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### Solicitation 12072-483

## Fort Lauderdale Aquatic Center Renovation

## **Bid Designation: Public**



**City of Fort Lauderdale** 

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### Bid 12072-483 Fort Lauderdale Aquatic Center Renovation

Bid Number	12072-483
Bid Title	Fort Lauderdale Aquatic Center Renovation
Bid Start Date	Nov 17, 2017 4:55:58 PM EST
Bid End Date	Jan 15, 2018 2:00:00 PM EST
Question & Answer End Date	Jan 5, 2018 7:00:00 AM EST
Bid Contact	Althea Pemsel
	Asst. Procurement & Contracts Manager
	Finance
	apemsel@fortlauderdale.gov
Contract Duration	570 days
Contract Renewal	Not Applicable
Prices Good for	120 days
Pre-Bid Conference	Nov 28, 2017 10:00:00 AM EST
	Attendance is optional
	Location: Fort Lauderdale Aquatic Center
	SUI Seableeze Boulevard Fort Lauderdale EL 33316

**Bid Comments** 

**REQUEST FOR PROPOSALS** 

Sealed proposals will be received electronically until 2:00 P.M., local time, on Monday, January 15<sup>th</sup>, 2018, and opened immediately thereafter in the 5th Floor Conference Room, City Hall, City of Fort Lauderdale, Florida, 100 North Andrews Avenue, for BID NO., 12072·183, PROJECT NO.,12315 Fort Lauderdale.

This project is located at \_501 Seabreeze Boulevard, 33316, in the City of Fort Lauderdale. The work to be accomplished under this contract includes, but is not limited to, \_1. Remove existing 50 meter Main Competition Pool and provide new expanded fully FINA compliant competition pool with (2) moveable stainless bulkheads. 2. Remove existing Diving Pool and underground observation room and provide new fully FINA compliant Diving Pool with dive tower including five (5) platform levels and 1 meter and 3 meter springboards. Provide elevated bleachers for +/- 550 spectator capacity on the west side of the Dive Pool. 3. Remove existing Spa for divers and provide new covered spa. 4. Repair existing 50 meter training pool with new surfacing and gutters. 5. Remove existing Instructional Pool and replace with expanded Instructional Pool. 6. Remove existing grandstand building and bleachers on north side of facility and provide new grandstand with spectator restrooms, concessions, ticket office, and bleachers for +/- 1500 spectator capacity. 7. Provde new pool deck and gutter systems. 8. Provide new pool deck and pool deck drain system. 9. Provide improvements to existing parking that include new asphalt, drainage system, utilty conecitons, landscaping, and planters.

NOTE: Payment on this contract will be made by Visa or MasterCard.

Licensing Requirements: Possession of a State of Florida General Contractor's License

<u>Pre-Proposal Meeting/Site visit:</u> A pre-proposal meeting and/or site visit will be held on Tuesday, November 28th, 2017, at 10:00 a.m., local time, at Fort Lauderdale Aquatic Center, located at 501 Seabreeze Boulevard, Fort Lauderdale, FL 33316.

It is strongly suggested that all Contractors attend the pre-proposal conference and/or site visit since tours at other times might not be available.

While attendance is not mandatory, it will be the sole responsibility of the bidder to inspect the City's location (s)/facilities OR /and become familiar with the scope of the City's requirements and systems prior to submitting a proposal. No variation in price or conditions shall be permitted based upon a claim of ignorance. It is strongly suggested that all Contractors attend the pre-bid meeting and/or site visit.

Bidding blanks may be obtained free of charge at BIDSYNC.COM. Drawing Plans are on file in the Public Works Department, City of Fort Lauderdale at 100 North Andrews Avenue, 4<sup>th</sup> floor, (Monday thru Friday 8:00 am to 4:30 pm) at a <u>NON-REFUNDABLE</u> cost of \$25.00 (including sales tax per set). Only cash or cashier's check made payable to the City of Fort Lauderdale are accepted.

It will be the sole responsibility of the bidder to ensure that his bid is submitted prior to the bid opening date and time listed. <u>PAPER BID SUBMITTALS WILL NOT BE ACCEPTED</u>. <u>BIDS MUST BE SUBMITTED</u> <u>ELECTRONICALLY VIA BIDSYNC.COM</u>

<u>Bid Security</u>: A certified check, cashier's check, bank officer's check or bid bond for <u>FIVE</u> percent (5%) of the bid amount, made payable to the City of Fort Lauderdale, Florida, shall accompany each proposal.

#### Bid Bonds:

Bidders can submit bid bonds for projects four different ways:

BidSync allows bidders to submit bid bonds electronically directly through their system using Surety 2000. For more information on this feature and to access it, contact BIDSYNC customer care department.

Bidders may upload their original executed bid bond on BIDSYNC to accompany their bids with the electronic proposal, and deliver, upon request, the original, signed and sealed hard copy within five (5) business days after bid opening, with the company name, bid number and title clearly indicated.

Bidders can hand deliver their bid bond in a sealed envelope to the Finance Department/Procurement Services Division, 100 North Andrews Avenue, Room 619, Fort Lauderdale, FL 33301.1016, before time of bid opening, with the company name, bid number and title clearly indicated on the envelope.

Bidders can mail their bid bond to the Finance Department/Procurement Services Division, 100 North Andrews Avenue, Room 619, Fort Lauderdale, FL 33301-1016, before time of bid opening, with the company name, bid number and title clearly indicated on the envelope.

<u>Certified Checks, Cashier's Checks and Bank Drafts</u> CANNOT be submitted via BIDSYNC, nor are their images allowed to be uploaded and submitted with your electronic bid. These forms of securities, as well as hard copy bid bonds, must be received on or before the Invitation to Bid (ITB) opening date and time, at the Finance Department/Procurement Services Division, 100 North Andrews Avenue, Room 619, Fort Lauderdale, FL 33301.1016, with the bid number and title clearly indicated on the envelope.

It is the bidder's sole responsibility to ensure that his bid bond or other bid security is received by the Procurement Services Division before time of bid opening. Failure to adhere to this requirement may be grounds to consider the bid as non-responsive.

The City of Fort Lauderdale reserves the right to waive any informality in any or all bids and to reject any or all bids.

For information concerning technical specifications, please utilize the question/answer feature provided by BIDSYNC at www.bidsync.com . Questions of a material nature must be received prior to the cut-off date specified in the solicitation. Material changes, if any, to the scope of services or bidding procedures, will only be transmitted by written addendum. (See addendum section of BIDSYNC Site). <u>Contractors please note:</u> No part of your bid can be submitted via FAX. No variation in price or conditions shall be permitted based upon a claim of ignorance. Submission of a bid will be considered evidence that the Contractor has familiarized himself with the nature and extent of the work, equipment, materials, and labor required. The entire bid response must be submitted in accordance with all specifications contained in this solicitation. Information on bid results and projects currently out to bid can be obtained on the City's website – http://www.fortlauderdale.gov/departments/finance/procurement-services . For general inquiries, please call (954) 828-5933.

#### **Item Response Form**

ltem	12072-48301-01 - design-build
Quantity	1 lump sum
Unit Price	
Delivery Location	City of Fort Lauderdale
	Fort Lauderdale Aquatic Center
	501 Seabreeze Boulevard
	Fort Lauderdale FL 33316
	Qty 1

#### Description

The City of Fort Lauderdale, Florida (City) is seeking proposals from qualified bidders, hereinafter referred to as the Contractor, to provide design-build services for the City's Public Works Department, in accordance with the terms, conditions, and specifications contained in this Request of Proposals (RFP).

This project is located at \_501 Seabreeze Boulevard, 33316, in the City of Fort Lauderdale. The work to be accomplished under this contract includes, but is not limited to, \_1. Remove existing 50 meter Main Competition Pool and provide new expanded fully FINA compliant competition pool with (2) moveable stainless bulkheads. 2. Remove existing Diving Pool and underground observation room and provide new fully FINA compliant Diving Pool with dive tower including five (5) platform levels and 1 meter and 3 meter springboards. Provide elevated bleachers for +/- 550 spectator capacity on the west side of the Dive Pool. 3. Remove existing Spa for divers and provide new covered spa. 4. Repair existing 50 meter training pool with new surfacing and gutters. 5. Remove existing Instructional Pool and replace with expanded Instructional Pool. 6. Remove existing grandstand building and bleachers on north side of facility and provide new grandstand with spectator restrooms, concessions, ticket office, and bleachers for +/- 1500 spectator capacity. 7. Provde new pool deck and gutter systems. 8. Provide new pool deck drain system. 9. Provide improvements to existing parking that include new asphalt, drainage system, utilty conecitons, landscaping, and planters

### SECTION 1 INTRODUCTION

#### 1.2 Purpose

The City of Fort Lauderdale, FL ("City") is issuing a Request for Proposal (RFP) to solicit competitive proposals from one single entity ("Firm" or "Proposer" or "Design-Build Firm (DBF)") responsible for the design, permitting, and construction for the Fort Lauderdale Aquatic Center Renovations located at 501 Seabreeze Boulevard, Fort Lauderdale, FL 33316. Design-Build Firms who are interested in submitting proposals to include in response to this RFP shall comply with the submittal requirements.

The City will retain the services of architecture or professional engineering and within the scope of construction as required. The City will solicit proposals and establish a competitive selection process in accordance with City of Fort Lauderdale Code of Ordinances Section 2-181(f)(6) to procure the services of a qualified DBF.

The Design-Criteria Professional Synalovski Romanik Saye, LLC, including their subconsultants, are not eligible to render design-build services for this solicitation. Pursuant to Florida Statutes 287.055 (9) (b), "A design criteria professional who has been selected to prepare the design criteria package is not eligible to render services under a design-build contract executed pursuant to the design criteria package." The City reserves the right to disqualify any proposal from a team which includes any subconsultant and/or individual who has played a substantial role in the development of the design criteria package or whose involvement with the design-build team would confer upon that team an unfair competitive advantage because of such subconsultant's or member's prior involvement in the project.

#### **1.3 Submission Deadline**

Responses shall be delivered during the City's normal business hours in a sealed envelope.

Fort Lauderdale City Hall
Attention: Procurement Services Division
100 N. Andrews Avenue, #619,
Fort Lauderdale, FL 33301
Monday, January 15 <sup>th</sup> , 2017
2:00 PM EST

At which time and place the responses will be publicly opened and the names of the firms will be read. After the deadline, responses will not be accepted. Firms are responsible for making certain that their proposal is received at the location specified by the due date and time. The City is not responsible for delays caused by any mail, package or courier service, including the U.S. mail, or caused by any other occurrence or condition. The City's normal business hours are Monday through Friday, 8:00 a.m. through 5:00 p.m. excluding holidays observed by the City.

#### 1.4 BidSync

The City uses BidSync (<u>www.bidsync.com</u>) to administer the competitive solicitation process, including but not limited to soliciting responses, issuing addenda, posting results and issuing notification of an intended decision. There is no charge to register and download the RFP from BidSync and participate in solicitation, nor will any fees be charged to the awarded contractor. Proposers are strongly encouraged to read the various vendor guides and tutorials available in BIDSNYC well in advance of their intention of submitting a response to ensure familiarity with the use of BidSync. The City shall not be responsible for a Proposer's inability to submit a

response by the submission deadline date and time for any reason, including issues arising from the use of BidSync.

#### **1.5 Point of Contact**

All inquiries concerning this RFP including questions and requests for additional information shall be sent via the BIDSNYC question and answer tool. The City's contact for this RFP is:

Procurement Services Division Althea Pemsel, Asst. Procurement boe Contract Manager 100 N. Andrews Avenue, 6<sup>th</sup> Floor Fort Lauderdale, FL 33301 Fax: 954-828-5576 Email: <u>apemsel@fortlauderdale.gov</u>

#### 1.6 Pre-Proposal Meeting and/or Site Visit

There will be a pre-proposal conference and/or site visit scheduled for <u>Tuesday</u>, <u>November</u> <u>28<sup>th</sup></u>, <u>2017 at 10:00 am at Fort Lauderdale Aquatic Center</u>, <u>501 Seabreeze Boulevard FL</u> <u>33316</u>. It is strongly suggested that all Contractors attend the pre-proposal conference and/or site visit. While attendance is not mandatory, <u>tours at other times might not be available</u>.

It is the sole responsibility of the Contractor to become familiar with the scope of the City's requirements and systems prior to submitting a proposal. No variation in price or conditions shall be permitted based upon a claim of ignorance.

DBF are requested to bring this solicitation document to the pre-propsal meeting, as additional copies will not be available.

#### **1.7 Compliance and Legal Conditions**

In order to comply fully with the requirements of the City's Code of Ordinances below and Florida Statutes 287.055, the following procedures shall be followed in selecting firms to provide design/build services and in negotiating design/build contracts.

It will be the sole responsibility of the proposer to familiarize themselves with the following ordinances and statutes:

- a) City of Fort Lauderdale Ordinance Section 2-181(f)(6) Design/build contracts
- b) <u>Florida Statutes 287.055</u> Acquisition of professional architectural, engineering, landscape architectural, or surveying and mapping services; definitions; procedures; contingent fees prohibited; penalties.
- c) Florida Statures 287.055 (9) Applicability to Design-Build Contracts

#### **1.8 Personal Investigation**

Proposers shall satisfy themselves by personal investigation and by such other means as they may think necessary or desirable, as to the conditions affecting the proposed work and the cost. No information derived from maps, plans, specifications, or from the Engineer, City Manager, or their assistants shall relieve the Contractor from any risk or from fulfilling all terms of the contract.

#### **1.9 Lobbyist Ordinance**

Any consultant submitting a response to this solicitation is responsible for being aware of, and complying with City of Fort Lauderdale Ordinance No. 00-27, Lobbying Activities. A Copy of

Ordinance No. C-00-27 may be obtained from the City Clerk's Office on the 7<sup>th</sup> floor of City Hall, 100 N. Andrews Avenue, Fort Lauderdale, FL, or the ordinance may be viewed on the City's website at:

http://fortlauderdale.gov/home/showdocument?id=6036

Questions concerning whether you may or may not need to comply with said ordinance, please contact the City of Fort Lauderdale City Clerk's Office at 954-828-5002.

#### 1.10 Inconsistencies

Any seeming inconsistency between different provisions of the plans, specifications, proposal or contract, or any point requiring explanation must be inquired into by the proposer, in writing, at least ten (10) days prior to the time set for opening proposals. After proposals are opened, the proposers shall abide by the decision of the City as to such interpretation. No modifications to Proposals will be permitted after the date and hour of the Proposal opening.

#### 1.11 Addenda and Interpretations

No interpretations of the meaning of the plans, specifications or other contract documents will be made orally to any proposer. Prospective proposers must request such interpretation in writing as instructed in the RFP. To be considered, such request must be received by the Questions and Answers deadline as indicated in Bidsync.com. Material changes, if any, to the scope of services or bidding procedures are only transmitted by written addendum. It is the proposer's responsibility to verify if addendums have been issued in Bidsync.com. Failure of any proposer to receive any such addenda or interpretation shall not relieve any proposer from any obligation under his RFP as submitted. All addenda so issued shall become a part of the contract document. Proposer shall verify in Bidsync.com that he/she has all addenda before submitting a proposal.

#### 1.12 Forms of Proposals

Each proposal and its accompanying statements must be submitted, in good order with all forms and blanks completed. The proposal must be signed by one duly authorized to do so, and in case signed by a deputy or subordinate, the principal's properly written authority to such deputy or subordinate must accompany the proposal. No proposal will be accepted, for any reason whatsoever, which is not submitted to the City as stated above, within the specified time.

#### **1.13** Bid Firm for Acceptance (120 days)

Proposer warrants, by virtue of bidding, that his proposal and the prices quoted in this proposal will be firm for acceptance by the City for a period of one hundred and twenty (120) days from the date of bid opening unless otherwise stated in the RFP. The City shall award contract within this time period or shall request to the recommended awarded vendor an extension to hold pricing, until products/services have been awarded.

#### 1.14 Additional Items or Services

The City may require additional items or services of a similar nature, but not specifically listed in the contract. The DBF agrees to provide such items or services, and shall provide the City prices on such additional items or services based upon a formula or method, which is the same or similar to that used in establishing the prices in this proposal. If the price(s) offered are not acceptable to the City, and the situation cannot be resolved to the satisfaction of the City, the City reserves the right to procure those items or services from other vendors, or to cancel the contract upon giving the DBF thirty (30) days written notice.

#### 1.15 Deletion or Modification of Services

The City reserves the right to delete any portion of the Contract at any time without cause, and if such right is exercised by the City, the total fee shall be reduced in the same ratio as the estimated cost of the work deleted bears to the estimated cost of the work originally planned. If work has already been accomplished on the portion of the Contract to be deleted, the Contractor shall be paid for the deleted portion on the basis of the estimated percentage of completion of such portion.

If the Contractor and the City agree on modifications or revisions to the task elements, after the City has approved work to begin on a particular task or project, and a budget has been established for that task or project, the Contractor will submit a revised budget to the City for approval prior to proceeding with the work.

#### 1.16 Rejection of Proposals/Bids

The City reserves the right to reject any proposal if the evidence submitted by the proposer, or if the investigation of such proposer, fails to satisfy the City that such proposer is properly qualified to carry out the obligations and to complete the work contemplated. Any or all proposals will be rejected, if there is reason to believe that collusion exists among submitters. A proposal will be considered irregular and may be rejected, if it shows serious omissions, alterations in form, additions not called for, conditions or unauthorized alternates, or irregularities of any kind. The City reserves the right to reject any or all proposals and to waive such technical errors as may be deemed best for the interests of the City.

#### 1.17 Bid Protest Procedure

Any proposer or bidder who is not recommended for award of a contract and who alleges a failure by the City to follow the City's procurement ordinance or any applicable law may protest to the Procurement Division – Deputy Director of Finance, by delivering a letter of protest within five (5) days after a Notice of Intent to award is posted on the City's website at the following link: <a href="http://fortlauderdale.gov/departments/finance/procurement-services/notices-of-intent-to-award">http://fortlauderdale.gov/departments/finance/procurement-services/notices-of-intent-to-award</a>

The complete protest ordinance may be found on the City's website at the following link: <u>https://www.municode.com/library/fl/fort\_lauderdale/codes/code\_of\_ordinances?nodeId=COOR\_CH2AD\_ARTVFI\_DIV2PU\_S2-199.1BIPRPR</u>

#### 1.18 Withdrawals

Any proposer may, without prejudice to him/herself, withdraw his/her proposal at any time prior to the expiration of the time during which proposals may be submitted. Such request for withdrawal must be in writing and signed in the same manner and by the same person who signed the proposal. After expiration of the period for receiving proposals, no proposal can be withdrawn, modified, or explained.

#### \*\*END OF SECTION 1\*\*

#### SECTION 2 SPECIAL CONDITIONS

#### 2.1 Definitions

<u>Award</u> – means the acceptance of a bid, offer or proposal by the proper authorized designee. The City Commission must approve all awards over the authority of the City Manager, with the exception of emergency purchases.

<u>City</u> – the City of Fort Lauderdale or the City Commission, a municipal corporation of the State of Florida.

<u>**City Commission**</u> – City Commission shall mean the governing and legislative body of the City.

<u>**Contract**</u> – This Agreement and all addenda, exhibits and amendments thereto between the City and the Design-Build Firm for this Project. Contract shall also mean the same as Agreement.

**<u>Design Build</u>** – Means a single contract with a Design-Build Firm for the design and construction of a City construction project.

**Design Build Firm (DBF)** – means a partnership, corporation, or other legal entity that is certified under Florida Statute 489.119 to engage in contracting through a certified or registered general contractor or a certified or registered building contractor as the qualifying agent or is certified under Florida Statute 471.023 to practice or to offer to practice engineering; certified under Florida Statute 481.219 to practice or to offer to practice architecture or certified under Florida Statute 481.319 to practice or to offer to practice architecture.

**Design Criteria Package (DCP)** – DCP shall mean those certain conceptual plans and specifications and performance oriented drawings or specifications of the Project, as prepared and sealed by the Design Criteria Professional, and in compliance with the requirements of Section 287.055, Florida Statutes.

**Design Criteria Professional** – means a firm which holds a current certificate or registration under Chapter 481, Florida Statutes, to practice architecture or landscape architecture or a firm which holds a current certificate as a registered engineer under Chapter 471, Florida Statutes, to practice engineering and who is employed by or under contract by the City to provide professional architect services, landscape architect services, or engineering services in connection with the preparation of the Design Criteria Package.

<u>**Guaranteed Maximum Price (GMP)**</u> – the mutually agreed upon contract price to be paid to the DBF for the work is reimbursed on a time and materials basis, with the DBF agreeing to complete the work without additional payment if a fixed price ceiling is reached. The guaranteed maximum price is not subject to increase, except as expressly allowed by the City. The contractor assumes the responsibility for any overrun beyond the guaranteed maximum price.

<u>Negotiate</u> – any form of that word means to conduct legitimate, arm's length discussion and conferences to reach an agreement on a term or price.

**Notice to Proceed** – means the written notice given by the City to the Design-Build Firm of the date and time for work to start.

**Professional Services** – means those services within the scope of the practice of architecture, professional engineering, landscape architect, or registered surveying and mapping, as defined by the laws of the state, or those performed by any architect, professional engineer, landscape architect, or registered surveyor and mapper in connection with his or her professional employment or practice.

<u>**Project Manager**</u> – an authorized representative of the City assigned to the Project by the City, assigned to make necessary observations of materials furnished by DBF and of the Work performed by DBF as detailed.

**<u>Proposal</u>** – means the proposal or submission submitted by a Proposer. The terms "Proposal" and "Bid" are used interchangeably and have the same meaning.

**<u>Proposer</u>** – means one who submits a Proposal in response to a solicitation. The terms "Proposer" and "Bidder" are used interchangeably and have the same meaning.

<u>Substantial Completion</u> – the date(s) certified by the Project Manager that all conditions of the permits and regulatory agencies have been met for the City's intended use of the Project, and all construction has been performed in accordance with the Contract Documents so City can fully utilize, as opposed to partially utilize, the Project for its intended purpose.

<u>Work</u> – the completed construction required by the Contract Documents, as permitted, including all labor necessary to produce such construction, and all materials and equipment incorporated or to be incorporated in such construction.

#### 2.2 Responsiveness

In order to be considered responsive to the solicitation, the firm's response shall fully conform in all material respects to the solicitation and all of its requirements, including all form and substance.

#### 2.3 Responsibility

In order to be considered responsible, DBF shall be fully capable of meeting all of the requirements of the solicitation and the subsequent contract; must possess the full capability, including financial and technical capacity, to perform as contractually required; and must fully document the ability to provide good faith performance.

#### 2.4 Sub-Consultants

A Sub-Consultant is an individual or firm contracted by the DBF to assist in the performance of services required under this RFP. A Sub-Consultant shall be paid through DBF and not paid directly by the City. Sub-Consultants are permitted by the City in the performance of the services pursuant to the Agreement. DBF must clearly reflect in its SOQ the major Sub-Consultant(s) to be utilized in the performance of required services. The City retains the right to accept or reject any Sub-Consultant proposed in the response of successful DBFs or prior to contract execution. Any and all liabilities regarding the use of a Sub-Consultant shall be borne solely by the successful DBF and insurance for each Sub-Consultant must be maintained in good standing and approved by the City throughout the duration of the Contract. Neither successful DBF nor any of its Sub-Consultants are considered to be employees or agents of the City. Failure to list all Sub-Consultants and provide the required information may disqualify any proposed Sub-Consultant from performing work under this RFP.

DBFs shall include in their responses the requested Sub-Consultant information and include all relevant information required of the DBF. In addition, within five (5) working days after the identification of the award to the successful DBF, the DBF shall provide a list confirming the Sub-Consultant(s) that the successful DBF intends to utilize in the Contract, if applicable. The list shall include, at a minimum, the name, and location of the place of business for each Sub-Consultant, the services Sub-Consultant will provide relative to any contract that may result from this RFP, Sub-consultants hourly rates or fees, any applicable licenses, insurance, references, ownership, and other information required of DBF. No more than 20% of the team members selected for this project can be substituted and any and all team and/or staff substitutions must be approved by the City in advance.

#### 2.5 Contract Term

Time is of the essence for the DBF's performance of the Work. The project will be funded from the City of Fort Lauderdale Community Redevelopment Agency (CRA). The CRA sunsets September 30, 2020 and the project must be complete by the sunset date per Florida Statute 163.362 (10).

The City will enter into a contract with the successful DBF for a Guaranteed Maximum Price for the Work. The terms and conditions of this contract are fixed price and fixed time. The DBF submitted bid is to be a lump sum bid for completing the Scope of Work in the RFP. The DBF will provide a Schedule of Values to the City for their approval. The total of the Schedule of Values will be this lump sum contract price for the work.

The Aquatic Center Renovation project shall be substantially completed within 570 business days from the date specified in the notice-to-proceed. Furthermore, the entire project shall be completed and ready for final payment within 40 business days from the date certified by Project Manager as the date of substantial completion, or otherwise negotiated with the City.

The DBF shall not assign, transfer or sub-contract any work either in whole or in part, without prior written approval of the City. The submittal responses shall be valid until such time as City Commission awards a contract as a result of this RFP.

City reserves the right, where it may serve the City of Fort Lauderdale's best interest, to request additional information or clarification from Proposers including but not limited to oral interviews as requested by the Evaluation Committee.

The City of Fort Lauderdale reserves the right to waive formalities in any proposal and further reserves the right to take any other action that may be necessary in the best interest of the City.

The City reserves the right to let other contracts in connection with this Project, provided it does not interfere with DBF's work or schedule. By submitting a Proposal each firm is confirming that the firm has not been placed on the convicted vendors list as described in <u>Florida Statue</u> <u>§287.133 (2) (a)</u>.

#### 2.6 Unauthorized Work

The successful DBF(s) shall not begin work until a Contract and a Notice to Proceed has been issued. DBF(s) agree and understand that a purchase order and/or task order shall be issued and provided to the DBF(s) following City Commission award; however, receipt of a purchase order and/or task order shall not prevent the DBF(s) from commencing the work once the City Commission has awarded the contract and notice to proceed is issued.

#### 2.7 Bid Bond

A certified check, cashier's check or bank officer's check, for five (5) percent of the Price Proposal, made payable to the City of Fort Lauderdale, Florida, or bid bond in such amount, shall accompany each proposal as evidence of the good faith and responsibility of the proposer. The check or bond shall be retained by the City as liquidated damages should the proposer refuse to or fail to enter into a contract for the execution of the work embraced in this proposal, in the event the proposal of the proposer is accepted. Retention of such amount shall not be construed as a penalty or forfeiture.

The above bond or check shall be a guarantee that the proposer will, if necessary, promptly execute a satisfactory contract and furnish good and sufficient bonds. As soon as a satisfactory contract has been executed and the bonds furnished and accepted, the check or bond accompanying the proposal of the successful proposer will be returned to him/her. The certified or other checks or bid bonds of the unsuccessful proposers will be returned to them upon the acceptance of the proposal of the successful proposer. If the successful proposer shall not enter into, execute, and deliver such a contract and furnish the required bonds within fifteen (15) days after receiving notice to do so, the certified or other check or bid bond shall immediately become the property of the City of Fort Lauderdale as liquidated damages.

Additional insurance and bonds may be required for the construction phase of the project.

#### 2.8 Performance and Payment Bond (Surety Bond)

The Contractor shall execute and record in the public records of Broward County, Florida, a payment and performance bond in an amount at least equal to the Contract Price with a surety insurer authorized to do business in the State of Florida as surety, ("Bond"), in accordance with <u>Section 255.05</u>, Florida Statutes, as may be amended or revised, as security for the faithful performance and payment of all of the Contractor's obligations under the Contract Documents.

The successful bidder shall furnish a performance and payment bond in compliance with Section 255.05, Florida Statutes, written by a Corporate Surety company, holding a Certificate of Authority from the Secretary of the Treasury of the United States as acceptable sureties on federal bonds, in an amount equal to the total amount payable by the terms of the contract, executed and issued by a Resident Agent licensed by and having an office in the State of Florida, representing such Corporate Surety, conditioned for the due and faithful performance of the work, and providing in addition to all other conditions, that if the Contractor, or his or its subcontractors, fail to duly pay for any labor, materials, or other supplies used or consumed by such Contractor, or his or its subcontractor or subcontractors, in performance of the work contracted to be done, the Surety will pay the same in the amount not exceeding the sum provided in such bonds, together with interest at the rate of fifteen percent (15%) per annum, and that they shall indemnify and save harmless the City of Fort Lauderdale to the extent of any and all payments in connection with carrying out of the contract, which the City may be required to make under the law.

The Contractor is required at all times to have a valid surety bond in force covering the work being performed. A failure to have such bond in force at any time shall constitute a default on the part of the Contractor. A bond written by a surety, that becomes disqualified to do business in the State of Florida, shall automatically constitute a failure on the part of the Contractor to meet the above requirements. Such bond shall continue in effect for one (1) year after completion and acceptance of the work with liability equal to at least twenty-five percent (25%) of contract price, or an additional bond shall be conditioned that the Contractor will correct any defective or faulty work or material which appear within one (1) year after completion of the contract, upon notification by the City, except in contracts which are concerned solely with demolition work, in which cases twenty-five percent (25%) liability will not be applicable.

#### 2.9 Insurance

DBF and its sub-contractors must agree to keep and maintain insurance for the duration of this Agreement including but not limited to commercial general liability, automobile liability, workers' compensation, property insurance (builder's risk), employer's liability, and umbrella/excess liability coverage with at least the minimum limits shown below.

The DBF shall furnish the City with certificates of insurance for each type of insurance described herein. Such policy or policies shall be issued by companies authorized to do business in the State of Florida and having agents upon whom service of process may be made in the State of Florida.

Consultants shall specifically protect the City and the City Commission by naming the City and the City Commission as additional insured under the comprehensive liability insurance policy hereinafter described. The City reserves the right to negotiate different limits and coverage in the final contract.

Workers' compensation insurance to apply for all employees in compliance with the "Workers' Compensation Law" of the State of Florida and all applicable federal laws, for the benefit of the DBF's employees.

Sub-consultants not eligible for professional liability coverage, by virtue of their trade, shall provide commercial general liability coverage acceptable to the City's Contract Administrator and City's Risk Manager. Sub-consultant and sub-contractors eligible for professional liability coverage shall be required to provide professional liability coverage acceptable to the City's Contract Administrator and Risk Manager on a task order by task order basis.

The DBF shall provide the City an original certificate of insurance. All certificates shall state that the City shall be given ten (10) days of notice prior to cancellation or modification of any stipulated insurance. The insurance provided shall be endorsed or amended to comply with this notice requirement. In the event that the insurer is unable to meet this requirement, it shall be the responsibility of the DBF to provide the proper notice. Such notification will be in writing by registered mail, return receipt request and addressed to the Procurement Services Division. Such policies shall: (1) name the insurance company or companies affording coverage acceptable to the City; (2) state the effective and expiration dates of the policies; and (3) include special endorsements where necessary. Such policies shall not be affected by any other policy of insurance, which the City may carry in its own name.

DBF shall as a condition precedent of this Agreement furnish to the City of Fort Lauderdale, c/o Procurement Services Division, 100 N. Andrews Avenue, #619, Fort Lauderdale, FL 33301, certificate(s) of insurance upon execution of this Agreement which indicate that insurance coverage has been obtained which meets the requirements as outlined below:

#### COMMERCIAL GENERAL LIABILITY

Limits of Liability:Bodily Injury and Property Damage LiabilityCombined Single LimitEach Occurrence\$1,000,000General Aggregate Limit\$2,000,000Personal Injury\$1,000,000Products/Completed Operations\$1,000,000

Endorsements Required: City of Fort Lauderdale included as an Additional Insured Employees included as insured Broad Form Contractual Liability Waiver of Subrogation Premises/Operations Products/Completed Operations Independent Contractors

#### POLLUTION LIABILITY N/A

#### UMBRELLA/EXCESS LIABILITY

Each occurrence

\$2,000,000

#### CRANE/ON-HOOK:

The Contractor will need to provide documentation of his Crane/On-Hook coverage in the amount of \$1,000,000, if any cranes are used during the course of the Project. Additionally, the Contractor will need to provide documentation of his subcontractors Crane/On-Hook coverage in the amount of \$1,000,000 if any of his subcontractors utilize any cranes during the course of this Project.

#### AUTOMOBILE BUSINESS

Limits of Liability: Bodily Injury and Property Damage Liability Combined Single Limit \$1,000,000 Any Auto Including Hired, Borrowed or Non-Owned Autos

Endorsements Required: Waiver of Subrogation

#### WORKERS' COMPENSATION/LONGSHOREMAN/JONES ACT

Limits of Liability: Statutory Limits of the State of Florida

PROFESSIONAL LIABILITY/ERRORS AND OMISSIONS COVERAGE

Combined Single Limit Each Occurrence

\$1,000,000

General Aggregate Limit\$2,000,000Deductible not to exceed10%Must be in effect for at least five (5) years after Project completion

#### Property Coverage (Builder's Risk)

Coverage must be afforded in an amount not less than 100% of the total project cost, including soft costs, with a deductible of no more than \$25,000 each claim. Coverage form shall include, but not be limited to:

- All Risk Coverage including Flood and Windstorm with no coinsurance clause
- Guaranteed policy extension provision
- Waiver of Occupancy Clause Endorsement, which will enable the City to occupy the facility under construction/renovation during the activity
- Storage and transport of materials, equipment, supplies of any kind whatsoever to be used on or incidental to the project
- Equipment Breakdown for cold testing of all mechanized, pressurized, or electrical equipment

For installation of property and/or equipment, Design Build Firm must provide Builder's Risk Installation insurance to include coverage for materials or equipment stored at the project site, while in transit, or while stored at a temporary location. Coverage limit must be no less than replacement cost.

The above insurance requirements are only required to be carried by the DBF during the term of the assigned project and provided upon award of the contract, except for professional liability/errors and omissions insurance which must be in effect for at least five (5) years after project completion.

The City is required to be named as additional insured under the commercial general liability insurance policy. Binders are unacceptable. The insurance coverage required shall include those classifications, as listed in standard liability insurance manuals, which most nearly reflect the operations of the DBF. Any exclusions or provisions in the insurance maintained by the DBF that precludes coverage for the work contemplated in an agreement shall be deemed unacceptable, and shall be considered a breach of contract.

All insurance policies required above shall be issued by companies authorized to do business under the laws of the State of Florida and must be rated no less than "A" as to management, and no less than "Class X" as to financial strength, by the latest edition of A. M. Best's Key Rating Insurance Guide which holds a valid Florida Certificate of Authority issued by the State of Florida, Department of Insurance, and are members of the Florida Guarantee Fund. Compliance with the foregoing requirements shall not relieve the DBF of his liability and obligation under this section or under any other section of this Agreement.

Note: City contract number must appear on each certificate.

#### 2.10 Invoices/Payment

A payment schedule based upon agreed upon deliverables may be developed with the awarded vendor.

The DBF shall submit a proposed schedule of values, after contract award, in a form acceptable to the City and will be required to be approved by the City before any design Work on this Project can commence. The proposed schedule of values shall be broken into two phases for the design and the construction.

During the design phase, the DBF may submit a request for payment monthly based upon percentage of completion of the final plans and specifications. Payment during the construction phase will be based upon percentage of work/inspections completed for each item in the approved schedule of values. DBF requisition for payment shall show a complete breakdown of the Project components, and the amount due, together with such supporting evidence, as may be required by the PM.

The City agrees that it will pay DBF within twenty (20) calendar days of receipt of DBF's correct requisition for payment. If, at any time during the contract, the City shall not approve or accept the Contractor's work product, and an agreement cannot be reached between the City and the Contractor to resolve the problem to the City's satisfaction, the City shall negotiate with the Contractor on a payment for the work completed and usable to the City. This negotiated payment shall be based on the overall task or project breakdown, relative to the percentage of work completed.

Ten percent (10%) of payment invoices from the DBF shall be retained by City until the Project has obtained Final Completion, receipt of as-built, and been accepted by City.

#### 2.11 Payment Method

The City of Fort Lauderdale has implemented a Procurement Card (P-Card) program which changes how payments are remitted to its vendors. The City has transitioned from traditional paper checks to payment by credit card via MasterCard or Visa. This allows you as a vendor of the City of Fort Lauderdale to receive your payment fast and safely. No more waiting for checks to be printed and mailed. Payments will be made utilizing the City's P-Card (MasterCard or Visa). Accordingly, firms must presently have the ability to accept credit card payment or take whatever steps necessary to implement acceptance of a credit card before the commencement of a contract. See Contract Payment Method form attached.

#### 2.12 Price Proposal

A total Price Proposal (proposed Contract Price) shall be submitted on the Price Proposal Form. Price Schedule breakdown shall consist of a firm, fixed fee performance based, Guaranteed Maximum Price (GMP) amount. The Price Proposal shall be based upon and include any and all costs or expenses to be incurred by the DBF in implementing, fulfilling and completing all aspects of the Design-Build Project. The information must include but is not limited to, the design, plans approval, permitting, construction and activation of the project in accordance with the requirements set forth in the City's Request for Proposals and the requirement of any and all agencies or organizations having jurisdiction for project review, permit approval or the design, construction, occupancy, activation, use or operation of the project, or use of the property on which the project is located.

The Price Proposal, in addition to all direct costs and expenses, shall include all other indirect costs and expenses including but not limited to, such costs as the Design-Builder's general, administrative and overhead costs, project management and supervisory costs, all fees, changes and taxes, labor, direct and indirect payroll costs, insurance and bond costs, cost of equipment, materials, tools, transportation, and service fee (profit).

#### 2.13 Bid Allowance/Reimbursable

Payments for permits will be made to the DBF based on the actual cost of permits upon submission of paid permit receipts with a reimbursable allowance up to \$250,000. The City shall not pay for other costs related to obtaining or securing permits. The City will honor and reimburse the DBF for any permit receipts over and above the allowance.

#### 2.14 City Project Manager

The Project Manager is hereby designated by the City as Thomas Green, P.E. The Project Manager will assume all duties and responsibilities and will have the rights and authorities assigned to the Project Manager in the Contract Documents in connection with completion of the work in accordance with this Agreement. Any questions during the solicitation processes must be through BidSync or via the Point of Contact listed in this RFP.

#### 2.15 Liquidated Damages

Upon failure of the DBF to substantially complete the entire Contract within the total specified period of time, plus approved time extensions, DBF shall pay to City the sum of **Five Thousand and 00/100 Dollars (\$5,000.00)** for each and every calendar day that the completion of the work is delayed beyond the time specified in this Agreement for completion and stipulated in Section 3.7 Construction Time Frame.

The time frame for liquidated damages shall not commence and thus shall not be tolled until the Project Manager submits the punch list to the DBF. These amounts are not penalties but are liquidated damages to City for its inability to obtain full beneficial use of the Project. Liquidated damages are fixed and agreed upon between the parties, recognizing the impossibility of precisely ascertaining the amount of damages that will be sustained by City as consequence of such delay.

#### 2.16 Work Schedule

Monday – Friday 8:00 am – 5:00 pm (including overtime hours. City Inspector hours are 8:00 a.m. to 4:30 p.m. Any inspection requested by the DBF outside those hours will be considered overtime to be paid by the DBF. Inspection Overtime Cost: \$219/hr

#### 2.17 Contract

The proposer to whom award is made shall execute a written contract to do the work and maintain the same in good repair until final acceptance by the proper authorities, and shall furnish good and sufficient bonds as specified within fifteen (15) days after receiving such contract for execution. If the bidder to whom the first award is made fails to enter into a contract as provided, the award may be annulled and the contract let to the next highest ranked bidder who is reliable, responsible, and responsive in the opinion of the City, and that proposer shall fulfill every stipulation and obligation as if such proposer were the original highest ranked bidder.

#### \*\*END OF SECTION 2\*\*

### SECTION 3 SCOPE OF WORK

#### 3.1 Project Objective

The City has issued this RFP to solicit competitive proposals for a highly qualified, experienced, and licensed DBF, to provide design-build services for the design, permitting, and construction of the City of Fort Lauderdale Aquatic Center Renovation and for other work related thereto.

The attached design criteria package describes the scope of work and technical specifications in detail. The Project includes but is not limited to the design, permitting, construction, startup and testing of:

- a) Remove existing 50m (meter) main competition pool and provide new expanded fully Federation Internationale De Natation (FINA) compliant Olympic competition pool with (2) moveable stainless bulkheads.
- b) Remove existing diving pool and underground observation room and provide FINA World and Olympic compliant diving pool with dive tower including five (5) platform levels (1m, 3m, 5m, 7.5m, 10m), and 1m and 3m springboards. Diving pool shall also be used for swimming. Pool plan to include equipment, fixtures, markings for swimming including, but not limited to lap lane markings, wall targets, lane line anchors, and backstroke flags. The sparger system shall include at a minimum diffuser stations for one (1) 3-meter springboard, the 3-meter platform, 5-meter platform, 7.5 meter platform, and 10-meter platform. One (1) additional diffuser to be located at one (1) 3-meter springboard on the north side of the pool.
- c) Remove existing spa for divers and provide new covered spa.
- d) Repair existing 50m training pool with new gutters and surfacing.
- e) Remove existing Teaching pool and provide new expanded teaching pool with covered shade structure
- f) Provide new starting blocks, timing systems, and scoreboard for the competition pool and training pool.
- g) Provide new filtration systems, pumps, and chlorination system for all pools.
- h) Demolish existing pool deck as needed and provide new raised concrete pool deck, provide pool deck drain system, and provide exterior outlets, water spigots, and pool deck showers.
- i) Remove existing grandstand building and bleachers on north side of facility and provide new grandstand building with raised seating for 1550 spectator capacity. Enclosed underneath is pool filtration equipment rooms, chemical rooms, and storage.
- j) Provide a diving stand building with raised 500 spectator capacity seating. Enclosed underneath is chemical room and filtration room, and storage space which will remain open for future buildout.
- k) Provide a new public restroom building with HVAC and a new concession space.
- I) Provide a new reception / registration entry space with HVAC.
- m) Provide site improvements that include parking and drainage improvements, new sport pole lighting, exterior illumination, landscaping, sidewalks, main entrance with fences and gates, entry plaza with aluminum canopy.
- n) Provide parking lot improvements that include regrading parking lot, installing drainage structures, provide storm water quality treatment, and provide new asphalt, striping, and curbs.
- o) Provide outdoor diving dryland: provide a fenced area for outdoor diving training equipment behind new diving bleachers and concrete pad surface to anchor equipment.
- p) All equipment provided shall be covered by an on-site technical support and warranty administration program, with licensed and experienced factory-trained technicians.
- q) Contractor shall paint all mechanical and utility piping with a universally approved color code, provide directional indicators on all piping, shall provide a laminated color coded drawing of entire treatment process.
- r) Contractor and equipment supplier shall supply a full three year warranty for the project including equipment package (unless specified differently in the DCP).
- s) Pool contractor shall provide 3-year pool gutter-pool shell leak-free guarantee.

Included in the scope of work are design, permitting, construction, construction management services, as well as inspection, construction certification and all associated work delineated herein or determined by the DBF as required to meet the project intent. The RFP documents, including the Design Criteria Package (DCP), technical specifications, all exhibits and attachments, and the successful proposal, shall form the terms and conditions of the Contract. The DBF shall be responsible for the design, additional surveying (if necessary), preparation of permit submittal packages, and obtaining all required permits for construction and staging, area construction phasing, maintenance of traffic, and all other related work or services.

#### 3.2 Project Background

The Fort Lauderdale Aquatic Center is situated on a man-made pier which extends approximately 600 feet into the Intracoastal Waterway. The pier itself was completed in 1963 by the Inland Navigation District and dedicated to the City of Fort Lauderdale. The existing Aquatic Center consists of 10 major components – five buildings and five pools.



Figure 1 Site plan referencing buildings and pools

Building 1 is located on the east side of the property and extends over the entry of the complex. It was built in 1990 and houses a locker room and offices for the beach patrol, restrooms, gift shop and an extension of the main International Swimming Hall of Fame museum.

Building 2 was built in 1965 and renovated in 1990, updating and replacing the pool systems. Concrete bleachers are built above ground-floor functions such as restrooms, an FPL vault, the pool pump and filtration system, facility maintenance offices and admission booth.

Building 3 contains an FPL vault, staff offices, press room, timing room and the bathhouse. It is connected to Building 4 by an observation deck that holds bleachers. Building 3 & 4 were renovated in the early 1990s.

Building 4 houses a weight room and offices and timing booth above as well as a smaller observation deck.

Building 5 is on the west end of the property. It was built in 1967 and dedicated in 1968, and houses the main ISHOF museum and exhibition space, offices and archival storage rooms for materials and supplies, and a banquet hall overlooking the Intracoastal Waterway.

Pool 1 is the Training pool. It was added in 1990 with the facility renovations.

Pool 2 is the Competition pool. It was originally built in 1965 for competitions and was renovated in 1990 to maintain required standards for competition facilities.

**Pool 3** is the Diving pool built in 1965 and has several springboards and dive platforms as well as an underground pool observation room. The springboards and platforms were renovated in 1990, and the platforms were renovated again in 1995.

Pool 4 is the small diver warm up spa. It is housed under the upper floors of Building 4.

**Pool 5** is the teaching pool used for providing swimming lessons. This was added to the complex in 1990. It is on the west side of Building 4 and covered with a blue shade canopy.

In recent years the standards for aquatic competitions have changed. The existing Fort Lauderdale Aquatic Complex facility does not meet the minimum aquatic competition requirements and is not able to host national or international competitions. The entire complex has fallen into disrepair and in 2011, Building 2, including the bleachers, was condemned. The City intends for the facility to be renovated and have the competition swimming and diving pool

meet competition requirements. The City intends to be able to host national and international diving and swimming competitions and provide spectator seating.

The DCP included in this RFP contains technical specifications that describe the material quality standards and performance criteria for this project. Additionally, the DCP includes conceptual layouts that illustrate the project intent. These conceptual layouts are provided to convey sufficient information to allow the Proposer to prepare a proposal to the City's RFP.

The selected DBF will be required to retain full responsibility for design, permitting, and construction of all aspects of the project. The DBF shall develop a detailed project design based on the criteria set forth in this document and construct the work in accordance with the requirements set forth in the DCP and applicable permits procured for the project by the DBF.

#### 3.3 Project Location

The location of the project is 501 Seabreeze Boulevard, Fort Lauderdale, Florida 33316.

#### **3.4 Minimum Qualifications**

To be eligible to respond to this RFP, the DBF must demonstrate and possess sufficient financial support, equipment, organization, and experience to provide Design-Build Services to ensure that it can satisfactorily perform the services if awarded a contract. The DBF must demonstrate that it, or the principals assigned to the project, have successfully provided services, with similar magnitude to those specified in the scope of work and demonstrate the managerial and financial ability to successfully perform the work.

Firm shall satisfy each of the following requirements cited below. Failure to do so may result in the Proposal being deemed non-responsive.

- a) Firm must be registered as legal entity in State of Florida.
- b) Firm engineer of record must have a current Florida active license as a professional engineer.
- c) Firm contractor must have a current Florida active certified general contractor's license with unlimited building classification.
- d) Capacity to provide performance and payment bonds.
- e) Capacity to meet City's insurance requirements.
- f) Firm or principals shall have no record of judgments, pending lawsuits against the City or criminal activities involving moral turpitude with no conflicts of interest that have not been waived by the City Commission.
- g) A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a proposal on a contract to provide any goods or services to a public entity, may not submit a proposal/bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids or leases of real property to a public entity, may not be awarded or perform work as a Contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in <u>Section 287.017</u>, Florida Statutes, for category two for a period of thirty-six (36) months from the date of being placed on the convicted vendor list.
- h) Neither Firm nor any principal, officer, or stockholder shall be in arrears or in default of any debt or contract involving the City (as a party to a contract, or otherwise), nor have failed to perform faithfully on any previous contract with the City.

- i) Firm must have completed successfully at least two (2) projects similar in size and nature within the past five (5) years.
- j) The proposed team must have worked together and completed at least one (1) project as a team.
- k) Submit three references of projects that are similar with full contact info.

#### 3.5 Project Requirements

The City reserves the right to modify the following scope of work during the contract negotiations with the selected DBF.

The DBF shall demonstrate quality project management practices while working on this Project. This includes communication with the City and others as necessary, management of time and resources, and documentation. The City will provide contract administration and technical reviews of all work associated with this Project.

- a) Site Inventory and Evaluation of City's Criteria Confirmation
  - 1. Site investigations, including but not limited to survey, subsurface utility investigations, geotechnical investigations, environmental engineering, to verify existing conditions if necessary.
  - 2. Preliminary evaluation of proposed site use, material selection, construction systems and equipment and provide recommendations on constructability, time, labor and scheduling factors related to project costs.
  - 3. No inspection, failure to inspect, or waiver of inspection on the part of the City shall relieve the DBF of their duty to complete the Work as described in this RFP.
  - 4. DBF agrees that the price specified on the Price Proposal Form is based on the DBF examination of the site and that no claim for additional compensation shall be made if the conditions encountered differ from those anticipated by such examination.

#### b) Governing Regulations

The services provided by the DBF shall be in compliance with all applicable City of Fort Lauderdale Standards, Federation Internationale De Natation (FINA) Facilities Rules, South Florida Water Management District Manuals and Guidelines, as well as State of Florida Department of Environmental Protection, Broward County Environmental Protection and Growth Management Department and Broward County Health Department regulations and guidelines except as explicitly noted within the DCP. Any and all applicable laws including but not limited to the most recent editions of the following documents shall be utilized for this Project:

- 1. South Florida Water Management District Volume IV Permit Information Manual, Criteria Manual for the Use of Works by the District
- Broward County Environmental Protection Department A Consulting Engineer's Guide for a Wastewater Collection/Transmission System Construction License Application
- 3. Florida Building Code
- 4. City of Fort Lauderdale, Code of Ordinance Chapter 6, Article III Sea Turtles
- 5. FINA Facilities Rules

#### c) Design Criteria Package (DCP)

This DCP sets forth minimum requirements regarding design, construction, and maintenance of traffic during construction, including requirements relative to project management, scheduling and coordination with other agencies and entities such as the state, county and local government environmental permitting agencies and the public. All plans, designs, surveys, investigations and inspections shall be prepared in accordance with

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the governing agencies listed previously. The DBF shall incorporate the DCP set forth herein as Exhibit 'A' in the design for this project, which includes the technical requirements and the conceptual layouts.

#### d) Design Development

The DBF shall provide a complete and thorough technical approach to conducting a designbuild pipeline installation operation. The DBF shall complete the engineering design plans for construction. Final plans must include emergency contact information as required by the City. The technical proposal should demonstrate an understanding of the following design and technical issues:

- 1. Familiarity with local subsurface conditions and interpretation of geotechnical data.
- 2. Dewatering
- 3. Deep foundation installation
- 4. Construction phasing
- 5. Aquatic facility design and construction
- 6. Sea turtle lighting compliance
- 7. Installation of proposed utilities
- 8. Landscaping and irrigation

#### e) Permitting, Reviews and Approvals

Respondent shall obtain approvals for all permits required for the project consistent with the design and construction proposed by DBF for City permits and any other regulatory agency whose approval is necessary for the development of the site including but not limited to: the City of Fort Lauderdale, the Florida Department of Transportation, the South Florida Water Management District, Broward County Environmental Protection and Growth Management Department, Broward County Health Department, and other Permitting Agencies. The DBF will be responsible for preparing designs and proposing construction methods that are permitable. All permits required for a particular construction activity will be acquired prior to commencing the activity. Delays due to incomplete permit packages, agency rejection, agency denials, agency processing time, or any permit violations, will be the responsibility of the DBF, and will not be considered sufficient reason for time extension. DBF will attend meetings as necessary for all approvals and will provide timely responses and modifications to regulatory comments.

#### *f) Construction Documents*

Prepare and finalize all construction drawings and specifications. Design and As-built documents must be produced in AutoCAD and comply with the latest City standards in effect at the time of contract execution. A copy of the City CADD Standards is attached as Exhibit B.

#### g) Construction Administration

Provide construction administration and observation associated with the site improvements and progress including a preconstruction conference and weekly site observation meetings. Provide interpretations of prepared plans and specifications as well as any change orders or construction change directives. Maintain appropriate quality control and quality assurance procedures.

#### h) Construction

Including but not limited to:

- Remove existing 50m (meter) main competition pool and provide new expanded fully Federation Internationale De Natation (FINA) compliant Olympic competition pool with (2) moveable stainless bulkheads.
- 2. Remove existing diving pool and underground observation room and provide FINA World and Olympic compliant diving pool with dive tower including five (5) platform levels (1m, 3m, 5m, 7.5m, 10m), and 1m and 3m springboards.

