

Bidder Name: _____
Address: _____
Telephone #: _____
Facsimile: _____

NAME OF PROJECT

**Prairie Stone Sports & Wellness Center
Lap Pool and Activity Pool Filter Replacement**

BID DATE: April 19, 2016

BID TIME: 9:30 am

PREPARED BY:

HOFFMAN ESTATES PARK DISTRICT
1685 W. Higgins Road
Hoffman Estates, IL 60169-2998
Telephone: (847) 885-7500
Facsimile: (847) 885-7523

HOFFMAN ESTATES PARK DISTRICT

TABLE OF CONTENTS

- ❖ Invitation to Bidders
- ❖ Instructions to Bidders
- ❖ Supplementary Conditions
- ❖ Specifications
- ❖ Proposal
 - ◆ Bid Proposal Form
 - ◆ Bid Certification Form
 - ◆ List of Subcontractors
 - ◆ Contract Compliance Attachment
 - ◆ Reference List
 - ◆ Illinois Department of Labor Prevailing Wage Rates
 - ◆ Certifications
- ❖ Drawings

March 30, 2016

Dear Bidder:

Enclosed you will find the plans, specifications and bidding materials for Prairie Stone Sports & Wellness Center Lap Pool and Activity Pool Filter Replacement. All pertinent information is included in the attached package. Please submit the Proposal Forms, Certification, References, and Bid Bonds. Please copy your proposal and retain one copy for your records.

I look forward to reviewing your bid proposal and working with you on this project. If you have further questions or need to meet at the site, please contact me 1-847-561-1327. I can be reached Monday through Friday from 8:30 a.m. until 4:30 p.m.

Sincerely,

John Giacalone
Division Director

INVITATION TO BIDS

Sealed bids for the Prairie Stone Sports & Wellness Center Lap Pool and Activity Pool Filter Replacement project will be received by the Hoffman Estates Park District at our office; 1685 West Higgins Road, Hoffman Estates, Illinois 60169 until **exactly 9:30 A.M., April 19, 2016** then publicly opened and read. Bids submitted after the closing time will be returned unopened. No oral or telephone proposals or modifications will be considered.

The Hoffman Estates Park District Board of Commissioners will make the final award.

Proposals shall be submitted on the attached Form of Proposal and returned in the envelope, if provided. No bidder may withdraw his proposal after the hour set for the opening thereof, or before award of the contract, unless said award is delayed for a period exceeding sixty (60) calendar days.

The Hoffman Estates Park District requires all bidders to comply with all provisions of the Park District Prevailing Wage Ordinance #O-15-06. This ordinance specifies that no less than the general prevailing rate of wages as found by the Park District or Department of Labor or determined by a court on review shall be paid each draft type of worker or mechanic needed to execute the contract or perform the work.

The Hoffman Estates Park District may reject any or all of the bids on any basis and without disclosure of a reason. The failure to make such a disclosure shall not result in accrual of any right, claim, or cause of action by any unsuccessful Bidder against the Hoffman Estates Park District.

Bid results and the award of the bid will be published on the Hoffman Estates Park District website www.heparks.org.

Sincerely,

John Giacalone
Division Director

HOFFMAN ESTATES PARK DISTRICT

INSTRUCTIONS TO BIDDERS

1. Identification of Project

The official name and location of the project shall henceforth be known as:

Prairie Stone Sports & Wellness Center
Lap Pool and Activity Pool Filter Replacement
5050 Sedge Blvd.
Hoffman Estates, Illinois 60192

The official name and address of the project owner shall henceforth be known as:

HOFFMAN ESTATES PARK DISTRICT
1685 West Higgins Road
Hoffman Estates, IL 60169-2998

Bid Opening: **April 19, 2016 9:30 am**

Committee Approval: **May 3, 2016**

Board Approval: **May 24, 2016**

Contract Awarded: **May 25, 2016**

Commencement of Work: Commencement of paperwork shall begin immediately upon notification of award. Actual work shall commence **July 11, 2016 or sooner** and shall continue with due diligence until full completion and acceptance.

Substantial Completion Date: **August 1, 2016 or sooner**

2. Contract Documents

The Notice to Bidders, the Instructions to Bidders, the Supplementary Conditions, Drawings, Specifications, the supplied Form of Proposal, the accepted Bid Sheet and certification comprise the Contract Documents. Copies of these documents can be obtained in person from the office of the Hoffman Estates Park District, 1685 W. Higgins Road, Hoffman Estates IL 60169-2998.

3. Explanation to Bidders

Any explanation desired by a bidder regarding the meaning or interpretation of the invitation for bids, drawings, specifications, etc., must be requested in writing and with sufficient time allowed for a reply to reach bidders before the submission of their bids.

Any interpretation made will be in the form of an amendment of the invitation for bids, drawings, specifications, etc., and will be furnished to all prospective bidders. Its receipt by the bidder must be acknowledged in the space provided on the Bid Form or by letter or telegram received before the time set for opening of bids. Oral explanations or instructions given before the award of the contract will not be binding.

4. Conditions Affecting the Work

Bidders should visit the site and take such other steps as may be reasonably necessary to ascertain the nature and location of the Work, the general and local conditions, which can affect the Work or the cost thereof. Failure to do so will not relieve bidders from responsibility for estimating properly the difficulty or cost of successfully performing the Work.

5. Bid Guarantee, Bonds and Required Paperwork

- A. A Bid Guarantee, five (5%) percent, is required by the invitation for bids. Failure to furnish a Bid Guarantee in the proper form and amount by the time set for opening of bids may be cause for rejection of the bid in the absolute discretion of the Owner.
- B. A Bid Guarantee shall be the form of a bid bond, postal money order, certified check, or cashier's check made payable to the Owner. Bid guarantees, other than those stated, will be returned to the bidder upon opening of bids. Such bids will not be considered for award (a) to unsuccessful bidders as soon as practical after the award of the job, and (b) to the successful bidder upon execution of such further contractual documents and bonds as may be required by the bid as accepted.
- C. The successful bidder, upon being given a "Written Notice to Proceed", will have five (5) calendar days to provide the required Labor and Material Payment Bond, Performance Bond, and Insurance Policies or certificates for same, and commence with the Work. Failure to comply with the conditions set forth in the Contract Documents shall result in the termination of the contract for default. In such event, the Contractor may be liable for any costs of performing the work which

exceed the amount of his bid, and the Bid Guarantee shall be available toward offsetting such difference, if not previously returned to the Contractor.

6. Preparation and Submission of Bids

Before submitting proposal, each bidder shall carefully examine all documents pertaining to the Work and visit the site to verify conditions under which Work will be performed.

Submission of bid will be considered presumptive evidence that the Bidder has visited the site and is conversant with local facilities and difficulties, the requirements of the documents and of pertinent State or Local Codes, State of Labor and Material Markets, and has made due allowance in his bid for all contingencies. Include in bid all costs of labor, material, equipment, contractor's license, permits, guarantees, applicable taxes (sales tax does not apply), insurance and contingencies, with overhead and profit necessary to produce a completed project, or to complete those portions of the Work necessary to produce a completed project, or to complete those portions of the Work covered by the specifications on which proposal is made, including all trades, without further cost to the Owner. The Owner shall be responsible for the building permit fee.

No compensation will be allowed by reason of any difficulties which the Bidder could have discovered reasonably, prior to bidding.

All proposals must be made upon the Proposal Form furnished by the Owner attached hereto and should give the amounts bid for work, in numbers, and must be signed and acknowledged by the contractor. The Proposal should be enclosed in the envelope marked "**Bid Proposal for Hoffman Estates Park District Prairie Stone Sports & Wellness Center Lap Pool and Activity Pool Filter Replacement**" to be received until **9:30 A.M., April 19, 2016** showing the return address of the sender and addressed to: Hoffman Estates Park District, 1685 W. Higgins Road, Hoffman Estates, Illinois 60169. Bids should be sealed, marked and addressed as directed above. Failure to do so may result in a premature opening of or a failure to open such bid.

The proposal submitted must not contain erasures, inter-lineations, or other corrections unless each correction is suitably authenticated by affixing in the margin immediately opposite the correction the surname or surnames of the person or persons signing the bid.

Modifications of bids already submitted will be considered if received at the office designated in the invitation for bids by the time set for opening of bids. Telegraphic modifications will be considered, but should not reveal the amount of the original or reversed bid.

7. Prices

The prices are to include the furnishing of all materials, equipment, tools, insurance, bonds, warranties, and all other facilities, and the performance of all labor and services necessary for the proper completion of the Work except as may be otherwise expressly provided in the Contract Documents.

8. Time Schedule

The timely execution of any project is extremely important. The successful bidder shall take every means to meet the completion date stated above except for extensions granted by the Owner in writing for circumstances beyond the control of the Bidder.

9. Late Bids and Modifications or Withdrawals

Bids and modifications or withdrawals thereof received at the office designated in the invitation for bids after the exact time set for opening of bids will not be considered.

10. Withdrawal of Bids

Bids may be withdrawn by written or telegraphic request received from bidders prior to the time set for opening of bids.

11. Public Opening of Bids

Bids will be publicly opened at the time set for opening in the invitation for bids. Their content will be made public for the information of bidders and others interested, who may be present either in person or by representative.

12. Award of Contract

- A. Award of Contract will be made to the lowest responsible bidder, as determined by the Board of Commissioners of the Hoffman Estates Park District, whose bid conforms to the invitation for bid.
- B. The Board of Park Commissioners may reject any or all of the bids on any basis and without disclosure of a reason. The failure to make such a disclosure shall not result in accrual of any right, claim, or cause of action by any unsuccessful bidder against the Hoffman Estates Park District.

13. Contract and Insurance

The written contract between the accepted bidder and the Owner shall be considered finalized and entered into between the parties upon the Park

District Board's approval and award of the contract to the accepted bidder and the Park District's execution of the accepted bidder's Form of Proposal, and said written contract shall be comprised by the Contract Documents. The accepted bidder shall provide the Owner with a Labor and Material Payment Bond, Performance Bond, and copies of applicable Insurance Policies and endorsements and certificates for same within five (5) calendar days of the "Written Notice to Proceed" and prior to the commencement of work.

