

ARCHITECTURAL & ENGINEERING SERVICES
FOR DISTRICT WIDE POOL UPGRADES AND RENOVATIONS
AT

Ottawa Hills High School (\$2.7MM construction budget)
Union High School (\$2.175MM construction budget)
City High / Middle School (\$1.6MM construction budget)

Awarded Separately or Combined at GRPS Sole Discretion

GRAND RAPIDS PUBLIC SCHOOLS

Request for Qualifications and Fee Proposal(s)

Includes Attachments A, B & C

Attachment A: Proposal Form

Attachment B: B133-2019 & A201-2017, as modified

Attachment C: Aqua Source Pool Studies FOR REFERENCE ONLY

Issued by:

The Ad Hoc Committee

Professional Service Contractor Selection

Proposal Due Date: **June 26, 2025 @ 11:00a**

Issuing Office: Grand Rapids Public School District

Office of Facilities Management & Planning

This is a Qualification Based Selection Process. Complete submittal of information requested in this document is essential to the selection process. Failure to provide this information may result in not being considered for the award of a contract.

June 5, 2025



**PROFESSIONAL DESIGN SERVICES
FOR DISTRICT WIDE POOL UPGRADES AND RENOVATIONS AT**

**Ottawa Hills High School, 2055 Rosewood Ave. SE, Grand Rapids, MI
Union High School, 1800 Tremont Blvd NW, Grand Rapids, MI
City High/Middle School, 1720 Plainfield Ave NE, Grand Rapids, MI**

GRAND RAPIDS PUBLIC SCHOOLS

GENERAL INFORMATION

A. Purpose

Grand Rapids Public Schools (GRPS) seeks professional design expertise to execute its Building Improvement Plan. The Professional Service Contractor (PSC) selected to design the renovations and upgrades of each of the above noted school buildings must provide the full range of architectural and engineering capabilities for the entire scope of work. Successful design and construction of our projects may also require the use of specialists in structural and civil engineering, pool design, interior design, acoustics, building restoration, energy efficiency, security, and technology. Implementing our Building Improvement Plan is a key component of the “Reimagine GRPS” and we seek the best consulting firms from our region to work collaboratively with our schools, communities, and administration.

To obtain the highest quality project within the time and budget allocations, GRPS seeks PSCs for the above noted school buildings through this Qualification-Based Selection (QBS) process. This selection process articulates the district goals, reflects our guiding principles and provides openness and consistency so that all qualified firms receive fair consideration. The remainder of this Request For Qualifications (RFQ) identifies specifics regarding each of the above noted school building renovation projects.

B. Project Scopes and Timelines

GRPS issues this RFQ in its process to obtain Architectural/Engineering design and production services for district wide pool upgrades and renovations of multiple GRPS school facilities. These renovations are a continuation of the 2023 Bond Program “Reimagine GRPS”. The overall GRPS goals for the renovated school buildings include the following:

- To welcome and stimulate students, staff and visitors
- To provide flexibility in adapting to current educational needs and future needs
- To function as a 21st century School Buildings for GRPS
- To maintain and enhance the District’s presence within the respective neighborhoods and the overall City and community

- To balance long-term, short term and operational costs
- To meet specific completion and budget targets

Ottawa Hills High School (OHHS)

Ottawa Hills High School is currently under design to accommodate Alger Middle school, which will then serve grades 6 through 12 for GRPS and is located at 2055 Rosewood Avenue SE, in Grand Rapids. The building was constructed in 1960 and has been renovated numerous times since.

The swimming pool was constructed at or around 1972 and opened to the public for use. At this time the pool construction generally consisted of a single lane pool w/ side diving well. Pool is listed at 250,000 gallons. Pool is running at 6.9 hour turnover rate @ 600 GPM. No major renovations were included in the file obtained from EGLE. It appears that this pool is in fact running on the original Dalee filter installed from 1972 OR has had a like for like replacement at some point in time that did not require a submission to the Health Department. Please reference **Attachment C** that contains the recent pool study information.

This project is to include bringing the natatorium up to current code compliance as well as accommodate current MHSAA regulations for competition use. This may include but is not limited to deepening the pool, filtration system upgrades, HVAC/Plumbing/Electrical upgrades, lighting upgrades, as well as locker room upgrades.

The selected PSC will be asked to include working with District Academic and Facilities staff to develop and finalize the building program needs as a first step in this process.

Renovation of OHHS natatorium is expected to begin in the **Summer of 2026**, and be completed by **Fall 2026**.*(dates subject to change based on final approval from the District.) The District will continue to operate OHHS during this work, with appropriate safety and security separations in place to allow for contractor and scholar access.

Successful completion of the project includes completion of Punch List items, installation of technology, and staff training as required prior to Owner acceptance.

The District's projected total construction budget for this project is approximately two million seven hundred thousand dollars (\$2,700,000). This budget is inclusive of district costs for new construction, including demolition and contingency.

Union High School

Union High School serves grades 9 through 12 for GRPS and is located at 1800 Tremont Blvd NW, Grand Rapids. The building was constructed in 1960 and has been renovated numerous times since.

Swimming Pool was constructed at or around 1968 and opened to the public for use. At this time the pool construction generally consisted of a single lane pool w/ integral diving well. Pool is listed at 175,000 gallons. Pool is running at 5.6 hour turnover rate @ 520 GPM. No major renovations were included in the file obtained from EGLE. It appears that this pool is in fact running on the original filter installed from 1968 OR has had a like for like replacement at some point in time that did not require a submission to the Health Department. Please reference **Attachment C** that contains the recent pool study information.

This project is to include bringing the natatorium up to current code compliance as well as accommodate current MHSAA regulations for competition use and address structural concerns. This may include but is not limited to deepening the pool, re-grouting the pool, filtration system upgrades, HVAC/Plumbing/Electrical upgrades, lighting upgrades, as well as locker room & shower upgrades.

The selected PSC will be asked to include working with District Academic and Facilities staff to develop and finalize the building program needs as a first step in this process.

Renovation of Union natatorium is expected to begin in the **Spring of 2027** and be completed by **Fall 2027**.*(dates subject to change based on final approval from the District.) The District will continue to operate Union during this work, with appropriate safety and security separations in place to allow for contractor and scholar access.

Successful completion of the project includes completion of Punch List items, installation of technology, and staff training as required prior to Owner acceptance.

The District's projected total construction budget for this project is approximately two million one hundred seventy-five thousand dollars (\$2,175,000). This budget is inclusive of district costs for new construction, including demolition and contingency.

City High / Middle School

City High/Middle School currently serve grades 7 through 12 for GRPS and is located at 1720 Plainfield Ave NE, in Grand Rapids. The building was constructed in 1980 and has been renovated numerous times since.

Swimming Pool was constructed at or around 1980s and opened to the public for use. Pool is listed at 236,125 gallons. Pool is running at 5.8 hour turnover rate @ 675 GPM. Little to no information was able to be obtained from EGLE. Please reference **Attachment C** that contains the recent pool study information.

This project is to include bringing the natatorium up to current code compliance as well as address structural concerns. This may include but is not limited to re-grouting the pool, filtration system upgrades, HVAC/Plumbing/Electrical upgrades, lighting upgrades.

The selected PSC will be asked to include working with District Academic and Facilities staff to develop and finalize the building program needs as a first step in this process.

Renovation of City High/Middle natatorium is expected to begin in the **Summer of 2029** and be completed by **Fall 2029**.*(dates subject to change based on final approval from the District.) The District will continue to operate OHHS during this work, with appropriate safety and security separations in place to allow for contractor and scholar access.

Successful completion of the project includes completion of Punch List items, installation of technology, and staff training as required prior to Owner acceptance.

The District's projected total construction budget for this project is approximately one million six hundred thousand dollars (\$1,600,000). This budget is inclusive of district costs for new construction, including demolition and contingency.

All Projects:

In addition to architecture and engineering design documentation, the scope of work for all PSCs includes, but is not limited to, meeting with committees and administrators and overseeing community Townhall meetings during the design phase, maintaining and updating public information regarding the design and construction progress on the District website, attending construction progress meetings, and issuing regular site visits progress reports. The pool studies have been included with the RFP for reference only. The selected PSC will be required to validate the existing report and provide gap analysis for a full turn-key project. The PSC will also be responsible to provide two opinions of probable construction cost at the completion of the SD and DD phases of the construction documents development. These opinions of probable construction cost must be completed by a 3rd party that is knowledgeable of current construction practices and cost, and will be reconciled with the cost estimates developed by our Construction Manager, if applicable, to be selected in the Fall 2025 (Ottawa), Fall 2026 (Union), Fall 2028 (City). PSC should assume to coordinate (3) separate bid packages with three different CMs.

The projects will be constructed under a Construction Manager as Constructor (CMc) agreement, the selection process for which will immediately follow the selection of the A/E firm. The A/E firm will be required to work closely with the CM during the planning phases and to oversee the construction of the project and timely completion.

Selection & Design Timeline

RFP Issuance:	June 5, 2025
RFIs DUE by:	June 18, 2025
Addenda #1 issued:	June 23, 2025
Proposals Due:	June 26, 2025
Interviews:	July 7 th – 9 th , 2025
Selection/Recommendation:	July 18, 2025
Finance Approval:	July 28, 2025
Board Approval:	August 11, 2025
Design Phase Begins:	August 2025
Bid	Varies by Project
Construction:	Varies by Project
Occupancy:	Varies by Project

Pre-proposal Meeting / Site Visit

A pre-proposal meeting and site visit will be held:

<u>Date</u>	<u>Time</u>	<u>Location</u>
Thursday, June 12	1:00p -3:00p	Start at City High/Middle at 1p followed by Union High and Ottawa Hills High School

C. Issuing Office

This RFQ is issued by the GRPS Department of Facilities Management & Planning, hereinafter referred to as the issuing office. The Director of this department and point of contact for this Request for Qualifications is:

Dale Cammenga
Director of Design, Construction & Renovation
Grand Rapids Public Schools Service Building
900 Union NE
Grand Rapids, Michigan 49503

D. Contract Award

Contract award will be undertaken by GRPS with the Professional(s) whose qualifications and proposal(s) the issuing office determines to be in the District's best interest. AIA Document B133-Modified will be the basis of this agreement.

E. Submittal Requirements – Firm, Team and Approach

Submit Six (6) hard copies to address and person named above, and one electronic PDF copy via email to **Dale Cammenga at CammengaD@grps.org**

Executive Summary – One [1] page maximum

Summarize your strong points and describe how your experience will benefit the GRPS efforts to design the(se) project(s).

Business Organization ~ One [1] page maximum

State the full name and address of the organization and, if applicable, the branch office, consultants, or other subordinate elements that will provide or assist in providing the service.

Indicate whether you operate as an individual, partnership, or corporation; if as a corporation, include the state in which you are incorporated. State the names of the principals of your firm.

Firm Experience – Five [5] pages maximum

Provide examples of up to five similar projects completed by the firm for educational clients within the past ten (10) years.

Statement of the Problem and Summary of Approach – Three [3] pages maximum

State in succinct terms your understanding of the major issues of this project. Identify specifically how your firm will meet the project goals and GRPS expectations.

Briefly describe how you intend to address the main issues of the project.

Work Plan / Schedule – Three [3] pages maximum (per project proposed)

Include a time-related chart, show events, tasks, and decision points in your work plan, from selection through overall completion of the program. Discuss how your work will be coordinated and how you intend to interface with Grand Rapids Public School District, the Construction Manager and the rest of the project team. Provide a review schedule between the A/E, CM, and Owner.

Manpower and Team ~ No page limit (per project proposed)

The firm must staff a project team with the qualifications and expertise necessary to undertake a project of this scope, **ready to begin work immediately upon notice to proceed**. Include the number of executive and professional personnel by skill and qualification that will be employed in the work. Describe their role in the project.

Identify key participants, including major consultants, with name, resumes, qualifications and relevant experience. You must indicate a percentage of time which each key participant will allocate to this project and coordinate this information with your fee proposal. Include a listing of their current project responsibilities and the dates that they will be available to begin work on this project.

Resumes with qualifications for key individuals must be provided. Include a brief description of three [3] major projects in which each individual has been instrumental (may be projects completed for other firms but be certain to identify the firm). **Up to one page per individual.**

Community (external and internal) Engagement and Communication plan ~ Two [2] pages maximum

State in succinct terms your plan to engage internal and external stakeholders during the design process, and how you will provide pertinent information in a public format (ie. Website) to keep the public and all interested parties abreast of the progress of the project.

F. Submittal Requirements – Fee (separate sealed envelope)

You are requested to submit a lump sum fee for the scope of work described above for each individual project or group of projects. Your fee proposal must also reflect and include detail for all expected reimbursable charges and the billable hourly rates for your team members assigned to our project. Your fee proposal is to include all services required for the scope of work as defined in this request for proposal our services are to include pre-design services to assist GRPS in making necessary adjustments to the program scope working closely with District Academic and Facilities staff in order to meet the budget.

Your firm will be working closely with a Construction Manager retained by GRPS. Close collaboration between your firm and the CM is expected on a weekly basis for the duration of the construction phase.

The submittal requirements are:

- Email and hand deliver your Fee proposal to:
Dale Cammenga, Director of Design, Construction & Renovation
900 Union NE
Grand Rapids, MI 49503
CammengaD@grps.org

Your submittal should be prepared simply and economically, providing a straightforward comprehensive description of the professional's ability to meet the requirements of the request. Submittals must be signed by an official authorized to bind the professional to its provisions.

Your submittal will be considered a contract document. Submittals must remain valid for a minimum of sixty [60] days.

H. Incurring Costs

GRPS is not liable for any cost incurred by the professional prior to issuance of a contract.

I. Prime Professional Service Contract Responsibilities

The PSC is required to assume responsibility for all services offered in the submittal whether or not they possess them within their organization. Further, GRPS will consider the professional to be the sole point of contact with regarding to contractual matters, including payment for any and all charges resulting from the contract.

INSURANCE REQUIREMENTS

The firm must acquire and continuously maintain during the period in which the consultant is performing services pursuant to this Contract, and provide the GRPS with acceptable proof of the following type and amounts of insurance coverage:

1. **Statutory Workers Compensation Insurance**
2. **Employers' Liability Insurance** with policy limits not less than One Million Dollars (\$ 1,000,000) each accident, One Million Dollars (\$ 1,000,000) each employee, and One Million Dollars (\$ 1,000,000) policy limit.
3. **Comprehensive General Liability Insurance** with separate limits of not less than \$1,000,000 per accident coverage against bodily injury and \$1,000,000 per accident coverage against property damage, or with a combined single limit against both bodily injury and property damage of not less than \$3,000,000 per occurrence. This coverage shall include a contractual liability endorsement, not excluding sexual harassment and molestation.
4. **Comprehensive Owned and Non-Owned Automobile Liability Insurance** with the same minimum limits of coverage as that required for the **Comprehensive General Liability Insurance**.
5. **Professional Liability Insurance** covering negligent acts, errors and omissions in the performance of professional services, with policy limits of not less than Two Million Dollars (\$ 2,000,000) per claim and Two Million Dollars (\$ 2,000,000) in the aggregate.

The Grand Rapids Public School District and Plante Moran Realpoint, it's Owner's Representative, must be named as additional insured by endorsement to the Comprehensive General Liability Policy. Certificates of insurance evidencing that the consultant has secured all of the foregoing insurance must be provided to the Grand Rapids Public School District. A minimum of thirty [30] days notice to the GRPS prior to the cancellation of, or change in, any such insurance shall be endorsed on each policy and noted on each certificate.

Fair Employment Practices Agreement

Equal Opportunity [Affirmative Action Employer]

The Grand Rapids Public School District, as an Equal Opportunity/Affirmative Action Employer, complies with federal and state laws prohibiting discrimination, including Title IV and Title VII [with amendments] of the 1964 Civil Rights Act, Title IX of the Educational Amendment of 1972, Section 504 of the Rehabilitation Act of 1973, Veterans Readjustment Act of 1974 as amended 28 USSC 20-12 and the Americans With Disabilities Act of 1990. It is the policy of the School Board that no person, on the basis of race, sex, height, weight, color, religion, national origin, or ancestry, age, marital status, disability, or veteran status, shall be discriminated against in employment, educational programs and activities, or admission.

Inquiries or complaints should be addressed to Frederica Williams, 1331 Martin Luther King Jr. St. SE, PO Box 117, Grand Rapids, Michigan 49501-0117.

SWORN STATEMENT OF FAMILIAL RELATIONSHIP

As required by Section 1267 of the Revised School Code – MCL 380.1267

STATE OF MICHIGAN

COUNTY OF _____

_____, being duly sworn, deposes and says:

That _____ (The "Bidder") has bid for an improvement to the following described project located in Kent County, Michigan, which is owned by the Grand Rapids Public Schools:

Project Name: _____

That the following is a statement of disclosure of any familial relationship that exists between the owner or any employee of the Bidder and any member of the Grand Rapids Public Schools Board of Education or Superintendent, as required pursuant to Section 1267 of the Revised School Code, as amended.

1. ☐ That there are no such familial relationships existing at this time.

OR

2. ☐ That a familial relationship exists between

_____,

an ☐ owner ☐ employee of the Bidder who is the
_____ relationship

of _____, who is ☐ a member of the
Board, ☐ the Superintendent.

Deponent _____

Subscribed and sworn to before me this _____ day of _____, 20____

Acting in: _____

My commission expires: _____

IRAN BUSINESS RELATIONSHIP AFFIDAVIT

Effective April 1, 2013 all bids, proposals, and/or qualification statements received in the State of Michigan must comply with the "Iran Economic Sanctions Act". The following certification is to be signed and included at time of submittal.

Certification

Pursuant to the Michigan Iran Economic Sanctions Act, 2012 P.A. 517, by submitting a bid, proposal or response, Respondent certifies, under civil penalty for false certification, that it is fully eligible to do so under law and that it is not an "Iran linked business" as the term is defined in the Act.

Signature

Title

Company

Criminal Background Affidavit

The undersigned, the owner or authorized officer of the below-named Firm, pursuant to the criminal background compliance certification requirements of Grand Rapids Public Schools (the "School District") hereby represents and warrants that the Firm has performed and/or will perform sufficient criminal background checks, including at a minimum, an Internet Criminal History Tool ("ICHAT") check, for all of its owners, employees, agents, representatives, contractors and/or other personnel who will be on any School District premises to carry out the services contemplated by the Contract Documents. The Firm further hereby certifies that no owner, employee, agent, representative, contractor and/or other personnel of the Firm will be on any School District premises if they are a registered criminal sexual offender under the Sex Offenders Registration Act, Public Act 295 of 1994, or have been convicted of "Listed Offense" as defined under Section 722 of the Sex Offenders Registration Act, MCL 28.722.

The Firm further acknowledges that if it is found to have submitted a false certification or otherwise fails to comply with the requirements of this certification, the School District may immediately terminate the Contract.

FIRM:

Name of FIRM

By: _____

Its: _____

STATE OF _____)
)ss.

COUNTY OF _____)

This instrument was acknowledged before me on the _____ day of _____, 20____, by _____.

Notary Public

County _____,

My Commission Expires: _____

Acting in the County of:

NON-COLLUSIVE AFFIDAVIT

STATE OF MICHIGAN)
) SS
COUNTY OF _____)

_____, being duly sworn, deposes and says that:

- 1. The proposal has been arrived at by the consultant independently and has been submitted without collusion with, and without any agreement, understanding, or planned common course of action with, any other vendor of materials, supplies, equipment, or services described in the request for proposals, designed to limit independent bidding or competition; and,
- 2. The contents of the proposal have not been communicated by the consultant or its employees or agents to any person not an employee or agent of the consultant or its surety on any bond furnished with the proposal and will not be communicated to any such person prior to the official opening of the proposal.

Signature of Consultant

STATE OF _____)
)SS.
COUNTY OF _____)

This instrument was acknowledged before me on the _____ day of _____, 20____, by _____.

_____, Notary Public

_____ County _____,

My Commission Expires: _____

Acting in the County of: _____

DEBARMENT AND SUSPENSION CERTIFICATION

The bidder, under penalty of perjury, certifies that, except as noted below, he/she or any other person associated therewith in the capacity of owner, partner, director, officer, manager:

- Is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any Federal agency;
- Has not been suspended, debarred, voluntarily excluded or determined ineligible by any Federal agency within the past 3 years;
- Does not have a proposed debarment pending; and
- Is not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or Local) in any matter involving fraud or official misconduct within the past 3 years.

If there are any exceptions to this certification, insert the exceptions in the following space:

Exceptions will not necessarily result in denial or award, but will be considered in determining bidder responsibility. For any exception noted above, indicate below to whom it applies, initiating agency, and dates of action.

Notes: *Providing false information may result in criminal prosecution or administrative sanctions. The above certification is part of the Bid. Signing this document on the signature portion thereof shall also constitute signature of this Certification.*

Signature

Title

Company

Date

Attachment A. Proposal Form

AE Services for District Wide Pool Upgrades & Renovations

BIDDER: _____

BIDDER'S ADDRESS: _____

BIDDER'S MAIN CONTACT FOR PROPOSAL: _____

MAIN CONTACT'S PHONE NUMBER: _____

MAIN CONTACT'S EMAIL ADDRESS: _____

All proposals submitted may not be withdrawn and shall be irrevocable for a minimum period as defined in this RFP.

A. COST PROPOSAL

a. For Scope of Services as described and required in the RFP and AIA B133-2019 as modified:

- Total lump sum fee for complete design services: \$ _____
 - \$ _____ total cost of the work for Ottawa project
 - \$ _____ total cost of the work for Union project
 - \$ _____ total cost of the work for City High/Middle project

b. Reimbursables:

Provide a list of items for which you would require reimbursement and the percentage mark-up, if any, which you would add to reimbursable expenses. In addition, please provide a not-to-exceed allowance for reimbursable expenses on this project. Please refer to AIA B133-2019 as amended, Article 11, for clarifications on allowable reimbursable expenses.

- Not-to-exceed reimbursable allowance: \$ _____

B. STANDARD OF CARE

a. Percentage of care for architect errors and omissions: _____ %

C. SUB-CONSULTANTS

- a. List all anticipated sub-consultants:

POOL	_____
STRUCTURAL	_____
ELECTRICAL	_____
MECHANICAL	_____
PLUMBING	_____
TECHNOLOGY	_____
OTHER	_____

In the event additional consultants are required to complete this project, please state your percentage markup, if any, for including the services of additional consultants under your primary contract:_%

D. ADDENDA

- a. This proposal includes information for the following addenda:

ADDENDA NO.	_____	DATED	_____
ADDENDA NO.	_____	DATED	_____

E. STAFFING RATES

- a. Provide separate attachment that includes all hourly professional service rates

F. CONTRACTUAL TERMS

- a. If selected as architect/engineer, I agree to the contractual terms as provided in the RFP as noted below:

- ☐ AIA B133-2019 Edition, as modified
- ☐ AIA A201 General Conditions, as amended
- ☐ Exceptions to amended B133-2019 and A201 -2017*

*Attach SPECIFIC proposed alternate contract language

I have read and I understand the responsibilities required of the architect/engineer under the terms of this RFP and the proposed Agreement. If selected, our firm will be able to fulfill the requirements.

SIGNATURE

Dated this _____ day of _____, 20_____.

FIRM NAME:

BY:

Signature

Position/Title

_____, being duly sworn, deposes and says that the information provided herein is complete so as not to be misleading.

Subscribed and sworn before me this _____ day of _____, 20_____.

NOTARY PUBLIC:

MY COMMISSION EXPIRES:

ATTACHMENT B: B133-2019 & A201-2017, as modified

DRAFT AIA® Document B133® – 2019

Standard Form of Agreement Between Owner and Architect, Construction Manager as Constructor Edition

AGREEMENT made as of the « » day of « » in the year «Two Thousand Twenty Five.

»

(In words, indicate day, month and year.)

BETWEEN the Architect's client identified as the Owner:
(Name, legal status, address, and other information)

«Grand Rapids Public School District»« »
1331 Martin Luther King Jr. Street SE
«Grand Rapids, Michigan 49506»

and the Architect:

(Name, legal status, address, and other information)

for the following Project:

(Name, location, and detailed description)

«Grand Rapids Public School District - 2023 Bond Program
District Wide Pool Upgrades and Renovations at the following buildings:
Union High School located at 1800 Tremont Blvd NW, Grand Rapids, MI 49504;
Ottawa Hills High School located at 2055 Rosewood Ave SE, Grand Rapids, MI 49506;
and
City High/Middle School located at 1720 Plainfield Ave NE, Grand Rapids, MI 49505, all
in accordance with the relevant application for preliminary qualification of bonds, the
relevant election ballot language, Owner-approved plans and specifications, all applicable
laws, the Owner's fixed budget, and as otherwise approved by the Owner. »

The Construction Manager (if known):

(Name, legal status, address, and other information)

The Owner and Architect agree as follows.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Documents A201-2017™, General Conditions of the Contract for Construction; A133-2019™ Standard Form of Agreement Between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price; and A134-2019™ Standard Form of Agreement Between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the Work Plus a Fee without a Guaranteed Maximum Price. AIA Document A201™-2017 is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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ARTICLE 1 INITIAL INFORMATION

§ 1.1 This Agreement is based on the Initial Information set forth in this Section 1.1.

(For each item in this section, insert the information or a statement such as "not applicable" or "unknown at time of execution.")

§ 1.1.1 The Owner's program for the Project:

(Insert the Owner's program, identify documentation that establishes the Owner's program, or state the manner in which the program will be developed.)

« As expressly approved by the Owner in writing after advice and input from the Architect, Construction Manager, and any others deemed appropriate by the Owner, in accordance with the relevant application for preliminary qualification of bonds. »

§ 1.1.2 The Project's physical characteristics:

(Identify or describe pertinent information about the Project's physical characteristics, such as size; location; dimensions; geotechnical reports; site boundaries; topographic surveys; traffic and utility studies; availability of public and private utilities and services; legal description of the site, etc.)

«As expressly approved by the Owner in writing after advice and input from the Architect, Construction Manager, and any others deemed appropriate by the Owner, in accordance with the relevant application for preliminary qualification of bonds. »

§ 1.1.3 The Owner's budget for the Cost of the Work, as defined in Section 6.1:6.1.1:

(Provide total and, if known, a line item breakdown.)

«The Owner's fixed budget for all aspects of the Projects ("fixed Project budget") is as follows:
Union High School Pool – Two Million Seven Hundred Thousand Dollars (\$ 2,700,000) Program Budget;
Ottawa Hills High School Pool – Two Million One Hundred Seventy Five Thousand Dollars (\$ 2,175,000) Program Budget;

§ 1.1.4 The Owner's anticipated design and construction milestone dates:

- .1 Design phase milestone dates, if any:

«To be determined»

- .2 Construction commencement date:

« To be determined »

- .3 Substantial Completion date or dates:

« To be determined »

- .4 Other milestone dates:

« To be determined »

§ 1.1.5 The Owner intends to retain a Construction Manager pursuant to the following agreement:

(Indicate agreement type.)

- [☒] AIA Document A133–2019, Standard Form of Agreement Between Owner and Construction Manager as ~~Constructor~~ as Constructor, as modified by the Owner, where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price.

- [☐] AIA Document A134–2019, Standard Form of Agreement Between Owner and Construction Manager as ~~Constructor~~ Constructor, as modified by the Owner, where the basis of payment is the Cost of the Work Plus a Fee without a Guaranteed Maximum Price.

§ 1.1.6 The Owner's requirements for accelerated or fast-track design and construction, or phased construction are set forth below:

(List number and type of bid/procurement packages.)

« To be determined »

§ 1.1.7 The Owner's anticipated Sustainable Objective for the Project:

(Identify and describe the Owner's Sustainable Objective for the Project, if any.)

«N/A »

§ 1.1.7.1 ~~If the Owner identifies a Sustainable Objective, the Owner and Architect shall complete and incorporate AIA Document E234™ 2019, Sustainable Projects Exhibit, Construction Manager as Constructor Edition, into this Agreement to define the terms, conditions and services related to the Owner's Sustainable Objective. If E234 2019 is incorporated into this Agreement, the Owner and Architect shall incorporate the completed E234 2019 into the agreements with the consultants and contractors performing services or Work in any way associated with the Sustainable Objective.~~

(Paragraph deleted)

§ 1.1.8 The Owner identifies the following representative in accordance with Section 5.4:

(List name, address, and other contact information.)

«Mr. Alex Smart, Executive Director of Facilities and Operations »
Grand Rapids Public School District
1331 Martin Luther King Jr. Street SE
Grand Rapids, MI 49506

« »

«The Owner may change the representative and the representative's authority in its sole discretion. The Owner will notify the Architect of any such changes. »

§ 1.1.8.1 Owner's Representative Consultant.

The Owner has engaged Plante Moran Realpoint, LLC (PMR) as an Owner's Representative Consultant on the Project. The Architect shall keep the Owner and PMR informed in matters regarding the Project. Unless otherwise provided in this Agreement or specifically authorized by the Owner, the Owner's Representative Consultant is not authorized to commit the Owner in matters regarding changes in the Work, Construction Schedule, or grant approval on behalf of the Owner. The Owner and/or the Owner's representative identified in 1.1.8 have the sole right to make decisions in matters regarding the Project. The following individual, subject to change upon written notification to the Architect, shall be primary contact for the Owner's Representative Consultant:

«Jenae Kuipers»

«Plante Moran Realpoint, LLC »

«634 Front Avenue NW; Suite 300

Grand Rapids, MI 49504

jenae.kuipers@plantemoran.com; (616) 643-4251»

The Owner, Architect, and PMR acknowledge and agree that the Owner's representative identified in Section 1.1.8 and the Owner's Representative Consultant identified in Section 1.1.8.1 are separate and distinct individuals with separate and distinct rights and responsibilities.

§ 1.1.9 The persons or entities, in addition to the Owner's representative, who are required to review the Architect's submittals to the Owner are as follows:
(List name, address, and other contact information.)

« As directed by the Owner's Board of Education, the State of Michigan, and any others required by law. »

§ 1.1.10 The Owner shall retain the following consultants and contractors:
(List name, legal status, address, and other contact information.)

.1 Construction Manager:

~~(The Construction Manager is identified on the cover page. If a Construction Manager has not been retained as of the date of this Agreement, state the anticipated date of retention. If the Architect is to assist the Owner in selecting the Construction Manager, complete Section 4.1.1.1.)~~

« »

.2 Land Surveyor:

«To be determined »« »

« »

« »

« »

« »

.3 Geotechnical Engineer:

« To be determined »« »

« »

« »

« »

« »

.4 Civil Engineer:

- ~~.5~~ Other consultants and contractors:
(List any other consultants and contractors retained by the Owner.)

« To be determined by the Owner. Contractors will be selected by the Owner in accordance with competitive bidding requirements under law, as applicable, including, MCL 380.1267, MCL 380.1274, and MCL 380.1274a. »

§ 1.1.11 The Architect identifies the following representative in accordance with Section 2.4:
(List name, address, and other contact information.)

« To be determined »

<<>>

<<>>

<<>>

§ 1.1.12 The Architect shall retain the consultants identified in Sections 1.1.12.1 and ~~1.1.12.2~~ 1.1.12.2 and any others required to perform Basic Services:
(List name, legal status, address, and other contact information.)

§ 1.1.12.1 Consultants retained under Basic Services:

- .1 Structural Engineer:

« To be performed by the Architect as a Basic Service »

- .2 Mechanical Engineer:

« To be performed by the Architect as a Basic Service »

- .3 Electrical Engineer:

« To be performed by the Architect as a Basic Service »

- .4 Civil Engineer:

« To be performed by the Architect as a Basic Service »

§ 1.1.12.2 Consultants retained under Supplemental Services:

« Not applicable »

§ 1.1.13 Other Initial Information on which the Agreement is based:

«The Architect shall remain primarily responsible for the services performed by any hired consultants. Any agreement between the Architect and a hired consultant shall identify the Owner as an intended third-party beneficiary »

§ 1.2 The Owner and Architect may rely on the Initial Information. Both parties, however, recognize that the Initial Information may materially change and, in that event, the Owner and the Architect ~~shall appropriately adjust may mutually agree to a written adjustment in~~ the Architect's services, schedule for the Architect's services, and the Architect's compensation. ~~The Owner shall adjust the Owner's budget for the Cost of the Work and the Owner's anticipated design and construction milestones, as necessary, to accommodate material changes in the Initial Information.~~ compensation, as applicable.

§ 1.3 The parties ~~shall may~~ agree upon ~~written~~ protocols governing the transmission and use of, and reliance on, of Instruments of Service or any other information or documentation in digital form.

§ 1.3.1 Any use of, or reliance on, all or a portion of a building information model without agreement to ~~written~~ protocols governing the use of, and reliance on, the information contained in the model shall be ~~at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees subject to the same restrictions and licenses set forth in Article 7.~~

ARTICLE 2 ARCHITECT'S RESPONSIBILITIES

§ 2.1 The Architect shall provide professional services as set forth in this Agreement. The Architect represents that it is properly licensed in the ~~jurisdiction where the Project is located~~ State of Michigan to provide the services required by this Agreement, ~~or and~~ shall cause such services to be performed by appropriately licensed design ~~professionals~~ professionals, whether provided by the Architect or a consultant of the Architect.

§ 2.2 The Architect shall perform its services consistent with the professional skill and care ordinarily provided by architects practicing in the same or similar locality under the same or similar ~~circumstances~~ circumstances and familiar with the school design and construction industry in Michigan. The Architect shall perform its services as expeditiously as is consistent with such professional skill and care and the orderly progress of the Project.

§ 2.3 The Architect shall provide its services in conjunction with the services of a Construction Manager as described in the agreement identified in Section 1.1.5. The Architect shall not be responsible for actions taken by the Construction Manager.

§ 2.4 The Architect shall identify a representative authorized to act on behalf of the Architect with respect to the Project.

§ 2.5 ~~Except with the Owner's knowledge and consent, the~~ The Architect shall not engage in any activity, or accept any employment, interest or contribution that would reasonably appear to compromise the Architect's professional judgment with respect to this ~~Project~~ Project, except upon the Owner's written consent and the full disclosure by the Architect of all relevant facts.

§ 2.6 Insurance. The Architect shall maintain ~~the following insurance until termination of this Agreement. If any of the requirements set forth below are in addition to the types and limits the Architect normally maintains, the Owner shall pay the Architect as set forth in Section 11.9.~~ insurance until termination of this Agreement in the types and amounts identified below, in any attached Certificate of Insurance, or as required by law, whichever is greater.

§ 2.6.1 ~~Commercial General Liability with policy limits of not less than \$ () for each occurrence and \$ () in the aggregate for bodily injury and property damage.~~ Comprehensive General Liability Insurance with separate limits of not less than \$1,000,000 per accident coverage against bodily injury and \$1,000,000 per accident coverage against property damage, or with a combined single limit against both bodily injury and property damage of not less than \$3,000,000 per occurrence. This coverage shall include a contractual liability endorsement, not excluding sexual harassment and molestation.

§ 2.6.2 ~~Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Architect with policy limits of not less than \$ () per accident for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles, along with any other statutorily required automobile~~

coverage-Comprehensive Owned and Non-Owned Automobile Liability Insurance with the same minimum limits of coverage as that required for the Comprehensive General Liability Insurance.

§ 2.6.3 The Architect may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella liability insurance policies result in the same or greater coverage as the coverages required under Sections 2.6.1 and 2.6.2, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ 2.6.4 Workers' Compensation at statutory limits.

§ 2.6.5 Employers' Liability with policy limits not less than ~~(\$) each accident, (\$) each employee, and (\$) «One Million Dollars» (\$ «1,000,000») each accident, «One Million Dollars» (\$ «1,000,000») each employee, and «One Million Dollars» (\$ «1,000,000») policy limit.~~

§ 2.6.6 Professional Liability covering negligent acts, errors and omissions in the performance of professional services, with policy limits of not less than ~~(\$) per claim and (\$) Two Million Dollars (\$ 2,000,000) per claim and Two Million Dollars (\$ 2,000,000) in the aggregate.~~

§ 2.6.7 ~~Additional Insured Obligations. To the fullest extent permitted by law, the Architect shall cause the primary and excess or umbrella policies for Commercial General Liability and Automobile Liability to include the Owner as an additional insured for claims caused in whole or in part by the Architect's negligent acts or omissions. The additional insured coverage shall be primary and non-contributory to any of the Owner's insurance policies and shall apply to both ongoing and completed operations.~~Not Used.

§ 2.6.8 Additional Insured Obligations. Grand Rapids Public School District and Plante Moran Realpoint, LLC, it's Owner's Representative, must be named as additional insured by endorsement to the Comprehensive General Liability Policy. Certificates of insurance evidencing that the Architect has secured all of the foregoing insurance must be provided to the Owner. A minimum of thirty [30] days' notice to the Owner prior to the cancellation of, or change in, any such insurance shall be endorsed on each policy and noted on each certificate.

§ 2.6.8 The Architect shall provide certificates of insurance to the Owner that evidence compliance with the requirements in this Section 2.6.

ARTICLE 3 SCOPE OF ARCHITECT'S BASIC SERVICES

§ 3.1 The Architect's Basic Services ~~consist of include~~ those described in this Article 3 Agreement and include usual and customary structural, mechanical, ~~and electrical engineering services. Services not set forth in this Article 3 are civil, interior design, food service, acoustical, landscape design, plumbing, and electrical engineering services and other architectural and engineering services required to complete the Project~~ The Architect's service shall be performed by those qualified and experienced in their respective fields, as needed, to address the requirements of the Project. Services identified in this Agreement, the General Conditions, and any other Contract Document shall be Basic Services unless expressly identified as Supplemental or Additional Services.

§ 3.1.1 The Architect shall manage the Architect's services, administer the Project, research applicable design criteria, consult with the Owner, attend Project meetings, communicate with members of the Project team, and report progress to the Owner.

§ 3.1.2 The Architect shall coordinate its services and those of its consultants with those services provided by the Owner, the Construction Manager, and the Owner's consultants. The Architect shall be entitled to rely on, and shall not be responsible for, the accuracy, completeness, and timeliness of, services and information furnished by the Owner, the Construction Manager, and the Owner's ~~consultants.~~ consultants, subject to the Architect's professional judgment, experience, and expertise. The Architect shall provide prompt written notice to the Owner if the Architect becomes aware of any error, omission, or inconsistency in such services or information.

§ 3.1.3 As soon as practicable after the date of this Agreement, the Architect shall submit, for the Construction Manager's review and the Owner's approval, a written schedule for the performance of the Architect's services. ~~The schedule~~

services for inclusion in the Project schedule prepared by the Construction Manager. The schedule of the Architect's services shall include design phase milestone dates, as well as the anticipated dates when cost estimates or design reviews may occur, for the commencement of construction and for Substantial Completion of the Work as set forth in the Initial Information. The schedule shall include allowances for periods of time required for the Owner's review, review and provision of information, for the Construction Manager's review, for the performance of the Construction Manager's Preconstruction Phase services, for the performance of the Owner's consultants, for a master design schedule for planning, schematics, design development, and construction documents phase, and for approval of submissions by authorities having jurisdiction over the Project. Once approved by the Owner, time limits established by the schedule shall not, except for reasonable cause, cause and with the mutual written agreement of the parties, be exceeded by the Architect or Owner. With the Owner's approval, the Architect shall adjust the schedule, if necessary, as the Project proceeds until the commencement of construction.

§ 3.1.4 The Architect shall submit information to the Construction Manager and participate in developing and revising the Project schedule as it relates to the Architect's services; schedule. The Architect shall review and approve, notify the Owner of any concerns with, or take other appropriate action upon, the portion of the Project schedule relating to the performance of the Architect's services; the Project schedule.

§ 3.1.5 The Architect shall not be responsible for an Owner's directive or substitution, or for the Owner's acceptance of non-conforming work, made or given without the Architect's written approval review or approval. The Architect shall advise the Owner of the Architect's opinion before the Owner orders a directive or substitution or accepts non-conforming work.

§ 3.1.6 The Architect shall advise the Owner as to all building and special permits required for the Project and shall assist the Owner in obtaining building permits and special permits for permanent improvements, except for permits required to be obtained directly by the Contractor. The Architect shall verify that the Owner has paid applicable fees and assessments. The Architect shall, in coordination with the Construction Manager, contact governmental authorities required to approve the Construction Documents and entities providing utility services to the Project. The Architect shall respond to applicable design and regulatory requirements imposed by those authorities and entities.

§ 3.1.7 The Architect shall assist and advise the Owner and Construction Manager in connection with the Owner's responsibility for filing documents required for the approval of governmental authorities having jurisdiction over the Project. Project, including, but not limited to plan review required by MCL 380.1263, first responder consultation required by MCL 380.1264, construction code inspections required by MCL 388.851, et seq., and fire safety inspection required by MCL 388.851, et seq. The Architect shall have the primary responsibility to complete the required documents and to ensure they are properly filed on behalf of the Owner.

§ 3.1.8 Prior to the Owner's acceptance of the Construction Manager's Guaranteed Maximum Price proposal, or the Owner's approval of the Construction Manager's Control Estimate, as applicable, the Architect shall consider the Construction Manager's requests for substitutions and, upon written request of the Construction Manager, provide clarification or interpretations pertaining to the Drawings, Specifications, and other documents submitted by the Architect. The Architect and Construction Manager shall include the Owner in communications related to substitution requests, clarifications, and interpretations.

§ 3.1.9 The Architect shall comply with governing codes, regulations and laws in the performance of all services covered by this Agreement.

§ 3.1.10 The Architect acknowledges that the services to be provided by the Architect under this Agreement shall include assisting the Owner in complying with the Owner's obligations set forth in Public Act No. 306 of 1937, MCL 388.851, et seq., and Public Act 299 of 1980, MCL 339.2011 (collectively, the "Acts"). Therefore, the Architect hereby agrees to perform the services that shall or may be performed by an "architect" or "engineer" pursuant to those Acts, including, but not limited to, construction supervision and cost estimating. The parties acknowledge that nothing in this Agreement shall be construed to limit the Architect's services, duties or obligations under either of those Acts.

§ 3.1.11 Upon request of the Owner, the Architect shall make a presentation or presentations to explain the design of the Project to representatives of the Owner.

~~§ 3.2 Review of the Construction Manager's Guaranteed Maximum Price Proposal or Control Estimate~~**3.1.12** The Architect shall submit design documents to the Owner at intervals appropriate to the design process for purposes of evaluation and approval by the Owner.

§ 3.2 Review of the Construction Manager's Guaranteed Maximum Price Proposal or Control Estimate

§ 3.2.1 At a time to be mutually agreed upon by the Owner and the Construction Manager, the Construction Manager shall prepare, for review by the Owner and Architect, and for the Owner's acceptance or ~~approval, rejection,~~ a Guaranteed Maximum Price proposal or Control Estimate. The Architect shall ~~assist the Owner in reviewing the review the~~ Construction Manager's proposal or estimate. The Architect's review ~~is not for the purpose of discovering errors, omissions, or inconsistencies; for the assumption of shall be for all purposes, including discovering errors, omissions, or inconsistencies; but the Architect shall only be responsible to the extent of its professional standard of care and as required by MCL 339.2011 and shall not assume~~ any responsibility for the Construction Manager's proposed means, methods, sequences, techniques, or procedures; or for the verification of any estimates of cost or estimated cost proposals. In the event that the Architect discovers any inconsistencies or inaccuracies in the information presented, the Architect shall promptly notify the Owner and Construction Manager.

§ 3.2.2 Upon authorization by the Owner, and subject to Section 4.2.1.14, the Architect shall update the Drawings, Specifications, and other documents to incorporate the agreed upon assumptions and clarifications contained in the Guaranteed Maximum Price Amendment or Control Estimate.

§ 3.3 Schematic Design Phase Services

§ 3.3.1 The Architect shall ~~review the program, and other information furnished by the Owner and Construction Manager, and shall review assist the Owner and the Construction Manager in development of the program, schedule and construction budget for final approval by the Owner, consult with the Owner regarding the same, and shall review and comply with applicable~~ laws, codes, and regulations applicable to the Architect's ~~services; services and the Project.~~

§ 3.3.2 The Architect shall prepare a preliminary evaluation of the Owner's program, schedule, budget for the Cost of the Work, Project site, and other Initial Information, each in terms of the other, to ascertain the requirements of the Project. The Architect shall notify the Owner of (1) any inconsistencies discovered in the information, and (2) other information or consulting services that may be reasonably needed for the Project. The Architect shall maintain a current budget statement for the Project.

§ 3.3.3 The Architect shall present its preliminary evaluation to the Owner and Construction Manager and shall discuss with the Owner and Construction Manager alternative approaches to design and construction of the ~~Project; Project,~~ including the feasibility of incorporating environmentally responsible design approaches. The Architect shall reach an understanding with the Owner regarding the requirements of the Project.

§ 3.3.4 Based on the Project requirements agreed upon with the Owner, the Architect shall prepare and present, to the Owner and Construction Manager, for the Owner's approval, a preliminary design illustrating the scale and relationship of the Project components. Approval by the Owner will not constitute approval of the means, techniques or particular material recommended by the Architect for the Project. Selection by the Owner of a "particular material" recommended by the Architect for the Project shall constitute approval of that "particular material" by the Owner for aesthetic purposes only.

§ 3.3.5 Based on the Owner's approval of the preliminary design, the Architect shall prepare Schematic Design Documents for Construction Manager's review and the Owner's approval. The Schematic Design Documents shall consist of drawings and other documents including a site plan, if appropriate, and preliminary building plans, sections and elevations; and may include some combination of study models, perspective sketches, or digital representations. Preliminary selections of major building systems and construction materials shall be noted on the drawings or described in writing.

§ 3.3.5.1 The Architect shall consider sustainable design alternatives, such as material choices and building orientation, together with other considerations based on program and aesthetics, in developing a design that is consistent with the Owner's program, schedule and fixed budget for the Cost of the Work. The Owner may obtain more advanced sustainable design services as a Supplemental Service under Section 4.1.

§ 3.3.5.2 The Architect shall consider with the Owner and the Construction Manager the value of alternative materials, building systems and equipment, together with other considerations based on program-program, fixed budget, and aesthetics, in developing a design for the Project that is consistent with the Owner's program, schedule, and fixed budget for the Cost of the Work.

§ 3.3.6 The Architect shall submit the Schematic Design Documents to the Owner and the Construction Manager. The Architect shall meet with the Construction Manager to review the Schematic Design Documents.

§ 3.3.7 Upon receipt of the Construction Manager's review comments and cost estimate at the conclusion of the Schematic Design Phase, the Architect shall take action as required under Section 6.4, and request the Owner's approval of the Schematic Design Documents. The Owner's approval shall be for general design concept purposes only and shall not be an approval of technical or design details. If revisions to the Schematic Design Documents are required to comply with the Owner's budget for the Cost of the Work at the conclusion of the Schematic Design Phase, the Architect shall incorporate the required revisions in the Design Development Phase. The Architect shall not proceed to the Design Development Phase unless and until it has received the Owner's written approval.

§ 3.3.8 In the further development of the Drawings and Specifications during this and subsequent phases of design, the Architect shall be entitled to rely on receive and review the accuracy of the estimates of the Cost of the Work, which are to be provided by the Construction Manager under the Construction Manager's agreement with the Owner-the Owner and shall prepare such estimates of Construction Cost as the Architect deems necessary to perform Basic Services and to satisfy MCL 339.2011. The Architect shall advise the Owner if it appears that the Cost of the Work may exceed the Owner's fixed budget for the Cost of the Work, and/or that total Project costs may exceed the fixed Project budget and shall make recommendations for corrective action.

§ 3.4 Design Development Phase Services

§ 3.4.1 Based on the Owner's approval of the Schematic Design Documents, and on the Owner's authorization of any adjustments in the Project requirements and the budget for the Cost of the Work, the Architect shall prepare and provide Design Development Documents for the Owner's and Construction Manager's review and the Owner's approval. The Design Development Documents shall be based upon Owner's approval shall be for general design concept purposes only and shall not be an approval of technical or design details. The Design Development Documents shall take into consideration information provided, and estimates prepared by, the Construction Manager and shall illustrate and describe the development of the approved Schematic Design Documents and shall consist of drawings and other documents including plans, sections, elevations, typical construction details, and diagrammatic layouts of building systems to fix and describe the size and character of the Project as to architectural, structural, mechanical and electrical systems, and other appropriate elements-mechanical, civil, and electrical systems, and such other appropriate elements reasonably related to the Project. The Design Development Documents shall also include outline specifications that identify major materials and systems and establish in general their quality levels.

§ 3.4.2 Prior to the conclusion of the Design Development Phase, the Architect shall submit the Design Development Documents to the Owner and the Construction Manager. The Architect shall meet with the Construction Manager to review the Design Development Documents.

§ 3.4.3 Upon receipt of the Construction Manager's information and estimate at the conclusion of the Design Development Phase, the Architect shall take action as required under Sections 6.5 and 6.6 and request the Owner's approval of the Design Development Documents. Approval by the Owner will not constitute approval of the means, techniques, or particular material recommended by the Architect for the Project. Selection by the Owner of a "particular material" recommended by the Architect for the Project shall constitute approval of that "particular material" by the Owner for aesthetic purposes only.

§ 3.4.4 The Architect shall specifically request and obtain the Owner's written approval of the Design Development Documents and related construction cost estimates before proceeding to the Construction Documents Phase.

§ 3.5 Construction Documents Phase Services

§ 3.5.1 Based on the Owner's approval of the Design Development Documents, and on the Owner's authorization of any adjustments in the Project requirements and the budget for the Cost of the Work, the Architect shall prepare and provide Construction Documents for the Construction Manager's review and the Owner's approval. The Owner's approval shall be for general design concept purposes only and shall not be an approval of technical or design details. The Construction

Documents shall illustrate and describe the further development of the approved Design Development Documents and shall consist of Drawings and Specifications setting forth in detail the ~~quality levels and performance criteria of~~ materials and systems and other requirements for the construction of the ~~Work.~~ Work, including quality levels and performance criteria. The Owner and Architect acknowledge that, in order to perform the Work, the Construction Manager will provide additional information, including Shop Drawings, Product Data, Samples and other similar submittals, which the Architect shall require in the bid documents and which the Architect shall review in accordance with Section 3.6.4.

§ 3.5.2 The Architect shall incorporate the design requirements of governmental authorities having jurisdiction over the Project into the Construction Documents.

§ 3.5.3 During the development of the Construction Documents, ~~if requested by the Owner, the~~ Architect shall assist the Owner and Construction Manager in the development and preparation of (1) the Conditions of the Contract for Construction (General, Supplementary and other ~~Conditions~~ Conditions), ~~as modified by the Owner,~~ and (2) a project manual that includes the Conditions of the Contract for ~~Construction~~ Construction, as modified by the Owner, and Specifications, and may include sample forms. All such documents shall have been provided in a format that conforms with the terms of this Agreement and the drawings/specifications, including but not limited to dispute resolution provisions, and shall comply with all public bidding, permit, prevailing wage (if applicable), and contracting laws applicable to Michigan public school districts and this Project.

§ 3.5.3.1 Documents referenced in Section 3.5.3 shall consist of the unabridged AIA contract forms modified as necessary to be consistent with this Agreement and the Project. The Architect shall ensure that bid specifications (and any other relevant Contract Documents) indicate that a modified version of the standard General Conditions of the Contract will be utilized. The Architect shall request the form of General Conditions of the Contract be either drafted by, or reviewed by, the Owner's legal counsel and, upon receipt, shall include such document in the bid specifications, the project manual, and all final project documents.

§ 3.5.4 Prior to the conclusion of the Construction Documents Phase, the Architect shall submit the Construction Documents to the Owner and the Construction Manager. The Architect shall meet with the Construction Manager to review the Construction Documents.

§ 3.5.5 Upon receipt of the Construction Manager's information and estimate at the conclusion of the Construction Documents Phase, the Architect shall take action as required under Section ~~6.7,~~ 6.7 and request the Owner's approval of the Construction Documents. Approval by the Owner will not constitute approval of the means, techniques, or particular material recommended by the Architect for the Project. Selection by the Owner of a "particular material" recommended by the Architect for the Project shall constitute approval of that "particular material" by the Owner for aesthetic purposes only.

§ 3.5.6 The Architect shall specifically request and obtain the Owner's written approval of the Construction Documents and related construction cost estimates before proceeding to the Construction Phase.

§ 3.5.7 Procurement/Bidding Phase Services

§ 3.5.7.1 General

The Architect shall, in consultation with the Owner, establish a list of prospective contractors. Following the Owner's approval of the Construction Documents, the Architect shall assist the Owner in (1) obtaining either competitive bids or negotiated proposals (as required by law); (2) rendering interpretations and clarifications of the Drawings and Specifications in appropriate written form; (3) confirming responsiveness of bids or proposals; (4) conducting or participating in pre-award conferences with apparent low bidders; (5) assisting the Owner with evaluating bids; and (6) providing award recommendations to the Owner. Owner-awarded contracts are to be assigned to, and assumed by, the Construction Manager.

§ 3.5.7.1.1 The Architect shall include in the bidding information, plans, or specifications a requirement that the successful bidders will provide operation manuals to the Owner and shall provide adequate training for the Owner in the operation of any and all facility systems installed by the bidders, including mechanical, civil, electrical, HVAC systems, and any other building systems.

§ 3.5.7.1.2 The Architect shall consider, propose, develop and implement a reasonable plan to develop bidders' interest in the Project(s), acknowledging the critical nature of ensuring sufficient bid coverage to satisfy

requirements regarding Project quality and the Owner's fixed budget for the Cost of the Work and fixed Project budget.

§ 3.5.7.2 Competitive Bidding

§ 3.5.7.2.1 Bidding Documents shall consist of bidding requirements and proposed Contract Documents.

§ 3.5.7.2.2 The Architect shall assist the Owner in bidding the Project by:

- .1 developing bidders' interest in the Project and establishing bidding schedules;
- .2 issuing bidding documents to bidders, and preparing and publishing necessary bid notices and advertisements;
- .3 reproducing and facilitating the distribution of Bidding Documents to prospective bidders;
- .4 organizing and conducting pre-bid conferences for prospective bidders;
- .5 preparing responses to questions from prospective bidders and providing clarifications and interpretations of the Bidding Documents in the form of addenda;
- .6 attending the Owner's opening of the bids, and subsequently documenting and distributing the bidding results, as directed by the Owner
- .7 reviewing the bidding procedure to assist the Owner's compliance with competitive bidding laws, including with respect to MCL 380.1267, MCL 380.1274, and MCL 380.1274a, as applicable;
- .8 ensuring all bid bonds, payment bonds, and performance bonds have been timely obtained; and
- .9 preparing bid analyses, conducting post-bid interviews with apparent low bidders, and making recommendations to the Owner for the Owner's award of contracts or rejection of bids (acknowledging that the Construction Manager may have a conflict of interest in awarding trade contracts, as the Construction Manager will assume responsibility for same during the Project's Construction Phase).

§ 3.5.7.2.3 If the Bidding Documents permit substitutions, the Architect shall consider requests for substitutions and prepare and distribute addenda identifying approved substitutions to all prospective bidders.

§ 3.6 Construction Phase Services

§ 3.6.1 General

§ 3.6.1.1 The Architect shall provide administration of the Contract between the Owner and the Construction Manager as set forth below and in AIA Document A201™-2017, General Conditions of the Contract for Construction. If the Owner and Construction Manager modify AIA Document A201-2017, those modifications shall not affect the Architect's services under this Agreement unless the Owner and the Architect amend this Agreement. The term "Contractor" as used in A201-2017 shall mean the Construction Manager. Construction, as modified. References to the "General Conditions" herein shall mean the modified version of AIA Document A201 – 2017.

§ 3.6.1.2 Subject to Section 4.2, the Architect's responsibility to provide Construction Phase Services commences upon the Owner's acceptance of the Construction Manager's Guaranteed Maximum Price proposal, the Owner's approval of the Construction Manager's Control Estimate, or by a written agreement between the Owner and Construction Manager which sets forth a description of the Work to be performed by the Construction Manager prior to such acceptance or approval. Subject to Section 4.2, and except as provided in Section 3.6.6.5, or the Owner's first award of a competitively bid subcontract, whichever occurs earlier. Unless otherwise provided in this Agreement, the Architect's responsibility to provide Construction Phase Services terminates on the later of: (1) date the Architect issues the final Certificate for Payment; (2) the time period identified in Section 12.15; or (3) the longest applicable Subcontractor or Construction Manager warranty period.

§ 3.6.1.3 The Architect shall advise and consult with the Owner and Construction Manager during the Construction Phase Services. The Architect shall have authority to act on behalf of the Owner only to the extent provided in this Agreement. The Architect shall not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, nor shall the Architect be responsible for the Construction Manager's failure to perform the Work in accordance with the requirements of the Contract Documents, except as provided in this Agreement. The Architect shall be responsible for the Architect's negligent acts or omissions, but shall not have control over or charge of, and shall not be responsible for, acts or omissions of the Construction Manager or of any other persons or entities performing portions of the Work. Nothing in this Section 3.6.1.3 shall be construed to limit the Architect's responsibilities in MCL 339.2011 or MCL 388.851, et seq., both as may be amended from time to time.

§ 3.6.2 Evaluations of the Work

§ 3.6.2.1 The Architect shall visit the site at intervals appropriate to the stage of construction, ~~or as otherwise required in Section 4.2.3,~~ to become generally familiar with the progress and quality of the portion of the Work completed, ~~and to determine, in general, to guard the Owner against defects and deficiencies, and to determine~~ if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. ~~However, the Architect shall not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work.~~ On the basis of the site visits, the Architect shall keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Construction Manager, and (3) defects and deficiencies observed in the Work. Nothing in this Section shall reduce or limit the Architect's duty to supervise construction, including under MCL 388.851, et seq. and MCL 339.2011.

§ 3.6.2.2 The Architect has the authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect shall have the authority to require inspection or testing of the Work in accordance with the provisions of the Contract Documents, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Construction Manager, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 3.6.2.3 The Architect shall interpret ~~and decide~~ matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Construction Manager. The Architect's response to such requests shall be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 3.6.2.4 Interpretations ~~and decisions~~ of the Architect shall be consistent with the intent of, and reasonably inferable from, the Contract Documents and shall be in writing or in the form of drawings. When making such ~~interpretations and decisions,~~ interpretations, the Architect shall endeavor to secure faithful performance by ~~both Owner and~~ Construction Manager, shall not show partiality to ~~either, either the Owner or Construction Manager,~~ and shall not be liable for results of interpretations ~~or decisions rendered in good faith. The Architect's decisions rendered in good faith and without negligence. The Architect's interpretations~~ on matters relating to aesthetic effect shall be final if consistent with the intent expressed in the Contract Documents. It is acknowledged and understood that the Architect's obligation to provide "decisions" in the General Conditions, as a condition precedent to dispute resolution, shall be satisfied by the interpretations referenced herein.

§ 3.6.2.5 Unless the Owner and Construction Manager designate another person to serve as an Initial Decision Maker, as that term is defined in AIA Document A201–2017, as modified, the Architect shall render initial written decisions on Claims between the Owner and Construction Manager as provided in the Contract Documents.

§ 3.6.2.6 Notwithstanding anything contained in this Agreement, particularly Sections 3.6.1.3 and 3.6.2.1, nothing contained in this Agreement shall be construed to limit in any way the Architect's duties and responsibilities under law, including those duties and responsibilities under 1937 PA 306 and 1980 PA 299. It is understood that the Owner has retained a Construction Manager on this Project. The Agreement between Construction Manager and the Owner shall impose upon the Construction Manager the responsibility for the workmanlike performance of all construction performed on the project and completion of all work required under the subcontracts.

The Construction Manager Agreement shall require that the Construction Manager inspect the work of the subcontractors as it is being performed to assure that the work performed and the materials furnished are in accordance with the Contract Documents and provide all support items, services, utilities, etc., which are necessary for the completion of the Project which are not provided through the subcontracts, or by the Owner, or as a reimbursable item.

§ 3.6.3 Certificates for Payment to Construction Manager

§ 3.6.3.1 The Architect shall review and certify the amounts due the Construction Manager and shall issue certificates in such ~~amounts,~~ amounts according to the timeframes and schedules provided in AIA Document A201 – 2017, as modified by the Owner. The Architect's certification for payment shall constitute a representation to the Owner, based on the Architect's evaluation of the Work as provided in Section 3.6.2 and on the data comprising the Construction Manager's Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated, the quality and quantity of the Work is in accordance with the Contract ~~Documents,~~ Documents and has been performed in a good and workmanlike manner, and that the Construction Manager is entitled to payment in the

amount certified. The foregoing representations are subject to (1) an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, (2) results of subsequent tests and inspections, (3) correction of minor deviations from the Contract Documents prior to completion, and (4) specific qualifications expressed by ~~the Architect~~ the Architect in writing and accompanying the relevant certification.

§ 3.6.3.2 The issuance of a Certificate for Payment shall not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Construction Manager's right to payment, or (4) ascertained how or for what purpose the Construction Manager has used money previously paid on account of the Contract Sum.

§ 3.6.3.3 The Architect shall maintain a record of the Applications and Certificates for ~~Payment~~ Payment, certified copies of which shall be sent to the Owner.

§ 3.6.4 Submittals

§ 3.6.4.1 The Architect shall review the Construction Manager's submittal schedule and shall not unreasonably delay or withhold approval of the schedule. The Architect's action in reviewing submittals shall be taken in accordance with the approved submittal schedule or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time, in the Architect's professional judgment, to permit adequate review.

§ 3.6.4.2 ~~The~~ In accordance with the submittal schedule approved by the Owner and Architect (or, in the absence of such a schedule, with reasonable promptness), the Architect shall review and approve, or take other appropriate action upon, the Construction Manager's submittals such as Shop Drawings, Product Data and Samples, ~~but only~~ for the limited purpose of checking for general accuracy, completeness, and conformance with information given and the design concept expressed in the Contract Documents. Review of such submittals is not for the purpose of determining the accuracy and completeness of other information such as dimensions, quantities, and installation or performance of equipment or systems, which are the Construction Manager's responsibility. ~~The~~ Unless otherwise agreed, the Architect's review shall not constitute approval of safety precautions or construction means, methods, techniques, sequences or procedures. The Architect's review and approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 3.6.4.3 If the Contract Documents specifically require the Construction Manager to provide professional design services or certifications by a design professional related to systems, materials, or equipment, the Architect shall specify the appropriate performance and design criteria that such services must satisfy. The Architect shall review and take appropriate action on Shop Drawings and other submittals related to the Work designed or certified by the Construction Manager's design professional, provided the submittals bear such professional's seal and signature when submitted to the Architect. The Architect's review shall be for the ~~limited~~ purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. ~~The~~ Subject to its professional experience and expertise, the Architect shall be entitled to rely upon, and shall not be responsible for, the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design ~~professionals~~ professionals, but shall provide prompt written notice to the Owner if the Architect becomes aware of any material error, omission, or inconsistency in such services, certifications, or approvals.

§ 3.6.4.4 ~~Subject to Section 4.2, the Architect shall~~ The Architect shall timely review and respond to requests for information about the Contract Documents. The Architect shall set forth, in the Contract Documents, the requirements for requests for information. Requests for information shall include, at a minimum, a detailed written statement that indicates the specific Drawings or Specifications in need of clarification and the nature of the clarification requested. The Architect's response to such requests shall be made in writing within any time limits agreed upon, or otherwise with reasonable promptness. If appropriate, the Architect shall prepare and issue supplemental Drawings and Specifications in response to the requests for information. The Architect shall maintain a log of requests for information and the responses thereto.

§ 3.6.4.5 The Architect shall maintain a record of submittals and copies of submittals supplied by the Construction Manager in accordance with the requirements of the Contract Documents.

§ 3.6.5 Changes in the Work

§ 3.6.5.1 The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. Subject to Section 4.2, the Architect shall prepare and take other appropriate action on Change Orders and Construction Change Directives for the Owner's approval and execution in accordance with the Contract Documents. If necessary, the Architect shall prepare, reproduce and distribute Drawings and Specifications to describe the Work to be added, deleted, or modified.

§ 3.6.5.2 The Architect shall maintain records relative to changes in the Work. The Architect shall contemporaneously review with the Owner all changes and potential changes in the Work for reason, cause, cost and responsibility. Said issues shall be recorded and reported in a Change Management Log for the Project, the review and approval of which by the Architect shall evidence concurrence in the resolution of the issue as identified therein.

§ 3.6.6 Project Completion

§ 3.6.6.1 When the Architect considers the Construction Manager's Work (or a designated portion thereof) to be substantially complete, the Architect shall, jointly with the Construction Manager, prepare for the Owner a list of incomplete or unsatisfactory items and a schedule for their completion. The Architect shall:

- .1 conduct inspections to determine the date or dates of Substantial Completion and the date of final completion;
- .2 issue Certificates of Substantial Completion and, upon Substantial Completion, jointly with the Construction Manager, prepare a list of incomplete or unsatisfactory items and schedule their completion; the Architect shall then coordinate the correction and completion of the Work. Following issuance of a Certificate of Substantial Completion of the Work or a designated portion thereof, the Architect shall evaluate the completion of the Work of the Construction Manager or Contractor/Subcontractor(s), make a determination when the Work is ready for final inspection, and conduct final inspections;
- .3 forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract Documents and received from the Construction Manager; and
- .4 issue a final Certificate for Payment based upon a final inspection indicating that, to the best of the Architect's knowledge, information, and belief, the Work complies with the requirements of the Contract Documents.

§ 3.6.6.2 The Architect's inspections shall be conducted with the Owner to (1) check conformance of the Work with the requirements of the Contract Documents and (2) verify the accuracy and completeness of the list submitted by the Construction Manager of Work to be completed or corrected. The Architect shall be solely responsible for the inspection, and the Owner shall be solely an observer.

§ 3.6.6.3 When Substantial Completion has been achieved, the Architect shall inform the Owner about the balance of the Contract Sum remaining to be paid the Construction Manager, including the amount to be retained from the Contract Sum, if any, for final completion or correction of the Work.

§ 3.6.6.4 The Architect shall forward to the Owner the following information received from the Construction Manager: (1) certificates of insurance of the Construction Manager and its subcontractors, (2) consent of surety or sureties, if any, to reduction in or partial release of retainage or the making of final payment; (2)-(3) affidavits, receipts, releases and waivers of liens, or bonds indemnifying the Owner against liens; and (3)-(4) any other documentation required of the Construction Manager under the Contract Documents.

§ 3.6.6.5 Upon request of the Owner, and prior to the expiration of one year from the date of Substantial Completion, the Architect shall, without additional compensation, conduct a meeting with the Owner to review the facility operations and performance for the purpose of identifying potential warranty issues and to verify adequacy of the facility operations and performance.

§ 3.6.6.6 As part of Basic Services, the Architect shall be prepared to serve, and shall serve when requested by the Owner, as a witness in connection with any public hearing, arbitration proceeding, legal proceeding or administrative law proceeding to which the Owner or the Architect is a party concerning the Project.

§ 3.6.6.7 The Architect shall ensure that the Construction Manager has obtained and maintained a performance bond and payment bond in an amount covering the Construction Manager and all Contractor/Subcontractors in a form and with a surety acceptable to the Owner in connection with its obligations thereunder. The amount of each bond shall be equal to one hundred percent (100%) of the Contract Sum. The Architect shall deliver the required bonds to the Owner at least three (3) days before the commencement of any work at the Project site.

§ 3.6.6.8 The Architect shall deliver all keys, manuals, record drawings and maintenance stocks to the Owner. The Architect shall forward to the Owner a final Project Application for Payment and Project Certificate for Payment upon the Contractor's compliance with the requirements of the Contract Documents.

§ 3.6.6.9 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner and the Architect.

ARTICLE 4 SUPPLEMENTAL AND ADDITIONAL SERVICES

§ 4.1 Supplemental Services

§ 4.1.1 The services listed below are not included in Basic Services but may be required for the Project. The Architect shall provide the listed Supplemental Services only if specifically designated in the table below as the Architect's responsibility, and Services listed below, other than those identified as Basic Services, may be provided by the Architect as an Additional or Supplemental Service if: (a) required for the Project, (b) the Owner authorizes the performance of same in writing prior to the Architect's provision of any such service, and (c) the Architect provides a good faith estimate of the cost of the same prior to the Owner's authorization. The Owner shall not be obligated to pay for any Additional or Supplemental Service in the absence of the foregoing. For proper Additional and Supplemental Services, the Owner shall compensate the Architect as provided in Section 11.2. Unless otherwise specifically addressed in this Agreement, if neither the Owner nor the Architect is designated, the parties agree that the listed Supplemental Service is not being provided for the Project.

(Designate the Architect's Supplemental Services and the Owner's Supplemental Services required for the Project by indicating whether the Architect or Owner shall be responsible for providing the identified Supplemental Service. Insert a description of the Supplemental Services in Section 4.1.2 below or attach the description of services as an exhibit to this Agreement.) Agreement. In those instances where the second column is left blank, it is intended that such service is not a Basic Service of the Architect.)

Supplemental Services	Responsibility (Architect, Owner, or not provided)
§ 4.1.1.1 Assistance with Selection of Construction Manager	Owner
§ 4.1.1.2 Programming	Architect Basic Service
§ 4.1.1.3 Multiple Preliminary Designs	Architect Basic Service
§ 4.1.1.4 Measured drawings	Architect Basic Service
§ 4.1.1.5 Existing facilities surveys	Architect Basic Service
§ 4.1.1.6 Site evaluation and planning	Architect Basic Service
§ 4.1.1.7 Building Information Model management responsibilities	Architect Basic Service
§ 4.1.1.8 Development of Building Information Models for post construction use	Not Provided
§ 4.1.1.9 Civil engineering	Architect Basic Service
§ 4.1.1.10 Landscape design	Architect Basic Service
§ 4.1.1.11 Architectural interior design	Architect Basic Service
§ 4.1.1.12 Value analysis	Architect Basic Service
§ 4.1.1.13 Cost estimating	Architect Basic Service
§ 4.1.1.14 On-site project representation	Architect Basic Service
§ 4.1.1.15 Conformed documents for construction	Architect Basic Service
§ 4.1.1.16 As-designed record drawings	Architect Basic Service
§ 4.1.1.17 As-constructed record drawings	See Section 4.1.2.1
§ 4.1.1.18 Post-occupancy evaluation	Architect Basic Service
§ 4.1.1.19 Facility support services	Not Provided
§ 4.1.1.20 Tenant-related services	Not Provided
§ 4.1.1.21 Architect's coordination of the Owner's consultants	Architect Basic Service
§ 4.1.1.22 Technology/telecommunications/data design/technology	Architect Basic Service
§ 4.1.1.22 Telecommunications/data design	Architect Basic Service
§ 4.1.1.23 Security evaluation and planning	See Section 4.1.2.1
§ 4.1.1.24 Commissioning	See Section 4.1.2.1
§ 4.1.1.25 Sustainable Project Services pursuant to Section 4.1.3	Not Provided
§ 4.1.1.26 Historic preservation	Not Provided
§ 4.1.1.27 Furniture, furnishings, and equipment design	Architect Basic Service
§ 4.1.1.28 Other services provided by specialty Consultants Consultants: Technology Design	Architect Basic Service
§ 4.1.1.29 Other Supplemental Services	Not Provided

§ 4.1.2 Description of Supplemental Services

§ 4.1.2.1 A description of each Supplemental Service identified in Section 4.1.1 as the Architect's responsibility is provided below.

(Describe in detail the Architect's Supplemental Services identified in Section 4.1.1 or, if set forth in an exhibit, identify the exhibit. The AIA publishes a number of Standard Form of Architect's Services documents that can be included as an exhibit to describe the Architect's Supplemental Services.)

[«Section 4.1.1.17: As a Basic Service, the Architect will collect the Contractor's marked-up prints and deliver them to the Owner in a reasonable condition and format.](#)

[Section 4.1.1.23: Without limiting the breadth of Section 4.1.1.23, above, the Architect shall ensure compliance with MCL 380.1264.](#)

Section 4.1.1.24: As a Basic Service, the Architect shall comply with Rule 1098a of the Michigan Energy Code, as applicable, coordinate with the Owner's commissioning agent, and otherwise participate in basic system start-up and balancing information provided by the contractor. »

§ 4.1.2.2 A description of each Supplemental Service identified in Section 4.1.1 as the Owner's responsibility is provided below.

(Describe in detail the Owner's Supplemental Services identified in Section 4.1.1 or, if set forth in an exhibit, identify the exhibit.)

« Not Applicable »

~~§ 4.1.3 If the Owner identified a Sustainable Objective in Article 1, the Architect shall provide, as a Supplemental Service, the Sustainability Services required in AIA Document E234™-2019, Sustainable Projects Exhibit, Construction Manager as Constructor Edition, attached to this Agreement. The Owner shall compensate the Architect as provided in Section 11.2. (Paragraph deleted)~~

§ 4.2 Architect's Additional Services

The Architect may provide Additional Services after execution of this ~~Agreement without invalidating the Agreement. Except for services required due to the fault of the Architect, any Additional Services provided in accordance with this Section 4.2 shall entitle the Architect to compensation pursuant to Section 11.3 and an appropriate adjustment in the Architect's schedule.~~ Agreement, in accordance with the first paragraph of Section 4.1, without invalidating the Agreement.

§ 4.2.1 Upon recognizing the need to perform the following Additional Services, the Architect shall notify the Owner in writing, with reasonable promptness and explain the facts and circumstances giving rise to the need. The Architect shall not proceed to provide the following Additional Services until ~~the Architect receives the Owner's written authorization: all requirements of the first paragraph of Section 4.1 have been satisfied:~~

- ~~.1 Services Subject to Section 6.6 and 6.8 (which services shall be Basic Services, services necessitated by a change in the Initial Information, previous instructions or recommendations given by the Construction Manager or the Owner, instructions, approvals given by the Owner, or a material change in the Project including size, quality, complexity, the Owner's schedule or budget for Cost of the Work, procurement or delivery method, or bid packages in addition to those listed in Section 1.1.6;~~
- ~~.2 Making revisions in Drawings, Specifications, or other documents (as required pursuant to Section 6.7), when such revisions are required because the Construction Manager's estimate of the Cost of the Work, Guaranteed Maximum Price proposal, or Control Estimate exceeds the Owner's budget, except where such excess is due to changes initiated by the Architect in scope, capacities of basic systems, or the kinds and quality of materials, finishes, or equipment; (Paragraph deleted)~~
- ~~.3 Services necessitated by the enactment or revision of codes, laws, or regulations, after completion of drawings, including changing or editing previously prepared Instruments of Service;~~
- ~~.4 Changing or editing previously prepared Instruments of Service necessitated by official interpretations of applicable codes, laws or regulations that are unforeseeable and occur after the preparation of such Instruments of Service and are either (a) contrary to specific interpretations by the applicable authorities having jurisdiction made prior to the issuance of the building permit, or (b) contrary to requirements of the Instruments of Service when those Instruments of Service were prepared in accordance with the applicable standard of care; care. The Architect is expected to and shall provide its services in compliance with the most recent codes, laws, regulations, and interpretations;~~
- ~~.5 Services necessitated by decisions of the Owner or Construction Manager not rendered in a timely manner manner, acknowledging the Owner's obligations under the Open Meetings Act or any other failure of performance on the part of the Owner or the Owner's consultants or contractors;~~
- ~~.6 Preparing digital models or other design documentation for transmission to the Owner's consultants and contractors, or to other Owner- authorized recipients;~~
- ~~.7 Preparation of design and documentation for alternate bid or proposal requests proposed by the Owner or Construction Manager; (Paragraph deleted)~~
- ~~.8 Preparation for, and attendance at, a public presentation, meeting or hearing; (Paragraph deleted)~~
- ~~.9 Preparation for, and attendance at, a dispute resolution proceeding or legal proceeding, except where the Architect is party thereto; thereto or at which the services of the Architect are at issue;~~
- ~~.10 Consultation concerning replacement of Work resulting from fire or other cause during construction; or~~

- ~~.11 Assistance to the Initial Decision Maker, if other than the Architect;~~
- ~~.12 Services necessitated by replacement of the Construction Manager or conversion of the Construction Manager as constructor project delivery method to an alternative project delivery method;~~
- ~~.13 Services necessitated by the Owner's delay in engaging the Construction Manager;~~
- ~~.14 Making revisions to the Drawings, Specifications, and other documents resulting from agreed upon assumptions and clarifications included in the Guaranteed Maximum Price Amendment or Control Estimate; and~~
- ~~.15 Making revisions to the Drawings, Specifications, and other documents resulting from substitutions included in the Guaranteed Maximum Price Amendment or Control Estimate. Architect.~~

§ 4.2.2 To avoid delay in the Construction Phase, the Architect shall ~~provide the following Additional Services, notify the Owner with reasonable promptness, and explain the facts and circumstances giving rise to the need, promptly comply with the opening paragraph of Section 4.1 for the following Additional Services.~~ If, upon receipt of the Architect's notice, the Owner determines that all or parts of the services are ~~not~~ required, the Owner shall give prompt written notice to the Architect of the Owner's determination. The Owner shall have no obligation to compensate the Architect for the services ~~provided prior to the Architect's receipt of the Owner's notice; not accepted in writing by the Owner:~~

- ~~.1 Reviewing a Construction Manager's submittal out of sequence from the submittal schedule approved by the Architect; (Paragraph deleted)~~
- ~~.2 Responding to the Construction Manager's requests for information that are not prepared in accordance with the Contract Documents or where such information is available to the Construction Manager from a careful study and comparison of the Contract Documents, field conditions, other Owner provided information, Construction Manager prepared coordination drawings, or prior Project correspondence or documentation; (Paragraph deleted)~~
- ~~.3 Preparing Change Orders, and Construction Change Directives that require evaluation of the Construction Manager's proposals and supporting data, or the approved by the Owner that exceed the scope of the Work and Project cost, that are initiated after bids have been accepted, and that require substantial preparation or revision of Instruments of Service;~~
- ~~.4 Evaluating an extensive number of Claims as the Initial Decision Maker; or (Paragraph deleted)~~
- ~~.5 Evaluating substitutions proposed by the Owner or Construction Manager and making subsequent revisions to Instruments of Service resulting therefrom; therefrom after the bids have been awarded.~~

§ 4.2.3 ~~The Architect shall provide Construction Phase Services exceeding the limits set forth below as Additional Services. When the limits below are reached, the Architect shall notify the Owner:~~

- ~~.1 () reviews of each Shop Drawing, Product Data item, sample and similar submittals of the Construction Manager~~
- ~~.2 () visits to the site by the Architect during construction~~
- ~~.3 () inspections for any portion of the Work to determine whether such portion of the Work is substantially complete in accordance with the requirements of the Contract Documents~~
- ~~.4 () inspections for any portion of the Work to determine final completion (Paragraph deleted)~~

§ 4.2.4 ~~Except for services required under Section 3.6.6.5 and those services that do not exceed the limits set forth in Section 4.2.3, Construction Phase Services provided more than 60 days after (1) the date of Substantial Completion of the Work or (2) the initial date of Substantial Completion identified in the agreement between the Owner and Contractor, whichever is earlier, shall be compensated as Additional Services to the extent the Architect incurs additional cost in providing those Construction Phase Services. (Paragraph deleted)~~

§ 4.2.5 ~~If the services covered by this Agreement have not been completed within () months of the date of this Agreement, through no fault of the Architect, extension of the Architect's services beyond that time shall be compensated as Additional Services. (Paragraph deleted)~~

ARTICLE 5 OWNER'S RESPONSIBILITIES

§ 5.1 ~~Unless otherwise provided for under this Agreement, the Owner shall provide information in a timely manner Upon the Architect's specific written request, the Owner shall provide information~~ regarding requirements for and limitations on the Project, including a written program which shall set forth the Owner's objectives; schedule; constraints and criteria, including space requirements and relationships; flexibility; expandability; special equipment; systems; and site requirements. The Architect will assist the Owner to provide such information.