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- 3. Remove existing spa for divers and provide new covered spa.
- 4. Repair existing 50m training pool with new gutters and surfacing.
- 5. Remove existing Teaching pool and provide new expanded teaching pool with covered shade structure
- 6. Provide new starting blocks, timing systems, and scoreboard for the competition pool and training pool.
- 7. Provide new filtration systems, pumps, and chlorination system for all pools.
- 8. Demolish existing pool deck as needed and provide new raised concrete pool deck, provide pool deck drain system, and provide exterior outlets, water spigots, and pool deck showers.
- 9. Remove existing grandstand building and bleachers on north side of facility and provide new grandstand building with raised seating for 1550 spectator capacity. Enclosed underneath is pool filtration equipment rooms, chemical rooms, and storage.
- 10. Provide a diving stand building with raised 500 spectator capacity seating. Enclosed underneath is chemical room and filtration room, and storage space which will remain open for future buildout.
- 11. Provide a new public restroom building with HVAC and a new concession space.
- 12. Provide a new reception / registration entry space with HVAC.
- 13. Provide site improvements that include parking and drainage improvements, new sport pole lighting, exterior illumination, landscaping, sidewalks, main entrance with fences and gates, entry plaza with aluminum canopy.
- 14. Provide parking lot improvements that include regrading parking lot, installing drainage structures, provide storm water quality treatment, and provide new asphalt, striping, and curbs.
- 15. Provide outdoor diving dryland: provide a fenced area for outdoor diving training equipment behind new diving bleachers and concrete pad surface to anchor equipment.
- 16. All equipment provided shall be covered by an on-site technical support and warranty administration program, with licensed and experienced factory-trained technicians.
- 17. Contractor shall paint all mechanical and utility piping with a universally approved color code, provide directional indicators on all piping, shall provide a laminated color coded drawing of entire treatment process.
- 18. Contractor and equipment supplier shall supply a full three year warranty for the project including equipment package (unless specified differently in the DCP).
- 19. Pool contractor shall provide 3-year pool gutter-pool leak-free guarantee.

#### Add Alternate:

1. Removable shade structure for the grandstand and bleachers.

#### Post Construction Deliverables

Prepare and submit as-built documents in such format as the City requires. Prepare a maintenance plan in a format selected by the City. Assist in project closeout and establishment of warranties. Responsible for all permit approvals and closeout.

#### 3.6 Project Budget

The City estimates an approximate budget of \$20,000,000.00 for completion of this project including all costs and fees. Total costs include construction related expenses; engineering programming, design and construction related services; testing services; public jurisdiction fees and charges; permits; and other construction related professional service fees necessary to fully complete the project.

#### 3.7 Construction Time Frame

#### Time is of the essence for the DBF's performance of the Work. <u>The project will be funded</u> from the City of Fort Lauderdale Community Redevelopment Agency (CRA). The CRA sunsets September 30, 2020 and the project must be complete by the sunset date per Florida Statute 163.362 (10).

The City expects this Project to be completed as expeditiously as possible and the City reserves the right to make adjustments to this schedule as necessary. After notification of award and as a condition precedent to executing the Contract, prior to the start of any work, the DBF shall submit their preliminary construction schedule to City for approval which shall be consistent with the Schedule in its Proposal. The Schedule shall be written in sufficient detail to show the chronological relationship of all major aspects of the project, including estimated starting and completion dates of various activities, design phase, procurement of materials, scheduling of equipment, and construction phase with a level of detail commensurate with the level of detail in the Proposal. The schedule is subject to approval by City.

Milestone	Business Days from Notice to Proceed (Completion Date)
Anticipated Notice to Proceed Date	April 02, 2018
Design, Construction Document, and Permitting Completion	260 Business Days (March 29, 2019)
Substantial Completion of Construction	570 Business Days (June 05, 2020)
Final Completion of Project	610 Business Days (July 31, 2020)

Failure to achieve the milestones will result in liquidated damages. The DBF shall be responsible to obtain all permits within the time frame above.

#### 3.8 Acceptance Criteria

The DBF will warranty all items that were designed and constructed as new, or rehabilitated as part of this Project for a minimum period of one (1) year from the date of City's final acceptance of completion of the project and receipt of final payment. Contractor and equipment supplier shall supply a full three year warranty for the project including equipment package (unless specified differently in the DCP). Pool contractor shall provide 3-year pool gutter-pool shell leak-free guarantee.

Additional warranties may be negotiated or added before an after completion of work.

#### 3.9 Project Planning and Approach

The DBF, as part of its design and preconstruction services, will assist with developing a strategy for the best approach for the successful completion of the project including guidance and assistance in the preparation of a detailed schedule and a reliable, cost estimate along with evaluations of any value engineering measures.

The Fort Lauderdale International Boat Show (Boat Show) is an annual event for the City of Fort Lauderdale and a portion of the project site is utilized by the events management company, Show Management. The event is typically held the first weekend in November and event staging activities begin in October. The DBF shall coordinate with Show Management so construction activities do not adversely impact the Boat Show.

The International Swimming Hall of Fame (ISHOF) has a lease agreement with the City of Fort Lauderdale and ISHOF operates a museum building located on the western end of the peninsula and a gift shop and museum building located on the eastern end of the peninsula. These buildings shall remain in operation during the construction phase. The DBF shall coordinate with ISHOF to maintain safe access to buildings during the construction phase.

#### 3.10 **Project Delivery and Objectives**

At all times of project stages, the DBF shall act in the best interests of the City and use their best efforts to deliver the project in an expeditious and cost-effective manner consistent with the City's project requirements, time constraints, and budget. The DBF shall develop a contractually obligated overall project schedule and will be responsible for methods of construction, safety, scheduling and coordination of all construction work in addition to miscellaneous contracts required for completion of the project within its predetermined budget limits and schedule.

The City expects all parties to this project to work closely together and deal appropriately with project conditions to finish the job successfully. A spirit of cooperation, collaboration and a commitment among professional design and construction services providers to work in the best interests of the project is of utmost importance.

#### \*\*END OF SECTION 3\*\*

### SECTION 4 SUBMITTAL REQUIREMENTS

The following information and documents are required to be provided with DBF response to this RFP. Failure to do so may deem your Proposal non-responsive. The City deems certain documentation and information important in the determination of responsiveness and for the purpose of evaluating responses. Responses should seek to avoid information in excess of that requested, must be concise, and must specifically address the issues of this RFP. The following checklist is not inclusive of all the information that may be necessary to properly evaluate the response and meet the requirements of the scope of work and/or specifications. Additional documents and information should be provided as deemed appropriate by the Proposer in response to specific requirements stated herein or through the RFP.

#### 4.1 Number of Copies

Submitters must submit one (1) bound original, three (3) bound copies, and one (1) unbound original suitable for photocopying plus one (1) electronic PDF copy on thumb drive only in a sealed package delivered to: City of Fort Lauderdale, City Hall, Division of Procurement Services, 100 N. Andrews Avenue, Room 619, Fort Lauderdale, FL 33301. The name and address of the submitter should appear on the outside of the submittals and the package should include the RFP number and title. Each submittal copy shall be identical in content. Submitter's cost incurred in responding to this RFP is the submitter's alone and the City does not accept

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liability for any such cost. The City will not and shall not be required to return any item submitted.

The DBF should concisely follow the format set out herein and provide all the information requested:

The City prefers that the responses be not more than fifty (50) pages double-sided, shall be bound in soft cover binder, numbered consecutively, on 8-1/2" x 11" sheets. Sheets may be 11"x17" for schedules or other information necessary to depict the proposed project approach. Utilize recyclable and recycled-content materials as much as practical. Place the labeled DVD/CD in a paper sleeve.

It is the sole responsibility of the Proposer to ensure their proposal is received on or before the date and time stated, in the specified number of copies and in the format stated herein.

#### 4.2 Contents of Qualification Statement/Submittals: (indexed in order listed)

Table of Contents

1. Proposal Contact Person Information

Indicate which firm/company is the Lead Design-Builder whose signature grants authority to bind submitter to the provisions of this RFP.

Identify the following:

- Legal name of proposer(s)
- Federal employee identification (FEIN) number
- Mailing address City State Zip
- Contact person's name
- Title
- Email address
- Phone number
- Fax number

Any firm/company qualifying as a minority entity to this RFP should also be identified in the same manner.

If there are multiple firms proposed as one team, each firm must be identified. Complete and add signature form page.

#### 2. Qualifications of Firm

Business Structure

- Provide a brief introduction narrative letter highlighting the qualifications of the firm in providing the professional services as it relates specifically to the project;
- Corporations, Joint Ventures, LLC or Partnerships submit a copy indicating when the corporation was organized as a legal entity in the State of Florida, corporation number.
- Any firm(s) involved in a joint venture in this Proposal will be evaluated individually. An executed copy of the joint venture agreement must be submitted with the

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proposal. Percentages of participation of fees must be clearly stated for each joint venture partner;

- Include copies of all active professional licenses and certification held by the Firm under Florida Law to provide the required services;
- Names of Key Personnel and Role in this project
  - Name, title, name of firm, phone number, fax number, and email
- Demonstrate your firm's ability to comply with insurance requirements. Provide a previous certificate or other evidence listing the Insurance Companies names for both Professional Liability and General Liability and the dollar amounts of the coverage.
- Include proof of performance and payment bond.

#### Subconsultant

 Consultant must clearly reflect in its Proposal any Subconsultant proposed to be utilized along with a summary of their background and qualifications including but not limited to name of subconsultant, location of place of business, service the subconsultant will provide, hourly rates/fees, license (if applicable), two (2) references, ownership, education, and experience. The City retains the right to accept or reject any Subconsultant proposed.

#### **Financials**

- List total annual billings for each of the past three (3) calendar years;
- Supply firm's current ratio (assets/liabilities) experience for the last five (5) years.

#### Firms Past Experience

Firms should submit any information they deem appropriate for evaluation of past performance with projects similar in nature to the one under consideration by the City.

- Title of example project;
- Location of example project;
- Client name/owner's representative name, address, phone number, and email;
- Date project started and completed or is anticipated to be completed; Point of contact name and organization which contracted the service who is very familiar with the project and the firm's performance and phone number and email;
- Brief description of Project relevance to this contract;
  - Original budget vs. Final cost
  - Principal elements and special features of the project.
  - Present status of project. (Clearly reflect if it was on time)
- Particular emphasis should be given as to how the firm-wide experience and expertise in the area of design build capabilities for similar facilities will be brought to bear on the proposed work.

Submittals that do not contain such documentation may be deemed as non-responsive.

#### 3. Qualifications of Team

The DBF must identify all design and construction disciplines and specialty consultants the DBF intends to employ in the design and construction of this Project.

- Name and title of each proposed team member;
- Years' experience;
- Area of responsibility;
- Firm name and location;
- Education provide information on the highest relevant academic degree(s) received and areas of specialization;
- Current professional registration;

 Provide information on any other professional qualifications relating to this contract such as publications, organizational memberships, certifications, training, awards, and foreign language capabilities;

Project Manager's Experience

• Provide a comprehensive summary of the experience and qualifications of the individual(s) who will be selected to serve as the project managers overseeing the design and construction for the City. Individual(s) must have a minimum of five (5) years' experience in required discipline and have served as project manager on similar projects on a minimum of three (3) previous occasions. Include their related work experience and qualification and copies of active licenses and certifications. Include the length of tenure with Firm. All proposed Project Managers must be committed for the duration of the Project and must have the City's approval prior to replacement.

Example Projects

- Illustrate proposed team member's qualifications preferably where multiple team members worked together in the past five (5) years on similar projects including projects that involve design, permitting, and construction including:
  - Title and location of project
  - Year started and completed
  - Project owner, point of contact, and point of contact phone number
  - Initial cost of project and actual cost at completion
  - Brief description of project and relevance to this project.
- Provide organizational chart of proposed team;
  - Indicate names and titles of all team members and the firm they are associated with.
- Resumes of key team members proposed for this project.

Submittals that do not contain such documentation may be deemed non-responsive.

- 4. Project Methodology & Approach
  - Provide a statement of the firms understanding of the project and methodology and approach to managing the project. A brief statement must be included which explains why your approach and plan would be the most effective and beneficial to the City of Fort Lauderdale. Include a plan for completing the specified work including ability to meet time and budget requirements;
  - Provide a conceptual design for the proposed Project. Include design, construction, planning, coordination, scheduling, maintainability and any other areas that utilize new or time saving techniques to accomplish the work in a timely manner without sacrificing quality. The terms and conditions of any and all warranties must be provided for evaluation;
  - Provide information on your firm's current workload and how this project will fit into your workload;
  - Describe available facilities, technological capabilities and other available resources you offer for the project.

5. References

References should be of projects with similar scope as listed in this RFP. Information should include:

- Client Name, address, contact person telephone, fax numbers, and email addresses.
- Description of work.
- Year the project was completed.

• Total cost of the construction, estimated and actual.

Note: Do not include City of Fort Lauderdale work or staff references as a demonstration of your capabilities. The Committee is interested in details of work experience and references other than the City of Fort Lauderdale.

#### 6. Price Proposal Form

Proposer must submit the Price Proposal Form included in this RFP and insert in this section. In addition to submitting the required Price Proposal Form, the Proposer must include a separate Schedule of Values for each phase or task of work. The price proposal shall be based upon and include any and all costs or expenses to be incurred by the DBF in implementing, fulfilling and completing all aspects of the design-build project. The price proposal, in addition to all direct costs and expenses, shall include all other indirect costs and expenses including but not limited to, such costs as the design-builder's general, administrative and overhead costs, project management and supervisory costs, all fees, changes and taxes, labor, direct and indirect payroll costs, insurance and bond costs, cost of equipment, materials, tools, transportation, and service fee (profit).

#### 7. Contract Forms

All contract forms must be completed (with all blanks filled in), executed and properly notarized.

- Price Proposal
- Non-Collusion
- Questionnaire
- Proposal Certification
- Prime Contractor Identification
- Contract Payment Method
- Acknowledgment of Addenda
- Bid Bond

#### \*\*END OF SECTION 4\*\*

### SECTION 5 EVALUATION AND SELECTION CRITERIA

#### 5.1 Evaluation Criteria and Scoring (100 Points)

Design-Build Team's responses to this RFP will be evaluated and ranked by an RFP Evaluation Committee. Submittals shall be evaluated based upon the information and references contained in the Proposals as submitted.

Qualifications	20 Points
Project Methodology & Approach	40 Points
Price Proposal	30 Points
References	10 Points

#### 5.2 EVALUATION PROCEDURE

#### **Committee**

Evaluation of the submittals will be conducted by an Evaluation Committee, consisting of a minimum of three (3) members of City Staff, or other persons selected by the City Manager or designee. All committee members must be present at scheduled evaluation meetings.

Submittals shall be evaluated based upon the information and references contained in the Proposals as submitted. Any firm(s) involved in a joint venture in its Proposal will be evaluated individually, as each firm of the joint venture would have to stand on its own merits.

#### Review of Qualifications

Upon receipt of proposals by the time specified, the City shall review the proposals of the DBFs submitting same considering such factors as: the ability of professional personnel; past performance; ability to meet time and budget requirements; locations of firm offices; recent, current and projected workloads of the firms; and, other factors relevant to the project. The City shall evaluate the proposal based on price, technical and design aspects of the project and other evaluation factors as may be set forth in the RFP.

#### Scoring and Ranking

The City uses a mathematical formula to determine the scoring for each individual responsive and responsible firm based on the weighted criteria stated herein. Each evaluation committee member will rank each firm by criteria, giving their first ranked firm as number 1, the second ranked firm as number 2, and so on. The lowest final ranking score will determine the recommendation by the evaluation committee to the City Manager.

#### **Clarification**

During the evaluation process, the City has the right to require any clarification it needs in order to understand the DBF's view and approach to the project scope of the work. Any clarifications to the Proposal made before executing the contract will become part of the final DBF contract.

#### **Negotiations**

The City Manager or designee reserves the right to conduct contract negotiations with the selected responsible, responsive DBF. If successful, the DBF and City will enter into a contract for the work. All proposers are considered fully informed as to the intentions of the City regarding the timeframe to prepare and complete contract negotiations.

If the City is unable to negotiate a satisfactory design-build contract with the design-build firm considered to be the most qualified, negotiations with that design-build firm shall be formally terminated. Upon termination of said negotiations, negotiations shall then be undertaken with the second ranked firm, with this process being repeated until an agreement is reached which is then recommended and formally approved by the City Commission or until the short-list is exhausted in which case a new RFP may be undertaken.

The City may withdraw this RFP, reject qualifications or any portion thereof at any time prior to an award, and is not required to furnish a statement of the reason why a particular qualification was not deemed to be the most advantageous to the City.

#### Consult Design Criteria Professional

The City shall consult with the design criteria professional who prepared the package concerning evaluation of the proposals, approval of detail work and drawings for the project and compliance of project construction with the package.

#### <u>Award</u>

The City reserves the right to award a contract to that DBF who will best serve the interest of the City. The City reserves the right, based upon its deliberations and in its opinion, to accept or reject any or all submittals. The City also reserves the right to waive minor irregularities or

variations of the submittal requirements and RFP process and any informality in any bid and to reject any or all bids. The City reserves the right to reduce or delete any of the bid items.

Upon award of a Contract, in accordance with Florida Statues, by the City Commission, the City Manager is authorized to execute the Contract on behalf of the City.

At time of award of contract, the City reserves the right to set a guaranteed maximum price limit that may be expended on this project. Contract quantities of any or all items may be increased, reduced, or eliminated to adjust the contract amount to coincide with the amount of work necessary or to bring the contract value to within the established limit.

#### **Exceptions**

Any Proposer that objects to any element of the solicitation documents including but not limited to the RFP, DCP, drawings, construction time frame, sample agreement, general terms and conditions, etc. should state those objections in the submittal.

#### \*\*END OF SECTION 5\*\*

### SECTION 6 APPENDIX ATTACHMENTS

- a) Design Criteria Package (DCP)
- b) CADD Standards
- c) Sample Agreement

#### \*\*END OF SECTION 6\*\*

# FORT LAUDERDALE AQUATIC COMPLEX DESIGN CRITERIA PACKAGE



### **SEPTEMBER 2017**

# **City of Fort Lauderdale**

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- P-102 New public bathrooms and concession room domestic water and sanitary floor plan
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# APPENDIX

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- B) City of Fort Lauderdale, Code of Ordinance- Chapter 6, Article III- Sea Turtles
- C) Survey
- D) Geotechnical Report

# DESIGN CRITERIA PROFESSIONAL TEAM

Architect:	SYNALOVSKI ROMANIK SAYE, LLC 1800 Eller Drive, Suite 500 Fort Lauderdale, FL 33316 (954) 961-6806
MEP Engineer:	DELTA G Consulting Engineers 707 NE 3 <sup>rd</sup> Ave suite 200 Fort Lauderdale, FL33304 (954) 527-1112
Structural Engineer:	Saad Elia El-Hage Consulting Engineers, Inc. 5601 NW 9 Avenue, Suite 401 Fort Lauderdale, FL 33309 (954) 771-8149
Civil Engineer:	Flynn Engineering Services, P.A. 241 Commercial Boulevard Lauderdale-By-The Sea, FL 33308 (954) 522-1004
Pool Design consultant:	AQUATICS H2O IIc PO Box 654 Drayton, SC 29333 864-386-1498
Landscape:	Natalia Barranco RLA 888 S. Andrews Avenue, Suite 300 Fort Lauderdale, FL 33316 954-667-7814

In accordance with Florida Statute 287.055, any architect, landscape architect, engineer or other licensed design professionals in the State of Florida who are members of the "Design Criteria Team" may not be a member of a proposing "Design-Build Firm".

# section 1

# 1.0 **DESCRIPTION**

Fort Lauderdale Aquatics Complex is located on the beach at D.C. Alexander Park, south of Las Olas Boulevard. It is a manmade pier which extends approximately 5 acres into the Intracoastal Waterway.

Originally built in 1965, the property is home to the International Swimming Hall of Fame and Fort Lauderdale Aquatic Complex, a municipal pool owned and operated by the City of Fort Lauderdale. Considered a leader and pioneer among the world's top aquatic centers, the Fort Lauderdale Aquatic Complex contains two 50-meter Olympic-size pools, a diving pool, a teaching pool and a spa.

It is home to U.S. National Team Champions, the Fort Lauderdale Dive Team (FLDT), and Swim Fort Lauderdale (SFTL). Swim Fort Lauderdale is an award winning USA Swimming and U.S. Masters Swimming team. In 2012, SFTL earned USA Swimming Level 4 club honors and was recognized by USA Swimming as a Silver Medal National Club of Excellence.

In 2016, SFTL was awarded the Bronze Medal by the USA Swimming Club Excellence Program, placing the team in the top 5% of clubs teams in the United States.

The existing facilities consist of five buildings and five pools as described below (see key plan for locations):

<u>Building 1:</u> Located on the east side of the property, it was built in 1990, currently used for beach patrol offices and additional museum spaces. This building will remain with no improvements in this scope of work.

<u>Building 2:</u> Concrete bleachers, Grand stand built in 1965 above the pool filtration equipment room, FPL vault, restrooms, storage and admission booth. This building will be demolished, a new building replacing this facility is included in this scope of work.

<u>Building 3:</u> It was renovated in 1990s, contains an FPL vault, staff offices, press-conference room, timing room, bathrooms, showers and lockers rooms. No improvements will be performed in this scope of work.

<u>Building 4:</u> It has a Fitness room in the first level, timing booth and offices above. No improvements will be performed in this scope of work.

<u>Building 5:</u> International Swimming Hall of Fame Museum and exhibition building built in 1967 will not be part of this scope of work.

<u>Pool 1 – Training pool:</u> 50 meters x 25 yards x 4 feet to 12.6 feet depth range. Capacity: 755,000 gallons. It was added in 1990, improvements will be part of this scope of work.

<u>Pool 2- Competition pool:</u> 50 meters x 25 yards x 4 feet to 7.3 feet depth range. Capacity: 573,180 gallons. It was built in 1965. To be demolished and build a new FINA Compliant Competition pool.

<u>Pool 3 – Diving pool:</u> 25 yards x 20 yards x 4 feet to 18 feet depth range, and a dive tower. It was built in 1965, and no longer comply with FINA requirements. Existing dive pool to be demolished and a new FINA compliant Diving pool, springboards and dive tower with new FINA platforms constructed.

<u>Pool 4: Spa- warm up pool.</u> To be demolished and a new covered spa pool constructed for 12 divers.

<u>Pool 5: Teaching pool:</u> 40 feet x 20 feet x 4 feet to 4.6 feet depth range. Capacity 21,141 gallons. Built in 1990, the existing to be enlarged to 37 feet x 40 feet.



# 1.1 SCOPE OF WORK.

# **1.1.1 Site Improvements:**

- 1. Base bid:
  - a. Provide new sidewalk, access stairs to east west breeze way circulation, ramps, permanent and removable fences, sport pole lighting fixture, exterior illumination, deck drain system, planters and landscaping.
  - b. Provide a main entrance under permanent canopy with permanent fence and gates.

- c. Build a new landscape area to relocate existing swimmer sculpture, surrounded by concrete seating.
- d. Provide flag poles.
  - e. Provide parking lot improvements to the existing parking lot. The parking lots and onsite circulation drives shall be completely reconstructed with new asphalt pavement and concrete curbing. The new parking lots and circulation drives shall also include new storm water drainage in compliance with the requirements of South Florida Water Management District (SFWMD), the City of Fort Lauderdale (City), and Broward County Environmental Protection and Growth Management Department, Planning and Environmental Regulation Division, Surface Water Management Dept.

## 1.2.2 Pools – Pools deck:

- 1. Existing 50M Training Pool (Pool 1):
  - a. Provide new gutters system.
  - b. New Filtration equipment, piping, surge tank, Regenerative Filter, On-site chlorine generator (ChlorKing X-Gen Salt system), back up liquid erosion feeder, CO2, new pvc junction boxes and conduit for new timing system, chemistry controller, UV or Clear Comfort.
  - c. Provide 20 new starting blocks, Colorado Timing or approved equal. Provide 20 electronic system timing touchpads, Colorado Timing Systems.
  - d. New pool deck broom finish.
- 2. Existing 50M Competition Pool (Pool 2):
  - a. Demolish existing pool and provide new fully FINA compliant Olympic pool; 25 meters x 50 meters (excluded bulkheads dimensions) with 3 meters deep for 30 meters in length of the pool for synchronized swimming. Rest of the pool will be 2 meters deep.
  - b. Provide 2 movable 6 feet wide, stainless steel bulkheads, Neptune Benson or approved equal.
  - c. New Filtration equipment desired are surge tank, Regenerative Filter, On-site chlorine generator (ChlorKing X-Gen Salt system),back up liquid erosion feeder, CO2, new pvc junction boxes and conduit for future new timing system, chemistry controller, UV (or Clear Comfort as bid alternate).
  - d. Provide 20 new starting blocks, Colorado Timing or approved equal. Provide 20 electronic system timing touchpads, Colorado Timing Systems.

- 3. Existing Diving Pool (Pool 3):
  - a. Remove existing pool and underground observation room completely and build new 25m (82 feet) x 25m x 6.096 m (20 feet) depth, to allow high diving at heights up to 27 meters. Diving pool to meet FINA World and Olympic requirements.
  - b. New dive tower for 1M, 3M, 5M, 7.5M, 10M platforms and 1M and 3M Duraflex springboards (permanent in south side of diving pool and removable in north side of diving pool).
  - c. New Filtration equipment desired are surge tank, Regenerative Filter, On-site chlorine generator (ChlorKing X-Gen Salt system), back up liquid erosion feeder, CO2, chemistry controller, UV (or Clear Comfort as bid alternate.)
  - d. Outdoor diving dryland: provide a fenced area for outdoor diving training equipment behind new diving bleachers and concrete pad surface to anchor the equipment.
  - e. Provide sparger system and water surface agitation system.
- 4. Existing Spa (Pool 4):
  - a. Remove existing spa and build new 12 people minimum skimmer spa.
  - b. New Filtration equipment (standard cartridge or sand filter), liquid erosion feeder, CO2, new Lochinvar Heat Exchange boiler, chemistry controller, UV (or Clear Comfort as bid alternate.)
  - c. Provide shade canopy to cover spa area.
- 5. Existing Teaching Pool (Pool 5):
  - a. Extend the pool dimension to 40 feet x 37 feet.
  - a. Provide a removable shade structure system to cover pool area.
  - d. New Filtration equipment desired are surge tank, Regenerative Filter, On-site chlorine generator (ChlorKing X-Gen Salt system), back up liquid erosion feeder, CO2, chemistry controller, UV (or Clear Comfort as bid alternate.)
- 6. Existing pools deck:
  - a. Demolish existing pool deck as needed, remove access ramps to building 3 and 4, build a new raised pool deck to access directly those buildings (level suggested 6" above the existing pool deck) finished floor.
  - b. Provide pool deck drain system.

- c. Provide sport lighting fixtures and outdoor light fixtures at heights and locations that are serviceable by City staff.
- d. Provide exterior outlets and numerous water spigots. Pool deck showers per DOH standards.

## 1.1.2 Buildings:

- 1. Existing Building 2:
  - a. Demolish existing concrete grandstand, underneath structure, pool filtration rooms, storage, bathrooms. NFPL vault and gear panels to remain location, to replace equipment.
  - b. Build a new aluminum grand stand raised for 1550 spectators capacity. Build underneath sloped concrete roof slab for pool filtration equipment rooms, chemical rooms and storage. Provide access ramps, raised catwalk, means of egress per Florida code and ICC 300.
  - c. Build a new electrical room overlap location with existing NFPL vault and gears.
  - d. Build a new reception / registration entry space for guests and members, with HVAC.
- 2. New Buildings:
  - a. Provide a new building for public bathrooms with HVAC, as per plumbing calculation shown below:

	r		MENS		WON	<b>IENS</b>
	Surface Area of Pool	Urinal	Water Closet	Lavatory	Water Closet	Lavatory
TOTAL RESTROOMS	REQUIRED	18	16	17	49	16
EXISTING RESTROOMS	EXISTING	8	10	11	16	11
NEW RESTROOMS	PROPOSED	10	6	6	33	5

- b. Include in the new building a concession space, mechanically ventilated, with commercial kitchen equipment as shown in schedule.
- c. Include in the new building a tickets booth with HVAC, to accommodate two persons.
- d. Provide a diving public stand, aluminum bleacher for 500 spectators capacity raised 9 feet lower level. Enclose underneath Teaching pool filtration room and chemical room. Provide a sloped roof for these rooms. The other area underneath the bleacher will remain open for future additional diving fitness space, storage and office. Provide access ramps, means of egress per Florida codes and ICC 300.

# 1.2 GENERAL DESIGN REQUIREMENTS

- a. Site Plan represents a design intent for the Site. It will be the responsibility of the Design-Build Team to ensure that their Site Plan receives all applicable approvals.
- b. The **City of Fort Lauderdale** has jurisdiction over all approvals including Building Permitting. Nonetheless, the Design-Build Team is responsible for approvals from all other local, regional and state agency having entitlement/approval jurisdiction.
- c. Access to the existing Museum Buildings must be maintained and continual operations of International Swimming Hall of Fame Museum shall be coordinated with the City at all times. Final construction logistics will be reviewed and approved by the City.
- d. In the Appendix, a Specific Purpose Survey is provided that provides limited information of the proposed project site. Should additional information be required, it is the responsibility of the Design-Build Firm to obtain.
- e. Any Demolition and relocation of existing services is the responsibility of the Design-Build Firm. Record documents of the existing structures are made available in the Appendix.
- f. It will be the responsibility of the Design-Build Firm to secure the site at all times during construction with a minimum of a six (6') foot high temporary fence with wind screen. All other necessary security measures are the responsibility of the Design-Build Firm. The Design-Build Firm shall be responsible for all temporary utilities and shall ensure that there will be no interruption of service to the existing venue operations. In addition, the Design-Build Firm is responsible to verify all existing local utility standards, requirements and provisions. All construction for this project shall conform to all current applicable codes, standards and governing authorities.
- g. Permitting fees and plan review fees associated with the new pools, bleachers and buildings will be paid for by the Design-Build Firm. The City of Fort Lauderdale Planning and Zoning and Engineering approvals will be coordinated with the City and obtained prior to the start of construction. In order to expedite the process, the Design-Build Firm shall contact the City of Fort Lauderdale Planning and Zoning, Engineering and Building Departments prior to submitting for permits in order to schedule the appropriate amount of time for review and permitting of the construction documents. The City is receptive to early site and/or shell package submissions in order to expedite the construction phase of the Project.
- h. All pools shall be constructed in accordance with Florida Building Code requirements, Chapter 64E-9 Public Swimming Pool Code as well as in accordance and international and/or national governing body standards where applicable.

# **1.3 DEMOLITION REQUIREMENTS.**

a. All demolition materials and appurtenances must be properly disposed of in accordance with all applicable regulations. Maximize the use of deconstruction and recycling services.

Before demolition can commence, any hazardous materials must be abated in accordance with the requirements of City of Fort Lauderdale. Provide a Demolition Plan/ Deconstruction Plan General Demolition disclosure.

- b. The work includes demolition, salvage of identified items and materials and removal of resulting rubbish and debris. Remove rubbish and debris from the property daily, unless otherwise directed. Materials that cannot be removed daily must be stored in areas specified in the approved Demolition Plan.
- c. Perform dust control activities in accordance with approved Dirt and Dust Control Plan
- d. All waste materials will become the property of the Contractor and must be transported, disposed of and recycled in accordance with the approved disposal plan.

## 1.5 **PROJECT SCHEDULE**

#### **CALENDAR. MILESTONES**

MILESTONE	BUSINESS DAYS FROM NOTICE TO PROCEED (COMPLETION DATE)
Anticipated Notice to Proceed Date	February 14 <sup>th</sup> , 2018
Design, Construction Documents and Permitting Completion.	260 Business Days (February 12 <sup>th</sup> , 2019)
Substantial Completion of Construction	570 Business Days (April 21 <sup>st</sup> , 2020)
Final Completion of Project	610 Business Days (June 16 <sup>th</sup> , 2020)

# 1.6 BUILDING PROGRAM INFORMATION TABLE

The proposed design must accommodate the established program in accordance with this Design Criteria Package. Working closely with the **City of Fort Lauderdale**, **SYNALOVSKI ROMANIK SAYE**, **LLC** developed the program for the **Fort Lauderdale Aquatic Complex**.

The ultimate size of the proposed solution is to be determined by the Design-Build Firm in response to the program requirements.

The Design-Build solution should expand the vision of the Fort Lauderdale Aquatic Complex. No particular architectural style is required. Nonetheless, the **City of Fort Lauderdale** seeks a design solution in context with FLAC and the existing context.

# 1.7 BUILDING TYPE

The Buildings Construction Type shall comply with the Florida Building Code (2014) and the requirements of this Design Criteria Package.

# END OF SECTION

# section 2

# 2.1 SITE IMPROVEMENTS

## 2.1.1 General: Work Included

This narrative is provided as a supplement to the project description to provide general guidelines for project work. This section consists of earthwork operations to include:

- 1) Excavation and backfill of structures and foundations
- 2) Excavation and backfill of pipe trenches
- 3) Site grading

**Related Sections** 

- 2.2 Stormwater System
- 2.3 Sanitary Sewer System
- 2.4 Water Service System
- 2.5 Pavement

Geotechnical Soils Report

A soils investigation prepared by a Florida Registered Geotechnical Engineer is provided in the Appendix. This geotechnical report, authored by Tierra South Florida dated September 17, 2013 has been included for informational purposes only. Should additional information be required, it is the responsibility of the Design-Build Firm to obtain and incorporate the results / requirements into the project work.

Survey

It will be the responsibility of the Design-Build Firm to verify and provide all surveys including as-builts and record drawings during design and construction phases, which are required to complete the project.

- 2.1.2 Execution: Density Testing
  - 1) Density testing will be performed by an independent certified laboratory selected and paid for by the Design-Build Firm.

# Equipment

All equipment shall be suitable and adequate to perform the work specified. Compaction equipment shall be as indicated in the subsurface investigation report or other to achieve the requirements / criteria as required by the Geotechnical Engineer.

# Excess Material

- 1) Stockpile all excess suitable material in stockpile areas on the Aquatic Center site in an area acceptable to the City. Stockpile areas must have runoff containment measures provided around stockpiles.
- 2) Unsuitable materials shall be removed and disposed of off-site at Design-Build Firm's expense.
- 3) At the completion of the job, all excess suitable material shall be removed and disposed of off-site at Design-Build Firm's expense.

# 2.2 STORMWATER SYSTEM

2.2.1 General: Work Included

The Design-Build Firm shall design, permit, install, and certify a complete stormwater system for this total project in connection with the existing system as necessary to meet the requirements of South Florida Water Management District (SFWMD), the City of Fort Lauderdale (City), and Broward County Environmental Protection and Growth Management Department, Planning and Environmental Regulation Division, Surface Water Management Dept. The Design-Build Firm will obtain permits from SFWMD, Broward County, the City's Engineering Department, and any other required permits.

The minimum floor elevation shall be at a minimum elevated above the 100-year 3-day flood elevation or as required by the Florida Building Code, City of Fort Lauderdale Ordinances, the Broward County, or SFWMD.

Where secondary (emergency) roof drains or scuppers are required, provide per the Florida Building Code.

This narrative is provided as a supplement to the project description to provide general guidelines for project work. The pool deck drainage will be via modular precast trench drains around the pools perimeter. These trench drains will connect via solid pipe out to an exfiltration trench system in the north parking lot. The trench drains are required to have ADA approved grates that are also chemical resistant and suitable for use in the salt air environment. The drainage system will require permitting thru the Broward County Environmental Protection and Growth Management Department, Planning and Environmental Regulation Division.

Provide parking lot improvements to the existing parking lot. The parking lots and onsite circulation drives shall be completely reconstructed with new asphalt pavement and concrete curbing. The new parking lots and circulation drives shall also include new storm water drainage in compliance with the requirements of South Florida Water Management District (SFWMD), the City of Fort Lauderdale (City), and Broward County Environmental Protection and Growth Management Department, Planning and Environmental Regulation Division, Surface Water Management Dept.

Work shall be in accordance with Section 430 of the FDOT Specifications except as modified herein, and curb inlets, catch basins, junction boxes and storm water control structures in accordance with Section 425 of the FDOT Specifications.

## **Referenced Standards**

Florida Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.

2.2.2 Products: Materials

Pipe

All piping and materials to be approved by the City of Fort Lauderdale Engineering Department.

#### Structures

Material for masonry and cast-in-place structures shall meet the requirements of FDOT Section 425-3.

Precast concrete inlets, catch basins, junction boxes and stormwater control structures may be substituted for cast-in-place or masonry structures as long as they conform to the requirements set forth in Section 425-5 of the FDOT Specifications.

#### 2.2.3 Execution: Foundation

#### Laying Pipe

In general pipe shall be installed in accordance with FDOT Section 430-4. All pipe shall be laid "in the dry."

Installation of concrete pipe shall also meet the requirements of FDOT Section 430-7.

#### Structure Construction

Structures shall be constructed of approved materials and built plumb and square with all joints satisfactorily sealed to water tightness at pipe entrances and exits. Inlet covers and catch basin grates shall be furnished and shall conform to City standard details.

# 2.3 SANITARY SEWER SYSTEM

#### 2.3.1 General: Work Included

The new restrooms in the NW area of the plan will require a new water service and a new sanitary sewer service. The Design Build contractor needs to verify the location of the end of the existing gravity sewer in the north parking lot. The City atlas shows this existing sewer ending in the east portion of the lot. The endpoint and the invert need to be confirmed by the Design Build contractor to insure the sewer can be extended by gravity to the new restrooms.

The Design-Build Firm shall design, permit, install, and certify a sanitary sewer collection and / or transmission system as needed to service the proposed project. The Design-Build Firm shall secure all required permits for the work. The Design-Build Firm shall be responsible for all temporary utilities on the site and shall ensure that there will be no interruption of service to the existing facilities. This specification is provided as a supplement to the project description to provide general guidelines for project work. This section includes sanitary sewer work including service laterals, mains, manholes, and lift stations. This section also includes testing of completed portions of new sanitary sewer.

All work shall be in accordance with applicable Codes of all Agencies having jurisdiction.

#### Storage of Materials

Piping shall not be stacked higher than four feet. Suitable racks, chairs and other supports shall be provided by the Design-Build Firm to protect preformed pipe-mating surfaces from damage. Store bottom tiers off the ground, alternate tiers and chock tier ends. All pipe and other materials subject to ultraviolet or ozone attack shall be protected from the sunlight, atmosphere and weather and stored in suitable enclosures until ready for installation.

#### 2.3.2 Products: Materials

#### **Ductile Iron Pipe**

All push-on or mechanical joint Ductile Iron Pipe shall be a minimum Class 350 meeting ANSI/AWWA C105/A21.5-05 (or latest revision). The pipe shall have a polyethylene internal coating and a coal tar epoxy coating outside in accordance with ANSI/AWWA C151A21.51-02 (or latest revision). All bolts must be corrosion resistant material.

Fittings shall be short body cast or Ductile Iron Pipe with push-on or mechanical joints as manufactured by or supplied by the pipe manufacturer. If some fittings are available only with flange joints, flange to mechanical and/or push-on joint adapters shall be used. Fittings shall be inside and out the same as specified

above for Ductile Iron Pipe. All fittings shall be designed for a pressure rating of 250 psi and shall have the same polyethylene lining as the pipe.

# **PVC** Pipe

All PVC pipe sizes 4 inch through 12 inch shall be ASTM D3034, SDR-35. PVC pipe shall be joined by a rubber ring bell joint which shall be an integral part of the pipe barrel and the rubber gasket push type joint. Gaskets shall meet the requirements of ASTM F477. Joints shall conform to ASTM D3212. Pipe shall be color code green either with four side continuous marking or by being solid color.

Fittings shall be either ductile iron as specified above or of PVC material meeting the same specification as PVC pipe. When ductile iron fittings are used for PVC pipe 4 inch and larger, mechanical joints shall also include a mechanical joint transition gland or gasket to outside diameter of PVC pipe.

#### Manholes

The manhole base shall be monolithically cast with the bottom manhole section. The base shall have a minimum thickness of 8 inches.

Joints between manhole sections shall be sealed with "Ramnek" gaskets or approved equal and with anti-hydro cement on inside and outside.

All manhole surfaces shall be protected with 2 coats of Bitumastic. Exterior surfaces shall receive 2 coats for total dry film thickness (DFT) of 16-18 mils. Interior shall also receive two coats to a total DFT of 16-18 mils. The first coat shall be red and the top coat black both inside and out.

#### 2.3.3 Execution: Installation

All pipe shall be installed in accordance with the pipe manufacturers recommendations, and the Uni-Bell PVC Pipe Association Handbook, or Ductile Iron Pipe Research Association recommendations, with each section of pipe having a firm bearing on the trench bedding throughout its length between bell holes. Foreign matter shall be prevented from entering the pipe during and after laying operations. All pipe ends shall be plugged when construction stops overnight or for extended periods.

Any pipe cutting shall be performed using the recommendations of the pipe manufacturer and in accordance with the best trade practices. When cutting pipe or fittings, care shall be taken to prevent damage to linings and coatings. Damage to linings shall be cause for rejection of the complete section of pipe. Damage to exterior coatings shall be corrected to original specifications.

#### Testing – General

The Design-Build Firm shall perform testing of all new sanitary sewers in the presence of representatives of all Agencies having jurisdiction, and the City. The Design-Build Firm shall be required to give a minimum of 48 hours notice to all

parties involved prior to performing any testing. All piping shall be thoroughly cleaned prior to testing.

## Lamping

The first test shall be the lamping of all sewers between each manhole to assure they are unobstructed, dry, straight, and correctly aligned.

## Televising

After successful lamping and deflection testing, the Design-Builder shall run a color TV camera designed for sewer-viewing through the sewer to make a visual and Audio record of the entire system, recording the station location of any flaws and all service laterals. All sewer TV tapes shall be recorded on a DVD format in color and two copies provided to the City.

## Leakage

A final test of either an infiltration, exfiltration or air testing may be performed at the discretion of the City. The method of testing shall be as selected by the City.

## Air Testing

The procedure for air testing shall be in accordance with ASTM C828 and as follows:

All house leads shall be properly plugged and blocked to withstand the air pressure. The sewer line shall be tested in increments between manholes. The line shall be cleaned and plugged at each manhole. Such plugs shall be designed to hold against the test pressure and shall provide an airtight seal. One of the plugs shall have an orifice through which air can be introduced into the sewer. An air supply line shall be connected to the orifice. The air supply line shall be fitted with suitable control valves and a pressure gauge for continually measuring the air pressure in the sewer. The pressure gauge shall have a minimum diameter of 3-1/2 inches and range of 0-10 PSIG. The gauge shall have minimum divisions of 0.10 PSIG and an accuracy of  $\pm 0.04$  PSIG.

The sewer shall be pressurized to 4.0 PSIG greater than the greatest back pressure caused by ground water over the top of the sewer pipe. At least 2 minutes shall be allowed for the air pressure to stabilize between 3.5 and 4.0 PSIG. If necessary, air shall be added to the sewer to maintain a pressure of 3.5 PSIG or greater.

The time required for the air pressure to decrease 1.0 PSIG during the test shall not be less than the time shown in Table I for PVC and DIP or Table II for VCP. The total length of line being tested including any service laterals shall be used in calculating the test time required.

Infiltration Testing

Infiltration testing is an acceptable method of leakage test only when the ground water level above the top of the pipe is over 7 feet throughout the length being tested. The allowable infiltration for any portion of sewer system should be measured by a weir or current meter placed in the appropriate manhole and should not exceed 50 gallons per inch of internal pipe diameter per mile per day (4.61/mm/km/day), including manholes.

#### **Exfiltration Testing**

Exfiltration testing is an acceptable method of test only in dry areas or when the line is sufficiently deep and the ground water level above the pipe is suitable low to develop test pressures which exceed the external pressure generated by the level of ground water above the pipe. The allowable water exfiltration for any length of sewer pipe between manholes should not exceed 50 gallons per inch of internal pipe diameter per mile per day.

During exfiltration testing the maximum internal pipe pressure at the lowest end should not exceed 25 feet (7.6m) of water or 10.8 psi (74.5 kPa) and the water level inside the manhole should be 2 feet (0.6m) higher than the top of the pipe or 2 feet (0.6m) higher than ground water level, whichever is greater.

Water for testing shall be obtained from an approved water source. The Design-Build Firm shall provide all water required at his own expense and shall make all necessary arrangements with the authority which controls the source of water system and shall be governed in its use of water by all rules and regulations imposed thereon by said authority. The Design-Build Firm shall provide and remove temporary connections between the source water system and the mains constructed under this contract. All temporary connections shall meet the approval of the City, the authority controlling the source water system and Public Health authorities having jurisdiction.

Water for testing shall be removed from the sanitary sewer by pumping to waste. Water discharge shall be controlled adequately to protect any surface water resource or adjacent property from potential environmental damage or from creation of hazard to traffic.

#### System Failure

Should any test fail, necessary repairs shall be accomplished by the Design-Build Firm and the test repeated until results within the established limits are met. If for any reason the repairs require excavating the sewer line and relaying it the disturbed line shall be retested as if it were a newly laid line. The Design-Build Firm shall furnish the necessary labor, water and all other items required to conduct the required testing and shall perform the necessary system repairs to comply with the specified test, at no cost to the City.

Special consideration shall be given to the repair of any pipe which fails any of the above tests. Not only shall the Design-Build Firm be responsible for making the necessary repairs and retesting at no additional cost, it shall be limited to the use of one (1) repair sleeve per one hundred (100) feet or fraction thereof. Any

line requiring more than the acceptable number of repair sleeves shall necessitate the entire sewer between manholes to be removed and replaced. No additional payment shall be made for any line requiring to be re-laid or associated testing. Measurements shall be made from center of manhole to center of manhole to calculate the number of acceptable repair sleeves per manhole run.

The following table is to be used for PVC and Ductile Iron Pipe:

#### TABLE I FROM UNI-BELL HANDBOOK OF PVC PIPE SPECIFICATION TIME REQUIRED FOR A <u>1.0 PSIG PRESSURE DROP</u> FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q = 0.0015

1 Pipe Diam.	2 Minimum Time	3 1 Length for	4 Time for		$\mathbf{s}_{\mathrm{l}}$	pecif	ication	Tin	ie for L	eng	th (L) S	how	n (min:	sec)	*				
(in.)	(min:	Minimum	Longer			<i>c</i> .	200	<i>e</i> .			200	<i>c</i> .	250	<i>c</i> .		e			
	sec)	(ft) (s	ec) 100	It	150	It	200	It	250	It	300	It	350	It	400	Ϊt	450	It	
4	3:46	597	.380	L	3:46		3:46		3:46		3:46		3:46		3:46		3:46		3:46
6	5:40	398	.854	L	5:40		5:40		5:40		5:40		5:40		5:40		5:42		6:24
8	7:34	298	1.520	L	7:34		7:34		7:34		7:34		7:36		8:52	3	10:08		11:24
10	9:26	239	2.374	L	9:26		9:26		9:26		9:53		11:52		13:51		15:49		17:48
12	11:20	199	3.418	L	11:20		11:20		11:24		14:15		17:05		19:56		22:47		25:38
15	14:10	159	5.342	L	14:10		14:10		17:48		22:15		26:42		31:09	- 2	35:36		40:04
18	17:00	133	7.692	L	17:00		19:13		25:38		32:03		38.27		44:52	5	51:16		57:41
21	19:50	114	10.470	L	19:50		26:10		34:54		43:37		52:21		61:00		59:48		78:31
24	22:40	99	13.674	L	22:47		34:11		45:34		56:58		68:22		79:46		91:10	1	02:33
27	25:30	88	17.306	L	28:51		43:16		57:41		72:07		86:32	1	00:57	11	15:22	1	29:48
30	28:20	80	21.366	L	35:37		53:25		71:13		89:02	1	06:50	1	24:38	14	12:26	1	60:15
33	31:10	72	25.852	т.	43:05		64:38		86:10	1	07:43	1	29:16	1	50:43	11	72:21	1	93:53
36	34:00	66	30.768	L	51:17		76:55	1	02:34	ī	28:12	ī	53:50	1	79:29	20	05:07	2	30:46

b)

Note: Interpolate between valves on table as shown in Example for Table II

 a) For pipe lengths greater than 450 feet but less than length in Column 3. use minimum time in Column 2. For pipe lengths greater than 450 feet and greater than length in Column 3, subtract length in Column 3 from actual pipe length, multiply difference by time in Column 4 and add to time in Column 2.

# 2.4 WATER SERVICE SYSTEM

#### 2.4.1 General: Work Included

The Design-Build Firm shall design, permit, construct, and certify a domestic water main, water services and, if required, fire protection main for the proposed project. The Design-Build Firm shall obtain all required permits for the water facilities. The Design-Build Firm shall be responsible for all temporary utilities on the site and shall ensure that there will be no interruption of service to the existing facilities. This specification is provided as a supplement to the project description to provide general guidelines for the project work. This section includes water system complete with piping, valves, fire hydrants, fittings, thrust

blocks and retainers, and plugs and accessories required for installation. Work in this section also includes sterilization, flushing, and bacterial and hydrostatic testing of completed portions of new domestic water main. The water services shall serve the new pool pump equipment and restrooms.

#### Storage of Materials

Piping shall not be stacked higher than four feet. Suitable racks, chairs and other supports shall be provided by the Design-Build Firm to protect preformed pipe mating surfaces from damage. Store bottom tiers off the ground, alternate tiers and chock tier ends. All pipe and other materials subject to ultraviolet or ozone attack shall be protected from the sunlight, atmosphere and weather and stored in suitable enclosures until ready for installation.

# 2.4.2 Products: General

All domestic water pipe shall be National Sanitation Foundation approved for potable water use. Ductile Iron Pipe all push-on, mechanical or restrained joint Ductile Iron Pipe shall be a minimum of Class 350 meeting ANSI/AWWA C151/A21.51. Flanged joint Ductile Iron Pipe shall meet ANSI/AWWA C115/A21.15 and shall have ductile iron flanges. All bolts and nuts for flanged joints shall be 304 stainless steel. Ductile Iron Pipe furnished under this specification shall have the standard cement mortar lining with seal coat in accordance with ANSI/AWWA C104/A21.4.

## PVC Pipe

PVC pipe of 4 to 12 inch diameter shall be AWWA C900, DR 18 Class 150. PVC pipe shall be joined by a rubber ring bell joint which shall be an integral part of the pipe barrel and the rubber gasket push type joint shall be suitable for operation at a minimum working pressure of 150 psi. Joints shall conform to ASTM D3139 or D1869.

PVC pipe of 2 to 3 inch diameter shall be Schedule 80, consist of 12454- B or 12454-C material, and meet the requirements of ASTM D-1785. All joints shall be solvent welded in accordance with ASTM D-2855 requirements. All Schedule 80 PVC pipe must have the approval of the City prior to installation.

PVC domestic water pipe lines shall be color coded blue.

# Fittings

Fittings shall be Ductile Iron Pipe conforming to ANSI A21.10 (AWWA C110) or Ductile Iron Pipe conforming to ANSI A21.53 (AWWA C153). Ductile iron fittings conforming to ANSI A21.53 shall be of the "full-flow" design with an I.D. equal to that of Class 350 Ductile Iron Pipe. Mechanical or push-on joints shall conform to ANSI A21.11. If some fittings are available only with flange joints, flange to mechanical and/or push-on joint adapters shall be used. Fittings shall be provided with coatings inside and outside as specified for Ductile Iron Pipe. All fittings shall be designed for a minimum pressure rating of 250 psi. All bolts and nuts for flanged fittings shall be 304 stainless steel.

Mechanical joint by plain end adapters or mechanical joint by mechanical joint long sleeves shall be utilized to accomplish joining of the spigot end of PVC pipe to Ductile Iron Pipe.

Fittings for Schedule 80 PVC shall be solvent welded or flanged fittings meeting ASTM D-2466 requirements. Flange dimensions shall conform to ANSI B16.5, Class 150.

## Restrained Joints

Joint restraint for pipe and fittings shall be provided as required. Joint restraint shall be designed for at least 150 psi unless specified otherwise.

Restrained joint Ductile Iron Pipe and fittings shall be "TR FLEX" as manufactured by U.S. Pipe and Foundry, "LOK-FAST" or "LOK-RING" as manufactured by American Cast Iron Pipe or approved equal. Generally, joint restraint for pipe and fittings 14 inch and larger shall be as specified in this paragraph. In locations where joint restraint by this method is not practical or appropriate, the methods specified in the following paragraphs shall be used, as approved by the City.