14. Postponement of Date for Opening Proposals

The Owner reserves the right to postpone the date of presentation and opening of proposals and will give telegraphic notice of any such postponement to each interested party.

SUPPLEMENTARY CONDITIONS

SECTION I – GENERAL

1. Application

These Supplementary Conditions shall be used in conjunction with and are a part of any and all Sections of the Specifications and all Contracts and Subcontracts that may be made for the completion of the work in all its parts as identified and described in the Contract Documents.

2. Definitions

Owner: The Hoffman Estates Park District, Board of Commissioners, Staff and its appointed Owner's representative.

Contractor: A firm, corporation or individual with whom the Owner makes a direct Contract for the construction of all or any portion of the work.

Architect/Engineer: The authorized representative of the Owner.

Subcontractor: A firm, corporation or individual other than employees of a Contractor with whom a Contractor or Subcontractor makes a contract to furnish labor, and/or materials, and/or services in connection with the project.

Owner Representative: An employee of the Hoffman Estates Park District responsible for the coordination of the work involved on the project.

The words "approve", "equal to", "as directed", etc., are interpreted and will be taken to mean "to the satisfaction of the Owner." Samples shall be submitted and approvals shall be requested in ample time to avoid any delays should resubmission of an item be necessary.

3. Contract Documents

The Contract Documents shall consist of the Notice to Bidders, the Instructions to Bidders, the Supplementary Conditions, the Drawings, the Specifications, the supplied Form of Proposal, and the accepted Bid Sheet and certification.

4. Bonds

- A. With proposal, and attached hereto, each Bidder shall furnish Bid Security payable to the Owner in the amount of 5% of bid.
- B. Include allowance in Lump Sum Proposal for Performance Bond and Labor and Materials Payment Bond in the amount of 100% of Contract Price.

1. The Contractor, before commencing the Work, shall furnish a Performance Bond and a Labor and Material Bond. The Performance Bond shall be in an amount equal to 100% of the full amount of the Contract Sum as security for the faithful performance of the obligation of the Contract Documents, and the Labor and Material Payment Bond shall be in an amount equal to 100% of the full amount of the Contract Sum as security for the payment of all persons performing labor and furnishing materials in connection with the Contract Documents. Such bonds shall be on standard AIA Documents, issued by the American Institute of Architect/Engineers, shall be issued by a surety satisfactory to the Owner, and shall name the Owner as a primary co-obligee. The cost of the bonds is to be included in the Bid Proposal. The Performance Bond and Labor and Material Payment Bond will become a part of the Contract. Each Bidder shall list the name of the surety company that will be furnishing the Bonds on its Bid Proposal. The failure of a Bidder to list the name of its surety company on its Bid Proposal shall be a non-responsive bid. The failure of the successful Bidder to supply the required Bonds within five (5) days after the Notice of Award or within such extended period as the Owner may grant if the forms do not meet its approval shall constitute a default, and the Owner may either award the Contract to the next responsible, responsive Bidder or re-advertise for bids. A charge against the defaulting Bidder may be made for the difference between the amount of the bid and the amount for which a contract for the work is subsequently executed, irrespective of whether the amount thus due exceeds the amount of the bid guarantee.
2. The Contractor shall deliver the required bonds to the Owner not later than five (5) days following the date the Agreement is entered into, or if the Work is to be commenced prior thereto in response to a letter of intent, the Contractor shall, prior to the commencement of the Work, submit evidence satisfactory to the owner that such bonds will be furnished.
3. The contractor shall require the attorney-in-fact who executed the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.
4. Whenever the Contractor shall be and is declared by Owner to be in default under the Contract, the Surety and the Contractor are each responsible to make full payment to the Owner or any and all extra Work incurred by the Architect/Engineer as a result of the Contractor's default, and to pay to Owner all attorney's fees and court costs incurred by Owner as a result of the Contractor's default, and in protecting Owner's rights under the Agreement to remedy Contractor's default.

5. The Contractor shall (i) furnish all Surety Company's bonds through Surety Company's local agents approved by and/or as directed by Owner; (ii) fully covered and guarantee with said bond the faithful performance and completion of the entire Contract, including without limitation, the faithful performance of prevailing wage requirements; and (iii) guarantee with said bond payment in all cases by the Contractor or by the Surety Company for all labor performed, material and supplies furnished with the entire Work in the Contract. Said Bond shall remain in full force and effect during the entire period of all general guarantees given by the Contractor with the Contract as called for in the Specifications and Contract, except in cases where other bonds are specifically called for in the specifications and Contract in connection with special guarantees.

5. Payment

The Contractor may present estimate of work for which he desires payment no later than the first Monday of each month, based on cost of labor and material incorporated into the work. Estimate shall be a Sworn Statement and shall show relative amount of each item completed. Submit Partial Waivers of Lien, including for first payout, from Contractors, Subcontractors and Material Suppliers with Sworn Statement for monthly payout. Payments will be made within approximately thirty (30) days after review by the Owner. Notwithstanding, anything to the contrary contained in the Contract Documents, payouts are to be made by checks payable to the Contractor. The Contractor will be required to submit a sworn payroll statement according to the Illinois Department of Labor documenting his compliance with the Illinois Prevailing Wage Act.

Final Payment will be made within approximately thirty (30) days of final inspection and approval and receipt of all waivers, sworn statements, guarantee statements, and other documents set forth in the Contract Documents.

6. Preparation of Bids

Before submitting proposal, each bidder shall examine carefully all documents pertaining to the work and visit the sites to verify conditions under which work will be performed. Submittal of the Bid Proposal by the Contractor is a representation by the Contractor, that the Contract Documents are full and complete, are sufficient to enable the Contractor to determine the cost of the Work and that the Contract Documents are sufficient to enable it to construct the Work outlined therein, in accordance with applicable laws and regulations, and otherwise to fulfill all its obligations hereunder, including, but not limited to, Contractor's obligations to construct the Work for an amount not in excess of the

contract Sum on or before the date(s) of Completion established in the Agreement. The Contractor further acknowledges and declares that it has visited and examined the Project site, examined all physical and other conditions affecting the Work and is fully familiar with all of the conditions thereon and thereunder affecting the same. In connection therewith, Contractor specifically represents and warrants to Owner that prior to the submission of its bid it has: (a) thoroughly examined the location of the work to be performed, is familiar with local conditions, and has read and thoroughly understands the Contract Documents as they relate to the physical conditions prevalent or likely to be encountered in the performance of the work at such location; (2) examined the nature, location and character of the general area in which the Project is located, including without limitation, its climatic conditions, available labor supply and labor costs, and available equipment supply and equipment costs; and (3) examined the quality and quantity of all materials, supplies, tools, equipment, labor, and professional services necessary to complete the Work in the manner and within the cost and time frame required by the Contract Documents.

Submission of bid will be considered presumptive evidence that the Bidder has visited the site and is conversant with local facilities and difficulties, the requirements of the documents and of pertinent State, County or Local Codes, State of Labor and Material Markets, and has made due allowance in his bid for all contingencies.

Include in bid all costs of labor, material, equipment, allowance, fees, permits, guarantees, applicable taxes (**sales tax does not apply**), insurance and contingencies, with overhead and profit necessary to complete those portions of the work covered by the specifications on which proposal is made, including all trades, without further cost to the Owner. Obtain all permits and arrange for all inspections. Pay all fees, permits and costs incurred.

No compensation will be allowed by reason of any difficulties, which the Bidder could have discovered prior to bidding.

7. Fees and Inspection

The Contractor is responsible for all license fees and arrangements for all inspections required by State, County, Local and other authorities having lawful jurisdiction. The Owner is responsible for all building permit fees associate with the Work.

8. Subcontracts

Contractors operating under direct Contracts with the Owner may let Subcontracts for the performance of such portions of the work as are usually executed by special trades. All such Subcontracts shall be based on conformance with all pertinent conditions set forth in the Contract Documents, including the Supplementary Conditions as well as the detailed requirements of the portions of the drawings and specifications which depict or describe the work (labor and materials) covered by the Subcontract.

No Work may be sublet without approval of the Owner, who reserves the right to disapprove any proposed Subcontractor whose record does not establish his experience, competence, and financial ability to perform the work.

9. Materials

Materials shall conform to the drawings, specifications, manufacturer's specifications for all products incorporated into the work, and all applicable standards and guidelines.

Some specific equipment and materials have been specified for use on this project to establish minimum performance requirements or desired features. To receive consideration of alternate equipment or materials, the Bidder must submit all appropriate product data and receive pre-bid approval from the Owner. All materials are subject to the approval by the Owner both before and after incorporation in the project.

All condemned material or work shall be removed from the premises and properly disposed of.

10. Law Compliance

All project construction work shall comply with all State and Municipal Laws and Regulation, and with all Local Ordinances and Rules pertaining to this work. Such Laws, Regulations, Ordinances and Rules shall be considered a part of these specifications.

- A. The Contractor warrants that it is familiar with and shall comply with Federal, State and local laws, statutes, ordinances, rules and regulations and the orders and decrees of any courts or administrative bodies or tribunals in any manner affecting the performance of the Contract including without limitation Workers= Compensation Laws, minimum salary and wage statutes and regulations, laws with respect to permits and licenses and fees in connection therewith, laws

regarding maximum working hours. No plea of misunderstanding or ignorance thereof will be considered.