§ 5.2 The Owner shall retain a Construction Manager to provide services, duties, and responsibilities as described in the agreement selected in Section 1.1.5.

§ 5.3 The Owner shall establish the Owner's budget for the Project, including (1) the budget for the Cost of the Work as defined in Section 6.1; (2) the Owner's other costs; and, (3) reasonable contingencies related to all of these costs. ~~The Owner shall~~ With the assistance of the Architect and Construction Manager, the Owner may update the Owner's budget for the Project as necessary throughout the duration of the Project until final completion. If the Owner significantly increases or decreases the Owner's budget for the Cost of the Work, the Owner shall notify the Architect and Construction Manager. The Owner and the Architect, in consultation with the Construction Manager, ~~shall~~ may thereafter agree to a corresponding change in the Project's scope and quality. The parties acknowledge that the Owner's fixed budget for the Cost of the Work is a condition precedent to the enforceability of this Agreement.

§ 5.3.1 The Owner acknowledges that ~~accelerated, phased or fast-track~~ accelerated or phased scheduling provides a benefit, but also carries with it associated risks. Such risks include the Owner incurring costs for the Architect to coordinate and redesign portions of the Project affected by procuring or installing elements of the Project prior to the completion of all relevant Construction Documents, and costs for the Construction Manager to remove and replace previously installed Work. If the Owner selects ~~accelerated, phased or fast-track~~ accelerated or phased scheduling, the Owner agrees to include in the budget for the Project sufficient contingencies to cover such costs. If the Architect recommends or approves accelerated or phased scheduling, doing so is a representation to the Owner that accelerated or phased scheduling is an appropriate and preferred method for this Project. The Architect will assist the Owner in determining what, if any, additional costs should be attributed to such accelerated or phased scheduling.

§ 5.4 The Owner shall identify a representative authorized to act on the Owner's behalf with respect to the ~~Project.~~ Project, subject to parameters of authority set by the Owner's Board of Education. The Owner shall render decisions and approve the Architect's submittals in a timely manner in order to avoid unreasonable delay in the orderly and sequential progress of the Architect's ~~services.~~ services, subject to the Owner's status as a public body, including being subject to the Open Meetings Act.

§ 5.5 ~~The~~ Where required by the circumstances of the Project and requested by the Architect in writing, the Owner shall furnish surveys to describe physical characteristics, legal limitations and utility locations for the site of the Project, and a written legal description of the site. The surveys and legal information shall include, as applicable, grades and lines of streets, alleys, pavements and adjoining property and structures; designated wetlands; adjacent drainage; rights-of-way, restrictions, easements, encroachments, zoning, deed restrictions, boundaries and contours of the site; locations, dimensions, and other necessary data with respect to existing buildings, other improvements and trees; and information concerning available utility services and lines, both public and private, above and below grade, including inverts and depths. All the information on the survey shall be referenced to a Project benchmark. The Architect shall assist the Owner in obtaining such services as part of the Architect's Basic Services. The Owner will pay for such services as applicable.

§ 5.6 ~~The~~ Where required by the circumstances of the Project and as requested by the Architect in writing, the Owner shall furnish services of geotechnical engineers, which may include test borings, test pits, determinations of soil bearing values, percolation tests, evaluations of hazardous materials, seismic evaluation, ground corrosion tests and resistivity tests, including necessary operations for anticipating subsoil conditions, with written reports and appropriate recommendations. The Architect shall assist the Owner in obtaining such services as a part of the Architect's Basic Services, and the Owner will pay for such services as applicable.

§ 5.7 ~~The Owner shall provide the Supplemental Services designated as the Owner's responsibility in Section 4.1.1.~~ (Paragraph deleted)

~~§ 5.8 If the Owner identified a Sustainable Objective in Article 1, the Owner shall fulfill its responsibilities as required in AIA Document E234™ 2019, Sustainable Projects Exhibit, Construction Manager as Constructor Edition, attached to this Agreement.~~

§ 5.9 The ~~Owner-Architect~~ shall coordinate the services of its own consultants with those services provided by the ~~Architect.~~ Owner's consultants. Upon the Architect's request, the Owner shall furnish copies of the scope of services in the contracts between the Owner and the Owner's consultants. The Owner shall ~~furnish the~~ consider furnishing, as part of the Project budget, services of consultants other than those designated as the responsibility of the Architect in this Agreement, or authorize the Architect to furnish them as an Additional ~~Service.~~ Service in accordance with Article 4,

when the Architect requests such services and demonstrates that they are reasonably required by the scope of the Project. ~~The Owner shall require that its Architect shall assist the Owner in selecting a service provider as part of Basic Services. The Owner and Architect shall require that their~~ consultants and contractors maintain insurance, including professional liability insurance, ~~if applicable and~~ as appropriate to the services or work provided. ~~The Architect shall furnish to the Owner copies of its contracts with consultants, if requested by the Owner.~~

§ 5.10 The Owner shall furnish tests, inspections and reports required by law or the Contract Documents, such as structural, mechanical, and chemical tests, tests for air and water pollution, and tests for hazardous materials. ~~The Architect shall assist the Owner in obtaining such services as part of the Architect's Basic Services.~~

§ 5.11 The Owner shall furnish all legal, insurance and accounting services, including auditing services, that may be reasonably necessary at any time for the Project to meet the Owner's needs and interests.

§ 5.12 The Owner shall provide prompt written notice to the Architect and Construction Manager if the Owner becomes aware of any fault or defect in the Project, including errors, omissions or inconsistencies in the Architect's Instruments of Service, ~~but the Owner's failure to do so does not relieve the Architect of its responsibilities, and the Owner assumes no duty of observation, inspection, or investigation pursuant to this Section or otherwise. The Architect shall give the Owner prompt written notice of any fault or defect in the Contract Documents or the Architect's Instruments of Service.~~

§ 5.13 The Owner shall ~~endeavor to~~ include the Architect in all communications with the Construction Manager that relate to or affect the Architect's services or professional responsibilities. ~~The Otherwise, the~~ Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Construction Manager ~~otherwise relating to that materially impact~~ the Project. Communications by and with the Architect's consultants shall be through the Architect.

§ 5.14 ~~The Owner shall coordinate~~ Architect shall assist the Owner with coordination of the Architect's duties and responsibilities set forth in the Agreement between the Owner and the Construction Manager with the Architect's services set forth in this Agreement. ~~The Upon request, the~~ Owner shall provide the Architect a copy of the executed agreement between the Owner and Construction Manager, including the General Conditions of the Contract for Construction.

§ 5.15 The Owner shall provide the Architect access to the Project site prior to commencement of the Work and ~~the Contract Documents~~ shall obligate the Construction Manager to provide the Architect ~~and the Owner~~ access to the Work wherever it is in preparation or progress.

§ 5.16 ~~Within 15 days after receipt of a written request from the Architect, the Owner shall furnish the requested information as necessary and relevant for the Architect to evaluate, give notice of, or enforce lien rights. (Paragraph deleted)~~

ARTICLE 6 COST OF THE WORK

~~§ 6.1 For purposes of this Agreement, the Cost of the Work shall be the total cost to the Owner to construct all elements of the Project designed or specified by the Architect and shall include the Construction Manager's general conditions costs, overhead, and profit. The Cost of the Work also includes the reasonable value of labor, materials, and equipment, donated to, or otherwise furnished by, the Owner. The Cost of the Work does not include the compensation of the Architect; the compensation of the Construction Manager for Preconstruction Phase services; the costs of the land, rights of way, financing, or contingencies for changes in the Work; or other costs that are the responsibility of the Owner.~~

~~§ 6.1.1 For purposes of cost estimating, budgeting, or expense tracking under this Agreement, the Cost of the Work shall be the total cost to the Owner to construct all elements of the Project and shall include Architect's and its Consultants' compensation and reimbursable expenses and the Construction Manager's compensation including general conditions costs, overhead, profit, and subcontractor costs.~~

~~§ 6.1.2 For purposes of calculating fees or other costs determined on a percentage of the Cost of the Work, the Cost of the Work includes only hard construction costs for that work designed or specified by the Architect. Without limiting the breadth of the preceding sentence, the Cost of the Work does not include the compensation of the Architect; the compensation of the Construction Manager for Preconstruction Phase services or for Construction Manager professional fees; the costs of the land, rights-of-way, financing, unused contingency funds, Owner-purchased equipment, Owner-hired consultants, or contingencies for changes in the Work; or other costs that are the responsibility of the Owner.~~

§ 6.2 The Owner's budget for the Cost of the Work is provided in the Initial Information, ~~and shall be adjusted throughout the Project as required under Sections 5.3 and 6.4, which the Architect acknowledges is fixed.~~ A fixed limit of construction cost shall be established by the Owner as a condition of this Agreement in accordance with the relevant application for preliminary qualification of bonds. Evaluations of the Owner's budget for the Cost of the Work represent the Architect's judgment as a ~~design professional~~ design professional familiar with the school design and construction industry in Michigan. See MCL 339.2011.

§ 6.3 The Owner shall ~~require the permit the Architect and~~ Construction Manager to include appropriate contingencies for design, bidding or negotiating, price escalation, and market conditions in ~~their respective~~ estimates of the Cost of the Work. The Architect shall ~~be entitled to rely on the accuracy and completeness of estimates of the Cost of the Work the Construction Manager prepares as the Architect progresses with its Basic Services.~~ prepare its own estimates of cost of the work as necessary to perform its Basic Services. See MCL 339.2011. The Architect shall prepare, as an Additional Service, revisions to the Drawings, Specifications or other documents required due to the Construction Manager's inaccuracies or incompleteness in preparing cost estimates, or due to market conditions the Architect could not reasonably anticipate. The Architect may review the Construction Manager's estimates solely for the Architect's guidance in completion of its ~~services, however, the Architect Basic Services, and~~ shall report to the Owner any material inaccuracies and inconsistencies noted during any such review.

§ 6.3.1 ~~If the Architect is providing cost estimating services as a Supplemental Service, and The Architect shall provide cost estimating services, and if~~ a discrepancy exists between the Construction Manager's cost estimates and the Architect's cost estimates, the Architect and the Construction Manager shall work together to reconcile the cost estimates.

§ 6.4 ~~If, prior to the conclusion of the Design Development Phase, the~~ If at any time, the Architect's or the Construction Manager's estimate of the Cost of the Work exceeds the Owner's budget for the Cost of the Work, the Architect, in consultation with the Construction ~~Manager, Manager and as a Basic Service,~~ shall make appropriate recommendations to the Owner to adjust the Project's size, quality or budget for the Cost of the ~~Work, and the Owner shall cooperate with the Architect in making such adjustments.~~ Work.

§ 6.5 If ~~the Construction Manager's at any time an~~ estimate of the Cost of the Work ~~at the conclusion of the Design Development Phase~~ exceeds the Owner's budget for the Cost of the Work, the Owner shall

- .1 give written approval of an increase in the budget for the Cost of the Work;
- .2 terminate in accordance with Section 9.5;
- .3 in consultation with the Architect and Construction Manager, revise the Project program, scope, or quality as required to reduce the Cost of the Work; or
- .4 implement any other mutually acceptable alternative.

§ 6.6 If the Owner chooses to proceed under Section 6.5.3, the Architect, without additional compensation, shall incorporate the revisions in the Construction Documents Phase as necessary to comply with the Owner's ~~fixed~~ budget for the Cost of the Work ~~at the conclusion of the Design Development Phase Services, or the budget as adjusted under Section 6.5.1. The Architect's revisions in the Construction Documents Phase shall be the limit of the Architect's responsibility under this Article 6 as a Basic Service.~~

§ 6.7 After incorporation of modifications under Section 6.6, the Architect shall, ~~as an Additional Service,~~ make any required revisions to the Drawings, Specifications or other documents necessitated by the Construction Manager's subsequent cost ~~estimates, estimates or~~ the Guaranteed Maximum Price ~~proposal, or Control Estimate proposal~~ that exceed the Owner's budget for the Cost of the ~~Work, except when the excess is due to changes initiated by the Architect in scope, basic systems, or the kinds and quality of materials, finishes or equipment.~~ Work. The Architect's revisions to the Drawings, Specifications, and/or other documents shall be performed as a Basic Service.

§ 6.8 In the event the lowest bid(s) or negotiated proposal(s), together with the Construction Manager's total fixed or estimated fees and costs, exceeds the fixed budget for the Cost of the Work, the Architect, in consultation with and at the direction of the Owner, shall without additional compensation modify the Contract Documents and provide related bidding and other services as necessary to bring the Cost of the Work within the fixed budget.

ARTICLE 7 COPYRIGHTS AND LICENSES

§ 7.1 The Architect and the Owner warrant that in transmitting Instruments of Service, or any other information, the transmitting party is the copyright owner of such information or has permission from the copyright owner to transmit such information for its use on the Project.

§ 7.2 ~~The Except as otherwise provided in this Agreement, the~~ Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and shall retain all common law, statutory and other reserved rights, including copyrights. Submission or distribution of Instruments of Service to meet official regulatory requirements or for similar purposes in connection with the Project is not to be construed as publication in derogation of the reserved rights of the Architect and the Architect's consultants. ~~The Owner shall be permitted to retain copies including reproducible copies of the Architect's drawings, specifications and other documents for information and reference in connection with the Owner's use and occupancy of the Project, modifications, renovation, or additions to the Project, and to complete the Project in the event the Architect is not retained through completion.~~

§ 7.3 ~~The Upon execution of this Agreement, the~~ Architect grants to the Owner a ~~nonexclusive license to use the Architect's Instruments of Service solely and exclusively nonexclusive, irrevocable license to access, use, and reproduce the Architect's Instruments of Service, in whatever form then they exist and regardless of stage of their completion, for purposes of constructing, using, maintaining, altering and adding to the Project, provided that the Owner substantially performs its obligations under this Agreement, including prompt payment of all sums due, pursuant to Article 9 and Article 11. The altering, adding to the Project, and completing the Project if the Architect does not provide services through completion. On behalf of and for the benefit of the Owner, the~~ Architect shall obtain similar nonexclusive licenses from the Architect's consultants consistent with this Agreement. The ~~license granted licenses granted or referenced~~ under this section permits the Owner to authorize the ~~Construction Manager, Contractor, Subcontractors, Sub-subcontractors, and suppliers, as well as the Owner's consultants and separate contractors, contractors and design professionals, to reproduce applicable portions of the Instruments of Service, subject to any protocols established pursuant to Section 1.3, solely and exclusively for use in performing services or construction for the Project. If the Architect rightfully terminates this Agreement for cause as provided in Section 9.4, the license granted in this Section 7.3 shall terminate. Any termination of this Agreement for any reason or under any condition shall in no way terminate or otherwise diminish the licenses described herein. See also Section 7.5.~~

§ 7.3.1 ~~In the event the Owner uses the Instruments of Service without retaining the authors of the Instruments of Service, the Owner releases the Architect and Architect's consultant(s) from all claims and causes of action arising from such uses. The Owner, to the extent permitted by law, further agrees to indemnify and hold harmless the Architect and its consultants from all costs and expenses, including the cost of defense, related to claims and causes of action asserted by any third person or entity to the extent such costs and expenses arise from the Owner's use of the Instruments of Service under this Section 7.3.1. The terms of this Section 7.3.1 shall not apply if the Owner rightfully terminates this Agreement for cause under Section 9.4. (Paragraph deleted)~~

§ 7.4 Except for the licenses granted ~~or referenced~~ in this Article 7, no other license or right shall be deemed granted or implied under this Agreement. ~~The Except as permitted under this Agreement, the~~ Owner shall not assign, delegate, sublicense, pledge or otherwise transfer any license granted herein to another party without the prior written agreement of the Architect. ~~Any unauthorized use of the Instruments of Service shall be at the Owner's sole risk and without liability to the Architect and the Architect's consultants.~~

§ 7.5 ~~Except as otherwise stated in Section 7.3, the~~ The provisions of this Article 7 shall survive the termination of this Agreement.

§ 7.6 ~~In addition to, and not in limitation of, the licenses otherwise granted or referenced in this Article 7, all construction plans, specifications, drawings and all other documents and like materials relating to the Project, including those in electronic form, prepared by the Architect and the Architect's consultants ("Instruments of Service") shall become the property of the Owner at the conclusion of the Project.~~

ARTICLE 8 CLAIMS AND DISPUTES

§ 8.1 General

§ 8.1.1 The Owner and Architect shall commence all claims and causes of action against the other and arising out of or related to this Agreement, whether in contract, tort, or otherwise, in accordance with the requirements of the binding

dispute resolution method selected in this Agreement and within the period specified by ~~applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work.~~ Michigan law. Notwithstanding anything in this Agreement or the Contract Documents to the contrary, no claim by the Owner shall be barred as untimely if filed within six (6) years of Substantial Completion of the Project or, if longer, one year after the discovery of a defect caused by the Architect's gross negligence. The Owner and Architect waive all claims and causes of action not commenced in accordance with this Section 8.1.1.

§ 8.1.2 ~~To the extent damages are covered by property insurance, the Owner and Architect waive all rights against each other and against the contractors, consultants, agents and employees of the other for damages, except such rights as they may have to the proceeds of such insurance as set forth in AIA Document A201-2017, General Conditions of the Contract for Construction. The Owner or the Architect, as appropriate, shall require of the Construction Manager, contractors, consultants, agents and employees of any of them, similar waivers in favor of the other parties enumerated herein. The Owner and Architect both acknowledge and agree that the Owner is not waiving any rights its insurer(s) may have to subrogation. To the extent any term in the Agreement is contrary to this provision, such term is void and unenforceable.~~

§ 8.1.3 The Architect shall indemnify and hold the Owner and the Owner's officers and employees harmless from and against damages, ~~losses and judgments arising from claims by third parties, including reasonable attorneys' fees and expenses recoverable under applicable law, but only to the extent they are caused by the losses, and judgments to the extent the foregoing damages, losses, expenses (including reasonable attorneys' fees and legal expenses), and judgments arise from the~~ negligent acts or omissions of the Architect, its employees and its consultants in the performance of professional services under this Agreement. ~~The Architect's obligation to indemnify and hold the Owner and the Owner's officers and employees harmless does not include a duty to defend. The Architect's duty to indemnify the Owner under this Section 8.1.3 shall be limited to the available proceeds of the insurance coverage required by Agreement or the Architect's breach of this Agreement.~~

§ 8.1.4 ~~The Architect and Owner waive consequential damages for claims, disputes, or other matters in question arising out of or relating to this Agreement. This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination of this Agreement, except as specifically provided in Section 9.7.~~

§ 8.2 Mediation

§ 8.2.1 Any claim, dispute, or other matter in question arising out of or related to this Agreement shall be subject to ~~non-binding~~ mediation as a condition precedent to ~~binding dispute resolution. If such matter relates to or is the subject of a lien arising out of the Architect's services, the Architect may proceed in accordance with applicable law to comply with the lien notice or filing deadlines prior to resolution of the matter by mediation or by binding dispute resolution litigation.~~

§ 8.2.2 The Owner and Architect shall endeavor to resolve claims, disputes and other matters in question between them by ~~non-binding~~ mediation, which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of this Agreement. ~~Agreement except that either party may, if in good faith, declare a mediation impasse and proceed with binding dispute resolution after one full day of mediation.~~ A request for mediation shall be made in writing, delivered to the other party to this Agreement, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of a complaint or other appropriate demand for binding dispute resolution but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration proceeding is stayed pursuant to this section, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings. ~~During the pendency of this alternative dispute resolution process, the parties agree that applicable limitations periods shall be tolled.~~

§ 8.2.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 8.2.4 If the parties do not resolve a dispute through mediation pursuant to this Section 8.2, the method of binding dispute resolution shall be the following:
(Check the appropriate box.)

[☐] Arbitration pursuant to Section 8.3 of this Agreement

[« X »] Litigation in a court of competent jurisdiction

[] Other: (Specify)

« »] Other: (Specify) « »

If the Owner and Architect do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, the dispute will be resolved in a court of competent jurisdiction.

§ 8.3 Arbitration

~~§ 8.3.1 If the parties have selected arbitration as the method for binding dispute resolution in this Agreement, any claim, dispute or other matter in question arising out of or related to this Agreement subject to, but not resolved by, mediation shall be subject to arbitration, which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of this Agreement. A demand for arbitration shall be made in writing, delivered to the other party to this Agreement, and filed with the person or entity administering the arbitration.~~

~~§ 8.3.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the claim, dispute or other matter in question would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the claim, dispute or other matter in question.~~

~~§ 8.3.2 The foregoing agreement to arbitrate, and other agreements to arbitrate with an additional person or entity duly consented to by parties to this Agreement, shall be specifically enforceable in accordance with applicable law in any court having jurisdiction thereof.~~

~~§ 8.3.3 The award rendered by the arbitrator(s) shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.~~

§ 8.3.4 Consolidation or Joinder

~~§ 8.3.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation; (2) the arbitrations to be consolidated substantially involve common questions of law or fact; and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).~~

~~§ 8.3.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.~~

~~§ 8.3.4.3 The Owner and Architect grant to any person or entity made a party to an arbitration conducted under this Section 8.3, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Architect under this Agreement.~~

~~§ 8.3 - § 8.4 The provisions of this Article 8 shall survive the termination of this Agreement. § 8.4 (Paragraph deleted)~~

ARTICLE 9 TERMINATION OR SUSPENSION

§ 9.1 If the Owner fails to make undisputed payments to the Architect in accordance with this Agreement, such failure shall be considered substantial nonperformance and cause for termination or, at the Architect's option, cause for suspension of performance of services under this Agreement. If the Architect elects to suspend services, the Architect shall give seven days' written notice to the Owner before suspending ~~services~~ services for this reason. In the event of a suspension of services, the Architect shall have no liability to the Owner for delay or damage caused the Owner because of such suspension of services. Before resuming services, the Owner shall pay the Architect all sums due prior to ~~suspension~~

~~and any expenses incurred in the interruption and resumption of the Architect's services-suspension.~~ The Architect's fees for the remaining services and the time schedules shall be ~~equitably adjusted-negotiated by the parties.~~

§ 9.2 If the Owner ~~suspends the Project, voluntarily suspends the Project for more than 30 consecutive days, except for a scheduled suspension or due to the fault of the Architect,~~ the Architect shall be compensated for services performed prior to notice of such suspension. ~~When the Project is resumed, the Architect shall be compensated for expenses incurred in the interruption and resumption of the Architect's services.~~ The Architect's fees for the remaining services and the time schedules shall be ~~equitably adjusted-negotiated by the parties.~~

§ 9.3 If the Owner ~~voluntarily~~ suspends the Project for more than 90 ~~emulative-consecutive~~ days for reasons other than ~~a scheduled suspension or~~ the fault of the Architect, the Architect may terminate this Agreement by giving not less than seven days' written notice.

§ 9.4 Either party may terminate this Agreement upon not less than seven days' written notice should the other party fail substantially to perform in accordance with the terms of this Agreement through no fault of the party initiating the termination. ~~In the event the Architect proposes to terminate this Agreement, the Architect shall notify the Owner in writing, stating with specificity the alleged non-performance, and further stating that the proposed termination shall be effective if the non-performance remains uncorrected for a period of not less than 15 days following the Owner's receipt of said notice.~~

§ 9.5 The Owner may terminate this Agreement upon not less than seven days' written notice to the Architect for the Owner's convenience and without cause.

§ 9.6 ~~If the Owner terminates this Agreement for its convenience pursuant to Section 9.5, or the Architect terminates this Agreement pursuant to Section 9.3, the~~ Upon termination of this Agreement, the Owner shall compensate the Architect for services ~~performed prior to termination, Reimbursable Expenses incurred, and costs attributable to termination, including the costs attributable to the Architect's termination of consultant agreements timely and properly performed prior to termination, and for Reimbursable Expenses then due, subject to any applicable offset.~~

§ 9.7 ~~In addition to any amounts paid under Section 9.6, if the Owner terminates this Agreement for its convenience pursuant to Section 9.5, or the Architect terminates this Agreement pursuant to Section 9.3, the Owner shall pay to the Architect the following fees:~~
~~(Set forth below the amount of any termination or licensing fee, or the method for determining any termination or licensing fee.)~~

~~.1—Termination Fee:~~

~~.2—Licensing Fee if the Owner intends to continue using the Architect's Instruments of Service:~~

~~(Paragraph deleted)~~

§ 9.8 ~~Except as otherwise expressly provided herein, this Agreement shall terminate one year from the date of Substantial Completion. (Paragraph deleted)~~

§ 9.9 The Owner's rights to use the Architect's Instruments of Service in the event of a termination of this Agreement ~~are set forth in Article 7 and Section 9.7. will continue and shall not be terminated or diminished in any manner.~~

ARTICLE 10 MISCELLANEOUS PROVISIONS

§ 10.1 This Agreement shall be governed by the law of ~~the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 8.3. State of Michigan.~~

§ 10.2 Terms in this Agreement shall have the same meaning as those in AIA Document A201–2017, General Conditions of the Contract for Construction, ~~except as modified in this Agreement~~ as modified on behalf of the Owner. The term "Contractor" as used in A201–2017 shall mean the Construction Manager.

§ 10.3 The Owner and Architect, respectively, bind themselves, their agents, successors, assigns, and legal representatives to this Agreement. Neither the Owner nor the Architect shall assign this Agreement without the written consent of the ~~other, except that the Owner may assign this Agreement to a lender providing financing for the Project if the lender agrees to assume the Owner's rights and obligations under this Agreement, including any payments due to the Architect by the Owner prior to the assignment.~~ other..

§ 10.4 If the Owner requests the Architect to execute certificates, the proposed language of such certificates shall be submitted to the Architect for review at least 14 days prior to the requested dates of ~~execution~~ execution unless circumstances require a shorter time frame. If the Owner requests the Architect to execute consents reasonably required to facilitate assignment to a lender, the Architect shall execute all such consents that are consistent with this Agreement, provided the proposed consent is submitted to the Architect for review at least 14 days prior to execution. The Architect shall not be required to execute certificates or consents that would require knowledge, services, or responsibilities beyond the scope of this Agreement.

§ 10.5 Nothing contained in this Agreement shall create a contractual relationship with, or a cause of action in favor of, a third party against either the Owner or Architect.

§ 10.6 Unless otherwise required in this Agreement, the Architect shall have no responsibility for the discovery, presence, handling, removal or disposal of, or exposure of persons to, hazardous materials or toxic substances in any form at the Project site. Notwithstanding the foregoing, the Architect shall immediately notify the Owner if it becomes aware of the presence of any such materials or substances.

§ 10.7 The Architect shall have the right to lawfully include photographic or artistic representations of the design of the Project among the Architect's promotional and professional materials. The Architect shall be given reasonable access to the completed Project to make such representations. However, the Architect's materials shall not include the Owner's confidential or proprietary ~~information if the Owner has previously advised the Architect in writing of the specific information considered by the Owner to be confidential or proprietary.~~ information. The Owner shall provide professional credit for the Architect in the Owner's promotional materials for the Project. ~~This Section 10.7 shall survive the termination of this Agreement unless the Owner terminates this Agreement for cause pursuant to Section 9.4.~~ The Architect shall obtain the Owner's Approval prior to disclosure of information for purposes of verifying that such disclosure contains no confidential information (including, for example, information protected by FERPA).

§ 10.8 If the Architect ~~or Owner receives information specifically designated as receives Owner information that is~~ "confidential" or "business proprietary," the ~~receiving party~~ Architect shall keep such information strictly confidential and shall not disclose it to any other person except as set forth in Section 10.8.1. This Section 10.8 shall survive the termination of this Agreement.

§ 10.8.1 The ~~receiving party~~ Architect may disclose "confidential" or "business proprietary" information after 7 days' notice to the ~~other party~~ Owner, when required by law, arbitrator's order, or court order, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or to the extent such information is reasonably necessary for the ~~receiving party to defend itself in any dispute.~~ The receiving party Architect to defend itself in any dispute and the Owner has consented to such disclosure. The Architect may also disclose such information to its employees, consultants, or contractors in order to perform services or work solely and exclusively for the Project, provided those employees, consultants and contractors are subject to the restrictions on the disclosure and use of such information as set forth in this Section 10.8. The Architect acknowledges and agrees that the Owner is a public body subject to the Michigan Freedom of Information Act ("FOIA"), the Owner may disclose Architect confidential or business proprietary information in response to a FOIA request, and that the determination whether a document is responsive to a FOIA request or if the requested information is exempt under FOIA will be in the sole discretion of the Owner.

§ 10.9 The invalidity of any provision of the Agreement shall not invalidate the Agreement or its remaining provisions. If it is determined that any provision of the Agreement violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Agreement

shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Agreement.

§10.10 The Architect agrees to retain permanent records relating to the services performed for a period of at least six (6) years following submission of the Construction Documents, during which period the records will be made available to the Owner upon request. The Architect shall notify the Owner in writing at least ninety (90) days before disposing of any referenced records for any reason at any time, to afford the Owner sufficient notice to take possession of such records if required or desired.

§ 10.11 Integration, Waiver and Severability

§ 10.11.1 This is the entire agreement between the Owner and Architect with respect to the matters covered herein and supersedes all prior agreements between them, written or oral. This Agreement may be modified only in writing signed by both parties. Any waivers hereunder must be in writing. No waiver or right or remedy in the event of default hereunder shall constitute a waiver of such right or remedy in the event of any subsequent default.

§ 10.11.2 A waiver of any term, condition, or covenant by a party shall not constitute a waiver of any other term, condition or covenant. If any court of competent jurisdiction declares a provision of this Agreement invalid, illegal or otherwise unenforceable, the remaining provisions of the Agreement shall remain in full force and effect.

ARTICLE 11 COMPENSATION

§ 11.1 For the Architect's Basic Services described under Article 3, timely and proper performance of Basic Services, the
Owner shall compensate the Architect as follows:

.1 Stipulated Sum
(Insert amount)

.2 Percentage Basis
(Insert percentage value)

() % of the Owner's budget for the Cost of the Work, as calculated in accordance with Section 11.6.

.3 Other
(Describe the method of compensation)

« »

§ 11.2 For the Architect's Supplemental Services designated in Section 4.1.1 and for any Sustainability Services required pursuant to Section 4.1.3, properly authorized Supplemental Services and Additional Services, the Owner shall
compensate the Architect as follows:

(Insert amount of, or basis for, compensation. If necessary, list specific services to which particular methods of compensation apply.)

«As mutually agreed by the parties in writing prior to the performance of any Supplemental Service or Additional Service in accordance with the hourly rates set forth in Section 11.7 »

§ 11.3 For Additional Services that may arise during the course of the Project, including those under Section 4.2, the
Owner shall compensate the Architect as follows:
(Insert amount of, or basis for, compensation.)

(Paragraph deleted)

§ 11.4 Compensation for Supplemental and Additional Services of the Architect's consultants when not included in
Sections 11.2 or 11.3, shall be the amount invoiced to the Architect plus percent (%), or as follows: at cost without
mark up.

(Insert amount of, or basis for computing, Architect's consultants' compensation for Supplemental or Additional Services.)

«Compensation for Supplemental and Additional Services of the Architect's consultants shall be the amount invoiced to the Architect without mark-up. »

§ 11.5 When compensation for Basic Services is based on a stipulated sum or a percentage basis, the proportion of compensation for each phase of services shall be as follows:

Schematic Design Phase	<u>Fifteen</u>	percent (	<u>15</u>	%)
Design Development Phase	<u>Twenty</u>	percent (	<u>20</u>	%)
Construction Documents Phase	<u>Forty</u>	percent (	<u>40</u>	%)
<u>Procurement Phase</u>	<u>Two and One Half</u>	percent (	<u>2.50</u>	%)
Construction Phase	<u>Twenty</u>	percent (	<u>20</u>	%)
<u>Project Completion/Closeout</u>	<u>Two and One-Half</u>	percent (	<u>2.50</u>	%)
Total Basic Compensation	<u>one hundred-One</u>	percent (	100	%)
	<u>Hundred</u>			

The Owner acknowledges that with an accelerated Project delivery, multiple bid package process, or Construction Manager as constructor project delivery method, the Architect may be providing its services in multiple Phases simultaneously. Therefore, the Architect shall be permitted to invoice monthly in proportion to services performed in each Phase of Services, as appropriate.

§ 11.6 When compensation identified in Section 11.1 is on a percentage basis, ~~progress payments for each phase of Basic Services shall be calculated by multiplying the percentages identified in this Article by the Owner's most recent budget for the Cost of the Work. Compensation~~ compensation paid in previous progress payments shall not be adjusted based on subsequent updates to the Owner's budget for the Cost of the Work.

§ 11.6.1 When compensation is on a percentage basis and any portions of the Project are deleted or otherwise not constructed, compensation for those portions of the Project shall be payable to the extent services are performed on those portions. The Architect shall be entitled to compensation in accordance with this Agreement for all services actually and properly performed whether or not the Construction Phase is commenced.

§ 11.7 The hourly billing rates for Supplemental and Additional services of the Architect and the Architect's consultants are set forth below. ~~The rates shall be adjusted in accordance with the Architect's and Architect's consultants' normal review practices.~~
(If applicable, attach an exhibit of hourly billing rates or insert them below.)

«As set forth in the Architect's Proposal attached hereto as Exhibit A. »

Employee or Category	Rate (\$0.00)
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§ 11.8 Compensation for Reimbursable Expenses

§ 11.8.1 Reimbursable Expenses are in addition to compensation for Basic, Supplemental, and Additional Services and include expenses incurred by the Architect and the Architect's consultants directly related to the Project, as follows:

- 1 Transportation ~~and authorized out-of-town travel and subsistence; in conjunction with the Project, (not including travel to and from the project site(s));~~
- 2 ~~Long distance services, dedicated data and communication services, teleconferences, Project web sites, and extranets;(Paragraph deleted)~~
- 3 Permitting and other fees required by authorities having jurisdiction over the Project; . The Architect will pay initial deposits for plan reviews as a reimbursable expense. Invoices for the balance of such fees may be forwarded to, and paid directly by, the Owner;
- 4 Printing, reproductions, plots, and standard form ~~documents;~~documents for use and review by Owner and governmental agencies, except that reproductions of Instruments of Service will be part of the Architect's basic fee when for office use by the Architect and the Architect's consultants;
- 5 Postage, handling, and delivery; and

- ~~.6 Expense of overtime work requiring higher than regular rates, if authorized in advance by the Owner; (Paragraph deleted)~~
- .7 Renderings, physical models, mock-ups, professional photography, and presentation materials requested by the Owner or required for the Project;
- ~~.8 If required by the Owner, and with the Owner's prior written approval, the Architect's consultants' expenses of professional liability insurance dedicated exclusively to this Project, or the expense of additional insurance coverage or limits in excess of that normally maintained by the Architect's consultants;~~
- ~~.9 All taxes levied on professional services and on reimbursable expenses;~~
- ~~.10 Site office expenses;~~
- ~~.11 Registration fees and any other fees charged by the Certifying Authority or by other entities as necessary to achieve the Sustainable Objective; and~~
- ~~.12 Other similar Project-related expenditures.~~Project.

§ 11.8.2 For Reimbursable Expenses directly related to the Project the compensation shall be the expenses incurred by the Architect and the Architect's consultants plus percent (%) of the expenses incurred at cost and without markup. Reimbursable expenses will not exceed \$ without the written approval of the Owner.

§ 11.9 Architect's Insurance. ~~If the~~ The types and limits of coverage required in Section 2.6 are in addition to the types and limits the Architect normally maintains, the Owner shall pay the Architect for the additional costs incurred by the Architect for the additional coverages as set forth below:
(Insert the additional coverages the Architect is required to obtain in order to satisfy the requirements set forth in Section 2.6, and for which the Owner shall reimburse the Architect.) this Agreement including Section 2.6 shall be provided as part of the Architect's Basic Services.

<< >>

§ 11.10 Payments to the Architect

§ 11.10.1 Initial Payments

§ 11.10.1.1 An initial payment of (\$) ~~«zero dollars»~~ (\$ ~~0.00~~) shall be made upon execution of this Agreement and is the minimum payment under this Agreement. It shall be credited to the Owner's account in the final invoice.

§ 11.10.1.2 ~~If a Sustainability Certification is part of the Sustainable Objective, an initial payment to the Architect of (\$) shall be made upon execution of this Agreement for registration fees and other fees payable to the Certifying Authority and necessary to achieve the Sustainability Certification. The Architect's payments to the Certifying Authority shall be credited to the Owner's account at the time the expense is incurred.~~
(Paragraph deleted)

§ 11.10.2 Progress Payments

§ 11.10.2.1 ~~Unless otherwise agreed, payments for~~ Payments for undisputed services shall be made monthly in proportion to services performed. ~~Payments are due and payable upon presentation~~ Undisputed payments are due and payable within thirty (30) days of the Owner's receipt of the Architect's invoice. Amounts unpaid () ~~«thirty»~~ (~~30~~) days after the invoice due date shall bear interest at the rate entered below, or in the absence thereof at the legal rate prevailing from time to time at the principal place of business of the Architect. below.
(Insert rate of monthly or annual interest agreed upon.)

% ~~«Five percent (5%) per annum »~~ % ~~«See MCL 438.31. »~~

§ 11.10.2.2 The Owner shall not withhold undisputed amounts from the Architect's compensation to impose a penalty or liquidated damages on the Architect, or to offset sums requested by or paid to contractors for the cost of changes in the Work, unless the Architect agrees or has been found liable for the amounts in a binding dispute resolution proceeding is otherwise responsible. . The Owner reserves the right to dispute any invoice or payment due Architect in good faith and without penalty and may withhold the same pending resolution of the dispute.

§ 11.10.2.3 Records of Reimbursable Expenses, expenses pertaining to Supplemental and Additional Services, and services performed on the basis of hourly rates shall be available to the Owner at mutually convenient times upon request.

ARTICLE 12 SPECIAL TERMS AND CONDITIONS

Special terms and conditions that modify this Agreement are as follows:

(Include other terms and conditions applicable to this Agreement.)

«§ 12.1 The Architect shall perform its responsibilities and services in a manner consistent with the professional standards of the Architectural profession in the State of Michigan for an architect familiar with school construction. Without limiting the breadth of the foregoing, the Architect shall comply with all applicable federal, state, and local laws, rules, regulations and policies/procedures. See Section 2.2.

§ 12.2 The Architect shall not be entitled to additional compensation in the event it is necessary to extend the contract completion date because the Project is delayed due to conditions beyond the control of the Owner, such as strikes, weather, material shortages, government-declared emergencies, etc.

§ 12.3 The Architect shall immediately notify the Owner, in writing, of the presence of any hazardous materials or toxic substances in connection with this Project of which the Architect is aware. The Owner, at its cost, shall be responsible for analysis, design, removal, remediation or other action related to any asbestos or hazardous substances.

§ 12.4 The Architect agrees that it will be the Architect responsible for the construction described in this Agreement and shall not specify as a building material in any Construction Document for the Project any material which the Architect knew or reasonably should have known was an asbestos containing building material (ACBM), as defined in Section 763.83 of 40 CFR Part 763, as amended. Upon the issuance of the final certificate for payment, the Architect shall furnish the Owner a signed statement (dated current) that, to the best of the Architect's knowledge, no asbestos containing building material was used as a building material in the Project. The Architect shall submit a copy of the certification to the Environmental Protection Agency Regional Office and to the Owner, which shall include the certification in its management plan. The Architect shall include in specifications that no ACBM shall be used in the construction of the school building and that each Contractor shall certify to the Owner and the Architect that none was used in the construction. The Architect shall cooperate with the Owner in obtaining all Contractor certifications.

§ 12.5 The Architect shall provide the Owner the necessary bidding information and shall assist with the Owner's obligations under the Michigan Prevailing Wage Act, MCL 401.1101, et seq. The referenced bid specifications shall consist of the unabridged AIA contract forms which the Architect shall modify as necessary to be consistent with this Agreement and the laws of the State of Michigan, including, but not limited to dispute resolution procedures and prevailing wage requirements (if applicable). The Architect shall include in bid specifications, and in any of the relevant document provisions indicating that modified version(s) of standard AIA Owner/Contractor Agreement(s) and modified General Conditions will be utilized; such documents shall be subject to the Owner's approval.

§ 12.6 (a) If errors and omissions in the Project are detected in the plans and specifications before the work is bid, the cost of any re-design required to incorporate the item or feature omitted or to correct the error shall be borne by the Architect, as well as any increase in construction costs due to a delay in bidding or construction relating to the error or omission or its redesign. Any other additional construction costs in this instance resulting from the inclusion of the omitted item or feature or to correct the error shall be borne by the Owner.

(b) If errors and omissions in the Project are detected in the plans and specifications after the Work has been bid, and if revision, removal or replacement of a portion of the Work is required, the Architect shall pay the cost of redesign and, if the Architect's error or omission was due to professional negligence, as determined on a case-by-case basis, then the Architect shall pay for the cost of the revision, removal, and the reconstruction required to incorporate the omission or to correct the error, as well as any other damages recoverable under law, and the Owner shall be responsible only for the costs it would have incurred had the error or omission not occurred.

§ 12.7 The Owner reserves the right in its discretion to require consolidation or joinder of mediation or litigation arising out of or relating to this Agreement with another mediation or litigation involving a person or entity not a party to this Agreement, in the event the Owner believes such consolidation or joinder is necessary in order to resolve a dispute or avoid duplication of time, expense, or effort.

§ 12.8 In the event of mediation arising out of or relating to this Agreement, the Owner reserves the right to require that the mediation hearing be conducted in the general area where the Owner's principal place of business is located. In the event

litigation arising out of or relating to this Agreement is related to litigation that is subject to the required jurisdiction/venue of another court, the Owner reserves the right determine the applicable court in its sole discretion.

§ 12.9 The Architect further agrees to include a similar mediation provision as identified herein in the form Owner/Contractor Agreement (per Section 3.4.3) and in all agreements with independent contractors and consultants retained for the Project and to require all independent contractors and consultant also to include a similar mediation provision in all agreements with subcontractors, sub-consultants, suppliers, or fabricators so retained, thereby providing for mediation as the primary method for dispute resolution between parties to those agreements. The Architect shall be responsible for ensuring the inclusion of this provision in pertinent bid documents and contract forms, the preparation of which the Architect provides or with which the Architect assists in preparation.

§ 12.10 The Architect, without additional cost to the Owner, shall maintain in force professional liability insurance providing coverage for the Architect for any negligent act in the Architect's rendering of or failure to render professional services and protecting the Owner from damages arising from results of such errors and omissions. Any "claims made" insurance shall be maintained in force during the life of the Project and for a period of no less than seven (7) years following the date of substantial completion. Any "occurrence based" insurance shall be maintained in force during the life of the Project and for a period of no less than twelve (12) months after the date of substantial completion. The Architect shall notify the Owner thirty (30) days in advance if this coverage becomes unavailable or if the coverage amount is substantially changed. The Architect shall provide the Owner with certificates of insurance evidencing the insurance coverage of the Architect, which certificates shall be attached to this Agreement. The Owner shall be listed as "additional insured" on all coverages to the extent reasonably permitted by the carrier. See attached Certificate of Insurance.

§ 12.11 The Owner reserves the right to approve the identity of the Architect's Project's representative(s) and to require their replacement upon two (2) weeks' notice. The Architect shall provide the services of _____ and all other individuals required for the Project and shall not replace any such individual until the completion of all services related to the Project, unless that person is discharged, dies, is disabled, is promoted to take on a substantially different responsibility, or is removed pursuant to the Owner's request for a personnel change. In the event that any individual identified above is discharged, dies, is disabled, or is promoted to take on a substantially different responsibility, or at such time as the Owner requests a personnel change, the Architect shall promptly submit to the Owner a qualification and experience resume of the person(s) proposed as replacement(s) and shall furnish replacement(s) upon agreement by the Owner.

§ 12.12 As a part of Basic Services, the Architect shall provide assistance for at least one (1) year beyond the date of substantial completion if there are actual performance and/or function issues related to the Project.

§ 12.13 To the fullest extent permitted by law, the Architect shall indemnify the Owner, its Board members, officers, and employees from and against any and losses, damages, including reasonable attorneys' fees and any additional expenses, and judgments arising from the Architect's negligence, the Architect's breach of this Agreement, or from claims by third parties that are attributable to the Architect's failures. The Architect's indemnity and hold harmless agreement shall not be applicable to any liability caused by the negligence of the Owner, its Board members, officers, and employees, but shall be to the fullest extent of the Architect's responsibility.

§ 12.14 The Architect will provide a full set of all drawings and specifications to the Owner upon completion of the Project. Further, production of original drawings and specifications, as well as all construction bulletin drawings and specifications in a CAD and a PDF form acceptable to the Owner shall be a part of Basic Services. Additionally, the Architect shall assemble and deliver all field drawings used for the Project as a part of Basic Services. All drawings and specifications of any medium, shall be available to the Owner at any time upon request, regardless of the stage of completion.

§ 12.15 Services deleted from Article 4 and its subparts shall be provided as part of the Architect's Basic Services.

§ 12.16 As part of Basic Services, the Architect shall conduct a post-occupancy inspection of the Project at six (6) and eleven (11) months following the Date of Substantial Completion, and, if different, thirty (30) days before the expiration of applicable warranties. The inspection shall include architectural, plumbing, mechanical, electrical, civil and structural review of the Project, to determine whether the Project components are performing as specified. The Architect's post-occupancy evaluations shall be in accordance with its professional standard of care.

§ 12.17 The Architect shall not utilize photographs of this Project for any advertising or promotional purpose that include the image of any student of the Owner without the express written permission of the parent or guardian of that student if that student is a minor. If the student is of the age of majority or is an emancipated minor, the Architect must obtain express written permission from that student. Such express written permission shall acknowledge the Architect's intent for use of those images. The Owner, in its discretion, may assist the Architect in securing such permission.

§ 12.18 The Architect shall be accessible to the Owner, either on-site or via communication media, as is reasonably necessary to address issues that arise during the Project.

§ 12.19 The Architect will not discriminate against any employee or applicant for employment, to be employed in the performance of this Agreement, with respect to hire, tenure, conditions or privilege of employment, or any matter directly or indirectly related to employment, because of race, color, religion, national origin, age, sex, sexual orientation, gender identity or expression, height, weight, or marital status. Breach of this covenant may be regarded as a material breach of this Agreement.

§ 12.20 The Architect will, as part of Basic Services, attend the Owner's Board of Education meetings and staff meetings (in person or via communication media) as reasonably requested by the Owner.

§ 12.21 The Architect shall actively enforce all applicable policies of the Owner, including but not limited to those related to alcohol and tobacco.

§ 12.22 The Architect will conduct pre-award conferences with apparent low bidders, reviewing bids or negotiated proposals, and advising the Owner whether such bids and proposals are responsive and acceptable in the context of the Project requirements.

§ 12.23 The parties acknowledge that the Owner is a Michigan general powers school district and is therefore subject to legal requirements and restrictions that may not apply in the private sector.

§ 12.24 The Architect may have provided services related to the Project prior to the date of this Agreement. The parties expressly acknowledge and agree that any such services shall be deemed governed by the terms of this Agreement regardless of when performed.

»

ARTICLE 13 SCOPE OF THE AGREEMENT

§ 13.1 This Agreement represents the entire and integrated agreement between the Owner and the Architect and supersedes all prior negotiations, representations or agreements, either written or oral. This Agreement may be amended only by written instrument signed by both the Owner and Architect.

§ 13.2 This Agreement is comprised of the following documents identified below:

- .1** AIA Document ~~B133™ 2019, Standard Form B133-2019~~ Agreement Between Owner and Architect, Construction Manager as Constructor ~~Edition~~Edition, as modified.
- .2** Building Information Modeling Exhibit, if completed:

(Paragraph deleted)

- .3** Exhibits:
(Check the appropriate box for any exhibits incorporated into this Agreement.)

☐ ~~— AIA Document E234™ 2019, Sustainable Projects Exhibit, Construction Manager as Constructor Edition dated as indicated below.~~
~~— (Insert the date of the E234 2019 incorporated into this agreement.)~~

☐ ☒ Other Exhibits incorporated into this Agreement:
(Clearly identify any other exhibits incorporated into this Agreement, including any exhibits and scopes of services identified as exhibits in Section 4.1.2.)

[Exhibit A – Architect’s Proposal dated _____, including Hourly Rates](#)
[Exhibit B – Preliminary Project Milestone Schedule](#)
[Exhibit C – Architect’s Certificate\(s\) of Insurance »](#)

4 Other documents:

(List other documents, if any, forming part of the Agreement.)

[Project Manual](#)

[«AIA Document A201 – 2017 General Conditions of the Contract for Construction, as modified.»](#)

[In the event of any conflict or ambiguity within, between, or among the Contract Documents, the terms most beneficial to the Owner, as determined in the Owner’s sole discretion, shall govern.](#)

This Agreement entered into as of the day and year first written above.

[GRAND RAPIDS PUBLIC SCHOOL DISTRICT,](#)

OWNER *(Signature)*

[Alex Smart,](#)

[Executive Director of Facilities and Operations](#)

(Printed name and title)

[Modified: 01/03/25; 5:14pm](#)

ARCHITECT *(Signature)*

[« » « »](#)

(Printed name, title, and license number, if required)

DRAFT AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

«Grand Rapids Public School District – 2023 Bond Program
District Wide Pool Upgrades and Renovations at the following buildings:
Union High School located at 1800 Tremont Blvd NW, Grand Rapids, MI 49504;
Ottawa Hills High School located at 2055 Rosewood Ave SE, Grand Rapids, MI 49506;
and
City High/Middle School located at 1720 Plainfield Ave NE, Grand Rapids, MI 49505, all
in accordance with the applicable ballot language, the Owner's fixed Project budget, the
approved plans and specifications, all applicable laws, and as otherwise approved by the
Owner. »

THE OWNER:

(Name, legal status and address)

«Grand Rapids Public School District»« »
1331 Martin Luther King Jr. Street SE
«Grand Rapids, Michigan 49506»

THE ARCHITECT:

(Name, legal status and address)

To be determined

THE CONSTRUCTION MANAGER:

To be determined

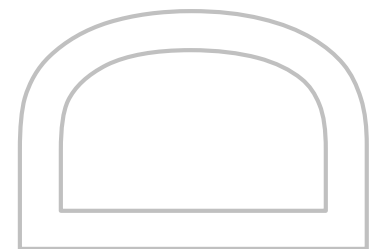
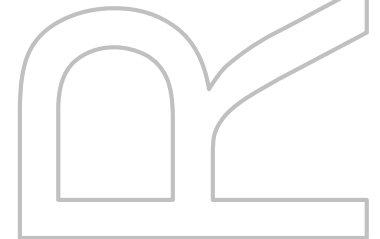
References to the "Contractor" herein with respect to the Construction Phase or as pertains
to actual, physical construction shall be deemed to apply to the Construction Manager, and
references to the Owner/Contractor Agreement shall refer to the Owner/Construction
Manager Agreement, unless context suggests otherwise.

The inclusion of any reference to or use of the term "Construction Manager" in this
document shall in no way be read to limit in any way the applicability of this document as
provided in Owner-Construction Manager Agreement Section 1.3.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.



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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement), which shall be awarded by the Owner and then assigned by the Owner to the Construction Manager after award, and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents ~~do not also~~ include the advertisement or invitation to bid, Instructions to Bidders, ~~sample forms~~, other information furnished by the Owner in anticipation of receiving bids or proposals, accepted portions of the Contractor's bid or proposal, ~~or and~~ portions of Addenda relating to bidding or proposal requirements. The Architect's execution of the Owner/Architect Agreement and the Construction Manager's execution of the Owner/Construction Manager Agreement and subcontractor agreements shall constitute their respective acceptance of all provisions of the Drawings, Addenda, and all Contract Documents.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate the Contractor's performance of ~~the Architect's~~ its duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions or interpretations, as applicable, on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith and without negligence.

§ 1.1.9 The term "Product(s)" as used in the Contract Documents refers to the materials, systems and equipment provided by the Contractor for use in the work of the Project.

§ 1.1.10 The terms "Warranty" and "Guarantee" as used in the Contract Documents shall have the same meaning and shall be defined as "legally enforceable assurance of satisfactory performance or quality of a product or Work."

§ 1.1.11 Where materials, systems and equipment items are referred to in the singular, such reference shall not serve to limit the quantity required. The Contractor shall furnish quantities as required by the Contract Documents to complete the Work.

§ 1.1.12 Unless specifically limited in the Contract, the words "furnish," "install," and "provide," or any combination thereof, mean to furnish and incorporate into the Work, including all necessary labor, materials, and equipment and other items required to perform the Work indicated.

§ 1.1.13 The Project Manual is a volume assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract and Specifications.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results. If the Drawings and Specifications conflict with each other with regard to the quality or quantity of Work required, the better quality and/or the greater quantity shall govern, and shall be provided, unless instructions are otherwise furnished to the Contractor by the Architect in writing with the Owner's consent.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade. Where responsibility for particular Work is required of the Contractor, the Contractor shall not be released from that responsibility by reason of the location of the Specification, Drawing, or other information that establishes the responsibility. Thus, for example, the Contractor shall be responsible for all Work required of it, even though that responsibility may be shown only in that portion of the Contract Documents typically pertaining to another contractor or trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.2.4 If there should be a conflict between two or more of the Contract Documents, the following order of interpretation shall apply.

- .1 Where requirements specifically set forth in the Agreement are in conflict with other Contract Documents, including, but not limited to, these General Conditions, the Agreement shall govern.
- .2 In all other instances, the conflict shall be resolved by complying with the provision that is most favorable to the Owner, as determined in the Owner's sole discretion.
- .3 When a duplicate of material or equipment occurs in the Drawings, the Specifications or other Contract Documents, each Contractor shall be deemed to have bid on the basis of each furnishing such material or equipment. The Contractor will decide which Subcontract(s) shall furnish the same.

§ 1.2.4.1 Without limiting the applicability of Section 1.2.4, if there should be conflict or ambiguity within any single Contract Document (for example, these General Conditions, as modified), the conflict or ambiguity shall be resolved by complying with the provision that is most favorable to the Owner, as determined in the Owner's sole discretion.

§ 1.2.5 It is the intent of the Contract Documents to accomplish a complete and first-class installation in which there shall be installed new products of the latest and best design and manufacture, and workmanship shall be thoroughly first class, executed by competent and experienced workmen.

- .1 Details of preparation, construction, installation, and finishing encompassed by the Contract Documents shall conform to the best practices of the respective trades, and that workmanship and construction methods shall be of first class quality so as to accomplish a neat and first class finished job.
- .2 Where specific recognized standards are mentioned in the Specifications, it shall be interpreted that such requirements shall be complied with.

§ 1.2.6 The Contractor acknowledges that there may be items of the Work that the Contractor is responsible to provide under the Contract Documents that are not drawn or specified in the design but are necessary for the proper execution and completion of the Work, and are consistent with, and reasonably inferable from, the Drawings and Specifications. All such items shall be provided as part of the Work without delay in its progress and without any increase in the Contract Sum or Guaranteed Maximum Price.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and unless otherwise indicated in the Contract Documents or the Owner/Architect Agreement, the Architect and the respective consultants will retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of ~~Service provided to them, Service,~~ subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.5.3 The Drawings, Specifications, and other documents and all data used in compiling any tests, surveys, or inspections at the Project Site and the results therefrom, as well as all photographs, drawings, specifications, schedules, data processing output, computer-aided design/drafting (CADD) system disks/tapes, computations, studies, audits, reports, models and other items of like kind, and all intellectual property, prepared or created for or in connection with the Project and required by the Owner, the Contractor, or a third party, belong to the Owner. The Contractor may retain one record set. All copies of them, except Contractor's record set, shall be returned or suitably accounted for upon completion of the Work. They are for use solely with respect to the Project. The Contractor shall not, without the prior written consent of the Owner, use or permit anyone to use any Drawings, Specifications, or other documents prepared for or in connection with the Project, or any concepts or ideas developed in connection with the Project, for any purpose other than the Project. The Owner shall at all times have access to and control over the disposition of any Drawings, Specifications, and other documents pertaining to the Project.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated an appropriate representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by registered or certified mail, by courier, or by electronic transmission if a method for electronic transmission is set forth

~~in the Agreement an acknowledgment of receipt is received from the recipient or proof of receipt is otherwise established. The parties acknowledge that an appropriate representative of the Owner shall be have authority only to the extent provided by the Owner's Board of Education.~~

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to ~~the designated an appropriate~~ representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery. ~~The parties acknowledge that an appropriate representative of the Owner shall be have authority only to the extent provided by the Owner's Board of Education.~~

§ 1.7 Digital Data Use and Transmission

The parties ~~shall may~~ agree upon ~~written~~ protocols governing the transmission and use ~~of, and reliance on, of~~ Instruments of Service or any other information or documentation in digital form.

~~§ 1.8 Building Information Models Use and Reliance~~

~~Any use of, or reliance on, all or a portion of a building information model without agreement to written protocols governing the use of, and reliance on, the information contained in the model shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.~~

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to ~~all~~ matters requiring the Owner's approval or ~~authorization. authorization~~ subject to parameters of authority established by the Owner's Board of Education. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 ~~The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.~~

~~NOT USED~~

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall ~~furnish~~ furnish, as applicable, to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. ~~If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.~~

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall immediately notify the Owner that the Work has ~~stopped-stopped and state with specificity why any evidence provided (or not provided) by the Owner is insufficient.~~ However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents. The parties' disagreement as to the appropriateness of payment for services performed shall not constitute the Owner's failure to make financial arrangements to fulfill the Owner's obligations under the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where information is protected by law and/or the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose such "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The To the extent permitted by law, the Contractor may also disclose such "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, ~~including including, but not limited to,~~ those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the ~~jurisdiction where the Project is located.~~ State of Michigan. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor ~~to whom the Contractor has no reasonable objection and~~ whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Taking into account the Contractor's experience and expertise, and exercise of professional caution, the Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work. The Contractor shall not be entitled to additional compensation resulting from its failure to confirm the location of site utilities or existing structures prior to the opening of the Contractor's bid.

§ 2.3.5 The Upon specific written request by the Contractor, the Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services. Contracts with other Contractors alone shall not constitute sufficient Owner control for purposes of this Section.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or ~~repeatedly~~ fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3. This right shall be in addition to and not in limitation of the Owner's rights under any provision of the Contract Documents.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ~~ten-day~~ three-day period after receipt of notice from the Owner or the Owner's designee (including, for this purpose, the Architect) to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, ~~correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the including any claim against the Contractor's Performance Bond, correct such default or neglect. In the event~~

the Contractor's default or neglect results in a threat to the safety of persons or property, the Contractor shall immediately commence and continue correction; otherwise, the Owner may undertake the same actions as permitted in the prior sentence. In such case, an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses, including any and all legal expenses incurred to effectuate and enforce this provision, and compensation for the Architect's and/or other Contractor's additional services made necessary by such default, neglect, or failure. If the Contractor does not agree to a Change Order as described in the preceding sentence, the Owner may nevertheless withhold the reasonable cost of correcting such deficiencies and the expenses identified in the preceding sentence (including, but not limited to, all legal expenses incurred to effectuate and enforce this provision). Exercise of such rights shall in no way limit or jeopardize the Owner's right to any claim against the Performance Bond or Contractor. The Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including the aforementioned Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15. In the event the Owner directs another entity to perform Work pursuant to this Section that otherwise is the obligation of the Contractor, including correction of safety violations, either at the Contractor's request or as a result of the Contractor's failure to perform such Work, the Owner may withhold any payments due Contractor to cover all costs for labor, material, and equipment plus that other entity's administrative, profit, and overhead costs. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative. Because the Project utilizes a Construction Manager as Constructor, the term "Contractor" shall, unless otherwise provided herein, mean the Project's Construction Manager.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.1.4 These General Conditions refer to the relationship between the Owner and Contractor. As to the contract between the Contractor and its Subcontractors, the General Conditions shall be read as the Contractor having the position of the Owner and the Subcontractors having the position of the Contractor. The Subcontractors are bound to the Contractor just as the Contractor is bound to the Owner. The Subcontractor shall have all the rights, duties and obligations to the Contractor as the Contractor has rights, duties and obligations to the Owner. The Subcontractors shall agree to and accept the same responsibility to the Owner as the Contractor. In the event any failure of a Subcontractor or the Subcontractor's Subcontractor or supplier, at any tier, causes any type of defective Work, injury, loss or damage to the Owner, direct or indirect, the Contractor shall be jointly and severally liable to the Owner for such injury in addition to any responsibility or liability of the Subcontractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents. The Contractor and/or its subcontractors shall independently verify all information related to utilities prior to beginning the Work. The Contractor shall make careful investigation to establish the exact location of any such items indicated on the Drawings. The Contractor shall be responsible for all costs arising out of damage to such items or additional construction costs incurred because Contractor failed to verify said information.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require-require, with a copy of same to be forwarded to the Owner.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.2.5 Prior to submitting its bid, the Contractor and/or its subcontractors shall have studied and compared the Contract Documents and shall have reported to the Architect any error, inconsistency or omission in the Contract Documents. It will be presumed that all bids and the Contract Sum include the cost of correcting any such error, inconsistency or omission, which could have been discovered by the exercise of reasonable diligence. Unless the Contractor establishes that such error, inconsistency or omission could not have been discovered by the exercise of reasonable diligence, the Contractor will make such corrections without additional compensation so that the Work is fully functional.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures. The Contractor shall immediately notify the Architect of delays of any other Contractors that could impact timely coordination and completion of the Work.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work. The Contractor shall be deemed to have accepted prior work when it commences provision of subsequent Work and shall be responsible for the cost of repair, replacement, or reconstruction if the prior work is found to be improper.

§ 3.4 Labor and Materials and Utilities

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work. Such provision of labor and materials shall occur in sufficient time to satisfy the existing Project schedule. The Contractor bears the risk of any failure to timely provide such labor and materials for any reason. The Contractor agrees to execute the appropriate UCC forms to effectuate the Owner's ownership of the material and equipment furnished pursuant to this Agreement.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.4.4 The Contractor agrees that neither it nor its Subcontractors will discriminate against any employee or applicant for employment, to be employed in the performance of this Contract, with respect to hire, tenure conditions or privilege of employment, or any matter directly or indirectly related to employment, because of race, color, religion, national origin, age, sex, sexual orientation, gender identity or expression, height, weight, or marital status. Breach of this covenant may be regarded as a material breach of this Contract.

§ 3.4.5 Immediately after "award of the Contract," the Contractor shall provide the Architect a list showing the name of the manufacturer proposed to be used for each of the product(s) identified in the Specifications and, where applicable, the name of the installing Subcontractor.

§ 3.4.6 The Architect will reply in writing to the Contractor stating whether the Owner or the Architect, after due investigation, has reasonable objection to any such proposal. If adequate data on any proposed manufacturer or installer is not available, the Architect may state that action will be deferred until the Contractor provides further data.

§ 3.4.7 In all cases involving utilities, unless the Contract Documents specifically provide otherwise, it shall be the Contractor's responsibility to coordinate the Work with the owners of such utilities for the protection of such utilities and for the safety associated with working with or in the vicinity of such utilities. The Contractor shall coordinate any work required by private and/or public utility companies to provide utilities to the Work and/or shall coordinate relocation of utilities as required by the Work. Any reference to the Owner being responsible for the coordination of, the paying for, or the relocation of any utility or associated equipment, which it does not own or control, requires only reasonable efforts by the Owner to coordinate such activity.

§ 3.4.8 Asbestos-Free Product Installation

§ 3.4.8.1 It is hereby understood and agreed that no product and/or material containing asbestos, including chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos and any combination of these materials that have been chemically treated and/or altered shall be installed or introduced into the Work by the Contractor or its employees, agents, Subcontractors, or other individuals or entities over whom the Contractor has control. The Contractor shall be required to provide a signed certification statement ensuring that all products or materials installed or introduced into the Work will be asbestos-free.

§ 3.4.8.2 The Contractor also shall be required to furnish certified statements from the manufacturers of supplied materials used during construction verifying their products to be asbestos-free in accordance with the requirements of Section 3.4.8.1.

§ 3.4.8.3 The Contractor shall complete and submit to the Owner a certification evidencing asbestos-free product installation prior to issuance of the final Certificate for Payment in a form acceptable to the Owner.

§ 3.4.9 Asbestos may be present within the construction areas. Contractors are to become aware of Owner's hazardous material report prior to construction. Work is not to disturb any in-place hazardous materials. The

Contractor and any Subcontractors must immediately stop all Work and notify the Owner if they reasonably suspect the presence of unknown hazardous materials and/or have disturbed any materials reasonably suspected to be hazardous materials.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. In addition to any other warranties, guarantees, or obligations set forth in the Contract Documents or applicable as a matter of law, and not in limitation of the terms of the Contract Documents, the Contractor warrants and guarantees that:

- .1 The Owner will have good title to the Work and all materials and equipment incorporated into the Work and, unless otherwise expressly provided in the Contract Documents, will be new.
- .2 The Work and all materials and equipment incorporated into the Work will be free from all defects, including any defects in workmanship or materials.
- .3 The Work and all equipment incorporated into the Work will be fit for the purposes for which they are intended.
- .4 The Work and all materials and equipment incorporated into the Work will be merchantable.
- .5 The Work and all materials and equipment incorporated into the Work will conform in all respects to the Contract Documents.

Upon notice of the breach of any of the foregoing warranties or guarantees or any other warranties or guarantees under the Contract Documents, the Contractor, in addition to any other requirements in the Contract Documents, will commence to correct such breach within 72 hours after written notice thereof and thereafter will use its best efforts to correct such breach to the satisfaction of the Owner; provided that if such notice is given after final payment hereunder, such 72 hour period shall be extended to seven (7) days. The foregoing warranties and obligations of the Contractor shall survive the final payment and/or termination of the Contract.

The Contractor shall, at the time of final completion of the Work and as a condition precedent to final payment to the Contractor, assign to the Owner all manufacturers' warranties related to the materials and labor used in the Work. The Contractor further agrees to perform the Work in such manner as to preserve any and all such manufacturers' warranties and deliver to the Architect the warranties, project manuals, operating procedures, and other materials related to each of the building systems and materials included in the Contractor's Work and as required by the Specifications.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect. The Contractor shall pay all local, state and federal taxes levied on its business, income or property and shall make all contributions for social security and other wage or payroll taxes. The Contractor shall be solely responsible for such payments and shall indemnify the Owner and hold it harmless from same.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the The Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work ~~knowing it to be~~ contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide written and dated notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Owner and Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, they will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the ~~Architect determines~~ Owner and Architect determine that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the ~~Owner and Contractor~~ Contractor in writing, stating the reasons. If either party ~~the Contractor~~ disputes the ~~Architect's~~ determination or recommendation, that party may the Contractor shall submit a Claim as provided in Article 15. The requirements of Section 2 of 1998 PA 57, as amended, are hereby incorporated into this document. The Contractor shall be alert to any indication or evidence of existing underground or concealed utilities or structures not shown on the Contract Documents and shall immediately notify the Owner of discovery of such evidence. If the Contractor encounters such utilities or structures, it shall cease operations immediately to minimize damage and shall notify the Owner and Architect. The Contractor shall bear the cost of damage resulting from its failure to exercise reasonable care in its construction activity or from continuing operations without notifying the Owner.

§ 3.7.4.1 The Contractor bidding on the Work is responsible for visiting the site and determining all local conditions that may in any way affect its Work.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify provide written and dated notification to the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features ~~may be made shall be made, as needed,~~ as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are ~~more than or~~ less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. The superintendent shall be satisfactory to the Owner in all respects, and the Owner shall have the right to require the Contractor to remove any superintendent from the Project whose performance is not satisfactory to the Owner and to replace such superintendent with a superintendent who is satisfactory to the Owner.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Owner and/or the Architect may notify the Contractor, stating whether the Owner ~~or and/or~~ the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. ~~Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.~~

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed except with a superintendent who is satisfactory to the Owner.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits ~~current under the Contract Documents, required under the~~ Contract Documents or any scheduling updates issued by the Architect or Owner. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project. In no event shall the Contractor's Construction Schedule be extended due to action or inaction of the Contractor, except with prior written approval of the Owner within the Owner's sole discretion.

The Contractor shall cooperate with the Architect and Owner in scheduling and performing the Contractor's Work to avoid conflict with, and as to cause no delay in, the work or activities of other contractors or the construction or operations of the Owner's own forces. The Contractor acknowledges and understands that the work schedule will be modified from time-to-time with the Owner's approval to coordinate with the work of others and that such schedule changes do not give rise to a claim for damages or additional compensation by the Contractor for delay or otherwise. The Contractor shall be required to conform to the most recent Owner-approved schedule and acknowledges that fact was taken into account when it agreed to the Contract Sum and entered into this Contract.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the ~~Architect's approval. The Architect's approval Owner's and Architect's approval. The Owner's and the Architect's approvals~~ shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. (2) allow for a reasonable amount of time to review submittals, and (3) shall provide for expeditious and practical execution of the Work. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent ~~schedules submitted to the Owner and Architect-approved Project schedules and the most recent Work schedule submitted to the Owner and Architect consistent therewith.~~

§ 3.10.4 NOT USED

§ 3.10.5 Progress Meetings: Meetings of representatives of the various Contractors may be held for the purpose of coordination and furthering the progress of the Work. Contractor and Subcontractor attendance is mandatory.

Meetings shall be held at regular intervals as provided in the General Requirements; special meetings may be held if deemed necessary by the Owner and/or Architect.

§ 3.10.6 The Contractor shall proceed strictly (not substantially) in accordance with the critical path set forth in the Construction Schedule. The Contractor shall monitor the progress of the Work for conformance with the requirements of the Construction Schedule and shall promptly advise the Owner of any delays or potential delays. If any progress report indicates any delays, the Architect shall propose an affirmative plan to correct the delay, including overtime and/or additional labor, if necessary. In no event shall any progress report constitute an adjustment of the Contract Time or any Milestone Date or the Contractor's Guaranteed Maximum Price unless any such adjustment is agreed to by the Owner and authorized pursuant to a Change Order.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor for submittal to and review by the Architect to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor for submittal to and review by the Architect to illustrate materials or equipment for some portion of the Work. All Work shall be furnished and installed in accordance with the Drawings, Specifications, and as additionally required by the manufacturer's printed instructions. The Contractor shall review the manufacturer's instructions, and where conflict occurs between the Drawings or Specifications and the manufacturer's instructions, the Contractor shall request clarification from the Architect prior to commencing the Work.

§ 3.12.3 Samples are physical examples for submittal to and review by the Architect that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's [review and](#) approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect [in detailed writing](#) of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. [The Subject to its professional skill and expertise, the](#) Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

[The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.](#) § 3.13.1 The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.13.2 [Anything contained in the Contract Documents to the contrary notwithstanding, no one except the Owner shall be permitted to disrupt the operation of any building system or any other services without the Owner's prior written consent. Any request to perform such work shall be in writing, received by the Owner no less than five \(5\) days prior to the commencement of the requested disruption, and shall detail \(1\) the exact nature and duration of such interruption, \(ii\) the area affected, and \(iii\) any impact upon the Construction Schedule caused by such proposed temporary disruption. Unless otherwise approved by the Owner, all work shall be performed during the hours and on the days set forth in the Specifications, in accordance with the most-recent project schedule, and/or as directed by the Owner or Architect. The Contractor's failure to comply with the notice provisions of this section shall constitute a waiver by the Contractor of any right it may have to an adjustment of the Contract Time, on account of any postponement, rescheduling, or other delays ordered by the Owner in connection with any Work for which appropriate notice was not furnished.](#)

§ 3.13.3 The Contractor will consult with the Owner and the Architect concerning any necessary operations at the Project site, including staging area limits, office or storage trailer locations, dumpster operations, equipment and material deliveries, hoisting areas and any other construction impacts on the Owner's grounds.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor and its Subcontractors, under the Contractor's direction, shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.15.3 Any areas and/or concurrently occupied space both occupied by the Owner and used in the progress of the Work, both within the limits of the construction site and the adjacent areas leading to it, shall be maintained, opened to travel and kept in a clean condition. Failure by the Contractor to maintain said areas will result in the Owner's cleaning of same, at the expense of the Contractor.

§ 3.15.4 In addition to removal of rubbish, the Contractor and its Subcontractors, under the Contractor's direction, shall replace any broken glass, remove stains, spots, marks, and dirt from decorated work, clean hardware, and/or remove spots and smears from all surfaces which were affected by the Work.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall indemnify and hold harmless the Owner and Architect ~~harmless from from any and all cost, damages, or loss~~ on account thereof, including, but not limited to, actual attorneys' fees, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect. The review by the Owner or Architect of any method of construction, invention, appliance, process, article, device or materials of any kind shall be for its adequacy in the Work and shall not be an approval for the use thereof by the Contractor in violation of any patent or other rights of any third person.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including expenses (including but not limited to attorneys' fees, fees) arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent

caused by the negligent of, or the failure to perform, the Work or the duties or obligations of the Contractor under the Owner/Contractor Agreement, these General Conditions, or the failure of the Contractor or the Work to conform with the Contract Documents, caused in whole or in part by the Contractor's breach of the Contract Documents or any negligent or wrongful acts or omissions of the Contractor, a Subcontractor, or anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder, them or anyone for whose acts of any of them may be liable, to the fullest degree of Contractor's fault, on a comparative basis (or the fault of any others for whom the Contractor is responsible). The Contractor shall be responsible to the Owner, Architect, Architect's consultants, and agents and employees of any of them for all amounts such parties may be required to pay in attorney fees in order to pursue enforcement of this provision against the Contractor or otherwise obtain indemnification from the Contractor provided under the terms of this Section 3.18. Such obligation shall not be construed to negate, abridge, or reduce any other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18 which would otherwise exist as to any party or person set forth in this section. To the fullest extent permitted by law, the Contractor shall indemnify the Owner and hold the Owner harmless against all loss by fines, penalties or corrective measures resulting from acts of the Contractor or omissions by the Contractor, its Subcontractors, agents, employees or assigns, with respect to the violation of safety requirements of this Contract, including reasonable attorney fees.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts, addition to and not in limitation of the Contractor's other indemnity obligations, the Contractor hereby accepts and assumes exclusive liability for and shall indemnify, protect, and hold harmless the Owner and Architect from and against the payment of the following:

- 1 all contributions, taxes, or premiums (including interest and penalties thereof) which may be payable under the unemployment insurance law of any state, the federal Social Security Act, federal, state, county, and/or municipal tax withholding laws, or any other law, measured upon the payroll of or required to be withheld from employees by whomsoever employed, engaged in the Work to be performed and furnished under this Contract;
- 2 all sales, use, personal property and other taxes (including interest and penalties thereof) required by any federal, state, county, municipal, or other law to be paid or collected by the Contractor or any of its Subcontractors or vendors or any other person or persons acting for, through or under it or any of them, by reason of the performance of the Work or the acquisition, ownership, furnishing, or use of any materials, equipment, supplies, labor, services, or other items for or in connection with the Work; and
- 3 all pension, welfare, vacation, annuity, and other benefit contributions payable under or in connection with respect to all persons by whomsoever employed, engaged in the Work to be performed and furnished under this Contract.