Mechanical joint retainer glands may be used to restrain Ductile Iron Pipe to mechanical joint valves and fittings. These retainer glands shall be manufactured of ductile iron per ASTM A536. Twist-off nuts shall be used to insure proper actuating of the restraining devices. These retainer glands shall be designed with a 2:1 factor of safety with regard to pressure rating and shall be "MEGALUG" series 1100 as manufactured by EBAA Iron, Inc., or approved equal. These retainer glands may be used only in locations and configurations as approved by the City and Utility.

Joint restrainers may be used to restrain AWWA C900 DR 18 PVC pipe of 4 to 12 inch diameter. These devices may be used to restrain the plain end of PVC pipe to PVC push-on bells or to cast iron mechanical joint bells. These joint restrainers shall be manufactured of ductile iron per ASTM A536 and shall be designed for minimum 150 psi pressure rating with a 2:1 factor of safety. These devices shall meet the requirements of Uni-Bell standard UNI-B-13. These joint restrainers may be used only in locations and configurations as approved by the City and Utility and do not eliminate the necessity of concrete thrust blocks where required.

Mechanical joint pipe, valves and fittings may be restrained with threaded rods and accessories as manufactured by Star National Products. All items shall be zinc plated or hot-dip galvanized and shall be designed in accordance with the manufacturer's design tables. After installation, all harnessing materials shall be coated with an approved bituminous coating at least 8 mils DFT. These joint restrainers may be used only in locations and configurations as approved by the City and Utility. Hydrant assemblies may be restrained as specified herein or restrained with a locked hydrant tee and/or a locked hydrant adapter as manufactured by American Ductile Iron Pipe or approved equal. Hydrant assembly restraint shall be approved by the City.

Valves

Provide all valves as required.

#### Hydrants

Provide all hydrants as required. Hydrants shall conform to ANSI/AWWA C502 - C503, shall be of the compression type, opening against the pressure, and shall be of the break-away type. The upper barrel of the hydrant shall be capable of rotating 360 degrees. Hydrants shall be furnished without drains.

Hydrants shall have two 2-1/2 inch hose nozzles, 180 degrees apart, and one 4-1/2 inch steamer nozzle. All nozzle threads shall conform to the National Standard Fire Hose Coupling screw thread as outlined in the Appendix A of AWWA C502. All nozzle caps shall be cast iron and secured to the hydrant barrel with chains. Outlet hose connections shall be replaceable, be sealed with an Oring and have a stainless steel retainer.

Hydrant shall open to the left, or counterclockwise looking down at the hydrant. The mating surfaces between the hold down nut and the operating nut shall be bronze. The hydrant shall be fitted with a thrust washer to ease in the opening of the hydrant. Hydrant operating threads shall be oil lubricated and O-ring sealed from water, moisture and foreign matter. The carbon steel stem shall be bronze sheathered where it contacts the lower double O-rings. The hydrant shall be designed such that only the bonnet and lubrication chamber or the bonnet and seal plate need to be removed to change the main valve and seat.

Hydrant inlet shall be mechanical joint, with all accessories, and shall accommodate 6 inch ductile iron or C900 PVC pipe. Hydrants shall have a minimum 5-1/4 inch opening in the valve seat. The main valve shall be rubber, which may be reinforced with steel. The valve seat ring and sub-seat shall be bronze, with O-ring seals to prevent water leakage from the hydrant inlet into the hydrant barrel. All O-ring seals in the main valve area shall seat against bronze or epoxy coated cast-iron.

The interior surfaces of the hydrant inlet and main valve bottom plate shall be epoxy coated in accordance with AWWA C550. The hydrant exterior shall be painted with two (2) coats of a polyurethane high glass enamel. Paint shall be used in accordance with the manufacturer's written instructions.

#### Service Lines

All water service lines shall be polyethylene meeting the applicable requirements for AWWA C-901 and shall be Poly-E Driscopipe 5100 Ultraline or Endopure by Endot or approved equal.

Service Saddle

All service saddles shall be of the double strap type with minimum working pressure of 150 psi. Saddles shall have a bronze body, straps and nuts.

#### 2.4.3 Execution: Installation

All pipes shall be installed in accordance with the pipe manufacturer's recommendations, the Uni-Bell PVC Pipe Association Handbook and the Ductile Iron Pipe Research Associations recommendations, with each section of pipe having a firm bearing on the trench bedding throughout its length between bell holes. Foreign matter shall be prevented from entering the pipe during and after laying operations. All pipe ends shall be plugged when construction stops overnight or for extended periods. Any pipe cutting shall be performed using the recommendations of the pipe manufacturer and in accordance with the best trade practices.

When cutting pipe or fittings, care shall be taken to prevent damage to linings and coatings. Damage to linings shall be cause for rejection of the complete section of pipe. Damage to exterior coatings shall be corrected to original specifications.

Thrust blocks, anchor blocks and/or restrained joints shall be as required. Concrete for thrust blocks, cradles, and other non-reinforced uses shall be Class I as specified. Restrained joints shall be fully extended during installation to prevent movement under pressure. All fasteners shall be torqued in accordance with the manufacturer's recommendations. Flanged joint pipe shall be installed as shown and in accordance with the manufacturer's recommendations and Appendix A of ANSI/AWWA C115/A21.15.

Polyethylene encasement for Ductile Iron Pipe, fittings and valves shall be installed in accordance with ANSI/AWWA C105/A21.5.

Ductile Iron Pipe may be direct tapped for threaded connections through 1 inch diameter unless shown otherwise. Threaded connection through 2 inch diameter for all PVC pipe, and greater than 1 inch diameter for Ductile Iron Pipe, shall utilize double flattened strap type service saddles with bronze body, bronze straps and nuts. Connections greater than 2 inch diameter shall be made using fittings.

PVC pipe shall not be installed in locations where it will be exposed to direct sunlight unless it is protected by an approved paint or shielding.

Where connections are required between new and existing piping, the connection shall be made using proper specials and fittings to suit the actual conditions. Connections shall not be made until all testing has been completed.

Service connections shall be made as required. The minimum spacing between two service connections shall be 18 inches.

Hydrostatic Testing

After the pipe has been laid and backfilled, the pipe shall be hydrostatically tested for leakage. The Design-Builder shall furnish the pump, pipe connection, blow off valves and any other necessary apparatus including gauges and meters and all personnel necessary for conducting the test. Before applying the test pressure, all air shall be expelled from the pipe. If necessary, threaded taps shall be made at the points of higher elevation and then closed with brass plugs.

When practicable, tests shall be made on sections between valves, or sections not exceeding 1,000 feet in length. Dead ends, bends and other fittings shall have a firm foundation and be securely blocked against the trench walls before testing or completing the backfill as specified.

The full minimum test pressure of 150 pounds per square inch (psi) shall be held for no less than two hours or longer as necessary to permit thorough examination of all exposed joints in the section of main being tested. Test pressure shall be at a minimum of 150 psi by pumping water into the pipe in accordance with the requirements of AWWA C600-87, Section 4, Hydrostatic Testing and Leakage Testing, Latest Revisions.

Leakage shall be measured by the quantity of water pumped into the pipe to maintain test pressure during test period. Maximum permissible leakage shall be less than the number of gallons per hour determined by the following formula:

 $L = (S \times D \times (P)0.5) / 148000$  L = allowable leakage in gph S = length of section tested, in feetD = nominal diameter of the pipe in inches

P = average pressure maintained during the leakage test in psi

The test pressure shall be a minimum of one hundred fifty (150) psi.

Water for testing shall be obtained from an approved water source. The Design-Build Firm shall provide all water required at his own expense and shall make all necessary arrangements with the authority which controls the source of water system and shall be governed in his use of water by all rules and regulations imposed thereon by said authority. The Design-Build Firm shall provide and remove temporary connections between the source water system and the mains constructed under this contract. All temporary connections shall meet the approval of the City, the authority controlling the source water system, Broward County Health Department and other authorities having jurisdiction.

All leaks shall be located and repaired until the test meets the above requirements. Any faulty fittings, valves or other accessories which leak during testing shall be replaced by the Design-Build Firm with sound material and testing shall be repeated as specified above. Any replacement of faulty material or retesting shall be at the expense of the Design-Build Firm.

Flushing

Water for testing shall be removed from the water main by pumping to waste. Water discharge shall be controlled adequately to protect any surface water resource or adjacent property from potential environmental damage or from creation of hazard to traffic.

Immediately prior to sterilization, all new piping shall be flushed for a minimum of one-half (1/2) hour or until no traces of cuttings, oil, dirt or other foreign matter are visible.

#### Sterilization

The Design-Build Firm shall sterilize all new domestic water piping in accordance with AWWA C651 by pumping into the system liquid chlorine or sodium hypochlorite solution containing a minimum chlorine concentration of 50 ppm. All air shall be expelled from the pipe, and the solution shall remain in the pipe for a minimum of eight (8) hours. Following the specified contact period, all valves and piping shall be flushed until flushed water contains a maximum of 0.02 ppm chlorine residual, plus any chlorine residual present in the approved water source.

## Bacterial Tests

For domestic water, the system shall be sampled as designated by and in conjunction with the Broward County Health Department for bacterial examination. A minimum of two (2) consecutive daily samples shall be satisfactorily completed or the system must be re-sterilized until this requirement is met. Testing for chlorine residual, sampling and biological examination shall be performed by a private testing laboratory coordinated by and paid for by the Design-Build Firm.

# 2.5 PAVEMENT

2.5.1 General: Work Included

This narrative is provided as a supplement to the project description to provide general guidelines for project work. This section includes performing all operations for the construction of project pavement. Any pavement work included in this project shall be in accordance with all the Agencies having jurisdiction.

**Related Sections** 

2.1 Earthwork

#### References

It is the intent of these Specifications that the Florida State Department of Transportation "Standard Specifications for Road and Bridge Construction," latest

edition, referred to herein and on the drawings as "DOT Standard Specifications," be used where applicable for the various items of work, and that where such wording therein refers to the State of Florida and its Department of Transportation and personnel such wording is intended to be replaced with that wording which would provide proper terminology; thereby making such "Standard Specifications for Road and Bridge Construction" the standard specifications for this project unless otherwise noted. Said "DOT Standard Specifications" shall include current Supplemental Specifications issued by the Florida DOT.

2.5.2 Products: Materials

Base Material

Base material shall be limerock. The Design-Build Firm shall use only one base material throughout the project.

Limerock material shall meet the requirements of Section 911 of the DOT Standard Specifications, including a minimum LBR of 100 compacted to 98% per AASTO T-180.

## Prime and Track Coats

The materials used for prime and track coats shall meet the requirements of Section 300 of the DOT Standard Specifications.

## Asphalt Concrete

The material used for Type S-3 (Type S-1 modified) Asphaltic Concrete shall meet the requirements of the DOT Standard Specifications.

#### Equipment

All equipment associated with the operations of pavement placement and related work shall be entirely suitable for the applicable operations performed and shall be maintained in good condition.

2.5.3 Execution: General Construction

The pavement subgrade shall be prepared, graded, stabilized and compacted in accordance with Type C Stabilization I Section 160 of the DOT Standard Specifications. Subgrade shall be a minimum LBR of 40 and compacted to 98% per AASTO T-180.

Density tests on the compacted subgrade and limerock base shall be performed by an independent testing laboratory selected, coordinated, and paid for by the Design-Build Firm.

# 2.6 SITE CONCRETE

2.6.1 General: Work Included

This specification is provided as a supplement to the project description to provide general guidelines for project work.

The work to be performed under this specification includes performing all operations to construct concrete curbs and gutters of cast-in-place concrete or precast concrete.

## 2.6.2 Products: Material

All work under this specification shall be constructed of Portland cement concrete, 3,000 psi in 28 days.

## 2.6.3 Execution Installation

Forms shall be made of either wood or metal. They shall be straight and true, free from warps or bends and of sufficient strength when staked to resist the pressure of the concrete and hold true to line and grade. Forms shall not be removed until concrete has reached sufficient strength.

Concrete shall be placed in the forms in four or five inch layers and tamped or spaded until mortar entirely covers its surface. The top of the concrete shall be floated smooth and the edges rounded with a 3/4" radius edge. The curbs shall be constructed in 20' sections with expansion joints at 40' centers. Gutters shall be constructed in 10' sections and expansion joints at 40' centers. Forms shall be removed within 24 hours after concrete has been placed and minor defects filled with 1:2 mortar. The exposed faces of all concrete curb shall be rubbed with a wetted wood float while the concrete is still green. Gutters shall be broom finished.

Curing compound shall be used as directed in Section 520-8.3 of the FDOT Standards.

# 2.7 LANDSCAPING & IRRIGATION

2.7.1 General: Work Included

An allowance shall be provided by the Design-Build Firm to design, furnish, and install all landscape materials, including all planting materials, lawns, buffer modifications and an irrigation system as required by the Agencies having jurisdiction. In addition, the allowance shall include the reparation of any and all landscape materials disturbed during construction. Any such affected landscaping shall be restored to preconstruction condition.

The landscape design should create a compelling solution that celebrates and compliments the proposed Aquatics Center.

It should reinforce the aesthetic and functional aspects of the Design-Build solution. Attention should be given to CPTED and Sustainability.

The landscape design concept should be responsive to site and context. Native and naturalized material should be emphasized. Entrances, circulation, hierarchy and limited maintenance should be considered.

2.7.2 Irrigation

A robust irrigation system shall be provided for all landscaped areas. Zoning and a related controller should be provided for watering with restrictions. The irrigation system will provide 100% coverage and include a rain sensor for conservation.

2.7.3 Planters

Permanent concrete or masonry planters will be provided along the breeze exterior corridor as shown in plans in lieu of existing access stairs.

Provide movable planters to screen the view of Dive pool as temporary fence feature and other locations to divide the public circulation from pool deck.

# 2.8 FENCING

2.8.1 Provide ornamental permanent aluminum fence and gates in main entrance and surrounding dive dryland area. Minimum height 7 feet.

# 2.9 SITE FURNISHING

- 2.9.1 Provide outdoor 40 gallons durable trash receptacles.
- 2.9.2 Provide flag poles

# 2.8 EXTERIOR ATHLETIC LIGHTING

- 2.8.1 Lighting System LED Light Source
  - A. Work covered by this section of the specifications shall conform to the contract documents, engineering plans as well as state and local codes.
  - B. The purpose of these specifications is to define the lighting system performance and design standards for the Fort Lauderdale Aquatics Complex using an LED Lighting source. The manufacturer / contractor shall supply lighting equipment to meet or exceed the standards set forth in these specifications.
    - C. The sports lighting will be for the following venues:

- 1. Diving Pool
- 2. Competition Pool.
- 3. Training Pool.
- 4. Deck.
- D. The primary goals of this sports lighting project are:

1. Guaranteed Light Levels: Selection of appropriate light levels impact the safety of the players and the enjoyment of spectators. Therefore light levels are guaranteed to not drop below specified target values for a period of 25 years.

2. Environmental Light Control: It is the primary goal of this project to minimize spill light to adjoining properties and glare to the players, spectators and neighbors.

3. Life-cycle Cost: In order to reduce the operating budget, the preferred lighting system shall be energy efficient and cost effective to operate. All maintenance costs shall be eliminated for the duration of the warranty.

4. Control and Monitoring: To allow for optimized use of labor resources and avoid unneeded operation of the facility, customer requires a remote on/off control system for the lighting system. Fields should be proactively monitored to detect luminaire outages over a 25-year life cycle. All communication and monitoring costs for 25-year period shall be included in the bid.

E. All lighting designs shall comply with the Sea Turtle Protection Ordinance.

# 2.8.2 Lighting performance

A. Illumination Levels and Design Factors: Playing surfaces shall be lit to an average target illumination level and uniformity as specified in the chart below. Lighting calculations shall be developed and field measurements taken on the grid spacing with the minimum number of grid points specified below. Appropriate light loss factors shall be applied and submitted for the basis of design. Average illumination level shall be measured in accordance with the IESNA LM-5-04 (IESNA Guide for Photometric Measurements of Area and Sports Lighting Installations). Illumination levels shall not to drop below desired target values in accordance to IES RP-6-15, Page 2, Maintained Average Illuminance and shall be guaranteed for the full warranty period.

Area of Lighting	Average Target Illumination Levels	Maximum to Minimum Uniformity Ratio	Grid Points	Grid Spacing
Competition Pool	150	2.0:1	152	10' by 10'
Diving Pool	150	2.0:1	64	10' by 10'
Training Pool	30	2.5:1	136	10' by 10'
Pool Deck	80	12.0:1	221	10' by 10'

B. Hours of usage: Designs shall be based on the following hours of usage

Area of Lighting	Annual Hours	Usage	25 Hour	year s	Usage
Pools	500		12,50	0	

- C. Color: The lighting system shall have a minimum color temperature of 5700K and a CRI of 65+..
- D. Mounting Heights: To ensure proper aiming angles for reduced glare and to provide better playability, minimum mounting heights shall be as described below. Higher mounting heights may be required based on photometric report and ability to ensure the top of the field angle is a minimum of 10 degrees below horizontal.

# of Poles	Pole Designation	Pole Height
7	Per Plans	70'
2	Per Plans	130'

Environmental light control

- A. Light Control Luminaires: All luminaires shall utilize spill light and glare control devices including, but not limited to, internal shields, louvers and external shields. No symmetrical beam patterns are accepted.
- B. Lighting Ordinance: In accordance with City of Fort Lauderdale lighting ordinance.
- C. Spill Light and Glare Control: To minimize impact on adjacent properties, spill light and candela values must not exceed the following.

Maximum

North - 120' off the Competition Pool's Northern Edge - Vertical Footcandles	0.3 fc
North - 120' off the Competition Pool's Northern Edge Horizontal Footcandles	0.2 fc
North - 120' off the Competition Pool's Northern Edge Max Candela	15,000 Cd
	Maximum
South - 88' off the Competition Pool's Southern Edge - Vertical Footcandles	4.8 fc
South - 88' off the Competition Pool's Southern Edge Horizontal Footcandles	4.5 fc
South - 88' off the Competition Pool's Southern Edge Max Candela	25,000 Cd
	Maximum
West - 330' off the Competition Pool's Western Edge - Vertical Footcandles	0.0 fc
West - 330' off the Competition Pool's Western Edge Horizontal Footcandles	0.0 fc
West - 330' off the Competition Pool's Western Edge Max Candela	0 Cd
	Maximum
East - 380' off the Competition Pool's Northern Edge - Vertical Footcandles	0.0 fc
East - 380' off the Competition Pool's Northern Edge Horizontal Footcandles	0.0 fc
East - 380' off the Competition Pool's Northern Edge	

- D. Spill Scans: Spill scans must be submitted indicating the amount of horizontal and vertical footcandles along the specified lines. Light levels shall be taken at 30-foot intervals along the boundary line. Readings shall be taken with the meter orientation at both horizontal and aimed towards the most intense bank of lights. Illumination level shall be measured in accordance with the IESNA LM-5-04 after 1 hour warm up.
- E. The first page of a photometric report for all luminaire types proposed showing horizontal and vertical axial candle power shall be provided to demonstrate the capability of achieving the specified performance. Reports shall be certified by a qualified independent testing laboratory with a minimum of five years experience or by a manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products. A summary of the horizontal and vertical aiming angles for each luminaire shall be included with the photometric report.
- E.1 Manufacturer shall submit a 25-year life cycle cost calculation as outlined in the required submittal information.

Preventative and Spot Maintenance: Manufacturer shall provide all preventative and spot maintenance, including parts and labor for 25 years from the date of equipment shipment. Individual outages shall be repaired when the usage of any field is materially impacted. Owner agrees to check fuses in the event of a luminaire outage.

## 2.8.2 Sports lighting system construction

Manufacturing Requirements: All components shall be designed and manufactured as a system. All luminaires, wire harnesses, drivers and other enclosures shall be factory assembled, aimed, wired and tested.

Durability: All exposed components shall be constructed of corrosion resistant material and/or coated to help prevent corrosion. All exposed carbon steel shall be hot dip galvanized per ASTM A123. All exposed aluminum shall be powder coated with high performance polyester or anodized. All exterior reflective inserts shall be anodized, coated, and protected from direct environmental exposure to prevent reflective degradation or corrosion. All exposed hardware and fasteners shall be stainless steel of 18-8 grade or better, passivated and coated with aluminum-based thermosetting epoxy resin for protection against corrosion and stress corrosion cracking. Structural fasteners may be carbon steel and galvanized meeting ASTM A153 and ISO/EN 1461 (for hot dipped galvanizing), or ASTM B695 (for mechanical galvanizing). All wiring shall be enclosed within the cross-arms, pole, or electrical components enclosure.

System Description: Lighting system shall consist of the following:

Galvanized steel poles and cross-arm assembly. Alternate: Concrete pole with a minimum of 8,000 psi and installed with concrete backfill will be an acceptable alternative provided building code, wind speed and foundation designs per specifications are adhered to.

Non-approved pole technology:

Square static cast concrete poles will not be accepted.

Direct bury steel poles which utilize the extended portion of the steel shaf for their foundation will not be accepted due to potential for internal and external corrosive reaction to the soils and long term performance concerns.

Lighting systems shall use concrete foundations. See appendix documentation.

For a foundation using a pre-stressed concrete base embedded in concrete backfill the concrete shall be air-entrained and have a minimum compressive design strength at 28 days of 3,000 PSI. 3,000 PSI concrete specified for early pole erection, actual required minimum allowable concrete strength is 1,000 PSI. All piers and concrete backfill must bear on and against firm undisturbed soil.

For anchor bolt foundations or foundations using a pre-stressed concrete base in a suspended pier or re-enforced pier design pole erection may occur after 7 days. Or after a concrete sample from the same batch achieves a certain strength.

Manufacturer will supply all drivers and supporting electrical equipment

Remote drivers and supporting electrical equipment shall be mounted approximately 10 feet above grade in aluminum enclosures. The enclosures shall be touch-safe and include drivers and fusing with indicator lights on fuses to notify when a fuse is to be replaced for each luminaire. Disconnect per circuit for each pole structure will be located in the enclosure.

Manufacturer shall provide surge protection at the pole equal to or greater than 40 kA for each line to ground (Common Mode) as recommended by IEEE C62.41.2\_2002.

Wire harness complete with an abrasion protection sleeve, strain relief and plug-in connections for fast, trouble-free installation.

All luminaires, visors, and cross-arm assemblies shall withstand 150 mph winds and maintain luminaire aiming alignment.

Control cabinet to provide remote on-off control and monitoring of the lighting system. See Section 2.4 for further details.

Manufacturer shall provide lightning grounding as defined by NFPA 780and be UL Listed per UL 96 and UL 96A.

Integrated grounding via concrete encased electrode grounding system.

If grounding is not integrated into the structure, the manufacturer shall supply grounding electrodes, copper down conductors, and exothermic weld kits. Electrodes and conductors shall be sized as required by NFPA 780.The grounding electrode shall be minimum size of 5/8 inch diameter and 8 feet long, with a minimum of 10 feet embedment. Grounding electrode shall be connected to the structure by a grounding electrode conductor with a minimum size of 2 AWG for poles with 75 feet mounting height or less, and 2/0 AWG for poles with more than 75 feet mounting height.

All system components shall be UL listed for the appropriate application.

## 2.8.3 Electric Power Requirements for the Sports Lighting Equipment: Electric power: \_\_\_\_\_ Volt, \_\_\_\_ Phase Maximum total voltage drop: Voltage drop to the disconnect switch located on the poles shall not exceed three (3) percent of the rated voltage.

- 2.8.4 Structural requirements:
  - A. Wind Loads: Wind loads shall be based on the 2014 Florida Building Code. Wind loads to be calculated using ASCE 7-10, an ultimate design wind speed of 170, HVHZ, and exposure category C.
  - B. Pole Structural Design: The stress analysis and safety factor of the poles shall conform to 2013 AASHTO Standard Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (LTS-6).
  - C. Foundation Design: The foundation design shall be based on soil parameters as outlined in the geotechnical report.

Foundation Design: The foundation design shall be based on soils that meet or exceed those of a Class 3 material as defined by 2014 FBC Table 1819.6.

A. Foundation Drawings: Project specific foundation drawings stamped by a registered engineer in the state where the project is located are required. The foundation drawings must list the moment, shear (horizontal) force, and axial (vertical) force at ground level for each pole. These drawings must be submitted at time of bid to allow for accurate pricing.

2.8.5 Controls:

- A. Instant On/Off Capabilities: System shall provide for instant on/off of luminaires.
- B. Lighting contactor cabinet(s) constructed of NEMA Type 4 aluminum, designed for easy installation with contactors, labeled to match field diagrams and electrical design. Manual off-on-auto selector switches shall be provided.
- C. Dimming: System shall provide for "High, Medium, Low", or "High/Low" dimming. System shall include key-activated switches to allow for automated dimming control or manual override.
- D. Remote Lighting Control System: System shall allow owner and users with a security code to schedule on/off system operation via a web site, phone, fax or email up to ten years in advance. Manufacturer shall provide and maintain a two-way TCP/IP communication link. Trained staff shall be available 24/7 to provide scheduling support and assist with reporting needs.

The owner may assign various security levels to schedulers by function and/or fields. This function must be flexible to allow a range of privileges such as full scheduling capabilities for all fields to only having permission to execute "early off" commands by phone. Scheduling tool shall be capable of setting curfew limits.
Controller shall accept and store 7-day schedules, be protected against memory loss during power outages, and shall reboot once power is regained and execute any commands that would have occurred during outage.

- E. Remote Monitoring System: System shall monitor lighting performance and notify manufacturer if individual luminaire outage is detected so that appropriate maintenance can be scheduled. The controller shall determine switch position (manual or auto) and contactor status (open or closed).
- F. Management Tools: Manufacturer shall provide a web-based database and dashboard tool of actual field usage and provide reports by facility and user group. Dashboard shall also show current status of luminaire outages, control operation and service. Mobile application will be provided suitable for IOS, Android and Blackberry devices.

Hours of Usage: Manufacturer shall provide a means of tracking actual hours of usage for the field lighting system that is readily accessible to the owner.

- 1. Cumulative hours: shall be tracked to show the total hours used by the facility
- 2. Report hours saved by using early off and push buttons by users.
- G. Communication Costs: Manufacturer shall include communication costs for operating the controls and monitoring system for a period of 25 years.
- H. Soil quality control
- A. It shall be the Contractor's responsibility to notify the Owner if soil conditions exist other than those on which the foundation design is based, or if the soil cannot be readily excavated. Contractor may issue a change order request / estimate for the Owner's approval / payment for additional costs associated with:
  - 1. Providing engineered foundation embedment design by a registered engineer in the State of FL for soils other than specified soil conditions;
  - 2. Additional materials required to achieve alternate foundation;
  - 3. Excavation and removal of materials other than normal soils, such as rock, caliche, etc.
- I. Field quality control

Illumination Measurements: Upon substantial completion of the project and in the presence of the Contractor, Project Engineer, Owner's Representative, and Manufacturer's Representative, illumination measurements shall be taken and verified. The illumination measurements shall be conducted in accordance with IESNA LM-5-04.

Field Light Level Accountability

- 1. Light levels are guaranteed not to fall below the target maintained light levels for the entire warranty period of 25 Years.
- 2. The contractor/manufacturer shall be responsible for an additional inspection one year from the date of commissioning of the lighting system and will utilize the owner's light meter in the presence of the owner.

3. The contractor/manufacturer will be held responsible for any and all changes needed to bring these fields back to compliance for light levels and uniformities. Contractor/Manufacturer will be held responsible for any damage to the fields during these repairs.

Correcting Non-Conformance: If, in the opinion of the Owner or his appointed Representative, the actual performance levels including footcandles and uniformity ratios are not in conformance with the requirements of the performance specifications and submitted information, the Manufacturer shall be required to make adjustments to meet specifications and satisfy Owner.

25-Year Warranty: Each manufacturer shall supply a signed warranty covering the entire system for 25 years from the date of shipment. Warranty shall guarantee specified light levels. Manufacturer shall maintain specifically-funded financial reserves to assure fulfillment of the warranty for the full term. Warranty does not cover weather conditions events such as lightning or hail damage, improper installation, vandalism or abuse, unauthorized repairs or alterations, or product made by other manufacturers.

Maintenance: Manufacturer shall monitor the performance of the lighting system, including on/off status, hours of usage and luminaire outage for 25 years from the date of equipment shipment. Parts and labor shall be covered such that individual luminaire outages will be repaired when the usage of any field is materially impacted. Owner agrees to check fuses in the event of a luminaire outage.

## **END OF SECTION**

# section 3

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## 3.1 STRUCTURAL NARRATIVE

1. Codes:

ASCE 7-10 or the latest revision at the time of permitting

F.B.C. 2014 or the latest revision at the time of permitting

All Reference Standards shall be in accordance to the F.B.C (Florida Building Code ) Latest Edition. Reference standards:

- ACI (American Concrete Institute)
  - AISC (American Institute of Steel Construction)
- AISI (American Iron and Steel Institute)
- ASTM (American Society for Testing and Materials)
- AWS (American Welding Society)
- ACI (American Concrete Institute)
- ATC (Applied Technology Council)
  - CRSI (Concrete Reinforcing Steel Institute)
  - PCA (Portland Cement Association)
- 2. Wind Loads:
- a) Wind loads shall comply to:

ASCE 7-10 or latest edition, and F.B.C. 2014, CH 16, High Velocity Hurricane Zone Velocity (V) = 180 MPH (Ultimate)

Enclosed Building

Exposure Category: C

All openings shall be impact resistant.

- 3. New buildings
- a) Roof: Concrete deck: cast in place or precast elements
- b) Interior and exterior bearing walls:

Walls shall be minimum 8" thick Reinforced concrete / reinforced masonry, with reinforced concrete beams and concrete columns.

c) Interior columns: Concrete columns as required to support the imposed roof dead and live loads.

d) Interior Partitions: Shall be designed for a minimum of 5 psf: Shall be braced laterally at the top.

e) Floor: Reinforced concrete structural slab supported by grade beams and piles. (typ)

f) Wind pressure on windows and doors: Provide positive and negative pressure based on charts from ASCE 7-10.

g) Roof Uplift: Define all zones, indicate all pressures per zone (Gross or Net).

Define the roof dead load used to resist uplift.

Additionally provide membrane uplift based on 10 sq. ft

Indicate the roof diagram on the roof plan.

h) Roof mounted units: Shall be designed in accordance to sect. 1620.6, F.B.C -10

Show roof mounted units' connections, and supporting frame needed to resist overturning and uplift.

4) Swimming pools: Existing concrete slab and grade beams, pool walls shall be removed.

Most of the existing piles would be cut off. If any of the existing piles to be used, E.O.R : shall indicate them define their remaining length , define their capacity (compression, tension). New piles shall be installed: Pile size and capacity (compression and tension) as per geotechnical report.

New reinforced grade beams shall be installed.

New reinforced concrete shell (floors and walls) shall be installed Notes:

Hydrostatic pressure would be a factor in the design.

Dewatering: A major factor in the construction.

Large pumps shall be installed for dewatering.

Coordinate with the owner for the required allowed time for pump usage, and the location for discharge water.

5) Diving tower shall be all concrete:

Reinforced concrete platforms. Reinforced concrete beams. Reinforced concrete columns. Reinforced concrete pile caps. Deep pile foundation.

6) New stairs and ramps: Reinforced concrete ramps and stairs.

7) Bleachers: Pre-engineered prefab bleachers including seats, beams, columns and connections. Steel frame shall be self-supporting and design to withstand: Gravity loads. Lateral loads (including Wind load).

Steel frame and connections: shall be hot dipped galvanized. Foundation for the steel frame: shall be on piles, grade beams and pile caps. Shall be coordinated with E.O.R.

Provide signed and sealed structural drawings and calculations by a licensed professional engineer in the State of Florida.

8) Common deck area: Reinforced structural concrete slab sitting on grade beams and piles.

9) Foundation: Shall be designed as deep foundation on piles (typ), for bleachers, buildings, pools, pool decks, common slab area. Refer to the Geotechnical Engineer Report for pile size, depth and capacity. Provide a plan showing piles layout: size, spacing.

10) Miscellaneous structural items:

Soffit: Design metal stud framing and bracing to resist gravity loads and wind suction loads. Expansion joints between Buildings: provide joints to separate buildings, and provide special sliding connection detail along the joint. Screen wall around roof units: Design to resist wind load as per ASCE -7 Provide size of members, bracing, and connection details. Mechanical room with louvers: Louvers shall have adjustable blades to be closed during Hurricane. Otherwise all interior elements in the room to be designed to resist direct hurricane wind loads.

11) Threshold inspection: Provide Threshold plan indicating in details all the structural items to be inspected by the special inspector.

12) Structural calculations:

a) Provide Signed and sealed structural calculations showing all of the loads, and load conditions. (Wind load, Deal Load, Live load)

b) Provide index sheet defining each structural item designed with the appropriate page.

c) Provide brief hand written load used on the structure (Input data) prior to the computer analysis and design calculation, and the computer output.

d) All pre-engineered structural elements shall be defined and designated to be designed by Specialty Engineer.

e) Provide clearly the loads (dead, live, wind), and criteria required (deflection limits) to insure the Delegated Specialty Engineer is designing according to the E.O.R recommendation.

f) All drawings, calculations, connections provided by Specialty Engineer shall be Signed and Sealed by a Licensed Engineer in the state of Florida.

g) Concrete: Compressive strength: 4000psi min. shall be used

13) Steel: All field welds spots shall be painted with anti-rust material. (Paint after weld inspection is done)

a) All steel exposed to weather shall be galvanized.

b) All steel connections shall be designed By E.O.R. or provide:

c) Shear, moment values at each connection on the plan to be designed by specialty engineer.

d) All steel shop drawings shall be backed up by signed and sealed structural calculations.

## 3.2 BUILDINGS SHELL

## 3.2.1 NEW BUILDINGS: BATHROOMS-CONCESSION-TICKET BOOTH- RECEPTION, UNDERNEATH GRAND STAND, UNDERNEATH DIVING STAND

The proposed buildings and Ancillary Structures and Service Area shall be designed to resist the effects of a Category 5 Hurricane remaining operational and habitable. All components and cladding assemblies necessary to maintain a structurally enclosed condition and prevent rainwater intrusion shall be designed to meet the criteria.

All product manufacturers for exterior lights, prefabricated wall components, exterior doors, roofing products, windows, shutters, structural components and products comprising a building's envelope introduced as a result of new technology, whether or not listed or specified, shall comply with Rule 9B-72 of the Florida Administrative Code and shall comply with the 2010 Florida Building Code.

## A) Exterior Walls

Exterior walls shall be constructed of either reinforced concrete masonry, meeting the minimum requirements for wind loading, impact resistance and moisture resistance as defined within this Design Criteria Package. Out-of plane deflection due to lateral loads shall not exceed L/180 for non-brittle wall finishes, or L/360 for brittle wall finishes.

Masonry walls must comply with ACI 530.1. Load-bearing units: ASTM C90, Non-load bearingunits: ASTM C129, Type I or II. Provide ground face units. Provide water repellent admixture to masonry units where the exterior face of the units will not receive a waterproof coating such as paint. Mortar must conform to ASTM C 270, Type S. Test mortar in accordance with ASTM C 780. Provide water repellent admixture and color additive in mortar for masonry walls that will not receive a waterproof coating such as paint. Do not use admixtures containing chlorides. Provide air entrainment, not to exceed 12 percent, in mortar.

Adjustable Anchors for Structural Members - Use adjustable anchors to anchor masonry structural steel columns or beams. Weld the fixed portion of the anchors (steel anchor rods) to the structural steel member. Provide adjustable anchors 3/16 inch (5 mm) diameter steel wire, triangular-shaped. Anchors attached to steel must be 5/16 inch (8 mm) diameter steel bars placed to provide 1/16 inch (1.6 mm) play between flexible anchors and structural steel members.

Deformed Bars - ASTM A 615/A 615M, ASTM A 616/A 616M, ASTM A 617/A 617M, or ASTM A 706/A 706M.

## A.1 Exterior walls finishes

Exterior finishes shall be stucco. ASTM C150, gray Portland cement Type II with 1/2 inch (13 mm) maximum chopped alkali resistant fiberglass strands, minimum 1.5 percent by weight to cement; 1 1/2 pounds (.68 kg) per sack of cement. Lime must conform to ASTM C206, Type S. Utilize stainless steel or zinc corner beads, J-beads and other accessories for the system.

Unless specifically deleted, utilize an acrylic admixture or coating to give additional moisture suppression to control fungus growth for the system.

Sand aggregate for job-mixed base coat and job-mixed finish coat stucco must conform to ASTM C897.

Sand for Finish Coats: Natural color and graded within the limits shown above for basecoats, except that the sand must pass the No. 8 sieve, and for smooth finish the sand must pass the No. 30 sieve. Mix scratch coat in proportion of one part by volume Portland cement, 3/4 to 1 1/2 parts by volume hydrated lime and 2 1/2 to 4 parts sand (volume of sand per sum of cement and lime). Mix brown coat in proportion of one part by volume Portland cement, 3/4 to 1 1/2 parts by volume hydrated lime and 3 to 5 parts sand (volume of sand per sum of cement and lime). Mix proportions can vary depending on climate and application variations, with the approval of the DOR.

Portland Cement Stucco Finish Coat 3 to 5 parts sand (volume of sand per sum of cement and lime).

Portland cement plaster application must be in accordance with ASTM C 926. Furring and lath application must be in accordance with ASTM C 1063.

Bonding Agents: ASTM C 932. Provide for exterior applications to masonry or concrete substrates. Provide water resistive barrier under stucco in accordance with manufacturer's recommendations and code requirements.

Minimize paint and coating finishes when it is not a requirement to minimize maintenance.

## B) Exterior Doors

All door assemblies shall meet wind and missile impact requirements. Hardware assemblies to be heavy duty commercial grade as approved by the City. Security components will be installed by the Design-Build Firm in coordination with the City.

- 1. Provide hollow metal doors at rooms' entrances.
- 2. Provide custom powder coated factory finish.
- 3. Provide impact resistant fully glazed doors at Reception room.
- 4. Provide roll up coiling door at bathrooms building entrance.

## C) Impact Resistant Aluminum Windows and Storefronts

All impact resistant windows and storefront assemblies shall meet wind and missile impact requirements. Provide custom powder coated factory finish. Provide a minimum of architectural Class I anodized coating or a high-performance organic coating conforming to AAMA 2605 for non-residential (commercial) construction. AAMA coatings must have a total dry film thickness of 1.2 mils.

In storefronts provide doors complete with frames, framing members, sub frames, transoms, adjoining sidelights, adjoining window wall, trim, and accessories, as required for a complete installation. Anchors must be stainless steel. Weather stripping must be Continuous wool pile, silicone treated, or type recommended by door manufacturer.

D) Impact Resistant Operable Aluminum Shutters

If utilized, all impact resistant Aluminum Shutters shall meet wind and missile impact requirements. Provide custom powder coated factory finish.

E) Exterior Louvers

Provide exterior louvers and screens where required, drainable blade type wall louvers with blade slopes of 45 degrees minimum, but provide wind driven rain rated louvers for wall louvered rooms without a floor drain within the room. Louvers must withstand a wind load of not less than 30 psf (146 Kg/m2), .08 inch (2 mm) thick 6063-T5 or T52 extruded aluminum in a factory-finished color in accordance with AAMA 2605 with a minimum coating thickness of 1.2 mil to match the building facade. Wall louvers must bear the AMCA certified ratings program seal for air performance and water penetration in accordance with AMCA 500 , 500L (wind driven rain), and AMCA 511. Provide sill flashing with sloped drain pan at base of louver to collect moisture that migrates down the interior face of the louver. This sill flashing must drain water to the outside of the building. Louvers must have bird screens.

F) Impact Resistant Roll up Doors

1. All impact resistant coiling doors shall meet wind and missile impact requirements. Provide custom powder coated factory finish.

- G) Exterior Glazing
- 1. All exterior glazing shall use laminated tinted glass.
- H) Roof Assembly

Roof system assembly and roof cover waterproofing barriers shall meet the wind design criteria and shall be protected from impact.

Recommended systems would include:

For all buildings except underneath grand stand and dive stand provide TPO for the low slope roof; on Tapered, Rigid Insulation over metal deck (or equal) for the low slope roof or concrete slab. Roof assembly shall demonstrate compliance with wind uplift forces.

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Underneath grand stand and dive stand provide sloped concrete slab cast in place or premanufactured planks.

Rooftop equipment shall be limited to the flat roof at directly above the bathrooms and shall include only those exhaust/supply fans associated with the kitchen. Other rooftop equipment shall be limited to the "main" roof of the Design-Build Solution.

Loose roof ballast shall not be used on this project.

An internal roof drainage system is preferred for this project. If external roof drainage is used, only stainless steel external scuppers, downspouts and overflow scuppers shall be designed to meet the requirement of all applicable codes.

Roof insulation R-value shall be minimum R-19. Low slope roofs shall have minimum of <sup>1</sup>/<sub>4</sub>" per foot slope and positive drainage to the roof drainage system.

Provide metal fascia at breeze exterior corridor to enclosure end underneath of grand stand bleacher.

Provide mesh canopies type. Retractable canopy (awning) or similar removable system above Teaching pool.

Provide metal panels system canopy at main entrance.

I) Exterior Soffits:

Provide exterior metal or exterior grade gypsum board soffit system at breeze exterior corridor.

Provide exterior metal or exterior grade gypsum board soffit system at breeze exterior corridor.

J) Insulation and vapor retarder

Provide continuous insulation, vapor retarder, water-resistive barrier, and air barrier to meet or exceed requirements of project's energy savings requirements as indicated by applicable American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) 90.1

Provide a continuous air barrier to control air leakage into, and out of conditioned spaces. The air barrier must encompass all elements of the facility that are exposed to the outside environment or outside environmental conditions such as roof, walls, floors, and compartmentalized unconditioned portions of the facility such as garages, and negatively pressurized spaces. Permanently seal penetrations through the air barrier, joints in the air barrier, adjoining construction, and transitions to different air barrier materials.

Provide a continuous water resistive barrier. The water resistive barrier must resist liquid (bulk) water from being absorbed into the back-up wall assembly if water leaks, penetrates, or seeps past the exterior enclosure cladding system.

Determine if a moisture barrier/ vapor retarder is required and where it would be located. Provide a

moisture barrier/ vapor retarder to restrict the flow of moisture through the exterior enclosure.

K) Handrails and Guardrails:

Provide aluminum railing system including anchors and attachment sleeves and fasteners. Handrails and guardrails must be finished to withstand extreme wear conditions.

Provide top of slab railing system for bleachers means of egress corridors, ramps.

Provide stainless steel guardrails side of slab attachment for diving platforms.

L) Stairs

Provide stairs, including stair construction and stair finishes as required by the building code to provide egress from the building from above or below grade level floors. Stairs must be in accordance with Florida Building Code (2014).

Provide interior stairs constructed of steel with concrete filled pans or cast-in-place concrete.

Provide exterior stairs constructed of non-corrosive galvanized steel (stainless steel?) for diving tower to access dive platforms.

M) Exterior painting and coatings

Provide field applied exterior coating for all items that are not prefinished and to prefinished items when required to provide a color other than standard prefinished color, when it is indicated a painted finish. City of Fort Lauderdale to select colors palette.

N) Exterior Joint sealants

Provide exterior application of joint sealants to seal joints and prepare for finish material installation.

O) Screen walls

Provide screen walls to screen mechanical units, exterior equipment, trash containers, per City of Fort Lauderdale requirements and compatible with the exterior architecture of the building.

#### 3.3 INTERIOR CONSTRUCTION

The following is a partial breakdown of the interior space requirements. Use Space schedule table Section 4 for each room interior finishes.

#### A) System description

Provide durable construction appropriate for the buildings functions. Durability must be considered during materials selection.

#### **B)** Partitions

Provide interior concrete masonry interior walls underneath bleachers, electrical room, bathrooms, concession.

In Reception room and ticket booth provide gypsum board furring in addition to the requirements above.

Corner Guards: Provide 3" corner guards for public bathrooms interior walls.

## C) Interior Paints and coatings

Paint: Interior painted surfaces shall be commercial grade, scrubbable, satin to semi-gloss finish latex acrylic paint. Apply three full coats, one primer and two finish coats. Use Benjamin Moore, Sherwin William, Glidden or City approved equal. Colors to be approved by the City. Minimize paint and coating finishes when it is not a requirement to minimize maintenance.

D) Floor Finish and Base

Sealed concrete surface smooth enough to meet manufacturer's smoothness requirements. Provide 3 coats of the manufacturer's approved sealer for exposed concrete floors that are not required to have an applied floor finish. Provide a chemical, and slip resistant coating.

Provide resilient solid LVT (luxury vinyl tile), in Reception and Ticket booth areas for high traffic floors with high durability, low maintenance, high slip-resistance requirements. Solid vinyl tile must be planks or square tiles with protective urethane finish for ease of maintenance a

Epoxy Flooring/Epoxy Integral Base: Epoxy based, seamless decorative "poured in place" flooring concrete coating system, two component system consisting of liquid polymers and color-fast decorative chips, creating a low maintenance floor coating system. Designed to create a terrazzo like appearance. Low odor, VOC compliant, seamless flooring and integral base system with different size decorative chips. Surface finish shall be slip resistant as required for the space use. Dur-A-Chip or City approved equal.

Rubber Base: Provide the following rubber base products as indicated in section 4: 4" x ¼" rubber base; and 4" Rubber Cove Base. Acceptable manufacturers are Johnsonite, Burke Mercer or City approved equal.

## E) Ceiling

Where denoted in Section 4 of this document the ceiling will consist of the following options:

Public Bathrooms and concession: GWB Ceilings: 5/8" "Mold-Tuff" moisture resistant GWB on metal framing or suspended metal runners, smooth finish, w/ semi-gloss paint.

Ticket booth: GWB Ceilings: 5/8" GWB on metal framing or suspended metal runners, smooth finish, w/ semi-gloss paint.

Underneath bleachers: exposed structure.

#### F) Interior Doors

Interior Doors: Interior doors shall consist of wood solid core factory finished wood grain (stain – satin finish) plain sliced birch, or other City approved wood, veneer doors set in (18) gage primed hollow metal welded mitered frames. Configure fire-rated doors to comply with all code requirements based on the fire-rated walls they occur within.

Access doors in ceiling and/or walls shall be a minimum of 16"x16", made of insulated sheet metal panel assembly with a continuous fastening device and hinge.

Provide for hardware assemblies per the required use of the space. Door hardware shall conform to City of Fort Lauderdale Standards and requirements.

## G) Countertops

- Solid Surface as noted: 1" Beveled Edge; Corian or City approved equal.
- Laminate as noted: 1" Beveled Edge; Laminate manufacturer to match laminate cabinets.
- Stainless steel.
- Backsplash: Solid Surface as noted: Full height backsplash to match countertop.
- Laminate as noted: 4" Plastic Laminate backsplash to match countertop.
- 4" stainless steel backsplash to match stainless steel countertop.

H) Toilet Room Partitions and Accessories

Provide solid plastic textured (HDPE) panels. Provide the following bathroom accessories:

TAG #	TOILET ACCESSORIES DESCRIPTION	MANUFACTURER / MODEL #	
A	GRAB BAR 36" LONG HEAVY DUTY STAINLESS STEEL	BRADLEY 812 SERIES #812D-00136	
В	GRAB BAR 42" LONG HEAVY DUTY STAINLESS STEEL	BRADLEY 812 SERIES #812D-00142	
С	PLASTIC SURFACE MOUNTED SOAP DISPENSER	GLOBAL PLASTIC MANUAL DISPENSER	
D	TOILET TISSUE DISPENSER SURFACE MOUNTED	GLOBAL PLASTIC JUMBO 9" ROLL	
	SINGLE JUMBO 9 " ROLL		
E	SURFACE MOUNTED NAPKIN DISPOSAL, STAINLESS STEEL	BRADLEY 4722 SERIES #4722-15	
F	PARTITION MOUNTED NAPKIN DISPOSAL STAINLESS STEEL	BRADLEY 4721 SERIES #4721-15	
G	SEMI RECESSED NAPKIN DISPOSAL, STAINLESS STEEL	BRADLEY 4722 SERIES #4722-1015	
Н	BABY CHANGING STATION, LIGHT GREY MOLDED		
I	HIGH DENSITY POLYETHYLENE	BRADLEY 9631	
J	FLOOR MOUNTED OVERHEAD BRACED SOLID PLASTIC	SCRANTON PRODUCTS - HINY HIDERS SERIE	
	RESTROOM PARTITIONS		
К	URINAL SCREEN	SCRANTON PRODUCTS - HINY HIDERS SERIE	
L	STAINLESS STEEL UTILITY SHELF	BRADLEY 9933 4 HOOKS/3 HOLDERS	
М	VERGE LAVATORY SYSTEM	BRADLEY LVL SERIES	
N	ADJUSTABLE MOTOR SENSORED HANDS DRYER	BRADLEY 2921-S0000- HIGH IMPACT ABS-SILVER	
0	STAINLESS STEEL FRAMED MIRROR 24"x36"	BRADLEY MODEL 781 SERIES	

## I) FF&E

Provide the minimum required wall mounted fire extinguisher cabinet and extinguishers. Cabinets to have glazing.

Pool furnishing: see section 4. Pool schedule

Concession food service equipment: see section 4. Food service schedule.

## J) Signage

All Building Code required signage shall be provided by the Design-Build Solution. Location, colors and style shall be approved by the City. Signage and way-finding in public areas shall be appropriate to provide public control and security. Signage shall be tamper resistant and designed to not pose a safety hazard.

## K) Aluminum bleachers

a). Provide outdoor permanent grandstands for the new competition and diving pools as shown on drawings and detailed in these performance specifications.

b). Provide necessary engineering, material, freight, installation to provide grandstand seating system in accordance with these specifications.

c). The minimum acceptable standards of design are:

1. Grandstand is elevated minimum 3 feet 8 inches. Front Walkway to be minimum 5'-2" deep. Overall length per plans. Permanent clear span I-Beam style grandstand. Total net seating capacity with Handicap seating per plans.

2. Premium Interlock surface mount decking.

3. Aisle layout is per plans. There shall be center aisle rails or end aisle rails per code.

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4. Handicap seating areas – provided as shown on plans.

5. Finishes to be "hot dipped" galvanized on the steel understructure, clear anodized on the seat boards, Dur-Kyn high performance paint on the aluminum aisle nosing strips at aisles and stairs, Dur-Kyn high performance painted finish on aluminum stair risers and main grandstand risers. Perimeter Railing risers to be hot dipped galvanized, rails to be clear anodized and utilizes 6 ga. black vinyl chain link fencing. Center Aisle rails to have a clear anodized

#### 6. Signage

Provide seating numbering by section, area and seat for ticketing purpose.

Properly label all handicap seating areas. Stair and ramp exits per egress plans.

d) Manufacturers Qualifications:

1. Manufacturers must have a minimum of ten years of experience in the manufacturing of grandstands and press boxes under current company name.

2. Manufacturer must provide five references of similar projects within the State of FL. References shall include scope of work, contract amount, owner's name and phone numbers, contract completion date and actual completion date.

3. List with submission the date that you visited the site and reviewed the existing conditions.

4. Welders must be AWS certified; manufacturing capabilities in accordance with the governmental agencies having jurisdiction.

5. Manufacturers must be a participant in the AISC Certification program and have proof of certification at time of bid.

e). Code Compliance: Provide aluminum bleachers to meet or exceed all State and Local applicable codes and in compliance with the South Florida Building Code and the IBC/ICC National Code and CABO/ANSI A117.1 Barrier Free Subcode, Current Editions.

Comply with all applicable which includes but not limited to the following:

- 1. South Florida Building Code
- 2. International Building Code IBC/ICC Building Code- Current Edition
- 3. AISC Manual of Steel Construction, 9th Edition
- 4. Aluminum Association of America Guidelines
- 5. IBC barrier free sub-code and Guidelines
- 6. U.S. Department of Justice ADA Standards
- 7. American Concrete Institute

f). The bleacher shall be designed to support, in addition to its own weight, a uniformly distributed live load of not less than 100 pounds per square foot of gross horizontal projection of the bleacher. And 6 pounds per square foot of dead load on seats, footboards, risers and steel framing.

g). All seat and footboard members shall be designed to support not less than 120 pounds per linear foot. The bleacher shall be designed to resist, with or without live load, horizontal wind load appropriate for local conditions. It shall also be designed to resist, in addition to the live load, sway forces applied to the seats in a direction parallel to the length of the seat planks 24 pounds per liner foot; and, in a direction perpendicular, stresses in aluminum members and connections shall not exceed those specified for Building Type Structures by the Aluminum Association.

h). General: The structure shall be properly braced for wind and construction loads until all structural elements are secured. Lateral and longitudinal bays shall be cross-braced as required. Guardrails shall be of adequate size, location, and height to meet specified codes and

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designed to carry required loads. Exit stairs and intermediate aisle stairs shall be completely closed, in the direction of travel and shall have a maximum rise of 7" and a minimum tread of 11".

i). Code Compliance: Submittals shall be based upon specifications and drawings contained in the bid documents. Architect will not review any design or product changes prior to the bid date. Design changes to reduce overall aisle egress calculations or number of stair and ramp exits will not be allowed. Design changes to seatboard bracket support and location is not allowed. All bidders must bid in accordance with these specifications.

