

CITY OF ANN ARBOR
INVITATION TO BID



Veterans Park Pool Mechanical Improvements

ITB No. 4518

Due Date: Monday, December 18, 2017 at 2:00 p.m. (Local Time)

Parks and Recreation Services
Community Services Area

Issued By:

City of Ann Arbor
Procurement Unit
301 E. Huron Street
Ann Arbor, MI 48104

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- City of Ann Arbor Prevailing Wage Declaration Form*
- City of Ann Arbor Living Wage Forms*
- City of Ann Arbor Vendor Conflict of Interest Disclosure Form*
- City of Ann Arbor Non-Discrimination Ordinance Notice and Declaration Form*

NOTICE OF PRE-BID CONFERENCE

A pre-bid conference for this project will be held on **Monday, December 11, 2017 at 3 p.m.** at **Veterans Memorial Pool and Ice Arena at 2150 Jackson Avenue, Ann Arbor, MI 48103.**

Attendance at this conference is highly recommended. Administrative and technical questions regarding this project will be answered at this time. The pre-bid conference is for information only. Any answers furnished will not be official until verified in writing by the Financial Service Area, Procurement Unit. Answers that change or substantially clarify the bid will be affirmed in an addendum.

INSTRUCTIONS TO BIDDERS

General

Work to be done under this Contract is generally described through the detailed specifications and must be completed fully in accordance with the contract documents. All work to be done under this Contract is located in or near the City of Ann Arbor.

Any Bid which does not conform fully to these instructions may be rejected.

Preparation of Bids

Bids should be prepared providing a straight-forward, concise description of the Bidder's ability to meet the requirements of the ITB. Bids shall be written in ink or typewritten. No erasures are permitted. Mistakes may be crossed out and corrected and must be initialed and dated in ink by the person signing the Bid.

Bids must be submitted on the "Bid Forms" provided with each blank properly filled in. If forms are not fully completed it may disqualify the bid. No alternative bid will be considered unless alternative bids are specifically requested. If alternatives are requested, any deviation from the specification must be fully described, in detail on the "Alternate" section of Bid form.

Each person signing the Bid certifies that he/she is the person in the Bidder's firm/organization responsible for the decision as to the fees being offered in the Bid and has not and will not participated in any action contrary to the terms of this provision.

Questions or Clarification on ITB Specifications

All questions regarding this ITB shall be submitted via email. Emailed questions and inquires will be accepted from any and all prospective Bidders in accordance with the terms and conditions of the ITB.

All questions shall be due on or before **Tuesday, December 12, 2017 at 5 p.m.** and should be addressed as follows:

Specification/Scope of Work questions emailed to celenbaas@a2gov.org
Bid Process and Compliance questions emailed to cspencer@a2gov.org

Any error, omissions or discrepancies in the specification discovered by a prospective contractor and/or service provider shall be brought to the attention of Chris Elenbaas at celenbaas@a2gov.org after discovery as possible. Further, the contractor and/or service provide shall not be allowed to take advantage of errors, omissions or discrepancies in the specifications.

Addenda

If it becomes necessary to revise any part of the ITB, notice of the Addendum will be posted to Michigan Inter-governmental Trade Network (MITN) www.mitn.info and/or City of Ann Arbor web site www.A2gov.org for all parties to download.

Each Bidder must in its Bid, to avoid any miscommunications, acknowledge all addenda which it

has received, but the failure of a Bidder to receive, or acknowledge receipt of; any addenda shall not relieve the Bidder of the responsibility for complying with the terms thereof.

The City will not be bound by oral responses to inquiries or written responses other than written addenda.

Bid Submission

All Bids are due and must be delivered to the City of Ann Arbor Procurement Unit on or before **Monday, December 18, 2017 at 2:00 p.m. EST.** Bids submitted late or via oral, telephonic, telegraphic, electronic mail or facsimile **will not** be considered or accepted.

Each Bidder must submit one (1) original Bid and **three (3)** Bid copies in a sealed envelope clearly marked: **ITB No. 4518 Veterans Park Pool Mechanical Improvements.**

Bids must be addressed and delivered to:

City of Ann Arbor
Procurement Unit,
c/o Customer Services, 1st Floor
301 East Huron Street
Ann Arbor, MI 48107

All Bids received on or before the Due Date will be publicly opened and recorded immediately. No immediate decisions are rendered.

The following forms provided within this ITB Document must be included in submitted bids.

- **City of Ann Arbor Prevailing Wage Declaration of Compliance**
- **City of Ann Arbor Living Wage Ordinance Declaration of Compliance**
- **Vendor Conflict of Interest Disclosure Form**
- **City of Ann Arbor Non-Discrimination Ordinance Declaration of Compliance**

Bids that fail to provide these completed forms listed above upon bid opening will be rejected as non-responsive and will not be considered for award.

Hand delivered bids will be date/time stamped/signed by the Procurement Unit at the address above in order to be considered. Normal business hours are 9:00 a.m. to 3:00 p.m. Monday through Friday, excluding Holidays. The City will not be liable to any Bidder for any unforeseen circumstances, delivery or postal delays. Postmarking to the Due Date will not substitute for receipt of the Bid. Each Bidder is responsible for submission of their Bid.

Additional time for submission of bids past the stated due date and time will not be granted to a single Bidder; however, additional time may be granted to all Bidders when the City determines in its sole discretion that circumstances warrant it.

Award

The City intends to award a Contract(s) to the lowest responsible Bidder(s). On multi-divisional contracts, separate divisions may be awarded to separate Bidders. The City may also utilize alternatives offered in the Bid Forms, if any, to determine the lowest responsible Bidder on each division, and award multiple divisions to a single Bidder, so that the lowest total cost is achieved

for the City. For unit price bids, the Contract will be awarded based upon the unit prices and the lump sum prices stated by the bidder for the work items specified in the bid documents, with consideration given to any alternates selected by the City. If the City determines that the unit price for any item is materially different for the work item bid than either other bidders or the general market, the City, in its sole discretion, in addition to any other right it may have, may reject the bid as not responsible or non-conforming.

The acceptability of major subcontractors will be considered in determining if a Bidder is responsible. In comparing Bids, the City will give consideration to alternate Bids for items listed in the bid forms. All key staff and subcontractors are subject to the approval by the City.

Official Documents

The City of Ann Arbor officially distributes bid documents from the Procurement Unit or through the Michigan Intergovernmental Trade Network (MITN). Copies of the bid documents obtained from any other source are not Official copies. Addenda and other bid information will only be posted to these official distribution sites. If you obtained City of Ann Arbor Bid documents from other sources, it is recommended that you register on www.MITN.info and obtain an official Bid. Bidders do not need to be shown on the plan holders list provided by MITN to be considered an official plan holder.

Bid Security

Each bid must be accompanied by a certified check, or Bid Bond by a surety licensed and authorized to do business within the State of Michigan, in the amount of 5% of the total of the bid price.

Withdrawal of Bids

After the time of opening, no Bid may be withdrawn for the period of one hundred twenty (120) days

Contract Time

Time is of the essence in the performance of the work under this Contract. The available time for work under this Contract is indicated on page C-2, Article III of the Contract. If these time requirements can not be met, the Bidder must stipulate on Bid Form Section 3 - Time Alternate its schedule for performance of the work. Consideration will be given to time in evaluating bids.

Liquidated Damages

A liquidated damages clause, as given on page C-2, Article III of the Contract, provides that the Contractor shall pay the City as liquidated damages, and not as a penalty, a sum certain per day for each and every day that the Contractor may be in default of completion of the specified work, within the time(s) stated in the Contract, or written extensions.

Liquidated damages clauses, as given in the General Conditions, provide further that the City shall be entitled to impose and recover liquidated damages for breach of the obligations under Chapter 112 of the City Code.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified

events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

Human Rights Information

All contractors proposing to do business with the City shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the Section 9:158 of the Ann Arbor City Code. Breach of the obligation not to discriminate as outlined in Section 5, beginning at page GC-3 shall be a material breach of the contract. Contractors are required to post a copy of Ann Arbor's Non-Discrimination Ordinance attached at all work locations where its employees provide services under a contract with the City.

Wage Requirements

Section 4, beginning at page GC-1, outlines the requirements for payment of prevailing wages and for payment of a "living wage" to employees providing service to the City under this contract. The successful bidder and its subcontractors must comply with all applicable requirements and provide proof of compliance.

Pursuant to Resolution R-16-469 all public improvement contractors are subject to prevailing wage and will be required to provide to the City payroll records sufficient to demonstrate compliance with the prevailing wage requirements. Use of the Prevailing Wage Form provided in the Appendix section or a City-approved equivalent will be required along with wage rate interviews.

For laborers whose wage level are subject to federal, state and/or local prevailing wage law the appropriate Davis-Bacon wage rate classification is identified based upon the work including within this contract. **The wage determination(s) current on the date 10 days before bids are due shall apply to this contract.** The U.S. Department of Labor (DOL) has provided explanations to assist with classification in the following resource link: www.wdol.gov.

For the purposes of this ITB the Construction Type of Building will apply.

Conflict Of Interest Disclosure

The City of Ann Arbor Purchasing Policy requires that prospective Vendors complete a Conflict of Interest Disclosure form. A contract may not be awarded to the selected Vendor unless and until the Procurement Unit and the City Administrator have reviewed the Disclosure form and determined that no conflict exists under applicable federal, state, or local law or administrative regulation. Not every relationship or situation disclosed on the Disclosure Form may be a disqualifying conflict. Depending on applicable law and regulations, some contracts may awarded on the recommendation of the City Administrator after full disclosure, where such action is allowed by law, if demonstrated competitive pricing exists and/or it is determined the award is in the best interest of the City. A copy of the Vendor Conflict of Interest Disclosure Form is attached.

Major Subcontractors

The Bidder shall identify on Bid Form Section 4 each major subcontractor it expects to engage for this Contract if the work to be subcontracted is 15% or more of the bid sum or over \$50,000, whichever is less. The Bidder also shall identify the work to be subcontracted to each major

subcontractor. The Bidder shall not change or replace a subcontractor without approval by the City.

Debarment

Submission of a Bid in response to this ITB is certification that the Bidder is not currently debarred, suspended, proposed for debarment, and declared ineligible or voluntarily excluded from participation in this transaction by any State or Federal departments or agency. Submission is also agreement that the City will be notified of any changes in this status.

Disclosures

After bids are opened, all information in a submitter's bid is subjected to disclosure under the provisions of Michigan Public Act No. 442 of 1976, as amended (MCL 15.231 et seq.) known as the "Freedom of Information Act." The Freedom of Information Act also provides for the complete disclosure of contracts and attachments thereto except where specifically exempted.

Bid Protest

All Bid protests must be in writing and filed with the Purchasing Agent within five (5) business days of the award action. The bidder must clearly state the reasons for the protest. If a bidder contacts a City Service Area/Unit and indicates a desire to protest an award, the Service Area/Unit shall refer the bidder to the Purchasing Agent. The Purchasing Agent will provide the bidder with the appropriate instructions for filing the protest. The protest shall be reviewed by the City Administrator or designee whose decision shall be final.

Cost Liability

The City of Ann Arbor assumes no responsibility or liability for costs incurred by the Bidder prior to the execution of a contract with the City. By submitting a bid, a bidder agrees to bear all costs incurred or related to the preparation, submission and selection process for the bid.

Reservation of Rights

The City of Ann Arbor reserves the right to accept any bid or alternative bid proposed in whole or in part, to reject any or all bids or alternatives bids in whole or in part and to waive irregularity and/or informalities in any bid and to make the award in any manner deemed in the best interest of the City.

Idlefree Ordinance

The City of Ann Arbor adopted an idling reduction Ordinance that goes into effect July 1, 2017. The full text of the ordinance (including exemptions) can be found at: www.a2gov.org/idlefree.

Under the ordinance, No Operator of a Commercial Vehicle shall cause or permit the Commercial Vehicle to Idle:

- (a) For any period of time while the Commercial Vehicle is unoccupied; or
- (b) For more than 5 minutes in any 60-minute period while the Commercial Vehicle is occupied.

In addition, generators and other internal combustion engines are covered

- (1) Excluding Motor Vehicle engines, no internal combustion engine shall be operated except when it is providing power or electrical energy to equipment or a tool that is actively in use.

INVITATION TO BID

City of Ann Arbor
Guy C. Larcom Municipal Building
Ann Arbor, Michigan 48107

Ladies and Gentlemen:

The undersigned, as Bidder, declares that this Bid is made in good faith, without fraud or collusion with any person or persons bidding on the same Contract; that this Bidder has carefully read and examined the bid documents, including City Nondiscrimination requirements and Declaration of Compliance Form, Living Wage requirements and Declaration of Compliance Form, Prevailing Wage requirements and Declaration of Compliance Form, Vendor Conflict of Interest Form, Notice of Pre-Bid Conference, Instructions to Bidders, Bid, Bid Forms, Contract, Bond Forms, General Conditions, Standard Specifications, Detailed Specifications, all Addenda, and the Plans (if applicable) and understands them. The Bidder declares that it conducted a full investigation at the site and of the work proposed and is fully informed as to the nature of the work and the conditions relating to the work's performance. The Bidder also declares that it has extensive experience in successfully completing projects similar to this one.

The Bidder acknowledges that it has not received or relied upon any representations or warrants of any nature whatsoever from the City of Ann Arbor, its agents or employees, and that this Bid is based solely upon the Bidder's own independent business judgment.

The undersigned proposes to perform all work shown on the plans or described in the bid documents, including any addenda issued, and to furnish all necessary machinery, tools, apparatus, and other means of construction to do all the work, furnish all the materials, and complete the work in strict accordance with all terms of the Contract of which this Bid is one part.

In accordance with these bid documents, and Addenda numbered _____, the undersigned, as Bidder, proposes to perform at the sites in and/or around Ann Arbor, Michigan, all the work included herein for the amounts set forth in the Bid Forms.

The Bidder declares that it has become fully familiar with the liquidated damage clauses for completion times and for compliance with City Code Chapter 112, understands and agrees that the liquidated damages are for the non-quantifiable aspects of non-compliance and do not cover actual damages that may be shown and agrees that if awarded the Contract, all liquidated damage clauses form part of the Contract.

The Bidder declares that it has become fully familiar with the provisions of Chapter 14, Section 1:320 (Prevailing wages) and Chapter 23 (Living Wage) of the Code of the City of Ann Arbor and that it understands and agrees to comply, to the extent applicable to employees providing services to the City under this Contract, with the wage and reporting requirements stated in the City Code provisions cited. Bidder certifies that the statements contained in the City Prevailing Wage and Living Wage Declaration of Compliance Forms are true and correct. Bidder further agrees that the cited provisions of Chapter 14 and Chapter 23 form a part of this Contract.

The Bidder declares that it has become familiar with the City Conflict of Interest Disclosure Form and certifies that the statement contained therein is true and correct.

The Bidder encloses a certified check or Bid Bond in the amount of 5% of the total of the Bid Price. The Bidder agrees both to contract for the work and to furnish the necessary Bonds and insurance documentation within 10 days after being notified of the acceptance of the Bid.

If this Bid is accepted by the City and the Bidder fails to contract and furnish the required Bonds and insurance documentation within 10 days after being notified of the acceptance of this Bid, then the Bidder shall be considered to have abandoned the Contract and the certified check or Bid Bond accompanying this Bid shall become due and payable to the City.

If the Bidder enters into the Contract in accordance with this Bid, or if this Bid is rejected, then the accompanying check or Bid Bond shall be returned to the Bidder.

In submitting this Bid, it is understood that the right is reserved by the City to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the City believes to be in its best interest.

SIGNED THIS _____ DAY OF _____, 201__.

Bidder's Name

Authorized Signature of Bidder

Official Address

(Print Name of Signer Above)

Telephone Number

Email Address for Award Notice

LEGAL STATUS OF BIDDER

(The Bidder shall fill out the appropriate form and strike out the other three.)

Bidder declares that it is:

* A corporation organized and doing business under the laws of the State of _____, for whom _____, bearing the office title of _____, whose signature is affixed to this Bid, is authorized to execute contracts.

NOTE: If not incorporated in Michigan, please attach the corporation's Certificate of Authority

• A limited liability company doing business under the laws of the State of _____, whom _____ bearing the title of _____ whose signature is affixed to this proposal, is authorized to execute contract on behalf of the LLC.

* A partnership, organized under the laws of the state of _____ and filed in the county of _____, whose members are (list all members and the street and mailing address of each) (attach separate sheet if necessary):

* An individual, whose signature with address, is affixed to this Bid: _____ (initial here)

Authorized Official

_____ **Date** _____, 201__

(Print) Name _____ Title _____

Company: _____

Address: _____

Contact Phone () _____ Fax () _____

Email _____

BID FORM

Section 1 – Schedule of Prices

Company: _____

Project: **ITB No. 4518 Veterans Park Pool Mechanical Improvements**

Base Bid

For the entire work outlined in these documents for **Veterans Park Pool Mechanical Improvements**, complete as specified, using equipment and materials only of the type and manufacturers where specifically named.

Bid items include:

Mechanical Room Filter, Pump and Piping Replacement

_____ (\$_____)

Feature Pump Pit Modifications as detailed in Specification Section 03150 Paragraph 2.8

_____ (\$_____)

Slide Pump Modifications as detailed in Specification Section 03150 Paragraph 2.9

_____ (\$_____)

Total Base Bid

_____ (\$_____)

Deductive Alternate #1

For the entire work outlined in these documents for **Veterans Park Pool Mechanical Improvements**, complete as specified, using equipment and materials only of the type and manufacturers where specifically named with the exception of replacing the Variable Frequency Drive (VFD) with a soft start control.

Deduct _____ (\$_____)

BID FORM

Section 2 - Material and Equipment Alternates

The Base Bid proposal price shall include materials and equipment selected from the designated items and manufacturers listed in the bidding documents. This is done to establish uniformity in bidding and to establish standards of quality for the items named.

If the Contractor wishes to quote alternate items for consideration by the City, it may do so under this Section. A complete description of the item and the proposed price differential must be provided. Unless approved at the time of award, substitutions where items are specifically named will be considered only as a negotiated change in Contract Sum.

<u>Item Number</u>	<u>Description</u>	<u>Add/Deduct Amount</u>
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If the Bidder does not suggest any material or equipment alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any material or equipment alternate under the Contract.

Signature of Authorized Representative of Bidder _____ Date _____

BID FORM

Section 3 - Time Alternate

If the Bidder takes exception to the time stipulated in Article III of the Contract, Time of Completion, page C-2, it is requested to stipulate below its proposed time for performance of the work. Consideration will be given to time in evaluating bids.

If the Bidder does not suggest any time alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any time alternate under the Contract.

Signature of Authorized Representative of Bidder _____ Date _____

BID FORM

Section 4 - Major Subcontractors

For purposes of this Contract, a Subcontractor is anyone (other than the Contractor) who performs work (other than or in addition to the furnishing of materials, plans or equipment) at or about the construction site, directly or indirectly for or on behalf of the Contractor (and whether or not in privity of Contract with the Contractor), but shall not include any individual who furnishes merely the individual's own personal labor or services.

Contractor agrees that all subcontracts entered into by the Contractor shall contain similar wage provision to Section 4 of the General Conditions covering subcontractor's employees who perform work on this contract.

For the work outlined in these documents the Bidder expects to engage the following major subcontractors to perform the work identified:

<u>Subcontractor (Name and Address)</u>	<u>Work</u>	<u>Amount</u>
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If the Bidder does not expect to engage any major subcontractor, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT expect to engage any major subcontractor to perform work under the Contract.

Signature of Authorized Representative of Bidder _____ Date _____

BID FORM

Section 5 – References

Include a minimum of three references from similar project completed within the past five years.

[Refer also to Instructions to Bidders for additional requirements, if any]

1) _____
Project Name Cost Date Constructed

Contact Name Phone Number

2) _____
Project Name Cost Date Constructed

Contact Name Phone Number

3) _____
Project Name Cost Date Constructed

Contact Name Phone Number

SAMPLE STANDARD CONTRACT

If a contract is awarded, the selected contractor will be required to adhere to a set of general contract provisions which will become a part of any formal agreement. These provisions are general principles which apply to all contractors of service to the City of Ann Arbor such as the following:

CONTRACT

THIS AGREEMENT is made on the _____ day of _____, 201_, between the CITY OF ANN ARBOR, a Michigan Municipal Corporation, 301 East Huron Street, Ann Arbor, Michigan 48104 ("City") and _____ ("Contractor")

(An individual/partnership/corporation, include state of incorporation)

(Address)

Based upon the mutual promises below, the Contractor and the City agree as follows:

ARTICLE I - Scope of Work

The Contractor agrees to furnish all of the materials, equipment and labor necessary; and to abide by all the duties and responsibilities applicable to it for the project titled [Insert Title of Bid and Bid Number] in accordance with the requirements and provisions of the following documents, including all written modifications incorporated into any of the documents, which are incorporated as part of this Contract:

Non-discrimination and Living Wage
Declaration of Compliance Forms (if
applicable)
Vendor Conflict of Interest Form
Prevailing Wage Declaration of
Compliance Form (if applicable)
Bid Forms
Contract and Exhibits
Bonds

General Conditions
Standard Specifications
Detailed Specifications
Plans
Addenda

ARTICLE II - Definitions

Administering Service Area/Unit means **City of Ann Arbor Parks and Recreation Services**

Project means **Veterans Park Pool Improvements, ITB No. 4518**

ARTICLE III - Time of Completion

- (A) The work to be completed under this Contract shall begin immediately on the date specified in the Notice to Proceed issued by the City.
- (B) The entire work for this Contract shall be completed by May 15, 2018.
- (C) Failure to complete all the work within the time specified above, including any extension granted in writing by the Supervising Professional, shall obligate the Contractor to pay the City, as liquidated damages and not as a penalty, an amount equal to \$1,000 for each calendar day of delay in the completion of all the work. If any liquidated damages are unpaid by the Contractor, the City shall be entitled to deduct these unpaid liquidated damages from the monies due the Contractor.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

ARTICLE IV - The Contract Sum

- (A) The City shall pay to the Contractor for the performance of the Contract, the lump sum price as given in the Bid Form in the amount of:

_____ Dollars (\$_____)

- (B) The amount paid shall be equitably adjusted to cover changes in the work ordered by the Supervising Professional but not required by the Contract Documents. Increases or decreases shall be determined only by written agreement between the City and Contractor.

ARTICLE V - Assignment

This Contract may not be assigned or subcontracted any portion of any right or obligation under this contract without the written consent of the City. Notwithstanding any consent by the City to any assignment, Contractor shall at all times remain bound to all warranties, certifications, indemnifications, promises and performances, however described, as are required of it under this contract unless specifically released from the requirement, in writing, by the City.

ARTICLE VI - Choice of Law

This Contract shall be construed, governed, and enforced in accordance with the laws of the State of Michigan. By executing this agreement, the Contractor and the City agree to venue in a court of appropriate jurisdiction sitting within Washtenaw County for purposes of any action arising under this Contract. The parties stipulate that the venue referenced in this Contract is for convenience and waive any claim of non-convenience.

Whenever possible, each provision of the Contract will be interpreted in a manner as to be effective and valid under applicable law. The prohibition or invalidity, under applicable law, of any provision will not invalidate the remainder of the Contract.

ARTICLE VII - Relationship of the Parties

The parties of the Contract agree that it is not a Contract of employment but is a Contract to accomplish a specific result. Contractor is an independent Contractor performing services for the City. Nothing contained in this Contract shall be deemed to constitute any other relationship between the City and the Contractor.

Contractor certifies that it has no personal or financial interest in the project other than the compensation it is to receive under the Contract. Contractor certifies that it is not, and shall not become, overdue or in default to the City for any Contract, debt, or any other obligation to the City including real or personal property taxes. City shall have the right to set off any such debt against compensation awarded for services under this agreement.

ARTICLE VIII - Notice

All notices given under this Contract shall be in writing, and shall be by personal delivery or by certified mail with return receipt requested to the parties at their respective addresses as specified in the Contract Documents or other address the Contractor may specify in writing. Notice will be deemed given on the date when one of the following first occur: (1) the date of actual receipt; or (2) three days after mailing certified U.S. mail.

ARTICLE IX - Indemnification

To the fullest extent permitted by law, Contractor shall indemnify, defend and hold harmless the City, its officers, employees and agents harmless from all suits, claims, judgments and expenses including attorney's fees resulting or alleged to result, in whole or in part, from any act or omission, which is in any way connected or associated with this Contract, by the Contractor or anyone acting on the Contractor's behalf under this Contract. Contractor shall not be responsible to indemnify the City for losses or damages caused by or resulting from the City's sole negligence. The provisions of this Article shall survive the expiration or earlier termination of this contract for any reason.

ARTICLE X - Entire Agreement

This Contract represents the entire understanding between the City and the Contractor and it supersedes all prior representations, negotiations, agreements, or understandings whether written or oral. Neither party has relied on any prior representations in entering into this Contract. No terms or conditions of either party's invoice, purchase order or other administrative document shall modify the terms and conditions of this Contract, regardless of the other party's failure to object to such form. This Contract shall be binding on and shall inure to the benefit of the parties to this Contract and their permitted successors and permitted assigns and nothing in this Contract, express or implied, is intended to or shall confer on any other person or entity any legal or equitable right, benefit, or remedy of any nature whatsoever under or by reason of this Contract. This Contract may be altered, amended or modified only by written amendment signed by the City and the Contractor.

FOR CONTRACTOR

By _____

Its: _____

FOR THE CITY OF ANN ARBOR

By _____

Christopher Taylor, Mayor

[signatures continue on next page]

By _____

Jacqueline Beaudry, City Clerk

Approved as to substance

By _____

City Administrator

By _____

Services Area Administrator

Approved as to form and content

Stephen K. Postema, City Attorney

PERFORMANCE BOND

(1) _____ of _____ (referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for

\$ _____, the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.

(2) The Principal has entered a written Contract with the City dated _____, 201_, for: _____ and this bond is given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq.

(3) Whenever the Principal is declared by the City to be in default under the Contract, the Surety may promptly remedy the default or shall promptly:

(a) complete the Contract in accordance with its terms and conditions; or

(b) obtain a bid or bids for submission to the City for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, arrange for a Contract between such bidder and the City, and make available, as work progresses, sufficient funds to pay the cost of completion less the balance of the Contract price; but not exceeding, including other costs and damages for which Surety may be liable hereunder, the amount set forth in paragraph 1.

(4) Surety shall have no obligation to the City if the Principal fully and promptly performs under the Contract.

(5) Surety agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder, or the specifications accompanying it shall in any way affect its obligations on this bond, and waives notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work, or to the specifications.

SIGNED AND SEALED this _____ day of _____, 201_.