The Contractor shall indemnify, defend, and hold the Owner harmless from any claim, damage, loss or expense, including, but not limited to, actual attorney fees, incurred by the Owner related to any hazardous material, condition, or waste, toxic substance, pollution, or contamination brought into the Project site or caused or exacerbated by the Contractor or used, handled, transported, stored, removed, remediated, disturbed, or dispersed of by Contractor.

§ 3.18.3 In the event that any claim is made or asserted, or lawsuit filed for damages or injury arising out of or resulting from the performance of the Work, whether or not the Owner or Architect is named as a party, the Contractor shall immediately advise the Owner and Architect, in writing, of such claim or lawsuit and shall provide a full and complete copy of any documents or pleadings thereto, as well as a full and accurate report of the facts involved.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement. The Term "Architect," "Architect/Engineer," "Engineer," or "Design Professional" as used herein means the Architect or the Architect's authorized representative.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the ~~Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.~~ Owner and Architect.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for ~~Payment.~~ Payment and with the Owner's written concurrence during the correction period. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or ~~as otherwise agreed with the Owner, to become generally more frequently as agreed with the Owner or required by law, to become~~ familiar with the progress and quality of the portion of the Work completed, and to determine ~~in general if the Work observed is being performed in a manner indicating that the~~ Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ~~The Except as otherwise set forth herein or in the Owner/Architect Agreement, the~~ Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents. The Architect shall provide all services and duties that may be performed by an "Architect" or "Engineer" in 1937 PA 306 and 1980 PA 299.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner ~~reasonably~~ informed about the progress and quality of the portion of the Work completed, will guard the Owner against defects and deficiencies in the Work, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. ~~The Except as required by the agreement between Owner and Architect or this document, the~~ Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and, except as provided in the agreement between Owner and Architect or this document, will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work. The Architect shall provide all services and duties that may be performed by an "Architect" or "Engineer" in 1937 PA 306 and 1980 PA 299.

§ 4.2.4 Communications

The Owner and Contractor shall endeavor to include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to materially affecting the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Owner and Architect or, in the absence of an approved submittal schedule, with reasonable promptness as to cause no delay in the Work while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the

purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component. However, should the Architect discover during the course of such review any inaccuracies, incompleteness, or other irregularities, the Architect shall immediately notify the Owner of the same to determine an appropriate corrective course of action or notify the Contractor of the same to correct the irregularities.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to ~~determine~~determine, with the Owner's concurrence, the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site.~~The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.~~

§ 4.2.11 The Architect will interpret ~~and decide~~ matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable ~~promptness~~promptness given the particular circumstances.

§ 4.2.12 Interpretations ~~and decisions~~ of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such ~~interpretations and decisions, interpretations,~~ the Architect will endeavor to secure faithful performance by ~~both Owner and Contractor, will not show partiality to either,~~ and will not be liable for results of interpretations or decisions rendered in good ~~faith~~faith and without negligence.

§ 4.2.13 The Architect's ~~decisions~~interpretations on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable ~~promptness~~promptness given the particular circumstances. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. A Subcontractor expressly includes a trade contractor awarded work by the Owner pursuant to competitive bidding (or, if competitive bidding is not required, by any other process allowed by law), when such work is assigned to the Construction Manager in accordance with the Owner/Construction Manager Agreement. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor. The term "Subcontractor" shall also include Sub-subcontractors at any tier and material and equipment suppliers. Each and every subcontract shall be understood to have the Owner as a third-party beneficiary, and the Owner shall enjoy all third-party beneficiary rights permitted by law.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, ~~Contract~~ Contract by Owner as required by law, shall notify the Owner and Architect in writing of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. ~~Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection. All contractual agreements with additional persons or entities serving as a Subcontractor or supplier shall expressly identify the Owner as a third-party beneficiary, and the Owner shall enjoy all third-party beneficiary rights not prohibited by law.~~

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, despite the Architect's or Owner's reasonable objection, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution. The Contractor shall notify the Owner and Architect of any proposed substitution a minimum of ten (10) days prior to such proposed change.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors. Without limiting the breadth of this Section 5.3, the Contractor shall ensure that all Subcontractors have provided insurance required by the Contract Documents and shall provide copies of certificates of insurance or the full insurance policies upon the Owner's reasonable request.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and ~~Contractor~~ Contractor in writing; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation ~~shall be equitably adjusted for increases in cost resulting from the suspension may be adjusted as negotiated by the parties.~~

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. ~~If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.~~

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to ~~insurance and waiver of subrogation insurance. The Contractor shall be responsible for coordinating the Work and with the work of other Contractors, including the Owner's own forces or Separate Contractors, so as to complete the Work in accordance with the Project time schedule.~~

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 ~~Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.~~ **NOT USED**

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not ~~apparent~~ reasonably discoverable.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. ~~The Owner shall be~~

~~responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.~~

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor ~~wrongfully~~ causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and ~~the Architect will~~ allocate the cost among those responsible. The Owner's right to clean up shall in no event be deemed a duty, and should the Owner choose not to pursue this remedy, the Contractor necessitating such action shall remain fully responsible for the same.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, only by Change Order, Construction Change ~~Directive~~ Directive, written contract amendment, or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive ~~requires agreement may be issued~~ by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.2.2 Unless expressly stated otherwise in the Change Order, an agreement on any Change Order shall constitute the Contractor's final position on all matters relating to the change in the work that is subject to the Change Order, including, but not limited to, all direct and indirect costs associated with such change and any and all adjustments to the Contract Sum and the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one or more of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;

- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.

However, the Contract Time shall be adjusted only if the Contractor demonstrates to the Owner that the changes in the Work required by the Construction Change Directive adversely affect the critical path of the Work.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall ~~determine-determine, with the Owner's approval,~~ the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to ~~the following:~~a reasonable amount of the following that are actually incurred by the Contractor:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time. Contractor agreements to a Construction Change Directive shall require a follow-up writing or signature as contemplated in Section 7.3.7.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for undisputed Work completed under the Construction Change Directive in Applications for Payment. ~~The For those undisputed portions, the~~ Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of ~~cost cost, if agreed to by the Owner in writing,~~ shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of ~~either party-the Contractor~~ to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree in writing with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the ~~adjustments, adjustments in writing,~~ such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.3.11 In no event shall the Contractor be entitled to receive, and the contractor hereby waives the right to receive, any payment or any extension of time for additional or changed work, whether partially or fully completed or simply proposed, unless such additional work is authorized by a written Change Order or Construction Change Directive signed by the Owner, nor shall the Contractor be obligated to proceed with any such work. Only the Owner shall have the right to issue a written Change Order or Constructive Change Directive to the Contractor authorizing an addition, deletion or other revision in the scope of the Work and/or an adjustment in the Contract Sum or the Construction Schedule.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall either (i) file a Claim in accordance with Article 15 and continue to implement the change in the Work, or (ii) notify the Owner and the Architect in writing and shall not proceed to implement the change in the Work. ~~If Without limiting other restrictions on payment, if~~ the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for obtaining all supplies, materials, tools and equipment necessary to perform the Work and for properly performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time. All work shall be completed in sufficient time to allow for clean-up and preparation for Owner move-in prior to the Date of Substantial Completion.

§ 8.2.4 Without altering the applicability and obligations of Section 8.2.3, the Contractor shall prosecute the Work undertaken in a prompt and diligent manner wherever such Work, or any part of it, becomes available, or at such other times as the Owner and/or Architect may direct so as to promote the general progress of the entire construction. The Contractor shall not, by delay or otherwise, interfere with or hinder the Work of a Separate Contractor, the Owner, or the Architect. Any supplies, materials, tools and/or equipment that are to be furnished by the Contractor hereunder shall be furnished in sufficient time to enable the Contractor to perform and complete its Work within the time or times provided for herein. If the Contractor, through its negligence or failure, including the negligence or failure of its Subcontractors or suppliers, fails to furnish the necessary labor and/or supplies, materials, tools and/or equipment to meet construction needs in accordance with the established schedule, then it shall increase its forces or work such overtime as may be required, at its own expense, to bring its part of the Work up to the proper schedule. In the event the Contractor fails to take such action necessary to bring its part of the Work up to schedule within twenty-four (24) hours of receiving notice from the Owner or Architect, then the Owner, at its sole option, may supplement the Contractor's forces, materials and/or equipment or remove the Contractor from the Project, and the Owner may complete part or all of the remainder of the Contractor's Work, either utilizing in the Owner's sole discretion its own

forces, new contractors chosen by the Owner or any Subcontractor or supplier of the Contractor, which may include fixed price supplemental work time and materials supplemental work, or any combination thereof, which in Owner's sole discretion will most quickly and completely cure the failure of the Contractor. The Contractor shall be responsible for any and all costs of performing or completing the Work that are incurred by the Owner or any Separate Contractor, Subcontractor, supplier, or other entity on the Owner's behalf. The Owner may withhold such costs from the subsequent payments due the Contractor. To the extent such withholdings are insufficient to cover the costs, the Contractor shall pay the difference within ten (10) days of receiving an invoice for the same. Exercise of such rights shall in no way limit or jeopardize the Owner's right to any other remedy, including, but not limited to, a claim against the Performance Bond of the Contractor.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 ~~If~~ Provided the Contractor submits a written request for an extension not more than fourteen (14) days after the occurrence that gives rise to the delay, if the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by ~~labor disputes~~, fire, ~~unusual delay in deliveries~~, unavoidable casualties, ~~significant and unusual~~ adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending ~~mediation and binding dispute resolution~~; litigation, mediation, arbitration or binding dispute resolution, as applicable; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may ~~determine~~ determine and with which the Owner agrees. Failure of the Contractor to submit a timely request for an extension shall irrevocably waive the Contractor's right to such an extension of time. If the Contract Time is subject to extension pursuant to this subparagraph, such extension shall be the exclusive remedy of the Contractor and the Contractor shall not be entitled to recover damages from the Owner.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 ~~does not preclude~~ precludes recovery of damages for delay by ~~either party~~ the Contractor under other provisions of the Contract Documents. Under no circumstances may the Contractor assert a Claim, cause of action, or other relief against the Owner for delay damages.

§ 8.4 Delay Damage Claims

§ 8.4.1 If the Contractor fails to complete its Work on time resulting in loss or damage to the Owner, whether or not liquidated damages are called for in the Contract Documents, the Owner shall be entitled to recover any damages caused by the Contractor's breach, including overhead, profit, extended general conditions, actual attorney fees, etc.

§ 8.4.2 Liquidated Damages: The Owner and Contractor recognize that time is of the essence of the Contract and that the Owner will suffer financial loss if the Work is not Substantially Complete and approved for occupancy within the time limits specified, plus any extensions of time as allowed by the General Conditions. They also recognize the delays, expense, and difficulties involved in proving in a legal proceeding the actual loss suffered by the Owner if the Work is not Substantially Complete on time due to several factors, including the unique position of the Owner as a public school. Accordingly, instead of requiring any such proof, the Owner and Contractor agree that as liquidated damages for delay (but not as penalty) caused by the Contractor, the Contractor shall pay the Owner _____ Dollars (\$ _____) for each day that expires after the date of Substantial Completion for the Project until the Work is Substantially Complete. Liquidated Damages charges shall be deducted from the payments owed to the Contractor. The Owner reserves the right to demand legal proceedings should the actual loss be reasonably known to exceed the damages provided herein. Any allegation of damages for delay asserted by the Contractor against the Owner shall be governed by Section 8.3.3, Section 8.4.3, and Section 8.4.4 contained herein.

§ 8.4.3 In the event the Contractor is hindered in the commencement or progress of the Work by someone other than the Owner, and in the event the Contractor claims damages as a direct and proximate consequence thereof (including, but not limited to, extended general conditions, overhead, profit, overtime, interest, supervision or other costs or profits whatsoever), then the Contractor shall not assert such claims against the Owner, and as to the Owner, the Contractor's claims of delay damages are hereby waived. The Contractor's sole and exclusive remedy regarding such claims for such delay damages shall be to pursue such claims directly against the individual or entity which caused the delay.

For any delay claims raised against the Owner, the Contractor's sole and exclusive remedy is an extension of time to perform the Work not to exceed the time frame of any proven delay. Under no circumstances is the Contractor entitled to monetary delay damages from the Owner.

§ 8.4.4 In the event of any delay in the completion of the Contractor's Work or scheduling of the Contractor's Work, including the sequence of that Work which is attributable to the Owner, and if it is determined by a court of competent jurisdiction that the Owner is liable for such delay despite the other terms of this Contract barring any Owner liability for damages for delay, then the Owner shall be liable to the Contractor for liquidated damages in the amount of not to exceed One Hundred Dollars (\$100) per day, maximum, which shall include all of the Contractor's claims, including by way of example, delays, compressions of schedule, lost productivity, lost profits, lost opportunities, out of sequence work, overhead, crowding, tools, equipment, rentals, etc.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

~~Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the~~ Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Owner or Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.2.1 The schedule of values shall be prepared in such manner that the value associated for each major item of work and each subcontracted item of work is shown with materials and labor indicated separately on AIA Document G702 - Application and Certificate of Payment, and AIA Document G703 - Continuation Sheet, or otherwise.

§ 9.3 Applications for Payment

§ 9.3.1 At least ~~ten~~ fifteen (15) days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of ~~values, if required under Section 9.2, values~~ for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents. The form of Application and Certificate for Payment shall be AIA Document G702, Application and Certification for Payment, supported by AIA Document G703, Continuation Sheet, unless otherwise agreed by the Owner. Applications for Payment are due to the office of the Architect by the designated day of the month. Applications for Payment that are received after the specified date will not be processed until the following month.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders. A request for payment of sums related to work regarding Construction Change Directives shall, unless qualified in writing at the time of request, constitute full and complete consent to the Construction Change Directive(s) and to the issuance of a Change Order.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.1.3 The Contractor shall submit with each monthly Application for Payment (1) an Affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the previous application was submitted and for which the Owner might in any way be responsible have been paid or otherwise satisfied, and (2) a release or waiver of liens arising out of the Contract from each Contractor and/or Subcontractor, materialman, supplier and laborer for the Contractor addressing all previous Applications for Payment submitted for the Project.

§ 9.3.1.4 The Contractor must provide copies of the insurance certificates, bonds, and the same for all of the Subcontractors prior to submitting the first Application for Payment.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site. Payment to Contractor for materials stored off site is discouraged. When circumstances indicate that the Owner's best interest is served by off-site storage, the Contractor shall make written request to the Owner for approval to include such material costs in the next progress payment. The Contractor's request shall include the following information:

- .1 A list of the fabricated materials consigned to the Project (which shall be clearly identified, giving the place of storage, together with copies of invoices and reasons why materials cannot be delivered to the site.
- .2 Certification that items have been tagged for delivery to the Project and that they will not be used for another purpose.
- .3 A letter from the Contractor's Surety indicating agreement to the arrangements and that payment to the Contractor shall not relieve either party of their responsibility to complete the Work.
- .4 Evidence of adequate insurance covering the material in storage, which shall name the Owner as additionally insured.
- .5 Costs incurred by the Architect to inspect material in off-site storage shall be paid by the Contractor.
- .6 Subsequent pay requests shall itemize the materials and their cost which were approved on previous pay requests and remain in off-site storage.
- .7 When a partial payment is allowed on account of material delivered on the site of the Work or in the vicinity thereof or under possession and control of the Contractor, but not yet incorporated therein, such material shall become the property of the Owner, but if such material is stolen, destroyed or damaged by casualty before being used, the Contractor will be required to replace it at its own expense.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor

deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. Architect, in writing, together with the certification to which it pertains. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed-reviewed, unless otherwise required by the Agreement between the Owner and the Architect or applicable law, construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;remedied, or the Contractor is in default on the Agreement;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents. Documents;
- .8 the Work not having progressed to the extent set forth in the Application for Payment;
- .9 representations of the Contractor are untrue;
- .10 failing to conform to Project Schedule;
- .11 default in the performance of any obligation to the Owner under another contract; or
- .12 failure to provide sufficiently skilled workers.

§ 9.5.2 When either party-the Contractor disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party-the Contractor may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.5.5 If the Contractor disputes any determination by the Owner or Architect with regard to any Certificate for Payment, the Contractor shall nevertheless continue to expeditiously perform the Work and such dispute shall provide no basis for any manner of suspension of the Contractor's performance of the Work.

§ 9.5.6 Notwithstanding anything herein to the contrary, the Owner has no obligation to pay the Contractor absent receipt of a Certificate for Payment for the requested amount, and neither the Architect's failure to issue a Certificate for Payment nor the Architect's failure to notify the Contractor and/or Owner of a withheld Certificate for Payment creates an obligation on the Owner to pay the Contractor. The foregoing sentence shall not operate to limit the right of the Owner to dispute amounts requested by the Contractor or to withhold payments from the Contractor as provided in the Contract Documents.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 ~~The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4. Owner may, in its sole discretion, after providing Contractor with ten (10) days prior written notice, make direct payments to the Contractor's Subcontractors, suppliers, laborers or claimants relating to labor or material provided to the Contractor for which the Contractor has not provided a waiver of lien, in the event the Subcontractors, suppliers, laborers or claimants threaten to or actually cease providing labor and/or materials for the Project such that, in the Owner's determination, progress of the Project and the Project's Schedule are jeopardized. All payments made pursuant to this section shall be considered the same as if paid directly to the Contractor and shall constitute partial payment of the Contract Sum. In the event the Contractor disagrees with the amount proposed to be paid to one or more Subcontractors, suppliers, laborers or claimants, the Contractor shall provide a bond in the amount the Contractor believes the Owner will overpay, within ten (10) days of receipt of notice, or be barred from making any claim that the amount of the direct payment was incorrect. Payment under this provision shall not jeopardize any other remedy available to the Owner.~~

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 ~~Provided the Owner has fulfilled its payment obligations under the Contract Documents, the~~ The Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.6.9 Subject to applicable law, if a petition in bankruptcy or any other arrangement or proceeding regarding insolvency, assignment for the benefit of creditors, trust, chattel mortgage, or similar state or federal proceeding, whether voluntary or involuntary, shall be filed with respect to the Contractor, the Owner may withhold the final balance, or any other payments, whether or not an application for progress payment has been properly filed, until expiration of the period of any guarantees or warranties required for the Contractor, and the Owner may pay out such

funds the amount necessary to satisfy any claims or costs that otherwise would have been covered by such guarantees or warranties.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if without justifiable basis under the Contract Documents, including these General Conditions the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' Documents the undisputed amount asserted by the Contractor in its Application for Payment or awarded by a court, then the Contractor may, upon twenty-one (21) additional days' written notice to the Owner and Architect, stop the Work until payment of the undisputed amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents. The Contractor acknowledges the Owner's right to dispute in good faith any amount requested by the Contractor, and, irrespective of the Architect's issuance of a Certificate for Payment, the Owner's right to withhold payments from the Contractor, including, without limitation, to correct Work that fails to conform with the Contract Documents or as an offset or recoupment to recover the cost of damages incurred by the Owner due to the Contractor's breach of the Contract or a wrongful or negligent act or omission of the Contractor.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents and when all required occupancy permits, if any, have been issued, so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect, immediately. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.8.6 Notwithstanding Sections 9.8.1 and 9.8.2, as a condition precedent to establishing the date of Substantial Completion, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected (a "punch list"). The Contractor shall respond immediately to correct Work deficiencies and/or punch list items. Should the Contractor fail to make corrections in a timely fashion, but not later than fifteen (15) calendar days from the date of Substantial Completion or notification of the required corrections, whichever is earlier, such Work may be corrected by the Owner at the Contractor's sole expense, and any remaining payments due the Contractor shall be withheld by the Owner.

§ 9.8.7 The Contractor shall promptly notify the Architect, in writing, when the Work deficiencies and/or punch list items are completed. Upon the review of the Work by the Architect after such notification by the Contractor, if Work deficiencies and/or punch list items shall continue to exist, the Contractor shall reimburse the Owner its cost plus ten percent (10%) overhead and profit on any cost incurred by the Owner, including the Architect's fees for re- inspection of the Work. Failure to pay such costs within ten (10) days of receipt of a demand regarding the same shall permit the Owner to pay such costs out of retainage held by the Owner on the Contractor's contract.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect. complete. The Contractor shall proceed with the Work in such a manner as reasonably directed and shall cooperate with the Owner to limit interruptions.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.9.4 Any agreement as to the acceptance of non-conforming Work not complying with the requirements of the Contract Documents shall be in writing in the form of a Change Order, acceptable to the Owner's authorized representative and signed by all parties.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6)-(6) an affidavit that states the Work is fully completed and performed in accordance with the Contract Documents, (7) in the event of Contractor bankruptcy, at the Owner's option, an order entered by the court having jurisdiction of the Contractor's insolvency proceeding authorizing such payment, (8) a general release executed by the Contractor on a form provided by the Owner, (9) all close-out documents, (10) all warranties collected and provided in an acceptable manner, and (11) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the

Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and ~~reasonable-actual~~ attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall not constitute a waiver of Claims by the ~~Owner except those arising from~~
~~1 — liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;~~
~~2 — failure of the Work to comply with the requirements of the Contract Documents;~~
~~3 — terms of special warranties required by the Contract Documents; or~~
~~4 — audits performed by the Owner, if permitted by the Contract Documents, after final payment.~~ Owner.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of ~~claims by that payee all claims of the Contractor~~ except those previously made by the Contractor in writing and identified by ~~that payee the Contractor~~ as unsettled at the time of final Application for ~~Payment.~~ Payment and specifically referenced as being an exception to the waiver contained in this section.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall continuously maintain adequate protection of all Work from damage and shall protect the Owner's property from injury or loss. The Contractor shall make good any such damage, injury or loss at no cost to the Owner, except to the extent directly caused by agents or employees of the Owner. The Contractor shall adequately protect the Work and adjacent property as required by law, the Contract Documents, or as otherwise required, to cause no damage to the Work and adjacent property during the execution of the Work. This requirement shall also apply to structures above and below ground as conditions of the site require. The Contractor shall also provide recommendations and information to the Owner regarding (a) the assignment of responsibilities for safety precautions and programs by the Subcontractors and responsibilities for safety precautions and programs by the Subcontractors and the Owner for the safety of Owner, and the general public; (b) temporary facilities; and (c) equipment, materials and services for common use of Subcontractors. The Contractor shall verify that the requirements and assignment of responsibilities are included in the proposed Contract Documents.

§ 10.1.2 The Contractor is solely responsible to the Owner for health and safety at the Project site and, accordingly, shall be solely responsible for initiating, monitoring, maintaining and supervising all safety precautions and programs in connection with the performance of the Work. The foregoing does not relieve the Subcontractors of their responsibility to the Contractor for the safe performance of their Work in accordance with all applicable laws.

§ 10.1.3 The Contractor shall develop and implement a health and safety plan that complies with all applicable laws covering all activities on the Project Site except those activities performed solely by the Owner. The Contractor shall provide the Owner a copy of such health and safety plan prior to commencement of Work. The Owner shall have no duty to review the plan and shall assume no duty by doing so.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take ~~reasonable precautions every reasonable precaution~~ for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall ~~comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.~~ take all reasonable safety precautions with respect to its Work and work of others, shall comply with all standard industry safety measures and shall comply with all applicable laws, ordinances, rules, regulations and orders of any public authority and all other requirements of the Contract Documents, including those applicable to the safety of persons or property. The Contractor shall be responsible for the safety of all of the Contractor's employees and the safety of all of the Contractor's Subcontractors, suppliers, and their employees. The Contractor shall report in writing to the Architect any injury to any of Contractor's or its Subcontractor's employees at the site within one (1) day after the occurrence of such injury.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, ~~reasonable~~ reasonable, necessary and appropriate safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel. The Contractor shall be solely and fully responsible for any and all damage claims and for defense of all actions against the Owner relating to such explosives, hazardous materials and/or unusual methods.

§ 10.2.5 The Contractor shall promptly remedy damage and loss ~~(other than damage or loss insured under property insurance required by the Contract Documents)~~ to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If ~~either party-the Contractor~~ suffers injury or damage to person or property because of an act or omission of the ~~other party-Owner~~, or of others for whose acts ~~such party-the Owner~~ is legally responsible, written notice of the injury or damage, whether or not insured, shall be given to the ~~other party-Owner~~ within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the ~~other party to investigate the matter.~~ Owner to investigate the matter. This provision shall be for investigative purposes only and shall not eliminate or reduce a party's obligation to pursue Claims. The Contractor's failure to do so shall be an irrevocable waiver of any Claim arising out of such injury or damage. Injury or damage to persons or property suffered by the Owner because of an act or omission of the Contractor, or others for whose acts the Contractor is legally responsible, shall be subject to the limitation periods established by Michigan law.

§ 10.2.8.1 The Contractor causing damage to the Work of another shall be responsible for the repair and replacement of such damaged Work. Back charges shall be made against the Contract Sum of the damaging Contractor when corrections are not made promptly.

§ 10.2.8.2 If the Contractor or any Subcontractor chooses to use any systems, equipment, facilities, or services which have been incorporated in the Project as a permanent part thereof by any other, the Contractor shall assume full responsibility for damages caused to said systems, equipment, facilities or services, and have damages repaired as required, so that in no case will the performance of the used systems, equipment, facilities or services be diminished from the specified criteria as a result of such use.

§ 10.2.9 The Contractor acknowledges that the safety of the Owner's students, employees and guests is of the utmost importance. The Contractor will take no action which would jeopardize the safety of the Owner's students, employees and guests and, without the Owner's written approval, shall take no action which would interfere with the Owner's activities. Without limiting the foregoing sentence, the Contractor shall comply with all laws applicable to student and/or school safety.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect in writing of the condition.

§ 10.3.2 Upon receipt of the Contractor's ~~notice, the Owner written notice, the Owner, in its discretion,~~ shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner ~~shall~~ shall, as a courtesy, furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. ~~The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection.~~ When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately ~~and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of to address~~ shutdown, delay, and start-up.

§ 10.3.3 ~~To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.~~ **NOT USED**

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the ~~site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.~~ site. To the extent the Contract Documents require the removal, transport and disposal of hazardous materials, the Contractor agrees that it assumes responsibility for said tasks as part of the Contract.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the

Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 ~~If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.~~ NOT USED

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's reasonable discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7. Nothing in this paragraph will be construed as relieving Contractor from the cost and responsibilities for emergencies covered hereby.

§ 10.5 Notification of Utility Companies

§ 10.5.1 At least five (5) working days prior to the start of work in areas which may involve existing utility lines, the Contractor shall notify the MISS DIG notification system, as legally required and, if applicable, any Registered Utility Protection Service of the utility company possibly affected by the planned work by certified mail with return receipt requested.

§ 10.5.2 The utility company should, upon receipt of notice, stake, mark or otherwise designate the location (and depth) of their lines, or temporarily move the line(s). The Contractor shall wait for the applicable utility to stake and/or mark its utility lines before commencing the relevant Work

§ 10.5.3 The Contractor shall immediately report to the respective utility company any break or leak in its lines, or any dent, gouge, groove or other damage to the utility line or to its coating or cathodic protection made or discovered in the course of the Work.

§ 10.5.4 The Contractor shall immediately alert the Owner, Architect and occupants of nearby premises of any and all emergencies caused or discovered in the utility line(s) in the course of the Work.

§ 10.6 Security

§ 10.6.1 All construction participants, including the Contractor, Architect, Subcontractors, etc., shall cooperate with the Owner's security personnel and shall comply with all of the Owner's security requirements. Such requirements shall include, without limitation, if requested by the Owner, delivering to the Owner's security personnel, prior to the commencement of the Work on each day, a list of all personnel who will be permitted access to the Work. The foregoing, however, shall not relieve the Contractor of any obligation to provide a safe and secure workplace for all parties entering the Project Site. The Contractor shall be responsible to implement commercially reasonable data security protection measures to protect the Owner's networks and data when performing technology-related Work.

§ 10.7 Fire Protection

§ 10.7.1 The Contractor shall maintain free access to the building areas for firefighting equipment and shall at no time block off main roadways or fire aisles without providing adequate auxiliary roadways and means of entrance for firefighting equipment, including heavy fire department trucks, where applicable.

§ 10.7.2 The Contractor shall at all times cooperate with the Owner and kept the municipal fire department informed of the means of entrance and changes to the roadways or fire aisles as needed to provide fire department access to or around the Project Site.

§ 10.7.3 The Contractor shall, during the entire construction period and until the completion of the Work, provide and maintain all material, equipment, and services necessary for an adequate fire protection system, which shall meet the approval of the Owner and/or the Architect. The system shall, at a minimum, meet the requirements set forth in the Contract Documents and of applicable laws. These requirements shall be augmented and/or the installations relocated, as may be necessary to meet, at all time, the demands of adequate protection in all areas and shall not be reduced prior to the completion of the Work with the written approval of the Owner and/or the Architect.

§ 10.8 Environmental Statement and Responsibility of Contractors and Sub-Contractors

§ 10.8.1 It shall be the responsibility of the Contractor to pay any and all costs incurred in any way related to clean up related to any environmental hazard created by means of release, spill, leak or any other means of contamination caused by accident or negligence that is the responsibility of Contractor or its subcontractors or other agents.

§ 10.8.2 It shall be the responsibility of the Contractor to dispose of any product(s) and/or material in strict compliance with applicable federal, state, and local laws (e.g., Environmental Protection Agency, Michigan Department of Natural Resources, etc.).

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as required by law and as otherwise described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies rated A- or better by A.M. Best Company and lawfully authorized to issue insurance in the jurisdiction where the Project is located. ~~The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.~~

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. Owner hereby requires the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder, each in the penal sum of 100% of the Contract Sum and in accordance with applicable law, on the date of execution of the Contract. The Owner may also require, through the Contract Documents or otherwise, that any contract valued at \$50,000 or less shall also include payment and performance bonds each in the penal sum of up to 100% of the Contract Sum. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located. The Contractor shall obtain and provide to the Owner copies of any and all bonds required by the Contract prior to Contractor beginning performance pursuant to the Contract. The Contractor's obligation to provide such bonds shall not be waived in any fashion, including any failure to secure such bonds prior to Contractor beginning performance pursuant to the Agreement.

§ 11.1.2.1 The Contractor's liability insurance shall be not less than the following:

§ 11.1.2.1.1 Comprehensive General Liability Insurance with separate limits of not less than \$1,000,000 per accident coverage against bodily injury and \$1,000,000 per accident coverage against property damage, or with a combined single limit against both bodily injury and property damage of not less than \$3,000,000 per occurrence. This coverage shall include a contractual liability endorsement, not excluding sexual harassment and molestation.

§ 11.1.2.1.2 Comprehensive Owned and Non-Owned Automobile Liability Insurance with the same minimum limits of coverage as that required for the Comprehensive General Liability Insurance.

§ 11.1.2.1.3 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided that such primary and excess or umbrella liability insurance policies result in the same or greater coverage as the coverages required under Sections 14.3.1.1 and 14.3.1.2, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ 11.1.2.1.4 Workers' Compensation at statutory limits and Employers' Liability with policy limits not less than «One Million Dollars» (\$ «1,000,000») each accident, «One Million Dollars» (\$ «1,000,000») each employee, and «One Million Dollars» (\$ «1,000,000») policy limit.

§ 11.1.2.1.5 Professional Liability covering negligent acts, errors and omissions in the performance of professional services, with policy limits of not less than Two Million Dollars (\$ 2,000,000) per claim and Two Million Dollars (\$ 2,000,000) in the aggregate.

§ 11.1.2.1.6 Other Insurance

(List below any other insurance coverage to be provided by the Construction Manager and any applicable limits.)
Not applicable.

§ 11.1.2.1.7 Additional Insured Obligations. Grand Rapids Public School District and Plante Moran Realpoint, LLC, it's Owner's Representative, the Architect, and Architect's consultants must be named as additional insured by endorsement to the Comprehensive General Liability Policy. Certificates of insurance evidencing that the Contractor has secured all of the foregoing insurance must be provided to the Owner. A minimum of thirty [30] days' notice to the Owner prior to the cancellation of, or change in, any such insurance shall be endorsed on each policy and noted on each certificate.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage. For all insurances where the Contractor is obligated to have its insurance company name the Owner, Owner's Representative Consultant, Architect and Architect's consultants as additional insureds, the Contractor shall require such insurance company to add to the policy the following clause: "The insurance afforded to the Additional Insured is primary insurance. If the Additional Insureds have other insurance which is applicable to the loss on an excess or contingent basis, the amount of the insurance company's liability under this policy shall not be reduced by the existence of such other insurance." Should the Contractor's insurance costs increase due to adding the Architect and/or Architect's Consultants as additional insureds, and should such costs be passed on to the Owner, the Architect and Architect's Consultants, as applicable, shall reimburse the Owner for such additional costs.

§ 11.1.5 Notice of Cancellation or Expiration of Contractor's Required Insurance. Immediately after the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, but in no event less than the sooner of three (3) days after becoming aware or the coverage actually lapsing, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration, including the Contractor's plan to immediately procure replacement insurance as required by the Contract Documents to avoid any lapse in coverage. Contractor's failure to do so is a material breach of this Agreement, shall entitle the Owner to purchase replacement insurance at Contractor's sole cost, and shall subject the Contractor to any and all damages related to its failure to comply with its required insurance obligations. Further, upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right, but not the obligation, to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. This policy will exclude any tools, equipment, scaffolding, glass breakage, etc., owned or rented by the Contractor or Subcontractors and materials stored on the site, but not incorporated into the Project. The Contractor shall be responsible for protecting all product until the Date of Final Completion is established by the Architect/Engineer. The Contractor shall replace any Work if damaged before Final Completion. The Contractor may assume the risk itself or obtain insurance in amounts it deems sufficient.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance of reasonable type and coverage amount that will protect the interests of the Contractor,

Subcontractors, and Sub-Subcontractors in the ~~Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto. Work and the parties shall negotiate an adjustment to the Contract Sum and Contract Time. Property Insurance provided by the Owner will cover only Work incorporated into the construction and will not cover tools, equipment, or other property owned, leased, rented, or borrowed by the Contractor, Subcontractor, Sub-Subcontractor, or others.~~

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the ~~Contractor; Contractor and~~ (2) the Contract Time and Contract Sum shall be ~~equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. negotiated.~~ If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 ~~The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property. Superior to any other provision herein or elsewhere in the Contract Documents, any references to "waiver of subrogation" or such similar provisions are hereby deleted and shall be declared to have no effect.~~

§ 11.3.2 ~~If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.~~ **NOT USED**

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. ~~The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.~~

§ 11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect

and Contractor shall make payments to their consultants and Subcontractors in similar manner. The Owner shall use its best efforts, with consultation of the Architect, to reach a quick and fair settlement for all interested parties, with the insurance companies after a loss.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15 if the Contractor timely and properly files a claim under Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time-Time or Contract Sum.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request with the Owner's consent to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable-a negotiated adjustment to the Contract Sum and Contract Time as may be appropriate. At the time the Owner's consent is sought as described herein, the Architect shall notify the Owner that additional costs may apply if the Work is in accordance with the Contract Documents. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

It is understood that the correction of work, either before or after Substantial Completion, shall occur without extension of the Contract Time, without increase in the Contract Sum, and without use of any contingency.

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including work of other Contractors and Subcontractors, compensation of consultants, any delay or related damages, attorneys' fees incurred by the Owner, additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense. The Owner shall have the right to charge the Contractor for any such costs and expenses and to deduct such amounts from any future payments due the Contractor.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year-two years after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The ~~one-year-two-year~~ period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The ~~one-year-two-year~~ period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 ~~or other provisions of the Contract Documents establishing a "correction warranty" or other similar concept~~ shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract ~~Documents. Establishment of the one-year Documents, including, without limitation, Section 3.5. Establishment of the two-year~~ period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

~~§ 12.2.6 The Contractor shall respond immediately to correct Work deficiencies and/or punch list items. Failure to correct Work deficiencies and/or punch list items in a timely fashion shall be a substantial breach, and the Owner may terminate the Contract immediately. The Owner's right of termination in this Section 12.2.6 is separate and distinct from the right of termination in Section 14.2. Whether or not the Contract is terminated, if the Contractor fails to make corrections in a timely fashion, such Work may be corrected by the Owner, in its sole discretion, at the Contractor's expense and the Contract Sum may be adjusted by back charge and/or withholding future payments due the Contractor accordingly. The Contractor shall promptly notify the Architect in writing when Work deficiencies and/or punch list items are completed. If upon review of the Work by the Architect, after such notification by the Contractor, Work deficiencies and/or punch list items shall continue to exist, the Contractor shall reimburse the Owner for any costs incurred by the Owner, plus ten percent (10%) overhead and profit, as well as the Architect's fees for reinspections of the Work.~~

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made. ~~The acceptance of nonconforming Work by the Owner shall be by written Change Order signed by the Owner's authorized representative. Acceptance of nonconforming Work may only occur pursuant to such written Change Order.~~

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the ~~place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.State of Michigan in all respects, except that Claims and causes of action brought by the Owner shall not be deemed untimely if filed within six (6) years of Substantial Completion of the entire Project.~~

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, Documents or applicable law, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located. For any late payments by the Owner, the interest rate shall not exceed five percent (5%) per annum (see MCL 438.31).

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the ~~Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the~~ Owner has not made payment on ~~a-an undisputed~~ Certificate for Payment within the time stated ~~in the Contract Documents, subject to justifiable withholding of payment as described herein or~~ in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' ~~written~~ notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' ~~written~~ notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 ~~repeatedly~~ refuses or fails to supply enough properly skilled workers or proper ~~materials; materials to the point of negatively impacting the Project and/or the related schedule;~~
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 ~~repeatedly~~ disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority;~~or~~
- .4 otherwise is guilty of substantial breach of a provision of the Contract ~~Documents; Documents; or~~
- .5 ~~the Contractor fails to prosecute the Work or any part thereof with promptness and diligence or fails to perform any provisions of the Contract, or goes into bankruptcy, liquidation, makes an assignment for the benefit of creditors, enters into a composition with its creditors, or becomes insolvent.~~

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, ~~seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety; three (3) days' notice, terminate the Contractor's right to proceed with the Work, or such part of the Work as to which such defaults have occurred, and may take any one or more of the following actions:~~

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

In the event the Contractor's surety bond requires notice of intent to declare a default of the Contractor and if such bond notice is provided by the Owner, such notice shall be adequate to satisfy the three (3) day written notice described above in this Section.

The three (3) day notice period identified in this Section does not give rise to an opportunity for the Contractor to cure the cause for termination. Further, the Owner's failure to properly follow the termination procedure shall not be a substantial or material breach of the Contract or the Owner's obligations.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner in pursuing termination and completion of the Work, including actual attorney and legal fees and costs, and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly ~~executed; executed and~~ costs incurred by reason of the ~~termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.~~termination.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the ~~Contract.~~Contract, including, but not limited to, additional sums, additional time for performance, or damages for delay. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents. The Contractor shall not knowingly (as "knowingly" is defined in the Federal False Claims Act, 31 USC 3729, et seq.) present or cause to be presented a false or fraudulent Claim. As a condition precedent to making a Claim by the Contractor, the Claim shall be accompanied by an affidavit sworn to before a notary public or other person authorized to administer oaths in the State of Michigan and executed by an authorized representative of the Contractor, which states that, "The Claim which is submitted herewith complies with subparagraph 15.1.1 of the General Conditions, as amended, which

provides that the Contractor shall not knowingly present or cause to be presented a false or fraudulent claim." Claims of the Owner shall be governed by the relevant Michigan statutory limitations period.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims as set forth herein and shall pursue all causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2. The Owner shall commence all claims and causes of action in accordance with Section 13.1 and Section 15.1.2.1, regardless of any other time frames identified in the Contract Documents. The Contractor shall commence all Claims and causes of action in accordance with Section 15.1.2 and Section 15.1.3, other provisions of the Contract, and in accordance with Michigan law.

§ 15.1.2.1 Regardless of any provisions to the contrary, the limitations period with respect to any Claim or cause of action by the Owner with respect to defective or nonconforming Work shall not commence until the discovery of such defective or nonconforming Work by the Owner. See also Section 13.1.

§ 15.1.2.2 Surety Notice and Prior Approval

Except where otherwise expressly required by the terms of the Agreement or the General Conditions, exercise by the Owner of any contractual or legal right or remedy without prior notice to or approval by the Contractor's surety shall in no way prohibit the Owner's ability to pursue such right or remedy. Further, pursuit of such a right or remedy without prior notice to or approval of surety shall in no way compromise, limit or bar any claim by the Owner against a surety bond of the Contractor.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, the Contractor shall be initiated by notice to the other party Owner and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 the Contractor shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant Contractor first recognizes the condition giving rise to the Claim, whichever is later. The Contractor's failure to timely and properly initiate a Claim shall be an absolute and irrevocable waiver of such Claim and any cause of action. Claims and causes of action by the Owner shall be governed by the applicable statute of limitations period, except when a provision of the Contract Documents provides a longer period. The parties acknowledge, understand, and agree that the Contractor's required prompt filing of a Claim is critical to the Project, as Contractor Claims often affect the Project schedule and/or Project budget, and that the deadline and waiver applicable to Contractor Claims is a material inducement to the Owner entering into an agreement with the Contractor.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.**NOT USED**

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, Claim or cause of action, including mediation, arbitration and/or litigation, as applicable, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make undisputed payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.**NOT USED**

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Failure to provide such notice shall serve as an absolute bar against a Claim or cause of action for such an increase in the

Contract Sum. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4. A Project delay shall not be a basis for a Claim or cause of action for additional cost by the Contractor. Delays may be remedied only through an extension of time per Sections 8.3.4 and 15.1.6.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided in Section 15.1.3 shall be given. Failure to give such notice shall be an absolute and irrevocable waiver of a Claim or cause of action for additional time. The Contractor's Claim shall include an estimate of ~~cost and of~~ probable effect of delay on progress of ~~the Work, the Work due to the increase in Contract Time sought.~~ In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor ~~and Owner waive Claims against each other waives Claims and/or causes of action against the Owner~~ for consequential damages arising out of or relating to this Contract. This ~~mutual waiver includes~~ waiver includes, without limitation:

- ~~1~~ damages incurred by the ~~Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and~~
- ~~2~~ ~~damages incurred by the~~ Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This ~~mutual~~-waiver is applicable, without limitation, to all consequential damages due to either party's ~~termination in accordance with Article 14, termination.~~ Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 ~~Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall~~ Claims of the Contractor shall, and Claims of the Owner may, be referred to the Initial Decision Maker for initial ~~decision-interpretation.~~ The Architect will serve as the Initial Decision ~~Maker, unless otherwise indicated in the Agreement-Maker.~~ Except for those Claims excluded by this Section 15.2.1, an initial ~~decision-interpretation~~ shall be required as a condition precedent to ~~mediation of any Claim. If an initial decision-mediation, arbitration and/or litigation of any Claim brought by the Contractor against the Owner. If an initial interpretation~~ has not been rendered within 30 days after ~~the a Contractor-required or Owner-requested~~ Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without ~~a decision-an interpretation~~ having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to ~~resolve the Claim-interpret the Claim.~~ Within ten (10) days of a written request, the Contractor shall make available to the Owner or its representative all of its books, records, or other documents in its possession or to which it has access relating to a Claim and shall require its Subcontractors, regardless of tier, and suppliers to do the same.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering ~~a decision-an interpretation.~~ The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker ~~will will, based on its interpretation,~~ either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial ~~decision-interpretation~~ approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial ~~decision-interpretation~~ shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any ~~recommended~~ change in the Contract Sum or Contract Time or both. ~~The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution. If the Claim is timely and properly asserted, the initial interpretation shall be subject to the parties' agreed-upon dispute resolution process.~~

§ 15.2.6 ~~Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.~~ **NOT USED**

~~§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.~~

§ 15.2.7 In the event of a Claim against the Contractor, the ~~Owner-Owner, Architect or Initial Decision Maker~~ may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the ~~Owner-Owner, Architect or Initial Decision Maker~~ may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

~~§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.~~

§ 15.3 Mediation

§ 15.3.1 ~~Except as stated in this Agreement or otherwise agreed in writing by the parties,~~ Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections ~~9.40.4, 9.10.5, and 15.1.7, 9.10.4 and 9.10.5,~~ shall be subject to mediation as a condition precedent to ~~binding dispute resolution.~~ ~~the parties' agreed-upon dispute resolution process.~~

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the ~~filing of binding commencement of the parties-agreed-upon~~ dispute resolution proceedings but, in such event, mediation shall proceed in advance of ~~binding dispute resolution such~~ proceedings, which shall be stayed pending mediation for a period of ~~60-sixty (60)~~ days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. ~~If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.~~ ~~All limitations periods shall be tolled during the mediation process.~~

§ 15.3.3 ~~Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.~~ **NOT USED**

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

~~§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.~~

~~§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.~~

~~§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.~~

~~§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.~~

§ 15.4.4 Consolidation or Joinder

The Contractor further agrees to include similar dispute resolution provisions in all agreements with the Subcontractors, suppliers, and independent contractors and consultants retained for the Project and to require them to include a similar dispute resolution provision in all agreements with Subcontractors, all subconsultants, suppliers or fabricators so retained, thereby providing for a consistent method of dispute resolution between the parties to those agreements. Subject to the other limitations periods identified in these General Conditions which are understood to govern over this sentence, no demand for mediation or arbitration shall be made after the date when the applicable statutes of limitation would bar legal or equitable proceedings. During the pendency of any mediation or arbitration, all applicable limitations periods shall be tolled until the conclusion of that process.

With the exception of matters solely dealing with the Contract, the Owner reserves the right in its discretion to require consolidation or joinder of any mediation or arbitration arising out of or relating to this Agreement with another mediation or arbitration involving a person or entity not a party to this Agreement in any event the Owner believes such consolidation or joinder is necessary in order to resolve a dispute or avoid duplication of time, expense or effort. With the exception of matters solely dealing with the Contract, in the event the Owner is involved in a dispute which is not subject to mediation or arbitration involving a person or entity not a party to this Agreement, the mediation and arbitration provisions of this article shall be deemed to be void and nonexistent in the event Owner, in its discretion, determines the Contractor should become a party to that dispute by joinder or otherwise. Any mediation or arbitration hearing shall be held in the general location where the Project is located, unless another location is mutually agreed upon.

/end of AIA A201-2017, General Conditions of the Contract for Construction/

Modified: 05/03/20; 9:04am

~~§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).~~

~~§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.~~

~~§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.~~



ATTACHMENT C: POOL STUDIES

Ottawa Hills
Union High
City High/Middle

AQUATICS FESIBILITY STUDY FOR OTTAWA HILLS HIGH SCHOOL



GRAND RAPIDS PUBLIC SCHOOLS

PREPARED BY:



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www.aquaticsource.com

March 12th, 2025

Plante Moran Realpoint
Scott Weir- Vice President
634 Front Avenue NW STE 300
Grand Rapids, MI 49504

Re: Grand Rapids Public Schools Aquatics Evaluation
Ottawa Hills High School Pool Feasibility Study

Scott,

Thank you for the opportunity to assist with Grand Rapids Public Schools aquatic facilities and in the case, Ottawa Hills High School. Based on discussions with your pre-construction team, I have elected to break this study into four (4) parts:

- Immediate Needs- Things that need to be done *now* to keep the pool code compliant or address major defects
- 3-year Forecast- Things that should be considered to keep the pool up to date and stem any major service work
- Complete Renovation- This is a solution that I would consider lining up with our other major pump room renovations that we have done with you, putting a long term solution in place for the foreseeable future
- Other Concerns- These are items that would be outside the pool contractors scope of work but that I have noted as being need of investigation so a complete solution can be proposed to the District

Based on discussions, I submitted a FOIA Request to EGLE regarding the pool. I received over seventy-three (73) pages of the complete history of the swimming pool. I will not include all of these but can forward them to you at your request.

This pool was in pretty good shape actually when we were there outside of the pump room needing to be cleaned. I do have concerns about the diving board closest to the break being too close for current code.

We would be glad to meet with yourself, your Design Team and even the Board of Education if it helps in order to go through this report so that everyone is on a level playing field as to what the expectations of this facility can and should be for the short and long term.



190 Summit St., Brighton, MI 48116 • phone 248.366.0606 • fax 248.366.0605
www.aquaticsource.com

Existing Pool & Design Data:

There is no standard design detail sheet for this pool because of its age. We went back through the pages of history to come up with the following information.

- Swimming Pool was constructed at or around 1972 and opened to the public for use. At this time the pool construction generally consisted of a single lane pool w/ side diving well. Pool is listed at 250,000 gallons.
- Pool is running at 6.9 hour turnover rate @ 600 GPM
- No major renovations were included in the file obtained from EGLE. It appears that this pool is in fact running on the original Dalee filter installed from 1972 OR has had a like for like replacement at some point in time that did not require a submission to the Health Department

Pool Volume:	250,000	UG gallons
Pool Area:	4,690	SQFT
Perimeter:	315	LF
Re-circulation Rate:	600	GPM <i>*695 GPM will be required for a 6 hour turnover rate</i>
Turn Over Rate:	6.9	HRS <i>*6.0 hours required under current code</i>
Filtration Rate:	UNKNOWN	

Return Line: 6" schedule 80 PVC (8.54 ft/sec < 10.0 ft / sec maximum velocity)

Main Drain Line: 8" schedule 80 PVC (4.88 ft/sec < 5.0 ft/sec maximum velocity)

Gutter Line: 6" schedule 80 PVC (8.54 ft/sec > 5.0 ft / sec maximum velocity)

Recent Work:

1. A new chemical controller is located in the room but is not hooked up and functioning
2. New Stenner pumps appear to be installed for pumping acid and liquid chlorine, but are not hooked up to the chemical controller; operator appears to be hand balancing pool
3. Bell & Gossett HX pump looks new
4. The modulating valve on the main drain line to the surge tank looks newer
5. There are sidewall main drain lines and much of the process piping appears to have been replaced with schedule 80 PVC in the recent past

Relevant Filtration Observations:

These existing filters have long served their useful life. When the open top vacuum DE filters are working correctly, they do provide very good filtration. Upon inspection, there do not appear to be any torn leafs or media getting back to the swimming pool. With that being said, the coating of media on the leafs in the filter was very thin and "mud like" in consistency suggesting it needs to be changed

For the most part, this filter was obsolete over 40 years ago and needs to be replaced.



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Competitive Swim Considerations:

In looking at the pool configuration, it appears that at the time of construction (before the Code change) the facing lanes and competitive swim took place in the shallow end of the pool, which according to the construction documentation, is the +/-75'-0" (25-yards) required for MHSAA required course

It does appear that at some point after the Code changed, the starting blocks were relocated to the deep end and the course modified to swim competition that way. However, according to the design documentation, it appears that the length of this modified course may be 80 LF (or close to 25 meters). This should be verified.

If this is the case, swimming here competitively for anything other than practice would not be allowable unless a fixed bulkhead was constructed in the deep end, much like was done at City High School in order to provide the appropriate length course.

We will not include budget items for this. This pool is the nicest one that the District has. If they do in fact want to use it for competition, we will work with them through the budgeting process on getting a bulkhead installed and making the pool usable for competition.

Before such consideration is given, it should be noted that because of the 6 lanes, we do not believe the pool would ever be able to host anything larger than a League meet. Most pools that host District and Regional meets have a minimum of 8 lanes.

Diving Boards:

I do not believe the diving boards as currently laid out are in compliance with current code. I have again attached the sheet showing the required dimensions for a 1-meter board and stand.

I do think that if we centered one (1) board in the deep end on the same wall we might be able to get what we need. My suggestion is to engage a service company to get into the pool and collect the necessary dimensional data so that the existing (and perhaps proposed) conditions can be documented to see if in fact the current configuration is in compliance and if there is a way to get a new stand into compliance.





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Code Compliance Issues:

From a cost analysis perspective, these items will be included under the “Immediate Needs & Concerns” sections, as they should be considered a priority in any design solution offered for the pool

1. While it is not code to have a chemical controller, it is code that the material be “simply handled and closely controlled in its usage” (R 325.2156 Rule 56 (1)(d)). I have **never** seen a public-school swimming pool that does not utilize a chemical controller for the direct measurement and application of sanitizer and pH control. This is a public safety risk and should be immediately rectified
2. The mechanical room is filthy. There are literally hundreds of empty bottles of liquid chlorine and muriatic acid in that room that need to be removed and properly disposed of. Mixing these chemicals together inadvertently will produce a chemical reaction that yields mustard gas and can cause serious injury or even death. This should be handled immediately
3. Any renovation is going to need to include the provision to provide the required 6-hour turnover rate required by current code. We need 695 GPM in order to hit that rate. This is no problem because the pipe sizes (excepting the gutter) are in place to accommodate this higher flow without exceeding velocity rates mandated by the State
4. Gutter line into the surge tank will need to be increased to 8” schedule 80 PVC

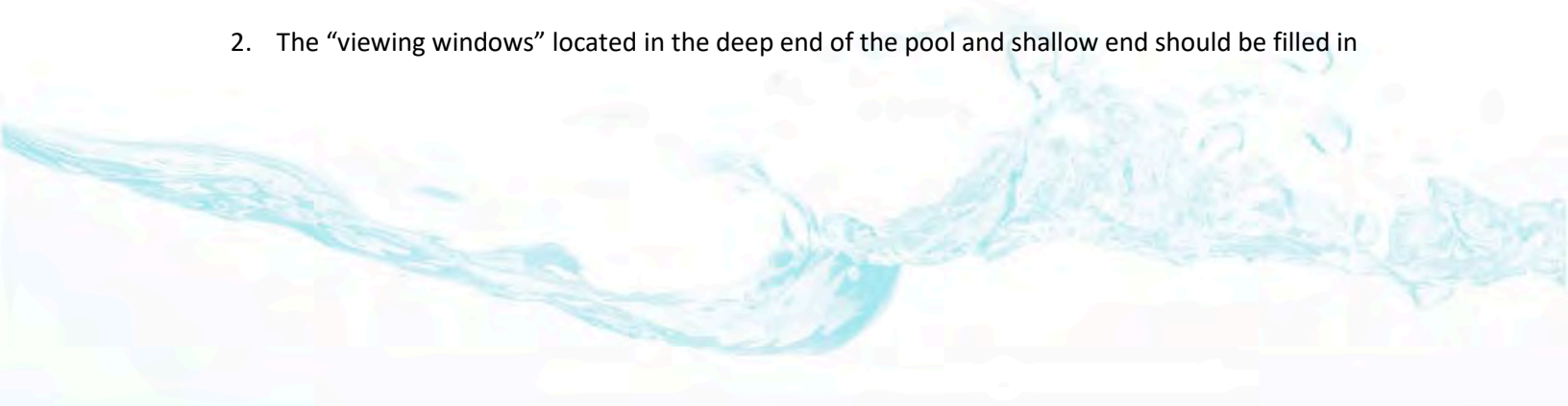
Immediate Needs & Concerns:

You have immediate needs that need to be addressed that will allow safe and efficient operation of the swimming pool.

1. At the time of inspection, there is no automated chemical control occurring. As far as I know, the Siemens controllers that are in those rooms are no longer manufactured and you cannot get parts for them. I would suggest removal and replacement with a brand that is supported by an in-state contractor

This would include integrating the existing peristaltic delivery pumps into the new controller

2. The “viewing windows” located in the deep end of the pool and shallow end should be filled in





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3-year Comprehensive Strategy:

If this pool is to remain in service long term, the 3-year comprehensive strategy needs to be a complete replacement of the mechanical room recirculation equipment. There really is no other option at this point. The system is old, difficult to run and maintain and has far outlived its useful life. In addition to a complete mechanical room renovation, the following items need to be considered as well

Please note this work should be pursued IN ADDITION TO the work in the previous section.

1. When the pool was re-piped, all of the cast iron connections into the pool structure were left in place. Any long term strategy for keeping this pool in service should include the removal of these stubs in the pool wall as well as the surge tank piping
2. Existing light fixtures do not have viable replacement parts and should be removed and filled in. Photometric study of natatorium should be performed and lighting updated based on current standards not using in pool lights as a contributing factor

Complete Renovation:

1. Remove existing sand filters and provide a new 'Defender' regenerative media filtration system by Neptune Benson
 - a. We have included a Defender cost analysis for your review. Please note that a Defender only shows a strong payback when an Owner is deciding between this filter and a sand filter. We need the initial cost of the sand filter to stack against the initial cost of the Defender to show any kind of ROI. Even with this not included, the installation will still payback in under 6 years
 - b. It should be noted that sand is not really an option in this pump room because of the size of the tanks and access into the basement
 - c. What we can tell you (and you will see on the summary sheet) is that the District will realize over \$4,000 in annual savings from the Defender installation and save over 350,000 gallons of water per year
2. Renovation to include all new valves (including modulating valve) hardware and support hardware
3. Renovation would include new filtration pump (secondary redundant pump listed as an option) and strainer
4. Renovation would include new flow meter, thermometers and gauges per code



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5. We will list the following items as add options to the renovation that may be worth considering as we move closer to an actual design:
 - a. Calcium hypo-chlorite feeder in lieu of liquid chlorine. Safer, more stable, easier to manage
 - b. On site chlorine generation using saline technology
 - c. Use of CO2 systems for pH control
 - d. Use of bisulfate for pH control
 - e. Ultraviolet light secondary disinfection systems for protection against chlorine resistant microorganisms and destruction of combined chlorine. If a new handler is installed, this item is a must

Other Concerns:

Most of the items in here would fall outside of our scope of work. However, with the scope and breadth of this proposed renovation, we feel that the trade disciplines representing these work scopes absolutely should be providing evaluations and budgetary number of these systems for inclusion in an overall project scope / budget. We will provide estimates that should be verified and substantiated with the various disciplines involved

1. Electrical distribution and devices in the mechanical space appear to be very old and in need of replacement and / or updating
2. The sump pumps for the space should be evaluated for good working condition
3. Water supply for the space should be provided in PVC pipe with isolation valves
4. Existing pool heating source should be evaluated for remaining service life and considered as part of the project if needed. Existing HX looks to be very old

Budget Summary

Please consider the following cost Summary. Note that we try and capture everything in the potential project. These sections will correspond with the items / numerations under the various sub-headings above.

Immediate Needs & Concerns (incl. Code Compliance Issues:

	<u>Extra's</u>	<u>Base Scope</u>
1. Chemical Controller.....		\$ 7,000
a. Auto-Fill	\$ 3,500	
b. PPM Chlorine Control....	\$ 2,500	
c. Main drain modulation...	\$ 6,500	
2. Fill in Viewing Windows....		\$ 25,000
		\$ 32,000



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3-year Comprehensive Strategy:

	<u>Extra's</u>	<u>Base Scope</u>
1. Re-Pipe Swimming Pool		
a. Gutter....		\$ 82,000
b. Return...		\$ 19,400
c. Surge Tank...		\$ 13,000
2. Fill in Lights.....	\$ 16,000	
3. Complete Mechanical Renovation		
a. New Defender Filter Package..		\$ 95,000
b. New Recirculation Pump.....		\$ 27,000
c. Redundant Recirculation Pump..	\$ 19,500	
d. VFD....		\$ 13,000
e. Pipe, Fittings & Hardware....		\$ 58,000
f. Valves....		\$ 26,000
g. System Accessories.....		\$ 14,000
h. Direct Labor.....		<u>\$ 68,000</u>
4. Option for Calcium hypo-chlorite feeder....	\$ 7,500	\$415,400
5. Option for on Site Chlorine Generation....	\$ 68,000	
6. Option for CO2 System for pH control...	\$ 13,000	
7. Option for bi-sulfate for pH control....	\$ 3,200	
8. Medium Pressure UV.....	\$ 48,800	
9. Provide alkalinity control through new chemical controller w/ bi-sulfate or CO2..	\$ 3,500	





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Other Concerns / Trade Costs:

1. Cost to produce EGLE Compliant Design Documents...	\$ 17,000
2. Plumbing support in mechanical room....	\$ 90,000
3. Electrical support in mechanical room...	\$ 80,000
4. HVAC support in mechanical room...	?
5. New heater / exchanger....	\$ 20,000

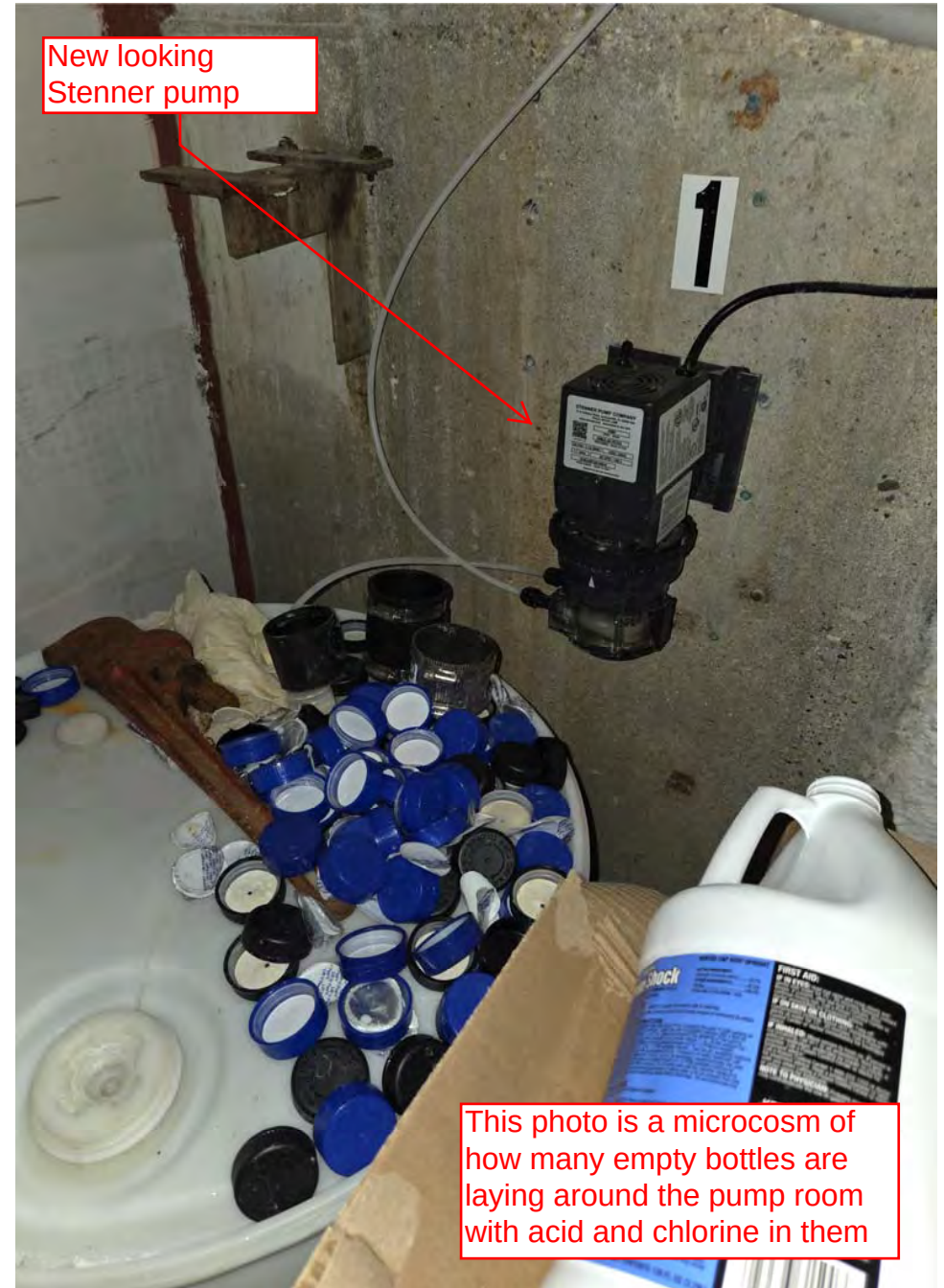
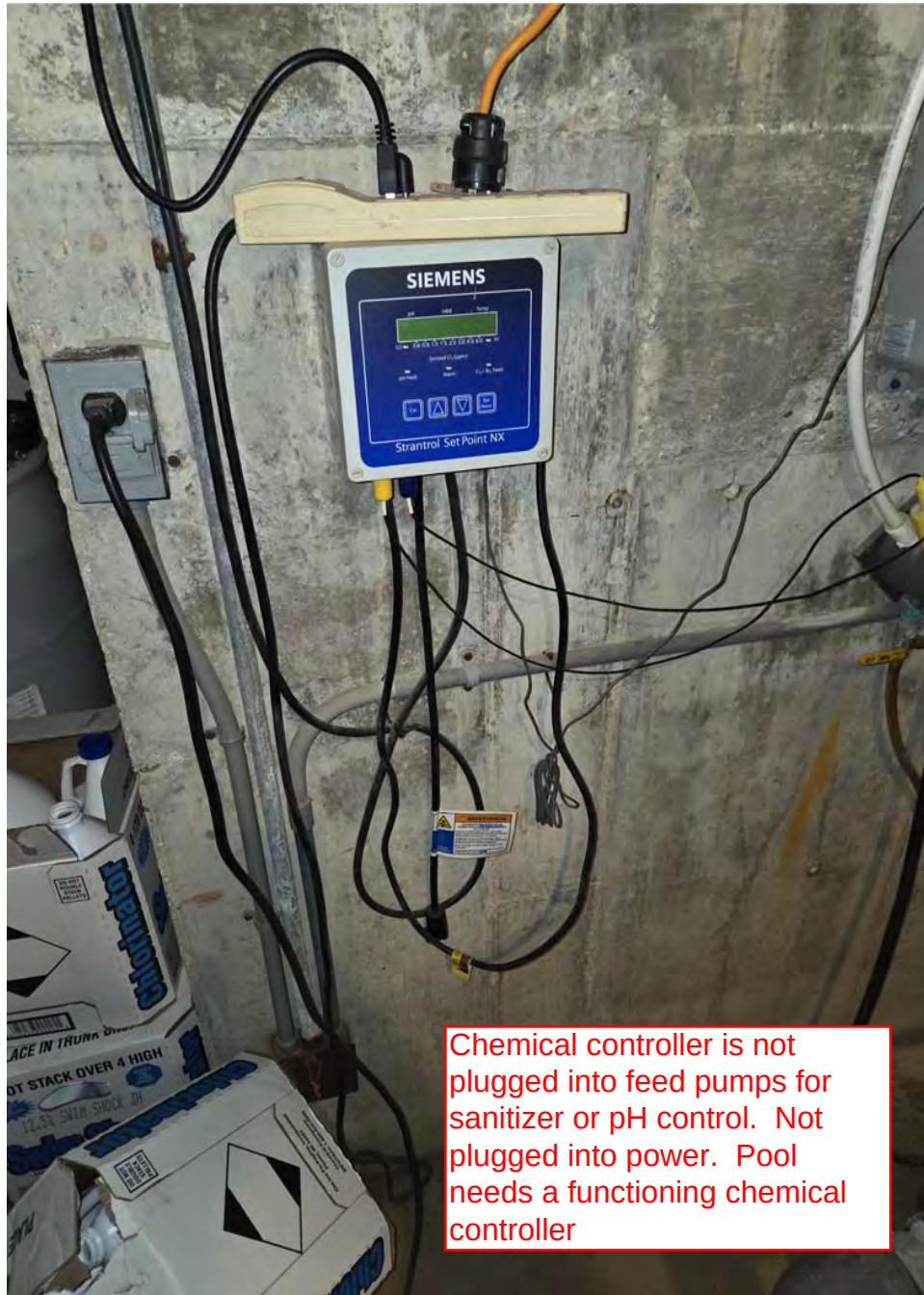
Conclusion:

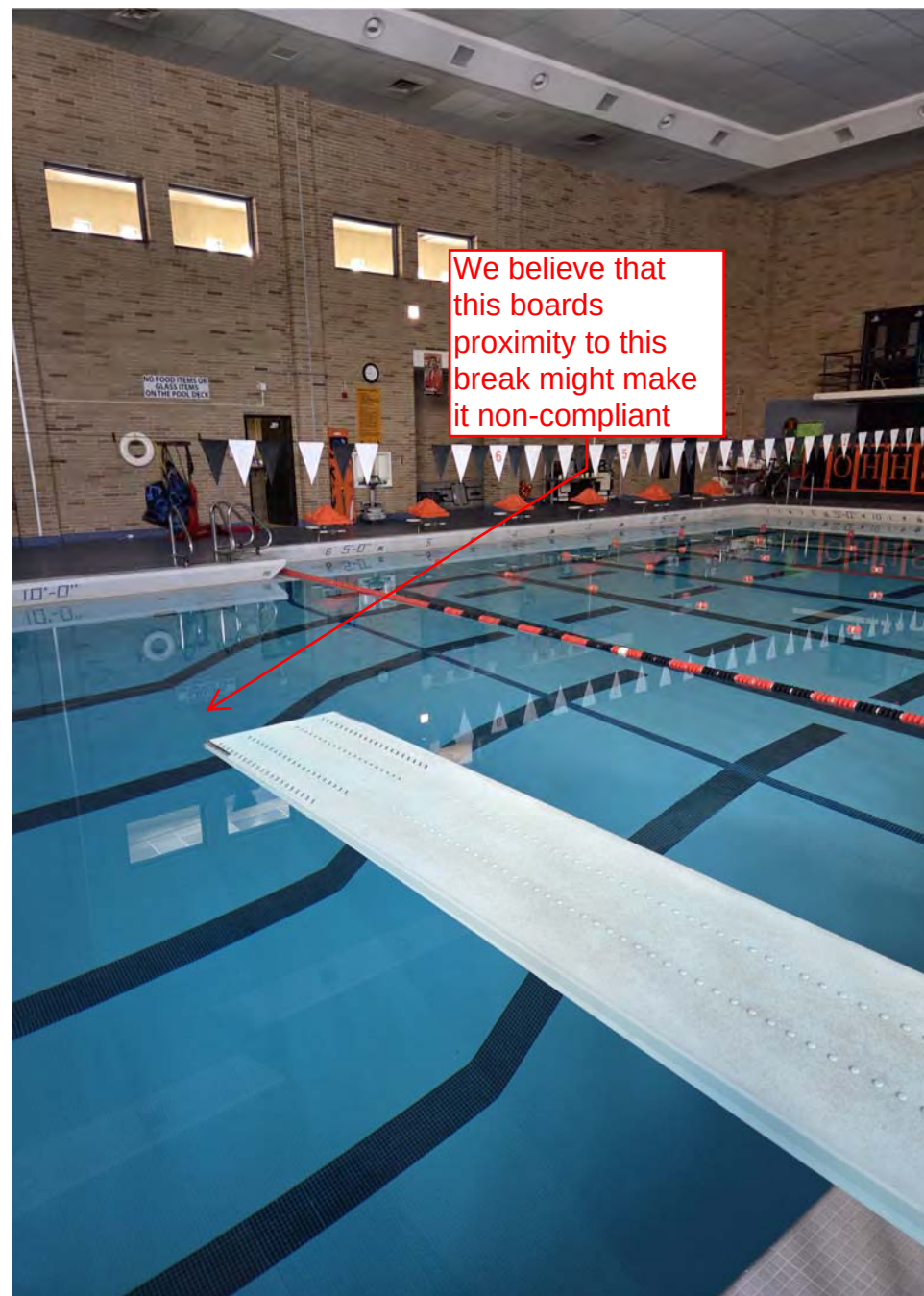
We would welcome the chance to sit down with the School Board and/or Administration to go over the report in detail and field questions. Following in the attached pages you will find a pictorial library from my visit with my notes on the individual photos that tie them to this document. We have also included various product information and cut sheets for the equipment that would be specified. We thank you for selecting us to be a part of your team and the process and stand ready to proceed at your direction.

Sincerely,

Nick Shelton
General Manager
Aquatic Source, LLC

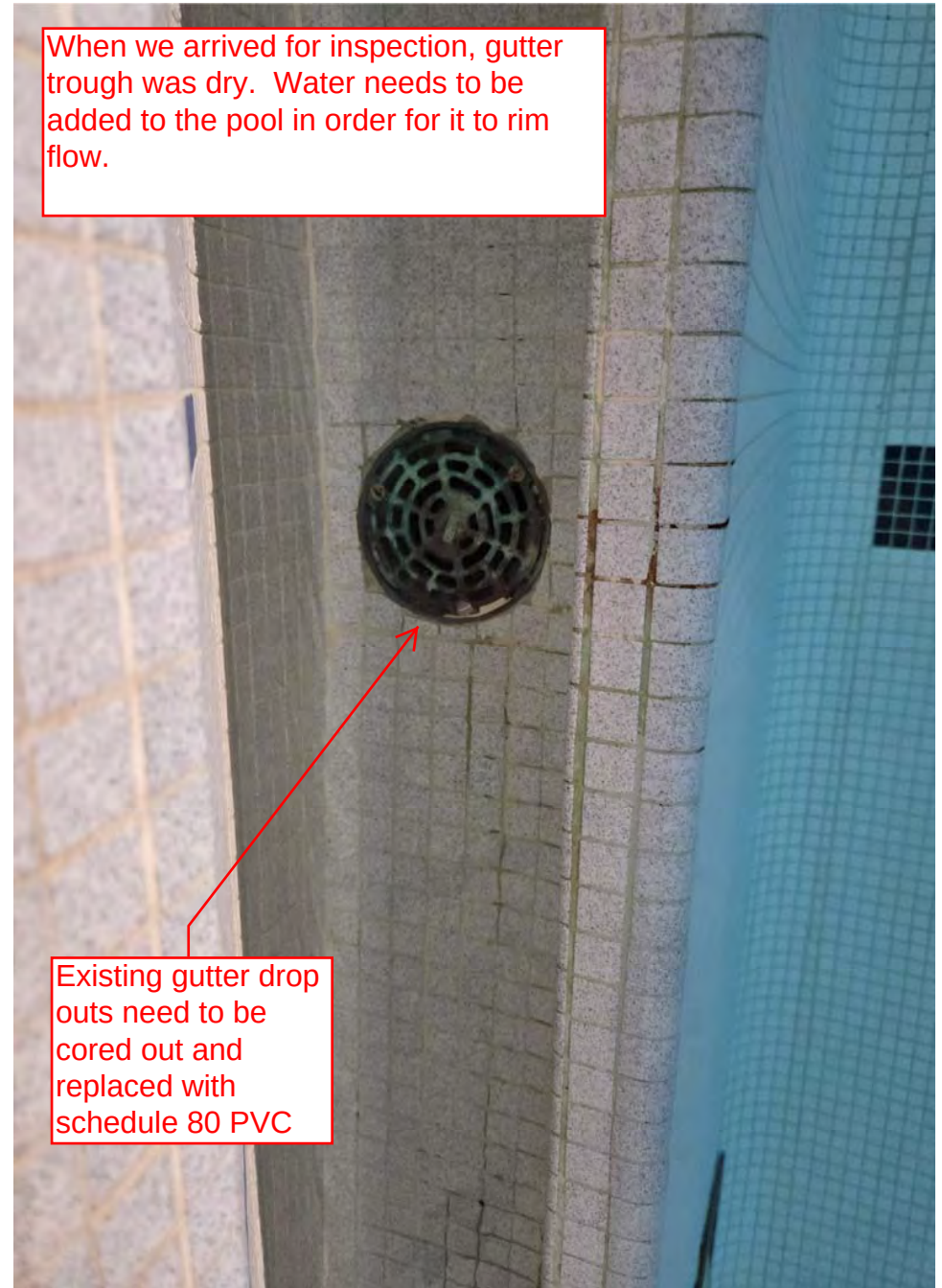






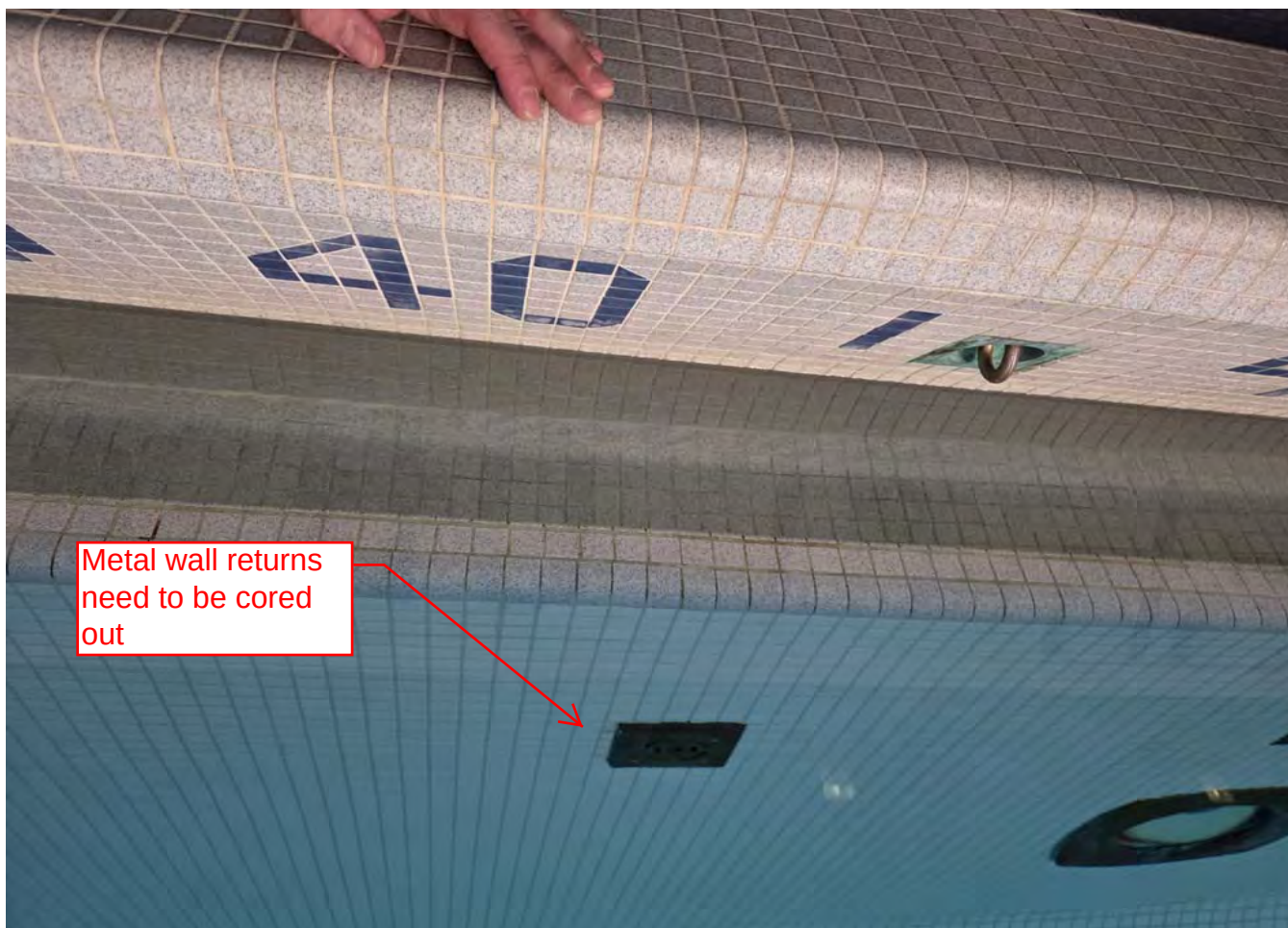


District should pursue diagrammatic documentation of the existing and proposed diving board locations to see if either will conform to current code



When we arrived for inspection, gutter trough was dry. Water needs to be added to the pool in order for it to rim flow.