- B. Whenever required, the Contractor or Subcontractor shall furnish the Architect/Engineer and Owner with satisfactory proof of compliance with said Federal, State and local laws, statutes, ordinances, rules, regulations, orders, and decrees.
- C. Contractor shall carefully examine the Occupational Safety and health Act as issued by the Federal Register (OSHA), and the specific regulations governing procedures, techniques, safety precautions, equipment design, and the configuration of the same as required under this Act and shall comply with all terms of the Act and to perform and complete in a workmanlike manner all work required in full compliance with said Act.
- D. Contractor shall comply with all terms of the Illinois Preference Act and all terms of the Equal Employment Opportunity Clause of the Illinois Fair Employment Practices Commission.
- E. At all times Contractor shall remain in compliance with the Illinois Public Works Employment Discrimination Act (775 ILCS 10/1, et seq.) and the Illinois Human Rights Act (775 ILCS 5/2-101, et seq.), and in addition shall at all times comply with Section 2-105 of the Illinois Human Rights Act requiring a written sexual harassment policy as defined therein.
- F. Contractor and all subcontractors shall be solely responsible for complying with the Substance Abuse Prevention on Public Works Projects Act, Public Act 095-06345.
- G. Contractor agrees to maintain all records and documents for projects of the District in compliance with the Freedom of Information Act, 5 ILCS 140/1 et seq. In addition, Contractor shall produce records which are responsive to a request received by the District under the Freedom of Information Act so that the District may provide records to those requesting them within the time frames required. If additional time is necessary to compile records in response to a request, then Contractor shall so notify the District and if possible, the District shall request an extension so as to comply with the Act. In the event that the District is found to have not complied with the Freedom of Information Act due to Contractor's failure to produce documents or otherwise appropriately respond to a request under the Act, then Contractor shall indemnify and hold the District harmless, and pay all amounts determined to be due including but not limited to fines, costs, attorney's fees and penalties.
- H. Contractor understands, represents and warrants to the Owner that the Contractor and its Subcontractors (for which the Contractor takes responsibility to insure that they comply with the above-mentioned Acts) are in compliance with all requirements provided by the Acts set forth in Article 15 and that they will remain in compliance for the entirety of the Work. A violation of any of the Acts set forth in this

Article is cause for the immediate cancellation of the Contract. However, any forbearance or delay by the Owner in canceling this Contract shall not be considered as, and does not constitute, Owner=s consent to such violation and a waiver of any rights the Owner may have, including without limitation, cancellation of this Contract.

- I. Contractor and each of its Subcontractors shall pay prevailing wages as established by the Illinois Department of Labor for each craft or type of work needed to execute the contract in accordance with 820 ILCS 130/.01 et seq. The Contractor shall prominently post the current schedule of prevailing wages at the Contract site and shall notify immediately in writing all of its Subcontractors, of all changes in the schedule of prevailing wages. Any increases in costs to the Contractor due to changes in the prevailing rate of wage during the terms of any contract shall be at the expense of the Contractor and not at the expense of the Owner. The change order shall be computed using the prevailing wage rates applicable at the time the change order work is scheduled to be performed. The Contractor shall be solely responsible to maintain accurate records as required by the prevailing wage statute and shall be solely liable for paying the difference between prevailing wages and any wages actually received by laborers, workmen and/or mechanics engaged in the Work

11. Supervision

The Contractor shall maintain a highly qualified technician on the job site at all times. The Contractor shall enforce strict discipline and good order among his employees and the Subcontractors at all times work is in progress. The Contractor shall not employ any unfit person or anyone not skilled in the work assigned to him.

12. Equipment and Tools

Furnish and maintain all equipment tools and apparatus, scaffolding, and all temporary work and materials necessary to perform the work.

13. Expediting

Place orders for materials and equipment immediately upon receipt of Contract or Notice to Proceed and follow up vigorously to insure adequate and timely supply to the work. Perform all tracings and expediting actions and arrange to get workmen in the job at the proper time to avoid delays.

14. Sanitary

The Contractor shall provide suitable, temporary toilet facilities at a specified location, for workmen on the project, complying in every respect

with Local and County requirements. Unit shall be chemically treated, serviced at regular intervals, and maintained in a sanitary condition at all times.

15. Existing Utilities

The Contractor shall be responsible for locating and protecting all existing utilities, public and private, for the duration of the job. Prior to the commencement of any work, the Contractor shall notify all public and private utilities for the purpose of verifying, marking, and recording the locations of all under ground or overhead utilities, temporary or permanent. Any repair/replacement costs or associated damage will be the responsibility of the Contractor.

16. Testing and Observations

The Contractor shall give the Owner, Village Inspector, and Manufacturer's Representative proper notice of readiness of Work for all required observations, tests, or reviews.

If Laws or Regulations of any public body having jurisdiction requires any Work (or part thereof) to specifically observed or tested, Contractor shall assume full responsibility therefor, pay all costs in connection therewith and furnish Engineer with the required certificates of inspection, testing, or approval. Contractor shall be responsible for and pay all costs in connection with any inspection or testing required in connection with Owner's or Manufacturer's agreed to Supplier of materials or equipment proposed to be incorporated into the Work, or of materials or equipment submitted for approval prior to the Contractor's purchase thereof for incorporation in the Work.

The cost of all observations, tests, and approvals in addition to the above which are required by the Contract Documents shall be paid by the Owner (unless otherwise specified).

All observations, tests, or reviews other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations agreed to by Owner and Contractor (or Manufacturer if so specified).

Should testing reveal deficiencies due to Contractor error, subsequent testing costs shall be paid by Contractor.

If any work (including the work of others) that is to be observed or tested is covered without the written concurrence of the Owner, it must, if requested by Engineer, be uncovered of observation. Such uncovering shall be at

the expense of the Contractor unless Contractor has given Owner or Village Inspector timely notice of Contractor's intention to cover such work and Engineer has not acted with reasonable promptness in response to such notice. Neither observations by Owner nor observations, tests, nor reviews by others shall relieve the Contractor from his obligations to perform the work in accordance with the Contract Documents.

17. Acceptance Preceding Work (if applicable)

Before starting any operation, the Contractor and Subcontractors shall examine work performed by others to which his work adjoins or is applied and report any condition that will prevent satisfactory accomplishment of his Contract. Failure to notify the Owner in writing of deficiencies or faults in preceding work will constitute acceptance thereof and waiver of any claims and its unsuitability.

18. Cutting and Patching

When necessary to cut or alter completed work to accommodate another trade, the Contractor or Subcontractor for work in places, shall do all cutting for and repair of portions of the work so disturbed. Where cutting is necessitated by fault or negligence of another Contractor, all costs of cutting and repairing shall be borne by the party at fault.

19. Damage to Current

Each Contractor shall adequately protect all preceding work from damage caused by him or his works. All breakage or damage will be repaired by trade concerned at the cost of the party causing damage. Each Contractor, however, shall be responsible for adequate protection of his own work against normal construction risks.

20. Housekeeping

Keep site of operations free from accumulations of rubbish and waste materials at all times. See that Subcontractors remove and dispose of their rubbish. Arrangements for removal and disposition of rubbish will be made by Contractors concerned at no cost to the Owner.

Should any Contractor or Subcontractor allow rubbish or waste material to accumulate on any portion of the site or in any portion of the building to such extent that the accumulation constitutes a hazard or obstructs the prosecution of the work in any way. The Owner may, if Contractor or Subcontractor at fault fails to remove such rubbish or waste materials within three (3) days after written notice to clear up the accumulation,

engage prior labor or services of another Contractor to make necessary removal and disposition and to charge cost against monies due to Contractor or Subcontractor at fault.

21. Protection

- A. Property: Each Contractor and Subcontractor shall take such precaution as are necessary adequately to protect from damage or deterioration and to safeguard from theft or pilferage, all materials, tools and equipment pertaining to his work which are on the site, whether stored or incorporated in the structure.
- B. Safety: Provide all barricades or other temporary protection as may be required by local authorities having lawful jurisdiction, or be considered of general safety, around all openings in floors and walls of the structure, and around all open pits or trenches in its vicinity.
- C. Weather: Each Contractor and Subcontractor shall at all times provide protection against rain, snow, wind storms, frost or heat so as to maintain all work, materials, apparatus, and fixtures, free from injury or damage.

At the end of each day's work, all new work subject to damage by the elements and all points where water or frost may enter any part of the structure or work shall be covered.

- D. Water: General Contractor shall at all times protect excavations, trenches, and building from damage from rain water, snow, spring water, ground water backing up of drains or sewers and all other water. He shall provide all pumps and equipment enclosures required for such protection.

He shall also construct and maintain any temporary drainage necessary to direct or lead water away from the work and shall do all pumping necessary to keep excavation and lowest floor free of water at all times.

- E. Damage: All work damaged by failure to provide protection shall be removed and replaced with new work at the expense of the Contractor at fault.

22. Guarantee

The Contractor and/or manufacturer shall provide a minimum of one (1) year warranty for all materials and workmanship associated with the project or work performed under the Contract.

23. Insurance

- **Worker's Compensation**
 - State: Statutory
 - Applicable Federal (e.g., Longshoremen's): Statutory
 - Employer's Liability
 - \$500,000.00 Per Accident
 - \$500,000.00 Disease, Policy Limit
 - \$500,000.00 Disease, Each Employee
- If written under **Commercial General Liability Policy** Form
 - \$2,000,000.00 General Aggregate
 - \$1,000,000.00 Products Completed Operations Aggregate
 - \$1,000,000.00 Personal and Advertising Injury
 - \$1,000,000.00 Each Occurrence
 - \$ 50,000.00 Fire Damage (any one fire)
 - \$ 50,000.00 Medical Expense (any one person)
- **Business Automobile Liability** (including owned, non-owned and hired vehicles):
 - Bodily Injury
 - \$1,000,000.00 Per Person
 - \$1,000,000.00 Per Accident
 - Property Damage
 - \$1,000,000.00 Per Occurrence
- **Umbrella Excess Liability**
 - \$2,000,000.00 over Primary Insurance
 - \$2,000,000.00 Retention for Self-Insured Hazards Each Occurrence

A. General: The Contractor shall not commence work under the Contract until he has obtained all insurance required, and it has been approved by the Owner, nor shall Contractor allow any Subcontractor to commence work on any portion of the work until all insurance required of the Subcontractor and Sub-subcontractor has been similarly approved by the Owner.

All such insurance shall be purchased only from companies licensed and duly authorized by the Department of Insurance of the State of Illinois to do business in Illinois and to write the types of insurance policies as herein specified. Insurance companies must have a minimum policy holder's rating of A+ and a financial rating of AAAAA as stated in the latest edition of Best's Insurance Guide.