1. The Bleacher Contractor shall be responsible to meet the code interpretation provided in the bid documents and modify as required by state or local governmental review boards.

2. Calculations that demonstrate code compliance with egress and exit of aisles, stairs, and ramps are a required submission with approved drawings.

## J. Permanent steel grandstand

Product Description – Interlock Decking System

1. The intent of the product design is to reduce deflection of aluminum deck and to eliminate fluid drainage below spectator seating.

2. All individual deck members shall be locked together longitudinally at all treads, front walk and cross walk locations.

3. This design, in ambient conditions, allows for expansion and contraction without damage or deformation of the aluminum deck.

4. The locking design restricts fluids to pass to the ground under the spectator seating up to 95%.

5. Extrusion gutters are part of each decking member that will allow for the collection and control of fluids that occur on the deck surface.

6. At all butt joint locations, internal gutters shall be mounted onto the structural members to direct fluids to determined locations.

- 7. Vertical columns are to be placed with spacing as listed per plans.
- 8. Traverse bays are free of cross bracing the total length of the grandstand.

9. Stringers are wide flange with steel angle rise and depth fabrication and are placed 6 feet on center.

- 10. Front Walkway: per plans
- 11. Entry stairs to be firmly anchored to uniformly poured concrete bases.
- 12. Stair rise: max. (7) inches per IBC Code with aluminum closure.

b. Stair tread depth: min. (11) inches per IBC.

13. Guardrails on Stair to be (42) inches above leading edge of step with intermediate rails.

14. Stairs to have handrail extension. The handgrip portion of handrails shall not be less than 1 1/2 inches or more than 2 inches in cross-sectional dimension or the shape shall provide an equivalent gripping surface. The handgrip portion of handrails shall have a smooth surface with no sharp corner. The top of handrails and handrail extensions shall be placed not less than 34 inches or more than 38 inches above the nosing of treads and landings. Handrails shall be continuous the full length of the stairs and shall extend in the direction of the stair run not less than 12 inches beyond the bottom riser. Ends shall be returned or shall terminate in newel posts or safety terminals.

15. Aisles:

a. Aisles with seating on both sides to have 34-inch high handrail with intermediate rail at approximately 22 inches above tread.

b. Anodized aluminum handrails with rounded ends (no fittings) are discontinuous to allow access to seating through a space 22 inches (min.) to 36 inches (max.).

c. Intermediate steps shall provide equal rise and run throughout aisle. Each shall have aisle nosing with Dur-Kyn finish and riser closure with Dur-Kyn finish.

- 16. Interlock Deck System-
- a. Rise and depth at each row is per plans
- b. Each seat 17 inches above its respective tread.
- c. Decking Arrangement:

1. The seats shall be 2"x10" seat plank with two internal legs and extruded aluminum alloy, 6063-T6 with clear anodized 204R1, AA-M10C22A31, Class II finish. Mounting brackets to be "L" type riser mounted (home stand).

2. The tread system shall be comprised of uniform serrated, slip resistant aluminum interlock together lengthwise and form a .922" x .60" V-shaped gutter running the length of the planks. The interlocking mechanism will minimize deflection and not separate due to loads being applied to individual planks. The locking mechanism by design shall allow for expansion and contraction of individual planks without effecting performance of the system.

3. The system shall cause the deck planks to react together at all treads and cross walks to live load and form the appearance of a single tread system. By design, this system forms a solid, overlapping tread and riser installation.

4. The nose extrusion shall allow for a 1" extruded aluminum contrasting nose piece to be flush mounted on the leading edge and shall capture the vertical riser plank in an extruded pocket. The heel extrusion shall have a .70" vertical lip at the rear of the plank to allow for placement of vertical riser plank and inhibit fluids from escaping at the rear of the tread.

5. These extrusions shall be such that the attachment of the seat brackets, step brackets, midaisle rails and all other components is accomplished without deck penetrations. No through bolting or drilling of the aluminum tread / riser system shall be permitted.

6. The system shall allow for seat and aisle reconfiguration at any time without evidence of its previous configuration.

- 7. Entry stairs and ramps to be 2 x 12 mill finish aluminum.
- Open ends of planks to be covered with aluminum end caps, securely fastened to the plank.
  Joint sleeves: Dual joint sleeves to be inserted at each butt joint of each load bearing aluminum plank, and to penetrate 6 inches into each plank at the joint. Joint sleeves are not required at secondary gutter locations.
- 17. Guardrailing: To be at all sides of bleacher, entry stairs, ramps portals and landings.

a. Vertical rail risers to be galvanized steel angle  $3^{\circ} \times 3^{\circ} \times 1^{\prime}$  (50 ksi) for steel to steel connection and fastened with 3/8° galvanized hardware

b. Horizontal railing to be anodized aluminum with aluminum cast end plugs at ends of straight runs and/or elbows at corners.

c. All guards shall be secured to vertical rail members with hot dipped galvanized fasteners and clamps

d. Railings shall be placed at a minimum of 42" above walkways, entrances and adjacent seat boards.

e. The barrier material shall include 6 gauge black vinyl coated chain link fencing, fastened in place with hot dipped galvanized tension bars and aluminum ties.

18. Ramps:

a. Slope: 1 in 12.

b. Guardrails to be 42 inches above ramp with two line anodized aluminum rail and in filled with 6 gauge black vinyl coated chain link fence (2" mesh) and 2 x 6 extruded aluminum toe board.

c. Handrail: Ramps to have handrail extensions. The handgrip portion of handrails shall not be less than 1 1/2 inches or more than 2 inches in cross-sectional dimension or the shape shall provide an equivalent gripping surface. The handgrip portion of handrails shall have a smooth surface with no sharp corners. The top of handrails and handrail extensions shall be placed not less than 34 inches or more than 38 inches above the ramp surface. Handrails shall be continuous the full length of the ramp and shall extend in the direction of the ramp not less than 12 inches beyond the end of the ramp. Ends shall be returned or shall terminate in newel posts or safety terminals. If returned, rail must be smooth with no external fittings.

d. Termination: Ramps shall end with smooth transition onto level concrete pad at benchmark elevation. Aluminum plate with end closures required.

19. Handicap provision:

a. Quantity of wheelchair spaces: as shown on drawings and in full compliance with IBC Barrier Free Standards set forth in the International Building Code

b. Riser area adjacent to wheelchair spaces to have intermediate construction so 4-inch sphere cannot pass through opening.

c. Provide companion bench seating mounted to the concrete plaza adjacent to the wheel chair spaces.

1. Substructures:

a. Structural shapes meet one of the following ASTM specifications: A36, A36/A572 grade 50, A572 grade 50, A529-50, or A500 grade B.

- b. Shop connections are seal welds.
  - c. After fabrication, all steel is hot-dipped galvanized to ASTM-A-123 specifications. d. All hardware shall be hot-dipped galvanized to ASTM A-123, mechanically galvanized or aluminum (aluminum applies to pop rivets, drive rivets, wire ties).
- d. A minimum of 3/8" galvanized connection hardware to be used on the substructure
- 2. Extruded Aluminum:

Seat Planks and Railing are extruded aluminum alloy, 6063-T6 with clear anodized 204R1, AA-M10C22A31, Class II finish.

Riser planks are extruded aluminum alloy, 6063-T6 with Dur-Kyn painted finish

a. Tread, stair and ramp planks are extruded aluminum alloy 6063-T6 mill finish with traffic coating.

b. Joint Sleeve Assembly to be inserted in flat plank to maintain true alignment in joining together two plank pieces. Extruded aluminum alloy, 6063-T, mill finish. Splice cover is unacceptable between two flat plank pieces joined in a straight line.

3. Accessories:

Channel End Caps: Aluminum alloy 6063-T6, clear anodized 204R1, AA-M10C22A31, Class II. Mechanically fastened.

Cast End Plugs: Aluminum 319 alloy, cast finish. (Required at termination ends of railing) Hardware:

- (1) Bolts, Nuts: Hot-dipped galvanized or mechanically galvanized.
- (2) Hold-down Clip Assembly: Aluminum alloy 6005A-T6, mill finish.
  - (3) Structural Hardware: Equal to or greater than hot dipped galvanized ASTM-A307.
  - No c Connections utilizing high strength bolts are classed as slip critical.

b. Aisle Nose and Stair Nose: Aluminum alloy, 6063-T6, slip-resistant black painted finish. Mechanically fastened.

a.

- C. Fabrication:
- 1. Design Load:
- a. Live Load: 100 psf gross horizontal projection.
- b. Lateral Sway Load: 24 plf seat plank.
- c. Perpendicular Sway Load: 10 plf seat plank.
- d. Live Load of Seat and Tread Planks: 120 plf.
- e. Handrails and Guardrail: Designed to resist a single concentrated load of 200# applied in any direction at any point along the top. Per IBC Building Code.
- f. Wind load: Per IBC Building Code.
- 2. Liveload deflection of structural members shall be limited to L/200 of the span.
- 3. All manufactured connections to be shop welded.
- a. Manufactured by certified welders conforming to AWS Standards.

## 3.4 OUTDOOR POOLS

## 3.4.1 SUMMARY:

Applicable Codes: F.B.C. 2012 or the latest revision at the time of permitting Reference standards:

- ACI (American Concrete Institute)
- ANSI (American National Standards Institute)
- ASTM (Hot Water Boilers ASTM International)
- AISI (American Iron and Steel Institute)
- ASTM (American Society for Testing and Materials)
- AWS (American Welding Society)
- ASSE (American Society Of Sanitary Engineering)..
  - ASHRAE (American Society Of Heating, Refrigerating And Air-Conditioning Engineers)
- FS (Federal Specifications)
- FCCHR (Foundation For Cross-Connection Control And Hydraulic Research)
- MSS (Manufacturers Standardization Society Of The Valve And Fittings Industry)
- FINA (International Swimming Federation)
- NCAA (National Collegiate Athletic Association)
- NFPA Rules National Fire Protection Association
- NEC National Electrical Code
- IBC International Building Code
- FBC (International Building Code FLORIDA BUILDING CODE)
  - Florida Department Of Health Chapter 64-E9 (Public Swimming Pools and Bathing Places)
- NPSI National Pool And Spa Institute
- F.I.N.A

This section includes the construction of all Aquatic Bodies of water, (1) 50 meter training pool, (1) 50 meter competition pool, (1) Dive pool, (1) Teaching pool, (1) spa and their components.

All metal equipment, and fixtures shall to be grounded per NEC 680 Electrical Code (See electrical summary.)

3.4.2 Description of individual components but not limited to description below:

• "50 meter training pool 1" - Remove existing stainless steel gutter and replace with new stainless steel gutter, new plumbing, new filtration equipment, move and re-use or apply new geo-thermal heat/cool system, new timing pvc boxes and supporting infrastructure as per plan. Remove existing underwater lighting fixtures and electric. Fill-in and seal all pool light niches and resurface with existing pool surface material (Diamond-Brite) to create uniform.

• "50 meter competition pool 2" – Remove existing 50 meter competition pool and provide new expanded fully FINA compliant standard pool with (2) six foot moveable stainless steel bulkheads (Neptune Benson or approved equal). New pool will have competition style stainless steel gutter, new plumbing, new filtration equipment, new FINA compliant competition starting blocks (Colorado Timing System starting blocks or approved equal) and lane dividers (Competitor Brand – no exceptions), move and re-use or apply new geo-thermal heat/cool system, new timing pvc boxes and supporting infrastructure as per plan. Recessed TOE LEDGES shall be provided for Competition Pool - on start and turn ends.

• "Dive pool 3" – Remove Dive pool and provide new fully FINA compliant pool. New pool will have stainless steel gutter, new plumbing, new filtration equipment, and lane dividers (Only need lanes in one direction East-West – 25M swimming lanes) (Competitor Brand – no exceptions), move and re-use or apply new geo-thermal heat/cool system, new timing pvc boxes and supporting infrastructure as per plan, new dive tower and removable dive stands around pool perimeter as per plan. Recessed TOE LEDGES shall be provided for Dive Pool - on start and turn ends.

Sparger system and water surface agitation: Approach is to re-use as much as the Air Sparger system for the dive pool as possible. The value unit and tanks appear to be in good working order but all plumbing from the value system to the pool will need to be new and the 25 Hp compressor itself needs to be replaced.

• "Teaching pool 5" – Remove existing teaching pool and provide new pool. New pool will have stainless steel gutter, new plumbing, new filtration equipment, and new efficient gas heater. Must have a mesh shade structure, such as the Turn N Slide Shade system, with cool net shade fabric, over top of this area.

• "Spa pool 4" – Remove existing spa and provide new covered spa. New spa will have traditional PVC skimmers, main drains, new plumbing, new filtration equipment with Clam Shell (VAK PAK or equal) enclosure, re-use existing gas heater (if operational and in working condition.)

• Reuse the existing well located in the same space with existing 50 meter training pool filtration and geo-thermal equipment; for injection back into the aquafer and no longer into the intercostal water ways.

• Facility anticipates potentially (6) new wells constructed for geo-thermal heat/cool system as indicated below:

- a) 3 8" supply wells with submersible pumps and VFDs. (NEW)
- b) 3 10" Injection wells (NEW)
- c) All of the well water piping (NEW)

- d) The pool and well water manifold piping at the units (NEW)
- e) 8 New units for the Competition Pool (stacked using aluminum racks). (NEW)
- f) 6 New units for the Dive Well (stacked using aluminum racks.) (NEW)
- g) 7 existing units reinstalled for the Training Pool (EXISTING)
- h) Controls and control wiring (NEW)
- i) Start-up and balance (NEW)

Provide Performance charts, instructions, brochures, diagrams, electrical characteristics, flow rates, equipment's weights and dimensions, and other information to illustrate the requirements of major components and subsystems.

A copy of qualified procedures and a list of names and identification symbols of qualified welders and welding operators.

Regenerative Media Filters with Request optional manufacturer service and maintenance plan with filtration system (Filtrex Manufacture or approved equal).; Four (4) copies of the operation manual outlining the step-by-step procedures required for system startup, operation and shutdown. The manual shall include manufacturer's name, model number, service manual, parts list, and brief description of all equipment and their basic operating features. Four (4) copies of the maintenance manual listing routine maintenance procedures, possible breakdowns and repairs. The manual shall include piping and equipment layout and simplified wiring and control diagrams of the system as installed.

Pool shell shall be reinforced concrete conforming to ACI 318. Steel reinforcement shall conform to ASTM A 615 - Grade 60 Fy=60 ksi. Pool floor shall be reinforced concrete conforming to ACI 301 and ACI 318. Steel reinforcement shall conform to ASTM A 615 Grad 60 Fy=60 ksi.

Provide flexible PVC (polyvinyl chloride) waterstop. The PVC waterstop shall be extruded from an elastomeric plastic material of which the basic resin is prime virgin polyvinyl chloride. The PVC compound shall not contain any scrapped or reclaimed material or pigment whatsoever.

## 3.4.3 Accessories

#### Waterstop:

Provide factory made waterstop fabrications for all changes of direction, intersections, and transitions leaving only straight butt joint splices for the field.

Provide hog rings or grommets spaced at 12 inches on center along length of waterstop.

Provide Teflon coated thermostatically controlled waterstop splicing irons for field butt splices. Field butt splices shall be heat fused welded using a Teflon coated thermostatically controlled waterstop splicing iron at approximately 380 degrees F. Follow approved manufacturer recommendations. Lapping of waterstop, use of adhesives, or solvents shall not be allowed. 3.4.2

Property	Test	Method	Required Limits
Water absorption	ASTM	D 570	0.15% max
Tear Resistance	ASTM	D 624	300lb/in (52.5 kN/m) min.
Ultimate Elongation	ASTM	D 638	350% min.
Tensile Strength	ASTM	D 638	2000 psi (13.78 Mpa) min.
Low Temperature Brittleness	ASTM	D 746	No Failure @ -35 F (-37 C)
Stiffness in Flexure	ASTM	D 747	700 psi (4.82 Mpa) min.
Specific Gravity	ASTM D 792		1.38 max.
Hardness, Shore A	ASTM D 2240	79+/- 3	79+/- 3
Tensile Strength after accelerated extraction	CRD-C 572		1600 psi (9.54 Mpa) min
Elongation after accelerated extraction	CRD-C 572		300% min.
Effect of Alkalies after 7days:Weight ChangeHardnessChange	CRD-C 572		between -0.10% / =0.25% +/- 5 points

Performance Requirements as follows:

Center waterstop in joint and secure waterstop in correct position using hog rings or grommets spaced at 12 inches on center along the length of the waterstop and wire tie to adjacent reinforcing steel.

Waterstop splicing defects which are unacceptable include, but are not limited to the following:

- Tensile strength less than 80 percent of parent section.
- Misalignment of center bulb, ribs, and end bulbs greater than 1/16 inch.
- Bond failure at joint deeper than 1/16 inch or 15 percent of material thickness.
- Misalignment that reduces waterstop cross section more than 15 percent.
- Visible porosity in the weld.

- Bubbles or inadequate bonding.
- Visible signs of splice separation when cooled splice is bent by hand at a sharp angle.
- Charred or burnt material.

#### Pipe sleeves and seal - Steel Wall/Floor Sleeves:

Cast in place concrete wall sleeves to be fabricated from galvanized heavy wall welded or seamless carbon steel pipe. All sleeves to have a 2" wide, full perimeter water stop, welded on both sides. Wall sleeves shall be Model "WSCS6" as manufactured by Metraflex or approved equal.

Pipe wall/floor penetration seals to be of the modular link type. Seals shall consist of a series of interlocking, molded synthetic rubber links, with heavy-duty plastic pressure plates and corrosion resistant nuts and bolts. Seals to be designed to provide a hydrostatic seal between the pipe and wall/floor penetration. Seals should be sized and selected per manufacturer recommendations. Mechanical pipe seals shall be fabricated of an EPDM Elastometric for general service and a Nitrile/Buna-N for hydrocarbon/petroleum based applications. Provide stainless steel hardware as required. Mechanical pipe seals shall be as manufactured by the Metroflex Company, Model "MetraSeal" or approved equal.

#### Recirculation, filtration and perimeter recirculation gutter systems:

The recirculation system shall consist of, but is not limited to, filters, pumps, strainers, chemical controllers, chemical feeders, flow meter and automatic level control. The chlorine chemical feed system shall be electrically interlocked with the recirculation pumps.

#### Regenerative media filters (except for Spa) Performance:

The filter system capacity, size, performance and model number shall be as shown on the drawings

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.

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.

Support legs three (3) shall be welded to type 304L stainless steel pads, before being attached to the main body of the tank by welding.

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.

All bolt and fastenings, both internal and external, shall be of at least Type 304L stainless steel.

The inspection window shall be Pyrex glass and will be covered by a clear acrylic safety shield.

The tank shall be designed for a 50 psi working pressure with a safety factor of 4. ASME code.

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

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diameter, bump shaft gland.

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.

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.

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'-11" in height.

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.

#### Flex Tubes and Assembly:

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.

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.

Flex tubes shall have a recommended operating differential rating of 25 psi, and an ultimate of 75 psi.

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.

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.

The bump mechanism shall consist of an Air-Stroke<sup>™</sup> actuator 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.

During bumping, Air-Stroke<sup>™</sup> is normally pressurized and de-pressurized causing the flex-tube assembly to move downward then upward in linear fashion over a stroke distance of approximately 2".

Bumping shall be both push-button initiated, and computer programmed.

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.

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Media shall contain no more than 1 tenth of one percent (.001) of crystalline silicate. Filter shall be furnished with five (5) changes of media.

#### 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 airline.

#### Filter Assembly

The entire filter assembly shall be approved and listed by the national sanitation foundation (NSF).

#### Filter Piping and Valves

Filter unit shall be provided with supports and brackets, and three (3) control valves with integral flow controls. In addition, two (2) pneumatically operated remote control valves for pre-coat recycle and on-stream operation will be provided. Valves shall be cast iron body, EPDM seat, 316 stainless steel disc/shaft and equipped with rotary actuators.

#### Automatic Filter Controller

Provide an automatic filter controller to automatically regenerate and precoat the flex-tubes on a timed basis. Controller shall be Filtrex, Inc. or approved equal 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:

#### Enclosure

Provide 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 steel cabinet, NEMA 12. A sub-panel to be provided for mounting components.

#### Circulation pump motor control:

the variable frequency drive shall be functionally interlocked with the MOD-1-SSC solid state control program.

The regeneration process shall be time based. The on-stream time period is user-programmable by a front panel key pad.

Filter control panel will provide interlock signal for pool water heater, water chemistry equipment and auxiliary devices.

Program for automatic filter controller shall be as follows; when the signal to start regeneration occurs (2 hrs, 4 hrs...30 hrs) the controller automatically:

- Switches off the recirculation pump
- Closes the pool return valve
- Initiates 3 bumps

- Opens the precoat re-cycle valve
- Starts circulation pump for a six (6) minute precoat re-cycle
- Opens pool return valve
- Closes precoat re-cycle valve
- Accessory piping to be CPVC Schedule 80

#### Pneumatic Control System:

Pneumatic control system shall be piped by pool contractor. Compressor and dryer shall provide 90-100 psi dry pneumatic air to filter controller.

#### Drain Requirements:

A sump pit or stand pipe is required for dumping spent media and rinsing tube elements. System cleanout requirements or "backwash" shall be coordinated with sanitary system capacity, If capacity is not available a sump with a transfer pump shall be sized.

#### Packaging:

The components shall be carefully packaged in a totally enclosed wooden crate to prevent damage during transport.

#### Warranty:

(Request optional manufacturer service and maintenance plan with filtration system. Filtrex filters or approved equal.)

The entire filtration system shall be of one (1) manufacturer. The factory or local representative shall be present during start-up to assist the user in operation and training. Filter tanks shall carry a ten (10) year limited fully rated warranty as regularly offered by the tank manufacturer. Internal components, including tube elements, shall carry a fully rated ten (10) year warranty. Valve bodies shall carry a five (5) year fully rated warranty. Valve operators and system accessories including the controller, quick exhaust valve, solenoid valve and bump mechanisms shall carry one year warranty as provided by the product manufacturer.

#### Hair and lint strainers:

Strainer body shall be entirely constructed of corrosion-resistant material. The unit shall be equipped with an influent connection and effluent connection.

Redundant strainers shall be supplied, one (1) for each pump, in parallel so that if one pump system needs to be serviced the full filtration flow of the system will flow through second strainer.

Strainer body shall include one (1) 3/4" F.P.T. drain connection and (1) 1/4" F.P.T. gauge connection (on the influent side). Unit shall include securing assemblies to permit easy opening and closing of strainer lid without the use of tools. Strainers with Influent connections 5"-8" shall have six (6) securing assemblies. Strainers with Influent connections 10"-16" shall have eight (8) securing assemblies.

Provide one (1) stainless steel basket per strainer and one (1) additional to serve as a spare. Basket shall be Type 304 stainless frame and mesh with 5/32" perforations and not less than 62% open area. Open area of basket shall be no less than 4 times greater than the influent connection.

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Strainer lid shall be 1/2" thick Lexan transparent acrylic machined to eliminate sharp edges and house securing assemblies. Lid shall be grooved to house rubber gasket. Lid shall be seated with a 1/4" diameter full faced 40 durometer neoprene rubber gasket. Strainer lids on units with 10" connections and larger shall include a stainless steel cross brace.

Strainers with Influent connections up to 8" shall be pressure tested to 50 psi. Strainer with Influent connections 10" and up shall be pressure tested to 30 psi.

#### Pumps and motors:

Provide 2 pumps for each pool.

Pool: The recirculation pumps shall be sized to provide design flows for filter and backwash operation. Pumps shall be sized to provide design flows for required flows on continuous duty. NPSH shall be less than ten (10) feet. Pump selection at design point shall be at or below specified horsepower.Pumps selection at all portions of the design curve shall be non-overloading.

Pumps shall be cast iron casing, bronze fitting with mechanical seals. Epoxy coated wet end.

End suction pumps shall be back pullout design for ease of maintenance.

Pumps motors shall be 3-phase, 480-volts, 60-cycle, ball bearing, and totally enclosed fan cooled, normal starting torque induction type.

Pumps motors shall shall have NEMA Class B temperature rise with NEMA Class F insulation system.

Pumps motors shall be insulated to provide long duty with VFD operation.

Vacuum gauges

Vacuum gauge shall be furnished for installation at pump suction port to indicate excessive restriction in hair and lint strainer.

Gauge shall be calibrated to 30 inches hg vacuum and dial shall be not less than 4 1/2 inches diameter.

Provide pressure gauge(s) for pump(s) discharge(s) and filter influent and effluent mounted on panel attached to filter tank. Gauge(s) shall be at least 4 1/2" inches in diameter, calibrated in psi for 0 to 60. Provide gauge installed at pump discharge with rubber fitting.

Provide compound gauges for pumps suction ports. Gauges shall be calibrated to 30 inches hg vacuum and 0 to 60 psi. Gauges shall be mounted on vibration tubes.

#### Pipe and fittings:

All materials and equipment shall be new, of best quality for the purpose intended, and shall be clearly marked with the manufacturer's name and nameplate, date, or stamp and rating. As far as practicable, materials and equipment shall be one manufacturer.

CPVC Schedule 80: Type 1, normal impact, NSF approved for solvent welding applications, for

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exposed piping. PVC Schedule 80 Type 1 normal impact for all buried pipe and fittings.

Copper tubing: ASTM Specification B-88, hard drawn, with ANSI Standard B16.22 wrought copper fittings.

Copper for fresh water must conform to all standards for potable water.

Wherever possible all fittings to be by same manufacturer and same Schedule as pipe.

Provide corrosion resistant hangers, supports and thrust blocks to eliminate undue vibration or movement in piping system, as recommended by manufacturer and/or required by Engineer. (Fiberglass, galvanized or stainless steel).

All pipe hangers, supports and hardware shall be non-corrosive materials. Spacing in accordance with manufacturer's requirement and seismic restraint manual. (Fiberglass, galvanized or stainless steel).

The material used in the manufacture of the pipe shall be a rigid chlorinated polyvinyl chloride (CPVC) compound, Type IV Grade I, with a Cell Classification of 23447 as defined in ASTM D 1784. This compound shall be light gray in color, and shall be approved by NSF for use with portable water.

Filter room piping to be colored coded in accordance with the following guide;

Potable Water Lines: Dark blue Backwash Waste: Dark Brown Filtered Water: Aqua Sewer: Dark gray Skimmer or Gutter Return: Olive Green Deck Drains: Light Brown Main Drain: Black Chlorine: Yellow Compressed Air: Dark Green Soda Ash: White Gas: Red Acid: Pink

#### Valves:

Butterfly valves shall be PVC, PP or PVDF body with either PP, PVC, or PVDF disc and either EPDM, Nitrile, or FKM seat & seals. The liner shall be full seat design fully molded around the body whereas only the Disc and Seat are wetted parts and feature raised convex rings on the face and be utilized as the mating flange gaskets. Valves shall accept flat faced flanges in accordance with ANSI B16.5 bolt pattern for 150 lb flanges.

Valve stem shall be either 316 SS (sizes  $1-1/2^{\circ} - 12^{\circ}$ ), or 403 SS (sizes  $14^{\circ} - 24^{\circ}$ ), be non-wetted, and have engagement over the full length of the disc. The valve lever handle (sizes  $1-1/2^{\circ} - 8^{\circ}$ ) shall have a molded provision for a padlock. Valves sizes  $11/2^{\circ} - 16^{\circ}$  shall feature a molded ISO bolt pattern for accessory mounting. Type-56 Sizes  $1-1/2^{\circ} - 16^{\circ}$ , or Type-75 Sizes  $18^{\circ} - 24^{\circ}$ .

#### Operators:

Type-56 1-1/2" – 16" (Lever Type standard sizes 1-1/2" - 8") Gear Type standard sizes 8" - 16", optional for sizes smaller than 8") Type-75 18" - 24" (Gear Type only standard)Lever Handle to be

Standard valve handle Gear-Operator to be all plastic construction with SS trim submersible type Gear-operator for valves sizes 1-1/2" – 16" Type-56, or Spero Cast Iron with Epoxy coating type for 18" – 24" Type-75.

#### Pressure vs. Temperature:

Valves shall have a pressure rating of: 150 psi at 700 F sizes 1-1/2" – 10" 100 psi at 700 F sizes 12" & 14" 85 psi at 700 F size 16" 75 psi at 700 F sizes 18" - 24".

Stem extensions where required should be 1 of 5 styles:

Two piece extension with outer housing 100% sealed either free standing or supported design. Two piece extension with outer housing 100% sealed either free standing or supported design. Single piece extension either free standing or supported design.

Single piece extension either free standing or supported design.

Single piece extension for the gear hand wheel only either free standing or supported design. Actuation where required should be either pneumatic or electric type.

Lugs where required should be factory. Materials of construction shall be 304 SS or 316 SS.

Operating Nuts where required 2" square operating nuts can be installed on Lever type or Gear type Butterfly valves. On Gear type valves, the gear operator must remain on top of valve body and only the hand wheel from gear-operator is replaced by 2" square operating nut.

#### Check valves:

Provide wafer G.F. Type 369 swing check valves on pump discharges and other locations where applicable per design. Valves to be constructed of PVC class 12454B per ASTM D 1784 PP class 110B76383 per ASTM D 4101, PVDF Type 1 per ASTM D 3222 that are chemical resistant and non-corrosive.

## Pvc in-line ball float valve:

Float operated modulating valve shall be designed for submerged service.

The housing body shall be fabricated using Schedule 80 PVC pipe with Schedule 80 PVC van stone flanges. The internal wafer shall be 3/16" gauge T304L material and positioned with 1/8" (± 1/16") clearance around the perimeter. The body shall also incorporate an interior stop to define the allowable range of arm motion.

The valve shaft shall be T304L material <sup>3</sup>/<sub>4</sub>" in diameter. Float arms shall securely fasten to shaft using T316SS nuts with washers to provide adjustability. Arms shall be <sup>1</sup>/<sub>2</sub>" diameter all thread rod T316SS with length as required.

Ball floats shall be constructed of copper and be 8" in diameter with internal weighting. Floats shall also be adjustable using T316SS nuts with washers as previously described.

#### Automatic make-up water level controller:

Pool water level shall be maintained by an automatic makeup level controller.

Controller package shall consist of a PVC chamber to house stainless steel probes; a control panel housing, a liquid level relay and delay timer; a self-housed 110 volt, 7-day/24 hour timer.

Water level shall be controlled by the use of a three probe electrode system, two for high and low level and one ground. Electrodes shall be T316 stainless steel connected to a UL approved probe holder. A mechanical linkage or float operated system will not be acceptable.

Probes and holders shall be housed in a PVC chamber consisting of an 8" SCHEDULE 80 PVC pipe. Chamber shall be sized to accommodate desired range of water level variation and shall be complete with removable cover and adjustment collar suitable for deck level installation. A 1-1/2" equalizing line shall be connected from the bottom of the chamber to the pool wall.

#### Fill funnel:

Fill funnel shall be fabricated of Schedule 80 PVC, sized to provide controlled fill of the gravity flow piping after the 6" air gap. Flow from portable water supply line and loses in gravity fill line shall be used in calculating funnel lip elevation.

#### Flowmeter:

Flowmeter shall be installed in the filtered water return line to the pool. Flowmeter shall be a direct reading analog type with positive displacement, self-powered flow sensor electrically connected to a 4-1/2 inch dial instrument calibrated to read in gallons per minute. Sensor shall be installed in pool return piping according to supplier's drawings and dial to be located on filter tank.

#### Controller water chemistry

The control system shall be housed in a nonmetallic NEMA 4X rated enclosure. The enclosure and connections shall be designed to eliminate any possibility of corrosion or damage to the internal components of the controller.

Datalogger shall be housed in a nonmetallic NEMA 4X rated enclosure. The enclosure and connections shall be designed to components of the controller.

## Controller/Displays

Controller shall have a 4 x 20-character alphanumeric, LCD display with constant backlighting. Screen size shall be a minimum of 1" high by 3" wide.

Continuous display of pH, ORP, optional chlorine and temperature.

Date, time and alarm status

Descriptive alarm messages

#### <u>Alarm:</u>

Alarm Display shall be LED and shall be provided with visual pH and chlorine/bromine feed pump indicators (feed up and feed down lights) which are activated as chemicals are being fed. Controller shall also display paused mode of proportional chemical feed. Visual alarm indicators to warn operator of high or low pH, ORP, optional water temperature, chlorine levels, or no flow and failsafe (feed duration) conditions.

#### Monitoring and Operating Displays

PH level shall be continuously monitored and displayed on the face panel, within a range of 2-12 with a .1 pH resolution. The face panel pH set points shall be programmable to limit operator selection of pH set points to comply with health code limitation.

ORP level shall be continuously monitored and digitally displayed in millivolts (mV) on the face

panel, within a range of 0-1000 mV with a 1 mV resolution. The face panel ORP set points shall be programmable to limit operator selection of ORP set points to comply with health code limitation. Chlorine residual shall be continuously monitored and displayed digitally on the face panel. The ppm display range shall be no ppm, .2-3 or .6-6 ppm.

Temperature of the swimming pool water shall be capable of being continuously monitored and digitally displayed on the unit face panel. The temperature display range shall be 32-150F.

#### Output Circuits

Three (3) controller output circuits shall be provided and capable of handling standard line voltage at 5 amps each for pH and chlorine/bromine feed control, for the time clock controlled functions, and for a master alarm signal. Fuses shall be used to protect solid state relay controlled outputs. An optional 4th mechanical relay is available but is not field upgradeable.

Automatic outputs shall be capable of being manually overridden with face panel interface for pH and ORP, and chlorine/bromine shall be provided to allow for direct and complete manual over ride. The closing of any of these momentary contacts will switch incoming line voltage directly to the feeder output circuit.

#### Chemical Feeding Programming

The control system shall be capable of being programmed for either standard on/off feed control or a time based proportional feed control mode. Time based proportional feed logic shall automatically adjust, within a settable time base of 10-600 seconds, the operating time of the feed unit, cycling on and off if unit falls below set point. Cycling time will be variable based upon continuance of set point variation. The unit shall also provide for a "proportional band" of 0-99 mV or 0-1.5 pH units. Minimum feeder "on time" shall be no less than five seconds to ensure proper pump performance. The controller shall govern the output of any chemical feeder from 10% to 100% of maximum rated capacity. The system shall operate in such a manger as to make unnecessary, under ordinary or extraordinary conditions, any manual increase or decrease of feeder output settings by operating personnel in order to maintain set point. Units allowing only on/off control of chemical feeders or requiring use of special proportional-band feed devices (4-10 mA or 0-100 strokes per minute inputs) to achieve proportional control shall not be considered equal.

#### Failsafe (Feed Duration)

The system shall be equipped with an internal microprocessor-based failsafe (feed duration) alarm circuit that triggers a separate failsafe (feed duration) red LED indicating that this shall disable the appropriate chemical feeder(s) and energize an alarm circuit in the event of:

Electrode (sensor) failures Chemical feeder malfunctions Depletion of chemical supply source

The time vase of the failsafe (feed duration) alarm circuit shall be programmable from 0 through 24 hours with one (1) minute resolution. In addition, an internal software switch shall make it possible to disable the feed duration alarm circuit entirely without affecting other system operations. Units incorporating mechanical-type overfeed timers shall not be considered equal.

#### Indicators, Alarms, and Warnings

The control system shall be provided with pH and ORP feed indicators, which shall be activated when respective chemicals are being fed.

System shall be provided with high and low pH and ORP alarms. High pH alarm shall prevent soda ash and hypochlorite feed and low pH alarm shall prevent acid feed and gas chlorine feed. High ORP alarm shall disable ORP oxidant feed.

System shall be capable of accepting a low voltage on/off flow indication signal via hard wire connection on internal circuitry. The system shall provide a low flow warning message to alert operator when no flow situation exists in the sample stream. Should a no flow condition exist, the system shall disable all chemical feeder functions.

The control system shall be provided with an internal microprocessor based "feed duration alarm" circuit that shall disable the appropriate chemical feeder(s) and energize an alarm circuit in the event of: a) sensor failures, b) chemical feeder malfunctions, and c) depletion of chemical supply.

The failsafe (feed duration) alarm mode shall be programmable from 0 through 18 hours with 1 minute resolution. In addition, an internal software switch shall make it possible to disable the failsafe (feed duration) alarm circuit entirely without affecting other controller operations. Units incorporating mechanical-type overfeed timers shall not be considered equal.

An alarm condition shall activate a remote master alarm signal, provided as a dry contact closure, enabling the use of 0280 VAC alarms.

#### Security

The logic of the system shall include a two level security code system, allowing access to pH, ORP, ppm, temperature and alarm set points. Security system will allow separate operator and a factory authorized system entry.

#### Flow cell and sensor assembly

The control system shall include a sensing chamber, a flow switch, and sensor assemblies, all of which shall incorporate the following features:

An integral self-air purging sensing chamber designed to accommodate four sensing devises shall be provided. The chamber body shall be PVC with a clear polycarbonate inspection cover. All plumbing, PVC Schedule 80, consisting of shut off valves, backflow device, nipples, elbows, sampling cocks, compound gauge and flow switch shall be supplied. The flow switch shall be of the paddle wheel-style with see-through cover and "on stream" light. Flow switch shall indicate flow (at least .9 gpm) through the sample stream and signal the controller to initiate an alarm condition and to shut off feed circuits in the event flow should stop. Flow switch shall operate on low voltage and be made of non-corrosive material. Flow cell and plumbing shall be mounted to a back panel housed with a gasket enclosure.

pH and ORP sensor shall contain no less than 28 milliliters of electrolyte gel to assure reasonable electrode life. The gel used in each electrode shall be inorganic so as to prevent degradation by chlorine or bromine. The Redox sensor shall be of the patented ORP technology. ORP sensing electrode shall incorporate at least 1 square centimeter of 99.99% pure platinum and

operate in temperatures between 32-150F (0-77C). Each electrode shall use a porous Teflon liquid junction to minimize the chance of liquid junction clogging and prolong electrode life. pH and ORP sensors shall incorporate shielded BNC connectors to insure continuity of connection. To insure accuracy and compatibility, the controller manufacturer shall manufacture the sensing probes. Electrodes not utilizing the above technology or organic gels or wood or ceramic liquid junctions or connectors other than shielded BNC will not be considered equal to these specifications.

Temperature sensor shall be of the RTD type having a two (2) wire cable of the low noise type with appropriate connectors. Cable and connectors shall meet or exceed Military Specifications. To insure accuracy and compatibility, the controller manufacturer shall manufacture the sensing probes.

#### Sensor wash system

An automatic sensor wash system shall be provided. The system shall consist of one 6-gallon vapor-proof tank, one feed pump capable of pumping up to 10 gallons per day at 75 psi, and a four-function anti-siphon/pressure relief valve. Digital programmable electronic timer in the chemical controller shall control the pump.

#### Manual pool vacuum system

Contractor shall provide a manual pool vacuuming system consisting of the following major components.

Stainless steel cart provided by pool vacuum manufacturer with mounting brackets for cartridge filter, pump, and vacuum hose. Cart shall have rubber tires which will not mar pool deck. Vacuum system cart shall be provide as finished product with all components installed, plumbed, and in working order.

Vacuum pump shall be minimum1 HP filter pump, single phase 120 V AC. Pump shall have integrated basket strainer, strainer basket enclosure shall have viewing window to view contents of strainer basket. Pump shall be self-priming. All pump components shall constructed of chlorine resistant materials.

Stainless steel cartridge filter shall be have adequate filter area to provide maximum application rate of 0.5 GPM/Sq. FT. when pump is running at calculated TDH. Filter shall have a minimal number of cartridges, making disassembly, cleaning, and reassembly as easy as possible.

Commercial grade vacuum head minimum of 24" wide with connections for 1½" vacuum hose and stainless steel pole shall be furnished. Vacuum head shall be constructed of a material that will not damage or mar pool finish.

Industrial grade 1 ½" x 75' vacuum hose shall be supplied for connection from vacuum cleaner to head. Hose shall be capable of undertaking vacuum created by design flow, twisting, and straining without collapsing

Minimum of 48'-0" of anodized aluminum pole with pole connector collars to connect sections of pole shall be furnished. Pole shall be of gauge anodized aluminum so as not to break, bend or deflect during typical pool cleaning.

Pool pump shall be plumbed to filter with minimum NSF schedule 80 PVC pipe. Throttling valve

shall be installed between pump and filter. Plumbing from effluent side of pump shall be NSF Schedule 80 PVC plumbed to allow for the return of filtered water to the pool when cart near pool edge.

#### Pool water test kit

Provide a tester for measuring FAC chlorine residuals and pH. Include sufficient reagents for one year" testing. Furnish in carrying case with separate slides for pH and chlorine. Also provide WB test with extra reagents and a DaLite slide mount for viewing. Provide one (1) each.

Contractor shall supply pool water test kit. Test kit shall test for the following: iron, ph, magnesium, free chlorine, combined chlorine, total alkalinity, calcium hardness and cyanuric acid. Kit shall be of the DPD variety. Kit shall have the chlorine residual testing increments as follows: 0.2, 0.4, 0.6, 0.8, 1.0, 1.5, 2.0 and 3.0 PPM. PH test range shall be 6.8-8.2 to the nearest 0.2 PH unit.

#### Bottom drain grates and sumps

Main Drain Grates should be of non-corrosive materials. Maximum opening of grates shall be 3/8" with total open areas as required to accommodate specified flow rate at velocity not to exceed 1.5 F.P.S. Load bearing capacity of grating as installed shall be at least 200 pounds per square foot. All bottom drains shall be equipped with VGB approved grates for anti-entrapment and Anti-Vortex Reduction Device (AVRD).

Anti-Vortex reduction device (AVRD) shall be constructed of stainless steel pipe the same size as the main drain outlet pipe.

Prefabricated NSF certified sump shall be constructed of 304 stainless steel. The sump shall have a continuous frame to accept the main drain grate and provide adequate structural support. Grate shall be fastened to main drain per manufacturers recommendations. Sump shall have mechanical connections for outlet pipe as well as on sump interior for AVRD.

#### Floor inlets

Contractor shall supply cast bronze body floor inlets with female (1 ½"IPS) threaded connections. The inlets shall be constructed of cast bronze with a chrome plated finish. Inlets face shall be flush with pool floor.

Inlets shall have a throttling plate below cover plate or other means of flow control while maintaining flushness of cover plate with pool floor, flow range shall range from 0-50 GPM. Inlet design shall permit 360 degree flow through.

#### Stainless steel gutter system (except for Spa)

The work under this section shall include the furnishing and installation of a stainless steel perimeter recirculating gutter system. The system shall consist of an overflow channel filtered water supply channel, finished edge, drain converter, supply converter and other accessories as listed.

The gutter system shall be of the fully recessed type on the ends of the pool and the semirecessed type on the sides.

#### Finished Edge

The bottom front edge of the gutter shall be flush with the face of the gutter and pool wall finish.

#### Materials

The exposed surface of all stainless steel shall be fabricated of type 316L, with a number 3 polished finish. The anchor angles and stiffeners shall be type 304 stainless steel. All components of the system shall be no less than 12 gauge in thickness.

#### Channel

The gutter channel shall be fabricated according to the dimensions detailed on the drawings.

The gutter system shall be sized to accommodate a flow capacity equal to 100% of the pool system recirculation rate.

#### Supply Tube/Filtered Water Inlets

The filtered water supply shall be a continuous conduit capable of carrying the respective design flow with nozzles. The quantity of inlets shall be determined to deliver the required flowrate. The inlets shall be spaced so as to not interfere with wall areas, electronic touch pads or competitive racing lanes. Inlets shall work in conjunction with floor inlet system.

The main overflow channel shall be fitted with jet flow nozzles to provide a constant stream of filtered chlorinated water in the channel to prevent any stagnation or build-up of dirt, as shown on the plans.

#### Surface Skimming

Surface skimming shall be continuous around the entire pool perimeter. The water level of the pool shall be maintained at  $\pm 1/16$ " above the overflow lip of the gutter. Dynamic surge action shall be quelled by the gutter channel to reduce repelling back onto the swimming surface.

#### Grating

All areas of the gutter shall be accessible for inspection and cleaning. The overflow channel shall be covered by a protective grating formed of extruded HDPE sections comprised of 5/8" wide, 1" deep extruded I-beam ribs placed perpendicular to the pool perimeter for maximum efficiency in quelling waves. The top shall be serrated to create a non-skid surface. The open area of the grating shall not be less than 32%. The grating shall be white unless otherwise specified on the plans.

#### **Converters**

Gutter drain and supply/return converters shall be sized according to the system requirements and installed at proper locations to prevent flooding of the gutter.

The drain converter shall be fabricated of T304L stainless steel no less than 12 gauge thickness. The supply (pressure) converter shall be fabricated of T304L stainless steel no less than 12 ga thickness.

NOTE: For buried applications the supply converter must be completely encased in 4" minimum of concrete or grout.

All converters shall be fitted with stainless steel flanged connections. Skid Resistant Surface The horizontal surfaces of the gutter are to have a skid resistant surface.

#### **Expansion Anchors**

The entire gutter channel shall be anchored to the pool walls with stainless steel anchors drilled into the pool beam at no less than 48" on center around the pool perimeter. Anchors to be set in high strength anchoring epoxy.

The rear top gutter edge shall be aligned and secured to the pool beam with 12 gauge stainless steel support angles. The angles shall be welded to anchor pins installed in the pool beam at no less than 48" on center around the entire pool perimeter.

Depth markers (Per DOH code, Chapter 64E-9) Depth of water in feet shall be plainly and conspicuously marked on the vertical pool wall at or above the waterline. Depth markers will be placed on the deck and face of the 5" concrete deck.

Depth markers shall indicate the actual pool depth within 3 inches, at normal operating water level when measured 3 feet from the pool wall or at the tangent point where the cove radius meets the floor, whichever is deeper. (Per DOH code, Chapter 64E-9)

Depth markers on the vertical pool wall shall be positioned to be read from the waterside. Depth markers shall be placed in such a way that they allow as much of the numerical value to be visible above the waterline as possible.

Depth markers on the deck shall be within 18 inches of the water edge and positioned to be read while standing on the deck facing the water.

Horizontal depth markers shall be slip resisting.

Depth markers shall be installed at the maximum and minimum water depths and at all points of slope change.

Depth markers shall be installed at intermediate increments of water depth not to exceed 2 feet. Depth marker shall be spaced not to exceed 25 feet intervals.

Depth markers shall be arranged uniformly on both sides and both ends of the pool.

Depth markers shall have a 4 inch minimum height. The numbers shall be of contrasting color to the background on which they are applied, and the color shall be of a permanent nature.

Letter shall either spell out "FT" or "IN". In addition, the depth of water shall also be displayed in meters. Lettering for meter depth markers may be spelled out "M".

Pool depths of 6 feet or less shall display the "No Diving" symbol. The symbol may be place on the deck at intervals of no more than 25 feet. Additional signage shall be in accordance with ANSI Z535 Series of standards for safety signs and colors. (See appendix H, glossary.)

## 3.4.4 SPARGER SYSTEM

## POOL COMPRESSED AIR BUBBLING SYSTEM (SPARGER) PULSAIR OR APPROVED EQUAL:

A. CONTRACTOR shall demolish and remove from the site all existing sparger system components located in the pool mechanical room. Owner reserves first right of refusal on all demolished equipment.

B. CONTRACTOR shall replace the sparger system to include all system components located in the pool mechanical room as listed in this section, and shall make connections to the existing sparger air supply piping connecting to sparger heads located in the dive pool floor. All sparger equipment and components in the mechanical room shall be replaced with new, including new upgraded sparger control systems as described in this section. Sparger equipment location and layout in the mechanical room shall be coordinated in the field as compatible with the work o of all other trades.

C. CONTRACTOR shall provide a complete new control system for operation of the sparger system consisting of a control box for operation of the system in a location near the diving pool and shall provide the wiring from the control box to the compressor unit. CONTRACTOR shall provide all required control wiring.

D. Provide one (1) 60-CFM rotary screw compressor rated 75 CFM at 200 PSIG actual with one (1) 30 HP motor (1800-RPM) O.D.P. 480V, 3 phase, 60 cycle. Compressor shall be completely factory pre-wired and shall include a standard full voltage magnetic starter. The compressor package shall include coalescing and charcoal filters with auto drain, integral air dryer, a regulator and remote motor starter. Compressor as manufactured by Kaeser, Ingersol Rand, Atlas Copco, or approved equal will be considered.

E. Provide one (1) vertical air receiver suitable for 200 PSIG working pressure with total volume of 660 gallons with an electronic auto drain. The interior of the air tank receiver shall be coated in FDA food grade coating by the tank manufacturer. The exterior of the air tank receiver shall be painted with an enamel finish by the tank manufacturer. The pipe and related fittings to hook up electronic drain valve to the bottom of air receiver tank shall be 304 stainless steel.

F. Provide Control System - There are several components to the control system, the transmitter, receiver, power supply, injection valve and interlocks. The control system will require a 115 VAC supply and a hard-wire connection between the control station and the compressor. The CONTRACTOR shall coordinate the location of the receiver. The wiring shall be done per Division 26 and coordinated with the pool wiring and electrical.

G. Provide Remote Control Transmitter - The one-channel control transmitter is similar to a television or other remote control device. The transmitter case is made of high impact plastic with a fully sealed membrane type switches to provide a dirt and moisture free environment. The unit is small and light enough to be placed in shirt pocket or hung around the neck on a lanyard. The switches are alternate action; pushing once turns the system on. Transmitter shall be capable of controlling each sparger diffuser line with a separate button.

H. Provide the following components: one (1) ball valve for tank shut-off, automatic water trap (115V), tank safety valves set at 220 PSIG, pressure gauges, pressure reducing valve, pressure switch 200/175 PSI, punch opening electric activated air-operated mechanism (corrosion resistant solenoid valves), remote control device on coil cord, and one quick disconnect fitting for an air hose in the filter room, easily accessible to the pool operator.

I. All above ground exposed piping between air compressor and air tank receiver shall be 304 stainless steel and installed per recommendations of the sparger system manufacturer.
Compressor air piping and interconnecting air supply piping to all components of the air supply system shall be rated for compressed air service with a minimum working pressure of 200 psig or equal and approved for such service under all relevant codes or regulations.

J. A supplier's representative for the equipment specified shall be present at the job site for installation, assistance, inspection and certification of the installation, equipment testing, startup assistance, and training of the Owner's personnel. Prior to startup, all equipment described herein shall be inspected for proper alignment, proper connection, and performance by means of a functional test.

K. CONTRACTOR shall coordinate all required electrical service to the complete sparger system. CONTRACTOR shall provide a necessary electrical and data connections and coordinate conduit runs and installation with all trades.

L. Air sparger system shall be manufactured by Pulsair Systems or approved equal.

M. CONTRACTOR shall provide manufacturer's minimum three (3) year warranty against defective materials, components and workmanship in the pool compressed air bubbling system - sparger.

# 3.4.5 GEO THERMAL HEAT / COOL PUMP SYSTEMS

## **Description of Operation**

The SYMBIONT<sup>™</sup> Geo-Thermal Pool Heater is a high quality, high performance, dedicated waterto-water package heat pump.

The SYMBIONT<sup>™</sup> is designed to provide high performance operation on private and public pools and spas. Like gas, the SYMBIONT<sup>™</sup> is totally unaffected by outdoor weather conditions and has a 15-20 year serviceable life expectancy.

The SYMBIONT<sup>™</sup>, while competitively priced with either solar heating systems or air source heat pumps, costs substantially less to operate than any air source available. When cost of operation and dependability are considered, the SYMBIONT<sup>™</sup> has no equal.

When the pool pump is running, and on demand of the thermostat, the SYMBIONT<sup>™</sup> pool heater and source water pump are energized to heat the pool.

Like any heat pump, the SYMBIONT<sup>™</sup> uses a refrigerant vapor compression cycle to extract free heat from one place (the heat source, either a well, a lake, or canal) and deliver it to another (the pool or spa). All you pay for is the electricity used by the compressor and pumps.