Existing gutter drop outs need to be cored out and replaced with schedule 80 PVC





Existing heat exchanger should be evaluated for potential end of life



This device was locate din the tunnels and we do not know what it is. May be a booster station for natural gas. Should be removed if no longe rin use

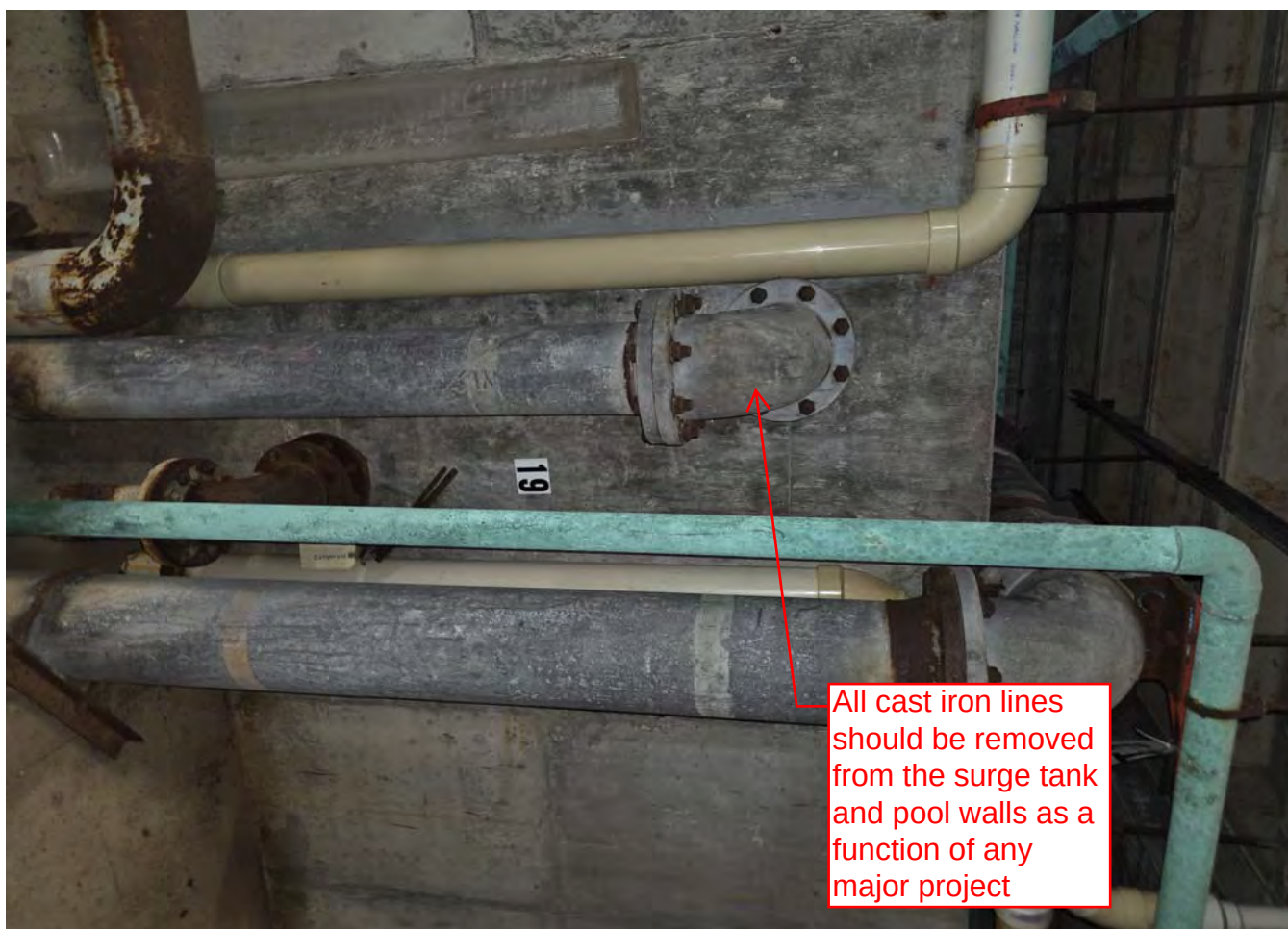
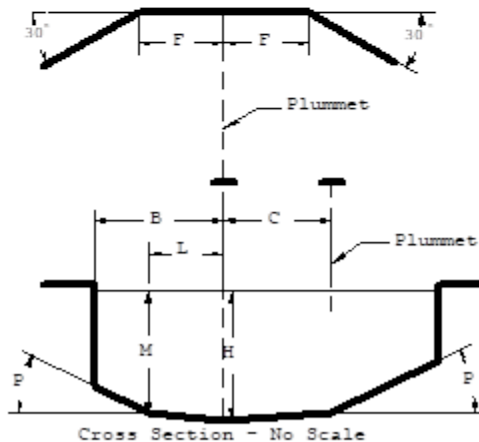
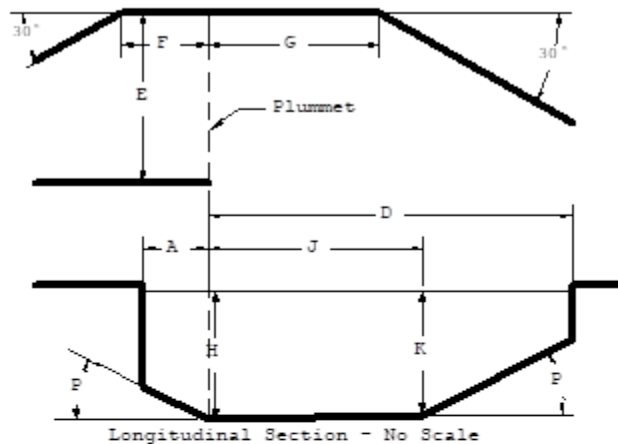




Table 1
Diving Areas

Letters below refer to Figure 1	Board height in meters	0.5 Meter	1.0 Meter	3.0 Meters
	Board height (feet)	1'8"	3'4"	9'11"
	Board length (feet)	10'0"	16'0"	16'0"
	Board width (feet)	1'8"	1'8"	1'8"
Minimum dimensions in feet				
A	Distance from plummet back to pool wall	2'0"	5'0"	6'0"
B	Distance from plummet to pool wall at side	8'3"	8'3"	11'6"
C	Distance from plummet to adjacent plummet	7'1"	7'1"	8'3"
D	Distance from plummet to pool wall ahead	26'0"	29'7"	33'8"
E	Height from board to ceiling at plummet and distances F and G	16'0"	16'0"	16'0"
F	Clear overhead distance behind and each side of plummet	8'0"	8'0"	8'0"
G	Clear overhead distance ahead of plummet	16'0"	16'0"	16'0"
H	Depth of water at plummet	8'6"	11'0"	12'0"
J	Distance ahead of plummet to depth K	12'0"	16'5"	19'9"
K	Depth at distance J ahead of plummet	8'3"	10'9"	11'9"
L	Distance at each side of plummet to depth M	8'0"	5'0"	6'7"
M	Depth at distance L on each side of plummet	8'3"	10'9"	11'9"
N	Maximum slope to reduce height E	30 degrees	30 degrees	30 degrees
P	Maximum floor slope to reduce depth ahead of K, to the sides of M, or back to pool wall behind H	1:3	1:2	1:2

Figure 1
Diving Areas



Highlighted above are some of the dimensions that I am concerned about just looking at the current configuration

Defender® Cost Savings Analysis



PROJECT INFORMATION			
PROJECT:	OTTAWA HILLS HIGH SCHOOL- GRPS	DATE:	March 12, 2025
LOCATION:	GARND RAPIDS, MI	PREPARED FOR:	SCOTT WEIR
		PREPARED BY:	NICK SHELTON

POOL SYSTEM DATA

POOL DESCRIPTION		I/O Flow (gpm)	
Pool-1	INDOOR HIGH SCHOOL POOL	I	695
Pool-2			
Pool-3			
Pool-4			
Pool-5			

POOL DESCRIPTION		I/O Flow (gpm)	
Pool-6			
Pool-7			
Pool-8			
Pool-9			
Pool-10			

OPERATING COST VARIABLES

VARIABLES	FORMULAS & DEFINITIONS		VALUES	UNIT
MECHANICAL SPACE VALUE	Cost per ft² to construct a room adequate to house filter equipment (indoor construction).		\$120.00	\$/ft²
INSTALLATION LABOR VARIANCE	Sand filters require an installation labor variance @ historical average cost of 15% of the filter.		15%	\$
MEDIA LOADING: SAND FILTER	Average cost to load media based on historical averages for time and labor.		\$4.00	\$/bag
MEDIA COST: SAND FILTER	Based on average market rate for #20 Silica Sand and 1/8 X 1/4 Pea Gravel. Weights drawn from corresponding filter data.		\$17.80	\$/100lb
MEDIA COST: DEFENDER FILTER	Based on average market rate for Perlite Filter Media. Annual Defender Filter Media Cost = Media weight in filter (from table) x Defender backwash frequency.		\$0.94	\$/lb
BACKWASH VOL: SAND (BVS)	BVS = Backwash Rate x Total Filter Surface Area x Backwash Duration x Backwash Frequency.	Rate	20	gpm/ft²
		Surface Area	From Table	ft²
		Duration	6	minutes
		Frequency	52	#/season
BACKWASH VOL: DEFENDER (BVD)	BVD = Total Tank Volume x 2 x Media Replacement Frequency.	Tank Volume	From Table	gal
		Frequency	12	#/season
POTABLE WATER USAGE	Potable Water Usage fee includes a "Volume Charge" only and does not include the monthly meter charge. See "Backwash Volume" for water usage volume calculation.		\$3.50	\$/1000 gal
SANITARY SEWER FEE	Sanitary Sewer Fee = (Monthly Capacity Charge + Monthly Usage Charge) x annual sewerage volume.		\$3.50	\$/1000 gal
MAKE-UP WATER: CHEMICALS (MWC)	MWC Cost = Water savings in gallons x Average market \$cost/gal for pool chemicals.		\$3.00	\$/1000 gal
MAKE-UP WATER: HEAT (MWH)	Represents cost to reheat backwash makeup water by average temperature delta°. MWH Cost = Backwash Vol. x 8.33#/gal x Conversion Factor x Delta° x \$/therm.	Temp Delta	30°	degrees F
		Cost/Therm	\$0.90	\$/therm
OPERATING DAYS PER SEASON	Average number of days of operation each year across all pools included in the project.		365	days
ELECTRICAL COSTS	Pump Motor HP x .746 Rating Conversion x \$Cost/Kw x 24 hrs x Average Operating Days.	Kw	\$0.12	\$/Kw
ANNUAL INCREASE	Average cumulative increase in labor, materials and maintenance costs (applies to both Sand and Defender filter installations).		7%	%
COMPRESSORS	Number of Air Compressor units needed for this project.		1	#
DEFENDER TOOL KITS	Number of Defender Tool Kits needed for this project.		1	#



PROJECT NAME: OTTAWA HILLS HIGH SCHOOL- GRPS

LOCATION: GARND RAPIDS, MI

PREPARED FOR: SCOTT WEIR

DATE: March 12, 2025



PREPARED BY: NICK SHELTON

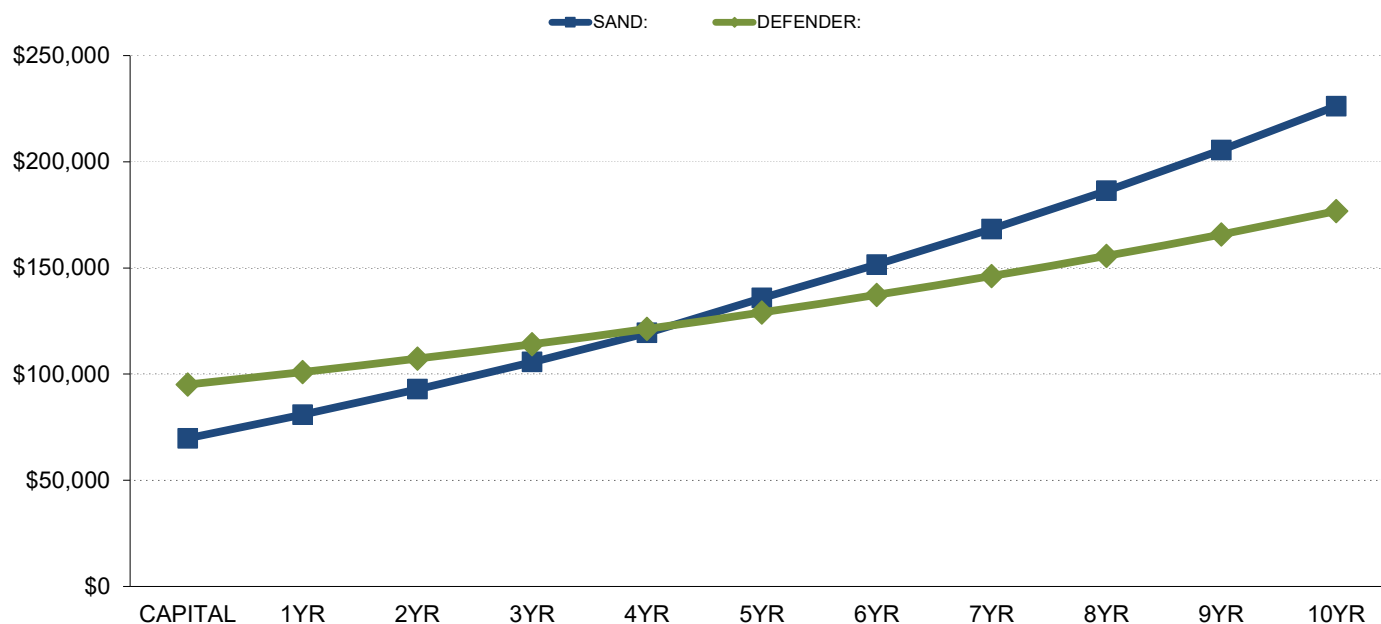
PHONE: 800-832-8002

FAX: 401-821-7129

WEBSITE: www.DefenderFilter.com



10 YEAR LIFE-CYCLE COST INCLUDING CAPITAL INVESTMENT



Water Savings

88%
Annual Water Savings

3,500,544
Gallons Saved Over 10 Years

Adj. ROI Payback

52 Months
@ 365 Operating Days /Yr

Electrical Savings

21%
Annual Electrical Savings

182,550
kWh Saved Over 10 Years

	CAPITAL	1YR	2YR	3YR	4YR	5YR	6YR	7YR	8YR	9YR	10YR
DEFENDER:	\$95,040	\$100,947	\$107,268	\$114,031	\$121,267	\$129,010	\$137,295	\$146,160	\$155,646	\$165,795	\$176,655
SAND:	\$69,744	\$80,934	\$92,907	\$105,718	\$119,426	\$135,838	\$151,532	\$168,325	\$186,293	\$205,519	\$226,091

Defender 10 Year Savings Forecast:

\$49,436





DEFENDER COST SAVINGS ANALYSIS: SUMMARY

INITIAL CAPITAL EXPENSES

ITEM / DESCRIPTION	SAND FILTER COST	DEFENDER FILTER COST	COST VARIANCE
FILTER PURCHASE PRICE	\$68,000	\$95,000	(\$27,000)
MECHANICAL SPACE	\$0	\$0	\$0
INSTALLATION LABOR VARIANCE	\$0	\$0	\$0
FILTER MEDIA	\$1,744	\$40	\$1,704
TOTAL CAPITAL COSTS:	\$69,744	\$95,040	(\$25,296)

ANNUAL OPERATING EXPENSES

ITEM / DESCRIPTION	SAND FILTER COST	DEFENDER FILTER COST	COST VARIANCE
ELECTRICAL COSTS	\$6,166	\$4,845	\$1,321
POTABLE WATER FEE	\$1,385	\$159	\$1,225
MAKE-UP: CHEMICALS	\$1,187	\$137	\$1,050
MAKE-UP: HEAT	\$1,068	\$123	\$945
SANITARY SEWER FEE	\$1,385	\$159	\$1,225
PERLITE MEDIA	\$0	\$484	(\$484)
ANNUAL OPERATING COSTS:	\$11,190	\$5,907	\$5,283

FILTER 10 YEAR SAVINGS FORECAST

ITEM / DESCRIPTION	SAND FILTER COST	DEFENDER FILTER COST	COST VARIANCE
CAPITAL COST	\$69,744	\$95,040	(\$25,296)
ELECTRICAL COSTS*	\$85,190	\$66,935	\$18,255
POTABLE WATER FEE*	\$19,131	\$2,203	\$16,928
MAKE-UP: CHEMICALS*	\$16,398	\$1,888	\$14,510
MAKE-UP: HEAT*	\$14,752	\$1,699	\$13,053
SANITARY SEWER FEE*	\$19,131	\$2,203	\$16,928
PERLITE MEDIA*	\$0	\$6,686	(\$6,686)
SAND MEDIA REPLACEMENT**	\$18,000	\$0	\$18,000
MEDIA REPLACEMENT (LABOR)***	\$6,000	\$0	\$6,000
GRAND TOTAL SAVINGS:			\$71,692

RAW ROI PAYBACK PROJECTION	CAPITAL COST VARIANCE ÷	OPERATING COST VARIANCE =	PAYBACK PERIOD (MONTHS)
	-\$25,296	\$5,283	57

*COSTS INCLUDE ANNUAL INCREASE FOR LABOR, MATERIALS AND MAINTENANCE

**SAND MEDIA REPLACEMENT AT 5 & 10 YEAR INTERVALS - PRICE BASED ON PROJECTED FUTURE COST

***MEDIA REPLACEMENT LABOR BASED ON HISTORICAL AVERAGES FACTORED FOR ANNUAL COST INCREASES

PROJECT NAME: OTTAWA HILLS HIGH SCHOOL- GRPS
LOCATION: GARND RAPIDS, MI
CONTACT NAME: SCOTT WEIR
PREPARED BY: NICK SHELTON
DATE: March 12, 2025



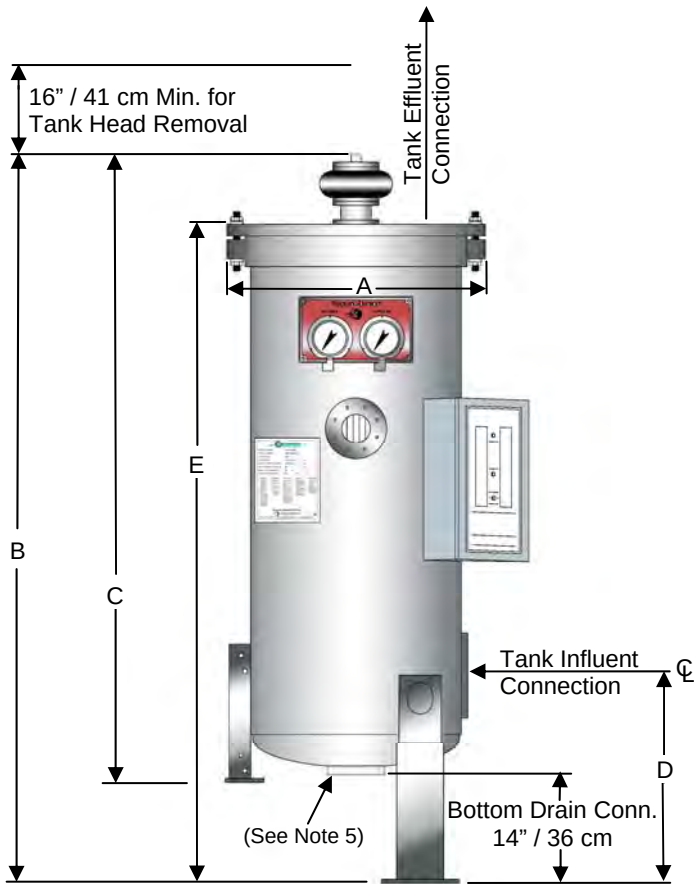


Defender Filter Capital & Operating Costs																					
Pool Data				Defender Media Filter Data					Capital Costs				Annual Operating Costs * Defender Filter								
Pool	Description	Flow (gpm)	Qty	NB Model #	Filter Surface Area (sf)	Filtration Rate (gpm/sf)	Tank Volume (gal)	Total Media Wt (lb)	Equipment Purchase Price	Mechanical Space		Perlite Media Cost	Filter Backwash					Perlite		Pump Data	
										Footprint(sf)	Cost		Volume (gal) (NOTE 1)	Potable Water	Sewer Discharge	Make-up Water Chem	Make-up Water Heat	Total Filter Recoat (lb)	Total Perlite Cost (lb)	Brake HP Req'd @ 55'TDh	Electrical Cost w/VFD
	Indoor High School Pool	695	1	SP-33-48-732	572.0	1.2	250	43	\$95,000	0	\$0	\$40	45,562	\$159	\$159	\$137	\$123	515	\$484	12.07	\$4,845
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	Compressors		1						\$0												
	Defender Tool Kits		1						\$0												
TOTALS		695	1		572		250	43	\$95,000	0	\$0	\$40	45,562	\$159	\$159	\$137	\$123	515	\$484	12.07	\$4,845



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Since 1956

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FILTER DIMENSIONS (imperial)					
Model Number	A	B (Note 1)	C (Note 1)	D	E
	in	in	in	in	in
SP-18-48-176	24.69	82.3	82.3	17.8	73.8
SP-24-42-327	30.75	90	76.5	27.5	81
SP-27-48-487	33.25	95	81.5	27.5	86
SP-33-48-732	39.25	104	90.5	31.5	93.5
SP-41-48-1038	47.75	106	92.5	35.5	97.5
SP-49-48-1548	54.75	110	96.5	36	101.5
SP-55-48-2076	61.75	115	101.5	39	105.5

FILTER DIMENSIONS (metric)					
Model Number	A	B (Note 1)	C (Note 1)	D	E
	cm	cm	cm	cm	cm
SP-18-48-176	62.7	209	209	45	187
SP-24-42-327	78.5	229	194.3	70	206
SP-27-48-487	84.5	241.5	207	70	218.5
SP-33-48-732	100	264.2	230	80	237.5
SP-41-48-1038	121.5	269.2	235	90.5	248
SP-49-48-1548	139.5	279.4	245.1	91.5	258
SP-55-48-2076	157	292.1	258	99	268

- **Automatic System Includes:** Automatic Filter Controller
- **Semi-Automatic System Includes:** Bump Button Box

FILTER CAPACITIES & SPECIFICATIONS								
Model Number	Filter Area		Maximum NSF Flow Rate		Recommended Flow Rate Range (Note 2)		Tank Volume	
	ft²	m²	2.0 gpm/ ft²	4.89 m³/hr	.5 - 1.4 gpm/ ft²	1.22 – 3.42 m³/hr/m²	gallons	m³
SP-18-48-176	137	12.73	274	62.3	69 - 192	15.53 – 43.54	66	.25
SP-24-42-327	223	20.72	446	101.32	112 - 312	25.28 – 70.86	128	.484
SP-27-48-487	381	35.60	762	174.08	191 - 533	43.43 – 121.75	159	.602
SP-33-48-732	572	53.14	1144	259.85	286 - 801	64.83 – 181.73	250	.946
SP-41-48-1038	812	75.44	1624	368.90	406 - 1137	92.04 – 258.00	441	1.669
SP-49-48-1548	1211	112.50	2422	550.13	606 - 1695	137.25 – 384.75	615	2.328
SP-55-48-2076	1625	150.97	3250	737.48	813 - 2275	141.48 – 516.32	841	3.184

FILTER CONNECTION SIZES & SPECIFICATIONS																
Model Number	Tank Conn. Inches (Note 3)	Tank Conn. mm (Note 3)	Drain Conn. Inches (Note 5)	Drain Conn. mm (Note 5)	Tank Footprint		Perlite (Note 4)		Upper Head Weight		Head & Tubes Weight		Tank Ship Weight		Operating Weight	
	imperial	DN	imperial	DN	ft²	m²	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
SP-18-48-176	3	80	2	50	11	.37	12	5.44	150	60	237	108	750	340	1311	595
SP-24-42-327	4	100	3	80	24	2.23	18	8.16	310	141	584	265	1450	658	2515	1141
SP-27-48-487	6	150	3	80	27	2.5	30	13.61	350	159	660	299	1650	748	2970	1347
SP-33-48-732	8	200	3	80	33	3.06	45	20.41	475	216	790	358	1800	817	3880	1760
SP-41-48-1038	8	200	4	100	44	4.09	64	29.03	750	340	1265	574	2350	1066	6019	2730
SP-49-48-1548	10	250	4	100	58	5.4	96	43.54	1085	492	1920	871	3320	1506	8437	3827
SP-55-48-2076	12	300	4	100	72	6.7	128	58.06	1385	628	2300	1043	3850	1746	10847	4920

Note 1: "B" dimension is installed height. "C" dimension indicates overall height with tank legs in the shipping position.

Note 2: Recommended flow rate range is suggested to optimize filtration performance.

Note 3: Tank connection sizes based on velocity not to exceed 10 fps or 3.048 mps.

Note 4: The required perlite media volume is based on a 1/8" (.3175 cm) cake which is the recommended thickness for optimum performance. This procedure will maximize filtration without adversely affecting the design pressure drop through the filter.

Note 5: SP-18 features a side drain. Centerline location is 10" (25cm) off of the floor.

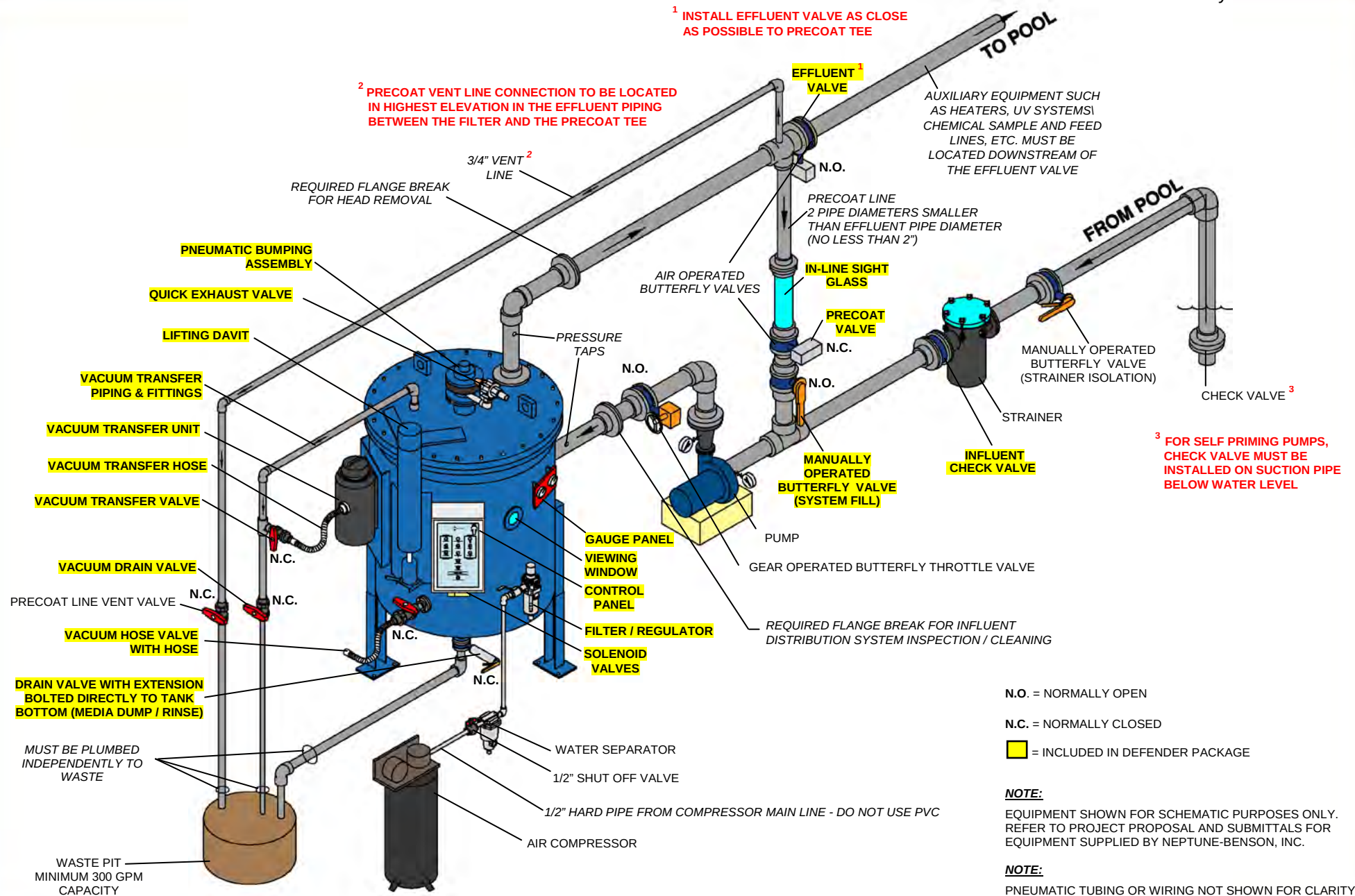
Note 6: SP-18 does not have collapsible legs – see website for illustration.



Neptune-Benson™

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R-11/28/11



Defender[®]

by Neptune Benson[®]

Regenerative Media Filters



Neptune  Benson[®]
Since 1956

Regenerative Media Filters

The Evolution of Water Filtration

Fresh, clean water is a common necessity in every corner of the world. We use it for drinking, bathing, food preparation, manufacturing, recreation and much, much more. With the need for clean water comes the need for water filtration. Water filtration has long been done using sand filtration. It is an easy and relatively inexpensive method for filtering water and has been used for thousands of years.

Pool Filtration

Approximately 60 years ago, swimming pool filters were composed of alternating layers of sand and gravel. In order to provide a significant filter area, these filters were extremely large. The filters would be backwashed every one to two weeks, disposing a significant volume of water to the municipal waste line. While these filters of yesteryear were effective, they became impractical as innovation led to more compact and efficient designs.

High-Rate Sand Filters

Today, the sand and gravel filters have been replaced with high-rate sand filters. The modernized version uses a single layer of fine sand and requires about 15% of the space required by the original sand and gravel filters. Although the high-rate sand filters are more compact and cost effective, they waste around 40% more water because of the need to be backwashed more often. In addition, the previous sand and gravel filters were more efficient at trapping smaller particles because the pressure in the high-rate sand filter forces smaller particles through the sand and back into the pool.

Diatomite Filters

Later, Diatomite filters (D.E.) were introduced and offered significantly improved performance relative to traditional sand filtration. The D.E. filters replaced the permanent sand media with diatomaceous earth and it was applied to internal filter elements at the beginning of every cycle and removed with the backwash water at the end of the cycle. The D.E. filters posed operational drawbacks associated with handling and disposal of the media, pushing for a safer and more environmentally friendly product.

Regenerative Media Filters

Regenerative Media Filters (RMF's) are a more efficient alternative to sand or D.E. filtration. RMF's such as the Neptune Benson's Defender® use up to 90% less water, take up a quarter of the space, and use less energy than traditional sand filters. Regenerative media filters are also more effective at removing contaminants. The Defender is able to remove particles as small as 1 micron from water while traditional sand

filters generally only remove particles in the 20 micron range.

Neptune Benson developed the Defender Regenerative Media Filter to provide a safe, non-hazardous filter which uses perlite media for the clearest, cleanest and safest water. Our automated system offers worry free operation and significant water savings. We invite you to explore all of the benefits of the Defender.

Defender®
by Neptune Benson®



Defender Technology Benefits

Up to 90% Water and Waste Savings



The Defender significantly eliminates the amount of backwash water associated with sand filter operation. Instead of backwashing, the Defender is programmed to automatically “bump” to regenerate the fine-grade perlite media for a fresh start. Eventually the filter will become saturated with trapped dirt and will require a quick and easy media discharge and replacement. Depending on bather load, the life cycle of the media averages around every four weeks.

Backwash Water Consumption				
Sand vs. Defender	Filter Area (sq ft)	Filter Rate (gpm/sq ft)	Backwash Volume (gal)	Annual Volume (gal)
Sand Filter (4) 4884SHFFG-6	126.8	11.8	9510 gal 3x / week	1,483,560 gal
Defender (1) SP-49-48-1548	1211	1.2	1230 gal 1x / 4 weeks	14,760 gal
Annual Water & Waste Savings: 1,468,800 gallons or approximately \$10,282.00* *US average water/sewer costs \$7.00 per 1000 gal				

75% Space & Construction Savings



The Defender takes up 1/4 to 1/6 of the space required by an equivalently sized sand system. This saves both space and construction costs. See the multiple benefits below.

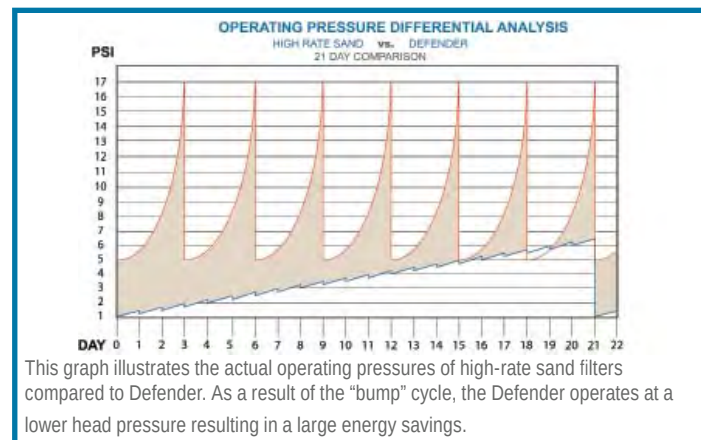
- No backwash holding tank
- Smaller waste line to sewer
- Local backwash to waste flow rate restrictions
- Operating weight may be as little as 10% of a similar sand filter
- Smaller access doors needed to plant



50% Energy Savings



Energy savings are derived in several ways. First, Defender filters operate at lower head pressures throughout the filter cycle saving power demand. Second, the elimination of backwash waste associated with sand filtration provides significant wastewater treatment savings. Consider the cost of chemically treating 1.4 million gallons and the BTU's required to heat this volume from 50°F (10°C) to 80°F (27°C).

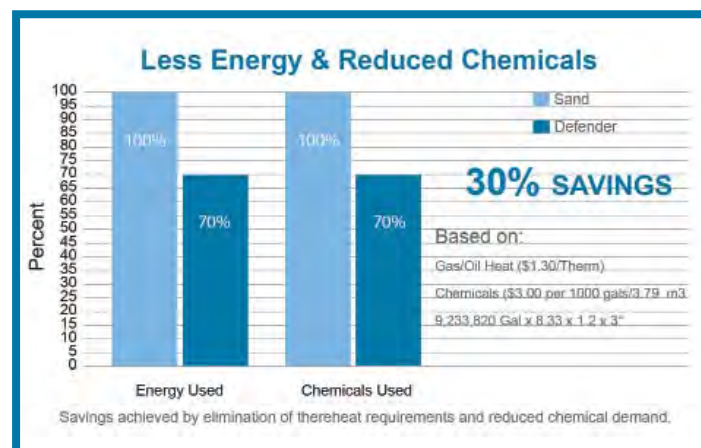


30% Less Fuel & Chemicals



The Defender eliminates the tremendous amount of backwash water associated with sand filter operation. Instead of backwashing, the Defender is programmed to automatically “bump” to regenerate the fine-grade perlite media and start fresh. Eventually the filter will become saturated with trapped dirt and will require a media discharge and replacement.

The following chart illustrates the Backwash Water Consumption of a typical indoor waterpark attraction with a 2000 GPM (454 m³/hr) recirculation rate. The annual water savings in excess of 2.2 million gallons (8328 m³) is complemented by associated costs related to sewer expenses, chemicals, heating, power and labor.



Defender Technology Benefits

Removes particles down to 1 micron



The Defender achieves the highest quality of water by removing particles down to 1 micron. This is 20 to 30 times finer than sand.

The multiple rewards listed below:

- Extension to the life of the filter
- Unsurpassed water quality
- Improved UV disinfection performance
- Up to 30% chemical consumption savings
- Controls turbidity to levels better than those required for drinking water.

ROI Savings Analysis



The combination of water, fuel and chemical savings with the Defender can translate into significant savings over time. You will be amazed at the payback and affordability of this system. With Neptune Benson's 50+ year track record of delivering exceptional value, you will enjoy the peace of mind that can only come from partnering with an industry leader. Some facilities have realized a return on investment in less than one year.

See the chart to the right for a breakdown of potential savings.

How Big is a Micron?

One Inch or 25.44 mm
25,400 microns

Paper Clip Wire
about 1,000 microns



Human Hair
about 50-100 microns



Pollen Grains
about 30-50 microns



Red Blood Cells
about 5-10 microns



Sample Savings Analysis

Potable Water & Discharge Impact	Sand	Defender®
Backwash Volume (Gal, US)	1,483,560	163,116
Potable Water (Make-up) Fees (USD)	\$5,192.00	\$571.00
Discharge Fees (USD)	\$5,192.00	\$571.00
Energy & Fuel Impact		
Pump Power Consumption (kW)	216,569	170,170
Pump Power Cost (USD)	\$13,307.55	\$10,455.94
Heating Requirements (Therms)	4,449	489
Heating Costs (USD)	\$5,784.00	\$636.00
Water Treatment Chemical Impact		
Chemical Costs	\$4,451.00	\$489.00





Neptune Benson's Defender® Regenerative Media Filter is simply the most efficient filtration system available today. It offers unprecedented water, energy and space savings and is capable of meeting the needs of nearly any water filtration application.

Large installation or small, there's a Defender filter that's right for you. Durability, economy and simplicity make the Defender the choice of premier design professionals the world over.

Follow the LEEDer

Neptune Benson's commitment to LEED® principles predates the creation of this formalized rating system. Improving the health and safety of aquatic environments has always been at the heart of what we do. Defender has helped numerous projects achieve LEED certification by routinely providing the following category points:

Energy & Atmosphere



Meets Prerequisite 2 - Minimum Energy Performance
Earns Credit 1 - Optimize Energy Performance

Innovation & Design



Earns Credit 1 - Reduction in Water Usage

What is the LEED System

Leadership in Energy & Environmental Design

Developed by the US Green Building Council (USGBC) in 2000, the LEED System has become the National Standard certifying design, construction & operations of green buildings. Projects (not products) are evaluated in five (5) areas:

- Sustainable Sites
- Water Efficiency
- Energy & Atmosphere
- Materials & Resources
- Indoor Environmental Quality

* Extra credit may be earned for Innovation & Design



Designed with Performance in Mind

Tank Construction

All vessels are conservatively engineered and manufactured with Flexsol 3000™ interior lining and include a 10 year fully rated warranty. The lining protects all wetted surfaces against corrosion to maximize the life expectancy of the vessel.

Vacuum Transfer

At the push of a button, a self-contained, integrated pump quickly introduces dry media into the Defender filter. This feature eliminates the mess and additional equipment required by wet, slurry designs.

Internal Hydraulics

Our under-drain manifold is engineered to achieve ideal distribution of influent flow. The generous open area serves to minimize turbulence and ensure superior “Flex Tube” coverage.

Lifting Davit

At some point it may be necessary to access the interior of the vessel. Our unique tank-mounted davit permits easy access without remote lifting devices. The davit reduces the overall height requirement and saves valuable floor space.

Filter Elements

Our “Flex Tubes” are constructed of T304L stainless steel frames (optional T316L) with permanent polyester woven coverings. Not one has ever had to be replaced as result of wear. Other systems designed with rigid plastic frames, o-rings and socks require costly replacement frequent maintenance.

The “Bump”

It’s all about the “Bump” - The Defender filter is programmed to automatically “bump” on a daily basis to regenerate the media coating of the “Flex Tubes”. This incredible benefit maximized system performance and reduces water consumption.

How it Works

As the bump tire deflates (A), the tube sheet lowers to loosen the media and trapped debris. The re-inflation of the bump tire (B) raises the tube sheet and forces water into the “Flex Tubes”, gently expanding them to fully release all material. This bump cycle pulses ten times to ensure the entire cleaning process.

At the completion of the bump cycle, the Defender will automatically pre-coat the “Flex Tubes” and re-commence the filter cycle. The “Bump” is a vital function in order to achieve superior filtration and to make the most out of every filter cycle.



Now Get Even More



Introducing the new RMF System Controller

Easy to Use

Get the most out of the Defender® with the RMF System Controller. The RMF System Controller displays data through a 7" high resolution LCD and offers simple push button operation paired with on screen menus to make operation quick and easy. It also provides animated graphics with step-by-step instructions on operating procedures.

Remote Monitoring and Control

The RMF System Controller provides remote monitoring, e-mail notifications of condition changes, and remote control of the system operations. Check performance remotely through a web browser or phone.

Data Logging and Exporting

The RMF System Controller continually logs data providing detailed information on water pressure stats, bump schedule, purge and more. Data can be viewed remotely and is exportable to .CSV formats for creating reports and working with the data.

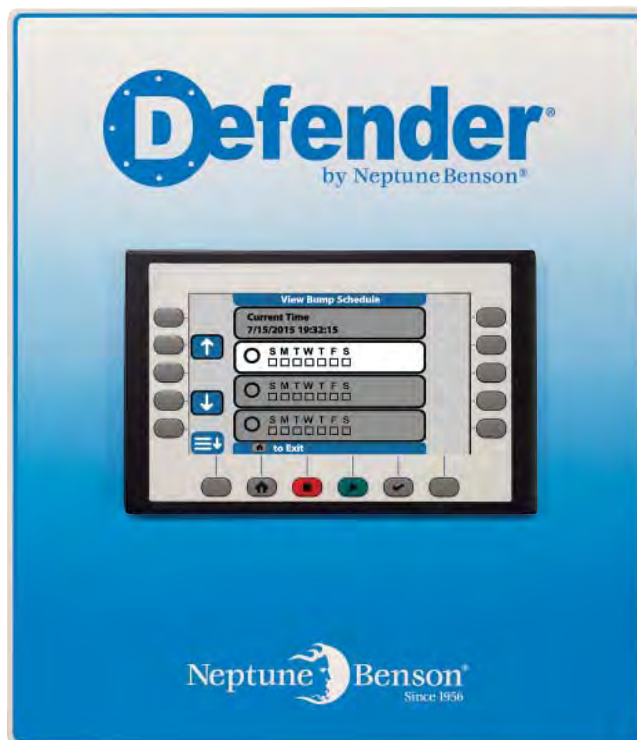
Improve Efficiency

The data provided through the RMF System Controller can be used to analyze trends and modify operations to maximize efficiency. Analyze and identify peak usage, then automate or schedule bumping to insure optimal operation. Data logs can also be used to help troubleshoot issues by identifying operating issues.



New Features & Benefits:

- 7" Hi-Res LCD w/ Tactile Feedback Membrane
 - Step by step animated graphics
- Advanced control of:
 - Bump & precoat cycle
 - Pneumatic valves & recirculation pump
 - Vacuum transfer system
 - Heater cool down delay
 - Data logging & maintenance reminders
- Remote monitoring/operation
 - Through a browser or smart phone
- Modbus communication for PLC connectivity
- Nema 4x/IP66 approved
- greendrive™ VFD & ETS-UV connectivity
- Automated Drain & Purge



Defender Certifications & Credits



NSF
National Sanitation Foundation

An independent, accredited organization that tests, audits and certifies products and systems, as well as provides education and risk management.

Location Tested/Certified: USA

Certified for: NSF/ANSI 50: Pool, Spa and Recreational Water Products and NSF/ANSI 61: Drinking Water System Components.
nsf.org



UL
Underwriters Laboratories

UL is global independent safety science company offering expertise across seven key strategic businesses; Product Safety, Environment, Information and Insights, Life & Health, Verification Services, Enterprise Services, and Workplace Health & Safety. Our breadth, established objectivity and proven history mean we are a symbol of trust and enable us to help provide peace of mind to all.

Location Tested/Certified: USA

Defender Tested/Certified for: RMF Panel USA
ul.com/global/eng/pages/



Smart WaterMark Approved

Australia's water conservation label, identifying & promoting products & services which help save water. An independent not-for-profit program supported by government & industry, and sister scheme to the WELS water efficiency rating program.

Location Tested/Certified: Australia

Defender Tested/Certified for: Validate Water Savings On An Application
www.smartwatermark.info/home/default.asp



CE Approved

The European Commission describes the CE mark as a “passport” that allows manufacturers to circulate industrial products freely within the internal market of the EU. The CE mark certifies that products have met EU health, safety and environmental requirements for workplace safety. All manufacturers in the EU and abroad must affix the CE mark.

Location Tested/Certified: USA

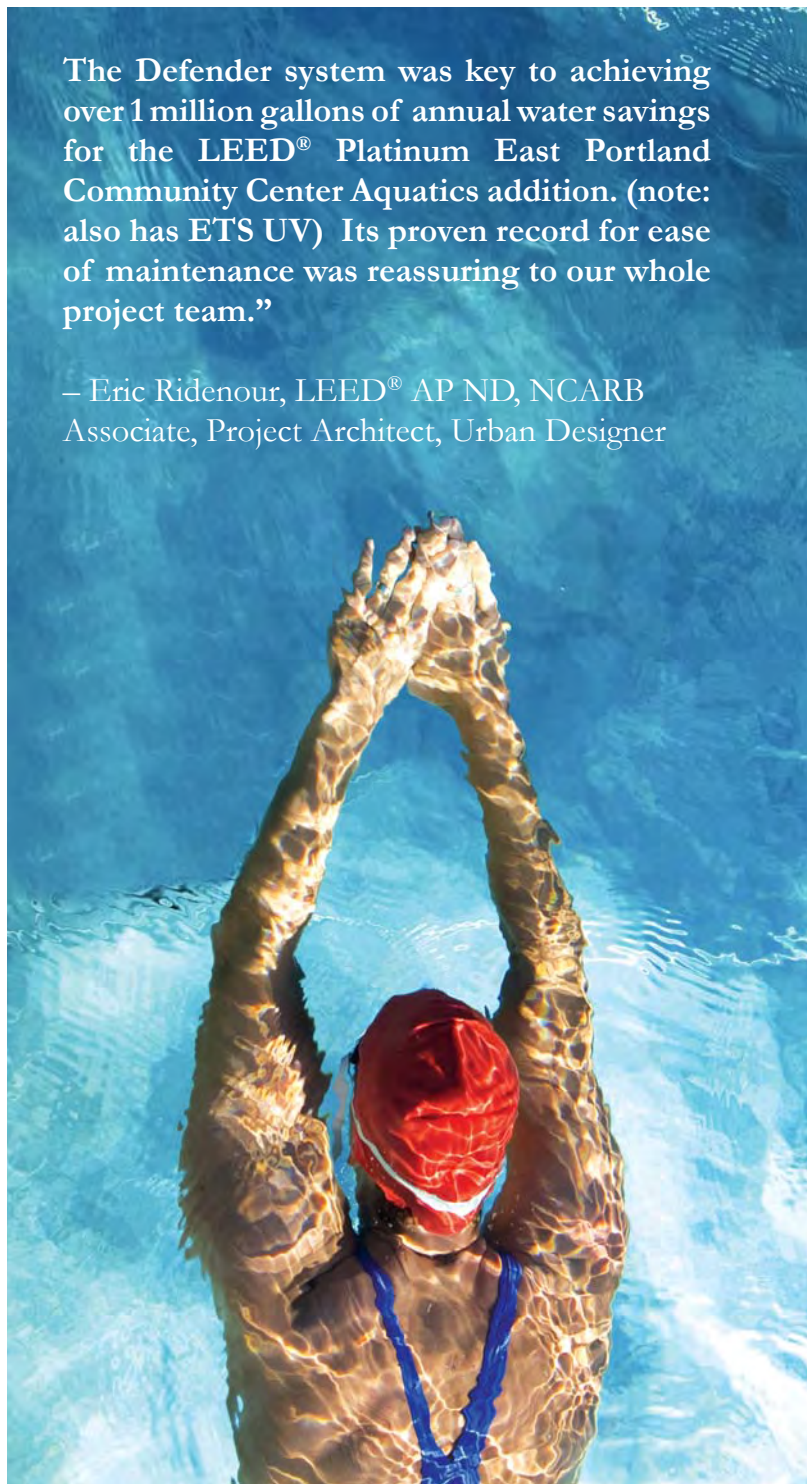
Defender Tested/Certified for: Meets Euro Health, Safety & Environmental requirements
ec.europa.eu/enterprise/policies/single-market-goods/cemarking/index_en.htm

Product Validation

In addition to our certifications and credits, Neptune Benson has a history of validating our technology. The value we provide is in the ongoing relationship – through the life of the filters and UV systems, we examine how the systems are being used and study the wear on the various components. Field Service Technician feedback is reviewed, and each product is continuously improved throughout the active product life. Neptune Benson's commitment to research and development has been the backbone of the business for over 55 years.

The Defender system was key to achieving over 1 million gallons of annual water savings for the LEED® Platinum East Portland Community Center Aquatics addition. (note: also has ETS UV) Its proven record for ease of maintenance was reassuring to our whole project team.”

– Eric Ridenour, LEED® AP ND, NCARB Associate, Project Architect, Urban Designer



System Sizing Options

Large installation or small, there's a Defender® filter for you

Neptune Benson's Defender® and Defender Assero® Regenerative Media Filters are available in a variety of sizes and configurations designed to suit nearly any application.

Defender®
by Neptune Benson®

Model Number	Filter Area		Recommended Flow Rate Range		Tank Volume	
	ft²	m²	.5 - 1.4 gpm/ft²	1.22 - 3.42 m³/hr/m²	gal	m³
SP-18-48-176	137	12.73	69 - 192	15.53 - 43.54	66	.25
SP-24-42-327	223	20.72	112 - 312	25.28 - 70.86	128	.484
SP-27-48-487	381	35.60	191 - 533	42.43 - 121.75	159	.602
SP-33-48-732	572	53.14	286 - 801	64.83 - 181.73	250	.946
SP-41-48-1038	812	75.44	406 - 1137	92.04 - 258.00	441	1.669
SP-49-48-1548	1211	112.50	606 - 1695	137.25 - 384.75	615	2.328
SP-55-48-2076	1625	150.97	813 - 2275	141.48 - 516.32	841	3.184

Note 1: Recommended flow rate range is suggested to optimize filtration performance. This filter is NSF listed for up to 2.0 gpm/sq.ft (4.89 m³/hr/m²) flow rate. Consult Neptune-Benson for applications higher than the recommended flow rate range.

Note 2: Tank connection sizes based on velocity not to exceed 10.0 fps or 3.0 mps.

Note 3: The required perlite media volume is based on a 1/8" (3 mm) thick cake which is recommended for optimal performance.



Defender®
ASSERO by Neptune Benson®



Model Number	Filter Area		Recommended Flow Rate Range		Tank Volume	
	ft²	m²	.5 - 1.4 gpm/ft²	1.2 - 3.9 m³/hr/m²	gal	m³
SP-29-36-200	117	10.9	59-164	12.70 - 37.20	181	.7
SP-29-36-250*	146	13.6	73 - 204	16.60 - 53.00	181	.7
SP-29-36-300	175.5	16.3	88-246	19 - 63(15.9-55.7)	181	.7
SP-29-36-350	205	19.0	103 - 287	23.20 - 74.10	181	.7
SP-29-36-400	234	21.7	117 - 328	26.50 - 84.60	181	.7
SP-29-36-450*	263	24.4	132 - 368	29.9 - 95.2	181	.7
SP-29-36-500	294	27.3	147 - 412	33.4 - 93.3	181	.7

Note 1: Recommended flow rate range is suggested to optimize filtration performance. This filter is NSF listed for up to 2.0 gpm/sq.ft (4.89 m³/hr/m²) flow rate. Consult Neptune-Benson for applications higher than the recommended flow rate range.

Note 2: Tank connection sizes based on velocity not to exceed 10.0 fps or 3.0 mps.

Note 3: The required perlite media volume is based on a 1/8" (3 mm) thick cake which is recommended for optimal performance.

Note 4: All Defender Assero models available in Automatic configuration.



Normblock Multi Series

SPECK

All Polyurethane Pump 1750 RPM
(7.5, 10, 15, 20, 25 & 30 HP)

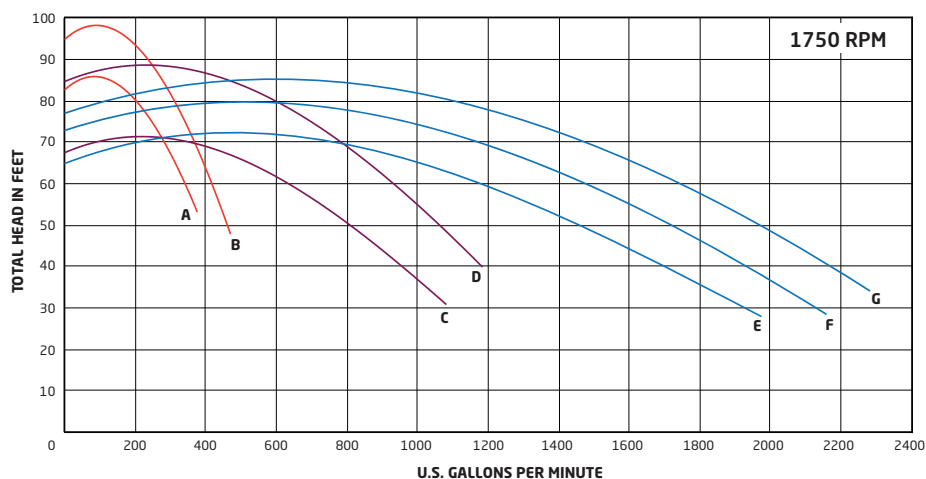
Redefining the limits of plastic pumps. The Normblock Multi takes the non-corrosive and lightweight benefits of plastic higher than any other American manufacturer.

Features

- This pump has a robust horizontal single stage design.
- Superior slow (1750 rpm) running design reduces vibrations resulting in quiet operation.
- The housing is made of high performance plastic (THK), corrosion resistant without elaborate internal coating and can be used with higher salt concentrations.
- Heavy duty energy efficient totally enclosed fan cooled (TEFC) motor, Class F insulation, protection class IP 55. Sealed ball bearings need no lubrication.
- Shaft coupling allows motor to be replaced without replacing mechanical seal.
- A high wear, rugged Carbon/SiC - EPDM mechanical seal allows for a long life and long maintenance intervals. Special application seals available upon request.
- Equipped with stainless steel shaft extension.
- Optional all plastic strainer tank for horizontal flooded suction applications.
- Every pump is tested to factory & customer's specifications.

Please Note: The noise level from both the motor and pump are greatly influenced by how they are installed. Consideration should be given to minimize vibration and noise transmission.

Performance Curves



A. Normblock Multi 65/250 (Ø 225mm) - 7.5 HP S.F. 1.25

B. Normblock Multi 65/250 (Ø 240mm) - 10.0 HP S.F. 1.25

C. Normblock Multi 100/250 (Ø 220mm) - 15.0 HP S.F. 1.25

D. Normblock Multi 100/250 (Ø 240mm) - 20.0 HP S.F. 1.25

E. Normblock Multi 125/250 (Ø 235mm) - 20.0 HP S.F. 1.25

F. Normblock Multi 125/250 (Ø 245mm) - 25.0 HP S.F. 1.15

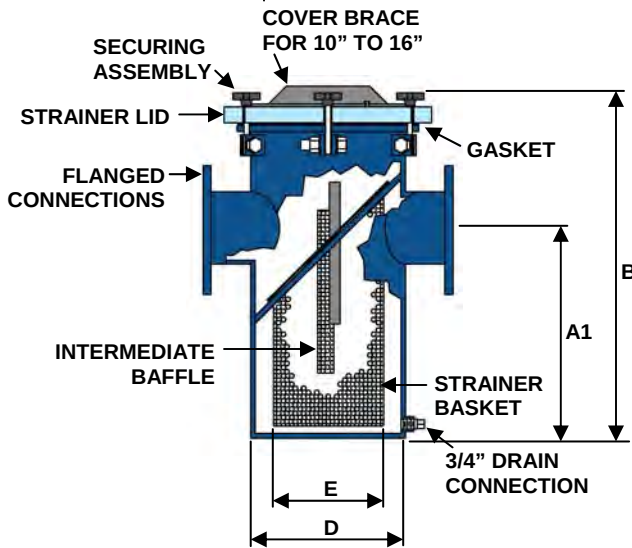
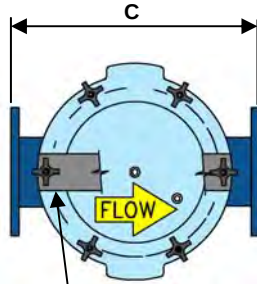
G. Normblock Multi 125/250 (Ø 255mm) - 30.0 HP S.F. 1.15



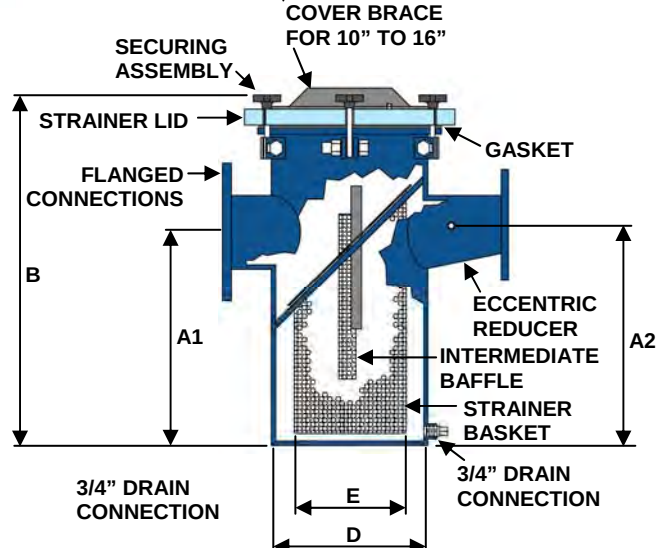
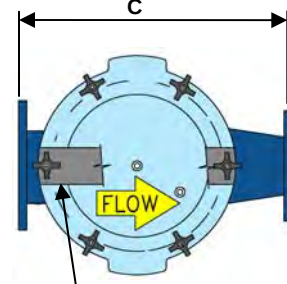
Normblock Multi 125/250

Trademarks and Certifications





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.

R 6/29/12



Neptune-Benson™

6 Jefferson Drive, Coventry, RI 02816 • (800) 832-8002
P +1 (401) 821-2200 • F +1 (401) 821-7129 • www.neptunebenson.com



The **BECSys5** water chemistry controller includes advanced sensors and features that produce crystal clear water for a healthy, safe and pleasant patron experience in a wide variety of applications, including pools, spas, water parks, fountains, zoos and aquariums.

Optimal water quality achieved with the **BECSys5** minimizes chemical usage, often resulting in significant savings. Substantial energy and water savings can also be realized by utilizing the BECSys5's advanced scalable capabilities.

Operation and maintenance staff will save time and be more efficient with proactive status messaging and increased visibility with BECSys Live.



BECSys Live!



BECSys Live is included with every **BECSys5**, providing simple and secure 24/7 real-time access from just about any device: PC, Mac, desktop, laptop, tablet and/or smartphone. All features integrated with the BECSys5 are available through BECSys Live.

Monitor status, change settings and review system performance. Review graphs and run reports that summarize key system activity and metrics, so you can easily spot trends.

Visit becsys.live to learn more and create your free account. And best of all... no additional fees or monthly subscription required!

Advanced Water Chemistry Control... and much more!

- ✓ **Advanced sensor technology** - proprietary pH and ORP sensors, with 2 year warranty
- ✓ **True PPM sensors** - Free, Total and Combined chlorine monitoring and control with PPM set points
- ✓ **Total Alkalinity** - monitor and control Total Alkalinity (TA)
- ✓ **Direct Test Kit Interface** - automatically upload/record digital readings from SpinTouch test kit
- ✓ **System Flow** - monitor circulation rate, and control VFD with Water Chemistry Assurance and Heater Protection
- ✓ **Chemical inventory management** - track usage and never run out again!
- ✓ **Intelligent Autofill** - monitor water consumption and identify leaks!

Advanced Water Chemistry Control

- pH, ORP, temperature
- Free chlorine (ppm)
- Total chlorine (ppm)
- Combined chlorine (ppm)
- Saturation Index calculation
- TDS (Total Dissolved Solids)
- Turbidity

Direct Test Kit Interface

- Automatically upload test kit readings from SpinTouch
- Review on screen or through BECSys Live
- Compare test kit readings to sensor readings

Total Alkalinity (TA) Control

- Add the BECSys Alkalinity Meter to monitor TA
- BECSys5 controls TA by automatically selecting between acid and CO₂ for pH control
- Routine bicarb additions no longer needed in most pools
- TA set points settable by operator
- TA reading is unaffected by residual chlorine or saline levels of water

24/7 Monitoring & Control with BECSys Live!

- Gbit Ethernet standard in every BECSys5
- Simple and secure setup using EZConnect
- Visit becsys.live to get started



Circulation System Management

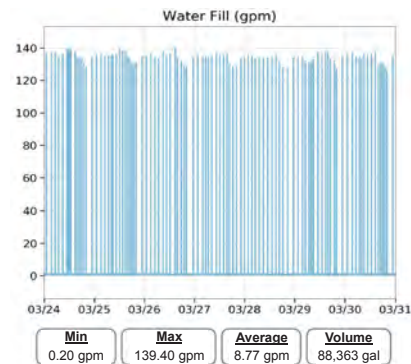
- Monitor circulation rate
- **Track turnovers & volume processed**
- Monitor strainer vacuum & pump effluent pressure
- Track Total Dynamic Head (TDH)

Advanced VFD Control

- Set circulation rate in gpm directly from BECSys5
- Program alternate turndowns, e.g. to save energy
- **Water Chemistry Assurance** automatically adjusts energy saving turndowns to assure proper water quality is maintained

Intelligent Autofill

- Maintain proper water level
- Autofill / chemical feed coordination
- **Monitor water consumption**
- **Identify pool leaks**
- Prevent surge pit overflows



Chemical Inventory Management

- Monitor acid and chlorine inventory
- **Track chemical usage**
- **Chemical reorder notifications**

You're in great hands!

BECS Technology has been designing and manufacturing the world's most reliable and innovative water chemistry controllers for over 30 years. We take pride in developing aquatics solutions that stand the test of time and are easy to use with features and capabilities that bring real value to our customers and their facilities.

Yet even the best equipment requires competent support to reach its full potential. BECSys distributors have been factory-trained and authorized to provide everything you'll need to take full advantage of all the benefits of your BECSys controller through the warranty period and beyond.

With a BECSys, you're in great hands!



Document #4333-G



BECSys Live provides simple and secure 24/7 real-time access to BECSys controllers from just about any device: PC, Mac, desktop, laptop, tablet or smartphone.

And best of all... Every feature described here is **free** for all internet-connected BECSys controllers using EZConnect! And that's just the beginning. Your BECSys servicing distributor may offer additional BECSys Live features as part of their service plans.



It's Simple

Just open a web browser on your favorite device and type becsys.live. It's really that simple.

Highly Secure

Messages are encrypted and all accounts are protected by 2 Factor Authentication.

Monitor Status

Real-time dashboards automatically updated with the latest readings and system status.

Make Changes

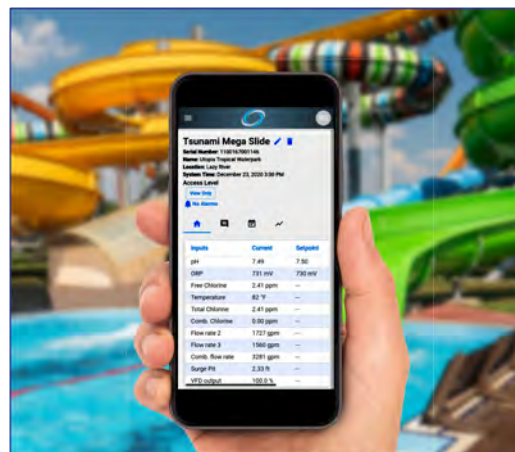
Adjust settings directly from **BECSys Live**. The same controller Access Code used on the controller front panel is required.

Watch Trends

Review graphs of all readings to see how your pool is performing over time.

Run Reports

Reports summarize key performance metrics such as alarm patterns, parameter changes, test kit logs and water quality readings.



BECSys *Live* was designed for you

You're busy. Your staff is busy. Everyone's juggling multiple priorities. You need a secure way to manage the water quality of every body of water - all in one place. No hopping between different applications. It has to be easy to use, but not at the expense of security. And powerful enough to allow you to get the job done, when it needs to be done.

If it's not easy to use, you won't use it. Period.

- Just type **becsys.live** into Chrome, Safari, Edge, Firefox...
- From any device: PC, Mac, tablet, smartphone
- Stay logged in; system recognizes your device so you don't need to log in every time
- Dashboards refreshed automatically
- Data logs automatically uploaded and maintained
- Change settings directly from Dashboard

Nobody takes Internet Security as seriously as we do.

- Two-factor authentication on all user accounts
- reCAPTCHA account protection from bots
- End-to-end message encryption (browser to controller)
- EZConnect = no VPNs, port forwarding or public IP addresses
- Controller Access Code required to change settings

This is no toy. BECSys *Live* is a serious tool.

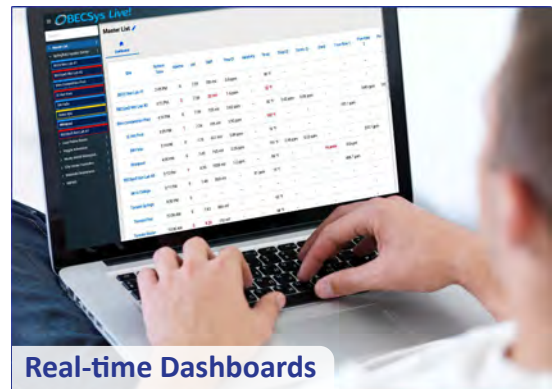
- Site Tree color-coded with Controller status
- Run reports for individual Controllers or Groups
- Graphs of readings with current set points and alarm points
- Upload SpinTouch readings via BECSys7 or BECSys5
- Record personal notes for each Controller

Go ahead. Hit us with your best shot.

- Scalable and flexible enough for all applications
- Unlimited number of Controllers
- Unlimited number of Groups
- Drag-and-Drop to organize your Site Tree
- Create personalized Controller/Group nicknames



Review Graphs



Real-time Dashboards



Run Reports

You're in great hands!

BECS Technology has been designing and manufacturing the world's most reliable and innovative water chemistry controllers for over 30 years. We take pride in developing aquatics solutions that stand the test of time and are easy to use with features and capabilities that bring real value to our customers and their facilities.

Yet even the best equipment requires competent support to reach its full potential. BECSys distributors have been factory-trained and authorized to provide everything you'll need to take full advantage of all the benefits of your BECSys controller through the warranty period and beyond.

With a BECSys, you're in great hands!



Document #6105-A

FROM WAVE PARKS TO WADING POOLS, WE HAVE A NEX-GEN® SYSTEM TO MEET YOUR NEEDS.



ChlorKing's NEXGEN on-site chlorine generators are leading the way to better, safer water. Their unique, forward-thinking design generates liquid chlorine from salt that is stored on site and uses the pool as the source water for the product. NEXGEN eliminates the need for storing large amounts of chlorine and doesn't generate the odors associated with traditional chlorine. Any of the NEXGEN systems can be fully customized to meet your needs and are easy to install, maintain and operate.

The NEXGEN 40-R

The ChlorKing® NEXGEN 40-R is a stand-alone, on-site chlorine generator capable of producing 48 lbs. of pH neutral equivalent chlorine per 24 hours. This is a low maintenance model which utilizes reverse polarity to clean the plates every 3 hours. The unique design uses swimming pool water to feed the generator and distribute chlorine to the pool as needed. Up to 6 bodies of water can be sanitized with one NEXGEN system using our venturi feed systems and can be used in conjunction with any ORP/pH controller. This product requires no salt in the swimming pool and will not raise TDS levels as with other chlorine generators. Hydrogen, the by-product is safely vented to atmosphere through a 2" (5cm) PVC pipe on top of the production tank.

Specifications

- Touch-screen display
 - Size 5" x 4" (12cm x 10cm) color display
 - Resistive touch membrane overlay
- Built in safety sensors
 - Air, water, pressure, & level sensors
 - Power supply
 - 100 amp 24v DC water-cooled
- Electrode stacks
 - 2-24 lb, 15,000 hr reverse polarity in clear housing
- Operating temperature - power supply cooling
 - 35°F (2°C) to 115°F (46°C) air temperature
 - 40°F (4°C) to 104°F (40°C) water temperature

- Pool source water
 - Up to 94°F (34°C) water temperature
- Electrical specifications
 - Max primary amps – (32)
 - Voltage / Hz – (208-240v 50/60Hz single phase)
 - Breaker required – (60 amp)
- Skid dimensions & weight
 - 48" (121cm) L x 28" (71cm) W x 68" (172cm) H
 - 48" (121cm) L x 22" (55cm) W x 40" (101cm) H (salt feeder)
- Plumbing requirements
 - 2" (5cm) inlet and outlet requiring 80 gpm (302 Lpm)
 - 2" (5cm) outlet for hydrogen removal to atmosphere
 - Maximum NEX-GEN venturi return line pressure (including pool return line) - 25psi



Main Features

- On-site chlorine generator capable of producing 48 lbs. (equivalent to 48 gal. of 12% bleach) per 24 hrs.
- Process uses swimming pool water to produce HOCl (hypochlorous acid). No fresh water is added.
- No salt is required in the pool
- pH neutral chlorine produced (HOCl)
- Reverse polarity for low maintenance
- Programmable touch-screen with auto correct features
- Skid mounted on wheels for easy installation
- Water-cooled power supply

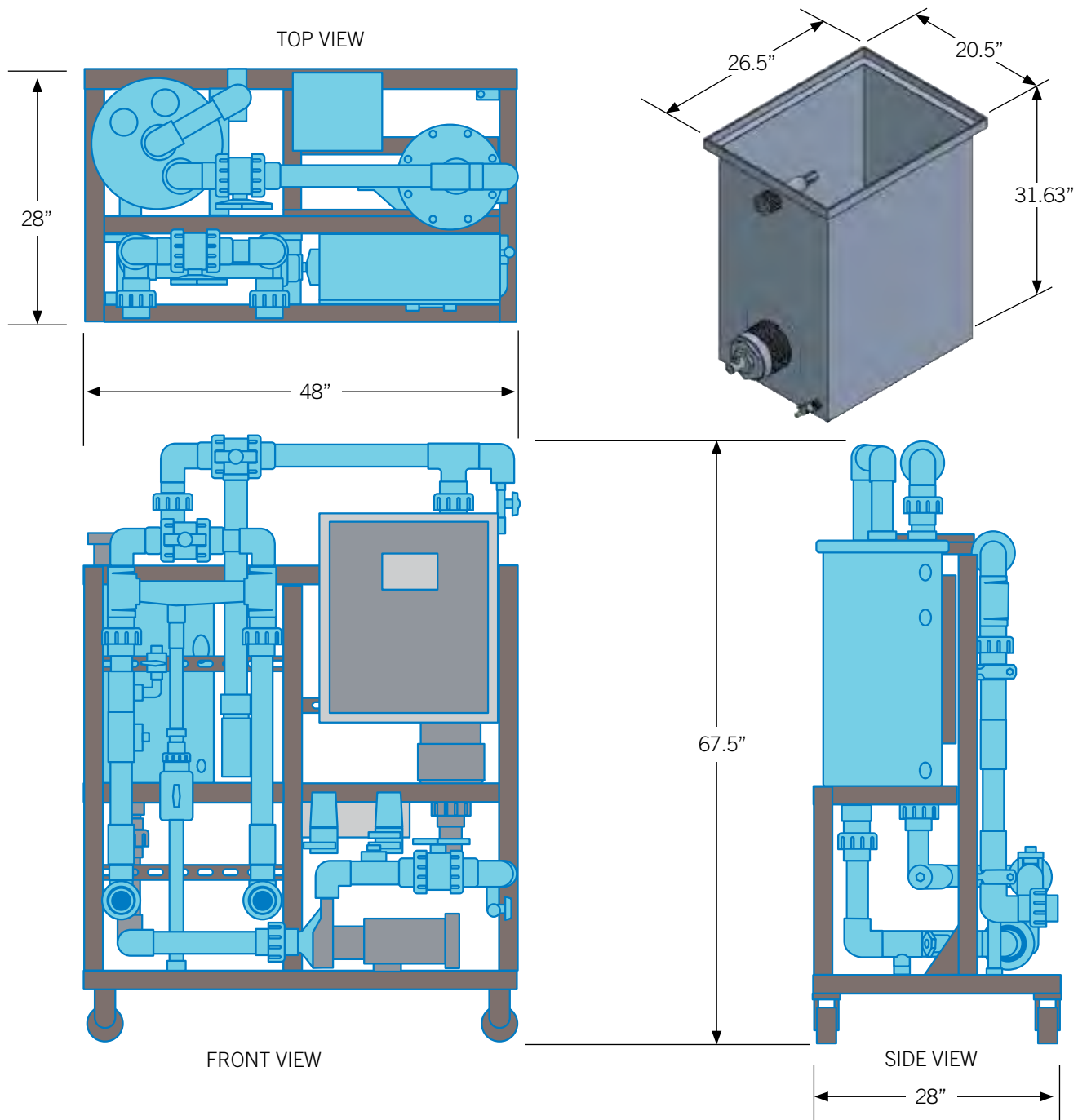
Applications

- Commercial swimming pools
- Water-parks
- Wave and surf riders

Order Information

- Product code: NEXGEN 40-R

NEXGEN®40-R DIMENSIONS & TANK LAYOUT



ChlorKing pioneered on-site chlorine generating technology in the 1970s. Realizing the potential for swimming pools and commercial applications, the company began generating "ultimate water" with simple, yet highly advanced technology. Today, ChlorKing® leads the way in commercial saline chlorination and is consistently seeking new frontiers in sanitizing solutions including ultraviolet light technology and their NEX-GEN® pH on-site chlorine generators. These environmentally friendly solutions are changing the way we treat H₂O.



Safer water through smarter technology.

Salt Chlorination Systems • Ultraviolet Light Systems • Hypochlorous Acid Generators

ChlorKing Inc. 2935 Northeast Parkway Atlanta, GA 30360 sales@chlorking.com 800.536.8180 chlorking.com



PRECISION

High-Tech Commercial Pool Disinfection with Powerful Performance

The Pulsar® Precision feeder is a high capacity erosion (HCE) feeder that is compact and lightweight with a modular design.