The insurance coverages must be maintained by the Contractor and the Subcontractor until all work is completed by the Contractor and

accepted by the Owner. If the policy is written on claims made basis, then the Contractor shall purchase such additional insurance as may be necessary to provide specified coverage to the District for a period of not less than five (5) years from the completion of the work.

- B. Automobile Liability: Contractor shall obtain at his expense and keep in force at all times during the performance of the work, Comprehensive Automobile Liability Insurance providing for bodily injury, personal injury and property damage, limits of an amount not less than \$500,000 per occurrence and \$1,000,000 per annual aggregate.
- C. General Liability Insurance: Contractor shall obtain at his expense and keep in force at all times during the performance of the work, Comprehensive General Liability Insurance providing for bodily injury, personal injury and property damage, limits of not less than \$1,000,000 per occurrence and \$1,000,000 annual aggregate.
- D. Worker's Compensation and Employer's Liability Insurance: Contractor shall obtain at his expense and keep in force at all times during the performance of work, worker's compensation and related insurance coverage at amounts required by statute and employer's liability with limits of not less than \$1,000,000 per occurrence.
- E. Certificates of Insurance: Within five (5) calendar days after receipt of the "Written Notice to Proceed", the Contractor shall file with the Owner, a Certificate of Insurance and Policy Endorsement showing complete coverage of all insurance required by this Section signed by the insurance companies or their authorized agents, certifying to the name and address of the party insured, the description of the work covered by such insurance, the insurance policy numbers, the limits of liability of the policies and the dates of their expirations, with a further certification from said insurance companies that their policies will not be modified, amended, changed, cancelled or terminated without thirty (30) business days prior written notice to the Owner. If any form of umbrella or excess coverage policy is utilized by the Contractor, the Owner reserves the right to require a copy of the entire policy.
- F. All policies of insurance purchased or maintained in fulfillment of this paragraph 24 shall name the Owner and Architect/Engineer as additional insureds thereunder.
- G. Failure of Owner to demand any certificate, endorsement or other evidence of full compliance with these insurance requirements or failure of Owner to identify a deficiency from evidence that is provided shall not be construed as a waiver of Contractor's obligation to

maintain such insurance. The Contractor agrees that the obligation to provide the insurance required by these documents is solely its responsibility and that this is a requirement which cannot be waived by any conduct, action, inaction or omission by the Owner.

- H. Nothing contained in the insurance requirements of the Contract Documents is to be construed as limiting the liability of the Contractor, the liability of any Subcontractor or any tier or either of their respective insurance carriers. The Owner, does not in any way, represent that the coverages or limits of insurance specified is sufficient or adequate to protect the Owner, Contractor, Architect/Engineer, or any Subcontractor's interests or liabilities but are merely at minimums. The obligation of the Contractor, the Architect/Engineer, and any Subcontractor of any tier to purchase insurance, shall not, in any way, limit their obligations to the Owner in the event the Owner should suffer an injury or loss in excess of the amount recoverable through insurance, or any loss or portion of the loss which is not covered by either the Contractors or any Subcontractor insurance.
- I. On the Certificate of Insurance, delete in the cancellation provision the following words, "Endeavor to" and "but failure to mail such notice shall impose no obligation or liability of any kind upon the company, its agents or representatives."
- J. All the insurance required of the Contractor shall state that the coverage afforded to the additional insureds shall be primary insurance of the additional insureds with respect to claims arising out of operations performed by or on their behalf. If the additional insureds@ have other insurance or self-insured coverage which is applicable to the loss, it shall be on an excess or contingent basis.
- K. All insurance required of the Contractor shall provide that any failure to comply with reporting provisions of the policies shall not affect coverage provided to the Owner or Architect/Engineer or any of their officers, directors, commissioners, officials, employees, consultants, volunteers, or agents. I. All insurance required of the Contractor shall provide that the insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.
- L. In the event the Contractor fails to furnish and maintain the insurance required by this contract, the Owner may purchase such insurance on behalf of the Contractor, and the Contractor shall pay the cost thereof to the Owner upon demand or shall have such cost deducted from any payments due the Contractor. The Contractor agrees to furnish to the Owner the information needed to obtain such insurance.

M. In order to protect the Owner and Architect/Engineer the Contractor shall require that all its Subcontractors purchase insurance protecting the Owner and Architect/Engineer to the same extent they are protected by the insurance required herein from the Contractor.

N. Owner's Liability Insurance

1. The Contractor shall purchase and maintain insurance covering the Owner's liability for claims which may arise from operations under the Contract and that will protect the Owner and the Architect/Engineer and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the work, provided that any such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease or death, or to injury or to destruction of tangible property (other than the work itself) including the loss of use resulting therefrom and (2) is cause in whole or in part by any negligent act of omission of the Contractor, and Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party to whom insurance is afforded pursuant to this paragraph. The minimum limits of liability purchased for such coverage shall be equal to the aggregate of the limits required for the Contractor's Liability Insurance under 24 above.
2. In any and all claims against the Owner or the Architect/Engineer or any of their agents or employees by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the insurance obligation under this paragraph shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor under Workmen's Compensation Acts, disability benefit acts or other employee benefit acts.
3. The insurance obligations of the Contractor under this paragraph shall not extend to the liability of the Architect/Engineer, his agents or employees arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications or (2) the giving of or failure to give directions or instruction by the Architect/Engineer, his agents or employees provided that such giving or failure to give is the primary cause of the injury damage.
4. The Contractor shall provide the Owner with the Original policy and shall furnish the Architect/Engineer a memorandum copy of said policy. The named insured in the Protective Liability Policy shall be: Hoffman Estates Park District

24. Indemnification

To the fullest extent permitted by law, the Contractor shall waive any right of contribution against the Owner and shall indemnify and hold harmless the Owner and the Architect/Engineer and their officers, officials, employees, volunteers and agents from and against all claims, damages losses and expenses, including, but not limited to, legal fees (attorney's and paralegal's fees, expert fees and court costs), arising out of or resulting from the performance of the Contractor's work provided that any such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or injury to or destruction of property, other than the work itself, including the loss of use resulting therefrom, or is attributable to misuse or improper use of trademark or copyright protected material or otherwise protected intellectual property, to the extent it is caused in whole or in part by any wrongful or negligent act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable. Such obligation shall not be construed to negate, abridge or otherwise reduce any other right to indemnity which the Owner would otherwise have. The Contractor shall similarly, protect, indemnify and hold and save harmless, the Owner, its officers, officials, employee, volunteers and agents against and from any and all claims, costs, causes, actions and expenses, including, but not limited to, legal fees, incurred by reason of Contractor's breach of any of its obligations under, or Contractor's default of any provisions of the Contract. The indemnification obligations under this paragraph shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor or any subcontractor under Workers' Compensation or Disability Benefit Acts or Employee Benefit Acts

25. Labor Law

The Contractor and each and every Subcontractor performing work at the site of the project to which this Contract relates shall comply with applicable and provisions of all pertinent Federal, State, and Local Labor Laws.

26. Final Cleaning

Just prior to delivery of the job to the Owner, the Contractor shall perform a final cleaning of the equipment and haul away from the job site all debris created by his work on the site and surrounding area.

27. Time Schedule/Major Repairs

Work under the Contract shall commence within five (5) calendar days after given "Written Notice to Proceed" by Owners (or date specified) and shall continue with due diligence until due completion.

Each Contractor or Subcontractor shall and does hereby agree that he will start and prosecute his work so as to cause no delay to the Contractor and that he will complete all work under his Contract coincidentally with completion of Contractor's work.

The Contractor shall submit an estimated time schedule setting up order of procedure and time allowed for each branch of work. Contractor shall make every effort to adhere to these schedules, but reasonable modifications will be permitted from time to time to compensate for delays due to strikes or conditions beyond Contractor's control, exclusive of weather.

28. Avoidance of Delays (Major Repairs)

Each Contractor and Subcontractor shall be furnished a copy of the "Time Schedule" referred to above, and each shall so prosecute his work that he not only maintains his progress in accordance with the said Time Schedule but also shall cause no delays to other Contractors, either in person or through a Subcontractor, fail to maintain progress according to the approved Time Schedule or cause delay to another Contractor or Subcontractor, he shall furnish such additional labor and/or services or work such overtime as may be necessary to bring his operation up to schedule with no additional cost to Owner. Failure to maintain schedule or to the above steps to regain the agreed time schedule shall constitute default within the terms of the Contract and grounds on which the Owner may have recourse to the Contractor's Surety for remedial action.

29. Unit Prices and Measurement (if applicable)

Upon completion of the work, a final measurement will be conducted by the Contractor and Owner. Unit prices included in the bid proposal will be applied to the units measured to determine the final/total price of the work.

30. Assignment

The Contractor or any Subcontractor shall not assign the Contract nor any monies due to become due to him hereunder, to any Person, Firm, or Corporation without previous written consent of the Owner.

31. Extras

No extra work shall be allowed or paid for unless a Change Order is made and accepted by the Owner in writing.

32. Examination of Site

Before submitting proposal, contractors shall examine site. Such an examination will be presumed and no allowance will be made for extra labor or materials due to Contractor's failure to do so. Any information furnished by the Owner shall not constitute a representation concerning site conditions and the Contractor shall bear, solely and exclusively, all costs due to concealed, unknown, unusual or otherwise unforeseen conditions at the site. Contractor is aware that all such risk concerning site conditions is borne by it, has considered such in making its bid, and therefore freely waives all of its rights under the Illinois Public Construction Contract Act of 1999 .

33. Safety

The Contractor is responsible for the safe passage of pedestrian traffic for the duration of the job. Any precautionary measures, necessary warning signs, barricades, etc., required to inform the general public of potential hazards or dangers and as necessary to assist the Contractor in the performance of the work, shall be at his expense and provided for in his quoted price. **Public safety is a foremost concern of the Owner, therefore failure by the Contractor to take a pro-active approach to safety is unacceptable. If necessary, the Owner will take whatever steps deemed appropriate, at the cost of the Contractor, to ensure the safety of the general public and our employees.**

34. Personnel

If any person employed on the work site be, in the opinion of the Owner, intemperate, disorderly, incompetent, willfully negligent or dishonest in the performance of his duties, he shall be directed to cease work and vacate the job site immediately.