(Name of Surety Company)

By _____
(Signature)

Its _____
(Title of Office)

Approved as to form:

Stephen K. Postema, City Attorney

(Name of Principal)

By _____
(Signature)

Its _____
(Title of Office)

Name and address of agent:

LABOR AND MATERIAL BOND

- (1) _____
of _____(referred to
as "Principal"), and _____, a corporation
duly authorized to do business in the State of Michigan, (referred to as "Surety"), are bound
to the City of Ann Arbor, Michigan (referred to as "City"), for the use and benefit of claimants
as defined in Act 213 of Michigan Public Acts of 1963, as amended, being MCL 129.201 et
seq., in the amount of
\$ _____, for the payment of which Principal and Surety bind themselves, their
heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.
- (2) The Principal has entered a written Contract with the City, dated _____, 201_,
for _____
_____; and this bond is
given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963 as
amended;
- (3) If the Principal fails to promptly and fully repay claimants for labor and material reasonably
required under the Contract, the Surety shall pay those claimants.
- (4) Surety's obligations shall not exceed the amount stated in paragraph 1, and Surety shall have
no obligation if the Principal promptly and fully pays the claimants.

SIGNED AND SEALED this _____ day of _____, 201_

(Name of Surety Company)
By _____
(Signature)
Its _____
(Title of Office)

(Name of Principal)
By _____
(Signature)
Its _____
(Title of Office)

Approved as to form:

Stephen K. Postema, City Attorney

Name and address of agent:

GENERAL CONDITIONS

Section 1 - Execution, Correlation and Intent of Documents

The contract documents shall be signed in 2 copies by the City and the Contractor.

The contract documents are complementary and what is called for by any one shall be binding. The intention of the documents is to include all labor and materials, equipment and transportation necessary for the proper execution of the work. Materials or work described in words which so applied have a well-known technical or trade meaning have the meaning of those recognized standards.

In case of a conflict among the contract documents listed below in any requirement(s), the requirement(s) of the document listed first shall prevail over any conflicting requirement(s) of a document listed later.

(1) Addenda in reverse chronological order; (2) Detailed Specifications; (3) Standard Specifications; (4) Plans; (5) General Conditions; (6) Contract; (7) Bid Forms; (8) Bond Forms; (9) Bid.

Section 2 - Order of Completion

The Contractor shall submit with each invoice, and at other times reasonably requested by the Supervising Professional, schedules showing the order in which the Contractor proposes to carry on the work. They shall include the dates at which the Contractor will start the several parts of the work, the estimated dates of completion of the several parts, and important milestones within the several parts.

Section 3 - Familiarity with Work

The Bidder or its representative shall make personal investigations of the site of the work and of existing structures and shall determine to its own satisfaction the conditions to be encountered, the nature of the ground, the difficulties involved, and all other factors affecting the work proposed under this Contract. The Bidder to whom this Contract is awarded will not be entitled to any additional compensation unless conditions are clearly different from those which could reasonably have been anticipated by a person making diligent and thorough investigation of the site.

The Bidder shall immediately notify the City upon discovery, and in every case prior to submitting its Bid, of every error or omission in the bidding documents that would be identified by a reasonably competent, diligent Bidder. In no case will a Bidder be allowed the benefit of extra compensation or time to complete the work under this Contract for extra expenses or time spent as a result of the error or omission.

Section 4 - Wage Requirements

Under this Contract, the Contractor shall conform to Chapter 14 of Title I of the Code of the City of Ann Arbor as amended; which in part states "...that all craftsmen, mechanics and laborers employed directly on the site in connection with said improvements, including said employees of subcontractors, shall receive the prevailing wage for the corresponding classes of craftsmen,

mechanics and laborers, as determined by statistics for the Ann Arbor area compiled by the United States Department of Labor. At the request of the City, any contractor or subcontractor shall provide satisfactory proof of compliance with the contract provisions required by the Section.

Pursuant to Resolution R-16-469 all public improvement contractors are subject to prevailing wage and will be required to provide to the City payroll records sufficient to demonstrate compliance with the prevailing wage requirements. A sample Prevailing Wage Form is provided in the Appendix herein for reference as to what will be expected from contractors. Use of the Prevailing Wage Form provided in the Appendix section or a City-approved equivalent will be required along with wage rate interviews.

Where the Contract and the Ann Arbor City Ordinance are silent as to definitions of terms required in determining contract compliance with regard to prevailing wages, the definitions provided in the Davis-Bacon Act as amended (40 U.S.C. 278-a to 276-a-7) for the terms shall be used.

If the Contractor is a "covered employer" as defined in Chapter 23 of the Ann Arbor City Code, the Contractor agrees to comply with the living wage provisions of Chapter 23 of the Ann Arbor City Code. The Contractor agrees to pay those employees providing Services to the City under this Agreement a "living wage," as defined in Section 1:815 of the Ann Arbor City Code, as adjusted in accordance with Section 1:815(3); to post a notice approved by the City of the applicability of Chapter 23 in every location in which regular or contract employees providing services under this Agreement are working; to maintain records of compliance; if requested by the City, to provide documentation to verify compliance; to take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee or person contracted for employment in order to pay the living wage required by Section 1:815; and otherwise to comply with the requirements of Chapter 23.

Contractor agrees that all subcontracts entered into by the Contractor shall contain similar wage provision covering subcontractor's employees who perform work on this contract.

Section 5 - Non-Discrimination

The Contractor agrees to comply, and to require its subcontractor(s) to comply, with the nondiscrimination provisions of MCL 37.2209. The Contractor further agrees to comply with the provisions of Section 9:158 of Chapter 112 of Title IX of the Ann Arbor City Code, and to assure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity.

Section 6 - Materials, Appliances, Employees

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary or used for the execution and completion of the work. Unless otherwise specified, all materials incorporated in the permanent work shall be new, and both workmanship and materials shall be of the highest quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

The Contractor shall at all times enforce strict discipline and good order among its employees, and shall seek to avoid employing on the work any unfit person or anyone not skilled in the work assigned.

Adequate sanitary facilities shall be provided by the Contractor.

Section 7 - Qualifications for Employment

The Contractor shall employ competent laborers and mechanics for the work under this Contract. For work performed under this Contract, employment preference shall be given to qualified local residents.

Section 8 - Royalties and Patents

The Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringements of any patent rights and shall hold the City harmless from loss on account of infringement except that the City shall be responsible for all infringement loss when a particular process or the product of a particular manufacturer or manufacturers is specified, unless the City has notified the Contractor prior to the signing of the Contract that the particular process or product is patented or is believed to be patented.

Section 9 - Permits and Regulations

The Contractor must secure and pay for all permits, permit or plan review fees and licenses necessary for the prosecution of the work. These include but are not limited to City building permits, right-of-way permits, lane closure permits, right-of-way occupancy permits, and the like. The City shall secure and pay for easements shown on the plans unless otherwise specified.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the contract documents are at variance with those requirements, it shall promptly notify the Supervising Professional in writing, and any necessary changes shall be adjusted as provided in the Contract for changes in the work.

Section 10 - Protection of the Public and of Work and Property

The Contractor is responsible for the means, methods, sequences, techniques and procedures of construction and safety programs associated with the work contemplated by this contract. The Contractor, its agents or sub-contractors, shall comply with the "General Rules and Regulations for the Construction Industry" as published by the Construction Safety Commission of the State of Michigan and to all other local, State and National laws, ordinances, rules and regulations pertaining to safety of persons and property.

The Contractor shall take all necessary and reasonable precautions to protect the safety of the public. It shall continuously maintain adequate protection of all work from damage, and shall take all necessary and reasonable precautions to adequately protect all public and private property from injury or loss arising in connection with this Contract. It shall make good any damage, injury or loss to its work and to public and private property resulting from lack of reasonable protective precautions, except as may be due to errors in the contract documents, or caused by agents or employees of the City. The Contractor shall obtain and maintain sufficient insurance to cover damage to any City property at the site by any cause.

In an emergency affecting the safety of life, or the work, or of adjoining property, the Contractor is, without special instructions or authorization from the Supervising Professional, permitted to act at its discretion to prevent the threatened loss or injury. It shall also so act, without appeal, if authorized or instructed by the Supervising Professional.

Any compensation claimed by the Contractor for emergency work shall be determined by agreement or in accordance with the terms of Claims for Extra Cost - Section 15.

Section 11 - Inspection of Work

The City shall provide sufficient competent personnel for the inspection of the work.

The Supervising Professional shall at all times have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for access and for inspection.

If the specifications, the Supervising Professional's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Supervising Professional timely notice of its readiness for inspection, and if the inspection is by an authority other than the Supervising Professional, of the date fixed for the inspection. Inspections by the Supervising Professional shall be made promptly, and where practicable at the source of supply. If any work should be covered up without approval or consent of the Supervising Professional, it must, if required by the Supervising Professional, be uncovered for examination and properly restored at the Contractor's expense.

Re-examination of any work may be ordered by the Supervising Professional, and, if so ordered, the work must be uncovered by the Contractor. If the work is found to be in accordance with the contract documents, the City shall pay the cost of re-examination and replacement. If the work is not in accordance with the contract documents, the Contractor shall pay the cost.

Section 12 - Superintendence

The Contractor shall keep on the work site, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Supervising Professional. The superintendent will be responsible to perform all on-site project management for the Contractor. The superintendent shall be experienced in the work required for this Contract. The superintendent shall represent the Contractor and all direction given to the superintendent shall be binding as if given to the Contractor. Important directions shall immediately be confirmed in writing to the Contractor. Other directions will be confirmed on written request. The Contractor shall give efficient superintendence to the work, using its best skill and attention.

Section 13 - Changes in the Work

The City may make changes to the quantities of work within the general scope of the Contract at any time by a written order and without notice to the sureties. If the changes add to or deduct from the extent of the work, the Contract Sum shall be adjusted accordingly. All the changes shall be executed under the conditions of the original Contract except that any claim for extension of time caused by the change shall be adjusted at the time of ordering the change.

In giving instructions, the Supervising Professional shall have authority to make minor changes in the work not involving extra cost and not inconsistent with the purposes of the work, but otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the Supervising Professional, and no claim for an addition to the Contract Sum shall be valid unless the additional work was ordered in writing.

The Contractor shall proceed with the work as changed and the value of the work shall be determined as provided in Claims for Extra Cost - Section 15.

Section 14 - Extension of Time

Extension of time stipulated in the Contract for completion of the work will be made if and as the

Supervising Professional may deem proper under any of the following circumstances:

- (1) When work under an extra work order is added to the work under this Contract;
- (2) When the work is suspended as provided in Section 20;
- (3) When the work of the Contractor is delayed on account of conditions which could not have been foreseen, or which were beyond the control of the Contractor, and which were not the result of its fault or negligence;
- (4) Delays in the progress of the work caused by any act or neglect of the City or of its employees or by other Contractors employed by the City;
- (5) Delay due to an act of Government;
- (6) Delay by the Supervising Professional in the furnishing of plans and necessary information;
- (7) Other cause which in the opinion of the Supervising Professional entitles the Contractor to an extension of time.

The Contractor shall notify the Supervising Professional within 7 days of an occurrence or conditions which, in the Contractor's opinion, entitle it to an extension of time. The notice shall be in writing and submitted in ample time to permit full investigation and evaluation of the Contractor's claim. The Supervising Professional shall acknowledge receipt of the Contractor's notice within 7 days of its receipt. Failure to timely provide the written notice shall constitute a waiver by the Contractor of any claim.

In situations where an extension of time in contract completion is appropriate under this or any other section of the contract, the Contractor understands and agrees that the only available adjustment for events that cause any delays in contract completion shall be extension of the required time for contract completion and that there shall be no adjustments in the money due the Contractor on account of the delay.

Section 15 - Claims for Extra Cost

If the Contractor claims that any instructions by drawings or other media issued after the date of the Contract involved extra cost under this Contract, it shall give the Supervising Professional written notice within 7 days after the receipt of the instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property. The procedure shall then be as provided for Changes in the Work-Section 13. No claim shall be valid unless so made.

If the Supervising Professional orders, in writing, the performance of any work not covered by the contract documents, and for which no item of work is provided in the Contract, and for which no unit price or lump sum basis can be agreed upon, then the extra work shall be done on a Cost-Plus-Percentage basis of payment as follows:

- (1) The Contractor shall be reimbursed for all reasonable costs incurred in doing the work, and shall receive an additional payment of 15% of all the reasonable costs to cover both its indirect overhead costs and profit;
- (2) The term "Cost" shall cover all payroll charges for employees and supervision required under the specific order, together with all worker's compensation, Social Security, pension and retirement allowances and social insurance, or other regular payroll charges on same;

the cost of all material and supplies required of either temporary or permanent character; rental of all power-driven equipment at agreed upon rates, together with cost of fuel and supply charges for the equipment; and any costs incurred by the Contractor as a direct result of executing the order, if approved by the Supervising Professional;

- (3) If the extra is performed under subcontract, the subcontractor shall be allowed to compute its charges as described above. The Contractor shall be permitted to add an additional charge of 5% percent to that of the subcontractor for the Contractor's supervision and contractual responsibility;
- (4) The quantities and items of work done each day shall be submitted to the Supervising Professional in a satisfactory form on the succeeding day, and shall be approved by the Supervising Professional and the Contractor or adjusted at once;
- (5) Payments of all charges for work under this Section in any one month shall be made along with normal progress payments. Retainage shall be in accordance with Progress Payments-Section 16.

No additional compensation will be provided for additional equipment, materials, personnel, overtime or special charges required to perform the work within the time requirements of the Contract.

When extra work is required and no suitable price for machinery and equipment can be determined in accordance with this Section, the hourly rate paid shall be 1/40 of the basic weekly rate listed in the Rental Rate Blue Book published by Dataquest Incorporated and applicable to the time period the equipment was first used for the extra work. The hourly rate will be deemed to include all costs of operation such as bucket or blade, fuel, maintenance, "regional factors", insurance, taxes, and the like, but not the costs of the operator.

Section 16 - Progress Payments

The Contractor shall submit each month, or at longer intervals, if it so desires, an invoice covering work performed for which it believes payment, under the Contract terms, is due. The submission shall be to the City's Finance Department - Accounting Division. The Supervising Professional will, within 10 days following submission of the invoice, prepare a certificate for payment for the work in an amount to be determined by the Supervising Professional as fairly representing the acceptable work performed during the period covered by the Contractor's invoice. To insure the proper performance of this Contract, the City will retain a percentage of the estimate in accordance with Act 524, Public Acts of 1980. The City will then, following the receipt of the Supervising Professional's Certificate, make payment to the Contractor as soon as feasible, which is anticipated will be within 15 days.

An allowance may be made in progress payments if substantial quantities of permanent material have been delivered to the site but not incorporated in the completed work if the Contractor, in the opinion of the Supervising Professional, is diligently pursuing the work under this Contract. Such materials shall be properly stored and adequately protected. Allowance in the estimate shall be at the invoice price value of the items. Notwithstanding any payment of any allowance, all risk of loss due to vandalism or any damages to the stored materials remains with the Contractor.

In the case of Contracts which include only the Furnishing and Delivering of Equipment, the payments shall be; 60% of the Contract Sum upon the delivery of all equipment to be furnished, or in the case of delivery of a usable portion of the equipment in advance of the total equipment delivery, 60% of the estimated value of the portion of the equipment may be paid upon its delivery in advance of the time of the remainder of the equipment to be furnished; 30% of the Contract

Sum upon completion of erection of all equipment furnished, but not later than 60 days after the date of delivery of all of the equipment to be furnished; and payment of the final 10% on final completion of erection, testing and acceptance of all the equipment to be furnished; but not later than 180 days after the date of delivery of all of the equipment to be furnished, unless testing has been completed and shows the equipment to be unacceptable.

With each invoice for periodic payment, the Contractor shall enclose a Contractor's Declaration - Section 43, and an updated project schedule per Order of Completion - Section 2.

Section 17 - Deductions for Uncorrected Work

If the Supervising Professional decides it is inexpedient to correct work that has been damaged or that was not done in accordance with the Contract, an equitable deduction from the Contract price shall be made.

Section 18 - Correction of Work Before Final Payment

The Contractor shall promptly remove from the premises all materials condemned by the Supervising Professional as failing to meet Contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute the work in accordance with the Contract and without expense to the City and shall bear the expense of making good all work of other contractors destroyed or damaged by the removal or replacement.

If the Contractor does not remove the condemned work and materials within 10 days after written notice, the City may remove them and, if the removed material has value, may store the material at the expense of the Contractor. If the Contractor does not pay the expense of the removal within 10 days thereafter, the City may, upon 10 days written notice, sell the removed materials at auction or private sale and shall pay to the Contractor the net proceeds, after deducting all costs and expenses that should have been borne by the Contractor. If the removed material has no value, the Contractor must pay the City the expenses for disposal within 10 days of invoice for the disposal costs.

The inspection or lack of inspection of any material or work pertaining to this Contract shall not relieve the Contractor of its obligation to fulfill this Contract and defective work shall be made good. Unsuitable materials may be rejected by the Supervising Professional notwithstanding that the work and materials have been previously overlooked by the Supervising Professional and accepted or estimated for payment or paid for. If the work or any part shall be found defective at any time before the final acceptance of the whole work, the Contractor shall forthwith make good the defect in a manner satisfactory to the Supervising Professional. The judgment and the decision of the Supervising Professional as to whether the materials supplied and the work done under this Contract comply with the requirements of the Contract shall be conclusive and final.

Section 19 - Acceptance and Final Payment

Upon receipt of written notice that the work is ready for final inspection and acceptance, the Supervising Professional will promptly make the inspection. When the Supervising Professional finds the work acceptable under the Contract and the Contract fully performed, the Supervising Professional will promptly sign and issue a final certificate stating that the work required by this Contract has been completed and is accepted by the City under the terms and conditions of the Contract. The entire balance found to be due the Contractor, including the retained percentage, shall be paid to the Contractor by the City within 30 days after the date of the final certificate.

Before issuance of final certificates, the Contractor shall file with the City:

- (1) The consent of the surety to payment of the final estimate;
- (2) The Contractor's Affidavit in the form required by Section 44.

In case the Affidavit or consent is not furnished, the City may retain out of any amount due the Contractor, sums sufficient to cover all lienable claims.

The making and acceptance of the final payment shall constitute a waiver of all claims by the City except those arising from:

- (1) unsettled liens;
- (2) faulty work appearing within 12 months after final payment;
- (3) hidden defects in meeting the requirements of the plans and specifications;
- (4) manufacturer's guarantees.

It shall also constitute a waiver of all claims by the Contractor, except those previously made and still unsettled.

Section 20 - Suspension of Work

The City may at any time suspend the work, or any part by giving 5 days notice to the Contractor in writing. The work shall be resumed by the Contractor within 10 days after the date fixed in the written notice from the City to the Contractor to do so. The City shall reimburse the Contractor for expense incurred by the Contractor in connection with the work under this Contract as a result of the suspension.

If the work, or any part, shall be stopped by the notice in writing, and if the City does not give notice in writing to the Contractor to resume work at a date within 90 days of the date fixed in the written notice to suspend, then the Contractor may abandon that portion of the work suspended and will be entitled to the estimates and payments for all work done on the portions abandoned, if any, plus 10% of the value of the work abandoned, to compensate for loss of overhead, plant expense, and anticipated profit.

Section 21 - Delays and the City's Right to Terminate Contract

If the Contractor refuses or fails to prosecute the work, or any separate part of it, with the diligence required to insure completion, ready for operation, within the allowable number of consecutive calendar days specified plus extensions, or fails to complete the work within the required time, the City may, by written notice to the Contractor, terminate its right to proceed with the work or any part of the work as to which there has been delay. After providing the notice the City may take over the work and prosecute it to completion, by contract or otherwise, and the Contractor and its sureties shall be liable to the City for any excess cost to the City. If the Contractor's right to proceed is terminated, the City may take possession of and utilize in completing the work, any materials, appliances and plant as may be on the site of the work and useful for completing the work. The right of the Contractor to proceed shall not be terminated or the Contractor charged with liquidated damages where an extension of time is granted under Extension of Time - Section 14.

If the Contractor is adjudged a bankrupt, or if it makes a general assignment for the benefit of creditors, or if a receiver is appointed on account of its insolvency, or if it persistently or repeatedly refuses or fails except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if it fails to make prompt payments to subcontractors or for material or labor, or persistently disregards laws, ordinances or the instructions of the Supervising Professional, or otherwise is guilty of a substantial violation of any provision of the Contract, then the City, upon the certificate of the Supervising Professional that sufficient cause exists to justify

such action, may, without prejudice to any other right or remedy and after giving the Contractor 3 days written notice, terminate this Contract. The City may then take possession of the premises and of all materials, tools and appliances thereon and without prejudice to any other remedy it may have, make good the deficiencies or finish the work by whatever method it may deem expedient, and deduct the cost from the payment due the Contractor. The Contractor shall not be entitled to receive any further payment until the work is finished. If the expense of finishing the work, including compensation for additional managerial and administrative services exceeds the unpaid balance of the Contract Sum, the Contractor and its surety are liable to the City for any excess cost incurred. The expense incurred by the City, and the damage incurred through the Contractor's default, shall be certified by the Supervising Professional.

Section 22 - Contractor's Right to Terminate Contract

If the work should be stopped under an order of any court, or other public authority, for a period of 3 months, through no act or fault of the Contractor or of anyone employed by it, then the Contractor may, upon 7 days written notice to the City, terminate this Contract and recover from the City payment for all acceptable work executed plus reasonable profit.

Section 23 - City's Right To Do Work

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this Contract, the City, 3 days after giving written notice to the Contractor and its surety may, without prejudice to any other remedy the City may have, make good the deficiencies and may deduct the cost from the payment due to the Contractor.

Section 24 - Removal of Equipment and Supplies

In case of termination of this Contract before completion, from any or no cause, the Contractor, if notified to do so by the City, shall promptly remove any part or all of its equipment and supplies from the property of the City, failing which the City shall have the right to remove the equipment and supplies at the expense of the Contractor.

The removed equipment and supplies may be stored by the City and, if all costs of removal and storage are not paid by the Contractor within 10 days of invoicing, the City upon 10 days written notice may sell the equipment and supplies at auction or private sale, and shall pay the Contractor the net proceeds after deducting all costs and expenses that should have been borne by the Contractor and after deducting all amounts claimed due by any lien holder of the equipment or supplies.

Section 25 - Responsibility for Work and Warranties

The Contractor assumes full responsibility for any and all materials and equipment used in the construction of the work and may not make claims against the City for damages to materials and equipment from any cause except negligence or willful act of the City. Until its final acceptance, the Contractor shall be responsible for damage to or destruction of the project (except for any part covered by Partial Completion and Acceptance - Section 26). The Contractor shall make good all work damaged or destroyed before acceptance. All risk of loss remains with the Contractor until final acceptance of the work (Section 19) or partial acceptance (Section 26). The Contractor is advised to investigate obtaining its own builders risk insurance.

The Contractor shall guarantee the quality of the work for a period of one year. The Contractor shall also unconditionally guarantee the quality of all equipment and materials that are furnished and installed under the contract for a period of one year. At the end of one year after the Contractor's receipt of final payment, the complete work, including equipment and materials

furnished and installed under the contract, shall be inspected by the Contractor and the Supervising Professional. Any defects shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. Any defects that are identified prior to the end of one year shall also be inspected by the Contractor and the Supervising Professional and shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. The Contractor shall assign all manufacturer or material supplier warranties to the City prior to final payment. The assignment shall not relieve the Contractor of its obligations under this paragraph to correct defects.

Section 26 - Partial Completion and Acceptance

If at any time prior to the issuance of the final certificate referred to in Acceptance and Final Payment - Section 19, any portion of the permanent construction has been satisfactorily completed, and if the Supervising Professional determines that portion of the permanent construction is not required for the operations of the Contractor but is needed by the City, the Supervising Professional shall issue to the Contractor a certificate of partial completion, and immediately the City may take over and use the portion of the permanent construction described in the certificate, and exclude the Contractor from that portion.

The issuance of a certificate of partial completion shall not constitute an extension of the Contractor's time to complete the portion of the permanent construction to which it relates if the Contractor has failed to complete it in accordance with the terms of this Contract. The issuance of the certificate shall not release the Contractor or its sureties from any obligations under this Contract including bonds.

If prior use increases the cost of, or delays the work, the Contractor shall be entitled to extra compensation, or extension of time, or both, as the Supervising Professional may determine.

Section 27 - Payments Withheld Prior to Final Acceptance of Work

The City may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any certificate to the extent reasonably appropriate to protect the City from loss on account of:

- (1) Defective work not remedied;
- (2) Claims filed or reasonable evidence indicating probable filing of claims by other parties against the Contractor;
- (3) Failure of the Contractor to make payments properly to subcontractors or for material or labor;
- (4) Damage to another Contractor.

When the above grounds are removed or the Contractor provides a Surety Bond satisfactory to the City which will protect the City in the amount withheld, payment shall be made for amounts withheld under this section.

Section 28 - Contractor's Insurance

- (1) The Contractor shall procure and maintain during the life of this Contract, including the guarantee period and during any warranty work, such insurance policies, including those set forth below, as will protect itself and the City from all claims for bodily injuries, death

or property damage which may arise under this Contract; whether the act(s) or omission(s) giving rise to the claim were made by the Contractor or by any subcontractor or anyone employed by them directly or indirectly. In the case of all contracts involving on-site work, the Contractor shall provide to the City, before the commencement of any work under this contract, certificates of insurance and other documentation satisfactory to the City demonstrating it has obtained the policies and endorsements required on behalf of itself, and when requested, any subcontractor(s). The certificates of insurance endorsements and/or copies of policy language shall document that the Contractor satisfies the following minimum requirements.

- (a) Worker's Compensation Insurance in accordance with all applicable state and federal statutes. Further, Employers Liability Coverage shall be obtained in the following minimum amounts:

- Bodily Injury by Accident - \$500,000 each accident
 - Bodily Injury by Disease - \$500,000 each employee
 - Bodily Injury by Disease - \$500,000 each policy limit

- (b) Commercial General Liability Insurance equivalent to, as a minimum, Insurance Services Office form CG 00 01 07 98 or current equivalent. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements specifically for the following coverages: Products and Completed Operations, Explosion, Collapse and Underground coverage or Pollution. Further there shall be no added exclusions or limiting endorsements which diminish the City's protections as an additional insured under the policy. The following minimum limits of liability are required:

- \$1,000,000 Each occurrence as respect Bodily Injury Liability or Property Damage Liability, or both combined.
 - \$2,000,000 Per Job General Aggregate
 - \$1,000,000 Personal and Advertising Injury
 - \$2,000,000 Products and Completed Operations Aggregate

- (c) Motor Vehicle Liability Insurance, including Michigan No-Fault Coverages, equivalent to, as a minimum, Insurance Services Office form CA 00 01 07 97 or current equivalent. Coverage shall include all owned vehicles, all non-owned vehicles and all hired vehicles. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements which diminish the City's protections as an additional insured under the policy. Further, the limits of liability shall be \$1,000,000 for each occurrence as respects Bodily Injury Liability or Property Damage Liability, or both combined.