The feeder uses Pulsar® calcium hypochlorite briquettes that work in conjunction to produce a fresh concentrated liquid chlorine solution for clean and sanitized water. This innovative feeder system is easy to maintain and service with a flexible design that allows for easy integration for small to large commercial pools.

Switch to the Pulsar® Precision Feeder System, delivering clear and sparkling water time and time again!

Powerful Feeder Performance

-  Provides consistent chlorine delivery
-  Feeder designed to minimize maintenance requirements
-  2 in 1 dust reduction funnel for loading briquettes with capacity extension
-  Rotomolded components hold up to the strongest elements
-  Feeder design allows for easy access to internal components
-  Features high capacity erosion technology with the benefits of a venturi and booster pump

Briquette Efficiency

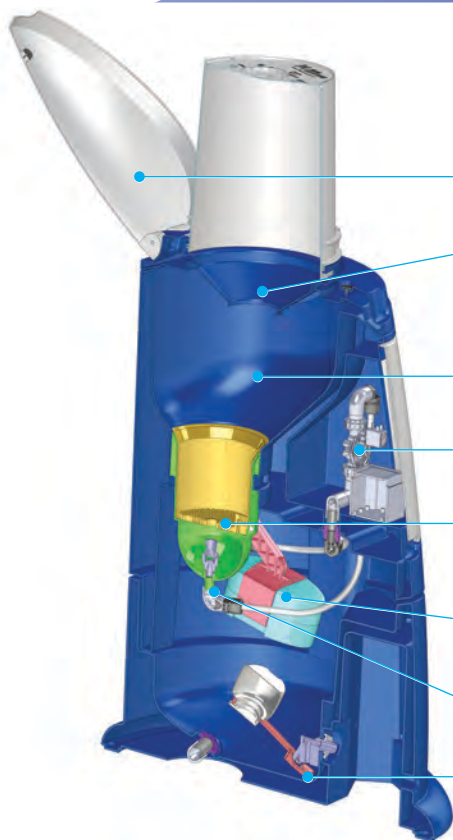
-  Won't overstabilize pool
-  More concentrated than liquid bleach
-  Dry, easy to handle formulation
-  Will not cause reduction of ORP
-  Highly concentrated to reduce shipping and handling costs
-  Longer shelf life when compared to liquid bleach



A 3-in-1 product that chlorinates consistently, increases calcium to protect plaster and balances alkalinity to stabilize pH!



PRECISION



Secure lid locking feature

Enhanced hopper attachment

Allows for added chemical capacity and reduction in dust during chemical loading

Hopper

Dual solenoids minimize solid build up

Briquette grid

Removable for easy maintenance

Emergency shut-off valve to prevent spills

High capacity erosion nozzle

Durable discharge valve

Feeder Specifications

Width	25.3"	642.62mm
Depth	29.8"	756.92mm
Height	40.9"	1038.89mm
Water Inlet Size	1/2" MNPT	12mm MNPT
Solution Outlet Size	1/2" MNPT	12mm MNPT
Operating Weight	220lbs	99.7kg
Shipping Weight	60lbs	27.7kg
Dry Chemical Capacity	70lbs	31.75kg
Feed Rate Range, Pool:	5-189 lbs/day AvCl	2.3-85.7 kg/day AvCl
Spa:	5-141 lbs/day AvCl	2.3-64 kg/day AvCl
Electrical	115VAC	
Operating Temperature	40°- 120° F	4.4°- 48.9° C

Chemical Specifications

Active Ingredient	Calcium Hypochlorite	
Available Chlorine	68%	
Scale Inhibitor	0.4-1.0%	
Weight	7-10g	
Dimensions	1 1/4" x 3/4" x 1/2"	33mm x 19mm x 13mm
Chemical Form	Pillow shaped briquette	
Color	White	
Container	50lb pail	22.6kg pail

For more information visit www.pulsarsystems.net or call us at 1-800-4-PULSAR



ACID PLUS

Order Early
for
Promotional
Pricing

Contact your sales rep
for more information

Introducing the Pulsar® Acid Plus Feeder System!

If you are using **Pulsar®** calcium hypochlorite feeders, then the **Pulsar®** Acid Plus feeder system can help maintain a complete dry chemical package for sanitation and pH control (down).

The **Pulsar®** Acid Plus Feeder provides:

- Reliable pH balancing
- Features a compact rugged rotomolded body
- Integrates inlet flow solenoid control for reliable operation
- Shares booster and venturi loop
- Custom color to distinguish between other feeders
- Acid introduced to venturi removes scale and minimizes maintenance
- Backflow prevention



The **Pulsar®** pH Down +4 is a proprietary formulation with the following benefits

- Dry acid chemical is easier to handle and transport than CO₂ and muriatic acid
- Requires NO double containment
- Ensures no liquid spills
- Has little or no odor
- Dry acid solution is 100% soluble
- Acid solution is not under pressure
- Less hazardous than highly concentrated liquid

The **Pulsar®** Acid Plus feeder system is low maintenance, easy to install and has a small footprint making it a great addition to your pool chlorination treatment plan.

System Capacity

Volume	60 lbs	27.21 kg
--------	--------	----------

System Dimensions

Width	19 in	48 cm
Height	33 in	84 cm
Weight (empty)	27 lbs	12 kg

Requirements

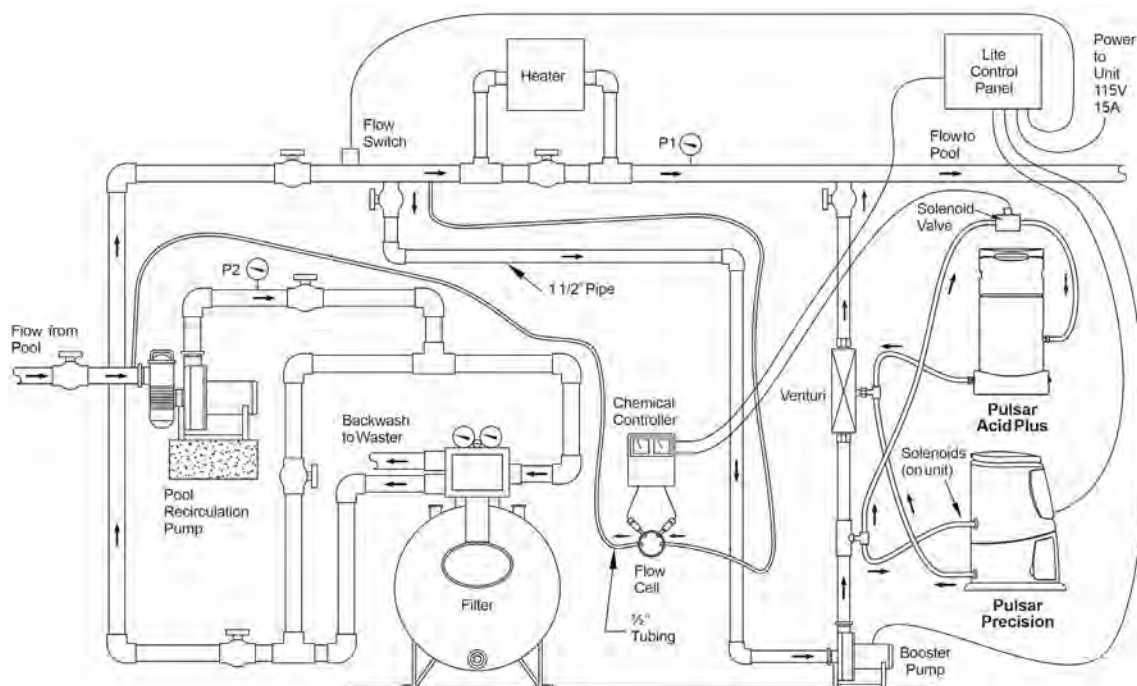
Use With	Pulsar® pH Down (+4)
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*4-in-1 product lowers pH, maintains clarity,
reduces equipment corrosion, and prevents against stains & scale!*





ACID PLUS



Installation

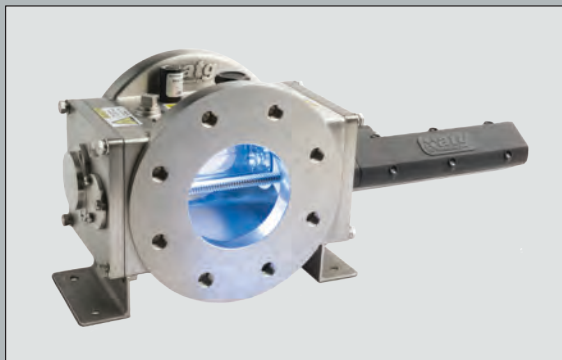
1. Use schematic or installation guide
2. Install booster pump and venturi Loop in accordance with the feeder I&O manual
3. Install one 1/2" Tee at the 1/2" NPT outlet above the booster pump discharge
4. Install the second 1/2" Tee at the 1/2" venturi suction
5. Connect four parker tubing connectors on the Tee branches at the feeder inlet and venturi suction
6. Plug in the feed solenoid valve to the chemical controller pH down output for pH control automatic

WARNING – Always use personal protective equipment including but not limited to chemical gloves, safety goggles and a full-face mask when handling acid to protect from liquid and vapor. Refer to the Safety Data Sheets that are included with the acid for additional information and precautions regarding the proper handling of acid.

If using the same booster pump and Venturi as the precision feeder as shown in the schematic, set booster pump to **Always On** by setting dip switch 4 to **OFF** in the control box.

Parts List

Part	Description	QTY	Part #
Pulsar® Acid Plus	Dry Acid Feeder, Tees (Qty 2), nipples (Qty 4), 1/2" parker fastNTights P8MC8 (Qty 2),	1	73350
Pulsar® Installation Ki	1HP booster pump, 1 1/2" Venturi PVDF with unions, 1/2" OD PE tubing 20 Ft, 1/2" x 1/2" female connector, 1/2" FNPT x 1/2" tubing connector, 1/2" FNPT x NPT ball valve (outlet), 1 1/2" x 12" PVC nipple,	1	79830
Tee	1/2" FNPT sch 80	2	71912
Nipple	1/2" NPT x 1 1/2" fully threaded	4	71916
Acid Plus Lid	Red lid for Pulsar® acid feeder	1	73298
Solenoid Valve	Basic SDCH ORP Kit w/3 meter extension	1	73119



The Wafer™ UV system is the most advanced UV system available. The treatment chamber has been designed for the simplest installation into any pipe work system. The chamber can be mounted vertically or horizontally. The compact design allows existing facilities to be easily upgraded with minimum site work.

TREATMENT CHAMBER

The Wafer™ treatment chambers are designed for installation into the piping after the filters but before chemical injection.

The treatment chamber is manufactured from solid cast 316L stainless steel, with standard ANSI flanged piping connections. Temperature probe, UV monitor probe, and automatic quartz wiper system included.

A pressure rating for the unit is 150 PSI and pressure drop through the chamber is minimal.

Our objective for the product is simple, to be the best on the market, no compromise. The Wafer™ system offers the flexibility of a horizontal or vertical installation application. The Wafer™ product line treats the largest pools with a very compact footprint.

Utilizing our proven medium pressure lamp technology, the Wafer™ system offers a high quality, 'high specifications' product at a very competitive price. The 8" WF-215-8 is suitable for all pools and whirlpools with flows rates up to 1,012 GPM for indoor applications and 1,100 GPM outdoors applications.



CONTROL SYSTEM

The control system is housed in a IP 54 rated panel. As a standard, it is supplied with 30 ft cables for connection to the treatment chamber.

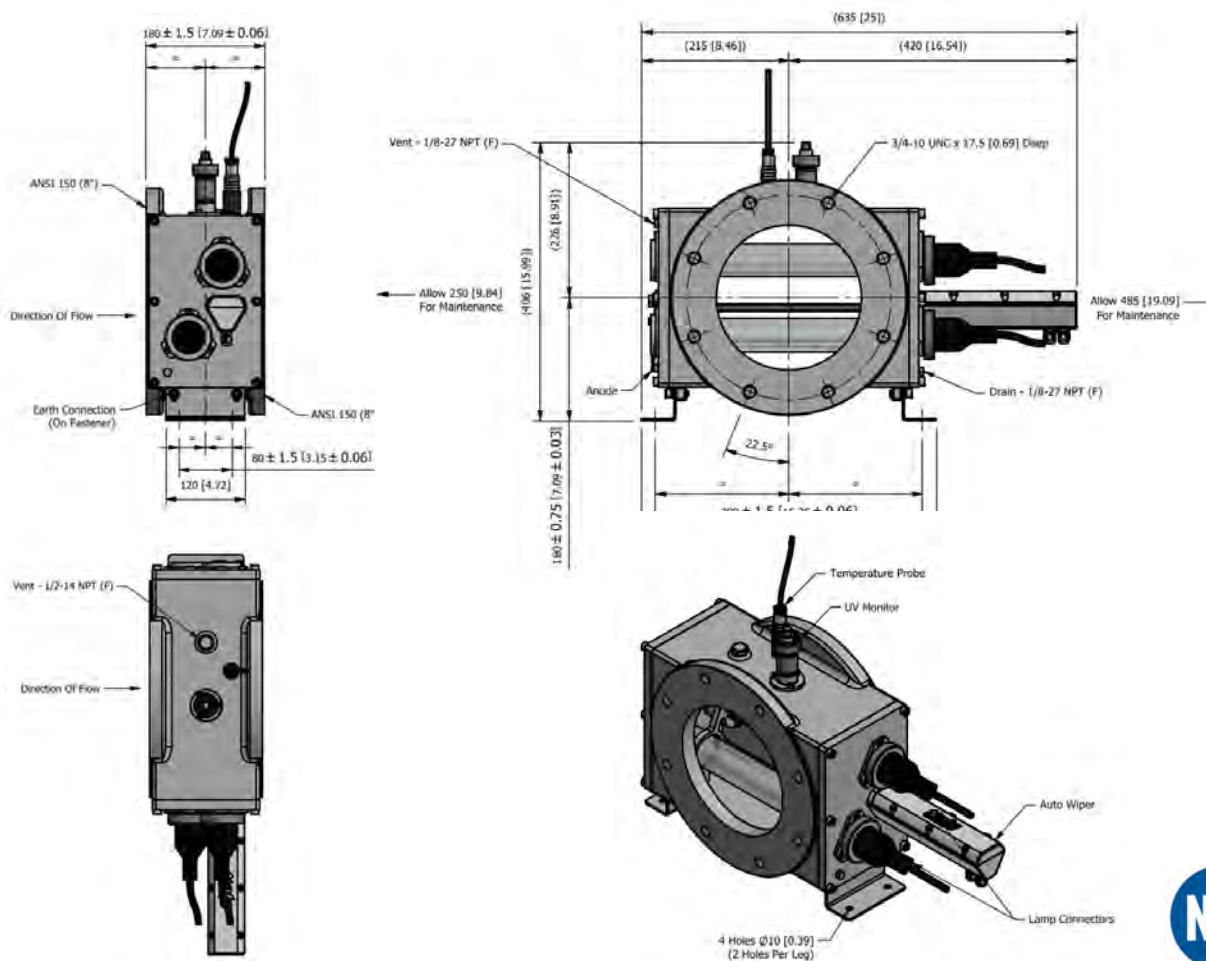
The power supply (PSU) and control cabinet are powered with the latest Spectra III microprocessor control unit. Three levels of operation (simple control, full parameter display, and operator configuration) allow for easy, uncomplicated operation of the unit by an operator. The control system features a sophisticated password protected engineering section for integrating the unit with other system devices.

Auto power restart, pump and valve interfaces, process interrupt and low power overnight operation are all features specifically designed for use on all recreational water applications.

WAFER™ UV for Recreational Water



TREATMENT CHAMBER WF-215-8 Technical Data Sheet



Type	Lamp & Power	Weight (Dry/Wet)	Connection Size	Sacrificial Anode	Wiper System	Material Construction
WF-215-8	2 X 1.5 kW	117/141 lbs	8"	1/2" NPT	Automatic	316L SS
Pressure Rating			150 PSI			
Drain & Vent			1/8" - 27 NPT Drain 1/2" - 14 NPT Vent			
Standard Cable Length			30 feet			
Ingress Protection			IP55			
GPM for 60 mj/cm2 Dose			1,012 GPM (indoor)			
GPM for 40 mj/cm2 Dose			1,100 GPM (outdoor)			
Strainer			8" EZ Clean Strainer Included			

Neptune-Benson
EVOQUA

Sales & Service : +1 920-885-4628
www.neptunebenson.com

4/1/20

WAFER™ UV for Recreational Water



CONTROL PANEL WF-215-8 Technical Data Sheet



Type	Lamp & Power	Panel Weight	Breaker Size	Power Supply	Phase	Frequency
PGA 2x3000	2 X 1.5 kW	110 lbs	30 Amp	208-240V	1 Ph	50/60 Hz
Variable Power			100% to 30% Power (Automatic Dose Pacing)			
User Interface			Spectra Membrane			
Ventilation			Forced Air Cooled (Fan)			
Ingress Protection			IP 54			

Neptune-Benson
EVOQUA

Sales & Service : +1 920-885-4628
www.neptunebenson.com

4/1/20



Easy to install.
Easy to operate.
Nothing to remove & clean.
Tremendous labor savings.

EZ Strainer is the first and only clean-in-place UV strainer designed to provide safety and reliability against the rare chance of lamp or quartz breakage. As simple as unlocking and turning the handle, the EZ strainer is now free and clear of fine debris that may have made it through the system.

Features

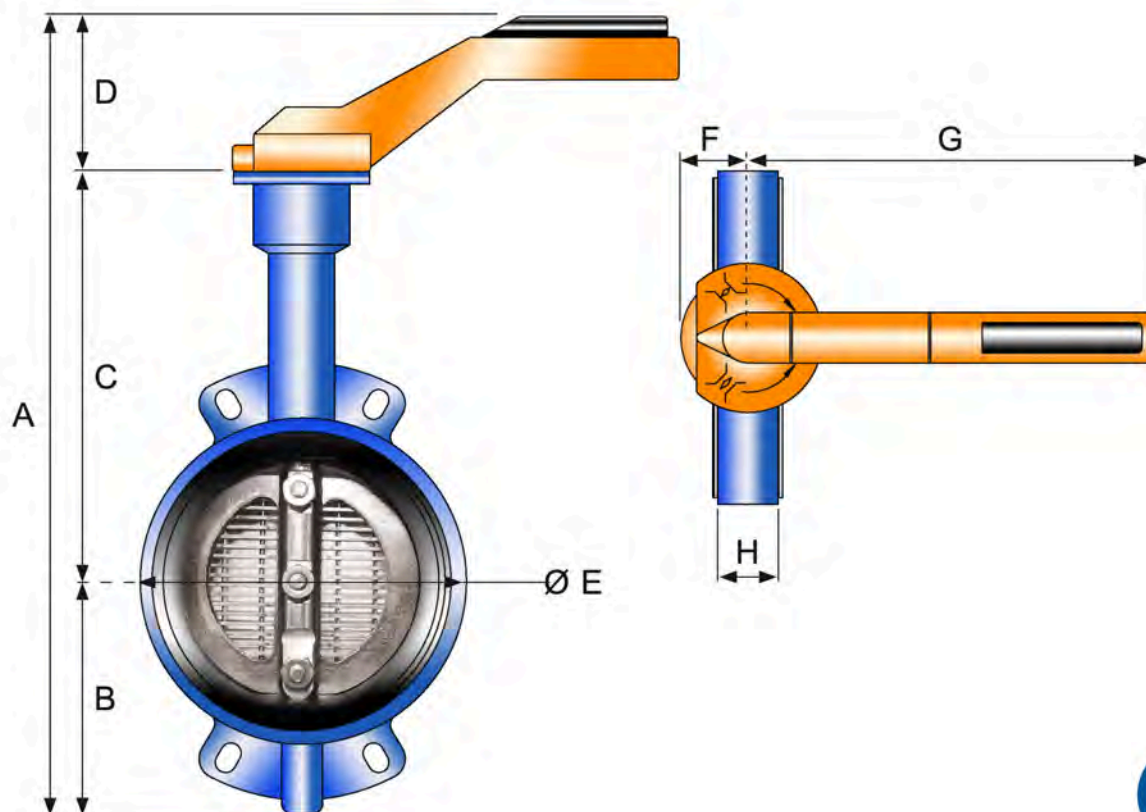
- Available in 4"/100mm to 12"/300mm pipe sizes.
- Durable stainless steel strainer disc and shaft.
- 180° positive stop.
- Lightweight cast aluminum riser (nylon) coated valve housing.

Model	Connection		Description
	inches	mm	
EZCLN-4	4	100	Standard Model Strainer
EZCLN-6	6	150	Standard Model Strainer
EZCLN-8	8	200	Standard Model Strainer
EZCLN-10	10	250	Standard Model Strainer
EZCLN-12	12	300	Standard Model Strainer

EZ Strainer for Recreational Water

EZ Strainer
by Neptune Benson

Technical Data Sheet



The EZ Strainer is designed to be used in the “Normally Closed” position and rotated 180 degrees daily.

Connection Sizes & Model Data

Model Number	Connection		A	B	C	D	E	F	G	H
	in	mm								
EZCLN-4	4	100	14 1/4	3 3/8	7	3 7/8	6 1/4	1 3/4	12 5/8	2 1/16
EZCLN-6	6	150	16 7/16	4 9/16	8	3 7/8	8 7/16	1 3/4	12 5/8	2 1/4
EZCLN-8	8	200	19 15/16	5 7/8	9 9/16	3 7/8	10 5/8	1 3/4	12 5/8	2 3/8
EZCLN-10	10	250	22 1/2	7 7/8	10 3/4	3 7/8	13 1/16	1 3/4	12 5/8	2 11/16
EZCLN-12	12	300	25 1/8	8 7/8	12 3/8	3 7/8	15	1 3/4	12 5/8	3 1/16

Neptune-Benson
EVOQUA

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4/9/20

SERIES 30/31 2"-20" (50mm-500mm)

PRESSURE RATINGS

BIDIRECTIONAL BUBBLE-TIGHT SHUT-OFF – Standard Disc*

Downstream Flanges/Disc in Closed Position

S30/31 Standard Disc*	2-12" (50-300mm)	175 psi (12 Bar)
	14-20" (350-500mm)	150 psi (10.3 Bar)

~~DEAD-END SERVICE – Lug Bodies/Standard Disc*~~

~~No Downstream Flanges/Disc in Closed Position~~

S31	2-12" (50-300mm)	75 psi (5.2 Bar)
	14-20" (350-500mm)	50 psi (3.4 Bar)

BODY: 250 psi (17.2 Bar) CWP

*For low pressure application, Bray offers a standard reduced disc diameter to decrease seating torques and extend seat life, thus increasing the valve's performance and reducing actuator costs.

VELOCITY LIMITS For On/Off Services:

Fluids 30 ft/sec (9 m/s)	Gases 175 ft/sec (54 m/s)
--------------------------	---------------------------

High strength through-stem design allows easy disassembly and reduced disc to stem failure.

PRIMARY & SECONDARY SEALS: These seals prevent line media from coming in contact with the stem or body. *Primary* Seal is achieved by an interference fit of the molded seat flat with the disc hub. *Secondary* Seal is created because the stem diameter is greater than the diameter of the seat stem hole.

STEM: Precision double "D" disc to stem connection drives the disc without the need for screws or pins. The close tolerance, double "D" connection that drives the valve disc is an exclusive feature of the Bray valve. Disassembly of the Bray stem is just a matter of pulling the stem out of the disc.

SEAT: Bray's tongue and groove seat design lowers torque and provides complete isolation of flowing media from the body. The seat also features a molded O-ring which eliminates the use of flange gaskets.

STEM RETAINING ASSEMBLY: The stem is retained in the body by means of a unique Stainless Steel Spirolox® retaining ring, a thrust washer and two C-rings, manufactured from brass as standard, stainless steel upon request. The retaining ring may be easily removed with a standard hand tool. The stem retaining assembly prevents unintentional removal of the stem during field service.

STEM BUSHING: Non-corrosive, heavy duty acetal bushing absorbs actuator side thrust.

STEM SEAL: Double "U" cup seal design is self-adjusting and gives positive sealing in both directions.

NECK: Extended neck length allows for 2" of piping insulation and is easily accessible for mounting actuators.

DISC: Casting is spherically machined and hand polished to provide a bubble-tight shut off, minimum torque, and longer seat life.

BODY: One-piece wafer or lug style. Polyester coating for excellent corrosion resistance. Nylon 11 coating is available as an option.

All Bray valves are pressure tested to 110% of rated pressure to assure bubble tight shutoff.



SERIES 31H

2"-20" (50mm-500mm)

Series 31H Lug valves are drilled and tapped to meet ASME Class 125/150 and PN16 flanges. Series 31H Valves will not be automated.

PRESSURE RATINGS

BIDIRECTIONAL BUBBLE-TIGHT SHUT OFF & DEAD-END SERVICE

2-20" (50-500mm) 250 psi (17.2 Bar)

BODY: 250 psi (17.2 Bar) CWP

VELOCITY LIMITS For On/Off Services:

Fluids 30 ft/sec (9 m/s) Gases 175 ft/sec (54 m/s)

STANDARD MATERIALS SELECTION 31H

Body Cast Iron
Ductile Iron

Disc Aluminum Bronze
Nylon 11 Coated Ductile Iron
316 Stainless Steel

Stem 416 Stainless Steel

Seat Bonded EPDM
Bonded BUNA-N

Material availability depends on valve size & series. Other materials are available. Please consult your local Bray representative for your specific application.

STANDARD MATERIALS SELECTION S30/31

NAME MATERIAL

Body Cast Iron
Ductile Iron
Carbon Steel
Aluminum

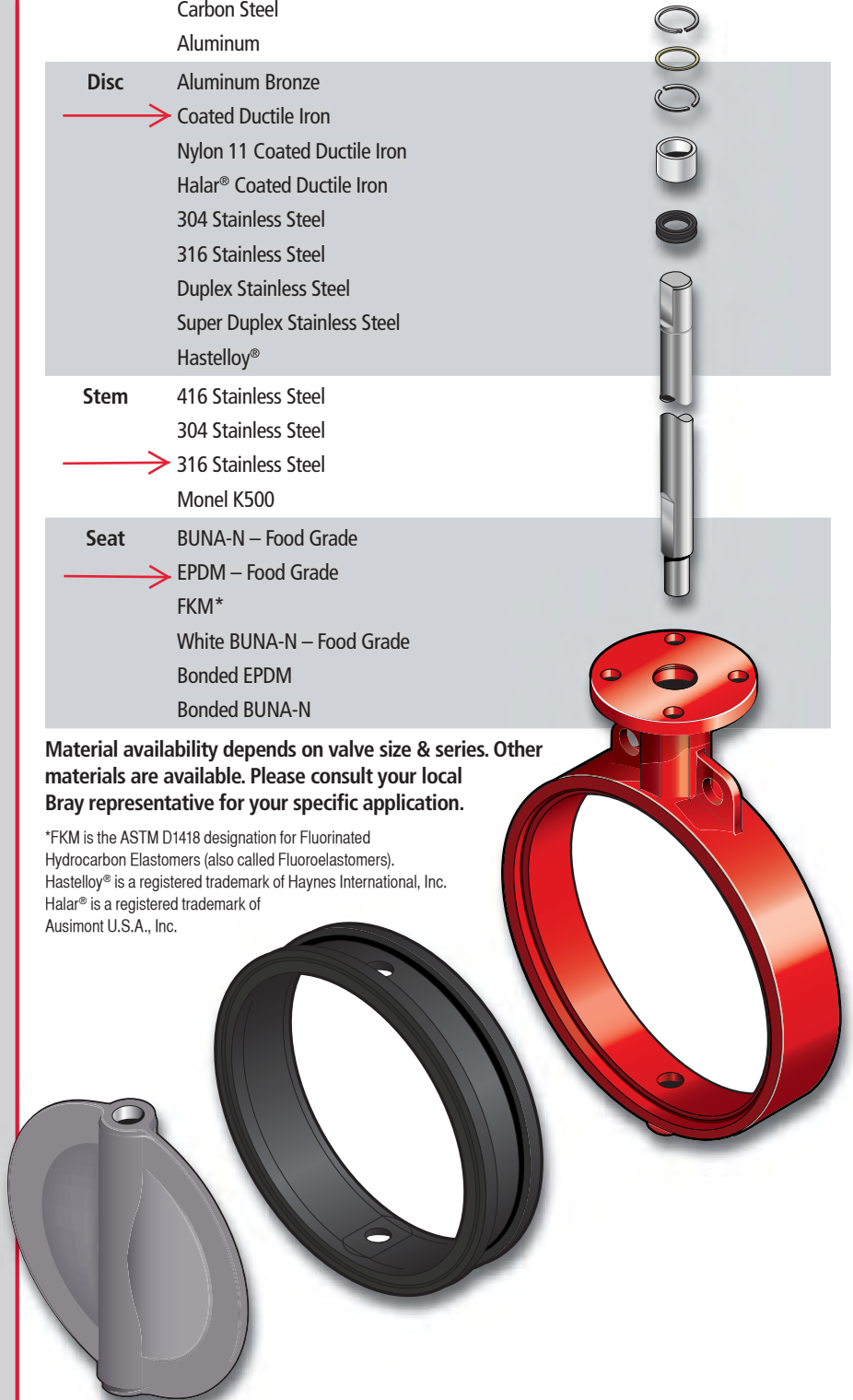
Disc Aluminum Bronze
Coated Ductile Iron
Nylon 11 Coated Ductile Iron
Halar® Coated Ductile Iron
304 Stainless Steel
316 Stainless Steel
Duplex Stainless Steel
Super Duplex Stainless Steel
Hastelloy®

Stem 416 Stainless Steel
304 Stainless Steel
316 Stainless Steel
Monel K500

Seat BUNA-N – Food Grade
EPDM – Food Grade
FKM*
White BUNA-N – Food Grade
Bonded EPDM
Bonded BUNA-N

Material availability depends on valve size & series. Other materials are available. Please consult your local Bray representative for your specific application.

*FKM is the ASTM D1418 designation for Fluorinated Hydrocarbon Elastomers (also called Fluoroelastomers).
Hastelloy® is a registered trademark of Haynes International, Inc.
Halar® is a registered trademark of Ausimont U.S.A., Inc.



AQUATICS FESIBILITY STUDY FOR UNION HIGH SCHOOL



GRAND RAPIDS PUBLIC SCHOOLS

PREPARED BY:



aquatic source

enriching lives through aquatics

248-366-0606



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March 11th, 2025

Plante Moran Realpoint
Scott Weir- Vice President
634 Front Avenue NW STE 300
Grand Rapids, MI 49504

Re: Grand Rapids Public Schools Aquatics Evaluation
Union High School Pool Feasibility Study

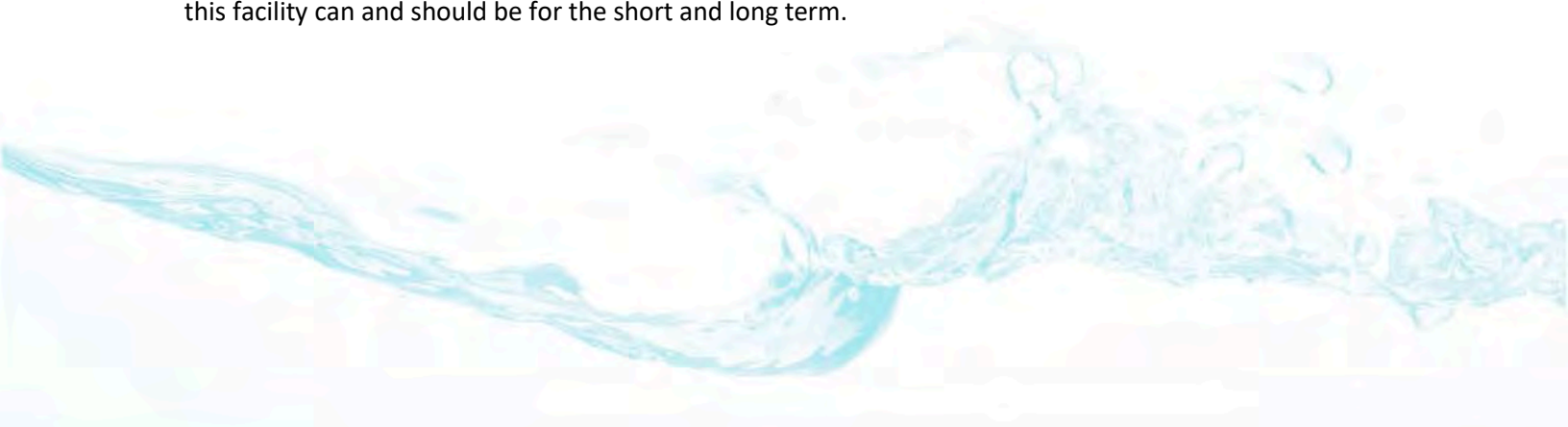
Scott,

Thank you for the opportunity to assist with Grand Rapids Public Schools aquatic facilities and in the case, Union High School. Based on discussions with your pre-construction team, I have elected to break this study into four (4) parts:

- Immediate Needs- Things that need to be done *now* to keep the pool code compliant or address major defects
- 3-year Forecast- Things that should be considered to keep the pool up to date and stem any major service work
- Complete Renovation- This is a solution that I would consider lining up with our other major pump room renovations that we have done with you, putting a long term solution in place for the foreseeable future
- Other Concerns- These are items that would be outside the pool contractors scope of work but that I have noted as being need of investigation so a complete solution can be proposed to the District

Based on discussions, I submitted a FOIA Request to EGLE regarding the pool. I received over seventy-three (73) pages of the complete history of the swimming pool. I will not include all of these but can forward them to you at your request.

We would be glad to meet with yourself, your Design Team and even the Board of Education if it helps in order to go through this report so that everyone is on a level playing field as to what the expectations of this facility can and should be for the short and long term.





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Existing Pool & Design Data:

There is no standard design detail sheet for this pool because of its age. We went back through the pages of history to come up with the following information.

- Swimming Pool was constructed at or around 1968 and opened to the public for use. At this time the pool construction generally consisted of a single lane pool w/ integral diving well. Pool is listed at 175,000 gallons.
- Pool is running at 5.6 hour turnover rate @ 520 GPM
- No major renovations were included in the file obtained from EGLE. It appears that this pool is in fact running on the original filter installed from 1968 OR has had a like for like replacement at some point in time that did not require a submission to the health Department
- In 1996 the pool appears to have been written up for the depth of water at the diving boards. I do not see in the documents provided where the board issue has ever been addressed

Pool Volume:	175,000	UG gallons
Pool Area:	3,379	SQFT
Perimeter:	240	LF
Re-circulation Rate:	520	GPM
Turn Over Rate:	5.6	HRS
Filtration Rate:	UNKNOWN	

Return Line:	6" schedule 80 PVC (6.39 ft/sec < 10.0 ft / sec maximum velocity)
Main Drain Line:	8" cast iron
Gutter Line:	6" schedule 40 PVC

Recent Work:

1. A new chemical controller is located in the room but is not hooked up and functioning
2. New Stenner pumps appear to be installed for pumping acid and liquid chlorine, but are not hooked up to the chemical controller; operator appears to be hand balancing pool
3. Bell & Gossett filtration pump looks new

Relevant Filtration Observations:

These existing filters have long served their useful life. When the open top vacuum DE filters are working correctly, they do provide very good filtration. However, there are several leafs in the filter that look torn and a graveyard of old and discarded ones in the basement.

There is media all over the floor of the pool which leads us to believe that the filter has defective parts and the Owner may be struggling to find replacements to a filter from the 1960's.

For the most part, this filter was obsolete over 40 years ago and needs to be replaced.



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Code Compliance Issues:

From a cost analysis perspective, these items will be included under the “Immediate Needs & Concerns” sections, as they should be considered a priority in any design solution offered for the pool

1. While it is not code to have a chemical controller, it is code that the material be “simply handled and closely controlled in its usage” (R 325.2156 Rule 56 (1)(d)). I have **never** seen a public-school swimming pool that does not utilize a chemical controller for the direct measurement and application of sanitizer and pH control. This is a public safety risk and should be immediately rectified
2. Current main drain covers (VGBA Covers) are expired and must be replaced
3. I did not see all of the code required safety equipment as illustrated in R 325.2165 Safety Equipment of the public swimming pool code
4. I did not observe the HVAC / air handler located in the basement working. Section R 325.2182 Heating, Ventilation & dehumidification requires the natatorium, bathrooms and mechanical space be adequately heated, cooled and de-humidified. If this unit is not working or needs to be replaced this could be a very expensive item. This unit should immediately be evaluated for proper working condition

Immediate Needs & Concerns:

You have immediate needs that need to be addressed that will allow safe and efficient operation of the swimming pool.

1. At the time of inspection, there is no automated chemical control occurring. As far as I know, the Siemens controllers that are in those rooms are no longer manufactured and you cannot get parts for them. I would suggest removal and replacement with a brand that is supported by an in-state contractor

This would include integrating the existing peristaltic delivery pumps into the new controller

2. The existing main drain grates in the swimming pool should be replaced with approved VGBA covers
3. Provide the following required safety equipment not identified at time of inspection:
 - a. Blood spill kit
 - b. First aid kit
 - c. Chemical test kit



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4. All filter leaf screens need to be replaced and or checked for good working condition to prevent media from getting back into the swimming pool. Further, stop using existing diatomaceous earth as a filter media, which is a known carcinogen. Use Perlite (or equivalent) media instead
5. The “viewing window” located in the deep end of the pool should be filled in
6. The pool needs to be acid washed and re-grouted
7. There appears to be a leak in the building envelope that is leaching sand / soils into the process tunnel located around the pool. This should be immediately looked into and addressed
8. There are numerous structural cracks in the shell of this swimming pool that can be seen from the tunnels. These cracks appear to have been arrested from actively leaking by the calcium in the water from using liquid chlorine. However, because of how many there are, we do recommend that a structural engineer perform an inspection of these and recommendations on repair. When the pool is emptied again, these cracks will once again actively leak
9. Diving Boards should be removed. You need 11’-0” at the plummet depth, which you have. However, you need 16’-5” of that depth out in front of that board before the break starts to slope back up. You have nowhere close to this. Either the entire pool deep end floor needs to be modified, or the board and stands should be immediately removed

3-year Comprehensive Strategy:

If this pool is to remain in service long term, the 3-year comprehensive strategy needs to be a complete replacement of the mechanical room recirculation equipment. There really is no other option at this point. The system is old, difficult to run and maintain and has far outlived its useful life. In addition to a complete mechanical room renovation, the following items need to be considered as well

Please note this work should be pursued IN ADDITION TO the work in the previous section.

1. The swimming pool needs to be re-plumbed in schedule 80 PVC and the cast iron penetrations removed from the walls and floor. Most of the plumbing is done in schedule 40 DWV sewer fittings
2. Existing light fixtures do not have viable replacement parts and should be removed and filled in. Photometric study of natatorium should be performed and lighting updated based on current standards not using in pool lights as a contributing factor



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Complete Renovation:

1. Remove existing sand filters and provide a new 'Defender' regenerative media filtration system by Neptune Benson
 - a. We have included a Defender cost analysis for your review. Please note that a Defender only shows a strong payback when an Owner is deciding between this filter and a sand filter. We need the initial cost of the sand filter to stack against the initial cost of the Defender to show any kind of ROI. Even with this not included, the installation will still payback in under 10 years
 - b. It should be noted that sand is not really an option in this pump room because of the size of the tanks
 - c. What we can tell you (and you will see on the summary sheet) is that the District will realize over \$2,800 in annual savings from the Defender installation and save over 225,000 gallons of water per year
2. Renovation to include all new valves (including modulating valve) hardware and support hardware
3. Renovation would include new filtration pump (secondary redundant pump listed as an option) and strainer
4. Renovation would include new flow meter, thermometers and gauges per code
5. We will list the following items as add options to the renovation that may be worth considering as we move closer to an actual design:
 - a. Calcium hypo-chlorite feeder in lieu of liquid chlorine. Safer, more stable, easier to manage
 - b. On site chlorine generation using saline technology
 - c. Use of CO2 systems for pH control
 - d. Use of bisulfate for pH control
 - e. Ultraviolet light secondary disinfection systems for protection against chlorine resistant microorganisms and destruction of combined chlorine. If a new handler is installed, this item is a must





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Other Concerns:

Most of the items in here would fall outside of our scope of work. However, with the scope and breadth of this proposed renovation, we feel that the trade disciplines representing these work scopes absolutely should be providing evaluations and budgetary number of these systems for inclusion in an overall project scope / budget. We will provide estimates that should be verified and substantiated with the various disciplines involved

1. Most of the cast iron plumbing in the basement servicing the deck drains appears to be cracked and broken and should be evaluated for replacement
2. Electrical distribution and devices in the mechanical space appear to be very old and in need of replacement and / or updating
3. We have spoken about the air handling equipment in previous sections but it bears repeating again here
4. The sump pumps for the space should be evaluated for good working condition
5. Water supply for the space should be provided in PVC pipe with isolation valves
6. Means of egress into this room in my opinion are problematic. In order to get operators and building engineers to spend the requisite time in a mechanical space, we need to make that space far more accessible than this one is...that may mean an elevator
7. Existing pool heating source should be evaluated for remaining service life and considered as part of the project if needed

Budget Summary

Please consider the following cost Summary. Note that we try and capture everything in the potential project. These sections will correspond with the items / numerations under the various sub-headings above.

Immediate Needs & Concerns (incl. Code Compliance Issues:

	<u>Extra's</u>	<u>Base Scope</u>
1. Chemical Controller.....		\$ 7,000
a. Auto-Fill	\$ 3,500	
b. PPM Chlorine Control....	\$ 2,500	
c. Main drain modulation...	\$ 6,500	
2. VGBA Approved Main Drain Covers....		\$ 1,500
3. Required Safety Equipment.....		\$ 800
4. Filter Screens.....		\$ 7,500
5. Fill in Viewing Window....		\$ 12,500
6. Acid Wash / Re-Grout Pool....		\$ 26,000
7. Remove Diving Boards & Bases.....		\$ 10,000
		<u>\$ 65,300</u>



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3-year Comprehensive Strategy:

	<u>Extra's</u>	<u>Base Scope</u>
1. Re-Pipe Swimming Pool		
a. Gutter....		\$ 62,000
b. Return...		\$ 14,400
c. Main Drain....		\$ 26,000
2. Fill in Lights.....	\$ 12,000	
3. Complete Mechanical Renovation		
a. New Defender Filter Package..		\$ 77,000
b. New Recirculation Pump.....		\$ 24,900
c. Redundant Recirculation Pump..	\$ 17,500	
d. VFD....		\$ 11,000
e. Pipe, Fittings & Hardware....		\$ 52,000
f. Valves....		\$ 23,000
g. System Accessories.....		\$ 12,000
h. Direct Labor.....		<u>\$ 62,000</u>
4. Option for Calcium hypo-chlorite feeder....	\$ 7,500	\$364,300
5. Option for on Site Chlorine Generation....	\$ 38,000	
6. Option for CO2 System for pH control...	\$ 13,000	
7. Option for bi-sulfate for pH control....	\$ 3,200	
8. Medium Pressure UV.....	\$ 37,800	
9. Provide alkalinity control through new chemical controller w/ bi-sulfate or CO2..	\$ 3,500	





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Other Concerns / Trade Costs:

- | | |
|---|-----------|
| 1. Cost to produce EGLE Compliant Design Documents... | \$ 17,000 |
| 2. Plumbing support in mechanical room.... | \$ 90,000 |
| 3. Electrical support in mechanical room... | \$ 80,000 |
| 4. HVAC support in mechanical room... | ? |
| 5. New heater / exchanger.... | \$ 20,000 |

Conclusion:

We would welcome the chance to sit down with the School Board and/or Administration to go over the report in detail and field questions. Following in the attached pages you will find a pictorial library from my visit with my notes on the individual photos that tie them to this document. We have also included various product information and cut sheets for the equipment that would be specified. We thank you for selecting us to be a part of your team and the process and stand ready to proceed at your direction.

Sincerely,

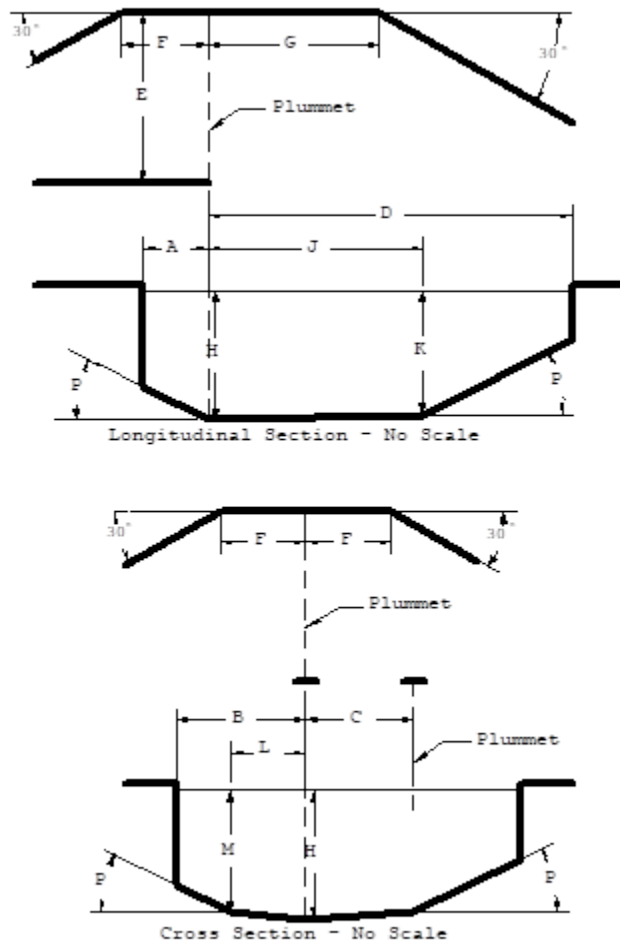
Nick Shelton
General Manager
Aquatic Source, LLC



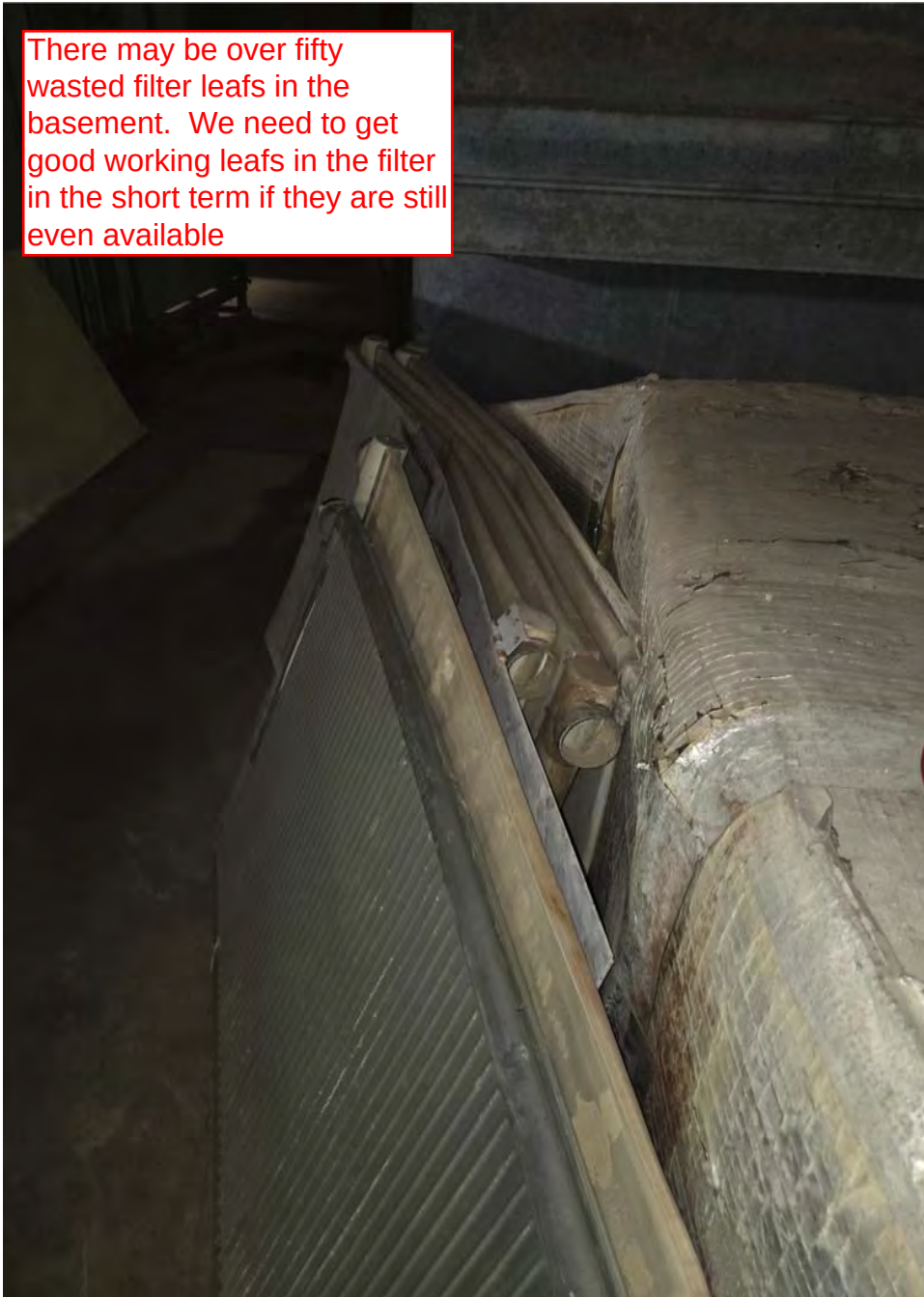
Table 1
Diving Areas

Letters below refer to Figure 1	Board height in meters	0.5 Meter	1.0 Meter	3.0 Meters
	Board height (feet)	1'8"	3'4"	9'11"
	Board length (feet)	10'0"	16'0"	16'0"
	Board width (feet)	1'8"	1'8"	1'8"
Minimum dimensions in feet				
A	Distance from plummet back to pool wall	2'0"	5'0"	6'0"
B	Distance from plummet to pool wall at side	8'3"	8'3"	11'6"
C	Distance from plummet to adjacent plummet	7'1"	7'1"	8'3"
D	Distance from plummet to pool wall ahead	26'0"	29'7"	33'8"
E	Height from board to ceiling at plummet and distances F and G	16'0"	16'0"	16'0"
F	Clear overhead distance behind and each side of plummet	8'0"	8'0"	8'0"
G	Clear overhead distance ahead of plummet	16'0"	16'0"	16'0"
H	Depth of water at plummet	8'6"	11'0"	12'0"
J	Distance ahead of plummet to depth K	12'0"	16'5"	19'9"
K	Depth at distance J ahead of plummet	8'3"	10'9"	11'9"
L	Distance at each side of plummet to depth M	8'0"	5'0"	6'7"
M	Depth at distance L on each side of plummet	8'3"	10'9"	11'9"
N	Maximum slope to reduce height E	30 degrees	30 degrees	30 degrees
P	Maximum floor slope to reduce depth ahead of K, to the sides of M, or back to pool wall behind H	1:3	1:2	1:2

Figure 1
Diving Areas

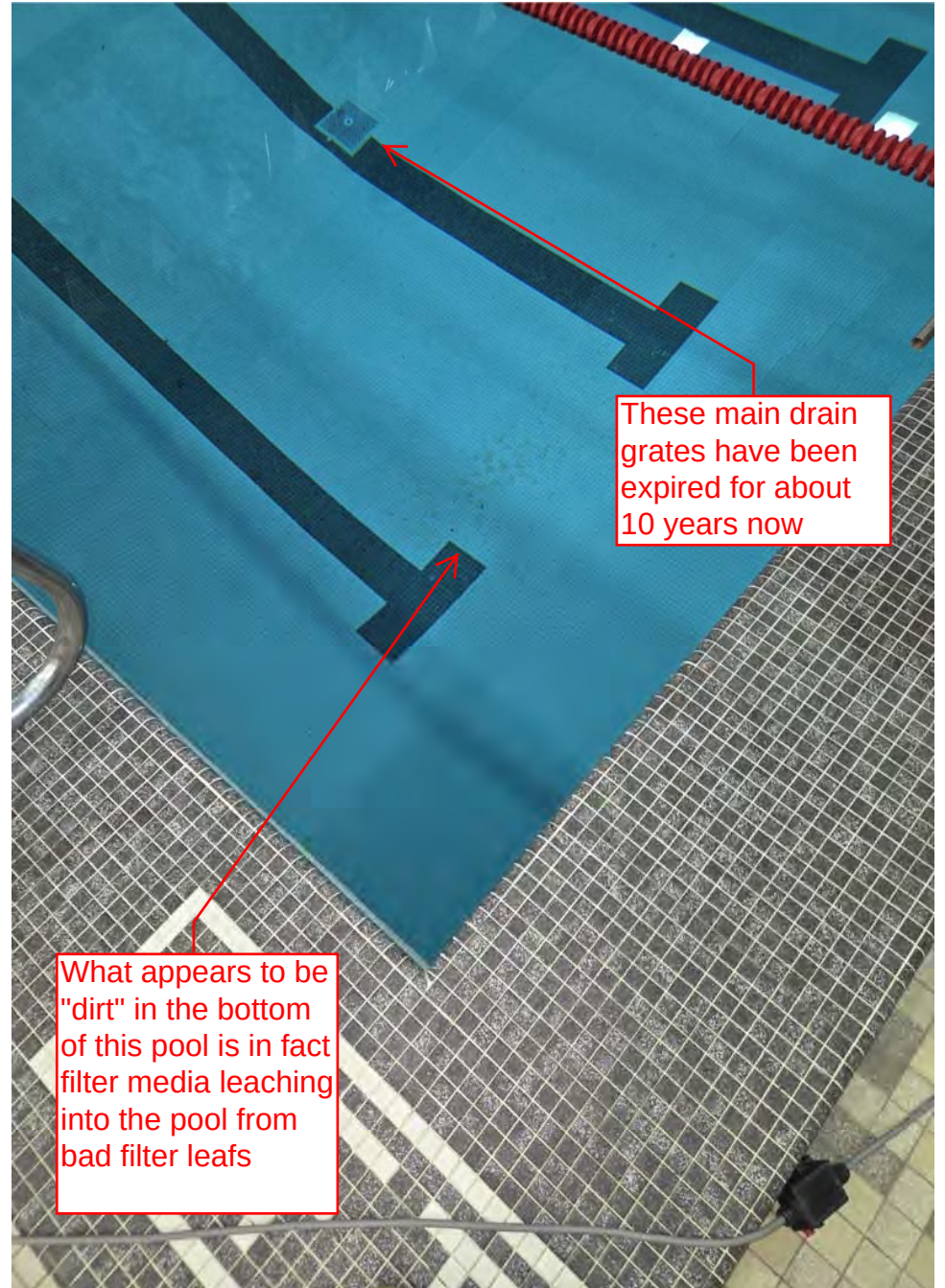


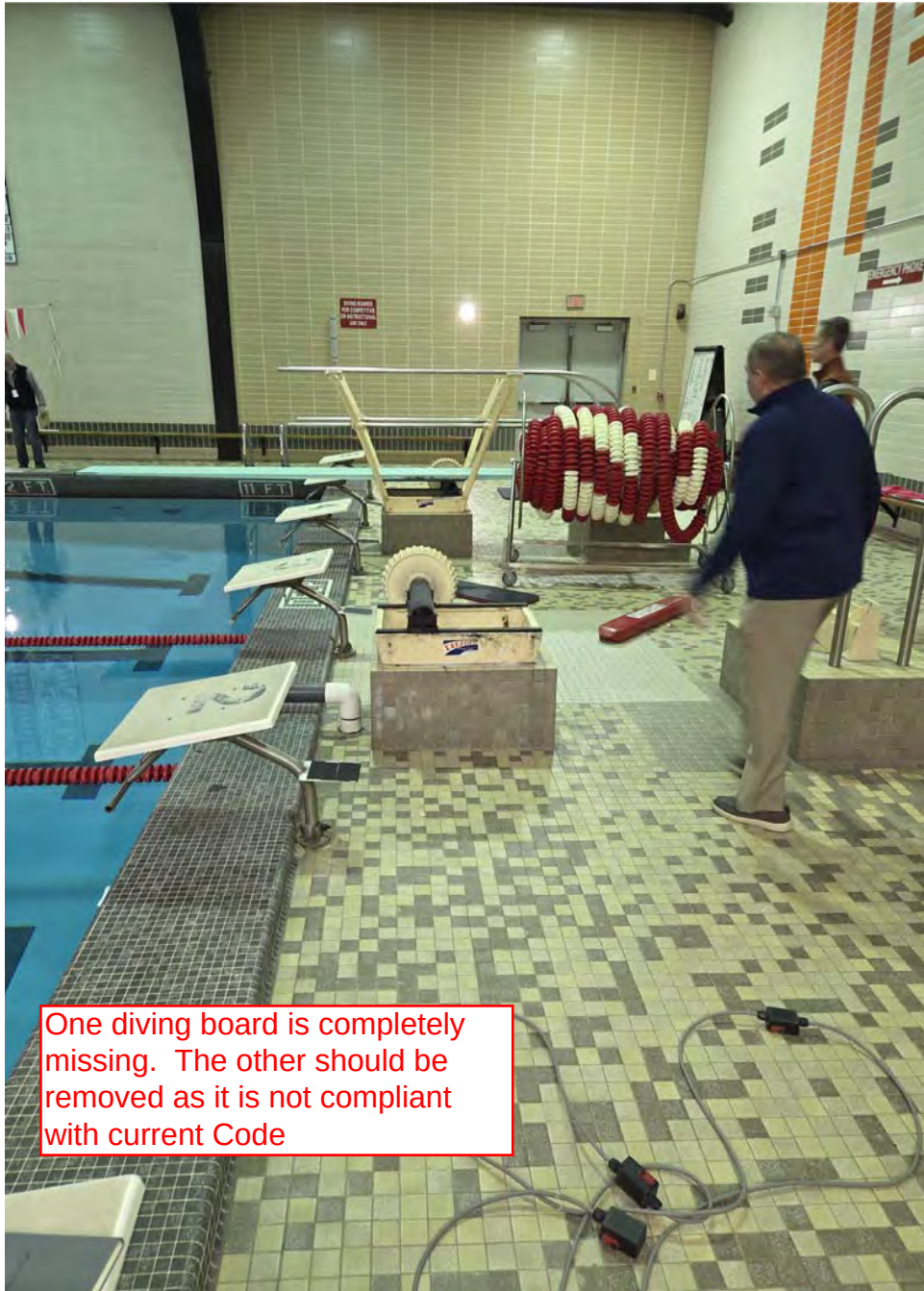
There may be over fifty wasted filter leafs in the basement. We need to get good working leafs in the filter in the short term if they are still even available



These main drain
grates have been
expired for about
10 years now

What appears to be
"dirt" in the bottom
of this pool is in fact
filter media leaching
into the pool from
bad filter leafs

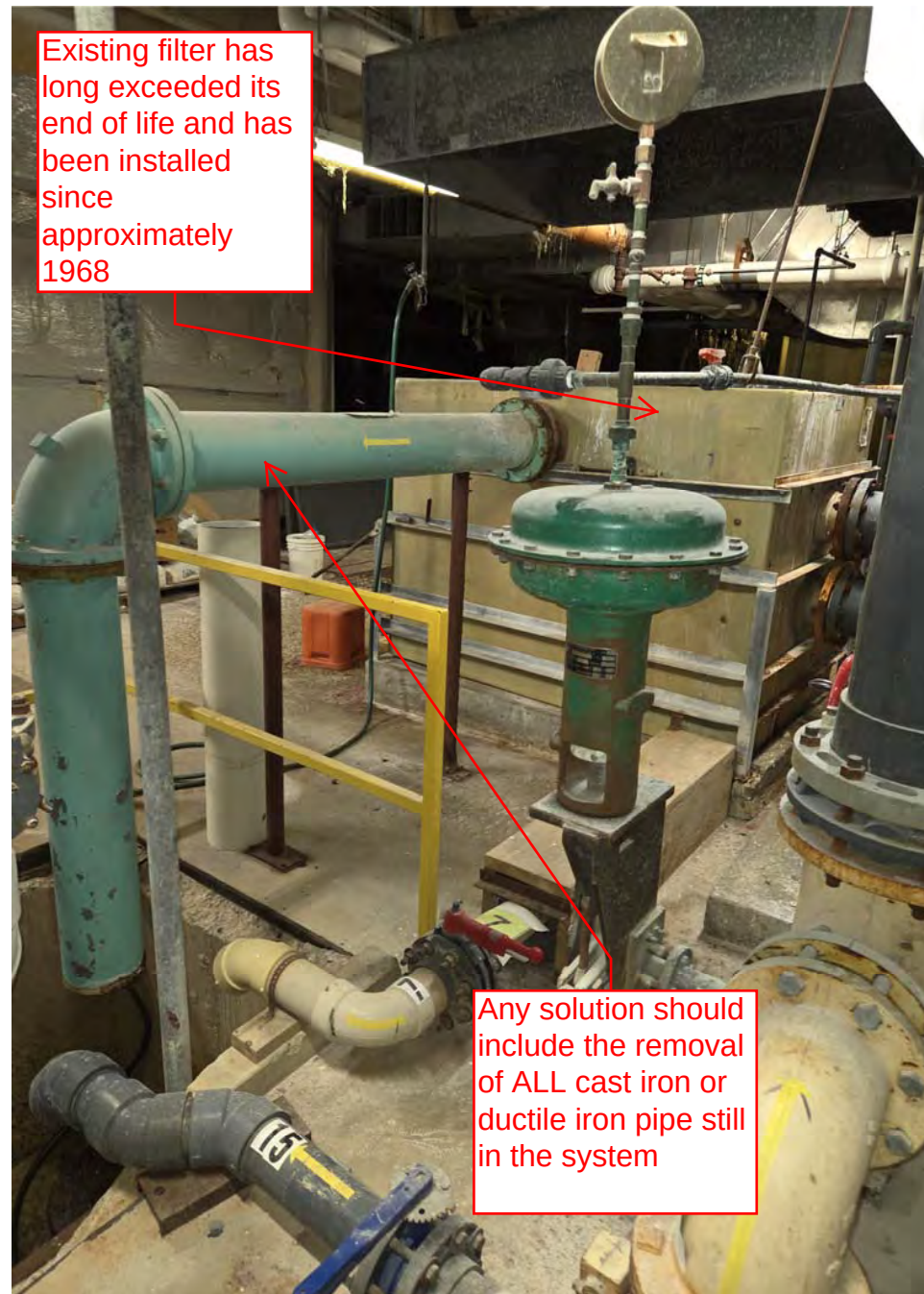
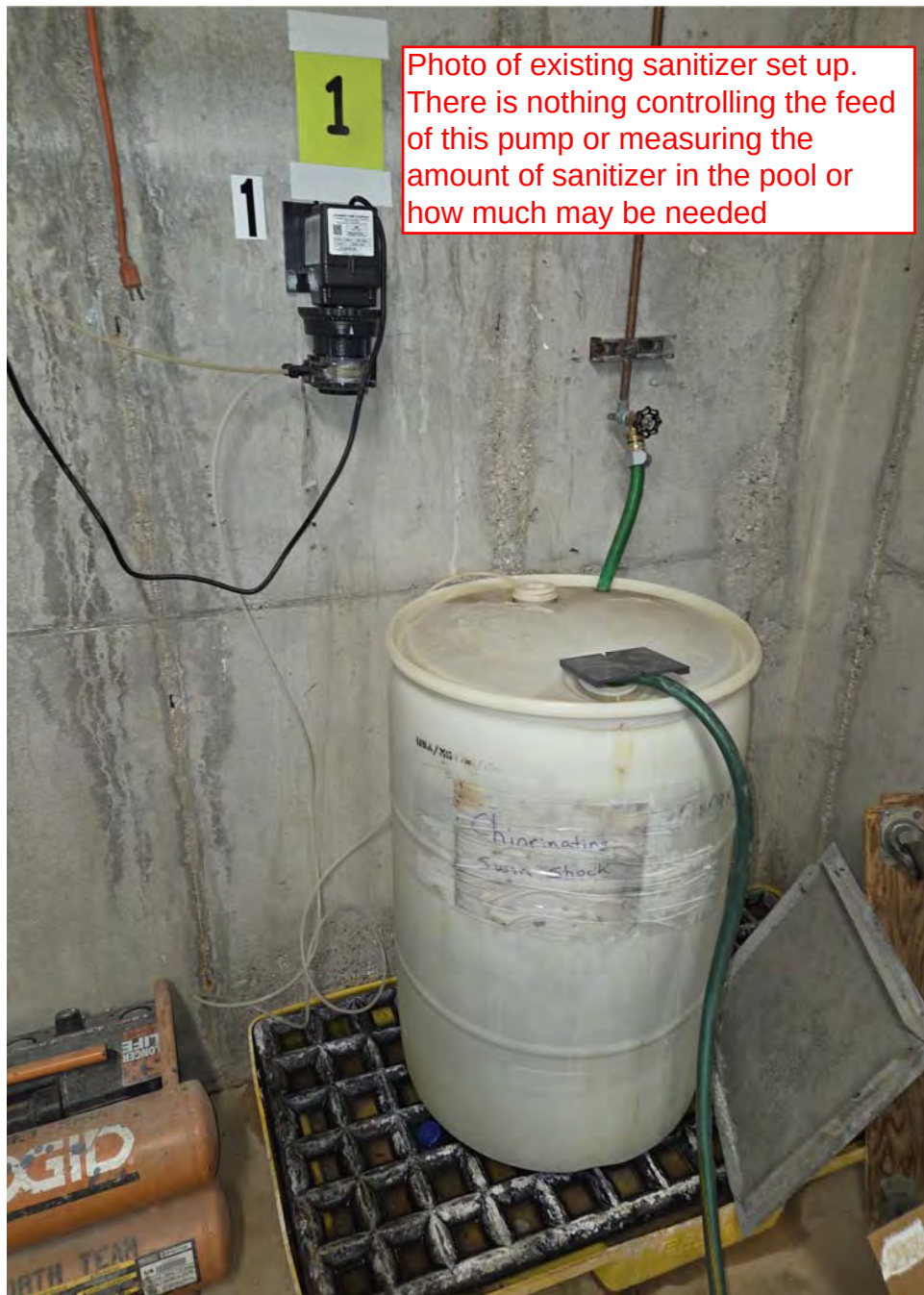




One diving board is completely missing. The other should be removed as it is not compliant with current Code

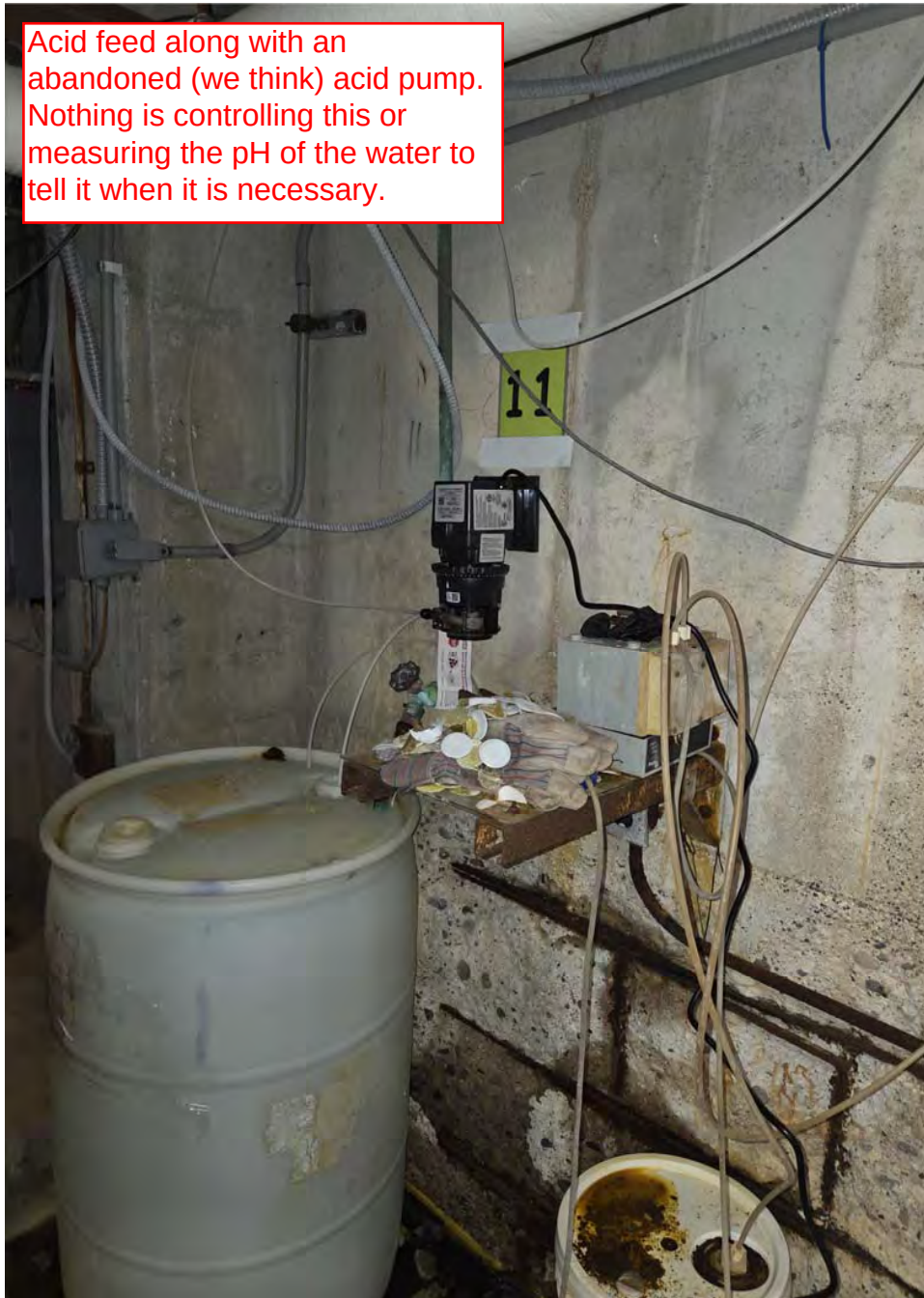


The distance from the end of the board to this break needs to be at least 16'-5" for the board to be compliant

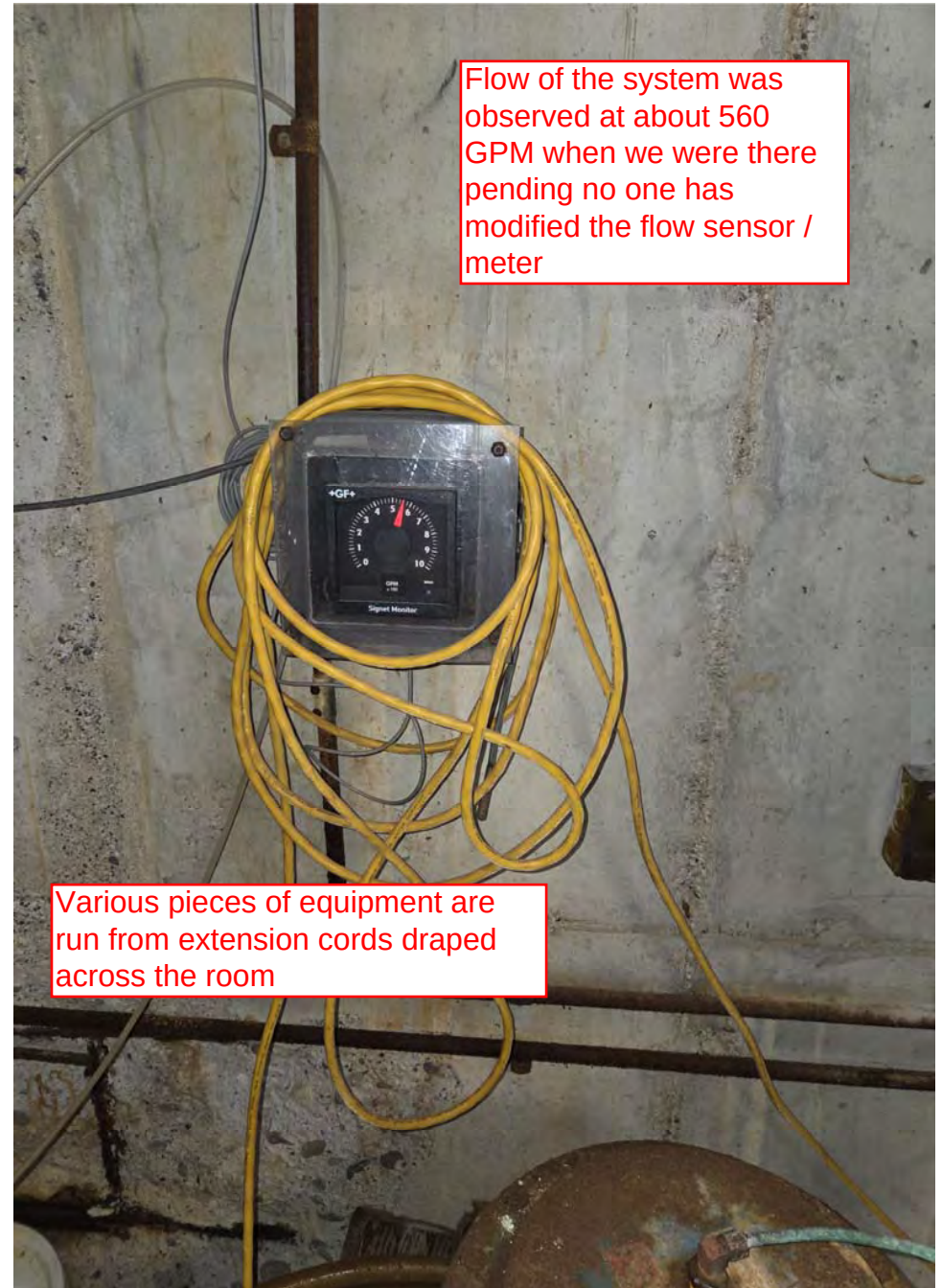




Acid feed along with an abandoned (we think) acid pump. Nothing is controlling this or measuring the pH of the water to tell it when it is necessary.