35. Liens

No payment shall become due until the Contractor, if required, shall deliver to Owner a complete release of all liens arising out of this Contract, or receipts in full in lieu thereof and, if required in either case, an affidavit that so far as he has knowledge or information, the releases and receipts include all the labor and material for which a lien could be filed. If any lien remains unsatisfied after all payments are made, the Contractor shall

refund to the Owner all monies that the latter may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

36. Default

In case of default by the Contractor, the Owner may procure the articles or services from other sources and hold the Contractor responsible for any excess cost occasioned thereby.

37. Cancellation of Contract

If the Contractor or any of his Sub-contractors shall, in the judgment of the Hoffman Estates Park District, be unable to carry on the work satisfactorily, or if the Contractor or any of his Sub-contractors shall violate any of the provisions of this contract, or in case of bankruptcy of the Contractor, or failure of the Contractor to pay for supplies or workmen, or a work-stoppage, or a failure by the Contractor to provide sufficient workmen or sufficient material for the job, the Owner may serve written notice upon the Contractor and his Surety of his intention to terminate the Contract, and, if within seven (7) days after the service of such notice, the Contractor or the Sub-contractor or the Surety have not proceeded to carry on the work in accordance with this Contract and to the satisfaction of the Owner, this Contract shall cease and terminate and the Owner shall have the right to take over the work and prosecute the same to completion by Contract for the account and at the expense of the Contractor and the Surety; and the Contractor and Surety shall be liable to the Owner for any excess costs occasioned by the Owner thereby, and in such event the Owner may take possession of and utilize in completing the work such materials, appliances, and plants as may be on the site of the work and necessary therefore; provided, however, that in the event the Owner determines that the failure of the Contractor, Sub-contractor or Surety to carry on the work in accordance with this Contract has resulted in an emergency which will require that the Owner take over the work immediately, to avoid loss or waste of a substantial part of the work already performed, the Owner may immediately take over the work and prosecute the same at the expense of the Contractor and Surety to the extent necessary to avoid damage, and may prosecute the same at the expense of the Contractor and Surety to the extent necessary to avoid damage, and may prosecute the same to completion at the expense of the Contractor and the Surety unless within seven (7) days after the services of the above described notice, the Contractor, Sub-contractor or Surety has proceeded to carry on the work in accordance with this Contract and to the satisfaction of the Hoffman Estates Park District.

38. Lien Waivers (if applicable)

Neither by partial nor final payment will the Owner be deemed to have waived any remedy for defective work or negligence on the part of the Contractor or any other portion of the Contract which, by its nature, survives after time of payment.

Supporting partial Waivers of Lien for each Subcontractor, supplier and prime contractor must accompany each request for progress payment.

Waivers must spell out exact description of work performed for which Waiver is issued and state whether dollar amount is full amount received or amount of work less retainage, held by prime contractor.

For final payment it is necessary to submit final waivers in the full amount of the Contracts for all Subcontractors, suppliers and prime contractors.

Waivers must be accompanied by a sworn statement listing Subcontractors and suppliers, the amount of their Contracts and the amount requested.

39. Line and Grade Stakes (if applicable)

Stakes for lines and grades shall be provided once by the Engineer. Costs for replacement of damaged stakes shall be paid by the Contractor. Prior to commencing work and before pouring or finally adjusting any structure or closing any excavation, the Contractor shall verify the correctness of any grades so as to conform to the Contract Documents.

40. Construction Observation

A Consultant may be called upon to observe the work on behalf of the Owner and will provide general assistance during construction insofar as proper interpretation of the Contract Documents is affected. The consultant shall not be responsible for the acts or omissions of the Contractor's superintendent or other employees.

All materials used and all completed work by the Contractor shall be subject to the observation of the Owner/Owner's representative. The Contractor shall furnish such samples of materials for examination and tests as may be requested by the Owner and shall furnish any information required concerning the nature or source of any materials or equipment, which he proposes to use. Any material, equipment, or work which does not satisfactorily meet the Contract Documents may be rejected by the Owner by giving written notice to the Contractor. All rejected materials,

equipment, or work shall be promptly removed and replaced at the Contractor's expense.

41. Field Representatives

Field representatives may be appointed by the Owner, Architect or Engineer to see that the work is performed in accordance with the Contract Documents. Field representatives shall have the authority to condemn and/or reject defective work materials. Only the Owner shall have authority to suspend work. Field representatives shall have no authority to permit deviation from the Contract Documents and Owner, the Contractor shall be liable for any deviations made without a written order from the Engineer.

HOFFMAN ESTATES PARK DISTRICT

SPECIFICATIONS

SECTION 13150

SWIMMING POOL

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Pool mechanical systems, including piping, circulation pump and filter.
- B. Miscellaneous pool testing, safety, and control equipment as required by the Department of Public Health.
- C. Pool start-up, closing, and instruction of Owners personnel.

1.2 REFERENCES

- A. ASTM D1785 – Specification for Standard specification polyvinyl chloride (PVC) plastic pipe schedules 40, 80, and 120.
- B. ASTM D1784 – Specification for Rigid Poly Vinyl Chloride (PVC) Compounds and Chlorinated Poly Vinyl Chloride (CPVC) Compounds.
- C. ASTM D2564 – Specifications for Solvent Cements for Poly Vinyl Chloride (PVC) Plastic Pipe and Fittings.
- D. ASTM D2855 – Practice for Making Solvent-Cemented Joints with PVC Pipe and Fittings.
- E. NSF – Seal for Potable Water.

1.3 DEFINITIONS

- A. The term “pool” as used in this Section shall refer to the lap pool and activity pool.
- B. The term “Architect / Engineer” as used in this Section shall refer to the pool filtration system design only.

1.4 SYSTEM DESCRIPTION

- A. Provide all labor and materials necessary for renovation of the existing pool filtration systems. The above will be complete will all equipment as indicated on

the construction documents. Construction shall be in accordance with State and Local Codes.

1.5 SUBMITTALS

- A. Product Data: Provide Manufacturer's/Installer's written installation instructions.
- B. The Contractor shall submit for approval to the Architect/Engineer complete lists, including descriptions catalog cuts, etc., and where applicable dimensioned shop drawings of all material, fixtures and equipment to be furnished and installed under this specification. Submittal shall adequately and completely describe the equipment, including where necessary or requested complete construction and installation dimensions, complete capacity and performance data, all accessory and auxiliary equipment, and all pertinent details of manufacture. Shop drawings for equipment shall be submitted and approval of shop drawings shall be obtained before proceeding with fabrication. Shop drawings shall not be "doctored" reproduces of Architects/Engineers drawings.
- C. Shop Drawings:
 - 1. Submit shop drawings as required by Parts 2 and 3 of this Section.
 - 2. The drawings accompanying this specification are essentially diagrammatic in nature and show the general arrangement of all equipment and piping. Because of the small scale of the drawings, it is not possible to show all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the structural and finish conditions of all his work and shall arrange such work accordingly, furnish all fittings, pipe and accessories that may be required to meet such conditions. Where conditions necessitate a rearrangement, the Contractor shall obtain the Architect/Engineer's approval. Locate all valves for maximum operation accessibility.
- D. Operation and Maintenance Manuals: Submit 4 copies of the operation and maintenance manuals for the filter, pump and heat exchanger.
- E. Required Submittals:
 - 1. Pump, Strainer
 - 2. Variable Frequency Drive
 - 3. Gauges, Flow Sensors
 - 4. Piping Materials, Valves
 - 5. Shop Drawings:
 - a. Filter
 - 6. Test Results:

- a. Piping Pressure Testing
- 7. Guarantees Warrantees:
 - a. Standard (1) Year
 - b. Filter Tank (15)
- 8. Close Out Documents:
 - a. O&M Manuals
 - b. As Built Drawings
 - c. Owners Certification Of Instruction

1.6 QUALITY ASSURANCE

- A. Qualifications of Pool Contractor: Work of this Section shall be performed by a contractor who has a proven record of competence and experience in the construction of similar facilities of this size and complexity for not less than 5 years. References will be required by the Owner.
- B. Performance Criteria: Certain sections of the Specifications contain performance criteria rather than product descriptions. It shall be the obligation of the contractor to insure that all criteria are satisfied and the burden or proof of conformance shall rest with the contractor. The Architect / Engineer shall require past performance records and, if required, inspection trips of similar facilities to substantiate conformance with these criteria. The Architect / Engineer shall be sole judge of conformance. The Pool Contractor is cautioned that he will be required to provide a finished product meeting all stated criteria and meeting or exceeding Department of Health requirements.

1.7 REGULATORY REQUIREMENTS

- A. All applicable local building and health codes.
- B. National Electrical Code (NEC)
- C. National Sanitation Foundation (NSF): Seal of approval program.
- D. Illinois Department of Public Health Swimming Pool and Bathing Beach Code

1.8 REQUIRED PERMITS

- A. Illinois Department of Public Health by Architect / Engineer.
- B. Local Building Department: Pool Contractor.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver all materials and equipment to the Work Site in original packages fully identified, with manufacturer's label.

- B. Protect plastic pipe from exposure to chemicals (aromatic hydrocarbons, halogenated hydrocarbons and other esters and ketones) that might attack the material. Protect all pipe from mechanical damage and long exposure to sunlight during storage.

1.10 WARRANTY

- A. Warranty: Provide one (1) year warranty covering all pool workmanship, material and equipment.
- B. All standard manufacturer's warranties shall apply to all equipment and products provided by this Contractor.

Filter Tank shall have a fifteen (15) year warranty.

PART 2 - PRODUCTS

2.1 FILTRATION SYSTEM

A. General:

1. Purpose of the bid is to purchase and have installed a complete filtration and recirculation system for each pool. It is intended to limit the bidding to a style of product and company that has a proven history and record of performance.
2. Due to the specialized nature of certain components required for this project, these specifications, in some instances refer to various components by trade or manufacturers name.
3. Whenever a proprietary (trade) name is used within this Specification Section, it is used for informational purposes to describe a standard of required function, dimension, appearance and quality. References to materials by trade name, make or model number shall not be construed as limiting competition.