- (d) Umbrella/Excess Liability Insurance shall be provided to apply excess of the Commercial General Liability, Employers Liability and the Motor Vehicle coverage enumerated above, for each occurrence and for aggregate in the amount of \$1,000,000.

- (2) Insurance required under subsection (1)(b) and (1)(c) above shall be considered primary as respects any other valid or collectible insurance that the City may possess, including any self-insured retentions the City may have; and any other insurance the City does possess shall be considered excess insurance only and shall not be required to contribute with this insurance. Further, the Contractor agrees to waive any right of recovery by its insurer against the City.

- (3) Insurance companies and policy forms are subject to approval of the City Attorney, which

approval shall not be unreasonably withheld. Documentation must provide and demonstrate an unconditional 30 day written notice of cancellation in favor of the City of Ann Arbor. Further, the documentation must explicitly state the following: (a) the policy number; name of insurance company; name and address of the agent or authorized representative; name and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions which shall be approved by the City, in its sole discretion; (c) that the policy conforms to the requirements specified Contractor shall furnish the City with satisfactory certificates of insurance and endorsements prior to commencement of any work. Upon request, the Contractor shall provide within 30 days a copy of the policy(ies) to the City. If any of the above coverages expire by their terms during the term of this Contract, the Contractor shall deliver proof of renewal and/or new policies and endorsements to the Administering Service Area/Unit at least ten days prior to the expiration date.

- (4) Any Insurance provider of Contractor shall be admitted and authorized to do business in the State of Michigan and shall carry and maintain a minimum rating assigned by A.M. Best & Company's Key Rating Guide of "A-" Overall and a minimum Financial Size Category of "V". Insurance policies and certificates issued by non-admitted insurance companies are not acceptable unless approved in writing by the City.
- (5) City reserves the right to require additional coverage and/or coverage amounts as may be included from time to time in the Detailed Specifications for the Project.
- (6) The provisions of General Condition 28 shall survive the expiration or earlier termination of this contract for any reason.

Section 29 - Surety Bonds

Bonds will be required from the successful bidder as follows:

- (1) A Performance Bond to the City of Ann Arbor for the amount of the bid(s) accepted;
- (2) A Labor and Material Bond to the City of Ann Arbor for the amount of the bid(s) accepted.

Bonds shall be executed on forms supplied by the City in a manner and by a Surety Company authorized to transact business in Michigan and satisfactory to the City Attorney.

Section 30 - Damage Claims

The Contractor shall be held responsible for all damages to property of the City or others, caused by or resulting from the negligence of the Contractor, its employees, or agents during the progress of or connected with the prosecution of the work, whether within the limits of the work or elsewhere. The Contractor must restore all property injured including sidewalks, curbing, sodding, pipes, conduit, sewers or other public or private property to not less than its original condition with new work.

Section 31 - Refusal to Obey Instructions

If the Contractor refuses to obey the instructions of the Supervising Professional, the Supervising Professional shall withdraw inspection from the work, and no payments will be made for work performed thereafter nor may work be performed thereafter until the Supervising Professional shall have again authorized the work to proceed.

Section 32 - Assignment

Neither party to the Contract shall assign the Contract without the written consent of the other. The Contractor may assign any monies due to it to a third party acceptable to the City.

Section 33 - Rights of Various Interests

Whenever work being done by the City's forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the Supervising Professional, to secure the completion of the various portions of the work in general harmony.

The Contractor is responsible to coordinate all aspects of the work, including coordination of, and with, utility companies and other contractors whose work impacts this project.

Section 34 - Subcontracts

The Contractor shall not award any work to any subcontractor without prior written approval of the City. The approval will not be given until the Contractor submits to the City a written statement concerning the proposed award to the subcontractor. The statement shall contain all information the City may require.

The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions and all other contract documents applicable to the work of the subcontractors and to give the Contractor the same power to terminate any subcontract that the City may exercise over the Contractor under any provision of the contract documents.

Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the City.

Section 35 - Supervising Professional's Status

The Supervising Professional has the right to inspect any or all work. The Supervising Professional has authority to stop the work whenever stoppage may be appropriate to insure the proper execution of the Contract. The Supervising Professional has the authority to reject all work and materials which do not conform to the Contract and to decide questions which arise in the execution of the work.

The Supervising Professional shall make all measurements and determinations of quantities. Those measurements and determinations are final and conclusive between the parties.

Section 36 - Supervising Professional's Decisions

The Supervising Professional shall, within a reasonable time after their presentation to the Supervising Professional, make decisions in writing on all claims of the City or the Contractor and on all other matters relating to the execution and progress of the work or the interpretation of the contract documents.

Section 37 - Storing Materials and Supplies

Materials and supplies may be stored at the site of the work at locations agreeable to the City unless specific exception is listed elsewhere in these documents. Ample way for foot traffic and drainage must be provided, and gutters must, at all times, be kept free from obstruction. Traffic on streets shall be interfered with as little as possible. The Contractor may not enter or occupy with agents, employees, tools, or material any private property without first obtaining written permission from its owner. A copy of the permission shall be furnished to the Supervising Professional.

Section 38 - Lands for Work

The Contractor shall provide, at its own expense and without liability to the City, any additional land and access that may be required for temporary construction facilities or for storage of materials.

Section 39 - Cleaning Up

The Contractor shall, as directed by the Supervising Professional, remove at its own expense from the City's property and from all public and private property all temporary structures, rubbish and waste materials resulting from its operations unless otherwise specifically approved, in writing, by the Supervising Professional.

Section 40 - Salvage

The Supervising Professional may designate for salvage any materials from existing structures or underground services. Materials so designated remain City property and shall be transported or stored at a location as the Supervising Professional may direct.

Section 41 - Night, Saturday or Sunday Work

No night or Sunday work (without prior written City approval) will be permitted except in the case of an emergency and then only to the extent absolutely necessary. The City may allow night work which, in the opinion of the Supervising Professional, can be satisfactorily performed at night. Night work is any work between 8:00 p.m. and 7:00 a.m. No Saturday work will be permitted unless the Contractor gives the Supervising Professional at least 48 hours but not more than 5 days notice of the Contractor's intention to work the upcoming Saturday.

Section 42 - Sales Taxes

Under State law the City is exempt from the assessment of State Sales Tax on its direct purchases. Contractors who acquire materials, equipment, supplies, etc. for incorporation in City projects are not likewise exempt. State Law shall prevail. The Bidder shall familiarize itself with the State Law and prepare its Bid accordingly. No extra payment will be allowed under this Contract for failure of the Contractor to make proper allowance in this bid for taxes it must pay.

Section 43

CONTRACTOR'S DECLARATION

I hereby declare that I have not, during the period _____, 20____, to _____, 20____, performed any work, furnished any materials, sustained any loss, damage or delay, or otherwise done anything in addition to the regular items (or executed change orders) set forth in the Contract titled _____, for which I shall ask, demand, sue for, or claim compensation or extension of time from the City, except as I hereby make claim for additional compensation or extension of time as set forth on the attached itemized statement. I further declare that I have paid all payroll obligations related to this Contract that have become due during the above period and that all invoices related to this Contract received more than 30 days prior to this declaration have been paid in full except as listed below.

There is/is not (Contractor please circle one and strike one as appropriate) an itemized statement attached regarding a request for additional compensation or extension of time.

Contractor

Date

By _____
(Signature)

Its _____
(Title of Office)

Past due invoices, if any, are listed below.

Section 44

CONTRACTOR'S AFFIDAVIT

The undersigned Contractor, _____, represents that on _____, 20__, it was awarded a contract by the City of Ann Arbor, Michigan to _____ under the terms and conditions of a Contract titled _____. The Contractor represents that all work has now been accomplished and the Contract is complete.

The Contractor warrants and certifies that all of its indebtedness arising by reason of the Contract has been fully paid or satisfactorily secured; and that all claims from subcontractors and others for labor and material used in accomplishing the project, as well as all other claims arising from the performance of the Contract, have been fully paid or satisfactorily settled. The Contractor agrees that, if any claim should hereafter arise, it shall assume responsibility for it immediately upon request to do so by the City of Ann Arbor.

The Contractor, for valuable consideration received, does further waive, release and relinquish any and all claims or right of lien which the Contractor now has or may acquire upon the subject premises for labor and material used in the project owned by the City of Ann Arbor.

This affidavit is freely and voluntarily given with full knowledge of the facts.

Contractor

Date

By _____
(Signature)

Its _____
(Title of Office)

Subscribed and sworn to before me, on this ____ day of _____, 20__
_____, _____ County, Michigan

Notary Public

_____ County, MI

My commission expires on:

STANDARD SPECIFICATIONS

All work under this contract shall be performed in accordance with the Public Services Department Standard Specifications in effect at the date of availability of the contract documents stipulated in the Bid. All work under this Contract which is not included in these Standard Specifications, or which is performed using modifications to these Standard Specifications, shall be performed in accordance with the Detailed Specifications included in these contract documents.

Standard Specifications are available online:

<http://www.a2gov.org/departments/engineering/Pages/Engineering-and-Contractor-Resources.aspx>

DETAILED SPECIFICATIONS

SECTION 01040
CUTTING AND PATCHING

PART 1 - GENERAL

1.01 Work Included

This section establishes general requirements pertaining to cutting (including excavating), fitting and patching of the work required to:

- A. Make the several parts fit properly;
- B. Uncover work to provide for installation, inspection, or both, of ill-timed work;
- C. Remove and replace work not conforming to requirements of the contract documents; and
- D. Remove and replace defective work.

1.02 Submittals

Prior to cutting which affects structural safety, submit written request to the Engineer for permission to proceed with cutting.

Should conditions of the work or schedule indicate a required change of materials or methods for cutting and patching, notify the Engineer and secure his written permission prior to proceeding.

Submit written notice to the Engineer designating time the work will be uncovered, to provide for the Engineer's observation.

1.03 Quality Assurance and Quality Control

Perform all cutting and patching in strict accordance with pertinent requirements of these specifications and, in the event no such requirements are determined, in conformance with the Engineer's written direction.

PART 2 - PRODUCTS

2.01 Materials

For replacement of work removed, use materials which comply with the pertinent sections of the specifications for this contract.

PART 3 - EXECUTION

3.01 Conditions

The Contractor shall inspect existing conditions, including elements subject to movement or damage during cutting, excavating, backfilling, and patching.

After uncovering the work, the Contractor shall inspect conditions affecting installation of new work. If uncovered conditions are not as anticipated, immediately notify the Engineer and secure needed directions. Do not proceed in areas of discrepancy until all such discrepancies have been fully resolved.

3.02 Preparation Prior to Cutting

Provide all required protection including, but not necessarily limited to, shoring, bracing, and supports to maintain structural integrity of the work.

3.03 Performance

Perform all required excavating and backfilling, as required under pertinent sections of these specifications. Perform cutting and demolition by methods which will prevent damage to other portions of the work and will provide proper surfaces to receive installation of repair and new work. Perform fitting and adjustment of products to provide finished installation, complying with the specified tolerances and finishes.

END OF SECTION

SECTION 01100
SUMMARY

PART 1 - GENERAL

1.01 Summary

This section includes project information, work covered by the contract documents, access to the site, work restrictions, and specification and drawing conventions.

1.02 Project Information

A. Project Identification

Veteran's Park Pool Mechanical Improvements

B. Project Location

City of Ann Arbor, Washtenaw County, Michigan

C. Project Address

Veteran's Memorial Park Pool and Ice Arena, 2150 Jackson Avenue, Ann Arbor, MI 48103

D. Owner

City of Ann Arbor Parks and Recreation Department, 301 East Huron Street, Ann Arbor, MI 48104

E. Engineer

ROWE Professional Services Company, 540 South Saginaw Street, Suite 200, Flint, MI 48502

1.03 Work Covered by Contract Documents

This project includes the removal and replacement of the existing sand filter, removal and replacement of the existing piping between the pump suction to the pool return, removal and replacement of pneumatic operators and other equipment, and associated electrical work.

1.04 Type of Contract

The project will be constructed under a single prime contract.

1.05 Access to Site

The Contractor will have full use of the project site; however, the Contractor shall confine activities and use of the premises to the areas required for the Contractor's work.

The Contractor shall limit construction activities to the areas designated on the plans for construction limits or activities.

Access to driveways, walkways, and entrances shall be maintained at all times.

1.06 Work Restrictions

The Contractor shall comply with local ordinances and authorities having jurisdiction.

Work activities at the site shall be limited to the period between 8 a.m. through 5 p.m., excluding weekends and holidays recognized by the City of Ann Arbor.

1.07 Specification and Drawing Conventions

The specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. The words “shall”, “shall be” or “shall comply with”, depending on the context, are implied where a colon is used within a sentence or phrase. Specification requirements are the Contractor’s responsibility unless specifically stated otherwise.

Requirements of Division 1 sections apply to the work of all sections in the specifications.

Requirements for materials and products identified on the drawings are described in detail in the specifications.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION

SECTION 01110
PERMIT REQUIREMENTS

PART 1 - GENERAL

1.01 Work Included

The Contractor shall complete work in accordance with all applicable regulations, laws, and ordinances. Work shall be completed in accordance with permits issued by regulatory agencies.

The Contractor shall obtain permits, including the paying of fees, posting bonds, and providing insurance coverage, to secure permits which have not been obtained by the Owner.

Where permits have been obtained by the Owner, the Contractor shall conduct work and operations consistent with the requirements of the permits.

Where changed conditions or other issues arise such that the conditions of a permit which has been issued cannot be met, the Contractor shall promptly notify the Owner and the permitting agency. The Contractor shall provide such additional information as may be necessary to secure a modification to the original permit to allow the planned work to continue.

1.02 Permits Obtained by the Owner

The Owner has obtained the following permits to allow for constructing the proposed project. Copies of these permits are included in the project manual.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.01 Permits to be Obtained by Contractor

A. Permit Applications Completed by the Owner

The Owner has submitted information and reviewed the proposed work with the following agencies. Final permits have not yet been issued. The Contractor is required to obtain the permits for the proposed project including the paying of fees, posting bonds, and providing insurance coverage to secure permits.

Permit Agency	Permit Type	Requirements
Michigan Department of Environmental Quality	Public Swimming Pool Equipment Change Form	N/A

B. Other Permits to be Obtained by the Contractor

The Contractor is responsible to obtain all permits necessary to complete the proposed work, which have not been obtained by the Owner. This includes necessary building permit(s) from the City of Ann Arbor.

END OF SECTION

SECTION 01310
SCHEDULE REQUIREMENTS

PART 1 - GENERAL

1.01 Work Included

The Contractor shall develop a detailed schedule, identifying various phases or divisions of work, indicating a start date and duration required for each. The schedule shall be presented to the Engineer or Owner in sufficient detail, as may be required by the Engineer or Owner, for their approval.

Periodically through the life of the project and as required by the Engineer or Owner, the Contractor shall update the schedule and provide copies to the Engineer and Owner.

1.02 Requirements

The entire work under this contract shall be completed in accordance with, and subject to, the scheduling requirements as outlines below, and all other requirements of the contract documents.

- A. The Contractor shall begin the work of this project on or before February 1, 2018, and only upon receipt of the fully executed contract and Notice to Proceed. Appropriate time extensions shall be granted if the Notice to Proceed is delayed beyond this date.
- B. The entirety of work under this contract shall be completed by May 15, 2018.

The Contractor is expected to be furnished with three copies of the contract, for his/her execution, on or before January 15, 2018. The Contractor shall properly execute the contract and return them, with the required bonds and insurance certificate, to the city within ten days. The Contractor shall not begin the work before the applicable date(s) as described herein without approval from the Owner, and in no case before the receipt of the fully executed contract. City Council approval is expected by January 18, 2018.

The Contractor shall schedule work to be performed during normal business hours, unless otherwise directed on the plans or approved by the Engineer.

Once work has begun on the project, the Contractor shall work continuously and expeditiously to complete all work provided for by the contract.

Project shall be substantially completed by May 15, 2018. Substantial completion is the stage of completion where the project is fit for occupancy and use without hindrance for its intended purpose.

Project shall be fully completed and ready for final payment in accordance with the date specified in the agreement.

The Contractor shall coordinate with a separate contractor installing a liner for the Veterans Park Pool. The pool may need to be filled as part of this process. The city will provide temporary water service, if necessary, at no additional cost to the Contractor. Coordination between contractors will not impact the substantial completion of final completion of the project.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION

SECTION 01330
COLOR AUDIO-VIDEO SURVEY
OF CONSTRUCTION AREAS

PART 1 - GENERAL

1.01 Work Included

The Contractor shall perform an audio-video survey of the project area to document the “pre-construction” conditions of the project and adjacent areas.

1.02 Related Work

A. Section 01770 – Closeout Procedures

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.01 Preconstruction Documentation

- A. Contractor shall take a sufficient number of digital preconstruction photographs, minimum 100, so as to resolve any disputes, which may arise regarding the considerations prior to and subsequent to construction.
- B. Contractor shall furnish one USB flash drive of the digital preconstruction photographs to the Engineer, and shall make others available for review in settling any disputes.
- C. In addition to photographs, the Contractor shall produce a high-quality preconstruction video of the entire site on a USP flash drive and submit it to the Engineer.
- D. If a dispute arises where digital preconstruction photographs or video was not taken, the disputed area shall be restored to the extent directed by the Engineer and to the complete satisfaction of the Engineer.

END OF SECTION

SECTION 01340
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 Work Included

- A. This section includes procedures for preparing and transmitting submittals required by specification sections for a product, material, or construction method. Submittals shall include the following:
 - 1. Shop drawings
 - 2. Product data
 - 3. Manufacturer's certificates
 - 4. Design data and calculations
 - 5. Manufacturer's instructions
 - 6. Manufacturer's field service reports
 - 7. Samples
 - 8. Operation and maintenance manuals (timing, quantity, content, and form)
- B. It is the responsibility of the General Contractor to convey the requirements of this section to their sub-contractors and their suppliers and vendors.

1.02 Submittals

- A. Schedule submittals to expedite work. Unless otherwise indicated in this section, submittals shall be submitted within 30 days of date of Notice to Proceed.
- B. Preparation
 - 1. Provide separate submittals for each specification section requiring submittals. Where multiple sections relate to the same system or element and are being provided from the same source, a single combined submittal is acceptable.
 - 2. Coordinate submission of related items. Group submittals of related products in a single transmission.
 - 3. Include all submittal material requested for that section.
 - 4. Identify variations from requirements of contract documents. State product and system limitations which may adversely affect work.
 - 5. Mark or show dimensions and values in same units as specified.
- C. Contractor Responsibilities
 - 1. Review submittals prior to transmittal. Verify compatibility with field conditions and dimensions, product selections and designations, quantities, and conformance of submittal with requirements of contract documents. Return non-conforming submittals to preparer for revision, rather than submitting for review.

2. Coordinate submittals to avoid conflicts between various items of work.
3. Submittal Transmittal Form
 - a. Include with each submittal a transmittal form. A sample copy of an acceptable form is included in Attachment A. The Contractor's standard submittal form may be used, provided it contains essentially the same information as the sample.
 - b. Identify project, Contractor, subcontractor, supplier, manufacturer, pertinent drawing sheet and detail numbers, and associated specification section numbers.
 - c. Sequentially number transmittal forms. Re-submittals shall have original number with a suffix. Acceptable form of number is SS SS SS-NN-T where:
 - i. SS SS SS indicates specification section number;
 - ii. NN indicates different submittals for that specification section; and
 - iii. T indicates the number of times that submittal has been made.
4. Failure of the Contractor to review submittals, prior to transmittal for review, shall be cause for rejection.
5. Incomplete, improperly packaged, and submittals from sources other than the Contractor will not be accepted.

D. Transmittal

Where possible, transmit all submittals electronically. Where electronic submittal is not possible, submit four paper copies for the Engineer's retention, plus as many copies as the Contractor desires returned after review. Samples shall be submitted as described elsewhere in this specification.

E. Review

The Engineer will review and return submittals with comments.

F. Do not fabricate products or begin work which requires submittals until return of reviewed submittal with A/E or SNL SE acceptance.

G. On return, promptly distribute reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

H. Resubmission

1. Revise and resubmit submittals, as required, within 15 days of return from initial review.
2. Make re-submittals under procedures specified for initial submittals.
3. Identify all changes made since previous submittal.

1.03 Quality Assurance and Quality Control

A. Where required by specification sections, provide quality assurance submittals:

1. Qualification Data

Contractor shall submit written information demonstrating capabilities and experience of firm or person. Include lists of complete projects with names and contact information for references.

2. Manufacturer's Certificates

Submit reference data, affidavits, and certifications on manufacturer's letterhead certifying that products conform to or exceed specified requirements. Certificates may be based on recent or previous test results supplied by manufacturer and accepted by the Engineer.

3. Installer Approval

Certification on manufacturer's letterhead that installer complies with requirements and is approved for installing manufacturer's products.

4. Field Test Reports

Written reports from qualified testing agency indicating and interpreting results of field tests performed either during or after installation for compliance with specified requirements.

1.04 Submittal Review

A. The Engineer will review submittals for the sole purpose of verifying general conformance with design intent and general compliance with contract documents. Approval of submittal by the Engineer does not relieve the Contractor of responsibility for correcting errors which may exist in submittal, or from meeting requirements of contract documents.

B. Review Time

Initial review will be performed within 14 days of receipt. Reviewer reserves the right to withhold action on a submittal requiring review of related submittals, until related submittal is received. Additional time will be required if processing must be delayed to permit review of related subsequent submittals. The Engineer will review re-submittals within 14 days.

C. Review Actions

After review, submittals will be returned and marked as follows to indicate action taken:

1. Reviewed, No Comments

Part of work covered by submittal may proceed, provided it complies with requirements of contract documents. Final acceptance will depend upon that compliance.

2. Reviewed, With Comments

Part of work covered by submittal may proceed, provided it complies with notations and corrections on submittal and requirements of contract documents. Final acceptance will depend upon that compliance.

3. Revise and Resubmit

Do not proceed with part of work covered by submittal including purchasing, fabricating, and delivering. Revise or prepare new submittal in accordance with notations and resubmit.

1.05 Drawings

A. Where required by specifications or otherwise needed, prepare drawings illustrating portion of work for use in fabricating, interfacing with other work, and installing products. Contract drawings shall not be reproduced and submitted as shop drawings.

B. When construction is complete, prepare and submit red-lined copies of the contract drawings showing clearly how construction deviated from the design, along with the authority for the deviation or change.

C. Electronic Format

1. Size printable to: 8½ inches by 11 inches minimum and 24 inches by 36 inches maximum.
2. Present in a clear and thorough manner. Title each drawing with project name. Identify each element of drawing with reference number.
3. Plans, elevations, sections, and detail shop drawings shall be to scale, with scale indicated.
4. Indicate field verified dimensions. Show relationship of products to adjacent work. Note coordination requirements.
5. Schematics and diagrams shall be logically arranged and presented in a clear, understandable manner with all items labeled.
6. Internal wiring diagrams: Provide internal wiring and elementary ladder diagrams for factory pre-wired equipment.
7. Control diagrams: Show relative positions of each component as a system diagram.

1.06 Product Data

- A. Provide product data such as manufacturer's brochures, catalog pages, illustrations, diagrams, tables, performance charts, and other material which describe appearance, size, attributes, code and standard compliance, ratings, and other product characteristics.
- B. Form
 1. Provide all critical information such as reference standards, performance characteristics, capacities, power requirements, wiring and piping diagrams, controls, component parts, finishes, dimensions, and required clearances.
 2. Submit only data which are pertinent. Mark each copy of manufacturer's standard printed data to identify products, models, options, and other data pertinent to project.
 3. Modify manufacturer's standard schematic drawings and diagrams and supplement standard data to provide specific information applicable to project. Delete information not applicable.
 4. Colors and Patterns: Unless color and pattern is specified for product, submit accurate color and pattern charts or samples illustrating manufacturer's full range for selection by the Engineer. Submit two hard copies only.

1.07 Design Data and Calculations

- A. Where required by specification sections, provide basic calculations, analyses, and data to support design decisions and demonstrate compliance with specified requirements. State assumptions and define parameters. Give general formulas and references. Provide sketches, as required, to illustrate design method and application.
- B. Arrange calculations and data in a logical manner, with suitable text to explain procedures and order.
- C. Indicate name, title, and telephone number of individual performing design and include professional seal of designer where applicable or required.

1.08 Manufacturer's Instructions

- A. Where required by specification sections, provide manufacturer's instructions for activities such as delivery, storage, assembly, installation, wiring, start-up, adjusting, and finishing.
- B. Indicate pertinent portions and identify conflicts between manufacturer's instructions and contract documents.
- C. Where appropriate, include preparation procedures; service connection requirements; critical ambient conditions; foundation requirements; special precautions; adjustment requirements; alignment procedures; leveling; purging; charging; lubrication; and cleaning prior to operation and/or Owner's acceptance.
- D. Installation (e.g., assembly, mounting, or wiring) and start-up instructions shall be submitted and available for review in the field prior to scheduled material or equipment installation.

1.09 Samples

- A. Submit samples to illustrate functional and aesthetic characteristics of products with all integral parts and attachment devices. Include full range of manufacturer's standard finishes, indicating colors, textures, and patterns for Engineer selection.
- B. Submission
Submit the number of samples specified in individual specification sections. One sample will be retained by the Engineer.
- C. Label with identification related to submittal transmittal form.

1.10 Manufacturer's Field Service Reports

- A. When an individual specification section requires services of manufacturer's field representative, submit report of observations, site decisions, and instructions given to installers.
- B. Form
 - 1. Present complete information in clear concise manner.
 - 2. Bind with titled cover in folder or binder.
- C. Report shall include:
 - 1. Time, location, conditions, and duration of activity;
 - 2. Names of persons performing and witnessing activity;
 - 3. Equipment used;
 - 4. Description of activity, data recorded, and results;
 - 5. Deficiencies found, corrective measures, and results of retesting; and
 - 6. Other pertinent data.
- D. Submit report within 30 days of construction site service visit.