## **Features**

- Modular Design with Easy Piping and Wiring Access
- Painted Aluminum Cabinets with Raised-Base Aluminum Chassis
- Insulated for Quiet Operation
- High Efficiency Scroll Compressor with Inherent Motor-Protector
- Titanium Tube-Shell Heat Exchangers

- Refrigerant Liquid Receiver and Filter/Dryer
- Refrigerant Sight-Glass with Moisture Indicator
- Thermostatic Expansion Valve
- High and Low Pressure Switches
- Time Delay Compressor Protectors
- Electronic Digital Pool/Spa Thermostat
- Factory Installed Reverse-Cycle Summer Pool Cooling
- ARL or ETL Listed/Approved

Specifications\*

65F	75F
199,014	221,545
6.07	6.62
50	
2"	
13 HP	
	460/60/3
	23
	150
	28.8
	40
520 lbs.	
60" x 34"	x 40"
	65F 199,014 6.07 50 2" 13 HP 520 lbs. 60" x 34"

# 3.4.6 SPA EQUIPMENT ENCLOSURE (VAK PAK OR EQUAL) SYSTEM

Vak Pak Recirculation System (SPA ONLY) Recirculation, filter and chemical Treatment System Specifications

A. The Filter and recirculation system shall be a self-contained design which includes a fiberglass skid equipment cabinet that shall contain all pumps, filters, pipe, valves, fittings, electrical panels, wiring and chemical control equipment as per the plans provided. It shall comply with the Florida Building Code and Health Department requirements. The complete system shall be certified under the UL1081 standard for Swimming Pool Pumps, Filters and Chlorinators and shall be marked with the testing lab certification. The equipment manufacturer shall provide start up and a minimum of 4 hours operation and maintenance training, on site, with the owner's maintenance department. The instructor shall be an employee of the filter and recirculation manufacture with a minimum of 10 years on-site training and startup experience of pool and spa recirculation systems.

B. The chemical control system must be capable of treating water to the collector tank with chemicals being injected at a point on the recirculation return line after the filter. The chemical controller manufacturer shall provide start up and a minimum of 2 hours operation and maintenance training, on site, with the owner's maintenance department. The instructor shall be an employee or representative of the chemical controller company.

C. Specifications:

## CB1002 Cabinet

72"x76" reinforced fiberglass cabinet for housing pumps, filters, chemical equipment and electrical components tested and certified to current UL 1081 standards,

# Grab rails

Grab rails shall be fabricated of stainless steel, 1.90" O.D. x .109" wall thickness, Type 304, polished to 320 grit. All bends shall be smooth and free of wrinkles. Welded joints shall be coped for 100% contact and fully welded. Joints shall be cleaned and blended to match the finish of the pipe.

#### Recessed step inserts

Step treads shall be of 12-gauge T304 stainless steel fastened with stainless steel.

#### Anchor sockets/escutcheon covers

Wedge Anchor Socket; Body shall be of cast bronze and shall be 4 ¼" long. It shall be made to receive 1.90" O.D. pipe. Two longitudinal ridges, for prevention of side sway shall run full depth of the body on the I.D. The locking wedge shall be cast bronze and bolts shall be stainless steel (cadmium plated steel).

Escutcheon Cover; Escutcheon cover shall be: Standard Stainless Steel Stamping. It shall be made to slip over 1.90" O.D. tubing.

## Handicap lift (portable or fixed)

Portable Aquatic Lifts as required by DOH - Chapter 64E-9; Facility currently has all operational portable lifts and one fixed lift - training pool. (Please try to re-use if possible)

Portable Aquatic Lift. It shall be battery powered, comply with Architectural Barriers Act (ABA), and have a lifting capacity of 300 pounds. Capable of easy movement to multiple pool locations using a patented counterbalance system (no deck anchors required). Product shall include battery, charger, battery console cover, waterproof control, and foot rest and seatbelt assembly.

Have a screw/spline type actuator to provide a safe and stable stop at any point in the lifting cycle. Capable of:

Not only having a stopping point that is a minimum of 16 inches and a maximum of 19 inches measured from the deck to the top of the seat surface when the seat is in the raised position (accessibility guidelines), but also providing additional stopping points at various heights to accommodate users of all ages and abilities.

Submerging the seat a minimum of 18" below the surface of the water.

Configured to facilitate ease in user transfer within clear deck space of 36 inches wide by 48 inches deep starting 12 inches from the back end of the seat (Ref. ABA).

Have a 24-volt gear motor to power side to side rotation to allow for ample clear deck space for transfer on both sides of the lift.

Seat: Width of 18.5 inches (ADBA Requires 16 inches) Back that extends 24 inches high (ADBA Requires 12 inches) Be structurally capable of providing a stable user transfer and pass a static load test equal to 1.5 times the rated load capacity.

Metallic parts (stainless steel and aluminum) to be passivated, pretreated and powder coated using a 5-step process. The process is to be validated by samples undergoing a 4,000 hour Salt Fog Test (ASTM D 1654), by a recognized independent laboratory, and achieve a rating of 10 (highest possible rating). (Note: The test is the equivalent of 10 years exposure to this harsh environment.)

# Lane lines and anchors

Provide polyester lane line with polyethylene core with PVC floats and stainless steel hooks and anchors at locations required by code and mounted in stainless steel gutter.

Provide Competitor Gold medal lane lines shall be furnished with 6"diameter polyethylene discs. Disc color shall be chosen by client.

Cable shall be vinyl coated stainless steel 3/16" in diameter.

Lane line shall have stainless steel spring at one end and stainless steel turnbuckle style tensioner at opposite end which does not require a wrench to adjust.

Each end of lane line shall have stainless steel "S" hooks to anchor to gutter/bulkhead anchors.

Stainless steel lane line anchors shall be recessed and preinstalled in stainless steel gutter per spacing and locations on drawings. Anchors shall also be included on movable bulkheads.

# 3.4.7 COMPETITIVE EQUIPMENT

Competitive Equipment conforming to Federation Internationale de Natation (FINA) and US National Governing Body standards for equipment including, but not limited to.... starting platforms, lane lines, targets, wave quelling floats, backstroke recall posts, pennants and ropes with their associate anchors and escutcheon.

Removable starting platform (Colorado Timing Systems or approved equal including backstroke ledge accessory. Option: Relay Judging Platforms)

# Swimming, Diving, Water Polo and Synchronized Swimming competitive events:

Starting Platforms shall have an elevated platform supported by a framework of stainless steel pipe. Intermediate steps shall be provided. A backstroke bar shall be located approximately 20" above the water level.

The platform top shall be 24" wide X 32" deep and have a non-skid surface. It shall be put at a 10° tilt toward the pool. The steps shall be constructed of stainless steel, with an integral non-skid surface.

The supporting framework shall be fabricated of stainless steel pipe 1.90" O.D. X .145" wall thickness. The legs may include an added insert for maximum resistance to flexing.

All pipe and tubing shall be Type 304L stainless steel polished to a 320 grit.

The sockets shall be constructed from stainless steel and will be 6" deep. A closure cap will be included with each socket. The sockets will be factory welded to spacer bars with the proper setting between them.

Backstroke and recall stanchions (Bronze deck anchors and stainless steel support poles.)

T304 stainless steel tubing with caps and eyelets for rope hooks at top. Height and location as per USA Swimming organization and FINA Rules.

Provide backstroke pennant lines, color to be selected by the City of Fort Lauderdale. Current colors: Blue/White.

Racing Lanes shall be Competition Type. Hardware shall be stainless steel. Competitor Swim brand racing lane lines, no exceptions. Color selected by City of Fort Lauderdale. 6-Inch Discs, Competitor Gold Medal 50M lane line, Gold Disconnect, 50M 2-75', Item 50-065 Quantity: 44 (two 50M sets, two pools)

http://www.competitorswim.com/products-main/racing-lanes/

Five (5) Store-Lane Reels and covers to house all of the lanes.

# Other specialized and moveable equipment:

## Bulkheads:

Horizontal bulkhead Divider (Neptune Benson brand or approved equal.)

Competition course must meet USA Swimming competition course certification standards. For a World, American or US Open swimming record to be recognized, the racing course must be certified.

http://www.usaswimming.org/DesktopDefault.aspx?TabId=1756

The contractor shall furnish two, 6 feet horizontal variable flotation bulkhead dividers for the swimming pool as shown on the drawings and as specified herein. Bulkhead shall be a horizontal, variable/fixed floatation, 316L stainless steel corrosive resistant bulkhead.

The bulkhead shall support a uniform live load of 35 lbs/ft2 at a vertical deflection not to exceed L/240 provided that all other bending and shear stresses fall within their allowable stress limits as determined by allowable stress design or factored loading method.

Camber shall be incorporated into the bulkhead such that the bulkhead shall have zero deflection under its own dead load.

Lateral deflection of the bulkhead, caused by swimmers and/or the use of tensioned racing lane lines, shall not exceed a total of 1/2".

Lateral lane line loads shall not exceed 100 lbf which is to be ensured by providing a torque on each lane line ratchet of < 10 lbf-ft. Lateral deflection of the bulkhead shall be designed based on a 200 lbf lateral lane line load. Lane line anchors shall have a minimum pullout resistance of 500 lbf each.

The bulkhead shall be shipped, complete, with a combination fixed and variable buoyancy system to facilitate smooth movement through the water. The fixed buoyancy system shall be rechargeable in the field. The rate of motion of the bulkhead through the water, during transit, shall not be less than 7 ft/min as moved by two faculty members of average size and strength, one member on each side.

It shall also be designed to ensure maximum stability of the bulkhead when locked in its designated locations.

The geometry and appurtenances of the bulkhead shall be designed and constructed in strict accordance with the FINA facility codes.

The entire submerged bulkhead structural framework shall be constructed of 316L stainless steel. All associated hardware shall be a minimum 18-8 stainless steel. The structure of the bulkhead shall be such as to meet the loading/deflection criteria specified in this section. All the welds of the structural framework shall be electrochemically cleaned and passivated to ensure the full development of the protective chromium oxide layer.

The buoyancy chambers shall be constructed of PVC pipe or approved polymer materials. The buoyancy system shall provide for variable as well as fixed buoyancy. The fixed buoyancy shall be designed so as to be automatically monitored and recharged during the operation of the variable buoyancy feature.

The system by which air shall be delivered to the buoyancy chambers shall be of PVC, or other inert or polymer material, with a minimum pressure rating of 50 PSIG. The air inlet connections for the buoyancy system shall finish flush with the enclosure grating and shall be protected from dirt entrainment.

The sides of the bulkhead shall be fitted with a flow through, permanently slip-resistant, HDPE grating.

A minimum of 28% net open area must be provided on the exposed side gratings of the bulkhead. Said grating shall also be of a design to prevent entrapment.

The grating used in the bulkhead shall be formed of HDPE grating. The top surface of the grating section shall be 5/8" wide and the depth shall be 1". Targets shall be provided on both sides of the bulkhead in each racing lane. The grating forming the targets shall be black on a field of white. The top surface and targets shall be serrated to create a non-skid surface. The space between extruded sections shall not exceed 9/32".

The bulkhead shall be designed to move easily on solid HDPE rollers, a minimum of two (2) at each end, with flanges a minimum of 5 inches in diameter and contoured to fit the profile of the lip of the perimeter overflow system. The wheels shall each be independently mounted on stainless steel axles with sealed bearings.

The bulkhead shall be designed with a 1 1/4" stainless steel anchoring pin on each end to secure

its position. Socket anchors shall be provided per the project drawings. The anchoring pins shall be accessible via a stainless steel hatch located directly above the pins on top of the bulkhead.

The face of the bulkhead at and above the water line shall form a fully-recessed opening with handhold in each lane, creating a contour similar to the end walls in the swimming pool, to entrap and prevent waves from rebounding into the lane. The opening shall be fitted with HDPE grating spaced to prevent fingers from being caught.

One single-bar security rail shall be provided at each end of the bulkhead. These rails shall be custom-fabricated of polished, tubular stainless steel. Corresponding 304L stainless steel anchors shall be installed integral to structural framework.

The bulkhead shall be manufactured with lane targets on one or both sides as illustrated by the drawings. Targets shall be sized and placed in accordance with the governing competitive facility codes so long as the depth of bulkhead permits.

There shall be fully recessed line anchors positioned at waterline on one or both side of the bulkhead as illustrated by the drawings. Anchors shall be permanently attached and located in accordance with competitive facility codes.

Miscellaneous equipment anchors, of 316L stainless steel construction, shall be provided as required. Anchors shall finish flush with the top surface and shall be of a sleeve style with a locking mechanism. The location of these anchors shall be detailed in the drawings and shall be in accordance with the governing competitive facility codes.

Housings for a timing system harness shall be incorporated into the structural framework of the bulkhead as required and in accordance with the governing competitive facility codes.

Individual PVC connection boxes, at each starting platform location, shall be custom fabricated into the top of the bulkhead enclosure grating for a flush installation when standard covers are in place. An additional connection box shall be provided at the end of the bulkhead so as to facilitate system connection.

## Anti-vortex plate

Anti-vortex plate shall be fabricated of 1/8" stainless steel. Plate shall be supported off the floor of the surge tank with a minimum 3" gap between the plate and the floor. Hardware shall be included. Plate diameter if circular or perimeter if octagonal or hexagonal shall be adequate size to limit velocity to 1.5 F.P.S. based upon maximum suction velocity of pipe at 6 F.P.S.

Threaded rod bolt holes 90° apart on suction pipe flange bolt patter shall be fabricated. <sup>3</sup>/<sub>4</sub>" bolt size up to 14" pipe size, 1" bolt up to 20".

Stainless steel threaded rod, washers and leveling bolts shall be furnished <sup>3</sup>/<sub>4</sub>" hardware size up to 14" pipe size, 1" hardware size, 14" to 24" pipe size.

#### **Disinfection systems**

(Include: 3-year Equipment Maintenance agreement covering the cost of equipment, parts, and service.)

The NEXGEN on-site chlorine generator shall be a ChlorKing model NEX-GEN 80 lb/day Skid Mounted pH Neutral Chlorine Generator CH NEX-GEN 80R3Tor equal.

The package system shall consist of one (1) pH neutral on-site chlorine generator per pool. The design of the system shall be such that pool water is the supply water and pool water is chlorinated directly by the NEXGEN system. Chlorine shall not be distributed to a secondary storage tank. Chlorine generators that require fresh water and water softeners shall not be accepted as equal. The system shall be completely factory piped and shall have a magnetic drive circulating pump, heat exchanger, blower, electrode stack[s], flow switches, air flow sensors, actuated ball valve and water cooled power supply. The NEXGEN system shall be capable of monitoring the pH and salt levels of the incoming swimming pool water and adjusting the chlorine produced as required to maintain pH in the range of 7.0 - 8.0, and salt in the range of 5,000 - 7,000ppm inside the chlorine production tank. The entire package shall be skid mounted, pre-piped, assembled, and output tested and ready for installation. The manufacturer shall verify proper operation of the cells and all controls by connection to water for a factory test prior to shipping.

Request for substitution for the specified make and model will not be considered unless equal to the specified system in every respect and must be submitted to the specifying agent not less than 10 calendar days prior to bid date. Requests for substitution must include a sample system with all specified features; complete documentation relating to all the specified features; and manufacturer's sales literature, engineering drawings, and installation, operation, and maintenance manuals. Failure to provide these or any other information necessary to confirm that all specified features are provided will be cause for rejection of substitution request

The NEXGEN shall be certified and listed by NSF International under the latest edition of the NSF/ANSI standard 50. The NEXGEN shall be ETL listed by Intertek and certified to UL 1081.

The NEXGEN shall be constructed on a heavy gauge steel skid assembly, primed and pre-painted on both sides. A chlorine generating tank shall be mounted on the skid encompassing a heat exchanger coil, toroidal conductivity probe and pH probe.

Between 1 and 4 electrode stack assemblies [model specific], housed in clear schedule 40 PVC shall be mounted on the skid, plumbed in 2" schedule 80 PVC pipe with a circulation loop to and from the chlorine generating tank.

A magnetic drive circulating pump shall be mounted on the skid to circulate water through the electrode stack assemblies into the chlorine generating tank. The pump shall be factory wired and controlled by the NEXGEN power supply.

A titanium flow sensor shall be factory mounted in the circulation plumbing to not allow the NEXGEN to operate when there is not sufficient flow.

A blower shall be mounted on the skid and plumbed using 2" schedule 80 PVC into the top of the chlorine generating tank. A second vent line shall be run from the top of the chlorine generating tank to atmosphere for the removal of hydrogen.

A titanium air flow sensor shall be factory mounted in the pipe between the blower and the chlorine generating tank to not allow the NEXGEN to operate when there is not sufficient air flow.

A pressure switch shall be mounted on the skid and plumbed into the swimming pool return line to not allow the NEXGEN to operate when there is not sufficient flow in the return line.

Stenner peristaltic pumps shall be mounted on the skid and plumbed into the chlorine generating circulation loop on the skid, to inject acid for pH control and salt addition. The pumps shall be powered from the NEXGEN power supply.

Grade 2 titanium with ruthenium dioxide high efficiency coating shall be used for the electrode stack[s] construction with a minimum 4mm plate spacing for reliable operation in swimming pool water applications.

An actuated ball valve shall be factory mounted on the skid to allow chlorine flow to the pool on demand, through the use of a pressure drop venturi factory mounted on the skid.

# **Controls**

The NEXGEN shall utilize 24 VDC control circuit and components. The control system shall have an electronic display for NEXGEN set-up, status and diagnostics.

The NEXGEN system shall have an LCD touch screen display showing vitals of the system operation. A control signal from an external ORP/PPM controller shall activate a relay allowing for chlorine generation. Supply voltage shall be 208-240 volt/60 hertz/ single phase.

Touch screen interface shall be equipped to display cell voltage, cell amperage, salt concentration, water temperature, pH and feed modes.

Touch screen historical reports shall have access to recorded events log displaying every event/action made by the NEXGEN system in the last 365 days, including run times, alarms, on/off status, user commands, external ORP/PPM/HRR controller run requests, water temperature, pH records and fault reports with corrections.

# Electrical controls

The NEXGEN shall be equipped with a high voltage terminal strip for supply voltage. Supply voltage shall be 208-240 volt/60 hertz/ single phase.

A booster pump (not factory mounted on the skid) shall be installed prior to the incoming water to the NEXGEN system to provide adequate flow. The booster pump shall be field wired to the terminal block located in the NEXGEN power supply.

An external PPM/ORP/HRR controller shall be connected to the "blue power cord" located on the NEXGEN power supply.

Rigid PVC or CPVC pipe from the top of the chlorine generating tank to atmosphere in a continuous upward gradient. The NEXGEN's total combined exhaust venting length shall not exceed 100 equivalent feet.

## **Operation & ratings**

The NEXGEN shall be capable of producing 80 NEX-GEN 80 lb/day Skid Mounted pH Neutral Chlorine Generator lbs of equivalent chlorine in a 24 hour period (as certified by NSF international)

The NEXGEN shall be capable of operating in air temperatures between 35F and 115F and water temperatures between 40F and 104F.

A factory trained and certified service technician (through ChlorKing training) shall perform commissioning of the NEXGEN on-site chlorine generating system.

Printed and bound operating, installation and service manuals shall be supplied with the NEXGEN.

## Warranty

(Include: 3-year Equipment Maintenance agreement covering the cost of equipment, parts, and service)

- A. 3 year limited warranty
- a. 2 year pro-rated warranty on the electrode plates (cells)
- b. 1 year warranty on electrical items
- B. Manufacturer must maintain spare or replacement parts in the USA for next day delivery.

## Co2 rate of flow adjustable feed units

CO2 from the pressure reducing valve shall be brought to the feed unit in thick wall 3/8" OD polyethylene tubing. Feed systems shall include 120 volt AC solenoid operated valve for remote on/off control of CO2 feed. CO2 feed unit shall also include rate adjusting flow meter scaled from 20-200 SCFH and have a pressure rating of 100 psi.

#### Stainless Steel Tank

The tank will be ASME coded with a minimum liquid storage capacity of 450 pounds and an operating pressure of 140 psi, with a peak pressure of 300 psi. A minimum continuous gaseous flow rate of 5.5 pounds per hour, with a peak delivery rate of 25 pounds per hour, will be required of the system. The tank shall be a double-walled, high-vacuum, jacketed pressure vessel. The outer vessel will be stainless steel and will have a protective coating to safeguard the unit against corrosive conditions. The inner vessel will be stainless steel and shall be wrap-insulated. Tank shall be equipped with an internal stainless steel vaporizer for high rate CO2. Internal electrical heating elements will not be allowed. CO2 tanks to be supplied by local CO2 vendor.

## Control and Indicating Devices

A pressure-regulating system shall be provided to insure continuous supply of CO2, even under high demand conditions. A shut-down regulator shall be supplied insuring that the tank maintains a minimum of 100 psi. A gas-use pressure regulator and liquid level gauge shall be provided, along with a tank pressure indicator. A safety relief valve with primary and secondary setting, a ventilation circuit and burst disc shall be supplied as part of this storage system. Controls for feed rate shall be fully automatic and require no external electrical or mechanical control.

# Installation Safeguard

Stainless steel tubing located at the top of the tanks shall provide protection for the regulators, gauges and safety devices. Pressure gauges shall be mounted on the tubing, allowing for ease of observation. The tank shall comply with the requirements of Seismic Zone 4 requirement.

## Fill System

A no-loss single hose fill system shall be provided. The unit shall be of the venture type and shall work by collapsing the tank head pressure during filling to allow the tank to be filled from one-third full to full, without venting carbon dioxide. The tank shall be filled through an exterior, wall mounted

fill station at a rate of 30 to 50 pounds per minute. The filling operation shall be fully automatic and be capable of being completed without entering the area housing the bulk storage system. The fill box shall include a universal quick disconnect, automatic closure coupling and lockable door with key.

## Water polo goals (floating goals, not wall mounted.)

The framework of the goal cage shall be fabricated of stainless steel tubing, 1.90" O.D. X .109" wall thickness, Type 304, polished to a 320 grit. All connectors and fittings are to be stainless steel or chrome-plated bronze. The fascia shall be 3" X 7/8" X ¼" thick fiberglass – Series 500 White. The cage shall be adjustable so that the cross bar of the goal can be set in strict accordance with regulations. The supporting legs shall swivel to permit flat storage of the cage. The goals may be furnished with black, tarred nylon net or solid blue, coated nylon backing securely fastened to the cages. All details and dimensions of the goals shall comply with FINA requirements. 1.100.2

# Variable frequency drives

A Variable Frequency Drive (VFD) shall be provided with each filter pump motor.

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.

All VFDs shall be factory programmed per the unique requirements of the job 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.

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.

#### 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.

Input voltage 200-240, 380-480, 575-600 VAC +/- 10%, 3 phase, 48-63 Hz.

# Voltage tolerance + 10% or – 15% of specified line voltage.

Output Frequency 0 to 300 Hz. Operation above 60 Hz shall require programming changes to prevent inadvertent high-speed operation.

Environmental operating conditions: -10 to 50°C, 0 to1000 meters above sea level, less than 90% humidity, noncondensing.

Enclosure shall be rated NEMA 4 or as specifically mentioned elsewhere.

The VFD shall be wired into the controller for on/off and run confirm functions.

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.

# 3.4.8 POOL FINISH MATERIALS

SGM Diamond Brite (Color to be approved by City of Fort Lauderdale)

Pool shell shall have rough trowel finish to aid in bonding of tile and pool finish. Pool shell shall be leveled, plumbed and evened with pool finish. Provide scratch and finish coats as required. All surfaces shall be finished to accept ceramic tile or plaster.

#### Surface Preparation

New Pools: Pool surface must be free of dirt, oil grease or other foreign materials. Lightly moisten walls and floors prior to application of Diamond Brite.

#### Mixing

Thoroughly mix Diamond Brite to a homogeneous lump-free consistency using 1-1/2-2 gallons of portable water per 80 lb. bag.

## **Application**

The pool must meet USA Swimming competition course certification standards. For a World, American or US Open swimming record to be recognized, the racing course must be certified.

http://www.usaswimming.org/DesktopDefault.aspx?TabId=1756

Diamond Brite should be applied to a uniform thickness of 3/8" to 1/2" over the entire surface. The walls may be scratch coated followed by a finish coat or single coated. Material applied to the floor after the walls have been applied, may be accelerated with Accelerator 100 to assure uniform setting time throughout the pool surface.

#### Pool tile

Must conform to DOH Chapter 643-9 and FBA standards.

All tile shall meet ANSI A137.1.

Tile Lettering and Numerals to be approximately 4 inches high and located on the tile. Letters to be 4 inches high and aligned with tops of numbers. Graphics sandblasting into tile is not acceptable. Provide white 'Chroma Series' by 'Buchtal, USA', Dal-Tile or 'National Pool Group' white tile base for graphic installation.

Provide continuous edging of 2 inch x 2 inch, 'non-slip' white glazed sheet tile at pool

construction joints.

Provide 12 inch wide continuous bands of 2 inch x 2 inch, 'non-slip' black sheet tile at racing lanes on floor and 3' x3' wall targets at each lane, wall markers or step nosing. 6 inch x 6 inch frost-proof 'non-slip' deck graphics ceramic tile by Dal-tile, Degrout Studios, or American Olean equal. Color and size of tile shall match color as per finish schedule. Lettering stating the following graphics: Feet (FT) and inches (IN) and meters (M) designation shall be included. Minimum quantity as shown on drawings. Numerals to be approximately 4 inches high and located on the tile.

Provide latex based thin-set mortar and grout systems shall be used to set tile. Conform to ANSI A118.6. Comply with manufacturers pre-mixed materials to conform to five (5) year limited warranty. Float pool shell at racing lane locations with latex based mortar as required to level and plumb pool shell for thin-setting of pool tile.

Provide tile materials conforming to ANSI A 137.1, Install tile materials with Portland Cement in conformance with ANSI A108.1, ASTM C 150 Type II low alkali, hydrated lime ASTM C 207 Type 5, Motor Sand ASTM C 144 at least all passing the No. 30 sieve. Tile shall be unglazed porcelain ceramic mosaic tile and provide waterproof acrylic membrane under tile finish.

## Construction work

Provide well point (s), gravel sump, and pump (s) for dewatering for construction of the pool shell. Provide permanent well point and run pipe to outside of deck and cap. All cold joints between floor and walls shall contain PVC waterstops. All cold joints in wall panels shall contain PVC waterstops. Pour walls square to floor, plum and true to shape and form as shown on drawings.

Contractor shall provide excavation true to form and size as shown on drawings. Provide forms and bracing as required. Swimming pool shall gradually change depth. Depths as per drawings.

Honeycombing, slump and or non-plumb walls shall be repaired as directed by the Contracting Officer. Repaired concrete areas shall be coated with bonding agent. Wall cracks which appear prior to plastering shall be sealed with an injection type epoxy sealer.

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.

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.

Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placement and curing.

In cold weather comply with ACI 306.1. In hot weather comply with ACI 305R.

Begin initial curing as soon as free water has disappeared from concrete surfaces. Where possible, keep continuously moist for not less than 72 hours. Continue curing by use of moisture-retaining cover. Cure formed surfaces by moist curing until forms are removed. Provide protection as required to prevent damage to exposed concrete surfaces.

Pool shell shall have rough trowel finish to aid in bonding of tile and pool finish. Pool shell shall be leveled, plumbed and evened with pool finish. Coating shall be 3/8 to 1/2 inch thick maximum per layer. Provide scratch and finish coats as required. All surfaces shall be finished to accept

ceramic tile or plaster as specified.

The pool must meet USA Swimming competition course certification standards. For a World, American or US Open swimming record to be recognized, the racing course must be certified.

http://www.usaswimming.org/DesktopDefault.aspx?TabId=1756

Fill pool with water as soon as pool finish is set. Continuously fill pool in provide overnight observation as required.

Provide continuous rows of 2 inch x 2 inch white frostproof tile at all construction joints and daily work stoppages of pool finish. Provide 4 inch x 4 inch black non-slip tile at top of slope transition located per plans.

Construction joints shall be used between stages of operation, and 6-inch PVC waterstop or equal joint material shall be used and located as shown on engineering drawings. 6-inch PVC waterstop shall be heatsealed at all material splices. Preformed corners shall be used. Before commencing new concrete placement, the surface and edges of any previously placed concrete scheduled to receive new concrete, shall be thoroughly wire-brushed and cleaned. All horizontal or vertical steel shall pass through the construction joint, so that the full strength of the reinforcing will be developed. Reinforcing shall not penetrate waterstops.

Wall ties will be snap ties with form cones to allow ties to be strapped off 1 1/2" from finish wall face. When ties are snapped, the exposed end of tie is to be coated with Epoxy. The cone recesses are to be filled with non shrink 5000 psi patching grout. This is to be done by pool concrete contractor.

6" Waterstops to be installed as per engineers drawing and as per manufacturers recommendations. All waterstops to be wired in place. Wires to be located through 'bells' of material only or as directed by manufacturer. All spices of waterstop to have butt joints heat sealed with hot shoe iron or other methods as determined by the manufacturer. Provide PVC serrated type or split type waterstops in non-movement construction joints. Provide dumbbell with center bulb type or serrated with center bulb type waterstop at movement construction joints.

Provide two-part polysulfide gun grade polysulfide joint sealant. Joint filler shall be based on Thiokol LP polysulfide polymer.

Contractor shall provide construction dewater piping stub out at construction discharge location. Permanent dewater piping to be shown on civil drawings.

Plywood or other approved material shall be used for forming where required.

Finished pool dimensions shall not exceed a tolerance (per FINA standards) in area defined as racing lanes to a depth of 4'-0". Size of the pool is indicated per drawings and FINA standards.

# Pool finish

(Must meet USA Swimming competition course certification standards. For a World, American or US Open swimming record to be recognized, the racing course must be certified. http://www.usaswimming.org/DesktopDefault.aspx?TabId=1756) Shall meet or exceed standards as set by National Pool Plaster Council. Major depressions in walls, floors and around fittings shall be parged and leveled prior to plastering. Depressions shall not vary from 1/4-inch variation in a 3 ft. Length. Pool finish shall be of consistent color and devoid of mottling. Pool finish shall contain no sharp areas and floor and walls areas shall be smooth to touch and shall not contain any noticeable bumps or depressions. Step risers and treads shall be level, plumb and step risers shall be vertical. Steps nosing shall be true to line and shall not wiggle in plan or elevation. Depressions in steps shall not vary from 1/4-inch variation in a 3ft.length.

# 3.4.9 COMPONENTS

## Stainless steel pool gutters

Stainless steel pool skim gutter shall be manufactured and installed by the same company. Gutter manufacturer shall provide design build package to include gutter, surge tank and installation. The manufacturer shall guarantee the system for a period of 1 year for materials and workmanship if the system is operated in accordance with written instructions.

All components of the system including anchor plates, gutter channel, supply tube, converters, grating and line anchors; shall be installed by personnel approved by the manufacturer. Welding shall be performed by a welder with at least five (5) years' experience in the welding of stainless steel. The stainless steel stud anchor will be installed in the poured in place pool wall with anchoring epoxy. The anchors shall be spaced no less than 48" on center and at the elevation shown on the drawings.

The fabricated gutter components shall be delivered to the jobsite, unloaded, and stored in the shallow end of the pool. All other installation work and required installation materials, including scaffold brackets and scaffolding, shall be provided by and performed by the gutter manufacturer's installation crew. All scaffolding shall conform to OSHA requirements where applicable. The gutter system shall be installed level within a tolerance of 1/16" +/-. Welds

All welding shall be performed by qualified welders. All seam shall be welded by the TIG process and shall result in a uniform appearance. Welds shall not be ground. All welds shall be brushed after cooling to approximately 300 degrees F (149 degrees C). Filler metal shall be added as required to present a flush appearance to finished seams. All horizontal welds shall be fully accessible for inspection

After the gutter system has been fully welded, anchored and secured, the supply tube shall be air pressure tested at 8 psi and witnessed by owners.

After the gutter system has been installed, the pool construction contractor shall place a nonmetallic, non-shrink grout underneath and behind the gutter to completely encase the channel. The grout material shall include a proprietary polymeric strengthening/water resistance compound. Mixing proportions shall be in accordance with grout manufacturer's guidelines.

The stainless steel gutter components shall be cleaned as required to present a uniform appearance. The strength of the welds shall not be reduced by grinding.

The manufacturer shall supply the services of a component and experienced field engineer to inspect and test the completed system.

# Valve and pipe installation

# Valves

Valves shall be installed as nearly as possible in the position shown. Valves shall be erected and supported in their respective position free from distortion and strain on appurtenances during handling and installation. Material shall be inspected for defects in workmanship and material. Debris and foreign material shall be cleaned out of valve openings and seats; operating mechanisms shall be operated to check their proper functioning, and nuts and bolts checked for tightness. Valves and other equipment which do not operate easily or are otherwise defective shall be repaired or replaced.

# Piping

Piping shall be installed to accurate lines and grades. Where temporary supports are used they shall be sufficiently rigid to prevent shifting or distortion of the pipe. Provision shall be made for expansion where necessary. Piping shall pitch toward low points and provision shall be made for draining these low points. A sufficient number of unions or flanges shall be used to allow for the dismantling of all water pipe, valves, and equipment's. Installation of piping including cleaning, cutting, threading and jointing, shall be in accordance with this section.

Pool design must provide a visible air gap above grade between backwash piping/draining piping and discharge manhole.

# Pipe Sleeves

Coordinate exact location of wall/floor sleeves prior to placement of concrete. After placement of pipe through sleeved opening, wrap the belt seal around the pipe. Slide the seal assembly into the space between the pipe and cast-in-place sleeve. After the seal is properly positioned, gradually and sequentially tighten the bolts, tightening each bolt two to three turns making five to nine passes completely around the pipe(do not cross tighten). Tightening of the bolts shall cause the sealing elements to expand and provide a water tight seal between the pipe and sleeve.

# <u>Tank</u>

The filter tank shall be installed in accordance with the recommendations of the manufacturer and by workers experienced in the installation of this type of equipment. Components with corrosion protective coating shall be checked and any damaged or abraded areas shall be restored to the original or an equivalent coating, by the manufacturer.

Equipment shall be properly aligned. The units shall be aligned and set in place. The anchor bolts shall be set in place and the nuts tightened against the shims. After the foundation alignments have been approved, the stationary assembly shall be securely bolted in place. The alignment of equipment shall be further checked after securing to the foundations. Bracing and shipping supports shall be removed from the tanks. Piping shall be connected as indicated. Valves shall be closed.

## Identification systems

Identification tags made of brass, engraved laminated plastic, or engraved anodized aluminum, indicated operation and valve number shall be installed on all valves. Tags shall be 1-3/4 inch

minimum diameter, marking shall be stamped or engraved. Indentation shall be black, for reading clarity. Tags shall be attached to valves with plastic straps designed for that purpose.

# Swimming pool electrical systems installation

All electrical devices shall be installed as per U.L., NFPA 70, NCBCC Building Code, and manufacturers' recommendations. Comply with NFPA 70. Provide all accessories and electrical devices required to supply a workable, functional and craftsman like electrical system associated with underwater lights, swimming pool filtration system and pump. All electrical devices and accessories shall be logically located to insure future maintenance access. Conform to the following additional requirements:

Any metal fittings in excess of 5 inches in any direction, installed inside the pool shall be grounded and bonded to rebar at pool shell. Comply with NFPA 70.

Reinforcing and steel rebar in pool deck to be bonded and grounded by electrical contractor as per NFPA 70.

## Installation of Power to Equipment

Electrical contractor to run conduit for filter pumps to master shut-off switch(s) in proximity of pump and filter. Switch to kill power to filter pumps and automatic on demand chlorinator at same time. All devices shall be U.L. approved. Conform to the following additional requirements:

All wire runs and circuits shall be hard wired and run in PVC conduit. Conduit to be installed and located below ground as per code. Tie into panel in pool equipment room as supplied by General Contractor. Electrical connections by General Contractor.

All electrical connections and panel boxes shall be waterproof and non-corrosive.

Filter motors shall be located on raised concrete or PVC or rubber motor pad approximately 4 inches above concrete floor.

All electrical devices shall be anchored to floors and or walls with appropriate size non-corrosive fasteners.

Wire sizing shall be as per approved D-B Contractor generated electrical drawings and specifications.

Pump motor control shall be an across-the-line magnetic type starter providing overload and under voltage protection and shall be provided with a start-stop push button station as required or other method as approved.

Filter motor provided by Pool Contractor. Run conduit from filter motors to panel at Pool Equipment Room. Make electrical connections, panels, breakers, motor starters, junction boxes, wires, conduit and other associated electrical equipment required to connect the filter motor to electrical service.

## Accessory installation

Coordinate the installation of all mounting sockets, flanges, etc., for equipment placement during the forming, pouring, and tiling of the pool. Install mounting sockets for the starting platforms in

accordance with the manufacturer's instructions.

# Posting framed instructions

Framed instructions containing wiring and control diagrams under glass or in laminated plastic shall be posted where directed. Condensed operating instruction, prepared in typed form, shall be framed as specified above and posted beside the diagrams. The framed instructions shall be posted before acceptance of the system.

# 3.4.10 POOL EQUIPMENT

# Starting Platform – (Starting platforms shall be Colorado Timing Systems brand or approved equal.)

Starting Platform shall be quickly and easily removable without unfastening anchor bolts. Platform shall be 24" wide x 32" long. Frame shall be fabricated from square tubing with columns made of 1.90" OD x .120" wall, stainless steel tubing with buff finish. Flush with front edge of platform, there shall be a backstroke bar. Backstroke bar shall be fabricated from satin finish, 1" diameter stainless steel tube. There shall be two (2) vertical backstroke grips made of stainless steel, positioned 15" on center. Lane number displayed with standard black numeral will be visible from all four sides of platform.

Top of starting platform shall be solid stainless steel and shall have a slip resistant surface. It shall be equipped with side rails made from 1" O.D. stainless steel tube welded to stainless steel plate. These rails shall be used to guide Fast Track Wedge back and forth through its range of adjustments. Wedge will be locked into place by locking pins being inserted into 5/16" holes drilled 1" on center in the sides of 1/8" gauge stainless plate. Mounted to the 1" rails will be a removable "wedge", made of 12 gauge, stainless steel with a 45 degree incline on surface facing forward into pool. This front surface shall have a non-slip surface. This wedge will use spring loaded plunger pins to lock securely into place. Single mechanism will be used to retract both pins simultaneously with one hand for ease of adjustment. Pins will snap into place under their own force as soon as they reach desired adjustment location and knob is released. Wedge shall slide uninhibited along guide rails on sides of platform.

Anchors, with caps shall be supplied with each starting platform. Anchor shall be fabricated of stainless steel and insert cover shall be stainless steel. Anchors shall be provided as a unit on 19" centers held rigidly together.

## Springboards and platforms

Provide flooring ("Rough-Tex" or Dive Tex Diving Platform Surface - non-slip surface for platform surfaces. Color: light gray)

All components shall comply with FINA requirements. Provide diving board aluminum extrusion type springboard. Duraflex 16' Modified Maxiflex Model "B" Aluminum Diving Board (aka "Cheeseboard") - no exceptions

It shall be constructed of a basic ribbed one-piece extrusion, heat-treated for a minimum yield strength of 50,000 psi of aluminum alloy #6070-T6. It shall have a torsion box extrusion, anchor end cap extrusion, and tip end cap extrusion riveted to the basic section. After machine tapering and assembly, the board shall be etched, followed by chromic conversion coating. It is then completely coated in aqua colored thermal curing epoxy resin. The top surface is to be finished with three coats

combined with a mixture of sand and white aluminum oxide to effect the non-skid surface. The anchor bolts are to be 5/8-inch diameter. The underside of the extrusion in the fulcrum area will be protected with a specially formed rubber channel attached to the diving board with epoxy adhesive.

Provide non slippery surface to apply on dive platforms. ("Rough-Tex" or Dive-Tex Diving Platform Surface - non-slip surface for platform surfaces. Color: Light Gray)

Provide short stands for 1 and 3 meters springboards on concrete platform (south side of diving pool), without railing.

Provide individual stand with ladder for 1 and 3 meter removable springboards (north side of diving pool), with stainless steel railing for 3 meter springboards.

# Scoreboard

Provide Scoreboard outdoor, located as shown in plans, full color, video display (Colorado Timing Systems, no exceptions. Including shipping, installation and personnel training. Scoreboard shall include sponsor panels- one for facility name and additional for title sponsor(s).)

Provide full matrix full color LED scoreboard with a computer controller (Computer PC – Microsoft) with display link software, standard unistrut, and galvanized steel channel mounting hardware and data cables.

Display shall be a full color LED matrix display. Display shall be comprised of red, blue and green LED's to form pixels. Display shall be capable of 281 trillion shades of color.

Display should be capable of 16-bit video processing, four levels of dimming capability and allow for Gamma correction. Display brightness shall be adjustable up to 7500 nits.

The display shall have built in graphics and animation capability with Windows based software. Graphics and animation shall have the capacity of being displayed on the entire matrix. All MS Windows fonts shall be compatible with the display. Display will allow for front service access Each pixel shall be comprised of 3 LED's, 1R1PG1B SMD. Display shall have 16mm pixel spacing center to center. Must be compatible with Colorado Timing Systems competitive timing system. Displays swimming, diving, water polo, pace clock, and synchronized swimming functions, competitors' names, full matrix graphics and animation, live video, and has advertising capabilities.

# POOL TIMING SYSTEM (COLORADO TIMING SYSTEMS)

# SYSTEM DESCRIPTION

A. Provide electronic timing and scoreboard system with multi-sport capability used for practice pacing and instruction, competitive swimming events, diving, water polo and synchronized swimming.

B. Provide starting system integrated with electronic timing, relay judging platforms and scoreboard system.

C. Provide all in-deck plates shall be furnished and installed by other.

Deck plates (in-deck titanium deck plate) patent (us) 8602815

Deck plates (Main Competition Pool: 20 total (10 east end; 10 on west end) Training Pool: 20 total (10 south end - 50-meters; 10 southeast side -25-yards) to permit plug-in connection for touch pads, A, B, C, backup buttons, electronic relay judging, start light signal, start speakers and a signal to start the timing device at each lane.

Each deck plate to be mounted horizontally or flush with deck tile with smooth edges to prevent injury to swimmers.

Deck plate shall be made of material resistant to long term pool water exposure and shall be maintenance free other than power washing. The thickness of the conducting corrosion resistant material shall be at least .018".

Deck plate shall have topography that protects connectors of touch pads, backup buttons, electronic relay judging, start light signal, start signal and start speakers by directing splash water to flow off to limit electrolysis,.

Deck plate shall have recessed lettering that does not fade or get mechanically removed.

Deck plate shall have titanium female connector receptacles inside the deckplate to prolong the life of the timing equipment in a corrosive pool environment.

Deck Plate cabling to be soldered in place and then potted with epoxy cement to prevent the possibility of wire joint corrosion.

Deck plate shall fit into 4" x 4" x 6" Carlon junction boxes in place in deck, and they should have water drainage capability in each box. Junction boxes shall be interconnected with 2" (inch) PVC conduit terminating in 12" x 12" x 6" wall boxes with adjacent power. Wall boxes and junction boxes are shown on the electrical drawings.

Recommended junction box - Carlon - Model #E989NNR-CAR or equivalent.

There is no substitute for this timing component connection system.

Titanium Deck plate shall be a standard production part and not a one-time custom.

D. Wall plates

Wall plates (6) shall be the termination point for connections between deck cables, timers, start system and other wall plates.

Wall plate shall permit 50-wire connections to be made through one connector. Military connectors shall be used for start system integration to prevent accidental disconnection.

Wall plate shall permit connection of start system; timing system and scoreboard(s).

Wall plate shall mount to 12"x 12" x 6" junction box, flush with finished wall, a minimum of 18" above finished floor.

All necessary connections and wiring are to be provided for connections of deck plates to wall plates from (2) bulkheads, (2) Bulkhead Converter Stubs (BHS), (2) Sets of cabling 50' from bulkhead to wall plates (BHWP-50), (2) sets of 25' interface cable from wall plate to timing console (CHI-25-CPUA), (2) sets of 25' cable from Champ Start to wall plate (CMP-WP25).

# Championship start system

(Colorado Timing Systems, no exceptions - Champion Series Start System is brand name of system for Colorado Timing Systems.)

A single cable from wall plate to start system shall carry signal for driving up to 20 individual block speakers, 20 individual Colorado Time Systems Relay Judging Platforms with Speedlights and external strobe(s).

Connecting cable (CMP-WP) shall use circular 10-pin military connector.

System shall have the capability to use either wired or wireless microphones and shall have a volume control on each microphone input.

Start system shall have a sturdy all metal, non-corrosive enclosure, legs and tripod mount (2) (TR-

System shall have external connections for additional strobe light(s), speaker output, start output and Speedlights.

The System shall run from external 12-volt/AC power adaptor and have (2) internal Gel cell batteries. The internal batteries will automatically be recharged while the starter is plugged in to the external power supply.

There will be an LED warning light on the system showing when the internal batteries are starting to get low on power.

Provide (18) SP-6/45 (6 watt, 45ohm) reflex corrosion-resistant speakers with cable.

Provide (2) LS40-10 Ten lane speaker harness with speaker inputs for use with SP-6/45's.

# Auxiliary speakers

Provide quantity (2) SP-200, 40 watt external speaker with 200' of cable and flag pole mounting kit.

Auxiliary speakers shall be 40-watt 80hm. Auxiliary speakers' output level shall be fully adjustable.

## Underwater recall system

Provide (2) underwater speakers (SP-UND).

Plugs directly into speaker output on Colorado Timing Systems - Championship Start Systems. Recommended for use at all facilities for entertainment, underwater instruction and accommodation for disabled athletes.

180dB, sonic output, meets UL and EU specs for low voltage underwater applications.

PVC constructed housing with protective cage. Rugged military-grade PVC and EPDM construction will not leak, rust or corrode in swimming pool environments.

## TIMING SYSTEM

Timing system (Colorado Timing Systems - Champion Start System: System 6 Timer)

Quantity (2) Timers shall be supplied with all necessary software to time and score swimming, diving and water polo in compliance with the appropriate sanctioning body(ies) - FINA, NCAA, YMCA, and National Federation of High Schools, as well as USA Swimming, USA Diving, USA Water Polo.

Shall include quantity (4) TP-SYS-10, 10 lane touchpad systems including in each ten lane prime/A harness, (11) push buttons, touchpad meter, vacuum pump.

Shall include quantity (2) CHE-41-50M, 50 Meter Y extension cables.

Timers shall include (2) WA-2 wireless transceivers for 2 4 ghz and (4) WA-1 wireless transceivers for 900mhz wireless signals. This allows wireless communication between timing consoles, pace clocks, shot clocks and numeric LED scoreboards.

Timer console shall time to a user-selectable accuracy from 1 second to .001 second. It shall take starts and finishes from the near end and/or far end of the pool. It must accept inputs from the start system; touch pads, up to three manual button backup times per lane, relay judging platforms, and remote judging terminals for diving. The timer will run off of a 12 Volt power supply connected to a standard 110 VAC outlet and will automatically switch to (and display on screen) internal battery power source, in case of line power failure without affecting the continuity and accuracy of the timing system.

Systems requiring use of multiple consoles or additional computers to achieve these functions are unacceptable.

Timer console shall interface to single-line and multi-line scoreboard and shall post immediate results to scoreboard in "Lane" or "Place" order (user selectable). The console shall also have the capability to pull race results from memory and post those results to the scoreboard in "Lane" or "Place" order (user selectable).

Timer to include internal clock calendar with self-sustaining battery to time/date stamp all results. The timer should be able to connect to a PC-style keyboard and mouse.

Timer must meet acceptable safety standards. Must be UL approved, other not acceptable.

Timer shall utilize a 6.25" by 8.25" backlit full-color LCD screen with tiling format to display complete race status. The LCD screen shall be capable of functioning as miniature scoreboard displaying information simultaneously for all active lanes (up to twelve lanes) including lane number, current length in race or final place, split or finish time, relay judging status indicator, and backup time and backup button status.

Stored split times including turning end (far end) splits shall be sent to the printer as they occur and also be stored in electronic memory during a race for later recall to facilitate meet management. Split times format to be user selectable to provide individual lap splits, cumulative splits, or both.

Backup timing provides backup time via push button provided on a per lane basis should swimmer fail to trigger touch pad or touch pad fails to register. Timer to be capable of accepting up to three backup button times per lane.

Meet memory stores all race results for an excess of 500 races including all split and backup times, finish times, as well as relay exchange results. Race storage retrieval should be capable of being invoked at any time. Storing race results using computers (or interface boxes), which are not safety agency approved for use specifically in an indoor swimming pool environment, are not acceptable.

Relay judging automatically compares the touch pad hit of an incoming swimmer with the starting swimmer's time of departure from the optional relay-judging platform. Results display both "plus" and "minus" takeoff times and can be printed and stored in race memory.

The timer shall communicate with meet management peripheral software on a two-way "handshake" basis, enabling the meet manager's resident computer to query the timer's memory via the RS-232 port at any time for any race results.

The system's Automatic Event Sequencer shall be capable of holding up to 10 event sequences for both standard and user defined. The event order will be able to be downloaded from meet management software. The desired order will be user selectable. EVENT SEQUENCES with appropriate race distance and race description for high school, college meets, and two "User Defined" meets (up to 1000 races) to permit construction of custom meets, USA Swimming, YMCA and FINA. When recalled from memory, race distance and descriptions are automatically selected for the operator.

Timer shall automatically flag timing discrepancies (on the LCD screen, on the results printouts and in stored memory) greater than .30 seconds between touch pad and backup times.

Timer shall have touch pad delay feature with ability to program delays from 1 to 99 seconds.

Printouts shall be on a parallel printer connected to the rear panel of the timer. Printout of race results shall be switch selectable in "Lane" or "Place" or order or both. A single keystroke shall print touch pad and backup button times. Printout shall include race number, event/heat number, event description to facilitate meets, and time & date stamp for each race. The system will allow the user to select any of 8 different data to be printed. Printout of relay judging platforms to include both "plus" and "minus" takeoff times for each leg of the relay.

Keyboard inserts shall permit multi-sport usage.

Keyboard shall permit single key entry of essential functions including Lane Off/On, Finish Arm, Split Arm, & Print Results to ensure speed and simplicity of operation during critical race times. Timers requiring multiple keystrokes for essential functions are unacceptable. The keyboard shall permit the operator to insert a backup time when required (edit) or to disqualify a lane (DQ), automatically posting it to the scoreboard, and provide automatic re-ranking of results. Any corrections generated by the operator (edit or disqualification) shall be clearly identified on the results printouts.

The Keyboard shall permit the operator to correct for an erroneous touch by adding/subtracting a touch pad hit to correct the lengths completed. The keyboard shall not permit the operator to finish a race in any lane; timers including such a function are <u>unacceptable</u> because they permit the possibility of cheating.

Timer Input/Output Ports must include:

1.Parallel port for printer interface.

2.2 Serial ports (RS-232) one for meet management software interface and a second for special needs.

3.Scoreboard(s) output port.

4.Start/Stop end (near end) cable harness input ports for Touch pad; Button A, Button B, and Button C inputs; start signal input; and relay judging platform(s) (12 lanes).

5. Turning end (far end) cable harness input ports for Touch pad; Button A, Button B, and Button C inputs; start signal input; and relay judging platforms inputs (12 lanes).

6.External PC monitor port (VGA).

7.Peripherals expansion ports.

8. Computer communications port for future features.

9.External DC power port.

10.PC-style keyboard and mouse

The timer shall be Web enabled to allow software update via the Internet. Timer software shall have the ability to adjust the intensity of LED scoreboard brightness.

# Wireless diving scoring (Colorado Timing Systems - System 6 Console)

A. Diving Scoring System shall utilize scoreboard to display diving scores and results without modification from swimming configuration.

B. Provide (20) Judging terminals and (2) I/O boxes for use with Colorado Timing Systems - System 6 Timing Console.

C. Diving console shall:

a. Accept 1,2,3,5,7,9 or 11 judges' input scores and compute award based upon proper formulas for the number of judges used. Console keyboard shall be operable with either remote judges' terminals or manual input of flash card scores.

b. Permit display of the lead diver number, current diver number, dive number, degree of difficulty, judges' scores and diver's calculated award and total score.

c. Permit entry of all diving data into non-volatile memory for storage or receive data from meet management computer without additional modifications. Data shall include diver number, round number, dive number, and position. Degree of difficulty shall be automatically calculated based upon dive number per current FINA/USD/NCAA/High School regulations. Dive degree of difficulty can also be manually input.

d. Automatically recall the diver with round number, dive number and DD using minimal keystrokes. Systems which require live entry of dive information are unacceptable.

e. Permit storage of diver's point totals and provide ranking of the divers at the end of each round.

f. Permit editing of judges' scores if required by meet officials.

g. Provide an output for computer data handling of diving events.

h. Permit two point deduction from the judges' scores and zero points for a failed dive. Such changes shall be clearly shown on the printout.

i. Printout shall provide preliminary data, diver ranking by rounds, and results of individual dives with judges' scores.

j. Judges' terminals shall be housed in sealed, water-resistant, shockproof housing. The terminals shall provide a signal to inform the judge that the diving console has requested a score. Signal shall cease when an appropriate score is transmitted. They shall also allow each judge to input a score with a minimum of keystrokes, review that score via a built-in LCD display, and correct a score if needed before transmitting to the System 6.