B. Quality Assurance:

1. Due to the specialized nature of the specified work and products, all bidders shall be required to have a minimum of five (5) years of operating history. The equipment described herein shall be products of a manufacturer regularly engaged in the fabrication of filtration and circulating systems for at least fifteen (15) years and shall be a professional engineering corporation.
2. The owner requires that filters bear the National Sanitation Foundation (NSF) seal for Standard #50. This NSF listing is required by the owner regardless of local health department regulations.
3. The specified filter system shall have had an NSF listing for at least two (2) years prior to the project bid date.

4. As assurance that each item of apparatus is properly sized to perform in conjunction with each other, the owner requires bidders to use the filter manufacturer as a single source of supply for the items of equipment as listed and described herewith.
5. The "EQUIPMENT SUPPLIER" shall be:
 - a. Neptune-Benson, Inc.; Coventry, Rhode Island; 1-800-832-8002
 - b. Paddock Pool Equipment Co. Inc., Rock Hill, S.C., 800-849-2729

C. Guarantee:

1. The "EQUIPMENT SUPPLIER" shall guarantee that the equipment to be furnished is of the correct capacity, that the various parts are designed to operate correctly and in conjunction with each other, that if the installation is made in accordance with the project drawings and operated in accordance with the suppliers instructions, the system will perform the prescribed functions correctly, the water entering the pool will be clear, bright, free from suspended matter visible to the unaided eye, and will be sanitary to the satisfaction of all authorities having jurisdiction.

D. Filter Requirements

1. Each filter system under this section shall consist of a Defender regenerative media filter as detailed on the drawings or equal.
2. It is the intent of these specifications to describe a filter system complete with all accessory items supplied and warranted by one manufacturer.
3. The primary components of the system consist of the main filter tank, flexible tube filter elements, element assembly, bump mechanism, vacuum transfer system, sight glass, pressure gauge panel, inspection (viewing) window, valves and automatic regeneration controller.
4. All components and related subassemblies shall be factory assembled and tested prior to shipment.

E. Filter System Capacity:

1. Each system shall consist of the regenerative media filter tank(s) with a total effective filter surface area as shown on the drawings and operate at a rate not exceeding 1.5 gallons per minute per square foot of filter area.

F. Filter Tank:

1. The filter tank shall not be less than the diameter noted on the drawings with a 60 inch side shell, suitable for 50 psi working pressure and hydrostatically tested to 75 psi. Tank shell shall be not less than 1/4 inch thick. Bottom dished head shall be not less than 1/4 inch thick. Top flat head shall be not less than 1 1/2 inch thick. All material to be Type A-36 carbon steel. Type 304L stainless steel with no interior or exterior coatings is acceptable.

2. All welding shall be performed by qualified operators. Joints shall be butt or fillet welded inside and out by manual or automatic process. Welded joints shall have complete penetration and fusion with little or no reduction of the thickness of the base metal. Welds shall be free of coarse ripples, grooves, overlaps, abrupt ridges or valleys. All welded surfaces shall be chipped and brushed clean, when necessary, leaving no slag or splatter.
3. Tank legs shall be constructed of 6" x 2 1/2" channel legs 1/4" thick. 24", 27" and 33" filters shall have (3) legs. 41", 49" and 55" filters shall have (4) legs. The material shall be Type A-36 carbon steel. Bearing plates shall be 10" x 5" x 1/4" type 304L stainless steel. Each bearing plate shall have (2) 5/8" drilled holes to secure to the floor with the 1/2" x 4 1/2" stainless steel concrete anchors provided. The legs shall be designed with bolted connections to minimize overall tank heights for shipping and access into the mechanical room.
4. The tank head shall be bolted to the shell with 7/8 inch diameter T304 stainless steel studs and nuts, 9" on center around the tank perimeter.
5. Tank shall be equipped with a UL listed grounding lug.
6. Tank shall incorporate connections for filter influent, effluent and drain sizes as showing on drawings; 1 1/2" vacuum transfer piping, 4" viewing window, and lift shaft gland.
7. Tank shall include brackets for mounting of automatic controller, gauge panel, filter / regulator, vacuum transfer blower and vacuum hose rack.
8. Tank shall include integrally mounted hydraulic lifting device (David). The Davit Assembly shall be designed to lift the filter head and include a pivot mechanism allowing the head to rotate 180° for access to tube sheet (model SP-24-42-327 excludes David requirement.)

G. Flexsol 3000 interior Lining:

1. All interior surfaces shall be grit blasted to white metal condition with a 2-3 mil profile. Blasted surfaces shall be cleaned of all dust or blast residue and primed as soon as is practical on the same day blasting is done.
2. When priming has dried the lining process will begin. If prime has sat for over twenty-four hours, a refresher coat will be applied.
3. Flexsol 3000® shall be a elastomeric polyurethane, 100 percent solid plural component lining. Hardness shall be 70 durometer on the shore D scale. Break tensile strength shall be 24600 psi with elongation of 25-30 percent.
4. Application of Flexsol 3000® lining shall be done by experienced applicators using a high pressure, high temperature plural component system. All wetted surfaces including flange faces, manway rings and manway covers shall be lined to 120 mils +/- 5 mils DFT.

5. Hardness shall be verified after curing to ASTM D 2240 standard.
6. Flexsol 3000® lining shall meet the NSF toxicity standard unconditionally and shall be approved for use with the NSF approved filter.
7. Flexsol 3000® lined vessels shall carry a ten (10) year limited non-prorated warranty.
8. The filter manufacturer shall bear the responsibility for suitability of lining and shall be the sole source for the specified warranty.

H. Exterior Coatings:

1. All exterior surfaces shall be grit blasted to white metal condition with a 2-3 mil profile. Blasted surfaces shall be cleaned of all dust or blast residue and primed as soon as practical on the same day blasting is done.
2. When priming has dried the coating process will begin. If prime has sat for over twenty-four hours, a refresher coat will be applied.
3. Two coats of high solids enamel shall be applied for a total developed film thickness of 5-8 mils.
4. Manufacturer is to supply min. 16 oz. of high solids enamel touch-up paint.

I. Internal Components:

1. Internally, the filter shall consist of flexible tube elements, filter assembly plate, stainless steel lift shaft and internal flow diversion assembly.
2. The filter elements shall be flexible tubes that provide the support structure for the media. The outer wall of each element shall be fabricated of multi-filament high strength polyester braid. Each element shall have an internal stainless steel spring, which acts a support structure for the braided filament.
3. The filter element assembly plate shall be fabricated of T304 stainless steel and provide both support for the top of the element cluster as well as water tight seal to prevent media from escaping the filter tank.
4. The lift shaft shall be fabricated from T304 stainless steel and provide the internal connection between the filter element assembly plate and the external bump mechanism.
5. The filter influent connection shall be fitted with a T316 stainless steel flow diversion assembly to eliminate disturbance to the filter elements during operation.
6. All stainless steel wetted internals shall be Type 304.

J. Bump Mechanism:

1. The bump mechanism shall include a pneumatically operated tire mounted externally on the filter tank head. The tire is alternately pressurized then depressurized causing the connected filter element assembly to move in an upward then downward fashion. This movement shall provide the means of dislodging the media and accumulated solids, which then recoat the filter element.

K. Vacuum Transfer System:

1. The vacuum transfer system shall be provided to allow the recharging of media into the filter for either bag or bulk media.
2. The vacuum blower shall include a 1.5 h.p. (for SP-27-SP-55) or .5 h.p. (for SP-24) TEFC 115/230v single phase motor 50/60 Hz.
3. An in-line filter with dual connections shall be provided to prevent dust and media from being drawn into the blower.
4. Provide three (3) 1 1/2" SCH 80 PVC ball valves: For the vacuum drain line, the blower inlet and the vacuum hose.
5. Provide 10 feet of 1 1/2" vacuum hose with fittings.

L. Automatic Controller (Alternate Only):

1. The automatic controller shall provide total control of the system's filtration and regeneration cycles, and provide all necessary equipment interlocks and timing mechanisms to execute the filter program.
2. The controller shall include an adjustable pressure switch, factory set to 50 psi. The switch shall stop the recirculating pump and close the pneumatic valves if air pressure falls to 50 psi.
3. The controller shall contain a microprocessor that will activate the following functions of the system:
 - a. Bump cycle/manual or automatic.
 - b. Precoat of filter elements.
 - c. Stopping and starting of the main recirculating pump.
 - d. Opening and closing of pneumatically operated valving.
 - e. Vacuum transfer system.
 - f. Heater cool down delay.
 - g. Auxiliary contacts to interlock chemical control or other equipment.
 - h. Keyed switch to activate a continuous, intermittent bump cycle for flex tube cleaning.
4. The controller panel shall display the following function:
 - a. Filter status.

- b. Precoat status.
 - c. Recirculating pump status.
 - d. Vacuum transfer pump status.
 - e. System power.
5. The controller enclosure shall be NEMA 12.
6. The RMF automatic controller will provide signal power to the main recirculating pump motor starter. The unit is required to be a device or variable frequency drive (VFD) and is to be installed with control wiring by the electrical contractor.
7. The RMF shall be 120v, 1-phase, 30 amp rated and shall be UL labeled

M. Flow meter:

- 1. A digital flow meter shall be included with a 4-20mA 0-10 VDC analog output.
- 2. The flow meter shall be wired into the VFD to provide automatic speed control of the filter pump motor.
- 3. The VFD shall compensate for varying filter head losses by maintaining the specified flow rate with the 4-20mA output signal of the flow meter.

N. Filter/Regulator:

- 1. Each filter shall include a combination filter / regulator. The regulator shall be adjustable from 0 – 120 psi. 1/2 inch F.P.T. connections shall be provided for field installation of air lines.

O. Water Separator:

- 1. One water separator with automatic drain shall be included for each air compressor supplied. 1/2 inch F.P.T. connections shall be provided for field installation of air lines.