1.11 Operation and Maintenance Data

- A. Where required by specification sections, provide operation and maintenance manuals.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION

ATTACHMENT A - SAMPLE SUBMITTAL TRANSMITTAL FORM

Attachment A

SAMPLE SUBMITTAL TRANSMITTAL FORM

PROJECT: _____
CONTRACT NUMBER: _____
SUBMITTAL NUMBER: _____ RESUBMITTAL: YES NO
DATE: _____ NUMBER OF COPIES SUBMITTED: _____
SUBMITTAL DESCRIPTION: _____

RELATED DESIGN DISCIPLINE (circle):

Civil	Landscape	Architectural	Structural
Mechanical	Electrical	Telecommunications	Security
Fire Protection	Controls	Other: _____	

ASSOCIATED SPECIFICATION SECTION NO: _____

REFERENCED DRAWING SHEET NO: _____

SUBCONTRACTOR/SUPPLIER/MANUFACTURER PROVIDING SUBMITTAL DATA:

Name: _____
Address: _____
Telephone Number: _____

CONTRACTOR:

Name: _____
Address: _____
Telephone Number: _____

CONTRACTOR'S CERTIFICATION:

The undersigned, as representative of the Contractor for the above project, submits the following and certifies that:

1. Submittal has been reviewed and it is complete and conforms to requirements of contract documents, except as noted.
2. Required dimensions have been field verified and are acceptable for installation of proposed products and construction of proposed work.
3. Required quantities for products and materials covered by this submittal have been verified as correct.
4. Fabrication processes and construction methods proposed in this submittal are acceptable for this project and will result in a complete, functional installation.
5. Submittal has been coordinated with other submittals and work and proposed products and construction will properly interface with other construction.

NAME OF CONTRACTOR REVIEWER: _____

SIGNATURE OF CONTRACTOR REVIEWER: _____

DATE: _____

SECTION 01500
CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 Work Included

This work includes providing temporary facilities and controls during the construction of the project.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.01 Electricity

Electricity for use by the Contractor during the construction of the project will be provided by the Owner. The Contractor shall provide such temporary systems necessary to convey the electricity to the work area from the point of supply.

Temporary power supply systems shall comply with all applicable codes.

3.02 Lighting

The Contractor shall provide lighting for construction activities. The Contractor shall provide fixtures, switches, conductors, and other equipment for a complete system. The lighting system shall meet the requirements of all applicable codes.

Electricity for lighting will be paid for as described in Section 3.01.

3.03 Heat, Ventilation

The Contractor shall provide supplemental heat and ventilation, as required, to maintain specified conditions for construction operations and to protect materials, equipment, and finishes from damage due to temperature or humidity.

The Contractor shall provide ventilation of enclosed areas to cure materials, to disperse humidity, and to prevent accumulations of dust, fumes, vapors, or gases.

The Contractor shall provide ventilation of enclosed areas, as necessary, to maintain safe working areas as required by applicable codes.

3.04 Water

The Owner will provide water for construction activities, at the location of existing water lines, faucets, and hydrants. The Contractor shall provide such piping extensions, as necessary, to deliver the water to the location(s) required for construction activities.

3.05 Barriers

The Contractor shall provide barriers to prevent entry to construction areas or hazardous areas.

3.06 Enclosures

The Contractor shall provide temporary weather tight enclosures of openings in exterior surfaces to provide acceptable working conditions, protection of materials from the elements, and to prevent entry of unauthorized persons.

3.07 Protection of Installed Work

The Contractor shall control vehicle and pedestrian traffic and/or provide temporary protective coverings, as required, to protect installed or uncompleted work from damage.

3.08 Cleaning

The Contractor shall maintain the construction area free of debris and waste material. Debris and waste material resulting from construction operations shall be properly disposed of by the Contractor.

The Contractor shall clean areas, as required, for proper execution of the project work.

3.09 Drinking Water

The Contractor shall furnish drinking water for their workers.

3.10 Sanitary Facilities

The Contractor shall provide sanitary facilities for their workers as required by laws and regulations. The Contractor shall service and clean the facilities.

END OF SECTION

SECTION 01600
MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 Work Included

Unless specifically indicated otherwise on the plans or in the contract documents, all materials and equipment shall be new and undamaged.

A. Materials and Equipment

1. Materials and equipment incorporated into the work shall conform to applicable specifications and standards. Materials and equipment shall comply with size, make, type, and quality specified or as specifically approved by the Engineer.
2. Manufactured and fabricated products shall be designed, fabricated, and assembled in accordance with the best engineering and shop practices. Like parts of duplicate units are to be manufactured to standard sizes and gauges to be interchangeable. Two or more items of the same kind shall be identical and manufactured by the same manufacturer. Products shall be suitable for the service conditions. Equipment capacities, sizes, and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing. Materials or equipment shall not be used for any purpose other than that for which it is designed or specified.

1.02 Substitutions

- A. Where specific materials and equipment items are identified in the specifications by manufacturer's name or model number, bids shall be based on the products of one of the manufacturers so named or added thereto by addendum during the bidding period.
- B. During the bidding period, all requests for substitutions will be given full consideration by the Engineer; and if approved, an addendum will be issued to incorporate the approved material or equipment into the contract documents.
- C. Requests for substitutions must be received by the Engineer in ample time, not later than ten days before the bid due date, so that any necessary addendum will be received by all prospective bidders before submission of the bids.
- D. After award of the contract, requests for substitutions will be considered only for one of the following reasons:
 1. Increased value to the Owner
 2. Decreased cost to the Owner
 3. Specified items not procurable
- E. Requests for substitutions after award of the contract shall be accompanied by manufacturer's data or other detailed descriptions of the proposed material or equipment.
- F. A request for a substitution constitutes a representation that the Contractor has investigated and determined the proposed product is equal to or superior in all respects to that specified.

- G. The Contractor shall coordinate the installation of an accepted substitution into the project to provide a complete and operable system. Modifications or re-work of other parts of the project resulting because of substitutes will be at the Contractor's expense.
- H. The Engineer shall be the judge of the acceptability of the proposed substitutions.

1.03 Manufacturer's Instructions

- A. When contract documents require that installation of work shall comply with the manufacturer's printed instructions, the Contractor shall obtain and distribute copies of such instructions to the parties involved in the installation, including two sets to the Engineer. The instructions shall be provided in advance of installation. The Contractor shall notify the Engineer in the event job conditions or the requirements of the plans or specifications conflict with the manufacturer's instructions.
- B. The Contractor shall handle, install, connect, clean, condition, and adjust products in accordance with such instructions and in conformity with the specified requirements.
- C. The Contractor shall perform work in accordance with manufacturer's instructions. No preparatory step or installation procedures shall be omitted unless specifically modified or exempted by contract documents.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.01 Transportation and Handling

- A. The Contractor shall arrange deliveries of products in accordance with construction schedules and coordinate them to avoid conflict with work and conditions at the site.
 - 1. Products shall be delivered in undamaged condition, in the manufacturer's original containers or packaging with identifying labels intact and legible.
 - 2. Immediately upon delivery, the Contractor shall inspect shipments to assure compliance with requirements of contract documents and approved submittals and that products are properly protected and undamaged.
- B. The Contractor shall provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.

3.02 Storage and Protection

- A. Products shall be stored in accordance with the manufacturer's instructions, with seals and labels intact and legible.
 - 1. Products subject to damage by the elements shall be stored in weather tight enclosures.
 - 2. Temperature and humidity shall be maintained within the ranges required by manufacturer's instructions.

- B. The Contractor shall arrange storage in a manner to provide easy access for inspection and make periodic inspections to assure that products are maintained under specified conditions and free from damage or deterioration.
- C. For products specified by naming one or more products or manufacturers and "or equal", the Contractor must submit a request for substitutions for any product or manufacturer not specifically named.

END OF SECTION

SECTION 01710
CLEANING

PART 1 - GENERAL

1.01 Work Included

Throughout the construction period, the Contractor shall maintain the buildings and site in a standard of cleanliness as described in this section.

1.02 Quality Assurance and Quality Control

The Contractor shall conduct daily inspections, and more often if necessary, to verify that the standards of cleanliness are being met.

The project area shall be maintained in compliance with pertinent requirements of governmental agencies having jurisdiction.

PART 2 - PRODUCTS

2.01 Cleaning Materials and Equipment

The Contractor shall provide all required personnel, equipment and materials needed to maintain the required standard of cleanliness. Only cleaning materials and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer, shall be used.

PART 3 - EXECUTION

3.01 Progress Cleaning

The Contractor shall retain all stored items in an orderly arrangement allowing maximum access, not impeding drainage or traffic, and providing the required protection of the materials. The Contractor shall not allow the accumulation of scrap, debris, waste material, and other items not required for construction of the project.

At least biweekly, and more often when necessary, the Contractor shall completely remove all scrap, debris, and waste material from the project site. Items to be removed shall be properly stored in accordance with fire codes and environmental regulations.

The Contractor shall inspect the project site daily, more often when necessary, and pick up all scrap, debris, and waste material. All such items shall be placed in the area(s) designated for their storage.

The site shall be maintained in a neat and orderly condition at all times.

Weekly, and more often if necessary, all interior surfaces shall be swept clean. "Clean" shall be interpreted for this purpose as free of dust and other material capable of being removed by use of reasonable effort and handheld broom.

As required, preparatory to installation of succeeding materials, the Contractor shall clean the structures or pertinent portions thereof to the degree of cleanliness recommended by the

manufacturer of the succeeding material, using the required equipment and materials to achieve the required cleanliness.

Following the installation of finish floor materials, the Contractor shall clean the finish floor daily (and more often if necessary) at all times while work is being performed in the space in which the finish materials have been installed. "Clean" for this purpose is interpreted as meaning free of foreign material which, in the opinion of the Engineer, may be injurious to the finish floor material.

3.02 Final Cleaning

Prior to completion of the work, the Contractor shall remove all tools, surplus materials, equipment, scrap, debris, and waste from the job site.

Exterior pavement areas shall be broomed clean. The resulting debris shall be completely removed.

The Contractor shall visually inspect all exterior structure surfaces and remove all traces of soil, waste material, smudges, and other foreign matter. All traces of splashed materials on adjacent surfaces shall be removed. If necessary to achieve a uniform degree of cleanliness, the entire surface of the exterior of the structure shall be hosed down and cleaned. In the event that stubborn stains are not removable with water, the Engineer may require light sandblasting or other cleaning at no additional cost to the Owner.

The Contractor shall inspect all interior surfaces and remove all traces of soils, waste material, smudges, and other foreign matter. Remove all traces of splashed materials from adjacent surfaces. The Contractor shall remove all paint droppings, spots, stains, and dirt from finished surfaces. Only cleaning materials and equipment specified for use on the surfaces to be cleaned shall be used.

The Contractor shall clean glass, inside and outside surfaces.

The Contractor shall polish and buff metal fixtures and accessories. The polish shall be as recommended by the manufacturer of the items being polished.

The final cleaning shall be scheduled as approved by the Engineer to enable the Owner to accept a completely clean project.

3.03 Cleaning During Owner's Occupancy

Where the Owner occupies a portion of the project, the portion being occupied shall be cleaned as provided for final cleaning. Once the area is accepted by the Owner, future cleaning will be the Owner's responsibility.

END OF SECTION

SECTION 01730
OPERATING AND MAINTENANCE DATA

PART 1 - GENERAL

1.01 Work Included

This work includes compiling product and equipment data and related information pertaining to the proper operation and maintenance of products and equipment provided under this contract.

PART 2 - PRODUCTS

2.01 Operation and Maintenance Material

Operation and maintenance material shall include the following:

- A. Names, addresses, and telephone numbers of Contractors, subcontractors and suppliers, including local sources of supplies or replacements.
- B. Catalog sheets, technical brochures, or other product data, describing the item. Delete inappropriate information.
- C. Supplement product data to show the relation of component parts and control and flow diagrams.
- D. Supplement the product data with a typed narrative sequence of instructions. Summarize manufacturer's instructions.
- E. Copies of warranties and bonds, where applicable.
- F. Additional information as required elsewhere in the specifications.

PART 3 - EXECUTION

3.01 Assembly and Submittal of Operation and Maintenance Materials

The Contractor shall compile and assemble four complete, bound sets of the required material to the Engineer.

END OF SECTION

SECTION 01770
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 Summary

This section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

- A. Inspection procedures.
- B. Warranties.
- C. Final cleaning.

1.02 Reference Sections

- A. Section 01340 – Submittals
- B. Section 01710 – Cleaning
- C. Section 01730 – Operation and Maintenance Data

1.03 Substantial Completion

A. Preliminary Procedures

Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Prepare and submit project record documents, operation and maintenance manuals, final completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
8. Complete startup testing of systems.
9. Submit test/adjust/balance records.

10. Terminate and remove temporary facilities from the project site, along with mockups, construction tools, and similar elements.
11. Advise Owner of changeover in heat and other utilities.
12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection

Submit a written request for inspection for Substantial Completion. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.04 Final Completion

A. Preliminary Procedures

Before requesting final inspection for determining date of final completion, complete the following:

1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
2. Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
5. Submit completed 'Final Payment Work Completion Check-off Form' – see attached.

B. Inspection

Submit a written request for final inspection for acceptance. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection

Request reinspection when the work identified in previous inspections as incomplete is completed or corrected.

1.05 List of Incomplete Items (Punch List)

A. Preparation

Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1.06 Warranties

A. Submittal Time

Submit written warranties on request of Engineer for designated portions of the work where commencement of warranties other than date of Substantial Completion is indicated.

B. Partial Occupancy

Submit properly executed warranties within 15 days of completion of designated portions of the work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8½- by 11-inch paper.

2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," project name, and name of Contractor.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.01 Materials

A. Cleaning Agents

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

PART 3 - EXECUTION

3.01 Final Cleaning

A. General

Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and federal and local environmental and antipollution regulations.

B. Cleaning

Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire project or for a portion of project:
 - a. Clean project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.
 - l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - i. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

- m. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - n. Replace parts subject to unusual operating conditions.
 - o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - q. Clean ducts, blowers, and coils if units were operated without filters during construction.
 - r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
 - s. Leave Project clean and ready for occupancy.
- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION

SECTION 03300
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 Work Included

This specification describes the requirements for forming, reinforcing, placing, and curing cast-in-place concrete.

1.02 References

- A. ASTM C94 – Standard Specification for Ready-Mixed Concrete
- B. ASTM A615 – Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
- C. ASTM A617 – Specification for Rail-Steel Deformed and Plain Bars for Concrete Reinforcement
- D. ASTM A617 – Specification for Axle-Steel Deformed and Plain Bars for Concrete Reinforcement
- E. ASTM A706 – Specification for Low-Alloy Steel Deformed Bars for Concrete Reinforcement
- F. ASTM D3405 – Standard Specification for Joint Sealants, Hot-Poured, for Concrete and Asphalt Pavements
- G. ASTM D1751 – Standard Specification for Performed Expansion Joint Fillers for Concrete Paving and Structural Construction (non extruding and resilient bituminous types)
- H. ASTM C309 – Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete

PART 2 - PRODUCTS

2.01 Materials

- A. Fiber Joint Filler
Fiber joint filler shall meet the requirement of ASTM D1751.
- B. Hot-Poured Joint Sealer
Poured joint sealer shall meet the requirements of ASTM D3405.
- C. Bar Reinforcement
Bar reinforcement shall meet the requirements of one of the following specifications.
 - 1. ASTM A615
 - 2. ASTM A616
 - 3. ASTM A617
 - 4. ASTM A706

D. Welded Wire Fabric Reinforcement

Welded steel smooth wire fabric for reinforcement of concrete shall conform to ASTM A185 and shall be of the size and configuration shown on the drawings.

E. Curing Compound

White membrane curing compound shall conform to the requirements of ASTM C309, Type 2, Class B Vehicle.

Transparent membrane curing compound shall conform to the requirements of ASTM C309, Type 1, Class B Vehicle, except that the compound shall be sufficiently transparent and free from permanent color to result in no pronounced change in color from that of the natural concrete.

2.02 Mixtures

Concrete shall be transit mixed in accordance with ASTM C94. Concrete mix designs shall be developed and verified by the concrete supplier to make certain that the specified requirements will be met. Mixes shall meet the following requirements:

Cement Content:	at least 5.5 sacks per yard of concrete
Consistency (slump):	0-3 inches ¹
28 day compressive strength:	at least 3,500 psi
Entrained air content:	5 percent to 8 percent ¹

PART 3 - EXECUTION

3.01 Formwork

The Contractor shall furnish and erect formwork, as necessary, to construct cast-in-place concrete. Formwork shall be of sufficient strength to resist deflection under the weight of fresh concrete. The Contractor shall design and provide temporary supports and falsework, as necessary, to support the formwork under pressure of the fresh concrete.

Forms used on surfaces that will be exposed when completed shall be free of holes, irregularities, and unevenness.

3.02 Reinforcement

Reinforcement shall be furnished in accordance with the shapes and dimensions required. Bending in the field shall not be done, except as necessary to make minor adjustments. Field bending shall be done cold.

¹For certain applications, it may be desirable to add admixtures to modify the consistency of the mix (such as for pumping). Any admixture must be approved in advance by the Engineer. The addition of an admixture may result in consistency and air content outside the limits specified.

Reinforcement shall be placed in the positions shown on the drawings and securely fastened in place to withstand pressure from fresh concrete. Reinforcement shall be free from dirt and reasonably free from excessive rust, loose mill scale, and other foreign material.

3.03 Embedded Items

A. Pipe Sleeves

Pipes sleeves shall be provided in walls and slabs at all proposed penetrations. The Contractor shall coordinate the location of the sleeves and shall be responsible for establishing the correct locations(s).

Pipe sleeves shall be firmly secured to the formwork or reinforcing so that they resist movement from the pressure of the fresh concrete.

B. Conduit

Conduit shall be installed within walls and slabs, as necessary, for proposed wiring or piping. The Contractor shall be responsible to coordinate the installation of conduit and determine its proper location. Conduit shall be secured to resist pressure from fresh concrete.

3.04 Placing Concrete

Forms and reinforcements shall be reviewed by the Engineer before the Contractor begins concrete placement. At the time of placement, the forms and reinforcement steel shall be clean and all sawdust, chips, and debris shall be removed from within the forms.

Concrete shall be promptly placed, with minimum handling to avoid segregation. Each pour shall be completed in a continuous operation.

Concrete shall be deposited in layers no greater than 12 inches and to as near the final position as possible. Concrete placement operations shall be conducted such that concrete is not dropped more than 5 feet. Chutes or tubes shall be used where necessary to limit the drop.

Fresh concrete shall be consolidated during and immediately after placement. Reinforced concrete shall be consolidated using high frequency, mechanical vibrators.

3.05 Temperature Limits

Concrete shall not be placed when the air temperature is 85 degrees Fahrenheit or higher.

Concrete shall not be placed when the air temperature during the cure time will be less than 25 degrees Fahrenheit. Concrete placed during periods when the air temperature is expected to fall below 35 degrees Fahrenheit at any time during the cure period shall be protected by insulation.

3.06 Construction and Expansion Joints

Joints in concrete structures shall be constructed only where shown on the drawings or authorized by the Engineer. The contact surface of concrete already in place shall be thoroughly cleaned of laitance and other objectionable material and thoroughly wetted before placing new concrete. The face edges of all joints shall be carefully finished to within $\frac{1}{8}$ -inch tolerance with respect to a true plane. Keys shall be formed with reasonable tolerances.

3.07 Finishing Concrete

The concrete shall be properly finished. Care shall be used to avoid over-vibration or over-finishing of the completed surface. Water may be applied to the surface of the concrete as an aid to finishing, only as approved by the Engineer. After finishing, curbs and sidewalks shall be textured in a transverse direction with a broom to produce uniform striations not over $\frac{1}{8}$ -inch in depth.

Slabs shall be finished by striking off the concrete surface with a screed accurately set to the required cross section. After striking, the surface shall be floated using a wood or magnesium float.

3.08 Curing

Immediately upon completion of finishing operations, concrete sidewalk, driveways, and similar exterior exposed surfaces shall be uniformly sprayed with white membrane curing compound at a rate of 1 gallon per 200 square feet. Exposed concrete walls and slabs for buildings shall be uniformly sprayed with 2 coats of clear curing compound each at a rate of 1 gallon per 300 square feet. Curing compound applied on vertical surfaces shall not run or sag.

3.09 Removal of Forms

Forms and falsework shall be removed by the Contractor when the concrete has attained sufficient strength. Falsework and temporary supports shall not be removed until the concrete has attained at least 70 percent of its anticipated minimum strength.

Forms shall not be removed for at least 15 hours after placement of concrete, except that removal of forms supported by falsework or temporary supports shall be governed by the strength requirement for their removal.

3.10 Finishing Hardened Concrete

All fins and irregular projections shall be removed from all surfaces, except from those which are not to be exposed or waterproofed. On all surfaces the following defects shall be corrected. Honeycomb areas, broken corners or edges, cavities produced by form ties, other defects, and all holes more than $\frac{3}{4}$ -inch in diameter and $\frac{3}{8}$ -inch in depth shall be thoroughly cleaned, and after having been kept saturated with water shall be carefully pointed and trued with mortar. The mortar shall be composed of cement and fine aggregate mixed in the proportions used in the grade of concrete being finished. Mortar used in pointing shall be a workable mix which has been prepared sufficiently in advance of use to permit it to attain its initial set. Consistency may be restored by reworking, but not by re-tempering. The cement shall be a mixture composed of $\frac{2}{3}$ of the same brand used in the concrete and $\frac{1}{3}$ white cement. The fine aggregate shall be from the same source as that used in the concrete. The mortar patches shall be properly cured.

When a rubbed surface finish is called for on the plans, the rubbing shall be started as soon as possible after the forms have been removed. Immediately before starting this work, the concrete shall be kept thoroughly saturated with water for a minimum period of one hour. Sufficient time shall have elapsed before the wetting down to allow the mortar used in the pointing of rod holes and defects to set, so it will not be damaged with water during the saturation period. Surfaces to be finished shall be rubbed with a medium-coarse carborundum stone. The surface shall not be painted or plastered with either neat cement or mortar. Rubbing shall be continued until all form marks, projections, and irregularities have been removed, all voids filled, and a uniform surface has been obtained. The paste produced by this rubbing shall be left in place at this time.

After all concrete above the surface being treated has been cast, the final finish shall be obtained by rubbing with a fine carborundum stone and water. This rubbing shall be continued until the entire surface is a smooth texture and uniform color.

After the final rubbing is completed and the surface has dried, it shall be rubbed with burlap to remove loose powder and shall be left free from all unsound patches, paste, powder and objectionable marks.

END OF SECTION

SECTION 13150
SWIMMING POOLS

PART 1 - GENERAL

1.01 Related Documents

A. Drawings and General Provisions of contract, including General Conditions and Division 1 of specifications sections, apply to work of this section.

B. The following Divisions contain requirements that relate to this section:

1. Section 16050 – Electrical

It is to be noted that certain specific references to electrical systems as they pertain to the pool process piping have been incorporated into this specification section and are required to be contracted and performed by the Pool Contractor via sub contract. They should not be construed as limitations to the work to be performed in this specification and should be used in conjunction with other relevant specification sections as they relate to Division 13150. They in no way supersede or override the individual specification section containing similar information as it pertains to other aspects of the project

C. Applicable requirements of the following specifications and codes apply to work of this section:

1. National Spa and Pool Institute (NSPI):

a. Minimum Standard for Public Swimming Pools

2. Model Aquatic Health Code (MAHC)

3. All local building and health codes

4. National Electrical Code (NEC)

5. National Sanitation Foundation (NSF): Seal of Approval Program

6. American Society for Testing and Materials (ASTM): Specifications referenced herein

7. Michigan Department of Public Health (MDEQ)

1.02 Description of Work

A. Work of this section includes, but is not necessarily limited to, the following:

1. Removal of the following equipment:

a. Existing sand filtration system and associated piping

b. Existing filtration pump and existing motor starter

c. Existing calcium hypo-chlorite feeder (salvage)

d. Existing feature pump, strainer and select associated piping

e. Existing slide pump and select associated piping

2. Provision of the following equipment:
 - a. New regenerative media filtration system and associated components
 - b. New filtration pump and strainer basket
 - c. New PVC piping as shown and required
 - d. New valves as shown and required
 - e. New feature pump, strainer, and associated piping
 - f. New slide pump, strainer and associated piping
 - g. Replace hypo-chlorite feeder
- B. Applicable Codes and Permits
 1. Department of Public Health permit to be paid for and obtained by the Architect.
An initial inspection fee may be required by the Department for this project. This fee (if applicable) will be paid by the Owner at such time as the Department identifies if it is required.
 2. County and Local Departments of Public Health permit(s) to be paid for and obtained by the Contractor (if applicable)
- C. Related Work not in this section, but included in the scope of work:
 1. Electrical work
All electrical work required under this section is to be provided by a licensed electrician. Electrical work is included under this scope of work.
 2. Cost for electrical work permits and inspections are to be included and furnished under this contract.

1.03 Quality Assurance

- A. Qualifications of Pool Contractor
Work of this section shall be performed by a Contractor who has a minimum of five projects with a proven seven-year record of competence and experience in the construction/modification of projects that include regenerative media filters of this size and complexity.
- B. Performance Criteria
Certain sections of the Specifications contain performance criteria rather than product descriptions. It shall be the obligation of the Pool Contractor to ensure that all criteria are satisfied and the burden or proof of conformance shall rest with the Pool Contractor. The Architect/Engineer shall require complete calculations, 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, and the Pool Contractor is cautioned that he will be required to bid and provide a finished product meeting all stated criteria and meeting or exceeding Department of Public Health requirements and the intent of these specifications.
- C. All work of this Section shall be performed by the qualified Pool Contractor or a Subcontractor to the qualified Pool Contractor unless otherwise pre-approved in writing by the Architect. A

representative of the Pool Contractor shall oversee any work subcontracted by the Pool Contractor at all times that subcontractor provides work at the site.

1.04 Testing/Field Quality Control

A. Testing and Flushing of Piping

Test to ensure that piping is free from leaks, defects, and obstructions.

1. The Contractor shall be responsible for discovering leaks and making necessary repairs:

a. Pressure piping and suction piping

After the piece is laid, the joints completed subject new lines to an air pressure test of not less than 20 pounds per square inch. Joints shall remain watertight under this pressure for a period of two hours.

b. Provide test results to the Architect/Engineer before covering pipes or filling of the pool.

2. Leaks shall be repaired and tested repeatedly until leakage or infiltration is approved.

B. Water Treatment

1. Water treatment is not included under this contract. Once the ne system is ready to start, Pool Contractor is to make Owner aware and the pool is to be filled by the Owner.

2. Once system has been started and commissioned it will be the Owner's responsibility to provide and balance chemicals in the pool prior to the inspection by the MDEQ.

1.05 Submittals

A. Submittals Required

1. Refer to General Conditions and Division 1 for number required.

2. Refer to this specification, Parts 2 and 3 for submittal required.

3. The Pool Contractor shall submit for approval to the Architect/Engineer complete lists, including descriptions, catalogs, cuts, etc., and where applicable dimensioned shop drawings of all material, fixtures and equipment to be furnished and installed under this specification. Submittals 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 drawing shall be obtained before proceeding with fabrication or procurement. Shop drawings shall not be "doctored" reproducible(s) of Architects/Engineers drawings. Shop drawings and submittals shall be provided complete and bound in a three-ring binder or as approved otherwise.

4. Early identify all "schedule critical" submittals for A/E review as not to impose hardship on schedule. Schedule is imperative. Pool must be open and ready for swimming by the public by Memorial Day weekend of 2018. NO EXCEPTIONS.