B. Wireless remote judging terminal and interface shall be as follows:

a. System will include one base station

1. Can connect to System6 via USB interface

2. Can connect to System5 or System6 via 5-pin DIN connection.

b. WJTs will operate from AA type batteries

1. Minimum 2 for 6 - 8 hours of operation

Optionally 4 for 12 - 16 hours of operation

c. WJT screen will provide 4 lines of 17 characters of information, including Diver Number, Dive Number, Dive Degree of difficulty, Round number and Judge number

d. Judges shall be able to set backlight and contrast levels of the LCD to their individual preferences, and those settings automatically saved when the WJT is turned off. Previous settings are restored when the WJT is turned back on.

e. WJT will have a sealed keypad and be waterproof

f. Wireless system shall operate in the 2.4GHz spectrum, and communications will be encrypted to prevent tampering with the judging

- g. System shall support up to 100 WJTs connected at the same time
- h. System will support a referee console
  - Ability to declare Balk, Fail, Max score
- 2.

1.

2.

Optional, any WJT can become a Referee Console

i. System6 shall have the ability to release WJTs from the system, view battery level and connection status. Individual WJTs also display battery level and connection status.

j. Each WJT will have the ability to request a change of score after the score has been sent. This request is shown on the Colorado Timing Systems - System 6 Timing Console and can be authorized or ignored.

k. System currently supports .5 point scoring

I. All devices are in-field firmware upgradeable for future enhancements

# Water polo scoring

Provide water polo program with Colorado Timing Systems - System 6 Timing Console Timer. Water polo basic system shall include: water polo software, 2 shot clocks, scoreboard horn, water polo interface, and pushbutton. Software must adhere to US Water Polo rules and regulations (per USWP Technical advisor). Exceptions will not be accepted.

Accessory software program shall turn multi-sport computer and multi-sport scoreboard and shot clocks into complete water polo scoring system.

Keyboard shall allow operator to control:

- a. Shot clock (reset on off edit time)
- b. Game time (start/stop & edit)
- c. Timeout clock (start/clear) per team
- d. Penalty times (start, edit, clear times) per team
- e. Team scores (+1, -1)
- f. Manually sound the horn
- g. Adjust periods
- h. Control shot time in deck mounted shot clocks and multi-sport scoreboard.
  - Water polo interface system allows a separate controller to operate shot clock time.

Features shall include: period times, timeout times, eject times for up to three players per team, game times, and shot clock time.

Single keystroke shall clear all eject times, no exceptions.

Selectable options shall include display of game time in seconds, tenths, and/or hundredths, keeps player fouls "on the fly" and records in memory.

Water polo scoreboard display functions shall include: game time, shot time, penalty times team scores, period number, player fouls and time of day.

Miscellaneous features shall include: 12 or 24 hour time of day display, tenths of hundredths of a second remaining display, total game time display, individual player foul totals display.

Timing system shall be capable of operating two shot clocks in addition to water polo scoring. System 6 Multi-Sport computer shall control shot time on deck-mounted shot clocks and multi-line scoreboard displays.

Built-in rechargeable battery shall operate shot clocks for up to 8 hours.

Utilize 2-conductor cable, include all necessary data cable and deck stands.

Timer shall have 3 selectable modes when less than game time remains (show full shot clock time; automatically blank shot time; automatically set to game time).

# Wireless shot clock/pace clocks (pcw-pro) for use with system 6 water polo program & system 6 pace clock program

Provide (4) portable shot clocks with (4) 10" (Red) LED digits.

Unit with digits less than 10" will not be accepted due to inadequate viewing distance.

Wireless portable shot clock/pace clock shall have the capability of running pace clock functions standalone or connected to each other.

Portable shot clock/pace clock shall have the capability of being programmed by a hand held console for pacing functions. Additionally, it shall be capable of being programmed with the timing console.

Wireless portable shot clock/pace clock shall have an external switch to change from a water polo function to a pacing function.

Wireless portable shot clock/pace clock shall have the capability of using the timing console to run the water polo functions.

Wireless Shot Clock/Pace clock shall have a battery life of 6 hours/internal rechargeable battery.

Wireless Portable shot clock/pace clock shall have the capability of being located anywhere on the deck.

Wireless PCW-PRO shall have a minimum of 8 channels of wireless communication in the 900MHz spectrum, with a minimum indoor line of sight communication range of 500ft.

Wireless Pace Clock/Shot Clock must be able to receive shot clock data from a wireless-enabled System 6 timing system.

Wireless Pace Clock/Shot Clock shall have the capability to adjust the LED intensity using a System 6 Console or via the control panel.

Wireless Pace Clocks shall have the capability to be set up as either Master or Slave.

Wireless Pace Clock set as Master must re-transmit Pace Clock data to Slave Pace Clocks set to receive data on the same frequency.

Pace Clock Pro electronic training device shall be provided, enabling swimmers to perfect their starts, relay exchanges, and turn speeds.

Portable pace clock shall have the capability of being programmed by a hand held console for pacing functions. Additionally, it shall be capable of being programmed with the timing console.

Pace clock shall operate on AC power or two internal rechargeable 12 volt Gel cell batteries. The internal battery will automatically be recharged while the clock is plugged in to the external power supply.

Pace clock shall have a battery life of 6 hours/internal rechargeable battery.

Portable pace clock shall have the capability of being located anywhere on the deck, mounted on a wall, or recessed within the wall.

Pace Clock/Shot Clock shall have 5 ports to operate in conjunction with the following CTS equipment: push button(s), relay judging platform, start system, and two touchpads.

Pace Clock/Shot Clock shall be capable of the following 15 training modes: (Additional equipment may be required for some functions.)

- Lap Counter
- Simple pace clock

- Pace Clock with Cumulative Splits
- Pace Clocks with Lap Splits
- Relay Exchanges
- Start Reaction
- Turn Speed
- Breakout Time
- Start Reaction & Breakout Time
- Five Single Lane Timing modes
- Mid-race Timing

# WATER POLO SHOT CLOCKS (DC-1501)

- A. Provide (2) sets of Deck Clocks (DC-1501)
- B. Multi-colored LED digits, 10" for shot time and 5" for game time
- C. Water & Sun resistant, corrosion free
- D. Polyethylene enclosure
- E. Wireless Frequency 2.4 GHz
- F. Can be utilized as game/shot clock for water polo or set to pace in time of day,
- G. Time of day or game time displays on top line with 5" digits, bottom line to display second
  - for pacing or shot time,
- H. Bright LED Digits,
- I. Integrated weatherproof horn for game or shot tones
- J. Ability to operate wirelessly with optional controller
- K. WHC-1- wireless hand held controller QTY (2) Required
- L. To be used in with Deck Clocks for Water Polo Practice
- M. WTTC-1 wireless tabletop controller QTY (2) Required

# SLIM 6 DIGIT PACE CLOCKS (SP-1600)

- A. Provide (4) 6 DIGIT PACE CLOCK
- B. 13" RED Bright LED Digits Viewable up to 650' away
- C. High Intensity LED outdoor
- D. Measures 19.25" h x 63" w x 2.8" d
- E. Displays Hour/Minutes/Seconds
- F. Weight: 20 lbs
- G. Wireless Frequency 2.4 GHz
- H. Power: 120/240 VAC, autosensing
- I. Rugged powder coated to protect against corrosion
- J.Suitable for outdoor use
- K. 12 operating channels to eliminate interference
- L. Time of day clock
- M. The slim pace clocks have an integrated real time of day chip (RTC). If multiple pace clocks are used in a facility, they will synchronize the time automatically.

# COLORADO TIMING SYSTEMS - SYSTEM 6 PACE CLOCK PROGRAM

- A. Accessory software program shall turn multi-sport computer and multi-sport scoreboard into an effective training system and coaching tool.
- B. Interfaces to HYTEK's "Workout Manager" software with direct download to computer timer.
- C. Programmable workouts are saved into memory for up to 80 workouts.
- D. Workouts display on multi-line scoreboard by lane.
- E. START/STOP all lanes with one keystroke or individually.
- F. Include programmable "fudge factor" for coaches' election.

# COLORADO AQUAGRIP TOUCHPAD TOUCH PADS (TP-240G)

- A. Touchpad shall be gutter hung style 198.12 cm wide x 55.88 cm tall and 0.76cm thick. Provide 40 touchpads.
- B. Touchpads shall be integrated to the timing system using on-deck cabling an in deck deck plates.
- C. Touchpads shall be integrated to the timing system using in-deck wiring to a wall plate connection.
- D. Touchpad shall be constructed of an all-plastic exterior with only the electrical connector metal exposed. Stainless steel will not be acceptable in pool environment.
- E. Touchpad shall have a uniform fine grit, non-abrasive surface that prevents swimmer slippage in any direction.
- F. Touchpad markings shall have contrasting colors with a 2" black border and black end-wall cross pattern for portion covered by touchpads.
- G. Touchpad brackets:

(44) 4000-0040 gutter hung touchpad brackets.

Touchpad brackets shall be custom made to fit the pool gutter system. Diagram required upon order.

H. Touchpad caddy for storing touch pads supplied shall be (4) CAD-TP/P Gutter hung touchpad caddy. Maximum of 10 touchpads per caddy.

COLORADO TIMING SYSTEM DELAY JUDGING PLATFORM with SpeedLights (RJPLD-24X32)

- A. Provide (24) Relay Judging Platforms with LED SpeedLights.
- B. Platform shall electronically indicate when a swimmer has left the starting block in relation to the incoming swimmer's touch of the timing pad. Accuracy shall be 1/100<sup>th</sup> of a second.
- C. Relay Judging Platforms with speedlights shall have been tested and approved for NCAA Division I championship competitions.
- D. Platform shall have a non-skid surface to prevent swimmer slippage.
- E. Top and front surface shall be sensitive to the swimmer's push off.
- F. Each platform shall be strapped or mounted to existing or customer provided starting blocks.
- G. Platforms will come equipped with SpeedLights, LED lights that flash with the start signal for competitive swimming competitions. SpeedLights are also recommended for competitors with applicable disabilities.
- H. Relay Judging Platform must be supplied/manufactured by single source. Third party equipment will not be accepted.
- I. Quanitity (2) Relay Judging Platform Storage Caddy will be provided 10 units per rack.
- J. Provide quantity (2) Speed Light connection cables for ten lanes.

# FULL COLOR ALPHANUMERIC VIDEO/SCOREBOARD SYSTEM

16mm PIXEL PITCH 224 PIXELS TALL BY 448 PIXELS WIDE - (OUTDOOR)

Will display 28 lines of information by 74 characters wide w/ 4.4" characters viewable from 220',

Will display 22 lines of information by 56 characters wide w/ 5.7" characters viewable from 285',

Will display 18 lines of information by 44 characters wide w/ 6.9" characters viewable from 345',

Will display 16 lines of information by 37 characters wide w/ 8.2" characters viewable from 410', Approximate dimensions 12.4' h x 24.2' w

- A. Display shall include: Full matrix LED scoreboard with computer controller (Windows xp, vista or 7), flat-wall mounting hardware and data/fiber cable up to 500'.
- B. Total number of pixels 100,352
- C. Display shall be live video capable
- D. Display shall be a full color LED matrix display. Display shall be comprised of red, blue and green LEDs to form pixels. Display shall be capable of 281 trillion shades of color.
- E. Display should be capable of 16-bit video processing, refresh rate of 300Hz, 100 levels of dimming capability and allow for Gamma correction. Display intensity shall be adjustable up to 8500 nits for outdoor applications.
- F. Display shall have viewing angles of 140° horizontal and 140° vertical.
- G. Display will allow for one of the following access points for service: (Front)
- H. Display shall include critical spare parts.
- I. Exact cabinet dimension, detailed drawings and weight will be provided with submittals.
- J. Operating temperature shall be 0°C 40°C (32°F 104°F) for outdoor boards.
- K. Humidity tolerance shall be 0%-95%.
- L. Weather protection IP65 front, IP54 rear

- M. Each pixel shall be comprised of 3 LEDs.
- N. Overall display dimensions w: 24.2' h: 12.42' d: 6.5"
- O. Display shall have 16 mm pixel spacing center to center.
- P. Must be compatible with Colorado Timing System competitive timing system.

# COLORADO TIMING SYSTEMS - SOFTWARE TO CONTROL FULL COLOR ALPHANUMERIC VIDEO/SCOREBOARD SYSTEM

- A. Operates Full or Single Color LED Matrix boards
- B. Receives data from CTS Sports Timers
- C. Receives data from 3<sup>rd</sup> Party Meet Management software
- D. Displays standard graphics formats (JPG, GIF, BMP, PNG)
- E. Playback of standard digital video (AVI, MPG, WMV)
- F. Allows creation of custom data templates with sport specific information
- G. Creates and plays sequences of templates and graphics, with transition effects
- H. Runs on Windows XP, Vista or 7
- I. Stores Name and Team information for up to 12 lanes for an infinite number of events and heats
- J. Stores multiple Diving event orders, with name and team information
- K. Supports any Windows font as well as custom CTS Bitmap (pixel-mapped) fonts
- L. Graphics and Templates can be used to provide in-venue advertising
- M. Multiple options for displaying Team Scores and Full Event Results (standalone or in conjunction with Meet Management Software)
- N. Quick message feature allows user-driven dynamic messaging

# **EXISTING CONDITIONS**

- A. Verify that all work by others, related to this section, is installed.
- B. Carefully examine all of the construction documents that affect the work of this section.
- C. Prior to starting work, notify the Architect and General Contractor of any defects requiring correction.
- D. Protect other materials and installed work against damage while completing work in this section.

# **INSTALLATION**

- A. Furnish and install all custom cables, connecters, scoreboard mounting brackets, and fasteners.
- B. Owner will provide lift and (2) laborers for mounting scoreboard and pulling cables.
- C. Furnish and install equipment in accordance with the manufacturers drawings and instructions.
- D. Provide scoreboard mounting, all timing system cable terminations, system checkout, and local operator training at time of installation. Training shall consist of one 4-hour session on site.
- E. Webinar training will not be acceptable.
- F. Furnish as-built drawings precisely locating all items.

F. Wiring and grounding shall be installed in strict accordance with the latest edition of the National Electric Code.

# 3.5 SYSTEMS

The following sections are comprised of the infrastructure systems required for this facility.

# 3.5.1 PLUMBING

# A) Genera

Plumbing systems will be designed to comply with the requirements of all the latest applicable codes and standards including, but not necessarily limited to, the following:

- Florida Building Code 2014
- Florida Plumbing Code 2014
- Applicable NFPA Standards and Codes
- Americans with Disabilities Act
- Local Codes and Ordinances
- Florida Energy Conservation Code
- Florida Department of Environmental Protection
- Florida Department of Environmental Resource Management
- USGBC LEED-NC Requirements (Alternate)

Plumbing load for new public bathrooms (men & women) will be estimated following relevant codes and industry design practices. The domestic water service 2-inch pipe size and the building sanitary drain will be 4-inch pipe size. The potable water system demand will be based on low-consumption water closets, low-consumption flush valve urinals, manual operated. Concession Room: sinks will be fitted with single-lever, low-flow sink faucets.

The water-conservation features to be provided will have minimal initial cost impact, but will reduce domestic water consumption by greater than 30% when compared to standard code-compliant fixtures.

## B) Plumbing Fixtures

Water closet, urinal, and lavatory fixtures in new public bathrooms (men and women), will be vitreous china bowl material. Water closets and urinals will be standard flush mechanism (no sensors). Lavatories faucets shall be manual (no sensors). Water closets will be wall-hung type-. Carriers will be provided for wall-hung toilets, urinals and electric water coolers. Floor-mounted concealed-arm carriers will be provided for wall-hung lavatories. Sinks will be 18-gauge stainless steel. Commercial chrome-plated brass flush valves, faucets, and trim will be provided. Faucets, including hose bibs and wall hydrants, will be provided with ceramic disc cartridges. Compression stops will not be acceptable.

C) Domestic Water Distribution

A new domestic water system will be provided to serve all plumbing fixtures, plumbing equipment, and mechanical equipment requiring water .Domestic water piping above grade shall be type "L" copper with soldered or press-fit joints and fittings. Domestic water piping below grade shall be type "K" copper. Water hammer arrestors will be provided to minimize system pressure surges. An ASME-rated, The water heater for new Concession Room and new Public Bathroom (men and women), will be 50 gallon electric and shall be set at minimum 140°F for control of bacterial growth and blended to a non-scalding temperature for delivery to plumbing fixtures from the thermostatic mixing valve.

D) Sanitary Drainage

The sanitary drainage, waste, and vent (DWV) system will consist of a conventional gravity drainage system with vent(s) to roof. The sanitary system piping will be cast iron hub-less piping above ground unless otherwise required for special applications. Underground, PVC piping will be installed in the sanitary main building drain and building sewer systems.

A floor drain with integral backwater valve will be provided in the floor slab beneath any raised access floors.

Trap primers will be provided on floor drains subject to evaporation of trap seal. Floor drains will be equipped with vandal-proof secured strainers/grates.

E) Storm Water

Design rainfall rate will be 5 inches per hour. Storm water drainage system piping will be hubless cast iron or PVC, above ground and in the interior of the building. Below ground and beyond the limits of the building the storm water drainage piping will be PVC.

F) Condensate Drainage

The condensate drainage from the air handling units will be coordinated with the mechanical design and routed to the building storm drainage system. Condensate connections to the storm drainage system will be protected with backwater valves. Independent condensate discharge to dry well(s) is also acceptable. The condensate drainage piping material will be type "L" copper or PVC. Any piping subject to the drainage of condensate, whether it is dedicated condensate drain lines or storm drainage piping will be insulated in order to prevent condensate on the exterior of such lines.

# 3.5.2 HVAC

Designated locations where HVAC Design shall be included are: Ticket Booth at Entrance, Pool Entrance Office/Lobby Registration, Spectator Restrooms, Storage Room-Timing System Equipment. HVAC systems will be designed to comply with the requirements of the latest applicable codes and standards, including but not limited to:

- The 2014 Florida Building Code
- The 2014 F.B.C. Energy Efficiency Chapter 13

- The 2014 Florida Mechanical Code
- The latest applicable NFPA Standards and Codes
- SMACNA HVAC Duct Construction Standards

General HVAC systems will be designed with the following design conditions:

Summer

- Outside Air temperature: 91°F dry bulb and 79°F wet bulb
- Inside conditions: 74°F and 50% relative humidity

Winter

- Outside Air temperature: 45°F
- Inside Conditions: 70°F and 50% relative humidity
- A) Cooling and Heating Systems

The cooling system consists of the following parameters: Tickets and Concession stand rooms will have Air Conditioning and will be served by cassette mini-split heat pump units. A High Wall Mini split 2-ton unit to the Elec. Rm & High Voltage Equipm. Room where there will be transformers and a UPS will be required. The Main Entrance Lobby to the aquatic center will be enclosed and will have a cassette mini-split heat pump units that will served this space. Condensing Units for both the mini-split dx high on wall and cassette mini split heat pumps will be placed on the roof area.

Outdoor equipment, condensers, and similar, need to be provided with a sound enclosure if the equipment's sound levels exceed local dB allowances. All outdoor equipment needs to comply with local requirements for maximum sound levels at a given distance from the property line.

B) Exhaust and Ventilation Systems

Exhaust air will be provided where required per Florida Mechanical Code 2014. Exhaust fans will be mounted above the ceiling or tight under structure. If a return air plenum is used exhaust fans and positively pressured ducts will need to be isolated from the plenum. Where necessary, explosion proof motors and spark proof fans shall be provided in spaces that house flammable vapors or in spaces where the possibility of the appearance of flammable vapors exists.

Exhaust all spaces that are required to have exhaust per FBC 2014 and ASHRAE 62.1 latest version.

Ventilation air will be provided per ASHRAE 62.1 or F.B.C. Mechanical 2014.

Outdoor air intakes shall be protected or blocked from access, at a level to prevent the possible introduction of hazardous chemicals/bio-chemicals by a person. Consider the use of another form of chemical control or hazardous chemical/gas alarms for outside air intakes.

Restroom ventilation rates have been set at approximately 50 CFM per water closet or urinal. Horizontal exhaust (Energy Recovery Unit) will be ducted to Energy Recovery Unit, which will provide exhaust for group toilets. Energy Recovery Unit will be located above the ceiling of each restroom (Men and Women). The ventilation air quantity that serves as the basis of design for the project is set by ASHRAE 62.1-2016 outside air quantities as contained in the Florida Building Code, 2014 edition.

Diving and Competition Pool Filtration Equipment room will be mechanically ventilated thru exhaust wall fans. Makeup air will be supplied thru Make up air lovers (Volume Damper and Motorized Damper) located on the exterior walls.

Training Pool Filtration Equipment room will be mechanically ventilated thru exhaust wall fans. Make up air will be supplied thru Make up air lovers (Volume Damper and Motorized Damper) located on the exterior walls.

Ventilation air quantity that serves as the basis of design for the project is set by ASHRAE 62.1-2016 outside air quantities as contained in the Florida Building Code, 2014 edition.

C) Air Distribution

The supply air distribution system will consist of a medium pressure duct system being fed by the central station air handling unit.

In areas like Electrical rooms, Communications, or any other spaces with special requirements, a constant flow fan coil or mini split dx system will be provided with an independent temperature sensor/thermostat.

D) Ductwork Specialties

Fire dampers and smoke dampers will be provided where required per F.B.C. 2014 chapter 7.

Manual Volume Dampers will be provided at the take-off of all diffuser flex ducts for balancing purposes.

Motorized dampers shall be provided in outside air intakes per F.B.C. 2014.

## E) Controls

Each space will have its own mini-split system, heat pump, dx split system to have the capability to control its system individually thru a thermostat/sensor. Each Diving and Competition Pool Filtration Equipment room Training Pool Filtration Equipment room exhaust fans will be controlled by thermostats and high level chlorine sensors.

# 3.5.3 FIRE PROTECTION

Fire Protection Systems will be designed to comply with the requirements of all the latest applicable codes and standards including, but not necessarily limited to, the following:

- Florida Building Code 2010
- Applicable NFPA Standards and Codes
- Local Codes and Ordinances
- NFPA 101 Life Safety Code

- NFPA 13 Installation of Sprinkler Systems
- NFPA 14 Installation of Standpipes and Hose Systems
- NFPA 20 Installation of Stationary Pumps for Fire Protection
- NFPA 24 Installation of Private Fire Service Mains and Appurtenances
- NFPA 2001 Clean Agent Fire Extinguishing Systems

A separate code-compliant double-detector check valve backflow preventer assembly will be provided on each 6-inch service to both the main building and Art Gallery. A fire department connection (FDC) will be provided in accordance with local Code requirements for each building. Both the main building and the Art Gallery will be protected by an automatic wet-pipe sprinkler system compliant with NFPA-13 and NFPA-24. The main building will be provided with a class I, automatic wet standpipe system compliant with NFPA-14. It is anticipated that the 4-story main building will require a fire pump for satisfying the most remote hydraulic area demand and shall be compliant with NFPA-20. A flow test will be required for assessment and verification of this requirement. Fire pump size and boost pressure shall be determined based on available pressure documented in flow test.

The Server room will be protected by a gaseous, clean agent suppression system compliant with NFPA 2001. The clean agent system will utilize an inert gas as the suppressant. The clean agent suppressant tanks may be located within the Server room. The clean agent system will be interlocked to shut-down the HVAC system prior to clean agent discharge.

An inert gas type clean-agent will be specified due to its environmentally friendly characteristics. Use of this type of clean-agent also precludes the need for a fan powered mechanical purge system for each of the protected areas after system discharge. Wet-pipe sprinkler system piping will be Schedule 10 grooved and Schedule 40 threaded black steel pipe with cast iron fittings.

Clean agent system piping will be Schedule 40 threaded black steel pipe with cast iron fittings. CPVC plastic pipe and fittings will not be accepted.

# 3.5.4 ELECTRICAL

Electrical service will be provided from two existing FP&L vaults, one on the south side of the complex and one on the north side. Each vault serves a set of service distribution equipment providing all required power requirements to all buildings within the complex.

The existing north service distribution equipment will be replaced with new though, as its current equipment is pretty old which could lead to near future costly repairs and lack of reliability. Since this service will be the one dedicated for all new pool equipment infrastructure (main activity in the complex) it is recommended its total replacement in order to guarantee steady power supply.

The new service distribution equipment is expected to be constituted by up to 3 main service main disconnects. The reason they will be separate and not only one main disconnect is because the current installation is set by (1) 200A service, (1) 400A service and (1) 800A service. It will be more cost efficient to reutilize current wiring from FP&L vaults that to call the company and try to reconfigure all three services in 1. The existing single electric meter for all 3 mains will remain.

The 800A service will maintain a 600A feed for the Hall of fame Building which will remain operational. 200A service are left for the small loads in the new construction and the 400A service and the 200A services will be reused to provide power to the new pool equipment and any third party loads like vendors, broadcasting stations, etc.

The reuse of the south service distribution for this project will be minor in comparison with the one at the north side, and because it will not serve the new 3 major pools' equipment infrastructure, corresponding to the main/largest power requirements, it is not advised to be replaced at this time to help with the main project's budget. This service will provide power to the small teaching pool at the southwest corner of the complex and a SPA nearby though. For distributing power to these two items, an existing 200A (or 400A, need, to confirm) feeder, currently providing power to the existing training pool, will be extended to an appropriate location and be feeding a new panel that will provide the required power for the teaching pool and the SPA. The decision to reuse this feeder is due to the fact that the training pool equipment's power needs will be transferred to the new north service distribution equipment indicated previously.

Switchgear:

1) 800A distribution panel with main disconnect. A 600A branch breaker will be dedicated to intercept Hall of Fame building's current feeder. 200A or smaller breakers will be used for lighting and receptacle loads.

2) 400A distribution panel for pool equipment. Branch breakers to be determined at design

time. Local panel will be installed in equipment rooms to serve directly the required loads.

200A distribution panel or main disconnect switch only for vendors and any visitor company.

Item 3) above and proposed extended feeder for teaching pool and SPA could be swapped in order to save on wiring/conduits and manpower.

All mains will be provided with surge protective devices. For lighting, A/C and receptacle loads, a step down transformer(s) will be provided as needed.

Transformer:

1) All transformers shall be TP1, energy star rated with copper windings, electrostatic shielding, and 150 degree C temperature rise.

Pool lighting will be provided via pole mounted fixtures which will be provided by MUSCO lighting.

Engineer to work with MUSCO in order to add a control design that would allow the facility to dim all pole lights.

Engineer to work with MUSCO to provide additional light fixtures in some of the poles, to provide egress illumination around the pools in case of a power outage condition. This extra
fixture will be fed by a UPS that will be installed in the renovated electrical room for the new north electrical service.

B) Exterior Lighting

Additional required egress illumination, not feasible through light poles, will be accomplished by provide wall mounted fixtures, utilizing all existing and new wall structures around the pools. Additional UPS systems will be required and could be located in any of the existing or new structures. An option for wall mounted fixtures is to provide them with embedded battery packs, but this may require extra effort for the maintenance since the batteries will not be in one location, but spread out by the pools' surrounding buildings.

Extra lighting and emergency lighting will also be designed for the existing teaching pool, which currently lacks of proper illumination.

The interior lighting systems will be designed to provide lighting levels consistent with current edition recommendations of the Illuminating Engineering Society (IES) for the space definition or specific tasks to be performed.

Our design will consider LED lighting to take advantage of it excellent life span, low energy consumption and good quality of illumination.

Exit signs shall use LED lamps for low energy and maintenance costs.

C) Interior Lighting

New restrooms, ticket area, concession, electrical room (existing modified), storage, pool equipment rooms will be equipped with occupancy sensors to automatically turn lighting loads on and off. Occupancy sensors shall be dual technology type.

General requirements for electrical outlets for other than specific requirements will be specification grade duplex receptacles at 20A, 125 volts.

New restrooms, ticket area, concession, electrical room (existing modified), storage, pool equipment rooms will be equipped with general purpose or dedicated outlets as per engineer consideration. Additional outlets can be added per additional owner request. Owner to coordinate any addition or removal of proposed outlets with engineer during design phase.

D) Electrical Outlets and Branch Wiring

All structures around the pools, new and existing, will be provided with extra general purpose GFCI, weather resistance receptacle, enclosed in a weatherproof enclosure as a mean for convenient use during competition and other activities that can take place.

Other required branch circuits for A/C and other non-pool related loads added to this renovation will be assigned new circuits and branch wiring during design phase.

All branch circuit wiring will be installed in conduit.

1) Minimum size conduit will be 1/2 inch.

2) All wiring will be copper. Conductor size for power circuits will be minimum No. 12 AWG. Conductors No. 10 AWG and smaller will be solid copper. Conductors larger than No. 10 AWG will be stranded copper.

3) All conduits and raceways will be provided with a grounding conductor sized per NEC table 250-66 or 250-122.

Besides the existing Colorado Timing System in the complex, the owner has requested that a new system be added.

E) Timing System

Engineer, Pool Consultant and Timing System representative/vendor will work together in the design of the required infrastructure for the new system.

Besides the existing Colorado Timing System in the complex, the owner has requested that a new system be added.

Engineer, Pool Consultant and Timing System representative/vendor will work together in the design of the required infrastructure for the new system.

F) Lightning Protection

Even though this protection is required in any structure by NFPA 780, the Florida Building Code does not enforce this requirement for this kind of facilities.

END OF SECTION

# section 4

### **4.1 SCHEDULES**

### 4.1.1 ROOM SCHEDULE -AREAS

			RO	OM SCHEDULE- AREA	S		
Number	Name	Area	Wall type	Wall Finish	Floor Finish	Base Finish	Ceiling Finish
			25	25			
001	POOL FILTRATION ROOM	2024 SF	8" CMU	PAINTED	SEALED CONCRETE	RUBBER BASE	EXPOSED STRUCTURE
002	STORAGE	806 SF	8" CMU	PAINTED	SEALED CONCRETE	RUBBER BASE	EXPOSED STRUCTURE
003	POOL FILTRATION ROOM	1440 SF	8" CMU	PAINTED	SEALED CONCRETE	RUBBER BASE	EXPOSED STRUCTURE
004	POOL FILTRATITON ROOM	750 SF	8" CMU	PAINTED	SEALED CONCRETE	RUBBER BASE	EXPOSED STRUCTURE
005	DIVE DRYLAND	1752 SF					
006	FUTURE DIVE FITNESS	1579 SF					
100	RECEPTION	289 SF	8" CMU-GYP. Furring	PAINTED	LVT	RUBBER BASE	SUSPENDED GYP. BOARD
102	ELECTRICAL ROOM	526 SF	8" CMU	PAINTED	SEALED CONCRETE		PAINTED SUSPENDED GYP. BOARD
103	WOMEN	1139 SF	8" CMU	PAINTED	EPOXY	EPOXY COVE	PAINTED SUSPENDED GYP. BOARD
104	MEN	560 SF	8" CMU	PAINTED	EPOXY	EPOXY COVE	PAINTED SUSPENDED GYP. BOARD
105	JANITORIAL	49 SF	8" CMU	PAINTED	LVT	RUBBER BASE	PAINTED SUSPENDED GYP. BOARD
106	TICKETS BOOTH	177 SF	8" CMU-GYP. Furring	PAINTED	EPOXY	EPOXY COVE	PAINTED SUSPENDED GYP. BOARD
107	CONCESSION	316 SF	8" CMU	PAINTED	EPOXY	EPOXY COVE	PAINTED SUSPENDED GYP. BOARD
108	CHEMICAL ROOM	199 SF	8" CMU	PAINTED	SEALED CONCRETE	RUBBER BASE	EXPOSED STRUCTURE
109	CHEMICAL ROOM	221 SF	8" CMU	PAINTED	SEALED CONCRETE	RUBBER BASE	EXPOSED STRUCTURE
P007	DIVE POOL	6730 SF	CONCRETE	DIAMOND BRITE-CERAMIC TILE	DIAMOND BRITE-CERAMIC TILE		
P008	COMPETITION POOL	14436 SF	CONCRETE	DIAMOND BRITE-CERAMIC TILE	DIAMOND BRITE-CERAMIC TILE		
P009	TRAINING POOL	12400 SF	CONCRETE	DIAMOND BRITE-CERAMIC TILE	DIAMOND BRITE-CERAMIC TILE		
P010	TEACHING POOL	1480 SF	CONCRETE	DIAMOND BRITE-CERAMIC TILE	DIAMOND BRITE-CERAMIC		
P011	SPA POOL	120 SF	CONCRETE	DIAMOND BRITE-CERAMIC TILE	DIAMOND BRITE-CERAMIC		
P012	POOL DECK	Not Enclosed			SEALED CONCRETE		

### 4.1.2 CONCESSION EQUIPMENT SCHEDULE

<u>Appliances:</u> Commercial Refrigerator Commercial Freezer Ice maker Microwave

<u>Plumbing:</u> 3 compartment sink Hand wash sink

Miscellaneous: Stainless steel preparation table Stainless steel shelving units.

### 4.1.3 POOL EQUIPMENT SCHEDULE

Starting blocks (as required).

DIVING POLE- SOUTH SIDE:

(2) 1m springboards Diving Short stands(3) 3m springboards Diving Short stands.

DIVING POLE- NORTH SIDE:

(4) 1M springboards -removable(3) 3M springboards - removable

Scoreboard

**Timing Equipment** 



### 5. SCHEMATIC DESIGN DOCUMENTS

The Schematic Design Documents contained within the Design Criteria were developed by the Design Criteria Team based on the program and collaborative efforts with the City of Fort Lauderdale.

The documents are schematic in nature and are intended to inform the Design-Build Firms of that Design Criteria upon which their Design-Build Solution and proposal should be based.

Nonetheless, it is the responsibility of the Design-Build Firm to determine the best design and construction solution within the parameters of this Design Criteria.

Table of drawings:

• 5.1 CIVIL DWGS:

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  - S-2 NORTH BLEACHER STRUCTURE BELOW
  - S-3 CONCESSION RESTROOM BUILDING
  - S-4 WEST BLEACHER STRUCTURE BELOW
  - S-5 DIVING POOL
  - S-6 COMPETITION POOL
  - S-7 TEACHING POOL AND SPA
- 5.3 ARCHITECTURAL DWGS:
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  - A-100 ENTRANCE LEVEL
  - A-101 PARTIAL SITE PLAN
  - A-102 UNDER BLEACHERS LEVELS
  - A-103 ROOF PLAN
  - A-104 DIVE TOWER
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- A-200 ELEVATIONS
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- A-704 MAIN ENTRANCE RENDERING
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- A-706 DIVING POOL VIEW RENDERING
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  - P-101 OVERALL PLUMBING POOL AND SPA SITE LAYOUT
  - P-102 NEW PUBLIC BATHROOMS AND CONCESSION ROOM DOMESTIC WATER AND SANITARY FLOOR PLAN
  - M-100 MECHANICAL INDEX, SYMBOL, LEGEND AND NOTES PLAN
  - M-101 OVERALL MECHANICAL POOL AND SPA SITE LAYOUT
  - M-102 MECHANICAL DETAILS
  - E-100 ELECTRICAL INDEX, SYMBOL, LEGEND AND NOTES PLAN
  - E-101 OVERALL ELECTRICAL POOL AND SPA SITE LAYOUT
- 5.5 POOL EQUIPMENT DWGS:
  - Q-101 OVERALL AQUATICS LAYOUT
  - Q-102 AQUATIC SECTIONS
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  - Q104 POOL EQUIPMENT ROOMS
  - Q-105 AQUATIC DESIGN INFO AND GUTTER PROFILES
  - Q-106 SPA LAYOUT AND EQUIPMENT









### ACO DRAIN NW100 channel system OR APPROVED EQUAL

N200 N300

	Description	Part No.	Invert I inches	Depth mm	Weight Ibs.
U	N1 Sloped channel - 39.37" (1m)	00001	4.41 - 4.65"	112 - 118	32.0
	N02 Neutral channel - 39.37" (1m)	05501	4.65"	118	32.9
0	N2 Sloped channel - 39.37" (1m)	00002	4.65 - 4.88"	118 - 124	32.9
	N3 Sloped channel - 39.37" (1m)	00004	4.88 - 5.12"	124 - 130	33.8
	N4 Sloped channel - 39.37" (1m)	00005	5.12 - 5.35"	130 - 136	34.7
	NS Sloped channel - 39.37" (1m)	00006	5.35 - 5.59"	130 - 142	35.6
	NO Sloped channel $39.37$ (111)	00007	5.09-5.05	142 - 140	30.3
	N8 Sloped channel - 39 37" (1m)	00008	6.06 - 6.30"	154 - 160	38.3
	N9 Sloped channel - 39.37" (1m)	00010	6.30 - 6.54"	160 - 166	39.2
	N010 Neutral channel - 39.37" (1m)	00011	6.54"	166	40.1
	N0103 Neutral channel - 19.69" (0.5m)	00013	6.54"	166	23.0
	N10 Sloped channel - 39.37" (1m)	00014	6.54 - 6.77"	166 - 172	40.1
	N11 Sloped channel - 39.37" (1m)	00015	6.77 - 7.01"	172 - 178	41.0
	N12 Sloped channel - 39.37" (1m)	00016	7.01 - 7.24"	178 - 184	41.9
	N13 Sloped channel - 39.37" (1m)	00017	7.24 - 7.48"	184 - 190	42.8
	N14 Sloped channel - 39.37" (1m)	00018	7.48 - 7.72"	190 - 196	43.7
	N15 Sloped channel 39.37 (111)	00019	7.72 - 7.95	202 208	44.0
	N17 Sloped channel - 39 37" (1m)	00346	8 19 - 8 43"	202 - 200	45.5
	N18 Sloped channel - 39.37" (1m)	00021	8.43 - 8.66"	214 - 220	47.3
	N19 Sloped channel - 39.37" (1m)	00022	8.66 - 8.90"	220 - 226	48.2
	N020 Neutral channel - 39.37" (1m)	00023	8.90"	226	49.1
	N0203 Neutral channel - 19.69" (0.5m)	05502	8.90"	226	26.0
	N20 Sloped channel - 39.37" (1m)	00024	8.90 - 9.13"	226 - 232	49.1
1	N21 Sloped channel - 39.37" (1m)	00025	9.13 - 9.3/"	232 - 238	50.0
	N22 Sloped channel $-39.37$ (111)	00028	9.57 - 9.01	230-244	50.9
	N24 Sloped channel - 39 37" (1m)	00027	9.84 - 10.08"	250 - 256	52.7
	N25 Sloped channel - 39.37" (1m)	00029	10.08 - 10.31"	256 - 262	53.6
	N26 Sloped channel - 39.37" (1m)	00030	10.31 - 10.55"	262 - 268	54.5
	N27 Sloped channel - 39.37" (1m)	00031	10.55 - 10.79"	268 - 274	55.6
	N28 Sloped channel - 39.37" (1m)	00032	10.79 - 11.02	274 - 280	56.5
•	N29 Sloped channel - 39.37" (1m)	00033	11.02 - 11.26"	280 - 286	57.4
	N030 Neutral channel - 39.37" (1m)	00034	11.26"	286	58.3
	N30 Sloped channel - 39 37" (1m)	00035	11 26 - 11 50"	286 - 292	59.2
2			11.20 11.30	200 252	55.2
$\mathbf{C}$	N900 In-line catch basin	05620	22.00	560	62.0
	NYOU QUICKLOK DAY (removable)	98/1/	-	-	0.1
	Series 900 Flastic trash bucket	01490	-	-	1.1
	Accessories				
	N306 closing end cap to suit C1-30	01078	-		4.2
	N104-4 Inlet cap - 4" PVC pipe	05651	-	×	3.2
0	N204-4 Inlet cap - 4" PVC pipe	05652	-	-	3.2
	N304-4 Inlet cap - 4" PVC pipe	05653	-		3.6
$\mathcal{O}$	N204 6 Inlet cap - 6" PVC pipe	91251	-	-	3.2
	N108-1 Outlet cap - 0 FVC pipe	91203	-		3.0
	N208-4 Outlet cap - 4" PVC pipe	05574	-	-	3.2
	N308-4 Outlet cap - 4" PVC pipe	05575	-	-	3.6
	N208-6 Outlet cap - 6" PVC pipe	91264	-		3.2
	N308-6 Outlet cap - 6" PVC pipe	91272	-	-	3.6
	Type 824 6" Sch. 40 oval to round outlet	95140	-	-	1.1
	UUICKLOK locking bar	02899	-	-	0.1
	QUICKLOR/FOWEILOK BLATE LEHIDARI TOOL	01318	-	-	0.3
$\mathbf{\nabla}$	Notes:				

Cóo Specifications The surface drainage system shall be ACO Drain NW100 complete with gratings secured with 'QuickLok' locking as manufactured by ACO Polymer Products, Inc. or equal approved. Materials The trench system bodies shall be manufactured from polyester polymer concrete with minimum properties as follows Compressive strength: 14,000 psi 4.000 psi Flexural strength: Water absorption 0.07% Frost proof Salt proof Dilute acid and alkali resistant The nominal clear opening shall be 4.00" (100mm) with overall width of 6.10" (155mm). Pre-cast units shall be manufactured with either an invert slope of 0.6% or with neutral invert and have a wall thickness of at least 0.50" (13mm). Each unit will feature a full radius in the trench bottom and a male to female interconnecting end profile. Units shall have horizontal cast in anchoring features on the outside wal to ensure maximum mechanical bond to the surrounding bedding material and pavement surface. Grates should be specified seperately. Choose appropriate grate from ACO Spec Info grate sheets for details. After removal of grates and 'OuickLok' bar there shall be uninterrupted access to the trench to aid maintenance.

Installation The trench drain system shall be installed in accordance with the manufacturer's installation instructions and recommendations.

. Preformed 4" dia. & 6" flumed drill-out outlet cast on underside of every channe Closing cap can be cut down to suit all channels
 Add 1" (25mm) for overall depth of channels and catch basin





prolonged salt exposure, repetitive frost cycles and chemically resistant to dilute acids and alkalis The system shall be installed in accordance with the manufacturer's instructions and recommendations

OR APPROVED EQUAL

\*Fill in as required.



Exhibit 1 (Part A) Page 154 of 202



# DECK AROUND POOL SCALE: 1/16" = 1'-0"

INDICATES EXISTING

INDICATES NEW CONCRETE



SYNALC Architec 180 For							
Ma	inuel Synalovski, AIA AR 0011628 SEAL						
LICI	ENSE NO. AA26001863						
FORT LAUDERDALE AQUATIC COMPLEX	• A1A AND SE 5TH STREET, FORT LAUDERDALE CITY, STATE CITY OF FORT LAUDERDALE						
REV DATE	DESCRIPTION						
DESIGN DELIVERABLE: DESIGN CRITERIA ISSUE DATE: 03/15/2017 PROJECT NUMBER: ######XXXXX DRAWN BY: CAP CHECKED BY: SEH SHEET TITLE: POOL DECK AND COMMON DECK							
SHEET NUMBER:	<b>S-1</b> CAM #18-0726 Exhibit 1 (Part A) Page 155 of 202						



# NORTH BLEACHER STRUCTURE BELOW

SCALE: 1/8" = 1'-0"

 EXISTING PILES
 ENGINEER OF RECORD SHALL DECIDE WEATHER TO USE THEM OR NOT. IF USED ENGINEER OD RECORD SHALL SURVEY THEIR EXACT LOCATION THEIR SIZE CAPACITY AND REMAINING EMBEDMENT

- $\otimes$  <u>NEW PILES</u> (LOCATION IS CONCEPTUAL TO HELP WITH PRELIMINARY BUDGET)
- ENGINEER OF RECORD SHALL DESIGN PILES AND SPACE THEM ACCORDING TO HIS ANALYSIS BASED ON THE UPDATED SOIL REPORT

\_\_\_\_\_\_ NEW GRADE BEAM BY ENGINEER OF RECORD

\_\_\_\_\_

 THE BLEACHER FRAMING AND SUPPORT SHALL BE INDEPENDENTLY DESIGNED AND SUPPORTED BY SPECIALITY ENGINEER (FRAMING, COLUMNS AND FOOTING)

BUILDING BELOW SHALL BE DESIGNED AND SUPPORTED BY ENGINEER OF RECORD

<u>NOTE:</u> BLEACHER ARE NOT SHOWN HERE BLEACHER ARE TO BE DESIGNED BY SPECIALITY ENGINEER AND ARE SELF SUPPORTED AND INDEPENDENT OF THIS STRUCTURE

INDICATES CONCRETE COLUMN FOR BLEACHER AS PER BLEACHER ENGINEER SPECIFICATION









# CONCESSION RESTROOM BLDG NOTE: SCALE: 1/8" = 1'-0"

<u>NOTE:</u> BLEACHER ARE NOT SHOWN HERE BLEACHER ARE TO BE DESIGNED BY SPECIALITY ENGINEER AND ARE SELF SUPPORTED AND INDEPENDENT OF THIS STRUCTURE











NEW GRADE BEAM BY ENGINEER OF RECORD

- THE BLEACHER FRAMING AND SUPPORT SHALL BE INDEPENDENTLY DESIGNED AND SUPPORTED BY SPECIALITY ENGINEER (FRAMING, COLUMNS AND FOOTING)
- BUILDING BELOW SHALL BE DESIGNED AND SUPPORTED BY
  ENGINEER OF RECORD









INIDCATES: (EXISTING PILE)
 EXISTING PILE NOT USED





, + | |

4

<del>+0'-6"</del>

# **COMPETITION POOL**

NOTE: NOTE: NIDCATES: (14" PILES) (LOCATION AND SPACING ARE PRELIMINARY) • ENGINEER OF RECORD IS RESPONSIBLE OF DESIGNING PILES, LOCATION AS NEEDED REFER TO GEOTECHNICAL REPORT RECOMMENDATION.

INIDCATES: (EXISTING PILE)
 EXISTING PILE NOT USED



SECTION scale:

/4"									
		[							
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	$\otimes$	$ \otimes $							
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	8	$\otimes$	 ⊗		8		 	8	

SCALE: 1/8" = 1'-0"

1 S-6



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SECTION scale: 1/2"=1'-0"

 $\begin{pmatrix} 2 \\ S-7 \end{pmatrix}$ 







SECTION scale: 1/2"=1'-0"  $\begin{pmatrix} 1 \\ S-7 \end{pmatrix}$ 

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DESIGN DELIVERABLE: DESIGN CRITERIA ISSUE DATE: 03/15/2017 PROJECT NUMBER: ######XXXXX DRAWN BY: CAP CHECKED BY: SEH SHEET TITLE: TEACHING POOL AND SPA	FORT LAUDERDALE AQUATIC COMPLEX		
DESIGN DELIVERABLE: DESIGN CRITERIA ISSUE DATE: 03/15/2017 PROJECT NUMBER: ######XXXXXX DRAWN BY: CAP CHECKED BY: SEH SHEET TITLE: TEACHING POOL AND SPA			
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SHEET NUMBER:			





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Fort Lauderdale











1 ROOF PLAN 1/16" = 1'-0"



옃







			ROO	OM SCHEDULE- AREA	S		
Number	Name	Area	Wall type	Wall Finish	Floor Finish	Base Finish	Ceiling Finish
	1		1			1	
001	POOL FILTRATION ROOM	2024 SF	8" CMU	PAINTED	SEALED CONCRETE	RUBBER BASE	EXPOSED STRUCTURE
002	STORAGE	806 SF	8" CMU	PAINTED	SEALED CONCRETE	RUBBER BASE	EXPOSED STRUCTURE
003	POOL FILTRATION ROOM	1440 SF	8" CMU	PAINTED	SEALED CONCRETE	RUBBER BASE	EXPOSED STRUCTURE
004	POOL FILTRATITON ROOM	750 SF	8" CMU	PAINTED	SEALED CONCRETE	RUBBER BASE	EXPOSED STRUCTURE
005	DIVE DRYLAND	1752 SF					
006	FUTURE DIVE FITNESS	1579 SF					
100	RECEPTION	289 SF	8" CMU-GYP. FURRING	PAINTED	LVT	RUBBER BASE	SUSPENDED GYP. BOARD
102	ELECTRICAL ROOM	526 SF	8" CMU	PAINTED	SEALED CONCRETE		PAINTED SUSPENDED GYP. BOARD
103	WOMEN	1091 SF	8" CMU	PAINTED	EPOXY	EPOXY COVE	PAINTED SUSPENDED GYP. BOARD
104	MEN	550 SF	8" CMU	PAINTED	EPOXY	EPOXY COVE	PAINTED SUSPENDED GYP. BOARD
105	JANITORIAL	49 SF	8" CMU	PAINTED	LVT	RUBBER BASE	PAINTED SUSPENDED GYP. BOARD
106	TICKETS BOOTH	177 SF	8" CMU-GYP. FURRING	PAINTED	EPOXY	EPOXY COVE	PAINTED SUSPENDED GYP. BOARD
107	CONCESSION	316 SF	8" CMU	PAINTED	EPOXY	EPOXY COVE	PAINTED SUSPENDED GYP. BOARD
108	CHEMICAL ROOM	199 SF	8" CMU	PAINTED	SEALED CONCRETE	RUBBER BASE	EXPOSED STRUCTURE
109	CHEMICAL ROOM	221 SF	8" CMU	PAINTED	SEALED CONCRETE	RUBBER BASE	EXPOSED STRUCTURE
P007	DIVE POOL	6730 SF	CONCRETE	DIAMOND BRITE-CERAMIC TILE	DIAMOND BRITE-CERAMIC TILE		
P008	COMPETITION POOL	14436 SF	CONCRETE	DIAMOND BRITE-CERAMIC TILE	DIAMOND BRITE-CERAMIC TILE		
P009	TRAINING POOL	12400 SF	CONCRETE	DIAMOND BRITE-CERAMIC TILE	DIAMOND BRITE-CERAMIC TILE		
P010	TEACHING POOL	1480 SF	CONCRETE	DIAMOND BRITE-CERAMIC TILE	DIAMOND BRITE-CERAMIC TILE		
P011	SPA POOL	120 SF	CONCRETE	DIAMOND BRITE-CERAMIC TILE	DIAMOND BRITE-CERAMIC TILE		
P012	POOL DECK	Not Enclosed			SEALED CONCRETE		



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AQUATIC COMPLEX AUDERDALE FORT AIA AND SE 5TH STREET, LAUDERDALE FORT F 0 ОF CITY DESIGN DELIVERABLE: DESIGN CRITERIA ISSUE DATE: PROJECT NUMBER: Project Number DRAWN BY: AMJ CHECKED BY: MS Copyright (c) by SYNALOVSKI ROMANIK SAYE, LLC All Rights Reserved SHEET TITLE ENLARGED BATHROOMS ROOM SCHEDULE SHEET TITLE A-105

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NORTH VIEW



# FORT LAUDERDALE AQUATIC COMPLEX



SYNALOVSKIROMANIKSAYE

CAM #18-0726 Exhibit 1 (Part A-702 Page 173 of 202 Bid 12072-483







SYNALOVSKIROMANIKSAYE

CAM #18-0726 Exhibit 1 (Part A<mark>A-703</mark> Page 174 of 202



FORT LAUDERDALE AQUATIC COMPLEX

Bid 12072-483

SYNALOVSKIROMANIKSAYE

CAM #18-0726 Exhibit 1 (Part A<mark>A-704</mark> Page 175 of 20\_



FORT LAUDERDALE AQUATIC COMPLEX

Bid 12072-483

SYNALOVSKIROMANIKSAYL

CAM #18-07 Exhibit 1 (Part A-705 Page 176 of 202



CAM #18-0726 Exhibit 1 (Part A-706 Page 177 of 202

# SHOCK ARRESTOR SCHEDULE

P.D.I. DESIGNATION	MANUF. & MODEL	FIXTURE UNITS	CONNECTION		
A	SIOUX CHIEF 652-A	1–11	1/2"		
В	SIOUX CHIEF 653-B	12-32	3/4"		
С	SIOUX CHIEF 654-C	33–60	1"		
SIOUX CHIEF SHOCK ARRESTORS APPROVED FOR INSTALLATION WITH NO ACCESS DOOR REQUIRED. CONFORMS TO ANSI/ASSE 1010 STANDARDS.					



