acceptance by the Builder of the use of the Owner's water, gas and electrical energy constitutes a release from the Builder to the Owner of all claims and liability for any damages or losses which may be incurred by the Builder as a result of water, gas and electrical energy outages or voltage variations or surges.

14.6 **Statements Of Owner's Capacity.** The Owner, upon reasonable written request, shall furnish to the Builder in writing statements of the record legal title to the Site on which the Project is located and the Owner's interest therein at the time of execution of this Contract For Construction.

ARTICLE 15
BUILDER'S COMPENSATION

15.1 **Unit Prices.** If any portion of the Construction Price is determined by the application of unit prices, the number of units contained in the Builder's Compensation Schedule is an estimate only, and the compensation to the Builder shall be determined by the actual number of units incorporated in, or required by, the Work.

15.2 **Schedule Of Values.** The Builder shall prepare and present to the Owner and the designated Professional the Builder's schedule of values, apportioning the different elements of the Work for purposes of periodic and final payment. The Builder's schedule of values shall be presented in the format, and with such detail and supporting information, requested by the Professional or Owner. The Builder shall not imbalance or artificially inflate any element of its schedule of values. Upon the Professional and Owner's acceptance, the schedule of values shall be used to process and pay the Builder's payment requests. The schedule of values shall not be changed without written change order authorized by the Owner.

15.3 **Invoicing Procedures.** In accordance with the procedures and requirements set forth in this Article, the Builder shall invoice the Owner and the Owner shall pay the Builder the Construction Price for Work performed in accordance with the Contract Documents.

15.3.1 The Builder shall submit invoices once a month on or before the 25th day of the month to the Professional requesting payment for labor and services rendered during the preceding thirty calendar days. Each invoice shall contain such detail and be backed up with whatever supporting information the Owner or a Professional requests and shall at a minimum state:

(i) the total Construction Price;

(ii) the amount due for properly provided labor, materials and equipment properly incorporated into the Project; and with respect to amounts invoiced for materials or equipment necessary for the Project and properly stored at the Site (or elsewhere if offsite storage is approved in writing by the Owner), be accompanied by written proof that the Owner has title to such materials or equipment and that such material and equipment is fully insured against loss or damage;

(iii) a breakdown of the various phases or parts of the Work as related to the Construction Price;

(iv) the value of the various phases or parts of the Work actually performed;

(v) previously invoiced amounts and credit payments made;

(vi) the total amount due, less any agreed retainage;

and shall also have attached such lien waiver and other documentation verifying the Builder's payment to subcontractors and suppliers as the Owner or a Professional may request.

15.4 **Payment Procedures.**

15.4.1 The Professional will review the Builder's applications for payment, including such accompanying data, information and schedules as the Professional requires, to determine the amounts due to the Builder and, based upon such review, together with its inspections of the Work, may authorize payment by the Owner to the Builder in writing. Such authorization will constitute the Professional's certification to the Owner that

(i) the Work described in the Builder's invoice has progressed to the level indicated and has been performed in accordance with the Contract For Construction;

(ii) all necessary and appropriate lien waivers have been submitted; and

(iii) the amount requested is currently due and owing to the Builder.

15.4.2 In the case of unit price work, the Professional's recommendations for payment will constitute a final determination of quantities and classifications of such work.

15.5 **Owner's Right To Refuse Payment/Retainage.** A Professional's approval of the Builder's invoice shall not preclude the Owner from exercising any of its remedies under this Contract For Construction. In the event of a dispute, payment shall be made for amounts not in dispute, subject to any setoffs claimed by the Owner. The Owner shall have the right to refuse to make payment and, if necessary, may demand the return of a portion or all of the amount previously paid to the Builder due to:

(i) the Builder's failure to perform the Work in compliance with the requirements of this Contract For Construction or any other agreement between the parties;

(ii) the Builder's failure to correctly and accurately represent the Work performed in a payment request, or otherwise;

(iii) the Builder's performance of the Work at a rate or in a manner that, in the Owner's opinion, is likely to result in the Project or any portion of the Project being inexcusably delayed;

(iv) the Builder's failure to use funds previously paid the Builder by the Owner, to pay the Builder's Project-related obligations including, but not limited to, the Builder's subcontractors, materialmen, and suppliers;

(v) claims made, or likely to be made, against the Owner or its property;

(vi) loss caused by the Builder or the Builder's subcontractors, or suppliers; or

(vii) the Builder's failure or refusal to perform any of its obligations to the Owner.

If the County chooses to make payments to the Builder, less retainage, it shall do so within a reasonable period of time after receipt of the Payment Application. Payments that are not unreasonably delayed will bear no interest penalties. The terms of this paragraph and the entire Contract Documents are intended to supercede all provisions of the Prompt Pay Act, O.C.G.A. § 13-11-1 through § 13-11-11.

Until the Work is fifty (50%) percent complete, the County shall pay ninety (90%) percent of the amount due the Builder on account of progress payments. At the time the Work, including change orders and other additions to the contract value provided for by the Contract Documents, is fifty (50%) percent complete and thereafter, the Professional may authorize remaining partial payments to be paid in full. Notwithstanding the foregoing, in the event the Professional determines the Builder is not reasonably following the schedule, or is failing to adequately perform the Work (all to be determined in the reasonable judgment of the Professional), the County shall continue to make progress payments at the rate of ninety (90%) percent of the amount due the Builder for each payment. If the County discontinues the retention, and after doing so the Professional determines that the Work is unsatisfactory or has fallen behind schedule, retention may be resumed at ten (10%) percent.

15.6 **Builder's Right To Refuse Performance For Non-Payment.** If the Owner, without cause or basis hereunder, fails to pay the Builder any amounts then due and payable to the Builder, the Builder shall have the right, in addition to all other rights and remedies contained herein, to cease performance of the Work until receipt of proper payment excluding amounts disputed by the Owner, after first providing thirty calendar days written notice to the Owner of its intent to cease work.

15.7 **Correction Of Past Payments.** All prior payments, whether based on estimates or otherwise, may be corrected and adjusted in any subsequent payment and shall be corrected and adjusted in the final payment. In the event that any invoice contains a defect or impropriety which would prevent timely payment, the Owner shall notify the Builder in writing of such defect or impropriety. Any disputed amounts determined by the Owner to be payable to the Builder shall be due thirty calendar days from the date the dispute is resolved.

15.8 **No Interest On Outstanding Amounts Due.** No interest shall accrue on amounts owed by the Owner to the Builder; nor shall interest accrue on retainage which is withheld to assure performance of this Contract For Construction.

15.9 **Invoice Warranties And Guarantees.** The Builder expressly warrants and guarantees to the Owner that:

(i) title to all goods, products, materials, equipment and systems covered by an invoice will pass to the Owner either by incorporation into the Work, or upon receipt of payment by the Builder, whichever occurs first;

(ii) all goods, products, materials, equipment and systems covered by an invoice are free and clear of liens, claims, security interests or encumbrances; and

(iii) no goods, products, materials, equipment or systems covered by an invoice have been acquired by the Builder, or its subcontractors or suppliers, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the Builder, or its subcontractors or suppliers.

Notwithstanding the above, the Builder shall be responsible for 1) Maintenance and protection of Work until final completion and acceptance, including, but not limited to, the storage of materials and equipment, erection of temporary structures and provisions for drainage as necessary to protect Work from injury, damage or loss. 2) Any injury, damage, or loss to Work resulting from the action of the elements or any other cause, irrespective of fault or negligence, accepting only such injury, damage, or loss as is caused solely by the negligence of willful misconduct of the County or the Architect. 3) Protection of its Work and materials and the Work and materials of his Subcontractors from damage or injury from the weather. Any portion of Work suffering injury, damage, or loss for which Contractor is responsible under 1, 2, or 3 above will be considered defective and shall be corrected or replaced without additional cost to County.

15.10 **Builder's Signature.** The signature of the Builder on any invoice constitutes the Builder's certification to the Owner that (i) the Builder's services listed in the invoice have progressed to the level indicated and have been performed as required by this Contract For Construction; (ii) the Builder has paid its subcontractors and suppliers their proportional share of all previous payments received from the Owner; and (iii) the amount requested is currently due and owing.

15.11 **Taxes.** The Builder shall incorporate into the Construction Price, and pay, all sales, consumer, use and similar taxes for goods, products, materials, equipment and systems incorporated into the Work which were legally required at the time of execution of this Contract For Construction, whether or not yet effective or merely scheduled to go into effect. The Builder shall secure, defend, protect, hold harmless, and indemnify the Owner from and against any and all liability, loss, claims, demands, suits, costs, fees and expenses (including actual fees and expenses of attorneys, expert witnesses, and other consultants) relating to any taxes assessed or imposed upon, incurred by or asserted against the Owner by any taxing authority with respect to such taxes. The Builder shall cooperate with and assist the Owner in securing qualified refunds of any sales or use tax paid by the Owner or Builder on goods, products, materials, equipment or systems. Any refund secured shall be paid to the Owner.

15.12 **Compensation Of Builder's Subcontractors And Suppliers.** Upon receipt of payment from the Owner, the Builder shall pay each of its subcontractors and suppliers out of the amount received by the Builder on account of such subcontractor's or supplier's portion of the Work, the amount to which each entity is entitled, reflecting percentages actually retained from payments to the Builder on account of such

entity's portion of the Work. The Owner shall have no obligation to pay, and shall not be responsible for payments to, the Builder's subcontractors or suppliers. However, the Owner reserves the right, but has no duty, to make payment jointly to the Builder and to any of its subcontractors or suppliers in the event that the Owner becomes aware that the Builder fails to pay or unreasonably withholds payment from one or more of those entities. Such joint check procedure, if employed by the Owner, shall create no rights in favor of any person or entity beyond the right of the named payees to payment of the check and shall not be deemed to commit the Owner to repeat the procedure in the future.

15.13 **Final Payment.** Prior to being entitled to receive final payment, and as a condition precedent thereto, the Builder must achieve Final Completion. The Owner shall, subject to its rights set forth above in this Article, make final payment of all sums due the Builder within a reasonable amount of time of Professional's execution of a final approval for payment.

ARTICLE 16
SCHEDULE REQUIREMENTS

16.1 **Construction Schedule.** The Construction Schedule shall include all pertinent dates and periods for timely completion of the Work.

16.1.1 Unless otherwise directed and approved by the Owner, the Builder shall prepare the Construction Schedule as a critical path schedule with separate divisions for each major portion of the Work or operations. The Construction Schedule shall include and properly coordinate dates for performance of all divisions of the Work, including completion of off-Site requirements and tasks, so that the Work can be completed in a timely and orderly fashion consistent with the required dates of Substantial Completion and Final Completion.

16.1.2 The Construction Schedule shall include (i) the required Commencement Date, the required dates of Substantial Completion and Final Completion; (ii) any guideline and milestone dates required by the Owner; (iii) any applicable subcontractor and supplier subschedules; (iv) a submittal schedule which allows sufficient time for review of documents and submittals; (v) the complete sequence of construction by activity, with dates for beginning and completion of each element of construction; and (vi) required decision dates.

16.1.3 By reviewing the Construction Schedule, the Owner and a Professional do not assume any of the Builder's responsibility (i) that the Construction Schedule be coordinated or complete; or (ii) for timely and orderly completion by the required dates of Substantial Completion, Final Completion and any milestone dates required by the Owner.

16.1.4 The Builder shall review, on a weekly basis, the actual status of the Work against the Construction Schedule. The Builder shall discuss the status of the Work weekly with the designated Professional, so that proper overall management may be provided.

16.1.5 The Builder shall periodically and in all instances when the Builder anticipates that performance of the Work will be delayed or in fact has been delayed, but not less frequently than monthly, prepare a revised Construction Schedule and show actual progress of the Work through the revision date, projected completion of each remaining activity, activities modified since previous submittal, major changes in scope, and other identifiable changes. The updated Construction Schedule shall be accompanied by a narrative report which (i) states and explains any modifications of the critical path schedule, including any changes in logic; (ii) defines problem areas and lists areas of anticipated delays; (iii) explains the anticipated impact the problems and delays will have on the schedule and scheduled activities; (iv) reports corrective action taken or proposed; and (v) states how problems anticipated by projections shown on the schedule will be resolved to avoid delay in delivering the Work by the required dates of Substantial Completion and Final Completion, and other milestone dates required by the Owner, if any.

16.2 **Delay In Performance.** If at any time the Builder anticipates that performance of the Work will be delayed or in fact has been delayed, the Builder shall (i) immediately notify the designated Professional of the probable cause of and effect from the delay, and possible alternatives to minimize the delay; and

(ii) take all corrective actions reasonably necessary to deliver the Work by the required dates of Substantial Completion and Final Completion, and other milestone dates required by the Owner, if any.

16.3 **Modifications To Time For Performance.** The Builder shall determine and promptly notify the Owner and the Professional(s) in writing when it believes adjustments to the required dates of Substantial Completion or Final Completion, or other milestone dates required by the Owner, if any, are necessary, but no such adjustments shall be effective unless approved in writing by the Owner and Professional(s). The Owner shall have the right to require the Builder to accelerate the work, including providing additional forces and working extended schedules in order to maintain the approved Construction Schedule.

16.4 **Early Completion.** The Builder may attempt to achieve Substantial Completion before the required date of Substantial Completion. However, such planned early completion shall be for the Builder's sole convenience and shall not create any additional Builder rights or Owner obligations under this Contract For Construction, nor shall it change the required dates of Substantial Completion or Final Completion. The Owner shall not pay the Builder any additional compensation for achievement of Substantial Completion or Final Completion prior to the required dates nor will the Owner owe the Builder any compensation should the Owner cause the Builder not to achieve Substantial Completion earlier than the required date of Substantial Completion or Final Completion earlier than the required date of Final Completion.

16.5 **Modification Dates Of Substantial Completion Or Final Completion.** The Builder may propose modifications to the required dates of Substantial Completion or Final Completion. The Owner may, but is not required to, accept the Builder's proposal. Modification(s) of the required dates of Substantial Completion or Final Completion shall be accomplished only by duly authorized and accepted change order(s) stating the new date(s) with specificity and reciting that all references in this Contract For Construction to the required dates of Substantial Completion or Final Completion shall thereafter refer to the date(s) as modified, and all rights and obligations, including the Builder's liability for actual damages, delay damages and liquidated damages, shall be determined in relation to the date(s) as modified.

16.6 **Document Review.** The Builder shall provide documents to the Owner and Professional(s) for review in accordance with schedule requirements and with sufficient lead time to allow the Owner and Professional(s) reasonable time for review.

ARTICLE 17
LIQUIDATED DAMAGES

17.1 **Time Of The Essence.** The parties hereto mutually understand and agree that time is of the essence in the performance of this Contract For Construction and that the Owner will incur damages if the Work is not completed on time. The Builder shall at all times carry out its duties and responsibilities as expeditiously as possible and shall begin, perform and complete its services so that (i) the Work progresses in accordance with the Construction Schedule; (ii) the Work is substantially completed by the required date of Substantial Completion; and (iii) the Work is finally complete by the date of Final Completion.

17.2 **Failure To Timely Achieve Completion.** The parties hereto mutually understand and agree that the Owner will sustain substantial monetary and other damages in the event of a failure or delay by the Builder in the completion of the Work. If the Builder inexcusably fails to achieve Substantial Completion by the required date of Substantial Completion as established and previously set forth in this Contract For Construction, the Builder shall pay to the Owner, as liquidated damages for delay and not as a penalty, the daily amount specified in Chapter 1 for each and every day after the required date of Substantial Completion until Substantial Completion. This liquidated damages provision shall apply and remain in full force and effect in the event that the Builder is terminated by Owner for default and shall apply until Substantial Completion has been achieved by any completing builder, including Owner. If the Builder fails to achieve Final Completion by the required date of Final Completion as established and previously set forth in this Contract For Construction, the Builder shall pay to the Owner, as liquidated damages for delay and not as a penalty, fifty (50%) percent of the daily amount stated for failure to timely achieve Substantial Completion, even if not actually imposed, for each calendar day of unexcused delay in achieving Final Completion. These damages shall be calculated cumulatively, so that, by way of example, if substantial completion continues not to be achieved after the date for Final Completion, damages may be assessed for both delay in Substantial Completion and delay in Final Completion for so long as that situation remains.

17.3 **Extension of Time For Delay.** If the Builder is delayed at any time in the progress or performance of the Work without any fault or neglect on its own part, and whether caused by the fault or neglect of the Owner or by any act of God or such other cause beyond the control of the Builder, the Builder shall be entitled to a reasonable extension of time only.

17.4 **Excusable Delay.** If the Builder is delayed at any time in the progress or performance of the Work by (i) acts or omissions of the Owner or Professional(s); (ii) major changes ordered by the Owner in the scope of Work; (iii) fire; (iv) unusual delays in transportation; (v) adverse unusual weather conditions; (vi) unavoidable casualties; (vii) causes beyond the Builder's control which the Owner agrees in writing are justifiable; or (viii) any other cause which the Owner determines may justify the delay, the Construction Schedule shall be extended for a period equal to the length of such delay, but only if (a) such delay is not in any way caused by default or collusion on the part of the Builder or by any cause which the Builder could reasonably control or circumvent; (b) the Builder would have otherwise been able to timely perform all of its obligations under this Contract For Construction but for such delay; and (c) immediately but not later than seven calendar days after the beginning of any such delay the Builder gives notice of its delay claim to the Owner. The Contract Time will not be extended due to normal inclement weather. The time for performance of this Contract as stated in the Contract documents, includes an allowance for calendar days which, according to historical data obtainable from the National Oceanic and Atmospheric Administration in the latest edition, prior to bid, for the area in which the Project is located, may not be suitable for construction work. For purposes of the contract schedule,

the Contractor agrees that he may expect inclement weather in accordance with the following table of calendar days:

January	22	July	8
February	16	August	6
March	11	September	4
April	7	October	5
May	4	November	9
June	6	December	15

If the Contractor believes that the progress of the Work has been adversely affected by the abnormal inclement weather, he shall submit a written request for extension of time to the Architect, pursuant to Paragraph 4.4. Such a request for extension of Contract Time shall be substantiated by actual records of the weather on the specific days concerned, as recorded at the official weather station nearest to the Project site. Furthermore, unless the Contractor can substantiate to the satisfaction of the Architect that activities affected during these time of abnormal inclement weather were being performed within fourteen calendar days of their scheduled performance on the Contractor's progress schedule, he will not be entitled to an extension of time therefore.

Extensions of time will not be granted for delays caused by normal inclement weather, unsuitable ground conditions, inadequate construction force, or the failure of the Contractor to place orders for equipment or materials sufficiently in advance to insure delivery when needed.

17.5 **Owner's Right To Withhold Payment.** When it reasonably believes (i) that Substantial Completion will be inexcusably delayed; or (ii) that the Builder will fail to achieve Final Completion by the date of Final Completion, the Owner shall be entitled, but not required, to withhold from any amounts otherwise due the Builder the daily amount specified for liquidated damages in this Article for each calendar day of the unexcused delay.

17.5.1 If and when the Builder overcomes the delay in timely achieving Substantial Completion or Final Completion, or any part thereof, for which the Owner has withheld payment, the Owner shall promptly release to the Builder those funds withheld, but no longer applicable, as liquidated damages.

17.5.2 Delay caused by labor disputes, picketing, employee boycotts, or the like which directly or indirectly involves employees of the Builder or its subcontractors and suppliers is not the responsibility of the Owner and will result in time extensions only if agreed to in writing by the Owner at the time such events arise.

ARTICLE 18
CONCEALED AND UNFORESEEN CONDITIONS

18.1 **Notification Regarding Unusual Conditions.** If (i) the Builder encounters concealed and unforeseen conditions of an unusual nature which affect the performance of the Work; or (ii) the conditions vary from those indicated by the Construction Documents; and (iii) such conditions are not ordinarily found to exist or differ materially from those generally recognized as inherent in work of the character provided by the Builder, the Builder shall immediately, but in no event later than one calendar day after first observance of the conditions, notify the appropriate Professional(s) and the Owner before conditions are disturbed and give the Professional(s) or the Owner opportunity to observe the condition in its undisturbed state.

18.1.1 The conditions will be promptly investigated and, if they differ substantially and cause a material increase or decrease in the Builder 's cost of, or time required for, performance of the Work, compensation or time for performance or both will be equitably adjusted in the discretion of the Owner. The Builder shall provide a lump sum price, or a not to exceed price based on a unit of work to be performed, within one calendar day from the date of Owner's/Professional on-site

observation. In the event the Owner and the Builder fail to agree as regards compensation and/or extension of time.

18.1.2 All adjustments in compensation or extensions of time shall be by change order. Change order requests must be made within five calendar days from the date of observation of the changed conditions.

18.1.3 The Builder's failure to notify the Professional(s) and Owner as provided in this Article or to perform any Work prior to receiving a signed Change Directive or Order shall constitute a waiver of any claim arising out of or relating to such concealed or unknown condition.

ARTICLE 19
BUILDER'S RECORDS

19.1 **Preparation Of Records.** The Builder shall, concurrently with performance of its services, prepare substantiating records regarding services rendered and goods furnished.

19.2 **Retention Of Records.** The Builder shall retain in its records copies of all (i) written communications; (ii) memoranda of verbal communications; (iii) accounting records (including original estimates and estimating work sheets, purchase orders and invoices); (iv) job site notes; (v) daily logs; (vi) reports; (vii) notices; (viii) all subcontract files (including proposals of successful and unsuccessful bidders); (ix) change order files (including documentation covering negotiated settlements); (x) written policies and procedures, (xi) records necessary to evaluate and verify direct and indirect costs (including by way of example overhead allocations, payroll records, time sheets, rental receipts, fixed asset records); and (xii) other documents such as plans, specifications, submittals, correspondence, minutes, memoranda, tape recordings, videos, accounting records, documents reflecting the unit price of construction and other writings or things which document the Project, its design, its cost, and its construction.

19.2.1 The Builder shall maintain substantiating records for five years after the date of Final Completion or for any longer period of time as may be required by law or good construction practice. If the Builder receives notification of a dispute or the commencement of litigation regarding the Project within this five-year period, the Builder shall continue to maintain all Project records until final resolution of the dispute or litigation.

19.2.2 The Builder shall, upon seven days' request from the Owner, secure from its subcontractors and suppliers copies of (i) written communications; (ii) memoranda of verbal communications; (iii) accounting records (including original estimates and estimating work sheets, purchase orders and invoices); (iv) job site notes; (v) daily logs; (vi) reports; (vii) notices; (viii) all subcontract files (including proposals of successful and unsuccessful bidders); (ix) Change Order files (including documentation covering negotiated settlements); (x) written policies and procedures, (xi) records necessary to evaluate and verify direct and indirect costs (including overhead allocations), and (xii) other documents generated with respect to the Project.

19.3 **Access To Records.** Upon the request of the Owner, the Builder shall make its records available during normal business hours to the Owner, its authorized representative(s) or to any state, federal or other regulatory authority. Any such authority, the Owner and its authorized representative(s) shall be entitled to inspect, examine, review and copy the Builder's records at the copying party's reasonable expense, within adequate work space at the Builder 's facilities. Failure by the Builder to supply substantiating records from itself and its subcontractors and suppliers upon the request of the Owner shall be reason to exclude the related costs from amounts which might otherwise be payable by the Owner pursuant to this Contract For Construction.

ARTICLE 20
PROPRIETARY DOCUMENTS AND CONFIDENTIALITY

20.1 **Nature And Use Of Information.** All information, documents, and electronic media furnished by the Owner to the Builder (i) belong to the Owner; (ii) are proprietary and confidential; (iii) are furnished solely for use on the Owner's Project; (iv) shall be kept confidential by the Builder; and (v) shall not be used by the Builder on any other project or in connection with any other person or entity, unless disclosure or use thereof in connection with any matter other than services rendered to the Owner hereunder is specifically authorized in writing by the Owner in advance or is required by any applicable law. The Owner hereby grants to the Builder a limited license to use and reproduce applicable portions of the Construction Documents necessary for execution of the Work. All copies made under this license shall bear the statutory copyright notice, if any, shown on the documents.

20.2 **Ownership Of Information.** All information, documents, and electronic media prepared by or on behalf of the Builder for the Project are the sole property of the Owner free of any retention rights of the Builder. The Builder hereby grants to the Owner an unconditional right to use, for any purpose whatsoever, any information, documents or electronic media prepared by or on behalf of the Builder for the Project, free of any copyright claims, trade secrets or other proprietary rights with respect to such documents.

20.3 **Disclosure Of Information.** The Builder shall not disclose any information it receives from the Owner to any other person or entity except to the extent necessary to allow it to perform its duties under this Contract For Construction.

20.4 **Instructions To Employees.** Because it is difficult to separate proprietary and confidential information from that which is not, the Builder shall instruct its employees and agents to regard all information which is not in the public domain as information which is proprietary and confidential.

20.5 **Non-Publication.** Submission or distribution of documents to meet official regulatory requirements or for other required purposes in connection with the Project is not to be construed as publication in derogation of the Owner's common law copyrights or other reserved rights.

ARTICLE 21
GENERAL INSURANCE REQUIREMENTS

21.1 **General Insurance Requirements.** Unless otherwise required, each insurance policy:

(i) shall be issued by an insurance carrier acceptable to the Owner;

(ii) shall be kept in force throughout performance of the Builder's services and for one year after the end of such performance;

(iii) shall be an occurrence policy; and

(iv) shall be evidenced by a certificate of insurance acceptable to the Owner which provides that the coverage evidenced thereby shall not be substantially modified or canceled without twenty-eight calendar days' prior written notice to the Owner.

21.2 **Certificates Of Insurance.** Prior to performance of services on the Project, the Builder shall (i) have all required insurance coverage in effect; and (ii) deliver to the Owner certificates of insurance for all its required minimum insurance coverage. The Builder shall (i) require that its subcontractors, and suppliers have similar coverage in effect, and prior to the performance of any services on the Project by the Builder's subcontractors and suppliers, and (ii) shall ensure that all required insurance coverages of its subcontractors and suppliers is in effect. The Owner shall have no responsibility to verify compliance by the Builder or its subcontractors and suppliers. Upon the request of the Owner, the Builder shall deliver to the Owner certificates of insurance and/or copies of policies for all required insurance coverage.

21.3 **Effect Of Insurance.** Compliance with insurance requirements shall not relieve the Builder of any responsibility to indemnify the Owner for any liability to the Owner as specified in any other provision of this Contract For Construction, and the Owner shall be entitled to pursue any remedy in law or equity if the Builder fails to comply with the contractual provisions of this Contract For Construction. Indemnity obligations specified elsewhere in this Contract For Construction shall not be negated or reduced by virtue of any insurance carrier's (i) denial of insurance coverage for the occurrence or event which is the subject matter of the claim; or (ii) refusal to defend any named insured.

21.4 **Waiver Of Subrogation.** The Builder hereby releases and discharges the Owner and the Owner's Related Parties of and from all liability to the Builder, and to anyone claiming by, through or under the Builder, by subrogation or otherwise, on account of any loss or damage to tools, machinery, equipment or other property, however caused.

21.5 Refer to Article XI, Insurance, in the enclosed document titled *Cobb County General Instructions for Bidders, Terms and Conditions*, found elsewhere within this project manual for additional information.

ARTICLE 22
GENERAL BOND REQUIREMENTS

22.1 **General Bond Requirements.** The Builder shall be required to provide separate performance and payment bond(s), the penal sum of each bond to be in an amount not less than the Construction Price, as adjusted by any change order(s), and each bond shall:

(i) be in a form approved by the Owner;

(ii) incorporate by reference the terms of this Contract For Construction;

(iii) be issued by a surety reasonably acceptable to the Owner that shall be on the Department of Treasury Listing of Acceptable Sureties and Underwriting Limitations, having a Best Rating of A:VII or better;

(iv) be accompanied by a power of attorney certifying that the person(s) executing the bond have the authority to do so.

22.2 **Delivery Of Bonds.** The Builder shall deliver any required bond(s) and power(s) of attorney to the Owner within 10 calendar days after receipt of Notice of Award.

22.3 Refer to Article IX, Bid, Pay, & Performance Bonds, from the enclosed document titled *Cobb County General Instructions for Bidders, Terms and Conditions*, found elsewhere within this project manual for additional information.

ARTICLE 23
OWNER'S RIGHT TO STOP WORK

23.1 **Cease And Desist Order .** If the Builder fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Paragraph 12.2, or persistently fails to carry out Work in accordance with the Contract Documents, or there are actual or potential third-party claims, or there is failure to make timely payments for labor or materials, damage to other entities connected with the Project, or reasonable evidence that the Contract cannot be completed for the Contract Price, or the Builder fails to supply labor or materials in accordance with the Contract Documents, the Owner, by written order signed personally or by the Professional, may order the Builder to stop the Work, or any portion thereof, until the cause for such order has been eliminated.

23.1.1 The Builder shall not be entitled to an adjustment in the time for performance or the Construction Price under this clause since such stoppages are considered to be the fault of the Builder.

23.1.2 The right of the Owner to stop Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Builder or others.

23.1.3 In the event the Owner issues instructions to cease and desist, and in the further event that the Builder fails and refuses within seven calendar days to provide adequate assurance to the Owner that the cause of such instructions will be eliminated or corrected, then the Owner shall have the right, but not the obligation, to carry out the Work or any portion of the Work with its own forces, or with the forces of another builder, and the Builder shall be responsible for the cost of performing such Work by the Owner.

23.1.4 The rights set forth herein are in addition to, and without prejudice to, any other rights or remedies the Owner may have against the Builder.

ARTICLE 24
TERMINATION OR SUSPENSION OF CONTRACT FOR CONSTRUCTION

24.1 **Termination For Cause By Owner.**

24.1.1 The Owner may terminate this Contract For Construction for cause if the Builder materially breaches this Contract For Construction by:

(i) refusing, failing or being unable to properly manage or perform on any requirement of the Project;

(ii) refusing, failing or being unable to supply the Project with sufficient numbers of workers, properly skilled workers, proper materials, or maintain applicable schedules;

(iii) refusing, failing or being unable to make prompt payment to subcontractors or suppliers;

(iv) disregarding laws, ordinances, rules, regulations or orders of any public authority or quasi-public authority having jurisdiction over the Project;

(v) refusing, failing or being unable to substantially perform in accordance with the terms of the Contract For Construction as determined by the Owner, or as otherwise defined elsewhere herein, or

(vi) refusing, failing or being unable to substantially perform in accordance with the terms of any other agreement between the Owner and Builder.

24.1.2 Upon the occurrence of any of the events described in Paragraph 24.1.1, the Owner may give written notice to the Builder setting forth the nature of the default and requesting cure within seven calendar days from the date of notice. At any time thereafter, if the Builder fails to initiate the cure or if the Builder fails to expeditiously continue such cure until complete, the Owner may give written notice to the Builder of immediate termination, and the Owner, without prejudice to any other rights or remedies, may take any or all of the following actions:

(i) complete all or any part of the Work, including supplying workers, material and equipment which the Owner deems expedient to complete the Work;

(ii) contract with others to complete all or any part of the Work, including supplying workers, material and equipment which the Owner deems expedient to complete the Work;

(iii) take such other action as is necessary to correct such failure;

(vi) take possession of all materials, tools, construction equipment and machinery on the Site owned or leased by the Builder;

(v) directly pay the Builder's subcontractors and suppliers' compensation due to them from the Builder;

(vi) finish the Work by whatever method the Owner may deem expedient; and

(vii) require the Builder to assign the Builder's right, title and interest in any or all of Builder's subcontracts or orders to the Owner.

24.1.3 If the Owner terminates the Contract For Construction for cause, and the Owner takes possession of all materials, tools, construction equipment and machinery on the Site owned or leased by the Builder, the Builder's compensation shall be increased by fair payment, either by purchase or rental at the election of the Owner, for any materials, tools, construction equipment and machinery items retained, subject to the Owner's right to recover from the Builder the Owner's damages

resulting from the termination.

24.1.4 If the Owner terminates this Contract For Construction for cause, and it is subsequently determined by a court of competent jurisdiction that such termination was without cause, then in such event, said termination shall be deemed a termination for convenience as set forth in Paragraph 24.3.

24.1.5 Refer to Article XIX, Default, from the enclosed document titled *Cobb County General Instructions for Bidders, Terms and Conditions*, found elsewhere within this project manual for additional information.

24.2 **Termination For Cause By Builder.**

24.2.1 The Builder may terminate this Contract For Construction for cause if the Owner materially breaches this Contract For Construction by:

(i) refusing, failing or being unable to make prompt payment to the Builder without cause;

(ii) disregarding laws, ordinances, rules, regulations or orders of any public authority of quasi-public authority having jurisdiction over any Project; or refusing, failing or being unable to substantially perform in accordance with the terms of this Contract For Construction or any other agreement between the Owner and the Builder.

24.2.2 Upon the occurrence of any of the events described in Paragraph 24.2.1, the Builder may give written notice to the Owner setting forth the nature of the default and requesting cure within thirty calendar days from the date of notice. If the Owner fails to cure the default within seven calendar days, the Builder, without prejudice to any rights or remedies, may give written notice to the Owner of immediate termination.

24.3 **Termination Or Suspension For Convenience.** The Owner may at any time give written notice to the Builder terminating this Contract For Construction or suspending the Project, in whole or in part, for the Owner's convenience and without cause. If the Owner suspends the Project for convenience, the Builder shall immediately reduce its staff, services and outstanding commitments in order to minimize the cost of suspension.

Refer to Article XXIV, Termination for Convenience from the enclosed document titled *Cobb County General Instructions for Bidders, Terms and Conditions*, found elsewhere within this project manual for additional information.

24.4 **Builder's Compensation When Builder Terminates For Cause Or Owner Terminates For Convenience.** If this Contract For Construction is (i) terminated by the Builder pursuant to Paragraph 24.2; (ii) terminated by the Owner pursuant to Paragraph 24.3; or (iii) suspended more than three months by the Owner pursuant to Paragraph 24.3, the Owner shall Reimburse the Builder for, an equitable portion of the Builder's fee based on the portion of the Work completed, excluding any allowance for overhead or profit, prior to the effective date of termination.

24.5 **Builder's Compensation When Owner Terminates For Cause.** If this Contract For Construction is terminated by the Owner for cause pursuant to Paragraph 24.1, no further payment shall be made to the Builder until Final Completion of the Project. At such time, the Builder shall be paid the remainder of the Construction Price less all costs and damages incurred by the Owner as a result of the default of the Builder, including liquidated damages applicable thereto. The Builder shall additionally reimburse the Owner for any additional costs or expenses incurred.

24.6 **Limitation On Termination Compensation.** Regardless of the reason for termination or the party terminating, the total sum paid to the Builder shall not exceed the Contract Construction Price (and any payment for line items appearing in the Schedule of Values shall be limited to the scheduled amount), as properly adjusted, reduced by the amount of payments previously made and penalties or deductions incurred pursuant to any other provision of this Contract For Construction, and shall in no event include duplication of payment.

24.7 **Builder's Responsibility Upon Termination.** Irrespective of the reason for termination or the party terminating, if this Contract For Construction is terminated, the Builder shall, unless notified otherwise by the Owner,

(i) immediately stop work;

(ii) terminate outstanding orders and subcontracts;

(iii) settle the liabilities and claims arising out of the termination of subcontracts and orders; and

(iv) transfer title and deliver to the Owner such completed or partially completed Work, and, if paid for by the Owner, materials, equipment, parts, fixtures, information and such contract rights as the Builder has.

24.8 **Lack Of Duty To Terminate.** The right to terminate or suspend the Work shall not give rise to a duty on the part of either the Owner or the Builder to exercise that right for the benefit of the Owner, the Builder or any other persons or entities.

24.9 **Limitation On Termination Claim.** If the Builder fails to file a claim within 90 calendar days from the effective date of termination, the Owner shall pay the Builder only for services actually performed and expenses actually incurred prior to the effective termination date.

ARTICLE 25
APPLICABLE LAW AND DISPUTE RESOLUTION

25.1 **Applicable State Law.** This Contract For Construction shall be deemed to be entered into in and shall be interpreted under the laws of the state in which the Project is located.

25.2 **Court Actions.** Except as expressly prohibited by law:

(i) all legal actions hereunder shall be conducted only in the superior court or federal court districts where the Project is located and having subject matter jurisdiction over the matter in controversy; except that any final judgment may be enforced in other jurisdictions in any manner provided by law;

(ii) the choice of jurisdiction and venue described in the preceding paragraph shall be mandatory and not permissive in nature, thereby precluding the possibility of litigation or trial in any jurisdiction or venue other than that specified herein;

(iii) the parties waive any right to assert the doctrine of forum *non conveniens* or to object to venue; and

(iv) the parties waive any right to a jury trial, and agree that all legal actions shall be tried, both as to factual and legal issues, only to the Court.

25.3 **Mutual Discussion.** In case of any dispute, claim, question or disagreement arising from or relating to the Project or arising out of this Contract For Construction or the breach thereof, the parties shall first attempt resolution through mutual discussion.

25.4 **Facilitative Mediation.** If the parties cannot resolve any dispute, claim, question, or disagreement arising from or relating to the Project or arising out of this Contract For Construction or the breach thereof through mutual discussion, as a condition precedent to any litigation, the parties shall in good faith participate in private, non-binding facilitative mediation seeking a just and equitable solution satisfactory to all parties.

25.4.1 The parties shall not be required to mediate for a period greater than ninety-one calendar days unless otherwise agreed to in writing by the parties. The parties shall share equally any administrative costs and fees of such proceedings, but shall each be responsible for their own expenses otherwise incurred.

25.4.2 In the event that the statute of limitations would run during the required mediation period, either party may institute litigation so as to avoid the running of such statute upon the condition that such party immediately seek a stay of such litigation pending the conclusion of the mediation period.

25.4.3 During the course of mediation, any party to the mediation may apply for injunctive relief from any court of competent jurisdiction until the mediation period expires or the dispute is otherwise resolved.

25.4.4 The Owner, the Professional(s), the Builder, and any other parties involved in any way in the design or construction of the Project are bound, each to each other, by this requirement to mediate prior to commencement of any litigation, provided that they have signed this Contract For Construction or an agreement that incorporates this Contract For Construction by reference or signed any other agreement which binds them to mediate. Each such party agrees that it may be joined as an additional party to a mediation involving other parties under any such agreement. In

the case where more than one mediation is begun under any such agreement and any party contends that the mediations are substantially related, the mediations may be conducted by the mediator selected in the first mediation which was commenced.

25.5 **Conflicting Dispute Resolution Provisions.** Neither party to this Contract For Construction shall enter into any contract with regard to the Project which directly or indirectly gives the right to resolve any dispute with, involving, or affecting the other to any other person or legal entity which is in conflict with the dispute resolution procedures required by this Article.

25.6 **Arbitration Preclusion.** In case of a dispute relating to the Project, or arising out of this Contract For Construction, no party to this Contract For Construction shall be required to participate in or be bound by, any arbitration proceedings.

25.7 **Performance During Dispute Resolution.** The Owner and the Builder agree that pending the resolution of any dispute, controversy, or question, the Owner and the Builder shall each continue to perform their respective obligations without interruption or delay, and the Builder shall not stop or delay the performance of the Work. Notwithstanding the above, the Owner shall not be required to make any payments to the Builder that Owner contends are in dispute.

25.8 Refer to Article XX, Disputes, from the enclosed document titled *Cobb County General Instructions for Bidders, Terms and Conditions*, found elsewhere within this project manual for additional information.

ARTICLE 26
DAMAGES AND REMEDIES

26.1 **Builder's Repair.** The Builder shall, at its expense, promptly correct, repair, or replace all goods, products, materials, systems, labor and services which do not comply with the warranties and guarantees set forth in this Contract For Construction, or any other applicable warranty or guarantee.

26.2 **Builder's Reimbursement.** The Builder shall promptly reimburse the Owner for any expenses or damages incurred by the Owner as a result of (i) the Builder 's failure to substantially perform in accordance with the terms of this Contract For Construction; (ii) deficiencies or conflicts in the Construction Documents attributable to the Builder or of which the Builder was or should have been aware; (iii) breach of the warranties and guarantees set forth in this Contract For Construction or any other applicable warranty or guarantee; or (iv) other acts or omissions of the Builder.

26.3 **General Indemnity.** To the fullest extent permitted by law the Builder shall secure, defend, protect, hold harmless, and indemnify the Owner and the Owner's from and against any and all liability, loss, claims, demands, suits, costs, fees and expenses (including actual fees and expenses of attorneys, expert witnesses, and other consultants), by whomsoever brought or alleged, and regardless of the legal theories upon which premised, including, but not limited to, those actually or allegedly arising out of bodily injury to, or sickness or death of, any person, or property damage or destruction (including loss of use), which may be imposed upon, incurred by or asserted against the Owner or the Owner's Related Parties allegedly or actually arising out of or resulting from the Builder's services, including without limitation any breach of contract or negligent act or omission (i) of the Builder; or (ii) of the Builder's subcontractors or suppliers, or (iii) of the agents, employees or servants of the Builder or its subcontractors or suppliers.

26.3.1 To the fullest extent permitted by law, the Builder, for itself and for its subcontractors and suppliers, and the respective agents, employees and servants of each, expressly waives any and all immunity or damage limitation provisions available to any agent, employee or servant under any workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts, to the extent such statutory or case law would otherwise limit the amount recoverable by the Owner or the Owner's Related Parties pursuant to the indemnification provision contained in the paragraph above.

26.3.2 Refer to Article XXVI, Indemnification and Hold Harmless, from the enclosed document titled *Cobb County General Instructions for Bidders, Terms and Conditions*, found elsewhere within this project manual for additional information.

26.4 **Intellectual Property Indemnity.** To the fullest extent permitted by law, the Builder shall defend, protect, hold harmless, and indemnify the Owner and the Owner's Related Parties from and against any and all liability, loss, claims, demands, suits, costs, fees and expenses (including actual fees and expenses of attorneys, expert witnesses, and other consultants), by whomsoever brought or alleged, for infringement of patent rights, copyrights, or other intellectual property rights, except with respect to designs, processes or products of a particular manufacturer expressly required by the Owner or Professional(s) in writing. If the Builder has reason to believe the use of a required design, process or product is an infringement of a patent, the Builder shall be responsible for such loss unless such information is promptly given to the Owner.

26.5 **Non-Exclusivity Of Owner's Remedies.** The Owner's selection of one or more remedies for breach of this Contract For Construction contained herein shall not limit the Owner's right to invoke any other remedy available to the Owner under this Contract For Construction or by law.

26.6 **Waiver Of Damages.** The Builder shall not be entitled to, under any circumstance, and hereby waives any monetary claims for or damages arising from or related to, lost profits, lost business opportunities, unabsorbed overhead or any indirect consequential damages.

ARTICLE 27
MISCELLANEOUS PROVISIONS

27.1 **Integration.** This Contract For Construction represents the entire and integrated agreement between the Owner and the Builder, and supersedes all prior negotiations, representations or agreements, either written or oral, for the Project. This Contract For Construction may be amended only by written instruments signed by both the Owner and the Builder, and is subject to such reasonable modifications as may be required by the Owner's lender(s) or insurer(s), if any.

27.2 **Severability.** If any provision of this Contract For Construction, or the application thereof, is determined to be invalid or unenforceable, the remainder of that provision and all other provisions shall remain valid and enforceable.

27.3 **Waiver.** No provision of this Contract For Construction may be waived except by written agreement of the parties. A waiver of any provision on one occasion shall not be deemed a waiver of that provision on any subsequent occasion, unless specifically stated in writing. A waiver of any provision shall not affect or alter the remaining provisions of this Contract For Construction.

27.4 **Strict Compliance.** No failure of the Owner to insist upon strict compliance by the Builder with any provision of this Contract For Construction shall operate to release, discharge, modify, change or affect any of the Builder's obligations.

27.5 **Third-Party Beneficiaries.** This Contract For Construction shall inure solely to the benefit of the parties hereto and their successors and assigns, and, except as otherwise specifically provided in this Contract For Construction, nothing contained in this Contract For Construction is intended to or shall create a contractual relationship with, or any rights or cause of action in favor of, any third party against either the Owner or the Builder.

27.6 **Survival.** All provisions of this Contract For Construction which contain continuing obligations shall survive its expiration or termination.

27.7 **Assignment.** Except as prohibited by applicable law, neither party shall assign any or all of its benefits or executory obligations under this Contract For Construction without the approval of the other party, except in case of assignment solely for security or assignment by the Owner to a Related Party of the Owner, or

except as otherwise specifically provided for in this Contract For Construction in case of default. The Owner and the Builder bind their successors and assigns to the other party to this Contract For Construction.

27.8 **Execution Of Documents.** Upon the request of the Owner, the Builder shall execute documents required by the Owner's lender whereby the Builder agrees that in the event of the Owner's default under, or the termination of, any construction loan agreement, the Builder will complete the services required by this Contract For Construction under the terms and conditions contained herein so long as the lender fulfills the obligations of the Owner toward the Builder as set forth in this Contract For Construction.

27.9 **Separate contracts.** Separate contracts may be awarded for, but not necessarily limited to, telephone cabling, computer cabling, furniture and equipment, landscaping, signage and graphics.

ARTICLE 28
SPECIAL TERMS AND CONDITIONS

28.1 Should these General Terms and Conditions be in conflict with any attached Special Terms and Conditions, the Special Terms and Conditions will control.

28.2 Should these General Terms and Conditions be in conflict with the attached Cobb County General Instructions for Bidders, Terms and Conditions, the Cobb County General Instructions for Bidders, Terms and Conditions will control.

ARTICLE 29
EVIDENCE OF COMPLIANCE WITH GEORGIA SECURITY & IMMIGRATION COMPLIANCE ACT

29.1 The County and Contractor agree that compliance with the requirements of O.C.G.A. Sec. 13-10-91 and Rule 300-10-1-.02 of the Rules of the Georgia Department of Labor are conditions of this Agreement for the physical performance of services.

29.2 The Contractor represents that it employs:

_____ 500 or more employees;
_____ 100 or more employees; or
_____ fewer than 100 employees
(Contractor must initial appropriate category).

29.3 The Contractor further agrees that its compliance with the requirements of O.C.G.A. Sec. 13-10-91 and DOL Rule 300-10-1-.02 is attested to on the executed Contractor Affidavit and Agreement attached hereto as EXHIBIT A.

29.4 If employing or contracting with any subcontractor(s) in connection with this Agreement, Contractor further agrees:

27 To secure from the subcontractor(s) such subcontractor(s)') indication of the employee-number category applicable to the subcontractor(s); and

28 To secure from the subcontractor(s) an affidavit attesting to the subcontractor's compliance with O.C.G.A. Sec. 13-10-91 and DOL Rule 300-10-1-.02; such affidavit being in the form attached hereto and referenced as EXHIBIT A-1; and

29 To submit such subcontractor affidavit(s) to the County when the subcontractor(s) is retained, but in any event, prior to the commencement of work by the subcontractor(s).

29.5 The failure of Contractor to supply the affidavit of compliance at the time of execution of this Agreement and/or the failure of Contractor to continue to satisfy the obligations of O.C.G.A. Sec. 13-10-91 and DOL Rule 300-10-1-.02 as set forth in this Agreement during the term of the Agreement shall constitute a material breach of the contract. Upon notice of such breach, Contractor shall be entitled to cure the breach within ten (10) days, upon providing satisfactory evidence of compliance with the terms of this

Agreement and State law. Should the breach not be cured, the County shall be entitled to all available remedies, including termination of the contract and damages.

ARTICLE 30
DEFINITIONS

When one of the following capitalized words, terms or phrases is used in this contract, it shall be interpreted or construed first as defined below, second according to its generally accepted meaning in the construction industry, and third according to its common and customary usage.

Builder: An entity, including but not limited to a general contractor, a trade contractor or a construction manager, engaged directly by the Owner pursuant to a Contract For Construction.

Construction Price: The dollar amount for which a Builder agrees to perform the Work set forth in a Contract For Construction.

Construction Documents: Plans, specifications, change orders, revisions, addenda, and other information which set forth in detail the Work.

Construction Schedule: The timetable which sets forth pertinent dates for timely completion of the Work.

Contract For Construction: A written agreement between the Owner and a Builder for provision of goods, products, materials, equipment, systems, management, supervision, labor and services required to construct all or part of a Project.

Contract For Professional Services: A written agreement between the Owner and a Professional for provision of services and related items required to design or engineer all or part of a Project.

Declaration Of Substantial Completion: Document declaring the Work substantially complete and suitable for occupancy or beneficial use by the Owner.

Final Completion: The stage of construction when the Work has been completed in accordance with the Contract For Construction and the Owner has received all documents and items necessary for closeout of the Work.

Hazardous Substances: The term "Hazardous Substance" shall have the same meaning and definition as set forth in the Comprehensive Environmental Response Compensation and Liability Act as amended, 42 U.S.C. § 6901 *et seq*, and regulations promulgated thereunder (collectively "CERCLA") and any corresponding state or local law or regulation, and shall also include: (a) any Pollutant or Contaminant as those terms are defined in CERCLA; (b) any Solid Waste or Hazardous Constituent as those terms are defined by, or are otherwise identified by, the Resource Conservation and Recovery Act as amended, 42 U.S.C. § 6901 *et seq*, and regulations promulgated thereunder (collectively "RCRA") and any corresponding state or local law or regulation; (c) crude oil, petroleum and fractions of distillates thereof; (d) any other material, substance or chemical defined, characterized or regulated as toxic or hazardous under any applicable law, regulation, ordinance, directive or ruling; and (e) any infectious or medical waste as defined by any applicable federal or state laws or regulations.

Owner's Related Parties: Any elected officials, agents, officers, trustees, office holders, directors, and employees of each.

Professional: An entity, including but not limited to an architect, civil engineer or geotechnical engineer, engaged directly by the Owner to provide design or engineering services.

Project: A planned construction undertaking as more specifically described immediately preceding the recitals in Chapter 1 of a Contract For Professional Services or in a Contract For Construction.

Project Design Schedule: The timetable which sets forth the required relationships between, and pertinent dates for, required completion of design and engineering services, documents and related activities.

Site: The geographical location of a Project, usually defined by legal boundary lines, and the location characteristics including, but not limited to, grades and lines of streets, alleys, pavements and adjoining structures, rights-of-way, restrictions, easements, encroachments, zoning, deed restrictions, existing buildings and improvements, and service and utility lines.

Substantial Completion: The stage of construction when the Owner can occupy or beneficially use satisfactorily completed Work for its intended purpose.

Total Project Construction Cost: The total cost to the Owner to complete construction of the Project, including, without limitation, the Work, the cost of utilities, the cost of fees for permits and licenses, and modifications necessitated by local conditions.

Work: Any and all computers, construction machinery, documents, equipment, facilities, fixtures, furnishings, goods, heat, items, labor, licenses, management, materials, permits, products, services, supervision, supplies, systems, taxes, testing, tools, utilities, transportation, vehicles, and water, required to be performed or supplied and/or necessary for proper execution and completion of the Project, or some portion thereof, whether or not incorporated or to be incorporated into the Project; provided, however, that Work does not include performance of pre-construction services by a Construction Manager.

PAYMENT BOND

Bond Number:_____

KNOW ALL MEN BY THESE PRESENTS, that we,_____ as Principal, hereinafter called "**Contractor**", and_____, a corporation duly organized under the laws of the State of_____ listed in the latest issue of U.S. Treasury Circular 570, and registered in State of Georgia, as Surety, hereinafter called "**Surety**", are held and firmly bound unto Cobb County, Georgia, hereinafter called "**Owner**", in the sum of_____ _____(in words), **($_____)** (in figures), for the payment of which sum, well and truly to be made, the **Contractor** and **Surety** bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the **Contractor** has entered into a written contract dated_____ **, 20**_____ with the **Owner** for performance of _____ in accordance with drawings and/or specifications prepared by or for Cobb County which contract is by reference made a part of this bond by reference as if fully set forth herein, and is hereinafter referred to as the **Contract**.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if **Contractor** shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

A. A claimant is defined as an entity having a direct contract with the **Contractor** or with a Subcontractor of the **Contractor** for labor, material, or both, used or reasonably required for use in the performance of the Contract, “labor and material” being construed to include but not limited to that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.

B. The **Contractor** and **Surety** hereby jointly and severally agree with the **Owner** that every claimant as herein defined who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be due claimant, and have execution thereon. The **Owner** shall not be liable for the payment of any judgment costs or expenses of any such suit.

C. No suit or action shall be commenced hereunder by any claimant,

1. Unless claimant, other than one having a direct contract with the **Contractor**, shall have given written notice to any two of the following: the **Contractor**, the **Owner**, or the **Surety** above-named, within ninety (90) days after such claimant did or performed the last of the work of labor, or furnished the last of the materials for which said claim is made, stating with substantial specifics and accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the **Contractor**, **Owner** and/or **Surety**, at the addresses provided in the Contract or in this bond, or served in any manner in which legal process may be served in the state in which the aforesaid project is located, save that such service need not be made by a public officer.

2. After one (1) year from the completion of Contract and the acceptance by **Owner** of the work there under, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

3. Other than in a state court of competent jurisdiction in and or the county or of the state in which the project, or any part thereof, is situated.

D. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by **Surety** of mechanics' liens which may be filed on record against said improvement, whether or not claim for the amount of such presented under and against this bond.

E. PROVIDED FURTHER, that the said **Surety**, for value received hereby, stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed there under or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specifications.

IN WITNESS WHEREOF, this instrument is executed in three (3) counterparts, each one of which shall be deemed an original, this ___ day of _____, 20___.

Attest:

By: _____

Attest:

By: _____

_____

Principal/Contractor (SEAL)

_____

Signature

_____

Typed Name

_____

Title

_____

Surety (SEAL)

_____

Signature of Attorney-in-Fact

_____

Typed Name of Attorney-in-Fact

(Bond must not be dated prior to date of Agreement)

PERFORMANCE BOND

Bond Number: _____

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned as Principal, hereinafter called "**Builder**", and _____, a corporation duly organized under the laws of the State of _____, listed in the latest issue of U.S. Treasury Circular 570, and registered in the State of Georgia, as Surety, hereinafter called "**Surety**", are held and firmly bound unto Cobb County, Georgia, hereinafter called "**Owner**", in the sum of _____ _____ (in words), ($ _____)(in figures), for payment of which sum, well and truly to be made, the **Builder** and **Surety** bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the **Builder** has entered into a written contract dated _____ _____, **20**_____ with **Owner** for the construction of _____ in accordance with drawings and/or specifications prepared by or for Cobb County which contract is made a part of this bond by reference as if set forth herein and is hereinafter referred to as the "**Contract**."

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

PROVIDED, FURTHER, that **Surety**, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed there under or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the specifications.

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

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 the **Owner** and the **Surety** jointly of the responsible and responsive bidder, arrange for a contract between such bidder and **Owner**, and make available as work progresses (even though there should be default or a succession of defaults) under the contract or contracts of 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 **Builder** under the **Contract** and any amendments thereto, less the amount paid by **Owner** to **Builder**.

Any suit under this Bond must be instituted before the expiration of two (2) 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**.

The **Surety** may only cancel this bond by first providing thirty (30) days written notice to **Owner** and Builder. Such cancellation shall not discharge the **Surety** from liability already accrued under this bond prior to the expiration of the thirty (30) day period.

IN WITNESS WHEREOF, this instrument is executed in four (4) counterparts, each one of which shall be deemed an original, this _____ day of _____, 20_____.

Attest:

By: _____

Attest:

By: _____

_____

Principal/Builder (SEAL)

_____

Signature

_____

Typed Name

President _____

Title

_____

Surety (SEAL)

_____

Signature of Attorney-in-Fact

_____

Typed Name of Attorney-in-Fact

SECTION 01010 - PROJECT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

Section Includes:

1. Description of Work
2. Access to and **Contractor's** use of the site.
3. Coordination requirements.
4. Construction procedures.
5. Protection of work

1.02 SCOPE OF WORK

A. The work to be done consists of the furnishing of all supervision, labor, materials and equipment, and the performance of all work required by the Contract Documents. Unless specifically stated otherwise, the **Contractor** shall furnish all labor, superintendence, materials, plant, power, light, fuel, water, tools, appliances, equipment, supplies, and other means of construction necessary or proper for the performance and completion of the Work. He shall obtain and pay for all required permits. The **Contractor** shall clean up the work and maintain it during and after construction, until accepted, and shall do all work and pay all costs incidental thereto. He shall repair or restore all structures and property that may be damaged or disturbed during performance of the Work.

B. The cost of incidental work described in this Section, for which there are no specific contract items, shall be considered as part of the general cost of doing the work and shall be included in the prices of the various contract items. No additional payment will be made therefore.

C. The **Contractor** shall provide and maintain such modern plant, tools and equipment as may be necessary, in the opinion of the **Owner**, to perform in a satisfactory and acceptable manner all the work required by this Contract. Only equipment of established reputation and proven efficiency shall be used. The **Contractor** shall be solely responsible for the adequacy of his workmanship, materials and equipment, prior approval of the **Owner** notwithstanding.

D. All work called for in the Specifications, but not shown on the Drawings, or vice versa, shall be of like effect as if shown or mentioned in both. Work not specified in either the Drawings or Specifications, but necessary to carry-out their intent or in the complete and proper execution of the work, is required and shall be performed by the **Contractor** as though it were specifically delineated or described. The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any work to be done or materials to be furnished, shall be

regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to used, and that interpretation of the Specifications shall be made upon that basis.

1.03 ACCESS TO AND CONTRACTOR'S USE OF THE SITE

A. The space available to the **Contractor** for the performance of the work, either exclusively or in conjunction with others performing other construction as part of the project, is shown limited to the areas indicated on the drawings and in the specifications.

B. The **Owner** may continue to occupy existing facilities during the construction period. The facility will not be open to the public during construction.

1. The **Owner** will endeavor to cooperate with the **Contractor's** operations when the **Contractor** has notified the **Owner** in advance of need for changes in operations in order to accommodate construction operations.
2. The **Contractor** shall conduct the Work so as to cause the least interference with the **Owner's** operations.
3. The Owner will remove all loose furniture and furnishings from the lobby and office area prior to construction.

C. Adequate signage will be provided by the **Contractor** as necessary.

1.04 COORDINATION REQUIREMENTS

A. Coordination with Owner:

1. Coordinate all work with the **Owner** to avoid interference with operation of plant equipment and processes.
2. Unscheduled bypassing of untreated or partially treated sewage to surface waters or drainage courses is prohibited during construction. In the event accidental bypassing is caused by the **Contractor's** operations, the **Owner** shall be entitled to immediately employ such means and methods as the **Owner** deems appropriate to stop the bypassing without giving written or verbal notice to the **Contractor**.
3. Penalties imposed on the **Owner** as a result of any bypass caused by actions of the **Contractor** shall be borne in full by the **Contractor**, including legal fees and other expenses resulting directly or indirectly from the bypass.
4. The schedule shall be coordinated with the construction schedule as specified in Section 01310 – DESIGN/CONSTRUCTION SCHEDULE and shall comply with all restrictions and conditions specified in this Section. Actual sequencing and scheduling of the Work and means and methods by which the Work is performed are the responsibility of the **Contractor**.

1.05 PROTECTION OF THE WORK

A. Take precautions to prevent fires and to facilitate fire-fighting operations.

B. Take precautions to prevent accidents due to physical hazards.

C. Take care to prevent pollution of air, water, and soil.

D. Prevent the entry of rainwater runoff into sanitary sewer system.

E. Control windblown dust; prevent erosion to site and nuisance to neighbors.

F. Execute work and stockpile spoils and materials to prevent flooding of excavations, below grade construction, and adjacent properties due to rainwater runoff.

G. Protect existing property not indicated to be removed. Repair any damage by the contractor or subcontractors to existing property at no additional cost to the Owner.

H. Maintain working conditions in order to keep the site and adjacent public ways free of hazardous and unsanitary conditions and public nuisances.

I. Maintain working conditions in order to control rodents and other pests; prevent infestation of adjacent sites and buildings due to pests on this site.

J. Keep public streets free of debris due to this work.

K. Provide adequate traffic control by means of signs, signals, and flaggers, as necessary.

L. Conduct construction operations so that no part of the work is subjected to damaging operations or influences which are in excess of those to be expected during normal occupancy conditions.

M. Conduct construction operations so that waste of power, water, and fuel is avoided.

N. Provide temporary supports as required to prevent movement and structural failure.

O. Install products only during environmental conditions which will ensure the best possible results.

P. Install products only at the time and in the sequence which will ensure the best possible results in conformance with project requirements.

PART 2 - PRODUCTS (NOT USED)
PART 3 - EXECUTION

3.01 CONSTRUCTION PROCEDURES

A. General Examination Requirements:

1. Prior to performing work, examine the applicable substrates and the conditions under which the work is to be performed.
2. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding.
3. Conditions which could have been discovered by examination prior to the submission of the bid for the work will not be allowed as cause for claims for extra work.
4. If during progress of the Work, the **Contractor** believes that additional information is required of the **Owner** to carry out the intent of the project, **Contractor** shall prepare and submit to **Owner** a "Request for Information" (RFI) on a form acceptable to the **Owner**. The **Owner** shall make reasonable effort to respond promptly so as not to impact **Contractor's** schedule of work. RFI's shall be submitted when the need is identified, not when the response is required.
5. Notify the **Owner** promptly of any modifications required due to existing conditions or previous work.
6. Before starting work which might affect existing construction, verify the existence and location of:
   a. Underground utilities.
   b. Other underground construction.
   c. Location and invert elevation of points of connection to piped utilities.
7. Verify that utility requirements of operating equipment are compatible with building utilities.
8. Verify space requirements of items which are shown diagrammatically on the drawings or any other items that might impact construction.

B. General Preparation Requirements:

1. Take field measurements as required to fit the work properly.
2. Recheck measurements prior to installing each product.

C. General Installation Procedures:

1. Accurately install the work and components of the work.
2. See sections describing specific parts of the work for additional requirements.
3. Where space is limited, install components to maximize space available for maintenance and to maximize ease of removal for replacement.
4. Install work in such manner to minimize cutting and patching.

D. Cleaning and Protection

1. Remove debris from concealed spaces prior to enclosing the space.

2. Keep the site and the work free of waste materials and debris. All areas in the interior of the building shall be kept clean at all times.
3. Clean areas in which work is to be done to level of cleanliness necessary for proper execution of that work.
4. Keep installed work clean, and clean again when soiled by other operations.
5. Protect installed work from soiling and damage.

E. Do not cut existing mechanical and electrical services which are to remain in use until provisions have been made to relocate or reconnect them promptly; obtain approval of the **Owner** of the time and duration of disconnection.

F. Installation of Components:
1. Install all products in accordance with manufacturer's instructions and recommendations, whether conveyed in writing or not.
2. Separate incompatible materials with suitable materials or spacing.
3. Provide all anchors and fasteners required and use methods necessary to securely fasten work.
4. After installation, adjust operating components to proper operation.

G. Instruction of the **Owner's** Personnel:
1. Instruct personnel designated by the **Owner** in the operation and maintenance of equipment and systems, prior to substantial completion.
2. Arrange times and places of instruction with the **Owner**.
3. Provide instruction by qualified manufacturer representatives.
4. Allow videotaping of instruction sessions by **Owner**.

H. Final Cleaning:
1. Remove materials and equipment which are not part of the work and all debris from the site prior to substantial completion.
2. Dispose of debris in a lawful manner.
3. Perform final cleaning after substantial completion has been certified, but before final payment.
4. Clean entire project site and grounds.
5. In spaces to be occupied, remove dirt, stains, and other foreign substances from all accessible surfaces and remove nonpermanent labels.
6. In spaces not normally occupied, remove debris and surface dust and wipe equipment clean, removing excess lubrication, paint, and other foreign substances.
7. Remove paint and other coatings from permanent labels and from mechanical and electrical equipment nameplates.
8. Leave the project clean and ready for occupancy.

I. Substantial Completion Procedures:
1. When **Contractor** believes that work is substantially complete, he shall issue

written notice of substantial completion to **Owner** requesting an inspection. **Contractor's** notice shall be accompanied by a written list of the items **Contractor** considers incomplete. Except for any portion(s) of work specified for early completion or required by the Owner for early possession, substantial completion will not occur for any work until the entire project is ready for possession and use.

2. If the **Owner** determines that the work is not substantially complete, he will so notify the **Contractor** in writing identifying the reasons for such a determination.
3. If the **Owner** finds the work substantially complete, he will so notify the **Contractor** in writing, listing the items of incomplete work, stating the date for completion of incomplete work, defining the division of responsibilities (with respect to security, operation, maintenance, utilities, insurance, and warranties), and setting forth any other terms related to acceptance.
4. The **Contractor** will acknowledge receipt of the acceptance notice in writing, indicating acceptance of all of its terms and provisions.
5. Upon receipt of the **Contractor's** acknowledgment letter, the **Owner** shall take possession of the work or portion of the work and put it into its intended service. The date that the work or portion of the work is put into service will become the date of substantial completion. Unless otherwise specified, warranties will begin on the date of substantial completion.
6. Subsequent to the substantial completion date, the **Owner** may exclude the **Contractor** from the work during such periods when construction activities might interfere with the operation of the project. The **Owner**, however, shall allow the **Contractor** reasonable access for completion or correction of incomplete punch list items.

J. Final Completion Procedures:

1. When **Contractor** considers that the Work is complete, he shall submit written certification that:
   a. All work has been completed and in accordance with the Contract Documents.
   b. All equipment and systems have been tested in the presence of the **Owner's** representative and are operational.
   c. The work is ready for final inspection.
2. Upon receipt of the notification, the **Owner** will determine if the work conforms to the terms of the contract. If he finds materials, equipment, or workmanship which do not meet the terms of the contract, he shall prepare a punch list of such items and submit it to the **Contractor**.
3. Following completion of the corrective work, the **Contractor** shall provide written notification to the **Owner**. Final determination of the acceptability shall be made by the **Owner**.
4. Upon acceptance of the project, the Owner shall issue a Notice of Completion to the **Contractor**. For portions of the project not previously accepted as substantially complete, the conditions of guarantee shall commence on the date

that the **Owner** issues the notice of completion.

5. An application for Final Payment should be made in conformance with Section 01152 of these specifications.

3.02 DISCOVERY OF HAZARDOUS OR TOXIC MATERIAL

A. If any material is encountered in the execution of the Work that is reasonably suspected of being hazardous or toxic to health or safety, immediately stop work in the area and notify the **Owner** (and thereafter confirm such notice in writing). **Contractor** shall proceed to other work areas to minimize construction delay impacts.

B. Determination of presence of material and remedial action required will be by others.

C. If material is found to be hazardous or toxic and requires removal, removal will be accomplished under a modification to this contract or by others.

D. The **Owner** shall not be responsible for any such hazardous or toxic materials brought to the site of the Work by the **Contractor**, subcontractor, suppliers or anyone else for whom the **Contractor** is responsible.

END OF SECTION

SECTION 01015 – PROJECT DESCRIPTION, PROJECT SCOPE, PRODUCT REQUIREMENTS

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Part 1 Project Description and Scope of Work

1.01 INTRODUCTION

Cobb County's Mountain View Aquatic Center located at 2650 Gordy Parkway, Marietta, Georgia was constructed in 2000. The building is functioning adequately serving over 230,000 patrons annually or over 500 patrons daily. The inherent moisture generated by the warm water combined with the inadequate ventilation has caused poor air quality and deterioration of the building's metal surfaces and deterioration of the metal painted surfaces within the natatorium. The chlorinated pool air has also deteriorated the dehumidification systems to the point of the need to replace the units.

Other renovations needed include, but are not limited to: pool surface replacement (marcite); cleaning and/or replacement of gutter grates; removal of paint from pool perimeter curb; pool filters replacement; replacement of gas pool heaters with boiler/heater exchange system; 50 meter pool bulkhead refurbishing; repainting of all painted surfaces within the facility; replacement of floor treatment in offices; throughout the facility; replacement of lights and/or ballasts in the natatorium; replacement of toilet partitions in the men's and women's toilet; replacement/repair of the hardware on the exterior doors; replacement of the counter in the lobby; replacement of grout and cleaning of tile in the showers and locker rooms.

It is the Owner's goal for this project to correct any existing damage and restore and improve the facility to prevent future deterioration of the facility and equipment and provide a first class environment for our patrons and programs. Many of these items will be bid as alternates.

1.02 PROJECT DESCRIPTION

Services to be provided under this contract include the complete construction, startup, and training for improvements to the Mountain View Aquatic Center described herein.

The following project description identifies areas of work the Owner intends for the bidder to address in the bid. The information included below generally describes the work to be performed. Refer to the project manual, drawings and specifications for additional information. Any work called for elsewhere within these specifications or on the drawings is also included in the scope of work.

A. Architectural – Refer to technical specifications for additional information

1. Natatorium (Interior Space 129 housing instructional pool and competition pool)
    a. Remove sound baffles as needed for painting, properly store and protect, and reinstall upon completion of painting.
    b. Clean and prepare surfaces of interior roof structures, beams, columns, walls, painted window frames and all previously painted (non factory finished) surfaces and duct work.
    c. Prepare and spot prime all rusted (previously painted) steel surfaces with specified primer per the technical specifications.
    d. After rusted surfaces have been prepared and primed, paint with two component water based epoxy per the technical specifications.
    e. Prepare and paint all other previously painted interior surfaces with two component water based epoxy per the technical specifications Section 09900.

2. Entrance, lobby offices, administrative offices, meeting room, lifeguard room, family (handicapped) restroom and locker rooms (refer to sheet A1.1 for room numbers).
    a. Prepare and paint all non factory finished painted surfaces matching existing colors. Prepare areas for painting in accordance with manufacturer's instructions. The only rooms that will not be painted are 101, 103, 104, 105, 113, 114, 126, 127 & 128. Paint with Pre-catalyzed water based epoxy per the technical specifications. (Alternate #1)
    b. Replace existing toilet partitions in rooms 120 and 125 with floor mounted, overhead braced solid plastic partitions. Replace urinal screens with solid plastic urinal screens of similar size and detail as the existing partitions. (Alternate #2).
    c. Remove and replace grout in floor and wall tile in rooms 119, 120, 121, 122, 123, 124 and 125. Clean floors and walls following grout removal and replacement. (Alternate #3)
    d. Replace existing floor covering with carpet in rooms 107, 108, 109, 110 & 111 (Alternate #4). Price to include vinyl cove base in each room.
    e. Replace counter in lobby (Alternate #5)
    f. Paint structure and underside of canopy adjacent to entrance 101 (Alternate #6).

3. 50 meter and instructional pools (All Base Bid)
    a. Drain pools (by County) and scarify and prepare plaster surface for new plaster (marcite). Install new pool surfaces in both pools utilizing Kover Krete Pre-Kote System, or equivalent and new marcite surface. Refer to manufacturer's product data in Section 13000 for additional information.
    b. Restore and/or replace existing lane marker tiles as needed. Contractor shall take special care to minimize damage to existing tiles during

demolition and construction operations. Contractor shall be responsible for replacing tiles damaged during the course of construction.

c. Completely remove stains from gutter grates. Replace grate materials damaged during the course of construction with similar I bar perpendicular grate system. The existing gutter grates are manufactured by Grate Technologies, Inc. If contractor is unable to completely remove stains from grates, grates shall be replaced at no additional cost to the Owner.
d. Coat gutters with Thoroseal waterproof coating or equal per manufacturer's instructions. Refer to section 13000 of the technical specifications for additional product information.
e. Remove paint on perimeter curb on both pools and seal with slip resistant clear sealer.
f. Saw cut grooves in locations indicated. Refer to the section 13000 of the specifications for the work associated with the swimming pools.
g. Pressure wash to clean entire pool deck
h. Replace existing lane lines with new plastic lane lines, Competitor Gold Medal Racing Lanes, or approved equivalent. Refer to section 13000 for additional product information.

4. 50 meter pool bulkhead (Base Bid)
    a. Thoroughly visually inspect bulkhead and repair welds as needed
    b. Dismantle panels, hydroblast and re-surface per manufacturer's (Neptune Benson) recommendations.
    c. Clean and polish all stainless steel surfaces
    d. Replace or recondition all fittings
    e. Coat interior surfaces with specified product
    f. Refer to section 13000 for additional information and requirements.

5. Filter Room (Alternates 7 & 8)
    a. Design and construct replacement of filters in the filter room. Design includes all elements and accessories needed for complete filter replacement including, but not limited to: pipes, valves, pumps, electrical service and filter locations.
    b. Remove existing pool filters and replace.
    c. Re-plumb pool piping as required.
    d. Refer to Technical Specification Sections 13150A, 13150B1, and 13150B2.

B. HVAC – REFER TO MECHANICAL DRAWINGS AND SPECIFICATIONS

1. Natatorium Dehumidification (Base Bid)
    a. Remove and dispose of 2 existing Pool Pak dehumidification units (see Section D. Demolition below).

b. Replace with 2 new Seresco dehumidification units with NE series model size 070. Integrate existing ductwork with 2 Seresco units as indicated on the drawings. **NOTE: The two new Seresco units will be purchased by the Owner.** Contractor is responsible for coordinating delivery with the manufacturer, accepting shipment, inspecting, unloading, storing (if needed), protecting, installing and start up of the new units. Units are scheduled to be delivered in August.
c. Modify existing duct work, fluid/gas transport lines and electrical systems to accept new units as shown on the drawings.
d. Add additional pool water supply/return line and booster pump for Seresco unit as primary heat for instructional pool water heat as shown on the drawings.
e. Modify existing pool heater water supply and return lines, and replace pressure gauges and thermometers associated with the dehumidification units as shown on the drawings.
f. Install dehumidification system according to manufacturer's recommendation and specifications
g. Perform all other work shown on the drawings.

2. Natatorium Duct Work
    a. Modify existing duct work vents and new ductwork vents inside natatorium to maximize air flow efficiency where indicated on the drawings. Install new return air ducts. See drawings prepared by Kirkpatrick Engineers for new duct work configuration.

3. Natatorium Exhaust System (Base Bid)
    a. Install Paddock Evacuator systems: **The Paddock Evacuator System will be purchased by the Owner.** The materials to be provided by the Owner include the Paddock Evacuator Bench Systems, end caps, fiberglass connection boxes, installation kit and wall bracket, caulk, exhaust fans, exhaust fan curbs and variable frequency drive. The Contractor is responsible for coordinating delivery with the manufacturer, inspecting, accepting, unloading, storing (if needed), protecting, installing and start up of the new units. The contractor shall provide and install the following accessories including, but not limited to: duct, fittings and glue. The installation includes penetrations through the wall and roof associated with the exhaust system.
    b. Interface Paddock Evacuator systems with Seresco units as shown on the drawings to provide maximum fresh air with minimum energy consumption.
    c. Perform all work shown on the drawings.

C. Electrical – REFER TO DRAWINGS AND SPECIFICATIONS (Base Bid)

1. Include the replacement of the lamps and ballasts for the lights in the natatorium.

2. Provide electrical work as shown on the drawings.

D. Demolition (Base Bid)
   1. Disassemble and remove 2 PoolPak units and condensers
      a. Remove units from the pads
      b. Salvage components for future use on other PoolPaks at owner's facilities. Turn salvage components over to the Owner. Dispose of all nonsalvagable materials.
      c. Turn over recyclable materials to owner
      d. Dispose of any remaining components
      e. See drawings and specifications and drawings for other demolition work.