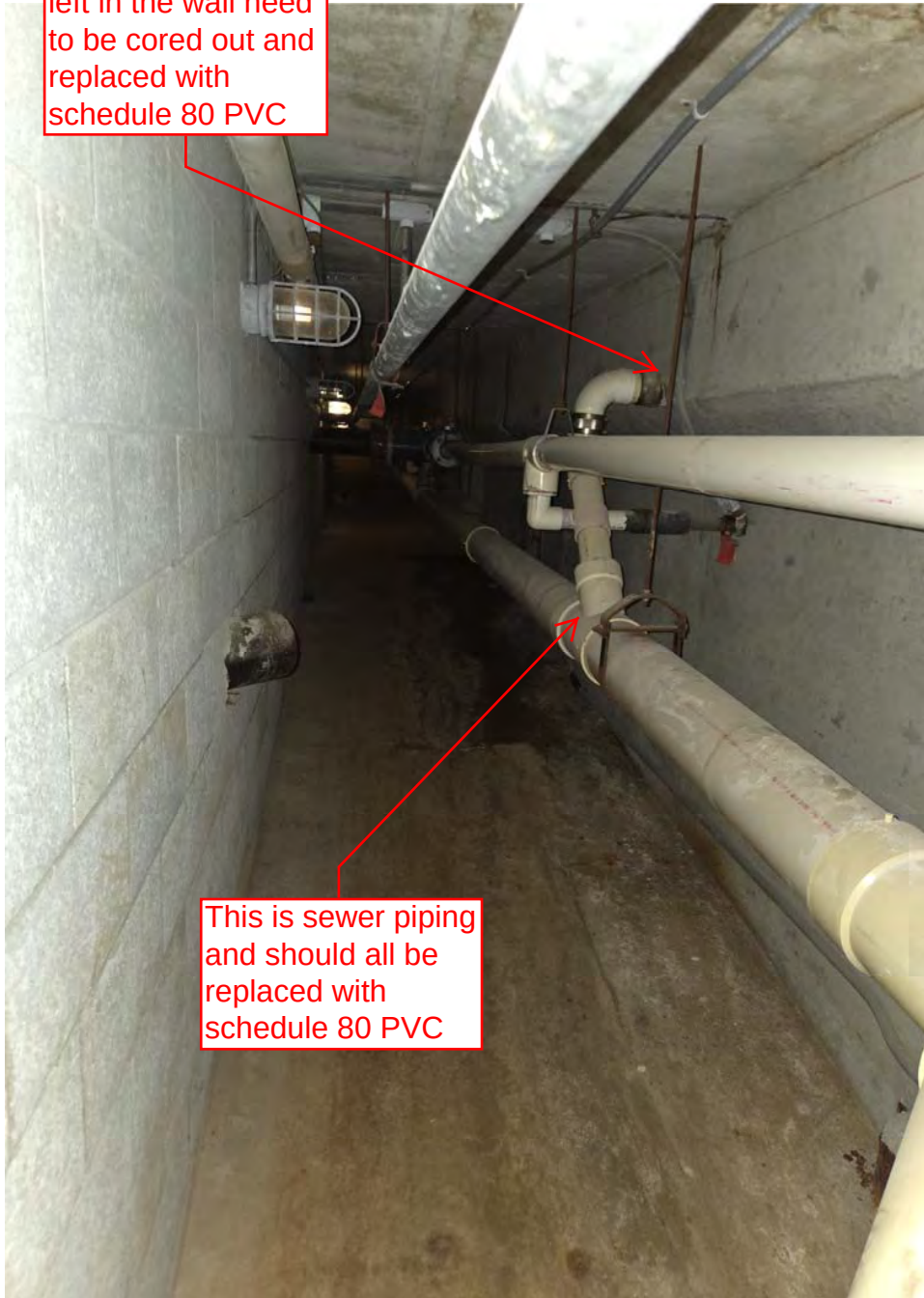


Flow of the system was observed at about 560 GPM when we were there pending no one has modified the flow sensor / meter



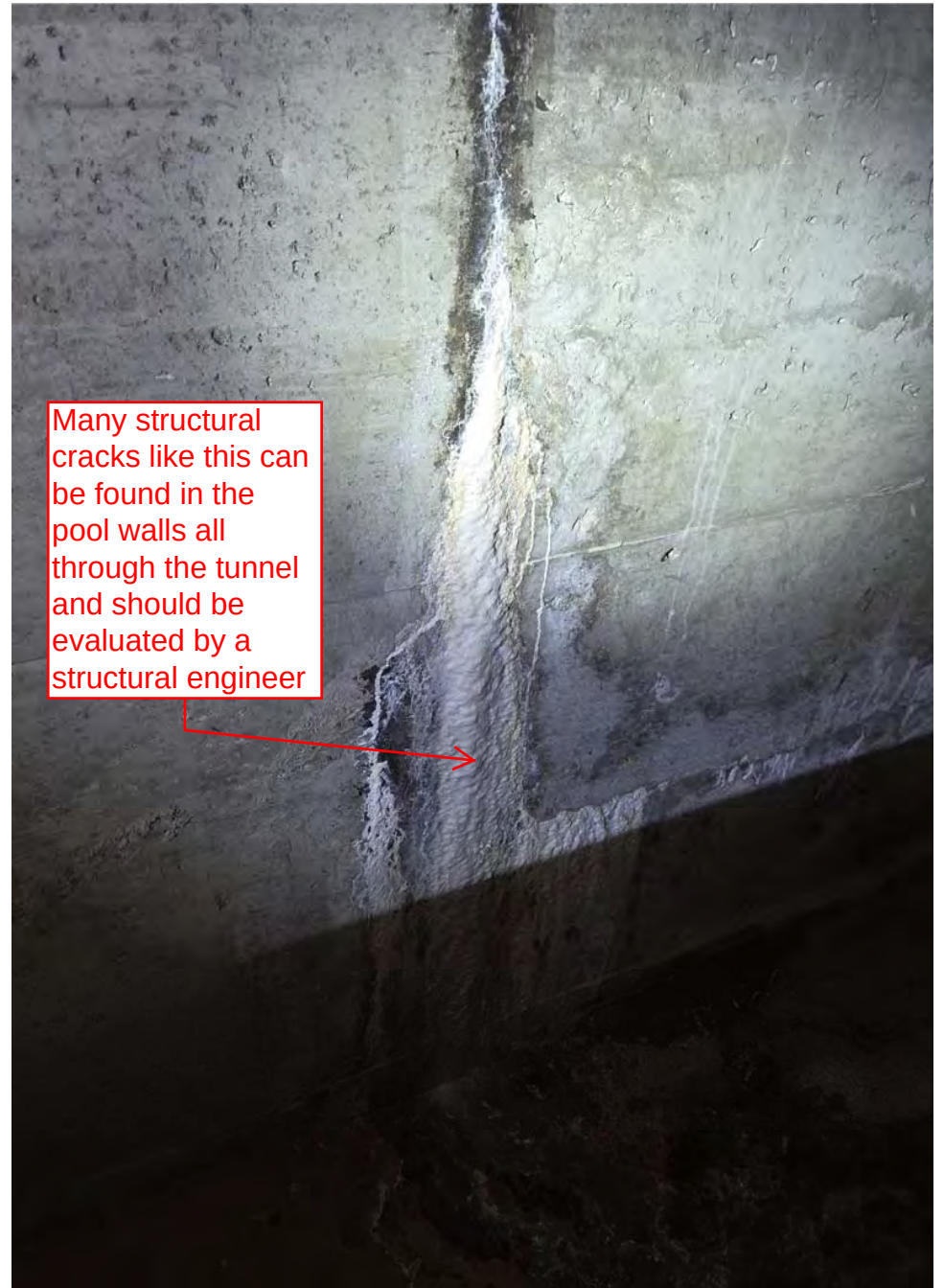
Various pieces of equipment are run from extension cords draped across the room

Cast iron stubs still left in the wall need to be cored out and replaced with schedule 80 PVC



This is sewer piping and should all be replaced with schedule 80 PVC

Many structural cracks like this can be found in the pool walls all through the tunnel and should be evaluated by a structural engineer





Another example of a structural crack



This heat exchanger does not appear to be that old. Recent work?

Defender® Cost Savings Analysis



PROJECT INFORMATION			
PROJECT:	UNION HIGH SCHOOL- GRPS	DATE:	March 10, 2025
LOCATION:	GARND RAPIDS, MI	PREPARED FOR:	SCOTT WEIR
		PREPARED BY:	NICK SHELTON

POOL SYSTEM DATA

POOL DESCRIPTION		I/O Flow (gpm)	
Pool-1	INDOOR HIGH SCHOOL POOL	I	486
Pool-2			
Pool-3			
Pool-4			
Pool-5			

POOL DESCRIPTION		I/O Flow (gpm)	
Pool-6			
Pool-7			
Pool-8			
Pool-9			
Pool-10			

OPERATING COST VARIABLES

VARIABLES	FORMULAS & DEFINITIONS		VALUES	UNIT
MECHANICAL SPACE VALUE	Cost per ft² to construct a room adequate to house filter equipment (indoor construction).		\$120.00	\$/ft²
INSTALLATION LABOR VARIANCE	Sand filters require an installation labor variance @ historical average cost of 15% of the filter.		15%	\$
MEDIA LOADING: SAND FILTER	Average cost to load media based on historical averages for time and labor.		\$4.00	\$/bag
MEDIA COST: SAND FILTER	Based on average market rate for #20 Silica Sand and 1/8 X 1/4 Pea Gravel. Weights drawn from corresponding filter data.		\$17.80	\$/100lb
MEDIA COST: DEFENDER FILTER	Based on average market rate for Perlite Filter Media. Annual Defender Filter Media Cost = Media weight in filter (from table) x Defender backwash frequency.		\$0.94	\$/lb
BACKWASH VOL: SAND (BVS)	BVS = Backwash Rate x Total Filter Surface Area x Backwash Duration x Backwash Frequency.	Rate	20	gpm/ft²
		Surface Area	From Table	ft²
		Duration	6	minutes
		Frequency	52	#/season
BACKWASH VOL: DEFENDER (BVD)	BVD = Total Tank Volume x 2 x Media Replacement Frequency.	Tank Volume	From Table	gal
		Frequency	12	#/season
POTABLE WATER USAGE	Potable Water Usage fee includes a "Volume Charge" only and does not include the monthly meter charge. See "Backwash Volume" for water usage volume calculation.		\$3.50	\$/1000 gal
SANITARY SEWER FEE	Sanitary Sewer Fee = (Monthly Capacity Charge + Monthly Usage Charge) x annual sewerage volume.		\$3.50	\$/1000 gal
MAKE-UP WATER: CHEMICALS (MWC)	MWC Cost = Water savings in gallons x Average market \$cost/gal for pool chemicals.		\$3.00	\$/1000 gal
MAKE-UP WATER: HEAT (MWH)	Represents cost to reheat backwash makeup water by average temperature delta°. MWH Cost = Backwash Vol. x 8.33#/gal x Conversion Factor x Delta° x \$/therm.	Temp Delta	30°	degrees F
		Cost/Therm	\$0.90	\$/therm
OPERATING DAYS PER SEASON	Average number of days of operation each year across all pools included in the project.		365	days
ELECTRICAL COSTS	Pump Motor HP x .746 Rating Conversion x \$Cost/Kw x 24 hrs x Average Operating Days.	Kw	\$0.12	\$/Kw
ANNUAL INCREASE	Average cumulative increase in labor, materials and maintenance costs (applies to both Sand and Defender filter installations).		7%	%
COMPRESSORS	Number of Air Compressor units needed for this project.		1	#
DEFENDER TOOL KITS	Number of Defender Tool Kits needed for this project.		1	#



PROJECT NAME: UNION HIGH SCHOOL- GRPS

LOCATION: GARND RAPIDS, MI

PREPARED FOR: SCOTT WEIR

DATE: March 10, 2025



PREPARED BY: NICK SHELTON

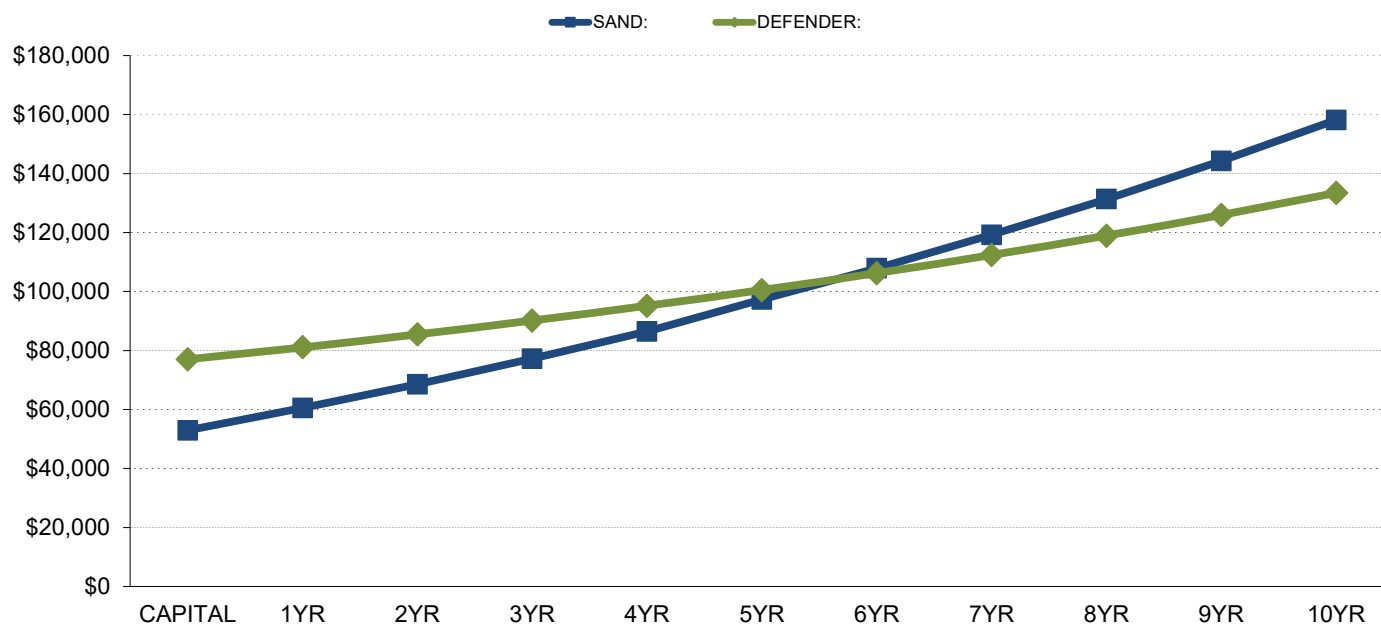
PHONE: 800-832-8002

FAX: 401-821-7129

WEBSITE: www.DefenderFilter.com



10 YEAR LIFE-CYCLE COST INCLUDING CAPITAL INVESTMENT



Water Savings

89%
Annual Water Savings

2,253,168
Gallons Saved Over 10 Years

Adj. ROI Payback

71 Months
@ 365 Operating Days /Yr

Electrical Savings

21%
Annual Electrical Savings

127,654
kWh Saved Over 10 Years

	CAPITAL	1YR	2YR	3YR	4YR	5YR	6YR	7YR	8YR	9YR	10YR
DEFENDER:	\$77,027	\$81,109	\$85,476	\$90,149	\$95,150	\$100,500	\$106,225	\$112,351	\$118,905	\$125,919	\$133,423
SAND:	\$52,961	\$60,506	\$68,579	\$77,217	\$86,459	\$97,310	\$107,892	\$119,214	\$131,329	\$144,293	\$158,163

Defender 10 Year Savings Forecast:

\$24,740





DEFENDER COST SAVINGS ANALYSIS: SUMMARY

INITIAL CAPITAL EXPENSES

ITEM / DESCRIPTION	SAND FILTER COST	DEFENDER FILTER COST	COST VARIANCE
FILTER PURCHASE PRICE	\$52,000	\$77,000	(\$25,000)
MECHANICAL SPACE	\$0	\$0	\$0
INSTALLATION LABOR VARIANCE	\$0	\$0	\$0
FILTER MEDIA	\$961	\$27	\$934
TOTAL CAPITAL COSTS:	\$52,961	\$77,027	(\$24,066)

ANNUAL OPERATING EXPENSES

ITEM / DESCRIPTION	SAND FILTER COST	DEFENDER FILTER COST	COST VARIANCE
ELECTRICAL COSTS	\$4,312	\$3,388	\$924
POTABLE WATER FEE	\$891	\$102	\$789
MAKE-UP: CHEMICALS	\$764	\$88	\$676
MAKE-UP: HEAT	\$687	\$79	\$608
SANITARY SEWER FEE	\$891	\$102	\$789
PERLITE MEDIA	\$0	\$322	(\$322)
ANNUAL OPERATING COSTS:	\$7,545	\$4,082	\$3,463

FILTER 10 YEAR SAVINGS FORECAST

ITEM / DESCRIPTION	SAND FILTER COST	DEFENDER FILTER COST	COST VARIANCE
CAPITAL COST	\$52,961	\$77,027	(\$24,066)
ELECTRICAL COSTS*	\$59,572	\$46,806	\$12,765
POTABLE WATER FEE*	\$12,311	\$1,416	\$10,896
MAKE-UP: CHEMICALS*	\$10,553	\$1,213	\$9,339
MAKE-UP: HEAT*	\$9,494	\$1,092	\$8,402
SANITARY SEWER FEE*	\$12,311	\$1,416	\$10,896
PERLITE MEDIA*	\$0	\$4,453	(\$4,453)
SAND MEDIA REPLACEMENT**	\$18,000	\$0	\$18,000
MEDIA REPLACEMENT (LABOR)***	\$4,000	\$0	\$4,000
GRAND TOTAL SAVINGS:			\$45,779

RAW ROI PAYBACK PROJECTION	CAPITAL COST VARIANCE ÷	OPERATING COST VARIANCE =	PAYBACK PERIOD (MONTHS)
	-\$24,066	\$3,463	83

*COSTS INCLUDE ANNUAL INCREASE FOR LABOR, MATERIALS AND MAINTENANCE

**SAND MEDIA REPLACEMENT AT 5 & 10 YEAR INTERVALS - PRICE BASED ON PROJECTED FUTURE COST

***MEDIA REPLACEMENT LABOR BASED ON HISTORICAL AVERAGES FACTORED FOR ANNUAL COST INCREASES

PROJECT NAME: UNION HIGH SCHOOL- GRPS
LOCATION: GARND RAPIDS, MI
CONTACT NAME: SCOTT WEIR
PREPARED BY: NICK SHELTON
DATE: March 10, 2025



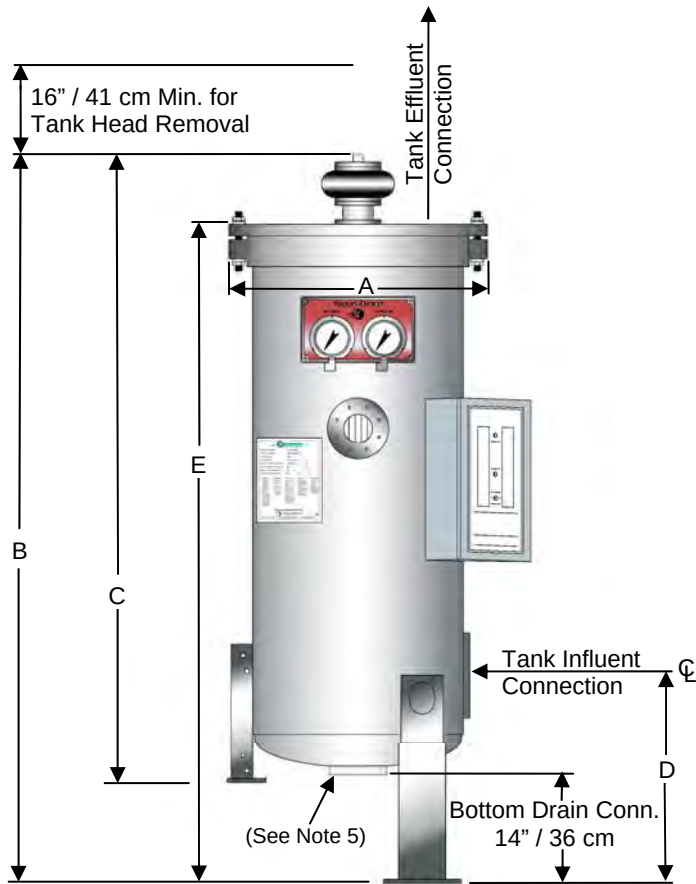


DEFENDER FILTER CAPITAL & OPERATING COSTS																					
POOL DATA				DEFENDER MEDIA FILTER DATA					CAPITAL COSTS				ANNUAL OPERATING COSTS * DEFENDER FILTER								
Pool	Description	Flow (gpm)	Qty	NB Model #	Filter Surface Area (sf)	Filtration Rate (gpm/sf)	Tank Volume (gal)	Total Media Wt (lb)	Equipment Purchase Price	MECHANICAL SPACE		Perlite Media Cost	FILTER BACKWASH					PERLITE		PUMP DATA	
										Footprint(sf)	Cost		Volume (gal) (NOTE 1)	Potable Water	Sewer Discharge	Make-up Water Chem	Make-up Water Heat	Total Filter Recoat (lb)	Total Perlite Cost (lb)	Brake HP Req'd @ 55'TDh	Electrical Cost w/VFD
	INDOOR HIGH SCHOOL POOL	486	1	SP-27-48-487	381.0	1.3	159	29	\$77,000	0	\$0	\$27	29,275	\$102	\$102	\$88	\$79	343	\$322	8.44	\$3,388
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	Compressors		1						\$0												
	Defender Tool Kits		1						\$0												
	TOTALS	486	1		381		159	29	\$77,000	0	\$0	\$27	29,275	\$102	\$102	\$88	\$79	343	\$322	8.44	\$3,388



Neptune-Benson
Since 1956

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FILTER DIMENSIONS (imperial)					
Model Number	A	B (Note 1)	C (Note 1)	D	E
	in	in	in	in	in
SP-18-48-176	24.69	82.3	82.3	17.8	73.8
SP-24-42-327	30.75	90	76.5	27.5	81
SP-27-48-487	33.25	95	81.5	27.5	86
SP-33-48-732	39.25	104	90.5	31.5	93.5
SP-41-48-1038	47.75	106	92.5	35.5	97.5
SP-49-48-1548	54.75	110	96.5	36	101.5
SP-55-48-2076	61.75	115	101.5	39	105.5

FILTER DIMENSIONS (metric)					
Model Number	A	B (Note 1)	C (Note 1)	D	E
	cm	cm	cm	cm	cm
SP-18-48-176	62.7	209	209	45	187
SP-24-42-327	78.5	229	194.3	70	206
SP-27-48-487	84.5	241.5	207	70	218.5
SP-33-48-732	100	264.2	230	80	237.5
SP-41-48-1038	121.5	269.2	235	90.5	248
SP-49-48-1548	139.5	279.4	245.1	91.5	258
SP-55-48-2076	157	292.1	258	99	268

- **Automatic System Includes:** Automatic Filter Controller
- **Semi-Automatic System Includes:** Bump Button Box

FILTER CAPACITIES & SPECIFICATIONS								
Model Number	Filter Area		Maximum NSF Flow Rate		Recommended Flow Rate Range (Note 2)		Tank Volume	
	ft²	m²	2.0 gpm/ ft²	4.89 m³/hr	.5 - 1.4 gpm/ ft²	1.22 - 3.42 m³/hr/m²	gallons	m³
SP-18-48-176	137	12.73	274	62.3	69 - 192	15.53 - 43.54	66	.25
SP-24-42-327	223	20.72	446	101.32	112 - 312	25.28 - 70.86	128	.484
SP-27-48-487	381	35.60	762	174.08	191 - 533	43.43 - 121.75	159	.602
SP-33-48-732	572	53.14	1144	259.85	286 - 801	64.83 - 181.73	250	.946
SP-41-48-1038	812	75.44	1624	368.90	406 - 1137	92.04 - 258.00	441	1.669
SP-49-48-1548	1211	112.50	2422	550.13	606 - 1695	137.25 - 384.75	615	2.328
SP-55-48-2076	1625	150.97	3250	737.48	813 - 2275	141.48 - 516.32	841	3.184

FILTER CONNECTION SIZES & SPECIFICATIONS																
Model Number	Tank Conn. Inches (Note 3)	Tank Conn. mm (Note 3)	Drain Conn. Inches (Note 5)	Drain Conn. mm (Note 5)	Tank Footprint		Perlite (Note 4)		Upper Head Weight		Head & Tubes Weight		Tank Ship Weight		Operating Weight	
	imperial	DN	imperial	DN	ft²	m²	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
SP-18-48-176	3	80	2	50	11	.37	12	5.44	150	60	237	108	750	340	1311	595
SP-24-42-327	4	100	3	80	24	2.23	18	8.16	310	141	584	265	1450	658	2515	1141
SP-27-48-487	6	150	3	80	27	2.5	30	13.61	350	159	660	299	1650	748	2970	1347
SP-33-48-732	8	200	3	80	33	3.06	45	20.41	475	216	790	358	1800	817	3880	1760
SP-41-48-1038	8	200	4	100	44	4.09	64	29.03	750	340	1265	574	2350	1066	6019	2730
SP-49-48-1548	10	250	4	100	58	5.4	96	43.54	1085	492	1920	871	3320	1506	8437	3827
SP-55-48-2076	12	300	4	100	72	6.7	128	58.06	1385	628	2300	1043	3850	1746	10847	4920

Note 1: "B" dimension is installed height. "C" dimension indicates overall height with tank legs in the shipping position.

Note 2: Recommended flow rate range is suggested to optimize filtration performance.

Note 3: Tank connection sizes based on velocity not to exceed 10 fps or 3.048 mps.

Note 4: The required perlite media volume is based on a 1/8" (.3175 cm) cake which is the recommended thickness for optimum performance. This procedure will maximize filtration without adversely affecting the design pressure drop through the filter.

Note 5: SP-18 features a side drain. Centerline location is 10" (25cm) off of the floor.

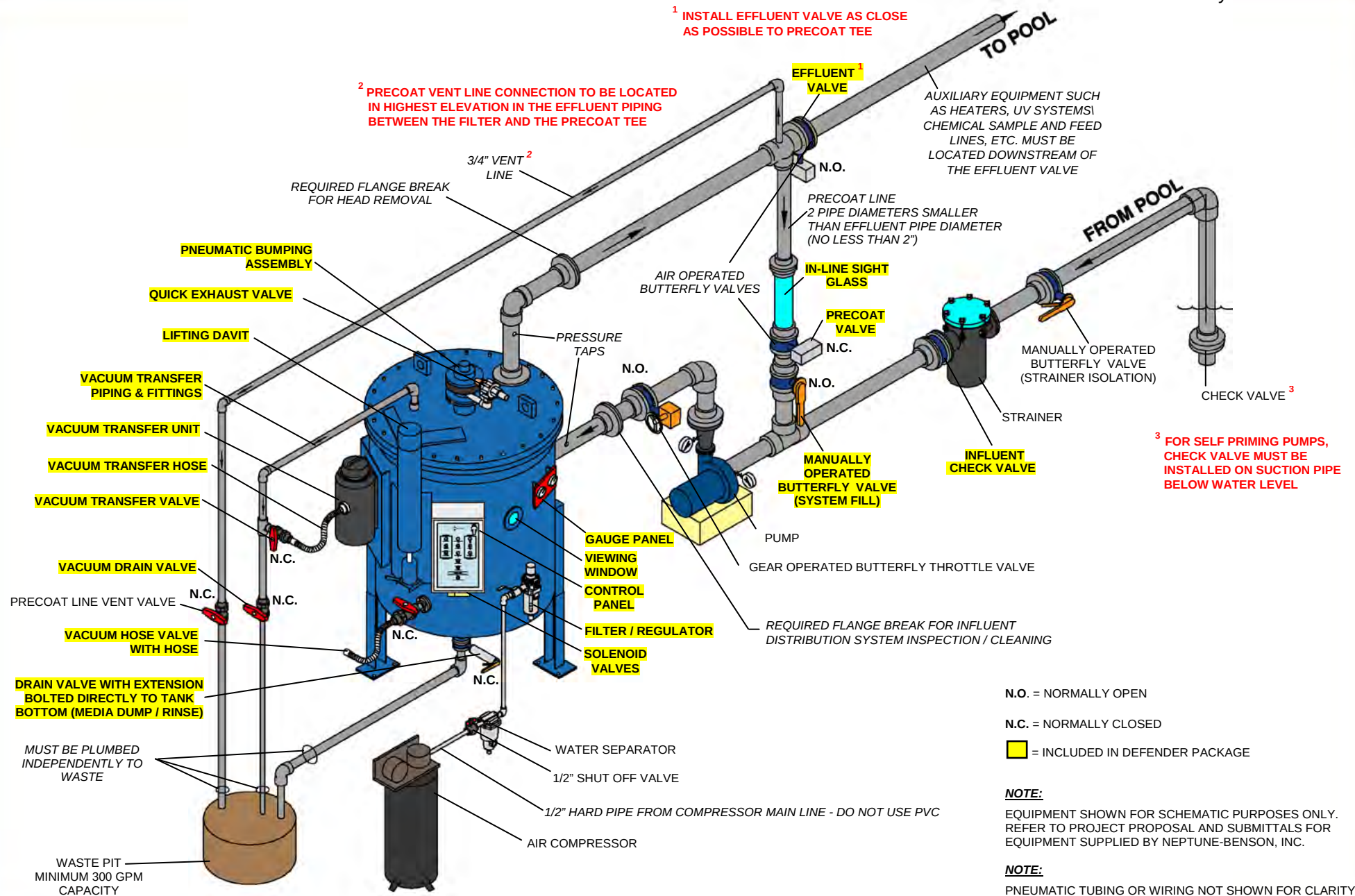
Note 6: SP-18 does not have collapsible legs – see website for illustration.



Neptune-Benson™

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R-11/28/11



Defender[®]

by Neptune Benson[®]

Regenerative Media Filters



Neptune  Benson[®]
Since 1956

Regenerative Media Filters

The Evolution of Water Filtration

Fresh, clean water is a common necessity in every corner of the world. We use it for drinking, bathing, food preparation, manufacturing, recreation and much, much more. With the need for clean water comes the need for water filtration. Water filtration has long been done using sand filtration. It is an easy and relatively inexpensive method for filtering water and has been used for thousands of years.

Pool Filtration

Approximately 60 years ago, swimming pool filters were composed of alternating layers of sand and gravel. In order to provide a significant filter area, these filters were extremely large. The filters would be backwashed every one to two weeks, disposing a significant volume of water to the municipal waste line. While these filters of yesteryear were effective, they became impractical as innovation led to more compact and efficient designs.

High-Rate Sand Filters

Today, the sand and gravel filters have been replaced with high-rate sand filters. The modernized version uses a single layer of fine sand and requires about 15% of the space required by the original sand and gravel filters. Although the high-rate sand filters are more compact and cost effective, they waste around 40% more water because of the need to be backwashed more often. In addition, the previous sand and gravel filters were more efficient at trapping smaller particles because the pressure in the high-rate sand filter forces smaller particles through the sand and back into the pool.

Diatomite Filters

Later, Diatomite filters (D.E.) were introduced and offered significantly improved performance relative to traditional sand filtration. The D.E. filters replaced the permanent sand media with diatomaceous earth and it was applied to internal filter elements at the beginning of every cycle and removed with the backwash water at the end of the cycle. The D.E. filters posed operational drawbacks associated with handling and disposal of the media, pushing for a safer and more environmentally friendly product.

Regenerative Media Filters

Regenerative Media Filters (RMF's) are a more efficient alternative to sand or D.E. filtration. RMF's such as the Neptune Benson's Defender® use up to 90% less water, take up a quarter of the space, and use less energy than traditional sand filters. Regenerative media filters are also more effective at removing contaminants. The Defender is able to remove particles as small as 1 micron from water while traditional sand

filters generally only remove particles in the 20 micron range.

Neptune Benson developed the Defender Regenerative Media Filter to provide a safe, non-hazardous filter which uses perlite media for the clearest, cleanest and safest water. Our automated system offers worry free operation and significant water savings. We invite you to explore all of the benefits of the Defender.

Defender®
by Neptune Benson®



Defender Technology Benefits

Up to 90% Water and Waste Savings



The Defender significantly eliminates the amount of backwash water associated with sand filter operation. Instead of backwashing, the Defender is programmed to automatically “bump” to regenerate the fine-grade perlite media for a fresh start. Eventually the filter will become saturated with trapped dirt and will require a quick and easy media discharge and replacement. Depending on bather load, the life cycle of the media averages around every four weeks.

Backwash Water Consumption				
Sand vs. Defender	Filter Area (sq ft)	Filter Rate (gpm/sq ft)	Backwash Volume (gal)	Annual Volume (gal)
Sand Filter (4) 4884SHFFG-6	126.8	11.8	9510 gal 3x / week	1,483,560 gal
Defender (1) SP-49-48-1548	1211	1.2	1230 gal 1x / 4 weeks	14,760 gal
Annual Water & Waste Savings: 1,468,800 gallons or approximately \$10,282.00* *US average water/sewer costs \$7.00 per 1000 gal				

75% Space & Construction Savings



The Defender takes up 1/4 to 1/6 of the space required by an equivalently sized sand system. This saves both space and construction costs. See the multiple benefits below.

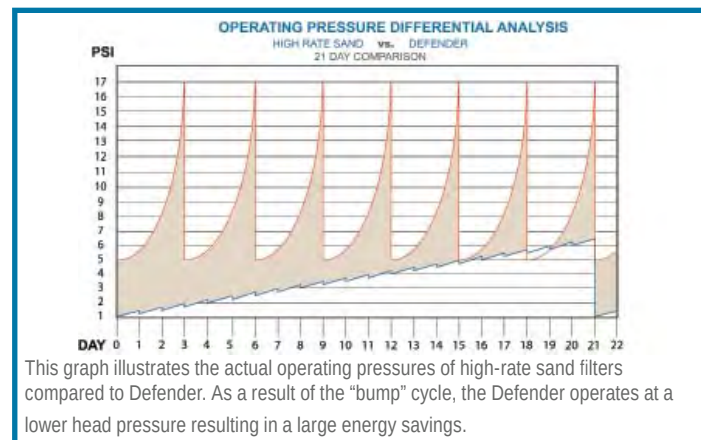
- No backwash holding tank
- Smaller waste line to sewer
- Local backwash to waste flow rate restrictions
- Operating weight may be as little as 10% of a similar sand filter
- Smaller access doors needed to plant



50% Energy Savings



Energy savings are derived in several ways. First, Defender filters operate at lower head pressures throughout the filter cycle saving power demand. Second, the elimination of backwash waste associated with sand filtration provides significant wastewater treatment savings. Consider the cost of chemically treating 1.4 million gallons and the BTU's required to heat this volume from 50°F (10°C) to 80°F (27°C).

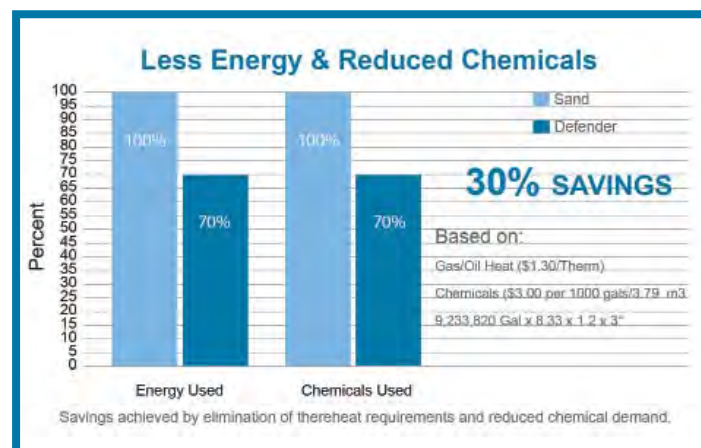


30% Less Fuel & Chemicals



The Defender eliminates the tremendous amount of backwash water associated with sand filter operation. Instead of backwashing, the Defender is programmed to automatically “bump” to regenerate the fine-grade perlite media and start fresh. Eventually the filter will become saturated with trapped dirt and will require a media discharge and replacement.

The following chart illustrates the Backwash Water Consumption of a typical indoor waterpark attraction with a 2000 GPM (454 m³/ hr) recirculation rate. The annual water savings in excess of 2.2 million gallons (8328 m³) is complemented by associated costs related to sewer expenses, chemicals, heating, power and labor.



Defender Technology Benefits

Removes particles down to 1 micron



The Defender achieves the highest quality of water by removing particles down to 1 micron. This is 20 to 30 times finer than sand.

The multiple rewards listed below:

- Extension to the life of the filter
- Unsurpassed water quality
- Improved UV disinfection performance
- Up to 30% chemical consumption savings
- Controls turbidity to levels better than those required for drinking water.

ROI Savings Analysis



The combination of water, fuel and chemical savings with the Defender can translate into significant savings over time. You will be amazed at the payback and affordability of this system. With Neptune Benson's 50+ year track record of delivering exceptional value, you will enjoy the peace of mind that can only come from partnering with an industry leader. Some facilities have realized a return on investment in less than one year.

See the chart to the right for a breakdown of potential savings.

How Big is a Micron?

One Inch or 25.44 mm
25,400 microns

Paper Clip Wire
about 1,000 microns



Human Hair
about 50-100 microns



Pollen Grains
about 30-50 microns



Red Blood Cells
about 5-10 microns



Sample Savings Analysis

Potable Water & Discharge Impact	Sand	Defender®
Backwash Volume (Gal, US)	1,483,560	163,116
Potable Water (Make-up) Fees (USD)	\$5,192.00	\$571.00
Discharge Fees (USD)	\$5,192.00	\$571.00
Energy & Fuel Impact		
Pump Power Consumption (kW)	216,569	170,170
Pump Power Cost (USD)	\$13,307.55	\$10,455.94
Heating Requirements (Therms)	4,449	489
Heating Costs (USD)	\$5,784.00	\$636.00
Water Treatment Chemical Impact		
Chemical Costs	\$4,451.00	\$489.00





Neptune Benson's Defender® Regenerative Media Filter is simply the most efficient filtration system available today. It offers unprecedented water, energy and space savings and is capable of meeting the needs of nearly any water filtration application.

Large installation or small, there's a Defender filter that's right for you. Durability, economy and simplicity make the Defender the choice of premier design professionals the world over.

Follow the LEEDer

Neptune Benson's commitment to LEED® principles predates the creation of this formalized rating system. Improving the health and safety of aquatic environments has always been at the heart of what we do. Defender has helped numerous projects achieve LEED certification by routinely providing the following category points:

Energy & Atmosphere



Meets Prerequisite 2 - Minimum Energy Performance
Earns Credit 1 - Optimize Energy Performance

Innovation & Design



Earns Credit 1 - Reduction in Water Usage

What is the LEED System

Leadership in Energy & Environmental Design

Developed by the US Green Building Council (USGBC) in 2000, the LEED System has become the National Standard certifying design, construction & operations of green buildings. Projects (not products) are evaluated in five (5) areas:

- Sustainable Sites
- Water Efficiency
- Energy & Atmosphere
- Materials & Resources
- Indoor Environmental Quality

* Extra credit may be earned for Innovation & Design



Designed with Performance in Mind

Tank Construction

All vessels are conservatively engineered and manufactured with Flexsol 3000™ interior lining and include a 10 year fully rated warranty. The lining protects all wetted surfaces against corrosion to maximize the life expectancy of the vessel.

Vacuum Transfer

At the push of a button, a self-contained, integrated pump quickly introduces dry media into the Defender filter. This feature eliminates the mess and additional equipment required by wet, slurry designs.

Internal Hydraulics

Our under-drain manifold is engineered to achieve ideal distribution of influent flow. The generous open area serves to minimize turbulence and ensure superior “Flex Tube” coverage.

Lifting Davit

At some point it may be necessary to access the interior of the vessel. Our unique tank-mounted davit permits easy access without remote lifting devices. The davit reduces the overall height requirement and saves valuable floor space.

Filter Elements

Our “Flex Tubes” are constructed of T304L stainless steel frames (optional T316L) with permanent polyester woven coverings. Not one has ever had to be replaced as result of wear. Other systems designed with rigid plastic frames, o-rings and socks require costly replacement frequent maintenance.

The “Bump”

It’s all about the “Bump” - The Defender filter is programmed to automatically “bump” on a daily basis to regenerate the media coating of the “Flex Tubes”. This incredible benefit maximized system performance and reduces water consumption.

How it Works

As the bump tire deflates (A), the tube sheet lowers to loosen the media and trapped debris. The re-inflation of the bump tire (B) raises the tube sheet and forces water into the “Flex Tubes”, gently expanding them to fully release all material. This bump cycle pulses ten times to ensure the entire cleaning process.

At the completion of the bump cycle, the Defender will automatically pre-coat the “Flex Tubes” and re-commence the filter cycle. The “Bump” is a vital function in order to achieve superior filtration and to make the most out of every filter cycle.



Now Get Even More



Introducing the new RMF System Controller

Easy to Use

Get the most out of the Defender® with the RMF System Controller. The RMF System Controller displays data through a 7" high resolution LCD and offers simple push button operation paired with on screen menus to make operation quick and easy. It also provides animated graphics with step-by step instructions on operating procedures.

Remote Monitoring and Control

The RMF System Controller provides remote monitoring, e-mail notifications of condition changes, and remote control of the system operations. Check performance remotely through a web browser or phone.

Data Logging and Exporting

The RMF System Controller continually logs data providing detailed information on water pressure stats, bump schedule, purge and more. Data can be viewed remotely and is exportable to .CSV formats for creating reports and working with the data.

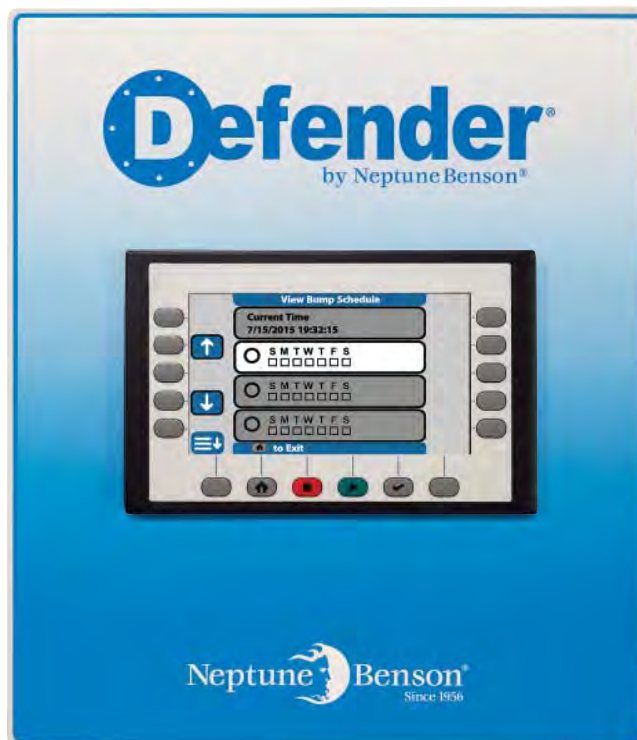
Improve Efficiency

The data provided through the RMF System Controller can be used to analyze trends and modify operations to maximize efficiency. Analyze and identify peak usage, then automate or schedule bumping to insure optimal operation. Data logs can also be used to help troubleshoot issues by identifying operating issues.



New Features & Benefits:

- 7" Hi-Res LCD w/ Tactile Feedback Membrane
 - Step by step animated graphics
- Advanced control of:
 - Bump & precoat cycle
 - Pneumatic valves & recirculation pump
 - Vacuum transfer system
 - Heater cool down delay
 - Data logging & maintenance reminders
- Remote monitoring/operation
 - Through a browser or smart phone
- Modbus communication for PLC connectivity
- Nema 4x/IP66 approved
- greendrive™ VFD & ETS-UV connectivity
- Automated Drain & Purge



Defender Certifications & Credits



NSF
National Sanitation Foundation

An independent, accredited organization that tests, audits and certifies products and systems, as well as provides education and risk management.

Location Tested/Certified: USA

Certified for: NSF/ANSI 50: Pool, Spa and Recreational Water Products and NSF/ANSI 61: Drinking Water System Components.
nsf.org



UL
Underwriters Laboratories

UL is global independent safety science company offering expertise across seven key strategic businesses; Product Safety, Environment, Information and Insights, Life & Health, Verification Services, Enterprise Services, and Workplace Health & Safety. Our breadth, established objectivity and proven history mean we are a symbol of trust and enable us to help provide peace of mind to all.

Location Tested/Certified: USA

Defender Tested/Certified for: RMF Panel USA
ul.com/global/eng/pages/



Smart WaterMark Approved

Australia's water conservation label, identifying & promoting products & services which help save water. An independent not-for-profit program supported by government & industry, and sister scheme to the WELS water efficiency rating program.

Location Tested/Certified: Australia

Defender Tested/Certified for: Validate Water Savings On An Application
www.smartwatermark.info/home/default.asp



CE Approved

The European Commission describes the CE mark as a "passport" that allows manufacturers to circulate industrial products freely within the internal market of the EU. The CE mark certifies that products have met EU health, safety and environmental requirements for workplace safety. All manufacturers in the EU and abroad must affix the CE mark.

Location Tested/Certified: USA

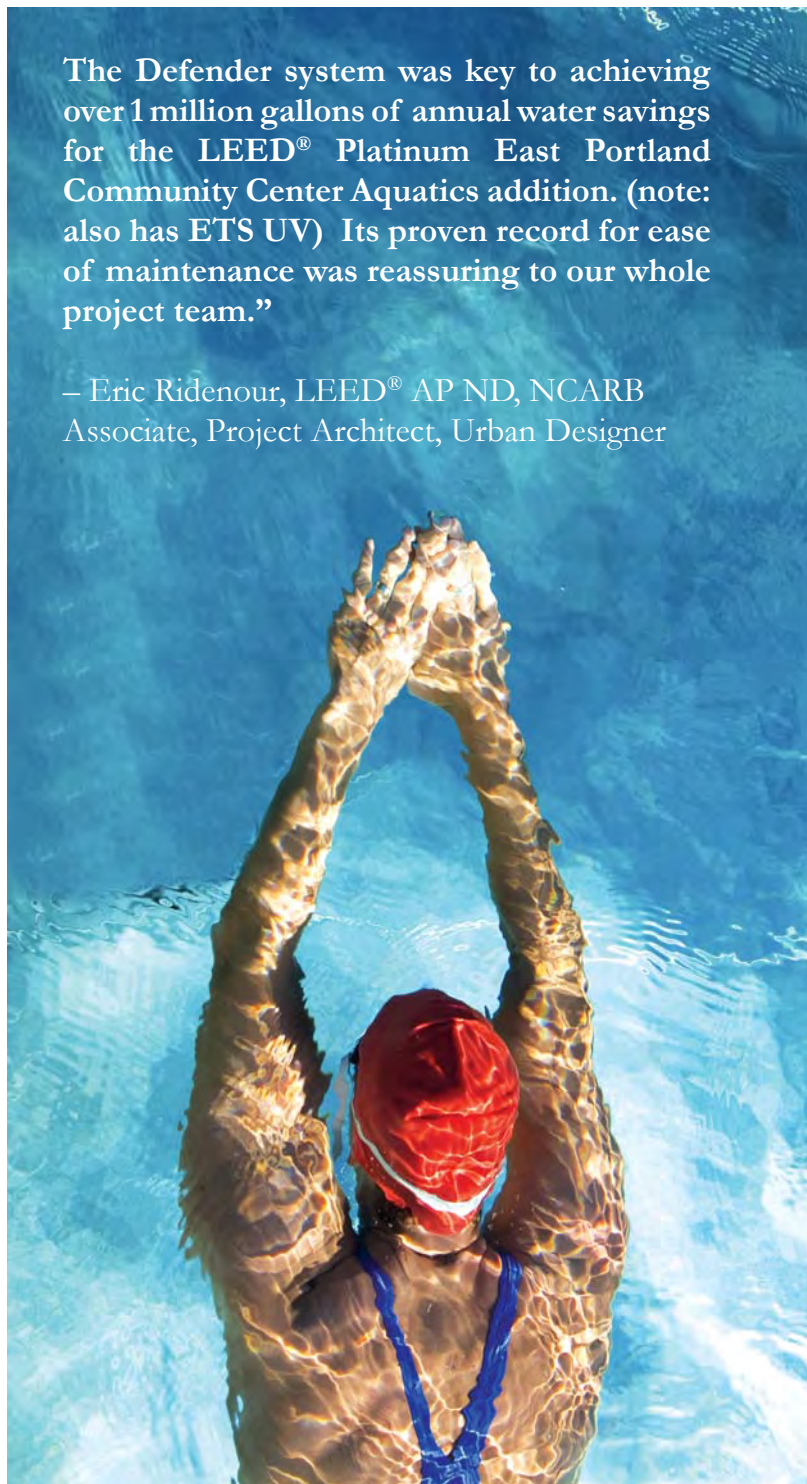
Defender Tested/Certified for: Meets Euro Health, Safety & Environmental requirements
ec.europa.eu/enterprise/policies/single-market-goods/cemarking/index_en.htm

Product Validation

In addition to our certifications and credits, Neptune Benson has a history of validating our technology. The value we provide is in the ongoing relationship – through the life of the filters and UV systems, we examine how the systems are being used and study the wear on the various components. Field Service Technician feedback is reviewed, and each product is continuously improved throughout the active product life. Neptune Benson's commitment to research and development has been the backbone of the business for over 55 years.

The Defender system was key to achieving over 1 million gallons of annual water savings for the LEED® Platinum East Portland Community Center Aquatics addition. (note: also has ETS UV) Its proven record for ease of maintenance was reassuring to our whole project team."

– Eric Ridenour, LEED® AP ND, NCARB Associate, Project Architect, Urban Designer



System Sizing Options

Large installation or small, there's a Defender® filter for you

Neptune Benson's Defender® and Defender Assero® Regenerative Media Filters are available in a variety of sizes and configurations designed to suit nearly any application.



Model Number	Filter Area		Recommended Flow Rate Range		Tank Volume	
	ft²	m²	.5 - 1.4 gpm/ft²	1.22 - 3.42 m³/hr/m²	gal	m³
SP-18-48-176	137	12.73	69 - 192	15.53 - 43.54	66	.25
SP-24-42-327	223	20.72	112 - 312	25.28 - 70.86	128	.484
SP-27-48-487	381	35.60	191 - 533	42.43 - 121.75	159	.602
SP-33-48-732	572	53.14	286 - 801	64.83 - 181.73	250	.946
SP-41-48-1038	812	75.44	406 - 1137	92.04 - 258.00	441	1.669
SP-49-48-1548	1211	112.50	606 - 1695	137.25 - 384.75	615	2.328
SP-55-48-2076	1625	150.97	813 - 2275	141.48 - 516.32	841	3.184

Note 1: Recommended flow rate range is suggested to optimize filtration performance. This filter is NSF listed for up to 2.0 gpm/sq.ft (4.89 m³/hr/m²) flow rate. Consult Neptune-Benson for applications higher than the recommended flow rate range.

Note 2: Tank connection sizes based on velocity not to exceed 10.0 fps or 3.0 mps.

Note 3: The required perlite media volume is based on a 1/8" (3 mm) thick cake which is recommended for optimal performance.



Model Number	Filter Area		Recommended Flow Rate Range		Tank Volume	
	ft²	m²	.5 - 1.4 gpm/ft²	1.2 - 3.9 m³/hr/m²	gal	m³
SP-29-36-200	117	10.9	59-164	12.70 - 37.20	181	.7
SP-29-36-250*	146	13.6	73 - 204	16.60 - 53.00	181	.7
SP-29-36-300	175.5	16.3	88-246	19 - 63(15.9-55.7)	181	.7
SP-29-36-350	205	19.0	103 - 287	23.20 - 74.10	181	.7
SP-29-36-400	234	21.7	117 - 328	26.50 - 84.60	181	.7
SP-29-36-450*	263	24.4	132 - 368	29.9 - 95.2	181	.7
SP-29-36-500	294	27.3	147 - 412	33.4 - 93.3	181	.7

Note 1: Recommended flow rate range is suggested to optimize filtration performance. This filter is NSF listed for up to 2.0 gpm/sq.ft (4.89 m³/hr/m²) flow rate. Consult Neptune-Benson for applications higher than the recommended flow rate range.

Note 2: Tank connection sizes based on velocity not to exceed 10.0 fps or 3.0 mps.

Note 3: The required perlite media volume is based on a 1/8" (3 mm) thick cake which is recommended for optimal performance.

Note 4: All Defender Assero models available in Automatic configuration.



Normblock Multi Series

SPECK X

All Polyurethane Pump 1750 RPM
(7.5, 10, 15, 20, 25 & 30 HP)

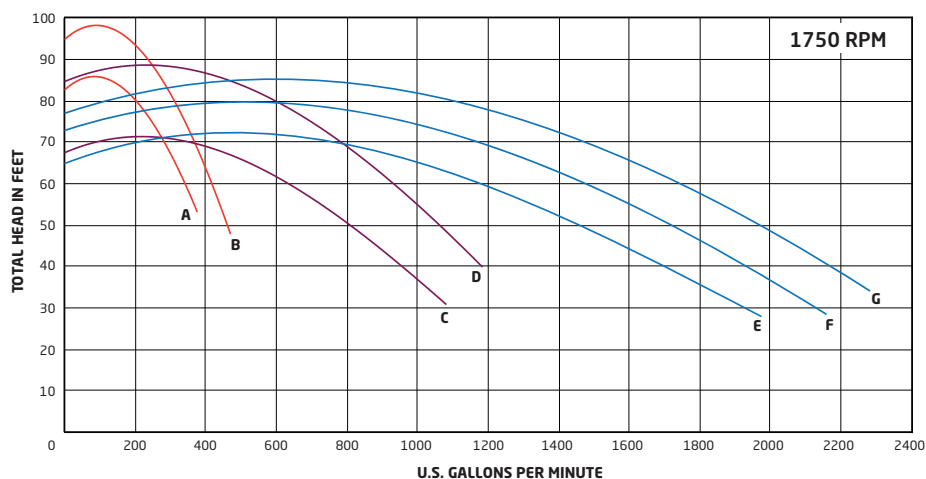
Redefining the limits of plastic pumps. The Normblock Multi takes the non-corrosive and lightweight benefits of plastic higher than any other American manufacturer.

Features

- This pump has a robust horizontal single stage design.
- Superior slow (1750 rpm) running design reduces vibrations resulting in quiet operation.
- The housing is made of high performance plastic (THK), corrosion resistant without elaborate internal coating and can be used with higher salt concentrations.
- Heavy duty energy efficient totally enclosed fan cooled (TEFC) motor, Class F insulation, protection class IP 55. Sealed ball bearings need no lubrication.
- Shaft coupling allows motor to be replaced without replacing mechanical seal.
- A high wear, rugged Carbon/SiC - EPDM mechanical seal allows for a long life and long maintenance intervals. Special application seals available upon request.
- Equipped with stainless steel shaft extension.
- Optional all plastic strainer tank for horizontal flooded suction applications.
- Every pump is tested to factory & customer's specifications.

Please Note: The noise level from both the motor and pump are greatly influenced by how they are installed. Consideration should be given to minimize vibration and noise transmission.

Performance Curves



- A. Normblock Multi 65/250** (Ø 225mm) - 7.5 HP S.F. 1.25
B. Normblock Multi 65/250 (Ø 240mm) - 10.0 HP S.F. 1.25
C. Normblock Multi 100/250 (Ø 220mm) - 15.0 HP S.F. 1.25
D. Normblock Multi 100/250 (Ø 240mm) - 20.0 HP S.F. 1.25

- E. Normblock Multi 125/250** (Ø 235mm) - 20.0 HP S.F. 1.25
F. Normblock Multi 125/250 (Ø 245mm) - 25.0 HP S.F. 1.15
G. Normblock Multi 125/250 (Ø 255mm) - 30.0 HP S.F. 1.15

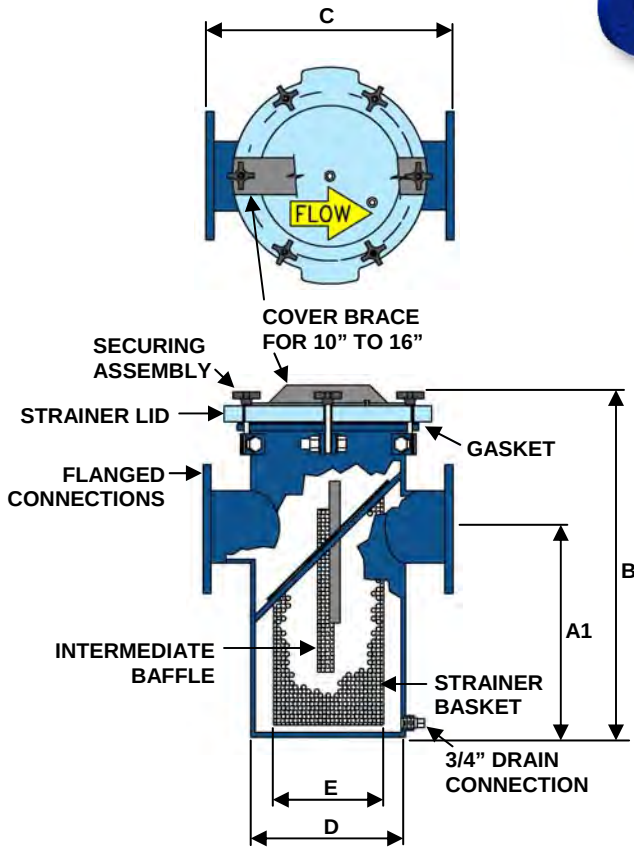


Normblock Multi 125/250

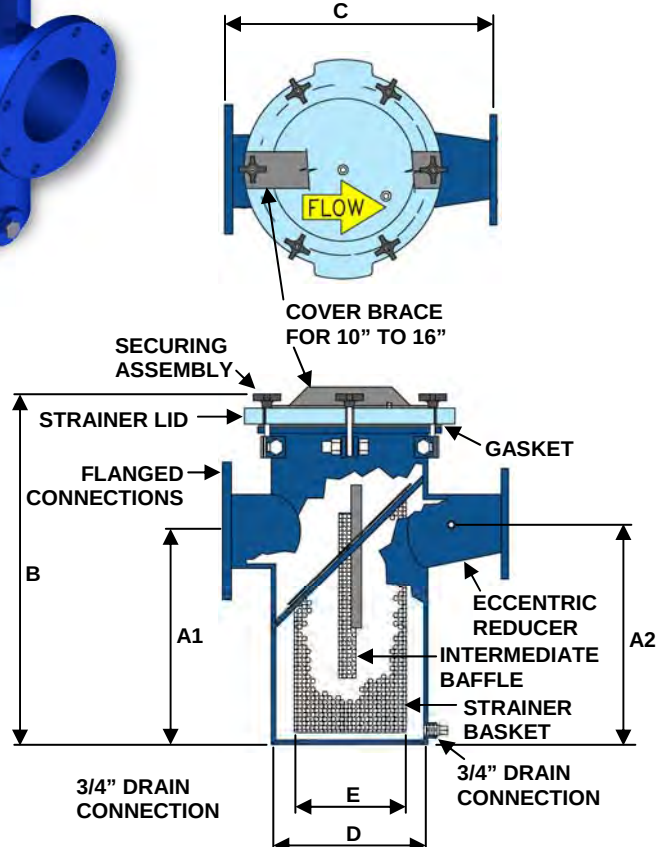
Available
with 6" &
8" Suction

Trademarks and Certifications





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.

R 6/29/12



Neptune-Benson™

6 Jefferson Drive, Coventry, RI 02816 • (800) 832-8002
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The **BECSys5** water chemistry controller includes advanced sensors and features that produce crystal clear water for a healthy, safe and pleasant patron experience in a wide variety of applications, including pools, spas, water parks, fountains, zoos and aquariums.

Optimal water quality achieved with the **BECSys5** minimizes chemical usage, often resulting in significant savings. Substantial energy and water savings can also be realized by utilizing the BECSys5's advanced scalable capabilities.

Operation and maintenance staff will save time and be more efficient with proactive status messaging and increased visibility with BECSys Live.



BECSys Live!



BECSys Live is included with every **BECSys5**, providing simple and secure 24/7 real-time access from just about any device: PC, Mac, desktop, laptop, tablet and/or smartphone. All features integrated with the BECSys5 are available through BECSys Live.

Monitor status, change settings and review system performance. Review graphs and run reports that summarize key system activity and metrics, so you can easily spot trends.

Visit becsys.live to learn more and create your free account. And best of all... no additional fees or monthly subscription required!

Advanced Water Chemistry Control... and much more!

- ✓ **Advanced sensor technology** - proprietary pH and ORP sensors, with 2 year warranty
- ✓ **True PPM sensors** - Free, Total and Combined chlorine monitoring and control with PPM set points
- ✓ **Total Alkalinity** - monitor and control Total Alkalinity (TA)
- ✓ **Direct Test Kit Interface** - automatically upload/record digital readings from SpinTouch test kit
- ✓ **System Flow** - monitor circulation rate, and control VFD with Water Chemistry Assurance and Heater Protection
- ✓ **Chemical inventory management** - track usage and never run out again!
- ✓ **Intelligent Autofill** - monitor water consumption and identify leaks!

Advanced Water Chemistry Control

- pH, ORP, temperature
- Free chlorine (ppm)
- Total chlorine (ppm)
- Combined chlorine (ppm)
- Saturation Index calculation
- TDS (Total Dissolved Solids)
- Turbidity

Direct Test Kit Interface

- Automatically upload test kit readings from SpinTouch
- Review on screen or through BECSys Live
- Compare test kit readings to sensor readings

Total Alkalinity (TA) Control

- Add the BECSys Alkalinity Meter to monitor TA
- BECSys5 controls TA by automatically selecting between acid and CO₂ for pH control
- Routine bicarb additions no longer needed in most pools
- TA set points settable by operator
- TA reading is unaffected by residual chlorine or saline levels of water

24/7 Monitoring & Control with BECSys Live!

- Gbit Ethernet standard in every BECSys5
- Simple and secure setup using EZConnect
- Visit becsys.live to get started



Circulation System Management

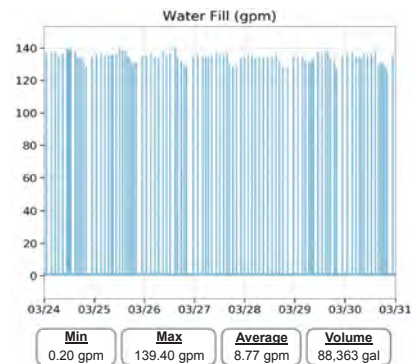
- Monitor circulation rate
- **Track turnovers & volume processed**
- Monitor strainer vacuum & pump effluent pressure
- Track Total Dynamic Head (TDH)

Advanced VFD Control

- Set circulation rate in gpm directly from BECSys5
- Program alternate turndowns, e.g. to save energy
- **Water Chemistry Assurance** automatically adjusts energy saving turndowns to assure proper water quality is maintained

Intelligent Autofill

- Maintain proper water level
- Autofill / chemical feed coordination
- **Monitor water consumption**
- **Identify pool leaks**
- Prevent surge pit overflows



Chemical Inventory Management

- Monitor acid and chlorine inventory
- **Track chemical usage**
- **Chemical reorder notifications**

You're in great hands!

BECS Technology has been designing and manufacturing the world's most reliable and innovative water chemistry controllers for over 30 years. We take pride in developing aquatics solutions that stand the test of time and are easy to use with features and capabilities that bring real value to our customers and their facilities.

Yet even the best equipment requires competent support to reach its full potential. BECSys distributors have been factory-trained and authorized to provide everything you'll need to take full advantage of all the benefits of your BECSys controller through the warranty period and beyond.

With a BECSys, you're in great hands!



Document #4333-G



BECSys *Live!* provides simple and secure 24/7 real-time access to BECSys controllers from just about any device: PC, Mac, desktop, laptop, tablet or smartphone.

And best of all... Every feature described here is **free** for all internet-connected BECSys controllers using EZConnect! And that's just the beginning. Your BECSys servicing distributor may offer additional BECSys Live features as part of their service plans.



It's Simple

Just open a web browser on your favorite device and type becsys.live. It's really that simple.

Highly Secure

Messages are encrypted and all accounts are protected by 2 Factor Authentication.

Monitor Status

Real-time dashboards automatically updated with the latest readings and system status.

Make Changes

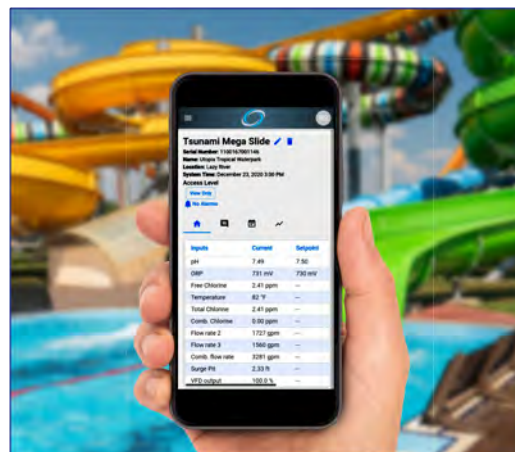
Adjust settings directly from **BECSys *Live!***. The same controller Access Code used on the controller front panel is required.

Watch Trends

Review graphs of all readings to see how your pool is performing over time.

Run Reports

Reports summarize key performance metrics such as alarm patterns, parameter changes, test kit logs and water quality readings.



BECSys *Live* was designed for you

You're busy. Your staff is busy. Everyone's juggling multiple priorities. You need a secure way to manage the water quality of every body of water - all in one place. No hopping between different applications. It has to be easy to use, but not at the expense of security. And powerful enough to allow you to get the job done, when it needs to be done.

If it's not easy to use, you won't use it. Period.

- Just type **becsys.live** into Chrome, Safari, Edge, Firefox...
- From any device: PC, Mac, tablet, smartphone
- Stay logged in; system recognizes your device so you don't need to log in every time
- Dashboards refreshed automatically
- Data logs automatically uploaded and maintained
- Change settings directly from Dashboard

Nobody takes Internet Security as seriously as we do.

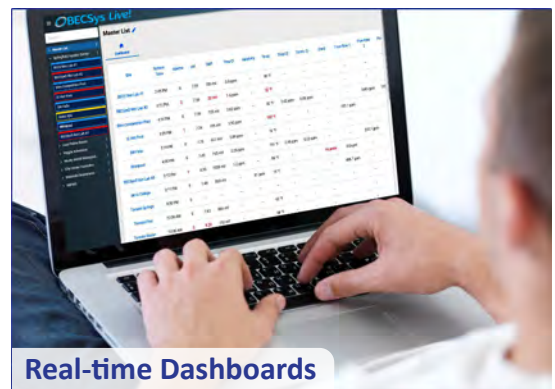
- Two-factor authentication on all user accounts
- reCAPTCHA account protection from bots
- End-to-end message encryption (browser to controller)
- EZConnect = no VPNs, port forwarding or public IP addresses
- Controller Access Code required to change settings

This is no toy. BECSys *Live* is a serious tool.

- Site Tree color-coded with Controller status
- Run reports for individual Controllers or Groups
- Graphs of readings with current set points and alarm points
- Upload SpinTouch readings via BECSys7 or BECSys5
- Record personal notes for each Controller

Go ahead. Hit us with your best shot.

- Scalable and flexible enough for all applications
- Unlimited number of Controllers
- Unlimited number of Groups
- Drag-and-Drop to organize your Site Tree
- Create personalized Controller/Group nicknames



You're in great hands!

BECS Technology has been designing and manufacturing the world's most reliable and innovative water chemistry controllers for over 30 years. We take pride in developing aquatics solutions that stand the test of time and are easy to use with features and capabilities that bring real value to our customers and their facilities.

Yet even the best equipment requires competent support to reach its full potential. BECSys distributors have been factory-trained and authorized to provide everything you'll need to take full advantage of all the benefits of your BECSys controller through the warranty period and beyond.

With a BECSys, you're in great hands!



Document #6105-A

FROM WAVE PARKS TO WADING POOLS, WE HAVE A NEX-GEN_{pH} SYSTEM TO MEET YOUR NEEDS.



ChlorKing's NEX-GEN_{pH} on-site chlorine generators are leading the way to better, safer water. Their unique, forward-thinking design generates liquid chlorine from salt that is stored on site and uses the pool as the source water for the product. NEX-GEN_{pH} eliminates the need for storing large amounts of chlorine and doesn't generate the odors associated with traditional chlorine. Any of the NEX-GEN_{pH} systems can be fully customized to meet your needs and are easy to install, maintain and operate.

The NEX-GEN_{pH} 20

The ChlorKing® NEX-GEN_{pH} 20 is a stand-alone, on-site chlorine generator capable of producing 20 lbs of pH neutral equivalent chlorine per 24 hours. The unique design uses swimming pool water to feed the generator and distribute chlorine to the pool as needed. Up to 6 bodies of water can be sanitized with one NEX-GEN_{pH} system using our venturi feed systems and can be used in conjunction with any ORP/pH controller. This product requires no salt in the swimming pool and will not raise TDS levels as with other chlorine generators. Hydrogen, the by-product is safely vented to atmosphere through a 2" PVC pipe on top of the production tank.

Specifications

- Touch-screen display
 - › Size 5" x 4" color display
 - › Resistive touch membrane overlay
- Built in safety sensors
 - › Air, water, pressure, & level sensors
 - › Power supply
 - › 100 amp 24v DC water-cooled
- Electrode stacks
 - › 1-20 lb, 15,000 hr forward polarity in clear housing
- Operating temperature
 - › 35°F (2°C) to 115°F (46°C) air temperature
 - › 40°F (4°C) to 104°F (40°C) water temperature

- Electrical specifications
 - › Max primary amps – (24)
 - › Voltage / Hz – (208-240v 60Hz single phase)
 - › Breaker required – (40 amp)
- Skid dimensions & weight
 - › 48"L x 28"W x 68"H (950 lbs)
 - › 48"L x 22"W x 40"H (salt feeder)
- Plumbing requirements
 - › 1.5" inlet and outlet requiring 80 gpm
 - › 2" outlet for hydrogen removal to atmosphere
 - › Maximum NEX-GEN venturi return line pressure (including pool return line) - 25psi

Main Features

- On-site chlorine generator capable of producing 20 lbs (equivalent to 20 gal of 12% bleach) per 24 hrs.
- Process uses swimming pool water to produce sodium hypochlorite (no fresh water added)
- No salt is required in the pool
- pH neutral chlorine produced
- Programmable touch-screen with auto correct features
- Skid mounted on wheels for easy installation
- Water-cooled power supply

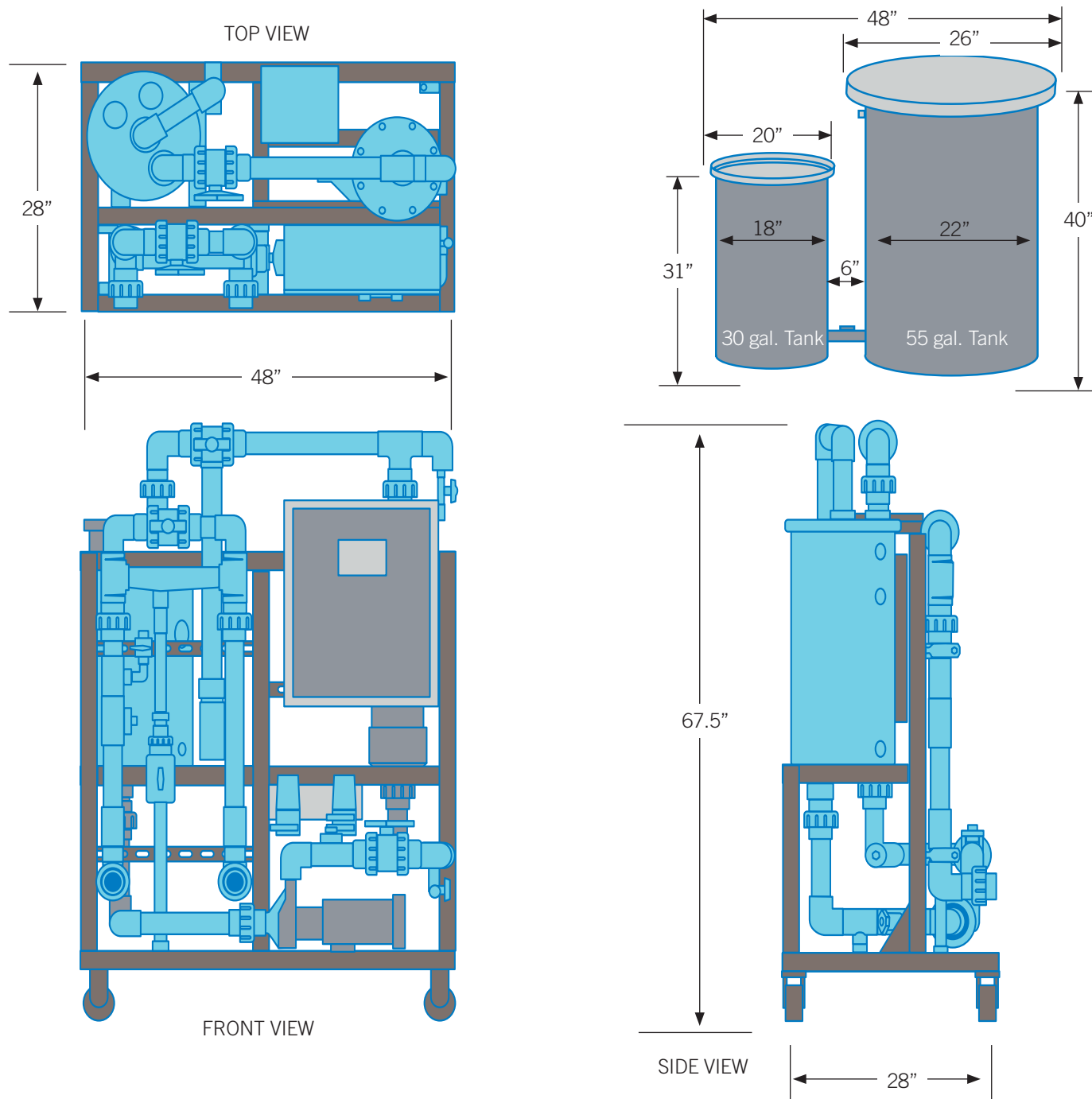
Applications

- Commercial swimming pools
- Water-parks
- Wave and surf riders

Order Information

- Product code: NEX-GEN 20R3T

NEX-GEN[®] pH 20 DIMENSIONS & TANK LAYOUT



ChlorKing pioneered on-site chlorine generating technology in the 1970's. Realizing the potential for swimming pools and commercial applications, the company began generating "ultimate water" with simple, yet highly advanced technology. Today, ChlorKing[®] leads the way in commercial saline chlorination and is consistently seeking new frontiers in sanitizing solutions including ultraviolet light technology and their NEX-GEN[®] pH onsite chlorine generators. These environmentally friendly solutions are changing the way we treat H₂O.



Safer water through smarter technology.

Salt Chlorination Systems • Ultraviolet Light Systems • Mixed Oxidant Systems

ChlorKing Inc. 6767 Peachtree Industrial Blvd Norcross GA 30092 sales@chlorking.com 800.536.8180 chlorking.com



PRECISION

High-Tech Commercial Pool Disinfection with Powerful Performance

The Pulsar® Precision feeder is a high capacity erosion (HCE) feeder that is compact and lightweight with a modular design.

The feeder uses Pulsar® calcium hypochlorite briquettes that work in conjunction to produce a fresh concentrated liquid chlorine solution for clean and sanitized water. This innovative feeder system is easy to maintain and service with a flexible design that allows for easy integration for small to large commercial pools.

Switch to the Pulsar® Precision Feeder System, delivering clear and sparkling water time and time again!

Powerful Feeder Performance



Provides consistent chlorine delivery



Feeder designed to minimize maintenance requirements



2 in 1 dust reduction funnel for loading briquettes with capacity extension



Rotomolded components hold up to the strongest elements



Feeder design allows for easy access to internal components



Features high capacity erosion technology with the benefits of a venturi and booster pump

Briquette Efficiency



Won't overstabilize pool



More concentrated than liquid bleach



Dry, easy to handle formulation



Will not cause reduction of ORP



Highly concentrated to reduce shipping and handling costs



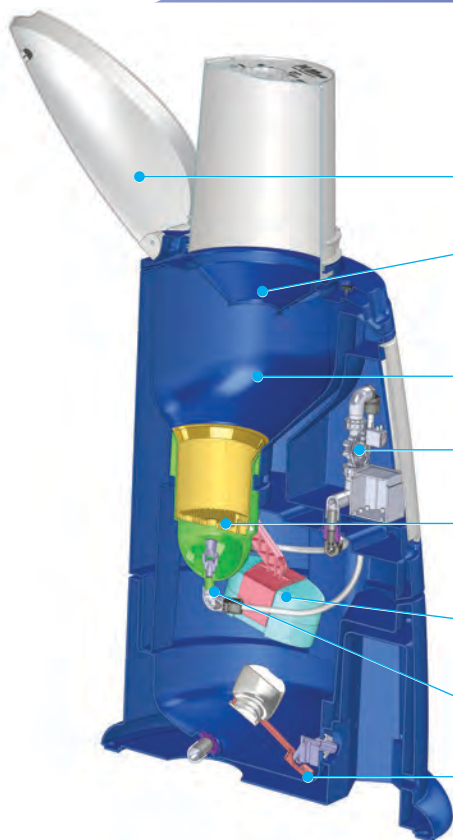
Longer shelf life when compared to liquid bleach



A 3-in-1 product that chlorinates consistently, increases calcium to protect plaster and balances alkalinity to stabilize pH!



PRECISION



Secure lid locking feature

Enhanced hopper attachment

Allows for added chemical capacity and reduction in dust during chemical loading

Hopper

Dual solenoids minimize solid build up

Briquette grid

Removable for easy maintenance

Emergency shut-off valve to prevent spills

High capacity erosion nozzle

Durable discharge valve

Feeder Specifications

Width	25.3"	642.62mm
Depth	29.8"	756.92mm
Height	40.9"	1038.89mm
Water Inlet Size	1/2" MNPT	12mm MNPT
Solution Outlet Size	1/2" MNPT	12mm MNPT
Operating Weight	220lbs	99.7kg
Shipping Weight	60lbs	27.7kg
Dry Chemical Capacity	70lbs	31.75kg
Feed Rate Range, Pool:	5-189 lbs/day AvCl	2.3-85.7 kg/day AvCl
Spa:	5-141 lbs/day AvCl	2.3-64 kg/day AvCl
Electrical	115VAC	
Operating Temperature	40°- 120° F	4.4°- 48.9° C

Chemical Specifications

Active Ingredient	Calcium Hypochlorite	
Available Chlorine	68%	
Scale Inhibitor	0.4-1.0%	
Weight	7-10g	
Dimensions	1 1/4" x 3/4" x 1/2"	33mm x 19mm x 13mm
Chemical Form	Pillow shaped briquette	
Color	White	
Container	50lb pail	22.6kg pail

For more information visit www.pulsarsystems.net or call us at 1-800-4-PULSAR



ACID PLUS

Order Early
for
Promotional
Pricing

Contact your sales rep
for more information

Introducing the Pulsar® Acid Plus Feeder System!

If you are using **Pulsar®** calcium hypochlorite feeders, then the **Pulsar®** Acid Plus feeder system can help maintain a complete dry chemical package for sanitation and pH control (down).