B. Product Data

Provide manufacturer's/installer's written installation instructions.

C. Certificates

Submit in duplicate a certificate from the manufacturer, properly attested, stating the material and construction comply with the requirements of the drawings and specifications. Certificates shall be furnished before the installation of the equipment.

D. Shop Drawings

1. Submit shop drawings as required by Parts 2 and 3 of this specification.
2. **The drawings accompanying this specification are essentially diagrammatic in nature and show the general arrangement of all equipment, piping, ductwork, services, etc. Because of the small scale of the drawings, it is not possible to show all offsets, fittings, and accessories that may be required. The Contractor shall carefully investigate the structural and finish conditions of all his work and shall arrange such work accordingly; furnishing 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 and room for replacement between all fittings.**

E. Schedule of Values

Provide A/E with Schedule of Values relevant to this project, , specification and accompanying set of drawings

F. Valve Charts

Submit two copies of valve charts for piping systems, consisting of isometric drawings, or piping layouts showing and identifying each valve and describing its function to the Architect/Engineer for approval.

1. Upon completion of the work, one copy of each chart sealed to rigid backboard with clear lacquer placed under plexi-glass, shall be hung in a conspicuous location in the equipment room

G. Operation and Maintenance Manuals

Submit to the Architect/Engineer three copies at substantial completion of the project.

H. Furnish to the Architect/Engineer the following:

1. Submittals
 - a. Water Treatment Analysis
 - b. Filter media
 - c. Valves (TUBV, butterfly, actuated, solenoid, pilot, brass, etc.)
 - d. Piping Materials (pipe, fittings, solvents, cements)
 - e. Pipe Hangers, Supports & Hardware
2. Test Results
 - a. Piping Pressure Testing
3. Guarantees/Warranties
 - a. As dictated by General Requirements

- b. Special Equipment Warranties (manufacturer extended)
- c. Future 3-Days of Instruction and Operational Checkout
- 4. Close Out Documents
 - a. Operation and Maintenance Manuals
 - b. As-Built Drawings
 - c. Owners Certification of Instruction

1.06 Delivery, Storage, and Handling

- A. Refer to General Conditions and Division 1 of the specifications for additional requirements.
- B. Deliver all materials and equipment to the work site in original packages, fully identified with manufacturer's label. Store off ground and protect from weather with a suitable covering.
- C. Protect plastic pipe from exposure to chemicals (aromatic hydrocarbons, halogenated hydrocarbons and other esters and keytones) that might attack the material. Protect all pipe from mechanical damage and long exposure to sunlight during storage.
- D. Deliver all material to jobsite in a timely manner as not to impede construction schedule.
- E. Store chemicals per manufacturer's written instructions.

1.07 Warranties

As dictated by General Requirements

1.08 Substitutions

- A. Refer to General Conditions and Division 1 -General Requirements.

B. Basis of Design

Specifications and drawings include specified manufacturers and specific model numbers. These are offered as the "basis of design." It is the intent of these specifications not to limit the competitive bidding of like products, but to establish the minimum and specific criteria by which all proposed product substitutions shall be designed to. Basis of design products have certain salient characteristics that the Owner has requested be included in any proposed substitutions forthcoming by bidding contractors. While variation from these products is allowed, Contractor shall be liable for the following:

- 1. Ensure that differing products conform to the design specifications established by the "basis of design" product.
- 2. Assume liability for extra costs related to other divisions that interface with division 13150 "basis of design" products that are substituted.
- 3. Costs of architect/consultant review time to insure products conform with the "basis of design" products.
- 4. Any other costs to the project that relate to the substitution of the "basis of design" products shall be borne by this Contractor

PART 2 - PRODUCTS

2.01 Recirculation Piping

- A. All pool recirculating plumbing and piping (unless noted otherwise) shall be rigid PVC Schedule 80 NSF Approved for potable water.
- B. The Pool Contractor shall remain responsible for all pool piping installed for the operation of the pool for the duration of the project.
- C. All piping shall be provided at the maximum height possible to prevent encroachment into spaces requiring clear head room (or as shown on drawings). Maintain maximum head height possible.
- D. Provide connections to existing plumbing as indicated using inside the fitting couplings and or standard socket couplings
- E. All PVC piping is to be solvent welded with commercial grade glue and primer rated for swimming pool use. NO PURPLE PRIMER IS ALLOWED.
- F. Provide plumbing configurations necessary to install new pumps into existing system.

2.02 Piping and Equipment Hardware

- A. Pipe clamps shall be zinc coated galvanized in construction
- B. All hangers, threaded rods, supports, bolts, nuts, washers, and anchors used are to be zinc coated galvanized in construction
- C. All uni-strut and uni-strut components, including spring nuts are to be zinc coated galvanized in construction.
- D. All valve related hardware (threaded rod/bolts, nuts, and washers) is to be stainless steel in construction.
- E. All piping shall be installed so pipe does not move when pump is turned on and off. All piping shall be plumb and level. All hangers shall be placed at valve locations. Make allowances in all piping for expansion and contraction. Maximum spacing for pipe hangers is as follows:

SCH 40 PVC Piping (inches)	Max. Spacing	Round Rod Support (inches min.)
¾ - 2	5'-0"	3/8
2½ - 4	6'-0"	½
6	6'-0"	¾
8 - 10	6'-0"	7/8
12 - 16	8'-0"	1

2.03 Valves

- A. Butterfly Valves
 - 1. All valves 2½ inches or larger are to be butterfly valves
 - 2. Acceptable Manufacturers:
 - a. Bray Series 30 Butterfly valves (basis of design)
 - b. Dominion by Neptune Benson

3. All valves 6 inches and smaller shall have lever operators.
4. All valves 8 inches and larger shall have gear operators with wheels.
All gear operated valves higher than 8 feet A.F.F. shall have stainless steel chain fall operators.
5. Valve construction is to be as follows:
 - a. Body Polyester coated cast iron
 - b. Disc Coated Ductile Iron
 - c. Stem 316 stainless steel
 - d. Seat EPDM food grade

B. Ball Valves

1. All valves 2 inches and smaller are to be true union ball valves.
2. Valves used in PVC pool plumbing are to be schedule 80 true union ball valves.
3. Valves used in copper plumbing are to be brass ball valves.

C. Check Valves

1. All check valves are to be double door check valves by Duo-Chek
 - a. Style G retained wafer
 - b. ASME Classes 125-2500
2. Valves to have the following minimum characteristics
 - a. Cast iron body with Al, Br. Plates
 - b. Buna-N seals
 - c. 316 stainless steel springs

2.04 High Rate Sand Filtration Equipment

A. Intent

1. Purpose of the bid is to purchase and have installed a complete filtration and recirculation system for the swimming pool. It is intended to limit the bidding to a style of product and company that has a proven history and record of performance.
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, 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. All bidders are required to bid on the named manufacturer in the BASE BID. See sections above for process by which to have alternate manufacturers approved as equals.

4. Alternates meeting the terms and conditions of the bidding documents will be acknowledged prior to bidding by addendum. No alternates will be considered after the bid.
5. For any and all alternates approved in accordance with the above conditions, state the amount to be DEDUCTED from the BASE BID if an alternate filtration system is being offered. No provision has been or will be made for ADDITIVE bids.

B. Quality Assurance

1. 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.
2. The specified filter system shall have had an NSF listing for at least three years prior to the project bid date.
3. 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.
4. The basis of design "EQUIPMENT SUPPLIER" shall be:
NEPTUNE-BENSON, INC.
COVENTRY, RHODE ISLAND
1-800-832-8002

C. Guarantee

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 System

1. The filter system under this section shall be a Defender Model #SP-33-48-732-R as detailed on the drawings.
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, flex tube filter elements, element assembly, bump mechanism, vacuum transfer system, sight glass, pressure gauge panel, inspection (viewing) window, valves, pressure transducers and RMF system controller.
4. All components and related subassemblies shall be factory assembled and tested prior to shipment.

E. Filter System Capacity

1. The filter system shall have a capacity of filtering 232,000 gallons in six hours at a rate of 645 gallons per minute.
2. The system shall consist of one defender filter tank with a total effective filter surface area

of 572 square feet and operate at a rate of 0.98 gallons per minute per square foot of filter area.

3. The filter area shall be provided as specified and as listed in NSF-Standard 50 to provide the specific filter rate. No modification, manipulation or interpretation of these values shall be permitted.
4. Filter system shall be designed to maximize square feet of filter area while minimizing operating weight. Systems that operate in excess of 11 pounds per square feet of filter area shall not be considered.

F. Filter Tanks

1. The filter tank shall not be less than 39¼ inches in diameter 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 ¼-inch thick. Bottom dished head shall be not less than ¼-inch thick. Top flat head shall be not less than 1¼-inch thick. All material shall be Type A-36 carbon steel. **NOTE:** Tanks constructed of alternate materials shall not be considered.
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- by 2½-inch channel legs ¼-inch thick. Twenty-four (24-), 27-, and 33-inch filters shall have three legs. Forty-one (41-), 49-, and 55-inch filters shall have four legs. The material shall be Type A-36 carbon steel. Bearing plates shall be 10- x 5- x ¼-inch type 304L stainless steel. Each bearing plate shall have two 5/8-inch drilled holes to secure to the floor with the ½- by 4½-inch stainless steel concrete anchors provided. The legs shall be designed with bolted connections to minimize overall tank height for shipping and access into the mechanical room. **OPTIONAL – REDUCED HEIGHT DEFENDER – WELDED LEGS – 12-INCH OAH REDUCTION REQUIRED FOR THIS PROJECT.**
4. The tank head shall be bolted to the shell with 7/8-inch diameter T304 stainless steel threaded rods and nuts, 9 inches on center around the tank perimeter.
5. Tank shall be equipped with a UL listed grounding lug.
6. Tank shall incorporate connections for 8-inch filter influent, 8-inch effluent, 3-inch drain; 1½-inch vacuum transfer piping, 6-inch viewing window, and lift shaft gland.
7. Tank shall include a 12-inch diameter access port with cover and hardware to facilitate cleaning of tube elements and interior inspection of filter.
8. Tank shall include brackets for mounting of RMF System controller, gauge panel, filter/regulator, vacuum transfer blower, and vacuum hose rack.
9. Tank shall include an integrally mounted hydraulic lifting device (davit). The davit assembly shall be designed to lift the filter head and include a pivot mechanism allowing the head to rotate 180 degrees, for access to the tube sheet. **NOTE:** Systems requiring additional devices for filter head removal will not be considered.

G. Flexsol 3000 Interior Lining

1. All interior surfaces shall be grit blasted to white metal condition with a 3 to 4 mil profile. Blasted surfaces shall be cleaned of all dust or blast residue. Lining shall be applied as soon as is practical on the same day blasting is done.
2. Flexsol 3000® shall be a urethane, 100 percent solid plural component lining. Hardness shall be 75 durometer on the shore D scale. Break tensile strength shall be 4,000 psi with elongation of less than 10 percent. Adhesion shall be greater than 2,500 psi.
3. Application of Flexsol 3000® lining shall be done by experienced applicators using a high pressure, high temperature plural component system. All wetted surfaces including flange faces, manway rings and manway covers shall be lined to 100 mils +/- 10 mils WFT.
4. Hardness shall be verified after curing to ASTM D 2240 standard.
5. Manufacturer shall submit for approval a sample piece of coated steel to determine flexibility, abrasion tolerance, and adhesion integrity.
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-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 to 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 coating process will begin. If prime has sat for over 24 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 to 8 mils.
4. Manufacturer is to supply min.16 ounces of high solids enamel touch-up paint.

I. Internal Components

1. The filter shall consist of flex tube elements, filter tube sheet, 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 T304 stainless steel spring, which acts a support structure for the braided filament.
3. The filter element tube sheet shall be fabricated of T304 stainless steel and provide both support for the top of the element assembly as well as water tight seal to prevent media from escaping the filter tank.
4. The lift shaft shall be fabricated from T304 stainless steel and provide the internal connection between the filter element tube sheet and the external bump mechanism.

5. The filter influent connection shall be fitted with a T304 stainless steel flow diversion assembly to eliminate disturbance to the filter elements during operation.
6. All stainless steel wetted fasteners shall be Type 304. **NOTE:** Systems utilizing rigid elements with replaceable filter septum shall not be considered.

J. Bump Mechanism

The bump mechanism shall include a pneumatically operated tire mounted externally on the filter tank head. The tire is alternately pressurized then depressurized causing the connected filter element assembly to move in a downward then upward fashion. This movement shall provide the means of dislodging the media and accumulated solids, which then recoat the filter element. **NOTE:** Systems that do not incorporate a pneumatic bump mechanism shall not be considered.

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 shall include a two-peak HP 115V single phase motor 60 Hz, cULus listed.
3. Vacuum shall be supplied with mating electrical connections pre-wired into RMF System controller for field final connection in a pre-assembled junction box.
4. Provide three 1½-inch SCH 80 PVC ball valves: for the vacuum drain line, the blower inlet, and the vacuum hose.
5. The manufacturer shall provide all necessary pipe, fittings, and hardware for field plumbing of the vacuum transfer system.
6. Provide 1½-inch vacuum hose with required fittings.
7. **NOTE:** Systems requiring external pre-coat mixing tanks, slurry feed, or other wet media transfer devices shall not be considered.

L. RMF System Controller

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 contain at least two microprocessors that will monitor all functions of the system.
3. The controller shall contain also control the operation of the following functions:
4. Standard Features
 - a. Bump cycle / manual or automatic; with or without security interlock for data logging
 - b. Pre-coating of the filter elements
 - c. Stopping and starting of the main recirculation pump
 - d. Opening and closing of pneumatically operated valving
 - e. Vacuum transfer system

- f. Heater cool down delay
 - g. Auxiliary contacts to interlock UV lamps, chemical control, or other equipment
 - h. Seven-inch Hi-Res LCD Screen with tactile feedback membrane
 - i. Last Bump™ and Bump-n-Go™ Features
 - j. Remote operation via browser or phone
 - k. Off-site real-time status
 - l. Email on change of condition
 - m. Data logging of process
 - n. Differential pressure monitoring and bump control
 - o. Automatic maintenance reminders
 - p. Exporting of process data logs to .csv Excel™ files
 - q. Modbus Communications for PLC connectivity
5. The controller panel shall display the following functions:
 - a. Filter status
 - b. Pre-coat status
 - c. Last bump
 - d. Recirculating pump status
 - e. Vacuum transfer pump status
 - f. System power
 - g. Low pressure alarm
 - h. Recirculating pump off alarm
 - i. Pressure differential
 - j. Flow rate (when interlocked with VFD)
 - k. Step-by-step animated graphics
 6. The controller enclosure shall be NEMA 4x/IP66 approved system.
 7. The RMF controller will provide signal power to the main recirculating pump motor starter. The unit is required to be a variable frequency drive (VFD) and is to be installed with control wiring by the Electrical Contractor.
 8. The RMF shall be 120V/230V, 1 phase, 20-amp rated and shall be UL labeled.
 9. **NOTE:** Systems without programmable, automatic bump/regeneration/filter modes shall not be considered.

M. Filter/Regulator

Each filter shall include a combination filter/regulator. The regulator shall be adjustable from 0 to 120 psi. Half-inch FPT. connections shall be provided for field installation of air lines.

N. Water Separator

One water separator with automatic drain shall be included for each air compressor supplied. Half-inch FPT. connections shall be provided for field installation of air lines.

O. Air Compressor

The system will require one air compressor per mechanical room. The following is the minimum requirement:

1. Twenty-gallon tank, 2 HP 115v, 1 phase, 15-amp, 5.2 CFM @ 90 psi, air pressure gauge, pressure relief valve, belt guard, pressure switch, air filter, tank drain.

P. Pneumatic Actuators

1. Each filter shall include pneumatic actuators for one effluent valve and one pre-coat valve.
2. The actuators shall be double acting with valve mounted drilling to ISO 5211.
3. The actuators shall include two ¼-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: Zinc phosphate coated steel, pre-compressed
 - h. Seals: NBR Nitrile rubber
 - i. Lubricant: MoS2
5. The actuators shall be factory lubricated to allow for 1,000,000 maneuvers.
6. The actuators shall have adjustable travel stops for both directions.
7. Working temperature limits: 4 degrees Fahrenheit to 186 degrees Fahrenheit. **NOTE:** Systems utilizing manually operated valves shall not be considered.
8. A tool kit for adjustment of pneumatic actuators shall be provided by the filter manufacturer.

Q. Solenoid Valves

1. Each filter shall include three single solenoid, four-way valves mounted on a multi-station manifold for operation of the pneumatic actuators and bump mechanism.
2. The solenoids 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.

R. Valves

1. All valves 3 to 12 inches shall be constructed with cast aluminum ASTM B179S12C 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 epoxy coated and with nylon coated ductile iron disc.
2. Valves shall be butterfly valves and shall be provided for the influent, effluent and pre-coat lines.

S. System Valves

1. Each defender filter shall include five system valves to facilitate system fill after media recharge, pre-coat/regeneration, influent, and effluent for filtering and media dump/drain valve.
2. The pre-coat/regeneration and effluent valves shall be butterfly type with pneumatic actuators per 2.15.
3. The system fill valve shall be butterfly type with lever operator and shall be the same size as the pre-coat/regeneration valve.
4. The influent valve shall be a wafer type check valve, ductile iron body with double disc, SS Type 304.
5. The dump/rinse valve shall be butterfly type, lever operated with SS extension to facilitate operation.

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 percent or more than 25 percent. Darcy permeability shall be between 1.2-1.85.
2. The media shall contain no more than 1 tenth of 1 percent (.001) of crystalline silicate.
3. The media shall be certified by the Manufacturer for use in the Defender Filter. The media shall be NSF Std. 50 listed.
4. The media shall be Aquaperl/Harborlite.
5. Each defender filter shall be furnished with six charges of perlite media.

U. Filter Cleaner

Each defender filter shall be furnished with one charge of chemicals for cleaning and degreasing of filter tube elements.

V. Warranties

1. Defender filter tanks with Flexsol 3000 shall carry a ten-year limited fully rated warranty as regularly offered by the tank manufacturer.
2. Internal components, including tube elements, shall carry a fully rated ten-year warranty.
3. Valve bodies shall carry a five-year, fully rated warranty.
4. Valve operators and system accessories including the RMF controller, quick exhaust valve, solenoid valve, and bump mechanisms shall carry one-year warranty as provided by the product manufacturer.
5. Unless otherwise specified, workmanship is to be guaranteed first class and carry a one-year warranty.

2.05 Recirculation Pumps

- A. Provide a recirculation pump for the swimming pool capable of providing 645 gallons per minute at 70 feet of total dynamic head (TDH).
- B. Basis of design for new pump is Marlow Series 4SPC, model #4SPC20EC self-priming pump
 1. 20 HP power pump, 208-volt, three-phase
 2. Pump and strainer body to be epoxy-coated
- C. Provide two stainless steel strainer baskets with new strainer.
- D. Pump is to be installed on a minimum 6-inch hi-poured concrete housekeeping pad and secured to the pad.
- E. Pump is to be fed from VFD.
- F. Provide pressure gauge on pressure side of pump and vacuum gauge on suction.

2.06 Recirculation Pump Variable Frequency Drive (VFD)

A. Basis of Design

1. Basis of Design for aquatic VFD is 'ECO-Flow C Series' by H2Flow model #EF-C- 46-12-2 with bypass panel and integrated aquatic controller.

a. H2Flow

Todd Lyons- National Sales Manager

Tel: 419.902.5537

todd.lyons@h2flow.net

- b. **If VFD option is not selected, contractor will be required to fit existing pool pump motor starter with a soft start. This soft start must be capable of accepting a 110 volt or 24-volt signal from the filter to initiate on/off functionality which will now be controlled by the Defender filter.**

- B. This specification defines the electrical, mechanical, environmental, agency and reliability requirements for three-phase, Variable Frequency Drives (VFD) as specified herein.
- C. Specific consideration is provided within this specification toward the unique and harsh environmental conditions that are typically present within a swimming pool equipment room. Suppliers should note the specific warranty requirements relative to the VFD's ability to withstand this environment. Chlorine and other chemical gasses are often present within the pool equipment room and NEMA 1 Drives will not be permitted under any circumstances.
- D. The specification also addresses the fact that users within this application field are often unfamiliar with VFD technology. A simple user interface to the VFD is essential. Setup and operation is required by intuitive menus that are written in a manner that the pool operator can understand.
- E. The Variable Frequency Drives and all components shall be designed, manufactured and tested in accordance with the latest applicable standards:
 - 1. Institute of Electrical and Electronic Engineers (IEEE)
IEEE 519-1992: Guide for harmonic content and control
 - 2. Underwriters Laboratories (UL508C: Power Conversion Equipment)
 - 3. National Electrical Manufacturer's Association (NEMA)
ICS 7.0: Industrial Controls & Systems for VFD
 - 4. IEC 61800 –3 Fulfill all EMC immunity requirements
- F. In case of any conflict between the requirements of this section and those of the listed documents, the requirements of this section shall take precedent.
- G. Qualifications:
 - 1. For the equipment specified, the VFD manufacturer shall be ISO 9001 certified.
 - 2. The supplier of this equipment shall have produced similar electrical equipment for a minimum period of 25 years. When requested by the Engineer, a list of applications with similar equipment shall be provided to demonstrate compliance with this requirement.
 - 3. Or equal substitutions are acceptable as follows. All products and services proposed are obligated to meet the detailed requirements of this specification. Any proposed exceptions must be clearly stated with the bid, clearly citing the reason for non-compliance, and the cost for providing a conforming product. Failure to provide a detailed list of proposed exceptions may cause a bid to be deemed non-responsive. The Engineer will be the sole determiner of the acceptability of a proposed exception. In no case will adjustments to the Contract Price be allowed later for conformance to the specifications. In the event that a product is later found to be non-compliant, the supplier will be obligated to make changes to the product so as to be compliant or alternatively supply a product that does comply with this specification. Furthermore, the supplier will be required to pay any reasonable charges incurred by any third parties to achieve a compliant result.
- H. General salient characteristics
 - 1. The VFD shall be rated at IP54 / NEMA 12 or higher. Exposed enclosure surfaces shall be corrosion resistant. VFDs installed within a supplementary panel shall not be vented or cooled from ambient external air. With the exception of the VFD's heatsink and water-

resistant heatsink fan, the VFD's electronics shall be fully sealed within the NEMA 12 or higher enclosure. So-called 'NEMA 12 or NEMA 4 Vented' enclosures are not permitted.

2. The VFD shall convert incoming fixed frequency three phase AC power into a variable voltage and variable frequency three phase output utilizing pulse width modulation. Advanced Space Vector Control will be utilized to reduce motor heating and provide precise control of the AC motor.
3. The VFD shall include a built-in Category C3 EMC Filter to mitigate harmonic distortions being transmitted back through the supply lines.
4. The VFD shall utilize DC capacitors to filter out bus ripple and provide smooth DC power to the transistor section.
5. The VFD shall utilize IGBT transistors to produce a pulse width modulated output. SCR output stages are not acceptable.
6. The VFD shall have a full load amp rating which exceeds or meets NEC Table 430-150. The VFD shall be able to provide full rated output current continuously, and shall be able to provide 110 percent of its variable torque rating and 150 percent of its constant torque rating for one minute.
7. The VFD shall utilize space vector control to reduce motor harmonics and torque ripple.
8. The VFD shall include the ability to reliably protect the pump from any of the following abnormal pump conditions: Run Dry/Loss of Prime; Cavitation; Dead head/Closed Valve; Worn impeller; Blocked Filter; Bearing Failure/Wear Detection. Protection using measured current (Amps), as a method for these protective features shall not be acceptable.
9. Auto Reset of certain fault conditions. If the VFD goes into a fault condition, it will make five attempts to automatically reset itself in a 20-minute period. If, after the five attempts, the fault still stands, the VFD will shut down the pump and display a fault message that will require a manual reset. If less than five faults occur in the 20 minutes, the 20-minute timer resets to zero.
10. The VFD shall provide a display with selectable readout of parameters, including: Speed; Torque; Electrical Power; Current; Output Voltage; Frequency; Heatsink Temperature; Motor Temperature; Run Time; Energy Consumed; Mains Time.
11. The VFD shall be capable of interfacing to an analog output signal from a Flow Transducer and be commissioned to achieve a 'constant flow' condition.
12. The VFD shall have remote run/stop capability, as well as, E-Stop integration.
13. The VFD shall include the capability for copying of settings when multiple similar pumps are involved. Settings established in one VFD shall be transferred to the others via a removable keypad.
14. Each VFD shall be provided with a bypass function in a separate bypass control panel. Bypass Controls shall be mounted in a NEMA 12 or higher rating enclosure. NEMA 12 'vented' panels are not acceptable.
15. Three Motor Contactors shall be included. Contactor A is required to be in series with the Line Power supply and the VFD, Contactor C is required to be in series with the VFD and the motor and Contactor B is required to bypass the VFD. In 'VFD' operation, contactors

- A and C are engaged, and contactor B is open. When in 'Bypass' mode, contactors A and C are open and contactor B is engaged.
- a. All contactors shall be appropriately rated for the supply voltage and pump motor specified and shall be in accordance with NEC standards.
 - b. Contactor B shall include an appropriately rated Motor Overload.
16. A Control Power Transformer shall be included to provide the necessary control voltage required to operate the Motor Contactors. The Bypass panel, shall include a door mounted three-position lockable selector switch. The switch shall be labeled: VFD-OFF-BYPASS. The switch is to require a key to move from one position to another. Two keys shall be provided to the customer. The bypass panel shall be manufactured in accordance with and approved to UL508.
17. Installations in locations where a Power Disconnect is not within 'line of sight' of the VFD Control Panel, or where deemed necessary by local electrical codes, a suitably rated circuit breaker disconnect or 'Knife' disconnect shall be included in the bypass control panel.
18. All applications shall require the inclusion of an appropriately rated line reactor. The line reactor shall be housed in an enclosure according to the manufacturer's instructions, taking careful note of the devices radiated heat and the chemical environment in which it may be installed.
19. All applications that will have a cable length between the VFD and the pump motor that exceeds 300 feet shall require the inclusion of an appropriately rated load reactor. When included, the load reactor shall be housed in an enclosure according to the manufacturer's instructions, taking careful note of the devices radiated heat and the chemical environment in which it may be installed.
- a. All installations that include existing motors with B (or worse) insulation shall also include load reactors
20. The VFD control panel shall include a lightning arrestor.
21. The VFD shall accept a supply voltage of -15percent/+10 percent of its stated supply rating.
22. The VFD shall be electronically lockable in order to prevent unauthorized or unintended program changes.
23. Motors to which the VFD is to be installed shall have a minimum insulation of "Class F".
24. Multiple motors with one VFD
- a. Pump A or Pump B for applications where a redundant pump is to be installed, the VFD control panel is required to include a Pump A/Pump B selector switch. The control panel shall be configured so that only pump A or pump B can be selected, i.e., both pumps must not be allowed to run simultaneously. This control is to be incorporated into the bypass panel configuration detailed in this specification section.
 - b. Pump A and Pump B for applications where two pumps are to be run simultaneously from a single VFD, the control panel shall be configured so that each pump is provided with an appropriately rated motor overload. The motor overload protection of the VFD shall not be relied on for protection of each individual motor. This control is to be incorporated into the bypass panel configuration detailed in this specification section.