1.03 SCOPE OF WORK

A. GENERAL

1. The Contractor shall include all demolition, construction, and equipment installation required to complete the Work. The Contractor shall provide or cause to be provided and shall pay for all testing services, labor, supervision, materials, equipment, tools, construction equipment and machinery, transportation and all other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent, and whether or not incorporated or to be incorporated in the Work. The above shall be provided such that the facility is turned over to the Owner in a complete, finished, and fully functional and operating manner.

2. Modify, as required, any existing electrical equipment or systems associated with the Work as part of this project, to comply with applicable code requirements.

B. PROGRAM OUTLINE

1. If requested, the Contractor shall meet with the Owner and review Contractor recommended alternate approaches for design and construction of the project. The Contractor shall identify, document and submit for review a value engineering proposal detailing topics and associated cost adjustments for Contractor recommended program adjustments to materials, assemblies, systems and equipment.

C. SPECIAL CONSTRUCTION REQUIREMENTS

1. The Contractor shall submit a detailed critical path schedule for review prior to the start of construction activities.

Refer to Section 01310 for Schedule Requirements.

2. Trade names and manufactures for all products, materials and systems provided for the project shall be of first line commercial quality standard and performance from nationally recognized companies.

3. Manufacturers, products and systems manufacturers other than those listed that can provide materials and systems equal in material, performance, quality and characteristics of listed manufacturers will be considered by the Owner. The Owner reserves final decision regarding equals.

PART 2 – PRODUCTS

2.01 Dehumidification Units

Owner to purchase Seresco dehumidification units. Contractor is responsible for coordinating shipment with the manufacturer, accepting shipment, inspecting, unloading, storing (if needed), protecting, installing and start up of the new units. Units are scheduled to be delivered in August.

2.02 Natatorium Exhaust System

Owner to purchase Paddock Evacuation system and accessories defined above. Contractor is responsible for coordinating delivery with the manufacturer, accepting shipment, inspecting, unloading, storing (if needed), protecting, installing and start up of the new units. Provide all miscellaneous materials not defined above needed to completely install the units.

2.03 Lane Line Replacement (Base Bid)

Replace 10 – 50 meter lane lines with 6" Competitor/ Gold Medal brand lane lines with 10 - 25 yard disconnect sections (See technical specifications)

2.04 Architectural Materials

Refer to the technical specifications for Architectural materials including, but not limited to paint, carpet, ceiling tiles, millwork, hardware and grout.

All work will be inspected by the Owner's Representative. The contractor will be required to notify the Owner's Representative of any additional work prior to performance. No additional work shall be performed without prior written approval by the Owner's Representative.

Prior to purchase or installation, Contractor will provide submittals for review by the Owner's Representative showing all equipment, electrical components and fixtures, paint, flooring materials, ceiling tiles and grout.

Owner's Representative and Project Manager is Russell Small
Phone number: 770-528-8818,
Email address: russell.small@cobbcounty.org.

PART 3 - PROJECT REQUIREMENTS

3.01.1 General

A. Materials and system types may designate specified manufacturers and models. Proposed equal products will be considered, unless noted otherwise in paragraph C below, if demonstrated by vendor to be equal or superior. All materials incorporated into the work shall be new unless otherwise specified herein or approved in special circumstances by Owner or Architect.

B. Cobb County Commissioners are required to make certain decisions that may come up during the course of the job. Depending on the timing, this could take several weeks before an available scheduled Board of Commissioners meeting.

C. Contractor is completely responsible for any and all costs related to or levied as a result of this project, unless specifically identified otherwise in the contract documents. This includes but is not limited to costs such as long distance telephone, cellular phones, temporary meters if needed, permitting fees and other fees of all types, etc.

D. During the construction of the project, Contractor shall address construction concerns and questions to the Cobb County Parks, Recreation and Cultural Affairs Department and shall not take direction from other persons or departments that may visit the site from time to time. The Contractor shall be required to totally complete the project to a move-in condition.

E. Contractor is responsible for all equipment, protection of existing materials and equipment, securing and paying for all permits, fees, certificates of occupancy, etc.

F. All costs related to the preparation, submittal, etc., of this bid by the bidder are the responsibility of the bidder, and will not be assumed in full or in part by the Owner. The Owner makes no representation or guarantee by the issuance of this request for bids that this project will be funded and/or performed. Should the Contractor fail to substantially complete the work under this contract per the specified schedule, he shall pay Owner liquidated damages $500.00 per calendar day for each consecutive calendar day until project is complete; which sum is agreed upon as a reasonable and proper measure of damages which owner will sustain per diem by failure of Contractor to complete work within time as stipulated; it being recognized by Owner and Contractor that the injury to Owner which could result from a failure of Contractor to complete on schedule is uncertain and cannot be computed exactly. In no way shall costs for liquidated damages be construed as a penalty on the Contractor. Contractor shall not be entitled to any compensation should he finish early.

G. The Contractor will complete all work including start up and testing of equipment and chemically balancing of the water in the pools by October 8, 2012.

END OF SECTION

Section 01030 - Alternates

Part 1 General

1.01 Acceptance of Alternates

A. Alternates quoted on Bid Schedule will be reviewed and accepted or rejected, in any order by the County, in the best interest of the County. Accepted Alternates will be identified in the Contract.

B. Coordinate related work and modify surrounding work to integrate the work of each Alternate with the Base Bid work.

C. Alternate pricing shall include all materials, supervision, labor, overhead, profit and any other items required to complete each Alternate item.

D. Description for each alternate listed below in Section 1.02 is recognized to be abbreviated, but implies that each change be complete for scope of work affected. Refer to applicable Specification Sections and attached Drawings for additional information.

1.02 Schedule of Alternatives

A. Alternate No. 1: Provide painting of all existing painted surfaces in the following spaces (refer to sheet A1.1from the as built drawing): Entrance 101, Lobby 102, Vestibule 106, Files 107, Closet 108, Administration 109, Office 110, Office 111, Corridor 112, Vending 113, Classroom/Meeting 114, Toilet 115, Janitor 116, Life Guard 117, Ante 118, Corridor 119, Men's Toilet 120, Men's Shower 121, Men's Lockers 122, Women's Lockers 123, Women's Showers 124, Women's Toilet 125 and Ante 131. This includes, but is not limited to walls, ceilings, doors, door frames and all other non factory finished surfaces. On previously painted surfaces, provide one coat of Sherwin Williams (or approved equivalent) K46W00051 Pro Industrial PreCatalyzed Water Based Semi-gloss Epoxy. Match existing colors. Refer to specification section 09900 for additional information.

B. Alternate No 2: Remove and replace toilet partitions and urinal screens in Men's Toilet 120 and Women's Toilet 125. Refer to as built drawing A1.1 and specification section 10600.

C. Alternate No. 3: Remove and replace wall and floor tile grout in rooms 119, 120, 121, 122, 123, 124 and 125. Refer to specification section 09310 for additional information.

D. Alternate No. 4: Remove and replace existing floor covering material and replace with carpet in rooms 107, 108, 109, 110 and 111. Include 1/8" thick rubber cover base. Surface for installation of carpet shall be properly cleaned and prepared for installation of new per manufacturer's recommendations. This includes, but is not limited to removal of adhesive or other products used in the installation of the existing flooring. Refer to specification

section 09650 for additional information.

E. Alternate No. 5: Replace Counter in Lobby 102. Work shall include repair to the floor around the counter damaged or removed due to the counter installation. See Specifications Sections 06400 and 06650.

F. Alternate No. 6: Paint structure and underside of exterior canopy adjacent to entrance 101. Refer to section 09900 for additional information.

G. Alternate No. 7: Replace pool filters PF-1, PF-2 and PF-3 with the Paddock filter described in section 13150-A or the Neptune Benson Filter described in section 13150-B1 or Owner approved equivalent product. The replacement will require the complete design and construction to remove the existing filters and installation the new filter. The design and construction includes, but is not limited to piping, valves, pumps, electrical service, filter location, and all other accessories needed for a complete and operating system.

H. Alternate No. 8: Replace pool filter PF-4 with the Paddock filter defined in section 13150-B2 or the Neptune Benson filter described in section 13150-B or Owner approved equivalent. The replacement will require the complete design and construction to remove the existing filter and install the new filter. The design includes, but is not limited to piping, valves, pumps, electrical service, filter location, and all other accessories needed for a complete and operating system.

Part 2 Products

See specification sections applicable to the work described by the alternates.

Part 3 Execution

A. All materials to be installed per the project specifications and/or manufacturer's recommendations.

B. System start up, testing and training shall be included.

END OF SECTION

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SECTION 01152 - APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.01 SUMMARY

Section Includes:
1. Schedule of values.
2. Periodic payment procedures.
3. Final payment procedures.

1.02 CONTRACT CONDITIONS

A. See the Agreement/Contract for additional information.

B. Progress payments will be made monthly.

C. The **Owner** will act upon the **Contractor's** application for payment upon receipt.

D. No payment will be made for materials or equipment stored off site unless specifically approved in advance, in writing by the **Owner**.

E. No applications for payment will be processed until the **Contractor's** Construction Schedule has been accepted by the **Owner**.

1.03 SUBMITTALS

A. Schedule of Values: First application for payment will not be reviewed without schedule of values if a contract is lump sum.
1. Submit 4 copies on 8 1\2 x 11 inch paper.
2. Identify with:
   a. Project name.
   b. Project number.
   c. Owner's name.
   d. **Contractor's** name and address.
   e. Submittal date.

B. Applications for Progress Payments: Submit in accordance with schedule established at preconstruction conference.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 SCHEDULE OF VALUES

A. Prepare a schedule of values prior to the first application for payment.

B. Schedule of Values: Break costs down into line items which will be comparable with line items in applications for payment.
1. Coordinate line items in the schedule of values with portions of the Contract Documents which identify units or subdivisions of work; provide cross-referencing if necessary to clarify.
2. Divide major subcontracts into individual cost items.
3. Where applications for payment are likely to include products purchased or fabricated

but not yet installed, provide individual line items for submittals, material cost, installation cost, and other applicable phases of completion.

4. Include in each line item its proportional share of overhead and profit.
5. Include the following information for each line item.
   a. Item name.
   b. Applicable specification section.
   c. Dollar value, rounded off to the nearest whole dollar (with the total equal to the Contract Price).
   d. Proportion of the Contract Price represented by this item, to the nearest one hundredth percent (with the total adjusted to 100 percent).
6. Provide the following supporting data for each line item:
   a. Subcontractor's name.
   b. Manufacturer or fabricator's name.
   c. Supplier's name.

C. The **Owner** will notify the **Contractor** if schedule is not satisfactory; revise and resubmit acceptable schedule.

D. Submit a revised schedule of values when modifications change the Contract Price or change individual line items.

3.02 APPLICATIONS FOR PAYMENT

A. Application for Payment Forms: Use the format required by the **Owner**, unless otherwise specified.

B. Preparation of Applications for Payment: Complete form entirely.

1. Make current application consistent with previous applications, certificates for payment, and payments made.
2. Base application on current schedule of values, if applicable, and **Contractor's** construction schedule.
3. Include original signatures by person authorized by the **Contractor** to sign legal documents.
4. Submit 4 copies, unless directed otherwise.
5. Attach copy of the schedule of materials and equipment stored offsite, and any other supporting documentation required by the **Owner** or the Contract Documents.

C. Transmit application for payment with a transmittal form itemizing supporting documents attached.

D. Any required periodic construction progress photographs and updates to the construction schedule must be submitted to the **Owner** at the same intervals at which applications for payment are made. The **Owner** may delay the processing of payment applications until the required submittals are received.

3.03 RETENTION

A. The **Owner** shall retain a percentage of each payment except as specified below. The retained amount is available for the protection and payment of the person, or persons, mechanics, subcontractors, or material men who shall perform labor upon the Contract or work thereunder, and persons who shall supply such person, or persons, or subcontractors with components and supplies for carrying on such work.

B. The **Owner** shall retain 10 percent of each progress payment except and at the sole discretion of the **Owner**:

1. Until the value of the Work in place is at least fifty percent (50%) of the Contract amount, the **Owner** shall retain ten percent (10%) of the value of all Work satisfactorily completed.
2. After construction is fifty percent (50%) complete, based on the value of work in place, all further payments will be made in full subject to the requirement that the total retention shall not be less than five percent (5%) of the Contract amount, provided that, in the opinion of the **Owner**, the **Contractor** is making satisfactory progress and there is no specific cause for greater withholding. The total amount retained shall be at least five percent (5%) of the Contract amount, adjusted for change orders, until the date of final payment.

C. In no case will retainage be less than required by applicable laws and regulations. If, at any time during the project, the **Contractor** fails to maintain the progress of the work on or ahead of schedule, the **Owner** may resume retainage of 10 percent of the amount of total progress payments to date until the **Contractor** is on or ahead of schedule or until final completion.

3.04 WITHHOLDING

A. The **Owner** may refuse to make payment of the full amount requested by the **Contractor** on any application for payment because of:
1. Defective or damaged work.
2. Work performed by the **Owner** to correct defective or damaged work.
3. A deductive change order.
4. Persistent failure of the **Contractor** to perform the work in accordance with the Contract Documents, including failure to maintain the progress of the work in accordance with the construction schedule. Persistent failure to maintain the progress of the work shall mean that for a period of two consecutive months following a written notice from the **Owner**, the **Contractor** fails to correct a behind-schedule condition at a rate that would reasonably indicate that he will finish the project on schedule.
5. Disregard of authority of the **Owner** or the laws of any public body having jurisdiction.
6. Claims made against the Owner on account of **Contractor's** performance or furnishing the work.
7. Liens filed in connection with the work.
8. Other items entitling Owner to reduce the amount requested, including, but not limited to:
    a. Failure to submit periodic updates to the project schedule.
    b. Failure to submit periodic construction progress photographs.
    c. Failure to maintain current Record Drawings.
    d. Failure to submit completed Record Drawings and Record Survey.

B. The **Owner** shall give **Contractor** prompt written notice of withholding, stating the reasons for each action.

3.05 FINAL AFFIDAVIT

A. Submit an affidavit with the final application for payment stating that the Work has been fully completed according to the terms of the Contract and that all bills incurred or labor, materials and services furnished or performed have been fully paid or have been waived in writing by any lien claimant. The affidavit will also indicate the amount of the Contract Price due as final payment.

B. This Final Affidavit is made pursuant to O.C.G.A. §44-14-361.2 and will be submitted in a format provided by the **Owner**.

3.06 FIRST PAYMENT PROCEDURE

The first application for payment will not be processed until the following submittals have been received:

1. Schedule of values if applicable.
2. List of subcontractors, principal suppliers, and fabricators.
3. **Contractor's** construction schedule.
4. Names of the **Contractor's** principal staff and consultants assigned to the project.

END OF SECTION

SECTION 01200 - PROJECT MEETINGS

PART 1 - GENERAL

1.01 SUMMARY

A. The **Owner** will schedule and administer a preconstruction meeting and may schedule periodic progress meetings, and specially called meetings throughout the progress of the Work. The **Owner** shall set the agenda for the meetings and preside at the meetings. The **Contractor** shall make physical arrangements for the meetings pursuant to the **Owner's** requirements.

B. Representatives of the **Contractor**, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

1.02 PRECONSTRUCTION MEETING

A. The **Owner** will schedule a Preconstruction Meeting prior to the start of construction.

B. The Preconstruction Meeting shall be attended by the following:
1. **Owner's** representative(s).
2. **Contractor's** Superintendent.
3. Others as appropriate.

C. The Preconstruction Meeting will generally have the following agenda:
1. Designation of responsible personnel.
2. Distribution and discussion of list of major subcontractors and suppliers.
3. Projected construction schedule with critical work sequencing.
4. Major equipment deliveries and priorities.
5. Procedures and processing of:
    a. Submittals
    b. Requests for Information
    c. Proposed Change Requests
    d. Field Decisions
    e. Applications for Payment
    f. Change Orders
6. Procedures for maintaining Record Documents.
7. Periodic Meeting Schedule.

1.03 PERIODIC PROGRESS MEETINGS

A. The **Owner** may schedule periodic progress meetings throughout the project duration. The necessity of and frequency of any periodic progress meetings will be determined by the **Owner** based on individual project requirements.

B. The periodic progress meetings shall be attended by the following:
1. **Owner's** representative(s).
2. **Contractor's** representative(s).
3. Others as appropriate.

C. The periodic progress meetings will generally have the following agenda:
1. Review work progress since last meeting.
2. Discussion of Construction Schedule for next period.
3. Status of major equipment and material deliveries.
4. Construction problems impacting progress.
5. Field observations.

6. Status of pending changes.
7. Other business.

1.04 OTHER MEETINGS

A. Specially-called meetings will be held as warranted by unforeseen developments during construction or as needed to coordinate special events, such as tie-ins or system shutdowns.

B. Specially-called meetings may be requested by either party or by other affected entities. Requests shall be made through the **Owner**, who shall coordinate the meeting schedule.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01200

SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.01 SUMMARY

A. This Section covers provisions for the submittal of shop drawings, product data, and samples prior to construction.

B. The **Contractor** is required to make all submittals in accordance with its Construction Documents and the Contract Documents. Individual Technical Specifications prepared by the **Contractors** architects and engineers shall identify equipment and materials for which submittals are required, including any required by the Contract Documents. If in the sole opinion of the **Owner**, the Technical Specifications do not require sufficient submittals, the **Owner** may require additional submittals for the project.

C. Provisions in this Section are mandatory procedures for preparing and submitting shop drawings, product data, and samples.

D. Required shop drawings, product data, and samples shall be coordinated, prepared, and submitted so as not to impact the project schedule. Submittals for interfacing units of work, and different categories of submittals for the same work, shall be coordinated and sequenced so that one will not be delayed by another. Adequate time shall be allowed for review by the **Contractor's** architects and engineers and by the **Owner**, and for possible resubmittal. Delays or impacts due to the **Contractors** failure to make or process submittals in a timely fashion are solely the responsibility of the **Contractor**. The **Contractor** has an obligation to notify the **Owner** in a timely manner if the submittal review process, with respect to reviews by the **Owner**, might cause a schedule impact on the required delivery of any materials or fabricated assemblies required to execute the Work.

E. Project delays or delays in the purchasing of materials or equipment occasioned by the requirement for resubmission of shop drawings, product data, and samples initially rejected by the **Contractor's** architects or engineers, or not originally in accordance with the Contract Documents upon review by the **Owner**, are the **Contractors** sole responsibility and will not be considered valid justification for time extensions.

F. No portion of the Work requiring the submittal of shop drawings, product data, or samples shall be commenced until each such submittal has been reviewed by the appropriate **Contractor's** architect or engineer, and, if required, the **Owner**, and the action required on the returned submittal does not require a correction and resubmittal (i.e., *No Exceptions Taken" or "Make Corrections Noted" or similar notation); and further, each installer shall have possession of such final reviewed submittal prior to commencing its portion of the Work. In addition, before work commences the **Owner** shall have been delivered four copies of each approved submittal.

G. The **Contractor** shall be responsible for distribution of all copies of initial and approved submittals required for coordination with others concerned with the Work.

H. Submittals requiring review by the **Owner** shall be delivered to the **Owner's** office, unless directed otherwise by the **Owner**. Submittals are to be scheduled and submitted to allow adequate time for review.

1.02 DEFINITIONS

A. "Shop Drawings" are drawings, diagrams, illustrations, schedules, performance charts,

manufacturer's data sheets, brochures and other data which are prepared and submitted by the **Contractor** and its subcontractors to illustrate in detail some portion of the Work. The **Contractor's** architects and engineer's drawings are not acceptable as shop drawings.

B. "Product Data" are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the **Contractor** and its subcontractors to illustrate a material, product, or system for some portion of the Work.

C. "Samples" are physical examples prepared for submission by the **Contractor** and its subcontractors to illustrate materials, equipment, or workmanship, and to establish standards by which the work will be judged as complying with the Contract Documents. Mock-ups are a special form of samples, too large or otherwise inconvenient for transmittal in the manner specified.

1.03 SUBMITTAL REGISTER

A. Within ten (10) days following the **Owner's** approval of the **Contractor's** final Construction Documents, or following each such approval of partial Construction Documents in the event of fast-tracking of the project, the **Contractor** shall submit a comprehensive Submittal Register to the **Owner**, showing all items requiring submission as defined in the **Contractor's** Technical Specifications.

B. No submittals will be reviewed by the **Owner** until the Submittal Register has been submitted, reviewed, and approved by the **Owner** as to content and format.

C. The Submittal Register shall be updated by the **Contractor** and resubmitted at each progress meeting, or on a monthly basis, or as otherwise required by the **Owner**.

D. The initial format of the Submittal Register shall be submitted by the **Contractor**, for approval by the **Owner**. If any aspect is lacking, the Submittal Register shall be reworked and resubmitted in a format as prescribed by and to the level of detail required by the **Owner**.

E. The Submittal Register shall be organized by Specification Section, and shall be further broken down as submittals from subcontractors will be structured.

F. The Submittal Register shall include all required submittals for test procedures, training programs, operation and maintenance manuals, and any other submittals required by the General Requirements.

G. The Submittal Register shall include the following information at a minimum:
1. Submittal breakdown by Specification Section and Paragraph number.
2. Scheduled date for initial submittal of each item.
3. Number of calendar days required after review to fabricate and deliver the specified item to the jobsite (if applicable).

1.04 PREPARATION OF SUBMITTALS

A. General Identification: All shop drawings, product data, and samples submitted for review or for record purposes shall have the following identification data, as applicable, contained thereon or permanently affixed thereto.
1. Date of submission and the dates of any previous submissions
2. Project title and location
3. Job number
4. Contract identification

5. Names of the Contractor, subcontractor, installer, supplier, and manufacturer
6. Identification of product (brand name, model number), use, and location
7. For each shop drawing: drawing number, drawing Ube, revision number, and date of drawing and all subsequent revisions
8. Corresponding Specification Section and Paragraph reference from Construction Documents
9. Field dimensions, clearly identified as such
10. Relation to adjacent or critical features of Work or materials
11. Applicable standards, such as ASTM or Federal Specification. numbers
12. Identification of deviations from the Contract Documents
13. Identification of revisions from previous submittals (if a resubmittal)
14. Contractor's stamp, initialed or signed, and dated
15. Contractors architect's or engineers stamp (for submission for **Owner**), with appropriate action indicated, signed or initialed, and dated

B. Shop Drawing Preparation

1. Provide newly-prepared information with graphics at accurate scale (except as otherwise indicated).
2. Number all sheets consecutively.
3. Indicate all working and erection dimensions. Identify all dimensions based on field measurement
4. Show arrangements and sectional views.
5. Indicate kinds of materials and finishes, anchoring and fastening details, including information for making connections to other Work. Furnish installation instructions to be followed in the field to achieve manufacturer's designed and planned intentions.

6. Indicate corresponding detail numbers from Construction Documents in addition to numbering systems used on shop drawings.
7. Form:
   a. Up to 11” x 17” in size may be either prints on opaque paper, or reproducible transparency. The use of 8-1/2” x 14” size shall not be acceptable.
   b. Prepare submissions larger than above on reproducible, correctable transparent sheets between 18" x 24” (minimum) and 22” x 34” (maximum) in size.
   c. Submittals may be electronic in pdf or other format acceptable to the Owner, but the Owner reserves the right to request paper copies in the forms identified in paragraphs 7.a and 7.b above and paragraph 8 below.
8. Number of Copies to be Submitted:
   a. The **Contractor** shall submit one reproducible copy and an appropriate number of opaque copies to its respective architects and engineers for review and internal return distribution.
   b. For shop drawings requiring review by the **Owner**, provide two (2) opaque copies with review stamp by **Contractor's** appropriate architect or engineer.
   c. Copies shall be grouped together such that one set of all copies can be removed immediately without the necessity to remove and resequence the remaining copies.
9. Associated drawings relating to a complete assembly shall be submitted simultaneously to the greatest extent possible, so that each may be checked in relation to each other and the total assembly.
10. Composite Coordination Shop Drawings:
    a. The locations and routing of all mechanical and electrical systems shall be delineated on coordinated composite layout drawings, to be submitted and reviewed by the appropriate **Contractor's** architects and engineers and the **Owner** according to the procedures above. Such coordination shall consider all other building systems, including structural members and their elevations.
    b. The composite drawings shall accommodate layering of ductwork, plumbing supply,

waste, roof drainage and vent piping, fire protection piping, HVAC piping, electrical conduit, control systems conduit, light fixture locations, sprinkler head locations, HVAC ceiling mounted and wall-mounted air devices, and life-safety system device locations.

c. Provide plan views of all ceiling plenum spaces, duct and pipe shafts, and mechanical and electrical rooms. Show all ceiling grid patterns and walls. Clearly indicate top and. bottom elevations of work, including elevations of wall-mounted devices.

d. Clearly indicate all penetrations of smoke and fire-rated walls and ceilings. Indicate recommended smoke stop or fire stop method, cross-referenced to appropriate requirements.

e. Composite drawings shall be 1/4' = l'-O" minimum scale.

C. Product Data Preparation

1. Product data submittals shall be made by Specification Section. All items within a Specification Section requiring submissions shall be submitted together. If two or more Sections require inter-coordination they shall be submitted at the same time. Each individual submittal item shall be marked to show the Specification Paragraph number which pertains to that item.
2. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked, and coordination requirements.
3. Clearly mark each copy to identify pertinent products, brand names, or models, and to indicate which choices and options are applicable to the Work.
4. Modify each copy to delete information which is not applicable to the Work. Supplement standard information to provide information specifically applicable to the Work and to job conditions.
5. Include performance characteristics and capacities.
6. Include dimensions and clearances required.
7. Include wiring or piping diagrams and controls.
8. Form:
   a. Submit all items within a Specification Section in a tabbed binder, with an index.
   b. Submittals for multiple but related Specification Sections may be grouped in the same binder, if adequately indexed and tabbed for easy reference.
   c. If product submittals bound together exceed the capacity of one binder, two or more binders shall be used, and notations shall be made on the covers of each indicating the number of binders in the set and the number of each binder (i.e., 2 of 3).
9. Number of copies to be submitted:
   a. The Contractor shall submit an appropriate number of copies to its respective architects and engineers for review and internal review distribution.
   b. For items data requiring review by the **Owner**, provide three (3) copies plus the number of copies the **Contractor** wants returned, with review stamp by **Contractor's** appropriate architect or engineer

D. Sample Preparation

1. Provide samples which are identical with the final condition of proposed materials or products for the Work.
2. Provide "range" samples (not less than three (3) units) where unavoidable variations must be expected, and describe or identify variations between units of each set.
3. Provide a full set of optional samples where selection is required.
4. Provide information with each sample to show generic description, source or product name and manufacturer, limitations, and compliance with standards.
5. Number of samples to be submitted:
   a. The **Contractor** shall submit an appropriate number of samples to its respective architects and engineers for review and internal return distribution.

b. For samples requiring review by the **Owner**, provide three (3) copies with review stamp by **Contractors** appropriate architect or engineer.

6. Maintain one set of all approved samples at the jobsite, in suitable condition, for quality control comparisons by the **Owner**. Jobsite quality control samples shall become the property of the **Owner**.
7. Returned submittals which are intended or permitted to be incorporated into the Work shall be so indicated in the individual Specification Sections, and shall be in a suitable and undamaged condition at the time of incorporation.

E. Other Submittals

1 . Inspection and Test Reports: Classify each as either a "shop drawing" or "product data", depending on whether report is uniquely prepared for the Project or a standard publication of workmanship control testing at point of production, and process accordingly.
2. Letters of Material Certification: Submit for specified materials, items, or equipment, and when requested. Letters of certification shall certify that material or equipment submitted complies with the Construction Documents and shall be submitted with substantiating supporting data (i.e., test reports from approved independent testing laboratory or other approved source). Classify as "product data".
3. Fire Rating and Acoustical Rating Certifications: Submit notarized certifications with shop drawings and material samples which are required to show or have a fire or acoustical rating.

1.05 TRANSMITTAL

A. Transmit all submittals requiring review by the **Owner** to the **Owner**.

B. Accompany each submittal to the **Owner** with a transmittal letter, in duplicate, containing the Project name, **Contractors** name, contract number and description, and brief description of submittal, including the number of drawing sets, data sets, and/or samples included. Include an outline of deviations, if any, from the requirements of the Construction Documents or Contract Documents, and itemize proposed changes in the Contract Sum or Contract Time, if any. Where no change in the Contract Sum or Contract Time is indicated by the **Contractor**, it shall be concluded that no such change is involved for making the change.

1.06 CONTRACTORS RESPONSIBILITIES

A. The **Contractor** shall prepare and submit all submittals with promptness and in accordance with the project schedule.

B. The **Contractor** shall determine and verify prior to submittal of any shop drawing, product data, or sample, the following:

1. Field measurements
2. Field construction criteria and job conditions
3. Catalog numbers and similar data
4. Conformance with Specifications

C. Any deviation in a submittal from the requirements of the Construction Documents shall be called to the attention of the reviewing party in writing at the time of the submittal, whether it be the appropriate **Contractor's** architect or engineer, or the **Owner**.

D. The **Contractor** shall affix its stamp, with initials or signature, and date, prior to submittal to its architects and engineers for review, indicating its review and concurrence that the submittal conforms to the Construction Documents.

E. The **Contractor's** architects and engineers shall review and return submittals with promptness and in accordance with the project schedule. The **Contractor's** internal review and return process for each submittal shall not exceed ten (10) working days.

F. The **Contractor's** architects and engineers shall affix their stamps to submittals they have reviewed, with initials or signature, and date, and indicating action to be taken.

G. If revision and resubmission is required of a submittal by the appropriate **Contractor's** architect or engineer, it shall be done with promptness so as to avoid impact to the project schedule.

H. For those submittals requiring review by the **Owner**, transmit same only after the internal review process has been completed by the **Contractor**, including all resubmittals required.

I. For those submittals requiring review by the **Owner**, copies shall include all stamps indicated above, and previous revisions, if any, shall be clouded and noted. Failure to adhere to these requirements will result in the return of the un-reviewed submittal to the **Contractor** for re-submital, with the **Contractor** responsible for any impact to the project schedule resulting therefrom.

1.07 OWNER'S RESPONSIBILITIES

A. For those submittals requiring review by the **Owner** reviews will be performed for compliance to County program requirements and standards only, and will indicate any requirements for revision and resubmittal, or will indicate acceptance.

B. Reviews will be performed with reasonable promptness and in accordance with the project schedule. The Contractor shall allow **a** reasonable time for processing by the reviewing party, in addition to transit time. The reviewing party will endeavor to review and return submittals within five (5) working days.

C. If the Contractor has a complaint with either the time required or the information provided by the **Owner's** review, it shall be expressed in writing at the time the submittal is returned. Failure by the **Contractor** to file such complaints at that time will prevent attempting to allege delays or impacts resulting therefrom at a later date. Such complaints must be fully detailed, and if additional information is requested by the **Owner**, it shall be provided as soon as becomes available, but in no case later than fifteen (15) days from the return of the submittal in question.

E. The **Owner's** review of a submittal shall not be construed as an indication that it is correct or suitable, nor that Work represented by a submittal complies with the Construction Documents prepared by the **Contractor**. Further, reviews by the **Owner** of submittals of details for any material apparatus, device, etc., will not relieve the **Contractor** from responsibility for furnishing same of proper dimension, size, quantity, and quality to efficiently perform the Work and carry out the requirements and intent of the Construction Documents.

1.08 RECORD SUBMITTALS

A. At Substantial Completion of the Work, the **Contractor** shall deliver to the **Owner** one copy of all final, approved submittals for the County's record.

B. Record submittals not in the form of drawing rolls shall be neatly labeled and organized by Specification Section and boxed in a "Bankers Box" or equivalent. Rolls of shop drawings shall be labeled appropriately for easy reference.

1.09 PAYMENT

No separate payment will be made for covered by this section. The contract price shall include the cost of furnishing all shop drawings, product data and samples.

END OF SECTION 01300

SECTION 01310 - CONSTRUCTION SCHEDULES

PART 1 GENERAL

1.01 SCOPE

A. The work under this Section includes preparing, furnishing, distributing, and periodic updating of the construction schedules as specified herein.

B. The purpose of the schedule is to demonstrate that the Contractor can complete the overall Project within the Contract Time and meet all required interim milestones.

C. The owners anticipated schedule for the project is as follows: Project bid - April 12, 2011; Board of Commissioners Consideration for Award- May 8, 2012; Contract Issue – May 9, 2012; Return of Signed Contracts, Bonds and Insurance – May 18, 2012; Construction start date – July 11, 2012; Project Substantial Completion – October 8, 2012; Owner occupancy – October 8 through October 12, 2012. Project Final Completion – October 12, 2012. Schedule is subject to change at the discretion of the County.

D. If the project is awarded by the Board of Commissioners on May 8, 2012 a contract will be issued immediately thereafter to the Contractor. The Contractor shall endeavor to return all required signed contracts, bonds and insurance to the County by May 18, 2012. The Contract will be signed and a Notice to Proceed will be issued as soon as possible thereafter. The time period between the award of the contract and the start of Construction (July 11, 2012) shall be utilized to identify and order any long lead items, finalize agreements with subcontractors, process submittals and prepare the project schedule. Special attention shall be given to long lead items to ensure orders are placed to expedite delivery of materials and mobilization of subcontractors in a prompt fashion.

1.02 SUBMITTALS

A. Overall Project Schedule (OPS)

1. Submit the OPS within 10 days after date of the Notice to Proceed.

2. The Owner will review the schedule and return it within 10 days after receipt.

3. If required, resubmit within 10 days after receipt of a returned copy.

B. Near Term Schedule (NTS)

1. Submit the first Near Term Schedule within 10 days of the Notice to Proceed.

2. The Owner will review the schedule and return it within 10 days after receipt.

C. Schedule of Values (SOV)

1. Submit the SOV within 10 days after date of Notice to Proceed. The schedule of values shall provide a defined value for all major items of work, preferably by specification section. The SOV shall also include a line item for general conditions. Front end loading of the schedule of values will not be accepted. The Owner reserves the right to request additional breakdown and back up information to support the schedule of values.

2. The Owner will review the SOV and return a reviewed copy within 10 days after receipt.

D. Submit an update of the OPS, NTS, and narrative with each progress payment request. Provide each update on a compact disc or thumb drive along with (1) hardcopy attached to Pay Application.

E. Notify Owner of planned worked during non typical working hours to allow coordination for access to the facility.

1.03 APPROVAL

A. Approval of the Contractor's construction schedule and revisions thereto shall in no way relieve the Contractor of any of Contractor's duties and obligations under the Contract. Approval is limited to the format of the schedule and does not in any way indicate approval of, or concurrence with, the Contractor's means, methods and ability to carry out the Work

1.04 OVERALL PROJECT SCHEDULE (OPS)

A. The Contractor shall submit to the Owner for approval a detailed Overall Project Schedule of the Contractor's proposed operations for the duration of the Project. The OPS shall be in the form of a Critical Path Method bar chart.

B. Critical Path Method Schedule

1. The OPS shall reflect the start and finish dates identified for the project. The critical path shall be identified and milestone dates for completion of critical path items shall be included in the schedule. The schedule shall show all major activities, durations, logic and relationship between the activities. Provide any other relevant information that demonstrates that the Contractor can complete the overall Project within the Contract Time and meet all required interim milestones. Each activity shall be identified by a separate bar. Activities with duration of more than 30 days shall be sub-divided into separate activities.

2. The schedule shall include activities for shop drawing preparation and review, fabrication, delivery, and installation of major or critical path materials and equipment items.

3. The schedule shall show the proposed start and completion date for each activity. A separate listing of activity start and stop dates and working day requirements shall be provided.

4. The schedule shall identify the Notice to Proceed date, the Contract Completion date, major milestone dates, and a critical path.

5. The schedule shall be printed on a maximum 11 x 17-inch size paper. If the OPS needs to be shown on multiple sheets, a simplified, one page, summary bar chart showing the entire Project shall be provided.

6. The schedule shall have a horizontal time scale based on calendar days and shall identify the Monday of each week.

7. The schedule shall show the precedence relationship for each activity.

1.05 NEAR TERM SCHEDULE (NTS)

A. The Contractor shall develop and refine a detailed Near Term Schedule showing the day to day activities with committed completion dates which must be performed during the upcoming 30 day period. The detailed schedule shall represent the Contractor's best approach to the Work which must be accomplished to maintain progress consistent with the Overall Project Schedule.

B. The Near Term Schedule shall be in the form of a Critical Path method bar chart and shall include a written narrative description of all activities to be performed and describe corrective action to be taken for items that are behind schedule.

1.06 UPDATING

A. Show all changes occurring since previous submission of the updated schedule.

B. Indicate progress of each activity and show actual completion dates.

C. The Contractor shall be prepared to provide a narrative report at the Project Coordination Meetings. The report shall include the following:

1. A description of the overall Project status and comparison to the OPS.

2. Identify activities which are behind schedule and describe corrective action to be taken.

3. A description of changes or revisions to the Project and their effect on the OPS.

4. A description of the Near Term Schedule of the activities to be completed during the next 30 days. The report shall include a description of all activities requiring participation by the Engineer and/or Owner.

END OF SECTION

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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 "References" for applicable industry standards for products specified.
3. Division 1 Section "Closeout Procedures" for submitting warranties for Contract closeout.
4. Divisions 2 through 27 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, that 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.

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

1.4 SUBMITTALS – See Section 01300 Submittals

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 weathertight 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.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

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. 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 “Submittals” and "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," Owner will make selection.
5. Where products are accompanied by the term "match sample," sample to be matched is Owner's.
6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
7. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in Part 2 "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
2. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
3. 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.
4. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Owner's sample. Owner's decision will be final on whether a proposed product matches.

    a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.

5. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.

    a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Owner will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
    b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Owner will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: Owner will consider requests for substitution if received within 14 days after the Notice to Proceed, unless specifically identified otherwise elsewhere within the documents. Requests received after that time may be considered or rejected at discretion of Owner.

B. Conditions: Owner will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Owner 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 Owner 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 has received necessary approvals of authorities having jurisdiction.
7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated with other portions of the Work.
9. Requested substitution provides specified warranty.

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01700 - CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 DESCRIPTION

A. Definitions: Closeout is hereby defined to include general requirement near the end of Contract time, in preparation for final acceptance, final payment, normal termination of contract, occupancy by Owner and similar actions evidencing completion of the work. Specific requirements for individual units of work are specified in sections of Divisions 2 through 16. Time of closeout is directly related to "Substantial Completion" and therefore, may be either a single time period for entire work or a series of time periods for individual parts of the work which have been certified as substantially complete at different dates. That time variation (if any) shall be applicable to other provisions of this section, regardless of whether resulting from "phased completion" originally specified in the Contract documents or subsequently agreed upon by Owner and Contractor.

1.02 PREREQUISITES TO SUBSTANTIAL COMPLETION

A. General: Prior to requesting Owner's Representative's inspection for certification of substantial completion, as required by General Conditions (for either the entire work or portions thereof), complete the following and list known exceptions in request.

1. In progress payment request coincident with or first following date claimed, show either portion of work claimed as "substantially completed," or list incomplete items, value of incompleteness, and reasons for being incomplete. Include supporting documentation for completion as indicated elsewhere in these contract documents.

2. Submit statement showing accounting of changes to the Contract Sum.

3. Advise Owner of pending insurance change-over requirements.

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

5. Obtain and submit releases enabling Owner's full and unrestricted use of the work and access to services and utilities, including (where required) occupancy permits, operating certificates, and similar releases.

6. Deliver tools, spare parts, extra stocks of materials, and similar physical items to Owner.

7. Coordinate final change-over of locks with Owner, and advise Owner's personnel to change-over in security provisions.

8. Complete start-up testing of systems, and instructions of Owner's operating/maintenance personnel. Discontinue (or change over) and remove from project site temporary facilities and services, along with construction tools and facilities, mock-ups, and similar elements.

9. The Contractor is responsible for making all of his own punch lists and execution of same prior to his request for substantial completion.

B. Inspection Procedures: Upon receipt of Contractor's request, Owner's Representative will either proceed with inspection or advise Contractor of prerequisites not fulfilled. Following initial inspection, Owner's Representative will either prepare Certificate of Substantial Completion, or advise Contractor of work which must be performed prior to issuance of Certificate; and repeat

inspection when requested until work has been substantially completed. Results of completed inspection will form initial "punch-list" for final acceptance.

1.03 PREREQUISITES TO FINAL ACCEPTANCE

A. General: Prior to requesting Owner's Representative's final inspection for certification of final acceptance and final payment, as required by General Conditions, complete the following and list known exceptions (if any) in request:

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

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

3. Submit certified copy of Owner's Representative's final punch-list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by Owner's Representative.

4. Submit final meter readings for utilities, measured record of stored fuel, and similar data as of time of substantial completion or when Owner took possession of and the responsibility for corresponding elements of the work.

5. Submit specific warranties, workmanship/maintenance agreements, final certifications and similar documents.

6. Complete final cleaning up requirements, including touch-up of marred surfaces.

7. Submit consent of surety.

8. Submit final liquidated damages settlement statement, acceptable to Owner.

9. Revise and submit evidence of final continuing insurance coverage complying with insurance requirements.

B. Re-inspection Procedures: Upon receipt of Contractor's notice that work has been completed, including punch-list items resulting from earlier inspections, and excepting incomplete item delays because of acceptable circumstances, Owner's Representative will re-inspect work. Upon completion of re-inspection, Owner's Representative will either prepare certificate of final acceptance or advise Contractor of work not completed or obligations not fulfilled as required for final acceptance. If necessary, procedure will be repeated.

1.04 RECORD DOCUMENT SUBMITTALS

A. General: Submit record drawings for the entire project documenting all changes made during construction. Do not use record documents for construction purposes; protect from deterioration or loss in a secure, fire-resistive location; provide access to record documents Owner's Representative's reference during normal working hours. Contractor to furnish (1) complete set of as-built drawings and one set of marked up as-built drawings at project completion. Retainage in the amount necessary to produce digital drawings will be withheld until as-built drawings are received.

B. Maintenance Manuals: Organize maintenance-and-operating manual information into suitable sets of manageable size, and bind into individual binders properly identified and indexed (thumb tabbed). Include emergency instructions, spare parts listing, warranties, wiring diagrams, recommended "turn-around" cycles, inspection procedures, shop drawings, product data, and similar applicable information. Bind each manual of each set into a heavy-duty 2 inch, three ring vinyl covered binder, and include pocket folders for folded sheet information. Mark identification on both front and spine of each binder. Include listing of all subcontractors and suppliers with contact name, address, and phone number(s). Turn manuals in to the County at time of punch list walk-through with Owner's Representative.

C. The Contractor and his subcontractors will each keep one set of drawings in the job office and make a daily record of all changes in location of equipment, partitions, materials, etc., as approved by Owner's Representative. At the conclusion of the job, Contractor to furnish one (1) complete set of marked up as-built drawings.

PART 2 PRODUCTS

Not applicable.

PART 3 EXECUTION

3.01 CLOSEOUT PROCEDURES

A. General Operating/Maintenance Instructions: Prior to final Inspection, arrange for each installer of work requiring continuing maintenance (by Owner) or operation, to meet with Owner's personnel, at project site, to provide basic instruction needed for proper operation and maintenance of entire work. Include instructions by manufacturer's representatives where installers are not expert in the required procedures. Review maintenance manuals, record documentation, tools, spare parts and materials, lubricants, fuels, identification system, control sequences, hazards, cleaning and similar procedures and facilities. For operational equipment, demonstrate start-up, shut-down, emergency operations, noise adjustments, and similar operations. Review maintenance and operations in relation with applicable warranties, agreements to maintain, bonds and similar continuing commitments.

3.02 FINAL CLEANING

A. General: Specific cleaning for specific units of work is specified in sections of Divisions 2 through 16. General cleaning during progress of work is specified in General Conditions:

1. Provide final cleaning of the work, at time indicated, consisting of cleaning each surface or unit of work to normal "clean" condition expected for a first-class cleaning and maintenance program. Comply with manufacturer's instructions for cleaning operations. The following are examples, but not by way of limitation, of cleaning levels required:

a) Clean exposed exterior to a dirt-free condition, free of dust, stains, films and similar noticeable distracting substances. Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original reflective condition.

b) Clean project site (yard and grounds) including landscape and development areas of litter and foreign substances. Sweep paved areas to a broom clean condition; remove stains, petrochemical spills and other foreign deposits. Rake grounds which are neither planted nor paved to a smooth, even-textured surface.

B. Removal of Protection: Except as otherwise indicated or requested by Owner's Representative, remove protection devices and facilities which were installed during course of the work to protect previously completed work during remainder of construction period.

C. Compliances: Comply with governing regulations for cleaning operations. Do not burn waste materials at site, or bury debris or excess materials on Owner's property, or discharge volatile or other harmful or dangerous materials into drainage systems; remove waste materials from site and dispose of in a lawful manner.

    1. Where extra materials of value remaining after completion of associates' work have become Owner's property, dispose of these to Owner's best advantage as directed.

3.03 CONTINUING INSPECTIONS

A. General: Except as otherwise required by specific warranties, agreements to maintain, workmanship/maintenance bonds, and similar continuing commitments, comply with Owner's request to participate in inspections at end of each time period of such continuing commitments. Participate in general inspection of the work approximately one year beyond date(s) of substantial completion.

END OF SECTION

SECTION 01731 - CUTTING AND PATCHING

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.

1.02 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

B. Related Sections include the following:

Divisions 2 through 16 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.03 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.04 QUALITY ASSURANCE

A. Not used

B. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

C. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operating elements may include the following:

a. Primary operational systems and equipment.

b. Air or smoke barriers.

c. Fire-suppression systems.

d. Mechanical systems piping and ducts.

e. Control systems.

f. Communication systems.

g. Conveying systems.

h. Electrical wiring systems.

i. Operating systems of special construction in Division 13 Sections.

D. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Miscellaneous elements may include the following:

a. Water, moisture, or vapor barriers.

b. Membranes and flashings.

c. Exterior curtain-wall construction.

d. Equipment supports.

e. Piping, ductwork, vessels, and equipment.

f. Noise- and vibration-control elements and systems.

E. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

PART 2 PRODUCTS

2.01 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

C. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3- EXECUTION

3.01 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

B. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.

C. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.02 PREPARATION

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

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

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.Retain paragraph below where Owner continues to occupy other portions of an existing facility.

D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

3.03 PERFORMANCE

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

B. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

a. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

b. In general, use hand or small power tools designed for sawing and 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.

c. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

d. Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.

e. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.

f. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

a. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

b. Exposed Finishes: 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.

1. Clean piping, conduit, and similar features before applying paint or other finishing materials.

2. Restore damaged pipe covering to its original condition.

3. Paint patched area to match existing

c. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

1. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

d. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.

e. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION

SECTION 02221 – DEMOLITION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. This Section includes the following:

1. Demolition and removal of existing dehumidifiers and associated piping.
2. Demolition and removal of existing boilers
3. Demolition and removal of existing filters (Alternate #7 & #8)
4. Demolition and removal of toilet partitions and urinal screens (Alternate #2)
5. Removing below-grade construction, if applicable.
6. Disconnecting, capping or sealing, and removing site utilities.
7. Salvaging items for reuse by Owner.
8. Demolition as needed for exhaust system. Refer to plans for locations
9. Demolition as required for construction and as shown on the drawings.

1.03 DEFINITIONS

A. Demolish: Completely remove and legally dispose of off-site.
B. Recycle: Recovery of demolition waste for subsequent processing in preparation for reuse.
C. Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner. Include fasteners or brackets needed for reattachment elsewhere.

1.04 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.
B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.05 SUBMITTALS

A. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.

1.06 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
B. Standards: Comply with ANSI A10.6 and NFPA 241.

1.07 COORDINATION

A. Arrange demolition schedule so as not to interfere with Owner's on-site operations.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

A. Satisfactory Soils: Comply with requirements in Division 2 Section "Earthwork."

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting demolition operations. Disconnect and capped utilities as required for demolition.

B. Field verify existing conditions, prior to bid, of all items to be demolished.

C. Perform an engineering survey of condition of site to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations.

3.02 PREPARATION

A. Existing Utilities: Locate, identify, disconnect, and seal or cap off indicated utilities serving buildings and structures to be demolished.

1. Arrange to shut off indicated utilities with utility companies, if needed.
2. If removal, relocation, or abandonment of utility services will affect adjacent occupied buildings, then provide temporary utilities that bypass buildings and structures to be demolished and that maintain continuity of service to other buildings and structures.
3. Cut off pipe or conduit a minimum of 24 inches (610 mm) below grade. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing according to requirements of authorities having jurisdiction.

B. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of demolition.

C. Salvaged Items: Comply with the following:

1. Clean salvaged items of dirt and demolition debris.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to storage area designated by Owner.
5. Protect items from damage during transport and storage.

3.03 PROTECTION

A. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from existing buildings.

B. Existing Utilities: Maintain utility services to remain and protect from damage during demolition operations.

1. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and authorities having jurisdiction.

2. Provide at least 72 hours' notice to occupants of affected buildings if shutdown of service is required during changeover.

C. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated. Comply with requirements in Division 1 Section "Temporary Facilities and Controls."

D. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

3.04 DEMOLITION, GENERAL

A. General: Demolish indicated items completely. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations.
2. Maintain fire watch during flame cutting operations.
3. Maintain adequate ventilation when using cutting torches.
4. Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

B. Engineering Surveys: During demolition, perform surveys to detect hazards that may result from building demolition activities.

C. Site Access and Temporary Controls: Conduct building demolition and debris- to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

D. Explosives: Use of explosives is not permitted.

3.05 DEMOLITION BY MECHANICAL MEANS

A. Proceed with demolition of structural framing members systematically, from higher to lower level. Complete building demolition operations above each floor or tier before disturbing supporting members on the next lower level.

B. Remove debris from elevated portions of the building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
1. Remove structural framing members and lower to ground by method suitable to minimize ground impact and dust generation.

C. Below-Grade Construction: Abandon foundation walls and other below-grade construction. Cut below-grade construction flush with grade.

D. Below-Grade Construction: Demolish foundation walls and other below-grade construction.
1. Remove below-grade construction, including basements, foundation walls, and footings.

E. Existing Utilities: Abandon existing utilities and below-grade utility structures. Cut utilities flush with grade.

F. Existing Utilities: Demolish and remove existing utilities and below-grade utility structures.

3.06 SITE RESTORATION

A. Below-Grade Areas: Completely fill below-grade areas and voids resulting from building demolition operations with satisfactory soil materials according to backfill requirements in Division 2 Section "Earthwork."

B. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

3.07 REPAIRS

A. Promptly repair damage to building and furnishings caused by demolition operations.

3.08 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site and legally dispose of them in an EPA-approved landfill acceptable to authorities having jurisdiction.

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.

B. Do not burn demolished materials.

3.09 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing before building demolition operations began.

END OF SECTION 02221

SECTION 03300 - CONCRETE

PART 1 - GENERAL

1.1 WORK INCLUDED:

A. Extent of concrete work as shown on drawings.

1.2 CODES AND STANDARDS:

A. ACI 301 "Specifications for Structural Concrete Building"; ACI 318-83 "Building Code Requirements for Reinforced Concrete"; comply with applicable provisions except as otherwise indicated.

1.3 OWNER:

A. Owner will employ and pay separate testing laboratory, through direction of Engineer, to take and evaluate test compression cylinders of concrete delivered to and placed at site.

1.4 QUALITY CONTROL:

A. Owner's testing laboratory will perform sampling and testing during concrete placement, which may include the following, as directed by Engineer. This testing does not relieve Contractor of responsibility of providing concrete in compliance with specifications. Contractor may perform additional testing as necessary, at no expense to Owner, to ensure quality of concrete. Contractor shall pay for the curing of cylinders:

1. Sampling: ASTM C 172.

2. Slump: ASTM C 143, one for each load at point of discharge.

3. Air Content: ASTM C 173, one for each set of compressive strength specimens.

4. Compressive Strength: ASTM C 39, one set for each 50 cu. yds. or fraction thereof of each class of concrete; one specimen tested at seven days, one specimen tested at 28 days, and one tested when approved by Owner.

B. When the total quantity of a given class of concrete is less than 50 cu. yds., strength tests may be waived by Engineer if field experience indicated evidence of satisfactory strength.

1.5 TEST RESULTS:

A. Test results will be reported in writing to Owner, Engineer, Contractor, and concrete producer on same day tests are made.

PART 2 - PRODUCTS

2.1 MANUFACTURER'S DATA:

A. Submit manufacturer's product data with installation instructions for property materials including reinforcement and forming accessories, admixtures, joint materials, hardners, curing materials and others as requested by Engineer.

2.2 LABORATORY REPORT'S:

A. Submit two copies of laboratory test or evaluation reports for concrete materials and mix designs.

2.3 MIX PROPORTIONS AND DESIGN:

A. Proportion mixes by either laboratory trail batch or field experience method complying with ACI 301.

B. Design Mixes: To provide normal weight concrete with the following properties, as indicated on drawings and schedules.

C. Exterior Flatwork: (Curb and Gutters) - 4000 psi 20 - day compressive strength, 565 pounds cement per cu. yard minimum; W/C ration, 0.44 maximum.

D. All other: 3000 psi 28 - day compressive strength; 495 pounds cement per cu. yard minimum; W/C ration, 0.50 maximum.

E. Submit written report to Engineer for each proposed concrete mix at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed and are acceptable to Engineer.

F. Mix designs may be adjusted when material characteristics, job conditions, weather, test results or other circumstances warrant. Do not use revised concrete mixes until submitted to and accepted by Engineer.

G. Use air-entraining admixture in all concrete, providing not less than 5% + 1% entrained air for concrete exposed to freezing and thawing, and from 2% to 4% for other concrete.

2.4 CONCRETE MATERIALS:

A. Portland Cement: ASTM C 150. Type II, low alkali, as required.

B. Aggregates: ASTM C 33, maximum size 3/4'.

C. Water: Clean, drinkable.

D. Air-Entraining Admixture: ASTM C 260.

2.5 RELATED MATERIALS:

A. Membrane-Forming Curing Compound: ASTM C 309, Type I.

2.6 CONCRETE CURING:

A. Apply in strict accordance with manufacturer's instructions, no more than 200 sq. ft. per gallon. Apply as soon as concrete will allow; apply in two directions at right angles. Coat entire surfaces.

2.7 FORM MATERIALS:

A. Provide form materials with sufficient stability to withstand pressure of placed concrete without bow or deflection.

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

C. Use overlaid plywood complying with U.S. Product STandard PS-1 "B-B High Density Overlaid Concrete Form", Class I.

2.8 REINFORCING MATERIALS:

A. Deformed Reinforcing Bars: ASTM A 615, Grade 60 unless otherwise indicated.

B. Welded Wire Fabric: ASTM A 185.

2.9 FORMING AND PLACING CONCRETE:

A. Ready-mix Concrete: ASTM C 94, unless a higher standard is called for.

2.10 FORMWORK:

A. Construct so that concrete members and structures are of correct size, shape, alignment, elevation and position.

B. Provide openings in formwork to accomodate work of other trades. Accurately place and securely support items built into forms.

C. Clean and adjust forms prior to concrete placement. Apply form release agents or wet forms, as required. Retighten forms during concrete placement if required to eliminate mortar leaks.

D. Reinforcement: Position, support and secure reinforcement against

displacement. Locate and support with metal chairs, runners, bolsters, spacers and hangers, as required. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire fabric in as long lengths as practicable, lapping at least one mesh and tying.

2.11 JOINTS:

A. Joints: Provide construction, isolation and control joints as indicated or required. Locate construction joints such as to not impair strength and appearance of structure. Place isolation and control joints in slabs-on-ground to stablize differential settlement and random cracking. Continue reinforcement though construction joints.

PART 3 - EXECUTION

3.1 INSTALLATION OF EMBEDDED ITEMS:

A. Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by cast-in-place concrete. Use setting diagrams, templates and instructions provided by others for locating and setting.

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

C. Concrete Placement: Comply with ACI, placing concrete in a continuous operation within planned joints or sections. Do not

begin placement until work of other trades affecting concrete is completed.

D. Consolidate placed concrete using mechanical vibrating equipment with hand rodding and tamping, so that concrete is worked around reinforcement and other embedded items and into forms.

E. Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placement and curing.

1. In cold weather comply with ACI 306.

2. In hot weather comply with ACI 305.

3.2 CONCRETE FINISHES:

A. Exposed-to-View Surfaces: Provide a smooth finish for exposed concrete surfaces and surfaces that are to be covered with a caoating or covering material applied directly to concrete. Remove fins and projections, patch defective areas with cement grout, and rub smooth.

B. Slab Trowel Finish: Apply towel finish to monolithic slab surfaces that are exposed-to-view or are to be covered with resilient flooring, paint or other thin film coating. Consolidate concrete surfaces by finish troweling, free of trowel marks, uniform in texture and appearance.

C. Curing: Begin initial curing as soon as free water has disappeared from exposes surfaces. Keep continuously moist for not less than seven days. Continue during by use of mositure-retaining cover or membrane-forming curing compound. Cure fored surfaces by moist curing until forms are removed. Provide protections as required to prevent damage to exposed concrete surfaces.

3.3 CONCRETE TICKETS:

A. The following information shall be furnished on each delivery ticket for each load of ready-mix concrete:

1. Number of cubic yards.

2. The exact amount of cement (this can be indicated either by weight or quantity.)

3. The amount of gravel (this can be indicated by weight or quantity.)

4. The amount of mixing water, including moisture in aggregates (this can be indicated by weight or quantity.)

5. If water is added at job site, note amount.

6. Amount of slump in inches.

7. Type of cement.

8. Amount of air entrainment (if any) when delivered at job site.

9. Do aggregates meet ASTM specified -- yes or no. Indicate maximum size aggreagate.

10. Amount and brand (or ASTM) of admixture other than air entraining agent (if any).

11. All tickets shall be given to the Owner's Representative. Superintendent or Foreman shall obtain these tickets and see that they are held for him in a particular file so they are readily available. Note exact location of concrete on job. Engineer shall be allowed to review the tickets at any time.

B. Cast in place concrete standards: Provide written guarantee, in form approved by Owner, to promptly remove and/or repair defective concrete occuring within two years after date of "substantial completion" at Contractor's expense and as directed by Engineer. Spalling of pitting of

concrete shall be considered defective work.

END OF SECTION

SECTION 04200 - UNIT MASONRY (ALTERNATE #5)

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Extent of each type of masonry work is indicated in section 06400, INTERIOR ARCHITECTURAL WOODWORK.

B. Types of masonry work required include:
Concrete unit masonry.

1.02 DELIVERY, STORAGE, AND HANDLING

A. Deliver masonry materials to project in undamaged condition.

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

PART 2 - PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Provide special shapes where required for lintels, corners, jambs, sash, control joints, headers, bonding and other special conditions.

Provide 1-inch bullnose units for all exposed vertical outside corners and ends.

B. Grade N.

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

D. Exposed Faces: Manufacturer's standard color unless otherwise indicated. All faces shall be fine texture

2.02 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I. Provide natural color or white cement as required to produce required mortar color.

B. Hydrated Lime: ASTM C 207, Type S.

C. Aggregate for Mortar: ASTM C 144, except for joints less than 1/4" use aggregate graded with 100% passing the No. 16 sieve.

D. Aggregate for Grout: ASTM C 404.

E. Cement Grout: Minimum 3,000 psi 28-day strength.

F. Non-Shrink Grout: Minimum 7,000 psi 28-day strength.

G. Anchoring Cement: Pourable, self-leveling, quick-setting cement base, waterproof, non-shrink hydraulic compound.

H. Water: Clean and potable.

2.03 JOINT REINFORCEMENT, TIES AND ANCHORING DEVICES

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

Hot-Dip Galvanized Steel Wire: 0.1483 inch diameter (9 gage), ASTM A 82 for uncoated wire and with ASTM A 123, Class B-2 (1.5 oz. per sq. ft. of wire surface) for zinc coating applied after prefabrication into units.

Width: Fabricate joint reinforcement in units with widths of approximately 2" less than nominal width of walls and partitions as required to provide mortar coverage of not less

than 5/8" on joint faces exposed to exterior and 2" elsewhere. Units shall be constructed of minimum 9-gage rods.

For single-wythe masonry provide truss design with continuous diagonal cross rods spaced not more than 16" o.c.

2.04 MISCELLANEOUS MASONRY ACCESSORIES

A. Reinforcing Bars: Deformed steel, ASTM A 615, Grade 60 for bars No. 3 to No. 18.

2.05 MASONRY CLEANERS

A. Job-Mixed Detergent Solution: Solution of trisodium phosphate (2 cup dry measure) and laundry detergent (2 cup dry measure) dissolved in one gallon of water. Submit brick manufacturer's endorsement of proposed masonry cleaner.

2.06 MORTAR AND GROUT MIXES

A. Do not add admixtures including coloring pigments, air-entraining agents, accelerators, retarders, water repellent agents, anti-freeze compounds or other admixtures, unless otherwise indicated.

Do not use calcium chloride in mortar or grout.

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

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

Use Type S mortar for all applications where another type is not indicated.

Provide natural gray color mortar for concrete masonry.

D. Grout for Unit Masonry: Comply with ASTM C 476 for grout for use in construction of reinforced and non-reinforced unit masonry. Use grout of consistency indicated or if not otherwise indicated, of consistency (fine or coarse) at time of placement which will completely fill all spaces intended to receive grout.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Saw-cutting of masonry shall not be done inside the building.

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

C. Thickness: Build single-wythe walls (if any) to the actual thickness of the masonry units, using units of nominal thickness indicated.

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

Use dry cutting saws to cut concrete masonry units.

3.02 CONSTRUCTION TOLERANCES

A. Variation from Plumb: For vertical lines and surfaces of walls and arises do not exceed 1/4" in 10', 1/4" maximum, non-cumulative. For external corners and other conspicuous lines, do not exceed 1/4" in 20'.

B. Variation from Level: For bed joints and lines of exposed horizontal grooves and other conspicuous lines, do not exceed 1/4" maximum, non-cumulative.

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

3.03 LAYING MASONRY WALLS

A. Layout walls in advance for accurate spacing of surface bond patterns with uniform joint widths and to accurately locate returns and offsets. Avoid the use of less-than-half-size units at corners, jambs and wherever possible.

B. Lay-up walls to comply with specified construction tolerances.

C. Pattern Bond: Lay exposed masonry in running bond with vertical joint in each course centered on units in courses above and below.

3.04 MORTAR BEDDING AND JOINTING

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

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

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

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

E. Corners: Provide interlocking masonry unit bond in each course at corners, unless otherwise shown.

F. For horizontally reinforced masonry, provide continuity at corners with prefabricated "L" units, in addition to masonry bonding.

3.05 HORIZONTAL JOINT REINFORCEMENT

A. General: Provide continuous horizontal joint reinforcement as indicated. Install longitudinal side rods in mortar for their entire length with a minimum cover of 5/8" on exterior side of walls, 2" elsewhere. Lap reinforcing a minimum of 6".

B. Space continuous horizontal reinforcement as follows:

Running Bond: at 16" o.c. vertically, unless otherwise indicated.

3.06 ANCHORING MASONRY WORK:

A. Anchor masonry where masonry abuts existing masonry walls to comply with the following:

Space anchors as indicated, but not more than 8" o.c. vertically,

3.07 REPAIR, POINTING AND CLEANING

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

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

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

Remove large mortar particles by hand with wooden paddles and non-metallic scrape hoes or chisels.

Protect adjacent non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film or waterproof masking tape.

Clean concrete unit masonry to comply with masonry manufacturer's directions and applicable NCMA "Tek" bulletins.

D. Paint block exposed to view with Sherwin Williams or equal block filler and one coat of Sherwin Williams (or approved equivalent) Pre-Catalyzed water based epoxy. Refer to section 09900 for paint specifications.

END OF SECTION 04200

SECTION 05500-PREFABRICATED STANDING SEAM METAL ROOF CURBS

PART 1 - GENERAL

1.01 The general conditions and supplemental general conditions of the contract apply to this section as if completely written herein.

1.02 Provide and install pre-fabricated roof curbs specifically designed to mount the specified exhaust fan to the existing standing seam roof including all labor, material and equipment to completely install the prefabricated metal roof curbs.

1.03 Prefabricated Metal Roof Curbs shall be used at all roof penetrations including but not limited to HVAC units, duct openings, pipe penetrations and exhaust fans.

PART 2 - PRODUCTS

2.01 PREFABRICATED METAL ROOF CURBS

A. Prefabricated Metal Roof Curbs shall be manufactured and installed by a company specializing in standing seam roof curbs.

B. Curbs shall be constructed using minimum .080, 3003H14 aluminum, or heavier as required to support the load of the equipment, with fully mitered and heli-arc welded corners, integral base plates, with water diverter cricket.

C. Minimum height of Curb shall be 8" above finished roof (or as specified).

D. Curbs shall be constructed to match slope of roof and provide a level top surface for mounting of equipment.

E. Curb flange shall be constructed to match configuration of roof panel. Side flange shall extend to the next natural seam in the roof panels and conform to seam configurations.

PART 3 - EXECUTION

3.01 Size of curbs and required options shall be coordinated by curb manufacturer,general contractor and mechanical contractor prior to fabrication.

3.02 Shop drawings bearing Engineers approval shall be used for the fabrication of the curbs.

3.03 Roof curb shall be installed by roof curb manufacturer or by General Contractor under the supervision of roof curb manufacturer.

END OF SECTION

SECTION 06400 - INTERIOR ARCHITECTURAL WOODWORK (ALTERNATE #5)

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes the following:

Laminate clad cabinets
Solid polymer counter tops are included in Section 06650 SOLID POLYMER FABRICATIONS

1.02 SUBMITTALS

A. Product Data for each type of product and process specified in this section and incorporated into items of Architectural woodwork during fabrication, finishing, and installation.

B. Samples for initial selection purposes of plastic laminate in form of manufacturer's color charts consisting of actual units or sections of units showing full range of colors, textures, and patterns available for each type of samples.

C. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, and other information specified.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: Firm experienced in successfully producing Architectural woodwork similar to that indicated for this project, with experience in on-site refinishing with plastic laminate.

B. AWI Quality Standard: Comply with applicable requirements of "Architectural Woodwork Quality Standards" published by the Architectural Woodwork Institute (AWI), except as otherwise indicated.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Protect woodwork during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

PART 2 - PRODUCTS

2.01 HIGH PRESSURE DECORATIVE LAMINATE MANUFACTURERS

A. Subject to compliance with requirements, manufacturers offering high pressure decorative laminates which may be incorporated in the work include; but are not limited to, the following:

Formica Corp.
Laminart.
Micarta Div., Westinghouse Electric Corp.
Nevamar Corp.
Ralph Wilson Plastics Co.
Wilsonart

2.02 MATERIALS

A. Provide materials that comply with requirements of the AWI woodworking standard for each type of woodwork and quality grade indicated and, where the following products are part of woodwork, with requirements of the referenced product standards that apply to product characteristics indicated.

High Pressure Laminate: NEMA LD 3.
Wood: Comply with AWI standards for grade specified.
Plywood: All plywood panels used for framing purposes shall be veneer core hardwood plywood, AWI Qual Stds Grade AA. Nominal thickness of plywood panels shall be as indicated in this specification and on the drawings.

B. Comply with formaldehyde emission requirements of the following standards:

Hardwood Plywood: HPMA FE.

C. Base assembly components shall be treated lumber.

2.03 FABRICATION, GENERAL

A. Wood Moisture Content: Comply with requirements of referenced quality standard for moisture content of lumber at time of fabrication and for relative humidity conditions in the installation areas.

B. Fabricate woodwork to dimensions, profiles, and details indicated.

C. Complete fabrication, including assembly, finishing and hardware application before shipment to project site to maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

D. Factory-Cut Openings, to maximum extent possible, to receive hardware and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Smooth edges of cutoffs and, where exposed, seal edges of cutouts with a water-resistant coating.

2.04 LAMINATE CLAD CABINETS (PLASTIC COVERED CASEWORK)

A. Quality Standard: Comply with AWI Section 400 and its Division 400B "Laminate Clad Cabinets".

Grade: Custom.

B. Laminate Cladding: High pressure decorative laminate complying with the following requirements:

Colors, Patterns and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

Provide selections made by Architect from laminate manufacturer's full range of standard colors and finishes in the following categories:

Wood grains and solids.

C. Laminate Grade for Exposed Surfaces: Provide laminate cladding complying with GP-50 (0.050" nominal thickness) on all visible exterior surfaces and all surfaces of all doors. Drawer exteriors and trim shall be plastic laminate on 3/4" hardwood plywood.

D. Semi-Exposed Surfaces: Provide laminate cladding on all faces and all edges, drawer interiors and exteriors of drawer side rails.

Shelves shall be 3/4”plywood with plastic laminate on all surfaces.

Particle board shall not be used for any exposed surfaces or surfaces in contact with floor.

2.05 FINISHING OF INTERIOR ARCHITECTURAL WOODWORK

A. Quality Standard: Comply with AWI Section 1500, unless otherwise indicated.

B. General: The entire finish of interior Architectural woodwork is specified in this section, regardless of whether factory-applied or applied after installation.

C. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces and similar preparations for finishing of Architectural woodwork, as applicable to each unit of work.

2.06 HARDWARE

A. Cabinet Hinges: Self-closing, 3-way adjustable, permanently lubricated, concealed-from-view fasteners.

B. Cabinet Pulls: Chrome plated brass, 4" centers, wire pull type, concealed-from-view fasteners.

C. Adjustable Shelves: Recessed adjustable shelf standards and clips.

D. Cabinet Locks: Chrome plated cam-type cabinet locks. Provide two (2) keys per each lock. Verify keying with owner prior to installation of locks.

E. Drawer Guides: Side-mounted, permanently lubricated ball bearing, full extension, 75-pound capacity. Slides shall include an integral stop to avoid accidental drawer removal.

PART 3 – EXECUTION

3.01 FABRICATION

A. Verify field measurements as indicated in the shop drawings before fabrication. Fabrication and assembly of components shall be accomplished at the shop site to the maximum extent possible. Construction and fabrication of cabinets and their components shall meet or exceed the requirements for AWI custom grade unless otherwise indicated in this specification and the drawings. Cabinet style, in accordance with AWI Qual Stds, Section 400-G descriptions, shall be as indicated on the drawings.

3.02 INSTALLATION

A. Quality Standard: Install woodwork to comply with AWI Section 1700 for same grade specified in Part 2 of this section for type of woodwork involved.

B. Install woodwork plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level and with no variations in flushness of adjoining surfaces.

C. Scribe and cut woodwork to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.

D. Cabinets and other laminate clad casework assemblies shall be attached and anchored securely to the floor and walls with mechanical fasteners that are appropriate for the wall and floor construction.

E. Cabinets: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors in openings and to provide smooth operation. Complete the installation of hardware and accessory items as indicated.

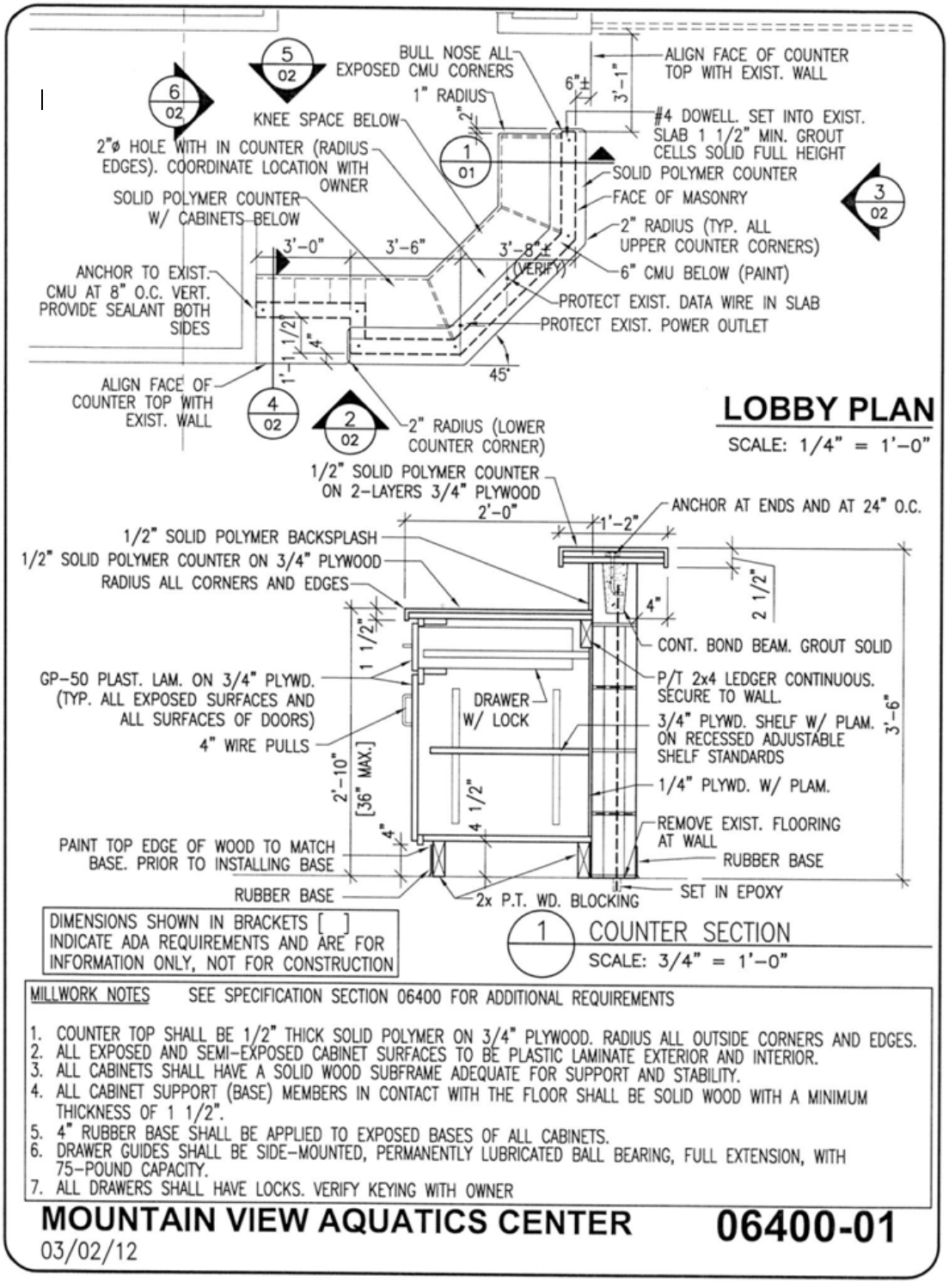
F. Complete the finishing work specified in this section to whatever extent not completed at shop or before installation of woodwork.

3.03 ADJUSTMENT AND CLEANING

A. Repair or replace damaged and defective woodwork to eliminate functional and visual defects; Adjust doors and drawers for uniform appearance. Caulk joints behind splashes at walls.

B. Clean, lubricate and adjust hardware. Verify proper operation of all locks and keys.

C. Clean woodwork on exposed and semi-exposed surfaces. Touch-up shop-applied finishes to restore damaged or soiled areas.