P. Air compressor:

- 1. The system will require (1) air compressor per mechanical room that shall include:
 - a. 30 gallon tank
 - b. 2 HP, electric motor 120v, 1 phase, 15 amp.
 - c. Air pressure gauge.
 - d. Pressure relief valve.
 - e. Belt guard.
 - f. Pressure switch.
 - g. Air filter.
 - h. 5.5 CFM @ 90 psi.

Q. Pneumatic Actuators:

1. Each filter shall include pneumatic actuators for (1) check valve, (1) effluent valve and (1) precoat valve.
2. The actuators shall be double acting with valve mounted drilling to ISO 5211.
3. The actuators shall include (2) 1/4 inch FPT ports for open / close connections. Flow control valves with quick connect fittings shall be provided at each port to allow speed control adjustment for the open / close function of the actuators.
4. Materials of Construction
 - a. Body: aluminum alloy, extruded acc. To ASTM 6063, anodized acc. To UNI 4522.
 - b. Ends: Die-cast in aluminum alloy acc. To ASTM B179, epoxy-polyester coated.
 - c. Pistons: Die-cast in aluminum alloy acc. To ASTM B179.
 - d. Pinion: Nickel-plated steel.
 - e. Slideways: Acetal resin (LAT LUB 731320T).
 - f. Fasteners: AISI 304 Stainless steel.
 - g. Springs: Epoxy coated steel, pre-compressed.
 - h. Seals: NBR Nitrile rubber.
 - i. Lubricant: MoS2.

R. Solenoid Valve:

1. Each filter shall include pneumatic actuators for (1) check valve, (1) effluent valve and (1) precoat valve.
2. The solenoid valves shall include lighted DIN connectors.
3. The solenoid valves shall be factory lubricated and shall not require any field lubrication.
4. The solenoid valves with multi-station manifold shall be located on the bottom of the automatic controller, factory wired and include quick connect fittings for attachment to the pneumatic actuators and bump mechanism.
5. The solenoid valves shall be SMC Series SY 7000.

S. Valves:

1. All Valves 3 inches – 12 inches shall be constructed with cast aluminum ASTM S12A housing and fully coated with Rilsan on all interior and exterior surfaces. Internal components include EPDM resilient lining, Rilsan coated ductile iron disc and T304

stainless steel shaft. Valves 14 inches and larger shall be constructed with cast iron housing fully coated with nylon and nylon coated ductile iron disc. Valves shall be butterfly valves and shall be provided for the influent, effluent and precoat lines.

T. Media:

1. 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.
2. The media shall contain no more than 1 tenth of one percent (.001) or crystalline silicate.
3. The media shall be certified by the manufacturer for use in the Defender Filter. The media shall be NSF listed in Std. 61 and Std. 50.
4. The media shall be Celaperl 1400P as supplied by EP Minerals.

U. Warranty:

1. Defender filter tanks with Flexsol 3000 shall carry a 10 year fully rated warranty as regularly offered by the tank manufacturer.
2. Bump tire and internal tube elements shall carry a fully rated 3 year warranty.
3. Valve bodies shall carry a 5 year fully rated warranty.
4. Valve operators and system accessories including the RMF controller, quick exhaust valve and solenoid valve shall carry one year warranty as provided by the product manufacturer.
5. Unless otherwise specified, workmanship is to be guaranteed first class and carry a one (1) year warranty.

2.2 WATER TREATMENT SYSTEM

- A. Re-install existing chemical system as shown and scheduled on Contract documents. All in accordance with manufacturer's recommendations.
- B. Furnish Owner with written water treatment program complete with written basic water chemical analysis and verbal instructions as to operate of system.

2.3 PUMPS [FLOODED SUCTION]

- A. Furnish and install circulation pumps as manufactured by Marlow, Sulzer/Paco, Aurora or approved equal. See contract documents for horsepower, voltage, phase, flow rate, NPSH-A, pump and motor efficiency, VFD, flow meter and pipe size information.

- B. Furnish and install pressure and vacuum gauges where called for on Drawings and as required by Code. Pressure and vacuum gauges shall be Terice #700 Liquid Filled, 0-60 PSI, vacuum 30 Hg – 30 PSI, all gauges with gauge cocks.
- C. To insure cavitations-free operation, each pump's NPSH requirements must be low enough to permit stable, continuous operation at 120 percent or greater of best efficiency point.
- D. Pump casing shall be close grain cast iron fitted with a replacement bronze case wear ring. Minimum 1/4 inch NPT suction and discharge gauge taps. Pumps with a specific speed greater than 1600 shall have double volute casings with suction splitter to reduce radial loading and shaft deflection.
- E. Pump impeller shall be of the enclosed type of cast bronze, lead free, zinc free, aluminum bronze and shall be statically and dynamically balanced. Impeller diameter shall be trimmed for the specified design conditions.
- F. Pumps mounted vertically to have recirculation line pipe from seal cavity to suction of the pump.
- G. Pumps to be mounted on a cast iron fabricated steel base, epoxy coated, and stainless steel hardware.
- H. Pump shall be fitted with a leakless mechanical seal. John Crane type 1 BUNA elastomers ceramic stationary seat carbon rotating stainless steel metal parts.
- I. Shaft to have a replaceable lead free, zinc free, bronze shaft sleeve.
- J. Pump to have an epoxy coating on all interior cast iron parts. All pump fasteners to be 300 series stainless steel and should have a never seize application to threads prior to assembly , or approved equal.
- K. Pump motor to 3-phase, 60 cycle, Totally Enclosed Fan Cooled, with horse power and voltage as shown on drawings, 1.15 service factor, inverter duty, NEMA (MG-1) section IV, Part 30.2.2.8, 200v or 208v motor must be single voltage, tri-voltage motor not acceptable on 200v or 208v service.
- L. All pumping components capable of pumping heavy chlorinated pool water.

2.4 STRAINERS

- A. Furnish and install hair and lint strainers where call for on drawings. Strainers to be of PVC or stainless steel construction with a clear acrylic lid as manufactured by Neptune Benson or Paddock Pool Equipment Co., Inc. Strainers shall be of the reducing type.
- B. Strainer baskets shall be stainless steel construction with 5/32 inch perforations. Provide each strainer with two strainer baskets.

2.5 VARIABLE FREQUENCY DRIVES

- A. The Variable Frequency Drives (VFD's) shall employ a Pulse Width Modulated (PWM) output waveform. Drive efficiency shall be 97% or better at full speed/load. The same manufacturer shall supply the Variable Frequency Drives for both Feature and Filter pumps. The Pump Supplier shall be responsible for providing as a system, the pumps, VFD's, flow meter and the set-point controller.
- B. The VFD shall be manufactured by Benshaw SG series, ABB, Model ACH 550, Square D Altivar Model 61 or approved equal. All items in this specification must be adhered to strictly. Any deviation must be submitted and approved in writing ten working days prior to bid date.
1. This specification is to cover a complete Variable Frequency motor Drive (VFD) consisting of a pulse width modulated (PWM) inverter designed for use on a standard NEMA Design B induction motor.
 2. The drive manufacturer shall supply the drive and all necessary options as herein specified. VFD's that are manufactured by a third party and "brand labeled" shall not be acceptable. All VFDs installed on this project shall be from the same manufacturer.
 3. VFD's with Filter Packages will include: Non-fused main disconnect, chemical pump, Heater, inter lock relay, Backwash Timer, Filter Alarm light on door Auto/Off Backwash Selector Switch, and 115V Control Transformer.
 4. Drives to operate automatically with a 4 to 20 ma PID loop with the flow meter and show actual flow rate in GPM on the keypad.
 5. With a certified start up you will receive a 2-year warranty on all parts and labor.
- C. Reference Standards:
1. Standard 519-1992, IEEE Guide for harmonic content and control
 2. UL508C
 3. ICS 7.0, AC Adjustable Speed Drives
 4. IEC 16800 Parts 1,2 and 3
 5. NEC 430.120, Adjustable-Speed Drive Systems
 6. IBC 2006 Seismic-referencing ACS 7-05 and ICC AC-156
- D. Qualifications:
1. VFDs and options shall be UL listed as assembly. The base VFD shall be UL listed for 100 KAIC without the need for input fuses.

2. CE Mark - The VFD shall meet product standard EN 61800-3 for the First Environment restricted level. (RFI / EMI Filter spec).
 3. The entire VFD enclosure, including the bypass shall be seismically certified and labeled in accordance with the IBC 2006 International Building Code:
 - a. VFD manufacturer shall provide Seismic Certification and Installation requirements at time of submittal.
 - b. Seismic importance factor of 1.5 rating is required, and shall be based upon actual shake test data as defined by ICC AC-156.
 - c. Seismic ratings based upon calculations alone are not acceptable. Certification of Seismic rating must be based on testing done in all three axis of motion by a certified lab.
- E. Submittals shall include the following information:
1. Outline dimensions, conduit entry locations and weight.
 2. Customer connection and power wiring diagrams.
 3. Complete technical product description including a complete list of options.
 4. Compliance to IEEE 519 – harmonic analysis for particular jobsite including total harmonic voltage distortion and total harmonic current distortion (TDD).
 - a. The VFD manufacturer shall provide calculations; specific to this installation, showing total harmonic voltage distortion is less than 5% impedance reactors, no exceptions.
- F. The VFD Package as specified herein shall be enclosed in a UL Listed Type enclosure, (enclosures with only NEMA ratings are not acceptable.)
1. Environmental operating conditions: 0 to 40⁰ C (32 to 104⁰ F) continuous. Altitude 0 to 3300 feet above sea level, less than 95% humidity, non-condensing. All circuit boards shall have conformal coating.
 2. Enclosure shall be UL rated and shall be UL listed as a plenum rated VFD.
- G. All VFDs shall have the following standard features:
1. All VFDs shall have the same customer interface, including digital display, and keypad, regardless of horsepower rating. The keypad shall be removable, capable of remote mounting and allow for uploading and downloading of parameter settings as an aid for start-up of multiple VFDs.
 2. The keypad shall include Hand-Off-Auto selections and manual speed control. There shall be fault reset and “Help” buttons on the keypad. The Help button shall include “on-line” assistance for programming and troubleshooting.
 3. The VFD shall have internal 5% impedance reactors to reduce the harmonics to the power line and to add protection from AC line transients.