I. User interface for initial programming and day-to-day operation

1. The VFD shall include a programmable Controller with an operator backlit LCD Graphical/Alpha/Numerical Display. The Controller shall comprise the following features:
 - a. Real time clock
 - b. Password protection
 - c. Hard-wired tamper protection feature
 - d. Custom software to control the VFD via a Modbus communication network
 - e. Automatic Flow Control
The Controller and VFD are to automatically adjust the pump's speed in order to compensate for a filter becoming dirty. The system is to maintain a minimum flow (GPM) required to meet state-mandated turnover rates. This unit is to be tied into the referenced flow meter.
 - f. Programmable speeds for daytime and nighttime turnover rates.
 - g. Non-volatile memory
All programmed parameters as well as the real-time clock settings shall be maintained in the event of a power outage.
 - h. Manual Backwash Control
Single button control that will ramp the pump's speed to a higher level for backwashing.
 - i. Programmable time duration for backwash speed
 - j. Automatic Backwashing
The controller shall accept an input from an automatic backwashing system. The controller's program shall be written so that such a signal will automatically initiate a higher speed for the pump until the signal is removed.
 - k. The controller shall be capable of interfacing to an analog output signal from a flow transducer and displaying measured flow in GPM.
 - l. Automatic reset of alarms caused by power brown outs/power loss
 - m. External input for seasonal/unoccupied speed

J. System Commissioning

1. Provide the services of a qualified manufacturer's employed Field Service Engineer to assist the customer the start-up and commissioning of the equipment specified under this section. Field service personnel shall reside within the state in which the specified equipment is being installed and be factory trained with periodic updates and have experience with the same model of VFD on the job site. Sales representatives will not be permitted to perform this work. The manufacturer's service representative shall provide technical direction and assistance to the customer in general assembly of the equipment, installation as specified in manufacturer's installation instructions, wiring, application dependent adjustments, and verification of proper VFD operation.

2. The manufacturer's service representative shall perform the following minimum work.
 - a. Inspection and final adjustments
 - b. Operational and functional checks of VFD
- K. Warranty of three years to commence from the date of start-up, not to exceed three months from the date of shipment. Warranty shall include all parts but not labor or travel. On-site warranty repairs or troubleshooting shall be billed on a time and cost basis. Supplier must provide written confirmation that on-site service can be provided within five hours of such a request.
 1. For the warranty period, the VFD manufacturer/supplier shall maintain a factory trained technical engineer within five hours travel distance from the customer's facility. Sales representatives shall not be permitted to provide technical support.
- L. Training
 1. The Field Service Engineer shall provide a training session for up to five customer's staff. Training and instruction time shall be in addition to that required for start-up service.
 2. The manufacturer's Field Service Engineer shall conduct the training.
 3. The training program shall consist of the following:
 - a. Instructions on the proper operation of the equipment.
 - b. Instructions on the proper maintenance of the equipment.

2.07 System Accessories

A. System Flow Meter

1. The flow sensor shall be a Georg Fischer Signet, blue cap model #2536 or equal.
2. Sensor shall be capable of sensing flow in either direction (bi-directional).
3. The flow sensor shall be insertion paddlewheel, with an electrical output signal proportional to flow velocity over a range of 0.3 to 20 feet per second. The output signal shall be an open-collector transistor pulse.
4. Signal transmission lengths shall be capable of distances up to 1,000 feet.
5. Sensor shall operate with a power input of 3.3 to 24 vdc, with a maximum current draw of < 20 mA.
6. The sensor shall utilize an installation fitting that is factory set to control proper flow sensor insertion depth, and orientate sensor to be parallel with fluid flow. Fitting to be a schedule 80 PVC clamp on saddle specifically designed so that flow meter insertion is at the proper depth for correct operation. Existing saddle is assumed to exist.
7. With a fully developed flow profile the sensor output shall be linear to ± 1 percent of full range, with a repeatability of ± 0.5 percent of full range, and supplied with a certificate traceable to NIST.
8. The sensor body materials shall be glass-filled polypropylene (black) or PVDF (natural).

9. The flow sensor shall be equipped with dual o-ring seals. The elastomeric seals shall be FPM-Viton® (standard) with optional EPDM or FFPM-Kalrez®.
10. Rotor pins shall be Titanium (standard for PP), Hastelloy-C or PVDF (standard for PVDF), with optional ceramic, Tantalum, or stainless steel.
11. Rotor material shall be black PVDF (standard for PP) or natural PVDF (standard for PVDF) with optional Tefzel® with or without Fluoraloy B® sleeve.
12. Sensor shall be wired into the new chemical controller for correct display of flow on the main screen without having to drive into the controller menus
13. Install with at least ten times the pipe diameter in distance upstream of the nearest pipe disturbance and four times downstream (in accordance with manufacturers written specifications).
14. Flow sensor is to be installed and integrated with new aquatic VFD to provide constant flow set at the MDEQ mandated recirculation rate for the facility

B. Anti-Vortex Assemblies

1. Provide and install an assembly at the termination of the suction side of the recirculation pump inside the existing surge tank that will prevent the formation of vortex's during normal pump operation that could cause pump cavitation.
2. Basis of design is model #AVPLATE8PVCKIT by Neptune Benson.

C. Chlorination System (not shown on drawings)

1. Owner has requested that the existing calcium hypo-chlorite 'Vantage' feeder be salvaged and re-installed on the new filtration and piping system.
 - a. Should the Contractor elect to go this route, include \$3,000 in your bid to contract re-installation of this equipment with Northwest Pools out of Toledo, Ohio.
 - b. All inlet connections for the delivery of the chlorine solution to the pool must be installed AFTER the influent line to the pool heater.
2. As an alternate to the re-installation of the Vantage system, contractor may elect to install an alternate calcium hypo-chlorite feeder with the following conditions:
 - a. Chemical must be sold to the City of Ann Arbor at a rate of \$2.22 per pound plus the cost of delivery
 - b. Chemical price must be held for three years from time of installation
 - c. Final acceptance of an alternate calcium hypo-chlorite feeder is at the discretion of the City of Ann Arbor.

D. Basis of Design Alternate Calcium Hypo-Chlorite Feeder (not shown on drawings)

1. General Description

- a. The system shall be designed to feed low concentrations of calcium hypochlorite in solution intermittently or continuously as required for pool and spa applications. The system shall be a single pre-assembled, package unit with a welded aluminum frame consisting of chlorinator, electrical box, centrifugal pump, and balance tank for ease of installation and operation. The system shall be the PowerBase Model 3150 by Axiall

Corporation. Only Accu-Tab® Blue SI calcium hypochlorite tablets by Axiall Corporation shall be used, with the patented solution modifier and the patented blue colorant added for safety (to help prevent accidental mixing with other chemicals).

- b. The base proposal requires furnishing equipment as specified herein, though substitutions will be considered. The bidder is cautioned that substitutions must meet the quality and operational requirements of each feature specified in Section 2 below. Batch systems with pressure mixing components producing chlorine concentrations exceeding the limits of the specifications will not be considered.
- c. Any system offered shall use an NSF Standard 50 listed erosion feeder and tablet combination, and shall be capable of meeting all requirements of the Health Department having jurisdiction over the installation.

2. System Features

- a. A maximum chlorine solution level of 0.05 percent (500 ppm) shall be maintained to prevent calcification in system components. Systems producing chlorine concentrations higher than 0.05 percent shall not be acceptable.
- b. Delivery shall be by erosion feed technology to control accurate and consistent concentration limits in the chlorine treatment solution. Soaking type, spray and/or vortex technology systems shall not be acceptable.
- c. The chlorinator shall automatically and continuously feed a limited quantity of chlorine in solution as needed; when the system is not running, no more chlorine than that amount which can be fed in one minute or less shall be left in the tank to prevent dilution. Batch systems preparing excess quantities of solution for delivery over an extended period shall not be acceptable.
- d. A centrifugal pump wired to the system electrical box shall feed freshly mixed chlorine treatment solution only as required for maximum efficiency. Batch systems requiring the use of a metering pump or pumps to feed pre-prepared standing solution shall not be acceptable.
- e. All piping in the chlorinator unit shall be Schedule 40 PVC. Systems with flexible tubing shall not be acceptable.

3. System Components

- a. Tablet Chlorinator
Accu-Tab® chlorinators by Axiall Corporation are designed exclusively for Accu-Tab® Blue SI calcium hypochlorite tablets by Axiall Corporation. Tablets are placed on a sieve plate inside the chlorinator; as water flows across the sieve plate, the tablets erode at a rate proportional to the flow rate.
- b. Inlet Water Supply Connection is 2-inch FNPT (water supply of 60 GPM required)
- c. Inlet Solenoid Valve
Opens and closes on command when the system receives a signal. 110 VAC required.
- d. Flow Meter
A rotameter (flow-through) flow meter, measuring the flow of the water-dissolving stream to the chlorinator.

- e. Flow Control Valve
PVC gate valve mounted in line with the flow meter allows operator to adjust flow of water-dissolving stream.
 - f. Solution Tank capable of holding 22 US gallons.
 - g. Primary Solution Tank Level Control
Made from Schedule 80 PVC and 316L stainless steel, this 1-inch float valve meters the tablet by-pass flow. The by-pass stream balances the variation in the water-dissolving stream. The float valve opens or closes to maintain the pump rate as it is manually throttled.
 - h. Secondary High-Level Solution Tank Control
Prevents the solution tank from overflowing. High level: when activated, a switch opens the circuit to the solenoid valve, causing the valve to close.
 - i. Solution Delivery Pump
Delivers chlorinated solution to the return line. A single-stage centrifugal pump is provided for systems with pressures up to 20 PSIG. (For systems requiring a discharge pressures greater than 20 PSIG, a custom selected pump shall be utilized.)
 - j. Solution Injection Pump Air Bleed
Used to prime the pump at start-up, or at any time, if necessary.
 - k. Primary Backflow Prevention
A PVC-spring-assisted check valve prevents reverse flow of water into the system.
 - l. Discharge Control Valve (manual)
Used to balance system output water flow with system input water flow.
 - m. Outlet Connection: Two-inch FNPT
 - n. Nema 4X Electrical Enclosure.
 - o. Aluminum Frame, Type 6061-T.
4. Electrical Requirements
Two electrical circuits are required for operation: one 110v 20-amp power, and one 110v control circuit from a pool controller.
5. Warranty
The manufacturer shall guarantee in writing that this unit, if operated in accordance with written instructions given and accepted by the Owner, will perform in complete accord with the specifications. All components will be warranted against manufacturers' defects for 12 months from its original installation date or 13 months from its Axiall Corporation shipment date, whichever first occurs.

2.08 Additional Work Not Shown on Plans- Feature Pump Pit Modifications

A. Description of Work

- 1. As part of this project, the Owner requires certain items to be included in the bid that are not shown on the plans. These items are detailed in photo markups and cut sheets included in the appendix.

- B. Re-plumb a portion of the feature pit
1. Materials selected are in an attempt to work with existing influent 6-inch Schedule 80 PVC line that has a double 90-degree elbow installed. It may be necessary to dig down next to the pit and install a coupling on this line and re-core it through the wall of the tank. This should be anticipated, but the intent is to begin at the flange as indicated in the photos. Provide demolition as required to install the following materials
- C. Provide and install the following materials:
1. New 6-inch strainer influent isolation valve. Specification Section 2.2 holds
 - a. All valve hardware used is to be stainless steel (nuts, washers, bolts/studs, etc.)
 2. New 6- by 6-inch fiberglass strainer with two stainless steel baskets by Neptune Benson Model #1500NBFG06R1 with basket Model #NBBSK08EP (quantity of two).
 - a. All hardware used is to be stainless steel (nuts, washers, bolts/studs, etc.)
 3. Provide new 6-inch Schedule 80 PVC plumbing to influent side of new pump
 4. Provide fiberglass eccentric reducer from new piping to face of pump. Neptune Benson 6- by 5-inch Model #15006X5ECSFG
 - a. All hardware used is to be stainless steel (nuts, washers, bolts/studs, etc.)
 5. Provide and install new recirculation pump for features by Bell & Gossett. Pump to be installed on a concrete pad (if required) to hit centerline of existing plumbing. Provide new feeders, flexible/watertight conduits and connectors from existing 60-amp safety switch located in pit
 - a. Series e-1531, model 4BD (see attached submittal)
 - b. Capable of 750 GPM at 60 feet of TDH
 - c. 15 HP, 208-volt, three-phase motor. Use high efficiency TEFC motors where possible
 - d. Standard mechanical seal
 - e. Epoxy coated internal cast iron components
 - f. All hardware used is to be stainless steel (nuts, washers, bolts/studs, etc.)
 - g. Install vacuum gauge on suction side of pump
 - h. Install pressure gauge on pressure side of pump
 - i. Bond new pump with existing #8 solid bonding wire in pit
 6. New 6-inch pump throttle valve. Specification Section 2.2 holds
 - a. All valve hardware used is to be stainless steel (nuts, washers, bolts/studs, etc.)
 7. Existing wood support is to be removed. Install stainless steel uni-strut stanchions with stainless steel clams (quantity of two) to existing manifold for support

2.09 Additional Work Not Shown on Plans-Slide Pump Modifications

A. Description of Work

As part of this project, the Owner requires certain items to be included in the bid that are not shown on the plans. These items are detailed in photo markups and cut sheets included in the appendix.

B. Re-plumb a portion of the feature pit

It is the intent to re-plumb the suction side of the slide pump back to where it goes vertical and enters the pool. This re-plumbing is in order to accommodate the new strainer the Owner has asked to be installed. Provide all demolition required to facilitate installation of the specified equipment in this area.

C. Provide and install the following materials:

1. New 6-inch check valve before strainer isolation to hold water in the line to help with pump priming. Specification Section 2.3 holds. This valve can be installed as close to the vertical section of suction pipe as needed.
 - a. All valve hardware used is to be stainless steel (nuts, washers, bolts/studs, etc.).
2. New 6-inch strainer influent isolation valve. Specification Section 2.3 holds.
 - a. All valve hardware used is to be stainless steel (nuts, washers, bolts/studs, etc.).
3. New 6- by 6-inch fiberglass strainer with two stainless steel baskets by Neptune Benson model #1500NBFG06R1 with basket model #NBBSK08EP (quantity of two).
 - a. All hardware used is to be stainless steel (nuts, washers, bolts/studs, etc.).
4. Provide new 6-inch schedule 80 PVC plumbing to influent side of new pump.
5. Provide fiberglass eccentric reducer from new piping to face of pump. Neptune Benson 6-by 4-inch model #15006X4ECSFG.
 - a. All hardware used is to be stainless steel (nuts, washers, bolts/studs, etc.).
6. Provide and install new recirculation pump for slide by Bell & Gossett. Pump to be installed on a concrete pad (if required) to hit centerline of existing plumbing. Provide new feeders, flexible/watertight conduits and connectors from existing deck mounted junction box located adjacent to pump
 - a. Series e-1531, model 3BD (see attached submittal)
 - b. Capable of 480 GPM at 60 feet of TDH
 - c. 10 HP, 208-volt, three-phase motor. Use high efficiency TEFC motors where possible.
 - d. Standard mechanical seal
 - e. Epoxy-coated internal cast iron components
 - f. All hardware used is to be stainless steel (nuts, washers, bolts/studs, etc.)
 - g. Install vacuum gauge on suction side of pump
 - h. Install pressure gauge on pressure side of pump

- i. Bond new pump with existing #8 solid bonding wire in pit
- 7. Provide fiberglass concentric reducer from new pump to discharge piping. Neptune Benson 6- by 3-inch Model #15006X3CNSFG
 - a. All hardware used is to be stainless steel (nuts, washers, bolts/studs, etc.).
- 8. New 6-inch pump throttle valve. Specification Section 2.3 holds.
 - a. All valve hardware used is to be stainless steel (nuts, washers, bolts/studs, etc.).

PART 3 - EXECUTION

Not Applicable

END OF SECTION

SECTION 15050
PLUMBING

PART 1 - GENERAL

1.01 Work Included

This work includes furnishing new piping and accessories as shown on the drawings as necessary for a complete and operational system.

1.02 Submittals

A. Product Data

The Contractor shall submit a list of materials proposed to be provided for this work. The list shall include the name of the supplier, catalog number, model number, size, style, and such other information required to identify each item. Catalog cuts or copies of manufacturer's specifications and drawings shall be submitted for each item.

B. Operation and Maintenance Manuals

The Contractor shall compile and submit operation and maintenance manuals for all equipment or systems constructed under this section.

1.03 Quality Assurance and Quality Control

Use sufficient journeyman plumbers and competent supervisors in execution of this portion of the work to ensure proper and adequate installation throughout. In the acceptance or rejection of installed plumbing, no allowance will be made for lack of skill on the part of workmen.

1.04 Product Handling

Use all means necessary to protect the materials of this section before, during, and after installation and to protect the work and materials of all other trades.

In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 Materials

Pipe, valves, and accessories shall meet the requirements of Section 13150 – Swimming Pools.

PART 3 - EXECUTION

3.01 Inspection

Examine the areas and conditions under which work of this section will be installed. Correct conditions detrimental to the proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 Plumbing System Layout

Lay out the plumbing system in careful coordination with the drawings, determining proper elevations for all components of the system and using only the minimum number of bends to produce a satisfactorily functioning system. Follow the general layout shown on the drawings in all cases, except where other work may interfere.

3.03 Installation, General

Do not cut into or reduce the size of any load-carrying member without the prior approval of the Engineer. Install all pipes to clear all beams and obstructions and in accordance with the following:

- A. Install all piping promptly, capping or plugging all open ends.
- B. Install all piping generally level and plumb, free from traps, and in a manner to conserve space for other work.
- C. Firmly anchor all pipes into position.
- D. Provide uniform pitch of at least ¼-inch per foot for all horizontal waste and drain piping within the building.
- E. Inspect each piece of pipe, coupling, fittings, and equipment for defects and obstructions. Promptly remove all defective material from the site.

3.04 Joints and Connections

Properly ream all cut pipe.

3.05 Closing in Uninspected Work

Do not cover up or enclose work until it has been properly and completely inspected and approved. Should any of the work be covered up or enclosed prior to all required inspections and approvals, uncover the work as required and, after it has been completely inspected and approved, make all repairs and replacements with such materials and workmanship as are necessary for the approval of the Engineer and at no additional cost to the Owner.

3.06 Testing

Furnish all test pumps, gauges, equipment, and personnel required, and test, as necessary, to demonstrate the integrity of the finished installation to the approval of all pertinent authorities and the Engineer.

A. Drain and Waste

Unless otherwise directed, plug all openings and fill with water to a height equal to the lowest vent. Allow to stand one hour or longer, as required. Repair leaks as directed and then re-test.

B. Pressure Lines

Test and make tight at 150 psi water gauge. Retain for four hours; repair all leaking joints as directed and then re-test.

C. Valves

Test all valve bonnets for tightness. Test operate all valves, at least once, from closed-to-open-

to-closed positions while valve is under pressure. Test all automatic valves for proper operation at the settings indicated. Test pressure relief valves at least three times.

D. Other

Test all piping specialties for proper operation. Test all air vent points to ensure that air has been vented.

END OF SECTION

SECTION 15190
MECHANICAL IDENTIFICATION

PART 1 - GENERAL

1.01 Work Included

This work includes the labeling and identification of mechanical systems and equipment, including:

- A. Equipment nameplates
- B. Access panel markers
- C. Pipe labels
- D. Valve tags
- E. Valve schedules
- F. Warning tags

1.02 Submittals

The Contractor shall submit samples or illustrations showing proposed nameplates, markers, labels, and tags. Proposed colors of both the background and the legend shall be shown.

Schedule(s) showing construction material of proposed markers, labels, and tags shall be provided to the Engineer for review. A schedule shall be provided showing the exact legend proposed and the overall size of the marker, label, or tag.

Copies of the valve schedule, indicating tag number, valve type, valve size, and normal position shall be provided to the Engineer for review.

1.03 Coordination

The Contractor shall coordinate the identification of devices, equipment, and piping with their painting and labeling. The Contractor shall coordinate the installation of labels, tags, markers, and signs.

PART 2 - PRODUCTS

2.01 Equipment Identification Devices

A. Equipment Nameplates

Each piece of manufactured equipment shall have a permanently attached metal nameplate, with data engraved or stamped to indicate the following:

1. Manufacturer name
2. Model number
3. Serial number
4. Capacity

5. Operating power characteristics
6. Speed
7. Other essential data

B. Equipment Markers

Each piece of equipment (such as pumps, process equipment units, etc.) shall be labeled with an engraved, laminated plastic marker, attached permanently to or adjacent to it. Names used for equipment identification shall match those shown on the contract drawings. Normally, markers shall be 4½ inches by 6 inches.

C. Access Panel and Door Markers

Control panel doors and access panels shall be labeled with engraved, laminated plastic markers to provide identification. Markers shall be attached by permanent adhesive or self-tapping stainless steel screws.

2.02 Piping Identification

A. Painting

Piping is not to be painted for color-coding.

B. Pipe Identification

Piping shall be labeled to show its service and direction of flow. Piping may be labeled by stenciling in a contrasting color, or by using pre-printed color-coded adhesive labels.

If used, adhesive labels must be suitable for adhering to the particular pipe material and temperature/humidity conditions.

Labeling for piping over 6 inches in diameter shall be 1½ inches high, minimum. Labeling for smaller piping shall be at least ½-inch high.

2.03 Valve Identification

A. Valve Tags

Valve tags shall be stamped or engraved with ½-inch numbers. Tags shall be 0.032 inches thick brass, with a 5/32-inch diameter hole for fastener. Tags shall be 2 inches in diameter; letters and numbers shall be black. Tags shall be fastened to valves by a brass beaded chain.

B. Valve Schedule

A valve schedule shall be provided for each piping system, for each area. The schedule shall show the valve number, system, location, and normal position. The schedule shall be wall mounted in a glazed, hardwood display frame.

PART 3 - EXECUTION

3.01 General

Identification requirements described in this section are for applications referenced in other sections. The Contractor shall coordinate furnishing and installation of equipment and piping with their identification.

3.02 Equipment Identification

Include signs or markers to identify the following general categories of equipment:

- A. Controls and operating valves
- B. Meters
- C. Gauges
- D. Pumps
- E. Compressors
- F. Other motor driven equipment
- G. HVAC equipment
- H. Filters
- I. Control panels
- J. Water treatment equipment/systems

Signs or markers shall not be obscured by other equipment or obstacles when viewed from normal walkways or aisles.

3.03 Piping Identification

Piping shall be labeled by stenciling or adhesive markers to identify its service and direction of flow. Labeling shall be provided at intervals not exceeding 25 feet, and adjacent to valves and equipment. Labeling shall be located so it is not obstructed from view by other equipment when viewed from normal walkways or access ways.

3.04 Valve Identification

Valve identification tags shall be installed on all valves and control devices.

A valve schedule shall be mounted on the wall of each room or area where valves are located, in a glazed frame.

END OF SECTION

SECTION 16050
ELECTRICAL

PART 1 - GENERAL

1.01 Work Included

This work includes the removal and replacement of wiring, switchgear, and electrical systems which provide power and control of existing equipment which is to be replaced by new equipment or systems. All work shall comply with applicable codes and standards. All work referred for a complete and operable system are to be provided.

1.02 Submittals

A. Project Data

The Contractor shall submit, for the Engineer's review, a list of materials and equipment prepared to be furnished and installed. Manufacturer's specifications and catalog cuts shall be provided, as required, to demonstrate compliance with the specified requirements.

B. Record Drawings

The Contractor shall maintain an accurate record of the actual locations, sizes, and components installed. A set of reproducible record drawings shall be provided to the Engineer at the completion of the project.

C. Operation and Maintenance Material

The Contractor shall collect operation and maintenance data for all equipment furnished and installed. As-constructed wiring diagrams shall be included. Four complete sets of this data shall be provided to the Engineer.

1.03 Quality Assurance and Quality Control

A. The Contractor shall use only trained and qualified workers.

B. All work shall be performed or installed in strict accordance with all applicable rules, regulations and codes of local, state and federal governments, or other authorities having lawful jurisdiction, and each Contractor and subcontractor shall be responsible for such compliance.

All electrical work and equipment shall conform to the requirements of the current issue of the National Electric Code, and shall bear the label of inspection and approval of the Underwriter's Laboratories.

1.04 Permits, Inspection, Fees

The Contractor shall obtain the necessary permits and pay required permit and inspection fees. The Contractor shall arrange for required inspections.

1.05 Warranties

The Contractor shall guarantee all work installed or furnished under this contract to be free from defects in materials and workmanship for a period of one year following substantial completion of the project.

1.06 Coordination

The Contractor shall coordinate electrical work with work of other trades.

Where equipment is provided by other trades that is to be connected by the Electrical Contractor, the Contractor shall coordinate the work of each trade.

PART 2 - PRODUCTS

2.01 Conduit

Conduit 2 inches and smaller, which is concealed in walls or ceiling spaces, shall be Electrical Metallic Tubing.

Conduit run exposed and conduit larger than 2 inches shall be hot-dip galvanized, rigid heavywall type, unless otherwise noted. Minimum size of conduit shall be ¾-inch, unless otherwise noted.

Conduit run in floor, underfloor, or underground on exterior of building shall be rigid, non-metallic, PVC conduit, equal to Carlon Type 40, unless otherwise noted. Provide grounding conductor in each plastic conduit in accordance with National Electrical Code.

2.02 Wire and Cable

All wire and cable shall conform to the latest requirement of the current edition of the NEC and shall meet all ASTM Specifications. Wire and cable shall be new; shall have size, grade or insulation voltage and manufacturer's name permanently marked on outer covering at regular intervals; and shall be delivered in complete coils or reels with identifying size and insulation tags.

All conductors shall be stranded, soft-drawn copper.

All other wiring, unless otherwise noted, shall be Type USE, THWN, or THHN, unless a higher temperature wire is required to feed lighting fixtures, high temperatures, cutouts, etc.

2.03 Contactors

Provide and install all required fusible or non-fusible contactors shown on the drawings. Unless otherwise noted, all contactors shall be in a NEMA 1 enclosure when mounted indoors, or a NEMA 3R enclosure when mounted outdoors. Contactors shall have control fusing and hand-off-auto switches in cover.

Contactors shall be Square D, ITE, Westinghouse, General Electric or Cutler Hammer.

2.04 Fuses

All fuses shall be dual element cartridge type and shall have a minimum short circuit rating of 100,000 rms amps. Fuses shall be Bussman "Fusetron".