LOBBY PLAN

SCALE: 1/4" = 1'-0"

DIMENSIONS SHOWN IN BRACKETS [ ] INDICATE ADA REQUIREMENTS AND ARE FOR INFORMATION ONLY, NOT FOR CONSTRUCTION

1 COUNTER SECTION

SCALE: 3/4" = 1'-0"

MILLWORK NOTES SEE SPECIFICATION SECTION 06400 FOR ADDITIONAL REQUIREMENTS

1. COUNTER TOP SHALL BE 1/2" THICK SOLID POLYMER ON 3/4" PLYWOOD. RADIUS ALL OUTSIDE CORNERS AND EDGES.
2. ALL EXPOSED AND SEMI-EXPOSED CABINET SURFACES TO BE PLASTIC LAMINATE EXTERIOR AND INTERIOR.
3. ALL CABINETS SHALL HAVE A SOLID WOOD SUBFRAME ADEQUATE FOR SUPPORT AND STABILITY.
4. ALL CABINET SUPPORT (BASE) MEMBERS IN CONTACT WITH THE FLOOR SHALL BE SOLID WOOD WITH A MINIMUM THICKNESS OF 1 1/2".
5. 4" RUBBER BASE SHALL BE APPLIED TO EXPOSED BASES OF ALL CABINETS.
6. DRAWER GUIDES SHALL BE SIDE-MOUNTED, PERMANENTLY LUBRICATED BALL BEARING, FULL EXTENSION, WITH 75-POUND CAPACITY.
7. ALL DRAWERS SHALL HAVE LOCKS. VERIFY KEYING WITH OWNER

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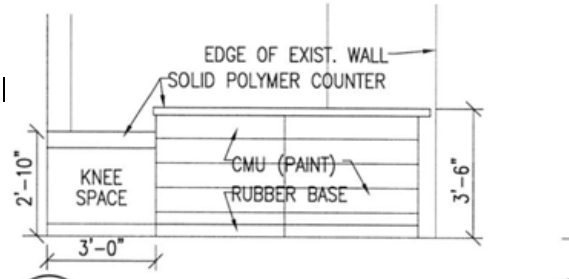
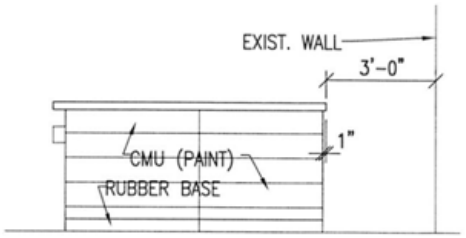
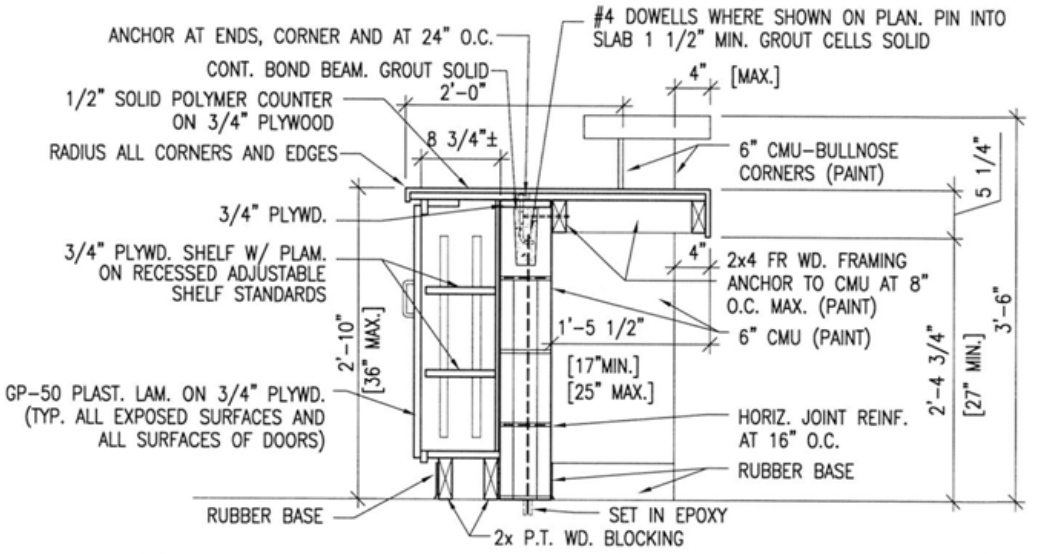


2 COUNTER ELEVATION
SCALE: 1/4" = 1'-0"



3 COUNTER ELEVATION
SCALE: 1/4" = 1'-0"



4 COUNTER SECTION
SCALE: 1/2" = 1'-0"

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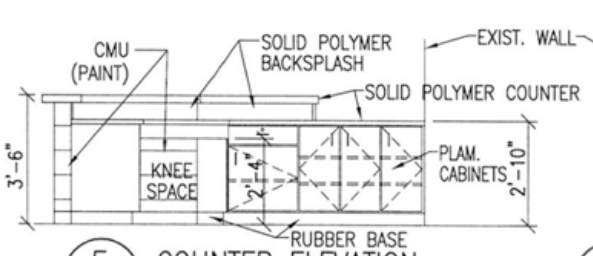
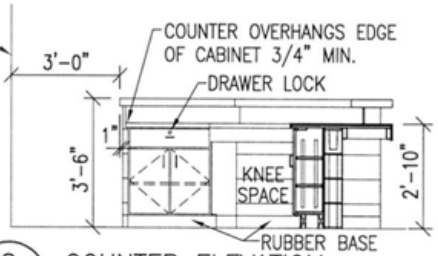


5 COUNTER ELEVATION
SCALE: 1/4" = 1'-0"



6 COUNTER ELEVATION
SCALE: 1/4" = 1'-0"

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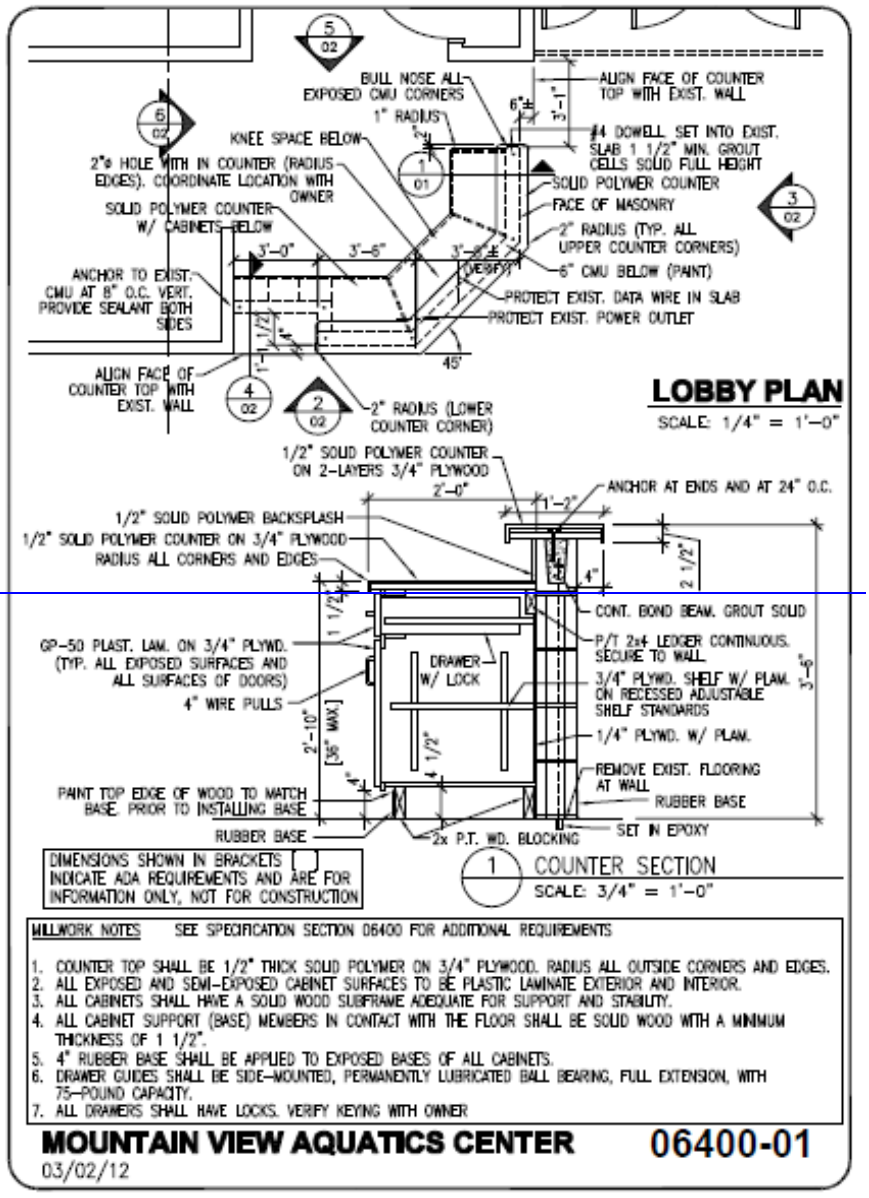
BULL NOSE ALL EXPOSED CMU CORNERS
1" RADIUS
ALIGN FACE OF COUNTER TOP WITH EXIST. WALL
#4 DOWELL SET INTO EXIST. SLAB 1 1/2" MIN. GROUT CELLS SOLID FULL HEIGHT
KNEE SPACE BELOW
2"ø HOLE WITH IN COUNTER (RADIUS EDGES). COORDINATE LOCATION WITH OWNER
SOLID POLYMER COUNTER
FACE OF MASONRY
SOLID POLYMER COUNTER W/ CABINETS BELOW
2" RADIUS (TYP. ALL UPPER COUNTER CORNERS)
6" CMU BELOW (PAINT)
ANCHOR TO EXIST. CMU AT 8" O.C. VERT. PROVIDE SEALANT BOTH SIDES
PROTECT EXIST. DATA WIRE IN SLAB
PROTECT EXIST. POWER OUTLET
ALIGN FACE OF COUNTER TOP WITH EXIST. WALL
2" RADIUS (LOWER COUNTER CORNER)
LOBBY PLAN
SCALE: 1/4" = 1'-0"
1/2" SOLID POLYMER COUNTER ON 2-LAYERS 3/4" PLYWOOD
ANCHOR AT ENDS AND AT 24" O.C.
1/2" SOLID POLYMER BACKSPLASH
1/2" SOLID POLYMER COUNTER ON 3/4" PLYWOOD
RADIUS ALL CORNERS AND EDGES
CONT. BOND BEAM. GROUT SOLID
P/T 2x4 LEDGER CONTINUOUS. SECURE TO WALL
GP-50 PLAST. LAM. ON 3/4" PLYWD. (TYP. ALL EXPOSED SURFACES AND ALL SURFACES OF DOORS)
DRAWER W/ LOCK
4" WIRE PULLS
3/4" PLYWD. SHELF W/ PLAM. ON RECESSED ADJUSTABLE SHELF STANDARDS
1/4" PLYWD. W/ PLAM.
REMOVE EXIST. FLOORING AT WALL
PAINT TOP EDGE OF WOOD TO MATCH BASE. PRIOR TO INSTALLING BASE
RUBBER BASE
RUBBER BASE
2x P.T. WD. BLOCKING
SET IN EPOXY
DIMENSIONS SHOWN IN BRACKETS [ ] INDICATE ADA REQUIREMENTS AND ARE FOR INFORMATION ONLY, NOT FOR CONSTRUCTION
1 COUNTER SECTION
SCALE: 3/4" = 1'-0"
MILLWORK NOTES SEE SPECIFICATION SECTION 06400 FOR ADDITIONAL REQUIREMENTS
1. COUNTER TOP SHALL BE 1/2" THICK SOLID POLYMER ON 3/4" PLYWOOD. RADIUS ALL OUTSIDE CORNERS AND EDGES.
2. ALL EXPOSED AND SEMI-EXPOSED CABINET SURFACES TO BE PLASTIC LAMINATE EXTERIOR AND INTERIOR.
3. ALL CABINETS SHALL HAVE A SOLID WOOD SUBFRAME ADEQUATE FOR SUPPORT AND STABILITY.
4. ALL CABINET SUPPORT (BASE) MEMBERS IN CONTACT WITH THE FLOOR SHALL BE SOLID WOOD WITH A MINIMUM THICKNESS OF 1 1/2".
5. 4" RUBBER BASE SHALL BE APPLIED TO EXPOSED BASES OF ALL CABINETS.
6. DRAWER GUIDES SHALL BE SIDE-MOUNTED, PERMANENTLY LUBRICATED BALL BEARING, FULL EXTENSION, WITH 75-POUND CAPACITY.
7. ALL DRAWERS SHALL HAVE LOCKS. VERIFY KEYING WITH OWNER
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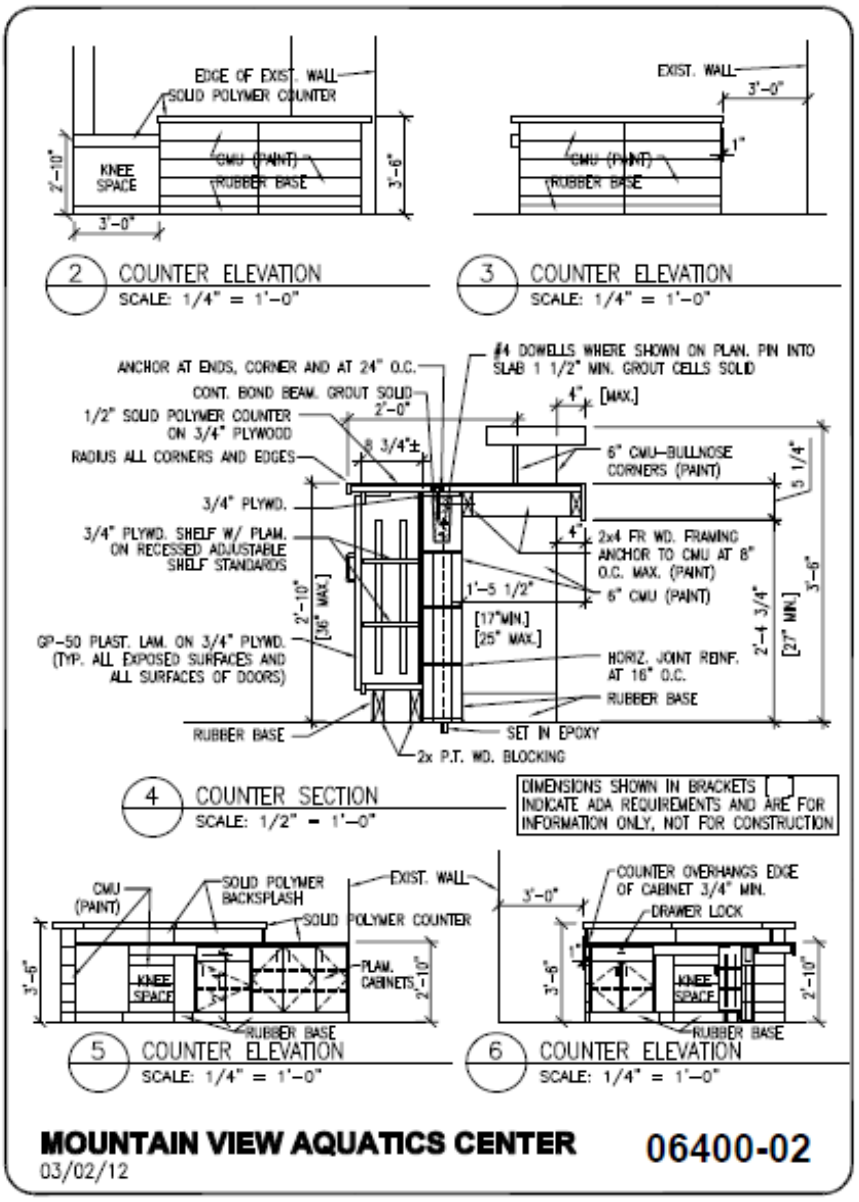

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03/02/12

SECTION 06650 - SOLID POLYMER FABRICATIONS (ALTERNATE #5)

PART 1 - GENERAL

1.01 SUMMARY

A. The extent of solid polymer fabrications is shown on the drawings and includes tops for restrooms.

1.02 SUBMITTALS

A. Comply with requirements of Section 01300.

B. Product Data: Indicate product description, fabrication information and compliance with specified performance requirements.

C. Shop Drawings: Indicate dimensions, component sizes, fabrication details, attachment provisions and coordination requirements with adjacent work.

D. Samples: Submit minimum 2 inch by 2 inch samples. Indicate full range of color and pattern variation. Approved samples will be retained as a standard for work.

E. Maintenance Data: Submit manufacturer's care and maintenance data, including care, repair and cleaning instructions and maintenance video. Provide maintenance kit for matte finishes. Include in project close-out documents.

F. Product certificates: Signed letter by manufacturer certifying that they comply with requirements.

G. Maintenance data:

1. Submit manufacturer’s care and maintenance data, including repair and cleaning instructions.
2. Include in project closeout documents.

1.03 PROJECT CONDITIONS

A. Coordinate work of this section with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance and durability of work and protection of materials and finishes.

B. Store materials off ground, protected from deterioration and damage.

C. Handle materials to prevent damage to finishes and prevent deformation. Do not install damaged material.

1.04 QUALITY ASSURANCE

A. Comply with applicable standards of following:

American National Standards Institute (ANSI).
American Society for Testing and Materials (ASTM).
National Electrical Manufacturers Association (NEMA).
Federal Specifications (FS).
NSF/ANSI standards: Standard 51 for Food Contact..

B. Fire test response characteristics: 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:

Flame Spread Index: 25 or less.
Smoke Developed Index: 450 or less.

C. Allowable Tolerances:

Variation in component size: +1/8 inch.

Location of openings: +1/8 inch from indicated location.

1.05 WARRANTY

A. Provide manufacturer's warranty against defects in materials, [fabrication and installation], excluding damages caused by physical or chemical abuse or excessive heat. Warranty shall provide for replacement or repair of material and labor for a period of ten (10) years, beginning at Date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cast, filled, acrylic; not coated, laminated or of composite construction, meeting ANSI Z124 1980, Type Six, and FS WW-P-541E/GEN dated August 1, 1980.

Material shall have minimum physical and performance properties specified.

Superficial damage to a depth of 1/32 inch shall be repairable by sanding or polishing.

Material Thicknesses: 1/2 inch.

B. Colors: As selected by Architect from manufacturer's standard selection. Colors may be selected from manufacture's first three price group levels (Corian Level C)

C. Performance Characteristics: Material shall comply with the following:

Property	Typical Result	Test
Tensile Strength	6,000 psi	ASTM D 638
Tensile Modulus	1.5 x 10^{-6} psi	ASTM D 638
Tensile Elongation	0.4% min.	ASTM D 638
Flexural Strength	10,000 psi	ASTM D 790
Flexural Modulus	1.2 x 10^{-6} psi	ASTM D 790
Hardness	>85	Rockwell "M" Scale ASTM D 785
	56	Barcol Impressor ASTM D 2583
Thermal Expansion	3.02 x 10^{-5} in./in./°C (1.80 x 10^{-5} in./in./°F)	ASTM D 696
Gloss (60° Gardner)	5–75 (matte—highly polished)	ANSI Z124
Light Resistance	(Xenon Arc) No effect	NEMA LD 3-2000 Method 3.3
Wear and Cleanability	Passes	ANSI Z124.3 & Z124.6
Stain Resistance: Sheets	Passes	ANSI Z124.3 & Z124.6
Fungus and Bacteria Resistance	Does not support microbial growth	ASTM G21&G22
Boiling Water Resistance	No visible change	NEMA LD 3-2000 Method 3.5
High Temperature Resistance	No change	NEMA LD 3-2000 Method 3.6
Izod Impact (Notched Specimen)	0.28 ft.-lbs./in. of notch	ASTM D 256 (Method A)
Ball Impact Resistance: Sheets	No fracture—1⁄2 lb. ball: 1⁄4" slab—36" drop 1⁄2" slab—144" drop	NEMA LD 3-2000 Method 3.8
Weatherability	ΔE^*_{94}<5 in 1,000 hrs.	STM G 155

Specific Gravity †	1.7	
Water Absorption	Long-term 0.4% (3⁄4") 0.6% (1⁄2") 0.8% (1⁄4")	ASTM D 570
Toxicity	99 (solid colors) 66 (patterned colors)	Pittsburgh Protocol Test ("LC50"Test)
Flammability	All colors (Class I and Class A)	ASTM E 84, NFPA 255 & UL 723
Flame Spread Index	<25	
Smoke Developed Index	<25	

D. Joint Adhesive: Manufacturer's standard two-part adhesive kit to create inconspicuous, non-porous joints by chemical bond.

E. Sealant: Manufacturer's standard mildew-resistant, FDA, UL listed silicone sealant in colors matching components.

F. Conductive tape: Manufacturer's standard aluminum foil tape, with required thickness, for use with cutouts near heat sources.

G. Insulating felt tape: Manufacturer's standard for use with conductive tape in insulating solid surface material from adjacent heat source

2.02 FABRICATION

A. Factory 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.

B. Form joints between components using manufacturer's standard joint adhesive; without conspicuous joints. Reinforce with strip of solid polymer material, 2" wide.

C. Rout and finish component edges with clean, sharp returns. Rout cutouts, radii and contours to template. Smooth edges. Repair or reject defective and inaccurate work.

D. Finish: Provide surfaces with a uniform finish.
Matte: Gloss range of 5-20.

E. Cove Backsplash: Fabricate splashes using 1/2 inch solid polymer material. Create 1/2 inch radius cove at intersection of counters and backsplashes.

F. Counter Tops: 1/2 inch thick solid polymer material adhesively joined with inconspicuous seams, having edge details as detailed on the Drawings. Provide expansion joints in counter top as recommended by material manufacturer.

G. Radius all edges, ends and corners.

PART 3 - EXECUTION

3.01 INSTALLATION REQUIREMENTS

A. Install components plumb, level and rigid, scribed to adjacent finishes, in accordance with approved shop drawings and product data.

B. Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work. Reinforce joints as required.

C. Provide backsplashes and side splashes as indicated on the Drawings. Adhere to tops using manufacturer's standard color matched silicone sealant.

D. Keep components clean during installation. Remove adhesives, sealants and other stains. Keep clean until Date of Substantial Completion. Replace stained and damaged components.

3.02 CLEANING AND PROTECTION

A. Clean exposed metal surfaces, removing substances which might cause corrosion of metal or deterioration of finishes.

B. Protect surfaces from damage until Date of Substantial Completion. Repair work or replace damaged work which cannot be repaired to Architect's satisfaction

C. Repair or replace prefinished materials with damaged surfaces.

END OF SECTION 06650

SECTION 09310 - CERAMIC TILE RENOVATION (ALTERNATE #3)

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Re-grout floor tile in Men's and Women's locker rooms and wall and floor tile in showers.

B. This section includes replacement of damaged tile.

1.02 SUBMITTALS

A. Submit product data for each material specified.

B. Submit samples of all tile and accessories shall be furnished for approval. Samples shall be of sufficient size to show color range, pattern, tile type and joints.

1.03 DELIVERY AND STORAGE

A. Materials shall be delivered to the project site in manufacturer's original unopened containers with seals unbroken and labels and hallmarks intact. Materials shall be kept dry, protected from weather, and stored under cover.

PART 2 - PRODUCTS

2.01 CERAMIC TILE

A. Manufacturer:

American Olean Tile Co., Inc.
Crossville, Inc.
Dal-Tile Corp.
Summitville Tiles, Inc.

B. Replacement Floor and Wall tile shall match existing in color, size and texture.

2.02 THIN-SET

A. Dry-set, Latex Portland Cement Latex-portland cement complying with ANSI 118.4.

Waterproofing: Trowel applied commercial waterproofing manufactured for use in type of systems specified.

2.03 GROUT

A. All grout shall be commercial 100 percent solids epoxy grout complying with ANSI A118.3. Color shall be selected by Architect from manufacturer's full range of colors.

PART 3 - EXECUTION

3.01 PREPARATION

A. Inspect work areas and document existing conditions including damage to finishes and furnishings prior to start of work.

B. Provide protection from dust for equipment and surfaces. Construct barriers as required to prevent migration of dust from the work area.

3.02 GENERAL INSTALLATION REQUIREMENTS

A. Remove existing grout in joints of tile minimum 1/8-inch deep by sawing or grinding with special tools for this purpose. Protect edges and surface finish of tile.

B. Remove and replace tiles which are damaged.

C. Remove sealant from expansion joints, wall/floor joints and other locations and replace.

D. Thoroughly clean all joints by vacuuming and wiping.

3.03 INSTALLATION OF FLOOR TILE (Replace damaged tiles)

A. Thin-set: Seal floor with trowel applied waterproofing. Install tile with dry-set mortar or latex portland cement mortar.

B. Control joints shall be provided over construction joints, control joints, and expansion joints in concrete slabs. Control joints shall also be provided where tile abuts restraining surfaces such as perimeter walls, curbs and columns and at intervals of 24 to 36 feet each way in large interior floor areas and 12 to 16 feet each way in large exterior areas or areas exposed to direct sunlight or moisture. Expansion joints shall extend through setting-beds and fill.

3.04 INSTALLATION OF WALL TILE (Replace damaged tiles)

A. Install types of tile designated for wall application to comply with requirements indicated below for setting bed methods, TCA installation methods related to subsurface wall conditions, and grout types:

Latex-Portland Cement Mortar: ANSI A108.5.

3.05 INSTALLATION OF GROUT

A. Portland Cement Grout: Portland-cement Epoxy grout shall be prepared and installed in accordance with ANSI A108.6.

3.06 CLEANING AND PROTECTING

A. Upon completion, tile surfaces shall be thoroughly cleaned in accordance with ANSI A108.1. Acid shall not be used for cleaning glazed tile. Floor tile with resinous grout or with factory mixed grout shall be cleaned in accordance with instructions of the grout manufacturer. After the grout has set, tile wall surfaces shall be given a protective coat of a non-corrosive soap or other approved method of protection. Tiled floor areas shall be covered with building paper before foot traffic is permitted over the finished tile floors. Board walkways shall be laid on tiled floors that are to be continuously used as passageways by workmen.

END OF SECTION 09310

SECTION 09680 (ALTERNATE #4)
CARPET

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Scope of work includes removal of existing flooring and installation of new modular carpet in rooms 107, 108, 109, 110 and 111. Refer to the drawing at the end of this section.

B. This section includes preparation and testing of substrate.

C. Furniture and equipment in spaces to be carpeted will be moved by the Owner.

D. Install 1/8" rubber cove base in all areas that receive carpet.

1.02 SUBMITTALS

A. Product Data: Submit product data for each type of product included in this section including carpet, adhesive, seam sealer and accessories.

Submit written data on physical characteristics, durability, resistance to fading and flame resistance characteristics.

B. Samples for carpet and edge strip. Provide duplicate samples for each carpet type and color.

D. Certification from carpet manufacturer that carpet complies with all requirements of the specifications.

E. Independent Testing Laboratory results from previously manufactured carpet materials (same as proposed for the project) illustrating compliance with specified project criteria.

F. Warranties: Carpet manufacturer shall submit copies of written warranties specified.

G. Installer Qualifications.

H. Maintenance Instructions: Submit manufacturer's printed instructions for maintenance of installed work, including methods and frequency recommended for maintaining optimum condition under anticipated traffic and use conditions. Include precautions against materials and methods which may be detrimental to finishes and performance.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: Firm (material producer) with not less than 3 years of production experience, whose published literature clearly indicates general compliance of products with requirements of this section.

B. Installer Qualifications: Firm specializing in carpet installation with not less than 2 years of experience in installation of carpeting similar to that required for this project.

C. Single Source Responsibility: Provide material produced by a single manufacturer for entire project.

D. Referenced Standards:

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS (AATCC)
AATCC TM 134 (1969; R 2006) Electrostatic Propensity of Carpets
AATCC TM 174 (1991; R 2007) Antimicrobial Activity Assessment of Carpets

ASTM INTERNATIONAL (ASTM)

ASTM E 648 (2010) Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source

CARPET AND RUG INSTITUTE (CRI)

CRI 104 (2002) Standard for Installation Specification of Commercial Carpet

1.04 DELIVERY STORAGE AND HANDLING

A. Deliver materials to project site in original factory wrappings and containers, clearly labeled with identification of manufacturer, brand name, quality or grade, fire hazard classification, and lot number.

B. Store materials in original undamaged packages and containers, inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, humidity; laid flat, blocked off ground to prevent sagging and warping. Maintain temperature in storage area above 40 degrees Fahrenheit.

C. Comply with instructions and recommendations of manufacturer for special delivery, storage, and handling requirements.

1.05 SEQUENCING AND SCHEDULING

A. Sequence carpet installation with other work to minimize possibility of damage and soiling during remainder of construction period.

B. Coordinate with Owner for removal of equipment and furnishings prior to start work.

1.06 WARRANTIES

A. Manufacturer shall warrant that the carpet will neither cause static nor induce malfunction of electronic equipment when installed throughout the equipment operation areas.

1. Remedy of claims under this warranty if found valid, shall include the engaging of the qualified installer to replace the carpeting in the static affected area with new materials having adequate static control properties, at no cost to the Owner for materials and labor, except that moving, replacing, disconnecting and reconnecting of equipment if not included herein.
   a) Static is defined as the electric charge built up and later discharged from a person, cart or other objects as a result of movement of that person or object upon the floor covering.
   b) Malfunction is defined as any failure of the electronic equipment caused by carpet induced static electricity, provided the equipment is operating within specifications in every other respect.
   c) Electronic Equipment is any computer, work processor, terminal, or other peripheral component, communications processor, typesetter or broadcast equipment sold by a recognized manufacturer (or its authorized distributor, agent, or representative) and installed and serviced by qualified personnel.

B. Carpet manufacturer must certify by register and roll numbers that carpet shipped for this project complies with all requirements of the Specifications subject to normal manufacturing tolerances.

C. Warranties:
1. Carpet Manufacturer's Standard Warranty for Wear – Fifteen (15) year warranty.
2. Yarn Manufacturer's Color Fastness Warranty:
   a) Light – Fifteen (15) year warranty.
   b) Atmospheric – Fifteen (15) year warranty.
3 Static - Lifetime of the carpet.
4. Edge Ravel & Delamination – Fifteen (15) year warranty.

5. Stain Warranty – Fifteen (15) years.

PART 2 - PRODUCTS

2.01 GENERAL

A. Furnish first quality carpet; free of visual blemishes, streaks, poorly dyed areas, fuzzing of pile yarn, spots or stains, and other physical and manufacturing defects. Provide carpet materials and treatments as reasonably nonallergenic and free of other recognized health hazards. Provide a static control construction on all grade carpets which gives adequate durability and performance. Provide the Carpet and Rug Institute (CRI) Indoor Air Quality (IAQ) Label. Carpet type bearing the label will indicate that carpet has been tested and meets the criteria of the CRI Green Label Requirements for Indoor Air Quality Test Criteria.

B. Manufacturer:

1. One manufacturer shall be used throughout the project.

2. Approved Manufacturers: Subject to compliance with requirements, products which may be incorporated in the work shall be one of the following:
   Interface (Libra Classic-GlasBloc)
   Mannington (Venue 20 - Infinity Modular)
   Tandus/C&A (Crayon/Powerbond).

C. Tolerances: Materials shall be subject to normal carpet industry manufacturing tolerances of plus or minus five percent with at least 33 percent of material being on the plus side.

D. Color & Pattern: Carpet colors and patterns will be selected by Owner from manufacturer's full range of colors and patterns. Up to two (2) different colors/patterns may be used throughout the project.

E. Minimum Critical Radiant Flux: Class 1, a minimum average critical radiant flux of 0.45 watts per square centimeter when tested in accordance with ASTM E-648.

F. Smoke Developed (Specific Optical Density): 450 or less (flaming) per NFPA 253 (NBS/AMINCO SMOKE CHAMBER).

G Pile Construction: Tufted, textured loop pile. Straight line tufts only; no offset stitching.

H Pile Yarn: Continuous filament textured. Yarn must be heat set or air entangled. No single step or straight down yarn processing accepted.

I. Dye Method: Min. 60% solution-dyed; no after-manufacture dye methods will be acceptable.

J. Static Control: Protect from static discharge in excess of 3.0 kv when tested per AATCC-134 (at 70 degrees F. & 30% relative humidity) for a five-year period from Date of Substantial Completion, regardless of what static control is used.

K. Indoor Air Quality: Carpet and Adhesive shall comply with CRI Green Label Plus Standards.

L. VOC: VOC content of primers, adhesives and seam sealers shall not exceed 1 gram / ltr.

M. Carpet, adhesive and seaming products shall be rated for installation on slabs with up to 10 lbs moisture emission rate and relative humidity for concrete substrates of minimum 85%.

N. Antimicrobial: Nontoxic antimicrobial treatment in accordance with AATCC TM 174 Part I (qualitative), guaranteed by the carpet manufacturer to last the life of the carpet.

O. Backing: Backing shall be a closed cell vinyl/polymer impervious material.

2.02 CARPET CHARACTERISTICS

A. Yarn Type – Type 6, 6 Antron.
B. Construction – Textured Patterned Loop.
C. Gauge – Min. 1/16th
D. Stitches per Inch – Min. 8
E. Pile Thickness – 0.110 to 0.16 inches
G. Yarn Tufted Weight – 20 oz to 24 oz per sq. yd.
H. Size: Modular 20-inch or 24-inch square tiles.
I. Primary Backing – Polypropylene (or approved Synthetic fiber such as Polyolefin)
J. Secondary Backing – Closed Cell Vinyl/Polymer Cushion.
K. Underlayment - None; Glue Directly to Slab

2.03 ACCESSORIES

A. Carpet Edge Guard, Metallic: Provide extruded aluminum fold-down edge guard with concealed gripper teeth; minimum 1/2" wide punched anchorage flange; minimum 5/8" wide fold flange. Provide in hammered texture with anodized aluminum finish of color selected by Architect from standard colors available. Edge guards shall be screw attached to floor with expansion anchors (Vinyl or rubber edging shall not be used)

B. Primer: Primer for non-porous substrata as recommended by carpet manufacturer.

C. Installation Adhesive: Premium grade release type water proof, water base, latex cement as recommended and supplied by manufacturer to suit application and expected service shall be used. Adhesive content shall be **ASBESTOS FREE**.

Adhesive shall be release type allowing removal of carpet without damage to carpet or substrate.

D. Miscellaneous Materials: As recommended by manufacturers of carpet and other carpeting products; selected by Installer to meet project circumstances and requirements.

PART 3 - EXECUTION

3.01 EXISTING CONDITIONS

A. Existing floor finishes shall be removed by the Contractor. Protect adjoining surfaces from damage. All previous adhesives and other materials which could affect the adhesion or smooth installation of new carpet shall be removed.

Removed materials shall be properly disposed of off-site by the Contractor.

B. Existing furniture and equipment which is not fastened to walls or floor shall be moved by the Owner as required to complete continuous flooring application in all areas.

3.01 EXAMINATION AND TESTING

A. Installer shall examine substrates for moisture content and other conditions under which carpeting is to be installed. Moisture content of the concrete floor shall not exceed the recommendations of the carpet manufacturer at time of installation. Verify building temperature and humidity level will remain within proper range as recommended by flooring manufacturer. Notify Contractor in writing of major conditions detrimental to proper completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

B. Moisture and alkalinity (pH) tests shall be performed for both new concrete substrata and existing on-grade sub-strata before installing flooring. Moisture content tested per ASTM F-1869-03 and pH must be within the acceptable range denoted by the manufacturer.

3.02 PREPARATION

A. Repair holes, cracks, depressions, and rough areas using material recommended by carpet or adhesive manufacturer. Apply leveling compound to ease all transitional floor areas scheduled to receive abutting floor materials of differing thicknesses. Tops of abutting floor materials shall be level throughout to avoid potential trip hazards.

B. Clear away debris and scrape up cementitious deposits from surfaces to receive carpeting; vacuum clean immediately before installation. Check concrete surfaces to ensure no dusting through installed carpet; apply sealer where required to prevent dusting.

C. Remove coatings from subfloor surfaces that would prevent adhesive bond, including curing compounds incompatible with resilient flooring adhesives, paint, oils, waxes and sealers.

3.03 INSTALLATION

A. Conduct installation in accordance with the manufacturer's printed instructions and CRI 104. Protect edges of carpet meeting hard surface flooring with molding and install in accordance with the molding manufacturer's printed instructions. Follow ventilation, personal protection, and other safety precautions recommended by the adhesive manufacturer. Continue ventilation during installation and for at least 72 hours following installation.

Comply with manufacturer's recommendations for seam locations, and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doors, center seams under doors; do not place seams in traffic direction at doorway.

B. Extend carpet under open-bottomed obstructions and under removable flanges and furnishings, and into alcoves and closets of each space.

C. Provide cut-outs where required, and bind cut edges properly where not concealed by protective edge guards or overlapping flanges.

D. Install carpet edge guard where edge of carpet is exposed; anchor guards to substrate.

E. Expansion Joints: Do not bridge building expansion joints with continuous carpeting; provide for movement.

F. Fit sections of carpet into each space prior to application of adhesive. Trim edges and butt cuts with seaming cement.

G. Apply adhesive uniformly to substrate in accordance with manufacturer's instructions. Butt carpet edges tightly together to form seams without gaps. Roll entire carpet area lightly to eliminate air pockets and ensure uniform bond. Remove any adhesive promptly from face of carpet by method which will not damage carpet face.

H. Install modular tiles with release adhesive and snugly jointed together. Lay tiles in an alternating pattern with accessibility to the subfloor where required.

I. Install 1/8” rubber cover wall base in all carpeted areas.

3.04 CLEANING

A. Remove and dispose of debris and unusable scraps. Vacuum carpet using commercial machine with face-beater element. Remove spots and replace carpet where spots cannot be removed. Remove any protruding face yarn using sharp scissors.

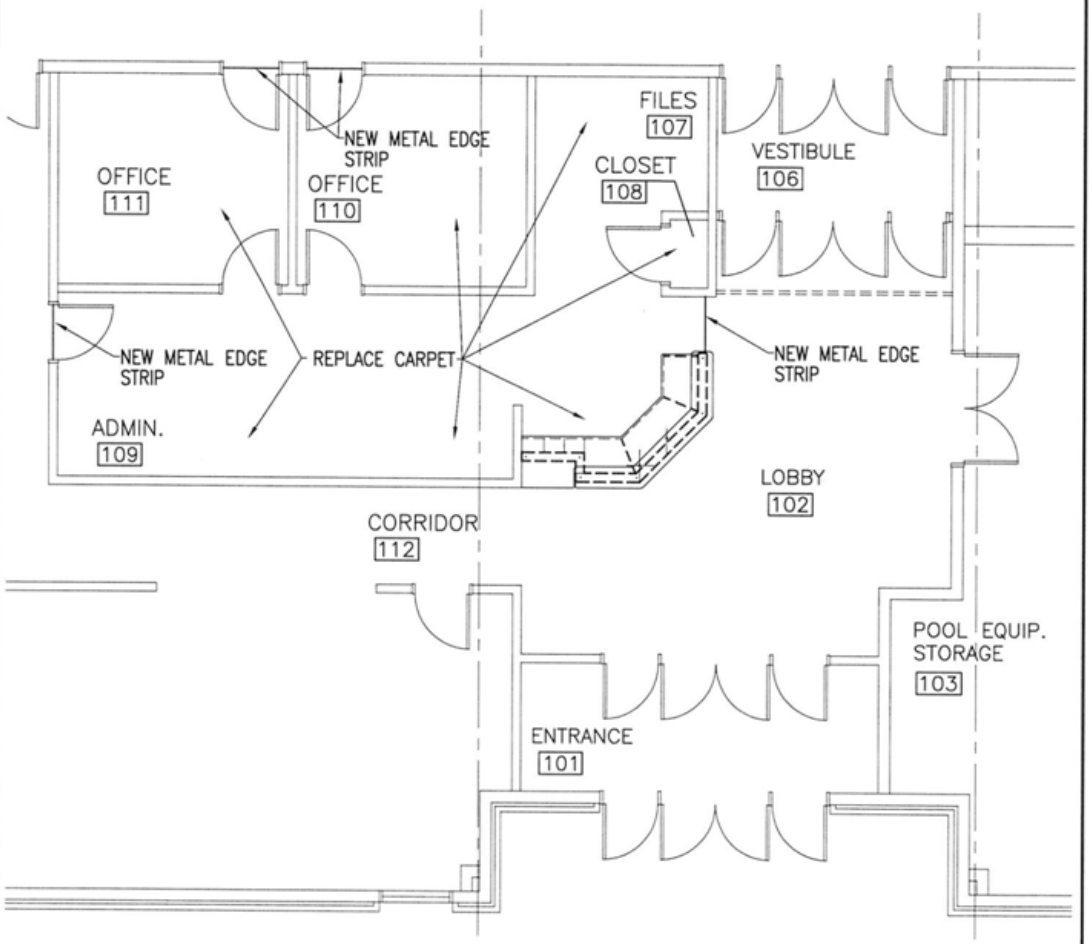
3.05 PROTECTION

A. Provide protective methods and materials needed to ensure that carpeting will be without deterioration or damage at time of substantial completion.

3.06 MAINTENANCE MATERIAL

A. Provide minimum of 1% of each type and of each color in full size modular tiles, to Owner for storage for future use.

REFER TO DRAWING NEXT PAGE FOR ADDITIONAL INFORMATION



LOBBY PLAN

SCALE: 1/8" = 1'-0"

MOUNTAIN VIEW AQUATICS CENTER **09680-01**

02/29/12

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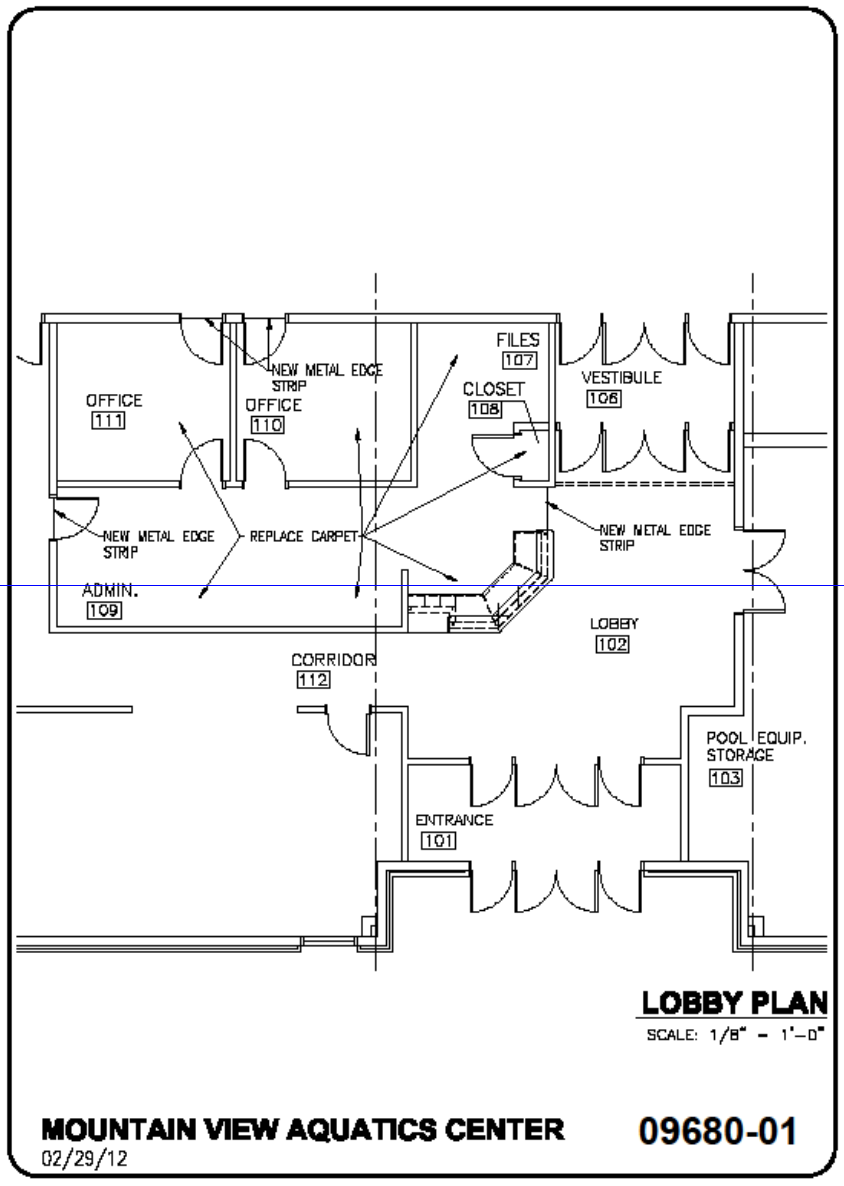

SECTION 09900 - PAINTING

Section 1 - Scope of Work

1.01 Base Bid -

A. **All** previously painted non factory finished surfaces, within the Natitorium (Room 129) shall be painted. Items excluded from painting include pool surface and deck, roll up door surface, prefinished aluminum or other factory finished items. Items to be repainted include, but are not limited to: beams, columns, doors, roof deck, walls, existing ductwork, new duct work, louvers, angles, vents, doors and windows.
B. Paint all new items installed including new duct work and hollow metal doors.
C. The Cobb County Parks Recreation and Cultural affairs seal on the wall will remain and will have to be protected during the construction and painting.
D. Remove existing sound baffles prior to painting. Store the baffles so they are properly protected during the painting operations and reinstall them upon completion of painting and ductwork installation.

1.02 Alternate # 1

A. All previously painted non factory finished surfaces within the spaces identified in Alternate #1 (refer to Section 01030) shall be painted. Items excluded from painting include prefinished aluminum or other factory finished items. Items to be repainted include, but are not limited to: concrete block, gypsum board, all walls, all ceilings, exposed structure if any. The surfaces will be prepped per manufacturer's instructions and painted with Topcoat: K46W00051 - Pro Industrial PreCatalyzed Waterbased Semi-Gloss Epoxy, color to match existing.

1.03 Alternate # 8

A. Repaint the structure, steel lintel and the underside of the canopy outside the front entrance to the facility utilizing the materials defined in paragraph 2.02.A.a below.

Section 2 – Products

2.01 Manufacturer

A. Basis of design shown below is Sherwin Williams. Owner approved equivalent products are acceptable.

2.02 SCHEDULE

A. Interior Finishes
   a. Steel
      Primer: B66W00310 - Pro Industrial Pro-Cryl® Universal Primer Off White. Spot prime all rusted areas as needed after proper prep work. Steel to be cleaned and prepped in accordance with manufacturer's instructions. No primer is required in areas where no rust exists.
      Topcoat: B71W00101 - Pro Industrial Hi-Bild Waterbased Catalyzed Epoxy for all surfaces in pool area(natatorium)
      Topcoat: B71V00100 - Pro Industrial Hi-Bild Waterbased Catalyzed Epoxy Hardener - High Lustre part B for epoxy in pool area
   b. Concrete Block (CMU) and other previously painted surfaces not in pool area.
      Topcoat: K46W00051 - Pro Industrial PreCatalyzed Waterbased Semi-Gloss Epoxy. Color to match existing.

Section 3 - Execution

3.01 SURFACE PREPARATION

A. Block (Cinder and Concrete) - Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement, and hardeners. Concrete and mortar must be cured at least 30 days at 75°F.The pH of the surface should be between 6 and 9,unless the products to be used are designed to be used in high pH environments such as Loxon. On tilt-up and poured-in-place concrete, commercial detergents and abrasive blasting may be necessary to prepare the surface. Fill bug holes, air pockets, and other voids with a patching compound such as ConSeal.

B. Drywall (Interior and Exterior) - Must be clean and dry. All nail heads must be set and spackled. Joints must be taped and covered with a joint compound. Spackled nail heads and tape joints must be sanded smooth and all dust removed prior to painting. Exterior surfaces must be spackled with exterior grade compounds.

C. Galvanized Metal - Allow to weather a minimum of 6 months prior to coating. Clean per SSPC-SP1 using detergent and water or a degreasing cleaner, then prime as required. When weathering is not possible or the surface has been treated with chromate's or silicates, first Solvent Clean per SSPC-SP1 and apply a test area, priming as required. Allow the coating to dry at least one week before testing. If adhesion is poor, Brush Blast per SSPC-SP7 is necessary to remove these treatments.

D. Previously Coated Surfaces - Maintenance painting will frequently not permit or require complete removal of all old coatings prior to repainting. However, all surface contamination such as oil, grease, loose paint, mill scale, dirt, foreign matter, rust, mold, mildew, mortar, efflorescence, and sealers must be removed to assure sound bonding to the tightly adhering old paint. Glossy surfaces of old paint films must be clean and dull before repainting. Thorough washing with an abrasive cleanser will clean and dull in one operation, or, wash thoroughly and dull by sanding. Spot prime any bare areas with an appropriate primer. Recognize that any surface preparation short of total removal of the old coating may compromise the service length of the system. Check for compatibility by applying a test patch of the recommended
coating system, covering at least 2 to 3 square feet. Allow to dry one week before testing adhesion per ASTM D3359. If the coating system is incompatible, complete removal is required.

E. Solvent Cleaning -Solvent Cleaning is a method for removing all visible oil, grease, soil, drawing and cutting compounds, and other soluble contaminants. Solvent cleaning does not remove rust or mill scale. Change rags and cleaning solution frequently so that deposits of oil and grease are not spread over additional areas in the cleaning process. Be sure to allow adequate ventilation. For complete instructions, refer to Steel Structures Paint Council Surface Preparation Specification No. 1. (SSPC-SP1).

F. Hand Tool Cleaning - Hand Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Mill scale, rust, and paint are considered adherent if they cannot be removed by lifting with a dull putty knife. Before hand tool cleaning, remove visible oil, grease, soluble residues, and salts by the methods outlined in SSPCSP1. For complete instructions, refer to Steel Structures Paint Council Surface Preparation Specification No. 2 (SSPC-SP2).

G. Power Tool Cleaning - Power Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Mill scale, rust, and paint are considered adherent if they cannot be removed by lifting with a dull putty knife. Before power tool cleaning, remove visible oil, grease, soluble residues, and salts by the methods outlined in SSPCSP1. For complete instructions, refer to Steel Structures Paint Council Surface Preparation Specification No.3.(SSP-PC3).

H. High-and Ultra-High Pressure Water Jetting for Steel and Other Hard Materials SSPC-SP12 or NACE 5. This standard provides requirements for the use of high- and ultra-high

pressure water jetting to achieve various degrees of surface cleanliness. This standard is limited in scope to the use of water only, without the addition of solid particles in the stream. For complete instructions, refer to Joint Surface Preparation Standard (SSPC-SP12/NACE No.5).

PRO INDUSTRIAL™

113.05

Pro-Cryl® Universal Primer

B66-310 Series

As of 12/31/2010, Complies with:

OTC	Yes	LEED® 09 CI	Yes
SCAQMD	Yes	LEED® 09 NC	Yes
CARB	Yes	LEED® 09 CS	Yes
MPI#	107, 134	LEED® 09 S	Yes
NAHB	Yes		

Children & Schools GREENGUARD® Indoor Air Quality Certified

CHARACTERISTICS

Pro Industrial Pro-Cryl Universal Primer is an advanced technology, self cross-linking acrylic primer. It is rust inhibitive and designed for both construction and maintenance applications. It can be used as a primer under water-based or solvent-based high performance topcoats.

- Rust inhibitive
- VOC compliant
- Single component
- Early moisture resistant
- Fast dry
- Low temperature application
- Interior and exterior use
- Suitable for use in USDA inspected facilities

Color: Off White, Gray, Red Oxide

Recommended Spread Rate per coat:

Wet mils:	5.0 - 10.0
Dry mils:	2.0 - 4.0
Coverage:	156 - 312 sq ft/gal approximate

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Time @ 6.0 mils wet 50% RH:

	40°F	77°F	120°F
To touch:	2 hrs	40 min	20 min
Tack free:	8 hrs	2 hrs	1 hr
To recoat:	16 hrs	4 hrs	2 hrs
To cure:	45 days	30 days	14 days

Drying time is temperature, humidity, and film thickness dependent.

Finish: Low sheen

Flash Point: >200°F, Seta Flash

Shelf Life: 36 months, unopened
Store indoors at 40°F to 100°F.

Tinting: Do not tint
B66W310 (may vary by color)

VOC (EPA Method 24): Unreduced: <100g/L; <0.83 lb/gal

Volume Solids: 39% ± 2%

Weight Solids: 53% ± 2%

Weight per Gallon: 10.8 lb

RECOMMENDED SYSTEMS

Steel, waterborne topcoat:
1 ct. Pro Industrial Pro-Cryl Universal Primer
1-2 cts. Pro Industrial Zero VOC Acrylic
or Pro Industrial Zero VOC WB Catalyzed Epoxy
or Pro Industrial Multi-Surface Acrylic
or Pro Industrial Hi-Bild Water-based Epoxy
or Pro Industrial PreCatalyzed Epoxy

Steel, solvent borne topcoat:
1 ct. Pro Industrial Pro-Cryl Universal Primer
1-2 cts. Pro Industrial High Performance Epoxy
or Pro Industrial Urethane Alkyd

Steel / Aluminum / Galvanized:
1 ct. Pro Industrial Pro-Cryl Universal Primer

Acceptable topcoats for:

Light Service:
1-2 cts. Pro Industrial PreCatalyzed Epoxy
or Pro Industrial Urethane Alkyd

Moderate Service:
1-2 cts. Pro Industrial Zero VOC Acrylic
or Pro Industrial Zero VOC WB Catalyzed Epoxy

Severe Service
1-2 cts. Pro Industrial High Performance Epoxy
or Pro Industrial Zero VOC WB Catalyzed Epoxy

System Tested: (unless otherwise indicated)
Substrate: Steel
Surface Preparation: SSPC-SP10
1 ct. Pro Industrial Pro-Cryl Universal Primer
1 ct. Pro Industrial Zero VOC Acrylic

Adhesion:
Method: ASTM D4541
Result: 500 psi

Corrosion Weathering:
Method: ASTM D5894, 10 cycles, 3360 hours
Result: Passes

Direct Impact Resistance:
Method: ASTM D2794
Result: >140 in. lbs.

Dry Heat Resistance:
Method: ASTM D2485
Result: 200°F

Flexibility:
Method: ASTM D522, 180° bend, 1/4" mandrel
Result: Passes

Moisture Condensation Resistance:
Method: ASTM D4585, 100°F, 1250 hours
Result: Passes

Pencil Hardness:
Method: ASTM D3363
Result: H

Salt Fog Resistance:
Method: ASTM B117, 1250 hours
Result: Passes

Provides performance comparable to products formulated to federal specification: AA50557 and Paint Specification: SSPC-Paint 23.

continued on back

PRO INDUSTRIAL™
PRO-CRYL® UNIVERSAL PRIMER

SHERWIN-WILLIAMS.

SURFACE PREPARATION

WARNING! Removal of old paint by sanding, scraping or other means may generate dust or fumes that contain lead. Exposure to lead dust or fumes may cause brain damage or other adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH approved) and proper containment and cleanup. For more information, call the National Lead Information Center at 1-800-424-LEAD (in US) or contact your local health authority.

Do not use hydrocarbon solvents for cleaning.

Iron and Steel - Minimum surface preparation is Hand Tool Cleaning per SSPC-SP2. Remove all oil and grease from the surface per SSPC-SP1. For better performance, use Commercial Blast Cleaning per SSPC-SP6.

Aluminum - Remove all oil, grease, dirt, oxide and other foreign material per SSPC-SP1.

Galvanizing - Allow to weather a minimum of six months prior to coating. Solvent Clean per SSPC-SP1. When weathering is not possible, or the surface has been treated with chromates or silicates, first Solvent Clean per SSPC-SP1 and apply a test patch. Allow paint to dry at least one week before testing adhesion. If adhesion is poor, brush blasting per SSPC-SP7 is necessary to remove these treatments. Rusty galvanizing requires a minimum of Hand Tool Cleaning per SSPC-SP2, prime the area the same day as cleaned.

Previously Painted Surfaces - If in sound condition, clean the surface of all foreign material. Smooth, hard or glossy coatings and surfaces should be dulled by abrading the surface. Apply a test area, allowing paint to dry one week before testing adhesion. If adhesion is poor, additional abrasion of the surface and/or removal of the previous coating may be necessary. Retest surface for adhesion. If paint is peeling or badly weathered, clean surface to sound substrate and treat as a new surface as above.

APPLICATION

Temperature: 40°F minimum
120°F maximum
(air, surface, and material)
At least 5°F above dew point

Relative humidity: 85% maximum

The following is a guide. Changes in pressures and tip sizes may be needed for proper spray characteristics. Always purge spray equipment before use with listed reducer. Any reduction must be compatible with the existing environmental and application conditions.

Reducer: Water

Airless Spray
Pressure..... 2000 psi
Hose..... 1/4" ID
Tip..... .015" - .019"
Filter..... 60 mesh
Reduction..... Not recommended

Conventional Spray
Gun..... Binks 95
Fluid Nozzle..... 66
Air Nozzle..... 63PB
Atomization Pressure..... 60 psi
Fluid Pressure..... 25 psi
ReductionAs needed up to 5% by volume

Brush..... Nylon/Polyester
Reduction..... Not recommended

Roller..... 3/8" woven
ReductionAs needed up to 5% by volume

If specific application equipment is listed above, equivalent equipment may be substituted.

CLEANUP INFORMATION

Clean spills and spatters immediately with soap and warm water. Clean hands and tools immediately after use with soap and warm water. After cleaning, flush spray equipment with Mineral Spirits to prevent rusting of the equipment. Follow manufacturer's safety recommendations when using Mineral Spirits.

PRO INDUSTRIAL™

113.20

Hi-Bild Waterbased Catalyzed Epoxy

Part A	B71-100	Series
Part B	B71V100	Semi-Gloss Hardener
Part B	B71V110	Eg-Shel Hardener

As of 12/31/2010, Complies with:

OTC	Yes	LEED® 09 CI	No
SCAQMD	No	LEED® 09 NC	No
CARB	Yes	LEED® 09 CS	No
MPI Spec #	No	LEED® 09 H	No
NAHB	No		

CHARACTERISTICS

Pro Industrial Hi-Bild Waterbased Catalyzed Epoxy is a high performance, interior/exterior, VOC compliant, low odor, high film build, two-component, water based acrylic epoxy. It dries to a tough, tile-like finish that exhibits excellent durability and performance properties.

Pro Industrial Hi-Bild Waterbased Catalyzed Epoxy resists: moisture, abrasion, select chemicals, impact, and yellowing. Suitable for use in USDA inspected facilities.

Color: Most colors

Recommended Spread Rate per coat:

Wet mils:	10.0 - 15.0
Dry mils:	4.0 - 6.0
Coverage:	110 - 170 sq ft/gal Approximate

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Time @ 10.0 mils wet 50% RH:

	@ 50°F	@ 77°F	@ 120°F
To touch:	2 hrs	1 hr	30 min
To handle	16 hrs	12 hrs	8 hrs
To recoat:			
minimum:	4 hrs	2 hrs	1 hr
maximum:	30 days	30 days	30 days
To cure:	30 days	14 days	7 days
Pot Life	-	8 hrs	-
Sweat In	-	15 min	-

Drying time is temperature, humidity, and film thickness dependent.

Mix Ratio: 4:1

Finish: Semi-Gloss, Eg-Shel

Flash Point: 230°F, SETA, mixed

Shelf Life: 12 months, unopened
Store indoors at 40°F to 100°F.

Tint Part A with BAC or EnviroToner at:

Base	oz/gal	Strength
Extra White	0-4	100%
Deep Base	8-12	100%
Ultradeep Base	8-12	100%

B71W111 (may vary by color)

VOC (EPA Method 24): Unreduced: <250 g/L 2.08 lb/gal, mixed

Volume Solids: 42% ± 2%, mixed

Weight Solids: 52% ± 2%, mixed

Weight per Gallon: 10.7 lb

RECOMMENDED SYSTEMS

Steel
1 ct: DTM Acrylic Primer/Finish
1-2 cts: Pro Industrial Hi-Bild WB Catalyzed Epoxy

Steel
1 ct. Pro Industrial Pro-Cryl Universal Primer
1-2 cts: Pro Industrial Hi-Bild WB Catalyzed Epoxy

Drywall:
1 ct: ProGreen 200 Latex Primer
1-2 cts: Pro Industrial Hi-Bild WB Catalyzed Epoxy

Galvanized
1 ct. Pro Industrial Pro-Cryl Universal Primer
1-2 cts: Pro Industrial Hi-Bild WB Catalyzed Epoxy

Masonry
1 ct: Loxon Masonry Primer
or Heavy Duty Block Filler
1-2 cts: Pro Industrial Hi-Bild WB Catalyzed Epoxy

Masonry, smooth
2 cts: Pro Industrial Hi-Bild WB Catalyzed Epoxy

System Tested:
Substrate: Steel
Surface Preparation: SSPC-SP10/NACE 2
Primer: 1 ct. WB Tile-Clad Epoxy Primer
Finish: 1 ct. Pro Industrial Hi-Bild WB Catalyzed Epoxy

Adhesion:
Method: ASTM D4541
Result: 751 psi

Exterior Durability:
Method: 1 year
Result: Excellent, chalks

Pencil Hardness:
Method: ASTM D3363
Result: HB

Thermal Shock:
Method: ASTM D2246, 12 cycles
Result: Passes

Wind Driven Rain:
Method: Federal Spec. TT-C-555B
Result: Passes
Hi-Bild WB Catalyzed Epoxy only

Abrasion Resistance:
Method: ASTM D4060, CS10 wheel, 1000 cycles 1 kg load
Result: 141 mg loss

Dry Heat Resistance:
Method: ASTM D2485
Result: 180°F, intermittent 200°F

Flexibility:
Method: ASTM D522, 180° bend 1/8" mandrel
Result: Passes

Impact Resistance, Direct:
Method: ASTM D2794
Result: 42 in. lb.

Impact Resistance, Indirect:
Method: ASTM D2794
Result: 24 in. lb.

Resists fumes, splash, and spillage of mild acids, alkalies, salts, aliphatic and aromatic hydrocarbon solvents, and lubricating oils (ASTM D3912).

continued on back

PRO INDUSTRIAL™
HI-BILD WATERBASED CATALYZED EPOXY

SHERWIN-WILLIAMS.

SURFACE PREPARATION

WARNING! Removal of old paint by sanding, scraping or other means may generate dust or fumes that contain lead. Exposure to lead dust or fumes may cause brain damage or other adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH approved) and proper containment and cleanup. For more information, call the National Lead Information Center at 1-800-424-LEAD (in US) or contact your local health authority.

Do not use hydrocarbon solvents for cleaning.

Steel - Minimum surface preparation is Hand Tool Clean per SSPC-SP2. Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. For better performance, use Commercial Blast Cleaning per SSPC-SP6/NACE 3, blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2 mils). Remove all weld spatter and round all sharp edges by grinding. Prime any bare steel within 8 hours or before flash rusting occurs.

Galvanized Steel - Allow to weather a minimum of six months prior to coating. Solvent Clean per SSPC-SP1. When weathering is not possible, or the surface has been treated with chromates or silicates, first Solvent Clean per SSPC-SP1 and apply a test patch. Allow paint to dry at least one week before testing adhesion. If adhesion is poor, brush blasting per SSPC-SP7 is necessary to remove these treatments. Rusty galvanizing requires a minimum of Hand Tool Cleaning per SSPC-SP2, prime the area the same day as cleaned.

Concrete and Masonry - For surface preparation, refer to SSPC-SP13/NACE 6 or ICRI 03732, CSP 1-3. Surfaces should be thoroughly cleaned and dry. Surface temperatures must be at least 55°F before filling. If required for a smoother finish, use the recommended filler/surfacer. The filler/surfacer must be thoroughly dry before topcoating per manufacturer's recommendations.
Weathered masonry and soft or porous cement board must be brush blasted or power tool cleaned to remove loosely adhering contamination and to get to a hard, firm surface. Apply one coat Loxon Conditioner, following label recommendations.

Previously Painted Surfaces - If in sound condition, clean the surface of all foreign material. Smooth, hard or glossy coatings and surfaces should be dulled by abrading the surface. Apply a test area, allowing paint to dry one week before testing adhesion. If adhesion is poor, or if this product attacks the previous finish, removal of the previous coating may be necessary. If paint is peeling or badly weathered, clean surface to sound substrate and treat as a new surface as above.

APPLICATION

Temperature: 50°F minimum
120°F maximum
(air, surface, and material)
At least 5°F above dew point
Relative humidity: 85% maximum

The following is a guide. Changes in pressures and tip sizes may be needed for proper spray characteristics. Always purge spray equipment before use with listed reducer. Any reduction must be compatible with the existing environmental and applicaton conditions.

Reducer ..... Water

Airless Spray
Pressure ..... 2400 psi
Hose ..... 3/8" ID
Tip ..... .019" - .023"
Filter ..... 60 mesh
Reduction ..... as needed up to 6% by volume

Brush ..... Nylon/Polyester
Reduction ..... Not recommended

Roller Cover ..... 3/8" woven
Reduction ..... Not recommended

If specific application equipment is listed above, equivalent equipment may be substituted.

Do not apply the material beyond recommended pot life.

Do not mix previously catalyzed material with new.

If maximum recoat time is exceeded, abrade surface before recoating.

CLEANUP INFORMATION

Clean spills and spatters immediately with soap and warm water. Clean hands and tools immediately after use with soap and warm water. After cleaning, flush spray equipment with mineral spirits to prevent rusting of the equipment. Follow manufacturers safety recommendations when using mineral spirits.

SHERWIN WILLIAMS.

PRO INDUSTRIAL™

113.01 PRE-CATALYZED WATERBASED EPOXY

K45 Series Eg-Shel
K46 Series Semi-Gloss

CHARACTERISTICS

Pro Industrial Precatalyzed Waterbased Epoxies are revolutionary, single-component pre-catalyzed waterborne acrylic epoxies that offers the adhesion, durability and resistance to stains and most cleaning solvents usually characteristic of two-component waterborne acrylic epoxy products.

These products are low in VOC, have a very mild odor, and can be applied over a wide variety of primers on properly prepared **interior** metal, wood, masonry, plaster and drywall.

- Interior institutional/commercial high maintenance areas
- Upgrade surfaces painted with conventional coatings with a high performance protection system with excellent adhesion
- Corrosion and Chemical resistant
- Hospitals and Schools
- Institutional dining and kitchen areas
- Suitable for use in USDA inspected facilities

Color: most colors
Recommended Spread Rate per coat:
4.0 mils wet; 1.5 mils dry
350 - 400 sq ft/gal
Note: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.
Drying Time, @ 77°F, 50% RH:
temperature and humidity dependent
Touch: 1 hour
Recoat: 8 hours
If this product dries 72 hours or longer it must be sanded before it is recoated. This product is fully cured in approximately 5 - 7 days.
Finish:
Eg-Shel 20 - 30 units @ 85°
Semi-Gloss 55 - 65 units @ 60°
Flash Point: N/A
Tinting with Blend-A-Color:
Use SherCOLOR Formulation System
Vehicle Type: Acrylic Epoxy
K45W00051
VOC (less exempt solvents):
155 g/L; 1.29 lb/gal
Volume Solids: 37 ± 2%
Weight Solids: 50 ± 2%
Weight per Gallon: 10.5 lb

SPECIFICATIONS

Block
1 ct. Loxon Block Surfacer
2 cts. Pro Industrial Precatalyzed Epoxy

Drywall
1 ct. PrepRite 200 Latex Primer
2 cts. Pro Industrial Precatalyzed Epoxy

Plaster
1 ct. PrepRite Wall and Wood Primer
or PrepRite Masonry Primer
2 cts. Pro Industrial Precatalyzed Epoxy

Masonry
1 ct. PrepRite Masonry Primer
2 cts. Pro Industrial Precatalyzed Epoxy

Steel, Aluminum, Galvanized
1 ct. Pro Industrial Pro-Cryl Universal Primer
2 cts. Pro Industrial Precatalyzed Epoxy

Wood
1 ct. PrepRite Wall and Wood Primer
or PrepRite Classic Primer
2 cts. Pro Industrial Precatalyzed Epoxy

System Tested:
Substrate: Steel
Surface Preparation: SSPC-SP6
Primer: 1 ct. DTM Acrylic Primer
Finish: 1 ct. Pro Industrial PreCatalyzed Epoxy Eg-Shel

As of 09/2008, Complies with:			
DTC	Yes	LEED® CIv2.0	No
SCAQMD	No	LEED® NCv2.2	No
CARB	Yes	LEED® CSv2.0	No
MPI Spec #	No	LEED® H	No
NAHB	Yes		

Adhesion
ASTM D 3359 ..... 5B
100% Adhesion for light colors; Darker colors require longer cure time for same level of adhesion
Abrasion Resistance
ASTM D 4060t ..... 74.4 mg loss
CS-10 Wheels 1000 Gram load, 1000 cycles
Block Resistance
Lab Assessment ..... Excellent

Direct Impact Resistance
ASTM D 2794 ..... >100 inch - lbs.
Pencil Hardness
ASTM D 3363 ..... 2B
Permeability Rating
AD/TS 2002.27A, Dry Cup
2.0 metric perms @ 1.3 - 1.5 mils DFT
Scrub Resistance
ASTM D 2486 ..... 500 - 600 cycles with Stiff Bristle Brush and Pumice Scrub Media

Chemical Resistance
ASTM D 1308
Rating:
Excellent Resistance ..... •
Limited Resistance x

Distilled Water (Hot and at Room Temperature)	•
Ethyl Alcohol	•
Vinegar (3% acetic acid)	•
Alkali (10% Sodium Hydroxide)	•
Acid (10% Sulfuric Acid)	•
Soap (10% Fantastik®)	•
Fruit (orange)	•
Butter	•
Olive Oil	•
50/50 Xylene/Mineral Spirits	•

Stain Resistance
ASTM D 3023
Rating:
Excellent Resistance ..... •
Limited Resistance x

Mustard	•
Grape Juice	•
Red Crayon	x
Yellow Crayon	•
Blue Crayon	•
Lipstick, Red	•
Iodine	x
Shoe Polish	•
Washable Ink	•
Permanent Ink	x
Coffee	•
10% Sodium Hydroxide (alkali)	•
Acetic Acid	•

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113.01
PRO INDUSTRIAL™ PRE-CATALYZED WATERBASED EPOXY

K45 SERIES EG-SHEL
K46 SERIES SEMI-GLOSS

SHERWIN WILLIAMS.

SURFACE PREPARATION

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Remove all surface contamination including mildew by washing with an appropriate cleaner, rinse thoroughly and allow to dry. Scrape and sand peeled or checked paint to a sound surface. Sand glossy surfaces dull. Seal stains from water, smoke, ink, pencil, grease, etc. with PrepRite® ProBlock® Primer Sealer.

Aluminum and Galvanized Steel - Remove any oil, grease, or other surface contamination. Remove all corrosion with sandpaper, steel wool, or other abrading method.

Drywall - Fill cracks and holes with patching paste/spackle and sand smooth. Joint compounds must be cured and sanded smooth. Remove all sanding dust.

Masonry, Concrete, Cement, Block - All new surfaces must be cured according to the supplier's recommendations—usually about 30 days. Remove all form release and curing agents. Rough surfaces can be filled to provide a smooth surface. If painting cannot wait 30 days, allow the surface to cure 7 days and prime the surface with PrepRite® Masonry Primer.

SURFACE PREPARATION

Plaster - Bare plaster must be cured and hard. Textured, soft, porous, or powdery plaster should be treated with a solution of 1 pint household vinegar to 1 gallon of water. Repeat until the surface is hard, rinse with clear water and allow to dry.

Steel
Rust and mill scale must be removed using sandpaper, steel wool, or other abrading method. Bare steel must be primed the same day as cleaned.

Wood
Sand any exposed wood to a fresh surface. Patch all holes and imperfections with a wood filler or putty and sand smooth.

Caulking
Gaps between walls, ceilings, crown moldings, and other interior trim can be filled with the appropriate caulk after priming the surface.

APPLICATION

Apply at temperatures above 50°F.
No reduction needed.

Brush
Use a nylon/polyester brush.

Roller
Use a 1/4" - 1/2"" nap synthetic cover.

Spray—Airless
Pressure ..... 1800-2700 psi
Tip ..... .015"-.021"

CLEANUP INFORMATION

Clean spills, spatters, hands and tools immediately after use with soap and warm water. After cleaning, flush spray equipment with mineral spirits to prevent rusting of the equipment. Follow manufacturer's safety recommendations when using mineral spirits.

CAUTIONS

For interior use only.
Non-Photochemically Reactive
Protect from freezing.
This product is **NOT** recommended for floors or for submerged surfaces, or in areas subject to continuous high moisture such as shower stalls (two-component solvent-based, conventional epoxy products or possibly "wet surface" specialty epoxy products are recommended for these areas).

LABEL CAUTION
CAUTION contains CRYSTALLINE SILICA. Use only with adequate ventilation. To avoid overexposure, open windows and doors or use other means to ensure fresh air entry during application and drying. If you experience eye watering, headaches, or dizziness, increase fresh air, or wear respiratory protection (NIOSH approved) or leave the area. Adequate ventilation required when sanding or abrading the dried film. If adequate ventilation cannot be provided wear an approved particulate respirator (NIOSH approved). Follow respirator manufacturer's directions for respirator use. Avoid contact with eyes and skin. Wash hands after using. Keep container closed when not in use. Do not transfer contents to other containers for storage. FIRST AID: In case of eye contact, flush thoroughly with large amounts of water. Get medical attention if irritation persists. If swallowed, call Poison Control Center, hospital emergency room, or physician immediately. DELAYED EFFECTS FROM LONG TERM OVEREXPOSURE. Abrading or sanding of the dry film may release crystalline silica which has been shown to cause lung damage and cancer under long term exposure. DO NOT TAKE INTERNALLY. KEEP OUT OF THE REACH OF CHILDREN. FOR PROFESSIONAL USE ONLY. SEE MATERIAL SAFETY DATA SHEET.
HOTW 09/22/2008 K45W00051 07 00

SECTION 10600- POLYMER (HDPE) FLOOR-MOUNTED OVERHEAD-BRACED TOILET COMPARTMENTS (Alternate #2)

PART 1 - GENERAL

1.01 DESCRIPTION

A. Plastic compartment work includes the following:
   1. Floor-supported, overhead-braced partitions.
   2. Urinal screens

B. Furnish all labor and materials necessary for the completion of work in this section as shown on the contract drawings and specified herein.

C. Work in this section shall include, but is not limited to:
   1. Demolition of existing toilet partitions and urinal screens
   2. Installation of new toilet compartments and urinal screens.
   3. Hardware for toilet compartments and partitions.
   4. Shop drawings and working drawings.
   5. Manufacturer's guarantee.

D. Related work specified elsewhere shall include accessories and anchorage/blocking for attachment of compartments.

1.02 PRODUCTS

A. Submit six sets of shop drawings, and details, for architect's approval. Shop drawings shall be based on field confirmed measurements.

B. Colors shall be selected from the manufacturer's standard range of colors:

C. Color and hardware samples shall be submitted for approval

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Toilet compartments to be supplied by Global Partitions, or approved equal.

2.02 MATERIALS

A. Doors, panels, and pilasters to be 1" thick with homogeneous color throughout, constructed from high density polyethylene (HDPE) resins which are waterproof, nonabsorbent and have a self lubricating surface that resists markings from pens, pencils and other marking instruments. All edges to be machine radius with all sharp edges removed.

2.03 CONSTRUCTION

A. Doors, panels, and pilasters shall be 1" thick with uniformly machined edges.

B. Doors and panels shall be 55" high and mounted at 14" above the finished floor. Door shall be mounted to the pilasters with a die-cast aluminum alloy wraparound hinge.