The **Pulsar®** Acid Plus Feeder provides:

- Reliable pH balancing
- Features a compact rugged rotomolded body
- Integrates inlet flow solenoid control for reliable operation
- Shares booster and venturi loop
- Custom color to distinguish between other feeders
- Acid introduced to venturi removes scale and minimizes maintenance
- Backflow prevention

The **Pulsar®** pH Down +4 is a proprietary formulation with the following benefits

- Dry acid chemical is easier to handle and transport than CO₂ and muriatic acid
- Requires NO double containment
- Ensures no liquid spills
- Has little to no odor
- Dry acid solution is 100% soluble
- Acid solution is not under pressure
- Less hazardous than highly concentrated liquid

The **Pulsar®** Acid Plus feeder system is low maintenance, easy to install and has a small footprint making it a great addition to your pool chlorination treatment plan.



System Capacity

Volume	60 lbs	27.21 kg
--------	--------	----------

System Dimensions

Width	19 in	48 cm
Height	33 in	84 cm
Weight (empty)	27 lbs	12 kg

Requirements

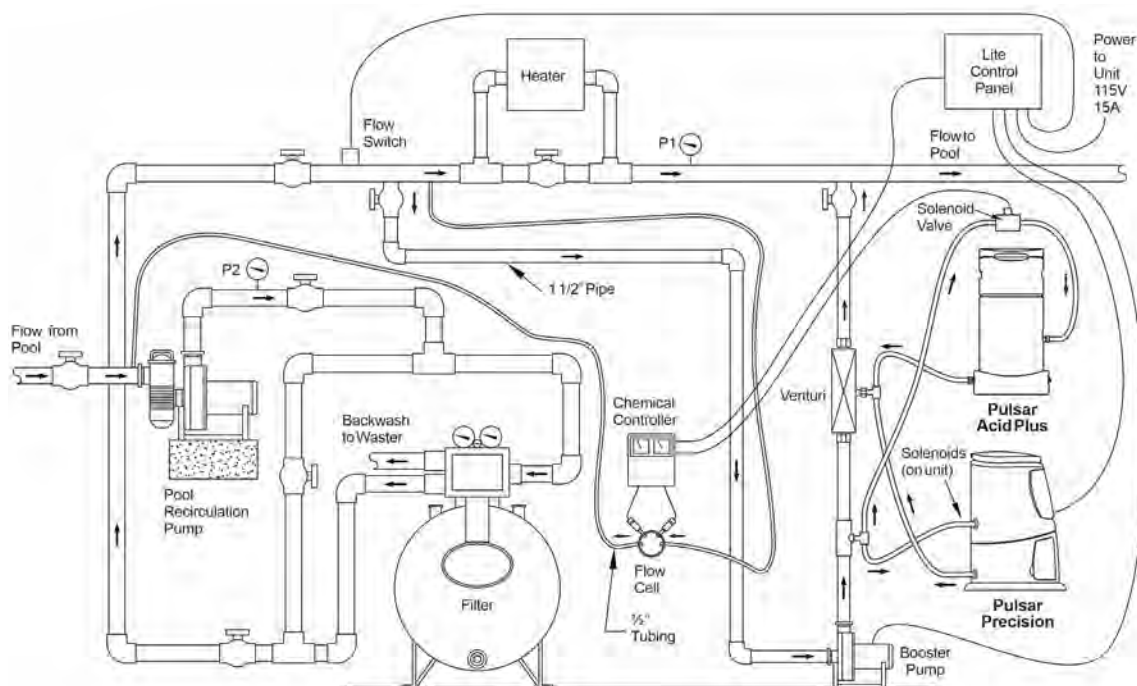
Use With	Pulsar® pH Down (+4)
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*4-in-1 product lowers pH, maintains clarity,
reduces equipment corrosion, and prevents against stains & scale!*





ACID PLUS



Installation

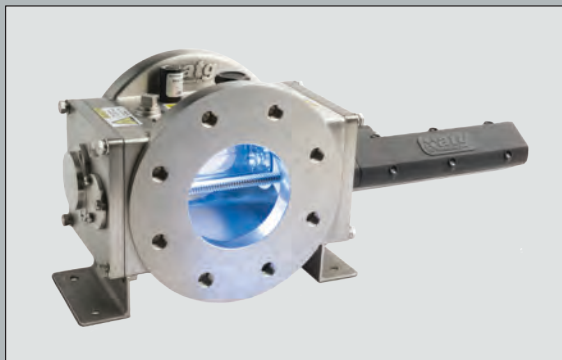
1. Use schematic or installation guide
2. Install booster pump and venturi Loop in accordance with the feeder I&O manual
3. Install one 1/2" Tee at the 1/2" NPT outlet above the booster pump discharge
4. Install the second 1/2" Tee at the 1/2" venturi suction
5. Connect four parker tubing connectors on the Tee branches at the feeder inlet and venturi suction
6. Plug in the feed solenoid valve to the chemical controller pH down output for pH control automatic

WARNING – Always use personal protective equipment including but not limited to chemical gloves, safety goggles and a full-face mask when handling acid to protect from liquid and vapor. Refer to the Safety Data Sheets that are included with the acid for additional information and precautions regarding the proper handling of acid.

If using the same booster pump and Venturi as the precision feeder as shown in the schematic, set booster pump to **Always On** by setting dip switch 4 to **OFF** in the control box.

Parts List

Part	Description	QTY	Part #
Pulsar® Acid Plus	Dry Acid Feeder, Tees (Qty 2), nipples (Qty 4), 1/2" parker fastNTights P8MC8 (Qty 2),	1	73350
Pulsar® Installation Ki	1HP booster pump, 1 1/2" Venturi PVDF with unions, 1/2" OD PE tubing 20 Ft, 1/2" x 1/2" female connector, 1/2" FNPT x 1/2" tubing connector, 1/2" FNPT x NPT ball valve (outlet), 1 1/2" x 12" PVC nipple,	1	79830
Tee	1/2" FNPT sch 80	2	71912
Nipple	1/2" NPT x 1 1/2" fully threaded	4	71916
Acid Plus Lid	Red lid for Pulsar® acid feeder	1	73298
Solenoid Valve	Basic SDCH ORP Kit w/3 meter extension	1	73119



The Wafer™ UV system is the most advanced UV system available. The treatment chamber has been designed for the simplest installation into any pipe work system. The chamber can be mounted vertically or horizontally. The compact design allows existing facilities to be easily upgraded with minimum site work.

TREATMENT CHAMBER

The Wafer™ treatment chambers are designed for installation into the piping after the filters but before chemical injection.

The treatment chamber is manufactured from solid cast 316L stainless steel, with standard ANSI flanged piping connections. Temperature probe, UV monitor probe, and automatic quartz wiper system included.

A pressure rating for the unit is 150 PSI and pressure drop through the chamber is minimal.

Our objective for the product is simple, to be the best on the market, no compromise. The Wafer™ system offers the flexibility of a horizontal or vertical installation application. The Wafer™ product line treats the largest pools with a very compact footprint.

Utilizing our proven medium pressure lamp technology, the Wafer™ system offers a high quality, 'high specifications' product at a very competitive price. The 6" WF-125-6 is suitable for all pools and whirlpools with flows rates up to 616 GPM for indoor applications and 660 GPM outdoors applications.



CONTROL SYSTEM

The control system is housed in a IP 54 rated panel. As a standard, it is supplied with 30 ft cables for connection to the treatment chamber.

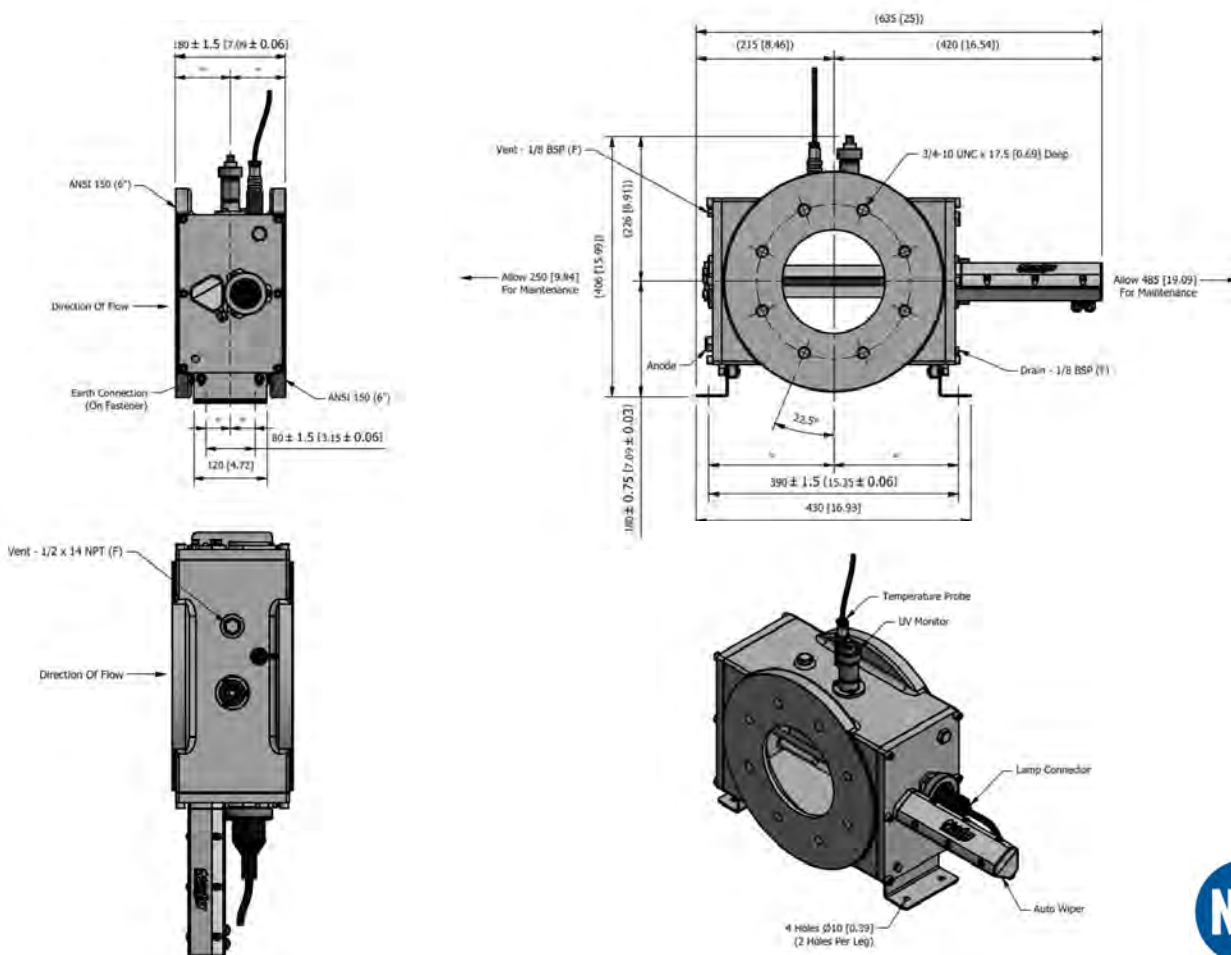
The power supply (PSU) and control cabinet are powered with the latest Spectra III microprocessor control unit. Three levels of operation (simple control, full parameter display, and operator configuration) allow for easy, uncomplicated operation of the unit by an operator. The control system features a sophisticated password protected engineering section for integrating the unit with other system devices.

Auto power restart, pump and valve interfaces, process interrupt and low power overnight operation are all features specifically designed for use on all recreational water applications.

WAFER™ UV for Recreational Water



TREATMENT CHAMBER WF-125-6 Technical Data Sheet



Type	Lamp & Power	Weight (Dry/Wet)	Connection Size	Sacrificial Anode	Wiper System	Material Construction
WF-125-6	1 X 2.5 kW	126/148 lbs	6"	1/2" NPT	Automatic	316L SS
Pressure Rating			150 PSI			
Drain & Vent			1/8" - 27 NPT Drain 1/2" - 14 NPT Vent			
Standard Cable Length			30 feet			
Ingress Protection			IP55			
GPM for 60 mj/cm2 Dose			616 GPM (indoor)			
GPM for 40 mj/cm2 Dose			660 GPM (outdoor)			
Strainer			6" EZ Clean Strainer Included			

Neptune-Benson
EVOQUA

Sales & Service : +1 920-885-4628
www.neptunebenson.com

4/1/20

WAFER™ UV for Recreational Water



CONTROL PANEL WF-125-6 Technical Data Sheet



Type	Lamp & Power	Panel Weight	Breaker Size	Power Supply	Phase	Frequency
PGA 2x3000	1 X 2.5 kW	110 lbs	30 Amp	208-240V	1 Ph	50/60 Hz
Variable Power			100% to 30% Power (Automatic Dose Pacing)			
User Interface			Spectra Membrane			
Ventilation			Forced Air Cooled (Fan)			
Ingress Protection			IP 54			

Neptune-Benson
EVOQUA

Sales & Service : +1 920-885-4628
www.neptunebenson.com

4/1/20



Easy to install.
Easy to operate.
Nothing to remove & clean.
Tremendous labor savings.

EZ Strainer is the first and only clean-in-place UV strainer designed to provide safety and reliability against the rare chance of lamp or quartz breakage. As simple as unlocking and turning the handle, the EZ strainer is now free and clear of fine debris that may have made it through the system.

Features

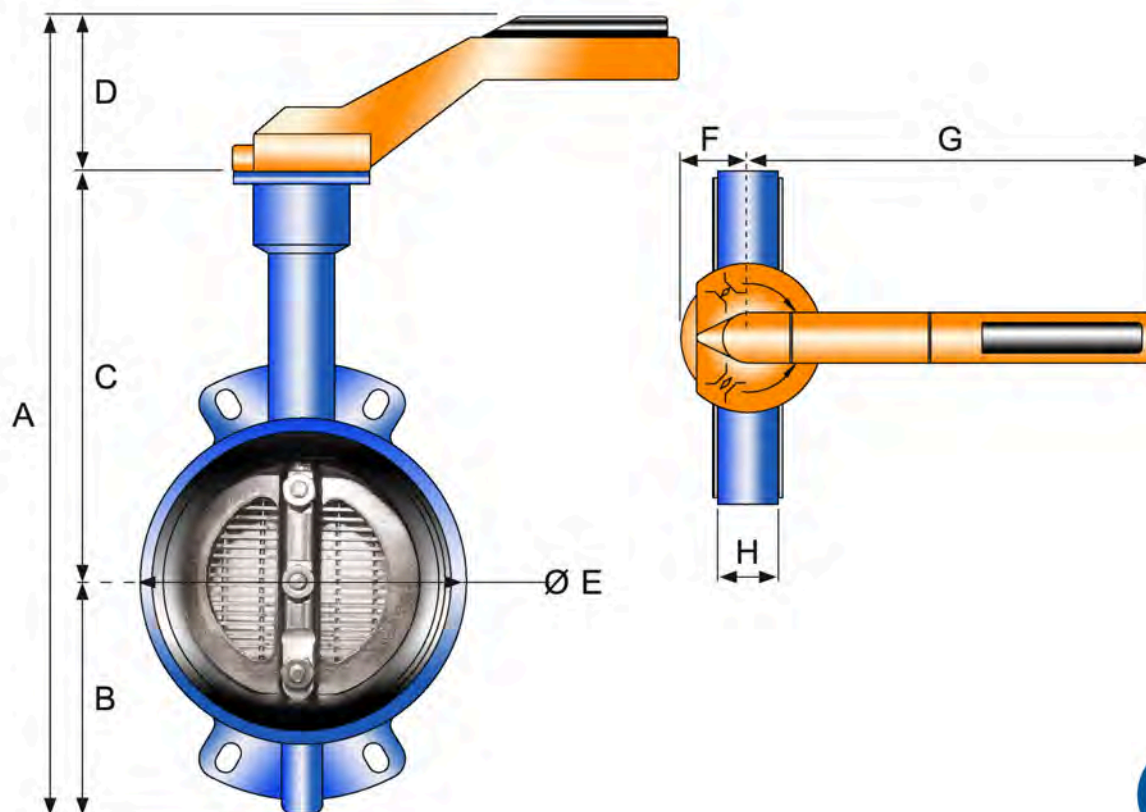
- Available in 4"/100mm to 12"/300mm pipe sizes.
- Durable stainless steel strainer disc and shaft.
- 180° positive stop.
- Lightweight cast aluminum riser (nylon) coated valve housing.

Model	Connection		Description
	inches	mm	
EZCLN-4	4	100	Standard Model Strainer
EZCLN-6	6	150	Standard Model Strainer
EZCLN-8	8	200	Standard Model Strainer
EZCLN-10	10	250	Standard Model Strainer
EZCLN-12	12	300	Standard Model Strainer

EZ Strainer for Recreational Water

EZ Strainer
by Neptune Benson

Technical Data Sheet



The EZ Strainer is designed to be used in the “Normally Closed” position and rotated 180 degrees daily.

Connection Sizes & Model Data

Model Number	Connection		A	B	C	D	E	F	G	H
	in	mm								
EZCLN-4	4	100	14 1/4	3 3/8	7	3 7/8	6 1/4	1 3/4	12 5/8	2 1/16
EZCLN-6	6	150	16 7/16	4 9/16	8	3 7/8	8 7/16	1 3/4	12 5/8	2 1/4
EZCLN-8	8	200	19 15/16	5 7/8	9 9/16	3 7/8	10 5/8	1 3/4	12 5/8	2 3/8
EZCLN-10	10	250	22 1/2	7 7/8	10 3/4	3 7/8	13 1/16	1 3/4	12 5/8	2 11/16
EZCLN-12	12	300	25 1/8	8 7/8	12 3/8	3 7/8	15	1 3/4	12 5/8	3 1/16

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4/9/20

SERIES 30/31 2"-20" (50mm-500mm)

PRESSURE RATINGS

BIDIRECTIONAL BUBBLE-TIGHT SHUT-OFF – Standard Disc*

Downstream Flanges/Disc in Closed Position

S30/31 Standard Disc*	2-12" (50-300mm)	175 psi (12 Bar)
	14-20" (350-500mm)	150 psi (10.3 Bar)

~~DEAD-END SERVICE – Lug Bodies/Standard Disc*~~

~~No Downstream Flanges/Disc in Closed Position~~

S31	2-12" (50-300mm)	75 psi (5.2 Bar)
	14-20" (350-500mm)	50 psi (3.4 Bar)

BODY: 250 psi (17.2 Bar) CWP

*For low pressure application, Bray offers a standard reduced disc diameter to decrease seating torques and extend seat life, thus increasing the valve's performance and reducing actuator costs.

VELOCITY LIMITS For On/Off Services:

Fluids 30 ft/sec (9 m/s)	Gases 175 ft/sec (54 m/s)
--------------------------	---------------------------

High strength through-stem design allows easy disassembly and reduced disc to stem failure.

PRIMARY & SECONDARY SEALS: These seals prevent line media from coming in contact with the stem or body. *Primary* Seal is achieved by an interference fit of the molded seat flat with the disc hub. *Secondary* Seal is created because the stem diameter is greater than the diameter of the seat stem hole.

STEM: Precision double "D" disc to stem connection drives the disc without the need for screws or pins. The close tolerance, double "D" connection that drives the valve disc is an exclusive feature of the Bray valve. Disassembly of the Bray stem is just a matter of pulling the stem out of the disc.

SEAT: Bray's tongue and groove seat design lowers torque and provides complete isolation of flowing media from the body. The seat also features a molded O-ring which eliminates the use of flange gaskets.

STEM RETAINING ASSEMBLY: The stem is retained in the body by means of a unique Stainless Steel Spirolox® retaining ring, a thrust washer and two C-rings, manufactured from brass as standard, stainless steel upon request. The retaining ring may be easily removed with a standard hand tool. The stem retaining assembly prevents unintentional removal of the stem during field service.

STEM BUSHING: Non-corrosive, heavy duty acetal bushing absorbs actuator side thrust.

STEM SEAL: Double "U" cup seal design is self-adjusting and gives positive sealing in both directions.

NECK: Extended neck length allows for 2" of piping insulation and is easily accessible for mounting actuators.

DISC: Casting is spherically machined and hand polished to provide a bubble-tight shut off, minimum torque, and longer seat life.

BODY: One-piece wafer or lug style. Polyester coating for excellent corrosion resistance. Nylon 11 coating is available as an option.

All Bray valves are pressure tested to 110% of rated pressure to assure bubble tight shutoff.



SERIES 31H

2"-20" (50mm-500mm)

Series 31H Lug valves are drilled and tapped to meet ASME Class 125/150 and PN16 flanges. Series 31H Valves will not be automated.

PRESSURE RATINGS

BIDIRECTIONAL BUBBLE-TIGHT SHUT OFF & DEAD-END SERVICE

2-20" (50-500mm) 250 psi (17.2 Bar)

BODY: 250 psi (17.2 Bar) CWP

VELOCITY LIMITS For On/Off Services:

Fluids 30 ft/sec (9 m/s) Gases 175 ft/sec (54 m/s)

STANDARD MATERIALS SELECTION 31H

Body Cast Iron
Ductile Iron

Disc Aluminum Bronze
Nylon 11 Coated Ductile Iron
316 Stainless Steel

Stem 416 Stainless Steel

Seat Bonded EPDM
Bonded BUNA-N

Material availability depends on valve size & series. Other materials are available. Please consult your local Bray representative for your specific application.

STANDARD MATERIALS SELECTION S30/31

NAME MATERIAL

Body Cast Iron
Ductile Iron
Carbon Steel
Aluminum

Disc Aluminum Bronze
Coated Ductile Iron
Nylon 11 Coated Ductile Iron
Halar® Coated Ductile Iron
304 Stainless Steel
316 Stainless Steel
Duplex Stainless Steel
Super Duplex Stainless Steel
Hastelloy®

Stem 416 Stainless Steel
304 Stainless Steel
316 Stainless Steel
Monel K500

Seat BUNA-N – Food Grade
EPDM – Food Grade
FKM*
White BUNA-N – Food Grade
Bonded EPDM
Bonded BUNA-N

Material availability depends on valve size & series. Other materials are available. Please consult your local Bray representative for your specific application.

*FKM is the ASTM D1418 designation for Fluorinated Hydrocarbon Elastomers (also called Fluoroelastomers).
Hastelloy® is a registered trademark of Haynes International, Inc.
Halar® is a registered trademark of Ausimont U.S.A., Inc.



AQUATICS FESIBILITY STUDY FOR CITY HIGH & MIDDLE SCHOOL



GRAND RAPIDS PUBLIC SCHOOLS

PREPARED BY:



aquatic source

enriching lives through **aquatics**

248-366-0606



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www.aquaticsource.com

March 14th, 2025

Plante Moran Realpoint
Scott Weir- Vice President
634 Front Avenue NW STE 300
Grand Rapids, MI 49504

Re: Grand Rapids Public Schools Aquatics Evaluation
City High & Middle School Pool Feasibility Study

Scott,

Thank you for the opportunity to assist with Grand Rapids Public Schools aquatic facilities and in the case, City High & Middle School. Based on discussions with your pre-construction team, I have elected to break this study into four (4) parts:

- Immediate Needs- Things that need to be done *now* to keep the pool code compliant or address major defects
- 3-year Forecast- Things that should be considered to keep the pool up to date and stem any major service work
- Complete Renovation- This is a solution that I would consider lining up with our other major pump room renovations that we have done with you, putting a long term solution in place for the foreseeable future
- Other Concerns- These are items that would be outside the pool contractors scope of work but that I have noted as being need of investigation so a complete solution can be proposed to the District

Based on discussions, I submitted a FOIA Request to EGLE regarding the pool. We received very little information back, totaling 4 pages that were only recent annual inspection reports. A follow up e-mail resulted in them providing us the design information on file for the pools recirculation system only; no other data has been provided.

This pool looks to have had a fixed bulkhead installed in the deep end in order to turn the course from a 25-meter course to the MHSAA required 25-yard course. However, it was discussed that this pool is being used for middle school and community use, while Union and Ottawa are being used for competitive purposes. We will comment on the pools potential further on in the document.

We would be glad to meet with yourself, your Design Team and even the Board of Education if it helps in order to go through this report so that everyone is on a level playing field as to what the expectations of this facility can and should be for the short and long term.



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Existing Pool & Design Data:

- As discussed above, a FOIA request to the State did not yield the same documentation that we were provided for the other two (2) pools accepting as identified below.

Pool Volume:	236,125	UG gallons
Pool Area:	5,044	SQFT
Perimeter:	315	LF
Re-circulation Rate:	675	GPM <i>*only 656 GPM will be required for a 6 hour turnover rate</i>
Turn Over Rate:	5.8	HRS <i>*6.0 hours max required under current code</i>
Filtration Rate:	UNKNOWN	

Return Line: 6" schedule 80 PVC (8.06 ft/sec < 10.0 ft / sec maximum velocity)
Main Drain Line: **6" cast iron**
Gutter Line: 10" schedule 80 PVC (2.93 ft/sec < 5.0 ft / sec maximum velocity)

Recent Work:

1. A new chemical controller is located in the room but is not hooked up and functioning
2. New Stenner pumps appear to be installed for pumping acid and liquid chlorine, but are not hooked up to the chemical controller; operator appears to be hand balancing pool
3. The modulating valve on the main drain line to the surge tank looks newer

Relevant Filtration Observations:

These existing filters have long served their useful life. When the open top vacuum DE filters are working correctly, they do provide very good filtration. Upon inspection, I could not find any visual defect in the filter leafs. However, there is media on the floor of the swimming pool. Seeing new leafs in the room, it is hard for me to tell if the problem has been rectified or if there are still compromised leafs.

For the most part, this filter was obsolete over 40 years ago and needs to be replaced.

Competitive Swim Considerations:

As discussed in the intro, it appears that a concerted effort has been made to make sure MHSAA competition could be held at this location. The fixed bulkhead, re-tiled lane lines, scoreboard and judges table / area all suggest that at some point consideration was given to make this pool usable for competition.



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Based on information given at the walk through, it seems that this pool is being strictly used for Community and Middle School swim. In our opinion, this is the pool to invest money in if competitive swimming / diving is of interest to the District. With the challenges presented by the condition of the pool structure / room at Union and the course not being the correct length at Ottawa, this pool has the infrastructure in place to get a single pool for a "Unified" GRPS team to compete at.

Of course the findings need to be verified, but it is our professional opinion that this is the pool the District should focus it's initial efforts on putting a long term solution in place for.

Diving Boards:

One of the 2 diving boards has already been removed because of the installation of the bulkhead. Like with other schools, we recommend a diver be put into the pool to get exact measurements so a compliance study can be performed on the remaining boards current location, or if it can be relocated to bring it into compliance.

Code Compliance Issues:

From a cost analysis perspective, these items will be included under the "Immediate Needs & Concerns" sections, as they should be considered a priority in any design solution offered for the pool

1. While it is not code to have a chemical controller, it is code that the material be "simply handled and closely controlled in its usage" (R 325.2156 Rule 56 (1)(d)). I have **never** seen a public-school swimming pool that does not utilize a chemical controller for the direct measurement and application of sanitizer and pH control. This is a public safety risk and should be immediately rectified
2. There was a smell that came from the mechanical room that frankly made it hard to breathe. I could not put my finger on exactly what it was but make up air is nonexistent in that mechanical room. Before ANY money is invested in new equipment, the District needs to figure out how to exhaust the air out of the mechanical space or it will all rust
3. Neither flow meter is presenting an actual flow of the pool...or if the number is correct, the pool has serious pump issues. Code requires a working meter to accurately display the flow of the system
4. The cast iron main drain line is undersized and will need to be replaced with an 8" schedule PVC line in the sidewall. This will require a variance through the health department.



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Immediate Needs & Concerns:

You have immediate needs that need to be addressed that will allow safe and efficient operation of the swimming pool.

1. At the time of inspection, there is no automated chemical control occurring. As far as I know, the Siemens controllers that are in those rooms are no longer manufactured and you cannot get parts for them. I would suggest removal and replacement with a brand that is supported by an in-state contractor

This would include integrating the existing peristaltic delivery pumps into the new controller

2. There are areas of the pool shell that are exhibiting significant structural defects where the calcium has sealed up the cracks. One area in particular is still actively leaking. This area is where a structural concrete beam is actually bearing on the pool wall. This area and others need to be evaluated by a structural engineer so that a correction plan can be formulated

3-year Comprehensive Strategy:

If this pool is to remain in service long term, the 3-year comprehensive strategy needs to be a complete replacement of the mechanical room recirculation equipment. There really is no other option at this point. The system is old, difficult to run and maintain and has far outlived its useful life. In addition to a complete mechanical room renovation, the following items need to be considered as well

Please note this work should be pursued IN ADDITION TO the work in the previous section.

1. When the pool was re-piped, all of the cast iron connections into the pool structure were left in place. Any long term strategy for keeping this pool in service should include the removal of these stubs in the pool wall as well as the surge tank piping
2. Existing light fixtures do not have viable replacement parts and should be removed and filled in. Photometric study of natatorium should be performed and lighting updated based on current standards not using in pool lights as a contributing factor
3. Pool was re-piped (gutter and return) in schedule 40 PVC. Any long term solution should have this piping replaced with schedule 80 PVC
4. I would consider re-grouting the pool when all of the work is completed. It is close enough that all of the patch work that will be done with the lights, returns and gutter will likely stick out if the entire pool is not re-grouted



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Complete Renovation:

1. Remove existing sand filters and provide a new 'Defender' regenerative media filtration system by Neptune Benson
 - a. We have included a Defender cost analysis for your review. Please note that a Defender only shows a strong payback when an Owner is deciding between this filter and a sand filter. We need the initial cost of the sand filter to stack against the initial cost of the Defender to show any kind of ROI. Even with this not included, the installation will still payback in under 6 years
 - b. It should be noted that sand is not really an option in this pump room because of the size of the tanks and access into the basement
 - c. What we can tell you (and you will see on the summary sheet) is that the District will realize over \$4,500 in annual savings from the Defender installation and save over 300,000 gallons of water per year
2. Renovation to include all new valves (including modulating valve) hardware and support hardware
3. Renovation would include new filtration pump (secondary redundant pump listed as an option) and strainer
4. Renovation would include new flow meter, thermometers and gauges per code
5. We will list the following items as add options to the renovation that may be worth considering as we move closer to an actual design:
 - a. Calcium hypo-chlorite feeder in lieu of liquid chlorine. Safer, more stable, easier to manage
 - b. On site chlorine generation using saline technology
 - c. Use of CO2 systems for pH control
 - d. Use of bisulfate for pH control
 - e. Ultraviolet light secondary disinfection systems for protection against chlorine resistant microorganisms and destruction of combined chlorine. If a new handler is installed, this item is a must





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Other Concerns:

Most of the items in here would fall outside of our scope of work. However, with the scope and breadth of this proposed renovation, we feel that the trade disciplines representing these work scopes absolutely should be providing evaluations and budgetary number of these systems for inclusion in an overall project scope / budget. We will provide estimates that should be verified and substantiated with the various disciplines involved

1. Electrical distribution and devices in the mechanical space appear to be very old and in need of replacement and / or updating
2. The sump pumps for the space should be evaluated for good working condition
3. Water supply for the space should be provided in PVC pipe with isolation valves
4. Existing pool heating source should be evaluated for remaining service life and considered as part of the project if needed. Existing HX looks to be very old

Budget Summary

Please consider the following cost Summary. Note that we try and capture everything in the potential project. These sections will correspond with the items / numerations under the various sub-headings above.

Immediate Needs & Concerns (incl. Code Compliance Issues:

	<u>Extra's</u>	<u>Base Scope</u>
1. Chemical Controller.....		\$ 7,000
a. Auto-Fill	\$ 3,500	
b. PPM Chlorine Control....	\$ 2,500	
c. Main drain modulation...	\$ 6,500	
2. Provide working flow meter.....		\$ 1,800
3. Sidewall main drain (.....		<u>below</u>
		\$ 8,800

3-year Comprehensive Strategy:

	<u>Extra's</u>	<u>Base Scope</u>
1. Re-Pipe Swimming Pool		
a. Gutter....		\$ 88,000
b. Return...		\$ 29,000
c. Main drain.....		\$ 32,000
d. Surge Tank...		\$ 15,000
2. Fill in Lights.....	\$ 18,000	



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3. Complete Mechanical Renovation		
a. New Defender Filter Package..		\$ 95,000
b. New Recirculation Pump....		\$ 27,000
c. Redundant Recirculation Pump..	\$ 19,500	
d. VFD....		\$ 13,000
e. Pipe, Fittings & Hardware....		\$ 58,000
f. Valves....		\$ 26,000
g. System Accessories.....		\$ 14,000
h. Direct Labor.....		\$ 68,000
4. Re-grout swimming pool....		<u>\$ 40,000</u>
5. Option for Calcium hypo-chlorite feeder....	\$ 7,500	\$505,000
6. Option for on Site Chlorine Generation....	\$ 68,000	
7. Option for CO2 System for pH control...	\$ 13,000	
8. Option for bi-sulfate for pH control....	\$ 3,200	
9. Medium Pressure UV.....	\$ 48,800	
10. Provide alkalinity control through new chemical controller w/ bi-sulfate or CO2..	\$ 3,500	

Other Concerns / Trade Costs:

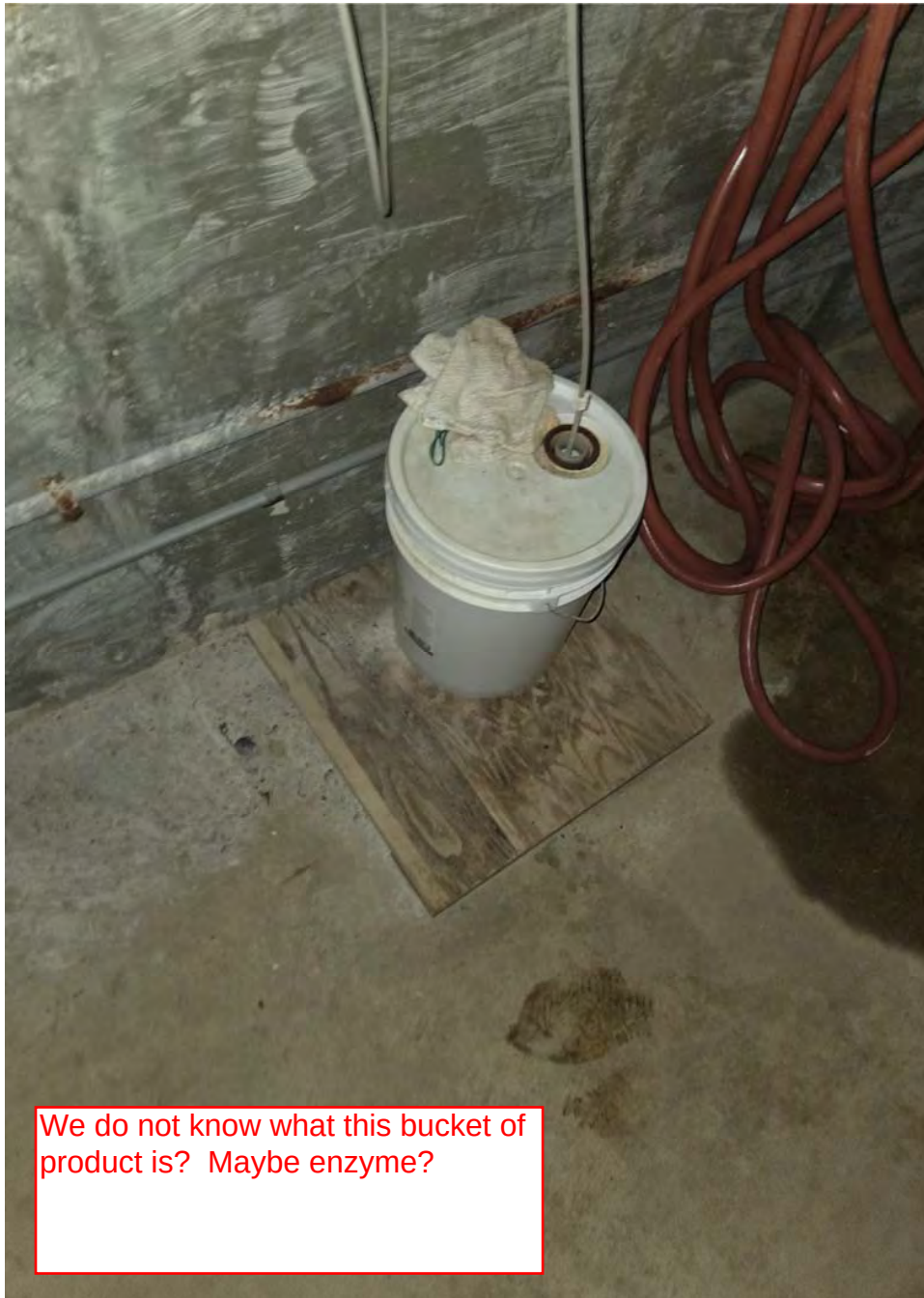
1. Cost to produce EGLE Compliant Design Documents...	\$ 25,000
2. Plumbing support in mechanical room....	\$ 90,000
3. Electrical support in mechanical room...	\$ 80,000
4. Make-up air in mechanical room....	\$ 60,000
5. New heater / exchanger....	\$ 20,000

Conclusion:

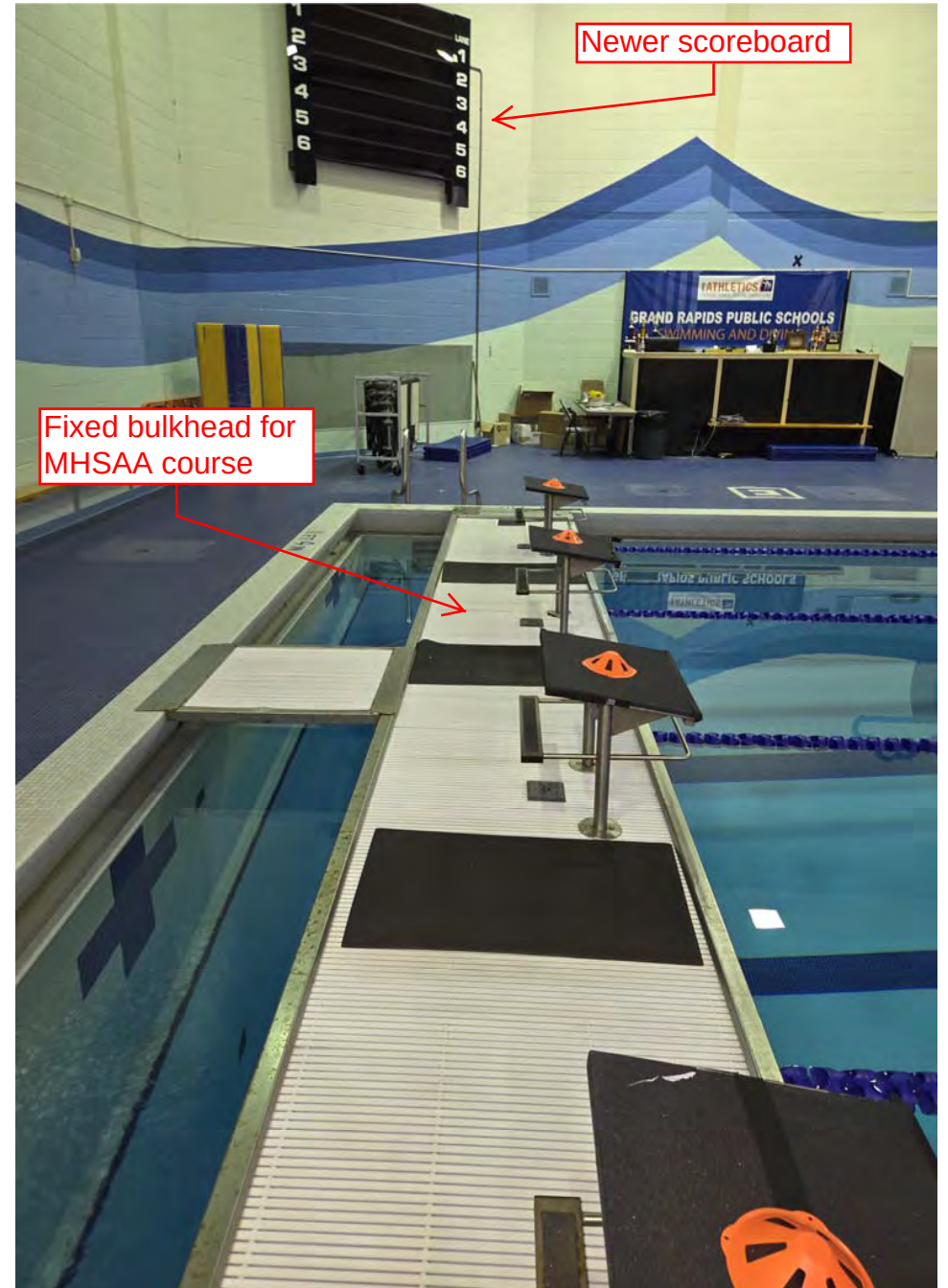
We would welcome the chance to sit down with the School Board and/or Administration to go over the report in detail and field questions. Following in the attached pages you will find a pictorial library from my visit with my notes on the individual photos that tie them to this document. We have also included various product information and cut sheets for the equipment that would be specified. We thank you for selecting us to be a part of your team and the process and stand ready to proceed at your direction.

Sincerely,

Nick Shelton
General Manager
Aquatic Source, LLC

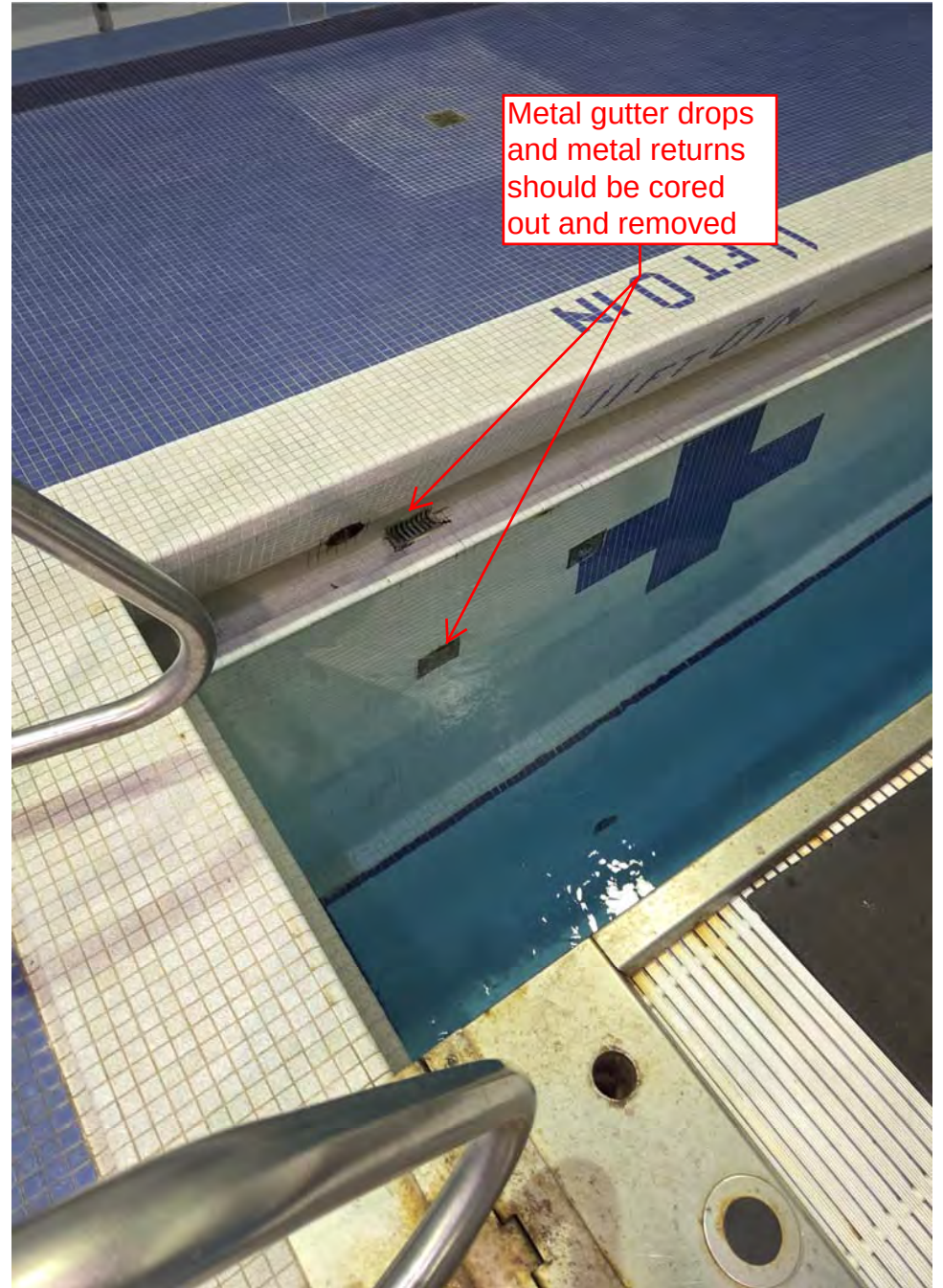
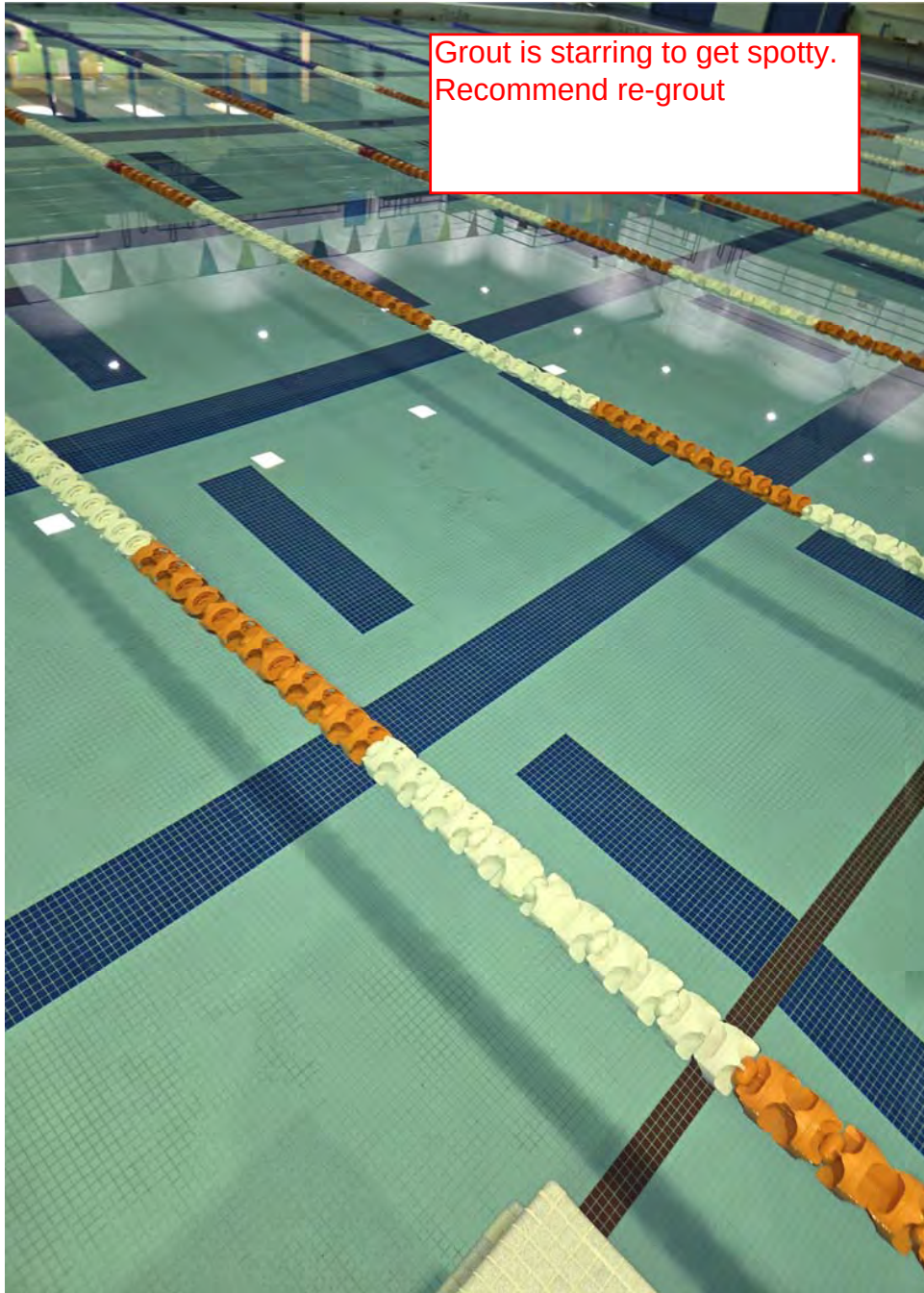


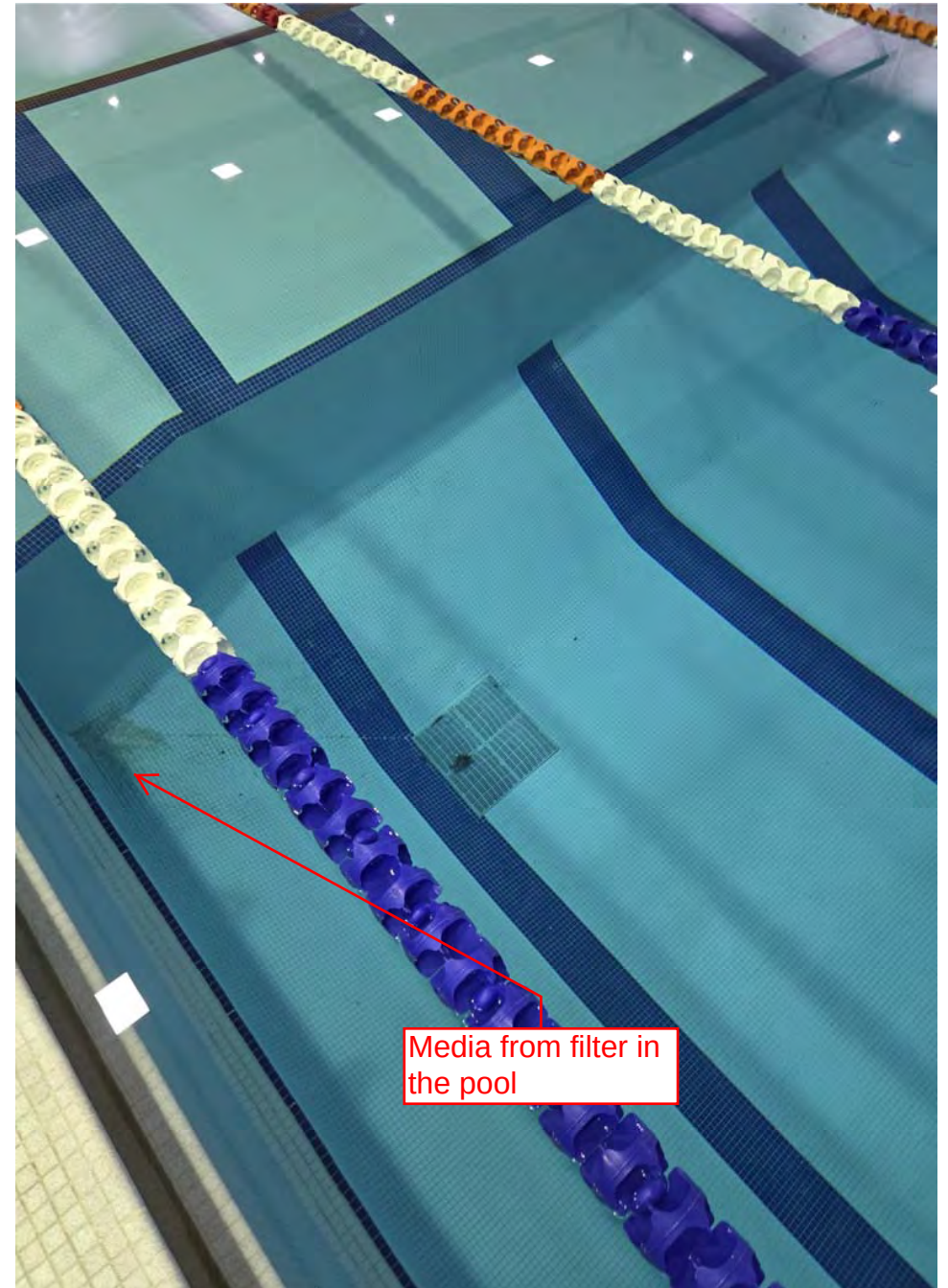
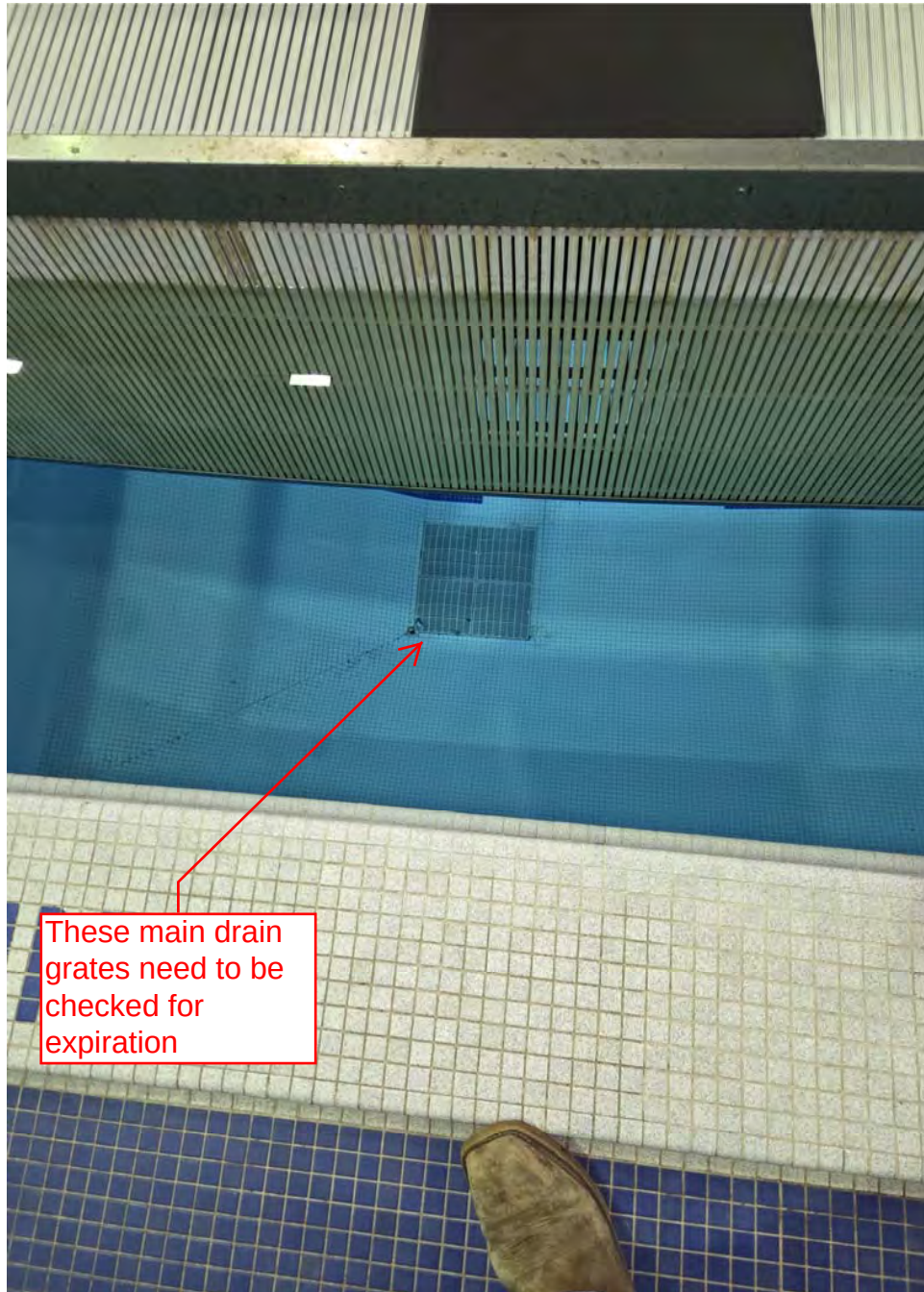
We do not know what this bucket of product is? Maybe enzyme?



Newer scoreboard

Fixed bulkhead for MHSAA course









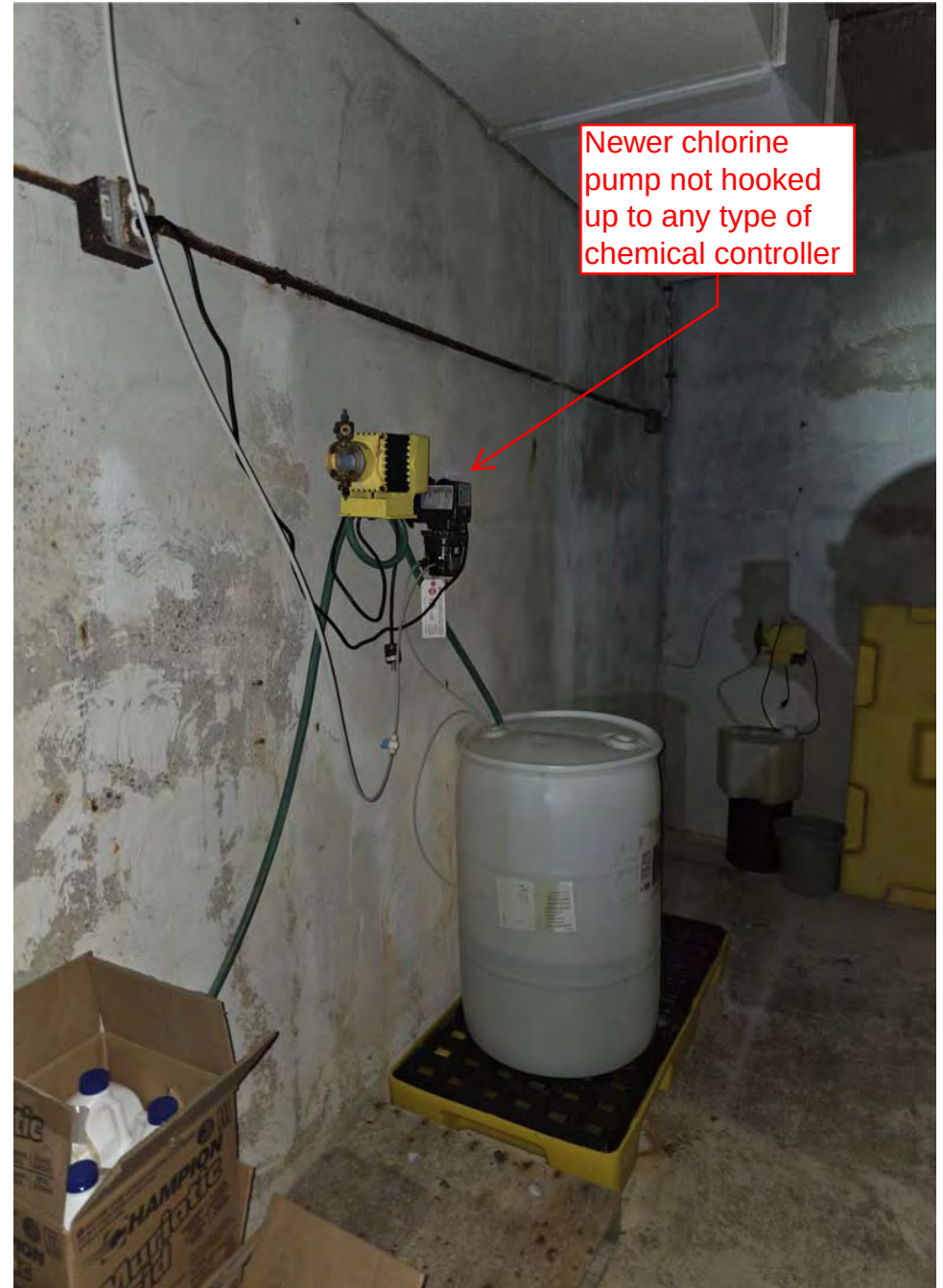
You can see the structural beam bearing on the pool wall. Something has moved and this has been leaking for a very long time. This and other obvious leaks in structure need to be investigated by a structural engineer



Another active structural leak



Heat exchanger is very old



Newer chlorine pump not hooked up to any type of chemical controller

Existing chemical controller unplugged and not in use.



Flow cell for existing chemical controller



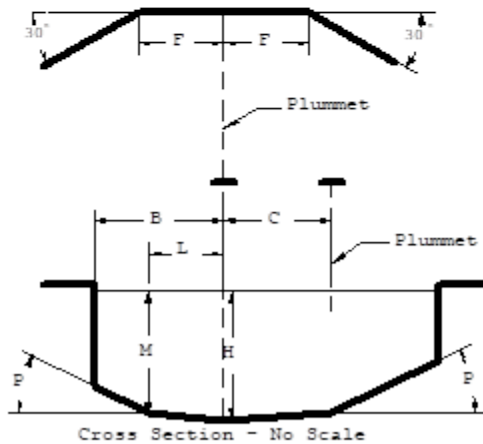
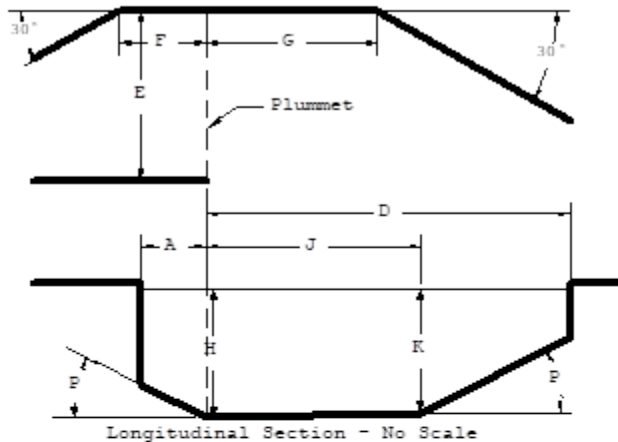


This flow meter is showing the pool running at 6 gallons per minute. There needs to be a functioning flow meter on the pool per code

Table 1
Diving Areas

Letters below refer to Figure 1	Board height in meters	0.5 Meter	1.0 Meter	3.0 Meters
	Board height (feet)	1'8"	3'4"	9'11"
	Board length (feet)	10'0"	16'0"	16'0"
	Board width (feet)	1'8"	1'8"	1'8"
Minimum dimensions in feet				
A	Distance from plummet back to pool wall	2'0"	5'0"	6'0"
B	Distance from plummet to pool wall at side	8'3"	8'3"	11'6"
C	Distance from plummet to adjacent plummet	7'1"	7'1"	8'3"
D	Distance from plummet to pool wall ahead	26'0"	29'7"	33'8"
E	Height from board to ceiling at plummet and distances F and G	16'0"	16'0"	16'0"
F	Clear overhead distance behind and each side of plummet	8'0"	8'0"	8'0"
G	Clear overhead distance ahead of plummet	16'0"	16'0"	16'0"
H	Depth of water at plummet	8'6"	11'0"	12'0"
J	Distance ahead of plummet to depth K	12'0"	16'5"	19'9"
K	Depth at distance J ahead of plummet	8'3"	10'9"	11'9"
L	Distance at each side of plummet to depth M	8'0"	5'0"	6'7"
M	Depth at distance L on each side of plummet	8'3"	10'9"	11'9"
N	Maximum slope to reduce height E	30 degrees	30 degrees	30 degrees
P	Maximum floor slope to reduce depth ahead of K, to the sides of M, or back to pool wall behind H	1:3	1:2	1:2

Figure 1
Diving Areas



Highlighted above are some of the dimensions that I am concerned about just looking at the current configuration

Defender® Cost Savings Analysis



PROJECT INFORMATION			
PROJECT:	CITY HIGH & MIDDLE SCHOOL- GRPS	DATE:	March 14, 2025
LOCATION:	GARND RAPIDS, MI	PREPARED FOR:	SCOTT WEIR
		PREPARED BY:	NICK SHELTON

POOL SYSTEM DATA

POOL DESCRIPTION		I/O Flow (gpm)	
Pool-1	INDOOR HIGH SCHOOL POOL	I	656
Pool-2			
Pool-3			
Pool-4			
Pool-5			

POOL DESCRIPTION		I/O Flow (gpm)	
Pool-6			
Pool-7			
Pool-8			
Pool-9			
Pool-10			

OPERATING COST VARIABLES

VARIABLES	FORMULAS & DEFINITIONS		VALUES	UNIT
MECHANICAL SPACE VALUE	Cost per ft² to construct a room adequate to house filter equipment (indoor construction).		\$120.00	\$/ft²
INSTALLATION LABOR VARIANCE	Sand filters require an installation labor variance @ historical average cost of 15% of the filter.		15%	\$
MEDIA LOADING: SAND FILTER	Average cost to load media based on historical averages for time and labor.		\$4.00	\$/bag
MEDIA COST: SAND FILTER	Based on average market rate for #20 Silica Sand and 1/8 X 1/4 Pea Gravel. Weights drawn from corresponding filter data.		\$17.80	\$/100lb
MEDIA COST: DEFENDER FILTER	Based on average market rate for Perlite Filter Media. Annual Defender Filter Media Cost = Media weight in filter (from table) x Defender backwash frequency.		\$0.94	\$/lb
BACKWASH VOL: SAND (BVS)	BVS = Backwash Rate x Total Filter Surface Area x Backwash Duration x Backwash Frequency.	Rate	20	gpm/ft²
		Surface Area	From Table	ft²
		Duration	6	minutes
		Frequency	52	#/season
BACKWASH VOL: DEFENDER (BVD)	BVD = Total Tank Volume x 2 x Media Replacement Frequency.	Tank Volume	From Table	gal
		Frequency	12	#/season
POTABLE WATER USAGE	Potable Water Usage fee includes a "Volume Charge" only and does not include the monthly meter charge. See "Backwash Volume" for water usage volume calculation.		\$3.50	\$/1000 gal
SANITARY SEWER FEE	Sanitary Sewer Fee = (Monthly Capacity Charge + Monthly Usage Charge) x annual sewerage volume.		\$3.50	\$/1000 gal
MAKE-UP WATER: CHEMICALS (MWC)	MWC Cost = Water savings in gallons x Average market \$cost/gal for pool chemicals.		\$3.00	\$/1000 gal
MAKE-UP WATER: HEAT (MWH)	Represents cost to reheat backwash makeup water by average temperature delta°. MWH Cost = Backwash Vol. x 8.33#/gal x Conversion Factor x Delta° x \$/therm.	Temp Delta	30°	degrees F
		Cost/Therm	\$0.90	\$/therm
OPERATING DAYS PER SEASON	Average number of days of operation each year across all pools included in the project.		365	days
ELECTRICAL COSTS	Pump Motor HP x .746 Rating Conversion x \$Cost/Kw x 24 hrs x Average Operating Days.	Kw	\$0.12	\$/Kw
ANNUAL INCREASE	Average cumulative increase in labor, materials and maintenance costs (applies to both Sand and Defender filter installations).		7%	%
COMPRESSORS	Number of Air Compressor units needed for this project.		1	#
DEFENDER TOOL KITS	Number of Defender Tool Kits needed for this project.		1	#



PROJECT NAME: CITY HIGH & MIDDLE SCHOOL- GRPS

LOCATION: GARND RAPIDS, MI

PREPARED FOR: SCOTT WEIR

DATE: March 14, 2025



PREPARED BY: NICK SHELTON

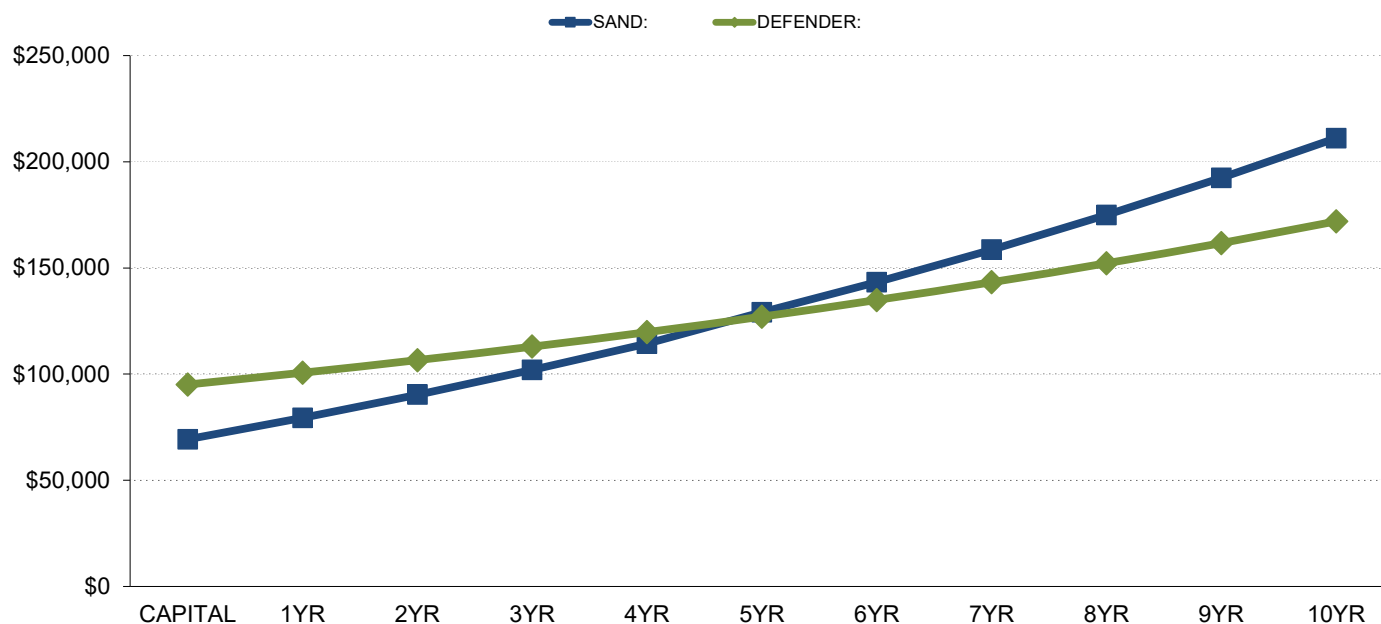
PHONE: 800-832-8002

FAX: 401-821-7129

WEBSITE: www.DefenderFilter.com



10 YEAR LIFE-CYCLE COST INCLUDING CAPITAL INVESTMENT



Water Savings

88%
Annual Water Savings

3,017,568
Gallons Saved Over 10 Years

Adj. ROI Payback

59 Months
@ 365 Operating Days /Yr

Electrical Savings

21%
Annual Electrical Savings

172,306
kWh Saved Over 10 Years

	CAPITAL	1YR	2YR	3YR	4YR	5YR	6YR	7YR	8YR	9YR	10YR
DEFENDER:	\$95,040	\$100,607	\$106,564	\$112,938	\$119,758	\$127,055	\$134,863	\$143,218	\$152,157	\$161,723	\$171,958
SAND:	\$69,317	\$79,479	\$90,353	\$101,988	\$114,437	\$129,075	\$143,328	\$158,579	\$174,897	\$192,358	\$211,041

Defender 10 Year Savings Forecast:

\$39,083





DEFENDER COST SAVINGS ANALYSIS: SUMMARY

INITIAL CAPITAL EXPENSES

ITEM / DESCRIPTION	SAND FILTER COST	DEFENDER FILTER COST	COST VARIANCE
FILTER PURCHASE PRICE	\$68,000	\$95,000	(\$27,000)
MECHANICAL SPACE	\$0	\$0	\$0
INSTALLATION LABOR VARIANCE	\$0	\$0	\$0
FILTER MEDIA	\$1,317	\$40	\$1,277
TOTAL CAPITAL COSTS:	\$69,317	\$95,040	(\$25,723)

ANNUAL OPERATING EXPENSES

ITEM / DESCRIPTION	SAND FILTER COST	DEFENDER FILTER COST	COST VARIANCE
ELECTRICAL COSTS	\$5,820	\$4,573	\$1,247
POTABLE WATER FEE	\$1,197	\$141	\$1,056
MAKE-UP: CHEMICALS	\$1,026	\$121	\$905
MAKE-UP: HEAT	\$923	\$108	\$814
SANITARY SEWER FEE	\$1,197	\$141	\$1,056
PERLITE MEDIA	\$0	\$484	(\$484)
ANNUAL OPERATING COSTS:	\$10,162	\$5,567	\$4,595

FILTER 10 YEAR SAVINGS FORECAST

ITEM / DESCRIPTION	SAND FILTER COST	DEFENDER FILTER COST	COST VARIANCE
CAPITAL COST	\$69,317	\$95,040	(\$25,723)
ELECTRICAL COSTS*	\$80,409	\$63,179	\$17,231
POTABLE WATER FEE*	\$16,536	\$1,944	\$14,592
MAKE-UP: CHEMICALS*	\$14,174	\$1,666	\$12,508
MAKE-UP: HEAT*	\$12,751	\$1,499	\$11,252
SANITARY SEWER FEE*	\$16,536	\$1,944	\$14,592
PERLITE MEDIA*	\$0	\$6,686	(\$6,686)
SAND MEDIA REPLACEMENT**	\$17,000	\$0	\$17,000
MEDIA REPLACEMENT (LABOR)***	\$5,000	\$0	\$5,000
GRAND TOTAL SAVINGS:			\$59,766

RAW ROI PAYBACK PROJECTION	CAPITAL COST VARIANCE ÷	OPERATING COST VARIANCE =	PAYBACK PERIOD (MONTHS)
	-\$25,723	\$4,595	67

*COSTS INCLUDE ANNUAL INCREASE FOR LABOR, MATERIALS AND MAINTENANCE

**SAND MEDIA REPLACEMENT AT 5 & 10 YEAR INTERVALS - PRICE BASED ON PROJECTED FUTURE COST

***MEDIA REPLACEMENT LABOR BASED ON HISTORICAL AVERAGES FACTORED FOR ANNUAL COST INCREASES

PROJECT NAME: CITY HIGH & MIDDLE SCHOOL- GRPS
LOCATION: GARND RAPIDS, MI
CONTACT NAME: SCOTT WEIR
PREPARED BY: NICK SHELTON
DATE: March 14, 2025



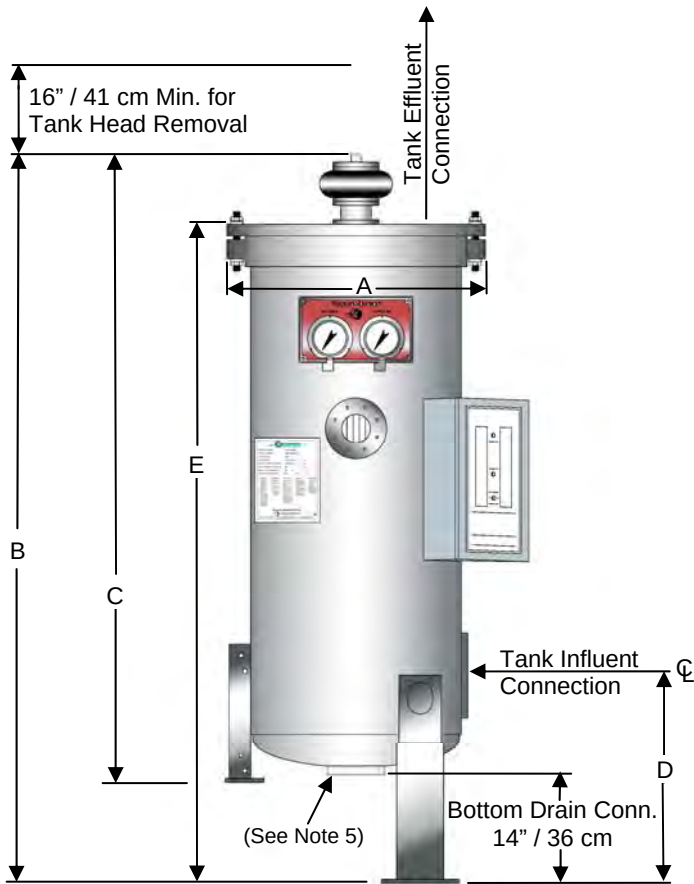


DEFENDER FILTER CAPITAL & OPERATING COSTS																					
POOL DATA				DEFENDER MEDIA FILTER DATA					CAPITAL COSTS				ANNUAL OPERATING COSTS * DEFENDER FILTER								
Pool	Description	Flow (gpm)	Qty	NB Model #	Filter Surface Area (sf)	Filtration Rate (gpm/sf)	Tank Volume (gal)	Total Media Wt (lb)	Equipment Purchase Price	MECHANICAL SPACE		Perlite Media Cost	FILTER BACKWASH					PERLITE		PUMP DATA	
										Footprint(sf)	Cost		Volume (gal) (NOTE 1)	Potable Water	Sewer Discharge	Make-up Water Chem	Make-up Water Heat	Total Filter Recoat (lb)	Total Perlite Cost (lb)	Brake HP Req'd @ 55'TDh	Electrical Cost w/VFD
	INDOOR HIGH SCHOOL POOL	656	1	SP-33-48-732	572.0	1.1	250	43	\$95,000	0	\$0	\$40	40,195	\$141	\$141	\$121	\$108	515	\$484	11.39	\$4,573
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	0	0	0	0	0.0	0.0	0	0	\$0	0	\$0	\$0	0	\$0	\$0	\$0	\$0	0	\$0	0.00	\$0
	Compressors		1						\$0												
	Defender Tool Kits		1						\$0												
	TOTALS	656	1		572		250	43	\$95,000	0	\$0	\$40	40,195	\$141	\$141	\$121	\$108	515	\$484	11.39	\$4,573



Neptune-Benson®
Since 1956

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FILTER DIMENSIONS (imperial)					
Model Number	A	B (Note 1)	C (Note 1)	D	E
	in	in	in	in	in
SP-18-48-176	24.69	82.3	82.3	17.8	73.8
SP-24-42-327	30.75	90	76.5	27.5	81
SP-27-48-487	33.25	95	81.5	27.5	86
SP-33-48-732	39.25	104	90.5	31.5	93.5
SP-41-48-1038	47.75	106	92.5	35.5	97.5
SP-49-48-1548	54.75	110	96.5	36	101.5
SP-55-48-2076	61.75	115	101.5	39	105.5

FILTER DIMENSIONS (metric)					
Model Number	A	B (Note 1)	C (Note 1)	D	E
	cm	cm	cm	cm	cm
SP-18-48-176	62.7	209	209	45	187
SP-24-42-327	78.5	229	194.3	70	206
SP-27-48-487	84.5	241.5	207	70	218.5
SP-33-48-732	100	264.2	230	80	237.5
SP-41-48-1038	121.5	269.2	235	90.5	248
SP-49-48-1548	139.5	279.4	245.1	91.5	258
SP-55-48-2076	157	292.1	258	99	268

- Automatic System Includes: Automatic Filter Controller
- Semi-Automatic System Includes: Bump Button Box

FILTER CAPACITIES & SPECIFICATIONS								
Model Number	Filter Area		Maximum NSF Flow Rate		Recommended Flow Rate Range (Note 2)		Tank Volume	
	ft²	m²	2.0 gpm/ ft²	4.89 m³/hr	.5 - 1.4 gpm/ ft²	1.22 - 3.42 m³/hr/m²	gallons	m³
SP-18-48-176	137	12.73	274	62.3	69 - 192	15.53 - 43.54	66	.25
SP-24-42-327	223	20.72	446	101.32	112 - 312	25.28 - 70.86	128	.484
SP-27-48-487	381	35.60	762	174.08	191 - 533	43.43 - 121.75	159	.602
SP-33-48-732	572	53.14	1144	259.85	286 - 801	64.83 - 181.73	250	.946
SP-41-48-1038	812	75.44	1624	368.90	406 - 1137	92.04 - 258.00	441	1.669
SP-49-48-1548	1211	112.50	2422	550.13	606 - 1695	137.25 - 384.75	615	2.328
SP-55-48-2076	1625	150.97	3250	737.48	813 - 2275	141.48 - 516.32	841	3.184

FILTER CONNECTION SIZES & SPECIFICATIONS																
Model Number	Tank Conn. Inches (Note 3)	Tank Conn. mm (Note 3)	Drain Conn. Inches (Note 5)	Drain Conn. mm (Note 5)	Tank Footprint		Perlite (Note 4)		Upper Head Weight		Head & Tubes Weight		Tank Ship Weight		Operating Weight	
	imperial	DN	imperial	DN	ft²	m²	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
SP-18-48-176	3	80	2	50	11	.37	12	5.44	150	60	237	108	750	340	1311	595
SP-24-42-327	4	100	3	80	24	2.23	18	8.16	310	141	584	265	1450	658	2515	1141
SP-27-48-487	6	150	3	80	27	2.5	30	13.61	350	159	660	299	1650	748	2970	1347
SP-33-48-732	8	200	3	80	33	3.06	45	20.41	475	216	790	358	1800	817	3880	1760
SP-41-48-1038	8	200	4	100	44	4.09	64	29.03	750	340	1265	574	2350	1066	6019	2730
SP-49-48-1548	10	250	4	100	58	5.4	96	43.54	1085	492	1920	871	3320	1506	8437	3827
SP-55-48-2076	12	300	4	100	72	6.7	128	58.06	1385	628	2300	1043	3850	1746	10847	4920

Note 1: "B" dimension is installed height. "C" dimension indicates overall height with tank legs in the shipping position.