Fuses for all circuits, motors and other equipment shall be selected in ratings in accordance with the National Electrical Code to provide a coordinated system of over-current protection. Thus, in case of a fault or harmful overload, only the fuses nearest the fault or overload equipment shall

open. Fuses selected for branch circuit protection of motors with other thermal overload protection shall not be rated at greater than 150 percent of full load motor current.

2.05 Wiring Devices

All lighting switches shall be 20-amp, quiet operation specification grade, as manufactured by Pass and Seymour, Hubbell, Bryant, or Arrow-Hart and Hegemen; equal to Pass and Seymour 20 AC series, suitable for 277-volt operation.

All duplex receptacles shall be 20-amp, 125-volt, specification grade as manufactured by Pass and Seymour, Hubbell or Arrow-Hart and Hegemen; equal to Catalog No. 5253 Pass and Seymour.

Floor boxes shall be cast, watertight, adjustable, gang type, installed level with finished floor surface, and shall include finishes, service fittings, and accessories as herein specified or shown on the drawings. Boxes shall be as manufactured by Russell & Stroll, Steel City, Lew or Walker.

Weatherproof duplex receptacles shall be Catalog No. 5253 receptacle with Pass and Seymour Catalog No. 4500 cover.

All switch and receptacle plates shall be 0.040 stainless steel; 97,000 series as manufactured by Pass and Seymour, Hubbell, Bryant or Arrow-Hart and Hegemen.

Absolutely no despard switches shall be used, unless otherwise specified or unless necessary due to building construction; and then only if specifically approved by the Engineer.

PART 3 - EXECUTION

3.01 Cutting and Patching

The Electrical Contractor shall "build in" his work and shall be responsible for holding his work in place while concrete is being poured and while walls are being laid. At the discretion of the Engineer, cutting and patching of work in place shall be done by the Contractor whose work is impaired, but the cost of such work shall be paid for by the Electrical Contractor.

All openings in walls, ceilings, or floors made by the Electrical Contractor shall be neatly patched by him after other work is done.

3.02 Verification of Conditions

All measurement necessary for the proper installation of materials or apparatus shall be taken in the field. The Contractor will be held responsible for the correct fit of work installed.

3.03 Temporary Lighting and Power

The Electrical Contractor shall provide, install and maintain all facilities required for temporary lighting and power.

Cost of current consumed will be paid by the Owner.

The Electrical Contractor shall perform his work in accordance with any applicable safety laws, rules or regulations of the State of Michigan.

3.04 Installation of Equipment

Equipment shall be installed and wired in accordance with the manufacturers drawings.

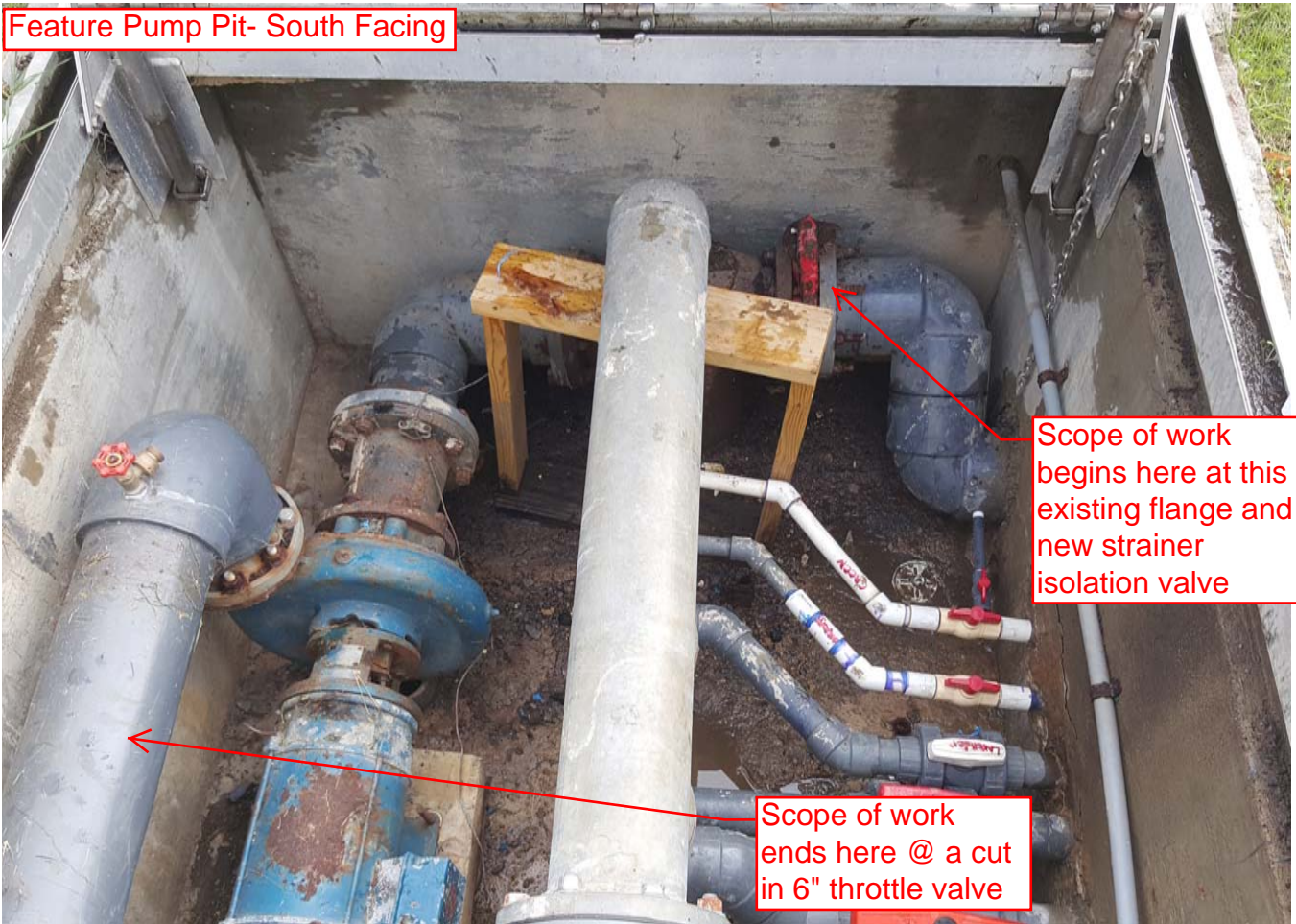
3.05 Installation of Conductors

Conductors shall be color coded for branch circuit wiring. All splices shall be made electrically and mechanically secure with pressure-type connectors.

END OF SECTION

APPENDIX

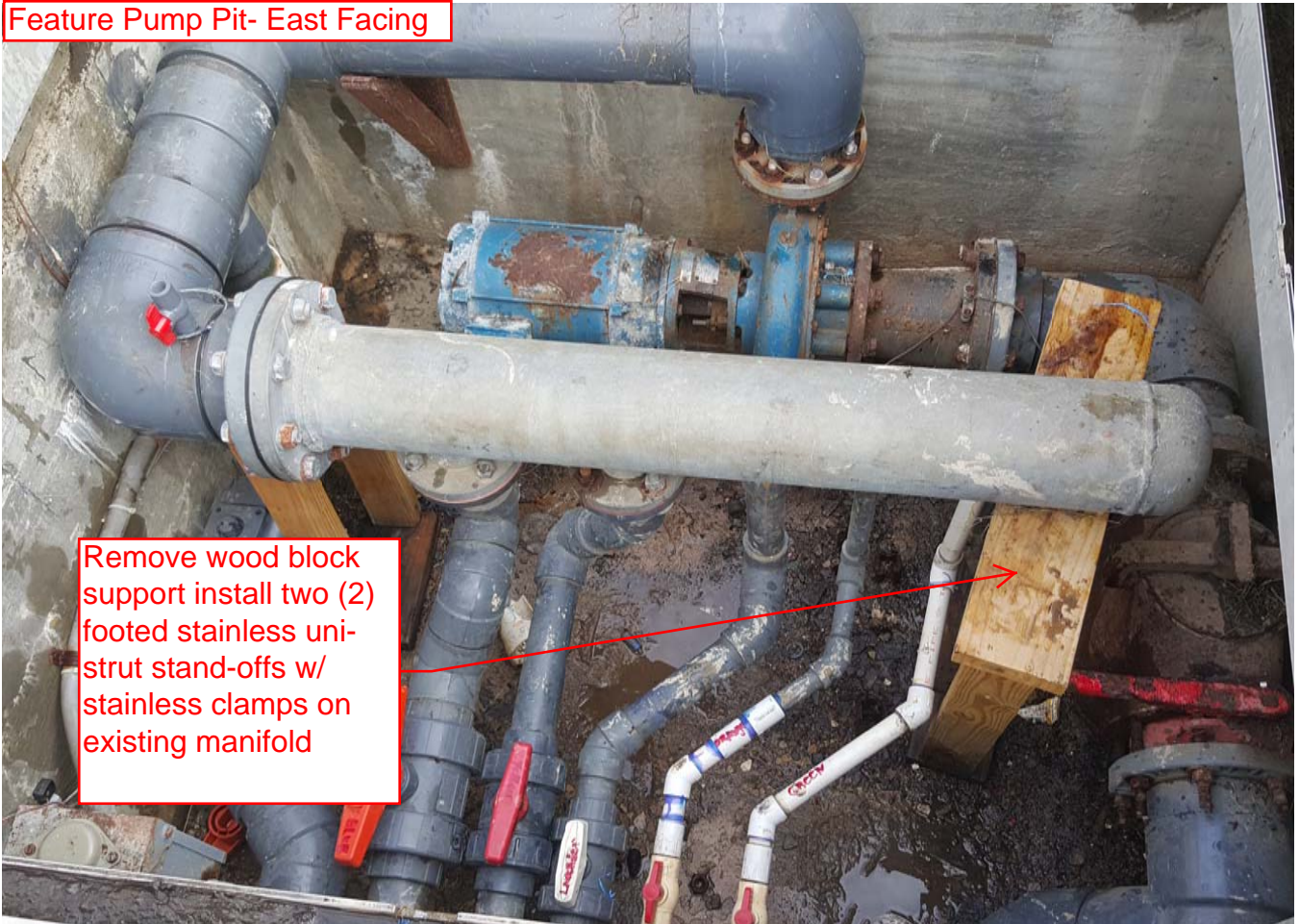
Feature Pump Pit- South Facing



Scope of work begins here at this existing flange and new strainer isolation valve

Scope of work ends here @ a cut in 6" throttle valve

Feature Pump Pit- East Facing



Remove wood block support install two (2) footed stainless uni-strut stand-offs w/ stainless clamps on existing manifold

Job/Project: Veteran's Memorial Feature Pump	Representative:	
ESP-Systemwize: WIZE-880A44	Phone:	
Location/Tag:	Email:	
Engineer:	Submitted By:	Date:
Contractor:	Approved By:	Date:

Close Coupled End Suction Pump

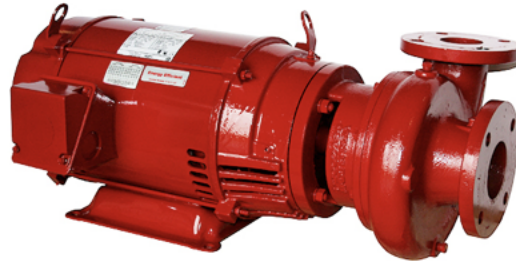
Bell & Gossett Series: e-1531

Model: 4BD

Weight (approx.): 300 lbs

Features & Design

- "Best in Class" hydraulic performance
- Best choice for lowest life cycle cost
- Internally self-flushing mechanical seals
- Hydrostatic testing of each pump standard



*The Bell & Gossett Series e-1531 is available in 18 sizes and a variety of configuration options that enable customization and flexibility to fit a broad range of operating conditions.

<http://bellgossett.com/pumps-circulators/end-suction-pumps/e-1531/>

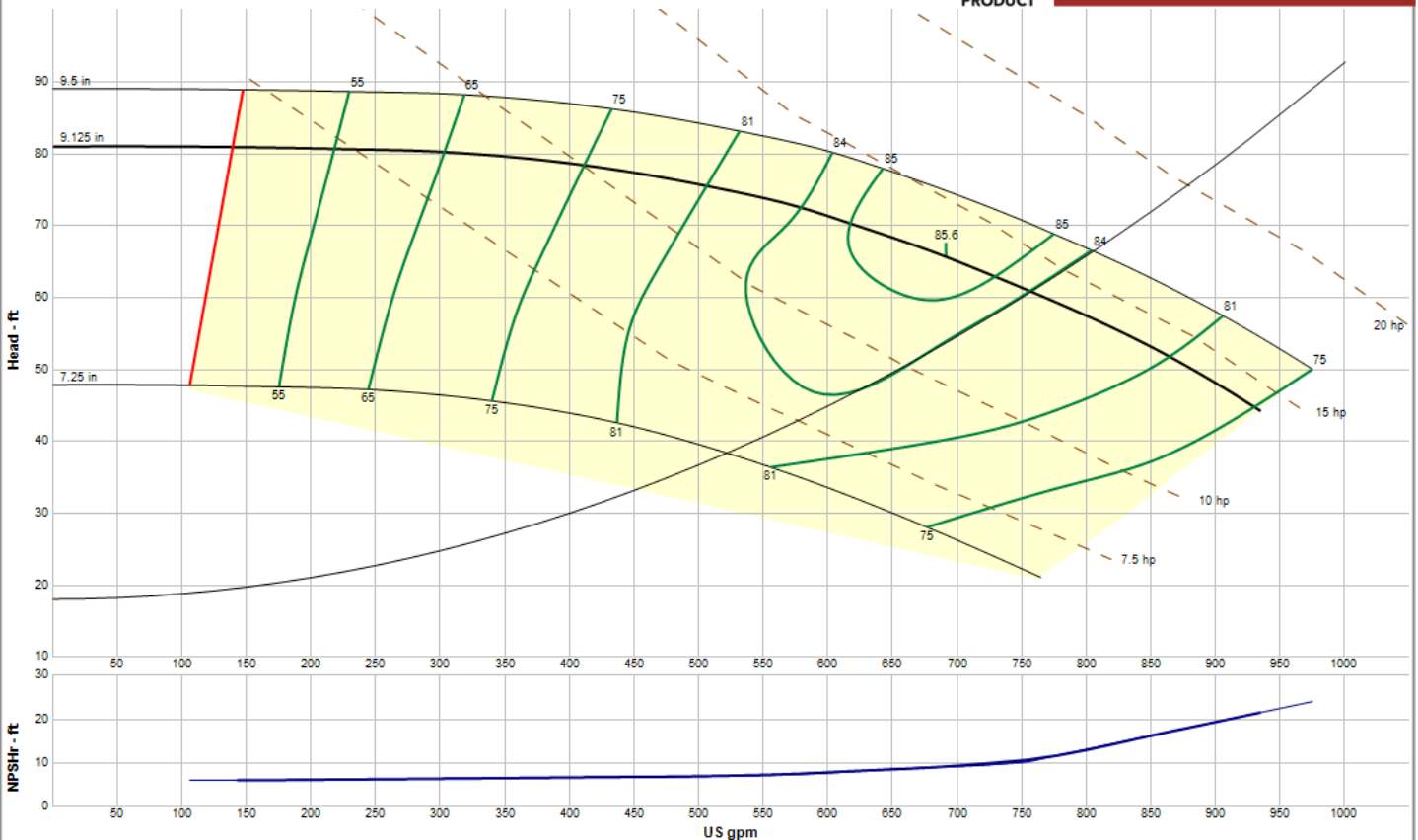
Pump Selection Summary

Pump Capacity	750.0 US gpm
Pump Head	60 ft
Control Head	18 ft
Duty Point Pump Efficiency	84 %
Pump PLEVv Efficiency	82.9 %
Duty Point Power	13.8 bhp
Minimum Flow at RPM	138 gpm
Flow @ BEP	691 gpm
RPM @ Duty Point	1770
Impeller Diameter	9.125 in
NPSHr	10.8
Motor HP	15 hp
Motor Speed	1800 rpm
Minimum Shutoff Head	81 ft
Fluid Type	Water
Fluid Temperature	68 °F

Performance Curve:

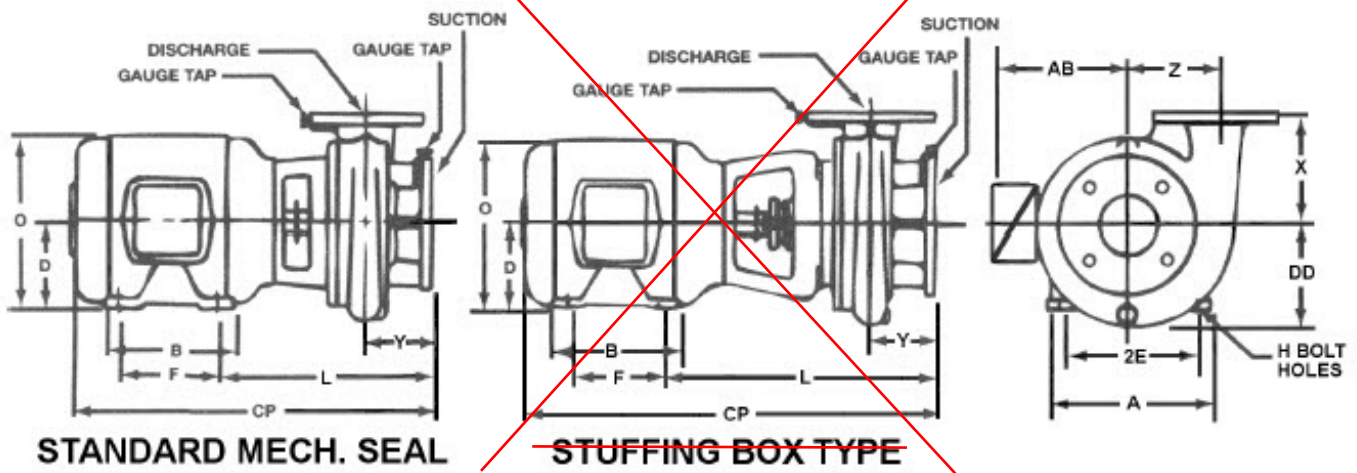


e-1531
4BD
1800 RPM



Performance curve meets HI 15.6 / ISO 9906 acceptance criteria

Dimensional Data:



Dimensions are subject to change. Not to be used for construction purposes unless certified

Suction Size: 5	Discharge Size: 4	A-Dim: 12.500	AB-Length: 10.750	B-Dim: 10.750
CP-Dim: 31.750	D-Dim: 6.250	DD-Height: 8.625	E2-Spacing of Holes: 10.000	F-Dim: 8.250
H-Dim: 0.531	L-Dim: 16.125	O-Height: 13.125	X-Dim: 8.000	Y-Length: 5.000
Z-Length: 7.000	Discharge Flange OD: 9.000	Discharge Bolt Circle Dia: 7.500	Discharge No of Bolts: 8	Discharge Bolt Size: 0.625
Suction Flange OD: 10.000	Suction Bolt Circle Dia: 8.500	Suction No of Bolts: 8	Suction Bolt Size: 0.750	CAD model unit system: inch/pound

Standard Materials of Construction *contact your local rep for optional ES Bearing Frame

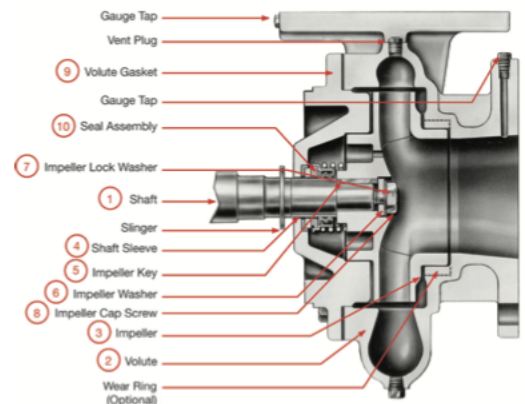
Construction:	Stainless Steel Fitted
1 Shaft:	Carbon Steel Grade per Motor Manufacturer
2 Volute:	Cast Iron ASTM A48 Class 30B
3 Impeller:	ASTM A743 Grade CF8 - 304 Stainless Steel
4 Shaft Sleeve:	ASTM 312 Grade TP304 - 304 Stainless Steel
5 Impeller Key:	#304 Stainless Steel
6 Impeller Washer:	Steel
7 Impeller Lock Washer:	#304 Stainless Steel
8 Impeller Cap Screw:	#304 Stainless Steel
9 Volute Gasket:	Cellulose Fiber

10 Standard Mechanical Seal Assembly

Elastomer:	Buna
Rotating Face:	Carbon
Stationary Face:	Ceramic
Hardware	Stainless Steel/Brass

Maximum Working Pressure

Max Working Pressure (standard) 175 psi (12 bar) W..P.



Pump Options *contact your local rep to configure

Stainless Steel Volute Wear Ring	Stuffing Box Configuration
External Flush Line	<u>Epoxy Coated Internal Cast Iron Components</u>
Certified Performance Tests (Per HI Standard 14.6)	Special Impeller Balancing (ISO 1940 G2.5 or G1.0)



Install concentric reducer here

Replace existing pump throttle valve

Pump and motor to be replaced. See specifications. provide new feeders and flexible conduit from existing junction box

Install eccentric reducer here

Install new strainer here

Install new 6" check valve as close to vertical pipe as possible

Install new 6" influent strainer isolation valve here

Job/Project: Veteran's Memorial Slide Pump	Representative:	
ESP-Systemsize: WIZE-F13D78	Phone:	
Location/Tag:	Email:	
Engineer:	Submitted By:	Date:
Contractor:	Approved By:	Date:

Close Coupled End Suction Pump

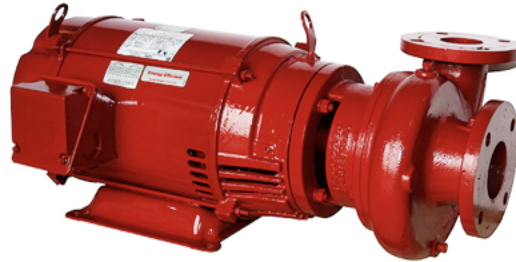
Bell & Gossett Series: e-1531

Model: 3BD

Weight (approx.): 255 lbs

Features & Design

- "Best in Class" hydraulic performance
- Best choice for lowest life cycle cost
- Internally self-flushing mechanical seals
- Hydrostatic testing of each pump standard



*The Bell & Gossett Series e-1531 is available in 18 sizes and a variety of configuration options that enable customization and flexibility to fit a broad range of operating conditions.

<http://bellgossett.com/pumps-circulators/end-suction-pumps/e-1531/>

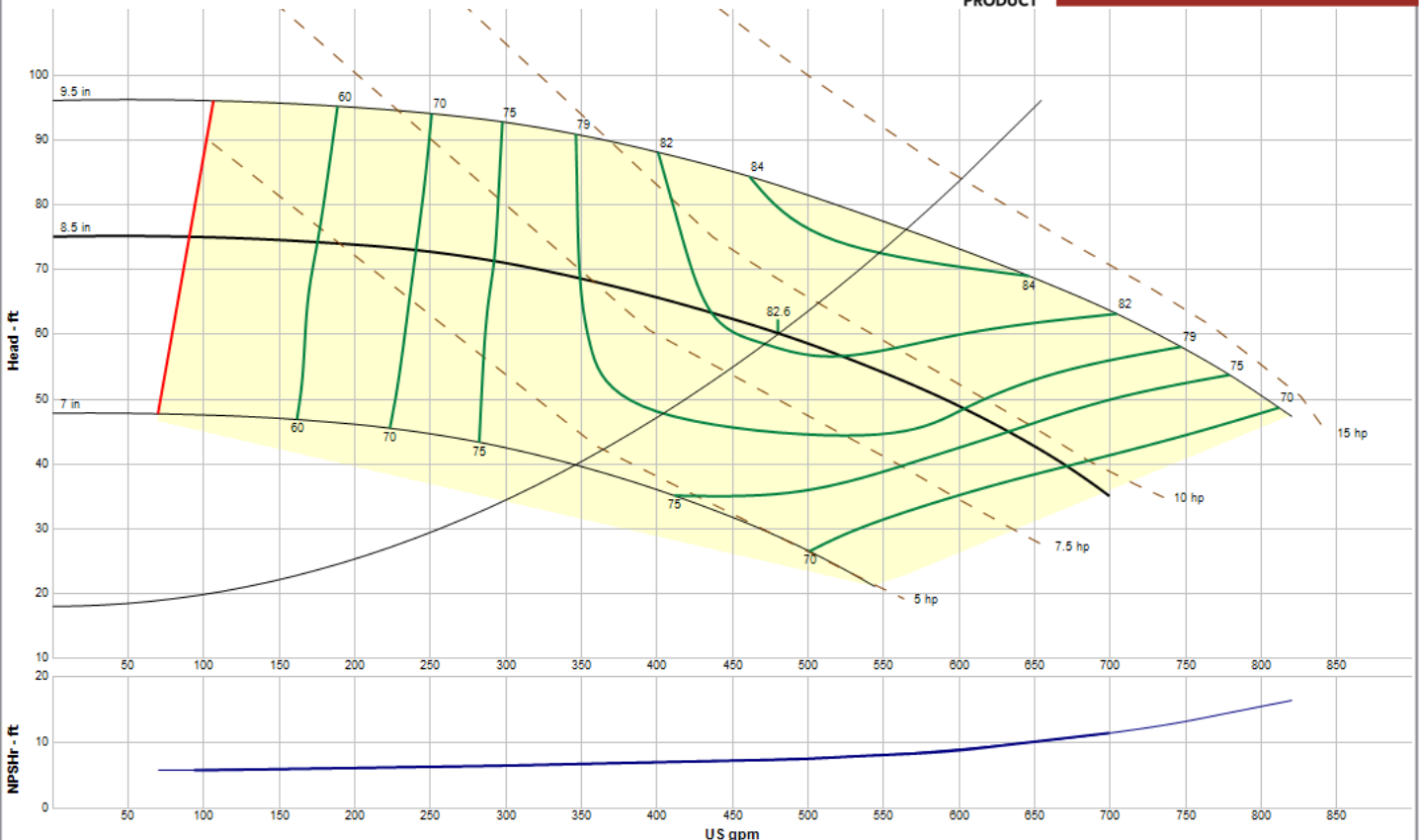
Pump Selection Summary

Pump Capacity	480.0 US gpm
Pump Head	60 ft
Control Head	18 ft
Duty Point Pump Efficiency	82.6 %
Pump PLEVv Efficiency	79.0 %
Duty Point Power	8.82 bhp
Minimum Flow at RPM	95.9 gpm
Flow @ BEP	480 gpm
RPM @ Duty Point	1770
Impeller Diameter	8.5 in
NPSHr	7.43
Motor HP	10 hp
Motor Speed	1800 rpm
Minimum Shutoff Head	75 ft
Fluid Type	Water
Fluid Temperature	68 °F