C. Pilasters shall be minimum 81-1/2" high anchoring to walls and panels with 58" continuous heavy-duty aluminum stirrup brackets. Pilasters are to be anchored to the floor with heavy gauge angles allowing full adjustment of pilaster.

Top of pilasters to be securely braced with aluminum anti-grip headrail.

D. Doors and panels to have an extruded aluminum heat sink strip attached to the lower edge.

2.04 HARDWARE

A. Door hardware shall be as noted:

   1. Heavy-duty 8" aluminum hinge shall have gravity-acting cams and wraparound flanges. Hinges are through-bolted onto doors and pilasters using stainless steel, tamper-resistant through bolts. Hinges allow for simple adjusting at the job site to a full close or partially open position, as required.

   2. Panel connections shall be made with continuous brackets, 54" long of heavy-duty anodized extruded aluminum. Continuous wall brackets are pre-drilled with holes spaced every 10" along the full length of the bracket. The bracket thickness shall be 1/8". Wall

brackets are mounted with stainless steel, tamper-resistant screws. Panels shall be attached with stainless steel, tamper-resistant through bolts. The attachment of brackets to the adjacent wall construction shall be accomplished with #14 x 2-1/2" stainless steel, tamper-resistant screws and plastic anchors.
B. Plastic pilaster shoes shall be minimum 3" high, and are anchored to the pilaster with #10 stainless steel, tamper-resistant screws.
C. Slide latches shall be fabricated from heavy-duty extruded aluminum and mounted to the door with stainless steel, tamper-resistant through bolts.
D. Strike and keepers shall be fabricated from heavy-duty extruded aluminum and shall be attached to the pilasters with stainless steel through bolts.
E. Headrail shall be anti-grip and made of heavy-duty extruded aluminum. Headrail brackets shall be made from die cast aluminum alloy

PART 3 - EXECUTION

3.01 PREPARATION

A. Remove all existing toilet accessories from existing partitions and save for reuse.
B. Remove and dispose of existing partitions and urinal screens
C. Take accurate measurements of complete toilet compartment locations.

3.02 INSTALLATION

A. Install compartments in a rigid, straight, plumb and level manner, complying with the shop drawings and manufacturer's installation instructions.
B. All doors and panels to be mounted at 14" above the finished floor.
C. Clearance at vertical edges of door shall be uniform top to bottom.
D. No evidence of cutting, drilling, and/or patching shall be visible on the finished work.
E. Finished surfaces shall be cleaned after installation and be left free of all imperfections.
F. Install existing toilet accessories in new partitions.

3.03 WARRANTY

A. Guarantees plastic against breakage, corrosion, and delamination for 15 YEARS from the date of acceptance by the Owner. If materials are found defective during that period for the reasons listed above, the materials will be replaced free of charge.

END OF SECTION

SECTION 13000

MISCELLANEOUS POOL AND POOL RELATED WORK

Re-marcite and pool work specification

Remove and/or scarify existing marcite surface of 50 meter and instructional pool to prepare for marcite (white Portland and Pool Mix marble) resurfacing.
Approximate total surface area: 50 meter pool 8,750 sq.ft. ; Instructional Pool 4,500 sq.ft. Bidders shall verify quantity prior to bidding.

- Draining the pool and refilling by Cobb County.
- Remove and reinstall existing defective tile, install matching tiles. Matching tiles believed to be Dal-Tile Mosaic tile.
- Cut out any metal fasteners and/or rebar causing rust stain at a minimum depth of 1" below concrete surface and patch area with hydraulic cement
- Scarify the pool surface and prep for adhesive

Saw cut around main drains, returns and tile providing a 1" – 2" true saw cut to taper marcite transition to the same.

Apply Kover Krete Pre-Kote System or equal product acceptable to County. See attached product data sheet for product information and application guidelines. Refer to www.koverkrete.com for additional information.

Before plastering pool a representative from the County and Pool Company will inspect and sign off on all prep work

Apply white plaster mix (minimum 3/8" thick) and trowel to a smooth finish. Plaster mix will be a 3 to 5 ratio, Portland to pool mix marble.

Other pool related work:

- Ground stainless steel main drain covers (6) to pool rebar framework. Attach underground rated lug to rebar and connect copper ground wire to lug on drain cover frame to rebar lug as required by the drain cover manufacturer. Completely encase rebar connection and ground wire in hydraulic cement and finish with marcite.

- Completely remove paint off of concrete curbing around the perimeter of pools with a high pressure washer. Remove all paint to substrate without damaging the concrete surface. Seal concrete curb with a clear slip resistant concrete sealer, Sherwin Williams H&C Concrete Sealer Wet Look with Shark Grip ™ or approved equivalent. Contractor shall seal a ten ft. long section of curb for review and approval by the Owner prior to proceeding with the work.

- Remove gutter grating around the perimeter for both pools and clean interior gutter surface with TSP (Trisodium Phosphate), rinse thoroughly and apply muriatic acid in water 1:5 ratio solution and pressure wash as to receive BASF "Thoroseal" Waterproof cement-based coating mixed with BASF Acryl 60 Water-based acrylic bonding and modifying admixture per the manufacturer's recommendation. Manufacturer's recommendations and product data sheets are attached at the end of this section.

- Completely clean gutter grating stains and re-install; replace grates broken or damaged as a result of the removal, cleaning, handling or any reason associated with the construction, with new grating material. If stains are not completely removed, replace with new grating material. New material to be equal to existing grating material. Manufacturer of grates, Grate Technology, was purchased by Neptune – Benson pool equipment manufacturer. The item is called "I – bar perpendicular".

- Clean surge tanks surface with TSP, rinse thoroughly and use muriatic acid in water 1:5 ratio solution so to receive BASF "Thoroseal" Waterproof cement-based coating mixed with BASF Acryl60 Water-based acrylic bonding and modifying admixture per the manufacturer recommendation.

- Saw cut a ½" diamond shape pattern approximately ¼" deep by ¼" wide in the deck in locations indicated by using a multi-blade track saw. This can be accomplished using a walk behind mini-groover saw manufactured by Diamond Products (or equivalent). Drawing showing locations of areas to b saw cut is included at the end of this specification section. Assume a quantity of 2039 square feet of surface area to be cut. An outline of each area shown shall be cut prior to cutting diamond shaped patterns.

- Refurbish Stainless Steel Bulkhead. Existing bulkhead was manufactured by Neptune-Benson. Thoroughly visually inspect all bulkhead welds. Review proposed welds for Owner concurrence prior to proceeding with welding. Make appropriate repairs to welds as needed; Assume that the project will require a certified welder (stainless tig) for a minimum of three days. Hydro-blast rust areas with a high pressure hydro blast washer (20,000 to 40,000 psi) to remove all rust. Clean all stainless with one of the following products (or equal): CitriSurf 77 Stainless Steel cleaner and passivation system; Nitric Acid (20%) solution. Please refer to MSDS requirements for handling of materials.

  Coat exposed internal stainless with Bitumastic 300M Coal Epoxy. See Link: http://www.farwestcorrosion.com/ccp/protect/carbolin/bitumastic300M.htm

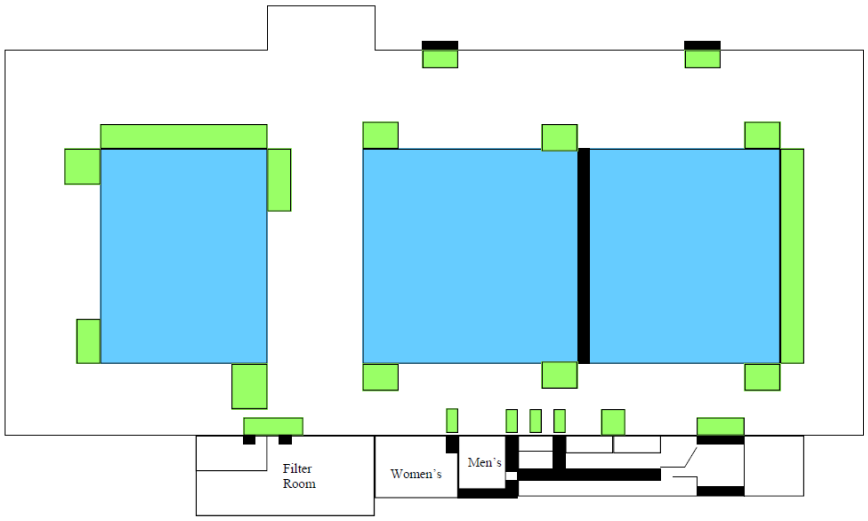
  Remove, prep and repaint all decking panels per manufacturer's instructions. The paint material shall be Tnemec Epoxoline 66 two component epoxy. Colors to match existing panels.

- Replace 10 – 50 meter lane lines with 6" Competitor/ Gold Medal brand lane lines with 10 - 25 yard disconnect sections. See attached specification for additional information. Refer to the product data sheet at the end of this specification and this link for additional information: http://www.competitorswim.com/racing_lanes.html

  Minimum warranty on material and workmanship 1 year.

  Cobb County will maintain proper water chemistry for 30 days
  Cobb County will brush pool for approximately 2-3 weeks to ensure proper curing of new plaster.

END OF SECTION



Mountain View Aquatic Center

Deck Areas that need attention to reduce slippage

Primary Areas

Note: The areas of highest priority are those where swimmers enter and exit the pool water and/or wet areas where swimmers enter and exit the natatorium.

BASF

The Chemical Company

PRODUCT DATA

07 16 00 Cementitious Waterproofing

THOROSEAL®

Waterproof cement-based coating for concrete and masonry

Description

Thoroseal® is a Portland-cement-based coating for concrete and masonry that resists both positive and negative hydrostatic pressure. Polymer-modified with Acryl 60®, Thoroseal® creates a low-maintenance and highly durable waterproof barrier.

Yield

225 ft²/50 lb (20.9 m²/22.7 kg) bag as a base coat at 1/16" (1.6 mm) dry-film thickness.

450 ft²/50 lb (41.8 m²/22.7 kg) bag as a topcoat at 1/32" (0.8 mm) dry-film thickness.

Coverage will vary depending on surface texture and porosity.

Packaging

THOROSEAL®

10 lb (4.5 kg) cans for Thoroseal® white and standard gray only

30 lb (13.6 kg) polyethylene-lined bags for Thoroseal® white and standard gray only

50 lb (22.7 kg) polyethylene-lined bags for Thoroseal® white, standard gray, all landscape colors and custom colors

60 lb (27.2 kg) pails for Thoroseal® white, standard gray, landscape colors, and custom colors

ACRYL 60®

1 quart (0.9 L) bottles

1 gallon (3.8 L) bottles

5 gallon (18.9 L) pails

30 gallon (113 L) drums

55 gallon (208 L) drums

Features	Benefits
• Waterproof	Protects building interiors from dampness and moisture damage
• Resistant to both positive and negative hydrostatic pressure	Suitable for use below grade interior and exterior and in water-treatment construction
• Breathable	Allows interior moisture to escape without damaging coating
• Compatible with high-performance coatings	Accepts a wide range of architectural coatings and textured finishes
• Aesthetically beneficial	Hides minor surface defects and blemishes in architectural concrete
• Aesthetically superior	Available in 10 landscape colors and in custom colors (with minimum order quantities)

Color

White and standard gray (this color is not uniform)

Custom and landscape colors are available for 5,000 lbs (2,268 kg) minimum order.

Ten landscape colors : bone, dijon, French vanilla, good earth, light khaki, Thoro® gray, Navajo white, parchment, pearl gray, and putty tan

Shelf Life

1 year when properly stored

Storage

Transport and store in unopened containers and keep in a clean, dry condition protected from rain, dew and humidity. Do not stack bags more than 2 pallets high. If dry onsite storage of bags is unavailable or if project is located in a very wet, humid climate zone, then specify Thoroseal® packaged in 60 lb (27.2 kg) metal pails. Store Acryl 60® in similar conditions. Do not allow Acryl 60® to freeze.

Where to Use

APPLICATION

- Alternative to mechanical finishing or rubbing of concrete
- Waterproofing basement and retaining walls
- Foundations
- Bridges and tunnels
- Water cisterns

LOCATION

- Vertical and light-pedestrian horizontal surfaces
- Interior and exterior
- Above and below grade

SUBSTRATE

- Cast-in-place and precast concrete
- Block, brick and porous stone

Thoro

Technical Data

Composition

Thoroseal® contains cement, graded sand, and proprietary additives.

Test Data

PROPERTY	RESULTS	TEST METHODS
Initial Set, min, at 70° F (21° C), 50% rh	10	Lab Method
Final Set, at 70° F (21° C), 50% rh	90	Lab Method
Density, (cured), lbs/ft³ (kg/m³)	129 (2,080)	Lab Method
Positive resistance to hydrostatic pressure, hrs, at 200 psi (1.4 MPa), 461 head ft, air cured at: 70° F (21° C), 50% rh	752 No leakage, no softening	CRD C 48, modified
Negative resistance to hydrostatic pressure, hrs, at 200 psi (1.4 MPa), 461 head ft, air cured at: 70° F (21° C), 50% rh	664 Limited dampness	CRD C 48, modified
Water absorption, %, boiling water submersion at 24 hours	3.6	ASTM C 67 (Section 7.3)
Compressive strength, psi (MPa)		ASTM C 109
7 days	4,200 (29)	
28 days	6,030 (42)	
Flexural strength, psi (MPa)		ASTM C 348
7 days	360 (2.5)	
28 days	1,027 (7)	
Tensile strength, psi (MPa)		ASTM C 190
7 days	250 (2)	
28 days	440 (3)	
Modulus of elasticity, psi (MPa)		ASTM C 469
28 days	2.72×10^5 (1.87×10^6)	
Artificial weathering, hrs		
Xenon Arc	5,000 = No failure	ASTM G 26
Carbon Arc	500 = No failure	ASTM G 23
Adhesion strength, psi (MPa)	418 (2.9)	Test by tensile bond
Artificial weathering,	No cracking, loss of adhesion, checking, or other defect	Atlas Type DMC weatherometer
Freeze/thaw resistance, 200 cycles	No change	ASTM C 666 (Procedure B)
Salt spray resistance, 300 hours	No defect	ASTM B 117
Carbon Dioxide (CO₂), in (mm)	1/16 (1.6) Equivalent to 3/4" (19 mm) new concrete	Lab Method Diffusion
Permeance, perms (metric perneability)	12 (0.10698) 18×10^6 resistance	ASTM E 96 (water-vapor transmission) Swedish standard SS-02-15-92

Test Data, continued

PROPERTY	RESULTS	TEST METHODS
Wind-driven rain, hrs	8 = excellent	Fed. Spec. TT-P-0035 (Para 4.4.7)
Coefficient of thermal expansion, in/in/° F (mm/mm/° C), at 28 days	6.99 x 10^{-6} (5 x 10^{-6})	ASTM C 531
Impact strength (Gardener impact tester)	No chipping	Fed. Spec. TT-P-0035 (Cement paints para. 3.4.8)
Hardness, (Barber Coleman Impressor) Requirement min = 30, max = 60		Fed. Spec. TT-P-0035 (para 4.4.9)
7 days	35	
14 days	47	
21 days	52	
Abrasion resistance, 3,000 L sand	Passed	Fed. Spec. TT-P-1411B
Reflectance		ASTM D 2244 using Hunterlab D-25 meter
Gray Thoroseal®	64.2	
White Thoroseal®	86.1	
Fungus resistance, at 21 days	No growth; meets all requirements	Fed. Spec. TT-P-29B
Surface burning characteristics		ASTM E 84
Flame Spread	0	
Smoke developed	5	
Fire Propagation	Index = 1.5	BS476: Part 6:1981
Flame spread	Class 1	BS476: Part 7:1971

Test results are averages obtained under laboratory conditions. Reasonable variations can be expected.

How to Apply

Surface Preparation

1. Surface preparation is extremely important for proper adhesion. Substrates must be sound and free of dust, dirt, laitance, paints, oils, grease, curing compounds or any other contaminants. Verify substrate has properly cured. Concrete should obtain 80% of design strength, typically achieved within 3 – 14 days. If efflorescence is present, mechanically remove it before proceeding. For extreme cases where this is not adequate, contact Technical Service.
2. Patch all holes and cracks before installation.
3. Relieve hydrostatic pressure in concrete block with weep holes.
4. Roughen or brush blast extremely smooth surfaces such as precast and cast-in-place concrete to ensure good mechanical adhesion of Thoroseal®.

Mixing

1. Mix Thoroseal® with a mixing liquid consisting of a blend of Acryl 60® diluted with water. Maximum dilution ratio is 1 part Acryl 60® to 3 parts water. Approximately 6 quarts of mixing liquid is needed per 50 lbs of Thoroseal® powder. Up to 2 additional quarts of mixing liquid may be added when using as a rubbing compound.
2. For best results, mechanically mix Thoroseal® with a slow-speed drill and mixing paddle. Gradually add the powder to the mixing liquid while drill is running.
3. When properly blended, Thoroseal® will have the lump-free consistency of smooth, heavy batter.
4. Allow the Thoroseal® and Acryl 60® mixture to rest undisturbed for a minimum of 10 minutes to fully wet out all the powder. Then remix the wet mixture and apply. A small amount of mixing liquid can be added to this remixing.
5. Pot life is 60 – 90 minutes at 70° F (21° C). At high temperatures and low relative humidity, pot life can be significantly less.

Application

1. Apply Thoroseal® with a Thoro® brush or broom or equivalent stiff fiber brush or by textured spray equipment. Spray applications of the first coat require back brushing or brooming to properly fill voids and achieve uniformity.
2. Completely dampen the substrate with water before application starts. Do not saturate the substrate, but keep it cool and damp throughout the application.
3. It is essential to work first coat thoroughly into the substrate to completely fill and cover all voids, holes and nonmoving cracks. Finish with a horizontal stroke for an even coat.
4. Allow to cure 24 hours, then apply the second coat and finish with a vertical stroke. Above grade, the second coat can be replaced with a Thoro® high-build architectural coating to achieve better color uniformity.
5. On block or masonry walls, allow 5 – 7 days before applying second coat to eliminate joint read through.

Specific Applications

Above-grade interior or exterior applications in positive pressure situations (direct contact with rain or standing water with a low head of pressure)

1. A 50 lb (22.7 kg) bag of Thoroseal® will provide the following coverage at the designated material usage.

Recommended coverage:

- First Coat: 2 lbs/yd² (1.1 kg/m²) = 225 ft²/50 lb bag (20.9 m²/22.7 kg bag)
- Second Coat: 1 lb/yd² (0.54 kg/m²) = 450 ft²/50 lb bag (41.8 m²/22.7 kg bag)
- Total: 3 lbs/yd² (1.6 kg/m²), cured nominal thickness of 1/16" (1.6 mm).

Coverage will vary depending on surface texture and porosity.

2. A 3 lbs/yd² (1.6 kg/m²) application rate does not eliminate surface irregularities such as struck mortar joints. To hide surface irregularities, spray and back-brush a base coat of Thoroseal® at 2 lbs/yd² (1.1 kg/m2) and allow it to cure for 5 – 7 days. Then spray apply and back trowel a topcoat of Thoroseal® Plaster Mix (see Form No. 1019908) at application rate of 9 lbs/yd² (4.9 kg/m²).

BELOW-GRADE INTERIOR APPLICATIONS

1. The standard application is 3 lbs/yd² (1.6 kg/m²).

2. For high hydrostatic pressure conditions (over 15 psi [0.10 MPa]), increase application rate to 4 lbs/yd² (2.2 kg/m²) and waterproof from the positive side wherever possible.

BELOW-GRADE EXTERIOR APPLICATIONS

1. Use Thoroseal® Foundation Coating (see Form No. 1019907) For high hydrostatic pressure conditions (over 15 psi [0.10 MPa]), apply a base coat of Thoroseal® Foundation Coating at 2 lbs/yd² (1.1 kg/m²) and allow to cure for 5 – 7 days.

2. Then apply a topcoat of Thoroseal® Plaster Mix at 12 lbs/yd² (6.5 kg/m²). A steel trowel finish is recommended.

3. For both below-grade interior and below-grade exterior applications where water might move between vertical walls and slab or footer, it is recommended to cut out and place a Waterplug® cove at the wall and floor junction prior to the application of the Thoroseal® base coat.

4. Thoroseal® can be covered with extruded polystyrene insulation board during the second coat application. The board must be fully coated with Thoroseal® and embedded into the still-wet coating already in place on the walls. Exercise care when placing the coated board because it should not be moved or slipped. Once placed, do not move the board. After curing, prepare the above-grade portions of the boards by roughening or removing the surface skin and then coating with Thoroseal® to protect them from UV light degradation.

WATERPROOFING POTABLE WATER TANKS OR RESERVOIRS

1. Install Thoroseal® as directed in the general Application instructions.

2. After Thoroseal® has fully cured, wash down the Thoroseal® surface with saline solution (salt brine, 1 lb salt per 1 gallon water).

3. Leave saline solution on the entire Thoroseal® surface for at least 24 hours.

4. Rinse off saline solution completely. If needed, reapply saline solution until final rinse water is completely clean and clear.

Color Uniformity

With any cementitious product, such as Thoroseal®, it may be difficult to achieve color uniformity due to weather and substrate variability. For this reason, it may be necessary to apply a topcoat of a Thoro® architectural coating.

Clean Up

Promptly clean hands and all tools with warm water while product is still wet. Cured material may only be removed mechanically.

For Best Performance

- Thoroseal® must be modified with Acryl 60® to achieve the properties listed in the technical data section.
- Do not apply to substrates with active water leaks or moving cracks; patch all leaking static cracks and holes with Waterplug®. Repair any other nonmoving cracks or voids with the appropriate Thoro® repair product and repair all moving cracks or voids with appropriate sealant.
- Maintain or place expansion and control joints as necessary.
- Do not apply in rain or when rain is expected within 24 hours. Do not apply above 90° F (32° C) or below 40° F (4° C) or when temperatures are expected to fall below 40° F (4° C) within 24 hours. For hot and cold temperature applications, store Thoroseal®, Acryl 60® and water at 50° F (10° C) to 70° F (21° C) before use.
- Hot substrates will effect working time and material strength.
- Variations between inside and outside temperatures may result in condensation on below-grade walls treated with Thoroseal®. This can be alleviated by assuring that adequate ventilation exists.
- Windy, dry or hot conditions may require rewetting of Thoroseal® during cure and the use of polyethylene barriers.
- Before specifying Thoroseal® for water-retaining structures, conduct tests to determine water quality. Thoroseal® is not intended for continuous contact with acid or sulfate-containing water. Very soft water will have an adverse effect on Thoroseal®.
- Service temperatures: immersion, up to 140° F (60° C); cleaning water, up to 200° F (93° C); dry air, up to 220° F (104° C).
- On all projects, it is recommended that a sample be prepared on site and approved prior to the commencement of the work. The site sample should confirm the color, texture and workmanship required until the job is finished and accepted. Retain the sample until final approval is secured.
- Allow Thoroseal® to cure 7 – 10 days before immersion in water.
- Make certain the most current versions of product data sheet and MSDS are being used; call Customer Service (1-800-433-9517) to verify the most current version.
- Proper application is the responsibility of the user. Field visits by BASF personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the jobsite.

Health and Safety

THOROSEAL®

Warning!

Thoroseal® contains Portland cement; silica, crystalline quartz; iron oxide; magnesium oxide; limestone; gypsum; calcium hydroxide; calcium oxide and anhydrite.

Risks

Product is alkaline on contact with water and may cause injury to skin or eyes. Ingestion or inhalation of dust may cause irritation. Contains small amount of free respirable quartz which has been listed as a suspected human carcinogen by NTP and IARC. Repeated or prolonged overexposure to free respirable quartz may cause silicosis or other serious and delayed lung injury.

Precautions

KEEP OUT OF THE REACH OF CHILDREN. Avoid contact with skin, eyes and clothing. Prevent inhalation of dust. Wash thoroughly after handling. Keep container closed when not in use. DO NOT take internally. Use only with adequate ventilation. Use impervious gloves, eye protection and if the TLV is exceeded or used in a poorly ventilated area, use NIOSH/ MSHA approved respiratory protection in accordance with applicable federal, state and local regulations.

First Aid

In case of eye contact, flush thoroughly with water for at least 15 minutes. In case of skin contact, wash affected areas with soap and water. If irritation persists, SEEK MEDICAL ATTENTION. Remove and wash contaminated clothing. If inhalation causes physical discomfort, remove to fresh air. If discomfort persists or any breathing difficulty occurs or if swallowed, SEEK IMMEDIATE MEDICAL ATTENTION.

Refer to Material Safety Data Sheet (MSDS) for further information.

Proposition 65

This product contains material listed by the state of California as known to cause cancer, birth defects, or other reproductive harm.

VOC Content

0 lbs/gal or 0 g/L, less water and exempt solvents.

For medical emergencies only, call ChemTrec (1-800-424-9300).

BASF

The Chemical Company

PRODUCT DATA

3 03 01.00 Maintenance of Concrete

ACRYL 60®

Water-based acrylic bonding and modifying admixture

Description

Acryl 60® is an acrylic-polymer emulsion mixed with Portland cement mortars, plasters, stucco, and concrete mixes to enhance their physical properties, adhesion to substrates, and durability.

Packaging

1 quart (0.9 L) bottles
18 month shelf life

1 gallon (3.8 L) bottles
18 month shelf life

5 gallon (18.9 L) pails
18 month shelf life

55 gallon (208 L) drums
12 month shelf life

Color

Milky white

Storage

Transport and store in unopened containers between 40 and 100° F (4 and 38° C). Protect from freezing.

Features	Benefits
• Acrylic polymer	Significantly improves adhesion, cohesion, tensile, compressive, and flexural strengths of cement-based materials
• Excellent chemical and UV resistance	Promotes long-lasting repairs
• Improved freeze/thaw stability of Portland-cement-based materials	Suitable for cold climate applications
• Stable	Will not re-emulsify when exposed to water

Where to Use

APPLICATION

- Cement-based mixes to improve their adhesion, and durability
- As gauging liquid for BASF waterproofing and repair products, such as Thoroseal® and Thorite®
- Walkways
- Ramps and structural beams

LOCATION

- Interior or exterior
- Above or below grade

SUBSTRATE

- Columns

How to Apply

Surface Preparation

1. The methods required for preparation will vary depending on the and product to be applied and the site and substrate conditions.

2. In all cases the surface must be clean and sound. Remove all loose and disintegrated material. Remove any and all traces of oil, grease, dirt, dust, efflorescence, biological, mold or mildew, and release or curing agents.

3. Vacuum, sweep, or blow out the areas to be patched with clean, oil-free air.

4. Surface profile is a key to successful concrete & masonry repairs (reference ICRI guide 03732) to find the recommended profile for a repair area.

CONCRETE/CMU/MASONRY SURFACES

Predampen the area to be patched or coated with potable water to a saturated surface-dry (SSD) condition. Do not leave standing water on surface. Proper surface preparation and cleanliness are extremely important.

OTHER SURFACES

For other surface preparation guidelines, refer to the specific BASF product data guide for information.

Mixing

1. The normal ratio of Acryl 60® to clean potable water is 1 part Acryl 60® to 3 parts water (1 to 3). Where increased physical and chemical resistance are required, increase the Acryl 60® content in the mixing liquid to a 1 to 2 or 1 to 1 Acryl 60® to water ratio (see chart above).

2. Always mechanically mix. Do not overmix or mix at a high speed.

Thoro

Technical Data

Composition

Acryl 60® is an acrylic-polymer emulsion.

Typical Properties

PROPERTY	VALUE
Density, lbs/gal (kg/L), Lab Method	8.65 (1.04)
Solids content, by volume, %, Lab Method	28
Maximum water dilution, Parts Acryl 60® to H_2O, Lab Method	1:3

Test Data

The following properties are for sand/cement mortar samples:

PROPERTY	RESULTS		TEST METHODS
	With Water	**With 1 to 1 Acryl 60® and Water**	
Compressive strength, psi (MPa) 28 days	3,800 (26.2)	4,500 (31)	ASTM C 109
Tensile strength, psi (MPa) 28 days	225 (1.5)	350 (2.4)	ASTM C 190
Flexural strength, psi (MPa) 28 days	1,000 (6.9)	1,800 (12.4)	ASTM C 348
Freeze/thaw durability	11 at 98 cycles	102 at 300 cycles	Method A

Test results are averages obtained under laboratory conditions at 70° F (21° C) and 50% rh. Reasonable variations can be expected.

Mixing Ratios

APPLICATION	RATIOS
For scrub coats applied before patching or overlays	Use straight Acryl 60®
To improve the adhesion properties of pointing mortars and to reduce cracking in cement plaster	Use 1 part Acryl 60® to 3 parts water
For large overlays or topping	Use 2 parts Acryl 60® to 1 part water
For bonding cement plaster no thicker than 1/4 – 3/8" (6 – 10 mm)	Use 1 part Acryl 60® to 3 parts water

NOTE: The above ratios are for normal conditions. Where bonding is more critical, increase the Acryl 60® content of the mixing liquid. A TEST PATCH IS ALWAYS RECOMMENDED.

For detailed application instructions for Thoro® products, see specific product data sheets.

Application

SAND/CEMENT MORTAR

1. Thoroughly mix all cement and sand first. The sand must be clean, free of clay, and dry.
2. Make up mixing liquid from a 1 to 3 or 1 to 2 Acryl 60® water ratio depending upon requirements.
3. Slowly add the mixing liquid to the cement/sand mixture and mix with a slow-speed mixer for 1 – 2 minutes to avoid entrapping air. After preparing, cleaning, and predampening the surface, brush apply a scrub coat (not diluted) of the Acryl 60®-modified cement/sand. Scrub vigorously into the surface to displace any air pockets.
4. Place the mix into the scrub-coated repair area while the scrub coat is still wet or tacky. Place the mix and avoid overtroweling. The trowel should be cleaned frequently, kept wet, and used with minimal pressure.
5. Maximum time for placement should not exceed 20 minutes. Higher air & surface temperatures or the use of fast setting repair materials will decrease working and placement time.

Curing

1. When rapid drying is expected due to high temperatures, rapid air movement, or wind, it is recommended that the surface be covered with wet burlap to retain moisture.
2. For normal use, allow a 24-hour curing period.
3. For heavy wheeled traffic, allow a 4-day curing period.

Clean Up

Clean all tools and equipment immediately with water. Cured material may be removed by mechanical means only.

For Best Performance

- Do not use Acryl 60® modified mixes when the ambient air or surface temperature is below 40° F (4° C) or when the temperature is expected to fall below 40° F (4° C) within 24 hours. High relative humidity, excessive moisture, and low temperatures will retard the curing of Acryl 60® modified mixes.
- Caution is needed when using the Acryl 60® in a mix that already has air entrained, consult technical support for it's proper use.
- Do not overmix or aerate mixes.
- Use with proper ventilation.
- Do not use Acryl 60® as a surface-applied external bonding agent or as a primer.
- Do not expose cement-based mixes modified with Acryl 60® to water immersion service for a minimum of 24 hours at 73° F (23° C).
- Not recommended for exposure to soft water or immersion where contact with water-treatment chemicals is present without a protective top coat.
- Caution should be used when a highly solvent material is being used over a base system that contains Acryl 60®.
- Make certain the most current versions of product data sheet and MSDS are being used; call Customer Service (1-800-433-9517) to verify the most current version.
- Proper application is the responsibility of the user. Field visits by BASF personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the jobsite.

Health and Safety

ACRYL 60®

Caution

Acryl 60® contains no hazardous ingredients as defined by 29 CFR 1910.1200 WHMIS.

Risks

May cause skin, eye or respiratory irritation. Ingestion may cause irritation.

Precautions

Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Keep container closed when not in use. DO NOT take internally. Use only with adequate ventilation. Use impervious gloves, eye protection and if the TLV is exceeded or used in a poorly ventilated area, use NIOSH/MSHA approved respiratory protection in accordance with applicable Federal, state and local regulations.

First Aid

In case of eye contact, flush thoroughly with water for at least 15 minutes. In case of skin contact, wash affected areas with soap and water. If irritation persists, SEEK MEDICAL ATTENTION. Remove and wash contaminated clothing. If inhalation causes physical discomfort, remove to fresh air. If discomfort persists or any breathing difficulty occurs or if swallowed, SEEK IMMEDIATE MEDICAL ATTENTION.

Proposition 65

This product contains material listed by the state of California as known as to cause cancer, birth defects, or other reproductive harm.

VOC Content

1 g/L or 0.01 lbs/gal less water and exempt solvents.

For medical emergencies only, call ChemTrec (1-800-424-9300).

KOVER KRETE™ SYSTEMS

Pre-Kote System

Cementitious Pre-coating System

PRODUCT INFORMATION

DESCRIPTION

PRE-KOTE™ SYSTEM is a cementitious coating system for swimming pool re-plastering and pebble finishes. PRE-KOTE™ SYSTEM is a high quality, factory prepared, cementitious pre-coating system that forms a hard, rough textured base coat that is tightly bonded to the interior walls and floors of concrete swimming pools and spas. PRE-KOTE™ is available as a two-component system or as an all-in-one "JUST ADD WATER" mix. The two-component system is composed of a specially formulated PRE-KOTE™ LIQUID resin and a blend of dry powder cement ingredients. The PRE-KOTE™ INSTANT has the resin already mixed in the bag of dry cement ingredients.

The PRE-KOTE™ actually becomes an integral part of the concrete pool or spa construction increasing the surface adhesion and strength of the marcite and pebble finishes.

ADVANTAGES

- "Pop-offs" virtually eliminated
- No expensive heavy sandblasting
- Reduces labor cost
- Increase profit
- Unmatched warranty
- Eliminates long repair down time
- Eliminates removing existing plaster
- Becomes an integral component of concrete pool and spa construction
- Increases surface adhesion
- Increases strength of marcite and pebble finishes

LIMITATIONS

Substrates must be clean, sound, and properly prepared. Ambient temperature while applying and curing the Pre-KOTE™ SYSTEM needs to be within the range of 50 to 90∘F (10.0∘ to 32. 2∘C). DO NOT APPLY when the pool shell temperature is below the dew point and the relative humidity is above 90%. Never apply PRE-KOTE™ SYSTEM where mineral salts (efflorescence) are present. The salts break down the bond properties of cement products. PRE-KOTE™ is a proven system as packaged. It is not for use in conjunction with other dry cement mixes or with other concrete bonding agents.

LIMITED WARRANTY NOTICE

Contract Packaging Inc. products are designed to be used in the construction industry and should be applied by competent persons in accordance with current published instructions. We cannot be held responsible for difficulty caused by other materials and conditions, or by inferior workmanship. Seller reserves the right to have the true cause of any difficulty determined by accepted test methods by an independent party. Any claim regarding product defect must be received in writing (1) year from day of shipment. No claim will be considered without such written notice or after the specified time interval.

DISCLAIMER OF WARRANTIES AND LIMITATIONS OF LIABILITY

Contract Packaging Inc. (Seller) warrants that if any goods supplied prove defective in workmanship or material that Seller shall replace them or refund their purchase price. This warranty is made in lieu of any and all other warranties, expressed or implied. Including the warranties of merchantability and/or fitness, which are hereby disclaimed. It is understood and agreed that buyer's sole remedy, and therefore Seller's liability, whether in contract, tort, under any warranty, in negligence, or otherwise shall be limited to the return of the purchase price paid by purchaser or replacement of any defective goods sold by Seller and under no circumstances shall Seller be liable for special, indirect or consequential damages. The price stated for the goods is a consideration in limiting Seller's liability. Any liability or risk resulting from the use of this product is assumed by the purchaser/user except where a specific warranty is provided by the manufacturer in writing. Before application, the purchaser/user shall determine the suitability of the product for his intended use and purchaser/user assumes all liabilities and risk, whatsoever in connection therewith. The terms of this warranty notice may not be orally modified. Applicator is required to use the complete Kover Krete™ Pre-Kote System for warranty. Any substitutions will void warranty.

PACKAGING	
Pre-Kote™ Instant / Gray Base	50 lb bags
Pre-Kote™ Original 2-Part / Gray Base	50 lb bags
Pre-Kote™ Liquid	5 gallon pail 55 gallon drum
PRODUCT COVERAGE	
Pre-Kote™ Instant 1 Kit: (3) 50-lb bags & Potable Water	350-500 sq. ft.
Pre-Kote™ System (2-part) 1 Kit: (3) 50-lb bag & (1) 5-Gal. Pre-Kote™ Liquid	350-500 sq. ft.

Manufactured by
CONTRACT PACKAGING INC.
22 N. Dollins Avenue - Orlando, FL 32805
Tel. (407) 246-7797 - Fax. (407) 481-2261 - www.koverkrete.com

KOVER KRETE™ SYSTEMS

Pre-Kote System

Cementitious Pre-Coating System

APPLICATION GUIDE

INSTALLATION

Before using this product, refer to the MATERIAL SAFETY DATA SHEET for additional handling instructions. Proper handling precautions MUST be taken.

There are three key steps to the successful installation of PRE-KOTE™ SYSTEM:

1. Proper surface preparation.
2. Proper liquid/powder ratio.
3. Uniform application.

Always install test areas to determine the suitability of the product for the intended use prior to full scale application. The conditions of your use and application of our product and information (whether verbal or written), including any suggested recommendations are beyond our control. Therefore it is imperative that you test our product and information to determine to your own satisfaction whether they are suitable for your intended use and application. This application and specific analysis at least must include testing to determine suitability from a technical as well as health, safety, and environmental standpoint.

SURFACE PREPARATION

Clean and degrease first by using Kover Krete™ Citra-Klean SB, pressure wash off residue, next etch old plaster by acid etching, followed by an aggressive pressure washing off entire area using a 3000-3500 psi (4-10 GPM) pressure washer.

Improper surface preparation can result in less than acceptable PRE-KOTE™ SYSTEM performance. It is very easy to blame adhesion problems that occur on the product that is used when poor surface preparation is really where the fault lies.

To insure proper PRE-KOTE™ adhesion and maximum durability, the concrete surface must be sound–free of laitance, cleaned of all dirt, dust, salts, loose plaster, mold, mildew, algae, etc. Surface must be at least 30 days old to allow for proper cement hydration and release of mineral salts. Salts break down the bond of cement products such as PRE-KOTE™. These salt areas need to be water blasted, sandblasted, or acid etched to produce an acceptable sound and open surface for bonding. Deep holes, cavities, and cracks must be filled prior to placing.

Acid etching has been used widely to remove salts, laitance and dirt from concrete. If acid etching is to be used, the surface should be pre-cleaned to remove any build-up of dirt or other contaminants. Acid will not penetrate a build-up of these materials.

Correct acid etching procedure is as follows: Mix one part by volume muriatic or phosphoric acid into 10 parts water. Apply acid with plastic sprinkling container to a pre-dampened surface. After application immediately brush with a stiff bristle street broom or brush to spread the acid solution evenly over the surface. Wait 10 minutes or until foaming stops, then thoroughly rinse/flush with clean water. The rinse/flush operations is most important in order to remove reactive products and loose cement/aggregate.

If hard/smooth concrete exists a stronger acid solution may be required. Where strong acid solutions are used it is imperative that surface be rinsed thoroughly with a Tri-sodium Phosphate Solution wash to ensure proper neutralization.

NOTE: ACID, if not neutralized, will bleed through and may cause delamination or deterioration of the PRE-KOTE™ SYSTEM.

The final pH of the cleaned, etched surface should be neutral (7) or slightly alkaline. Properly etched concrete produces a sandpaper finish that has the "teeth" to form a successful bond. If this is not achieved, repeat etching process. Proper protective clothing such as goggles, rubber gloves and boots are recommended when handling acids.
If the pool is the resurfacing of a previously painted surface, the surface should be sandblasted to remove all paint.

MIXING EQUIPMENT

A ½" (13 mm) drill and a mixing paddle with a 5 gallon (19L) pail is sufficient. The ½" (13mm) drill must be a slow or variable speed drill to control the shear and mixing speed.

MIXING

When mixing or applying this product, use waterproof gloves, adequate eye protectors and a respirator that has been approved by the U.S. Bureau of Mines for toxic nuisance and pneumoconiosis producing dusts.

Add PRE-KOTE™ POWDER or PRE-KOTE™ INSTANT to PRE-KOTE™ LIQUID in the mixing container. Add only enough PRE-KOTE™ LIQUID to bring the mix to a smooth, lump-free consistency; approximately 50 pounds of dry mix to 1 to 1.5 gallons of PRE-KOTE™ LIQUID. DO NOT ADD MORE THAN TWO GALLONS OF WATER TO PRE-KOTE INSTANT.

Manufactured by
CONTRACT PACKAGING INC.
22 N. Dollins Avenue - Orlando, FL 32805
Tel. (407) 246-7797 - Fax. (407) 481-2261 - www.koverkrete.com

Mix for 3 to 5 minutes until the material is fluid and free of lumps. If the sides of the mixer develop powder buildup, scrape sides and continue mixing until powder and lumps break up into the mix.

APPLICATION

PUSH BROOM, ROLLER, OR HOPPER GUN SPRAY EQUIPMENT

The pool walls and floor should be misted with PRE-KOTE™ LIQUID prior to the application of the mixed PRE-KOTE™ to cut down the substrate suction and to allow for equal absorption so that the applied material can cure naturally.

Apply mixed PRE-KOTE™ with push broom, roller, or hopper gun spray equipment. If substrate becomes dry, mist area with PRE-KOTE™ LIQUID again. Apply a light, thin coat and then double back again with another coat building to the thickness of 1/8" to 1/4" (3.2 mm to 6.4mm). Allow applied PRE-KOTE™ to stiffen sufficiently and let the moisture leave surface. Finish to desired texture. Allow drying overnight before applying final interior finish.

HOPPER GUN SPRAY EQUIPMENT - The hopper gun is filed with mixed PRE-KOTE™ material. The hopper gun use is similar to that in the drywall industry. Since the air pressure setting can be regulated and the dial on the gun face can be regulated, texture and roughness can be controlled. Follow the equipment manufacturer's instructions.

CLEAN UP

In case of spillage, flush area with large amounts of water, place into appropriate container, and dispose of in accordance with local regulations. Uncured PRE-KOTE™ LIQUID can be removed with water. Cured PRE-KOTE™ LIQUID can be liquefied with lacquer thinner.

PRE-KOTE™ DRY POWDER or freshly mixed concrete may cause skin injury. Avoid contact with skin and wash exposed skin areas promptly with water. If any cement powder or mixture gets into eyes, rinse immediately and repeatedly with water and get prompt medical attention. PRE-KOTE™ DRY POWDER Contains some silica sand that can cause Silicosis. Avoid overexposure to the airborne dust. Practice good housekeeping, protect food and drink.

FOR BEST PERFORMANCE

- **Do not install PRE-KOTE™ below 50○F (10○C). Do not apply when the pool shell temperature is below the dew point and the relative humidity is above 90%.**
- **PRE-KOTE™ is not for use in conjunction with other dry cement mixes or with other concrete bonding agents.**
- **Test installation is encouraged and highly recommended.**
- **Store in a cool, dry place. Keep all materials from freezing.**
- **Never apply PRE-KOTE™ where mineral salts (efflorescence) are present. The salts break down the bond properties of cement products.**
- **Pre-Kote Liquid can be added to Pre-Kote Instant to add strength.**
-

KEEP OUT OF REACH OF CHILDREN
NOT FOR INTERNAL CONSUMPTION
FOR INDUSTRIAL USE ONLY

Competitor Gold Medal Racing Lanes

Gold Medal 6" Competitor Racing Lanes

Designed for optimum control of the water surface, our patented flow thru design allows the waves to be dispersed along the channel of revolving disks. COMPETITOR lanes have been selected and used in numerous Olympic Games, World Championships and National swimming events. Each lane comes completely assembled and is offered in a variety of colors and lengths to meet any needs.

Each COMPETITOR lane consists of a series of 6" plastic disks and donuts strung on a vinyl coated 3/16ths inch stainless steel cable. Each disk is designed to rotate independently of the others allowing the swimmers wake energy to be absorbed and dispersed along the channel provided within the lane. This feature allows for a consistency of wave quelling from one lane to another, a unique feature not found in other products on the market.

COMPETITOR Racing Lanes are attached to the pool wall using a stainless steel tension spring at one end and a stainless steel ratchet reel at the other end allowing for customized tension.

Photo shows 6" Gold Medal and 4" COMPETITOR Lanes

Specifications for the Gold Medal 6" COMPETITOR Racing Lane—

Use these detail specification when submitting specifications to architects and design consultants.

Covers products starting with COMPETITOR Part No# 200371 through 200387.

Each individual disc measures 6 inches in diameter and consists of a series of 5 fins projecting from the center hub. Mid way on the length of the disc hub is a radially extended web member, which supports an annular-section ring-shaped flanges in co-axial relationship with the central bore. To assist in damping the longitudinal wave forces, the web member is formed with a multiplicity of circular openings. The web in conjunction with the multiple fins combine to impede, aerate, dampen and break up the other. Both the web and the fins functions are very important in that most waves will not intersect the lane in a perpendicular manner.

Each disc has the capability to revolve independently from any other disk mounted on the 3/16th inch braided stainless steel cable. Which has a clear vinyl coating to protect the disks from excessive wear. Flotation is aided by the introduction of a hollow toroidally-shaped body, having a central radial web and a co-axial opening to position the float for freely sliding movement on the cable. These floats are deployed in an uniformly spaced interval and surrounded by a pair of modified discs on either side to accommodate the float without substantially altering the wave quelling properties of the lane as an assembled unit.

Assembly for each lane is completed at one end with a bronze nickel plated spool encased in a stainless steel tension mechanism to provide customized adjustment of lane torque. The other end has a stainless steel spring assembly to maintain equal pressure during use.

Color combinations are limited to any or all groupings of the following: Black, Blue, Green, Maroon, Orange, Purple, Red, White and Yellow. It is suggested that at least two colors be used, with 5 meters from each end of the pool being distinct in color pattern from the remainder of the lane. FINA requires a backstroke turn marking of a contrasting color 15 meters from each end of the lane.

Manufactured by:
Competitor Swim Products a Division of Richey Industries, Inc.
910 Lake Road
Medina, Ohio 44256
Tel: 330 – 725 – 4997 Fax: 330 – 722 – 3288 E-Mail: sales@richeyind.com

SECTION 13150A – FILTERS (ALTERNATES 7 & 8)

Provide design, purchase and installation of new filters and accessories as described below and in section 01030-Alternates. Alternate #7 requires the three existing filters for the 50 M pool to be replaced by one filter . Alternate #8 requires the filter for the instructional pool be replaced by one filter. The filters approved for the project are manufactured by Paddock or Neptune Benson as described below. Proposed equivalent products must be submitted for review at least 14 working days prior to the bid date. Bidder may use the either of the approved filters or an Owner approved alternate.

Section 13150A defines the acceptable filters manufactured by Paddock to be used for Alternate #7 and Alternate #8 (50 meter pool and instructional pool).

Section 13150B-1 defines the acceptable filter manufactured by Neptune Benson in Alternate #7 for the 50 meter pool.

Section 13150-B2 defines the acceptable filter manufactured by Neptune Benson in Alternate #8 for the instructional pool.

SECTION 13150A

1.01 PADDOCK REGENERATOR OR FILTREX REGENERATIVE FILTERS (APPROVED FILTERS FOR ALTERNATES NO. 7 AND 8)

It is the intent of this specification to describe a water filtration system complete with all necessary items. It is the further intent of these specifications that the filtration unit from the pump through the backwash system, including all filter control valves as hereinafter specified and all accessories, be supplied and guaranteed by one manufacturer. The contractor shall design and install the new filter system including all accessories and electrical service for the new filter system. Any filter offered under these specifications shall be NSF listed at the time of offering (bid date). Such listing shall be evidenced by the filter model number appearing in the current NSF listing for swimming pool filters at the filtration rate required for this project. The filter specified shall be of the Pressure Sand type. The filter shall be a product of a manufacturer regularly engaged in the fabrication of water filtration equipment and who has a minimum of five (5) years experience in manufacturing this type of filter. The filter system shall be an automatic regenerative pressure Diatomaceous Earth (DE) or Perlite filter as supplied by Paddock Pool Equipment Company or Owner approved equivalent. Proposed equivalent products must be submitted for review at least 14 working days prior to the bid date.

1.02 Filter Requirements

Filter Data is as follows:

Model	**PPEC 2100 (Alternate #7)**
Number of Tanks	1
Diameter	63.5”
Area	1538.8 SF
Flow Rate	1833 GPM
Filtration Rate	1.19 G/SF

Model	**PPEC350 (Alternate #8)**
Number of Tanks	1
Diameter	33”
Area	277.9

Flow Rate	350 GPM
Filtration Rate	1.25 G/SF

1.03 Filter Tank:

1. The filter tank shall be diametrically divided into head and body components. The two shall be bolted together by means of external flanges, and made water tight by an o-ring seal.

2. The filter body and head shall be of welded construction, with all welded surfaces, nozzles and bracket attachments fabricated from type 304L stainless steel. All joints shall be welded both internally and externally. The internal weld shall be a continuous seal weld to preclude crevice corrosion.

3. Support legs (3) shall be welded to type 304L stainless steel pads, before being attached to the main body of the tank by welding.

4. Both body and head flange bolting surfaces shall be entirely supported by a full perimeter spacer ring, to preclude distortion of those surfaces by varying bolt tension.

5. All bolt and fastenings, both internal and external, shall be of at least grade 18-8 stainless steel.

6. The inspection window shall be Pyrex glass and will be covered by a clear acrylic safety shield.

7. The tank shall be designed for a 50 psi working pressure using non-code criteria and have a safety factor of 4.

8. The filter tank shall incorporate connections for filter influent and effluent, drain, pre-coat inlet, pressure and vacuum relief, instruments (2) -1/4-18 NPTF, inspection window (1) 4" nominal diameter, bump shaft gland.

9. The filter effluent and pre-coat recycle connection shall be common to assure a non-shock transition between the pre-coat recycle and service flows.

10. The nozzle sizes for the influent and drain connections are specific for their respective functions. Accordingly, separate nozzles are used with sizes as indicated on drawings.

11. The filter body shall incorporate an integral full diameter inlet distributor which directs the water to be filtered to the flex tube bundle in laminar fashion, Adjustable legs and a short turn top elbow shall be provided as part of the filter. Not to exceed 9'-1l1" in height.

12. On completing the fabrication, all internal surfaces of the filter tank shall be passivated according to the procedure set forth in federal specifications QQ-P-35B, for austenitic 300 series corrosion - resisting steel.

1.04 Flex Tubes and Assembly

1. The flex tubes shall be cylindrical in shape with each tube closed at the bottom and open at the top. The open shall be flanged to fit into the tube sheet.

2. The outer wall of the flex tube shall be made of multi-filament polyester braid with filaments arranged so that external pressure causes a diminution of the tube diameter and pore size. Conversely, internal pressure results in an enlargement of the diameter. Each tube shall have an internal stainless spring to limit the diameter diminution. The membrane ends shall

be impregnated with a polyester thermo set resin to reinforce the spring compression points.

3. Flex tubes shall have a recommended operating differential rating of 25 psi, and an ultimate of 75 psi.

4. The tube sheet shall retain the flex tubes and shall separate the filter tank into upper and lower sections. A seal shall be provided to prevent unfiltered water from bypassing the tube sheet into the upper clean side of the filter tank.

5. All components in the assembly shall be constructed from materials unaffected by the corrosiveness of the swimming pool water. The assembly shall be removed from the filter tank for servicing as a unit; or, if desired, by dismantling the individual parts.

1.05 Bump Mechanism

1. The bump mechanism shall consist of a double acting pneumatic cylinder supported on a machined surface located on top of the filter head. It shall be connected to the flex-tube assembly by a stainless steel shaft and rod aligner.

2. During bumping, the cylinder is alternately pressurized, causing the flex-tube assembly to move downward then upward in linear fashion over a stroke distance of approximately 2".

3. Bumping shall be both push-button initiated, and electro-mechanically programmed.

1.06 Media

Perlite or DE media can be used in this filter.

1.07 Controls and Gauge Assembly

Provide gauge panel with two (2) 4-1/2 inch diameter gauges connected to the influent lines of filter; bump controller, air pressure regulator, air lubricator, pressure stat, and associated air line.

1.08 Filter Assembly

The entire filter assembly shall be approved and listed by the national sanitation foundation (NSF).

1.09 Filter Piping and Valves

Filter unit shall be provided with supports and brackets, manifold, and elements. Piping shall be arranged to carry out operations of filtering, pre-coating, rinsing, and draining. External piping connections shall be flanged when larger than two inches. Filter tank assembly shall be provided with necessary pipe, valves, and fittings to make a complete battery from inlet to outlet.

1.10 Filter Precaution

Filter tank must be properly anchored in place in full accordance with manufacturer's recommendations before being filled with water.

1.11 Automatic Filter Controller

Provide an automatic filter controller to automatically regenerate and precoat the flex-tubes on a timed basis. Controller shall be equal to Filtrex, inc. model "MOD-1-SSC". Installation shall include all materials, pilot operated valves, air piping, etc., for a complete operating system equal to, but not limited to, the following:

1. Enclosure: single door, continuous hinge enclosure conforms to the NEMA standard for type 12 industrial use enclosures. Equipped with quick acting external screw clamps for securing the neoprene gasket cover. Construction shall be corrosion resistant polyethylene. A sub-panel to be provided for mounting components.

2. Circulation pump motor control: the variable frequency drive shall be functionally interlocked with the MOD-1-SSC solid state control program.

3. The regeneration process shall be time based. There shall also be an interlock with the computerized pool management controller to effect a regeneration whenever a user adjustable pressure differential occurs.

4. The IF-panel provided to be interlocks the pool water heater with the filter bump cycle. A 4-20ma signal is also provided, to interface with an ep-switch, to control the pneumatic air to the control valve on a heat exchanger.

5. Pilot operated valves: provide two (2) solenoid pilot, pneumatically actuated butterfly valves for the programmed control of the pool return and precoat re-cycle flows. Valves shall be continental air diaphragm operated cast iron body butterfly valves with stainless steel disc and shaft and fisher 656-30 diaphragm actuator (3-15psi).

6. Program for automatic filter controller shall be as follows; when the signal to start a regeneration occurs (2 hrs, 4 hrs...30 hrs) the controller automatically:

    * Switches off the recirculation pump
    * Closes the pool return valve
    * Opens the precoat re-cycle valve
    * Initiates 2 - 3 bumps
    * Starts circulation pump for a short precoat re-cycle
    * Opens pool return valve
    * Closes precoat re-cycle valve

1.12 Pneumatic Control System

Pneumatic control system shall be piped by pool contractor. Compressor and dryer shall provide 100 psi dry pneumatic air to filter controller. The pool contractor is also responsible for mounting the bump cylinder on top of the filter tank with four bolts provided. He must then connect the pneumatic air to this mechanism and from there to the two automatic valves.

1.13 Warranty

Paddock warrants the Regenerator™ Tank to be free of defects in material and workmanship under normal use and service within 15 years of first use. Components and parts by other manufacturers are subject to terms, conditions and limits under their warranty. Paddock's obligation under this warranty shall be limited to repair or replacement of any item which upon Paddock's examination shall disclose to its satisfaction to be defective.

END OF SECTION

SECTION 13150B1 - 50 Meter Pool (Alternate #7 Option)
DEFENDER FILTER SYSTEM

PART 1 - GENERAL

1.1 INTENT

A. Purpose of the bid is to purchase and have installed a complete filtration and recirculation system for the swimming pool. It is intended to limit the bidding to a style of product and company that has a proven history and record of performance. Contractor is responsible for the complete design, permitting and installation of all components needed for a properly functioning system, including electrical service.

B. Due to the specialized nature of certain components required for this project, these specifications, in some instances, refer to various components by trade or manufacturers name.

C. Whenever a proprietary (trade) name is used within this Specification Section, it is used for informational purposes to describe a standard of required function, dimension, appearance and quality. References to materials by trade name, make or model number shall not be construed as limiting competition.

1.2 PROPOSED EQUAL PRODUCTS

A. Other treatment systems will be considered only if a complete set of drawings and specifications detailing such equipment as it pertains to this project are submitted for evaluation fourteen (14) working days prior to the bid date. The submission should include a list of five (5) operating installations within a reasonable distance of the jobsite. List should include the names and telephone numbers of the operating personnel. The technical contents of the submittal shall include hydraulic calculations, equipment fabrication details, filter room layout in plan and elevation views, warranties, installation and operating instructions.

B. Proposed equal products meeting the terms and conditions of the bidding documents will be acknowledged prior to bidding by addendum. No alternates will be considered after the bid.

1.3 SUBSTITUTIONS

See paragarph 1.2.A above.

1.4 QUALITY ASSURANCE

A. Due to the specialized nature of the specified work and products, all bidders shall be required to have a minimum of five (5) years of operating history. The equipment described herein shall be products of a manufacturer regularly engaged in the fabrication of filtration and recirculating systems for at least fifteen (15) years and shall be a professional engineering corporation.

B. The owner requires that filters bear the National Sanitation Foundation (NSF) seal for Standard #50. This NSF listing is required by the owner regardless of local health department regulations.

C. The specified filter system shall have had an NSF listing for at least three (3) years prior to the project bid date.

D. As assurance that each item of apparatus is properly sized to perform in conjunction with each other, the owner requires bidders to use the filter manufacturer as a single source of supply for the items of equipment as listed and described herewith.

E. The "EQUIPMENT SUPPLIER" shall be:

NEPTUNE-BENSON, INC.
COVENTRY, RHODE ISLAND
1-800-832-8002
Or Owner approved equavilent

1.5 GUARANTEE

A. The “EQUIPMENT SUPPLIER” shall guarantee that the equipment to be furnished is of the correct capacity, that the various parts are designed to operate correctly and in conjunction with each other, that if the installation is made in accordance with the project drawings and operated in accordance with the suppliers instructions, the system will perform the prescribed functions correctly, the water entering the pool will be clear, bright, free from suspended matter visible to the unaided eye, and will be sanitary to the satisfaction of all authorities having jurisdiction.

1.6 SUBMITTALS

Provide detailed shop drawings of the items of equipment being provided, indicating the dimensions, material of the filter tanks, valves, actuators, RMF programmer & accessory components.
Provide a complete set of operating instructions, embracing the operational functions and recurring maintenance processes involved in connection with the complete filtration system.

PART 2 - FILTER SYSTEM

2.1 FILTER SYSTEM

A. The filter system for the 50 meter pool under this section shall be a Defender Model SP-49-48-1548.

B. It is the intent of these specifications to describe a filter system complete with all accessory items supplied and warranted by one manufacturer.

The primary components of the system consist of the main filter tank, flex tube filter elements, element assembly, bump mechanism, vacuum transfer system, sight glass, pressure gauge panel, inspection (viewing) window, valves and automatic filter controller.

All components and related subassemblies shall be factory assembled and tested prior to shipment.

2.2 FILTER SYSTEM CAPACITY

A. The filter system shall have a capacity of filtering 600,000 gallons in 6 hours at a rate of 1666 gallons per minute.

B. The system shall consist of One Defender filter tank(s) with a total effective filter surface area of 1211 square feet and operate at a rate of 1.38 gallons per minute per square foot of filter area.

The filter area shall be provided as specified and as listed in NSF-Standard 50 to provide the specific filter rate. No modification, manipulation or interpretation of these values shall be permitted.

D. Filter system shall be designed to maximize sq. ft. of filter area while minimizing operating weight. Systems that operate in excess of 11 lbs. per sq. ft. of filter area shall not be considered.

2.3 FILTER TANKS

A. The filter tank shall not be less than 49” in diameter with a 60” side shell, suitable for 50 psi working pressure and hydrostatically tested to 75 psi. Tank shell shall be not less than ¼” thick. Bottom dished head shall be not less than ¼” thick. Top flat head shall be not less than 1 1/4” thick. All material shall be Type A-36 carbon steel.

NOTE: Tanks constructed of alternate materials shall not be considered.

B. All welding shall be performed by qualified operators. Joints shall be butt or fillet welded inside and out by manual or automatic process. Welded joints shall have complete penetration and fusion with little or no reduction of the thickness of the base metal. Welds shall be free of coarse ripples, grooves, overlaps, abrupt ridges or valleys. All welded surfaces shall be chipped and brushed clean, when necessary, leaving no slag or splatter.

C. Tank legs shall be constructed of 6” x 2 ½” channel legs ¼” thick. 24”, 27” and 33" filters shall have (3) legs. 41”, 49” and 55” filters shall have (4) legs. The material shall be Type A-36 carbon steel. Bearing plates shall be 10” x 5” x 1/4” type 304L stainless steel. Each bearing plate shall have (2) 5/8" drilled holes to secure to the floor with the ½" x 4 ½" stainless steel concrete anchors provided. The legs shall be designed with bolted connections to minimize overall tank height for shipping and access into the mechanical room.

C. The tank head shall be bolted to the shell with 7/8” diameter T304 stainless steel threaded rods and nuts, 9” on center around the tank perimeter.

D. Tank shall be equipped with a UL listed grounding lug.

E. Tank shall incorporate connections for 6" filter influent,6" effluent, 3" drain; 1-1/2" vacuum transfer piping, 4” viewing window, and lift shaft gland.

F. Tank shall include brackets for mounting of automatic controller, gauge panel, filter / regulator, vacuum transfer blower and vacuum hose rack.

G. Tank shall include a integrally mounted hydraulic lifting device (davit). The davit assembly shall be designed to lift the filter head and include a pivot mechanism allowing the head to rotate 180°, for access to the tube sheet.
NOTE: Systems requiring additional devices for filter head removal will not be considered.

2.4 FLEXSOL 3000 INTERIOR LINING

A. All interior surfaces shall be grit blasted to white metal condition with a 3-4 mil profile. Blasted surfaces shall be cleaned of all dust or blast residue. Lining shall be applied as soon as is practical on the same day blasting is done.

B. Flexsol 3000® shall be a urethane, 100% solid plural component lining. Hardness shall be 75 durometer on the shore D scale. Break tensile strength shall be 4000 psi with elongation of less than 10%. Adhesion shall be greater than 2500 psi.

C. Application of Flexsol 3000® lining shall be done by experienced applicators using a high pressure, high temperature plural component system. All wetted surfaces including flange faces, manway rings and manway covers shall be lined to 100 mils +/- 10 mils WFT.

D. Hardness shall be verified after curing to ASTM D 2240 standard.

E. Manufacturer shall submit for approval a sample piece of coated steel to determine flexibility, abrasion tolerance and adhesion integrity.

F. Flexsol 3000® lining shall meet the NSF toxicity standard unconditionally and shall be approved for use with the NSF approved filter.

G. Flexsol 3000® lined vessels shall carry a ten (10) year limited non-prorated warranty.

H. The filter manufacturer shall bear the responsibility for suitability of lining and shall be the sole source for the specified warranty.

2.5 EXTERIOR COATINGS

A. All exterior surfaces shall be grit blasted to white metal condition with a 2-3 mil profile. Blasted surfaces shall be cleaned of all dust or blast residue and primed as soon as is practical on the same day blasting is done.

B. When priming has dried the coating process will begin. If prime has sat for over twenty-four hours, a refresher coat will be applied.

C. Two coats of high solids enamel shall be applied for a total developed film thickness of 5-8 mils.

D. Manufacturer is to supply min.16 oz of high solids enamel touch-up paint.

2.6 INTERNAL COMPONENTS

A. The filter shall consist of flex tube elements, filter tube sheet, stainless steel lift shaft and internal flow diversion assembly.

B. The filter elements shall be flexible tubes that provide the support structure for the media. The outer wall of each element shall be fabricated of multi-filament high strength polyester braid. Each element shall have an internal T304 (optional T316) stainless steel spring, which acts a support structure for the braided filament.

C. The filter element tube sheet shall be fabricated of T304 (optional T316) stainless steel and provide both support for the top of the element assembly as well as water tight seal to prevent media from escaping the filter tank.

D. The lift shaft shall be fabricated from T304 (optional T316) stainless steel and provide the internal connection between the filter element tube sheet and the external bump mechanism.

E. The filter influent connection shall be fitted with a T304 (optional T316) stainless steel flow diversion assembly to eliminate disturbance to the filter elements during operation.

F. All stainless steel wetted fasteners shall be Type 304. (optional T316)
NOTE: Systems utilizing rigid elements with replaceable filter septum shall not be

considered.

2.7 BUMP MECHANISM

The bump mechanism shall include a pneumatically operated tire mounted externally on the filter tank head. The tire is alternately pressurized then depressurized causing the connected filter element assembly to move in a downward then upward fashion. This movement shall provide the means of dislodging the media and accumulated solids, which then recoat the filter element.
NOTE: Systems that do not incorporate a pneumatic bump mechanism shall not be considered.

2.8 VACUUM TRANSFER SYSTEM

A. The vacuum transfer system shall be provided to allow the recharging of media into the filter for either bag or bulk media.

B. The vacuum shall include a 5 peak HP 115V single phase motor 60 Hz, cULus listed.

C. A GFI protected receptacle shall be provided for field installation on the vacuum mounting bracket and field wired to the RMF controller.

D. Provide three (3) 1-1/2" SCH 80 PVC ball valves: for the vacuum drain line, the blower inlet and the vacuum hose.

E. The Manufacturer shall provide all necessary pipe, fittings and hardware for field plumbing of the vacuum transfer system.

F. Provide 10 feet of 1-1/2" vacuum hose with required fittings.
NOTE: Systems requiring external precoat mixing tanks, slurry feed, or other wet media transfer devices shall not be considered.

2.9 AUTOMATIC CONTROLLER

A. The automatic controller shall provide total control of the system's filtration and regeneration cycles, and provide all necessary equipment interlocks and timing mechanisms to execute the filter program.

B. The controller shall include an adjustable pressure switch, factory set to 50 psi. The switch shall stop the recirculating pump and close the pneumatic valves if air pressure falls to 50 psi.

C. The controller shall contain a microprocessor that will activate the following functions of the system:
1. Bump cycle / manual or automatic
2. Precoating of the filter elements
3. Stopping and starting of the main recirculating pump
4. Opening and closing of pneumatically operated valving
5. Vacuum transfer system
6. Heater cool down delay
7. Auxiliary contacts to interlock chemical control or other equipment
8. Keyed switch to activate continuous, intermittent bump cycle for flex tube cleaning.

D. The controller panel shall display the following functions:
1. Filter status

2. Precoat status
3. Recirculating pump status
4. Vacuum transfer pump status
5. System power

E. The controller enclosure shall be NEMA 4x.

G. The RMF automatic controller will provide signal power to the main recirculating pump motor starter. The unit is required to be a variable frequency drive (VFD) and is to be installed with control wiring by the electrical contractor.

H. The RMF shall be 120V, 1 phase, 30 amp rated and shall be UL labeled.
NOTE: Systems without programmable, automatic bump/regeneration/filter modes shall not be considered.

2.10 VFD

A. A Variable Frequency Drive (VFD) shall be provided with each Defender (one per filter pump) for control of the filter pump motor.

B. The Variable Frequency Drives (VFDs) shall be solid state, with a Pulse Width Modulated (PWM) output. The VFD package as specified herein shall be enclosed in a NEMA 4 enclosure, completely assembled, programmed and tested by the manufacturer. The VFD shall employ a full wave rectifier (to prevent input line notching), capacitors, DC link inductors, and Insulated Gate Bipolar Transistors (IGBTs) as the output-switching device. The drive efficiency shall be 97% or better at full speed and full load. Displacement power factor shall be no less than 0.98 at all speeds and loads.

C. All CFW11 VFDs shall be factory programmed per the unique requirements of each job per Neptune Benson specifications. Programming shall include but shall not be limited to filter pump motor specifications, remote start/stop requirements, run confirm requirements and PID loop requirements.

D. VFDs and options shall be UL and CUL listed as a complete assembly. VFDs and options shall be UL, CUL, and CE labeled as a component.

E. Harmonic Distortion Control:

The VFD design shall incorporate mechanisms that lower the harmonic currents caused by the drive as compared to standard six-pulse drives onto the AC power line. Harmonic calculations shall be supplied upon request based on a single line diagram of the electrical system. This diagram shall include transformer(s) KV, kVA and impedance percentage to accurately predict the harmonic levels at the PCC (Point of Common Coupling), as specified by IEEE519-1992. The calculations shall be made with the point of the common coupling being the utility feeder.

F. Specifications:

1. Input voltage 200-240, 380-480, 575-600 VAC +/- 10%, 3 phase, 48-63 Hz.
2. Voltage tolerance + 10% or – 15% of specified line voltage.
3. Output Frequency 0 to 300 Hz. Operation above 60 Hz shall require programming changes to prevent inadvertent high-speed operation.
4. Environmental operating conditions: -10 to 5Õ°C, 0 to 1000 meters above sea level, less than 90% humidity, non-condensing.
5. Enclosure shall be rated NEMA 4 or as specifically mentioned elsewhere.

G. The VFD shall be wired into the RMF controller for on/off and run confirm functions. Wiring shall be by electrical contractor.

H. The VFD shall be a WEG NBCFW series

I. The VFD shall be equipped with a bypass. Bypass option shall send the motor to bypass mode based on an easily accessible door-mounted selector or based on the drive's programmable relay. A bypass pilot light shall provide indication of the bypass mode. The bypass mode shall provide overload protection. Contactors shall be electrically and mechanically interlocked. An essential services mode shall send the motor to bypass regardless of the selected mode.

J. A disconnect switch, as may be required by local electrical codes, is to be supplied by others.

2.11 FLOWMETER

A. A digital flowmeter shall be included with a 4-20mA 0-10 VDC analog output.

B. The flowmeter shall be wired into the VFD to provide automatic speed control of the filter pump motor.

C. The VFD shall compensate for varying filter head losses by maintaining the specified flowrate with the 4-20mA output signal of the flowmeter.

2.12 FILTER / REGULATOR

Each filter shall include a combination filter / regulator. The regulator shall be adjustable from 0 – 120 p.s.i. 1/2" F.P.T. connections shall be provided for field installation of air lines.

2.13 WATER SEPARATOR

One water separator with automatic drain shall be included for each air compressor supplied. 1/2" F.P.T. connections shall be provided for field installation of air lines.

2.14 AIR COMPRESSOR

The system will require (1) air compressor per mechanical room. The following is the minimum requirement:
20 gallon tank, 2 HP 115v, 1 phase, 15 amp, 5.2 CFM @ 90 psi, air pressure gauge, pressure relief valve, belt guard, pressure switch, air filter, tank drain.

2.15 PNEUMATIC ACTUATORS

A. Each filter shall include pneumatic actuators for (1) effluent valve and (1) precoat valve.

B. The actuators shall be double acting with valve mounted drilling to ISO 5211.

C. The actuators shall include (2) 1/4" FPT ports for open / close connections. Flow control valves with quick connect fittings shall be provided at each port to allow speed control adjustment for the open / close function of the actuators.

D. Materials of Construction
1. Body: aluminum alloy, extruded acc. to ASTM 6063, anodized acc. to UNI 4522
2. Ends: Die-cast in aluminum alloy acc. To ASTM B179, epoxy-polyester coated
3. Pistons: Die-cast in aluminum alloy acc. To ASTM B179

4. Pinion: Nickel-plated steel
5. Slideways: Acetal resin (LAT LUB 731320T)
6. Fasteners: AISI 304 Stainless steel
7. Springs: Epoxy coated steel, pre-compressed
8. Seals: NBR Nitrile rubber
9. Lubricant: MoS2

E. The actuators shall be factory lubricated to allow for 1,000,000 maneuvers.

F. The actuators shall have adjustable travel stops for both directions.

G. Working temperature limits: 4ºF to 186ºF. NOTE: Systems utilizing manually operated valves shall not be considered.

H. A tool kit for adjustment of pneumatic actuators shall be provided by the filter manufacturer.

2.16 SOLENOID VALVES

A. Each filter shall include three (3) single solenoid, 4-way valves mounted on a multi-station manifold for operation of the pneumatic actuators and bump mechanism.

B. The solenoids valves shall include lighted DIN connectors.

C. The solenoid valves shall be factory lubricated and shall not require any field lubrication.

D. The solenoid valves with multi-station manifold shall be located on the bottom of the automatic controller, factory wired and include quick connect fittings for attachment to the pneumatic actuators and bump mechanism.

E. The solenoid valves shall be SMC Series SY 7000.

2.17 VALVES

A. All valves 3" – 12" shall be constructed with cast aluminum ASTM S12A housing and fully coated with Rilsan on all interior and exterior surfaces. Internal components include EPDM resilient lining, Rilsan coated ductile iron disc and T304 stainless steel shaft. Valves 14" and larger shall be constructed with cast iron housing epoxy coated and with nylon coated ductile iron disc.

B. Valves shall be butterfly valves and shall be provided for the influent, effluent and precoat lines.

2.18 SYSTEM VALVES

A. Each defender filter shall include Five (5) system valves to facilitate system fill after media recharge, precoat/regeneration, influent & effluent for filtering and media dump/drain valve.

B. The precoat/regeneration and effluent valves shall be butterfly type with pneumatic actuators per 2.15.

C. The system fill valve shall be butterfly type with lever operator and shall be the same size as the precoat/regeneration valve.

D. The influent valve shall be a wafer type check valve, ductile iron body w/double disc, SS type 304.

E. The dump/rinse valve shall be butterfly type, lever operated with SS extension to facilitate operation.

2.19 DRAIN REQUIREMENTS

A. A sump pit or stand pipe is required for dumping spent media and rinsing tube elements.

B. To prevent overflow the sump or stand pipe drain piping should be sized for 300 gpm capacity.

C. If drain piping cannot be sized for 300 gpm, or if the sewer is at an elevation higher than the filter tank drain, use the following minimum sump sizes:

Model SP-24 130 gals
Model SP-27 160 gals
Model SP-33 250 gals
Model SP-41 450 gals
Model SP-49 620 gals
Model SP-55 850 gals

Use a sump pump to transfer waste to sewer.
NOTE: Systems that cannot dump spent media by gravity drain only shall not be considered.

2.20 PACKAGING

A. For loading and unloading, filter tank diameters 24" – 41" shall be bolted to individual wooden pallets. Filter tank diameters 49" and 55" shall be equipped with temporary lifting legs. All tanks shall be shrink wrapped to prevent damage during transport.

B. The components shall be carefully packaged in a totally enclosed wooden crate to prevent damage during transport.

2.21 MEDIA

A. Media shall be expanded perlite with a median particle size of 37 microns. Percentage retained on a +150 Tyler Mesh shall not be less than 8% or more than 25%. Darcy permeability shall be between 1.2-1.85.

B. The media shall contain no more than 1 tenth of one percent (.001) of crystalline silicate.

C. The media shall be certified by the Manufacturer for use in the Defender Filter. The media shall be NSF Std. 50 listed.

D. The media shall be Celaperl 1000 as supplied by EP Minerals.

E. Each Defender filter shall be furnished with six (6) charges of perlite media.

2.22 FILTER CLEANER

A. Each Defender filter shall be furnished with one (1) charge of chemicals for cleaning and degreasing of filter tube elements.

2.23 WARRANTIES

A. Defender filter tanks with Flexsol 3000 shall carry a 10 year limited fully rated warranty as regularly offered by the tank manufacturer.

B. Internal components, including tube elements, shall carry a fully rated 10 year warranty.

C. Valve bodies shall carry a 5 year fully rated warranty.

D. Valve operators and system accessories including the RMF controller, quick exhaust valve, solenoid valve and bump mechanisms shall carry one year warranty as provided by the product manufacturer.