-HANGER ROD — LOCKING NUT HANGER ROD --SUPPORT NUT SUPPORT NUT-- HEAVY DUTY CLEVIS HANGER HEAVY DUTY CLEVIS--VAPOR BARRIER HANGER - INSULATION 0 <u>CLEVIS HANGER</u> SINGLE HORIZONTAL RUNS CLEVIS HANGER SINGLE HORIZONTAL RUNS NO VAPOR BARRIER INSULATION WITH VAPOR BARRIER INSULATION HEAVY DUTY CONCRETE STEEL INSERT WITH ELONGATED STRAP INSERT NUT-- HANGER ROD HANGER ROD. SIZE AS REG. PIPE HANGER DETAIL STEEL BEAM CONCRETE INSERT PIPE SUPPORT DETAILS NAME <u>FIXTURE</u> LAV-1 WALL HUNG LAVATORY ADA LAVATORY -COUNTERTOP IAV LAVATORY WALL HUNG WC LUSH VALVE WATER CLOSET J.R. SMITH #2698 -WATER SAVËR TRAP PRIMER CLEANOUT PLUG -FINISHED WALL -WALL HUNG WC-1 FLUSH VALVE FINISHED FLOOR -WATER CLOSET URINAL - FLOOR DRAIN DRINKING FOUNTAIN BI-LEVEL ADA TRAP PRIMER DETAIL STAINLESS STEEL SCALE: N.T.S. 3-COMP THREE COMPARTMENT STAINLESS - PERFORATED CAP - CLEAN OUT MOP/SK MOP SINK 18" MIN FLOOR DRAIN PITCH DOWN -TOWARD DRAIN — DRAIN PAN CLEAN OUT ----FLOOR SINK <u>FIXTURE</u> WATER CLOSET (F.V.) - DRAIN LINE SHALL BE AT LEAST THE SAME SIZE AS THE NIPPLE ON THE LAVATORY SINK DRAIN PAN ELECTRIC WATER COOLER MOP SINK URINAL NOTE: TYPICAL CONDENSATE TRAP SCALE: N.T.S.

## PLUMBING INDEX

	DRAWING	REX	
1	P-100 PLUMBING INDEX, SYMBOL LEGEND AND NOTES.		
2	P-101 OVERALL PLUMBING POOLS AND SPA SITE LAYOUT		
3	P-102 NEW PUBLIC BATHROOMS & CONCESSION ROOM - DOM. WTR. AND SAN. PLANS		
4			
5			
6			



LEGEND AND

NOTES PLAN

SHEET NUMBER

## SHOP DRAWING REQUIREMENTS

- CONTRACTOR SHALL SUBMIT 6 COPIES OF COMPLETED SHOP DRAWINGS, TOGETHER AT ONE TIME AND MUST COME THROUGH THE ARCHITECT. ALL SUBMITTALS SHALL BE MADE WITHIN 30 DAYS OF NOTICE TO PROCFF
- ALL SUBMITTALS MUST CLEARLY INDICATE EXACTLY WHICH ITEMS ARE BEING PROPOSED FOR USE. IF NOT, THE SUBMITTAL SHALL BE REJECTED.
- SUBSTITUTIONS SHALL BE LIMITED TO ONE OF THE ALTERNATES LISTED IN THE CONSTRUCTION DOCUMENTS. PRODUCTS CONSIDERED TO BE EQUAL SHALL BE REVIEWED AND ACCEPTED BY THE ENGINEER, ARCHITECT AND OWNER (10) DAYS PRIOR TO BID DATE. THE CONTRACTOR ASSUMES ALL DESIGN RESPONSIBILITY AND ALL FINANCIAL RISKS FOR PROCEEDING
- PRIOR TO SHOP DRAWINGS PROCESSING, AND ON ANY ITEM OR WORK THAT IS AT VARIANCE TO THE CONSTRUCTION DOCUMENTS.
- SHOP DRAWINGS AND SUBMITTALS FOR EACH ITEM SHALL BE REVIEWED NO MORE THAN TWICE. A THIRD SUBMITTAL ON AN ITEM MUST BE ACCOMPANIED BY A PURCHASE ORDER FROM THE CONTRACTOR OR IT SHALL BE REJECTED.
- CIRCUMSTANCES NECESSITATING A REVISION TO THE PERMITTED DOCUMENTS NOT PROCESSED PRIOR TO INSTALLATION MAY NOT BE ACCEPTED. IF ACCEPTED IT MUST BE LEGIBLE, ACCURATE AND ACCOMPANIED BY A PURCHASE ORDER ORDER FROM THE CONTRACTOR. THE REVISION SHALL BE CHARGED TO THE CONTRACTOR AND DELIVERED TO HIM ON A C.O.D. BASIS.
- . SUBSTITUTIONS FROM THE BASE DESIGN OR VARIATIONS TO THE PERMITTED CONTRACT DOCUMENTS, WHETHER RESULTING FROM PROCESSED SHOP DRAWINGS OR NOT, THAT RESULT IN REQUIREMENTS IN LETTERS OF AUTHORIZATION AND/OR PERMIT CONTRACT DOCUMENT CHANGES MANDATED BY THE AUTHORITY HAVING JURISDICTION WILL NOT BE MADE BY THIS OFFICE UNLESS ACCOMPANIED BY A PURCHASE ORDER FROM THE CONTRACTOR, AND RELEASED ON A C.O.D. BASIS.
- CONTRACTOR SHALL SUBMIT 5 COPIES OF EQUIPMENT LAYOUTS OF ALL ELECTRICAL SPACES, ROOMS, ETC. TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING EQUIPMENT OR INSTALLING CONDUITS, ETC. THE LAYOUTS SHALL CONSIST OF PLAN VIEWS AT A SCALE OF 1/2" = 1'0" and elevations for each SUCH SPACE OR ROOM. ETC









NEW PUBLIC BATHROOMS & CONCESSION ROOM - DOMESTIC WATER FLOOR PLAN SCALE: 1/4"=1'-0"



2

SCALE: 1/4"=1'-0"



Contraction of the second seco				
	GEORGE SANJUA FLORIDA LICENSE	N, P.E. 3 #46100		
FORTLAUDERDALE AQUATIC COMPLEX	AIA AND SE 5TH STREET, FORT LAUDERDALE	CLIENT: CITY OF FORTLAUDERDALE		
DESIGN DESIGN DELIVERABLE: 1 ISSUE DATE: M PROJECT NUMBE DRAWN BY: MO, CHECKED BY: GS Copyright (c) by SYNA All Rights Reserved. SHEET TITLE: NEW PUBLIC CONCESS DOMESTIS SANITARY		ESIGN 6 7 6 7 6 7 7 8-0726		
<u> </u>	VAC NOTES,	LEGEND A		
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(GENE	RAL NOTES ARE PROVIDED AS HIS PROJECT. IF A CONFLICT EX	A BASIC DESCRIPTION OF		
THE	UNIRACI DUCUMENTS THE SPE	CIFICATIONS, PLANS AND		
	<u>GENERAL NO</u>	DTES:		
1.	ALL MECHANICAL SYSTEMS AF APPLICABLE SECTIONS OF THE BUILDING CODE, NOISE & HEIG	RE TO BE INSTALLED IN AC E NFPA STANDARDS, ANSI EHT ORDINANCES, PLANS A		
2.	ALL MATERIALS SHALL BE NET IN STRICT ACCORDANCE WITH RULES AND ORDINANCES, ANY RESTORED TO ORIGINAL COND	W AND ALL WORKMANSHIP APPLICABLE LOCAL CODES ( DAMAGED EQUIPMENT SH. ITION.		
3.	THE CONTRACTOR SHALL PRO PANELS, CONTROL SYSTEMS, I FURNISHING AND INSTALLING	VIDE ALL LABOR, MATERIAL DEVICES, PERMITS AND SEA A COMPLETE OPERABLE ME		
4.	ALL LOUVERS, GRILLES, PIPING SURROUNDING COLOR AND TE AND TEXTURE WITH ARCHITEC WITH BENJAMIN MOORE EPOXY	G, ETC. SHALL BE PAINTED XTURES AS REQUIRED BY T. PAINT ALL EXPOSED M ( ENAMEL 182.		
5.	THE CONTRACTOR SHALL PRO IDENTIFICATION LABELS FOR A TAGS. (SETON OR SIMILAR)	VIDE PLASTIC OR ALUMINU ILL MECHANICAL EQUIPMEN		
6.	ALL CUTTING, PATCHING, STRU AND WALL OPENINGS SHALL E	JCTURAL STEEL, WEATHER BE BY THE GENERAL CONTI		
7.	ALL OPENINGS IN BUILDING ST 1/2" LARGER (ON ALL SIDES) WITH FIRE RETARDANT SILICO TECHNOLOGY CORP.).	RUCTURE, FOR DUCTWORK THEN THE OUTSIDE DIMEN NE FOAM (I.E. CHASE-FOAI		
8.	PROVIDE MAINTENANCE AND C OR SYSTEMS. PROVIDE 5 SE SUBMITTALS SHALL HAVE A S INFORMATION.	OPERATION MANUAL ON ALL TS OF SUBMITTALS ON ALL JUMMARY SHEET SHOWING		
9.	HVAC CONTRACTOR WILL WAR AND ALL OTHER EQUIPMENT,P AND SPECIFICATIONS FOR A P BUILDING. ANY REPAIRS REQU NON OPERATIONAL PERIODS.	RANTY ALL MECHANICAL S ARTS AND LABOR UNDER ERIOD OF ONE (1) YEAR A IRING SYSTEM SHUT DOWN IVAC CONTRACTOR SHALL		
10.	AIR QUALITY SHOULD BE TEST AND MONITORED THEREAFTER,	DING AND PORCHASING AN IED BEFORE OCCUPANCY A OR AT LEAST AT REGULA		
	MECHANICAL	. EQUIPMENT		
1.	PROVIDE BACKDRAFT DAMPER	s on all exhaust fans		
2.	PROVIDE VIBRATION ISOLATOR: IN THE SPECIFICATIONS. IF N MANUFACTURER FOR QUIET OF	S ON ALL MECHANICAL EQ IOT SPECIFIED, AS RECOMM PERATION (WITH 99% ISOLA		
3.	PROVIDE A MIN. OF 10' CLEAF OPENINGS.	RANCE BETWEEN O/A INTA		
4.	MOUNT ALL ROOFTOP EQUIPMI REQUIRED BY LOCAL CODES, A ROOF.	ent (IF USED) FOR WIND L ALL CURBS SHALL EXTEND		
5.	ALL PIPING AND DUCTWORK S ETC, AS REQUIRED AND COOR BAR JOIST CROSS BRACING A FOR DUCTWORK INSTALLATION	HALL BE SLEEVED THRU W DINATED WITH THE STRUCT ND PROVIDE NECESSARY T		
6.	ALL INSULATION WILL HAVE FI	RE/SMOKE RATING LESS T		
7.	ALL OUTDOOR EQUIPMENT SHA MIN. REQUIREMENT SHALL NOT RADIALLY 30 FT FROM THE E	ALL COMPLY WITH LOCAL Z T EXCEED A NOISE LEVEL O QUIPMENT IN ALL DIRECTIO		
	<u>AIR DISTRIBU</u>	TION/DUCTW		
1. 2	REFER TO ARCHITECTURAL PL PROVIDE OFF WHITE FINISH (S	ANS FOR CEILING TYPE.		
2. 3.	ALL DUCTWORK WHERE ALLOW BE 1" LOW PRESSURE DUCT,	ED BY LOCAL CODES AND SEAL CLASS "C" AND AS		
	A. EXHAUST AIR DUCTWORK B. MAKE-UP AIR DUCTWORK C. SUPPLY AND RETURN DU	ALUMINUM SHEETMETAI A ALUMINUM SHEETMETA JCTWORK IN THE STORAGE SUFETMETAL		
	D. DUCTWORK INSULATION - E. THE LENGTH OF FLEXIBLE LAYING LENGTH.	NIZED SHEETMETAL. - REFER TO DMS SECTION E DUCT MUST BE 6 FT MIN		
4.	ALL DUCTWORK SHALL BE FAI "SMACNA" STANDARDS AND L	BRICATED AND INSTALLED .OCAL BUILDING CODES.		
5. 6.	ALL DUCT SIZES ARE CLEAR SEAL ALL DUCTS. JOINTS AND	inside dimensions. ) seams in an approved		
••	AGAINST LEAKAGE.			
1				
1.	CONSTRUCTION TO ENSURE DAMPERS, ETC. ARE INSTAL	THAT ALL DUCTS, VOLUME LED FOR PROPER BALANCI		

A REPORT SHALL BE SUBMITTED TO THE MECHANICA DEFICIENCIES FOUND AND MAKING RECOMMENDATIONS OR DEVICES TO BE ADDED TO ALLOW FOR PROPER E AR DEVICES, EXTRACTORS SHALL IEST AND BALAN AR DEVICES, EXTRACTORS, DAMPERS, AHU'S & FAN THE DESIGN QUANTITIES AS SHOWN ON THE PLANS B REPORT IN ACCORDANCE WITH THE AIR BALANCE PROVIDE FINAL BALANCING FOR ALL SYSTEMS TO S AND ENGINEER.



MARK EF-1 GR EF-2 GR EF-3 GR EF-4A GR EF-4B GR 1. 2. 3. 4.	SELECT MAKE EENHECK SEENHECK SEENHECK EENHECK SEENHECK SEENHECK	TION BASED ON MODEL NO. SCE3-24-620-A-VGD SCE3-20-320-A	TYPE SIDEWALL DIRECT	AREA SERVED	CFM	ESP	TSP	RPM	HP	MOTOR		DRIVE	SONES OR NC	UNIT	WALL	ACCES
EF1 GR EF2 GR EF4 GR EF48 GR EF48 GR 	MAKE EENHECK S EENHECK S EENHECK S	MUUEL NU. SCE3-24-620-A-VGD SCE3-20-320-A	SIDEWALL DIRECT	1	-	1 101 100			I HP	RPM			UN NU	writhi		RFMAR
EF-2 GR EF-3 GR EF-4A GR EF-4B GR I I I I I I I I I I I I	EENHECK SEENHECK	SCF3-20-320-4			7100	0.75	0.75	1750	3	1750	480-3-60	DIRECT	44	105	UPENING (IN.) 66X66	1,2,3.4
EF-3 GR EF-4A GR EF-4B GR 1. 2. 3. 4.	EENHECK	00E0 20 020 A	SIDEWALL DIRECT	STORAGE 1 NEXT STAIRS	1200	0.75	0.75	1750	1/2	1750	480-3-60	DIRECT	26	105	66X66	1,2,3,
EF-4A GR EF-4B GR 1. 2. 3. 4.	EENHECK	SCE3-20-320-A	SIDEWALL DIRECT DRIVE FAN	STORAGE 1 NEXT STAIRS	1200	0.75	0.75	1750	1/2	1750	480-3-60	DIRECT	26	59	66X66	1,2,3,4
EF-48 GR		SCE3-36-609-B-VGD	SIDEWALL DIRECT DRIVE FAN	DIV. COMP. EQUIP. RM	5100	0.75	0.75	1465	3	1750	480-3-60	DIRECT	29	105	66X66	1,2,3,
1. 2. 3. 4.	EENHECK	SCE3-36-609-B-VGD	SIDEWALL DIRECT DRIVE FAN	DIV. COMP. Equip. RM	5100	0.75	0.75	1465	3	1750	480-3-60	DIRECT	29	105	66X66	1,2,3,
1. 2. 3. 4.																
1. 2. 3. 4.																
1. 2. 3. 4.	GENE	RAL FAN NOTE	 <b>S</b> :					ACCF	SSORI	ES/RFM	   <b>ARKS</b> :					
5. 6. 7.	PROVIDE M ON ALL FA PROVIDE B FIELD ADJI ALL OUTDO OR NOT EX FROM THE COORDINA' SEE GENEF FIELD SUP PROVIDE F	OTOR STARTERS, DISCON NAS. NACKDRAFT FOR ALL EXH UST OPENINGS WITH STRU DOR EQUIPMENT SHALL C XCEED A NOISE LEVEL OI EQUIPMENT IN ALL DIRE TE WITH ELECTRICAL CON RAL, AIR CONDITIONING, I PLIED ITEMS. TACTORY FAN MOUNTING	INECTS AND ALL ASS AUST FANS . JCTURE. OMPLY WITH LOCAL Z 550B AS MEASURED CTIONS. TRACTOR BEFORE BID JUCTWORK, AND COOF SUPPORTS-LEGS, CUF	Coning Noise of Coning Noise of Cadially 15 ( Ding or Order Rdination Note RBS, Hanging C	ols Rdinance Ft. Sing any I S For Oth Clips, etc.	equipmen Her	1. 2. 3. 4. 5. 6. 7. 8. 9.	MOTOR AC CONTROL- WALL HOU OSHA GUA SPEED CO WALL SWI INTERLOCK CONTINUO SET T-ST. D. ALUMINUM	CCESS FROM -VARI-GREE ISING. ARD. INTROLLER. ICH. ( FAN WITH US OPERAT AT CONTRO HOUSING.	O/A MCD / ION. LLER TO 78	of Building. Dial for Indoor Wall and Co/No2 Monitori F.	. MOUNTIN NG SYSTE	12. 9 IG. 13. 9 14. 9 15. 7 16. 9	stainles: Stainles: Spring H Tefc Mot /Fd	5 steel shaft. 5 steel fasten Anging Isolato Or.	ers. Rs and I
δ.	PROVIDE B	SIRDSCREEN ON ALL INLE	IS AND OUTLETS.				11	. PROTECTIV	E COATING							
		1 1		ND SY	MBC	)LS						SCH	EDL	ILE		
							-	SYMBOL	USE	TYPE	DESIGN MANUF	ACTURER		REM	ARKS	ACCI
				SENSOR				EAL/	EXH. /INT		ER GREENHE	ск	FLORID	A PRODU FL10	CT APPROVAL N 00088.1	10.:
			J NO2 → SUP	PLY AIR (DIRE	CTION OF	THROW)			AIR LOU		EHH-601	U		ioa no.: Exp. da1	12-0830.08 E: 11-1-17	
			→ RET — NEV	UKN AIR/EXHAU V DUCTWORK	IST AIR			1. 2.	GENERAL PROVIDE	and hvac ( ).5" stainle	CONTRACTOR TO COOR ESS STEEL MESH WIRE	dinate fi Screen.	NISH AND	COLOR	Prior to orde	RING.
			BAC BAC MAN	K DRAFT DAMP NUAL VOLUME D	LK AMPER											
		MCI EF	шта мо ) Mo1 EXH S WiRi	for controlle Ior controlle Iaust fan E Mesh scrffn	D DAMPER			S	TAN	DARE				REC	QUIREN	/EN
		OAI EAL	. OUT EXH	iside air louve Iaust air louv	er Fr			SEAL	. CLASS		SEALING REQUIREMEN	TS		APP C	LICABLE STATIC DNSTRUCTION ST	PRESSUR
									A	ALL T SEAMS	RANSVERSE JOINTS, LO S, AND DUCT WALL PEI	NGITUDIN	AL NS	4	'WG AND UP (1	1000 PA)
NOTE: HVAC LEGEND IS PROVIDED AS A GENERAL REFERENCE. SOME SYMBOLS SHOWN MAY NOT PERTAIN TO THIS PROJECT.									В	A	LL TRANSVERSE JOINTS LONGITUDINAL SEAMS	S AND ONLY			3" WG (750	PA)
									с		TRANSVERSE JOINTS (	ONLY			2" WG (500	PA)
											TEO					
							ND E	ALAN								
1. 2. 3.	AIR UISTRI ACCORDING TEST, ADJ LICENSED FROM A R CONTRATO IN COOLING COOLING C THE TEST	GUIUN STSTEM TESTING G TO 2014 FLORIDA BUIL IUSTMENT AND SYSTEM E IN THE STATE OR A CON ECOCONIZED TESTING AND RS ARE ALLOWED TO TE G OR HEATING CAPACITY OR HEATING SYSTEM CAP AND BALANCE REQUIREM	AUJUSTING AND BAL DING CODE, ENERGY ( ALANCE SHALL BE PE IPANY OR INDIVIDUAL BALANCING ORGANIZ ST AND BALANCE SYS ACITIES OF 65,000 B ENT LISTED IN THE C	Anging Shall Conservation, Erformed by A Holding A Cup Ation. Licenset Stems of 15.0 Tuh or Less A Ode.	DL PERFOI SECTION C N ENGINEE RRENT CER D MECHANI TON OR LE RE EXCEM	THED 408.2.2. RTIFICATIO CAL ESS PT FROM	- 	4 5 6	F. ALL HY ENGINE FOR HY 5,000 5. BALAN STAND/ 6. UPON ALL GF	AC STSTEMS ERING STANI AC SYSTEM: SQFT OR OT CING PROCED ARDS, THE A CONSTRUCTION RILLES IN SEI	Distall be Balanced Dards. A written Bal S serving Zones Mit Herwise Requested B Dures Shall be in Ac NABC NATIONAL STAND, DN COMPLETION, ALL R RVED AREAS SHALL BE	ACCC ANCE RE A TOTA Y THE OV CCORDANC ARDS, OR EUSED MI BALANC	TUANCE PORT SHA L AIR CON WNER FOR E WITH T EQUIVALE ECHANICAI ED TO AC	HI GEN ILL BE PI IDITIONIN SMALLEF HE NEBB INT PROC SYSTEM HIEVE RE	Erally Accept Rovided to the S Area Excedin R Spaces. Procedural Edures. Is Shall Be Re Quired Design	ED OWNER IG BALANCE VALUES.
	NOTE: DRAWINGS SHOWING DIMENSION	/DETAILS ARE TO BE CO IN DETAIL OR TO SCALE IS ARE SHOWN THE STR	NSIDERED DIAGRAMMA ALL MINOR ITEMS. UN JCTURAL, ARCHITECT	.TIC, NOT NECES ILESS SPECIFIC IRAL AND SITE	SARILY											
	CONDITION	IS SHALL GOVERN EXACT	LOCATIONS. CONTRACTIONS. CONTRACTIONS. CONTRACTIONS	CTOR SHALL FOI	LOW FALL											
	IKADES															
								1								
															MIN	<u> 11</u>
								L M	ARK	BRAND					NG FLA. U	<u>, т</u>
													A A	TMB	H A L	BS
								DF/	AC-1,2,3,4,6	6,7 40MBQB	18C3 290/350/420	60 N/	/A N/A	5.5/9	0.0 0.15 4	
								DF7	•∪-⊃ <u>SPLIT</u>	40MAQB	24B3  <sup>320/620/8/0</sup>	N/	A   N/A	0.0/2	.0.0 0.40 4	
									1. OUTS 2. PROV ON-C 3. PROV 4. PROV MANL AHU. 5. INSTA 6. PROV	ide air desi ide a/c uni off switch s ide wired pf ide proper ifacturer's return air all chemical ide built—in	GN CONDITIONS: 91'FDB TS WITH PROGRAMMABLE SUB-BASE. (WRED AND ROGRAMMABLE REMOTE VIBRATION ISOLATORS A RECOMMENDATIONS. PR THRU LOUVERED DOOR DRYER AND STRAINER DISCONNECT AND BUIL	- 79'FDB E HEATING INSTALLEI CONTROL AS PER IS OVIDE FILT UNLESS ( IN REFRIC T-IN CON	B. AND COO D BY ELEC MODEL# K OLATION IER RACK DTHERWISE GERANT LIC DENSATE I	LING THE TRICAL C SACN0101 UNDER NOTED. QUID LINE PUMP.	rmostat with ontractor) aaa. S.	

	ENERGY RECOVERY VENTILATOR																					
	SELECTION B	SELECTION BASED ON			MCA	MOCP	WEIGHT	T OUTDOOR AIR FAN							EXHAUST AIR FAN						WHEEL	
MARK	MAKE	MODEL NO.		VULTAGE	(AMPS)	(AMPS)	(LB.)	VOLUME (CFM)	(IN WC)	FRPM	Motor HP	DRIVE	EAT	LAT	VOLUME (CFM)	ESP. (IN WG)	FRPM	M MOTOR DRIVE EAT LAI HP TYPE				
ERV-1	GREENHECK	ECV-30H	RESTRMS	208/60/1	19.9	30		2650	0.50	1005	1.5	DIRECT	91/79	79/67	2650	1.00	1442	2.1	DIRECT	80.9	-	49.
ERV-2	GREENHECK	ECV-20H	RESTRMS	208/60/1	11.8	15		1450	0.50	1070	3/4	DIRECT	91/79	79/67	1450	1.0	1362	1.5	DIRECT	80.9		53.
GENERAL ERV NOTES: 1. PROVIDE MOTOR STARTERS AND DISCONNECTS AS REQUIRED. 8. PROVIDE BIRDSCREEN ON ALL INLETS AND OUTLETS. 13. PROVIDE MOTORIZED CONTROL DAMPER.																						

PROVIDE MOTOR STARTERS AND DISCONNECTS AS REQUIRED.
 PROVIDE BACKDRAFT FOR EXHAUST SIDE.
 FIELD ADJUST OPENINGS WITH STRUCTURE.
 COORDINATE WITH ELECTRICAL CONTRACTOR BEFORE BIDDING OR ORDERING ANY EQUIPMENT.
 SEE GENERAL, AIR CONDITIONING, DUCTWORK, AND COORDINATION NOTES FOR OTHER FIELD SUPPLIED ITEMS.
 C PROMOS CONDECTION DESIGNATE ACTIVICE

6. PROVIDE CORROSION RESISTANT FASTENERS.

7. PROVIDE FACTORY FAN MOUNTING SUPPORTS-LEGS, CURBS, HANGING CLIPS, ETC...

MOTORS MOUNTED ON ADJUSTABLE PLATE

MOTORS MOUNTED ON ADJUSTABLE PLATE
 ERV'S SHALL BE CONTROLLED BY BMS WHEN BUILDING IS IN OCCUPIED MODE, ERV'S SHALL OPERATE. WHEN BUILDING IS IN UNOCCUPIED MODE, ERV'S SHALL DEACTIVATE.
 ASSOCIATED MOTORIZED DAMPERS SHALL OPEN UPON ACTIVATION OF UNIT AND CLOSE UPON DEACTIVATION OF UNIT. MOTORIZED DAMPERS SHALL FAIL OPEN.
 HERESITE PAINT.

	SPLIT SYSTEM SCHEDULE																												
AIR HANDLING UNIT										AIR COOLED CONDENSING UNIT SYSTEM DATA									TA										
	MODEL	CFM		ESP	FAN	HEAT	ER	WT			AHU	DIMENSIONS	MARK	MODEL	WT	ELECTRICAL	CO	MPRESS	OR	F	AN	UNIT	MAX	CAPAC	TY	SEER	REF.	LINES	DIMENSION
	NO.	TOTAL	0A	IWG	HP	KW 00240	STEP	LBS	6 MCA	FUSE	Volts-ph-Hz	LXWXH		NO.	LBS	VOLTS-PH-HZ	QTY.	RLA	LRA	QTY	FLA	МСА	FUSE	TMBH	SMBH		SUCTION	LIQUID	LXWXI
RM	CARRIER FV4CNB006	1600	I	1.0	3/4	10	1	207	7 53.8	60	208–1–60	22 X 25 X 60	CU-1	24ACB748-3	277	208-1-60	1	21.2	96	1	1.3	27.8	40	49.1	36.2	17.0			35 X 35 X
	CARRIER FV4CNF003L00	1000	-	1.0	1/2	5	1	150	5.4	15	208–1–60	22 X 22 X 54	CU-2	24ACC630A003	204	208–1–60	1	12.8	64	1	0.70	16.7	25	28.14	20.52	16.0			32 X 32 X
isigi Sigi Ui Dei Vdei Jn F	TEM NOTES N CONDITIONS: 941 NTS WITH PROGRAM VERIFY OWNER PF NSING UNITS W/ SI REFRIGERANT PIPING NS.	EDB — ( MMABLE REFEREN EACOAS G AS M	67°FW Cool ICE O ICE O T Cof ANUF/	B (MI/ LING/I N TYF RROSIO ACTUF	ami, f Heatin Pe of Dn pr Rer's	'L). Ng Thermo Thermost Otection Latest Pu	OSTAT TAT. (LUVA JBLISH	con Ta c Ed	itrols. Dr Equ	JIVALEI	NT).	5. 6. 7.	Provide 80 and Provide Manufa Insula <sup>-</sup> Armafl	E LONG-LINE ACC 250 FT. E PROPER VIBRA ACTURER'S RECOM IE REFRIGERANT EX.	CESORI TION IS IMEND SUCTIO	es for tubing Solators as pe Ations. Dn line with 3/	sets be r Isola '4" fire	etween .TION Retard	DANT			8. P 9. IN 10. P 11. P 12. P * U	Rovide i NSTALL C Rovide i Rovide i NOVIDE i NIT Size 1 Ton	Filter Rack Chemical Dr Built—In Dis Auxiliary Co Hurricane 1 Is 1.5 Ton, Unit. This U	W/ Filte Yer and Connect DNDENSAT 1e-down But une Nit Will	er for a Straine With Ai E float Kits fo Der Low Perfori	ALL AHU'S. R IN REFRI L AIR HAN SWITCH. R CONDEN: SETTING T M IN LOW S	gerant l Dling Uni Sing Unit His Will Setting.	lquid lines. Its. S. Perfom As



Exhibit 1 (Part A) Page 181 of 202











DELTA G CONSUL ENGINEERS, INC. 707 N.E. 3rd AVE., SUITE 200 FORT LAUDERDALE, FL. 33304 (954) 527-1112 GEORGE SANJUAN, P.E. FLORIDA LICENSE #46100 ЕX MPL 0 U U F QU ш ERDA ப்பட OR<sup>.</sup> SE AND LL\_ AIA LAL REV DATE DESCRIPTION DESIGN DELIVERABLE: SCHEMATIC DESIGN ISSUE DATE: MM/DD/YYYY

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MECHANICAL DETAILS

M-102

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DRAWN BY: MO, JW, RT, JB

CHECKED BY: GSJ

SHEET TITLE:

SHEET NUMBER:

(GENERAL NOTES ARE PROVIDED AS A BASIC DESCRIPTION OF THE	EXTENT AND QUALITY EXPECTED IN THIS PROJECT. IF A CONFLICT EXISTS	
BETWEEN THESE GENERAL NOTES AND THE REMAINDER OF THE CONT 1. THE ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS:	RACT DOCUMENTS THE SPECIFICATIONS, PLANS AND DETAILS WILL GOVERN.)	SYMBOL DESCRIPTION
FLORIDA STATE FIRE MARSHALL'S RULE 69A-3.012 FAC AND RULE CHAPTER 69A-60 FLORIDA ADMINISTRATIVE CODE (FAC) AND FLORIDA STATUTE SECTION 633.022	28. ALL CIRCUIT BREAKERS SHALL BE INVERSE TIME TYPE (THERMAL MAGNETIC OR SOLID STATE AS REQUIRED BY SPECIFICATION). TWO AND THREE POLE CIRCUIT BREAKERS SHALL BE COMMON TRIP. NO TIE HANDLES PERMITTED.	LIGHTING (REFER TO LIGHTING FIXTURE SCHEDULE)
A. NFPA 70: NATIONAL ELECTRICAL CODE (2011 EDITION) B. NFPA 72: NATIONAL FIRE ALARM CODE (2010 EDITION)	29. ALL FUSES SHALL BE CURRENT LIMITING, PER U.L., RATED 600V., UON. A. NON—TIME DELAY FUSES IN MAIN SWITCHES AND SWITCHES FEEDING PANELS.	
C. NFPA 99: HEALTH CARE FACILITIES (2012 EDITION) D. NFPA 101: LIFE SAFETY CODE (2012 EDITION) E. NFPA 110: STANDARD FOR EMERGENCY AND STANDBY POWER SYSTEMS (2010 EDITION)	<ul> <li>B. TIME DELAY FUSES FOR MOTOR AND A/C CIRCUITS.</li> <li>30. ALL DISCONNECT SWITCHES SHALL BE SIZED BY NEC REQUIREMENTS TO ACCOMMODATE</li> </ul>	LIGHTING FIXTURE (HID, FLUORESCENT OR INCANDESCENT), RECESSED MTD.
F. NFPA 780: STANDARD FOR THE INSTALLATION OF LIGHTNING PROTECTION SYSTEMS (2011 EDITION) IN ADDITION, THE INSTALLATION SHALL ALSO BE IN ACCORDANCE WITH THE FOLLOWING:	EQUIPMENT SERVED, INCLUDING REQUIRED FUSES U.O.N. SWITCHES SHALL BE HORSEPOWER RATED FOR MAX. HORSEPOWER, HEAVY DUTY TYPE.	EXIT LIGHT FIXTURE. DIRECTION ARROWS AS SHOWN
G. FLORIDA BUILDING CODE 2014 Strift Edition (FBC) H. THE GUIDELINES FOR DESIGN AND CONSTRUCTION OF HEALTH CARE FACILITIES (FGI GUIDELINES, 2010 EDITION)	31. CONTRACTOR SHALL VERIFY CIRCUIT PROTECTIVE DEVICE RATING FOR EQUIPMENT PRIOR TO INSTALLATION. 32. FURNISH AND INSTALL DISCONNECT SWITCHES AND WIRING FOR AIR CONDITIONING	WALL MOUNTED EXIT LIGHT FIXTURE (SHADED QUADRANT INDICATES FACE(S) OF FIXTURE)
I. FLORIDA FIRE PREVENTION CODE (2010 EDITION) 2. AS A MINIMUM, ALL EQUIPMENT SHALL MEET APPLICABLE STANDARDS, FOR THE TYPE OF FOLLIDMENT AND INTENDED USE OF THE FOLLOWING:	SYSTEM AS PER MANUFACTURER RECOMMENDATIONS. CONTROLS ARE TO BE SUPPLIED BY AIR CONDITIONING CONTRACTOR AND CONNECTED. PROVIDE ALL CONTROL WIRING FOR	2 X 2 FLUORESCENT LIGHT FIXTURE
A. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) B. ILLUMINATING ENGINEERS SOCIETY (IES)	A/C SENSORING AND CONTROL UNITS, COORDINATE WITH A/C CONTRACTOR FOR WIRING DIAGRAMS AND EXACT MOUNTING LOCATIONS.	DIAGONAL SHADING DENOTES LIGHT FIXTURE CONNECTED TO EMERGENCY BRANCH CIRCUIT OR. W/EMERG. BATTERY PACK.
C. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) D. NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATES.(NEMA)	ALL ELECTRICAL EQUIPMENT SHALL BE RAINTIGHT WHERE EXPOSED TO THE WEATHER. ALL FLEX CONDUITS CONNECTED TO SUCH EQUIPMENT SHALL BE LIQUID TIGHT.	1 X 4 FLUORESCENT LIGHT FIXTURE DIAGONAL SHADING DENOTES LIGHT FIXTURE CONNECTED TO EMERGENCY
ALL ELECTRICAL EQUIPMENT, DEVICES, WIRE, ETC., SHALL BE LISTED, FOR INTENDED USE, WITH UNDERWRITER'S LABORATORIES INC. (U.L.), WHERE STANDARDS HAVE BEEN	ENVIRONMENT IN WHICH THEY ARE TO BE INSTALLED. 35. ALL CONNECTIONS TO GROUND RODS SHALL BE MADE WITH U.L. APPROVED WELDED	BRANCH CIRCUIT OR, W/EMERG. BATTERY PACK.
ESTABLISHED BY U.L. 3. CONTRACTOR TO PROVIDE ALL LABOR, MATERIALS AND SUPERVISION NECESSARY TO ADDITION THE WORK AND AUGUMAN AND (OD NOTED ON THE DEMUNICON)	CONNECTIONS, UNLESS NOTED OTHERWISE. THE CONTRACTOR SHALL FORM A GROUNDING ELECTRODE SYSTEM AS PER NEC 250-50.	FLUORESCENT STRIP FIXTURE DIAGONAL SHADING DENOTES LIGHT FIXTURE CONNECTED TO EMERGENCY BRANCH CIRCUIT OR W/EMERG BATTERY PACK
4. THE CONTRACTOR SHALL VISIT THE JOB SITE AND VERIFY ALL CONDITIONS, LOCATIONS, DIMENSIONS AND COUNTS AS SHOWN OR NOTED ON THE DRAWINGS. PRIOR TO	36. OUTLET IN DRY LOCATIONS BOXES SHALL BE PRESSED STEEL, IN WET OR DAMP LOCATIONS SHALL BE CAST ALLOY WEATHER—RESISTANT OUTLET WITH THREADED HUBS AND IN OTHER CLASSIFIED AREAS IT SHALL BE IN A SPECIAL ENCLOSURE PROPER	EXTERIOR LIGHT FIXTURE WITH ARMS AS SHOWN ON DRAWINGS
SUBMITTING BID. 5. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL LABOR,	PLASTER RINGS SHALL BE USED WITH OUTLET BOXES. PROPER COORDINATION BETWEEN ELECTRICAL SUBCONTRACTOR AND GENERAL CONTRACTOR FOR PLASTER RING INITIATION	TOGGLE SWITCH 120/277V. 20 AMP.,(M.H. = 48" A.F.F.)
MATERIALS AND SUPERVISION NECESSARY TO ACCOMPLISH THE WORK AS SHOWN AND/OR NOTED ON THE PLANS.	WILL BE REQUIRED. NO "GOOF" RINGS SHALL BE ALLOWED. ALL OUTLET BOXES SHALL BE SECURELY FASTENED. 37. WHEN ELECTRICAL ROYES ARE LOCATED IN VERTICAL FIRE RESISTIVE ASSEMBLIES.	$3_3$ TOGGLE SWITCH 120/277V. 20 AMP. ,(M.H. = 48" A.F.F.) , 3–WAY TOGGLE SWITCH 120/277V. 20 AMP., (M.H. = 48" A.F.F.), 4–WAY
ARCHITECTURAL CONTRACTOR SHALL NOT SCALE DRAWINGS. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT LOCATIONS OF ALL EQUIPMENT UNLESS NOTED OTHERWISE.	37. WHEN ELECTRICAL BOXES ARE LOCATED IN VERTICAL FIRE RESISTIVE ASSEMBLIES, (CLASSIFIED AS FIRE/SMOKE AND SMOKE PARTITIONS), THEY SHALL BE INSTALLED WITHOUT AFFECTING THE FIRE CLASSIFICATION. ALL OF THE FOLLOWING CONDITIONS	k TOGGLE SWITCH 120/277V. 20 AMP. KEYSWITCH, (M.H. = 48" A.F.F.)
7. IT SHALL BE UNDERSTOOD THAT ALL WORK PERFORMED SHALL BE DONE BY A LICENSED CONTRACTOR AND IN A FIRST-CLASS WORKMANLIKE MANNER. SAID CONTRACTOR SHALL	SHALL BE MET: A. ALL ELECTRICAL BOXES SHALL BE METALLIC. B. BOX OPENING SHALL OCCUP ONLY ON ONE SIDE OF ERAMING SPACE	$f_{\rm F}$ FAN SWITCH 120/277V. 20 AMP, (HORSEPOWER RATED) T 30-MINUTE ROTATABLE TIMER SWITCH (M.H. = 48" A.F.F.)
MEET ALL REQUIREMENTS SET FORTH BY ANY LOCAL ORDINANCE AND GOVERNING AUTHORITIES.	C. BOX OPENING SHALL OCCOR UNET ON ONE SIDE OF FRAMING SPACE. C. BOX OPENING SHALL NOT EXCEED 10322.56 SQUARE MM (16SQUARE INCHES). D. ALL CLEARANCES BETWEEN OUTLET BOX AND GYPSUM BOARD SHALL BE	SP TOGGLE SWITCH 120/277V. 20 AMP., WITH PILOT LIGHT, (M.H.=48"A.F.F.)
PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF THE WORK. 9. CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS	COMPLETELY FILLED WITH JOINT COMPOUND (OR OTHER APPROVED MATERIAL). E. PROVIDE A WALL AROUND OUTLETS LARGER THAT 10322.56 SQUARE MM (16 SQUARE INCHES). THE INTECRITY OF THE WALL BATING SHALL BE MAINTAINED.	Sex TOGGLE SWITCH 120/277V. 20 AMP. EXPLOSION-PROOF, (M.H.=48"A.F.F.)
FOR A PERIOD OF NOT LESS THAN ONE YEAR FROM DATE OF ACCEPTANCE, UNLESS INDICATED OR SPECIFIED OTHERWISE.	F. THE TOTAL AGGREGATE SURFACE AREA OF THE BOXES SHALL DE MAINTAINED. SQUARE MM (100 SQUARE INCHES) PER 9.29 SQUARE METERS (100 SQUARE FEET)	bsSPEED SWITCH 120/277V. 20 AMP. U.O.N. ,(M.H. = 48" A.F.F.) $Single$ Phase manual motor starter, (M.H.=48" A.F.F.)
U. 11 SHALL NUT BE THE INTENT OF THESE PLANS AND/OR SPECIFICATIONS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE CONTRACTOR SHALL BE EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM AND PROVIDE	G. OUTLET BOXES LOCATED ON OPPOSITE SIDES OF FIRE RESISTIVE ASSEMBLIES SHALL BE SEPARATED BY A MINIMUM HORIZONTAL DISTANCE OF 609.6MM (24 INCHES).	\$DDIMMER SWITCH 120/277V. 20 AMP., (M.H.=48" A.F.F.) (1500 WATTS UNLESS OTHERWISE INDICATED)
FOR ALL REQUIREMENTS NECESSARY FOR EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.	I. THE OPENING IN THE GYPSUM BOARD FACING SHALL BE CUT NOT TO EXCEED 3.175MM (1/8 INCH) BETWEEN THE EDGES OF THE OUTLET BOX AND THE EDGES	$5_{3D}$ THREE-WAY DIMMER SWITCH (48" A.F.F.) $5_{a}$ SINGLE POLE SWITCH (48" A.F.F.) (SUBSCRIPT INDICATES ITEM
ANY AND ALL DAMAGES TO BUILDING SURFACES, EQUIPMENT, ETC. CAUSED DURING THE PERFORMANCE OF WORK.	OF THE OPENING. 38. SMOKE DETECTORS SHALL BE PROVIDED NO CLOSER THAN 36" FROM SUPPLY AIR	CONTROLLED) PANIC SWITCH, MUSHROOM TYPE, (M.H.=48" A.F.F.)
2. CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE OR DELAYS AND SHALL INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED THEREPY	39. CONTRACTOR SHALL PROVIDE A TYPE WRITTEN DIRECTORY OF EACH PANELBOARD. HAND WRITTEN DIRECTORY IS NOT ACCEDITABLE EVOLUTION SPACE SHALL DE	$\Psi_{a,b}$ wall mounted – occupancy sensor switch,(m.h.=48"a.f.f.) MFGR. sensor switch/#wsd-pdt
3. FOR ELECTRIC POWER SYSTEM, COORDINATE POWER SERVICE WITH POWER COMPANY;	HANDWRITTEN IN PENCIL. 40. PROVIDE A 4" STEEL REINFORCED CONCRETE HOUSEKEEPING PAD UNDER ALL FLOOR	(a, b) OR (2) INDICATES TWO POLE SWITCH — WSD-PDT-2P LV INDICATES LOW VOLTAGE — WSD-PDT-LV
TO SUBMITTING BID. CONTRACTOR TO VERIFY AVAILABLE SERVICE VOLTAGE AND PHASES WITH POWER COMPANY PRIOR TO BID AND PROVIDE BID ALLOWANCE FOR	MOUNTED ELECTRICAL EQUIPMENT. 41. A. WORKING CLEARANCES FOR ELECTRICAL EQUIPMENT SHALL BE IN COMPLIANCE WITH	OS       CEILING MOUNTED OCCUPANCY SENSOR – LIGHTING CIRCUIT CONTROLL         MFGR./MODEL# (SENSOR SWITCH/#CM-PDT)
B. PROVIDE TEMPORARY ELECTRICAL SERVICE FOR USE BY ALL TRADES DURING CONSTRUCTION AND REMOVE SAME AT COMPLETION OF PROJECT,	B. THE EXCLUSIVELY DEDICATED SPACE EXTENDING FROM FLOOR TO STRUCTURAL CEILING WITH A WIDTH AND DEPTH OF THE PANELBOARD OR SWITCHBOARD MUST BE	CEILING MOUNTED DUAL TECHNOLOGY EXTENDED RANGE OCCUPANCY E SENSOR - LIGHTING CIRCUIT CONTROLLER. SENSOR SWITCH/#CM-PDT- WALL MOUNTED - OCCUPANCY SENSOR (MH = 96"A F F )
4. CONTRACTOR SHALL KEEP ALL AREAS IN WHICH WORK IS BEING PERFORMED, FREE FROM DEBRIS AT ALL TIMES AND SAID AREAS SHALL BE LEFT BROOM CLEAN AT THE	CLEAR OF ALL PIPING, DUCTS, EQUIPMENT FOREIGN TO THE ELECTRICAL EQUIPMENT OR ARCHITECTURAL APPURTENANCES IN ACCORDANCE WITH NEC 408.	MFGR./MODEL#WV-PDT
5. CONTRACTOR SHALL PAY FOR ALL PERMITS, FEES, INSPECTIONS, AND TESTING COSTS.	42. METER CANS, HUBS, & LUGS FOR SAME ARE TO BE FURNISHED & INSTALLED BY CONTRACTOR. CONTRACTOR TO VERIFY SPECIFIC TYPE OF METER CAN TO BE USED WITH F.P.L. PRIOR TO BID.	OCCUPANCY SENSOR NOTE:
<ol> <li>COORDINATE ALL ELECTRICAL SITE WORK WITH ALL OTHER TRADES CONTRACTORS.</li> <li>IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR FOR THE ADVANCE ORDERING OF LONG LEAD ITEMS. AS TO NOT INTERFERE WITH THE PRODUCTION OF</li> </ol>	43. A. PROVIDE A PERMANENT SIGN ON THE MAIN ELECTRICAL ROOM DOOR TO THE BLDG. STATING THAT THE SERVICE DISCONNECTS ARE LOCATED INSIDE.	CONTRACTOR SHALL PROVIDE ALL SWITCHPACKS AND CONDUCTORS AS REQUIRED FOR LAYOUTS AND CONTROLS SHOWN ON PLANS.
OTHER TRADES RESULTING IN ANY DOWN OR LAG TIME. THE CONTRACTOR SHALL NOT ORDER ANY ITEMS UNTIL APPROVED SHOP DRAWINGS ARE RETURNED TO HIM.	B. SIGNS SHALL BE PLACED AT THE MAIN DISCONNECT EQUIPMENT INDICATING TYPE AND LOCATION OF ON-SITE EMERGENCY POWER SOURCES.	IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE AND INSTALL A COMPLETE AND FULLY FUNCTIONAL LIGHTING CONTROL
ELECTRICAL CONTRACTOR SHALL SUBMIT (& COPIES) ECOIPMENT LATOUT OF ALL ELECTRICAL SPACES, ROOMS, ETC., TO ENGINEER FOR APPROVAL PRIOR TO ORDERING EQUIPMENT OR INSTALLING CONDUITS, ETC. LAYOUT SHALL CONSIST OF PLAN VIEWS	44. THE EQUIPMENT GROUNDING TERMINAL BARS OF THE NORMAL AND EMERGENCY ELECTRICAL SYSTEM PANELBOARDS SERVING THE SAME BUILDING SHALL BE BONDED TOGETHER WITH AN INSULATED, CONTINUOUS, COPPER CONDUCTOR NOT SMALLER THAN	SYSTEM IN ACCORDANCE WITH THE PLANS, DETAILS, INTENT OF THE DESIGN AND SPECIFICATIONS SHOWN ON THESE PLANS.
(SCALED AS REQUIRED) AND ELEVATIONS (DIMENSIONED) FOR EACH SUCH SPACE, ROOM, ETC. 9. CONTRACTOR SHALL SUBMIT AT ONE TIME, SIX (6) SETS OF LOOSE-LEAF BOUND	NUMBER 6. 45. THE ELECTRICAL CONTRACTOR SHALL FURNISH A COMPLETE SET OF AS-BUILT DRAWINGS SHOWING ALL CHANGES AND DEVIATIONS TO THE ARCHITECT/ENGINEER PRIOR	BASIC MATERIALS
BOOKS, INDEXED WITH ALL PRODUCTS, MATERIALS, LIGHTING FIXTURES, LAMPS, WIRING DEVICES, SWITCHGEAR, ETC. CLEARLY HIGHLIGHTING ALL EQUIPMENT QUANTITIES AND DETAILS ALL EQUIPMENT SHALL BE AS SPECIFIED ON PLANS: THE PESPONSIBILITY TO	TO COMPLETION OF THE PROJECT. 46. ARCHITECTURAL AND/OR ENGINEERING EXPENSES THAT ARE INCURRED DUE TO	DUPLEX RECEPTACLE, 20 AMP., 125V., (M.H.=18"A.F.F.) FLOOR OUTLET BOX AND DUPLEX RECEPTACLE 20 AMP., 125V., WITH
ACCEPT OR REJECT ANY PROPOSED SUBSTITUTION REMAINS WITH THE PROJECT ENGINEER. THE CONTRACTOR MAY AT HIS JUDGMENT USE ANY ARTICLE, DEVICE,	REVISIONS OR SUBSTITUTIONS REQUESTED BY THE CONTRACTOR SHALL BE PAID FOR BY THAT CONTRACTOR. 47. FOR TELEPHONE SYSTEMS:	APPROPRIATE FLANGE.
WRITING ARE EQUAL TO THAT SPECIFIED. 20. ALL CONDUCTORS SHALL BE COPPER. TYPE THHN/THWN EXCEPT WHERE OTHERWISE	A. PROVIDE GROUNDING FOR ALL TELEPHONE OUTLETS AND EQUIPMENT PER REQUIREMENTS OF THE TELEPHONE COMPANY.	DUPLEX RECEPTACLE, 20 AMP., 125V., TOP HALF SWITCHED, M.H. =
REQUIRED BY U.L. OR CODES. MINIMUM WIRE SIZE SHALL BE #12 AWG, EXCLUDING CONTROL WIRING. ALUMINUM CONDUCTORS ARE NOT PERMITTED.	AND BACKBOARDS WITH TELE. CO. C. VERIFY LOCATION OF TELEPHONE SERVICE WITH TELEPHONE COMPANY. PROVIDE	<ul> <li>18" A.F.F. UNLESS OTHERWISE NOTED</li> <li>DUPLEX RECEPTACLE, 20 AMP., 125V., ISOLATED GROUND AND SURGE</li> </ul>
21. ALL CONDUCTORS SHALL BE IN CONDUITS. ALL CONDUITS SHALL BE GALVANIZED RIGID STEEL (GRS) EXCEPT THAT: (a) PVC CONDUITS MAY BE USED UNDERGROUND PROVIDED ELBOWS AND RISERS ARE GALVANIZED RIGID STEEL OR SCHEDULE 80 PVC, WHERE	ALL ASSOCIATED COSTS IN BID. D. MARK TERMINATIONS OF TELEPHONE CONDUIT AS DIRECTED BY THE TELEPHONE	T PROTECTED, (M.H.=18"A.F.F.)
SUBJECT TO PHYSICAL DAMAGE (b) ELECTRICAL METALLIC TUBING (EMT) MAY BE USED IN OR ON WALLS OR CEILINGS WHERE NOT SUBJECT TO MECHANICAL DAMAGE, DAMP OR CORPOSIVE CONDITIONS (c) LIQUID TICHT ELEVIELE CONDUIT WHERE PEOLIDED (d)	COMPANY. E. VERIFY LOCATION OF TELEPHONE SERVICE WITH TELEPHONE COMPANY PRIOR TO SUBMITTING BID, INCLUDE ALL ASSOCIATED COSTS IN BID.	$\Psi$ Single received a second state in the second state in the second state in the second state is the second state in the second state is the second state in the second state is the sec
FLEXIBLE METALLIC CONDUIT WHERE REQUIRED IN DRY LOCATIONS ONLY, (a) MC CABLE WITH DEDICATED GREEN GROUNDING CONDUCTOR WHERE PERMITTED. ALL CONDUITS IN	F. USE EXTERIOR GRADE 3/4" PLYWOOD BACKBOARDS FOR MOUNTING TELEPHONE EQUIPMENT AND TERMINAL STRIPS. PAINT BOARD ON ALL SIDES AND EDGES WITH TWO COATS OF FLAT BLACK FIRE PETARDANT PAINT	Ψewc Simplex Receptable (16 A.F.F.) (ewc denotes electric water cooler. coordinate with ewc installer for mounting height)
HAZARDOUS AREAS (PER NEC) SHALL MEET THE REQUIREMENTS OF NEC CHAPTER 5. 22. FOR UNDERGROUND ELECTRICAL CONDUITS, PROVIDE PULL BOXES, SUCH THAT NO SINGLE CONDUIT RUN HAS RENDS IN FACESS OF 360 DUIL BOXES SHALL BE	48. INDUSTRIAL CONTROL TYPE TRANSFORMERS SHALL BE PROVIDED WITH FINGERSAFE COVERS AND PRIMARY FUSE PROTECTION AS REQUIRED PER NEC 450-3. MOUNT	TWO DUPLEX RECEPTACLES WITH COMMON COVER 20A., 125V.,(18" A.F
SUITABLE AND APPROVED FOR THE INTENDED USE. WARNING TAPE WHICH SAYS "WARNING BURIED ELECTRIC" SHALL BE PLACED IN TRENCHES ABOVE ALL UNDERGROUND ELECTRIC CONDUCTS WITH THE WARNING TAPE WHICH SAYS	TRANSFORMERS ON 4"X4" JUNCTION BOX ABOVE ACCESSIBLE CEILINGS OR ELECTRICAL ROOMS. 49 FOR RESIDENTIAL WORK PROVIDE COMBINIATION TYPE ARC-EAULT CIRCUIT INTERPLIPTER	DUPLEX RECEPTACLE, 20 AMP., 125V., MOUNT ABOVE COUNTER @42"
ELECTRIC CONDUTTS. WHERE CONDUTTS PASS UNDERNEATH PAVED AREAS, THEY SHALL BE PVC. WHERE UNDERGROUND CONDUTTS ARE NOT EXPOSED TO MECHANICAL DAMAGE OR ARE NOT UNDER PAVED AREAS, THEY SHALL BE SCHEDULE 40 PVC.	PROTECTION THROUGHOUT THE DWELLING UNIT, EXCEPT IN KITCHEN BATHROOM, GARAGES AND OUTDOORS. ALL DWELLING UNIT RECEPTACLE OUTLETS MUST BE LISTED	SPECIAL PURPOSE OUTLET e.g. RANGE OUTLET, COORD. W/ EQUIPT.
3. ALL CONDUIT RUNS ARE SHOWN DIAGRAMMATIC. EXACT ROUTING SHALL BE DETERMINED IN THE FIELD, UNLESS OTHERWISE NOTED. 4. WIREWAYS SHALL BE SIZED AS REQUIRED DEP NECTING STATEDWISE NOTED (1001)	IAMFER-RESISTANT. 50. PROVIDE U.L. LISTED COMPOUND APPLIED TO BACK OF "BACK TO BACK" BOXES IN RATED WALLS WHERE THE BOXES ARE LESS THAN 609.6MM (24 INCHES) APART	GFCI DUPLEX RECEPTACLE, 20 AMP., 125V., (M.H.=18"A.F.F.)
5. WHERE CORE DRILLING OF FLOOR/WALLS IS REQUIRED, CONTRACTOR SHALL SEAL OPENINGS WATERTIGHT AFTER UTILITIES HAVE BEEN INSTALLED. LOCATION OF CORED	MEASURED HORIZONTALLY. 51. CONTRACTOR SHALL PROVIDE TYPED, UPDATED PANEL DIRECTORIES ON ALL PANELS THAT	GFCI DUPLEX RECEPTACLE, 20 AMP., 125V., MTD. ABOVE COUNTER (VE HEIGHT)
HOLES SHALL COORDINATE WITH LOCATION OF EQUIPMENT IN A MANNER TO BE CLEAN AND FUNCTIONAL. THE CONTRACTOR SHALL INSTALL ONLY ONE CONDUIT PER HOLE AND SEAL THE OPENING AROUND THE CONDUIT AS SPECIFIED.	ARE AFFECTED AT THE COMPLETION OF THE JOB. 52. FOR RECEPTACLES IN DAMP AND WET LOCATIONS THE CONTRACTOR SHALL PROVIDE ALL 125V, AND 250V., 15A, AND 20A, RECEPTACLES THAT ARE LISTED AS WEATHER RESISTANT	30 AMP., 125V., TWIST LOCK RECEPTACLE FOR FLOOR POLISHING MAC         JUNCTION BOX. MOUNTING AS SHOWN
6. PROVIDE FIRE RETARDANT U.L. APPROVED SEALANT ON ALL PENETRATIONS OF FIRE RATED PARTITIONS, WALLS AND STRUCTURAL SLABS. CONTRACTOR TO VERIFY, PRIOR TO SUBMITTING PID. LOCATIONS OF ALL SUBLICIES DATED DATED DATED TO WALLS AND	TYPE TO COMPLY WITH NEC ARTICLE 406.8. 53. SERVICE EQUIPMENT IN OTHER THAN DWELLING UNITS SHALL BE LEGIBLY MARKED IN	POWER POLE
SUBMITTING BID, LOCATIONS OF ALL SUCH FIRE KATED PARTITIONS, WALL AND STRUCTURAL SLABS. 7. UNLESS NOTED AS EXISTING, ALL EQUIPMENT, WIRING, DEVICES, ETC. SHALL BE NEW	THE FIELD WITH THE MAXIMUM AVAILABLE FAULT CURRENT. THE FIELD MARKING(S) SHALL INCLUDE THE DATE THE FAULT CURRENT CALCULATION WAS PERFORMED AND BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.	(5) ELECTRIC MOTOR, NUMBER INDICATES HORSEPOWER
	TING NOTES	COMBINATION MAGNETIC MOTOR STARTER, SIZE AS NOTED
		DISCONNECT SWITCH, SIZE AS NOTED
1. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF LIGHT FIXTURES.	15. PROVIDE WIND LOAD RATED LIGHT POLES WITH 170 MPH MINIMUM WIND SPEED (ASCE 7), EXPOSURE C WITH IMPORTANCE FACTOR OF 1.0, AND PROVIDE PHOTOMETRICS WITH	AMP RATING/FRAME NEMA 3R- FOR EXTERIOF NEMA 1- FOR INTERIOR
<ol> <li>COURDINATE TIPE OF CEILING FOR EACH FIXTURE WITH ARCHITECTURAL REFLECTED CEILING PLANS AND PROVIDE FIXTURE TRIM AS REQUIRED.</li> <li>ALL COMPACT FLUORESCENT DOWNLIGHTS SHALL USE LAMPS WITH 3500K TEMPERATURE</li> </ol>	ALL FATURE SUDMITIALS, CUNTRACTOR TO VERIFY VULIAGES OF ALL LIGHT FIXTURES PRIOR TO BIDDING. 16 PHOTOMETRICS ARE BASED ON MANUFACTURER'S INFORMATION AND CATALOC NUMBERS	FUSE SIZE ( * DENOTES AS PER MANUFACTURER)
MINIMUM 10,000 HOUR LIFE, ELECTRONIC BALLAST, UNLESS OTHERWISE NOTED. 4. PROVIDE APPROVED FIRE RATED ENCLOSURES FOR ALL LIGHT FIXTURES LOCATED IN	ALTERNATIVE MANUFACTURERS MUST PROVIDE THE IESNA FORMAT ELECTRONIC FILES OF THE INDEPENDENT TEST LAB REPORTS FOR THE PROPOSED FIXTURES ON CD OR	LIGHTING CONTROL TIME CLOCK PHOTOCELL, MOUNTED ON ROOF FACING NORTH
FIRE RATED CEILINGS. 5. FIXTURES IN AREAS WITHOUT CEILINGS, OR IN MECHANICAL AND ELECTRICAL ROOMS SHALL BE MOUNTED WITH 1 1271 1271 1271 1271 1271 1271 1271 1	THE PHOTOMETRIC CRITERIA HAS BEEN MET, AND IF ALTERNATE IS APPROVED WILL ISSUE AN ADDENDUM. MANUFACTURERS NOT LISTED ON THE PLANS OR IN AN	SHUNT-TRIP BUTTON - FLUSH MOUNTED UNLESS OTHERWISE NOTED
SHALL BE MOUNTED WITH 1 1/2"X1 1/2"KINDORF CHANNEL SUPPORT SUSPENDED FROM ROOF STRUCTURE WITH THREAD RODS. FIXTURES SHALL BE MOUNTED 10'-0" A.F.F. 6. ALL ACRYLIC LENSED FIXTURES SHALL HAVE A LENS THICKNESS OF 125 INCLESS	ADDENDUM WILL NOT BE ACCEPTED. TO CONFIRM THAT THE SPECIFIED PHOTOMETRIC CRITERIA HAS BEEN MET, A COMPUTER	PLUG-IN STRIP WITH RECEPTACLES, 18" O.C. UNLESS OTHERWISE INDIC
7. HALF SHADED FIXTURES DENOTE EMERGENCY FIXTURES EITHER WITH 1100 LUMEN	DISK CONTAINING AN IES FILE FOR THE PROPOSED ALTERNATE MUST BE SUBMITTED TO (SPECIFIER) FOR EVALUATION NO LESS THAT 10 DAYS PRIOR TO BID. ANY ACCEPTABLE ALTERNATE MUST BE APPROVED IN WRITING PRIOR TO BID. DATE	
EMERGENCY BATTERY PACK OR ON LIFE SAFETY CIRCUIT. 8. LIGHTING FIXTURE SCHEDULE IS PREDICTED ON PERFORMANCE AND IS DESIGNED TO	18. CONTRACTOR MUST BE AFFRONCED IN WINNING FRIOR TO BID DATE. EXCEPTIONS). IF ALTERNATE FIXTURES ARE PROPOSED. THEY MUST BE BID AS AN	GROUND OR GROUND ROD AS NOTED
MEET CERTAIN AESTHETIC CRITERIA. ALL ALTERNATIVE SELECTIONS MUST BE SUBMITTED FOR PRIOR APPROVAL TEN (10) DAYS PRIOR TO BID DATE.	ALTERNATE BID MUST INCLUDE: A) TOTAL DOLLAR CREDIT TO OWNER IF ALTERNATE IS ACCEPTED.	
9. ALL BALLASTS SHALL HAVE MINIMUM POWER FACTOR OF 0.90. ALL BALLASTS FOR METAL HALIDE AND HIGH PRESSURE SODIUM FIXTURES SHALL BE CONSTANT WATTAGE	B) LINE THEM CREDIT FOR EACH ALTERNATE FIXTURE PROPOSED. C) CATALOG SUBMITTAL DATA FOR EACH ALTERNATE FIXTURE PROPOSED.	
TYPE WITH $\pm /-5\%$ LAMP WATTS FOR $\pm /-10\%$ NOMINAL LINE VOLTAGE VARIATION	19. IF THERE IS A DISCREPANCE BETWEEN A FIXTURE DESCRIPTION AND GENERAL NOTES, AND THE CATALOG NUMBER LISTED, THE FIXTURE DESCRIPTION AND GENERAL NOTES	
0. PROVIDE LAMPS WITH FIXTURES, VERIFY LAMP TYPE WITH MANUFACTURER.	SHALL GOVERN.	
<ol> <li>PROVIDE LAMPS WITH FIXTURES, VERIFY LAMP TYPE WITH MANUFACTURER.</li> <li>FLUORESCENT LUMINAIRES THAT UTILIZE DOUBLE-ENDED LAMPS AND CONTAIN BALLAST(S) OR MULTIWIRE BALASTED LUMINAIRES SHALL CONTAIN AN INTEGRATED</li> </ol>	20. COORDINATE FIXTURE TYPES WITH ARCHITECTURAL DRAWINGS.	NOTE: SOME SYMBOLS SHOWN ON THIS LEGEND MAY NOT PERTAIN TO THIS PROJECT.
<ol> <li>PROVIDE LAMPS WITH FIXTURES, VERIFY LAMP TYPE WITH MANUFACTURER.</li> <li>FLUORESCENT LUMINAIRES THAT UTILIZE DOUBLE-ENDED LAMPS AND CONTAIN BALLAST(S) OR MULTIWIRE BALASTED LUMINAIRES SHALL CONTAIN AN INTEGRATED INTERNAL DISCONNECT AND TO BE COMPLIED WITH NEC 410.73(G).</li> <li>ALL OPENINGS FOR LIGHT FIXTURES IN CEILINGS SHALL BE PROTECTED IN A MANNER (PER ALL GOVERNING CODES) THAT WILL DEPOVIDE THE SAME DATING AS THE OFFICIAL</li> </ol>	<ol> <li>COORDINATE FIXTURE TYPES WITH ARCHITECTURAL DRAWINGS.</li> <li>INTERNALLY ILLUMINATED EXIT SIGNS SHALL NOT EXCEED 5 WATTS PER SIDE.</li> <li>RECESSED LUMINAIRES INSTALLED IN THE BUILDING THERMAL ENVELOPE SHALL BE SEALED TO LIMIT AIR LEAKAGE RETWEEN CONDITIONED AND LUMCONDITIONED SHALL BE</li> </ol>	NOTE: SOME SYMBOLS SHOWN ON THIS LEGEND MAY NOT PERTAIN TO THIS PROJECT.