Performance Curve:

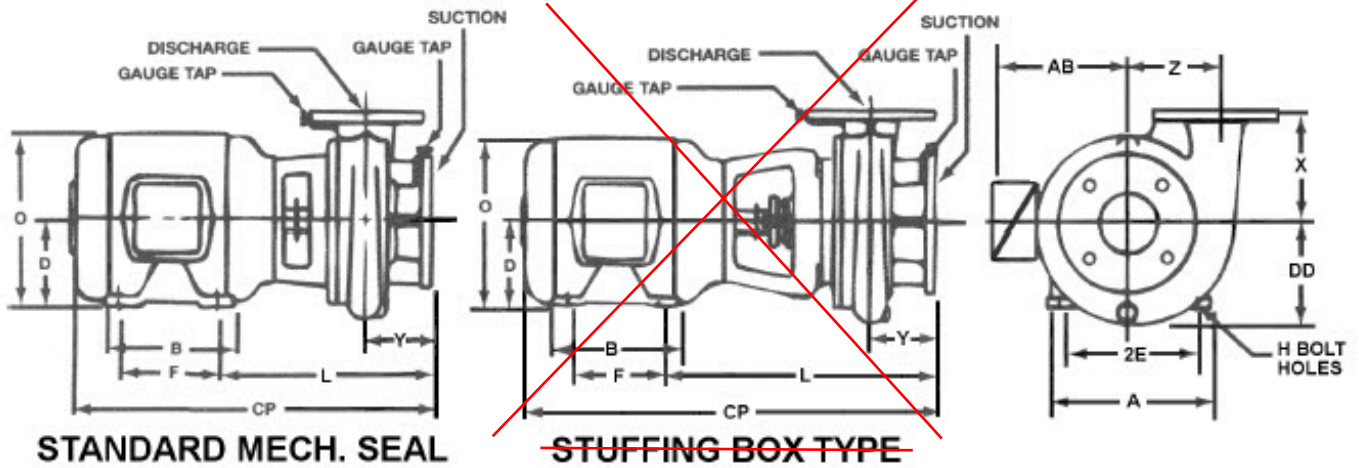


e-1531
3BD
 1800 RPM



Performance curve meets HI 15.6 / ISO 9906 acceptance criteria

Dimensional Data:



Dimensions are subject to change. Not to be used for construction purposes unless certified

Suction Size: 4	Discharge Size: 3	A-Dim: 10.750	AB-Length: 10.750	B-Dim: 9.000
CP-Dim: 27.500	D-Dim: 5.250	DD-Height: 7.000	E2-Spacing of Holes: 8.500	F-Dim: 7.000
H-Dim: 0.406	L-Dim: 14.313	O-Height: 11.125	X-Dim: 7.500	Y-Length: 4.750
Z-Length: 6.125	Discharge Flange OD: 7.500	Discharge Bolt Circle Dia: 6.000	Discharge No of Bolts: 4	Discharge Bolt Size: 0.625
Suction Flange OD: 9.000	Suction Bolt Circle Dia: 7.500	Suction No of Bolts: 8	Suction Bolt Size: 0.625	CAD model unit system: inch/pound

Standard Materials of Construction *contact your local rep for optional ES Bearing Frame

Construction:	Stainless Steel Fitted
1 Shaft:	Carbon Steel Grade per Motor Manufacturer
2 Volute:	Cast Iron ASTM A48 Class 30B
3 Impeller:	ASTM A743 Grade CF8 - 304 Stainless Steel
4 Shaft Sleeve:	ASTM 312 Grade TP304 - 304 Stainless Steel
5 Impeller Key:	#304 Stainless Steel
6 Impeller Washer:	Steel
7 Impeller Lock Washer:	#304 Stainless Steel
8 Impeller Cap Screw:	#304 Stainless Steel
9 Volute Gasket:	Cellulose Fiber

10 Standard Mechanical Seal Assembly

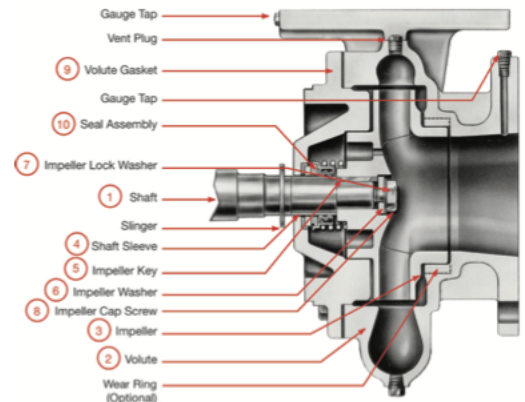
Elastomer:	Buna
Rotating Face:	Carbon
Stationary Face:	Ceramic
Hardware	Stainless Steel/Brass

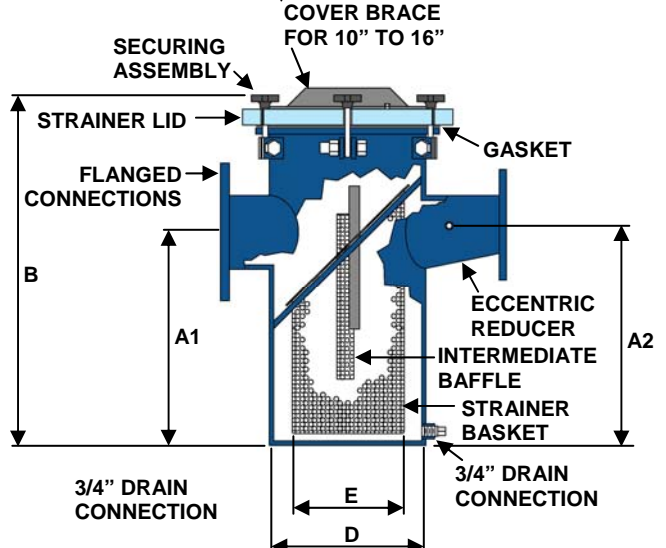
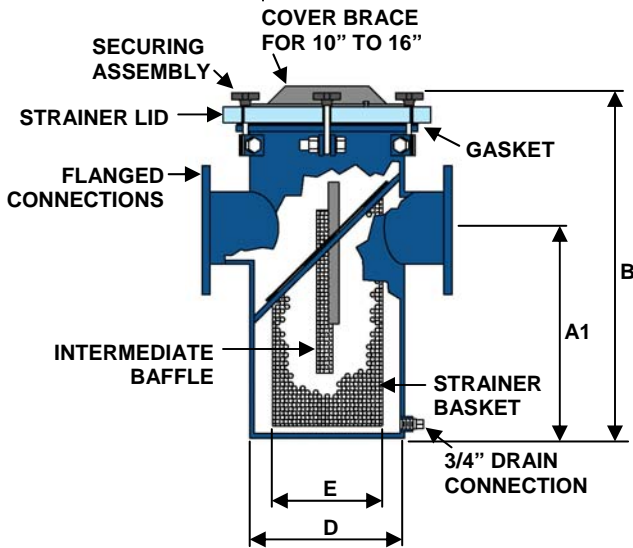
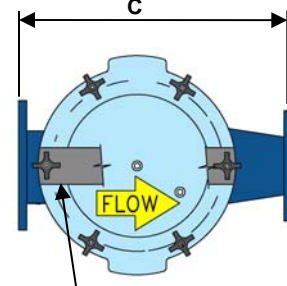
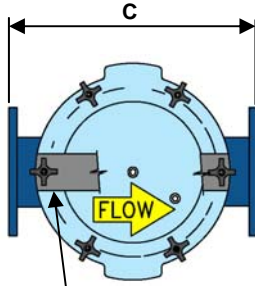
Maximum Working Pressure

Max Working Pressure (standard) 175 psi (12 bar) W..P.

Pump Options *contact your local rep to configure

Stainless Steel Volute Wear Ring	Stuffing Box Configuration
External Flush Line	<u>Epoxy Coated Internal Cast Iron Components</u>
Certified Performance Tests (Per HI Standard 14.6)	Special Impeller Balancing (ISO 1940 G2.5 or G1.0)





Straight

Eccentric Reducing

Capacity And Dimension Chart

	Strainer Size	Strainer Part #	SS Basket Part #	Open Area Of Pipe (Sq In)	Open Area Of Basket (Sq In)	Ratio Of Open Area	MAX. Flow Rate (GPM)	All dimensions are in inches						Approx. Weight (lbs.)
								A1	A2	B	C	D*	E	
Straight	3	1500NBFG03R1	NBBSK04EP	7	140	20.0:1	125	8 1/2	-	18	18	9 1/8	5 3/4	45
	4	1500NBFG04R1	NBBSK04EP	13	140	10.8:1	215	8 1/2	-	18	18	9 1/8	5 3/4	45
	6	1500NBFG06R1	NBBSK08EP	28	250	8.9:1	488	13 1/4	-	26	20	11 1/4	7 1/2	75
	8	1500NBFG08R1	NBBSK08EP	50	250	5.0:1	854	12 1/4	-	26	20	11 1/4	7 1/2	80
	10	1500NBFG10R1	NBBSK10EP	79	614	7.8:1	1344	21	-	36	26	16 1/2	11 3/4	155
	12	1500NBFG12R1	NBBSK10EP	113	614	5.4:1	1901	20	-	36	26	16 1/2	11 3/4	170
	14	1500NBFG14R1	NBBSK14EP	154	828	5.4:1	2295	22	-	39	30	18 1/2	14	230
Eccentric Reducing	4 x 2 1/2	150NBFG425ER1	NBBSK04EP	13	140	10.8:1	198	8 1/2	9 3/8	18	19	9 1/8	5 3/4	45
	4 x 3	150NBFG43ER1	NBBSK04EP	13	140	10.8:1	215	8 1/2	8 1/2	18	19	9 1/8	5 3/4	45
	6 x 3	150NBFG63ER1	NBBSK08EP	28	250	8.9:1	310	13 1/4	14 3/4	26	22 1/2	11 1/4	7 1/2	75
	6 x 4	150NBFG64ER1	NBBSK08EP	28	250	8.9:1	488	13 1/4	14 1/4	26	22 1/2	11 1/4	7 1/2	75
	6 x 5	150NBFG65ER1	NBBSK08EP	28	250	8.9:1	488	13 1/4	13 3/4	26	22 1/2	11 1/4	7 1/2	75
	8 x 5	150NBFG85ER1	NBBSK08EP	50	250	5.0:1	854	12 1/4	13 3/4	26	23 1/2	11 1/4	7 1/2	80
	8 x 6	150NBFG86ER1	NBBSK08EP	50	250	5.0:1	854	12 1/4	13 1/4	26	23 1/2	11 1/4	7 1/2	80
	10 x 5	150NBFG15ER1	NBBSK10EP	79	614	7.8:1	854	21	23 1/2	36	32	16 1/2	11 3/4	155
	10 x 6	150NBFG16ER1	NBBSK10EP	79	614	7.8:1	1220	21	23	36	32	16 1/2	11 3/4	155
	10 x 8	150NBFG18ER1	NBBSK10EP	79	614	7.8:1	1344	21	22	36	32	16 1/2	11 3/4	160
	12 x 6	150NBFG26ER1	NBBSK10EP	113	614	5.4:1	1220	20	23	36	32	16 1/2	11 3/4	160
	12 x 8	150NBFG28ER1	NBBSK10EP	113	614	5.4:1	1901	20	22	36	32	16 1/2	11 3/4	165
	14 x 8	150NBFG48ER1	NBBSK14EP	154	828	5.4:1	2140	22	24 3/4	39	35	18 1/2	14	230
	14 x 10	150NBFG40ER1	NBBSK14EP	154	828	5.4:1	2295	22	23 5/8	39	35	18 1/2	14	230
	14 x 12	150NBFG42ER1	NBBSK14EP	154	828	5.4:1	2295	22	22 5/8	39	35	18 1/2	14	230
	16 x 10	150NBFG60ER1	NBBSK14EP	192	828	4.3:1	3012	22	24 5/8	39	36	20 1/2	14	320
16 x 12	150NBFG62ER1	NBBSK14EP	192	828	4.3:1	3012	22	24	39	36	20 1/2	14	320	

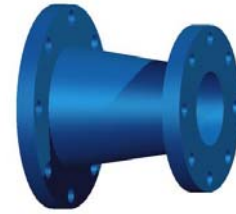
D* = Outside Diameter.

(4) Securing assemblies for 3" & 4" sizes. (6) Securing assemblies for 5" & 8" sizes. (8) Securing assemblies for 10" and larger.

CONCENTRIC REDUCERS

All dimensions are in inches

Size	Part #	"F"
3 x 2	15003X2CNSFG	6
3 x 2 1/2	15003X25CNSFG	6
4 x 2	15004X2CNSFG	7
4 x 3	15004X3CNSFG	7
5 x 4	15005X4CNSFG	8
6 x 2 1/2	1506X25CNSFG	9
6 x 3	15006X3CNSFG	9
6 x 4	15006X4CNSFG	9
6 x 5	15006X5CNSFG	9
8 x 3	15008X3CNSFG	11
8 x 4	15008X4CNSFG	11
8 x 5	15008X5CNSFG	11
8 x 6	15008X6CNSFG	11
10 x 5	15010X5CNSFG	12
10 x 6	15010X6CNSFG	12
10 x 8	15010X8CNSFG	12
12 x 6	15012X6CNSFG	14
12 x 8	15012X8CNSFG	14
12 x 10	1512X10CNSFG	14
14 x 8	15014X8CNSFG	16
14 x 10	15014X10CNSFG	16
14 x 12	1514X12CNSFG	16
16 x 8	15016X8CNSFG	18
16 x 10	1516X10CNSFG	18
16 x 12	1516X12CNSFG	18



ECCENTRIC REDUCERS

All dimensions are in inches

Size	Part #	"F"
3 x 2	15003X2ECSFG	6
3 x 2 1/2	1503X25ECSFG	6
4 x 2	15004X2ECSFG	7
4 x 2 1/2	1504X25ECSFG	7
4 x 3	15004X3ECSFG	7
5 x 4	15005X4ECSFG	8
6 x 2 1/2	1506X25ECSFG	9
6 x 3	15006X3ECSFG	9
6 x 4	15006X4ECSFG	9
6 x 5	15006X5ECSFG	9
8 x 3	15008X3ECSFG	11
8 x 4	15008X4ECSFG	11
8 x 5	15008X5ECSFG	11
8 x 6	15008X6ECSFG	11
10 x 5	15010X5ECSFG	12
10 x 6	15010X6ECSFG	12
10 x 8	15010X8ECSFG	12
12 x 6	15012X6ECSFG	14
12 x 8	15012X8ECSFG	14
12 x 10	1512X10ECSFG	14
14 x 8	1514X08ECSFG	16
14 x 10	1514X10ECSFG	16
14 x 12	1514X12ECSFG	16
16 x 8	1516X08ECSFG	18
16 x 10	1516X10ECSFG	18
16 x 12	1516X12ECSFG	18



ATTACHMENTS

CITY OF ANN ARBOR
LIVING WAGE ORDINANCE DECLARATION OF COMPLIANCE

The Ann Arbor Living Wage Ordinance (Section 1:811-1:821 of Chapter 23 of Title I of the Code) requires that an employer who is (a) a contractor providing services to or for the City for a value greater than \$10,000 for any twelve-month contract term, or (b) a recipient of federal, state, or local grant funding administered by the City for a value greater than \$10,000, or (c) a recipient of financial assistance awarded by the City for a value greater than \$10,000, shall pay its employees a prescribed minimum level of compensation (i.e., Living Wage) for the time those employees perform work on the contract or in connection with the grant or financial assistance. The Living Wage must be paid to these employees for the length of the contract/program.

Companies employing fewer than 5 persons and non-profits employing fewer than 10 persons are exempt from compliance with the Living Wage Ordinance. If this exemption applies to your company/non-profit agency please check here No. of employees__

The Contractor or Grantee agrees:

- (a) To pay each of its employees whose wage level is not required to comply with federal, state or local prevailing wage law, for work covered or funded by a contract with or grant from the City, no less than the Living Wage. The current Living Wage is defined as \$13.13/hour for those employers that provide employee health care (as defined in the Ordinance at Section 1:815 Sec. 1 (a)), or no less than \$14.65/hour for those employers that do not provide health care. The Contractor or Grantor understands that the Living Wage is adjusted and established annually on April 30 in accordance with the Ordinance and covered employers shall be required to pay the adjusted amount thereafter to be in compliance (Section 1:815(3)).

Check the applicable box below which applies to your workforce

Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage without health benefits

Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage with health benefits

- (b) To post a notice approved by the City regarding the applicability of the Living Wage Ordinance in every work place or other location in which employees or other persons contracting for employment are working.
- (c) To provide to the City payroll records or other documentation within ten (10) business days from the receipt of a request by the City.
- (d) To permit access to work sites to City representatives for the purposes of monitoring compliance, and investigating complaints or non-compliance.
- (e) To take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee covered by the Living Wage Ordinance or any person contracted for employment and covered by the Living Wage Ordinance in order to pay the living wage required by the Living Wage Ordinance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services or agrees to accept financial assistance in accordance with the terms of the Living Wage Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Living Wage Ordinance, obligates the Employer/Grantee to those terms and acknowledges that if his/her employer is found to be in violation of Ordinance it may be subject to civil penalties and termination of the awarded contract or grant of financial assistance.

Company Name

Street Address

Signature of Authorized Representative

Date

City, State, Zip

Print Name and Title

Phone/Email address

CITY OF ANN ARBOR LIVING WAGE ORDINANCE

RATE EFFECTIVE APRIL 30, 2017 - ENDING APRIL 29, 2018

\$13.13 per hour

If the employer provides health care benefits*

\$14.65 per hour

If the employer does **NOT** provide health care benefits*

Employers providing services to or for the City of Ann Arbor or recipients of grants or financial assistance from the City of Ann Arbor for a value of more than \$10,000 in a twelve-month period of time must pay those employees performing work on a City of Ann Arbor contract or grant, the above living wage.

ENFORCEMENT

The City of Ann Arbor may recover back wages either administratively or through court action for the employees that have been underpaid in violation of the law. Persons denied payment of the living wage have the right to bring a civil action for damages in addition to any action taken by the City.

Violation of this Ordinance is punishable by fines of not more than \$500/violation plus costs, with each day being considered a separate violation. Additionally, the City of Ann Arbor has the right to modify, terminate, cancel or suspend a contract in the event of a violation of the Ordinance.

* Health Care benefits include those paid for by the employer or making an employer contribution toward the purchase of health care. The employee contribution must not exceed \$.50 an hour for an average work week; and the employer cost or contribution must equal no less than \$1/hr for the average work week.

The Law Requires Employers to Display This Poster Where Employees Can Readily See It.

**For Additional Information or to File a Complaint Contact:
Colin Spencer at 734/794-6500 or cspencer@a2gov.org**



Vendor Conflict of Interest Disclosure Form
--

All vendors interested in conducting business with the City of Ann Arbor must complete and return the Vendor Conflict of Interest Disclosure Form in order to be eligible to be awarded a contract. Please note that all vendors are subject to comply with the City of Ann Arbor’s conflict of interest policies as stated within the certification section below.

If a vendor has a relationship with a City of Ann Arbor official or employee, an immediate family member of a City of Ann Arbor official or employee, the vendor shall disclose the information required below.

1. No City official or employee or City employee’s immediate family member has an ownership interest in vendor’s company or is deriving personal financial gain from this contract.
2. No retired or separated City official or employee who has been retired or separated from the City for less than one (1) year has an ownership interest in vendor’s Company.
3. No City employee is contemporaneously employed or prospectively to be employed with the vendor.
4. Vendor hereby declares it has not and will not provide gifts or hospitality of any dollar value or any other gratuities to any City employee or elected official to obtain or maintain a contract.
5. Please note any exceptions below:

Conflict of Interest Disclosure*	
Name of City of Ann Arbor employees, elected officials or immediate family members with whom there may be a potential conflict of interest.	<input type="checkbox"/> Relationship to employee <hr style="border: 0; border-top: 1px solid black;"/> <input type="checkbox"/> Interest in vendor’s company <input type="checkbox"/> Other (please describe in box below)

*Disclosing a potential conflict of interest does not disqualify vendors. In the event vendors do not disclose potential conflicts of interest and they are detected by the City, vendor will be exempt from doing business with the City.

I certify that this Conflict of Interest Disclosure has been examined by me and that its contents are true and correct to my knowledge and belief and I have the authority to so certify on behalf of the Vendor by my signature below:		
Vendor Name	Vendor Phone Number	
Signature of Vendor Authorized Representative	Date	Printed Name of Vendor Authorized Representative

Questions about this form? Contact Procurement Office City of Ann Arbor Phone: 734/794-6500, procurement@a2gov.org

CITY OF ANN ARBOR NON-DISCRIMINATION ORDINANCE

Relevant provisions of Chapter 112, Nondiscrimination, of the Ann Arbor City Code are included below.
You can review the entire ordinance at www.a2gov.org/humanrights.

Intent: It is the intent of the city that no individual be denied equal protection of the laws; nor shall any individual be denied the enjoyment of his or her civil or political rights or be discriminated against because of actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight.

Discriminatory Employment Practices: No person shall discriminate in the hire, employment, compensation, work classifications, conditions or terms, promotion or demotion, or termination of employment of any individual. No person shall discriminate in limiting membership, conditions of membership or termination of membership in any labor union or apprenticeship program.

Discriminatory Effects: No person shall adopt, enforce or employ any policy or requirement which has the effect of creating unequal opportunities according to actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight for an individual to obtain housing, employment or public accommodation, except for a bona fide business necessity. Such a necessity does not arise due to a mere inconvenience or because of suspected objection to such a person by neighbors, customers or other persons.

Nondiscrimination by City Contractors: All contractors proposing to do business with the City of Ann Arbor shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the guidelines of this section. All city contractors shall ensure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity and tends to eliminate inequality based upon any classification protected by this chapter. All contractors shall agree not to discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of any applicable protected classification. All contractors shall be required to post a copy of Ann Arbor's Non-Discrimination Ordinance at all work locations where its employees provide services under a contract with the city.

Complaint Procedure: If any individual believes there has been a violation of this chapter, he/she may file a complaint with the City's Human Rights Commission. The complaint must be filed within 180 calendar days from the date of the individual's knowledge of the allegedly discriminatory action or 180 calendar days from the date when the individual should have known of the allegedly discriminatory action. A complaint that is not filed within this timeframe cannot be considered by the Human Rights Commission. To file a complaint, first complete the complaint form, which is available at www.a2gov.org/humanrights. Then submit it to the Human Rights Commission by e-mail (hrc@a2gov.org), by mail (Ann Arbor Human Rights Commission, PO Box 8647, Ann Arbor, MI 48107), or in person (City Clerk's Office). For further information, please call the commission at 734-794-6141 or e-mail the commission at hrc@a2gov.org.

Private Actions For Damages or Injunctive Relief: To the extent allowed by law, an individual who is the victim of discriminatory action in violation of this chapter may bring a civil action for appropriate injunctive relief or damages or both against the person(s) who acted in violation of this chapter.

THIS IS AN OFFICIAL GOVERNMENT NOTICE AND
MUST BE DISPLAYED WHERE EMPLOYEES CAN READILY SEE IT.

MICHIGAN DEPARTMENT OF TRANSPORTATION CERTIFIED PAYROLL

COMPLETION OF CERTIFIED PAYROLL FORM FULFILLS THE MINIMUM MDOT PREVAILING WAGE REQUIREMENTS

(1) NAME OF CONTRACTOR / SUBCONTRACTOR (CIRCLE ONE) (2) ADDRESS

(3) PAYROLL NO. (4) FOR WEEK ENDING (5) PROJECT AND LOCATION (6) CONTRACT ID

(a)	(b)	(c)	(d) DAY AND DATE							(e)	(f)	(g)	(h)	(i)	(j) DEDUCTIONS						(k)
															TOTAL HOURS ON PROJECT	PROJECT RATE OF PAY	PROJECT RATE OF FRINGE PAY	GROSS PROJECT EARNED	GROSS WEEKLY EARNED	TOTAL WEEKLY HOURS WORKED ALL JOBS	
EMPLOYEE INFORMATION	WORK CLASSIFICATION	Hour Type	HOURS WORKED ON PROJECT							TOTAL HOURS ON PROJECT	PROJECT RATE OF PAY	PROJECT RATE OF FRINGE PAY	GROSS PROJECT EARNED	GROSS WEEKLY EARNED	TOTAL WEEKLY HOURS WORKED ALL JOBS	FICA	FEDERAL	STATE	OTHER	TOTAL DEDUCT	TOTAL WEEKLY WAGES PAID FOR ALL JOBS
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00

Date _____

I, _____
 (Name of Signatory Party) (Title)

do hereby state:

(1) That I pay or supervise the payment of the persons employed by

_____ on the
 (Contractor or Subcontractor)
 _____; that during the payroll period commencing on the
 (Building or Work)

_____ day of _____, _____, and ending the _____ day of _____, _____,
 all persons employed on said project have been paid the full weekly wages earned, that no rebates have
 been or will be made either directly or indirectly to or on behalf of said

_____ from the full
 (Contractor or Subcontractor)

weekly wages earned by any person and that no deductions have been made either directly or indirectly
 from the full wages earned by any person, other than permissible deductions as defined in Regulations, Part
 3 (29 C.F.R. Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948,
 63 Stat. 108, 72 Stat. 967; 76 Stat. 357; 40 U.S.C. § 3145), and described below:

(2) That any payrolls otherwise under this contract required to be submitted for the above period are
 correct and complete; that the wage rates for laborers or mechanics contained therein are not less than the
 applicable wage rates contained in any wage determination incorporated into the contract; that the
 classifications set forth therein for each laborer or mechanic conform with the work he performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide
 apprenticeship program registered with a State apprenticeship agency recognized by the Bureau of
 Apprenticeship and Training, United States Department of Labor, or if no such recognized agency exists in a
 State, are registered with the Bureau of Apprenticeship and Training, United States Department of Labor.

(4) That:

(a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

- in addition to the basic hourly wage rates paid to each laborer or mechanic listed in
 the above referenced payroll, payments of fringe benefits as listed in the contract
 have been or will be made to appropriate programs for the benefit of such
 employees, except as noted in section 4(c) below.

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

- Each laborer or mechanic listed in the above referenced payroll has been paid,
 as indicated on the payroll, an amount not less than the sum of the applicable
 basic hourly wage rate plus the amount of the required fringe benefits as listed
 in the contract, except as noted in section 4(c) below.

(c) EXCEPTIONS

EXCEPTION (CRAFT)	EXPLANATION

REMARKS:

NAME AND TITLE	SIGNATURE
THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION. SEE SECTION 1001 OF TITLE 18 AND SECTION 231 OF TITLE 31 OF THE UNITED STATES CODE.	