E. Unless otherwise specified, workmanship is to be guaranteed first class and carry a one (1) year warranty.

END OF SECTION

SECTION 13150 B-2
DEFENDER FILTER SYSTEM – INSTRUCTIONAL POOL (Alternate #8 Option)

PART 1 - GENERAL

1.1 INTENT

A. Purpose of the bid is to purchase and have installed a complete filtration and recirculation system for the swimming pool. It is intended to limit the bidding to a style of product and company that has a proven history and record of performance. Contractor is responsible for the complete design, permitting and installation of all components needed for a properly functioning system, including electrical service.

B. Due to the specialized nature of certain components required for this project, these specifications, in some instances, refer to various components by trade or manufacturers name.

C. Whenever a proprietary (trade) name is used within this Specification Section, it is used for informational purposes to describe a standard of required function, dimension, appearance and quality. References to materials by trade name, make or model number shall not be construed as limiting competition.

1.3 PROPOSED EQUAL PRODUCTS

A. Other treatment systems will be considered only if a complete set of drawings and specifications detailing such equipment as it pertains to this project are submitted for evaluation fourteen (14) working days prior to the bid date. The submission should include a list of five (5) operating installations within a reasonable distance of the jobsite. List should include the names and telephone numbers of the operating personnel.The technical contents of the submittal shall include hydraulic calculations, equipment fabrication details, filter room layout in plan and elevation views, warranties, installation and operating instructions.

B. Proposed equal products meeting the terms and conditions of the bidding documents will be acknowledged prior to bidding by addendum. No alternates will be considered after the bid.

1.3 SUBSTITUTIONS

See paragraph 1.2.A above.

1.4 QUALITY ASSURANCE

A. Due to the specialized nature of the specified work and products, all bidders shall be required to have a minimum of five (5) years of operating history. The equipment described herein shall be products of a manufacturer regularly engaged in the fabrication of filtration and recirculating systems for at least fifteen (15) years and shall be a professional engineering corporation.

B. The owner requires that filters bear the National Sanitation Foundation (NSF) seal for Standard #50. This NSF listing is required by the owner regardless of local health department regulations.

C. The specified filter system shall have had an NSF listing for at least three (3) years prior to the project bid date.

D. As assurance that each item of apparatus is properly sized to perform in conjunction with each other, the owner requires bidders to use the filter manufacturer as a single source of supply for the items of equipment as listed and described herewith.

E. The "EQUIPMENT SUPPLIER" shall be:

NEPTUNE-BENSON, INC.
COVENTRY, RHODE ISLAND
1-800-832-8002
Or Owner approved equavalent

1.5 GUARANTEE

A. The “EQUIPMENT SUPPLIER” shall guarantee that the equipment to be furnished is of the correct capacity, that the various parts are designed to operate correctly and in conjunction with each other, that if the installation is made in accordance with the project drawings and operated in accordance with the suppliers instructions, the system will perform the prescribed functions correctly, the water entering the pool will be clear, bright, free from suspended matter visible to the unaided eye, and will be sanitary to the satisfaction of all authorities having jurisdiction.

1.6 SUBMITTALS

Provide detailed shop drawings of the items of equipment being provided, indicating the dimensions, material of the filter tanks, valves, actuators, RMF programmer & accessory components.
Provide a complete set of operating instructions, embracing the operational functions and recurring maintenance processes involved in connection with the complete filtration system.

PART 2 - FILTER SYSTEM

2.1 FILTER SYSTEM

A. The filter system under this section shall be a Defender Model SP-49-48-1548 as detailed on the drawings.

B. It is the intent of these specifications to describe a filter system complete with all accessory items supplied and warranted by one manufacturer.

The primary components of the system consist of the main filter tank, flex tube filter elements, element assembly, bump mechanism, vacuum transfer system, sight glass, pressure gauge panel, inspection (viewing) window, valves and automatic filter controller.

All components and related subassemblies shall be factory assembled and tested prior to shipment.

2.2 FILTER SYSTEM CAPACITY

A. The filter system shall have a capacity of filtering 600,000 gallons in 6 hours at a rate of 1666 gallons per minute.

B. The system shall consist of One Defender filter tank(s) with a total effective filter surface area of 1211 square feet and operate at a rate of 1.38 gallons per minute per square foot of filter area.

C. The filter area shall be provided as specified and as listed in NSF-Standard 50 to provide the specific filter rate. No modification, manipulation or interpretation of these values shall be permitted.

D. Filter system shall be designed to maximize sq. ft. of filter area while minimizing operating weight. Systems that operate in excess of 11 lbs. per sq. ft. of filter area shall not be considered.

2.3 FILTER TANKS

A. The filter tank shall not be less than 49” in diameter with a 60” side shell, suitable for 50 psi working pressure and hydrostatically tested to 75 psi. Tank shell shall be not less than ¼” thick. Bottom dished head shall be not less than ¼” thick. Top flat head shall be not less than 1 1/4” thick. All material shall be Type A-36 carbon steel.

NOTE: Tanks constructed of alternate materials shall not be considered.

B. All welding shall be performed by qualified operators. Joints shall be butt or fillet welded inside and out by manual or automatic process. Welded joints shall have complete penetration and fusion with little or no reduction of the thickness of the base metal. Welds shall be free of coarse ripples, grooves, overlaps, abrupt ridges or valleys. All welded surfaces shall be chipped and brushed clean, when necessary, leaving no slag or splatter.

C. Tank legs shall be constructed of 6” x 2 ½” channel legs ¼” thick. 24”, 27" and 33" filters shall have (3) legs. 41”, 49” and 55” filters shall have (4) legs. The material shall be Type A-36 carbon steel. Bearing plates shall be 10” x 5” x 1/4” type 304L stainless steel. Each bearing plate shall have (2) 5/8" drilled holes to secure to the floor with the ½" x 4 ½" stainless steel concrete anchors provided. The legs shall be designed with bolted connections to minimize overall tank height for shipping and access into the mechanical room.

D. The tank head shall be bolted to the shell with 7/8” diameter T304 stainless steel threaded rods and nuts, 9” on center around the tank perimeter.

E. Tank shall be equipped with a UL listed grounding lug.

F. Tank shall incorporate connections for 6" filter influent,6" effluent, 3" drain; 1-1/2" vacuum transfer piping, 4” viewing window, and lift shaft gland.

G. Tank shall include brackets for mounting of automatic controller, gauge panel, filter / regulator, vacuum transfer blower and vacuum hose rack.

H. Tank shall include a integrally mounted hydraulic lifting device (davit). The davit assembly shall be designed to lift the filter head and include a pivot mechanism allowing the head to rotate 180°, for access to the tube sheet.

NOTE: Systems requiring additional devices for filter head removal will not be considered.

2.4 FLEXSOL 3000 INTERIOR LINING

A. All interior surfaces shall be grit blasted to white metal condition with a 3-4 mil profile. Blasted surfaces shall be cleaned of all dust or blast residue. Lining shall be applied as soon as is practical on the same day blasting is done.

B. Flexsol 3000® shall be a urethane, 100% solid plural component lining. Hardness shall be 75 durometer on the shore D scale. Break tensile strength shall be 4000 psi with elongation of less than 10%. Adhesion shall be greater than 2500 psi.

C. Application of Flexsol 3000® lining shall be done by experienced applicators using a high pressure, high temperature plural component system. All wetted surfaces including flange faces, manway rings and manway covers shall be lined to 100 mils +/- 10 mils WFT.

D. Hardness shall be verified after curing to ASTM D 2240 standard.

E. Manufacturer shall submit for approval a sample piece of coated steel to determine flexibility, abrasion tolerance and adhesion integrity.

F. Flexsol 3000® lining shall meet the NSF toxicity standard unconditionally and shall be approved for use with the NSF approved filter.

G. Flexsol 3000® lined vessels shall carry a ten (10) year limited non-prorated warranty.

The filter manufacturer shall bear the responsibility for suitability of lining and shall be the sole source for the specified warranty.

2.5 EXTERIOR COATINGS

A. All exterior surfaces shall be grit blasted to white metal condition with a 2-3 mil profile. Blasted surfaces shall be cleaned of all dust or blast residue and primed as soon as is practical on the same day blasting is done.

B. When priming has dried the coating process will begin. If prime has sat for over twenty-four hours, a refresher coat will be applied.

C. Two coats of high solids enamel shall be applied for a total developed film thickness of 5-8 mils.

D. Manufacturer is to supply min.16 oz of high solids enamel touch-up paint.

2.6 INTERNAL COMPONENTS

A. The filter shall consist of flex tube elements, filter tube sheet, stainless steel lift shaft and internal flow diversion assembly.

B. The filter elements shall be flexible tubes that provide the support structure for the media. The outer wall of each element shall be fabricated of multi-filament high strength polyester braid. Each element shall have an internal T304 (optional T316) stainless steel spring, which acts a support structure for the braided filament.

C. The filter element tube sheet shall be fabricated of T304 (optional T316) stainless steel and provide both support for the top of the element assembly as well as water tight seal to prevent media from escaping the filter tank.

D. The lift shaft shall be fabricated from T304 (optional T316) stainless steel and provide the internal connection between the filter element tube sheet and the external bump mechanism.

E. The filter influent connection shall be fitted with a T304 (optional T316) stainless steel flow diversion assembly to eliminate disturbance to the filter elements during operation.

F. All stainless steel wetted fasteners shall be Type 304. (optional T316)

NOTE: Systems utilizing rigid elements with replaceable filter septum shall not be considered.

2.7 BUMP MECHANISM

The bump mechanism shall include a pneumatically operated tire mounted externally on

the filter tank head. The tire is alternately pressurized then depressurized causing the connected filter element assembly to move in a downward then upward fashion. This movement shall provide the means of dislodging the media and accumulated solids, which then recoat the filter element.

NOTE: Systems that do not incorporate a pneumatic bump mechanism shall not be considered.

2.8 VACUUM TRANSFER SYSTEM

A. The vacuum transfer system shall be provided to allow the recharging of media into the filter for either bag or bulk media.

B. The vacuum shall include a 5 peak HP 115V single phase motor 60 Hz, cULus listed.

C. A GFI protected receptacle shall be provided for field installation on the vacuum mounting bracket and field wired to the RMF controller.

D. Provide three (3) 1-1/2" SCH 80 PVC ball valves: for the vacuum drain line, the blower inlet and the vacuum hose.

E. The Manufacturer shall provide all necessary pipe, fittings and hardware for field plumbing of the vacuum transfer system.

F. Provide 10 feet of 1-1/2" vacuum hose with required fittings.

NOTE: Systems requiring external precoat mixing tanks, slurry feed, or other wet media transfer devices shall not be considered.

2.9 AUTOMATIC CONTROLLER

A. The automatic controller shall provide total control of the system's filtration and regeneration cycles, and provide all necessary equipment interlocks and timing mechanisms to execute the filter program.

B. The controller shall include an adjustable pressure switch, factory set to 50 psi. The switch shall stop the recirculating pump and close the pneumatic valves if air pressure falls to 50 psi.

C. The controller shall contain a microprocessor that will activate the following functions of the system:

1. Bump cycle / manual or automatic
2. Precoating of the filter elements
3. Stopping and starting of the main recirculating pump
4. Opening and closing of pneumatically operated valving
5. Vacuum transfer system
6. Heater cool down delay
7. Auxiliary contacts to interlock chemical control or other equipment
8. Keyed switch to activate continuous, intermittent bump cycle for flex tube cleaning.

D. The controller panel shall display the following functions:

1. Filter status
2. Precoat status
3. Recirculating pump status
4. Vacuum transfer pump status
5. System power

E. The controller enclosure shall be NEMA 4x.

F. The RMF automatic controller will provide signal power to the main recirculating pump motor starter. The unit is required to be a variable frequency drive (VFD) and is to be installed with control wiring by the electrical contractor.

G. The RMF shall be 120V, 1 phase, 30 amp rated and shall be UL labeled.
NOTE: Systems without programmable, automatic bump/regeneration/filter modes shall not be considered.

2.10 VFD

A. A Variable Frequency Drive (VFD) shall be provided with each Defender (one per filter pump) for control of the filter pump motor.

B. The Variable Frequency Drives (VFDs) shall be solid state, with a Pulse Width Modulated (PWM) output. The VFD package as specified herein shall be enclosed in a NEMA 4 enclosure, completely assembled, programmed and tested by the manufacturer. The VFD shall employ a full wave rectifier (to prevent input line notching), capacitors, DC link inductors, and Insulated Gate Bipolar Transistors (IGBTs) as the output-switching device. The drive efficiency shall be 97% or better at full speed and full load. Displacement power factor shall be no less than 0.98 at all speeds and loads.

C. All CFW11 VFDs shall be factory programmed per the unique requirements of each job per Neptune Benson specifications. Programming shall include but shall not be limited to filter pump motor specifications, remote start/stop requirements, run confirm requirements and PID loop requirements.

D. VFDs and options shall be UL and CUL listed as a complete assembly. VFDs and options shall be UL, CUL, and CE labeled as a component.

E. Harmonic Distortion Control:

The VFD design shall incorporate mechanisms that lower the harmonic currents caused by the drive as compared to standard six-pulse drives onto the AC power line. Harmonic calculations shall be supplied upon request based on a single line diagram of the electrical system. This diagram shall include transformer(s) KV, kVA and impedance percentage to accurately predict the harmonic levels at the PCC (Point of Common Coupling), as specified by IEEE519-1992. The calculations shall be made with the point of the common coupling being the utility feeder.

F. Specifications:

1. Input voltage 200-240, 380-480, 575-600 VAC +/- 10%, 3 phase, 48-63 Hz.
2. Voltage tolerance + 10% or – 15% of specified line voltage.
3. Output Frequency 0 to 300 Hz. Operation above 60 Hz shall require programming changes to prevent inadvertent high-speed operation.
4. Environmental operating conditions: -10 to 5Õ°C, 0 to 1000 meters above sea level, less than 90% humidity, non-condensing.
5. Enclosure shall be rated NEMA 4 or as specifically mentioned elsewhere.

G. The VFD shall be wired into the RMF controller for on/off and run confirm functions. Wiring shall be by electrical contractor.

H. The VFD shall be a WEG NBCFW series

I. The VFD shall be equipped with a bypass. Bypass option shall send the motor to bypass mode based on an easily accessible door-mounted selector or based on the drive's programmable relay. A bypass pilot light shall provide indication of the bypass mode. The bypass mode shall provide overload protection. Contactors shall be electrically and mechanically interlocked. An essential services mode shall send the motor to bypass regardless of the selected mode.

J. A disconnect switch, as may be required by local electrical codes, is to be supplied by others.

2.11 FLOWMETER

A. A digital flowmeter shall be included with a 4-20mA 0-10 VDC analog output.

B. The flowmeter shall be wired into the VFD to provide automatic speed control of the filter pump motor.

C. The VFD shall compensate for varying filter head losses by maintaining the specified flowrate with the 4-20mA output signal of the flowmeter.

2.12 FILTER / REGULATOR

Each filter shall include a combination filter / regulator. The regulator shall be adjustable from 0 – 120 p.s.i. 1/2" F.P.T. connections shall be provided for field installation of air lines.

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One water separator with automatic drain shall be included for each air compressor supplied. 1/2" F.P.T. connections shall be provided for field installation of air lines.

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B. The actuators shall be double acting with valve mounted drilling to ISO 5211.

C. The actuators shall include (2) 1/4" FPT ports for open / close connections. Flow control valves with quick connect fittings shall be provided at each port to allow speed control adjustment for the open / close function of the actuators.

D. Materials of Construction
1. Body: aluminum alloy, extruded acc. to ASTM 6063, anodized acc. to UN 4522
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3. Pistons: Die-cast in aluminum alloy acc. To ASTM B179
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6. Slideways: Acetal resin (LAT LUB 731320T)
7. Fasteners: AISI 304 Stainless steel
8. Springs: Epoxy coated steel, pre-compressed
9. Seals: NBR Nitrile rubber
10. Lubricant: MoS2

E. The actuators shall be factory lubricated to allow for 1,000,000 maneuvers.

F. The actuators shall have adjustable travel stops for both directions.

G. Working temperature limits: 4ºF to 186ºF. NOTE: Systems utilizing manually operated valves shall not be considered.

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A. Each filter shall include three (3) single solenoid, 4-way valves mounted on a multi- station manifold for operation of the pneumatic actuators and bump mechanism.

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C. The solenoid valves shall be factory lubricated and shall not require any field lubrication.

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A. Each defender filter shall include Five (5) system valves to facilitate system fill after media recharge, precoat/regeneration, influent & effluent for filtering and media dump/drain valve.

B. The precoat/regeneration and effluent valves shall be butterfly type with pneumatic actuators per 2.15.

C. The system fill valve shall be butterfly type with lever operator and shall be the same size as the precoat/regeneration valve.

D. The influent valve shall be a wafer type check valve, ductile iron body w/double disc, SS type 304.

E. The dump/rinse valve shall be butterfly type, lever operated with SS extension to facilitate operation.

2.18 DRAIN REQUIREMENTS

A. A sump pit or stand pipe is required for dumping spent media and rinsing tube elements.

B. To prevent overflow the sump or stand pipe drain piping should be sized for 300 gpm capacity.

C. If drain piping cannot be sized for 300 gpm, or if the sewer is at an elevation higher than the filter tank drain, use the following minimum sump sizes:

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NOTE: Systems that cannot dump spent media by gravity drain only shall not be considered.

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2.21 MEDIA

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B. The media shall contain no more than 1 tenth of one percent (.001) of crystalline silicate.

C. The media shall be certified by the Manufacturer for use in the Defender Filter. The media shall be NSF Std. 50 listed.

D. The media shall be Celaperl 1000 as supplied by EP Minerals.

E. Each Defender filter shall be furnished with six (6) charges of perlite media.

2.22 FILTER CLEANER

A. Each Defender filter shall be furnished with one (1) charge of chemicals for cleaning and degreasing of filter tube elements.

2.23 WARRANTIES

A. Defender filter tanks with Flexsol 3000 shall carry a 10 year limited fully rated warranty as regularly offered by the tank manufacturer.

B. Internal components, including tube elements, shall carry a fully rated 10 year warranty.

C. Valve bodies shall carry a 5 year fully rated warranty.

D. Valve operators and system accessories including the RMF controller, quick exhaust valve, solenoid valve and bump mechanisms shall carry one year warranty as provided by the product manufacturer.

E. Unless otherwise specified, workmanship is to be guaranteed first class and carry a one (1) year warranty.

END OF SECTION

MECHANICAL AND ELECTRICALTABLE OF CONTENTS

SECTION 23 0500 - MECHANICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

B. Where mention of data referenced in paragraph A above is included or repeated in this Section, redundancy is for emphasis only. In the case where any discrepancy exists, the more strict requirement or more costly installation shall prevail.

1.2 WORK INCLUDED:

A. This Section covers general items including but not limited to references, regulations, procedures, materials and installation data applicable to all sections of Division 23 - Mechanical.

B. Provide all labor, materials, necessary equipment and services necessary for completely furnished and operational mechanical systems as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS". Provide all minor incidental items such as offsets, fittings, etc., required as part of work even though not specified or indicated. Provide for connection of "NIC ITEMS" where applicable.

C. Description of Systems: Work of Division 23 includes but is not limited to:

1. Replacement and modifications of pool dehumidification equipment, hot water boilers, piping, pumps, controls, etc.

2. Modifications to air distribution system (ductwork)

1.3 COORDINATION:

A. General: Coordinate and order progress of mechanical work to conform to progress of work under other divisions. Complete entire installation as soon as condition of building permits.

B. Drawings:

1. Drawings indicate general design and arrangement of ductwork, pipe lines, equipment, systems, etc. Information shown is diagrammatic in character and does not necessarily indicate every required offset, fitting, etc. Do not scale drawings for dimensions; however, for purpose of clearness and legibility, size and location of equipment and ductwork drawn to scale wherever possible. Drawings indicate required size and termination of

pipes/ducts and suggest proper routes to conform to structure, to avoid obstructions, and to preserve clearance. Install piping and ductwork in such manner as to conform to structure and to avoid obstructions.

2. Refer to site drawings for sanitary and storm sewers, fire protection water supply, and domestic water supply.

3. Refer to architectural and structural drawings for dimensions, finish, levels, and locations. Locate ceiling mounted items as diffusers and access panels as indicated on reflected ceiling plans where such items are indicated thereon.

4. Refer to electrical drawings for voltage characteristics supplied to mechanical equipment. Electrical connections to motors, starters, controllers, and resistance heaters match wiring covered under Division 25, Electrical, or indicated on electrical drawings, i.e., 3 wire, 4 wire, etc.

D. Ductwork: As ducts are larger and less flexible relative to other elements of mechanical and electrical work (as pipes and conduits), ducts have right of way.

E. Discrepancies: Examine all specification divisions and drawings covering work other than mechanical. If any discrepancies are observed between work of this division and work of other divisions, report such discrepancies to Architect in writing for decision or direction.

1.4 CODES, REGULATIONS, AND REQUIREMENTS:

A. Comply with applicable governmental and utility codes, regulations, or requirements.

B. Perform work in accordance and conformity with, but not limited to, requirements of below listed publications unless more stringent requirements are specified.

C. Publications:

1. General:

a. National Electrical Code - NFPA Standard 70, edition specified in Division 16.
b. Underwriters' Laboratories, Inc., Approved Materials List. Materials and apparatus of a type that have been tested and listed by UL shall be manufactured under their reinspection service and bear UL label.
c. International Building Code, 2010 Edition with any local addenda.
d. Life Safety Code - NFPA 101, 1991 edition.
e. Energy Conservation - Comply with requirements of Georgia State Energy Code.

2. Plumbing:

a. International Plumbing Code, 2006 Edition with any local addenda.
b. American National Standard Specifications for Making Building and Facilities Accessible to and Usable by Physically Handicapped People, ANSI A117.1.

3. Heating, Ventilating, and Air Conditioning:

a. International Mechanical Code, 2006 Edition with any local addenda.
b. Air Conditioning and Ventilating Systems - NFPA Standard 90A, 2006 edition.
c. Safety Code for Mechanical Refrigeration - ANSI Standard B9.1.

D. Permits: Obtain permits and inspections for installation of mechanical work and pay all charges incidental thereto. Deliver to Owner all certificates of inspection issued by authorities having jurisdiction.

1.5 SUBMITTALS:

A. Submit shop drawings and product data to Engineer as required by various sections of Division 23.

B. Support submittals by descriptive material, catalogs, cuts, diagrams, performance curves, and charts published by manufacturer to show conformance to specification and drawing requirements; model numbers alone not acceptable. Include published installation recommendations and requirements. Mark each submittal with drawing number or specification section, article, and paragraph number which pertains to item. Failure to comply with above format considered cause for rejection.

C. For products requiring electrical connections, supply equipment selected to operate on electrical system characteristics provided under Division 25 work.

1.6 OPERATING AND MAINTENANCE DATA:

A. Submission: Submit minimum of two sets bound in heavy-duty hard vinyl-covered 3-ring loose-leaf notebooks of Operating and Maintenance Manual, 8-1/2" X 11" page size to Architect for approval prior to scheduling any systems demonstration. Identify manuals with label under clear plastic shield on both front and spine showing name of project, Architect, and Contractor plus date of contract documents.

1.7 WARRANTY:

A. General: Comply with requirements of General Conditions.

B. Refrigeration Equipment: Include prompt repair of leaks and replacement of oil or refrigerant lost through leaks or malfunction during warranty period.

C. Equipment Performance: Warrant each product to deliver capacities specified, scheduled, or indicated.

1.8 ABBREVIATED LANGUAGE:

A. Specification Language Explanation: These specifications are of abbreviated, simplified or streamlined type and include incomplete sentences. Omissions of words or phrases such as "the Contractor shall", "in conformity therewith", "shall be", "as noted on the drawings", "a", "the", are intentional. Supply omitted words or phrases by inference in same manner as they are when "NOTE" occurs on drawings. Supply words "shall be" or "shall" by inference when colon is used with sentences or phrases. Supply words "on the drawings" by inference when "as indicated" is used with sentences or phrases.

PART 2 - PRODUCTS

2.1 CATALOGED PRODUCTS:

A. Materials and Equipment: Cataloged products of manufacturers regularly engaged in production of such materials or equipment and manufacturer's latest design that complies with specification requirements. Duplicate items that have been in satisfactory commercial or industrial use at least 2 years. Where brand names are specified use specified products unless approved in writing prior to bids.

B. Uniformity: Provide products of single manufacturer where two or more items of same class of equipment are required. Component parts of equipment need not be products of original product manufacturer.

C. Identification: Provide each item of equipment with manufacturer's name, address, model number, and serial number on nameplate securely affixed in conspicuous place; nameplate of distributing agent not acceptable.

2.2 REQUIREMENTS FOR MATERIAL AND EQUIPMENT:

A. Pressure vessels (except direct fired units) constructed and inspected in accordance with ASME Code for Unfired Pressure Vessels for working pressure specified and bear appropriate ASME approval stamp.

B. Equipment drives, couplings, pulleys, and other rotating parts equipped with guards to provide safe operating conditions. Comply with requirements of ANSI pamphlet 315-1.

C. Materials and devices used in fabrication and construction of various parts of equipment included in mechanical work provided in accordance with standards of ASTM, ASME, UL, NEMA, and AMCA where such standards apply.

D. Where equipment is specified by catalog number, such numbers are used for descriptive purposes and equipment shall comply with additional requirements of specifications or with referenced regulations and standards.

E. Provide similar equipment, apparatus, valves, etc. of same manufacturer and type whenever possible.

F. Valves, gauges, thermometers, switches, control devices, etc. furnished as standard part of any piece of equipment may conform to that original equipment Manufacturer's standard.

G. If any product requires special tool, key, or device for assembly, adjustment setting, or maintenance, provide same with product.

H. Provide products conforming to applicable governmental or utility codes, regulations, or requirements.

PART 3 - EXECUTION:

3.1 MANUFACTURER'S RECOMMENDATIONS:

A. Install products in compliance with recommendations of manufacturer. Manufacturers or their authorized representative provide services and supervision to insure compliance. Conflict between manufacturer's recommendations and other contract requirements referred to Engineer in writing for decision or direction.

B. Requirements of several acceptable manufacturers for specified item may vary as to installation, detail, location, number of connections, dimension, weight, etc. Provide drawings, services, materials, and labor for installation and functioning of item furnished.

3.2 INSTALLATION:

A. Coordination: Comply with General Conditions.

B. Preparation: Base final installation of materials and equipment on actual dimensions and conditions at project. Field measure for materials or equipment requiring exact fit.

C. Workmanship: Perform work in accordance with good commercial practice. Good appearance of finished work is of equal importance with its mechanical efficiency.

D. Protection: Close ends of pipe and ductwork during construction to prevent entry of foreign material. Protect insulation against dirt, water, chemical or mechanical damage before, during and after installation. Protect fixtures and equipment against damage during and after installation.

E. Codes, Regulations, and Requirements: Installation to comply with applicable governmental or utility codes, regulations or requirements. Coordinate timing of inspections by authorities having jurisdiction.

F. Approved Substitutes: Be responsible for modification in space requirements, configurations, performance, changes in bases, supports, structural members and openings in structure, and other apparatus or work under another division of work that may be affected by their use.

G. Noise and Vibration: When in operation, systems to be free from noise and vibration. Loose items secured and items such as duct dampers locked into position to prevent "rattling".

3.3 CLEARANCE AND ACCESS:

A. Install piping, ductwork, equipment, etc., so as to maintain maximum head room and clearances. Piping and ductwork not interfere with operation of or accessibility of doors; not encroach on aisles, passageways, or access area to equipment; and not interfere with servicing or removal of equipment.

B. Equipment requiring service located and installed to permit access for servicing without damage to building structure, finishes, or other equipment.

C. Where valves, dampers, and other devices are installed in furred spaces, provide flush type access panels to access. Lay-in acoustical type ceilings do not require manufactured access panels. Tag valves, dampers, and equipment as requiring access panels so that access panel locations may be adjusted as necessary to achieve proper access.

3.4 CLEANING AND PAINTING:

A. Comply with requirements of General Conditions.

B. Clean exposed surfaces of piping, hangers, ducts and other exposed items of grease, dirt or other foreign material. At completion of work remove rubbish and debris resulting from operations and leave equipment spaces clean and ready for use.

C. Repaint factory-painted equipment that has been scratched or marred to match original color and texture.

D. Equipment hangers, supports and uninsulated black steel pipe exposed to sight inside building which are not provided with factory applied prime coat, finished with field applied prime coat. In addition, such items in finished spaces also provided with two coats of finish paint in color to match adjacent surfaces.

END OF SECTION

SECTION 23 0501

BASIC MATERIALS AND METHODS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 WORK INCLUDED:

A. Provide all labor, materials, necessary equipment and services to complete sleeves, escutcheons, access panels, thermometers, pressure gauges, T and P test plugs, motors, power controllers, excavation, flashing, and welding work as indicated on drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS". Provide for connection of "NIC ITEMS" where applicable.

B. Work items included in this section are common to more than one section of Division 23. Administrative items common to more than one section of Division 23 are included in Section 23 0500.

C. Including but not necessarily limited to the following:

(1) Sleeves.
(2) Escutcheons.
(3) Access Panels.
(4) Excavation and Backfill.
(5) Temperature and Pressure Gauges.
(6) Motors and Power Controllers.
(7) Welding.

1.3 RELATED WORK:

A. Division 23 0000 - All sections.

1.4 QUALITY ASSURANCE:

A. Welder Qualifications: Certified welders under National Certified Pipe Welding Bureau (NCPWB) standards for type of work performed. File operators' certificates

at site and available to Engineer for examination.

B. Regulatory Requirements: Comply with applicable Standards, Codes, Regulations and Requirements.

1.5 REFERENCES:

A. Reference Standards: Comply with applicable portions of the following:

(1) National Certified Pipe Welding Bureau (NCPWB).
(2) ASME Boiler Pressure Code.
(3) American Water Works Association (AWWA).
(4) ANSI B31 Code for Pressure Piping.
(5) Underwriters Laboratories (UL).
(6) National Fire Protection Association (NFPA).
(7) National Electrical Manufacturers' Association (NEMA).
(8) National Electrical Code (NEC).

PART 2 - PRODUCTS

2.1 SLEEVES:

A. Fabricated from sections of Schedule 40 black steel pipe for passage of pipe or insulated pipe.

2.2 ESCUTCHEONS:

A. Bright plated stamped steel with concealed hinge and catch.

B. Wall and ceiling plates held in place by springs and floor plates equipped with set screw.

C. Plain end pipe couplings manufactured of painted malleable or ductile iron with curved multi-groove jaws to grip outside of pipe surface and plated nuts and bolts. Equal to Victaulic "Roust-A-Bout" plain end pipe coupling, style 99.

2.3 MOTORS:

A. General: Motors provided with equipment furnished under this division shall conform to this article except motor for hermetic refrigeration machine. High efficiency type for motors size 1 horsepower and larger.

B. Minimum Requirements:

(1) Constructed for operation at project altitude.

(2) Dustproof/leakproof bearing rings.
(3) Built to NEMA standards.
(4) Factory balanced.
(5) Open drip-proof.
(6) Thermal overload protection for 1/2 horsepower and smaller motors.
(7) For voltage indicated under Division 16 work.

C. Equipment Standards:

(1) ANSI/NEMA Standards

(2) Provide satisfactory operation within plus or minus 10% of nameplate voltage without adversely affecting performance or life.

(3) Continuous duty classification based on 40 degrees C ambient temperature.

(4) Service factor not less than 15%.

(5) Sized for duty performed and not exceed service factor when driven equipment is operating at specified capacity under most severe conditions encountered.

(6) Nameplates indicate rated efficiency and power factor in addition to standard data.

(7) Submittal to include certification with respect to high efficiency classification, motor power factor and efficiency at full load, three quarter load, and half load.

D. Specific Requirements:

(1) Polyphase, squirrel-cage induction motors, NEMA design B, 1.15 service factor normal starting torque and low starting current unless other operational characteristics are required for duty performed. Continuous duty classification based on 40 degrees C ambient temperature. Two speed motors single winding type. Motors operating on 240 or 480 volt systems use dual voltage motors, 230/460 volts. Motors operating on 208 volt systems rated at 200 volts.

(2) Nominal full load power factor and efficiency ratings not less than those listed below. Data listed is for 1,800 RPM, 3 phase, 230/460 volts NEMA design B, Class B insulation, 40 degrees C ambient, continuous duty motor with drip proof housing. Motors of other ratings and characteristics shall conform to high efficiency standards for efficiency and power factor.

HP	EFF.	P.F.	HP	EFF.	P.F.
1	82%	84%	15	89%	87%
1.5	83%	86%	20	91%	88%
2	84%	87%	25	91%	89%
3	85%	86%	30	92%	87%
5	87%	87%	40	92%	88%
7.5	88%	87%	50	92%	89%
10	89%	87%			

(3) Integral horsepower motors installed indoors provided with drip proof housing and Class B insulation. Motors installed out of doors or where subject to excessive moisture or high humidity and where specified or indicated on drawings provided with drip proof housing, Class B insulation, and moisture proof encapsulated windings. Motors in hazardous locations as defined by National Electrical Code provided with explosion proof housing.

(4) Integral horsepower motors 25 HP and larger provided with thermal devices imbedded in motor windings which, in conjunction with motor controller, provide motor overload protection. Protection shall be static type, sensitive to both over temperature and rate of temperature rise, and provide motor protection from overheating due to frequent starting, overload, high ambient temperature, abnormal voltage, ventilation failure, phase failure and locked rotor.

E. Manufacturers: Westinghouse, G.E., Louis Allis, Gould, Emerson, approved substitute.

2.4 POWER CONTROLLERS:

A. General: Provide power control devices including controllers or contactors for equipment or motors furnished under this division unless furnished as part of a motor control center provided under Division 16 work. Supply manual or magnetic controllers to comply with sequences of operation covered in Section 15950 - Controls, and other sections of Division 15. Furnish all necessary control devices as pushbutton stations, speed controls, H-O-A switches, time delays, transformers, and relays for proper operation.

B. Equipment Standards:

(1) ANSI/NEMA Standards Publication ICS 1-1978 Revision No. 3, 1980 - General Standards for Industrial Control and Systems.

(2) ANSI/NEMA Standards Publication ICS 2-1978 Revision No. 2, 1980 Standards for Industrial Control Devices, Controllers and Assemblies.

(3) UL 508 - Industrial Control Equipment.

C. Manual Controllers:

(1) Units manually operated, trip free switching device with motor running protection overload elements in each ungrounded conductor of motor circuit. Melding alloy or bi-metallic manual reset type for overload protection.

(2) Units installed in finished spaces provided in flush mounted enclosures. Those exposed to weather provided with NEMA 3R enclosure. Other enclosures NEMA 1 type.

D. Magnetic Controllers:

(1) Units for across-the-line application with or without circuit breaker type disconnect, refer to electrical drawings for locations requiring combination type. Where circuit breaker type is used, UL interrupting rating of circuit breaker not less than 14,000 RMS symmetrical amps.

(2) Units exposed to weather provided with NEMA 3R enclosure. Other enclosures NEMA 1 type.

(3) Provide two-speed controllers for two-speed motors to match motor winding type.

(4) Features:

a. Control transformer, fused.
b. Pilot light on load side.
c. Integral hand-off-auto switch or on-off switch as required by control sequence.
d. Auxiliary contacts required for system operation plus one spare.
e. Overload relays, three for three phase circuits and two for single phase motors.
f. 120 volt maximum control voltage with fuse for holding coil.

(5) Remote Switches and Pushbutton Stations: Provide remote switches and pushbutton stations required for manually operated equipment complete with pilot lights powered by current from load side of controller.

(6) Operating handle of disconnect device in combination starters interlocked with door to prevent opening door when starter is energized; however, an inconspicuous means provided to defeat this interlock. Operating handle must have provisions for not less than two padlocks. Interlock contact provided in M.C.P. of combination magnetic starters to disconnect control

circuit when M.C.P. in "off" position.

(7) Overload heater elements of melting alloy or bi-metallic type not to exceed actual nameplate rating of motor furnished. Heater schedule placed on inside of door of starter.

E. Manufacturers: Westinghouse, G.E., Square D, Cutler Hammer, Allen Bradley, approved substitute.

PART 3 - EXECUTION

3.1 INSTALLATION DATA:

Comply with requirements of Section 230500.

3.2 SLEEVE INSTALLATION:

A. General: Provide individual sleeves for pipes; no sleeve to provide passage for more than one pipe. Inside diameter of sleeve to provide not less than 3/8" clearance around pipe (bare pipe) or insulation (insulation shall pass through sleeve except for fire-rated walls/partitions); maximum clearance around pipe or insulation of approximately 1". Space sleeves to allow room for installation of escutcheons where pipes are exposed to view in finished spaces.

B. Elevated Concrete Slabs: Set with top of sleeve not less than 1/4" nor more than 1/2" above finished floor surface. Tack-weld two #3 reinforcing bars (not less than 8" long) to side of sleeve to provide secure anchor in concrete.

C. Masonry Walls: Extend completely through wall. Where sleeve and pipe are located exposed and require an escutcheon, do not extend sleeve beyond surface as to interfere with installation. Install sleeves at same time pipe is installed. Where wall has been erected and sleeve omitted, remove masonry for pipe, and sleeves then build into wall. Sleeves may be split and then tack-welded back together around pipe. Sleeves for cast iron and copper sanitary lines omitted so that pipes may be built into masonry walls.

D. Gypsum Board or Dry Wall Type Partitions: Sleeves not required. Openings for pipes neatly cut (1/2" maximum oversize all around) and not broken out. Seal opening with dry wall joint compound and tape, backed with packed mineral wool insulation material.

E. Penetration Sealing of Sleeves: For concrete slabs and masonry walls, fill void between sleeve and pipe or pipe insulation with "FireFill" ceramic fiber insulation packed to density of 10 to 12 pounds per cubic foot or seal with foam sealant or putty/caulk applied in accord with manufacturer's printed instructions.

3.3 ESCUTCHEON INSTALLATION:

A. Install plates on exposed pipes where they pass through walls, floors, and ceilings in finished areas. Ceiling and wall plates held in place by spring catches, floor type by set screw. Vertical exposed uninsulated piping in unfinished spaces shall use plain end pipe couplings at floor slab for combined support and escutcheon.

B. Space pipe out from floor, wall and ceiling surfaces to accommodate plates and space lines far enough apart for plate installation. Plates to be snug fitting and installed on outside of pipe or pipe insulation after finish painting of area is complete.

3.4 ACCESS PANELS:

A. Provide access panels positioned to allow normal arm length of reach to operate valves and pipe specialties, duct damper operators, fire or smoke dampers, or control system devices that are concealed in furred spaces behind non-accessible surfaces.

3.5 MOTOR INSTALLATION:

A. Do not exceed motor nameplate amphere rating under normal operating conditions. Replace motor with larger horsepower rating when necessary to meet this requirement; replace motor controller as necessary and coordinate with power wiring provided under Division 25 work.

B. Align motor with driven equipment. Adjust motor base to maintain belt tension where belt drive is used.

C. Connect with flexible conduit not exceeding 18" in length. Do not stretch conduit tight but allow some slack.

D. Ground motor within junction box with bolt used for no other purpose.

3.6 INSTALLATION OF POWER CONTROLLERS:

A. Provide individual power controller for each motor or electrical load installed under Division 23, either manual or magnetic as required for proper and safe operation and in accord with requirements expressed in Controls specifications. Select motor starters and contactors to carry inrush and full load current at design voltage of equipment served.

B. Magnetic starters shall be provided for all motors (regardless of horsepower rating)

requiring remote or automatic starting control.

C. Select thermal overload relay heater elements for space ambient (highest sustained temperature) actually encountered and measured current draw under final operating conditions. Install heater schedule on inside cover of starter. Provide spare sets of heater elements loose in starter enclosure where melting alloy type is used.

D. Provide combination power controllers as required by electrical drawings or Division 23 specifications.

E. Mounting of controllers and power wiring provided under Division 23 work. Control or interlock wiring provided under Controls specifications.

3.7 DRIP PANS:

A. Provide drip pans under fluid conducting piping where indicated or for piping that occurs within 30 horizontal inches of electrical panels and switchboards.

B. Pans: Not less than 18 gauge galvanized sheet steel with soldered seams and joints. Minimum 2" deep with rolled top edges, extending 6" each side of pipe or group of pipes and 6" beyond protected equipment zone below. Keep pans as close to underside of pipes as practicable. Cross brace and reinforce with galvanized angles as necessary to prevent sagging or warping.

C. Pitch each pan to drain connection and extend minimum 3/4" copper tube drain to discharge over nearest available open drain or to building exterior.

3.8 QUALIFICATIONS OF WORKMEN:

A. Comply with requirements of General and Supplementary Conditions and Division-1 Specification sections.

B. Welders qualified and so certified under National Certified Pipe Welding Bureau or independent testing lab in accordance with NCPWB procedures.

C. Conform welding of piping to Code for Pressure Piping, ANSI B31. Welded joints visually inspected and those judged defective then tested by an independent testing lab at Contractor's expense. Rework or replace those determined deficient by lab as recommended for correction by lab.

END OF SECTION

SECTION 23 0529

PIPE AND PIPE FITTINGS

PART 1 - GENERAL

1.1 WORK INCLUDED:

A. Furnish and install all pipe and pipe fittings as shown on the drawings or required to make the work complete and functional.

1.2 QUALITY ASSURANCE:

A. The Contractor shall submit to the Engineer written evidence that the pipe furnished under this specification is in conformance with the material and mechanical requirements specified herein.

1.3 GENERAL DESIGN REQUIREMENTS:

A. All such work shall be done by competent workmen in a thorough workmanlike manner according to best practice and in compliance with all codes and applicable regulations, with proper provisions for uncoupling, draining, expansion, and contraction.

1.4 QUALITY CONTROL:

A. Prior to its incorporation into the work, the Contractor shall submit to the Engineer written evidence that the pipe furnished under this specification is in conformance with the material and mechanical requirements specified herein. Certified copies of independent laboratory test results or mill test results from the pipe supplier may be considered evidence of compliance provided such tests are performed in accordance with the appropriate ASTM or AWWA testing standards by experienced, competent personnel. In case of doubt as to the accuracy or adequacy of mill tests, the Engineer may require that the Contractor furnish test reports from an independent testing laboratory on samples of pipe materials.

PART 2 - PRODUCTS

2.1 HOT (HEATING) WATER PIPING

A. Included: Pipe systems for space heating hot water.

a. System: All boiler hot water piping above 110 deg. F. to the heating coils and the hot side up the plate and frame heat exchangers.

b. Pipe: Type "L" hard drawn copper ASTM Spec. B-88.
c. Fittings: Wrought copper sweat type suitable for copper pipe.
d. Sweat to Screwed Pipe Adaptors: Cast brass A.S.A. B16.18.
e. Joints: Made with silver solder “Sil-Fos” with a compatible flux solder.
f. Unions: Cast brass or bronze with soldered connections. Unions for pipes 2" and smaller shall be ground joint; 2 1/2" and larger shall be flanged.
g. Use dielectric unions to connect copper to steel piping.

2.2 UNDERGROUND PRE-INSULATED PIPING SYSTEM:

A. Underground piping system shall consists of integral units of copper and PVC pipe and polyurethane insulation with temperature limits from -40 F. to 250F., completely enclosed in a ASTM D1784 PVC casing.

B. The insulation shall be foamed polyurethane completely filling the annular space and shall be a minimum of 1" thick.

C. Carrier pipe shall be Type “L” Copper for Hot Water and Schedule 80 PVC for Pool Water and domestic water pre-heating loop as indicated on drawings. Joints solder for copper and solvent weld for PVC or two ring casing tite couplings as provided by manufacturer. Fittings shall be factory pre-insulated using the same carrier pipe, insulation, casing and rubber end seals as the straight lengths.

D. Provide anchors, expansion compensators, thrust blocks, fittings, installation instructions and kits as required to provide a complete system.

E. Pre-insulated piping system shall be as manufactured by Rovanco Piping Systems, Thermal Pipe Systems, Inc., Thermacor Process, Inc., or approved equal.

2.3 MAKE-UP WATER PIPING AND AIR VENT DISCHARGE PIPING:

A. Pipe: ASTM B88, Type L, Hard Copper.
B. Joints: 95-5 solder.
C. Fittings and Unions: ANSI/ASME B16.22 Wrought Copper and Bronze Solder Joint Pressure Fittings.
D. Flanges and Gaskets: Bronze with 1/16" thick preformed synthetic rubber.

2.4 CPVC PIPE

a. System: Heated Pool Water Piping
b. Pipe: Schedule 80 chlorinated polyvinyl chloride (CPVC) pipe.
c. ASTM D-2846 and SDR-11 Specifications for CPVC Pipe
D-1784 Specification for Type 1, Grade 1 PVC Material

d. NSF Standard 14
e. IAMPO UPC File Number 2366
f. BRISTOLTHERM CPVC 4120
g. Capable to withstand water temperatures up to 180°F at a working pressure of 100 PSI
h. Joints: Solvent welding joints made with solvent cement recommended by pipe manufacturer.
I. Fittings: Solvent welding type.
j. Adaptors: Provide adaptors for joining other materials. Adaptors must be manufactured specifically for the application used.
k. Installation: In accordance with pipe manufacturer's recommendations.

2.5 STEEL PIPE

a. System: Natural Gas Pipe.
b. Pipe: ASTM or A120, schedule 40.
c. Fittings: ANSI/ASME B16.3, malleable iron or ASTM A234, forge steel welding type.
d. Joints: Screwed for pipe 2" and under; ANSI/AWS D1.1 for welded pipe over 2".

PART 3 - EXECUTION

3.1 COPPER PIPING INSTALLATION

A. The ends of all copper piping and ends of all fittings shall be thoroughly cleaned with emory cloth and coated with soldering flux before soldering. Hold flame on fitting and not on piping during the soldering process. The hot and cold water supply to fixtures shall be width and height shown in the fixture manufacture's roughing book. Pipe and fitting shall be Chase, Revere, Bridgeport, or Nibco, and soldering flux shall be of compatible type. Dielectric adapters shall be used wherever ferrous and copper piping is connected.

B. The interior of piping shall be kept clean at all times and shall be free of fins and burrs. After cutting, pipes shall be thoroughly reamed and all foreign matters shall be removed by hammering, shaking, swabbing or combination of methods. During construction all openings shall be plugged or capped to prevent foreign to be permitted.

C. Throughout the building all pipe cases shall be run concealed in pipe chases, ceilings, or wall construction unless otherwise indicated. All piping shall be symmetrical and parallel with lines of building structure and shall be fabricated to measurements established on actual job and carefully worked into place without springing or forcing. The contractor shall provide all necessary loops, anchors, offsets, etc. are required for proper control of expansion and contraction of piping.

D. Solder containing lead Shall Not Be Used.

3.2 CPVC PIPING INSTALLATION

A. Use a good grade of PVC cement which meets ASTM standard D-2564
Cut pipe to desired length with pipe cutters, hack saw or cross cut saw.
Ream pipe both internally and externally to remove burrs and ragged edges.
Before making solvent weld joint, be sure all joining surfaces are free of dirt, dust, water, and oil.
The use of a primer before the application of PVC cement is recommended.
Apply primer to both joining surfaces.
Immediately apply a smooth coat of cement to the joining surfaces.
Immediately insert the pipe into the full depth of the fitting socket.
Turn pipe 1/8 to 1/4 turn in the socket to insure an even spread of cement.
Hold firmly in position for 15 seconds.
Allow joint to set according to cement manufacturer's instructions.

3.3 INSTALLATION OF STEEL AND ALLOY PIPING:

A. Pipe threads shall be concentric with the outside of the pipe and shall conform to ANSI B2.1. When threading stainless steel pipe, dies shall have 20 degrees to 30 degrees hook. Finished joints shall have no more than three threads exposed. Before assembly, pipe ends and threads shall be inspected and any defective pieces replaced. All joints shall be properly aligned before connection to prevent thread damage. Pipe dope shall be used on the male threads of all threaded connections. Teflon thread tape shall be applied two threads back from the end of the pipe or fitting to prevent shredding. Excess pipe dope shall be trimmed or cleaned off to provide adherence for paints or coatings. After joining, exposed threads in underground piping shall be given a heavy coat of bituminous paint or other suitable protective compound prior to backfilling.

B. All flanges shall be faced and drilled and shall be true and perpendicular to the axis of the pipe. Flanges shall be cleaned of all burrs, deformations, or other imperfections before joining. Flanged joints shall be installed so as to ensure uniform gasket compression. All bolting shall be pulled up to the specified torque by crossover sequence. Where screwed flanges are used, the pipe edge shall not extend beyond the face of the flange, and the flange neck shall completely cover the threaded portion of the pipe. Where slip-on flanges are used, the distance from the end of the pipe to the gasket face of the flange shall not exceed "t" plus 1/4 inch, where "t" is the pipe wall thickness. Unless otherwise required, bolt holes shall straddle the vertical and horizontal axes of the pipe. Connections to equipment shall be made in such a way that no strain is placed on the equipment flanges.

C. For flanged connections between steel or alloy piping and cast or ductile iron piping or valves, steel flanges shall be flat faced and furnished with full-face gaskets, insulating bushings, and, when buried, stainless steel bolts.

D. Where steel or alloy pipe is connected to copper tubing, insulating bushings or couplings shall be used to prevent galvanic corrosion.

END OF SECTION

SECTION 23 0553

MECHANICAL IDENTIFICATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 WORK INCLUDED:

A. Provide all labor, materials, necessary equipment and services to complete mechanical identification as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

B. Including but not necessarily limited to the following:

(1) Nameplates.
(2) Tags.

1.3 SUBMITTALS:

A. Shop Drawings and Product Data: Submit for following in accordance with Section 23 0500 and include manufacturer's installation instructions:

(1) Nameplates.
(2) Tags.

B. Submit list of wording, symbols, letter size, and color coding for mechanical identification, both for piping and equipment.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

A. W. H. Brady Co.
B. Sexton Name Plate Co.
C. National Band and Tag Co.
D. Approved Substitute.

2.2 MATERIALS:

A. Color: Unless specified otherwise, conform with ANSI/ASME A13.1
B. Plastic Nameplates: Laminated three-layer plastic with engraved black letters on light contrasting background color.

C. Plastic Tags: Laminated three-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 1-1/2" diameter or square.

D. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2" diameter with smooth edges.

E. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and fluid being conveyed.

F. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

PART 3 - EXECUTION

3.1 PREPARATION:

Degrease and clean surfaces to receive adhesive for identification materials.

3.2 INSTALLATION:

A. Plastic Nameplates: Install with corrosive-resistant mechanical fasteners, or adhesive.

B. Plastic or Metal Tags: Install with corrosive-resistant chain.

C. Plastic Pipe Markers: Install in accordance with manufacturer's instructions.

D. Plastic Tape Pipe Markers: Install complete around pipe in accordance with manufacturer's instructions.

E. Equipment: Identify air handling units, pumps, water chiller, fans, and water treatment devices with plastic nameplates. Small devices may be identified with plastic or metal tags.

G. Controls: Identify control panels and major control components outside panels with plastic nameplates.

END OF SECTION

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SECTION 23 0593 - TEST, ADJUST AND BALANCE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 WORK INCLUDED:

A. Provide all labor, materials, necessary equipment and services to complete testing, adjusting and balancing work as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

B. Including but not necessarily limited to the following:

(1) Adjust and Balance Hydronic Systems.

(2) Adjust and Balance Air Handling Systems.

(3) Check each operating piece of operating equipment provided under Division 23 000.

(4) Test smoke detectors, fire alarm interlock and high temperature cutout systems and devices; report any deficiencies found.

(5) Adjust drives of air handling equipment (air handling units, fans, ventilators, etc.) to deliver air volumes scheduled.

(6) Balance Report.

C. Where construction schedule or other factors make it inexpedient to leak test low pressure (low velocity) ductwork as covered under Section 23 3100, compare measured fan delivery volume to sum of system outlets or inlets to determine that leakage from ductwork is acceptable. Leakage of 5% of circulated air volume is maximum allowable.

1.3 RELATED WORK:

A. Division 23000 (all equipment)

1.4 QUALITY ASSURANCE:

A. Regulatory Requirements: Comply with the following:

(1) NFPA 90A - Air Conditioning and Ventilating Systems.
(2) NFPA 101 - Life Safety Code.

(3) International Building Code - 2006 Edition.
(4) International Mechanical Code - 2006 Edition.

B. Independent Technical Firm:

(1) Obtain services of approved independent test and balance firm to perform this work and prepare report for submittal.

(2) Qualifications:

a. Firm organized for sole purpose of providing services of this type, and as a minimum employ one (1) Professional Engineer, with current registration in state where project is located, to perform such professional services. This engineer personally responsible for developing job-site data as required in test procedures outlined.
b. Firm operated minimum of two (2) years under its current firm name, and belong to "AABC" or "NEBB".
c. Firm capable of performing services specified at location of facility described within time, of preparing and submitting detailed report of actual field work performed, and of following up basic work as required.
d. Personnel employed on job site either Professional Engineers or trained engineering technicians, been permanent, full time employees of firm for minimum of six (6) months prior to start of work for this project.

C. Report Forms: Forms on 8-1/2" X 11" size paper for looseleaf binding, imprinted with firm name, and with blanks for listing of required test ratings and for certification of report. Reports on forms published by AABC or NEBB and special forms designed by firm.

D. Instrument Manufacturers:

(1) To establish standard of accuracy for instrumentation employed in execution of this work, manufacturer's name and model numbers are given herein.

(2) Devices of following manufacturers are acceptable:

a. Air Balancing - Ellison, Hays, Dwyer.
b. Water Balancing - Barco, Meriam, Venturi-flow.
c. System Performance - Trerice, Ellison, Amprobe, Mansfield.

(3) Submit data sheets on each item of testing equipment required. Data sheet to include name of device, manufacturer's name, model number, latest date of calibration, and correction factors.

E. Certification of Reports: Report forms certified by firm's principal that methods used and results achieved are as herein specified. Seal of professional engineer applied.

1.5 REFERENCES:

A. Reference Standards: Comply with applicable portions of the following:

(1) ASHRAE Handbook, - Testing, Adjusting and Balancing.

(2) AABC National Standards for Total System Balance, 1982 edition.

(3) NEBB Procedural Standards for Testing, Adjusting and Balancing of Environmental Systems, Latest edition.

(4) SMACNA Manual, HVAC Systems - Testing, Adjusting and Balancing, Latest edition.

1.6 SUBMITTALS:

A. Preliminary:

(1) Confirmation of compliance with quality assurance provisions for personnel.

(2) Report Forms: 8-1/2" X 11" for loose leaf binding with blanks for test readings and certification and on forms imprinted with company name.

B. Before Starting Field Work:

(1) Set of report forms prepared for field use with complete system design information.

(2) Data sheet on each item of testing equipment proposed to be used in work including latest data of calibration and correction factors.

C. Before Request of Final Inspection:

(1) Recorded data presented in legible form, typewritten or in ink, submitted not less than two weeks before date requested for final inspection.

(2) If testing work is delayed by weather conditions for 30 days after completion of installation, submit request for delayed inspection. If approved, sum of money withheld from payments due Contractor until this work is completed. Before making request for Engineer to review such delayed work, complete data as specified in 1 above.

1.7 PROJECT CONDITIONS:

A. Heating, ventilation and air conditioning systems completely installed and placed in continuous operation before commencing testing and balancing work. Perform work when outside temperature conditions, occupant loads, lighting loads, special equipment requiring extra sensible or ventilation requirements, and solar conditions are within reasonable range relative to design conditions.

B. Perform testing operations when outside conditions approximate design conditions for heating and cooling functions as follows:

(1) Cooling cycle and summer ventilating system, over 80 degrees F dry bulb.

(2) Heating cycle below 60 degrees F dry bulb.

(3) Year-round system, test heating and cooling cycles separately as above.

C. Test cooling cycle with all electric lights turned "on". Balance air systems with doors closed, windows closed, and ceilings in place.

D. Should corrective measures occasioned by faulty installation require retesting, adjusting and balancing, provide such work at no additional expense.

1.8 WORK AFTER FINAL INSPECTION:

A. Send qualified personnel to building for not less than one period during summer and one period during winter, observe temperatures throughout conditioned spaces, consult with Owner's representatives as to need for additional balancing or adjustment, then perform such work as indicated.

B. Schedule these visits, at time agreeable to Owner's representative on or about June 15 and December 1. Send report covering these visits to Engineer within 15 days after visit.

C. Engineer reserves right to request firm to re-adjust air volume and different system requirements to meet local conditions during warranty period. During this time at his discretion, Architect may request recheck or resetting of any outlet, fan or any other equipment or part as listed in report. Firm to provide technicians to assist in making any test during this period of time.

PART 2 - PRODUCTS

2.1 GENERAL:

A. Testing devices employed designed for purpose of test and subject to approval of Architect.

B. Instruments covered herein not required to remain as permanent installations.

C. Use recently calibrated equipment designed specifically for its intended use.

PART 3 - EXECUTION

3.1 PROCEDURES:

A. Perform work with equipment operating under normal conditions after systems have been completed and placed in working order.

B. Installation and location of testing devices to permit accurate measurements.

C. Work performed in accordance with reference standards covered in Article 1.05 of this section.

D. Certify that piping systems have been leak or pressure tested and that ductwork has been leak or pressure tested (Section 15890). Coordinate with requirement of paragraphs 1.2 C. and 3.2 E. of this section.

E. Permanent adjustment and final setting of control devices or wiring connections performed under Section 15950 work, coordinate with installer of control systems.

3.2 AIR SYSTEMS:

A. Preliminary:

(1) Prepare system diagrams (sketches) sized to fit inside report.

(2) Identify and list size, type and manufacturer of equipment to be tested, including air flow constants for air terminals.

(3) Use manufacturers' rating for equipment to make required calculations except where field test shows equipment operating off ratings.

B. Air Handling:

(1) Test supply, return, relief, and exhaust fans and adjust speed to designed CFM within limits of mechanical equipment.

(2) Test and record for each motor: Voltage, running amperes, motor nameplate date, and starter heater ratings.

(3) Make pitot tube traverse of main supply, exhaust or return ducts, determine CFM at fans, and adjust fan speed to deliver about 10% over design quantity.

(4) Test and record system static pressure at fan suction and discharge.

(5) Test and adjust fan and system for design outside air CFM.

(6) Test and adjust system for design re-circulated air CFM.

C. Distribution Systems:

(1) Make pitot tube traverses of branch ducts, adjust system dampers accordingly.

(2) Test and adjust fans as in B.1. above before proceeding.

D. Verification:

(1) Prepare summation of readings of observed CFM for each system, compare with designed CFM and verify that duct losses are within specified allowable range (5% maximum).

(2) Verify designed CFM at fans as in B. above.

E. Static Pressure Profile for High Velocity Systems:

(1) Test and record static pressures throughout system with readings at each item of equipment and at 50' intervals along duct systems, identified as positive or negative pressures and referenced to outside pressure of building.

(2) Test and record static pressure at each element of air handling equipment as filters, cooling coil, supply fan, return air ducts to mechanical room, automatic dampers, etc.

(3) Prepare a static pressure profile through system on graph.

F. Cooling Apparatus:

(1) Test and record cooling apparatus entering air temperatures, dry bulb and wet bulb.

(2) Test and record cooling apparatus leaving air temperatures, dry bulb and wet bulb.

G. Heating Apparatus: Make similar dry bulb temperature readings.

3.3 LOW PRESSURE DUCT LEAKAGE DETERMINATION:

A. Refer to paragraphs 1.2 C. and 3.2 E. of this section.

B. Refer to paragraph 3.9 B. of Section 15890, option as described in subparagraph 3.

C. Using data developed under article 3.2 of this section and any additional pitot tube traverses of ducts needed, determine system total fan delivery and compare this value with sum of measured air outlets (diffusers, registers, etc.) to determine duct leakage. Maximum acceptable leakage volume is 5% of total system volume. If leakage so determined is greater than 5%, Contractor to proceed to seal ductwork until leakage as calculated by this procedure reduced to acceptable maximum.

D. Include statement in report that all low pressure (low velocity) duct systems so examined have acceptable duct leakage rates. Identify individual systems tested.

3.4 HYDRONIC SYSTEMS:

A. Preliminary:

(1) Identify equipment to be tested, list capacity data, and verify against contract documents.

(2) Verify proper water level in expansion tanks and in system.

(3) Check air vents at high points of water systems and determine that all are installed and operating freely. Check and record water pressure at highest air vent with pump off; and adjust water make-up pressure reducing valve to maintain 5 PSIG minimum pressure at highest point with pump off and set pressure relief valve to relieve at 10 to 15 PSIG above water make-up valve setting.

(4) Open line valves to full open position and set control valve to full coil flow.

(5) Verify rotation, test and record pump shut-off head, and test and record pump wide-open head, for each pump.

(6) Install flow test instrumentation, test and record flow at each measuring point.

B. Central Equipment:

(1) Set water pumps to proper flow quantity.

(2) Adjust flow of water thru equipment to design quantities.

(3) Observe leaving water temperatures and return water temperatures at water chiller. Verify control settings at correct design temperatures.

(4) Test and record operating suction and discharge pressures, and determine final dynamic head for each pump.

(5) Make similar adjustments and readings for boiler and heating water pumps.

(6) Set hot water pumps to proper flow quantity.

(7) Adjust flow of hot water thru boiler assembly to design quantities.

(8) Observe leaving water temperatures and return water temperatures at boiler. Verify control settings at correct design temperatures.

(9) Test and record operating suction and discharge pressures, and determine final dynamic head for each pump.

(10) Test and adjust readings for boiler and heating water pumps.

C. Distribution:

(1) Balance flow to each hot water coil and water circuit.

(2) Record pressure and pressure drop at each coil.

D. Air Handling Units (All):

(1) Position automatic control devices through full range.

(2) Observe pressure drop through coil at set flow rate on call for full flow thru coil.

(3) Upon completion of flow readings and adjustments of coils, mark all settings and record following data:

a. Inlet water temperatures.
b. Leaving water temperatures.
c. Pressure differentials.

E. Verification:

(1) Record rated and actual running voltage and amperage for each pump motor.

(2) Record total dynamic head for each pump.

(3) Mark each balancing cock or valve (including butterfly type) at final setting.

3.5 CONTROL SYSTEMS:

A. In cooperation with Contractor's representative, set and adjust automatically operated devices to achieve specified sequence of operation. Testing firm to verify calibration of controls and list those needing adjustment by control system installer in

report.

B. During testing and balancing, operate controls to achieve desired flow rates through portions of systems being tested and balanced.

C. At conclusion of balancing, operate each control device through complete range, verify required function and sequence.

3.6 COMPLETION SERVICES:

A. Certification of Report: Certify reports that methods used and results achieved are as herein specified.

B. Submission of Reports: Fill in test results on approved report forms. Submit not less than six (6) certified copies of reports for evaluation and approval.

C. Acceptance: Final acceptance of project not made until satisfactory report is received. Engineer reserves right to spot check report by field verification prior to final acceptance.

END OF SECTION

SECTION 23 0813 - MECHANICAL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 WORK INCLUDED:

A. Provide all labor, materials, necessary equipment and services to complete insulation of equipment, ducts and piping systems as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

B. Including, but not necessarily limited to, the following:

(1) Insulation of Hot Water System.
(2) Insulation of condensate piping

1.3 QUALITY ASSURANCE:

A. Requirements of Regulatory Agencies:

(1) Fire Hazard Classification - Products with composite (insulation, jacket or facing, and adhesive to secure jacket or facing) fire hazard rating as tested by ASTM E-84, NFPA 255, or UL 723 not to exceed 25 flame spread, 50 smoke developed, and 50 fuel contributed. Materials labeled accordingly.

(2) Energy Conservation - Comply with requirements of State Energy Code.

B. Reference Standards: Comply with following standards as applicable to specified products:

(1) ASTM E 96 Procedure A Fire Retardant.
(2) ASTM C 195-77 Mineral Fiber Thermal Insulating Cement.
(3) ASTM C 449-82 Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement.
(4) ASTM C 534-77 Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form.
(5) ASTM C 547-77 Mineral Fiber Preformed Pipe Insulation.
(6) ASTM C552 Cellular Glass Block and Pipe Thermal Insulation.

(7) ASTM C 553-70 (1977) Mineral Fiber Blanket and Felt Insulation (Industrial Type).
(8) ASTM D 1056-78 Flexible Cellular Materials - Sponge or Expanded Rubber.

C. Applicator: Company specializing in insulation application with not less than 3 years minimum experience.

1.4 SUBMITTALS:

A. Shop Drawings and Product Data: Submit for following in accordance with Section 23 0500 and include manufacturer's installation instructions.

B. Include product description, list of materials and thickness for each service, and locations.

1.5 DELIVERY, STORAGE AND HANDLING:

A. Deliver materials to job site in original non-broken factory packaging, labeled with manufacturer's density and thickness. Store in a warm, dry location.

1.6 PROJECT CONDITIONS:

A. Environmental Requirements: Perform work at ambient and equipment temperatures as recommended by insulation manufacturer.

B. Protection: Protect insulation against dirt, water, chemical or mechanical damage before, during and after installation. Repair or replace insulation or covering damaged prior to final acceptance of work. No soiled jacketing accepted.

1.7 DEFINITIONS:

A. Cold Pipe Lines:

(1) Systems operating at 62 degrees F and below (as condensate and refrigerant suction lines).

(2) Above ground waste piping receiving condensate from units.

B. Hot Pipe Lines:

(1) Systems operating at 100 degrees F and above during normal operating periods.

(2) Space heating water lines.

C. Exposed Location: Exposed in mechanical rooms or rooms with finished walls or ceilings.

D. Concealed Location: Locate in pipe chases, furred spaces, attics, crawlspaces, in ceiling plenums, above future suspended ceiling line in unfinished rooms, or all other locations not exposed to normal view.

PART 2 - PRODUCTS

2.1 PIPE SHIELDS:

Pipe insulation protection shields or saddles for pipe support.

2.2 FIBERGLASS PIPE INSULATION:

A. Material: One piece fibrous glass sectional pipe insulation with factory applied glass reinforced aluminum foil and white kraft paper flame retardant vapor barrier jacket. Longitudinal jacket laps and jacket. Longitudinal jacket laps and butt self-sealing. Average thermal conductivity not to exceed 0.23 BTU-in. per square foot per degree F per hour at a mean temperature of 75 degrees F.

B. Manufacturers and Models:

(1) Schuller Flame Safe AP-T Plus.
(2) Owens Corning Fiberglass 25 ASJ/SSL.
(3) CertainTeed Fiberglass 500 Degree Snap-On ASJ/SSL.
(4) Knauf Fiber Glass.
(5) Approved Substitute.

C. Finishes:

(1) Insulating Cement:

a. Schuller No. 301.
b. 48 Insulations Quik-Set.
c. Rockwood Mfg. Co. Delta-Maid One Shot.
d. Approved Substitute.

(2) Vapor Barrier Coating for Cold Lines:

a. Benjamin Foster Tite Fit 30-35.
b. Vimasco 740.
c. Insul-Coustic F.R.V.B. IC-501.
d. Childers Cil-Perm CP-30.
e. Epolux Cadalar 650.
f. Approved Substitute.

(3) Breather Coating for Hot Lines:

a. Benjamin Foster Sealfas 30-36.
b. Insul-Coustic Permsure IC-102.
c. Vimasco 713.
d. Childers Chil-Seal CP-50.
e. Epolux Cadalog 336.
f. Approved Substitute.

2.3 FIBERGLASS BLANKET:

A. Blanket Material:

(1) Glass fiber flexible blanket insulation with factory-applied foil skrim kraft (FSK) facing. Facing to extend 2" beyond one edge of insulation blanket. Average thermal conductivity not to exceed 0.27 BTU-inch per sq ft per degree F per hour at mean temperature of 75 degrees F, minimum density of 1 lb/cu ft.

(2) Manufacturers and Models:

a. Schuller Microlite FSK faced wrap 1 lb Density.
b. Owens Corning Fiberglas Faced Duct Wrap FPK 25, Series ED-100.
c. Knauf Fiber Glass.
d. Certainteed Ultralite Duct Wrap Type IV.
e. PPG.
f. Approved Substitute.

B. Fire retardant adhesive for securing insulation to ductwork and for sealing 2" facing flange at circumferential joints:

(1) Benjamin Foster 85-20.
(2) Insul-Coustic IC-225.
(3) Vimasco 733.
(4) Childers CP-82.
(5) Epolux Cadoprene 400.
(6) Approved Substitute.

C. White vapor barrier coating for sealing penetrations and punctures in insulation facing:

(1) Benjamin Foster 30-35.
(2) Insul-Coustic IC-501.
(3) Vimasco 740.
(4) Childers CP-30.
(5) Epolux Cadalar 650.

(6) Approved Substitute.

E. Three inch wide foil reinforced kraft tape:

(1) Arno C-430.
(2) Fasson O822.
(3) Nashua FSK.
(4) Approved Substitute.

2.4 FITTING, VALVE, AND STRAINER COVERING:

A. For Fiberglass Pipe Insulation: Either of the following:

(1) Premolded PVC covers meeting fire hazard classification requirements with fiberglass inserts. Seal at end and throat on cold systems.

(2) Premolded glass fiber fitting covers. Finish with glass fabric embedded in fire retardant mastic.

B. For Flexible Closed Cell Insulation: Oversized pipe covering of same material and thickness as adjacent pipe covering.

C. Vapor Barrier Mastic Coatings: Perm rating not more than 0.25 when tested in accordance with ASTM E 96, Procedure A Fire Retardant.

D. Adhesives, Sealers, Facings, and Vapor Barrier Coatings: Compatible with materials to which applied and not corrode, soften, or otherwise attack pipe or insulation materials in either wet or dry state. Use only adhesives, sealers, facings, and vapor barrier coatings recommended by manufacturers of insulation materials.

2.6 SOUND BARRIER MEMBRANE:

A. Covering to be flexible urethane membrane decoupler, vinyl impregnated with lead load.

B. Density not less than 107 lbs/cu ft and thickness approximately 50 mil.

C. Manufacturers:

(1) Peabody KC-100.
(2) EAR C-2003.

PART 3 - EXECUTION

3.1 PREPARATION:

A. Testing of piping and ductwork completed and leaks repaired prior to application of insulation. Surfaces clean and dry before proceeding.

B. Maintain ambient temperatures and conditions recommended by manufacturers of adhesive and insulation.

3.2 PIPE INSULATION APPLICATION:

A. General:

(1) Install materials according to manufacturer's instructions.

(2) Apply insulation tightly over clean, dry surfaces with sections or edges firmly butted together. Make insulation continuous through sleeves or openings in walls and floors.

B. Fiberglass System:

(1) Seal vapor barriers and run continuous throughout for following insulation systems: air conditioning condensate and drinking fountain drains.

(2) Avoid use of staples on vapor barrier jackets. Seal vapor barrier penetrations with white vapor barrier finish.

(3) Apply adhesives to not exceed coverages recommended by manufacturer.

(4) Leave surfaces clean and ready for painting.

(5) Locate insulation or cover seams in least visible locations. Repair separation of joints or cracking of insulation due to thermal movement or poor workmanship.

(6) Neatly finish insulation at supports, protrusions, and interruptions.

(7) Shields - Provide insert, not less than 6" long and of same thickness and contour as adjoining insulation, between support shield and piping, but under finish jacket, on piping 2" diameter or larger, to prevent insulation from sagging at support points. Inserts to be cork, foam glass, or other heavy density insulating material suitable for planned temperature range. Factory fabricated inserts may be used.

(8) Ends of insulation sections on cold lines sealed off with vapor seal adhesive to prevent moisture migration at fittings, flanges and valves and at intervals not exceeding 21 feet.

C. Schedule:

(1) Cold/Hot Lines with Fiberglass Covering:

Service	Pipe Sizes	Thickness
Hot Water Piping	Less than 2"	1"
Hot Water Piping	Larger than 2"	1-1/2"
Condensate Piping	All	1"
Waste Receiving Condensate	All	1"

3.3 FIBERGLASS BLANKET:

A. Preparation: Install materials after ductwork has been tested and approved. Clean surfaces for adhesives.

B. Blanket Installation on Ductwork:

(1) Use 2" thick material unless otherwise specified.

(2) Continue insulation with vapor barrier through penetrations except at fire or smoke dampers.

(3) Brush coat adhesive on duct in minimum 6" wide circumferential widths on not greater than 12" centers with additional 6" brush width of adhesive along both circumferential and longitudinal lines where joints occur. Allow open time of 6 to 10 minutes.

(4) Using insulation faced with a 2" tab, cut insulation sufficiently long to allow for minimum 2" overlap at longitudinal joint. Remove extra 2" of insulation, leaving facing as overlap.

(5) Place insulation around duct, pulling snug, but not so tight as to compress corners, and press insulation firmly into adhesive on duct, after butting edges together.

(6) Underside of exposed circumferential and longitudinal seam coated with adhesive and firmly pressed on surface of vapor barrier again, making sure all seams are tightly butted. Joint may then be stapled on 6" to 12" centers, 1" back from edge until adhesive sets. Seal all staples with vapor barrier adhesive and apply vapor seal tape over staples and joint along all circumferential and longitudinal seams.

(7) On ducts 30" or more in width, in addition to above procedures, insulation secured to bottom of duct with stick pins on maximum 12" lateral and longitudinal centers, secured with washers or clips on each pin applied flush to face of insulation without depressing surface. Pin cut off as close to washer as possible, and entire exposed pin and washer assembly coated with vapor barrier adhesive and covered with 3" X 3" patch of vapor seal tape. Also wire in place on maximum 12" centers.

C. Breaks, cracks and perforations in vapor barrier and torn out sections of vapor barrier repaired with vapor seal tape.

D. For insulation on ducts containing only hot, return, or exhaust air, covering applied as specified above except that extensive sealing with adhesive and tape not required for vapor seal but only for attachment.

E. Duct Insulation Requirements:

(1) Cover supply air ductwork with blanket vapor barrier insulation.

(2) Cover sheet metal return air ductwork above ceiling with blanket insulation.

(3) Do not insulate toilet exhaust or miscellaneous exhaust ducts unless so noted or specified.

(4) Acoustically lined ductwork does not require external insulation unless otherwise noted or specified.

END OF SECTION

SECTION 23 0923 - CONTROLS

PART 1 GENERAL

1. 1 WORK INCLUDED:

Modify the existing Johnson Controls Metasys DDC control system as required including Central processing unit, Software, Control Equipment, Control valves, Automatic dampers, Damper actuators, Sequence of Operations and Point lists to perform work required in this section.

1.2 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

Section 23 2100 - Miscellaneous Hydronic Components: Installation of control valves, flow switches, temperature sensor wells, gauge taps, flow meters.

Section 23 3100 - Ductwork: Installation of automatic dampers. To include assembly of multiple section dampers with required interconnecting linkages, shafts and brackets and extend the required number of shafts through the ducts for externally mounted damper motors. Jack shafts will be assembled with sealed roller ball bearings of stainless steel construction.

Division 26 000- Electrical

1.03 GENERAL PROVISIONS

The General Provisions of the Contract, including the General Conditions and supplementary General Conditions, apply to the work specified in this section.

1.04 RELATED SECTIONS

Section 23 0500 - Basic Mechanical Requirements

Section 23 0501 - Basic Materials and Methods

1.05 GENERAL INSTRUCTIONS

The BAS/ATC systems as specified herein shall be provided in their entirety by the BAS/ATC Contractor. The BAS/ATC Contractor shall base this Bid on the system as specified, the sequence of operations and the points list.