- (THIS APPLIES TO ALL FIRE RATED CEILINGS). 13. FOR EMERGENCY EXIT SIGNS AND EMERGENCY BATTERY PACKS MAKE CONNECTION AHEAD OF ALL SWITCHES AND CONTROLS.
- PROVIDE A FUSE HOLDER AND FUSE (BUSSMAN HEB AND FNQ OR EQUAL), IN THE PRIMARY SIDE OF EACH UNGROUNDED CONDUCTOR FOR ALL BALLASTS AT THE HAND HOLE OF EACH EXTERIOR POLE MOUNTED LIGHTING FIXTURE OR J-BOX FOR WALL OR GROUND MOUNTED FIXTURE.
- RECESSED LUMINAIRES SHALL BE IC-RATED AND LABELED AS MEETING ASTM E 283 WHEN TESTED AT 75 Pa PRESSURE DIFFERENTIAL WITH NO MORE THAN 2.0 CFM OF AIR MOVEMENT FROM THE CONDITIONED SPACE TO THE CEILING CAVITY. ALL RECESSED LUMINAIRES SHALL BE SEALED WITH A GASKET OR CAULK BETWEEN THE HOUSING AND THE INTERIOR WALL OR CEILING COVERING.

		SYSTEMS SYM	BOL LEG	END
SYMBOL	L	DE	SCRIPTION	
		CALL BACK PUSH BUTTON		
		CIRCUIT BREAKER, TYPE AN	ND SIZE AS PE	R DRAWINGS.
C _	<u></u>	CLOCK		
В	R	BELL AIR HANDLING UNIT SHUT-	DOWN RELAY	
R	-	POWER ON INDICATOR WITH	I KEYED RESET	
		SERVICE AND DISTR	IBUTION	
	<u> </u>	ELECTRICAL BRANCH CIRC (SEE PANEL SCHEDULE F	OR DETAILS)	RD, RECESS MOUNTED.
		ELECTRICAL BRANCH CIRC	UIT PANELBOA	RD, SURFACE MOUNTED.
		(SEE PANEL SCHEDULE F	OR DETAILS)	
		TRANSFORMER, SIZE AS N	OTED	
		AUTOMATIC TRANSFER SWIT	CH EMAIN	
		NEW EQUIPMENT OR WORK		ECT
		TELEPHONE/COMPUTER TE	RMINAL BOARD	"ТТВ"
S		INTERCOM SYSTEM SPEAKE	R UTLET WITH (2	) 8-CONDUCTOR RJ-45
		JACKS IN A SINGLE-GAN C = ABOVE THE COUNTE	G BOX MOUNTE	ÉD AT 18" A.F.F.
		W = WALL MOUNTED (1	8 A.F.F.) 8 A.F.F.) CEILING MOUN	TED
<b>B</b>		DATA/TELEPHONE PORT -	FLOOR MOUNT	ED
4	ф-	TELEVISION SIGNAL WALL 8-CONDUCTOR RJ-45 JA SINGLE-CANO ROY	OUTLET (M.H. ACK AND F-TY	= 18" A.F.F.) WITH PE RG6 COAX JACK IN
-₫∢		TELEVISION SIGNAL WALL		E RG6 COAX JACK &
		JACKS IN SINGLE-GANG	UILEI (2) 8–0 BOX. (18" A.F.	LUNDUCIOR RJ-45 F.)
Π		SECURITY SYSTEM		WER AND SIGNAL
Y		CONNECTION, SEE SPECS	A, PROVIDE PC.	WER AND SIGNAL
		SECURITY SYSTEM MONITO	RS AND RECOR	DERS, SEE SPECS.
₩ <u></u> <u></u>	•	SECURITY SYSTEM CABLES	IN CONDUIT. S	SEE SPECS.
(	ି)s	SECURITY SYSTEM JUNCTION	ON BOX AT ACC	CESSIBLE LOCATION.
•		SECURITY SYSTEM HIDDEN RELEASE, COORDINATE IN	N PUSH BUTTO STALLATION WIT	N FOR DOOR STRIKE TH FURNITURE OR
ട്ര		EQUIPMENT. SECURITY SYSTEM SPEAKE	R WITH INTEGR	AL MICROPHONE
[	KP	SECURITY SYSTEM KNOX E	BOX	
		FIRE ALARM/DETECT	FION SYSTEA STATION 48" A	<u>/</u> .F.F.
110 C	ğ	COMBINATION AUDIBLE/VIS	UAL SIGNALING	UNIT - FIRE ALARM
⊠w∍		AT 80" A.F.F. OR 6" BELO WP DENOTES WEATHERPRO	OW CEILING WH	ICHEVER IS LOWER.
X 15/75	CD	VISUAL SIGNALING UNIT - TO BOTTOM) (NO AUDIO I	FLASHING ST	ROBE LIGHT ONLY (80"
() 2		PHOTO-ELECTRIC SMOKE E = ELEVATOR	DETECTOR	
(2	2)m	DUCT MOUNTED SMOKE DI TEST AND HEAVY DUTY CO	ETECTOR, WITH ONTROL RELAY.	SAMPLE TUBE, REMOTE
	- 00	R = RETURN S = SUPPLY TYPICAI 120V RESIDENTIA	I TYPE SMOKE	DETECTOR WITH
(C) R (S)		SOUNDER BASE AND BATT	ERY BACK-UP.	MOUNTED)
	$\nabla_{\mathbf{F}}$	FIREFIGHTER'S PHONE JAC	к	
₩R/F		HEAT DETECTOR, FIXED TE OTHERWISE INDICATED FIRE ALARM FLOW SWITCH	I (FURNISHED	35°) UNLESS BY SPRINKLER
$\diamond$	Ļ	CONTRACTOR)	CH (FURNISHE	D BY SPRINKLER
M	0	CONTRACTOR) MOTION SENSOR - CEILIN	G MOUNTED	
M F/	ACP	MONITOR MODULE FIRE ALARM CONTROL PAN	iel — Address	ABLE
RAP		FIRE ALARM REMOTE ANNU FIRE ALARM TERMINAL CAF	INCIATOR PANEL BINET	– Flush Mounted
-	EWL	FIREFIGHTER'S ELEVATOR W	VARNING LIGHT	
NOTE: SOM	E SY	l Mbols shown on this legi	END MAY NOT F	PERTAIN TO THIS PROJECT.
		ABBREVIA	TIONS	
A.C.	ABC	IVE COUNTER	EX	EXISTING
A.F.	ARC	FAULT	ER G.F.I.	EXISTING RELOCATED GROUND FAULT INTERRUPTER
A.S.W.	ABC	VE SHOW WINDOW RCPT.	L.C.	LOCKABLE COVER
B.F.C. B.F.G.	BEL BEL	ow Finished Ceiling Ow Finished Grade	M.H. N	NEW DEVICE
C.B.	CIR		N.F.	NON FUSED
D		VICE LINE	NL RE	EXISTING TO BE REMOVED
IG	AND	ATED GROUND (ORANGE	T.C. T.S.	TERMINAL CABINET TIME SWITCH
ЕМ	DEV	ICE) IVIDE EMERGENCY	U.O.N.	UNLESS OTHERWISE NOTED
	BAT CON SWI	TERY PACK W/FIXTURE, INECT AHEAD OF ALL TCHES.	WP. XFMR.	WEATHER PROOF ENCLOSURE TRANSFORMER.
			$\begin{pmatrix} X \\ E - X, XX \end{pmatrix}$	DETAIL SHEET NUMBER
NOTE: SOM	e syi	MBOLS SHOWN ON THIS LEGE	END MAY NOT F	PERTAIN TO THIS PROJECT.

	ELECTRICAL INDEX			
2	E-100     ELECTRICAL INDEX, STMBUL LEGEND AND NOTES.       E-101     OVERALL ELECTRICAL POOLS AND SPA SITE LAYOUT			
5 L				
5				
	SHOP DRAWING REQUIREMENTS			
. C	NTRACTOR SHALL SUBMIT 6 COPIES OF COMPLETED SHOP DRAWINGS, TOGETHER AT ME THROUGH THE ARCHITECT. ALL SUBMITTALS SHALL BE MADE WITHIN 30 DAYS (	ONE TIME	AND N TO	MUST
. Al Th	L SUBMITTALS MUST CLEARLY INDICATE EXACTLY WHICH ITEMS ARE BEING PROPOSEL IE SUBMITTAL SHALL BE REJECTED.	D FOR USE	. IF N	от,
• S P	JBSTITUTIONS SHALL BE LIMITED TO ONE OF THE ALTERNATES LISTED IN THE CONST RODUCTS CONSIDERED TO BE EQUAL SHALL BE REVIEWED AND ACCEPTED BY THE EN	RUCTION D	ocume Rchite	INTS. ICT
. ТІ РІ	ID OWNER (10) DATS PRIOR TO BID DATE. IE CONTRACTOR ASSUMES ALL DESIGN RESPONSIBILITY AND ALL FINANCIAL RISKS FO RIOR TO SHOP DRAWINGS PROCESSING, AND ON ANY ITEM OR WORK THAT IS AT VAI	R PROCEEI RIANCE TO	DING THE	
C • SI	INSTRUCTION DOCUMENTS.	N TWICE.	A THI	RD
S	IBMITTAL ON AN ITEM MUST BE ACCOMPANIED BY A PURCHASE ORDER FROM THE C IALL BE REJECTED.	CONTRACTOR	ORI	Т
. CI IN B	ACCUMSIANCES NECESSIAIING A REVISION TO THE PERMITTED DOCUMENTS NOT PROC STALLATION MAY NOT BE ACCEPTED. IF ACCEPTED IT MUST BE LEGIBLE, ACCURATE A PURCHASE ORDER ORDER FROM THE CONTRACTOR. THE REVISION SHALL BE CH INTRACTOR AND DELIVERED TO FUND A CONTRACTOR.	AND ACCO HARGED TO	UR TO MPANIE THE	D
U SU w⊾	BSTITUTIONS FROM THE BASE DESIGN OR VARIATIONS TO THE PERMITTED CONTRACT ETHER RESULTING FROM PROCESSED SHOP DRAWINGS OR NOT THAT DESILIT IN DE		rs, s in	
	TERS OF AUTHORIZATION AND/OR PERMIT CONTRACT DOCUMENT CHANGES MANDATED THORITY HAVING JURISDICTION WILL NOT BE MADE BY THIS OFFICE UNLESS ACCOMP. RCHASE ORDER FROM THE CONTRACTOR AND RELEASED ON A COD BASIS	D BY THE ANIED BY A	- 114 \	
• C( FT	INTRACTOR SHALL SUBMIT 5 COPIES OF EQUIPMENT LAYOUTS OF ALL ELECTRICAL SF C. TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING FOLIPMENT OR INSTALLING	PACES, ROO G CONDUT	MS, 5, ETC	
TH	E LAYOUTS SHALL CONSIST OF PLAN VIEWS AT A SCALE OF $1/2" = 1'0"$ AND ELEVICH SPACE OR ROOM, ETC.	VATIONS FO	R EAC	н
			_	





		1 1	
1.	POOL PERIMETER= 512'-8"		1.
2.	POOL AREA= 14,296 SQ.FT.		2.
3.	POOL CAPACITY= 1,000,000 GALS		3.
4.	POOL FLOW RATE FOR 6 HR. TURNOVER= 2778 GPM		4.
5.	TOTAL RECICULATION RATE= 2778 GPM		5.
6.	TOTAL FILTER AREA= 3077.6 SQ.FT.		6.
7.	FILTER RATE PER SQ.FT. OF FILTER AREA= 0.903 GPM/SQ.FT.		7.

1.	POOL PERIMETER= 328'-0"
2.	POOL AREA= 6,724 SQ.FT.
3.	POOL CAPACITY= 1,007,000 GALS
4.	POOL FLOW RATE FOR 6 HR. TURNOV
5.	TOTAL RECICULATION RATE= 2798 GF
6.	TOTAL FILTER AREA= 3077.6 SQ.FT.



![](_page_185_Figure_11.jpeg)

![](_page_186_Figure_0.jpeg)

![](_page_187_Figure_0.jpeg)

				 1		
	A	QUA	TIC	SERVALOVSKIE Architecture • Plant 1800 Eller E Fort Lauder T 954. F 954. WWW.syn Manuel Syn AR 00 St	Comanik Aing • Interior Desi Orive, Suite 50 Ordale, FL 33310 .961.6806 .961.6807 Aalovski.com nalovski, AIA D11628 EAL	Saye
				LICENSE NO	. AA26001863	
				FORT LAUDERDALE AQUATIC COMPLEX	AIA AND SE 5TH STREET, FORT LAUDERDALE	CITY OF FORT LAUDERDALE
				DESIGN DELIVERABLE: SCH ISSUE DATE: PROJECT NUMBER: DRAWN BY: JTE CHECKED BY: TDE CHECKED BY: TDE COpyright (c) by SYNALOVSK All Rights Reserved SHEET TITLE SHEET TITLE	I ROMANIK SAYE, L	GN
					CAM #18-072 Exhibit 1 (Part A Page 188 of 20	6 .) 2

![](_page_188_Figure_0.jpeg)

DIVING & COMPETITION POOL FILTRATION POOL FILTRATION CONCRETE COLLECTION TANK	

![](_page_188_Figure_4.jpeg)

	FIL	TRATION EQ		- BASIS OF DESIGN						
QTY	ITEM	MANUFACTURER	MODEL NO.	DESCRIPTION						
2	FILTRATION PUMP	PACO	6012-3	PACO FLOODED SUCTION MODEL 30 H.P. PUMP & MOTOR, RATED FOR 1389 GPM @ 60 TDH, 480V, 3 PHASE, 60 CYCLE, 1750 RPM, WITH VFD SUPPLIED BY FILTER MANUFACTURE W/FLOW SENSOR AND READ OUT.						
2	LINT STRAINER	PADDOCK		PADDOCK STAINLESS STEEL ROUND HAIR & LINT STRAINER W/ EXTRA STAINLESS STEEL BASKET						
2	D.E. FILTRATION	PADDOCK	PPEC-2100S	1,538.8 SQ.FT. 63.5" DIAMETER STAINLESS STEEL REGENERATIVE D.E. PRESSURE FILTER WITH VFD PANEL						
1	AIR COMPRESSOR	GRAINGER		GRAINGER 5 H.P. 408V, AIR COMPRESSOR W/TANK						
1		McMASTER	9831K13	AUTO CONDENSATE DRAIN						
±513	GUTTER	PADDOCK	C-100	STR. TYPE ST.ST. RECIRCULATION SYSTEM W/ HDPE PADDOCK GRAY GRATE.						
2	BULKHEADS	PADDOCK		SIX FOOT WIDE STAINLESS STEEL BULKHEADS WITH HDPE GRATING						
		CHLO	RINATION E	EQUIPMENT						
	SALT CHLORINATOR	CHLORKING	NEX-GEN 80	SALT CHLORINATOR BOOSTER PUMP, BRIME TANK AND STAND						
1	CHEMISTRY CONTROLLER	BECSYS	7	WATER CHEMISTRY CONTROLLER W/ FLOW CELL, SWITCH, FLOW SENSOR, TDS, PPM						
1	CO2 CROSSOVER SWITCH	BECSYS								

	FILTRATION EQUIPMENT - BASIS OF DESIGN						
	DIVE POOL						
QTY	ITEM	MANUFACTURER	MODEL NO.	DESCRIPTION			
2	FILTRATION PUMP	PACO	6012-3	PACO FLOODED SUCTION MODEL 30 H.P. PUMP & MOTOR, RATED FOR 1399 GPM @ 60 TDH, 480V, 3 PHASE, 60 CYCLE, 1750 RPM, WITH VFD SUPPLIED BY FILTER MANUFACTURE W/FLOW SENSOR AND READ OUT.			
2	LINT STRAINER	PADDOCK		PADDOCK STAINLESS STEEL ROUND HAIR & LINT STRAINER W/ EXTRA STAINLESS STEEL BASKET			
2	D.E. FILTRATION	PADDOCK	PPEC-2100S	1,538.8 SQ.FT. 63.5" DIAMETER STAINLESS STEEL REGENERATIVE D.E. PRESSURE FILTER WITH VFD PANEL			
1	AIR COMPRESSOR	GRAINGER		GRAINGER 5 H.P. 408V, AIR COMPRESSOR W/TANK			
1		McMASTER	9831K13	AUTO CONDENSATE DRAIN			
±328	GUTTER	PADDOCK	C-100	STR. TYPE ST.ST. RECIRCULATION SYSTEM W/ HDPE PADDOCK GRAY GRATE.			
		CHLO	RINATION E	EQUIPMENT			
	SALT CHLORINATOR	CHLORKING	NEX-GEN 80	SALT CHLORINATOR BOOSTER PUMP, BRIME TANK AND STAND			
1	CHEMISTRY CONTROLLER	BECSYS	7	WATER CHEMISTRY CONTROLLER W/ FLOW CELL, SWITCH, FLOW SENSOR, TDS, PPM			
1	CO2 CROSSOVER SWITCH	BECSYS					

![](_page_189_Figure_2.jpeg)

 $3 \frac{50 \text{ METER TRAINING POOL AND TEACHING POOL GUTTER PROFILE}}{1 1/2" = 1'-0"}$ 

FILTRATION EQUIPMENT - BASIS OF DESIGN							
50 METER TRAINING POOL							
QTY	QTY ITEM MANUFACTURER MODEL NO. DESCRIPTION						
2	FILTRATION PUMP	PACO	5095-7	PACO FLOODED SUCTION MODEL 20 H.P. PUMP & MOTOR, RATED FOR 1049 GPM @ 60 TDH, 480V, 3 PHASE, 60 CYCLE, 1750 RPM, WITH VFD SUPPLIED BY FILTER MANUFACTURE W/FLOW SENSOR AND READ OUT.			
2	LINT STRAINER	PADDOCK		PADDOCK STAINLESS STEEL ROUND HAIR & LINT STRAINER W/ EXTRA STAINLESS STEEL BASKET			
1	D.E. FILTRATION	PADDOCK	PPEC-2100S	1,538.8 SQ.FT. 63.5" DIAMETER STAINLESS STEEL REGENERATIVE D.E. PRESSURE FILTER WITH VFD PANEL			
1	AIR COMPRESSOR	GRAINGER		GRAINGER 5 H.P. 408V, AIR COMPRESSOR W/TANK			
1		McMASTER	9831K13	AUTO CONDENSATE DRAIN			
±480	GUTTER	PADDOCK	R-300	STR. TYPE ST.ST. RECIRCULATION SYSTEM W/ HDPE PADDOCK GRAY GRATE.			
		CHLO	RINATION E	QUIPMENT			
	SALT CHLORINATOR	CHLORKING	NEX-GEN 80	SALT CHLORINATOR BOOSTER PUMP, BRIME TANK AND STAND			
1	CHEMISTRY CONTROLLER	BECSYS	7	WATER CHEMISTRY CONTROLLER W/ FLOW CELL, SWITCH, FLOW SENSOR, TDS, PPM			
1	CO2 CROSSOVER SWITCH	BECSYS					

# FILTRATION EQUIPMENT - BASIS OF DESIGN

TEACHING POOL						
QTY	ITEM	MANUFACTURER	MODEL NO.	DESCRIPTION		
1	FILTRATION PUMP	PACO		PACO FLOODED SUCTION MODEL 7.5 H.P. PUMP & MOTOR, RATED FOR 347 GPM @ 60 TDH, 480V, 3 PHASE, 60 CYCLE, 1750 RPM, WITH VFD SUPPLIED BY FILTER MANUFACTURE W/FLOW SENSOR AND READ OUT.		
1	LINT STRAINER	PADDOCK		PADDOCK STAINLESS STEEL ROUND HAIR & LINT STRAINER W/ EXTRA STAINLESS STEEL BASKET		
1	D.E. FILTRATION	PADDOCK	PPEC-350S	277.9 SQ.FT. 33" DIAMETER STAINLESS STEEL REGENERATIVE D.E. PRESSURE FILTER WITH VFD PANEL		
1	AIR COMPRESSOR	GRAINGER		GRAINGER 3 H.P. 408V, AIR COMPRESSOR W/TANK		
1		McMASTER	9831K13	AUTO CONDENSATE DRAIN		
±154	GUTTER	PADDOCK	R-300	STR. TYPE ST.ST. RECIRCULATION SYSTEM W/ HDPE PADDOCK GRAY GRATE.		
		CHLOI	RINATION E	QUIPMENT		
	SALT CHLORINATOR	CHLORKING	NEX-GEN 20	SALT CHLORINATOR BOOSTER PUMP, BRIME TANK AND STAND		
1	CHEMISTRY CONTROLLER	BECSYS	7	WATER CHEMISTRY CONTROLLER W/ FLOW CELL, SWITCH, FLOW SENSOR, TDS, PPM		
1	CO2 CROSSOVER SWITCH	BECSYS				

![](_page_189_Figure_9.jpeg)

![](_page_189_Picture_11.jpeg)

1" —

![](_page_189_Picture_12.jpeg)

![](_page_189_Picture_13.jpeg)

 $1 \frac{50 \text{ METER COMPETITION POOL GUTTER PROFILE (ENDS)}}{1 \frac{1}{2} = 1'-0"}$ 

EXTRA GUTTER

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 $\triangleleft$ 

\_STAINLESS STEEL

 $\Delta$  (CONCRETE).

STIFFENER CHANNEL

STAINLESS STEEL

SIKA INTRAPLAST 'N' BY SIKA CORP.

1'-0" FROM CORNERS & 4'-0" OC

5/8-11 X 8" LG THREADED

— STUD ANCHORS 1'-0" FROM CORNERS & 4'-0" OC

5/8" 'U'-BAR ANCHORS 1'-0" \_ FROM CORNERS & 4'-0" OC

PROFILES

Q-105

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SHEET TITLE

![](_page_190_Figure_0.jpeg)

 $1 \frac{\text{SPA SECTION}}{3/4" = 1'-0"}$ 

![](_page_190_Figure_2.jpeg)

# EQUIPMENT SKID PLAN VIEW

![](_page_190_Picture_4.jpeg)

![](_page_190_Figure_6.jpeg)

	VALVES AND PIPE CONNECTION SIZES	SIZE
А	MAIN DRAIN	8"
В	SKIMMER (DIRECT SUCTION)	2"
E	RETURN LINE	2"
G	PUMP TO WASTE	2"
н	PUMP TO FILTER	2"
1	AUTOMATIC FRESH WATER FILL DEVICE	1"
к	FILTER SUCTION	2.5"
L	FROM HEATER	2"
м	TO HEATER	2"
0	TANK OVERFLOW W/CHECK VALVE	2"
s	THERAPY SUCTION	4"
Т	THERAPY DISCHARGE	3"
w	THERAPY BYPASS	2"
U	GALLONS, COLLECTOR TANK	300

# SPA NOTES:

1.	SPA PERIMETER= 46'
2.	SPA AREA= 123.5 SQ.FT.
3.	SPA CAPACITY= 2,335 GALS
4.	POOL FLOW RATE FOR 30 MIN. TURNOVER= 78 GPM
5.	TOTAL RECICULATION RATE= 120 GPM
6.	TOTAL FILTER AREA= 7.06 SQ.FT.
7.	FILTER RATE PER SQ.FT. OF FILTER AREA= 15 GPM/SQ.FT.

![](_page_190_Figure_12.jpeg)

![](_page_190_Figure_13.jpeg)

![](_page_190_Figure_14.jpeg)

4" SUCTION

	AQUATICS H <sup>2</sup>	
	AQUATICS H-W	
	COMMERCIAL SPA SAND FILTER SYSTEM	
	CHR36CTS 2,330 GALLONS IN 30 MINUTES	SYNALOVSKIROMANIKS Architecture • Planning • Interior Design
	78 GPM @ 11.05 GPM FILTER RATE, 7.06 SQ. FT. TOTAL	1800 Eller Drive, Suite 500
1	<u>1</u> <u>PENTAIR</u> , <u>TR140C</u> , <u>SAND</u> FILTER, <u>7.06</u> SQ. FT.	Fort Lauderdale, FL 33315 T 954.961.6806 F 954.961.6807
	1.5HP _ PENTAIR RECIRCULATION PUMP WFE-6	www.synalovski.com
(2)	1 PHASE 230 VOLTS, 95 GPM @ 60 TDH, 6" STRAINER	Manuel Synalovski, AlA AR no11628
3	5HP _ PENTAIR FEATURE PUMP XFE-20 1 phase 230 volts, 220 gpm @ 60 tdh, 6" strainer	SEAL
4	2" BLUE WHITE FLOWMETER, CF30 200 P, 40 TO 150 GPM	
5	PRESSURE GAUGE 0# TO 60#, 2 1/2" FACE	LICENSE NO. AA26001863
6	GENERAL INSTRUMENTS THERMOMETER 32° TO 248°F, 0° TO 120°	
8	CL2 FEEDER BY <u>STENNER</u> , model <u>45M5</u> , <u>50</u> gpd <u>30</u> gallon remote lockable chemical container	
9	PH FEEDER BY <u>STENNER</u> , model <u>45M2</u> , <u>10</u> gpd <u>15</u> gallon remote lockable chemical container	L
(12)	SEIMENS 3 PHASE 12 CIRCUIT MAIN LUG BREAKER PANEL 125A 115/230V, 60hZ	
(15)	CES MR1 CHEMICAL CONTROLLER, 115V	

# 300 GALLON SPA COLLECTOR

![](_page_190_Figure_18.jpeg)

ELEVATION "B"

![](_page_190_Figure_20.jpeg)

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![](_page_191_Picture_2.jpeg)

### 6. SUPPLEMENTARY INFORMATION

Technical Documents Index:

- 6.1 Technical cut sheets- Section 2:
- 6.1.1 Pool deck drain trench
- 6.1.2 Athletic lighting poles
- 6.1.3 Movable fencing options
- 6.2 Technical cut sheets Section 3:
- 6.2.2 Bleachers
- 6.2.3 Pool filtration equipment
- 6.2.4 Pools racing equipment
- 6.3 Technical cut sheets Section 4:
- 6.3.1 Bathrooms fixtures and accessories
- 6.3.2 Concession equipment

![](_page_193_Figure_0.jpeg)

The system shall be 4 inches (100mm) nominal inside width with a 6.1 in. (155mm) overall width and a built-in slope of 0.6 %. All channels shall be interlocking with a male/female joint. Each channel shall have preformed 4 in. (100mm) round and 6 in. (150mm) oval drill-outs on the bottom for vertical connection with underground piping.

The complete drainage system shall be by ACO Polymer Products, Inc. Any deviation or partial system design and/or improper installation will void any and all warranties provided by ACO Polymer Products, Inc.

Channel shall withstand loading to Load Class \_\_\_\_\*(DIN 19 580). Grate type shall be appropriate to meet the system load class specified and intended application. Grates shall be secured using a locking bar and bolt. Channel and grate shall be independently certified to meet the specified DIN 19580 load class.

Polymer Concrete shall have material properties of: compressive strength range between 14,000-14,500 psi; flexural strength between 3600-4500 psi; tensile strength of 1500 psi. The material water absorption rate shall not exceed 0.05 % by weight and shall be resistant to prolonged salt exposure, repetitive frost cycles and chemically resistant to dilute acids and alkalis.

The system shall be installed in accordance with the manufacturer's instructions and recommendations. *\*Fill in as required.* 

/20/2017 12·23 PM

![](_page_194_Figure_0.jpeg)

### ACO DRAIN

## NW100 channel system

City of Fort Lauderdale

![](_page_195_Figure_4.jpeg)

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## **ACO DRAIN** NW100 channel system

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Description Part		Part No. Invert		Weight	
	-	inches	mm	lbs.	
Description           N1 Sloped channel - 39.37" (1m)           NO2 Neutral channel - 39.37" (1m)           N2 Sloped channel - 39.37" (1m)           N3 Sloped channel - 39.37" (1m)           N4 Sloped channel - 39.37" (1m)           N5 Sloped channel - 39.37" (1m)           N7 Sloped channel - 39.37" (1m)           N8 Sloped channel - 39.37" (1m)           N010 Neutral channel - 39.37" (1m)           N010 Sloped channel - 39.37" (1m)           N010 Sloped channel - 39.37" (1m)           N11 Sloped channel - 39.37" (1m)           N12 Sloped channel - 39.37" (1m)           N13 Sloped channel - 39.37" (1m)           N14 Sloped channel - 39.37" (1m)           N15 Sloped channel - 39.37" (1m)           N15 Sloped channel - 39.37" (1m)           N16 Sloped channel - 39.37" (1m)           N17 Sloped channel - 39.37" (1m)           N18 Sloped channel - 39.37" (1m)           N18 Sloped channel - 39.37" (1m)           N19 Sloped channel - 39.37" (1m)	Part No. 00001 05501 00002 00004 00005 00006 00007 00008 00009 00010 00011 00013 00014 00015 00016 00017 00018 00019 00020 00346 00021 00022 00023 05502 00024	Invert I           inches           4.41 - 4.65"           4.65 - 4.88"           4.88 - 5.12"           5.12 - 5.35"           5.35 - 5.59"           5.35 - 5.59"           5.83 - 6.06"           6.06 - 6.30"           6.30 - 6.54"           6.54"           6.54"           6.54"           7.42 - 7.48"           7.42 - 7.48"           7.42 - 7.48"           7.95 - 8.19"           8.19 - 8.43"           8.43 - 8.66"           8.66 - 8.90"           8.90"           8.90 - 9.13"	Depth mm 112 - 118 118 - 124 124 - 130 130 - 136 136 - 142 142 - 148 148 - 154 154 - 160 160 - 166 166 166 - 172 172 - 178 178 - 184 184 - 190 190 - 196 196 - 202 202 - 208 208 - 214 214 - 220 226 226 226 - 232	Weight Ibs.           32.0           32.9           32.9           33.8           34.7           35.6           37.4           38.3           39.2           40.1           41.0           41.9           42.8           43.7           44.6           45.5           46.4           47.3           48.2           49.1           26.0           49.1	
N21 Sloped channel - 39.37" (1m) N22 Sloped channel - 39.37" (1m) N23 Sloped channel - 39.37" (1m) N24 Sloped channel - 39.37" (1m) N25 Sloped channel - 39.37" (1m) N25 Sloped channel - 39.37" (1m) N27 Sloped channel - 39.37" (1m) N28 Sloped channel - 39.37" (1m) N28 Sloped channel - 39.37" (1m) N29 Sloped channel - 39.37" (1m) N030 Neutral channel - 19.69" (0.5m) N30 Sloped channel - 39.37" (1m)	00025 00026 00027 00028 00029 00030 00031 00032 00033 00034 05503 00035	9.13 - 9.37" 9.37 - 9.61" 9.61 - 9.84" 9.84 - 10.08" 10.08 - 10.31" 10.31 - 10.55" 10.55 - 10.79" 10.79 - 11.02 11.02 - 11.26" 11.26" 11.26"	232 - 238 238 - 244 244 - 250 250 - 256 256 - 262 262 - 268 268 - 274 274 - 280 280 - 286 <b>286</b> 286 - 292	50.0 50.9 51.8 52.7 53.6 54.5 55.6 56.5 57.4 <b>58.3</b> <b>31.0</b> 59.2	
N900 in-line catch basin N900 QuickLok bar (removable) Series 900 Plastic trash bucket	05620 98717 01498	22.00 - -	560 - -	62.0 0.1 1.1	
Accessories	1		1	1	
N306 closing end cap to suit C1-30 N104-4 Inlet cap - 4" PVC pipe N204-4 Inlet cap - 4" PVC pipe N304-4 Inlet cap - 4" PVC pipe N304-6 Inlet cap - 6" PVC pipe N304-6 Inlet cap - 6" PVC pipe N108-4 Outlet cap - 4" PVC pipe N208-4 Outlet cap - 4" PVC pipe N308-4 Outlet cap - 4" PVC pipe N308-6 Outlet cap - 6" PVC pipe	01078 05651 05652 05653 91251 91263 05573 05574 05575 91264 91272 95140 02899 01318			4.2 3.2 3.6 3.2 3.6 3.2 3.6 3.2 3.6 3.2 3.6 1.1 0.1 0.3	

### **Specifications** General

The surface drainage system shall be ACO Drain NW100 complete with gratings secured with 'QuickLok' locking as manufactured by ACO Polymer Products, Inc. or equal approved.

#### Materials

The trench system bodies shall be manufactured from polyester polymer concrete with minimum properties as follows:

Compressive strength:	14,000 psi
Flexural strength:	4,000 psi
Water absorption	0.07%
Frost proof	
Salt proof	
Dilute acid and alkali resis	stant

The nominal clear opening shall be 4.00" (100mm) with overall width of 6.10" (155mm). Pre-cast units shall be manufactured with either an invert slope of 0.6% or with neutral invert and have a wall thickness of at least 0.50" (13mm). Each unit will feature a full radius in the trench bottom and a male to female interconnecting end profile. Units shall have horizontal cast in anchoring features on the outside wall to ensure maximum mechanical bond to the surrounding bedding material and pavement surface.

#### Grates

Grates should be specified seperately. Choose appropriate grate from ACO Spec Info grate sheets for details. After removal of grates and 'QuickLok' bar there shall be uninterrupted access to the trench to aid maintenance.

#### Installation

The trench drain system shall be installed in accordance with the manufacturer's installation instructions and recommendations.

#### Notes:

1. Preformed 4" dia. & 6" flumed drill-out outlet cast on underside of every channel

2. Closing cap can be cut down to suit all channels

3. Add 1" (25mm) for overall depth of channels and catch basin

#### ACO Polymer Products, Inc.

**Northeast Sales Office** P.O. Box 245 Chardon, OH 44024 Tel: (440) 285-7000 Toll free: (800) 543-4764 Fax: (440) 285-7005

West Sales Office P.O. Box 12067 Casa Grande, AZ 85130 Tel: (520) 421-9988 Toll Free: (888) 490-9552 Fax: (520) 421-9899

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**Southeast Sales Office** 4211 Pleasant Road Fort Mill, SC 29708 Toll free: (800) 543-4764 Fax: (803) 802-1063

![](_page_196_Picture_23.jpeg)

**Electronic Contact:** info@ACODrain us www.ACODrain.us

Re-order DL086

![](_page_196_Picture_25.jpeg)

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obtains with our product since conditions of use are beyond the control of the company. It is the customer's responsibility to evaluate suitability and safety of product for his 11/20/2017 12:23 PM May 13/2

#### www.ACODrain.us

E & A

# Type 494Q Longitudinal black plastic grate (ADA)

### **Product Features**

- Certified to EN 1433 Load Class A 3,500 lbs 70 psi
- Uses 'QuickLok' boltless locking system
- Suitable for use with K100, KS100, C100, H100-8, H100-10, H100K-8, and H100KS-8 channels
- Manufactured from durable, UV stable polypropylene
- Raised anti-slip surface detail
- Complies with ADA American Disabilities Act of 1990 Section 4.5.4
- Bicycle Tire Penetration Resistant to AS3996-2006

### Specifications

#### General

The surface drainage system shall be ACO Drain K100, KS100, C100, H100-8, H100-10, H100K-8, and H100KS-8 channels\* complete with ACO Type 494Q black\* longitudinal (ADA) plastic grate with 'QuickLok' locking as manufactured by ACO Polymer Products, Inc. or similar approved.

#### Materials

The covers shall be manufactured from polypropylene and have *minimum* properties as follows:

- Independently certified to meet Load Class A to EN 1433 - 3,500 lbs - 70 psi
- UV stable polypropylene
- Intake area of 27.4 sq. in. (176.8 cm<sup>2</sup>) per half meter of grate

The overall width of 4.84" (123mm) and overall length of 19.69" (500mm). Slots measure 0.33" (8mm) by 1.74" (44mm).

#### Installation

The trench drain system and grates shall be installed in accordance with the manufacturer's installation instructions and recommendations.

\* delete as appropriate

![](_page_198_Picture_3.jpeg)

![](_page_198_Figure_5.jpeg)

Description	Part No.	Length inches <i>(mm)</i>	Width inches <i>(mm)</i>	Weight Ibs.	
<b>OuickLok grate</b> Type 494Q plastic black ADA grate QuickLok locking bar QuickLok grate removal hook	97393 02899 01318	19.69 ( <i>500</i> ) - -	4.84 ( <i>123</i> ) - -	1.8 0.2 0.6	

![](_page_198_Figure_7.jpeg)

#### ACO Polymer Products, Inc.

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![](_page_198_Picture_12.jpeg)

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11/20/2017 12:23 PM www.ACODrain.us May 13/3

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E & A

# Type 494Q Longitudinal black plastic grate (ADA)

### **Product Features**

- Certified to EN 1433 Load Class A 3,500 lbs 70 psi
- Uses 'QuickLok' boltless locking system
- Suitable for use with K100, KS100, C100, H100-8, H100-10, H100K-8, and H100KS-8 channels
- Manufactured from durable, UV stable polypropylene
- Raised anti-slip surface detail
- Complies with ADA American Disabilities Act of 1990 Section 4.5.4
- Bicycle Tire Penetration Resistant to AS3996-2006

### Specifications

#### General

The surface drainage system shall be ACO Drain K100, KS100, C100, H100-8, H100-10, H100K-8, and H100KS-8 channels\* complete with ACO Type 494Q black\* longitudinal (ADA) plastic grate with 'QuickLok' locking as manufactured by ACO Polymer Products, Inc. or similar approved.

#### Materials

The covers shall be manufactured from polypropylene and have *minimum* properties as follows:

- Independently certified to meet Load Class A to EN 1433 - 3,500 lbs - 70 psi
- UV stable polypropylene
- Intake area of 27.4 sq. in. (176.8 cm<sup>2</sup>) per half meter of grate

The overall width of 4.84" (123mm) and overall length of 19.69" (500mm). Slots measure 0.33" (8mm) by 1.74" (44mm).

#### Installation

The trench drain system and grates shall be installed in accordance with the manufacturer's installation instructions and recommendations.

\* delete as appropriate

![](_page_199_Picture_24.jpeg)

![](_page_200_Picture_3.jpeg)

![](_page_200_Figure_5.jpeg)

Description	Part No.	Length inches <i>(mm)</i>	Width inches <i>(mm)</i>	Weight Ibs.
<b>QuickLok grate</b> Type 494Q plastic black ADA grate QuickLok locking bar QuickLok grate removal hook	97393 02899 01318	19.69 ( <i>500</i> ) - -	4.84 ( <i>123</i> ) - -	1.8 0.2 0.6

![](_page_200_Figure_7.jpeg)

#### ACO Polymer Products, Inc.

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![](_page_200_Picture_12.jpeg)

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May 13/3

# Type 447Q/448Q Longitudinal stainless steel grate

### **Product Features**

A SALANA A

- Certified to EN 1433 Load Class B 28,000 lbs 581 psi
- Uses 'QuickLok' boltless locking system
- Suitable for use with K100, KS100, H100-8, H100-10, H100K-8 H100KS-8, and NW100 channels
- Manufactured from 16 gauge, Grade 304, stainless steel
- Complies with ADA American Disabilities Act of 1990 Section 4.5.4
- Bicycle Tire Penetration Resistant to AS 3996 2006

### **Specifications**

#### General

The surface drainage system shall be ACO Drain K100, KS100, H100-8, H100-10, H100K-8, H100KS-8, and NW100 channels\* complete with ACO Type 447Q longitudinal stainless steel grate with 'QuickLok' locking as manufactured by ACO Polymer Products, Inc. or similar approved.

#### Materials

The covers shall be manufactured from stainless steel and have *minimum* properties as follows:

- Independently certified to meet Load Class B to EN 1433 - 28,000 lbs - 581 psi
- 16 gauge, Grade 304 stainless steel
- Intake area of 40.57 sq. in. (261.74 cm<sup>2</sup>) per half meter of grate/81.21 sq. in. (523.93 cm<sup>2</sup>) per meter of grate

The overall width of 4.85" (123mm) and overall length of 39.37" (1000mm) (Type 447Q) and 19.69" (500mm) (Type 448Q). Slots measure at a maximum of 1.52" (39mm).

#### Installation

The trench drain system and grates shall be installed in accordance with the manufacturer's installation instructions and recommendations.

\* delete as appropriate

![](_page_201_Picture_26.jpeg)