4. The input current rating of the VFD shall be no more than 3% greater than the output current rating. VFD's with higher input current ratings require the upstream wiring, protection devices, and source transformers to be oversized per NEC 430.120.
5. The VFD shall provide a programmable loss-of-load (broken belt / broken coupling) Form-C relay output. The drive shall be programmable to signal the loss-of-load condition via a keypad warning, Form-C relay output, and / or over the serial communications bus.

H. Serial Communications

1. The VFD shall have an EIA-485 port as standard. The standard protocols shall be Modbus, Johnson Controls N2, Siemens Building Technologies FLN, and BACnet MS/TP. The use of third party gateways and multiplexers is not acceptable. All protocols shall be "certified" by the governing authority (i.e. BTL Listing for BACnet).
- I. EMI / RFI filters. All VFD's shall include EMI/RFI filters. The onboard filters shall allow the entire VFD assembly to be CE Marked and the VFD shall meet product standard EN 61800-3 for the First Environment restricted. No exceptions.
- J. OPTIONAL FEATURES – Optional features to be furnished and mounted by the drive manufacturer. All optional features shall be UL Listed by the drive manufacturer as a complete assembly and carry a UL508 label.

2.6 POOL VALVES AND PIPING MATERIALS

A. Products:

1. Provide valves of same manufacturer throughout where possible and practical.
2. Provide valves with manufacturer's name and pressure rating clearly marked on outside of body.

B. Valve Connections: Provide valves suitable to connect to adjoining piping as specified for pipe joint. Use pipe size valves.

C. Use of Valves:

1. Pipe sizes 4" – 12", Butterfly.
2. Miscellaneous valves ½" – 3", PVC True Union Ball Valves.
3. All chemical lines and equipment – PVC True Union Ball Valves.

D. Butterfly Valves:

1. Butterfly valves 4" – 12" shall be wafer or lug bodies and shall be suitable for use between ANSI 125 or 150 lb. Flanges.
2. Bodies of the flangeless design shall be provided with at least four (2) bolt guides to center the valve in the pipeline.
3. All butterfly valves shall have a cast iron body epoxy coated, ductile iron nylon 11 coated discs, stainless shaft with Buna-N or EPDM seat minimum 150 PSI rating.
4. All butterfly valves 4" – 6" shall have 10 position locking handle, butterfly valves 8" – 12" shall have gear operators and chain operators as required.
5. All valves shall be as manufactured by Bray Valve (713) 894 5454 or equal as approved by the Architect / Engineer.

E. Ball Valves:

4. PVC True Union Ball Valves, Dual Union, Eslon, Assahi, or equal.

F. Check Valves – (where required): Shall be cast iron body, stainless steel spring trim, bronze split disc, seal material Buna-N. (CHEXX) Model as manufactured by Metraflex, Chicago, Illinois, or Mueller Steam Specialties as indicated on Contract documents.

F. Modulating Float Valves: Shall be used in the surge tank as specified on Contract documents. The valves shall be constructed with stainless steel rods and PVC floats allowing 20% maximum flow when fully closed. As manufactured by Neptune Benson or equal as approved by the Architect / Engineer.

PART 3 – EXECUTION

3.1 PIPING AND PIPE FITTINGS – HANGERS AND SUPPORTS

- A. Work Included: Pipe, fittings, connections, wall penetrations, hangers and supports, equipment bases and supports.
- B. Use the prescribed pipe type in the following areas. All plastic pipe flanges shall be scheduled 80 PVC with neoprene gaskets where required.
 1. All piping shall be schedule 80 or pressure rated PVC solvent weld.
 2. All chemical piping, schedule 80 PVC, solvent weld.
 3. Heater connections shall be Type "L" copper piping on the heater influent and effluent lines from the bypass to the heater, with cast brass or wrought copper fitting and 95/5 soldered joints.

C. Hangers and Supports: Submit hanger locations and weights, hanger details on Shop Drawings.

1. All mechanical room piping must be properly supported.
2. It shall be the Contractor's responsibility to properly support piping at all valves, pumps, equipment, overhead areas, etc.
3. Use of the proper hanger for the conditions is essential. All piping must be supported laterally as well as vertically hung.
4. All piping 8" or larger must be properly supported from the floor only.
5. All piping connections and support hardware shall be stainless steel inside balance tanks.

D. Piping:

1. Cut all pipe with mechanical cutter without damage to pipe.
2. Placing and laying: Inspect pipe for defects before installation. Clean the interior of pipe thoroughly of foreign matter and keep clean during laying operation.
3. Threaded joints: After cutting and before threading, the pipe shall be reamed and shall have burrs removed. Screw joints shall be made with graphite or inert filler and oil or with an approved graphite compound applied to make threads only. Threads shall be full-cut and not more than 3 threads on the pipe remained exposed. Use Teflon II tape on the make threads of all threaded pipe joints. Caulking of threaded joints to stop or prevent leaks will not be permitted. Unions shall be provided where required for disconnection of exposed piping. Unions will be permitted where access is provided
4. Solvent welded joints shall be made in accordance with the manufacturer's printed instructions and the following minimum standards:
 - a. All fittings shall fit easily on the pipe before applying cement. The outer surface area of pipe and inner wall of fitting shall be dry and clean. Cleaner is to be applied to the outer surface of the pipe and to the inner surface of the fitting. Cement is to be applied to the outer surface of the pipe, or on the male section of fittings only. When the outside surface area of the pipe is satisfactorily covered with cement allow ten (10) seconds open time to lapse before inserting pipe end into fittings. After full insertion of pipe into fitting, turn fitting around the pipe end approximately 1/8 to 1/4 of a turn. Wipe off excess cement at the joint in a neat cove bead. Follow manufacturer's instructions on solvents.
 - b. All joints shall remain completely undisturbed for a minimum of 10 minutes from time of jointing the pipe and fitting. If necessary to apply pressure to a newly made joint, limit to 10% of rated pipe pressure, during the first 24 hours after the joint has been made.

- c. Full working pressure shall not be applied until the joints have set for a period of 24 hours.
- 5. Make provisions for expansion and contraction by way of swing joints or snaking.
- E. Protect plastic pipe from exposure to aromatic hydrocarbons, halogenated hydrocarbons, and most of the esters and ketones that attack the material. Protect all pipe from mechanical damage and long exposure to sunlight during storage.
- F. No installation shall be made that will provide a cross connection or interconnection between distribution supply for drinking purposes and the swimming pool that will permit a backflow of water into the potable water supply. Pipe openings shall be closed with caps or plugs during installation. Equipment and pool fittings shall be tightly covered and protected against dirt, water and chemical or mechanical injury. At the completion of work the fittings, materials and equipment shall be thoroughly clean and adjusted for proper operation.
- G. Pipe Identification
 - 1. Provide identification on all piping located in mechanical equipment, chlorine, acid rooms, heater courts, etc.
 - 2. Identify the pool that the line is serving (with multiple pools only), contents, direction of flow.
 - 3. Mark at least once on each line and at 20 ft. intervals on long pipe runs. Consult Health Department Code form minimum marking requirements.
 - 4. Color code per Health Department requirements. If code does not identify color coding requirements consult Architect/Engineer.
 - 5. Brady, B-946, custom legend, self-sticking markers and arrows or equal.

3.2 TESTING/FIELD QUALITY CONTROL

- A. This Section requires the following tests to be performed by the Contractor.
- B. Testing and Flushing of Piping:
 - 1. Contractor shall be responsible for discovering leaks and making necessary repairs.
 - 2. After the piece is installed, the joints completed, test all pool piping per the Illinois Plumbing Code, Section 890.1930, Test Methods. Joints shall remain airtight under this pressure for a period of twelve hours. Provide test results to the Architect / Engineer.
 - 3. Leaks shall be repaired and tested repeatedly until leakage or infiltration is approved.

C. Water Treatment:

1. Obtain a chemical analysis of the source/pool make-up water supply and submit to Architect / Engineer. Include the following:
 - a. Total alkalinity / PPM
 - b. Calcium hardness / PPM
 - c. Chlorine / PPM
 - d. PH
 - e. Iron
 - f. Copper
2. Treat and balance pool water prior to turnover of pool to the Owner (using chemicals provided by the Owner).
3. Pool water: balance to establish a total alkalinity level of 60-125 PPM and calcium hardness level of 180-375 PPM (3 times alkalinity level).
4. Stabilize pool water by shocking to 20 PPM of chlorine for initial sanitation.
5. Consult with Architect / Engineer for special waters to establish balanced levels.

3.3 INSTRUCTION OF OWNER'S PERSONNEL

- A. The Pool Sub-contractor shall supply the services of an experienced swimming pool operator instructor for a period of not less than four (4) hours after the pool has been filled and initially placed in operation. During this period the Owner's designated representatives shall be thoroughly instructed in all phases of the pool's operation.
- B. Prior to this instructor leaving the job, he shall obtain written certification from the Owner's designated representative acknowledging that the instruction period has been completed and all necessary operating information provided.
- C. Pool Sub-contractor shall deliver two complete sets of operating and maintenance instructions for the swimming pool equipment to the Architect / Engineer. Including, but not limited to the following:
 1. Bound together in a complete manual.
 2. Accurate parts list.
 3. Pool start-up instructions.
 4. Narrative on the pool operation through all sequences.
 5. All valves must be permanently tagged along with valve legend and explanation.

6. Trouble shooting information.
 7. A schematic piping diagram as installed.
 8. All piping in Mechanical Room to be labeled with description of line and arrows indicating direction of flow.
- 3.4 CLEAN UP AND PROTECTION
- A. After work of this Section has been complete, clean up work areas and remove all equipment excess materials and debris. Protect pool from damage until time of Final Acceptance. Remove and replace finishes that are chipped, cracked, abraded, improperly adhered, or otherwise damaged.

END OF SECTION