As part of his Bid, the BAS/ATC Contractor shall submit for review by the Owner's authorized representatives a written description of his proposed BAS/ATC systems, including block diagrams showing all major components and panels, printers and other processing devices and required cabling between each. Include environmental and space requirements for

panels, CPU's and other major devices and System points list.

In general, the proposal shall be based on a completely electronic system, including valve and damper actuators, and a full DDC system, wherein all HVAC equipment is centrally controlled by the BAS/ATC system.

1.06 SCOPE

The BAS/ATC systems shall be supplied and installed completely under the BAS/ATC Contract. Control components shall be mounted and wired by the BAS/ATC Contractor.

The engineering, installation, calibration, software programming and checkout necessary for complete and fully operational BAS/ATC systems, as specified hereafter, shall be provided by the BAS/ATC Contractor.

1.07 SUBMITTALS

The following data/information shall be submitted for approval:
Complete sequence of operation. Valve, humidifier and damper schedules showing size, configuration, capacity and location of all equipment. Data sheets for all hardware and software control components. Provide as part of the submittal five copies of all data and control drawings.

PART 2 PRODUCTS AND SYSTEMS

2.01 MANUFACTURERS

Modify the existing Johnson Controls Company Metasys System.

2.02 GENERAL

The building automation system shall include but not be limited to the following components:

1. The Operator Interface shall consist of hardware and software that allows for monitoring and adjustment of system parameters.

2. System Application Controllers shall manage the Energy and Building Management capabilities of the automation system as well as facilitate remote communications and central monitoring.

3. Application Specific Controllers shall provide distributed, pre-engineered control specific t the mechanical equipment specified.

4. Custom Application Controllers with distributed custom programming capability shall provide control for non-standard control sequences.

5. The Data Communications capability shall allow data to be shared between the various controllers in the architecture.

6. The system software shall include system software for the global application functions, application software for distributed controllers, and operator interface software.

7. End devices such as sensors, actuators, dampers, valves and relays.

8. The failure of any single component shall not interrupt the control strategies of other operational devices. System expansion shall be through the addition of end devices, controllers, and other devices described in this specification.

2.03 OPERATOR INTERFACE

Use Existing

2.04 SYSTEM APPLICATION CONTROLLERS

The Building Automation System shall be composed of one or more independent, stand-alone, microprocessor based System Application Controllers to manage the global strategies described in the Application software section.

The operating system of the System Application Controller shall manage the input and output communication signals to allow distributed controllers to share real and virtual point information and allow central monitoring and alarms. Data shall automatically be shared between System Application Controllers when they are networked together.

The database and custom programming routines of remote System Application Controllers shall be editable from a single operator station.

The System Application Controllers shall have the capability of being remotely monitored over telephone modem. Additional capabilities shall include automatically dialing out alarms, gathering alarms, reports and logs, programming and downloading databases.

2.05 APPLICATION SPECIFIC CONTROLLERS

Application Specific Controllers shall be standalone, microprocessor based Direct Digital Controllers with sufficient memory to handle its operating system, database and programming requirements. Where factory mounting is not possible, the controllers shall be factory programmed and tested prior to shipment to the jobsite. The controllers shall be clearly labeled as to controller type, where it is to be installed and software address (if applicable). The controller shall be fully tested upon installation to ensure that it is properly matched to the equipment it is controlling. The controller shall communicate with other devices on the communication network and be fully integrated with the other system components.

2.06 SYSTEM APPLICATION CONTROLLER SOFTWARESYSTEM SECURITY.

ALARMS. The Building Automation System shall provide audio, visual, contact closure and remote telephone annunciation for:

Remote equipment failure
Equipment run time
Number of start/stops
Program failure
Card failure
Sensor failure

When an alarm state is detected, the alarm shall automatically be stored and the user notified by printing the alarm message sounding an audible tone, and flashing an alarm message on the CRT.

DIAL-UP COMMUNICATIONS. An autodial-up and auto-answer communications utility shall allow standalone System Application Controllers to communicate with remote operator stations over voice grade phone lines.

Controllers shall automatically call operator stations to report alarms, and upload historical data and reports. In the event that the controller is unable to connect with the remote station, it shall continue to attempt communication on a predetermined interval until communication is successful. The capability shall exist to automatically switch to a backup phone number in the event communications is unsuccessful with the first number.

PART 3 EXECUTION

3.01 INSTALLATION REQUIREMENTS

All electrical work performed in the installation of the BAS/ATC system as described in this specification shall be per the National Electrical Code (NEC) and per applicable state and local codes. Where exposed, conduit shall be run parallel to building lines properly supported and sized at a maximum of 40% fill. In no cases shall field installed conduit smaller than 1/2" trade size by allowed. Where conductors are concealed (tenant spaces), cable rated for use in return air plenums shall be used.

3.02 OWNER TRAINING

The BAS/ATC contractor shall provide three copies of an operator's manual describing all operating and routine maintenance service procedures to be used with the temperature control and Building Automation System supplied. This contractor shall instruct the owner's designated representatives in these procedures during the startup and test period. The duration of the instruction period shall be no less than 8 hours, during normal working hours.

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3.03 WARRANTY

All BAS/ATC devices and installation shall be warranted to be free from defects in workmanship and material for a period of one year from the date of job acceptance by the owner. Any equipment, software or labor found to be defective during this period shall be repaired or replaced without expense to the owner. Factory authorized warranty service shall be available.

PART 4 - SEQUENCE OF OPERATIONS

4.1 POOL DEHUMIDIFIER SYSTEM - SEQUENCE OF OPERATION

System started and stopped at main controller. When pool dehumidification system is in the operational mode the unit will be controlled by its internal controls.

4.2 INTERLOCKING WIRING FOR PUMPS:

A. Provide wiring for interlock necessary to achieve required sequences covered herein and as covered by equipment manufacturer's printed recommendations.

B. Interlock of pumps, flow switches, etc., for water chiller executed in accordance with published machine manufacturer's shop drawing control and power wiring diagrams. Provide relays, switches and devices required.

C. Coordinate with electrical work for installation of smoke detectors for is supply and return ducts of PDHU's.

4.3 PUMPS - SEQUENCE OF OPERATION:

P-1 Interlocked to energize when PDHU-1 and Pool Filter Pump is energized.

P-2 Interlocked to energize when PDHU-2 and Pool Filter Pump is energized.

P-3 Interlocked to energize when PDHU-1 and/or PDHU-2 are energized.

HWP-1, 2 HWP-1 and HWP-2 shall operate in a lead and standby operation. HWP- 1 and HWP-2 shall alternate as lead and standby pumps on a biweekly basis. At no time will both HWP-1 and HWP-2 be energized at the same time. HWP-1 and HWP-2 shall be started and stopped by the BAS based on a hot water demand from the boiler and/or pool water heat backup.

4.5 HOT WATER BOILER - SEQUENCE OF OPERATION:

Hot Water Boiler (HWB-1) shall be energized when the outdoor air temperature is below 60 deg. F. (Adjustable) or when manually when desired. When energized hot water pump

HWP-1 shall start and upon proof of flow HWB-1 shall energize. The boiler system shall operate to maintain a hot water discharge temperature as scheduled. The boiler manufacturer's control system shall start, stop and control the firing rate of the boiler.

4.6 HX-1 HEAT EXCHANGER - SEQUENCE OF OPERATION:

HX-1 shall be used for automatic backup heat for the indoor pool water from PDHU-1. Normal operation is for PDHU-1 to provide heat to the water in the main Lap Pool. If for any reason PDHU-1 is not providing enough heat to maintain pool water set point temperature or PDUH-1 is out of service then HX-1 shall automatically provide the required heat to maintain the pool water temperature set point. When the backup pool water heating system is activated a signal shall be sent to the main building system controller signaling the backup system has been activated.

Pool water temperature for both the supply and return water to and from PDHU-1 shall be sensed to determine both entering and exiting water temperatures. If the pool water temperature entering PDHU-1 is the same as or greater than the pool water set point temperature, PDHU-1 will automatically divert hot gas to the hot gas reheat coil or will reject heat to the air cooled condenser located outdoors. This is part of the PDHU-1 control system.

If for any reason PDHU-1 fails to maintain the pool water temperature set point then control valve (CV-1) at HX-1 shall modulate to provide outlet water to the pool of 90 deg. maximum (adjustable). When the pool water temperature set point is satisfied, CV-1 shall be in the full bypass position.

4.7 HX-2 HEAT EXCHANGER - SEQUENCE OF OPERATION:

HX-2 shall be used for automatic backup heat for the Instructional Pool water from PDHU-2. Normal operation is for PDHU-2 to provide heat to the water in the Instructional Pool. If for any reason PDHU-2 is not providing enough heat to maintain pool water set point temperature or PDUH-2 is out of service then HX-2 shall automatically provide the required heat to maintain the pool water temperature set point. When the backup pool water heating system is activated a signal shall be sent to the main building system controller signaling the backup system has been activated.

Pool water temperature for both the supply and return water to and from PDHU-2 shall be sensed to determine both entering and exiting water temperatures. If the pool water temperature entering PDHU-2 is the same as or greater than the pool water set point temperature, PDHU-2 will automatically divert hot gas to the hot gas reheat coil or will reject heat to the air cooled condenser located outdoors. This is part of the PDHU-2 control system.

If for any reason PDHU-2 fails to maintain the pool water temperature set point then control valve (CV-2) at HX-2 shall modulate to provide outlet water to the pool of 90 deg. maximum (adjustable). When the pool water temperature set point is satisfied, CV-2 shall be in the full

bypass position.

4.8 SMOKE DETECTOR SYSTEM:

A. Smoke detector approved for duct installation provided for each PDHU air handling system arranged to automatically shut down supply fan and de-energize system.

B. Under this section, wire contacts on smoke detectors to stop their respective systems as required by NFPA Standard 90A.

C. Provide extra isolated contracts to allow wiring into building fire alarm system.

D. Smoke detector shall meet expressed requirements of Section of NFPA-90A entitled "Controls" (Chapter 4).

4.9 EMERGENCY SHUT DOWN

A. Provide an emergency shutdown button located in the mechanical room to de-energize all fan coil units and exhaust fans. Identify this button as "EMERGENCY SHUT DOWN IN CASE OF FIRE". This button shall be wired in series with the fire alarm shut down interlock to allow for manual or automatic shut down.

END OF SECTION

SECTION 23 2100 - MISCELLANEOUS HYDRONIC COMPONENTS

PART 1 GENERAL

1. 1 WORK INCLUDED:

Modify the existing Johnson Controls Metasys DDC control system as required including Central processing unit, Software, Control Equipment, Control valves, Automatic dampers, Damper actuators, Sequence of Operations and Point lists to perform work required in this section.

1.2 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

Section 23 2100 - Miscellaneous Hydronic Components: Installation of control valves, flow switches, temperature sensor wells, gauge taps, flow meters.

Section 23 3100 - Ductwork: Installation of automatic dampers. To include assembly of multiple section dampers with required interconnecting linkages, shafts and brackets and extend the required number of shafts through the ducts for externally mounted damper motors. Jack shafts will be assembled with sealed roller ball bearings of stainless steel construction.

Division 26 000- Electrical

1.03 GENERAL PROVISIONS

The General Provisions of the Contract, including the General Conditions and supplementary General Conditions, apply to the work specified in this section.

1.04 RELATED SECTIONS

Section 23 0500 - Basic Mechanical Requirements

Section 23 0501 - Basic Materials and Methods

1.05 GENERAL INSTRUCTIONS

The BAS/ATC systems as specified herein shall be provided in their entirety by the BAS/ATC Contractor. The BAS/ATC Contractor shall base this Bid on the system as specified, the sequence of operations and the points list.

As part of his Bid, the BAS/ATC Contractor shall submit for review by the Owner's authorized representatives a written description of his proposed BAS/ATC systems, including block diagrams showing all major components and panels, printers and other processing devices and required cabling between each. Include environmental and space requirements for

panels, CPU's and other major devices and System points list.

In general, the proposal shall be based on a completely electronic system, including valve and damper actuators, and a full DDC system, wherein all HVAC equipment is centrally controlled by the BAS/ATC system.

1.06 SCOPE

The BAS/ATC systems shall be supplied and installed completely under the BAS/ATC Contract. Control components shall be mounted and wired by the BAS/ATC Contractor.

The engineering, installation, calibration, software programming and checkout necessary for complete and fully operational BAS/ATC systems, as specified hereafter, shall be provided by the BAS/ATC Contractor.

1.07 SUBMITTALS

The following data/information shall be submitted for approval:
Complete sequence of operation. Valve, humidifier and damper schedules showing size, configuration, capacity and location of all equipment. Data sheets for all hardware and software control components. Provide as part of the submittal five copies of all data and control drawings.

PART 2 PRODUCTS AND SYSTEMS

2.01 MANUFACTURERS

Modify the existing Johnson Controls Company Metasys System.

2.02 GENERAL

The building automation system shall include but not be limited to the following components:

1. The Operator Interface shall consist of hardware and software that allows for monitoring and adjustment of system parameters.

2. System Application Controllers shall manage the Energy and Building Management capabilities of the automation system as well as facilitate remote communications and central monitoring.

3. Application Specific Controllers shall provide distributed, pre-engineered control specific t the mechanical equipment specified.

4. Custom Application Controllers with distributed custom programming capability shall provide control for non-standard control sequences.

5. The Data Communications capability shall allow data to be shared between the

various controllers in the architecture.

6. The system software shall include system software for the global application functions, application software for distributed controllers, and operator interface software.

7. End devices such as sensors, actuators, dampers, valves and relays.

8. The failure of any single component shall not interrupt the control strategies of other operational devices. System expansion shall be through the addition of end devices, controllers, and other devices described in this specification.

2.03 OPERATOR INTERFACE

Use Existing

2.04 SYSTEM APPLICATION CONTROLLERS

The Building Automation System shall be composed of one or more independent, stand-alone, microprocessor based System Application Controllers to manage the global strategies described in the Application software section.

The operating system of the System Application Controller shall manage the input and output communication signals to allow distributed controllers to share real and virtual point information and allow central monitoring and alarms. Data shall automatically be shared between System Application Controllers when they are networked together.

The database and custom programming routines of remote System Application Controllers shall be editable from a single operator station.

The System Application Controllers shall have the capability of being remotely monitored over telephone modem. Additional capabilities shall include automatically dialing out alarms, gathering alarms, reports and logs, programming and downloading databases.

2.05 APPLICATION SPECIFIC CONTROLLERS

Application Specific Controllers shall be standalone, microprocessor based Direct Digital Controllers with sufficient memory to handle its operating system, database and programming requirements. Where factory mounting is not possible, the controllers shall be factory programmed and tested prior to shipment to the jobsite. The controllers shall be clearly labeled as to controller type, where it is to be installed and software address (if applicable). The controller shall be fully tested upon installation to ensure that it is properly matched to the equipment it is controlling. The controller shall communicate with other devices on the communication network and be fully integrated with the other system components.

2.06 SYSTEM APPLICATION CONTROLLER SOFTWARESYSTEM SECURITY.

ALARMS. The Building Automation System shall provide audio, visual, contact closure and remote telephone annunciation for:

Remote equipment failure
Equipment run time
Number of start/stops
Program failure
Card failure
Sensor failure

When an alarm state is detected, the alarm shall automatically be stored and the user notified by printing the alarm message sounding an audible tone, and flashing an alarm message on the CRT.

DIAL-UP COMMUNICATIONS. An autodial-up and auto-answer communications utility shall allow standalone System Application Controllers to communicate with remote operator stations over voice grade phone lines.

Controllers shall automatically call operator stations to report alarms, and upload historical data and reports. In the event that the controller is unable to connect with the remote station, it shall continue to attempt communication on a predetermined interval until communication is successful. The capability shall exist to automatically switch to a backup phone number in the event communications is unsuccessful with the first number.

PART 3 EXECUTION

3.01 INSTALLATION REQUIREMENTS

All electrical work performed in the installation of the BAS/ATC system as described in this specification shall be per the National Electrical Code (NEC) and per applicable state and local codes. Where exposed, conduit shall be run parallel to building lines properly supported and sized at a maximum of 40% fill. In no cases shall field installed conduit smaller than 1/2" trade size by allowed. Where conductors are concealed (tenant spaces), cable rated for use in return air plenums shall be used.

3.02 OWNER TRAINING

The BAS/ATC contractor shall provide three copies of an operator's manual describing all operating and routine maintenance service procedures to be used with the temperature control and Building Automation System supplied. This contractor shall instruct the owner's designated representatives in these procedures during the startup and test period. The duration of the instruction period shall be no less than 8 hours, during normal working hours.

3.03 WARRANTY

All BAS/ATC devices and installation shall be warranted to be free from defects in workmanship and material for a period of one year from the date of job acceptance by the owner. Any equipment, software or labor found to be defective during this period shall be repaired or replaced without expense to the owner. Factory authorized warranty service shall be available.

PART 4 - SEQUENCE OF OPERATIONS

4.1 POOL DEHUMIDIFIER SYSTEM - SEQUENCE OF OPERATION

System started and stopped at main controller. When pool dehumidification system is in the operational mode the unit will be controlled by its internal controls.

4.2 INTERLOCKING WIRING FOR PUMPS:

A. Provide wiring for interlock necessary to achieve required sequences covered herein and as covered by equipment manufacturer's printed recommendations.

B. Interlock of pumps, flow switches, etc., for water chiller executed in accordance with published machine manufacturer's shop drawing control and power wiring diagrams. Provide relays, switches and devices required.

C. Coordinate with electrical work for installation of smoke detectors for is supply and return ducts of PDHU's.

4.3 PUMPS - SEQUENCE OF OPERATION:

P-1 Interlocked to energize when PDHU-1 and Pool Filter Pump is energized.

P-2 Interlocked to energize when PDHU-2 and Pool Filter Pump is energized.

P-3 Interlocked to energize when PDHU-1 and/or PDHU-2 are energized.

HWP-1, 2 HWP-1 and HWP-2 shall operate in a lead and standby operation. HWP- 1 and HWP-2 shall alternate as lead and standby pumps on a biweekly basis. At no time will both HWP-1 and HWP-2 be energized at the same time. HWP-1 and HWP-2 shall be started and stopped by the BAS based on a hot water demand from the boiler and/or pool water heat backup.

4.5 HOT WATER BOILER - SEQUENCE OF OPERATION:

Hot Water Boiler (HWB-1) shall be energized when the outdoor air temperature is below 60 deg. F. (Adjustable) or when manually when desired. When energized hot water pump HWP-1 shall start and upon proof of flow HWB-1 shall energize. The boiler system shall operate to maintain a hot water discharge temperature as scheduled. The boiler manufacturer's control system shall start, stop and control the firing rate of the boiler.

4.6 HX-1 HEAT EXCHANGER - SEQUENCE OF OPERATION:

HX-1 shall be used for automatic backup heat for the indoor pool water from PDHU-1. Normal operation is for PDHU-1 to provide heat to the water in the main Lap Pool. If for any reason PDHU-1 is not providing enough heat to maintain pool water set point temperature or PDUH-1 is out of service then HX-1 shall automatically provide the required heat to maintain the pool water temperature set point. When the backup pool water heating system is activated a signal shall be sent to the main building system controller signaling the backup system has been activated.

Pool water temperature for both the supply and return water to and from PDHU-1 shall be sensed to determine both entering and exiting water temperatures. If the pool water temperature entering PDHU-1 is the same as or greater than the pool water set point temperature, PDHU-1 will automatically divert hot gas to the hot gas reheat coil or will reject heat to the air cooled condenser located outdoors. This is part of the PDHU-1 control system.

If for any reason PDHU-1 fails to maintain the pool water temperature set point then control valve (CV-1) at HX-1 shall modulate to provide outlet water to the pool of 90 deg. maximum (adjustable). When the pool water temperature set point is satisfied, CV-1 shall be in the full bypass position.

4.7 HX-2 HEAT EXCHANGER - SEQUENCE OF OPERATION:

HX-2 shall be used for automatic backup heat for the Instructional Pool water from PDHU-2. Normal operation is for PDHU-2 to provide heat to the water in the Instructional Pool. If for any reason PDHU-2 is not providing enough heat to maintain pool water set point temperature or PDUH-2 is out of service then HX-2 shall automatically provide the required heat to maintain the pool water temperature set point. When the backup pool water heating system is activated a signal shall be sent to the main building system controller signaling the backup system has been activated.

Pool water temperature for both the supply and return water to and from PDHU-2 shall be sensed to determine both entering and exiting water temperatures. If the pool water temperature entering PDHU-2 is the same as or greater than the pool water set point temperature, PDHU-2 will automatically divert hot gas to the hot gas reheat coil or will reject heat to the air cooled condenser located outdoors. This is part of the PDHU-2 control system.

If for any reason PDHU-2 fails to maintain the pool water temperature set point then control valve (CV-2) at HX-2 shall modulate to provide outlet water to the pool of 90 deg. maximum (adjustable). When the pool water temperature set point is satisfied, CV-2 shall be in the full bypass position.

4.8 SMOKE DETECTOR SYSTEM:

A. Smoke detector approved for duct installation provided for each PDHU air handling system arranged to automatically shut down supply fan and de-energize system.

B. Under this section, wire contacts on smoke detectors to stop their respective systems as required by NFPA Standard 90A.

C. Provide extra isolated contracts to allow wiring into building fire alarm system.

D. Smoke detector shall meet expressed requirements of Section of NFPA-90A entitled "Controls" (Chapter 4).

4.9 EMERGENCY SHUT DOWN

A. Provide an emergency shut down button located in the mechanical room to de-energize all fan coil units and exhaust fans. Identify this button as "EMERGENCY SHUT DOWN IN CASE OF FIRE". This button shall be wired in series with the fire alarm shut down interlock to allow for manual or automatic shut down.

END OF SECTION

SECTION 23 2113

PIPE HANGERS AND SUPPORTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 WORK INCLUDED:

A. Provide all labor, materials, necessary equipment and services to complete supports, anchors, and vibration control for mechanical work as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

B. Including but not necessarily limited to the following:

(1) Pipe Hangers and Support Systems.
(2) Equipment Bases and Supports.
(3) Vibration Isolation.
(4) Inertia Bases.

PART 2 - PRODUCTS

2.1 CONCRETE FOUNDATIONS:

A. Formed concrete housekeeping pads reinforced with not less than #3 bars 6" on center each way minimum. Extend bent sections of reinforcing bars from holes drilled in floor slab to anchor foundation. Provide common finish for exposed surfaces; edges and corners beveled, voids filled and rubbed.

B. Minimum height not less than 6" unless otherwise indicated. Size pads to extend 4" to 12" beyond equipment bases or to match size of inertia bases where such are required. Set anchor bolts as required by equipment base or vibration isolation mounts.

2.2 INSERTS AND CONCRETE FASTENERS:

A. Continuous Type Inserts:

(1) Fabricated of galvanized steel with end caps, removable closer strips, and anchors (on 6" centers, minimum). Use UNISTRUT P-3300 series for dome

of metal pans (thin slab) and UNISTRUT P-3200 series for normal slabs, bottom of concrete beams, and in bottom of concrete joists.

(2) Single Support Type Concrete Inserts: Galvanized metals, Grinnell Fig. 282-CS-Universal, Kindorf No. D-900, UNISTRUT Series 3245, or Fee & Mason No. 2570.

(3) Manufacturers: UNISTRUT, Grinnell, Kindorf, or approved substitute.

B. Self-drilling Concrete Fasteners:

(1) Manufacturers: Locke Manufacturing Company "Bull-Dog", Phillips "Red Head", Diamond Expansion Bolt Company "Blue-Cut", approved substitute.

2.3 PIPE HANGERS AND SUPPORTS:

A. Description: Hangers complete with threaded rods, clamps, nuts, rollers, brackets, and insulation protection. Parts of hangers in direct contact with copper pipe or tubing copper plated or plastic coated. Hangers proportioned to size of pipe where bare and to outside diameter of covering where insulated. Provide vibration isolators mounted in hanger rods where specified.

B. Hangers and Brackets:

(1) Adjustable Split Ring - Grinnell Figure 104, sizes 3/4" through 8", UL and FM.
(2) Adjustable Pipe Ring:

a. Ferrous Piping - Grinnell Figure 97, galvanized or cadmium plated 1/2" through 8", UL and FM.
b. Copper Pipe and Tubing Grinnell Figure 97 cp, copper plated, 1/2" through 8", UL and FM.

(3) Adjustable Clevis - Grinnell Figure 260 black steel, 1/2" through 24", UL and FM. Galvanized finish where exposed to weather.

(4) Single Pipe Roll - Grinnell Figure 171, cast iron roll and sockets.

(5) Wall Brackets:

a. Single rod, Close to Wall - Grinnell Figure 213, cast iron pipe size to 2" and 180 lbs. maximum load.
b. Rod or Equipment Support, Medium Duty - Grinnell Figure 195, welded black steel, 1500 lbs. maximum load. Provide backplate to distribute weight over wall surface.

(6) Vertical Support: Steel riser clamp, plastic shield where used for copper pipe. Refer to Section 15050 for use of mechanical coupling clamp on

exposed uninsulated steel lines for floor support clamp.

(7) Sleeves: Refer to Section 15050.

C. Floor Supports:

(1) Pipe Sizes to 4" and All Cold Pipe Sizes: Cast iron adjustable pipe saddle, locknut nipple, floor flange, and concrete pier or steel support.

(2) Hot Pipe Sizes 6" and Over: Adjustable cast iron roll and stand, steel screws, and concrete pier or steel support.

D. Saddles:

(1) Shield Type For Insulated Lines: Grinnell Figure 167 full 180 degrees for horizontal and inclined lines and complete 370 degrees (lapped 10 degrees) for vertical lines. Constructed of galvanized steel selected for thickness of insulation. Saddle lengths and material thickness:

Pipe Size	Min. Length	Min. Gauge
1/2" through 1-1/2"	8"	18
2" through 4"	12"	16
5" and larger	18"	16

(2) Shield Type For Bare Lines: Full 180 degrees for horizontal and inclined lines and 350 degrees (10 degrees short of complete closure) for vertical lines. Constructed of galvanized steel and completely lined with 1/4" thick solid neoprene sheet of 40 DURO. Saddle lengths and material thickness:

Pipe Size	Min. Length	Min. Gauge
1/2" through 1"	2"	20
1-1/4"" through 2"	4"	18
2" through 4"	6"	16
5" and larger	8"	16

E. Hanger Rods:

(1) Carbon steel threaded continuous. Galvanized finish where exposed to weather.

(2) Sizes: For rolled threads, rod size not less than root diameter of thread. Minimum size rod for soil, waste, and vent piping is 3/8".

Pipe Size	Min. Rod Diameter
1/2" through 2"	3/8"
2-1/2" and 3"	1/2"
4" and 5"	5/8"
6" and above	3/4"

F. Manufacturers: Grinnell, Auto-Grip, Carpenter and Paterson, Fee and Mason, F & S Mfg., Elcen, Unistrut, approved substitute.

2.4 BRACKETS FOR COPPER PIPE SUPPORT:

A. Mold and machine brackets, clamps, bolts, U-bolts, nuts and washers from type ABS plastic. Sizes of components proportioned to pipe sizes.

B. Manufacturers: P & M Bracket (A-10D series), Tyler Pipe (RF200F), WEJ-IT (Adjusto-Space System), Approved Substitute.

2.5 HANGERS FOR DUCTWORK:

Comply with Section 23 3100.

2.6 INERTIA BASES:

A. Description: Fabricated of welded galvanized channel sides and flat bottom designed to receive field install concrete fill and incorporating brackets, anchor bolts, sleeves, etc., required for mounting isolators and equipment.

B. Reinforcing: Not less than #4 steel bars welded to frame on approximate 6" centers each way.

C. Size and Weight: Thickness not less than 6" or 8% of longest plan dimension, whichever is greater. Total weight of inertia base with concrete installed equal to or slightly greater than weight of equipment supported unless otherwise indicated.

D. Manufacturers: Same as for vibration and sound isolation devices.

2.7 VIBRATION/NOISE ISOLATION:

A. Material Qualifications:

(1) Equipment to bear manufacturer's name, trademark and ASME, UL or other labels in every case where standard has been established for particular item.

(2) Equipment of latest approved design of standard product of manufacturer regularly engaged in production of required type of product.

B. Corrosion Protection:

(1) Vibration isolators designed or treated for resistance to corrosion.

(2) Steel components PVC coated, or phosphated and painted with industrial grade enamel. Nuts, bolts and washers zinc- electroplated or cad-plated. Structural steel bases thoroughly cleaned of welding slag and primed with zinc-chromate or metal etching primer. Finish coat of industrial enamel applied over primer.

(3) Isolators exposed to weather to have steel parts PVC coated or zinc-electroplated plus coating of neoprene or bitumastic paint. Aluminum components for outdoor installation to be etched and painted with industrial grade enamel.

C. Design Requirements:

(1) Required isolator deflections for isolators supporting various items of equipment shown on plans or called for in PART 3 - EXECUTION, 3.11.D. Schedules.

(2) Steel springs of stable type having horizontal stiffness at least equal to vertical stiffness. Springs to have minimum additional travel to "solid" equal to 50 percent of rated deflection. Stress at solid to be sufficiently low that spring does not exceed its elastic limit and is certified by manufacturer for infinite cycle life classification.

(3) Floor-mounted spring isolators of open or unhoused type without horizontal restraint unless specified otherwise. Where indicated, limit stops provided to limit excessive vertical motion of supported equipment when load is temporarily lessened or when equipment is subjected to external forces. Floor mounts may be of single or multispring type so designed to force concentration of supported load at center of support. Floor-mounted isolators equipped with glued-on ribbed-Neoprene pad on bottom. Floor mounts so selected that no more than 1" of adjustment is required to level equipment.

(4) Hangers of open or box type. Metal-to-metal contact between supporting rods and hanger components prevented by Neoprene inserts. Box hangers designed to withstand temporary loading of 400 percent of design load without visible deformation. Spring hangers so selected that no more than 1" of adjustment is required to level equipment.

(5) Where height saving brackets for side mounting of isolators are specified, height saving brackets designed to provide for operating clearance of 1-1/2" under inertia base.

(6) Isolators supporting given piece of equipment selected for approximately equal spring deflection, and selected to compensate for unequal loading so that equipment shall be level after load is applied during start-up/cycling and with equipment operating continuously.

(7) Isolators for equipment installed out-of-doors designed to provide adequate restraint due to normal wind conditions and to withstand wind loads of 30 pounds per square foot applied to any exposed surface of equipment without failure.

D. Isolator Types:

(1) Type 1 - Adjustable, freestanding, stable, open spring mounting with combination leveling bolt and equipment fastening bolt. Spring (or springs) welded or otherwise rigidly attached to mounting baseplate and to spring compression plate. Neoprene pad having minimum thickness of 1/4" bonded to baseplate. Baseplates sized to limit pad loading to 100 PSI.

(2) Type 2 - Adjustable, stable, open spring isolator having 1 or more coil springs welded, or otherwise rigidly attached to top compression plate and baseplate. Ribbed or waffled Neoprene pad having minimum thickness of 1/4" bonded to baseplate. Isolator to fit within welded steel enclosure consisting of top-plate and rigid lower housing, which serves as blocking device or, limit stop, during installation. Restraining bolts to connect top-plate and lower housing to prevent isolated equipment from rising when drained of water. Neoprene grommets provided to prevent metal-to-metal contact between restraining bolts and isolator housings.

(3) Type 3 - Elastometric mounting having steel baseplate with mounting holes and threaded insert at top of mounting for attaching equipment. Metal parts completely embedded in elastomeric material. Elastomer may be Neoprene with anti-ozone and anti-oxident additives. Mountings designed for and loaded so that deflection does not exceed 15 percent of free height of mounting.

(4) Type 4 - Pad-type mounting consisting of two layers of 3/8" thick, ribbed or waffled Neoprene pads bonded to 16-gauge galvanized steel separator plate. Bolting not required. Pads sized for approximately 20 to 40 PSI load. Where required to properly distribute load on isolator, a steel bearing plate to be bonded to top of isolator.

(5) Type 5 - Spring hanger consisting of rectangular steel box, coil spring, spring cups, Neoprene impregnated fabric washer, and steel washer with addition of elastomeric element at top of box for acoustic isolation, and addition of load transfer plate to hold equipment or piping at fixed elevation during installation and to permit transferring load to spring after installation. Spring to provide scheduled static deflection. Hanger box capable of supporting load of 300 percent rated load without noticeable deformation or failure. Design such as to prevent metal-to-metal contact between hanger rod and top of hanger box. Elastomeric element to meet design requirements for Type 3 mountings.

(6) Type 6 - Adjustable, stable, open spring isolator having 1 or more coil springs welded, or otherwise rigidly attached to top compression plate and base plate. Ribbed or waffled Neoprene pad having minimum thickness of 1/4" bonded to baseplate. Isolator to incorporate restraining bolts, blocking devices adjusted to prevent transmission of any vibrator disturbances during

normal operations but will limit movements in any direction to not more than 5/8" on receiving a 4G force at isolator base with snubber being engaged on movement of isolated equipment of between 1/8" and 1/4".

E. Base:

(1) Type B-1 - Concrete inertia base, consisting of perimeter steel pouring form, reinforcing bars welded in place, bolting templates and height saving brackets for side mounting of isolators. Perimeter steel members to be structural channels having minimum depth of 1/12 of longest span, but not less than 6" deep. Inertia base sized minimum overlap of 2" around base of equipment, and in case of belt driven equipment, 4" beyond end of drive shaft. Concrete inertia bases for pumps shall weigh not less than weight it supports, be sized to support suction elbow of end suction pumps and both suction and discharge elbows of horizontal split-case pumps. Bases to be T-shaped where necessary to conserve space. In final adjustment of isolator, base not to support any piping load.

(2) Type B-2 - Concrete inertia base, consisting of perimeter steel pouring form, reinforcing bars welded in place, bolting templates and base is to rest directly on isolators. Perimeter steel members to be structural channels having minimum depth of 1/12 of longest span, but not less than 6" deep. Inertia base sized minimum overlap of 4" around base of equipment, and in case of belt driven equipment, 4" beyond end of drive shaft. Concrete inertia bases for pumps sized to support suction elbow of end suction pumps and both suction and discharge elbows of horizontal split-case pumps. Bases to be T-shaped where necessary to conserve space.

F. Flexible Pipe Connectors: Single-arch, flanged reinforced elastic connector capable of at least 1/4" axial extension and compression and 1/2" lateral offset. Construction, fabric and compounds suitable for operating temperatures and pressures at point of installation. Spring loaded control units used to limit axial traverse to + 1/8". Springs to be deflected a minimum of 3/4" at the operating pressure.

G. Manufacturers: Mason Industries, Korfund, Vibration Mountings, Peabody, Amber Booths, Approved Substitute.

PART 3 - EXECUTION

3.1 DRIVEN FASTENERS:

A. Do not use concrete nails or other hand driven fasteners likely to break away masonry materials.

B. Use only guns such that anchors cannot be shot through thin materials. Shot anchors not driven into thin portion of slabs less than 4" thick.

3.2 HOLES IN STRUCTURE:

A. Holes in any structural beam prohibited unless noted on drawings.

B. Steel sleeves for round openings through 12" diameter in slabs shall be grouted in place in holes made by core drilling where sleeves omitted during concrete pour.

C. Rectangular and large round openings for duct systems and large pipes in slabs core drilled or sawed out where such openings were omitted during concrete pour.

D. Clearance space between sleeves or openings filled with approved fibrous material and sealed with non-hardening caulking compound or foam filled with Dow-Corning 3-6548 silicone RTV foam, refer to paragraphs 2.1 D. and 3.2 E. of Section 15050 for material and installation specifications.

3.3 FLEXIBLE DUCT AND PIPE CONNECTIONS:

A. Refer to Section 23 0529 – Pipe and Fittings, and Section 23 3100 - Ductwork.

B. These items installed where drawn or specified by installer of system served.

3.4 GENERAL INSTALLATION INSTRUCTIONS FOR PIPING SUPPORT:

A. Pipe supports installed to provide piping systems which are self-supporting, vibration free, and not dependent upon connection to equipment for support and stability.

B. Equipment, waste, drain, and relief valve discharge piping anchored to structure, equipment concrete base to eliminate vibration, sway, and strain on equipment connection.

C. Clamps and brackets for support of piping and equipment from solid masonry secured with self-drilling expansion fasteners. Clamps and brackets for support from hollow masonry block construction secured with toggle bolts.

D. Underground piping bedded on firm trench bottom for length of body of pipe (space for bells on cast iron pipe excavated below grade of trench).

E. Where exposed pipes are run parallel and are hung independently, bottom surfaces of pipes at approximately same level when running in same direction.

F. Cold lines are pipes in which fluids or gas is likely below 75 degrees F; included are pipes conveying following:

(1) Make-up cold water.
(2) Air conditioning condenstate.

G. Adequately support piping from building structure with adjustable hangers to

maintain uniform grading where required and to prevent sagging and pocketing. Provide supports between piping and building structure where necessary to prevent swaying.

H. Install hangers to provide minimum 1/2" clear space between finished covering and adjacent work. Place hanger within one foot of each horizontal or vertical elbow.

I. Use hangers which are vertically adjustable 1-1/2" minimum after piping is erected.

3.6 PIPE SUPPORT AND HANGERS:

A. General: Installation of pipe support and hangers in accord with publication "Pipe Hangers and Supports - Selection and Application" MSS-SP-69, by Manufacturers Standardization Society of the Valve and Fittings Industry. Where requirements of this section at variance with above publication, this section governs.

B. Vibration Isolation:

(1) Saddles: Attach all piping within building with saddles specified in paragraph 2.3.D. above. This applies to both insulated and bare lines.

(2) Systems: Above includes, but is not limited to hydronic piping (Section 15510).

C. Ferrous Pipe:

(1) Suspended Horizontal and Inclined Pipe:

a. Support at each valve or other special fitting, at each rise or drop, at each change of pipe line direction, at each branch connection, and at not over following maximum spacings for straight runs of pipe:

Nominal Pipe Size Inches)	Maximum Span (Feet)	Minimum Rod Diameter (Inches)
1/2	5	1/4
3/4	6	3/8
1	7	3/8
1-1/2	9	3/8
2 and 2-1/2	10	3/8
3	12	1/2

b. Insulated Lines: Shield type saddles for cold and hot lines.

c. Hanger and Support:
1) Individual Pipes:
a) Hydronic Piping:
1. Through 3", use adjustable pipe ring.

2. 4" and above, use adjustable clevis.

2) Parallel Pipes Run One Over the Other(s): Use single pipe rolls mounted one over the other on two all-thread rods.

D. Copper Pipe:

(1) Suspended Horizontal and Inclined Pipe:

a. Suspended Horizontal Pipe - Support at each valve or other special fitting, at each rise or drop, at each change of pipe line direction, at each branch connection, and at not over following maximum spacings for straight runs of pipe:

Nominal Pipe Size Inches)	Max. Span (Feet)	Min. Rod Diameter (Inches)
1/2	5	1/4
3/4	5	3/8
1	6	3/8
1-1/4	7	3/8
1-1/2	8	3/8
2 and 2-1/2	8	3/8
3	10	1/2
4	12	1/2

b. Saddles for insulated lines shield type for copper.

c. Hangers shall be adjustable pipe ring, copper plated.

E. Pipe Supported from Walls: Where horizontal or inclined pipe is 4 feet or more below structural system and close enough to concrete or masonry wall for support, use wall bracket of appropriate size to support line.

F. Hanger Rods Through Noise-Barrier Ceiling on Basement Floor: Seal with non-hardening caulking (as GE Silicone) where rod passes through the gypsum board ceiling attached to underside of floor structure above. Upper attachment of rod secured to supplemental steel attached to top of lower bar joist cord or to bottom or upper bar joist cord. Sealant applied to eliminate any opening which will allow air born noise to pass through.

3.7 SUPPORT FOR SMALL EQUIPMENT:

A. General: Hang from structural system with threaded rods.

B. Expansion Tank: Hang suspended equipment with threaded rods attached to supplemental steel at structural system.

C. Install vibration isolator hanger (2.8.D.5 above) in each hanger rod.

3.8 FACTORY FABRICATED FRAMING CHANNELS AND FITTINGS:

A. Factory fabricated framing channels and fittings used for:

(1) Constructing pipe racks for supporting multiple horizontal pipes.

(2) Constructing trapeze type hangers for suspending multiple horizontal pipes.

(3) Securing vertical exposed water service drops to hose bibbs and wall hydrants.

B. Properly secure framing channel to building construction. Use inserts for poured-in-place concrete.

3.9 CONCRETE FOUNDATIONS AND INERTIA BASES:

A. Provide foundations conforming to following:

(1) Base Mounted Pumps - 6" high pad minimum or as drawn plus inertia base.

B. Set anchor bolts for equipment base or for vibration mounts.

END OF SECTION 23 2113

SECTION 23 2114

VALVES AND COCKS

PART 1 - GENERAL

1.1 WORK INCLUDED:

A. Work included in this section shall include but not be limited to furnishing and installing all gate valves, ball valves, check valves, cocks and all accessories as shown on the drawings, as specified and/or needed for a complete system.

1.2 SHOP DRAWINGS:

A. Submit detailed shop drawings of equipment to be supplied under this section. Clearly indicate make, model, location, type, size and pressure rating of each item to be supplied.

PART 2 - PRODUCTS

2.1 GENERAL:

A. All valves shall be of a design which the manufacturer lists for the intended service and shall be of materials allowed by the ASME code for pressure piping and of manufacturer as listed. Provide the proper discs for the service intended in accordance with the valve manufacturer's recommendation.

B. Unless specified or indicated, all valves shall be gate or ball type, except that globe valves shall be used for throttling service. Valves used in solder joint tubing shall have solder type ends.

C. All valves shall be installed so that they are easily accessible.

D. Provide valves of the same manufacturer throughout where possible.

E. A union or coupling shall be provided within 2 feet on each side of threaded end valve unless the valve can be otherwise easily removed from the piping. This shall not apply to soldered end valves in copper plumbing.

2.2 VALVES AND STRAINERS:

A. Ball Valves: All thermoplastic true union Industrial type manufactured to ASTM F 1970 and construction of PVC type I, ASTM cell classification 12454 or CPVC type IV, ASTM D 1784 cell classification 23447. Valve o-rings shall be made of EPDM Santoprene® or Viton® material. The valve stem shall have two o-rings. The valve body shall have two stem stops. The valve carrier shall have a full block polymeric locking strip. Valve seats shall be Teflon® material. Valves shall be operated by a handle or pneumatically or electrically by actuator. Valves shall be capable of

being field retrofit with pneumatic or electric actuator. Valves shall be full port (equal to or greater than the minimum inside diameter of sch. 80 pipe). End connectors shall be of socket, thread or flange type. Equal to Spears, Hayward, Dwyer, Nibco.

B. Copper tube size ball valves: All thermoplastics CTS ball valves (½" through 2") shall be of one-piece construction and produced of CPVC type IV, cell classification 23447-B material. Valve seats shall be of Teflon or Santoprene material. Handle shall be attached with thermoplastic locking pin. The valve shall contain no metal components. Equal to Spears, Hayward, Dwyer, Nibco.

C. Ball check valves: All thermoplastic ball check valves (½" through 3") shall be of single union design and produced of PVC type I, cell classification 1245-B or CPVC type IV, cell classification 23447-B or PP or PVDF material. Seat shall be made of Viton. End connectors shall be of socket, thread or flange type. Equal to Spears, Hayward, Dwyer, Nibco.

D. Wye line strainer: All thermoplastic wye line strainers shall be produced of PVC type I, cell classification 12454-B or CPVC, cell classification 23447-B. Strainer assembly shall have a union nut for ease of removal during cleaning. Strainer screens shall be of stainless steel or polypro material. Screens shall be of 20 or 40 mesh in stainless steel and 20 mesh in polypro material. End connectors shall be of socket or thread type. Equal to Spears, Hayward, Dwyer, Nibco.

E. Check valves in sizes 2-1/2 inches and smaller shall be Y-pattern, regrinding, bronze-body, bronze-mounted valves. Valves shall have 200-pound, cast bronze body, renewable bronze disc, screwed cap, and threaded ends per ANSI B2.1. Bronze for body and cap shall conform to ASTM B 61. Brass nuts and pin shall conform to ASTM B 16. Valves shall have a hinge bumper capable of preventing the valve from sticking in the open position and an arrow cast on the valve body to indicate direction of flow. Bronze check valves shall be Powell Fig. 560Y, Stockham Fig. B-345, Nibco Fig. T-453-B, or equal

F. Check valves in sizes 3 inches and larger shall be iron body, bronze-mounted valves conforming to AWWA C508. Valves shall have 125-pound cast iron body, bolted and gasketed cover, stainless steel or brass hinge pin, renewable bronze seats and disc, outside lever and adjustable weight, and 125-pound flanged ends per ANSI B16.1. Cast iron for body and cap shall conform to ASTM A 126, Grade B. Bronze for disc and seats shall conform to ASTM B 62. Iron body check valves shall be Mueller Fig. 2600-6-01, M & H (Dresser) Fig. 50, Nibco Fig. F-918-BL & W, or equal.

G. Safety and relief valves shall conform to the latest requirements of the ASME Boiler and Pressure Vessel Code, Section I--Power Boilers, section IV-- Heating Boilers or section VIII-- unfired pressure vessels, as applicable. Valves shall be side outlet, unpacked, lifting lever type constructed of materials suitable for the condition of service. All valves shall be National Board stamped and shall bear the approved nameplate. Valve relieving capacity shall not be less than 125 percent

of the heat input to be relieved.

H. Combination balancing/shut-off fittings shall be Sarco "Balance Master" type IBV, Illinois Series 400, Taco Series 900 or March R-200 "Hydro-Balance".

I. Circuit Setter Balancing Valve shall be calibrated bronze balance valve with provisions for connecting a portable differential pressure meter at locations shown on plans. Meter connections to have built-in check valves. An integral pointer shall register degree of valve opening. Each balance valve to be constructed with internal seals to prevent leakage around rotating elements, and be suitable for shut-off to permit equipment servicing, and shall be Bell and Gossett, Armstrong or equal.

J. Cast iron pipe strainers equal to Sarco, Armstrong, Mueller, Bell and Gossett.

2.3 WATER PRESSURE REDUCING VALVE

A. Water pressure regulator shall be field adjustable, self contained, single seated, direct acting, spring loaded type with a diaphragm. Valve body and spring shall be bronze and all other parts shall have a corrosion resistance equal to bronze. All valves must be seated against leakage including a top cover over the adjusting screw.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. All valves shall be installed in strict conformance with the drawings and approved shop drawings and manufacturer's instructions.

B. Swing check valves shall be installed only in a horizontal position. Lever shall be free to operate without obstruction.

C. Valves shall be installed in such a way that operators and packing are easily accessible. Valves with field replaceable seats shall be installed with sufficient clearance to permit removal of valve bonnet and stem without removing valve from the line.

3.2 FIELD TESTING:

A. Following installation, all valves shall be tested by the Contractor under the anticipated operating conditions. The ability of the valves to operate properly without leakage, binding, sticking, fluttering, or excessive operating torque shall be demonstrated to the satisfaction of the Engineer. The Contractor shall at his own expense adjust and/or replace any valve as necessary to assure satisfactory operation.

B. Following installation and testing, all ferrous and nonmachined surfaces of exposed valves, operators, floor stands, and stem guides shall be field primed and painted or for the intended service.

END OF SECTION

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SECTION 23 2123

PUMPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 WORK INCLUDED:

A. Provide all labor, materials, necessary equipment and services to complete pumping systems as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

B. Including but not necessarily limited to the following:

(1) Base-Mounted Pumps.
(2) In-Line Pumps.

1.3 SUBMITTALS:

A. Shop Drawings and Product Data: Submit for following in accordance with Section 23 0500 and include manufacturer's installation instructions.

B. Submit certified pump curves showing pump performance characteristics with pump and system operating points plotted. Include NPSH curve when applicable.

C. Submit copy of manufacturer's representative's inspection report per 3.2.

PART 2 - PRODUCTS

2.1 COMMON REQUIREMENTS:

A. Statically and dynamically balance rotating parts.

B. Construction to permit complete servicing without breaking piping or motor electrical connections.

C. Pumps to operate at 1750 RPM unless specified otherwise.

D. Pump connections to be flanged.

E. Cover rotating parts with removable metal guards.

2.2 BASE MOUNTED END SUCTION PUMPS:

A. Type: Centrifugal, single stage, direct connected.

B. Casing: Cast iron, split volute, single suction, rated for greater of 150 PSI or 1.25 times actual working discharge pressure, renewable bronze wearing rings, flanged suction and discharge, vent tapping.

C. Impeller: Bronze, fully enclosed, keyed to shaft. Impeller diameter not to exceed 85% of casing diameter as measured from cut-water.

D. Shaft: High grade alloy steel with copper, bronze or stainless steel shaft sleeves.

E. Bearings: Grease lubricated roller or ball bearings with reservoirs. Provide seal and integral dirt and water seal at each end of reservoir. Housing designed to flush lubricant through and provide continuous cleaning of bearing surfaces.

F. Drive: Direct with flexible coupling.

G. Seals: Carbon rotating against a stationary ceramic seat.

H. Motor: Capacity to prevent over-loading with pump operating at any point on curve.

I. Baseplate: High grade heat treated cast iron or reinforced heavy steel with integral drain rim grout base.

J. Manufacturers and Series: Armstrong Series 4030, Bell and Gossett 1510, Taco FT, Approved Substitute.

2.3 IN-LINE PUMPS:

A. Casing: Bronze cast iron rated for not less than 125 PSI working pressure and designed to support motor.

B. Impeller: Bronze.

C. Shaft: Alloy steel with integral thrust collar and two oil lubricated bronze sleeve bearings.

D. Seal: Carbon rotating against a stationary ceramic seat.

E. Drive: Flexible coupling.

F. Equal to Taco Series 80 or equals by Armstrong or Bell and Gossett.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. General:

(1) Install pumps to allow complete removal without dismantling connecting piping.

(2) Provide air cock and drain connection on horizontal pump casing.

(3) Decrease from line size to pump flange size with long radius reducing elbows or reducers. Support piping adjacent to base-mounted pump so that no weight is carried on pump casings. Provide supports under elbows or reducers on base-mounted pump suction or discharge line sized 4" and over.

(4) Provide drains for floor-mounted pump baseplate, drain pan, or stuffing boxes piped to and discharging into floor drains.

B. Floor Mounted Pumps: Support on spring-mounted concrete filled inertia base above concrete housekeeping pad. Refer to Section 23 2113. Where drawn, increase height of base pad to align pump suction with horizontal piping header centerline.

C. Level and Alignment:

(1) Level and align pumps and motors on baseplates and base pads in accordance with manufacturer's instruction and within their recommended tolerances using indicating micrometer. Do this before piping or electrical connections are made.

(2) After connections made and just prior to placing pump in operation, recheck levels and alignments. Make adjustments to assure that thrust is balanced, that shaft rotates freely when turned by hand and that pump is quiet in operation.

(3) When adjustments are completed, tightly bolt motor and casing in position. Then securely bolt baseplate to base pad and grout baseplate full.

D. Lubrication: Lubricate pumps in accordance with manufacturer's instructions after completion of system and before start-up.

E. Spare Parts: Provide for each pump a spare mechanical seal, packaged and identified for storage. Deliver and secure receipt at time of final inspection.

3.2 CERTIFICATION:

A. After completion of work, alignment and operation of base-mounted pumps checked by pump manufacturer's representative.
B. Submit report of inspection with comments and approval on letterhead of manufacturer or manufacturer's designated representative.

END OF SECTION

SECTION 23 2513

HVAC WATER TREATMENT

PART 1 - GENERAL

1.1 WORK INCLUDED:

A. Provide all labor, materials, necessary equipment and services to complete cleaning of and chemical treatment for hydronic piping systems as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

B. Including but not necessarily limited to the following:

(1) Boiler Water System

1.2 SUBMITTALS:

A. Shop drawings and Product Data: Submit in accordance with Section 15010 and include manufacturer's installation instructions:

1.4 QUALITY ASSURANCE:

A. Supplier Qualifications: Recognized specialist, active in field of industrial water treatment for at least ten years, with water analysis laboratory, development facilities and service department. Chemical treatment equipment and chemical products of single supplier.

PART 2 – PRODUCTS

2.1 SPACE HEATING HOT WATER SYSTEM TREATMENT:

A. Feeder: Provide bypass feeder tank (shot feeder) with not less than two gallon solution capacity, refer to detail. Feeder fabricated of steel with welded construction and rated at not less than 175 PSIG working pressure and 250 degrees F.

B. Chemicals: Provide 1 year supply of chemical treatment for prevention of scale and corrosion in each system. Furnish single, multi-purpose, liquid type chemical for periodic shock dosage of each system. Employ services of a qualified water treatment firm to perform testing and administer chemical doses as required. Test system monthly for first year and treat as required.

C. Testing Equipment: Water analysis test set to control treatment chemical dosages.

PART 3 - EXECUTION:

3.1 CLEANING OF BOILER WATER SYSTEM:

A. Before operating any boiler piping equipment except pumps, chemically clean and flush piping systems.

B. Use only chemicals formulated for removal of grease, dirt, mill scale, welding slag, and foreign materials in system. During cleaning and flushing process, clean strainers and open drain valves periodically to remove sediment from systems. Chemical solutions circulated through piping until systems are clean, after which systems flushed with clean water.

C. After flushing process, refill piping systems with clean water and charge with operating chemicals.

D. Chemical manufacturer to include instructions for handling, storage, and mixing of chemicals and dosage requirements for this specific installation.

E. After completion of system cleaning, provide Engineer with four (4) copies of certification outlining: time and date cleaning operation commenced; duration of time of cleaning operation; chemicals and procedures used; name and employer of persons performing cleaning operation; statement as to condition of flushing water when drained from system to indicate adequacy of chemical cleaning.

END OF SECTION

SECTION 23 3100

DUCTWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 WORK INCLUDED:

A. Provide all labor, materials, necessary equipment and services to complete the ductwork as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

B. Including but not necessarily limited to the following:

(1) Ductwork.
(2) Duct Insulation
(3) Dampers and Hardware.
(4) Air Diffusers& Grilles

1.3 QUALITY ASSURANCE:

A. Regulatory Requirements: Comply with following standards.

(1) NFPA 90A - Air Conditioning and Ventilating Systems.

(2) UL 181 - Factory-Made Duct Materials and Air Duct Connections.

1.4 REFERENCES:

A. Reference Standards: Comply with applicable portions of the following:

(1) ASHRAE Handbook: 2008 Equipment Volume, Chapter 1 - Duct Construction.

(2) SMACNA Low Pressure Duct Construction Standards, Latest edition with supplements.

(3) SMACNA Duct Liner Application Standard, Latest edition.

(4) SMACNA Manual for the Balancing and Adjustment of Air Distribution Systems, Latest edition.

(5) AABC National Standards for Total System Balance, 1982 edition.

1.5 SUBMITTALS:

A. Shop Drawings and Product Data: Submit for following in accordance with General Conditions. Include manufacturer's installation instructions where applicable:

(1) Ductwork Shop Drawings
(2) Duct Insulation.
(3) Dampers and Hardware.

PART 2 - PRODUCTS

2.1 SHEET METAL MATERIAL:

A. Use material of lock forming quality galvanized sheet steel, ASTM A 525.

B. Weight of galvanized coating not less than 1.25 ounces total for both sides per square foot of sheet, G90 per ASTM A 525 and ASTM 90.

C. Where ductwork is exposed and is not to be covered with insulation, use paint grip type galvanized finish to facilitate coating.

D. Where material is welded, apply additional brushed on coating after wire brush cleaning to prevent corrosion.

2.2 LOW PRESSURE DUCTWORK:

A. General:

(1) Fabricate ductwork to meet job conditions from dimensions taken from job site.

(2) Fabricate and install ductwork so no undue vibration or noise results.

(3) Do not provide holes in duct systems for installation of hangers, conduits, etc.

(4) Dimensions on drawings are net clear inside dimensions.

(5) All exposed ducts shall be paint grade finish.

B. Sheet Metal Type:

(1) Except where indicated otherwise, duct fabrication and construction to conform to recommendations of SMACNA Low Pressure Duct Construction Standards.

(2) Round Ducts:

a. Round ducts up to and including 12" in diameter of longitudinal lock-seam construction. Round ducts larger than 12" of spiral lock seam construction.

b. Girth joints in ducts up to and including 12" in diameter of beaded-crimp type and each joint shall be fastened with sheet metal screws, equally spaced, not more than 8" on centers and with minimum of 3 screws in each joint. Provide at least 1" lap to accommodate sheet metal screws on beaded-crimp joint.

c. Girth joints in ducts larger than 12" of beaded sleeve type. Beaded sleeve joint fabricated of same gauge galvanized steel sheet as duct, minimum of 4" in length. Each section of duct fastened to sleeve with sheet metal screws, equally spaced, not more than 8" on centers and with minimum of 3 screws in each section.

(3) Hangers:

a. Duct hangers and supports in accordance with Section V (pages 5-1 through and including page 5-13) hangers and supports of SMACNA Standard.

b. Exceptions:

1) Hangers not spaced over 8'-0" on centers.

2) For rectangular ducts: with longest dimensions up through 60", hangers of galvanized steel strap type; with longest dimension 61" and larger, hangers of trapeze type constructed with steel angles (protected from corrosion by either galvanizing or primed and painted) with round hanger rods. Sizes for strap hangers and trapeze angles and rods shall be based on duct size as scheduled in SMACNA Standard, Table 5-1 (page 5-8) for strap hangers and Table 5-3 (page 5-10) for trapeze hangers.

3) For round ducts, use galvanized steel strap hangers. Sizes and number for strap hangers based on duct size as scheduled in SMACNA Standard Table 5-2 (page 5-9). For duct sizes requiring 2 hangers, hanger supports not less than 3/8" round steel hanger rods.

4) Plenums: Plenums constructed as "casings" per Figures 3-9 and 3-10 of Duct Manual; use galvanized angles in lieu of black steel.

5) Special Joints: Manufactured "Ductmate" joints may be used on rectangular low pressure ductwork.

2.3 FLAT OVAL AND SPIRAL ROUND DUCTWORK

A. General:

(1) Except where specified otherwise herein or where indicated otherwise on drawings, medium pressure duct systems fabrication and construction to comply with SMACNA Medium Pressure Duct Construction Standards.

(2) Round and flat oval medium pressure ductwork and fittings products of same manufacturer.

(3) Medium pressure ductwork and fittings constructed from galvanized steel sheets. Galvanized areas that are damaged by welding coated with corrosion resistant aluminum paint.

B. Round and Flat Oval Ductwork:

(1) Medium pressure round ducts up to and including 60" in diameter of spiral weld lockseam type: ducts 61" and larger in diameter of longitudinal seam type with fusion welded butt seam. Longitudinal seam duct greater than 60" in diameter which is supplied in lengths greater than 4 feet to have angle iron rings welded to duct on not more than 4 foot centers; intermittent welding of angle ring to duct to have not less than 1" of weld for each 12" length of angle ring.

(2) Medium pressure flat oval ducts of spiral weld lockseam type, except duct sizes not available in spiral lockseam construction of longitudinal seam type with fusion welded butt seam.

(3) Contractors option: Round and flat oval duct may be spiral lockseam construction with an intermediate standing rib to provide rigidity equivalent to ASHRAE or SMACNA standard spiral duct. Dynamic performance same as for spiral duct without standing rib. Thickness of galvanized sheet steel not less than 28 gauge for diameters through 42" and not less than 26 gauge for diameters of 44" and greater. Fittings to compliment duct with spot-welded and bonded seams.

(4) Joints in Round and Flat Oval Medium Pressure Ductwork:

a. Duct-to-duct joints in round duct up to and including 60" in diameter and in equivalent size flat oval ducts, made by using sleeve couplings, reinforced by rolled beads. Duct-to-fitting joints in round duct up to and including 60" in diameter, and in equivalent size flat oval ducts, made by slip-fit of projecting collar on fitting into duct. Insertion length of sleeve coupling and fitting collar shall be not less than 2".

b. Duct-to-duct and duct-to-fitting joints in round ducts larger than 60" in diameter, and in equivalent size flat oval ducts, of loose flange

type. Ends of ducts and fittings to have 5/8" (minimum) flanges to form gasketing surface for sealing. Bolting flanges not less than 2" X 2" X 3/16" ring type steel angles attached to duct and fitting by continuous weld; bolt spacing on flanges not to exceed 6" on centers. Flanged joints sealed with neoprene rubber gaskets.

(5) Duct Material Gauges:

a) Round Duct

Diameter	Minimum U.S. Gauge	Method of Manufacturers
3" to 14"	26	Spiral Lockseam
15" to 26"	24	Spiral Lockseam
27" to 36"	22	Spiral Lockseam
37" to 50"	20	Spiral Lockseam
51" to 60"	18	Spiral Lockseam
61" to 84"	16	Longitudinal Seam

b) Spiral Lockseam Flat Oval Duct:

Major Axis Dimension	Minimum U.S. Gauge
Up to 24"	24
25" to 48"	22
49" to 70"	20
71" and Larger	18

c) Longitudinal Seam Flat Oval Duct:

Major Axis Dimension	Minimum U.S. Gauge
Up to 36"	20
37" to 50"	18
51" and Larger	16

(6) Fittings for Round and Flat Oval Medium Pressure Ductwork:

a) Fittings with continuous welds along seams.
b) Divided flow fittings manufactured as separate fittings, not as tap collars welded into spiral duct sections.
c) All 90 degree divided flow fittings and 45 degree laterals (wyes) up to and including 12" diameter tap size provided with radiused entrance into tap, produced by machine or press forming with entrance free of weld build-up, burrs, and irregularities.
d) All 90 degrees divided flow fittings and 45 degree laterals (wyes) larger than 12" diameter of conical type.

(7) Fittings and Couplings Material Gauges:

a) For Round Duct:

Diameter	Minimum U.S. Gauge
3" to 36"	20
37" to 50"	18
51" and Larger	16

b) For Flat Oval Duct:

Major Axis Dimension	Minimum U.S. Gauge
Up to 36"	20
37" to 50"	18
51" and Larger	16

(8) Lined Round and Flat Oval Duct: Ductwork indicated on drawings as lined factory manufactured double-walled, internally-insulated, and perforated-metal lined acoustical duct with glass fiber insulation protected from erosion by perforated internal liner.

(9) Manufacturers:

a) Unlined Ductwork:
United Sheet Metal Corporation (including "UNI-RIB Duct").
U.S. Air Duct Corporation.
SEMCO Manufacturing Company.
Lewis and Lambert Sheet Metal Fabricators.
SMPCO (Sheet Metal Products Co.).
Approved substitute.

b) Lined Ductwork: Same as above where product is equal to that manufactured by United Sheet Metal Corporation and covered in their Bulletin No. 30-1 (1975) for round duct and Bulletin No. FO-40-1078 for flat-oval duct, with fittings as dimensioned and illustrated in "Illustrated Sheets" K-1 through K-7 (8-78) and FOK-1 through FOK-8 (2-79).

C. Rectangular Ductwork: Chapters and Figures are found in SMACNA Standard

(1) Shop fabricated duct and fittings constructed of galvanized steel in accord with Chapter 4, Tables 4-1 through 4-5 of SMACNA Standard. Use pocket lock joints (Figure 4-8) or flanged joints (Figure F-9) for ducts through 36" in any dimension. Use reinforced standing seams (Figure 4-7) or companion angle flanged joints for ducts over 36" in any dimension.

(2) Typical construction shown in Figures 4-1 through 4-3 of Duct Manual. Square throat elbows with turning vanes per Figure 4-15. Transitions and transformations per Figures 4-16 through 4-18.Branch connections per Figure 4-19.

(3) Hangers per Chapter 6, Figure 6-4 and Figure 6-5.

(4) Reinforcing "tie rods" between reinforcing installed as illustrated in Figure 4-13.

(5) Sealants per Chapter 5 of SMACNA Standard.

(6) Lined rectangular duct internally insulated with 1" thick material as described in Article 2.7 of this Section entitled "Acoustical Treatment for Ductwork." In addition to fabrication described and where air velocity exceeds 3,500 feet per minute, install perforated internal liner equal to that used in B.8. above for lined round and flat oval ductwork.

2.4 MANUAL DAMPERS AND DAMPER HARDWARE:

A. Splitter Dampers:

(1) Splitter dampers constructed of not less than 20-guage galvanized steel sheet. Length of damper blade shall be same as width of widest duct section at split, but blade length never less than 12 inches.

B. Manual Volume Control Dampers:

(1) Dampers either single blade butterfly or multi-louver type in ducts up to and including 18" X 12" size; for ducts larger than 18" X 12" in either or both dimensions, dampers opposed-blade, multi-louver type only.

(2) Single Blade Dampers:

a) Single blade butterfly dampers constructed of not less than 16-guage galvanized steel blade mounted in galvanized steel frame. For rectangular dampers, top and bottom edges of blade crimped to stiffen blade. Damper provided with an extended rod to permit installation of damper regulator.

(3) Multi-louver Dampers:

a) Multi-louver dampers of opposed blade type, constructed of not less than 16-guage galvanized steel blade mounted in galvanized steel channel frame. Blade spacing not to exceed 6" and top and bottom edges of blades crimped to stiffen blades. Damper blades interconnected by rods and linkages to provide simultaneous operation of all blades. Damper provided with an extended rod to permit installation of damper regulator.

(4) Hardware for Manual Dampers:

a) Splitter Damper Hardware

1) When neither dimension of damper exceeds 18", damper provided with ball joint bracket attached to outside of duct.

Bracket with set screw for securing damper rod in position.

2) Damper operating rod not less than 1/4" diameter steel rod and secured to damper blade with clip. When either dimension of damper exceeds 18", damper provided with 2 ball joint brackets and rods. Rods located at quarter points on damper.

b) Volume Control Damper Hardware:

1) Duct mounted dial regulators with operating handle provided on volume control dampers which are located above non-fire rated, accessible acoustical tile ceilings.

2) Concealed ceiling mounted dial regulators provided on volume control dampers located above following type ceilings unless ceiling access panel is provided:
(a)Gypsum board ceilings
(b)Plastered ceilings
(c)Acoustical tile ceilings with non-accessible concealed grid system.
(d)Fire-rated acoustical tile ceilings secured with clips on exposed grid system.

3) Concealed regulators provided with plain covers. Provide steel channel blocking above ceiling to support and anchor regulators. Dampers with operating rods parallel to line of ceiling provided with miter gears for connecting regulator operating rod to damper operator rod.

2.5 INTERNAL LINERS FOR DUCTWORK:

A. Material shall be neoprene coated (on side with surface exposed), semi-rigid 1" thick (unless otherwise indicated) glass fiber insulation (1-1/2 lb/cu ft minimum density) with maximum K factor of .27 at 75 degrees F and minimum sound absorption coefficient of 0.16 at 125 cps and 0.85 at 500 cps. Refer to page 1-12 of SMACNA Low Pressure Duct Construction Standards. Adhesive flame spread rating not over 25 and smoke developed rating not higher than 50 as per NFPA-90A and UL Standard 723, and applied in accord with SMACNA Duct Liner Application Standard. Duct sizes indicated on plans clear inside dimensions; add twice liner thickness to each dimension shown on drawings (width by height) to get "out-to-out" size required.

2.6 INSULATION

A. Provide insulation as indicated and specified. All insulation, backing, sealants and adhesives shall be UL listed as fire resistive with a maximum flame spread rating of 25 and smoke development of 50.

B. All supply ducts downstream of PIU's shall be internally lined. All conditioned air ducts in corridors and mechanical rooms shall be externally insulated with 2" thick, glass fiber insulation with 0.0025" aluminum foil flame resistant vapor barrier and shall be applied with adhesive at 1' intervals. Materials shall be lapped 3" at all joints and each side of circumferential laps individually taped in place. Insulation on underside of ductwork over 18" wide shall be adhered by means of ductpins spaced on no more than 18" centers both ways. Tape all joints and seams and cover pin penetrations with 3" wide .0025 foil tape adhered with lap seal adhesive.

2.7 AIR DISTRIBUTION PRODUCTS

A. Unless otherwise indicated, provide air distribution products as manufactured by Titus, Krueger or Anemostat.

B. Finishes of all grilles, registers, and diffusers shall be as selected by the A/E at time of submittal. Provide color selection chart of standard colors of manufacturer for this purpose. Dampers and extractors visible thru grilles and diffusers shall be flat black.

C. Duct mounted diffusers Titus Model 300RS, 3/4" blade spacing, double deflection or equals by Price or Krueger

D. Wall mounted return grilles Titus Model 350RL, 3/4" blade spacing, double deflection, individually adjustable blades with front blades parallel to short dimension or equals by Price or Krueger.

2.9 DUCT AND PLENUM ACCESS DOORS AND PANELS:

A. General: Access doors or panels on ductwork and plenums provide access to parts of fire dampers, automatic dampers, and other items requiring maintenance or inspection. Position to be accessible after construction is completed.

B. Low Pressure Ductwork:

(1) Double wall construction of not less than 24-gauge galvanized steel sheet, with 1" thick neoprene coated fiberglass insulation between walls. Doors with continuous hinge on one side and cam latch with striker plate on other side; doors with height over 12" fitted with not less than 2 cam latches with striker plates. Door frame constructed of not less than 22-guage galvanized steel with knock-over edges for securing to duct. Door assembly double gasketed to provide seals from door to frame and from frame to duct.

(2) Access doors shall be 24" X 24" where possible, but a minimum of 12" X 12" if permitted by duct size, and if not, as large as possible.

(3) Manufacturers:

a) Cesco.
b) Dowco.
c) Ruskin.
d) Safe Air.
e) Ventlok.
f) Approved Substitute

2.10 PVC DUCTWORK

A. Materials shall be as specified in SMACNA PVC Duct Construction Standard, PVC Class 12454-B and B per ASTM D-1784, (formerly known as Type I, Grade 1) and PVC Class 1433-D, ASTM D-1784. Composition shall include inhibitor for UV radiation. A material sample coupon shall be submitted to the engineer for review with submittal package.

B. Ductwork shall be fabricated, reinforced, installed, sealed and tested in accordance with requirements and recommendations of SMACNA Thermoplastic Duct (PVC) Construction Manual.

PART 3 – EXECUTION

3.1 SHEET METAL DUCTWORK:

A. All ductwork shall be galvanized sheet metal.

B. Supply air ductwork between air handling unit fan outlet and duct terminal units to be sheet metal. Exhaust air ductwork to be sheet metal.

3.2 GENERAL INSTALLATION OF DUCTWORK:

A. Install in accordance with Referenced Standards.

B. Where inside of duct visible through return air grilles, louvers, etc., coat normally visible inside portion of duct with flat black paint.

C. In installation of ducts, make necessary allowances and provisions for structural conditions of building. Make duct transformations as required. Maintain required cross-sectional areas.

D. Duct systems are not intended to be used during construction to provide temporary heat and ventilation. If contractor chooses to use ducts for temporary heat and ventilation during the construction period the warranty period shall not be affected in anyway. All ductwork shall be thoroughly cleaned inside and out and all filters must be replaced prior to acceptance of the system by the Owner.

E. Interior of duct systems cleaned as each section is erected and secured in place. Sealed with polyethylene sheets, taped in place, when actual duct erection not taking place.

F. Openings in drywall partitions do not require lintels, cut openings square.

G. Clean duct system and force air at high velocity through duct to remove accumulated dust. To obtain sufficient air, clean half the system at a time. Protect equipment which may be harmed by excessive dirt with filters, or bypass such items during cleaning.

H. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

I. Turning vanes installed in all 90 degree square and rectangular elbows and at other locations shown on drawings.

3.3 SHEET METAL DUCTWORK:

A. Hanging Method and Fastenings in accord with Section V of SMACNA Low Pressure Duct Standards and Chapter 6 of SMACNA High Pressure Duct Standards. Secure ducts against displacement and vibration. Anchor to structural parts of building. Use of hanger wire not permitted. Where ducts obstruct suspended ceiling hangers, duct supports, not ducts, arranged to provide means for supporting ceilings.

B. Connections to grills and registers in accord with Figure 2-15 of SMACNA Low Pressure Duct Standards with "plaster frames" being used at wall for Figure 8.

C. Shop Priming: Non-galvanized supports, access doors not part of ducts, bar or angle reinforcing, and items made of uncoated steel painted with primer to prevent corrosion.

D. Duct "Blackout": Inside of ducts where visible behind air inlets and outlets in finished areas finished with coat of dull flat black paint.

F. Flexible Connectors installed to each return air, outside air and supply air duct connection of air handling equipment except roof mounted "power roof ventilator" type fans. Provide minimum of 1-1/2" clearance between metal parts.

G. Joints and seams in low pressure ductwork where leakage is excessive as determined by senses of feeling and hearing, sealed with sealing tape applied to exterior of duct.

3.4 FLEXIBLE CONNECTIONS TO AIR HANDLING UNITS AND FANS:

A. Neoprene impregnated glass fabric used to connect to supply and return outlets on fans, air handling units, and as otherwise indicated. Not required for roof mounted, ventilator type fans. Inline type and utility set fans with ductwork connection provided with flexible connections.

B. Connections in accord with Figure 3-5 of SMACNA Low Pressure Duct Standards.

3.5 DUCT LEAK TESTING:

A. Evaluate duct leakage before ductwork is covered with insulation or concealed by building construction. Ductwork may be isolated into sections for testings.

B. Low Pressure Ductwork:

(1) Objective is to limit total leakage of ductwork to less than 5% of system flow capacity.

(2) Ductwork examined for leakage by senses of feeling and hearing with system fan operating or separate, temporary fan used to simulate design flow and pressure conditions. Exception - duct systems rated below 1/2" static pressure (positive or negative) do not require leak testing when sealed in accordance with SMACNA Seal Class D (Table 1-2 of SMACNA Low Pressure Duct Standards).

(3) Option - Where construction schedule or other factors make it inexpedient to leak test ductwork by simulating design flow and pressure of systems rated between 1/2" and 2" static pressure (positive or negative) before application of insulation or otherwise concealing, Contractor may propose that leakage be later evaluated by comparing system fan delivery volume to sum of system outlets or inlets to determine that leakage of ductwork is acceptable. Cost of test and any corrective measures borne by Contractor with work executed in accordance with criteria established by Section 15991 - Testing, Adjusting and Balancing. Should leakage be determined to exceed 5%, ductwork to be uncovered, joints and seams resealed, and retested until proven leak free within acceptable limits.

END OF SECTION

SECTION 23 5233

MODULATING GAS FIRED BOILER

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 gas fired, non-condensing finned copper water tube boilers for heating hot water.

1.3 SUBMITTALS

A. Product Data: Include rated capacities; shipping, installed, and operating weights; furnished specialties; and accessories for each model indicated.

B. Shop Drawings: Detail equipment assemblies and indicate dimensions, required clearances, and method of field assembly, components, and location and size of each field connection.

1. Wiring Diagrams: Detail wiring for power, signal, and control systems and differentiate between manufacturers installed and field installed wiring.

C. Source Quality Control Tests and Inspection Reports: Indicate and interpret test results for compliance with performance requirements before shipping.

D. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.

E. Maintenance Data: Include in the maintenance manuals specified in Division 1. Include parts list, maintenance guide, and wiring diagrams for each boiler.