Note 2: Recommended flow rate range is suggested to optimize filtration performance.

Note 3: Tank connection sizes based on velocity not to exceed 10 fps or 3.048 mps.

Note 4: The required perlite media volume is based on a 1/8" (.3175 cm) cake which is the recommended thickness for optimum performance. This procedure will maximize filtration without adversely affecting the design pressure drop through the filter.

Note 5: SP-18 features a side drain. Centerline location is 10" (25cm) off of the floor.

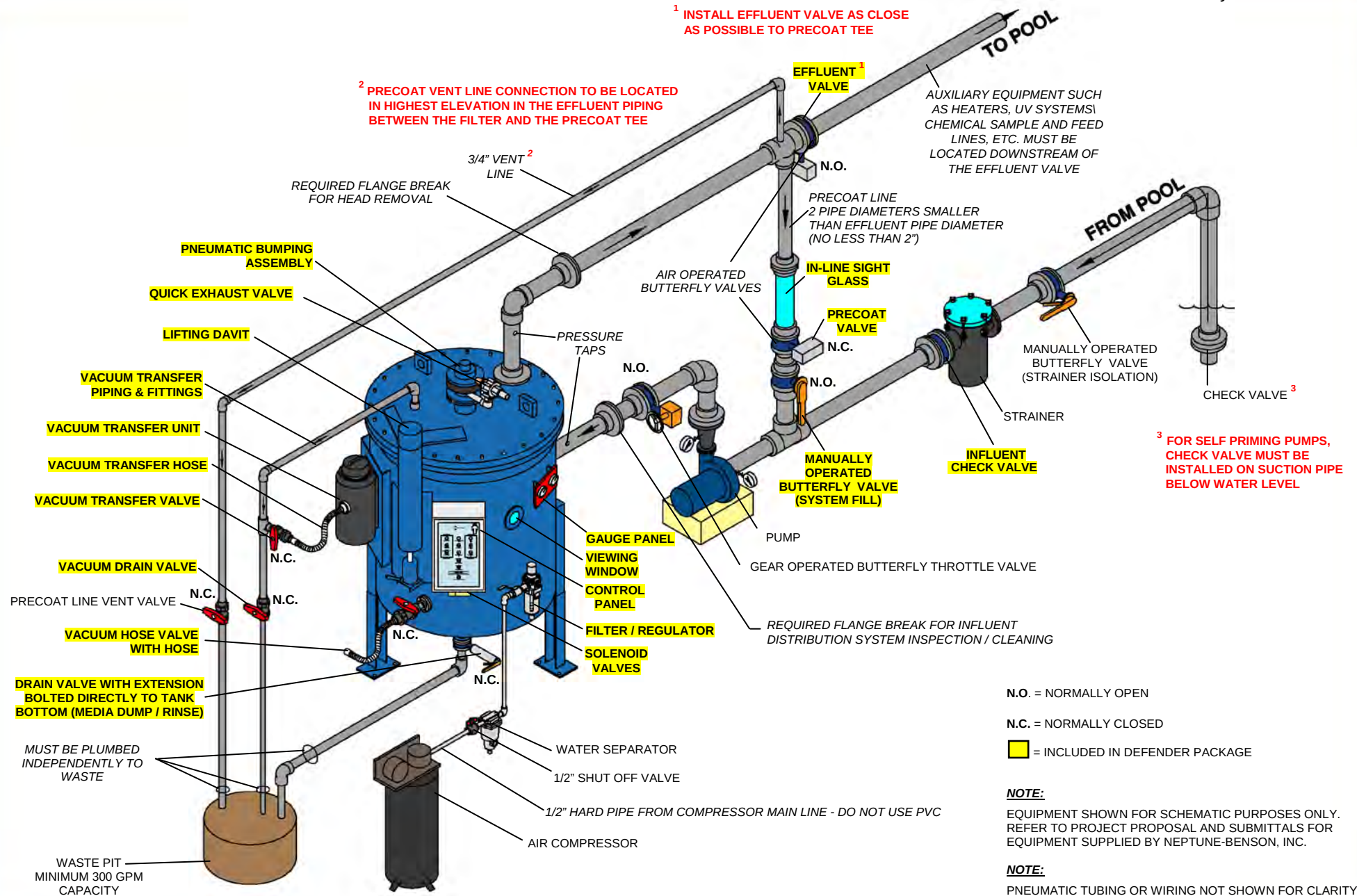
Note 6: SP-18 does not have collapsible legs – see website for illustration.



Neptune-Benson™

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R-11/28/11



Defender[®]

by Neptune Benson[®]

Regenerative Media Filters



Neptune  Benson[®]
Since 1956

Regenerative Media Filters

The Evolution of Water Filtration

Fresh, clean water is a common necessity in every corner of the world. We use it for drinking, bathing, food preparation, manufacturing, recreation and much, much more. With the need for clean water comes the need for water filtration. Water filtration has long been done using sand filtration. It is an easy and relatively inexpensive method for filtering water and has been used for thousands of years.

Pool Filtration

Approximately 60 years ago, swimming pool filters were composed of alternating layers of sand and gravel. In order to provide a significant filter area, these filters were extremely large. The filters would be backwashed every one to two weeks, disposing a significant volume of water to the municipal waste line. While these filters of yesteryear were effective, they became impractical as innovation led to more compact and efficient designs.

High-Rate Sand Filters

Today, the sand and gravel filters have been replaced with high-rate sand filters. The modernized version uses a single layer of fine sand and requires about 15% of the space required by the original sand and gravel filters. Although the high-rate sand filters are more compact and cost effective, they waste around 40% more water because of the need to be backwashed more often. In addition, the previous sand and gravel filters were more efficient at trapping smaller particles because the pressure in the high-rate sand filter forces smaller particles through the sand and back into the pool.

Diatomite Filters

Later, Diatomite filters (D.E.) were introduced and offered significantly improved performance relative to traditional sand filtration. The D.E. filters replaced the permanent sand media with diatomaceous earth and it was applied to internal filter elements at the beginning of every cycle and removed with the backwash water at the end of the cycle. The D.E. filters posed operational drawbacks associated with handling and disposal of the media, pushing for a safer and more environmentally friendly product.

Regenerative Media Filters

Regenerative Media Filters (RMF's) are a more efficient alternative to sand or D.E. filtration. RMF's such as the Neptune Benson's Defender® use up to 90% less water, take up a quarter of the space, and use less energy than traditional sand filters. Regenerative media filters are also more effective at removing contaminants. The Defender is able to remove particles as small as 1 micron from water while traditional sand

filters generally only remove particles in the 20 micron range.

Neptune Benson developed the Defender Regenerative Media Filter to provide a safe, non-hazardous filter which uses perlite media for the clearest, cleanest and safest water. Our automated system offers worry free operation and significant water savings. We invite you to explore all of the benefits of the Defender.

Defender®
by Neptune Benson®



Defender Technology Benefits

Up to 90% Water and Waste Savings



The Defender significantly eliminates the amount of backwash water associated with sand filter operation. Instead of backwashing, the Defender is programmed to automatically “bump” to regenerate the fine-grade perlite media for a fresh start. Eventually the filter will become saturated with trapped dirt and will require a quick and easy media discharge and replacement. Depending on bather load, the life cycle of the media averages around every four weeks.

Backwash Water Consumption				
Sand vs. Defender	Filter Area (sq ft)	Filter Rate (gpm/sq ft)	Backwash Volume (gal)	Annual Volume (gal)
Sand Filter (4) 4884SHFFG-6	126.8	11.8	9510 gal 3x / week	1,483,560 gal
Defender (1) SP-49-48-1548	1211	1.2	1230 gal 1x / 4 weeks	14,760 gal
Annual Water & Waste Savings: 1,468,800 gallons or approximately \$10,282.00* *US average water/sewer costs \$7.00 per 1000 gal				

75% Space & Construction Savings



The Defender takes up 1/4 to 1/6 of the space required by an equivalently sized sand system. This saves both space and construction costs. See the multiple benefits below.

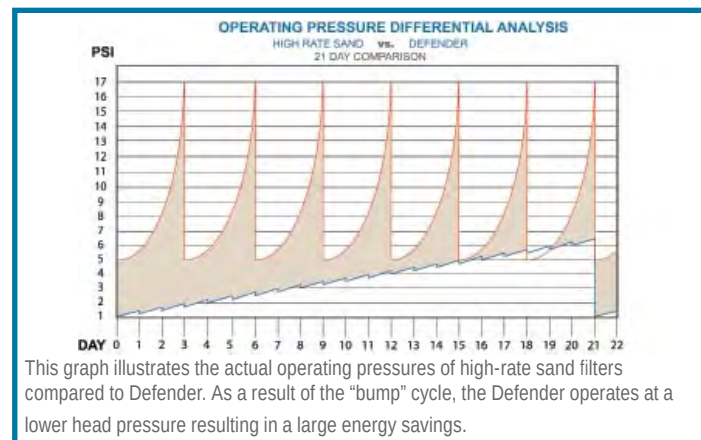
- No backwash holding tank
- Smaller waste line to sewer
- Local backwash to waste flow rate restrictions
- Operating weight may be as little as 10% of a similar sand filter
- Smaller access doors needed to plant



50% Energy Savings



Energy savings are derived in several ways. First, Defender filters operate at lower head pressures throughout the filter cycle saving power demand. Second, the elimination of backwash waste associated with sand filtration provides significant wastewater treatment savings. Consider the cost of chemically treating 1.4 million gallons and the BTU's required to heat this volume from 50°F (10°C) to 80°F (27°C).

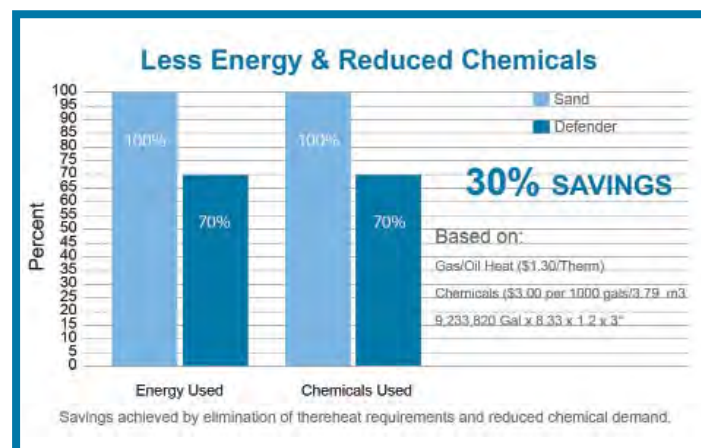


30% Less Fuel & Chemicals



The Defender eliminates the tremendous amount of backwash water associated with sand filter operation. Instead of backwashing, the Defender is programmed to automatically “bump” to regenerate the fine-grade perlite media and start fresh. Eventually the filter will become saturated with trapped dirt and will require a media discharge and replacement.

The following chart illustrates the Backwash Water Consumption of a typical indoor waterpark attraction with a 2000 GPM (454 m³/hr) recirculation rate. The annual water savings in excess of 2.2 million gallons (8328 m³) is complemented by associated costs related to sewer expenses, chemicals, heating, power and labor.



Defender Technology Benefits

Removes particles down to 1 micron



The Defender achieves the highest quality of water by removing particles down to 1 micron. This is 20 to 30 times finer than sand.

The multiple rewards listed below:

- Extension to the life of the filter
- Unsurpassed water quality
- Improved UV disinfection performance
- Up to 30% chemical consumption savings
- Controls turbidity to levels better than those required for drinking water.

ROI Savings Analysis



The combination of water, fuel and chemical savings with the Defender can translate into significant savings over time. You will be amazed at the payback and affordability of this system. With Neptune Benson's 50+ year track record of delivering exceptional value, you will enjoy the peace of mind that can only come from partnering with an industry leader. Some facilities have realized a return on investment in less than one year.

See the chart to the right for a breakdown of potential savings.

How Big is a Micron?

One Inch or 25.44 mm
25,400 microns

Paper Clip Wire
about
1,000 microns



Human Hair
about
50-100 microns



Pollen Grains
about
30-50 microns



Red Blood Cells
about
5-10 microns



Sample Savings Analysis

Potable Water & Discharge Impact	Sand	Defender®
Backwash Volume (Gal, US)	1,483,560	163,116
Potable Water (Make-up) Fees (USD)	\$5,192.00	\$571.00
Discharge Fees (USD)	\$5,192.00	\$571.00
Energy & Fuel Impact		
Pump Power Consumption (kW)	216,569	170,170
Pump Power Cost (USD)	\$13,307.55	\$10,455.94
Heating Requirements (Therms)	4,449	489
Heating Costs (USD)	\$5,784.00	\$636.00
Water Treatment Chemical Impact		
Chemical Costs	\$4,451.00	\$489.00





Neptune Benson's Defender® Regenerative Media Filter is simply the most efficient filtration system available today. It offers unprecedented water, energy and space savings and is capable of meeting the needs of nearly any water filtration application.

Large installation or small, there's a Defender filter that's right for you. Durability, economy and simplicity make the Defender the choice of premier design professionals the world over.

Follow the LEEDer

Neptune Benson's commitment to LEED® principles pre-dates the creation of this formalized rating system. Improving the health and safety of aquatic environments has always been at the heart of what we do. Defender has helped numerous projects achieve LEED certification by routinely providing the following category points:

Energy & Atmosphere



Meets Prerequisite 2 - Minimum Energy Performance
Earns Credit 1 - Optimize Energy Performance

Innovation & Design



Earns Credit 1 - Reduction in Water Usage

What is the LEED System

Leadership in Energy & Environmental Design

Developed by the US Green Building Council (USGBC) in 2000, the LEED System has become the National Standard certifying design, construction & operations of green buildings. Projects (not products) are evaluated in five (5) areas:

- Sustainable Sites
- Water Efficiency
- Energy & Atmosphere
- Materials & Resources
- Indoor Environmental Quality

* Extra credit may be earned for Innovation & Design



Designed with Performance in Mind

Tank Construction

All vessels are conservatively engineered and manufactured with Flexsol 3000™ interior lining and include a 10 year fully rated warranty. The lining protects all wetted surfaces against corrosion to maximize the life expectancy of the vessel.

Vacuum Transfer

At the push of a button, a self-contained, integrated pump quickly introduces dry media into the Defender filter. This feature eliminates the mess and additional equipment required by wet, slurry designs.

Internal Hydraulics

Our under-drain manifold is engineered to achieve ideal distribution of influent flow. The generous open area serves to minimize turbulence and ensure superior “Flex Tube” coverage.

Lifting Davit

At some point it may be necessary to access the interior of the vessel. Our unique tank-mounted davit permits easy access without remote lifting devices. The davit reduces the overall height requirement and saves valuable floor space.

Filter Elements

Our “Flex Tubes” are constructed of T304L stainless steel frames (optional T316L) with permanent polyester woven coverings. Not one has ever had to be replaced as result of wear. Other systems designed with rigid plastic frames, o-rings and socks require costly replacement frequent maintenance.

The “Bump”

It’s all about the “Bump” - The Defender filter is programmed to automatically “bump” on a daily basis to regenerate the media coating of the “Flex Tubes”. This incredible benefit maximized system performance and reduces water consumption.

How it Works

As the bump tire deflates (A), the tube sheet lowers to loosen the media and trapped debris. The re-inflation of the bump tire (B) raises the tube sheet and forces water into the “Flex Tubes”, gently expanding them to fully release all material. This bump cycle pulses ten times to ensure the entire cleaning process.

At the completion of the bump cycle, the Defender will automatically pre-coat the “Flex Tubes” and re-commence the filter cycle. The “Bump” is a vital function in order to achieve superior filtration and to make the most out of every filter cycle.



Now Get Even More



Introducing the new RMF System Controller

Easy to Use

Get the most out of the Defender® with the RMF System Controller. The RMF System Controller displays data through a 7" high resolution LCD and offers simple push button operation paired with on screen menus to make operation quick and easy. It also provides animated graphics with step-by-step instructions on operating procedures.

Remote Monitoring and Control

The RMF System Controller provides remote monitoring, e-mail notifications of condition changes, and remote control of the system operations. Check performance remotely through a web browser or phone.

Data Logging and Exporting

The RMF System Controller continually logs data providing detailed information on water pressure stats, bump schedule, purge and more. Data can be viewed remotely and is exportable to .CSV formats for creating reports and working with the data.

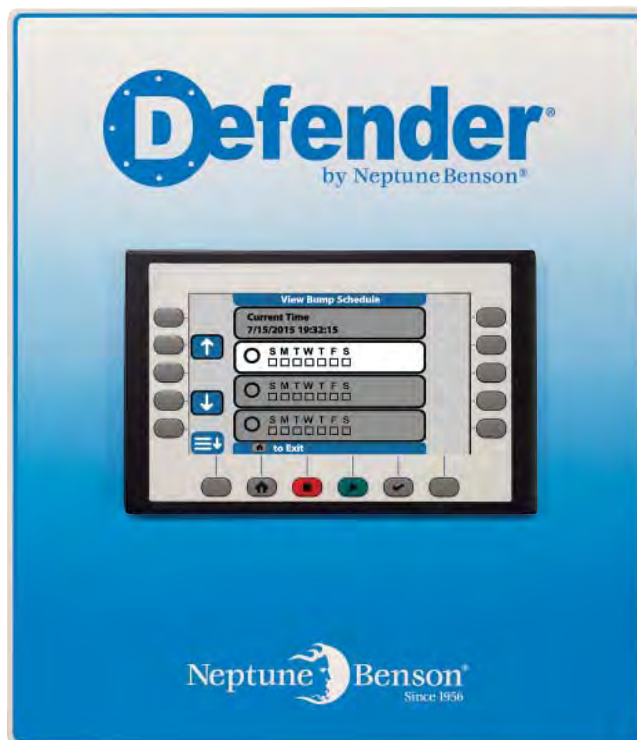
Improve Efficiency

The data provided through the RMF System Controller can be used to analyze trends and modify operations to maximize efficiency. Analyze and identify peak usage, then automate or schedule bumping to insure optimal operation. Data logs can also be used to help troubleshoot issues by identifying operating issues.



New Features & Benefits:

- 7" Hi-Res LCD w/ Tactile Feedback Membrane
 - Step by step animated graphics
- Advanced control of:
 - Bump & precoat cycle
 - Pneumatic valves & recirculation pump
 - Vacuum transfer system
 - Heater cool down delay
 - Data logging & maintenance reminders
- Remote monitoring/operation
 - Through a browser or smart phone
- Modbus communication for PLC connectivity
- Nema 4x/IP66 approved
- greendrive™ VFD & ETS-UV connectivity
- Automated Drain & Purge



Defender Certifications & Credits



NSF
National Sanitation Foundation

An independent, accredited organization that tests, audits and certifies products and systems, as well as provides education and risk management.

Location Tested/Certified: USA

Certified for: NSF/ANSI 50: Pool, Spa and Recreational Water Products and NSF/ANSI 61: Drinking Water System Components.
nsf.org



UL
Underwriters Laboratories

UL is global independent safety science company offering expertise across seven key strategic businesses; Product Safety, Environment, Information and Insights, Life & Health, Verification Services, Enterprise Services, and Workplace Health & Safety. Our breadth, established objectivity and proven history mean we are a symbol of trust and enable us to help provide peace of mind to all.

Location Tested/Certified: USA

Defender Tested/Certified for: RMF Panel USA
ul.com/global/eng/pages/



Smart WaterMark Approved

Australia's water conservation label, identifying & promoting products & services which help save water. An independent not-for-profit program supported by government & industry, and sister scheme to the WELS water efficiency rating program.

Location Tested/Certified: Australia

Defender Tested/Certified for: Validate Water Savings On An Application
www.smartwatermark.info/home/default.asp



CE Approved

The European Commission describes the CE mark as a "passport" that allows manufacturers to circulate industrial products freely within the internal market of the EU. The CE mark certifies that products have met EU health, safety and environmental requirements for workplace safety. All manufacturers in the EU and abroad must affix the CE mark.

Location Tested/Certified: USA

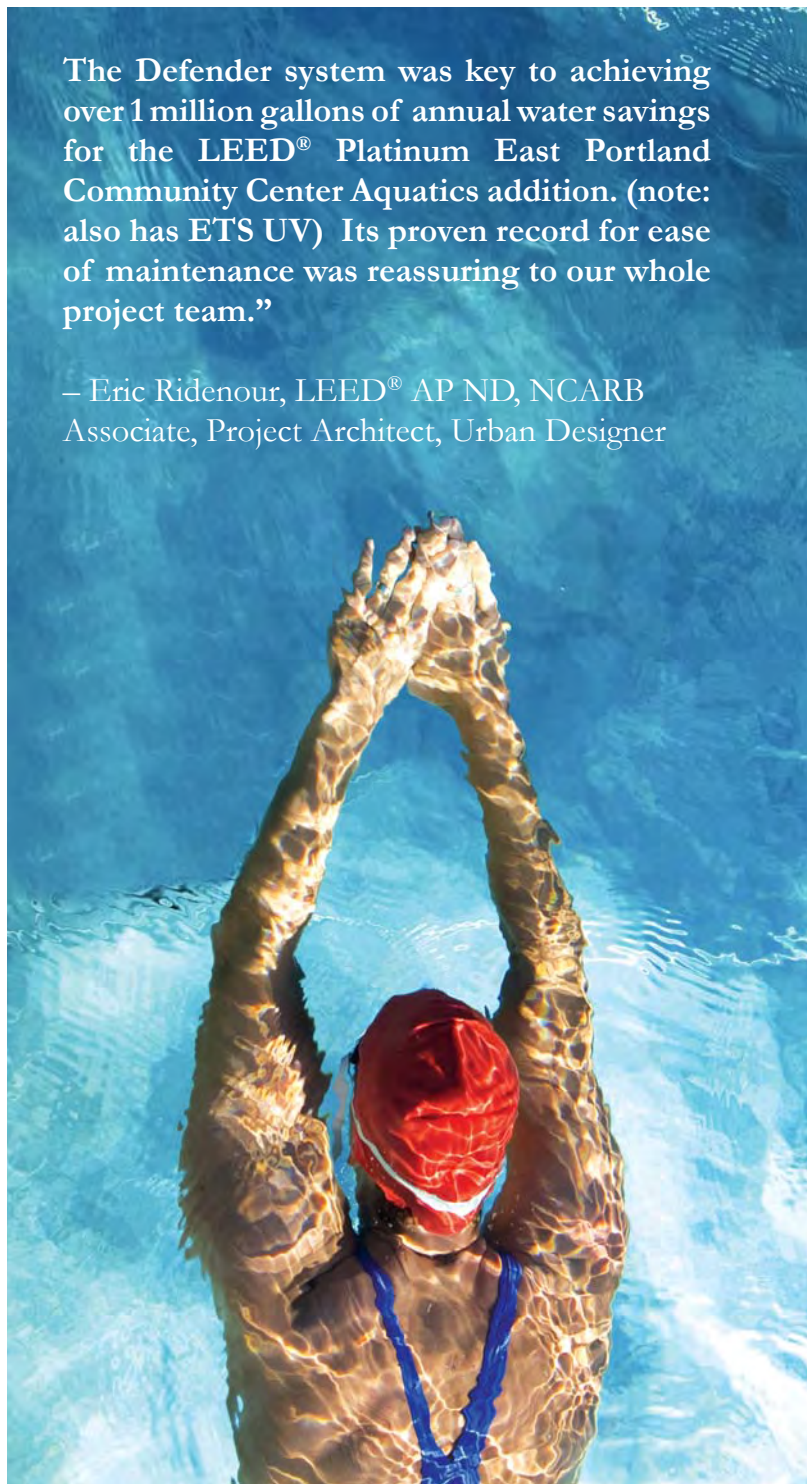
Defender Tested/Certified for: Meets Euro Health, Safety & Environmental requirements
ec.europa.eu/enterprise/policies/single-market-goods/cemarking/index_en.htm

Product Validation

In addition to our certifications and credits, Neptune Benson has a history of validating our technology. The value we provide is in the ongoing relationship – through the life of the filters and UV systems, we examine how the systems are being used and study the wear on the various components. Field Service Technician feedback is reviewed, and each product is continuously improved throughout the active product life. Neptune Benson's commitment to research and development has been the backbone of the business for over 55 years.

The Defender system was key to achieving over 1 million gallons of annual water savings for the LEED® Platinum East Portland Community Center Aquatics addition. (note: also has ETS UV) Its proven record for ease of maintenance was reassuring to our whole project team."

– Eric Ridenour, LEED® AP ND, NCARB Associate, Project Architect, Urban Designer



System Sizing Options

Large installation or small, there's a Defender® filter for you

Neptune Benson's Defender® and Defender Assero® Regenerative Media Filters are available in a variety of sizes and configurations designed to suit nearly any application.



Model Number	Filter Area		Recommended Flow Rate Range		Tank Volume	
	ft²	m²	.5 - 1.4 gpm/ft²	1.22 - 3.42 m³/hr/m²	gal	m³
SP-18-48-176	137	12.73	69 - 192	15.53 - 43.54	66	.25
SP-24-42-327	223	20.72	112 - 312	25.28 - 70.86	128	.484
SP-27-48-487	381	35.60	191 - 533	42.43 - 121.75	159	.602
SP-33-48-732	572	53.14	286 - 801	64.83 - 181.73	250	.946
SP-41-48-1038	812	75.44	406 - 1137	92.04 - 258.00	441	1.669
SP-49-48-1548	1211	112.50	606 - 1695	137.25 - 384.75	615	2.328
SP-55-48-2076	1625	150.97	813 - 2275	141.48 - 516.32	841	3.184

Note 1: Recommended flow rate range is suggested to optimize filtration performance. This filter is NSF listed for up to 2.0 gpm/sq.ft (4.89 m³/hr/m²) flow rate. Consult Neptune-Benson for applications higher than the recommended flow rate range.

Note 2: Tank connection sizes based on velocity not to exceed 10.0 fps or 3.0 mps.

Note 3: The required perlite media volume is based on a 1/8" (3 mm) thick cake which is recommended for optimal performance.



Model Number	Filter Area		Recommended Flow Rate Range		Tank Volume	
	ft²	m²	.5 - 1.4 gpm/ft²	1.2 - 3.9 m³/hr/m²	gal	m³
SP-29-36-200	117	10.9	59-164	12.70 - 37.20	181	.7
SP-29-36-250*	146	13.6	73 - 204	16.60 - 53.00	181	.7
SP-29-36-300	175.5	16.3	88-246	19 - 63(15.9-55.7)	181	.7
SP-29-36-350	205	19.0	103 - 287	23.20 - 74.10	181	.7
SP-29-36-400	234	21.7	117 - 328	26.50 - 84.60	181	.7
SP-29-36-450*	263	24.4	132 - 368	29.9 - 95.2	181	.7
SP-29-36-500	294	27.3	147 - 412	33.4 - 93.3	181	.7

Note 1: Recommended flow rate range is suggested to optimize filtration performance. This filter is NSF listed for up to 2.0 gpm/sq.ft (4.89 m³/hr/m²) flow rate. Consult Neptune-Benson for applications higher than the recommended flow rate range.

Note 2: Tank connection sizes based on velocity not to exceed 10.0 fps or 3.0 mps.

Note 3: The required perlite media volume is based on a 1/8" (3 mm) thick cake which is recommended for optimal performance.

Note 4: All Defender Assero models available in Automatic configuration.



Normblock Multi Series

SPECK X

All Polyurethane Pump 1750 RPM
(7.5, 10, 15, 20, 25 & 30 HP)

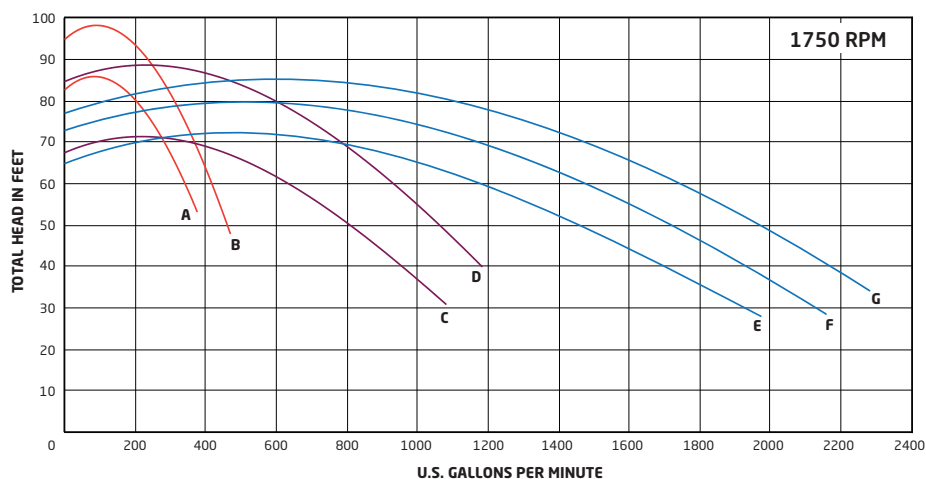
Redefining the limits of plastic pumps. The Normblock Multi takes the non-corrosive and lightweight benefits of plastic higher than any other American manufacturer.

Features

- This pump has a robust horizontal single stage design.
- Superior slow (1750 rpm) running design reduces vibrations resulting in quiet operation.
- The housing is made of high performance plastic (THK), corrosion resistant without elaborate internal coating and can be used with higher salt concentrations.
- Heavy duty energy efficient totally enclosed fan cooled (TEFC) motor, Class F insulation, protection class IP 55. Sealed ball bearings need no lubrication.
- Shaft coupling allows motor to be replaced without replacing mechanical seal.
- A high wear, rugged Carbon/SiC - EPDM mechanical seal allows for a long life and long maintenance intervals. Special application seals available upon request.
- Equipped with stainless steel shaft extension.
- Optional all plastic strainer tank for horizontal flooded suction applications.
- Every pump is tested to factory & customer's specifications.

Please Note: The noise level from both the motor and pump are greatly influenced by how they are installed. Consideration should be given to minimize vibration and noise transmission.

Performance Curves



- A. Normblock Multi 65/250** (Ø 225mm) - 7.5 HP S.F. 1.25
B. Normblock Multi 65/250 (Ø 240mm) - 10.0 HP S.F. 1.25
C. Normblock Multi 100/250 (Ø 220mm) - 15.0 HP S.F. 1.25
D. Normblock Multi 100/250 (Ø 240mm) - 20.0 HP S.F. 1.25

- E. Normblock Multi 125/250** (Ø 235mm) - 20.0 HP S.F. 1.25
F. Normblock Multi 125/250 (Ø 245mm) - 25.0 HP S.F. 1.15
G. Normblock Multi 125/250 (Ø 255mm) - 30.0 HP S.F. 1.15

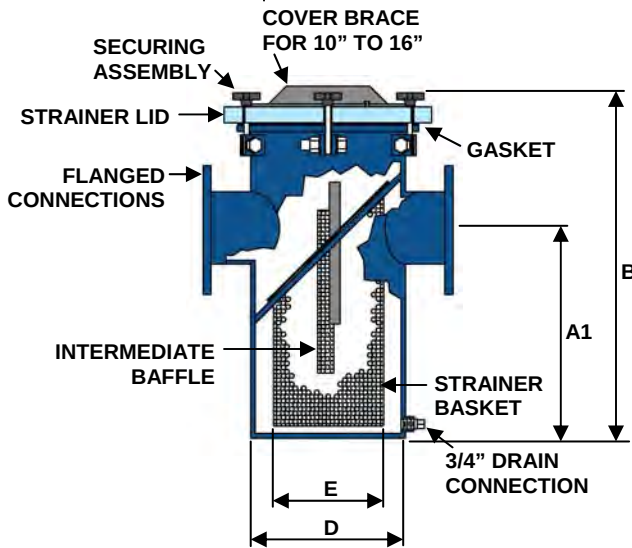
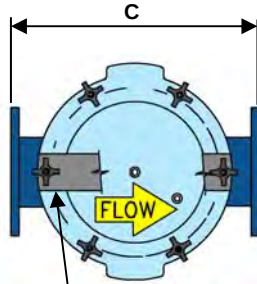


Normblock Multi 125/250

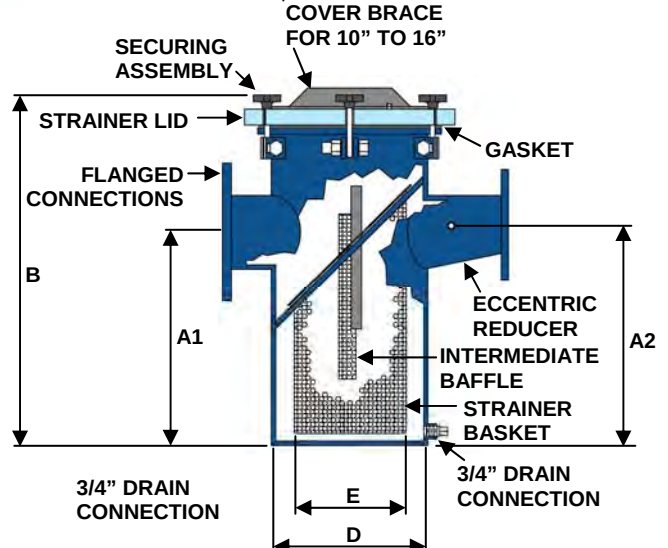
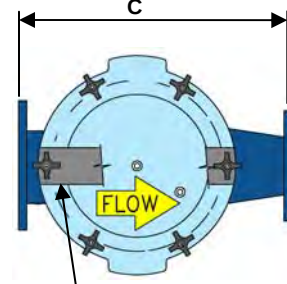
Available
with 6" &
8" Suction

Trademarks and Certifications





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.

R 6/29/12



Neptune-Benson™

6 Jefferson Drive, Coventry, RI 02816 • (800) 832-8002
P +1 (401) 821-2200 • F +1 (401) 821-7129 • www.neptunebenson.com



The **BECSys5** water chemistry controller includes advanced sensors and features that produce crystal clear water for a healthy, safe and pleasant patron experience in a wide variety of applications, including pools, spas, water parks, fountains, zoos and aquariums.

Optimal water quality achieved with the **BECSys5** minimizes chemical usage, often resulting in significant savings. Substantial energy and water savings can also be realized by utilizing the BECSys5's advanced scalable capabilities.

Operation and maintenance staff will save time and be more efficient with proactive status messaging and increased visibility with BECSys Live.



BECSys Live!



BECSys Live is included with every **BECSys5**, providing simple and secure 24/7 real-time access from just about any device: PC, Mac, desktop, laptop, tablet and/or smartphone. All features integrated with the BECSys5 are available through BECSys Live.

Monitor status, change settings and review system performance. Review graphs and run reports that summarize key system activity and metrics, so you can easily spot trends.

Visit becsys.live to learn more and create your free account. And best of all... no additional fees or monthly subscription required!

Advanced Water Chemistry Control... and much more!

- ✓ **Advanced sensor technology** - proprietary pH and ORP sensors, with 2 year warranty
- ✓ **True PPM sensors** - Free, Total and Combined chlorine monitoring and control with PPM set points
- ✓ **Total Alkalinity** - monitor and control Total Alkalinity (TA)
- ✓ **Direct Test Kit Interface** - automatically upload/record digital readings from SpinTouch test kit
- ✓ **System Flow** - monitor circulation rate, and control VFD with Water Chemistry Assurance and Heater Protection
- ✓ **Chemical inventory management** - track usage and never run out again!
- ✓ **Intelligent Autofill** - monitor water consumption and identify leaks!

Advanced Water Chemistry Control

- pH, ORP, temperature
- Free chlorine (ppm)
- Total chlorine (ppm)
- Combined chlorine (ppm)
- Saturation Index calculation
- TDS (Total Dissolved Solids)
- Turbidity

Direct Test Kit Interface

- Automatically upload test kit readings from SpinTouch
- Review on screen or through BECSys Live
- Compare test kit readings to sensor readings

Total Alkalinity (TA) Control

- Add the BECSys Alkalinity Meter to monitor TA
- BECSys5 controls TA by automatically selecting between acid and CO₂ for pH control
- Routine bicarb additions no longer needed in most pools
- TA set points settable by operator
- TA reading is unaffected by residual chlorine or saline levels of water

24/7 Monitoring & Control with BECSys Live!

- Gbit Ethernet standard in every BECSys5
- Simple and secure setup using EZConnect
- Visit becsys.live to get started



Circulation System Management

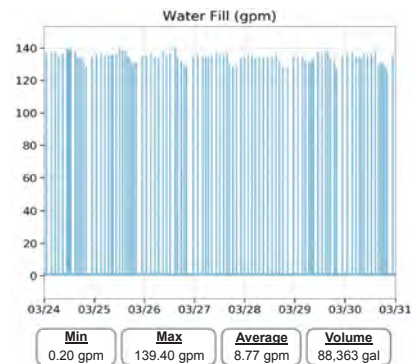
- Monitor circulation rate
- **Track turnovers & volume processed**
- Monitor strainer vacuum & pump effluent pressure
- Track Total Dynamic Head (TDH)

Advanced VFD Control

- Set circulation rate in gpm directly from BECSys5
- Program alternate turndowns, e.g. to save energy
- **Water Chemistry Assurance** automatically adjusts energy saving turndowns to assure proper water quality is maintained

Intelligent Autofill

- Maintain proper water level
- Autofill / chemical feed coordination
- **Monitor water consumption**
- **Identify pool leaks**
- Prevent surge pit overflows



Chemical Inventory Management

- Monitor acid and chlorine inventory
- **Track chemical usage**
- **Chemical reorder notifications**

You're in great hands!

BECS Technology has been designing and manufacturing the world's most reliable and innovative water chemistry controllers for over 30 years. We take pride in developing aquatics solutions that stand the test of time and are easy to use with features and capabilities that bring real value to our customers and their facilities.

Yet even the best equipment requires competent support to reach its full potential. BECSys distributors have been factory-trained and authorized to provide everything you'll need to take full advantage of all the benefits of your BECSys controller through the warranty period and beyond.

With a BECSys, you're in great hands!



Document #4333-G



BECSys Live provides simple and secure 24/7 real-time access to BECSys controllers from just about any device: PC, Mac, desktop, laptop, tablet or smartphone.

And best of all... Every feature described here is **free** for all internet-connected BECSys controllers using EZConnect! And that's just the beginning. Your BECSys servicing distributor may offer additional BECSys Live features as part of their service plans.



It's Simple

Just open a web browser on your favorite device and type becsys.live. It's really that simple.

Highly Secure

Messages are encrypted and all accounts are protected by 2 Factor Authentication.

Monitor Status

Real-time dashboards automatically updated with the latest readings and system status.

Make Changes

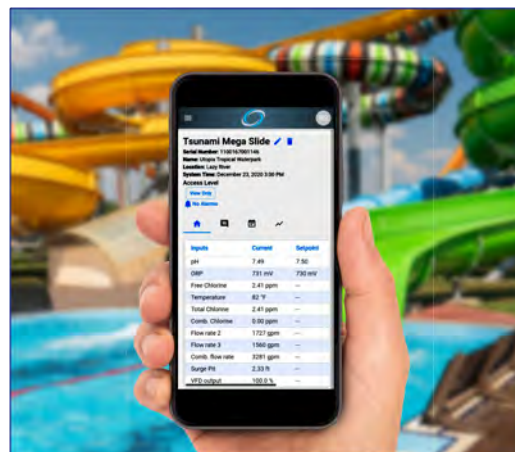
Adjust settings directly from **BECSys Live**. The same controller Access Code used on the controller front panel is required.

Watch Trends

Review graphs of all readings to see how your pool is performing over time.

Run Reports

Reports summarize key performance metrics such as alarm patterns, parameter changes, test kit logs and water quality readings.



BECSys *Live* was designed for you

You're busy. Your staff is busy. Everyone's juggling multiple priorities. You need a secure way to manage the water quality of every body of water - all in one place. No hopping between different applications. It has to be easy to use, but not at the expense of security. And powerful enough to allow you to get the job done, when it needs to be done.

If it's not easy to use, you won't use it. Period.

- Just type **becsys.live** into Chrome, Safari, Edge, Firefox...
- From any device: PC, Mac, tablet, smartphone
- Stay logged in; system recognizes your device so you don't need to log in every time
- Dashboards refreshed automatically
- Data logs automatically uploaded and maintained
- Change settings directly from Dashboard

Nobody takes Internet Security as seriously as we do.

- Two-factor authentication on all user accounts
- reCAPTCHA account protection from bots
- End-to-end message encryption (browser to controller)
- EZConnect = no VPNs, port forwarding or public IP addresses
- Controller Access Code required to change settings

This is no toy. BECSys *Live* is a serious tool.

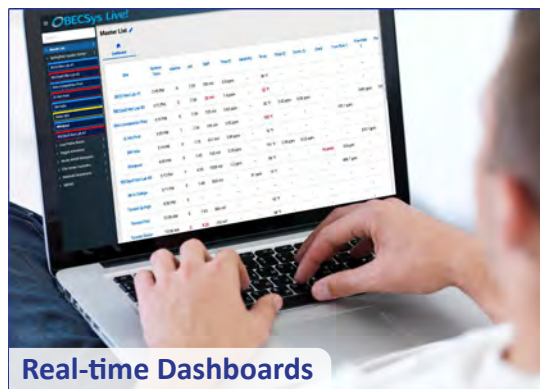
- Site Tree color-coded with Controller status
- Run reports for individual Controllers or Groups
- Graphs of readings with current set points and alarm points
- Upload SpinTouch readings via BECSys7 or BECSys5
- Record personal notes for each Controller

Go ahead. Hit us with your best shot.

- Scalable and flexible enough for all applications
- Unlimited number of Controllers
- Unlimited number of Groups
- Drag-and-Drop to organize your Site Tree
- Create personalized Controller/Group nicknames



Review Graphs



Real-time Dashboards



Run Reports

You're in great hands!

BECS Technology has been designing and manufacturing the world's most reliable and innovative water chemistry controllers for over 30 years. We take pride in developing aquatics solutions that stand the test of time and are easy to use with features and capabilities that bring real value to our customers and their facilities.

Yet even the best equipment requires competent support to reach its full potential. BECSys distributors have been factory-trained and authorized to provide everything you'll need to take full advantage of all the benefits of your BECSys controller through the warranty period and beyond.

With a BECSys, you're in great hands!

Document #6105-A



FROM WAVE PARKS TO WADING POOLS, WE HAVE A NEX-GEN® SYSTEM TO MEET YOUR NEEDS.



ChlorKing's NEXGEN on-site chlorine generators are leading the way to better, safer water. Their unique, forward-thinking design generates liquid chlorine from salt that is stored on site and uses the pool as the source water for the product. NEXGEN eliminates the need for storing large amounts of chlorine and doesn't generate the odors associated with traditional chlorine. Any of the NEXGEN systems can be fully customized to meet your needs and are easy to install, maintain and operate.

The NEXGEN 40-R

The ChlorKing® NEXGEN 40-R is a stand-alone, on-site chlorine generator capable of producing 48 lbs. of pH neutral equivalent chlorine per 24 hours. This is a low maintenance model which utilizes reverse polarity to clean the plates every 3 hours. The unique design uses swimming pool water to feed the generator and distribute chlorine to the pool as needed. Up to 6 bodies of water can be sanitized with one NEXGEN system using our venturi feed systems and can be used in conjunction with any ORP/pH controller. This product requires no salt in the swimming pool and will not raise TDS levels as with other chlorine generators. Hydrogen, the by-product is safely vented to atmosphere through a 2" (5cm) PVC pipe on top of the production tank.

Specifications

- Touch-screen display
 - Size 5" x 4" (12cm x 10cm) color display
 - Resistive touch membrane overlay
- Built in safety sensors
 - Air, water, pressure, & level sensors
 - Power supply
 - 100 amp 24v DC water-cooled
- Electrode stacks
 - 2-24 lb, 15,000 hr reverse polarity in clear housing
- Operating temperature - power supply cooling
 - 35°F (2°C) to 115°F (46°C) air temperature
 - 40°F (4°C) to 104°F (40°C) water temperature

- Pool source water
 - Up to 94°F (34°C) water temperature
- Electrical specifications
 - Max primary amps – (32)
 - Voltage / Hz – (208-240v 50/60Hz single phase)
 - Breaker required – (60 amp)
- Skid dimensions & weight
 - 48" (121cm) L x 28" (71cm) W x 68" (172cm) H
 - 48" (121cm) L x 22" (55cm) W x 40" (101cm) H (salt feeder)
- Plumbing requirements
 - 2" (5cm) inlet and outlet requiring 80 gpm (302 Lpm)
 - 2" (5cm) outlet for hydrogen removal to atmosphere
 - Maximum NEX-GEN venturi return line pressure (including pool return line) - 25psi



Main Features

- On-site chlorine generator capable of producing 48 lbs. (equivalent to 48 gal. of 12% bleach) per 24 hrs.
- Process uses swimming pool water to produce HOCl (hypochlorous acid). No fresh water is added.
- No salt is required in the pool
- pH neutral chlorine produced (HOCl)
- Reverse polarity for low maintenance
- Programmable touch-screen with auto correct features
- Skid mounted on wheels for easy installation
- Water-cooled power supply

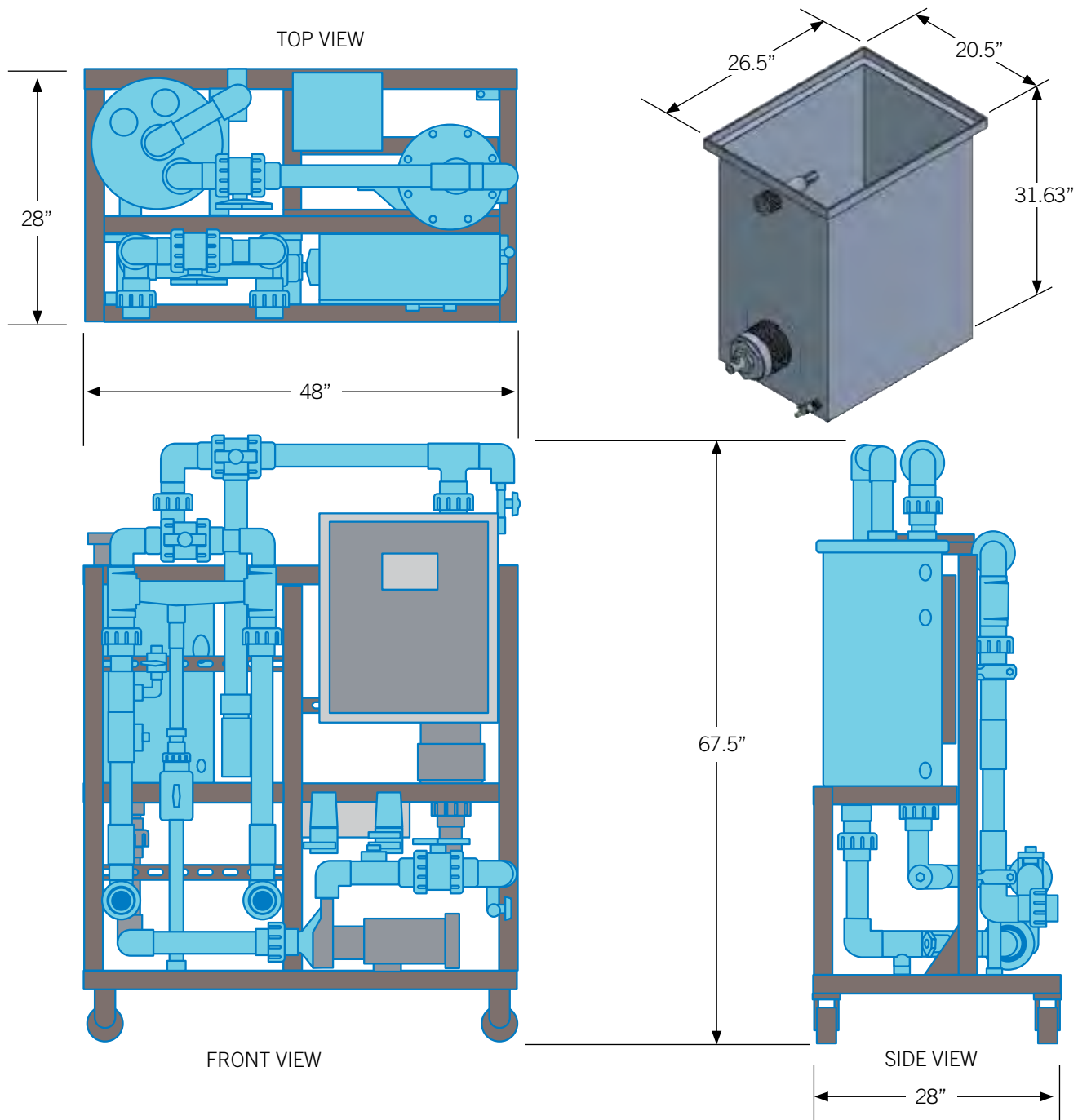
Applications

- Commercial swimming pools
- Water-parks
- Wave and surf riders

Order Information

- Product code: NEXGEN 40-R

NEXGEN®40-R DIMENSIONS & TANK LAYOUT



ChlorKing pioneered on-site chlorine generating technology in the 1970s. Realizing the potential for swimming pools and commercial applications, the company began generating "ultimate water" with simple, yet highly advanced technology. Today, ChlorKing® leads the way in commercial saline chlorination and is consistently seeking new frontiers in sanitizing solutions including ultraviolet light technology and their NEX-GEN® pH on-site chlorine generators. These environmentally friendly solutions are changing the way we treat H₂O.



Safer water through smarter technology.

Salt Chlorination Systems • Ultraviolet Light Systems • Hypochlorous Acid Generators

ChlorKing Inc. 2935 Northeast Parkway Atlanta, GA 30360 sales@chlorking.com 800.536.8180 chlorking.com



PRECISION

High-Tech Commercial Pool Disinfection with Powerful Performance

The Pulsar® Precision feeder is a high capacity erosion (HCE) feeder that is compact and lightweight with a modular design.

The feeder uses Pulsar® calcium hypochlorite briquettes that work in conjunction to produce a fresh concentrated liquid chlorine solution for clean and sanitized water. This innovative feeder system is easy to maintain and service with a flexible design that allows for easy integration for small to large commercial pools.

Switch to the Pulsar® Precision Feeder System, delivering clear and sparkling water time and time again!

Powerful Feeder Performance



Provides consistent chlorine delivery



Feeder designed to minimize maintenance requirements



2 in 1 dust reduction funnel for loading briquettes with capacity extension



Rotomolded components hold up to the strongest elements



Feeder design allows for easy access to internal components



Features high capacity erosion technology with the benefits of a venturi and booster pump

Briquette Efficiency



Won't overstabilize pool



More concentrated than liquid bleach



Dry, easy to handle formulation



Will not cause reduction of ORP



Highly concentrated to reduce shipping and handling costs



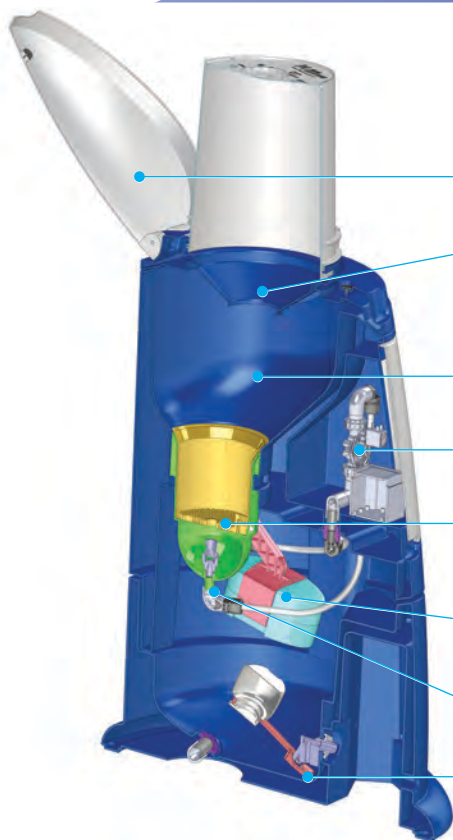
Longer shelf life when compared to liquid bleach



A 3-in-1 product that chlorinates consistently, increases calcium to protect plaster and balances alkalinity to stabilize pH!



PRECISION



Secure lid locking feature

Enhanced hopper attachment

Allows for added chemical capacity and reduction in dust during chemical loading

Hopper

Dual solenoids minimize solid build up

Briquette grid

Removable for easy maintenance

Emergency shut-off valve to prevent spills

High capacity erosion nozzle

Durable discharge valve

Feeder Specifications

Width	25.3"	642.62mm
Depth	29.8"	756.92mm
Height	40.9"	1038.89mm
Water Inlet Size	1/2" MNPT	12mm MNPT
Solution Outlet Size	1/2" MNPT	12mm MNPT
Operating Weight	220lbs	99.7kg
Shipping Weight	60lbs	27.7kg
Dry Chemical Capacity	70lbs	31.75kg
Feed Rate Range, Pool:	5-189 lbs/day AvCl	2.3-85.7 kg/day AvCl
Spa:	5-141 lbs/day AvCl	2.3-64 kg/day AvCl
Electrical	115VAC	
Operating Temperature	40°- 120° F	4.4°- 48.9° C

Chemical Specifications

Active Ingredient	Calcium Hypochlorite	
Available Chlorine	68%	
Scale Inhibitor	0.4-1.0%	
Weight	7-10g	
Dimensions	1 1/4" x 3/4" x 1/2"	33mm x 19mm x 13mm
Chemical Form	Pillow shaped briquette	
Color	White	
Container	50lb pail	22.6kg pail

For more information visit www.pulsarsystems.net or call us at 1-800-4-PULSAR



ACID PLUS

Order Early
for
Promotional
Pricing

Contact your sales rep
for more information

Introducing the Pulsar® Acid Plus Feeder System!

If you are using **Pulsar®** calcium hypochlorite feeders, then the **Pulsar®** Acid Plus feeder system can help maintain a complete dry chemical package for sanitation and pH control (down).

The **Pulsar®** Acid Plus Feeder provides:

- Reliable pH balancing
- Features a compact rugged rotomolded body
- Integrates inlet flow solenoid control for reliable operation
- Shares booster and venturi loop
- Custom color to distinguish between other feeders
- Acid introduced to venturi removes scale and minimizes maintenance
- Backflow prevention



The **Pulsar®** pH Down +4 is a proprietary formulation with the following benefits

- Dry acid chemical is easier to handle and transport than CO₂ and muriatic acid
- Requires NO double containment
- Ensures no liquid spills
- Has little to no odor
- Dry acid solution is 100% soluble
- Acid solution is not under pressure
- Less hazardous than highly concentrated liquid

The **Pulsar®** Acid Plus feeder system is low maintenance, easy to install and has a small footprint making it a great addition to your pool chlorination treatment plan.

System Capacity

Volume	60 lbs	27.21 kg
--------	--------	----------

System Dimensions

Width	19 in	48 cm
Height	33 in	84 cm
Weight (empty)	27 lbs	12 kg

Requirements

Use With	Pulsar® pH Down (+4)
----------	-----------------------------

*4-in-1 product lowers pH, maintains clarity,
reduces equipment corrosion, and prevents against stains & scale!*



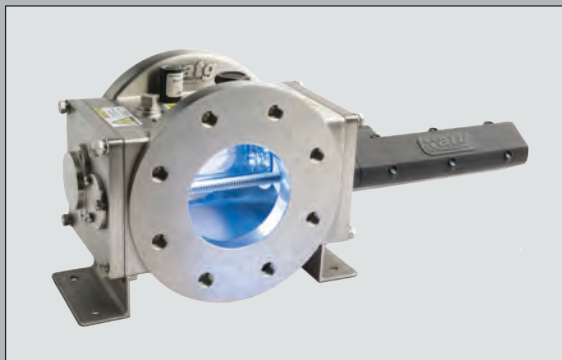


1. Use schematic or installation guid
2. Install booster pump and venturi Loop in accordance with the feeder I&O manual
3. Install one ½” Tee at the ½” NPT outlet above the booster pump discharge
4. Install the second ½” Tee at the ½” venturi suction
5. Connect four parker tubing connectors on the Tee branches at the feeder inlet and venturi suction
6. Plug in the feed solenoid valve to the chemical controller pH down output for pH control automatic

If using the same booster pump and Venturi as the precision feeder as shown in the schematic, set booster pump to *Always On* by setting dip switch 4 to **OFF** in the control box.

Parts List

Part	Description	QTY	Part #
Pulsar® Acid Plus	Dry Acid Feeder, Tees (Qty 2), nipples (Qty 4), ½” parker fastNTights P8MC8 (Qty 2),	1	73350
Pulsar® Installation Ki	1HP booster pump, 1 ½” Venturi PVDF with unions, ½” OD PE tubing 20 Ft, ¾” x ½” female connector, ½” FNPT x ½” tubing connector, ½” FNPT x NPT ball valve (outlet), 1 ½” x 12” PVC nipple,	1	79830
Tee	½” FNPT sch 80	2	71912
Nipple	½” NPT x 1 ½” fully threaded	4	71916
Acid Plus Lid	Red lid for Pulsar® acid feeder	1	73298
Solenoid Valve	Basic SDCH ORP Kit w/3 meter extension	1	73119



The Wafer™ UV system is the most advanced UV system available. The treatment chamber has been designed for the simplest installation into any pipe work system. The chamber can be mounted vertically or horizontally. The compact design allows existing facilities to be easily upgraded with minimum site work.

TREATMENT CHAMBER

The Wafer™ treatment chambers are designed for installation into the piping after the filters but before chemical injection.

The treatment chamber is manufactured from solid cast 316L stainless steel, with standard ANSI flanged piping connections. Temperature probe, UV monitor probe, and automatic quartz wiper system included.

A pressure rating for the unit is 150 PSI and pressure drop through the chamber is minimal.

Our objective for the product is simple, to be the best on the market, no compromise. The Wafer™ system offers the flexibility of a horizontal or vertical installation application. The Wafer™ product line treats the largest pools with a very compact footprint.

Utilizing our proven medium pressure lamp technology, the Wafer™ system offers a high quality, 'high specifications' product at a very competitive price. The 8" WF-215-8 is suitable for all pools and whirlpools with flows rates up to 1,012 GPM for indoor applications and 1,100 GPM outdoors applications.



CONTROL SYSTEM

The control system is housed in a IP 54 rated panel. As a standard, it is supplied with 30 ft cables for connection to the treatment chamber.

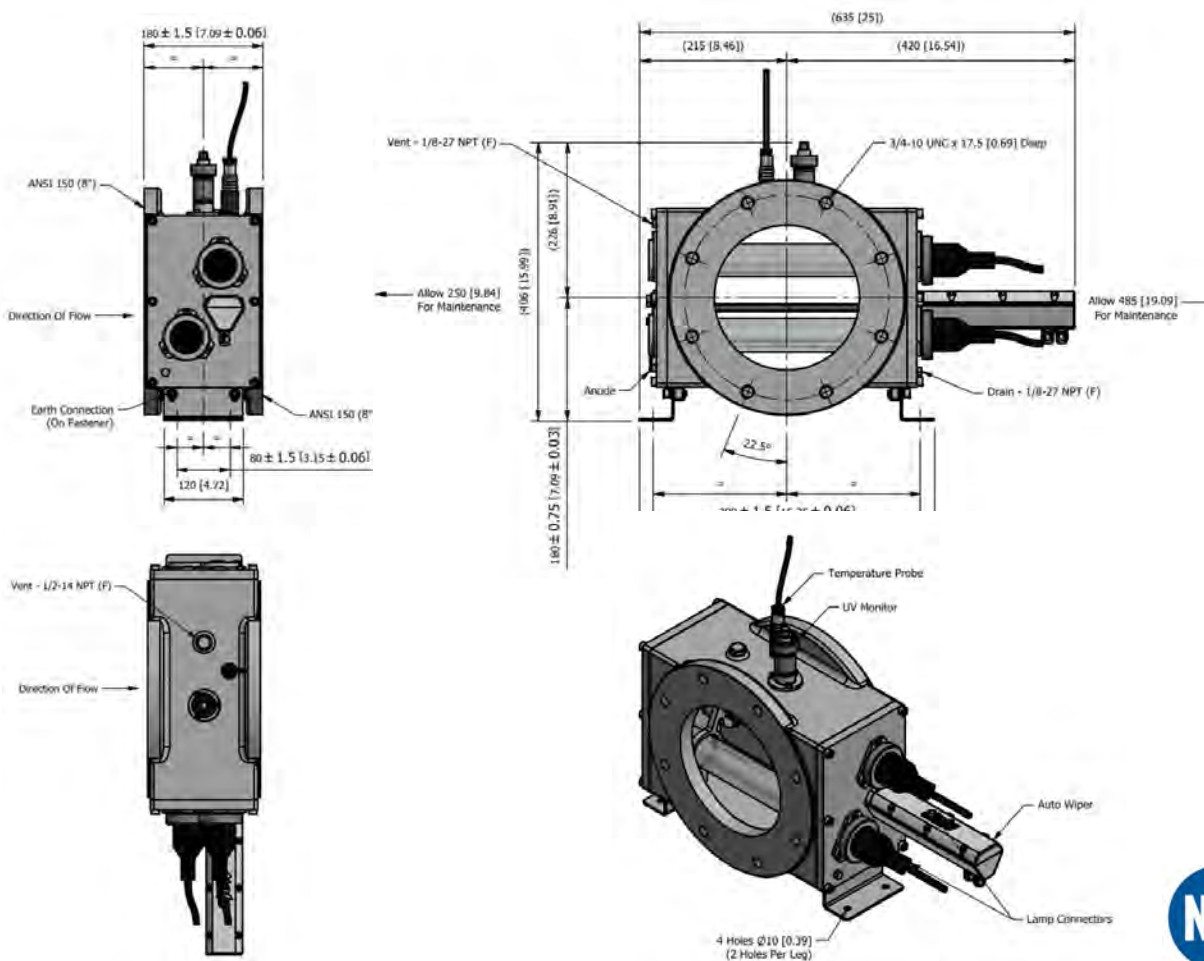
The power supply (PSU) and control cabinet are powered with the latest Spectra III microprocessor control unit. Three levels of operation (simple control, full parameter display, and operator configuration) allow for easy, uncomplicated operation of the unit by an operator. The control system features a sophisticated password protected engineering section for integrating the unit with other system devices.

Auto power restart, pump and valve interfaces, process interrupt and low power overnight operation are all features specifically designed for use on all recreational water applications.

WAFER™ UV for Recreational Water



TREATMENT CHAMBER WF-215-8 Technical Data Sheet



Type	Lamp & Power	Weight (Dry/Wet)	Connection Size	Sacrificial Anode	Wiper System	Material Construction
WF-215-8	2 X 1.5 kW	117/141 lbs	8"	1/2" NPT	Automatic	316L SS
Pressure Rating			150 PSI			
Drain & Vent			1/8" - 27 NPT Drain 1/2" - 14 NPT Vent			
Standard Cable Length			30 feet			
Ingress Protection			IP55			
GPM for 60 mj/cm2 Dose			1,012 GPM (indoor)			
GPM for 40 mj/cm2 Dose			1,100 GPM (outdoor)			
Strainer			8" EZ Clean Strainer Included			

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4/1/20

WAFER™ UV for Recreational Water



CONTROL PANEL WF-215-8 Technical Data Sheet



Type	Lamp & Power	Panel Weight	Breaker Size	Power Supply	Phase	Frequency
PGA 2x3000	2 X 1.5 kW	110 lbs	30 Amp	208-240V	1 Ph	50/60 Hz
Variable Power			100% to 30% Power (Automatic Dose Pacing)			
User Interface			Spectra Membrane			
Ventilation			Forced Air Cooled (Fan)			
Ingress Protection			IP 54			

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Easy to install.
Easy to operate.
Nothing to remove & clean.
Tremendous labor savings.

EZ Strainer is the first and only clean-in-place UV strainer designed to provide safety and reliability against the rare chance of lamp or quartz breakage. As simple as unlocking and turning the handle, the EZ strainer is now free and clear of fine debris that may have made it through the system.

Features

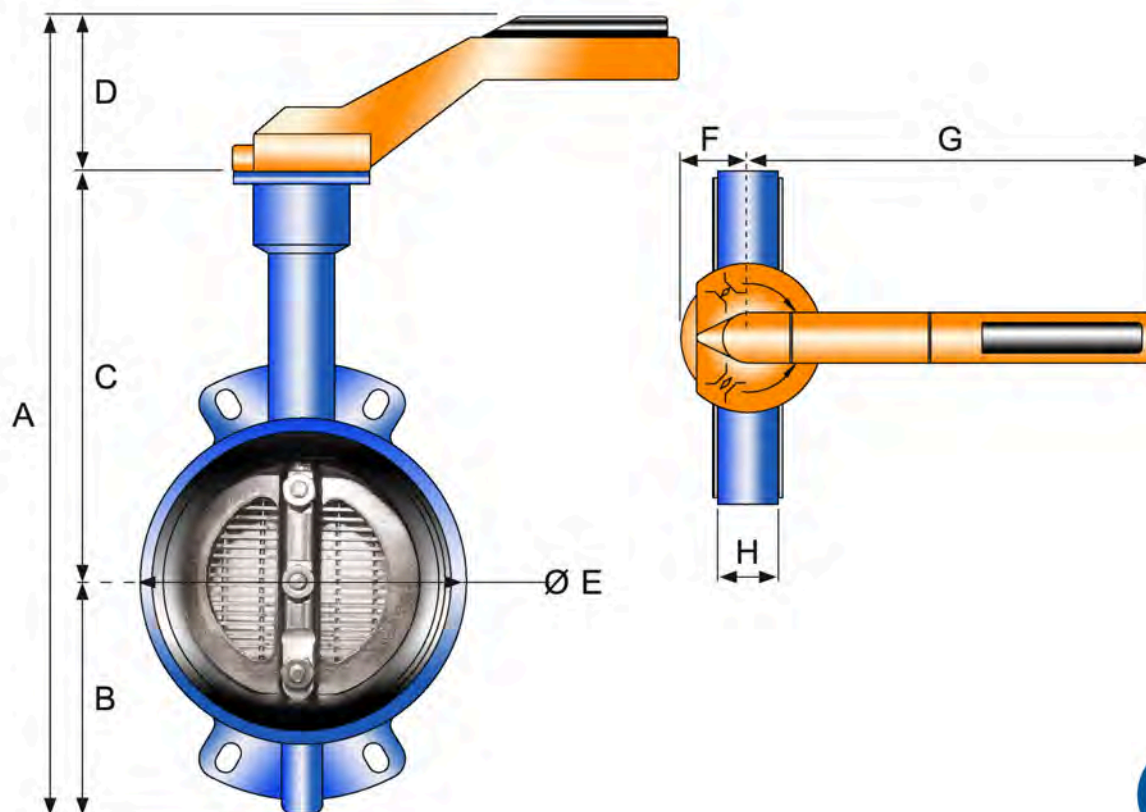
- Available in 4"/100mm to 12"/300mm pipe sizes.
- Durable stainless steel strainer disc and shaft.
- 180° positive stop.
- Lightweight cast aluminum riser (nylon) coated valve housing.

Model	Connection		Description
	inches	mm	
EZCLN-4	4	100	Standard Model Strainer
EZCLN-6	6	150	Standard Model Strainer
EZCLN-8	8	200	Standard Model Strainer
EZCLN-10	10	250	Standard Model Strainer
EZCLN-12	12	300	Standard Model Strainer

EZ Strainer for Recreational Water

EZ Strainer
by Neptune Benson

Technical Data Sheet



The EZ Strainer is designed to be used in the “Normally Closed” position and rotated 180 degrees daily.

Connection Sizes & Model Data

Model Number	Connection		A	B	C	D	E	F	G	H
	in	mm								
EZCLN-4	4	100	14 1/4	3 3/8	7	3 7/8	6 1/4	1 3/4	12 5/8	2 1/16
EZCLN-6	6	150	16 7/16	4 9/16	8	3 7/8	8 7/16	1 3/4	12 5/8	2 1/4
EZCLN-8	8	200	19 15/16	5 7/8	9 9/16	3 7/8	10 5/8	1 3/4	12 5/8	2 3/8
EZCLN-10	10	250	22 1/2	7 7/8	10 3/4	3 7/8	13 1/16	1 3/4	12 5/8	2 11/16
EZCLN-12	12	300	25 1/8	8 7/8	12 3/8	3 7/8	15	1 3/4	12 5/8	3 1/16

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4/9/20

SERIES 30/31 2"-20" (50mm-500mm)

PRESSURE RATINGS

BIDIRECTIONAL BUBBLE-TIGHT SHUT-OFF – Standard Disc*

Downstream Flanges/Disc in Closed Position

S30/31 Standard Disc*	2-12" (50-300mm)	175 psi (12 Bar)
	14-20" (350-500mm)	150 psi (10.3 Bar)

~~DEAD-END SERVICE – Lug Bodies/Standard Disc*~~

~~No Downstream Flanges/Disc in Closed Position~~

S31	2-12" (50-300mm)	75 psi (5.2 Bar)
	14-20" (350-500mm)	50 psi (3.4 Bar)

BODY: 250 psi (17.2 Bar) CWP

*For low pressure application, Bray offers a standard reduced disc diameter to decrease seating torques and extend seat life, thus increasing the valve's performance and reducing actuator costs.

VELOCITY LIMITS For On/Off Services:

Fluids 30 ft/sec (9 m/s)	Gases 175 ft/sec (54 m/s)
--------------------------	---------------------------

High strength through-stem design allows easy disassembly and reduced disc to stem failure.

PRIMARY & SECONDARY SEALS: These seals prevent line media from coming in contact with the stem or body. *Primary* Seal is achieved by an interference fit of the molded seat flat with the disc hub. *Secondary* Seal is created because the stem diameter is greater than the diameter of the seat stem hole.

STEM: Precision double "D" disc to stem connection drives the disc without the need for screws or pins. The close tolerance, double "D" connection that drives the valve disc is an exclusive feature of the Bray valve. Disassembly of the Bray stem is just a matter of pulling the stem out of the disc.

SEAT: Bray's tongue and groove seat design lowers torque and provides complete isolation of flowing media from the body. The seat also features a molded O-ring which eliminates the use of flange gaskets.

STEM RETAINING ASSEMBLY: The stem is retained in the body by means of a unique Stainless Steel Spirolox® retaining ring, a thrust washer and two C-rings, manufactured from brass as standard, stainless steel upon request. The retaining ring may be easily removed with a standard hand tool. The stem retaining assembly prevents unintentional removal of the stem during field service.

STEM BUSHING: Non-corrosive, heavy duty acetal bushing absorbs actuator side thrust.

STEM SEAL: Double "U" cup seal design is self-adjusting and gives positive sealing in both directions.

NECK: Extended neck length allows for 2" of piping insulation and is easily accessible for mounting actuators.

DISC: Casting is spherically machined and hand polished to provide a bubble-tight shut off, minimum torque, and longer seat life.

BODY: One-piece wafer or lug style. Polyester coating for excellent corrosion resistance. Nylon 11 coating is available as an option.

All Bray valves are pressure tested to 110% of rated pressure to assure bubble tight shutoff.



SERIES 31H

2"-20" (50mm-500mm)

Series 31H Lug valves are drilled and tapped to meet ASME Class 125/150 and PN16 flanges. Series 31H Valves will not be automated.

PRESSURE RATINGS

BIDIRECTIONAL BUBBLE-TIGHT SHUT OFF & DEAD-END SERVICE

2-20" (50-500mm) 250 psi (17.2 Bar)

BODY: 250 psi (17.2 Bar) CWP

VELOCITY LIMITS For On/Off Services:

Fluids 30 ft/sec (9 m/s) Gases 175 ft/sec (54 m/s)

STANDARD MATERIALS SELECTION 31H

Body Cast Iron
Ductile Iron

Disc Aluminum Bronze
Nylon 11 Coated Ductile Iron
316 Stainless Steel

Stem 416 Stainless Steel

Seat Bonded EPDM
Bonded BUNA-N

Material availability depends on valve size & series. Other materials are available. Please consult your local Bray representative for your specific application.

STANDARD MATERIALS SELECTION S30/31

NAME MATERIAL

Body Cast Iron
Ductile Iron
Carbon Steel
Aluminum

Disc Aluminum Bronze
Coated Ductile Iron
Nylon 11 Coated Ductile Iron
Halar® Coated Ductile Iron
304 Stainless Steel
316 Stainless Steel
Duplex Stainless Steel
Super Duplex Stainless Steel
Hastelloy®

Stem 416 Stainless Steel
304 Stainless Steel
316 Stainless Steel
Monel K500

Seat BUNA-N – Food Grade
EPDM – Food Grade
FKM*
White BUNA-N – Food Grade
Bonded EPDM
Bonded BUNA-N

Material availability depends on valve size & series. Other materials are available. Please consult your local Bray representative for your specific application.

*FKM is the ASTM D1418 designation for Fluorinated Hydrocarbon Elastomers (also called Fluoroelastomers).
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Halar® is a registered trademark of Ausimont U.S.A., Inc.