1.4 QUALITY ASSURANCE

A. Listing and Labeling: Provide electrically operated components specified in this Section that are listed and labeled.

1. The Terms “Listed” and “Labeled”: As defined in NFPA 70, Article 100.

2. Listing and Labeling Agency Qualifications: A “Nationally Recognized Testing Laboratory” as defined in OSHA Regulation 1910.7.

B. ASME Compliance: Boilers shall bear ASME “H” stamp and be National Board listed.

C. CSD-1 Compliance: Control devices and control sequences according to requirements of CSD-1.

D. FM Compliance: Control devices and control sequences according to requirements of FM.

E. IRI Compliance: Control devices and control sequences according to requirements of IRI.

F. Comply with NFPA 70 for electrical components and installation.

1.5 COORDINATION

A. Coordinate size and location of concrete bases. Concrete, reinforcement, and formwork requirements are specified in Division 3 Section “Cast-in-Place Concrete.”

1.6 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents. Installing contractor shall provide one year of warranty parts and labor.

B. Special Warranty: Submit a written warranty, executed by the contractor for the heat exchanger.

1. Warranty Period: Manufacturer’s standard, but not less than 10 years from date of Substantial Completion on the heat exchanger. Warranty shall be non-prorated and not limited to thermal shock. Additional 21-year thermal shock warranty on heat exchanger.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Manufacturer shall be a company specializing in manufacturing the products specified in this section with minimum five (5) years experience. Subject to compliance with requirements, manufacturers offering boilers that may be incorporated into the Work include, but are not limited to, the following:

B. Design: Boilers shall be CSA design certified as a non-condensing boiler. Boilers shall be designed for a minimum of 4:1 continuous turn down with constant CO_2 over the turndown range. The boiler shall operate with natural gas or propane and have a CSA certified input rating as noted on the drawings, and a thermal efficiency rating of 87% at rated input and 88.3% at minimum input. The boiler shall incorporate a TrueFlow™ fuel-air system, which is symmetrically air-fuel coupled such that changes in combustion air flow or flue flows affect the BTUH input without affecting combustion quality. The boiler will automatically adjust input for altitude and temperature induced changes in air density. The boiler will use a proven pilot interrupted spark ignition system. The boiler shall use a UL approved flame safeguard ignition control system using UV detection flame sensing. The design shall provide for silent burner ignition and operation. Burner shall be premix radial-type and fire in a 360° vertical pattern. Boiler shall be able to vent a horizontal distance of 60 equivalent feet, 18.3 m.

C. Service Access: The boilers shall be provided with stainless steel jacket panels, minimum 16 gauge, with push-button fasteners for easily accessing all serviceable

components. Sheet metal screws may not be used in the securing of jacket panels to the boiler. The boilers shall not be manufactured with large enclosures, which are difficult to remove and reinstall. All accesses must seal completely as not to disrupt the sealed combustion process. All components must be accessible and able to adjust with the removal of a single cover or cabinet component.

D. Indicating Lights: Each boiler shall include a diagnostic control panel with a full text display indicating the condition of all interlocks and the BTUH input percentage. Access to the controls shall be through a swing-access door, leaving diagnostic panel intact and not disrupted.

C. Manufacturers: RBI (a Mestek company) is the basis of design. Listed acceptable manufacturers shall be subject to compliance with requirements. Provide boilers by one of the following:

1. RBI (a Mestek company) – Futera III Series
2. Patterson-Kelley - Modufire Series Only
3. Thermal Solutions - Evolution
4. Lochinvar Corp - Power-Fin Series Only

2.2 COMPONENTS

A. Combustion Chamber: The combustion chamber shall be constructed of minimum 16 gauge stainless steel. Aluminum or galvanized steel is not acceptable. An access door shall be provided for ease of service and inspection of the heat exchanger.

B. Heat Exchanger: The heat exchanger shall be inspected and bear the A.S.M.E. Section IV seal of approval. The heat exchanger shall be a four-pass heat exchanger with a maximum working pressure of 160 psi. The heat exchanger's vertical design shall provide equal amounts of heat transfer throughout the entire heating surface. Each heat exchanger shall have copper tubes, with an integral copper finned tube of 7/8" I.D., .064" minimum wall thickness, 7 fins per inch, with a fin height of 3/8". Each end of the water tubes shall be strength rolled into the header. The heat exchanger shall be gasket less. Each individual tube can be retubed without the disturbance of the surrounding tubes. A pressure relief valve of 50 lb/sq in shall be equipped with the boiler and factory mounted. The headers shall be of cast iron construction.

C. Jackets: 18 gauge brushed stainless steel

D. Gas Burner: Metal fiber mat premix burner shall fire to provide equal distribution of heat throughout the entire heat exchanger. Burner composition shall be Fecralloy™. The burner shall be easily removed for maintenance without the disruption of any other major component of the boiler. Ignition electrodes shall be removed for inspection and proper alignment without removing the burner. A window view port shall be provided for visual inspection of the flame during firing.

E. Ignition Components: The ignition hardware shall consist of dual Alumina ceramic insulated ignition electrodes and UV sensing tube permanently arranged to ensure proper ignition

electrode and UV alignment. Electrodes must be capable of removal while leaving the burner intact. Hot surface ignition systems of any type will not be accepted.

F. Rated Capacity: The boiler shall be capable of operating at rated capacity with pressures as low as 2" W.C. at the inlet to the burner pressure regulator. Boilers that cannot provide full BTUH inputs at 2" W.C. will not be accepted.

G. The burner shall be capable of 88.3% efficiency without exceeding a NOx reading above 10 ppm.

H. The burner and gas train shall be provided with the following trim and features:

1. Burner Firing: TrueFlow™ Full modulation with 3:1 turndown @ Continuous CO_2

2. Burner Ignition: Intermittent spark

3. Safety Controls: Energize ignition, limit time for establishing flame, prevent opening of gas valve until pilot flame is proven, stop gas flow on ignition failure, and allow gas valve to open.

4. Flue Gas Collector: Enclosed combustion chamber with integral combustion air blower and single venting connection.

5. Gas Train: Manual gas valves (2), main gas valve (motorized), 'B' valve, pilot gas pressure regulator, and automatic pilot gas valve. All components to be factory mounted.

6. Safety Devices: Optional high/low gas pressure switches, air flow switch, and blocked flue detection switch. All safeties to be factory mounted.

2.3 BOILER TRIM

B. Controls: The boiler control package shall be a MTI Heat-Net or equivalent, integrated boiler management system. The control system must be integral to each boiler, creating a control network that eliminates the need for a "wall mount" stand-alone boiler system control. Additional stand-alone control panels, independent of a Building Management System (BMS), shall not be allowed to operate the boiler network.

The Heat-Net control shall be capable of operating in the following ways:

1. As a stand-alone boiler control system using the Heat-Net protocol, with one "Master" and multiple "Member" units.
2. As a boiler network, enabled by a Building Management System (BMS), using the Heat-Net protocol, with one "Master" and multiple "Member" units.
3. As "Member" boilers to a Building Management System (BMS) with multiple input control methods.

MASTER:
A boiler becomes a Master when a resistance type 10K sensor is connected to the J10 "SYS/DHW HEADER" terminals. The sensor shall be auto detected. The Master senses

and controls the header/loop temperature utilizing a system set point. It uses any boilers it finds “Heat-Net Members” or those defined in the control setup menus to accomplish this. The “Master” shall also have the option of monitoring Outside Air Temperature “OA” to provide full outdoor air reset functionality. Only one master shall be allowed in the boiler network.

When operating as a “Master”, the Heat-Net control provides a stand-alone method using a PID algorithm to regulate water temperature. The algorithm allows a single boiler “Master” or multiple “Master + Member” boilers in a network of up to 16 total boilers.

The control algorithm is based upon a control band, at the center of which is the set point. While below the control band, boilers are staged on and modulated up until the control band is entered. Once in the control band, modulation is used to maintain set point. Optimized system efficiency is always accomplished by setting the Modulation Maximum “Mod-Max” setting to exploit each boiler in the network’s inverse efficiency curve. The control shall operate so that the maximum number of boilers required, operate at their lowest inputs until all boilers are firing. Once all boilers are firing, the modulation clamp is removed and all boilers are allowed to fire above this clamped percentage up to 100%. This “boiler efficiency” clamp is defaulted to 80% and thus limits all the boilers individual outputs to 80% until the last boiler fires. The 80% default must be field adjustable for varying operating conditions. All boilers modulate up and down together always at the same modulation rate. Boilers are shut down only when the top of the band is breached, or before the top of the band, if the control anticipates that there is a light load. Timers shall also be included in each control in the network to prevent any boiler from short cycling.

MEMBER:
Additional boilers in the network always default to the role of member. The lack of sensors connected to the J10 terminals “SYS/DHW Header” on each additional boiler shall ensure this.

Each “Member” shall sense its supply outlet water temperature and modulate based on signals from a Building Management System (BMS) or “Master” boiler. When operating as a member, starting, stopping, and firing rate shall also be controlled by the “BMS” or “Master” boiler.

When using the Heat-Net protocol, the system set point shall be sent from the “Master”, along with the modulation value to control firing rate. It also receives its command to start or stop over the Heat-Net cable. Each “Member” will continuously monitor its supply outlet temperature against its operating limit. If the supply temperature approaches the operating limit temperature (adjustable), the boilers input control rate is limited and its modulation value decreases to minimize short cycling. If the operating limit is exceeded, the boiler shall shut off.

Each Heat-Net control in the boiler network shall have the following standard features:
1. Digital Communications Control.
    A. Boiler to Boiler: Heat-Net
    B. Building Management System (BMS): MODBUS standard protocol.

2. Analog 4:20 and 0-10vdc also supported.
3. Distributed control using Heat-Net protocol for up to 16 total boilers.

4. System/Boiler operating status in English text display.
5. Interlock, Event, and System logging with a time stamp.
6. Advanced PID algorithm optimized for specific boilers (KN-Series).
7. Four dedicated temperature sensor inputs for: Outside Air Temperature, Supply (Outlet) Temperature, Return Temperature (Inlet), and Header Temperature.
8. Automatically detects the optional temperature sensors on start up.
9. Menu driven calibration and setup menus with a bright 4-line Vacuum Fluorescent Display.
10. (8) Dedicated 24vac interlock monitors and 8 dedicated 120vac system monitors used for diagnostics and providing feedback of faults and system status.
11. Multiple boiler pump or motorized boiler valve control modes.
12. Combustion Air Damper control with proof time.
13. Optional USB/RS485 network plug-in to allow firmware updates or custom configurations.
14. Optional BACNET and LONWORKS interface.
15. Alarm contacts.
16. Runtime hours.
17. Outdoor Air Reset with programmable ratio.
18. Time of Day clock to provide up to four (4) night setback temperatures.
19. Failsafe mode when a Building Management System (BMS) is controlling set point. If communications is lost, the boiler/system shall run off the Local Set point.

B. Safety Relief Valve: ASME rated, factory set to protect boiler and piping as per schedule/drawings.

C. Gauge: Combination water pressure and temperature shipped factory installed. LCD inlet/outlet temperature gauges to be an integral part of the front boiler control panel to allow for consistent easy monitoring of temperatures factory mounted and wired.

D. Flow Switch: Prevent burner operation when water falls below a safe level or when water flow is low. Flow switch shall be factory mounted and wired. Provision for installation of a low water cut off shall be provided.

E. Operating Controls: Boiler shall be provided with a Honeywell RM7800 series digital flame safe guard. The flame safeguard shall be capable of prepurge cycles.

F. Operating Temperature Control: Shall be a manual probe type controller adjustable from 120°F to 240°F, 49°C to 116°C. Control shall be factory mounted and sense the inlet and outlet temperature of the boiler through a resistance sensor.

G. High Limit: Temperature control with manual reset limits boiler water temperature in series with the operating control. High limit shall be factory mounted and sense the outlet temperature of the boiler through a dry well.

H. PROVIDE THE FOLLOWING STANDARD TRIM:

1. Cast iron headers
2. Low air pressure switch

3. Blocked flue detection switch
4. Flow switch (factory mounted and wired)
5. Modulation control
6. Temperature/pressure gauge
7. Manual reset high limit
8. Air inlet filter
9. Inlet/outlet temperature display
10. Full digital text display for all boiler series of operation and failures
11. Variable frequency drive and combustion air fan
12. FM and CSD-1 gas train

I. PROVIDE THE FOLLOWING JOB SPECIFIC TRIM AND FEATURES

1. Air inlet hood for exterior termination of air intake pipe
2. Vent termination hood for exterior termination of vent pipe
3. FM or IRI controls and gas train
4. CSD-1 controls
5. Diagnostic keyboard display for RM7800 series control
6. Bronze fitted circulator provided by the manufacturer (shipped loose)
7. Probe type low water cut off, manual reset (shipped loose)
8. Bronze headers
9. Outdoor installation

2.4 MOTORS

A. Refer to Division 23 Section “Motors” for factory installed motors.

B. Boiler Blower Motor: Open drip-proof motors where satisfactorily housed or remotely located during operation. There shall be no requirement to remove gas train components to remove the blower motor. Blower motor shall not exceed 1 HP and not require more than 13 amps.

2.5 SOURCE QUALITY CONTROL

A. Test and inspect boilers according to the ASME Boiler and Pressure Vessel Code, Section IV. Boilers shall be test fired in the factory with a report attached permanently to the exterior cabinet of the boiler for field reference.

2.6 SPECIAL GAS VENTS

A. Prefabricated system listed to UL-1738, Standard for Venting Systems for Gas-Burning Appliances, Categories II, III, and IV made with AL29-4C stainless steel inner liner, 1” insulating air space, and 400 series stainless steel outer jacket. Vent shall be designed for maximum 550°F and positive pressure of 15” W.C.

B. Complete with: factory appliance flue connector, boot tees, drain caps or inline drains, stack supports, roof flashings, and termination. All items specifically required by Appliance and Gas Vent manufacturer’s installation instructions.

C. Manufacturers: Heat-Fab CI PLUS, Metal-Fab CORR/GUARD, Security Chimneys by Lennox SSD, or Schebler Chimney Systems EVENT.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine area to receive boiler for compliance with requirements for installation tolerances and other conditions affecting boiler performance. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install boilers level and plumb, according to manufacturer's written instructions and referenced standards.

B. Install gas fired boilers according to NFPA 54.

C. Support boilers on 4 in (100 mm) thick concrete base, 4 in (100 mm) larger on each side than base of unit.

D. Install electrical devices furnished with boiler, but not specified to be factory mounted.

E. Install a 3/4" drain valve on the outlet piping prior to the first shut off valve.

3.3 CONNECTIONS

A. Connect gas piping full size to boiler gas train inlet with union.

B. Connect hot water piping to supply and return boiler tappings with shutoff valve and union or flange at each connection.

C. Install piping from safety relief valves to nearest floor drain.

D. Connect breeching to boiler outlet, full size of outlet. The boiler shall operate under positive (Category IV) or negative (Category II) stack pressure. Vent material must be listed AL29-4C Stainless Double Wall Stack for condensing appliances.

E. Electrical: Comply with applicable requirements in Division 26 Sections.

F. Ground equipment.

1. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory authorized service representative to supervise the field assembly of components and installation of boilers, including piping and electrical connections. Report results in writing.

1. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

B. Manufacturer's representative shall supply a factory authorized service technician to start up the boilers.

3.5 CLEANING

A. Flush and clean boilers on completion of installation, according to manufacturer's written instructions.

B. After completing boiler installation, including outlet fittings and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finishes including chips, scratches, and abrasions with manufacturer's stainless steel cleaner.

3.6 COMMISSIONING

A. Engage a factory authorized service representative to provide startup service. Start up to be performed only after complete boiler room operation is field verified to offer a substantial load, and complete system circulation. One year warranty shall be handled by factory authorized tech.

B. Verify that installation is as indicated and specified.

1. Verify that electrical wiring installation complies with manufacturer's submittal and installation requirements in Division 26 Sections. Do not proceed with boiler startup until wiring installation is acceptable to equipment Installer.

C. Complete manufacturer's installation and startup checklist and verify the following:

1. Boiler is level on concrete base.
2. Flue and chimney are installed without visible damage.
3. No damage is visible to boiler jacket, refractory, or combustion chamber.
4. Pressure reducing valves are checked for correct operation and specified relief pressure. Adjust as required.
5. Clearances have been provided and piping is flanged for easy removal and servicing.
6. Heating circuit pipes have been connected to correct ports.
7. Labels are clearly visible.
8. Boiler, burner, and flue are clean and free of construction debris.
9. Pressure and temperature gauges are installed.
10. Control installations are completed.

D. Ensure pumps operate properly.

E. Check operation of pressure reducing valve on gas train, including venting.

F. Check that fluid level, flow switch, and high temperature interlocks are in place.

G. Start pumps and boilers, and adjust burners to maximum operating efficiency.

1. Fill out startup checklist and attach copy with Contractor Startup Report.

2. Check and record performance of factory provided boiler protection devices and firing sequences.

3. Check and record performance of boiler fluid level, flow switch, and high temperature interlocks.

4. Run-in boilers as recommended or required by manufacturer.

H. Perform the following tests for each firing rate for high/low burners and for 100, 66, and 3 percent load for modulating burners. Adjust boiler combustion efficiency at each firing rate. Measure and record the following:

1. Inlet gas pressure.

2. Gas pressure on manifold.

3. Flue gas temperature at boiler discharge.

4. Flue gas carbon dioxide and oxygen concentration.

5. Natural flue draft.

I. Measure and record temperature rise through each boiler.

3.7 DEMONSTRATION

A. Engage a factory authorized service representative to train Owner's maintenance personnel as specified below:

1. Operate boiler, including accessories and controls, to demonstrate compliance with requirements.

2. Train Owner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance.

3. Review data in the maintenance manuals. Refer to Division 1 Section "Contract Closeout."

4. Review data in the maintenance manuals. Refer to Division 1 Section "Operation and Maintenance Data."

5. Schedule training with Owner with at least 7 days advance notice.

END OF SECTION

SECTION 23 6995

SYSTEMS START-UP

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 WORK INCLUDED:

A. Provide all labor, materials, necessary equipment and services to start-up of operating systems installed under Division 23.

B. Including but not necessarily limited to the following major equipment and the systems in which they are installed:

(1) Pool Dehumidification System
(2) Hot Water Boiler System

1.3 PROJECT CONDITIONS:

A. Existing Conditions - Verify that:

(1) Building enclosure is completed.
(2) Excess building materials and debris have been removed.
(3) Building and area has been thoroughly cleaned.

PART 2 - PRODUCTS: Not Applicable.

PART 3 - EXECUTION

3.1 INSPECTION:

A. Inspect preceding work to insure that:

(1) Electrical - Verify with Division 26 work that:

a. Temporary services are disconnected and permanent utility services are capable of full load.
b. Connections in main switchgear and subpanels are tight.
c. Necessary tests and check meter readings have been made.
d. Wiring to motors and controls required for operational smoke and fire protection code demonstrations are complete.

(2) Mechanical:

a. Specified tests on piping, ductwork and related systems have been made.
b. Operational and performance tests have been made.
c. Each piece of equipment comprising a part of system has been checked for proper lubrication, drive rotation, belt tension, proper control sequence, and any other condition which may cause damage to equipment or endanger personnel.

3.2 START-UP AND TESTING:

A. Notify Owner at least two (2) days in advance of start-up of mechanical systems.

B. Conduct start-up and start-up testing in presence of Architect if Architect so desires. See applicable sections of Division 15 for specific requirements.

C. Complete tests required by code authorities including, but not limited to, smoke detection, fire protection and health codes.

D. Insure that control systems are fully operational in automatic mode.

E. Proceed only after test runs have been completed and systems have been demonstrated to be satisfactory and ready for permanent normal operation. Clean permanent pipeline strainers and filters, replace air filters, properly adjust valve and pump packings, adjust belt tensions, secure drive guards in place, and check lubrication and replenish if required.

F. If systems are not to continue in use following start-up procedures, take steps to insure against accidental operation or operation by unauthorized personnel.

END OF SECTION

SECTION 23 7533

POOL DEHUMIDIFICATION SYSTEMS

PART 1- GENERAL

1.01 DESCRIPTION

A. **Two (2) Seresco Model NE-070 enclosed swimming pool environmental control/energy recovery units with air cooled condensing units shall be furnished by the Owner and installed by the Contractor.** The Contractor shall receive, unload and completely install the Seresco units including all ductwork, piping, electrical, etc. as required for a complete system. The Owner is furnishing only the (2) Sersco units and air cooled condensing units. All other equipment, materials, items and accessories required such as ductwork, piping, anchors, valves, additional controls, etc. shall be provided by the Contractor.

B. Seresco System shall include mechanical heat recovery, all fans, exhaust and recirculated air dampers, pool water condenser, heat section, moisture disposal, complete solid state logic control system, factory-installed and wired in a single unit enclosure.

C. It is the intent of this section of the specifications to provide a complete, operable, adjusted natatorium dehumidification system as shown and scheduled on the plans utilizing the county furnished two (2) Seresco Model NE-070 units.

D. The system shall have a full warranty for one full year from start-up.

PART 2 - PRODUCTS

2.01 PRINCIPLE OF OPERATION

A. The unit shall control space temperature and relative humidity, pool water temperature and shall provide ventilation. Warm moist air from the natatorium is drawn over the evaporator coil by the return fan and latent and sensible heat is removed from the air. The heat captured by this process and the heat generated from the compressor power consumption are absorbed by a mechanical refrigeration system. The resulting dryer, cooler air is drawn is blown into a mixing box. The air from the mixing box is drawn over a reheat condenser coil and auxiliary heating coil by a supply fan.

B. The unit shall include an automatic heating and cooling economizer control function in which the system logic determines what portion, if any, of the leaving evaporator air to exhaust from the mixing box and replace with an equal amount of outside air. The selected exhaust air quantity is that which will result in the least electrical consumption by the unit, based upon a comparison of outside air temperature and humidity, return air temperature and humidity and Aleaving evaporator@ air temperature and humidity.

C. The refrigeration system may be activated if any of the following occur:
   1. Outside air conditions unsuitable for economizing.
   2. Space temperature drops below the set point.
   3. Space relative humidity rises above the set point.
   4. Space temperature rises above the set point.
   5. The unit shall monitor space and outside air temperature, space relative humidity, pool water temperature and building surface temperature.

D. The thermal energy absorbed by the refrigeration system is distributed as follows:
   1. First priority is given to maintaining the natatorium space temperature. No supplementary space heating system external to the unit is required.
   2. Second priority is given to maintaining the pool water temperature.
   3. All heat is then transferred to a Remote Air-Cooled Condenser.

2.02 SEQUENCE OF OPERATION

A. All operating and logic controls shall be factory-mounted and wired in the unit. Control sequences shall be designed specifically to control swimming pool environmental conditions.
B. Control system shall provide modulation of heat recovery/heating system by proportional control of dry bulb temperature, relative humidity, cold-wall surface condensation prevention humidity reset and ventilation air volume.
C. Controls shall automatically operate heating, dehumidification and heat recovery system in response to greatest requirement and adjust unit outputs to maintain building conditions. Unit and controls shall be capable of providing full heating capacity to either air or water. Controls shall be capable of proportional control of heating and dehumidification by loading stages of compressor capacity as necessary. As building requirements are satisfied, unit shall unload and shut off compressors.
D. Unit shall provide the following functions:
E. Ventilation Mode: Provide outdoor ventilation air to satisfy minimum ventilation air requirements per ASHRAE 62-04 Ventilation Code.
F. Heating, Cooling and Dehumidification Economizer Mode: Provide outdoor air as a function of indoor and outdoor conditions. The economizer shall operate in the space heating, space cooling, space heating/dehumidification or space cooling/dehumidification modes.
G. Exhaust Mode: Each unit shall have an exhaust mode to partially ventilate the natatorium at a specified airflow. The exhaust mode shall be programmed by the owner as needed. Unit controls shall control the supply and exhaust air fan systems and open the outdoor air and exhaust air dampers for a programmed time interval for automatic operation. The use of an exhaust fan in lieu of a full sized return fan system is not acceptable.
H. Purge Cycle: Each unit shall have a purge cycle to fully ventilate the natatorium at 100% airflow specified for the supply fan. The exhaust/purge cycle shall be programmable by the owner as needed to ventilate the natatorium after shocking of the pool has been performed. Unit controls shall control the purge air fan

systems and open the outdoor air and exhaust air dampers for a programmed time interval for automatic operation. During purge mode, the compressors are deactivated.

I. Event Mode Schedule: The Event Mode changes the ventilation air quantity to meet the demands of an event or situation where additional outside air is needed. The unit controller can store up to 28 schedule events, which shall be user adjustable at the Remote User Interface (RUI). During Event Mode, the minimum damper position is raised to a value higher than the minimum damper set point. For each event, the screen shall show the day of the week, the hour in 24-hour format, the minute and the event type.

J. Occupied/Unoccupied Control Mode: Microprocessor-based, 7-day, 24-hour operation controls manage the occupied/unoccupied mode operation during heating season. During unoccupied times the outside air dampers shall be closed to minimize the air-heating load.

K. Space Heating: Full proportional control of space dry bulb temperature shall be maintained by staging compressor loading of unit capacity, with humidity override. Automatic mechanical heat recovery from pool room return air as required by building and water temperatures. Return/exhaust air must pass through the mechanical heat recovery system and shall be exhausted at the lowest heat content. Automatic switching and proportioning outputs for control of auxiliary air heating shall be performed.

L. Smart Economizer: The Smart Economizer is the simultaneous operation of the Heat Recovery heating and Economizer modes. When the natatorium requires dehumidification or heating and the outside air dry bulb and dew point are warmer/drier than the air off the evaporator coil, then 100% warm, dry air is drawn into the Seresco with the supply fan. The warm, dry outside air is heated further as it assess over the condenser coil and is supplied to the natatorium.

M. Pool Water Heating: If the space temperature is at or above set point and the pool water temperature is below the set point; hot gas is directed to the pool water condenser when the compressor is running. At times when the pool water requires heat, the Seresco activates the main pool water heater. See schedule for amount of heat rejection provided by the pool water condenser.

N. Smart Pump Control for Pool Water Heating: The pump circulating water to the pool water condenser shall be deactivated by a signal from the dehumidifier control panel when the pool water condenser is not being used to heat pool water. This option requires the pool water temperature sensor to be shipped loose and field installed (by others) in a location where it can sense pool water temperature under all conditions.

2.03 HUMIDITY CONTROL:

A. The economizer is activated if dehumidification is required and all of the following occur:
   1. Air and water temperatures are satisfied.
   2. Absolute humidity of the outside air is lower than the absolute humidity of the poolroom air.

3. Outside air temperature will not adversely affect the pool room air temperature.

B. When outside air cannot be used for dehumidification, full proportional control of humidity is done by staging unit capacity. The humidity controller energizes the compressor and directs hot gas to the air reheat condenser if the space requires heating or the pool water condenser if pool water temperature is below set point.

C. If dehumidification is required and the air/water temperatures are satisfied, then the hot gas is directed to the air-cooled or water-cooled condenser.

D. DX Cooling with Remote Air-Cooled Condenser: On a call for space cooling, the refrigeration system is energized. The return air passing through the unit=s evaporator coil is cooled. The cooled air is delivered to the natatorium by the supply fan. The heat recovered by the evaporator and compressor is directed to the remote air cooled condenser.

E. Condensation Prevention - Cold-Wall Temperature Sensor Humidity Reset Control: When the temperature of the interior surface at the wall sensor drops to within 5_F of the dew point temperature of the space air, the relative humidity set point is offset downward. This condition causes the dehumidifier system to activate humidity control to lower the space dew point and hinder the formation of condensation on the cold wall or glass surfaces.

2.04 BACnet/IP

A. The dehumidifier control panel shall be capable of direct connection to a BACnet/IP-based Building Automation System. With proper connection to the Ethernet network, the dehumidifier shall appear as a native BACnet device.

2.05 SAFETY (DISCONNECT) SWITCH

A. UL-approved, NEMA-3R, fusible, safety (disconnect) switch of appropriate voltage and current shall be supplied for the specified unit based on MOP of same. Safety (disconnect) switch to be field-mounted and wired by Contractor.

PART 3 B EXECUTION

3.01 INSTALLATION

A. Comply with manufacturer's printed instructions except where more stringent requirements are shown or specified and where manufacturer's technical representative directs otherwise.

B. Install unit where shown on drawings. Provide 3-feet clearance around sides and 4-feet around compressor compartment of unit for airflow and service. Provide a means for access to all sides of the unit.

3.02 START-UP, OWNER TRAINING & WARRANTY

A. All units shall be thoroughly cleaned by the installing contractor in accordance with the manufacturer's instructions, prior to being placed into service.
B. Start-up service shall be provided by the equipment manufacturer's authorized representative and shall include complete testing of all controls and unit operation. The agency responsible for start-up shall record the refrigeration system pressures and electrical operating data. Copies of this data are to be supplied to the owner. North America B Standard
C. A complete operating and maintenance manual, including wiring diagrams, start-up and operating sequence and material list shall be provided to the owner. The owner shall be provided with complete instruction of operating and maintenance procedures.
D. Manufacturer shall provide owner with on site training by factory-trained service personnel. Training shall cover the operation and maintenance requirements of this unit. This training session shall be held at time of factory start up.
E. Manufacturer shall provide to the owner a web-based, instructional video program for use by field personnel.
F. Manufacturer shall provide a one-year parts warranty on the entire unit.
G. Manufacturer shall provide a one-year labor warranty on the entire unit.

3.04 DRIVE LINE WARRANTY:

A. A two-year extended parts warranty shall be provided on the following:
    1. Dampers
    2. Damper Motors

B. A four-year extended parts warranty shall be provided on the following:
    1. Compressor
    2. Compressor Motor Contactor (or Protector)
    3. Supply Fan Motor
    4. Supply Fan Motor Starter (or Protector)
    5. Return Fan Motor
    6. Return Fan Motor Starter (or Protector)
    7. Pool Water Condenser Solenoid Valves & Coils
    8. Liquid Expansion Solenoid Valves & Coils
    9. Air-Cooled Condenser Solenoid Valves & Coils
    10. Blowers, Wheels & Housings

END OF SECTION

SECTION 26 05 00 - ELECTRICAL GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 SCOPE OF WORK:

A. Contractor shall install all electrical work covered by the below specifications and approved drawings. Provide all material, labor transportation, tools, supervision, etc., necessary to complete the total electrical job. All items not specifically mentioned herein which are obviously necessary to make a complete working installation shall be provided by the contractor, including any necessary field engineering and/or detail drawings required. Drawings shall be submitted for approval as provided for in Paragraph 1.4 Shop Drawings.

B. The work shall consist of, but shall not be limited to, the installation of the following systems:

1. Interior and exterior electrical systems for modifications to the existing power distribution for the new HVAC equipment as indicated on the Drawings.

2. Power connections to equipment specified in specifications and on the Approved Drawings.

3. Temporary Power as required for the project.

4. Fire seal all floor, wall or ceiling penetrations in any rated assembly back to its original rating as required.

5. Demolition of existing mechanical equipment as indicated in the Mechanical Documents. Remove the circuitry; disconnect switches, motor starters, VFD's, etc. as required and dispose of as required by Local, State and Federal Laws.

6. Clean, re-lamp and repair all existing lighting fixtures in the Natatorium 129.

1.2 CODES AND FEES:

A. All work shall be done in accordance with the requirements of the National Electrical Code, NFPA #70, 2011 Edition and all local and state codes.

B. The contractor shall obtain and pay for all permits and inspections required by the building and safety codes and ordinances and the rules and regulations of any legal body having jurisdiction.

C. All electrical items covered by this specification shall be U.L. labeled and listed for the purpose.

1.3 DRAWINGS:

A. The drawings indicate the general arrangement of electrical equipment. The contractor shall review architectural drawings for door swings, cabinets, counters and other built-in equipment; conditions indicated on architectural plans shall govern for this work. Coordinate installation of electrical equipment with the structural and mechanical equipment and access thereto. Coordinate installation of recessed electrical equipment with concealed ductwork and piping, and wall thickness.

B. Do not scale drawings. Dimensions for layout of equipment shall be obtained from architectural and/or mechanical unless specifically indicated on electrical drawings.

C. Discrepancies shown on different drawings, between drawings and specifications or between documents and field conditions shall be promptly brought to the attention of the architect.

1.4 SHOP DRAWINGS:

A. The contractor shall submit for review by the architect, eight sets of complete schedules and data of materials and equipment to be incorporated in the work. Submittals shall be supported by descriptive materials, such as catalog sheets, product data sheets, diagrams, performance curves, and charts published by the manufacturer, to show conformance to specification and drawing requirements, model numbers alone will not be acceptable. Data submitted for review shall contain all information required to indicate compliance with equipment specified. Complete electrical characteristics shall be provided for all equipment. The architect reserves the right to require sample of any equipment to be submitted for approval.

B. Each individual submittal item for materials and equipment shall be marked to show specification section and paragraph number which pertains to the item.

C. Prior to submitting shop drawings, the contractor shall review the submittal for compliance with the contract documents and place a stamp or other confirmation thereon which states that the submittal complies with contract requirements. Submittals without such verification will be returned without review.

D. Eight complete sets of Submittals shall be made for each of the following items:

Disconnect Switches — Fuses
Wiring Devices — Compatible Circuit Breakers
Fusible Disconnecting Motor Starters - MCC
Fire Sealing Materials, Instructions and UL Certifications
Fire Alarm System Components and Partial One-Line Diagrams

1.5 RECORD DRAWINGS:

A. At the time of final inspection, provide three (3) sets of complete data on electrical equipment used in the project and Reproducible As-Built drawings reflecting all field changes. This data shall be in bound form and shall include the following items:

1. Test results required by these specifications.

2. Panel board shop drawings and copies of the final circuit directories reflecting all field changes.

3. Data sheets indicating electrical characteristics of all devices and equipment.

4. The As-Built Drawings shall have the Contractor's name, address, telephone number, fax number, date and indicate that the drawings are "As-Built".

1.6 SITE INVESTIGATION:

A. Prior to submitting bids of the project, the contractor shall visit the site of the work to become aware of existing conditions which may affect the cost of the project.

1.7 EQUIPMENT CONNECTIONS:

A. All equipment requiring electrical connections shall be connected under this section of these specifications. Where electrical connections to equipment require specific locations, such location shall be obtained from shop drawings. Do not scale drawings for location of conduit stub-ups or boxes mounted in wall or floor to serve specific equipment, unless dimensioned on the electrical drawings.

B. Equipment furnished under other divisions of these specifications to be connected under this section of the specifications shall consist of, but not be limited to, the following:

1. Electrical equipment for heating, ventilating and air conditioning systems.

2. Owner furnished equipment.

C. The contractor's attention is directed to other sections of these specifications, where equipment requiring electrical service is specified, to become fully aware of the scope of the work under this section of these specifications requiring electrical service and connections to equipment specified elsewhere.

1.8 MECHANICAL SYSTEMS:

A. Review plumbing and HVAC drawings and Division 25 of these specifications for mechanical equipment requiring electrical service. Provide service to and make connections to all such mechanical equipment requiring electrical service.

1.9 COOPERATION:

A. The contractor shall coordinate his electrical activities with other trades so as to avoid delays, interference's, and any unnecessary work.

1.10 GUARANTEE:

A. For guarantee of work under Division 16, refer to the general and special conditions.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Materials or equipment specified by manufacturer's name shall be used, unless approval of other manufacturers is listed in addendum to these specifications. Request for approval of substitute materials shall be submitted in writing to the architect at least ten working days prior to bid openings. Faxed request will not be accepted or reviewed.

B. Where substitution of materials alters space requirement indicated on the drawings, submit shop drawings indicating proposed layout of space, all equipment to be installed therein, and clearances between equipment.

C. All material shall be new and shall conform to the applicable standard or standards where such have been established for the particular material in question. Publications and standards of the organization listed below are applicable to materials specified herein.

1. American Society for Testing and Materials (ASTM).
2. Underwriters' Lab (UL).
3. National Electrical Manufacturer Association (NEMA).
4. Insulated Cable Engineers Association (ICEA).
5. Institute of Electrical and Electronic Engineers (IEEE).
6. Edison Electric Institute (EEI).
7. National Fire Protection Association (NFPA).
8. American Wood Preservers Association (AWPA).
9. American National Standards Institute (ANSI).

D. Material of the same type shall be the product of one manufacturer.

E. All cost incurred by the acceptance of substitutions shall be borne by the contractor. Proof for all substitution shall be by the contractor.

PART 3 - EXECUTION

3.1 WORKMANSHIP:

A. All work shall be neatly, orderly, and securely installed with conduits, panels, boxes, switches, etc., perpendicular and/or parallel with the principle structural members. Exposed raceways shall be offset where they enter surface mounted equipment. Wiring installed in panels and other enclosures shall be looped and laced and not wadded or bundled.

3.2 TESTS:

A. At final inspection, a test will be made and the entire system shall be shown to be in proper working order as per these specifications and the approved drawings.

B. Contractor shall provide all instruments, labor and materials for any essential intermediate and final testing.

C. Equipment covers (i.e., panelboard trims, motor controls, device plates, and junction box covers) shall be removed, as directed, for inspection of internal wiring. All circuits throughout project shall be energized and shall be tested for operation and equipment connections in compliance with contract requirements. Accessible ceiling shall be removed, as directed, for inspection of equipment installed above ceilings.

D. Perform the following test after the installation but prior to energizing equipment:

1. Megger test all feeders and branch circuits 50 Amps or greater and all high voltage circuits. Allowances for leakages shall be within the manufacturers recommend tolerances. Testing methods shall be per the cable manufacturer’s recommendations. Certified test results and the manufacturers data/recommendations shall be provided to the Architect as indicated below.

2. The Contractor shall perform any other test which may be required by any legal authority having jurisdiction to verify this installation meets that requirement or requirements.

3.3 IDENTIFICATION:

A. Contractor shall identify each device such as circuit breakers, panelboards, controllers, etc. with Black on White Phenolic Tags for Normal Loads and Red on White Phenolic Tags for Emergency Loads using machine cut letters, 1/4" minimum height, unless otherwise noted. Permanently attach to each device as required, do not use screws for any NEMA 3R or NEMA 4X device. For all panelboards, switchboards, transformers, fusible disconnecting motor starters and fusible disconnect switches include name, voltage, phase, number of wires, ampacity rating, short circuit rating and name/location of feed to the device.

3.4 CLEANING AND PAINTING:

A. Oil, dirt, grease, and other foreign materials shall be removed from all raceways, fittings, boxes, panelboard trims, and cabinets to provide a clean surface for painting. Scratched or marred surfaces of lighting fixtures, panelboard and cabinet trims, switchboard, or other equipment enclosures shall be touched up with paint furnished by the equipment manufacturers specifically for that purpose. Painting in general is specified under other sections of the specifications.

B. Trim covers for flush-mounted panelboards, telephone cabinets, pull boxes, junction boxes and control cabinets shall not be painted unless specifically required by the architect. Where such painting is required, trim covers shall be removed for painting. Under no conditions shall locks, latches or exposed trim clamps be painted.

C. Unless specifically indicated to the contrary, all painting shall be done under Painting of these specifications.

3.5 EXCAVATION, TRENCHING AND BACKFILLING:

A. The contractor shall perform all excavation to install the electrical work herein specified. During excavation, material for backfilling shall be piled back from the banks of the trench to avoid overloading and to prevent slides and cave-ins. All excavated materials not to be used for backfill shall be removed and disposed of by the contractor. Grading shall be done to prevent surface water from flowing into trenches and other excavation and any water accumulating therein shall be removed by pumping. All excavation shall be made by open cut. No tunneling shall be done. Any area disturbed during excavation shall be repaired back to its original condition, i.e.: paving, grassing, sod, gravel, etc. at no additional cost to the Owner.

B. The bottom of the trenches shall be graded to provide uniform bearing and support for conduits, cables, or duct bank on undisturbed soil at every point along its entire length. Over depths shall be backfilled with loose, granular, moist earth, tamped. Remove unstable soil that is not capable of supporting equipment or installation and replace with specified material for a minimum of 12" below invert of equipment or installation.

C. The trenches shall be backfilled with the excavated materials approved for backfilling, consisting of earth, loam, sandy clay, sand and gravel or soft shale, free from large clods of earth and stones, deposited in 6" layers and rammed until the installation

has a cover of not less than the adjacent ground but not greater than 2" above existing ground. The backfilling shall be carried on simultaneously on both sides of the trench so that injurious pressures do not occur. The compaction of the filled trench shall be at least equal to 95% of the maximum density as determined by the Standard Proctor Test. Settling the backfill with water will not be permitted. Reopen any trenches not meeting compaction requirements or where settlement occurs, refill, compact, and restore the surface to the grade and compaction indicated, mounded over and smoothed off.

D. Contractor shall repair all surfaces disturbed by the installation of all underground conduit systems back to their original condition with the same type of material and construction and/or up-grade as approved by the Engineer and Owner.

E. All conduits shall be buried a minimum of 36” below finished grade. Provide and install magnetic warning tape 12” below finished grade over the entire length of all buried conduits. Install warning tape such that there is three (3) feet coiled up at each end of the buried conduit. Warning tape shall be T & B / Westline or equal:

1. Electric Conduits - #NA-1268 (Yellow)

F. The Contractor shall provide **ALL REQUIRED** erosion control for this project as required by the County / City/ State Officials.

3.6 DOCUMENT COORDINATION:

A. The Contractor shall be responsible for the full coordination of all aspects of Electrical products and systems.

B. No mechanical equipment, piping, or ductwork shall be located within 42" of electrical switchboards and/or panelboards.

C. No water piping (domestic, storm, sanitary, sprinkler, etc.) shall be located above electrical switchboards and/or panelboards. Provide shields over the panels in sprinklered areas.

D. All above-ceiling items shall be located such to minimize necessary ceiling system component removal to attain access for maintenance and/or replacement.

END OF SECTION 26 05 00

SECTION 260526 - GROUNDING

PART 1 - GENERAL

1.1 GROUNDING:

A. Shall comply with Article 250 of the National Electrical Code and all state and local codes and the requirements of the utility company serving the site.

B. Grounding shall be provided as per these specifications and the Contract Drawings.

C. The building electrical system shall be a grounded wye supplemented with equipment grounding systems. All non-current carrying parts of the electrical system i.e., raceways, equipment enclosures and frames, junction and outlet boxes, machine frames and other conductive items in close proximity with electrical circuits, shall be grounded to provide a low impedance path for potential ground faults.

D. The neutral conductor of the 480Y/277 Volt, Three Phase, 4 Wire or 208Y/120 Volt, Three Phase, 4 Wire systems shall be grounded to the ground system as indicated on the drawings. Grounding electrode conductor shall be copper sized in accordance with Table 250.66 of the National Electrical Code and as indicated on the drawings. The grounding electrode conductor shall be installed in PVC Conduit to the ground point connection.

PART 2 - PRODUCTS

2.1 PRODUCTS:

A. Ground rods shall be 3/4" copperweld sectional rods 10'-0" in length. Top of the ground rod shall be twelve (12) inches below finished grade. Connection to the ground rod shall be made by chemical weld process. Resistance to ground shall not exceed twenty-five (25) ohms.

PART 3 - EXECUTION

3.1 GROUNDING:

A. All motors shall be grounded by drilling and tapping the bottom of the motor junction box and attaching the conductor to the box with a round head bolt used for no other purpose. Conductor attachment shall be through the use of a lug attached to conductor with crimping tool.

B. A grounding conductor shall be installed in all power conduit installations. All circuit grounding conductors shall be sized as per Table 250.122 of the National Electrical Code.

C. Each panelboard shall be provided with a copper or aluminum equipment grounding bar brazed or riveted to the associated enclosures or cabinet and an insulated neutral bar. The related feeder and branch circuit grounding conductors shall be brazed to the grounding bar or connected with pressure connector.

D. All pool bonding shall be provided as per the documents and Paragraph 680.26 Equipotential Bonding of the National Electrical Code.

END OF SECTION 26 05 26

SECTION 26 05 30 - BASIC MATERIALS AND METHODS

PART 1 - GENERAL

1.1 GENERAL:

A. Provide complete conduit system including boxes, fittings and supports. All empty conduits shall be left with fiber polyline pull cord. Conduits shall be concealed except in unfinished spaces such as areas without ceilings or on existing precast concrete walls. Refer to the Architectural Drawings for wall designations.

1.2 RACEWAYS:

A. Contractor shall install all conduits as per the below requirements.

1. Intermediate Metal Conduit (IMC) shall be ferrous galvanized conduit and shall comply with Article 342 of the National Electrical Code. IMC conduit shall be used in areas with exposed conduits, in the pool area, pool equipment areas and in any run 10 feet and below above the finished floor.

2. Rigid steel conduit shall be ferrous galvanized conduit and shall comply with Article 344 of the National Electrical Code. Rigid steel conduits shall be used in areas with exposed conduits, in the pool area, pool equipment areas and in any run 10 feet and below above the finished floor.

3. Electrical Metallic Tubing (EMT) shall be ferrous galvanized conduit and shall comply with Article 358 of the National Electrical Code. EMT conduit shall be used only in areas with concealed conduits or above 10 feet from finished floor in the mechanical/electrical equipment rooms. No exposed EMT will be allowed in any public areas.

4. Liquid tight flexible metal conduit shall comply with Article 350 of the National Electrical Code.

5. Flexible metal conduit shall comply with Article 348 of the National Electrical Code.

6. Rigid nonmetallic conduit shall be polyvinyl chloride Schedule 40 or Schedule 80 (PVC) and comply with Article 352 of the National Electrical Code. Schedule 40 or Schedule 80 (PVC) conduits shall be used only in underground conduit runs, use rigid steel or IMC 90 degree bend below grade to transition to above grade. No exposed Schedule 40 (PVC) conduits will be allowed.

B. Coordinate all raceways with the mechanical ductwork and plumbing work installed in the job.

C. Seal all penetrations through any rated floor; wall or ceiling shall be sealed back to its original rating.

1.3 OUTLETS:

A. Location of Outlets: Unless specifically indicated, all outlets are located diagrammatically on the drawings. Reference shall be made to the architectural and mechanical plans for the exact location of all outlets. Outlets shall be located so that they will be symmetrical with architectural details and power outlets shall be so located as to serve the equipment.

PART 2 - PRODUCTS

2.1 CONDUCTORS:

A. All conductors shall be copper and have 600 volt type THHN/THWN insulation except where noted on drawings. Conductors installed where fixtures are used as raceway shall be 90°C Type THHN or XHHN.

B. All branch circuits shall be a minimum of #12 AWG solid or stranded copper except for motor leads, which shall be a minimum #12 AWG stranded copper, unless otherwise noted on drawings.

C. All branch circuit and feeder conductors, No. 8 AWG and smaller shall be color coded as follows: 208Y/120 volt, three phase system, Phase A--Black, Phase B--Red, Phase C--Blue, Neutral--White, Ground--Green. 120/240 volt single phase system, Phase A--Black, Phase B--Red, Neutral--White, Ground--Green. 480Y/277 volt, three phase system, Phase A--Brown, Phase B--Orange, Phase C--Yellow, Neutral--Gray, Ground--Green with stripe.

2.2 PULLBOXES:

A. All pull boxes shall be constructed of code gauge galvanized sheet steel and comply with Article 314 of the National Electrical Code, for the number, size and position of conduits entering the box, size of box and maximum number of conductors in a box.

2.3 OUTLET BOXES:

A. Outlet boxes shall be provided for each lighting fixture and for each device. Boxes shall not be smaller than specifically indicated herein and shall be larger if required by Article 314 of the National Electrical Code for the number and size of conductors installed.

2.4 RECEPTACLES AND WALL SWITCHES:

A. Receptacles and wall switches shall be of the type and size indicated on the drawings. Equal quality devices manufactured by Bryant, Hubbell or P & S may be used.

1. All switches shall be 20 amp 120/277 volt Specification grade with gray handles unless otherwise noted. Switches shall be as indicated on drawings.

2. Duplex outlets shall be 20 amp 125 volt A.C. 3 wire Specification grade straight blade with gray face, unless otherwise noted on drawings.

3. GFCI duplex outlets shall be 20 amp 125 volt A.C. 3 wire Specification grade straight blade with gray unless otherwise noted on drawings.

B. Device plates shall be one piece single or multi-gang type selected to match the specific device or combination of devices. Device plates for flush mounted devices shall be Brushed Stainless Steel 302/304 type, unless specifically indicated otherwise. Devices flush mounted in exposed masonry construction shall be jumbo type. Device plates for surface mounted devices shall be used with the type of outlet of outlet box in which the device is mounted. All devices installed in areas exposed to the weather and where specifically indicated shall be provided with a weatherproof in-use extra-duty device plate.

PART 3 - EXECUTION

3.1 RACEWAYS:

A. Exposed conduits shall be installed parallel or at right angles to existing walls, ceilings, and structural members. Support exposed conduits at not more than ten foot intervals and within three feet of outlets, junction boxes, cabinets and fittings. Individual runs of conduits shall be supported by one hole conduit straps; groups of conduits shall be supported on 1 1/2" X 1 1/2" fourteen gauge channel; Kindorf, Unistrut or Powers, suspended from structure with 3/8" threaded steel rods with spring steel conduit supporters. Attach rods to structure with swivel type clamps. Individual runs of exposed conduits attached to structural steel shall be supported by beam clamps. Where conduits must pass through structural members obtain approval of architect with respect to location and size of hole prior to drilling.

B. Concealed branch circuit conduits shall be supported at intervals not exceeding ten feet and within three feet of each outlet, junction box, cabinet or fitting. Individual branch circuit conduits shall be attached to structural steel members with spring steel type conduit clips and to non-metallic structural members with one hole conduit straps. Where branch circuit conduits must be suspended below structure, conduits shall be supported by trapeze type support, typical to the type for exposed conduits indicated above. Conduits shall not be attached to channels of ceiling suspension system or suspension wires. Concealed feeder conduits larger than one inch trade diameter, above ceiling, shall be attached to structure on intervals not exceeding twelve feet with conduit beam clamps, one hole conduit straps or trapeze type support in accordance with conditions encountered.

C. Conduit support device shall be attached to structure with wood screws on wood, toggle bolts on hollow masonry, lead shield on solid masonry and machine bolts, clamps or spring steel clips on steel. Nails are not acceptable.

D. Rigid conduit shall be attached to sheet metal enclosures with two bonding type lock nuts and insulated bushing. EMT connectors and couplings shall be watertight compression type and manufactured by Thomas and Betts or Appleton. All connectors shall be of the insulated throat type. Rigid conduit stub ups not attached to enclosure shall be terminated with steel insulated throat, grounding type bushing. All connectors and couplings shall be approved for the purpose.

E. Expansion fittings shall be provided in all feeder conduits where conduits pass through building expansion joints. All conduits penetrating rated fire walls or rated fire floors shall be installed with devices to maintain the fire rating of the wall or floor penetrated. Use O.Z. Gedney "Fire-Seal" or approved alternate. Contractor shall caulk holes on both sides of smoke walls where conduits penetrate.

F. Protect conduits against dirt, plaster, and foreign debris with conduit plugs. Plugs shall remain in place until all masonry work is complete.

G. All conduits entering buildings from below grade shall be sealed with fiber and insulating electrical putty to prevent entrance of moisture.

H. Conduit seals shall be used where noted on drawings and per Article #300-5 and #300-7 of the National Electrical Code. Seals shall be Crouse-Hinds Type "EYS", Appleton Type "EYF" or O.Z. Gedney Type "EY" or "EYA".

I. Flexible conduit shall comply with the above and below specifications.

1. Flexible conduit shall be used for connection to vibrating equipment, electric

duct heaters, unit heaters and rotating machinery and for connection from junction box to corresponding recessed lighting fixture.

2. Flexible liquid tight conduit connecting motors, duct heaters, unit heaters and other electrical equipment subject to vibration not less than eighteen inches in length or as permitted by the NEC.

3. Flexible metal conduit from outlet box to recessed lighting fixture shall not exceed six feet in length.

4. Flexible conduit used for other than connections to lighting fixtures shall not be less than one-half inch trade size and in no case shall flexible conduit size be less than permitted by the National Electrical Code for the number and size of conductors to be installed therein. Three-eighths inch flexible conduit may be used for connection to lighting fixtures providing conduit fill requirements of National Electrical Code are not exceeded.

5. Ground continuity through flexible conduit shall be maintained with green equipment grounding conductor, do not use flexible conduit for ground continuity.

6. When exposed to weather, when specifically indicated, or when installed in areas subject to moisture, flexible conduit shall be liquid tight type.

7. All connectors for flexible conduit shall be standard set screw type, cast connectors, bushed as required for flexible conduit. When used with liquid type flexible conduit, connectors shall be standard compression type.

3.2 PULL OR JUNCTION BOXES:

A. Pull boxes shall be provided where specifically indicated and where required to facilitate the installation of conductors. Pull boxes shall be installed exposed only in unfinished spaces, unless otherwise specifically indicated, and shall be installed to be fully accessible.

B. Where pull boxes are installed in finished spaces, boxes shall be standard screw cover j-boxes and galvanized switch boxes, gangable, where not exposed to the weather. Surface mounted boxes shall be Type "FD" with blank covers.

C. Pull boxes required for horizontal feeders containing more than one feeder shall be provided with reinforced flange and removable 12 gauge 1 1/2" X 1 1/2" galvanized channel for support of conductors. Wood supports within pull boxes are not acceptable.

D. Splices shall not be permitted in pull boxes except when specifically approved in writing by the Architect or where specifically shown on the drawings. Where splices are permitted, splices shall be made with splicing sleeves attached to conductors with hydraulic crimping tool. Split bolt connectors are not acceptable for splices within pull boxes.

E. Feeders within pull boxes shall be individually laced with nylon tie straps of the type with enlarged tab to permit identification of each feeder within pull box.

F. Minimum pull or junction box size shall be as per the NEC.

3.3 OUTLET BOXES:

A. Outlet boxes shall be sized as per the NEC and as required for the installation and

installed where required for the installation and as per the NEC.

B. Review architectural drawings for areas where outlets occur within specific architectural or structural features and install outlets as shown on architectural drawings, or, if not shown, accurately center and align boxes within the architectural feature or detail.

C. Unless otherwise indicated or specified, all switches and receptacles shall be mounted with top of device, the distances indicated herein, above the finished floor except where finished walls are exposed concrete block, in which case height shall be adjusted to allow outlet box for device to be mounted at block joint. Review architectural drawings for any device requiring specific location. Mounting heights for devices shall be as the requirements of the "ADA" and as follows (unless noted otherwise):

1. Wall switches: 48"

2. Wall receptacles: 18"

D. All devices shall be mounted within outlet boxes to allow device plates to be in contact with wall on all sides. Devices shall be accurately aligned with major axis of device parallel to adjacent predominate building feature.

E. Wall switches shall be installed on the strike side of doors, unless otherwise indicated on the Contract Drawings.

3.4 CONDUCTORS:

A. All feeder and branch circuit conductors No. 6 AWG and larger shall be phase identified in each accessible enclosure by 1" wide plastic tape attached to conductors in a readily visible location. Tape colors shall match color requirements specified herein.

B. All branch circuit conductors shall be connected as indicated on the drawings. Common neutrals and ground wires may be pulled in conduits where only opposite phase conductors are run. All conduits shall have a ground wire pulled and shall comply with Article 250 of the National Electrical Code.

C. Conductors within enclosures, i.e., panels, terminal cabinets, control cabinets shall be grouped and laced with nylon tie straps. Conductors within pull boxes shall be grouped and identified with nylon tie straps with circuit identification tag.

D. Splices in conductors shall be made only within junction boxes, wiring troughs and other enclosures as permitted by the National Electrical Code, 2008 Edition. Do not splice conductors in panelboards, safety switches, or motor control enclosures. Splices in conductors No. 10 AWG or smaller shall be made with Skotchlok insulated spring connectors, Ideal wing nuts, or Ideal steel crimp connectors with wrap-cap insulating caps. Splices in conductors No. 8 AWG and larger shall be made with split bolt connectors taped with No. 88 plastic electrical tape or Ideal Type GP or GT tap connectors and insulating cover unless splices are specifically indicated to be made with crimping sleeve applied to conductors with hydraulic operated crimping tool.

E. Conductors used only for 120 volt control wiring systems shall be minimum No. 14 AWG stranded type MTW 600 volt insulation. Control conductors to be J.I.C. color coded. Where control conductors terminate on terminal strip, make termination with lug applied to conductor with crimping tool.

F. Phase rotation established at service equipment shall be maintained throughout entire project.

G. Pull wires shall be 500# minimum test continuous fiber polyline.

END OF SECTION

SECTION 26 28 00 - ELECTRICAL SERVICE AND DISTRIBUTION EQUIPMENT

PART 1 - GENERAL

1.1 GENERAL:

A. Provide and install all electrical distribution equipment as specified, scheduled or indicated on the approved drawing and these specifications.

PART 2 - PRODUCTS

2.1 DISCONNECT SWITCHES:

A. Fusible or Non-Fusible disconnect switches shall be Heavy Duty type and be provided for all motors located out of sight of motor controller and where specifically indicated on the drawings. Disconnect switches shall disconnect all underground conductors. When exposed to weather, enclosure shall be NEMA 3R (Rain tight); located in the pool area, enclosure shall be NEMA 4X Stainless Steel; otherwise, enclosure shall be NEMA-12. Switches shall be installed to be fully accessible in accordance with Article 110.26 of the National Electrical Code.

B. Disconnect switches for single phase motors shall be horsepower rated, motor switches without overload protection, voltage rating as per motor nameplate voltage or greater.

C. Fusible disconnect switch shall disconnect all ungrounded conductors and shall be supplied with the proper sized fuse clips and fuses. Fuse size over frame size will be noted on drawings. Fuses shall be current limiting, time delay, dual element Type RK-5 fuses.

D. Disconnect switches shall be Square D, General Electric, Siemens or Cutler-Hammer. All disconnect switches shall be identified in accordance with the Paragraph 26 05 00 - 3.3 Identification of these specifications and Article 110.22 of the National Electrical Code.

E. All disconnect switches shall be marked with Arc Flash Warning Labels as required by Article 110.16 of the NEC.

2.2 BACKBOARDS:

A. Provide and install backboards at all panels and power distribution equipment and as required by the local authorities. Backboards shall be 3/4" Fire rated (FRP) grade plywood.

2.3 COMPATIBLE CIRCUIT BREAKERS:

A. Provide and install compatible circuit breakers into existing panels/MCC as indicated on the Approved Drawings. Circuit breakers shall be the same manufacturer as the panel/MCC being installed into and shall have the same ratings in terms of voltage, short circuit rating, etc. as the panel/MCC being installed into.

PART 3 - EXECUTION

3.1 MANUFACTURERS' RECOMMENDATIONS:

A. The contractor shall install all electrical distribution equipment in accordance with the manufacturer's recommendations and these specifications.

END OF SECTION 26 28 00

SECTION 26 51 00 - LIGHTING FIXTURES

PART 1 - GENERAL

1.1 GENERAL:

A. The Contractor shall clean, re-lamp and repair all fixtures in Natitorium 129.

PART 2 - PRODUCTS

2.1 BALLASTS:

A. Replacement ballast shall be provided and installed by the Contractor for all fixtures in the Natitorium. Ballast shall match the existing ballast presently installed in each fixture.

2.2 LAMPS:

A. All lamps shall be furnished and installed by the Contractor. Lamps shall match the existing lamps in each fixture.

B. Lamps shall be Sylvania or General Electric or approved equivalent.

PART 3 - EXECUTION

3.1 MANUFACTURER'S RECOMMENDATIONS:

A. Install all lighting fixtures in accordance with the manufacturer's recommendations, as herein specified, or as indicted on the drawings.

END OF SECTION 26 51 00

SECTION 27 51 20 - AUXILIARY SYSTEMS

PART 1 - GENERAL

1.1 GENERAL:

A. Provide and install all electrical auxiliary systems as indicated on the drawings and/or specifications. The work shall consist of, but not be limited to, the installation of the following:

1. Modifications to the existing Fire Alarm System as indicated on the documents.

PART 2 - PRODUCTS

2.1 FIRE ALARM SYSTEM MODIFICATIONS:

A. All Fire Alarm devices and components shall be the same manufacturer as the existing system and be compatible with the existing system, including all wiring. Provide any required zone cards in the FACP for the modifications.

PART 3 - EXECUTION

3.2 FIRE ALARM SYSTEM:

A. The contractor shall color code and install all wiring in accordance with state and local codes and the requirements of the Manufacturer. All wiring shall be run in conduits, sized and routed by the Contractor/Vendor. Provide Shop Drawings as herein before indicated for wiring and conduit sizes.

B. The installation shall be performed under the supervision of the manufacturer's local authorized installation and service personnel.

C. After the completion of the installation, the Contractor shall test the entire system in accordance with NFPA 72 and the local Authority Having Jurisdiction to certify compliance as required. Provide the Owner with a Certificate indicating the system is in compliance.

END OF SECTION 27 51 20

NOTES:

1. SEE SHEET S1.1 FOR SLAB CONTROL JOINTS AND TRENCH DRAIN LOCATION
2. SEE SHEET A5.1 FOR EXPANSION AND CONTROL JOINT DETAILS
3. SEE SHEET A1.2 (ROOF PLAN) FOR DOWNSPOUT LOCATIONS
4. SEE SHEETS CA1.1, CA1.2, CA7.1 AND CA7.2 FOR POOL AND DECK LAYOUT AND DETAILS
5. SEE STRUCTURAL DRAWINGS FOR ALL AREAS WITH RECESSED SLABS

WALL TYPE LEGEND:

1. 3½" FACE BRICK ON REINFORCED CMU WALL
2. 8" CMU WALL- EXTEND UNDERSIDE OF ROOF DECK
3. 8" CMU WALL- EXTEND TO UNDESIDE OF ROOF DECK (1 HOUR RATING)
4. 8" CMU WALL- EXTEND TO UNDERSIDE OF ROOF DECK (2 HOUR RATING)
5. 6" CMU WALL- EXTEND A MINIMUM OF 4" ABOVE THE HIGHEST ADJACENT CEILING ENLESS OTHERWISE NOTED

5A. 6" CMU WALL- EXTEND TO UNDERSIDE OF ROOF DECK

6. 4" CMU WALL- EXTEND A MINIMUM OF 4" ABOVE THE HIGHEST ADJACENT CEILING, BRACE TOP OF WALL. (SEE DETAIL 21 S6.1).
7. 8" CMU WALL- EXTEND A MINIMUM OF 4" ABOVE THE HIGHEST ADJACENT CEILING UNLESS OTHERWISE NOTED
8. 3½" FACE BRICK ON 1 HR RATED REINFORCED CMU WALL
9. 4" METAL STUD WALL WITH 5/8" GWB ON BOTH SIDES. EXTEND TO UNDERSIDE OF ROOF DECK

CANOPY NOT SHOWN
SEE SHEET A1.2

FOR REFERENCE ONLY

0 4' 8' 16' 24'

HEERY
ATLANTA, GEORGIA

Mountain View Park Aquatic Center

Cobb County, Georgia

24 HOUR EMERGENCY CONTACT:
MR. DONALD PURVIS (770)-437-2633

COMMISSION:	97115-02
DATE:	OCTOBER 9 1998
DRAWN BY:	R. TAYLOR
CHECKED BY:	P. BRUCE
APPROVED BY:	

REVISIONS	DATE	REVISIONS	DATE

STAMP: STATE OF GEORGIA — SCOTT J. DREAS — REGISTERED ARCHITECT — 10/1/98

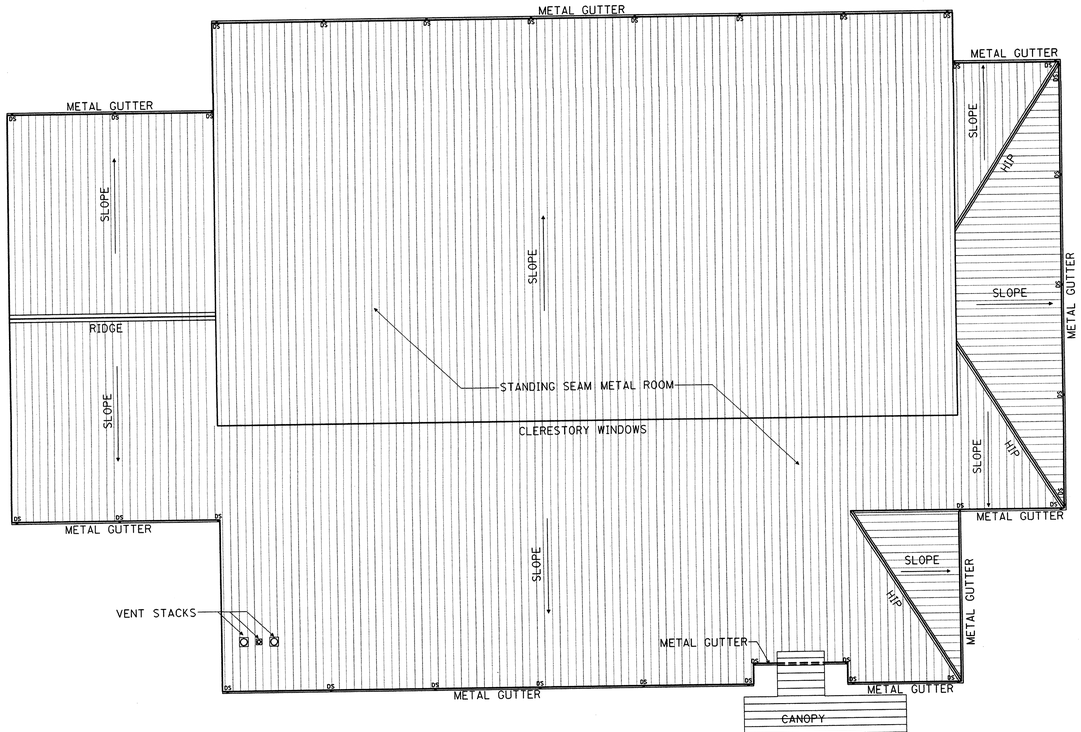
KEY PLAN

SHEET TITLE: **FLOOR PLAN**

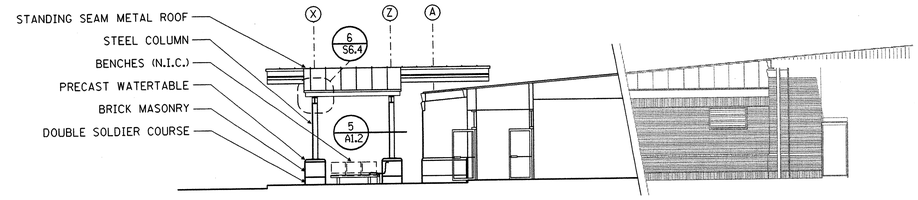
SCALE:

DRAWING NUMBER: **A1.1**

OF



9 A1.2 **ROOF PLAN**
SCALE: NOT TO SCALE



4 A1.2 **CANOPY ELEVATION/SECTION**
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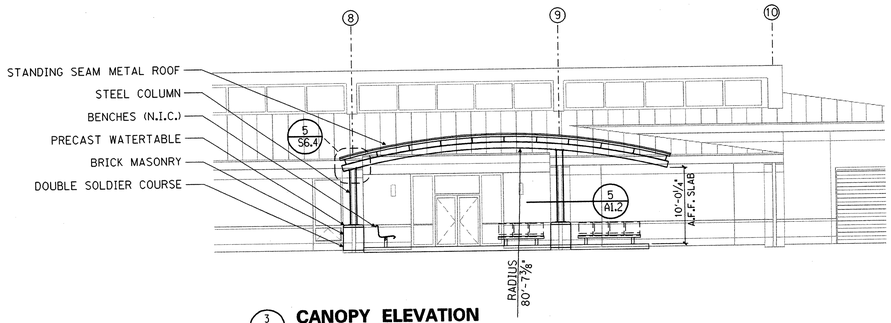

3 A1.2 **CANOPY ELEVATION**
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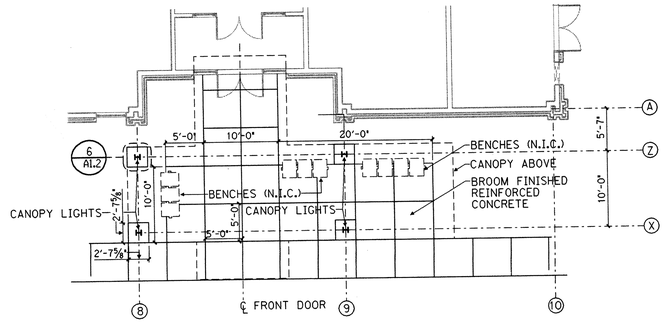
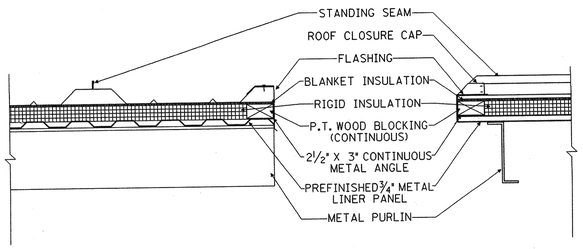
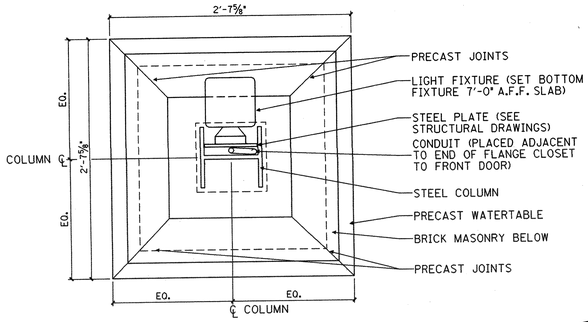


2 A1.2 **CANOPY FLOOR PLAN**
SCALE: NOT TO SCALE

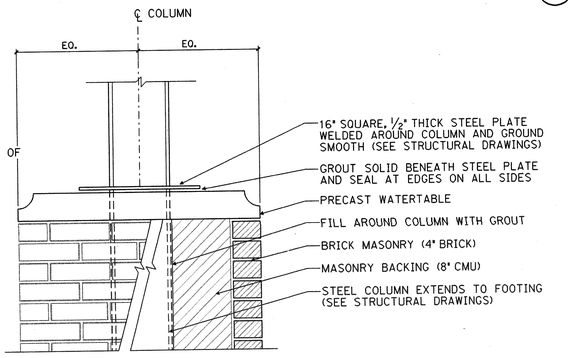


8 A1.2 **CANOPY ROOF SIDE CLOSURE**
SCALE: NOT TO SCALE

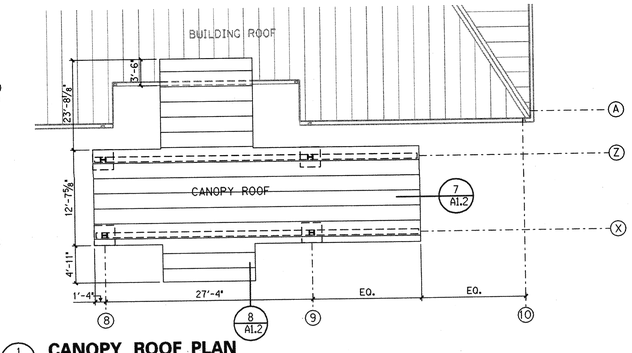


7 A1.2 **CANOPY ROOF END CLOSURE**
SCALE: NOT TO SCALE

6 A1.2 **MASONRY PIER PLAN**
SCALE: NOT TO SCALE



5 A1.2 **MASONRY PIER ELEVATION**
SCALE: NOT TO SCALE



1 A1.2 **CANOPY ROOF PLAN**
SCALE: NOT TO SCALE

FOR REFERENCE ONLY

HEERY
ATLANTA, GEORGIA

Mountain View Park Aquatic Center

Cobb County, Georgia

24 HOUR EMERGENCY CONTACT:
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COMMISSION:	97115-02
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STAMP: STATE OF GEORGIA — SCOTT J. DREAS — 10/12/98 — CERTIFICATE NO. 25... — REGISTERED ARCHITECT

KEY PLAN

SHEET TITLE
ROOF PLAN AND CANOPY DETAILS
SCALE: AS NOTED

DRAWING NUMBER
A1.2
OF

LEGEND

- CONCEALED CONDUIT. SEE NOTE BELOW
- EXPOSED CONDUIT. SEE NOTE BELOW
- UNDERGROUND OR UNDERFLOOR CONDUIT. SEE NOTE BELOW.
- FLEX CONDUIT, SIZE AND CONDUCTORS SAME AS HOMERUN.
- 20AMP 125V. STRAIGHT BLADE 3 WIRE GROUNDING DUPLEX OUTLET. NUMBER INDICATES CIRCUIT.
  WP – INDICATES WEATHERPROOF
  GFCI – GROUND FAULT CIRCUIT INTERRUPTER
- PANELBOARD.
- T — TRANSFORMER.
- (10) (S) — MOTOR. NUMBER INDICATES HORSEPOWER. "S" INDICATES FRACTIONAL HORSEPOWER MOTOR WITH 120/277 V. TOGGLE SWITCH AS DISCONNECT.
- Sm — MOTOR RATED SWITCH
- 10A/30A/3/1 — FUSIBLE DISCONNECT SWITCH, FUSE SIZE OVER FRAME SIZE, NUMBER OF POLES, AND ENCLOSURE TYPE NOTED.
- 60A/3/1 — NON FUSIBLE DISCONNECT SWITCH, AMP SIZE, NUMBER OF POLES, AND ENCLOSURE TYPE NOTED.
- (DD) — DUCT SMOKE DETECTOR.
- R — FIRE ALARM RELAY.

GENERAL NOTE:

FOR LIGHTING REQUIREMENTS, SEE ELECTRICAL SPECIFICATIONS SECTION 265100.

PARENTHESES DENOTE EXISTING 'EQUIPMENT SERVED' (TYPICAL)

BOLD LETTERING DENOTES NEW 'EQUIPMENT SERVED' (TYPICAL) PROVIDE NEW LABELS AS REQUIRED (TYPICAL TO THE EXISTING)

SECTION 1	SECTION 2	SECTION 3	SECTION 4
(HW CIRC P-8)	⑥ (HWP-1) HWP-1 10 HP	(POOL CIRC P-2)	② (SPACE) EF-2 3 HP
(CONTROL PUMP P-11)	⑦ (HWP-2) HWP-2 10 HP	(POOL CIRC P-1)	③ (SPACE) EF-3 1 HP
(EF-1)	(POOL CIRC P-5)	⑤ (DU-2B) DC-2 (AAU-1)	⑧ (SPACE) P-1 7-1/2 HP
(HW CIRC P-9)	(POOL CIRC P-4)	⑩ (SPACE) P-3 1-1/2 HP	⑨ (SPACE) P-2 7-1/2 HP
(CONTROL PUMP P-12)	(PUMP HRP-1)	⑪ (SPACE) PS-1 1 HP	① (SPACE) EF-4 1 HP
(DU-1B) ④ DC-1	(POOL CIRC P-3)	⑫ (SPACE) EF-6 1 HP	⑬ (SPACE) EF-5 2 HP

MCCA – 600A 480V 3PH 3W

(1) E-1 EXISTING MOTOR CONTROL CENTER 'MCCA'

SCALE: NTS

MCCA NOTES:

1. MCCA-4-5. PROVIDE AND INSTALL NEMA SIZE 1 MOTOR STARTER WITH 3A MCP, CPT AND RUN/OFF INDICATOR LIGHTS AND H-O-A SWITCH (NEW STARTER TO MATCH EXISTING STARTERS IN MCCA)
2. MCCA-4-1. PROVIDE AND INSTALL NEMA SIZE 1 MOTOR STARTER WITH 10A MCP, CPT AND RUN/OFF INDICATOR LIGHTS AND H-O-A SWITCH (NEW STARTER TO MATCH EXISTING STARTERS IN MCCA)
3. MCCA-4-2. PROVIDE AND INSTALL NEMA SIZE 1 MOTOR STARTER WITH 3A MCP, CPT AND RUN/OFF INDICATOR LIGHTS AND H-O-A SWITCH (NEW STARTER TO MATCH EXISTING STARTERS IN MCCA)
4. MCCA-1-6. REMOVE 20A/3P CIRCUIT BREAKER. PROVIDE AND INSTALL 30A/3P CIRCUIT BREAKER (NEW CIRCUIT BREAKER TO MATCH EXISTING CIRCUIT BREAKERS IN MCCA)
5. MCCA-3-3A. REMOVE 20A/3P CIRCUIT BREAKER. PROVIDE AND INSTALL 30A/3P CIRCUIT BREAKER (NEW CIRCUIT BREAKER TO MATCH EXISTING CIRCUIT BREAKERS IN MCCA)
6. MCCA-2-1. REMOVE 7A MCP. PROVIDE AND INSTALL NEW 30A MCP (NEW MCP TO MATCH EXISTING MCP'S IN MCCA)
7. MCCA-2-2. REMOVE 7A MCP. PROVIDE AND INSTALL NEW 30A MCP (NEW MCP TO MATCH EXISTING MCP'S IN MCCA)
8. MCCA-4-3. PROVIDE AND INSTALL NEMA SIZE 1 MOTOR STARTER WITH 25A MCP, CPT AND RUN/OFF INDICATOR LIGHTS AND H-O-A SWITCH (NEW STARTER TO MATCH EXISTING STARTERS IN MCCA)
9. MCCA-4-4. PROVIDE AND INSTALL NEMA SIZE 1 MOTOR STARTER WITH 25A MCP, CPT AND RUN/OFF INDICATOR LIGHTS AND H-O-A SWITCH (NEW STARTER TO MATCH EXISTING STARTERS IN MCCA)
10. MCCA-3-4 . PROVIDE AND INSTALL NEMA SIZE 1 MOTOR STARTER WITH 5A MCP, CPT AND RUN/OFF INDICATOR LIGHTS AND H-O-A SWITCH (NEW STARTER TO MATCH EXISTING STARTERS IN MCCA)
11. MCCA-3-5 . PROVIDE AND INSTALL NEMA SIZE 1 MOTOR STARTER WITH 3A MCP, CPT AND RUN/OFF INDICATOR LIGHTS AND H-O-A SWITCH (NEW STARTER TO MATCH EXISTING STARTERS IN MCCA)
12. MCCA-3-6 . PROVIDE AND INSTALL NEMA SIZE 1 MOTOR STARTER WITH 3A MCP, CPT AND RUN/OFF INDICATOR LIGHTS AND H-O-A SWITCH (NEW STARTER TO MATCH EXISTING STARTERS IN MCCA)
13. MCCA-4-6 . PROVIDE AND INSTALL NEMA SIZE 1 MOTOR STARTER WITH 7A MCP, CPT AND RUN/OFF INDICATOR LIGHTS AND H-O-A SWITCH (NEW STARTER TO MATCH EXISTING STARTERS IN MCCA)

KIRKPATRICK ENGINEERS
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MARIETTA, GEORGIA 30067
(770) 933-8842

03/14/2012

MOUNTAIN VIEW PARK AQUATIC CENTER
2850 GORDY PARKWAY MARIETTA, GEORGIA 30066

No.	REVISIONS
	3/16/12 ISSUED FOR BID

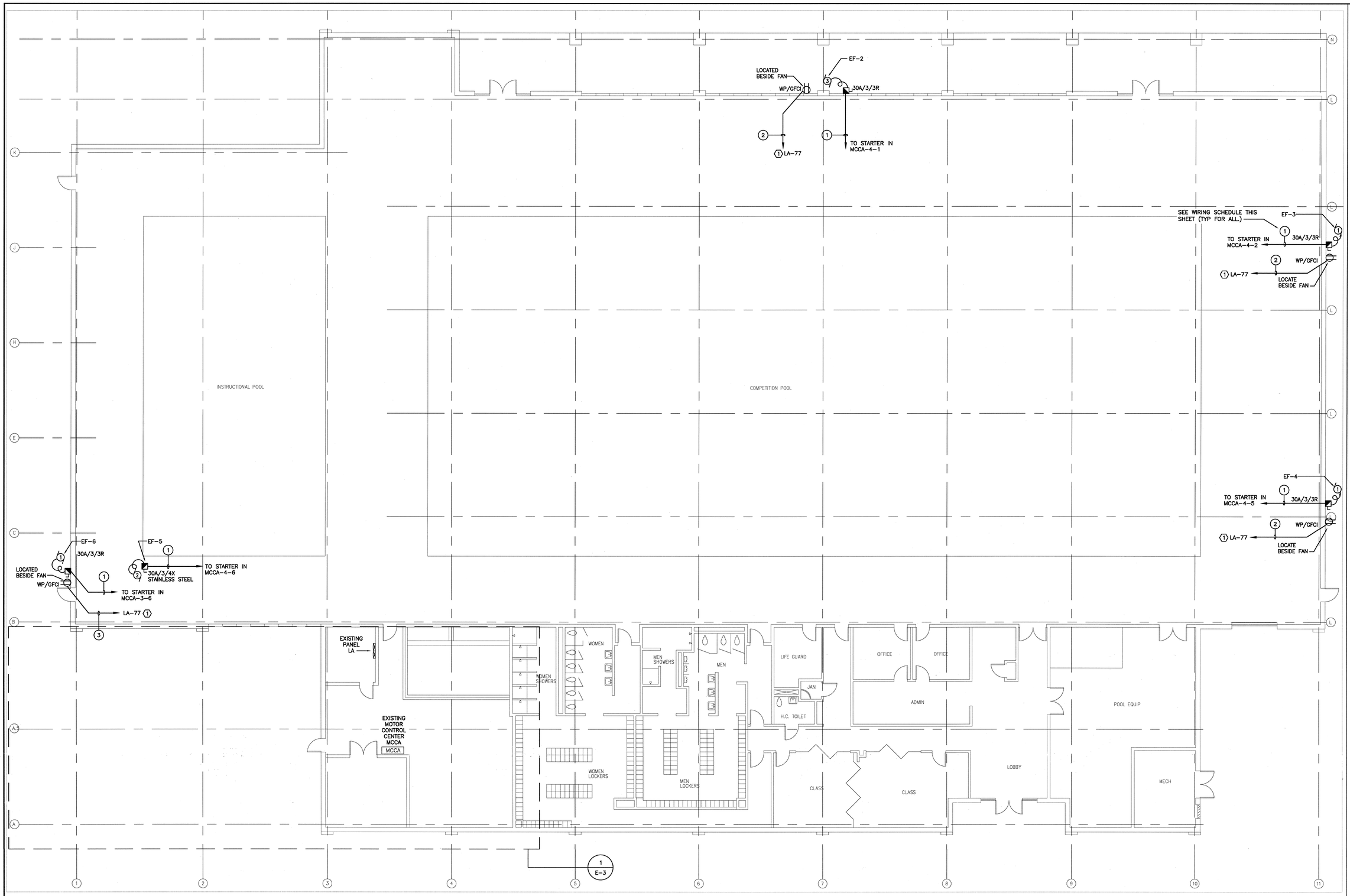
PROJECT No.:
DATE: 03.14.2012
DRAWN: SS
CHECKED: WBMW

W&A PROJECT NUMBER - 12013
WOMACK & ASSOCIATES CONSULTING ENGINEERS
4200 Perimeter Park South, Suite 225
Atlanta, Georgia 30341
Voice 770-458-3005 Fax 770-458-8388

PLOT SCALE: 1 = 1

SHEET TITLE
OVERALL PLAN
ELECTRICAL

SHEET No.
E-1
Sheet of



GENERAL NOTES:

1. SEE MECHANICAL DRAWINGS FOR EXACT LOCATION OF HVAC EQUIPMENT.

1 / E-2 PART PLAN - ELECTRICAL

SCALE: 1/8" = 1'-0"

KEYNOTES:

(1) RUN HOMERUNS (TOTAL OF FOUR) TO PANEL LA. PROVIDE AND INSTALL COMPATIBLE 20A/1P CIRCUIT BREAKER IN SPARE SPACE (LA-77). NOTE ADDITION TO PANEL SCHEDULE.

WIRING SCHEDULE

(1) 3#12 + 1#12G IN 3/4" C
(2) 2#6 + 1#6G IN 3/4" C
(3) 2#10 + 1#10G IN 3/4" C

ALL CONDUCTORS ARE TO BE COPPER

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03/14/2012

MOUNTAIN VIEW PARK AQUATIC CENTER
2650 GORDY PARKWAY MARIETTA, GEORGIA 30066

No.	REVISIONS
	3/16/12 ISSUED FOR BID

PROJECT No.:
DATE: 03.14.2012
DRAWN: SS SS
CHECKED: WBMW

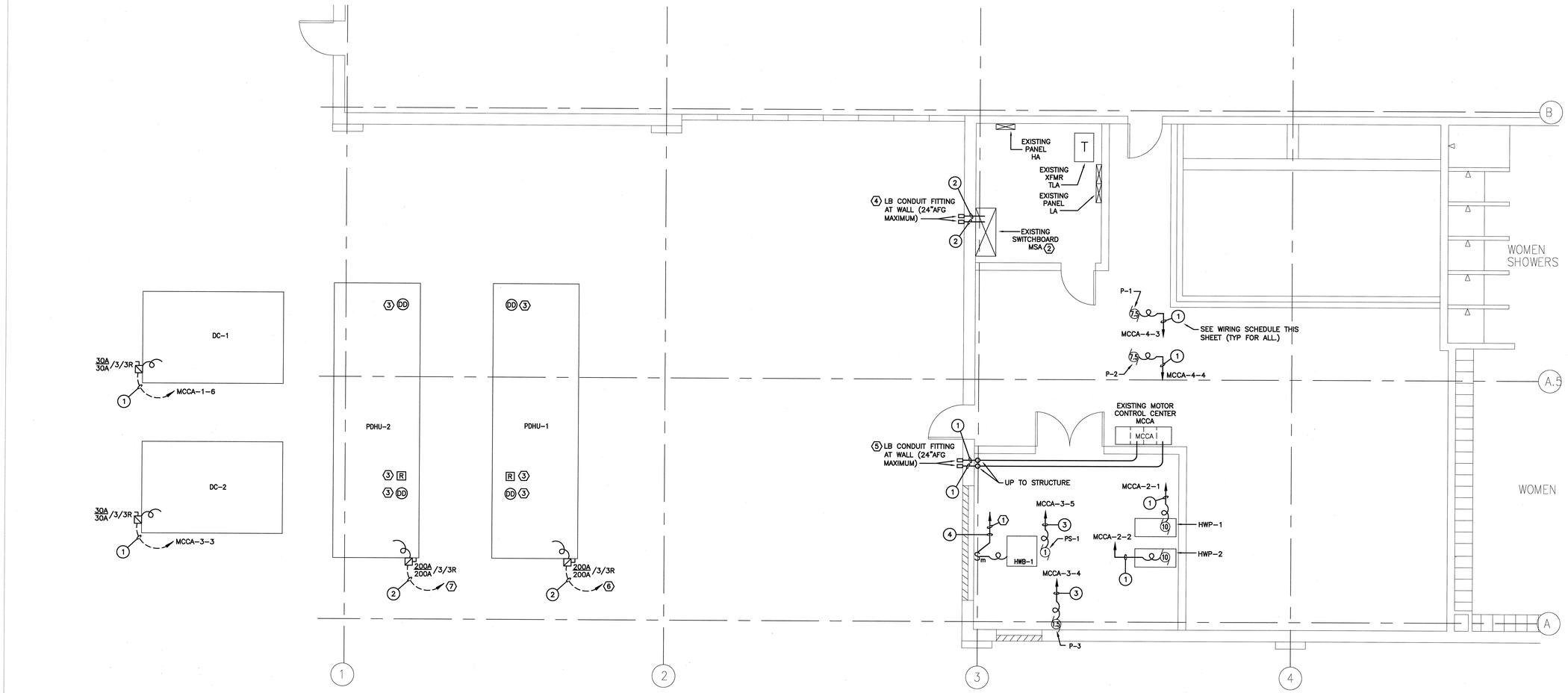
W&A PROJECT NUMBER - 12013

WOMACK & ASSOCIATES CONSULTING ENGINEERS
4200 Perimeter Park South, Suite 225
Atlanta, Georgia 30341
Voice 770-458-3005 Fax 770-458-8388

PLOT SCALE: 1 = 1

SHEET TITLE
OVERALL PLAN
NEW ELECTRICAL

SHEET No.
E-2
Sheet of



1 / E-3 PART PLAN - ELECTRICAL

SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. SEE MECHANICAL DRAWINGS FOR EXACT LOCATION OF HVAC EQUIPMENT.

KEYNOTES:

1. ROUTE TO PANEL LA. PROVIDE & INSTALL COMPATIBLE 20A/1P CIRCUIT BREAKER IN SPARE SPACE LA-75. NOTE ADDITION TO PANEL SCHEDULE.
2. CONTRACTOR TO HAVE SWITCHBOARD MANUFACTURER REPAIR/RECALIBRATE EXISTING METERING/ALARM MONITOR PANEL ON SWITCHBOARD. PROVIDE OWNER WITH TRAINING INFORMATION AS TO THE OPERATION OF UNIT AT END OF PROJECT.
3. CONTRACTOR SHALL TIE NEW DEVICE INTO EXISTING FIRE ALARM SYSTEM WIRING. PROVIDE AND INSTALL ANY ADDITIONAL ZONE COMPONENTS AS NEEDED IN THE FACP.
4. CONTRACTOR TO CORE DRILL WALL (AT LOCATION SHOWN) FOR THE CONDUIT FEEDS TO PDHU-1 & PDHU-2. SEAL ALL OPENINGS BACK TO THEIR ORIGINAL CONDITION AFTER THE INSTALLATION OF THE CONDUITS.
5. CONTRACTOR TO CORE DRILL WALL (AT LOCATION SHOWN) FOR THE CONDUIT FEEDS TO DC-1 & DC-2. SEAL ALL OPENINGS BACK TO THEIR ORIGINAL CONDITION AFTER THE INSTALLATION OF THE CONDUITS.
6. ROUTE TO EXISTING 200A/3P CIRCUIT BREAKER IN SWITCHBOARD MSA (PRESENTLY SERVING DU-2A)
7. ROUTE TO EXISTING 200A/3P CIRCUIT BREAKER IN SWITCHBOARD MSA (PRESENTLY SERVING DU-1A)

WIRING SCHEDULE

1. 3#10 + 1#10G IN 3/4" C
2. 3#3/0 + 1#6G IN 2" C
3. 3#12 + 1#12G IN 3/4" C
4. 2#12 + 1#12G IN 3/4" C

ALL CONDUCTORS ARE TO BE COPPER

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03/14/2012

MOUNTAIN VIEW PARK AQUATIC CENTER
2850 GORDY PARKWAY MARIETTA, GEORGIA 30066

No.	REVISIONS
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PLOT SCALE: 1 = 1

SHEET TITLE
PART PLAN - ELECTRICAL

SHEET No.
E-3

Sheet of

1 / ED-1 OVERALL PLAN - ELECTRICAL DEMOLITION

SCALE: 1/8" = 1'-0"

KEYNOTES:

(1) CONTRACTOR TO REMOVE EXISTING EQUIPMENT AS INDICATED. REMOVE THE ASSOCIATED CIRCUITRY (CONDUIT AND CONDUCTORS) BACK TO THE SERVICE POINT OR NEAREST ACTIVE J-BOX, REMOVE CONDUCTORS, ELECTRICALLY CAP ALL CONDUCTORS TO REMAIN, IF THE CIRCUIT CONTINUES TO OTHER DEVICES TO REMAIN, KEEP THE CIRCUIT CONTINUOUS AS NEEDED. REMOVE ALL EQUIPMENT, CONDUCTORS, CONDUITS, SUPPORTS AS NEEDED.

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GEORGIA REGISTERED 19598 PROFESSIONAL ENGINEER

03/14/2012

MOUNTAIN VIEW PARK AQUATIC CENTER
2650 GORDY PARKWAY MARIETTA, GEORGIA 30066

No.	REVISIONS
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PLOT SCALE: 1 = 1

SHEET TITLE
OVERALL PLAN
ELECTRICAL DEMOLITION

SHEET No.
ED—1

Sheet of

CODE REQUIREMENTS

BUILDING:	–	2006 INTERNATIONAL BUILDING CODE W/2007, 2009, AND 2010 GA AMENDMENTS
FIRE:	–	2006 INTERNATIONAL FIRE CODE (ICC) W/2007 AND 2010 GA AMENDMENTS
FIRE SAFETY:	–	NFPA 101, 2000 EDITION W/ GA AMENDMENTS
PLUMBING:	–	2006 INTERNATIONAL PLUMBING CODE W/2007, 2008, 2009, 2010, 2011, & 2012 GA AMENDMENTS
MECHANICAL:	–	2006 INTERNATIONAL MECHANICAL CODE W/2007, 2008, 2010, 2011, & 2012 GA AMENDMENTS
GAS:	–	2006 INTERNATIONAL FUEL GAS CODE W/2007, 2008, 2009, 2010, 2011, & 2012 GA AMENDMENTS
ELECTRICAL:	–	2011 NATIONAL ELECTRICAL CODE
ENERGY:	–	INTERNATIONAL ENERGY CONSERVATION CODE (ICC) 2009 EDITION W/2011 GA SUPPLEMENTS AND AMENDMENTS; ASHRAE/IESNA STANDARD 90.1 WITH GEORGIA AMENDMENTS

TABLE OF CONTENTS

MOUNTAIN VIEW AQUATIC CENTER
2650 GORDY PARKWAY
MARIETTA, GEORGIA 30066

AIR QUALITY IMPROVEMENTS AND INTERIOR RENOVATIONS

MECHANICAL ENGINEERING

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PHONE: 770-933-8842

CONTACT: JERRY KIRKPATRICK, P.E.

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MOUNTAIN VIEW PARK AQUATIC CENTER
AIR QUALITY INPROVEMENTS and INTERIOR RENOVATIONS
2650 GORDY PARKWAY, MARIETTA, GEORGIA 30066

No.	REVISIONS
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DATE: 03/16/2012
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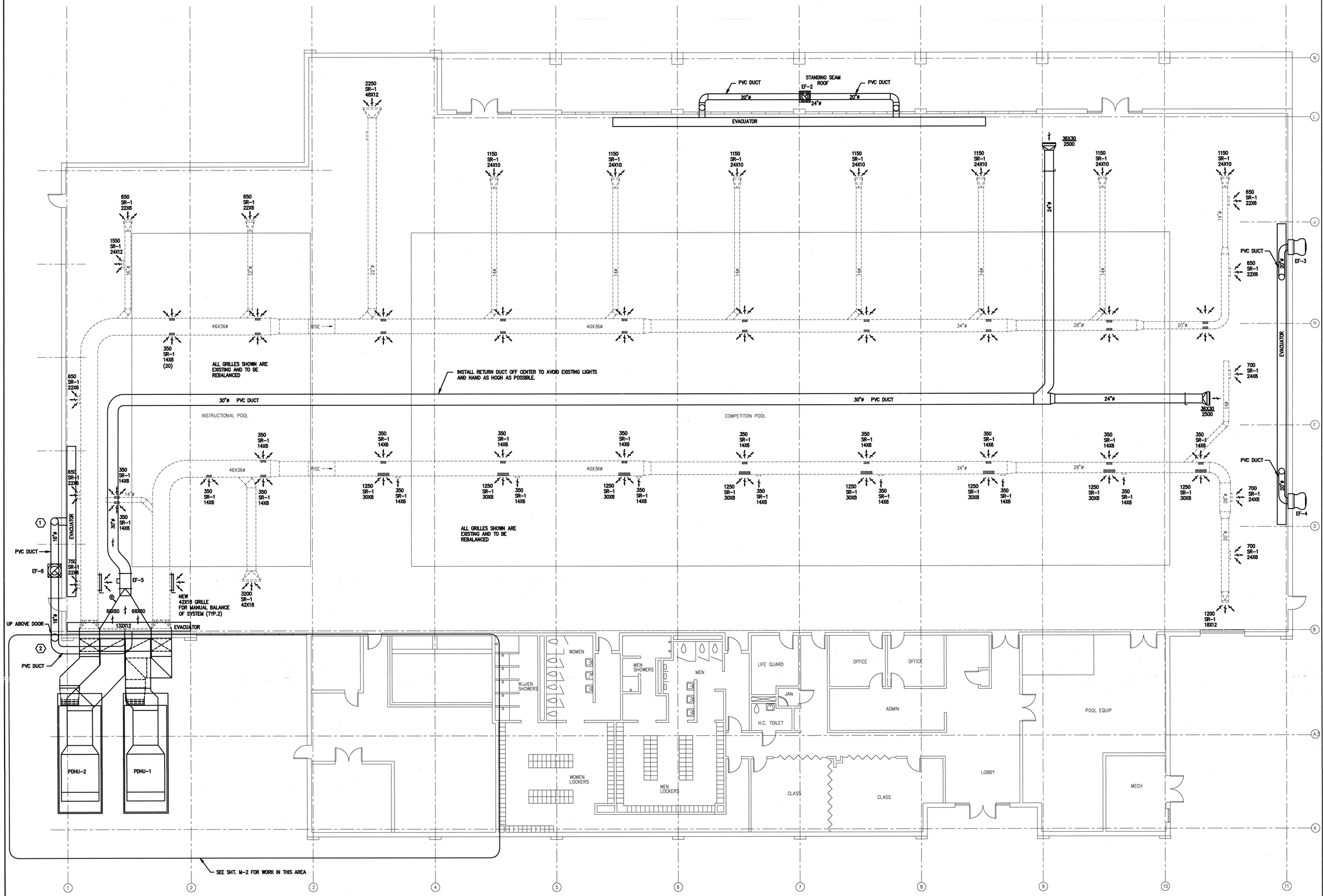
CHECKED: JK

SHEET TITLE
COVER SHEET

SHEET No.
M-0
Sheet of



MECHANICAL PLAN

KEYED NOTES:

1. TRANSITION DUCT FROM 30"ø TO 132"X12". CONNECT TO UNIT RETURN DUCT.
2. DUCT TO PENETRATE WALL AND RUN OUTSIDE ALONG WALL ABOVE DOOR.

GEORGIA REGISTERED No. 013238 PROFESSIONAL ENGINEER JOHN E KIRKPATRICK

3-16-2012

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MOUNTAIN VIEW PARK AQUATIC CENTER
AIR QUALITY INPROVEMENTS and INTERIOR RENOVATIONS
2650 GORDY PARKWAY, MARIETTA, GEORGIA 30066

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SHEET TITLE
MECHANICAL PLAN

SHEET No.
M-1
Sheet of

KEYED NOTES:

(A) FIELD ROUTE NEW 1-1/2"ø GAS PIPE FROM EXISTING GAS PIPING IN ROOM

(B) CONNECT NEW 2-1/2" PIPING TO EXISTING 4" PIPING. REUSED UNDERGROUND PIPING FOR PDHU-1

(C) REMOVE EXISTING 3" HW PIPING TO FLOOR AND PLUG OPEING AT FLOOR.

(D) NEW TYPE "B" FLUE THRU ROOF.

(E) BURY NEW PIPES 36" BELOW GROUND.

(F) RELOCATE AND REUSE EXISTING CHEMICAL BYPASS FEEDER

(G) NEW BOILER MUST HAVE 36" CLEARANCE ALL AROUND.

(H) TIE-IN TO EXISTING PIPING AND REROUTE TO PDHU-1 AS SHOWN. ABONDON REMAINING PIPING.

(I) NEW EXPANSION TANK 16" DIA., MINIMUM ACCEPTANCE VOLUME = 20 GALLONS

(J) CONNECT TO 3/4"ø HW PIPE SERVING EXISTING UH'S.

(K) INTERNALLY LINE NEW DUCTWORK EXPOSED TO OUTDOORS WITH 1-1/2" THK. FIBERFLASS DUCT LINERS

(L) NEW PADDOCK EVACUATOR SYSTEM

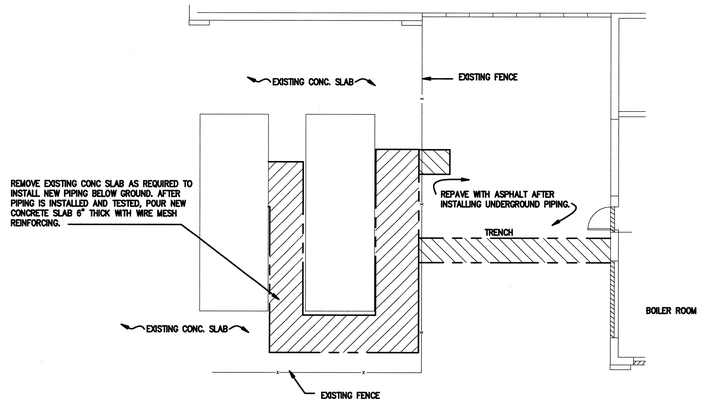
(M) EXTEND EXISTING PAD TO ACCOMODATE NEW SERESCO UNITS.

(N) TRANSITION DUCT FROM 30"ø TO 132"X12". CONNECT TO UNIT RETURN DUCT.

(O) DUCT TO PENETRATE WALL AND RUN OUTSIDE ALONG WALL ABOVE DOOR.

(P) FABRICATE ANNODIZED ALUMINUM WALL BOX TO COVER FOR EXPOSED PIPES. AFTER PIPES ARE INSTALLED AND IDENTIFIED, INJECT FOAMGLASS INSULATION INSIDE BX AND PAINT BOX TO MATCH BRICK WALL.

PIPE LEGEND	
SYMBOL	DESCRIPTION
PIC	UNDERGROUND PRE-INSULATED TYPE "L" COPPER
PICPVC	UNDERGROUND PRE-INSULATED SCH. 80 CPVC
PWS	POOL WATER SUPPLY
PWR	POOL WATER RETURN
HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN



UNDERGROUND PIPING INSTALLATION NOTES:

1. REMOVE EXISTING FENCE AND STORE FOR RE-INSTALLATION AFTER WORK IS FINISHED.
2. IDENTIFY AND MARK UNDERGROUND PIPING, ELECTRICAL, GAS PIPING, ETC. IN EFFECTED AREA.
3. CUT ASPHALT AND DIG TRENCH APPROXIMATELY 48" DEEP FOR NEW PIPING.
4. CUT AND REMOVE EXISTING CONCRETE SLAB AS SHOWN FOR NEW PIPING AND ELECTRICAL CONDUIT.
4. INSTALL NEW UNDERGROUND PIPING APPROXIMATELY 36" DEEP AND INSTALL NEW ELECTRICAL LINES AS INDICATED ON ELECTRICAL DRAWINGS.
5. AFTER PIPING IS INSTALLED, TESTED AND COVERED UP POUR NEW PIPE SLAB TO REPLACE REMOVED SLAB. EXTEND EXISTING POOL DEHUMIDIFIER PADS AS SHOWN AND REQUIRED TO ACCOMMODATE NEW SERESCO UNITS.

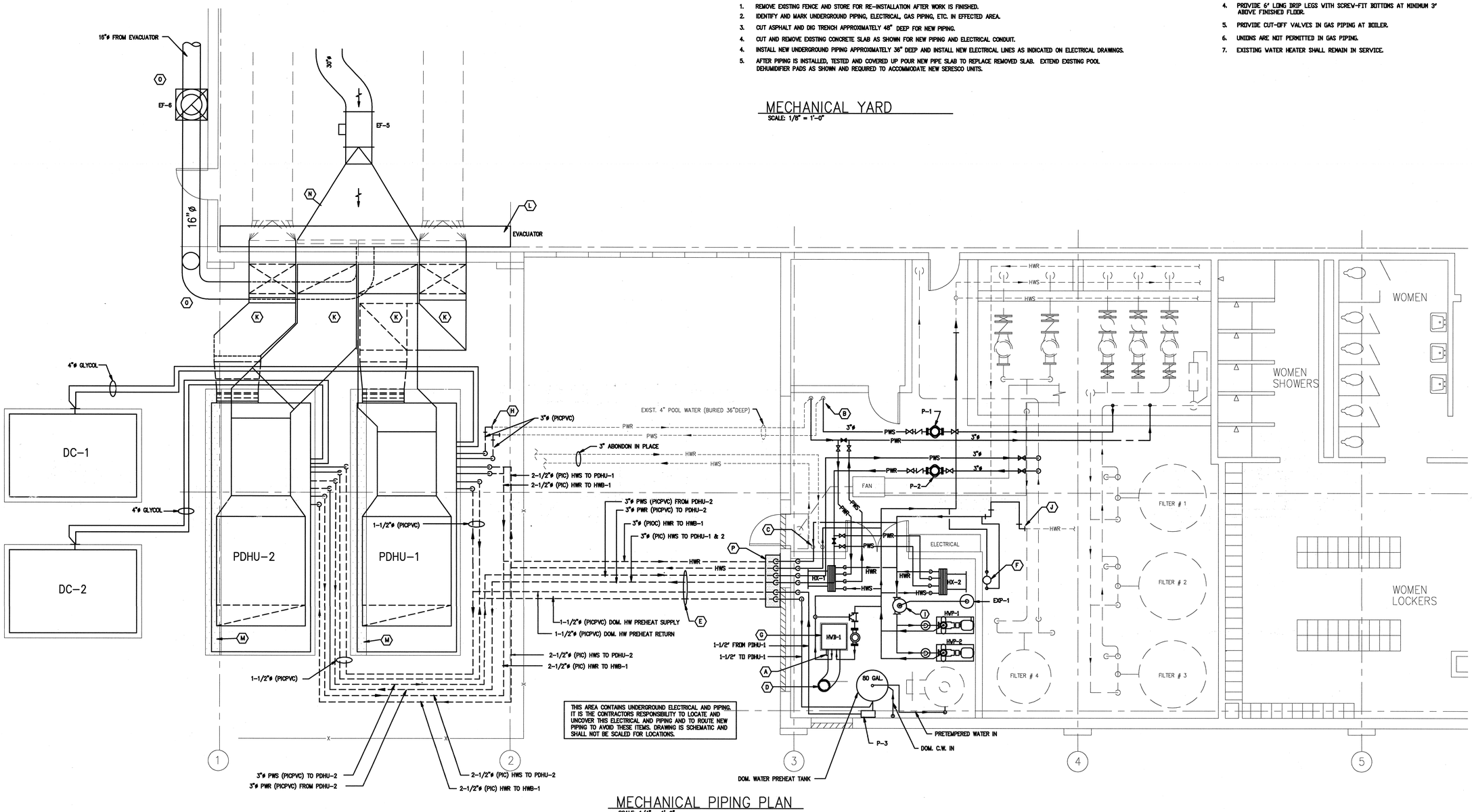
MECHANICAL YARD
SCALE: 1/8" = 1'-0"

GENERAL NOTES:

1. THIS PLAN IS SCHEMATIC ONLY. CONTRACTOR SHALL VERIFY MEASUREMENTS, COUNTS, HEADROOM, DIMENSIONS, EXISTING CONDITIONS, ETC. AND PLAN DEMOLITION AND INSTALLATION ACCORDINGLY.
2. INSTALL ALL PIPING, VALVES, FITTINGS, GAGES, STRAINERS, ETC. AND EQUIPMENT IN ACCORDANCE WITH THE MECHANICAL PIPING SCHEMATIC SHOWN ON SHT. M-3. INSTALL PIPING AND EQUIPMENT TO ALLOW FOR HEADROOM AND CLEARANCES FOR MAINTENANCE AND ACCESSIBILITY INSTALL VALVES TO ALLOW FOR ACCESS TO OPERATORS AND HANDLES.
3. THE CONTRACTOR SHALL ACCEPT THE PROJECT SITE IN "AS IS" CONDITION. HE SHALL VERIFY ALL THE EXISTING CONDITIONS AND THOSE FOR THE EXISTING WORK TO BE REUSED OR ALTERED. CONTRACTOR SHALL INCLUDE COSTS OF ALL REQUIRED MODIFICATIONS OR REPLACEMENTS IN ACCORDANCE WITH APPLICABLE PLANS AND SPECIFICATION SECTIONS.
4. THE DIMENSIONS AND COUNTS PROVIDED IN THE DRAWINGS AND SPECIFICATIONS ARE FIELD MEASURED AND MAY NOT BE EXACT. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE SITE, TAKE NECESSARY MEASUREMENTS, COUNTS AND FAMILIARIZE HIMSELF WITH ALL THE JOB CONDITIONS PRIOR TO PROCEEDING WITH THE WORK.

GAS PIPING NOTES

1. DISCONNECT GAS PIPING TO EXISTING BOILERS. CONNECT NEW GAS PIPING TO NEW BOILER AFTER INSTALLATION. PROVIDE ADDITIONAL PIPING AND FITTINGS AS REQUIRED.
2. GAS PIPING AND FITTINGS - BLACK CARBON STEEL, BUTT WELDED, SCHEDULE 40 PIPE MEETING REQUIREMENTS OF ASTM A 53. WELDED FORGED STEEL FITTINGS MEETING REQUIREMENTS OF ASTM A 234 OR STANDARD WEIGHT MALLEABLE IRON SCREWED.
3. GAS PIPING SYSTEM SHALL BE TESTED AS FOLLOWS. TESTS SHALL INCLUDE COMPRESSED AIR, CARBON DIOXIDE OR NITROGEN GAS. PRESSURE TESTS SHALL BE CONDUCTED ON THE DOWNSTREAM SIDE OF THE METER AFTER THE PIPING IS FULLY INSTALLED WITH TEST PORTS. THE PIPING SHALL BE PRESSURIZED TO A MINIMUM PRESSURE OF 20 PSIG AND HELD FOR A PERIOD OF NOT LESS THAN ONE (1) HOUR WITH THE COMPRESSOR DISCONNECTED. TESTS EACH JOINT WITH A SOAPY WATER SOLUTION FOR LEAKS DURING PRESSURE TEST. IF ANY JOINT FAILS THE LEAK TEST THE JOINT SHALL BE CORRECTED AND A COMPLETE NEW TEST SHALL BE MADE.
4. PROVIDE 6" LONG DRIP LEGS WITH SCREW-FIT BOTTOMS AT MINIMUM 3" ABOVE FINISHED FLOOR.
5. PROVIDE CUT-OFF VALVES IN GAS PIPING AT BOILER.
6. UNIONS ARE NOT PERMITTED IN GAS PIPING.
7. EXISTING WATER HEATER SHALL REMAIN IN SERVICE.



MECHANICAL PIPING PLAN
SCALE: 1/4" = 1'-0"

GEORGIA REGISTERED No. 013238 PROFESSIONAL ENGINEER JOHN E KIRKPATRICK
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MOUNTAIN VIEW PARK AQUATIC CENTER
AIR QUALITY INPROVEMENTS and INTERIOR RENOVATIONS
2650 GORDY PARKWAY, MARIETTA, GEORGIA 30066

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SHEET TITLE
MECHANICAL PIPING PLAN

SHEET No.
M-2
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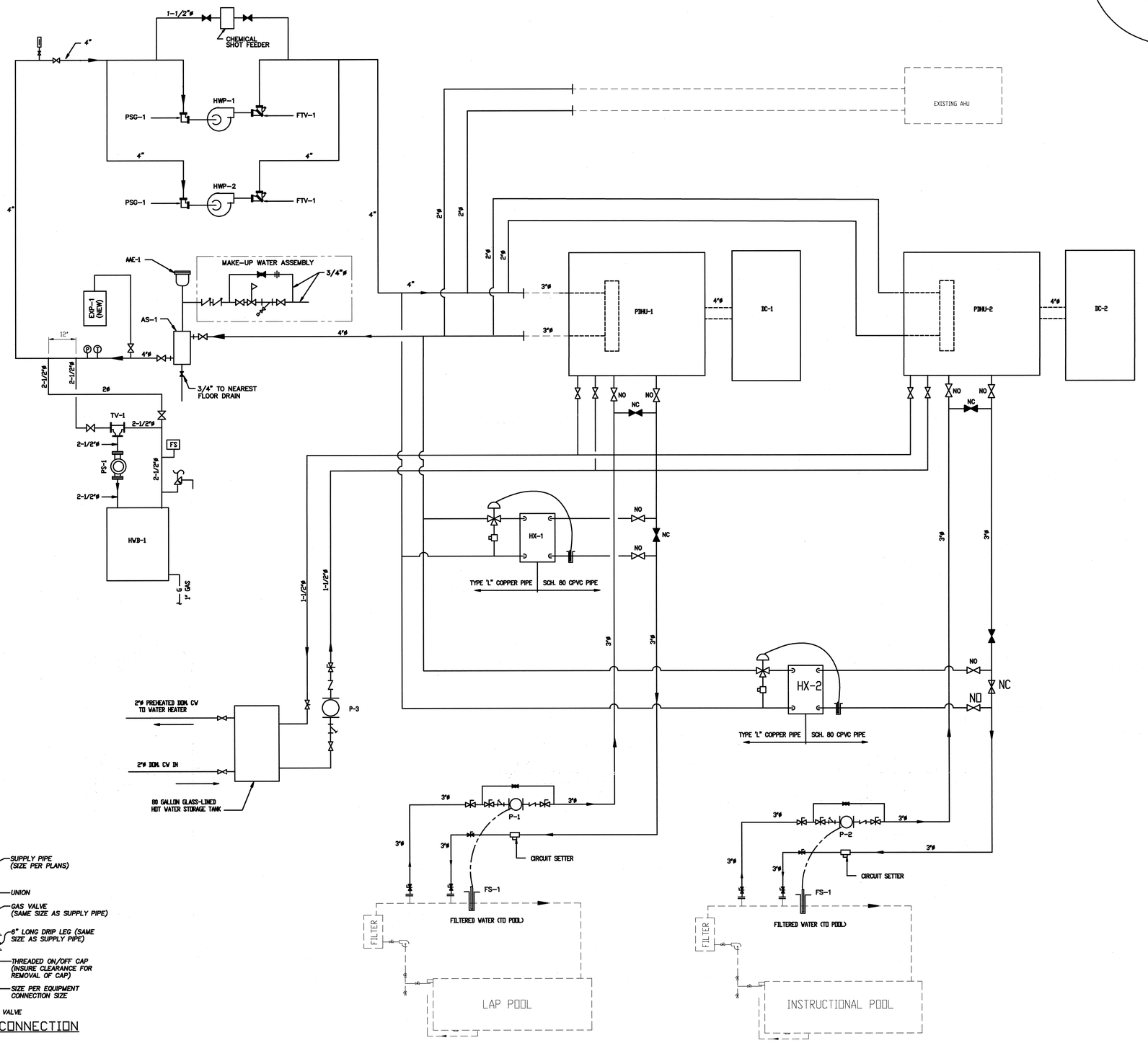
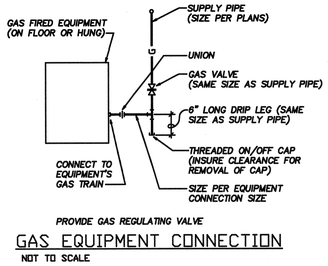


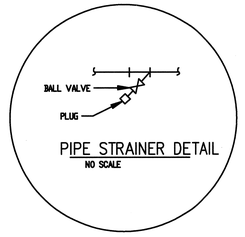
HVAC PIPING SCHEMATIC

NOT TO SCALE



GAS EQUIPMENT CONNECTION

NOT TO SCALE



PIPE STRAINER DETAIL

NO SCALE

PIPING LEGEND

- PRESSURE REDUCING VALVE
- NORMALLY CLOSED VALVE
- BALL VALVE
- NORMALLY CLOSED GLOBE VALVE
- CONTROL VALVE
- BACKFLOW PREVENTER
- CHECK VALVE
- THERMAL WELL
- PRESSURE GAUGE
- THERMOMETER
- UNION
- RELIEF VALVE
- PIPE STRAINER
- FLO-TREX VALVE
- SUCTION GUIDE
- TS — TEMPERATURE SENSOR
- CIRCUIT SETTER

POOL WATER HEATING – SEQUENCE OF OPERATION:

HX-1 SHALL BE USED FOR AUTOMATIC BACKUP HEAT FOR THE MAIN POOL WATER. NORMAL OPERATION IS FOR THE POOL DEHUMIDIFICATION UNIT (PDUH-1) TO PROVIDE POOL WATER HEAT. IF FOR ANY REASON PDHU-1 IS NOT PROVIDING ENOUGH HEAT TO MAINTAIN POOL WATER SET POINT TEMPERATURE OR PDUH-1 IS OUT OF SERVICE THEN HX-1 SHALL AUTOMATICALLY PROVIDE THE REQUIRED HEAT TO MAINTAIN THE POOL WATER TEMPERATURE SET POINT. WHEN THE BACKUP SYSTEM IS FUNCTIONING A SIGNAL SHALL BE SENT TO THE COMPUTER THAT THE BACKUP SYSTEM IS ACTIVATED.

POOL WATER TEMPERATURE FOR BOTH THE SUPPLY AND RETURN WATER TO AND FROM PDHU-1 SHALL BE SENSED TO DETERMINE BOTH ENTERING AND EXITING WATER TEMPERATURES. IF THE POOL WATER TEMPERATURE ENTERING PDHU-1 IS THE SAME AS OR GREATER THAN THE POOL WATER SET POINT TEMPERATURE, PDHU-1 WILL AUTOMATICALLY DIVERT HOT GAS TO THE HOT GAS REHEAT COIL OR WILL REJECT HEAT TO THE AIR COOLED CONDENSER LOCATED OUTDOORS. THIS IS PART OF THE PDHU-1 CONTROL SYSTEM.

IF FOR ANY REASON PDHU-1 FAILS TO MAINTAIN THE POOL WATER TEMPERATURE SET POINT THEN CONTROL VALVE (CV-1) AT HX-1 SHALL MODULATE TO PROVIDE OUTLET WATER TO THE POOL OF 90 DEG. MAXIMUM (ADJUSTABLE). WHEN THE POOL WATER TEMPERATURE SET POINT IS SATISFIED, CV-1 SHALL BE IN THE FULL BYPASS POSITION.

* PROVIDE DIELECTRIC UNIONS WHERE ALL DISSIMULAR METALS COME INTO CONTACT.

GENERAL NOTES

1. THE CONTRACTOR SHALL PROVIDE A COMPLETE PIPING SYSTEM TO INCLUDE ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT FOR A COMPLETE AND FUNCTIONAL SYSTEM INCLUDING ALL NECESSARY APPURTENANCES CUSTOMARILY INCLUDED IF NOT SPECIFICALLY CALLED OUT.
2. ALL WORK SHALL BE PERFORMED IN COMPLIANCE WITH APPLICIBLE LOCAL AND STATE CODES AND ORDINANCES.
3. INSTALL ALL EQUIPMENT AND MATERIALS PER MANUFACTURER'S RECOMMENDATIONS.
4. THE CONTRACTOR SHALL VISIT THE JOB SITE AND THOROUGHLY FAMILIARIZE HIMSELF WITH ALL DETAILS OF THE WORK AND THE EXISTING CONDITIONS AND SHALL VERIFY DIMENSIONS AND CLEARANCES AND BE ASSURED THAT THE EQUIPMENT PURCHASED WILL FIT INTO THE AVAILABLE SPACE.
5. THE CONTRACTOR SHALL VERIFY ALL ELECTRICAL CHARACTERISTICS BEFORE PURCHASING EQUIPMENT.

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3-16-2012

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MOUNTAIN VIEW PARK AQUATIC CENTER
AIR QUALITY INPROVEMENTS and INTERIOR RENOVATIONS

2650 GORDY PARKWAY, MARIETTA, GEORGIA 30066

No.	REVISIONS
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SHEET TITLE
HVAC PIPING SCHEMATIC

SHEET No.
M-3

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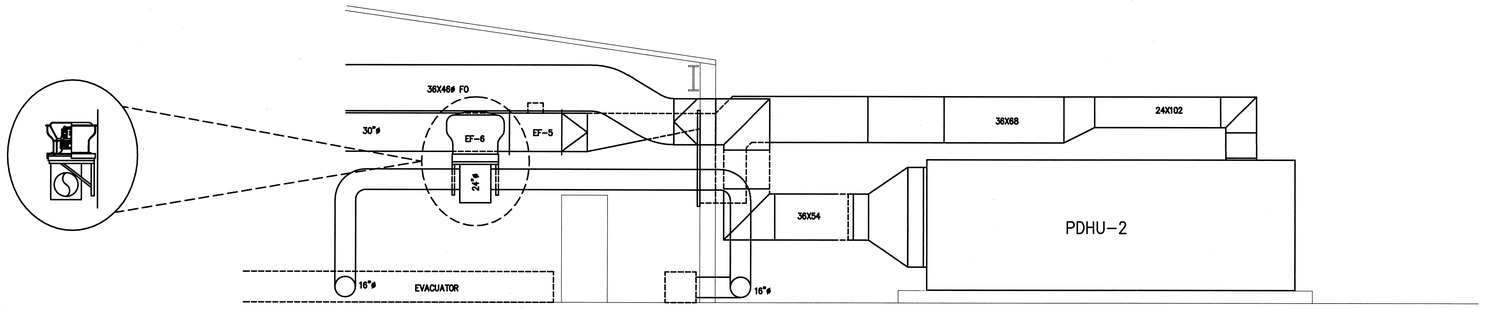
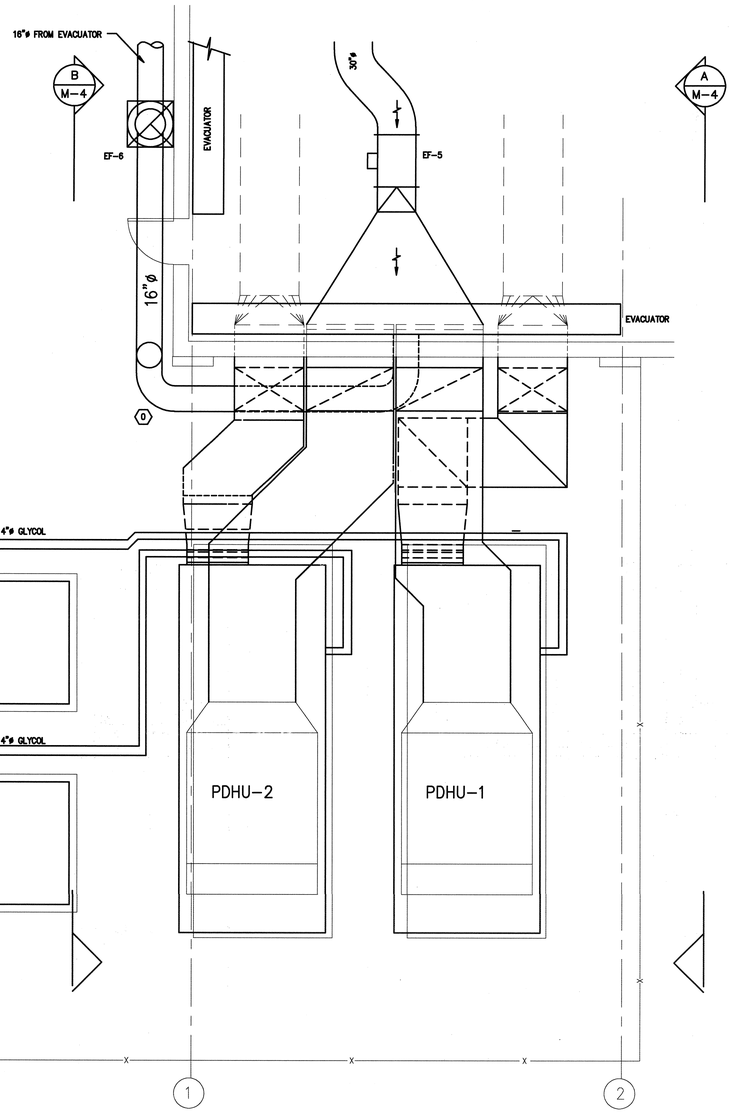
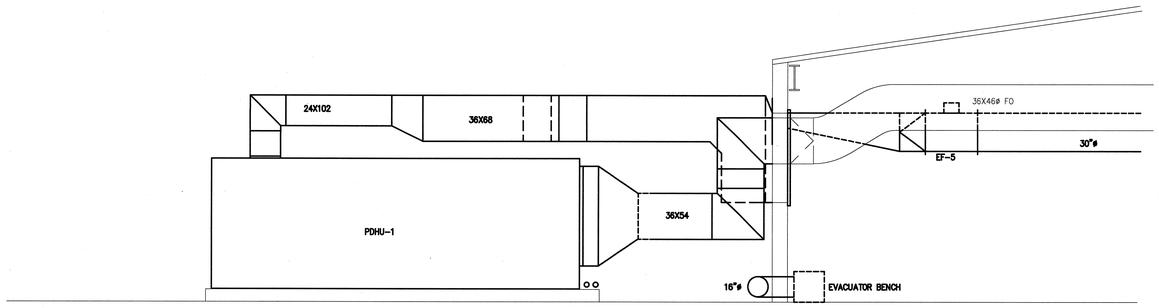


B / M-4 SECTION



OUTDOOR MECHANICAL DUCTWORK PLAN
SCALE: 1/4" = 1'-0"



A / M-4 SECTION

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MOUNTAIN VIEW PARK AQUATIC CENTER
AIR QUALITY INPROVEMENTS and INTERIOR RENOVATIONS
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SHEET TITLE
OUTDOOR MECHANICAL DUCTWORK PLAN

SHEET No.
M-4
Sheet of

FAN SCHEDULE

DESIG	DESCRIPTION	CFM	EXT SP INCHES WC	APPROX MOTOR WATTS (HP)	TYPE DRIVE	NOM WHEEL DIA INCHES	MAX RPM	SERVICE	ELECT	BASIS FOR DESIGN	REMARKS	STATUS
EF-1	EXISTING										EXISTING	EXISTING
EF-2	ROOF FAN	4400	2.3	3	BELT	–	1166	EXHAUST	SEE DWGS.	SOLER & PALAU TXBHP24-5	SEE NOTE 1,2	BY OWNER
EF-3	ROOF FAN	2200	1	1	BELT	–	1545	EXHAUST	SEE DWGS.	SOLER & PALAU TXBHP15101	SEE NOTE 1,2	BY OWNER
EF-4	ROOF FAN	2200	1	1	BELT	–	1545	EXHAUST	SEE DWGS.	SOLER & PALAU TXBHP15101	SEE NOTE 1,2	BY OWNER
EF-5	IN-LINE FAN	5000	1	2	BELT	–	1025	EXHAUST	SEE DWGS.	SOLER & PALAU SQB 20	SEE NOTE 1	NEW
EF-6	ROOF FAN	3200	1	1	BELT	–	1200	EXHAUST	SEE DWGS.	SOLER & PALAU TXBHP18103	SEE NOTE 1,2	BY OWNER

NOTE 1. – INTERLOCK WITH PDHU-1 AND PDHU-2

NOTE 2. – THE OWNER IS PRE-PURCHASING (3) PADDOCK EVACUATOR BENCH SYSTEMS. THE SYSTEMS ARE TO BE RECEIVED, UNLOADED AND COMPLETELY INSTALLED BY THE CONTRACTOR INCLUDING CONTROLS AND INTERLOCKS REQUIRED TO CONNECT TO THE BAS. PADDOCK IS FURNISHING THE FOLLOWING PRINCIPAL ITEMS:

(1) 27'-10" LONG PADDOCK EVACUATOR BENCH UNIT

(1) 83'-8" LONG PADDOCK EVACUATOR BENCH UNIT

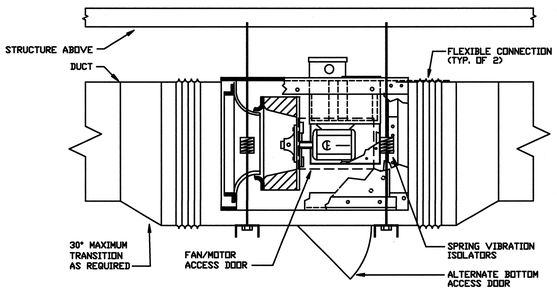
(1) 67'-'8" LONG PADDOCK EVACUATOR BENCH UNIT

EF-2

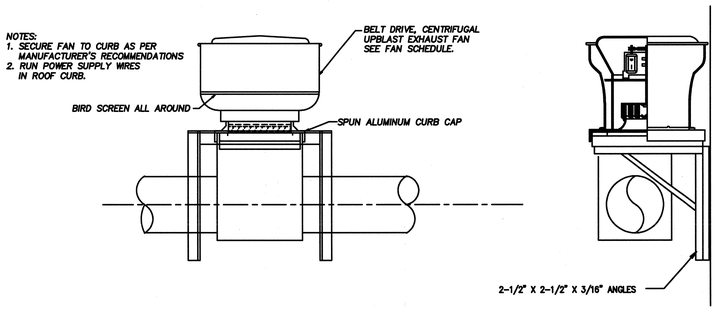
EF-3

EF-4

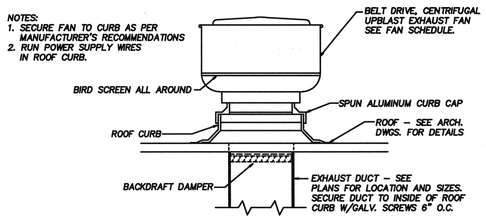
EF-6



INLINE FAN DETAIL
N.T.S.



BRACKET MOUNTED CENTRIFUGAL UPBLAST EXHAUST FAN DETAIL
NOT TO SCALE



ROOF MOUNTED CENTRIFUGAL UPBLAST EXHAUST FAN DETAIL
NOT TO SCALE

POOL DEHUMIDIFIER ENERGY RECOVERY UNIT (BY OWNER)

MARK	TOTAL NO. REQ'D.	SUPPLY AIR S.C.F.M. EACH	RETURN AIR S.C.F.M. EACH	OUTSIDE AIR S.C.F.M. EACH	EXHAUST AIR S.C.F.M. EACH	ESP IN.W.G. SUPPLY FAN	ESP IN.W.G. RETURN FAN	SUPPLY FAN MOTOR HP	RETURN FAN MOTOR HP	EVAP. CAPACITY BTUH	REHEAT CAPACITY BTUH	POOL WATER HEATING COIL CAPACITY BTUH	POOL WATER HEATING COIL PRESS. DROP	POOL WATER HEATING COIL GPM	ENCLOSURE HEATING COIL CAPACITY BTUH	ENCLOSURE HEATING COIL EWT	ENCLOSURE HEATING COIL LWT	ENCLOSURE HEATING COIL GPM	ENCLOSURE HEATING COIL PRESS. DROP	POOL DESIGN CRITERIA WATER TEMP	POOL DESIGN CRITERIA AIR TEMP	DRY COOLER	APPROX. WEIGHT POUNDS	BASIS OF DESIGN
PDHU-1, 2	2	26,250	15,750	6,000	7,000	1.5	1.0	15	10	909,600	1,137,000	640,000	20 FT.	100	700,000	180	150	50	9 FT.	84° F.	86° F.	YES	15,300	SERESCO MODEL NE-070 FURNISHED BY OWNER
DC-1, 2	2	1,137,000 BTUH HEAT REJECTION, ELECTRICAL: 460/3PH, MCA = 28, MOCP = 30.																						

① COMPLETE PACKAGE PROVIDED BY OWNER INCLUDING ALL INTERNAL CONTROLS, WATER HEATING COIL, HEAT EXCHANGERS, FANS, DRY COOLERS, ETC.

② CONTRACTOR TO PROVIDE 30% GYCOL SOLUTION TO DRY COOLERS AS REQUIRED BY SESERCO.

③ UNIT FURNISHED BY OWNER AND INSTALLED BY CONTRACTOR.

④ VOLTAGE 460/3/60, MCA = 162, MOCP = 200

PUMP SCHEDULE

SYMBOL	GPM	TDH	HP	RPM	TYPE	SERVICE	NOTES
P-1	120	85'	7.5	1750	VERTICAL IN-LINE (ALL BRONZE)	POOL WATER HEATING	③
P-2	120	85'	7.5	1750	VERTICAL IN-LINE (ALL BRONZE)	POOL WATER HEATING	③
P-3	10	60'	1-1/2	1750	VERTICAL IN-LINE	DESUPERHEATER HEAT RECOVERY	③
HWP-1	140	100'	10	1750	END SUCTION BASE MOUNTED	BOILER HOT WATER WATER	①③④
HWP-2	140	100'	10	1750	END SUCTION BASE MOUNTED	BOILER HOT WATER WATER	①③④
PS-1	116	18'	1	1750	VERT. IN-LINE	SECONDARY PUMP	②③

① PROVIDE ARMSTRONG PUMP SUCTION GUIDE AND ARMSTRONG FLO-TREX VALVES OR EQUAL

② PROVIDE 2-1/2" FLUID POWER ENERGY VALVE MODEL A-2570

③ ACCEPTABLE MANUFACTURERS – ARMSTRONG, BELL & GOSSETT, TACO OR APPROVED EQUAL.

④ HWP-1 AND HWP-2 OPERATE AS LEAD AND STANDBY. PUMPS NEVER OPERATE TOGETHER.

GAS FIRED HOT WATER BOILER

DESIG	LOCATION	NAT. GAS INPUT	NAT. GAS OUTPUT	GPM	INLET TEMP F	OUTLET TEMP F	BASIS OF DESIGN
HWB-1	MECH. RM.	1,999,000	1,739,000	140	155	180	* RBI FUTURA III

① FULL MODULATING BOILER, 88% EFFICIENT.

② BOILER CONTROLS SHALL BE EQUIPPED WITH STAND ALONE CONTROLS FOR AUTOMATIC LEAVING WATER TEMPERATURE RESET BASED ON OUTDOOR AIR TEMPERATURE. MAXIMUM LEAVING WATER TEMPERATURE SHALL BE 180 DEGREES F. AT 17 DEGREES OUTDOOR TEMPERATURE AND SHALL MODULATE PROPORTIONALLY TO 100 DEGREES F. AT 60 DEGREES F. OUTDOOR TEMPERATURE.

③ BOILER SHALL BE STARTED AND STOPPED BY THE BAS. BOILER SHALL START ANY TIME THE OUTDOOR AIR IS BELOW 60 DEG. F OR WHEN THE POOL WATER TEMPERATURE IS 2 DEGREES BELOW THE SET POINT (ADJUSTABLE).

* ④ SEE SPECIFICATIONS FOR OTHER ACCEPTABLE MANUFACTURERS.

HEAT EXCHANGER SCHEDULE

DESIG	LOCATION	HOT SIDE GPM	HOT SIDE ENTERING WATER TEMP 'F	HOT SIDE LEAVING WATER TEMP 'F	HOT SIDE WATER Δ P FT	COLD SIDE GPM	COLD SIDE ENTERING WATER TEMP 'F	COLD SIDE LEAVING WATER TEMP 'F	COLD SIDE WATER Δ P FT	REMARKS
HX-1	MECH. ROOM	50	180	140	6'	120	80	95	9'	PLATE AND FRAME
HX-2	MECH. ROOM	50	180	140	6'	120	80	95	9'	PLATE AND FRAME

MISCELLANEOUS COMPONENTS

TV-1 – 2-1/2" FLUID POWER THREE WAY THERMOSTATIC VALVE MODEL 2510M

PSG-1 – 4" ARMSTRONG PUMP SUCTION GUIDE OR EQUAL

FTV-1 – 4" ARMSTRONG FLO-TREX VALVE OR EQUAL

AS-1 – 4" PIPE SIZE ARMSTRONG VORTEX AIR-SEPARATOR MODEL VAS WITH STRAINER OR EQUAL

EXP-1 – PRE-CHARGED BLADDER TYPE EXPANSION TANK. MINIMUM ACCEPTANCE VOLUME = 22 GALLONS, TANK VOLUME = 44 GALLONS

AAE-1 – AUTOMATIC AIR ELIMINATOR ARMSTRONG AAE-750

GENERAL NOTES

1. THE CONTRACTOR SHALL PROVIDE A COMPLETE PIPING SYSTEM TO INCLUDE ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT FOR A COMPLETE AND FUNCTIONAL SYSTEM INCLUDING ALL NECESSARY APPURTENANCES CUSTOMARILY INCLUDED IF NOT SPECIFICALLY CALLED OUT.
2. ALL WORK SHALL BE PERFORMED IN COMPLIANCE WITH APPLICIBLE LOCAL AND STATE CODES AND ORDINANCES.
3. INSTALL ALL EQUIPMENT AND MATERIALS PER MANUFACTURER'S RECOMMENDATIONS.
4. THE CONTRACTOR SHALL VISIT THE JOB SITE AND THOROUGHLY FAMILIARIZE HIMSELF WITH ALL DETAILS OF THE WORK AND THE EXISTING CONDITIONS AND SHALL VERIFY DIMENSIONS AND CLEARANCES AND BE ASSURED THAT THE EQUIPMENT PURCHASED WILL FIT INTO THE AVAILIABLE SPACE.
5. THE CONTRACTOR SHALL VERIFY ALL ELECTRICAL CHARACTERISTICS BEFORE PURCHASING EQUIPMENT.
6. GRILLES TO BE ADDED OR REPLACED TO BE EQUAL TO TITUS 300/350 DOUBLE DEFLECTION SUPPLY AND TITUS 301R RETURN.

GEORGIA REGISTERED No 013238 PROFESSIONAL ENGINEER JAMES E KIRKPATRICK
3-16-2012

KIRKPATRICK ENGINEERS
Professional Consulting Engineers
SUITE 111
2141 KINGSTON CT. (770) 933-8842
MARIETTA, GEORGIA 30067

MOUNTAIN VIEW PARK AQUATIC CENTER
AIR QUALITY INPROVEMENTS and INTERIOR RENOVATIONS
2650 GORDY PARKWAY, MARIETTA, GEORGIA 30066

No.	REVISIONS
	3/16/12 ISSUED FOR BID

PROJECT No.:

DATE: 03/16/2012

DRAWN: JK/LS

CHECKED: JK

SHEET TITLE
MECHANICAL SCHEDULES AND DETAILS

SHEET No.
M-5
Sheet of

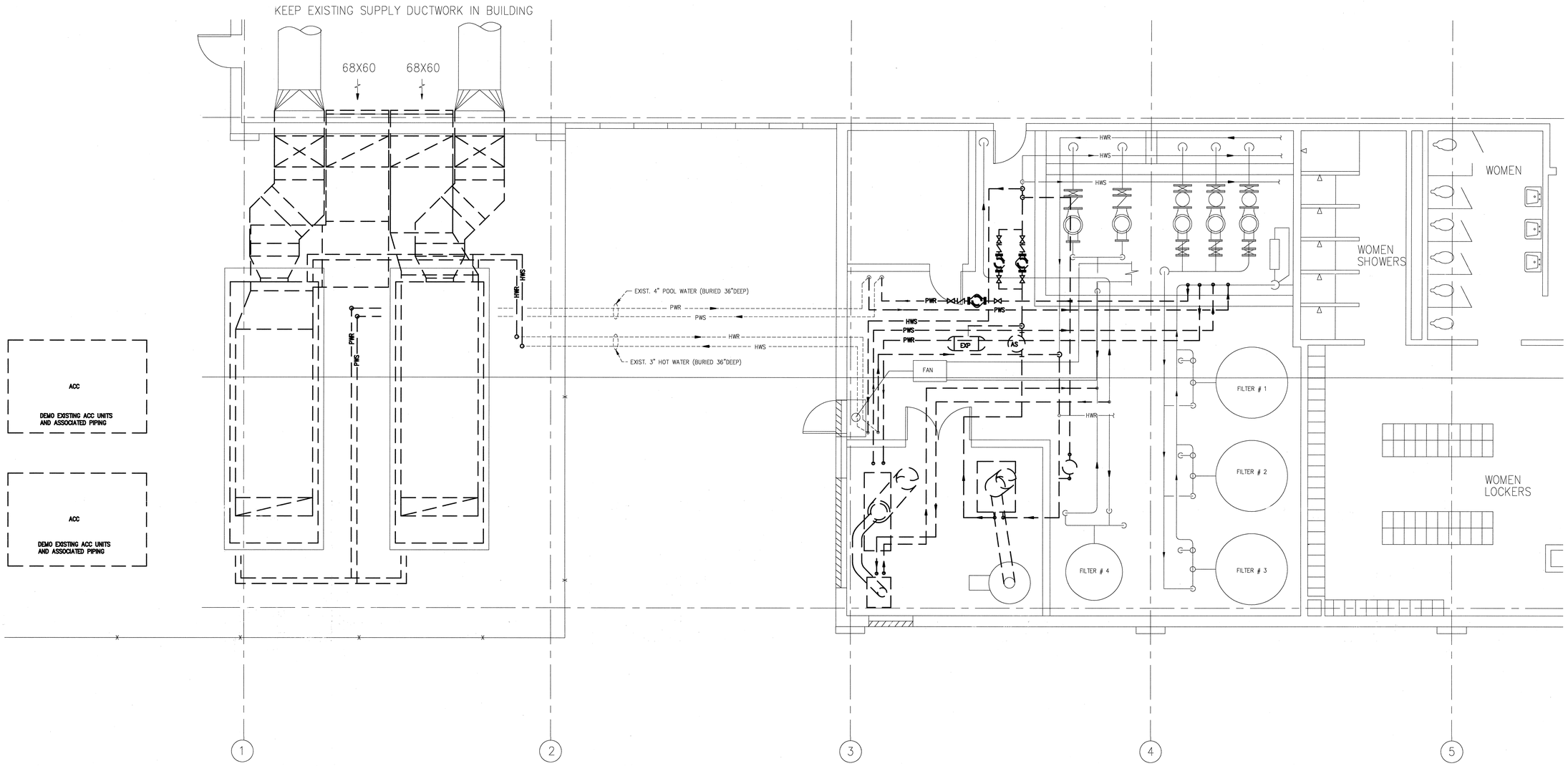
SPECIAL DEMO NOTES:

THE CONTRACTOR SHALL ALLOW THE COUNTY THE OPPORTUNITY TO SALVAGE REUSABLE COMPONENTS FROM THE EXISTING DEHUMIDIFIERS PRIOR TO REMOVING THEM FROM THE SITE. THESE COMPONENTS INCLUDE ANY CONTROLLERS, COMPRESSORS AND MOTORS ASSOCIATED WITH THE EXISTING UNITS. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ANY PORTIONS OF THE UNITS THAT REMAIN.

THE CONTRACTOR SHALL CAREFULLY REMOVE THE EXISTING AIR COOLED CONDENSING UNITS FROM THEIR CURRENT LOCATION ADJACENT TO THE DEHUMIDIFIERS, STORE THEM IN THE PARKING LOT, INTACT, AND TURN THEM OVER TO THE OWNER FOR USE AS NEEDED AT OTHER FACILITIES.

DEMOLITION NOTES

1. THE CONTRACTOR SHALL ACCEPT THE PROJECT SITE IN "AS IS" CONDITION. HE SHALL VERIFY ALL THE EXISTING CONDITIONS AND THOSE FOR THE EXISTING WORK TO BE REUSED OR ALTERED. CONTRACTOR SHALL INCLUDE COSTS OF ALL REQUIRED MODIFICATIONS OR REPLACEMENTS IN ACCORDANCE WITH THE DRAWINGS.
2. THE DIMENSIONS AND COUNTS PROVIDED IN THE DRAWINGS AND SPECIFICATIONS ARE FIELD MEASURED AND MAY NOT BE EXACT. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE SITE, TAKE NECESSARY MEASUREMENTS, COUNTS AND FAMILIARIZE HIMSELF WITH ALL THE JOB CONDITIONS PRIOR TO PROCEEDING WITH THE WORK.
2. REMOVE ONLY PIPING AND EQUIPMENT SHOWN AS DASHED.
3. CUT PIPING SQUARE TO SIDES TO ALLOW FOR ANY CONNECTION TO NEW PIPING TO BE INSTALLED.
4. REMOVE ASSOCIATED PIPING HANGERS, INSULATION, ETC.
5. REFER TO SHEET M-2 FOR LIMITS OF PIPING AND EQUIPMENT DEMOLITION AND ADDITIONS. DEMO AS REQUIRED
6. BLANK OFF AND SEAL ALL OPENINGS LEFT IN PIPING TO BE REUSED.
7. CONFINE OPERATIONS AT THE SITE TO AREAS PERMITTED BY LAW, ORDINANCES, PERMITS, CONTRACT DOCUMENTS AND THE OWNER. AREA SENSITIVITY MUST BE MAINTAINED AT ALL TIMES.
8. DO NOT UNREASONABLY ENCUMBER PREMISES WITH MATERIALS OR EQUIPMENT AND REMOVE DEMOLISHED MATERIALS AND EQUIPMENT FROM SITE ON A DAILY BASIS.
9. MAINTAIN THE PREMISES IN CLEAN AND SAFE CONDITION AT ALL TIMES.
10. OPERATIONS SHOULD NOT CAUSE ANY HINDRANCE, NUISANCE, LACK OF SAFETY, BLOCKED MEANS OF ENTRANCE AND EXIT, DAMAGE TO PROPERTY AND PERSON, DISRUPTION OF UTILITIES, EXCESSIVE AND OFFENSIVE NOISE AND DUST TO ANY OF THE ADJOINING AREAS AND PERSONS.
11. PROVIDE ACCESS TO OWNER'S AUTHORIZED PERSONS AND THE POLICE, FIRE OR OTHER DEPARTMENTS HAVING LEGAL JURISDICTION TO THE SITE AT ALL TIMES AND PROVIDE COOPERATION IN THEIR WORK.



DEMOLITION PLAN

SCALE 1/4" = 1'-0"

GEORGIA REGISTERED No. 013234 PROFESSIONAL ENGINEER JEFFREY E KIRKPATRICK
3-16-2012

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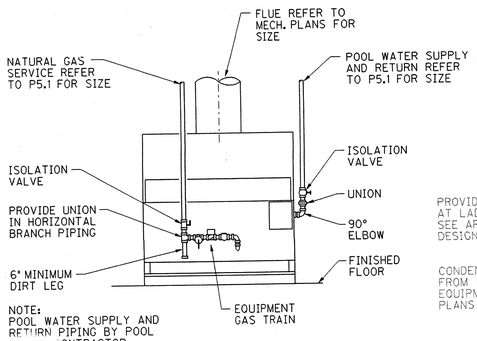
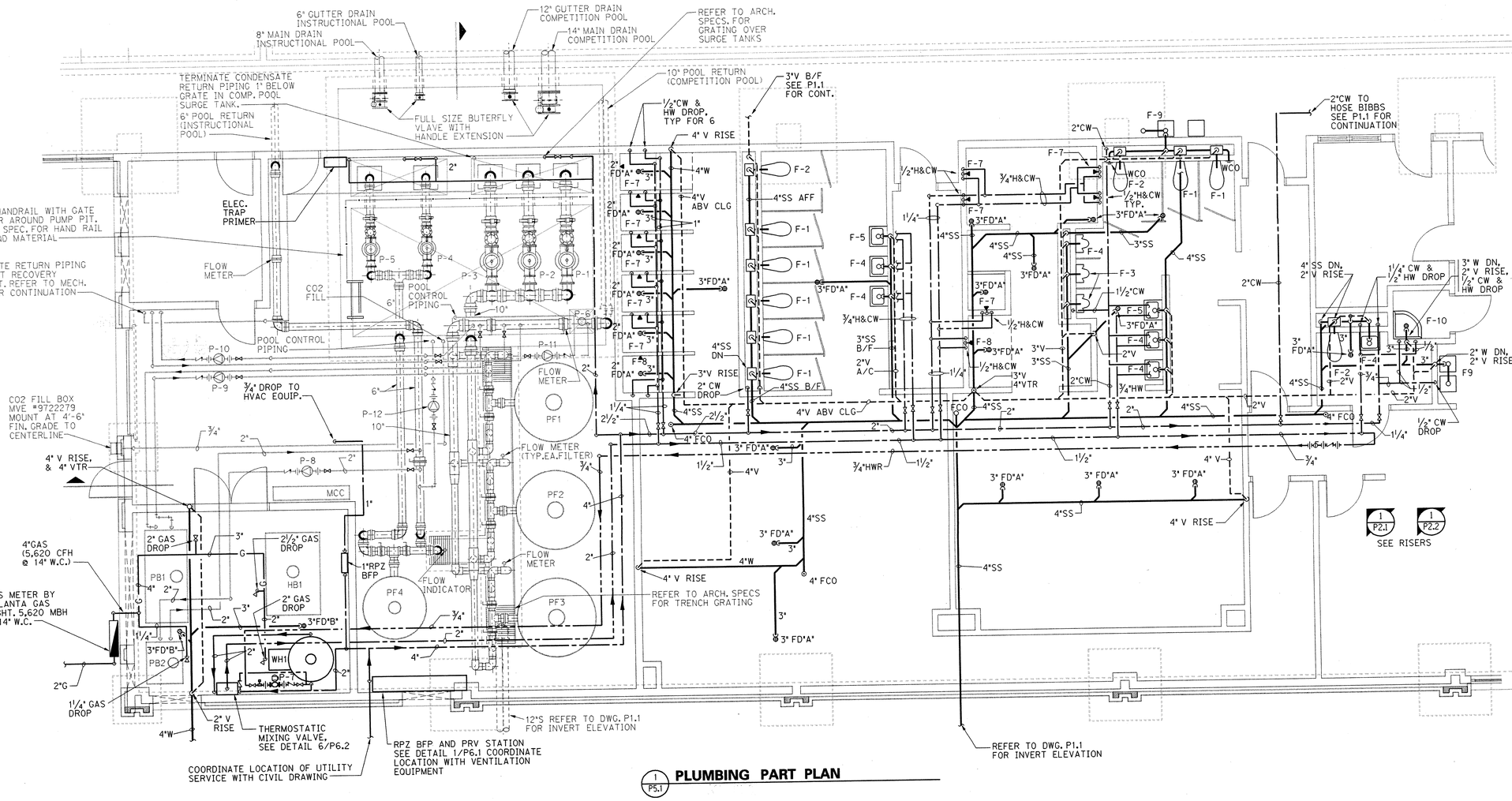
SHEET TITLE
MECHANICAL DEMOLITION PLAN

SHEET No.
MD-1
Sheet of



POOL HEATER DETAIL
NOT TO SCALE



PLUMBING PART PLAN
1/P5.1

FOR REFERENCE ONLY
0 2' 4' 8' 12'

HEERY
ATLANTA, GEORGIA

Mountain View Park Aquatic Center

Cobb County, Georgia

24 HOUR EMERGENCY CONTACT:
MR. DONALD PURVIS (770)-437-2633

COMMISSION:	97115-02
DATE:	OCTOBER 9 1998
DRAWN BY:	S. HARRISON
CHECKED BY:	J. NIELSON
APPROVED BY:	J. CRAYTOR

REVISIONS DATE

REVISIONS DATE

STAMP: GEORGIA REGISTERED No. 19317 PROFESSIONAL ENGINEER 10-12-98 JAMES CRAYTOR

KEY PLAN

SHEET TITLE
PLUMBING LARGE SCALE AND SECTIONS

SCALE:

DRAWING NUMBER
P5.1
OF