Port Washington-Saukville School District

Athletic & Outdoor Facilities Master Plan Study

RETTLER corporation

your vision. our design.

PREPARED FOR:

Port Washington-Saukville School District
100 West Monroe Street
Port Washington, WI 53074

PREPARED BY:

Rettler Corporation
3317 Business Park Drive
Stevens Point, WI 54482

Water Technology, Inc
100 Park Avenue, P.O. Box 614
Beaver Dam, WI 53916

Draft: August 2023

TABLE OF CONTENTS

Section I: Introduction
1.1 Mission & Vision 6
1.2 Reason & Purpose 6
1.3 Methodology & Process 7

Section II: Inventory & Analysis
2.1 Map of Facilities 8
2.2 Facility Inventory & Ratings 8

Section III: Needs Assessment
3.1 Online Community Survey 36
3.2 Online User Group Survey 43

Section IV: Recommendations
4.1 Athletic Facilities Recommendations 46
4.2 Playground Recommendations 47

Section V: Cost & Maintenance Considerations
5.1 Exterior Athletic Facilities 50

Section VI: Conclusions
6.1 General Conclusions 53

Appendix A
Aquatic Facility Study 54

1.0 INTRODUCTION

The Port Washington-Saukville School District (PWSSD) historically has partnered with the City of Port Washington, sharing and utilizing athletic facilities for community, K-12 competition, and recreational uses.

The Port Washington-Saukville School District has an enrollment of 2,606 students from Elementary through High School.

1.1 Mission & Vison

The School District has the following statements to guide decision making:

Mission Statement
"We educate all children to reach their greatest potential."

Vision Statement
"We will continue our quest to move from good to great through a process of continuous improvement based on current research and data by focusing on:

a. *student success for all.*
b. *student and staff mental health and well-being.*
c. *enhanced student instructional and learning opportunities.*
d. *progressive technological instructional support.*
e. *rigorous, relevant, and comprehensive curriculum and instruction, aligned with the learning targets derived from State standards."*

Along with PWSSD facilities, City of Port Washington Parks and Recreation facilities are utilized by the district population.

1.2 Reason and Purpose

This study addresses the need to comply with changing codes, safety requirements, meet growing community needs, increased usage, respond to public requests, renovate aging facilities, and implement a consistent, rational, and cost-effective approach to updating and/or adding new athletic and aquatic facilities. This study reviews the current outdoor, indoor, and aquatic facilities in the district and provides recommendations for the future.

On November 14, 2022, Rettler Corporation, a central Wisconsin-based Landscape Architect, Civil Engineering, and Site Design firm, was retained to assist the Port Washington-Saukville School District in developing an Outdoor Athletic Facility Assessment and Master Plan. In addition to Rettler's outdoor athletics facilities evaluation and recommendations, Water Technology, Inc. has been retained to review the aquatic facilities in the District.

As part of a long-range facility planning effort, this assessment evaluates the current condition of outdoor athletic and aquatic facilities at each of the District school sites, and

at other sites utilized by the district in the City of Port Washington. The evaluations are based on site visits by qualified professionals, stakeholder surveys, discussions with school staff, and photography. The study also incorporates maintenance schedules for all field types, and makes recommendations for District-wide improvements.

1.3 Methodology and Process

The Athletic Facility Assessment study has assigned letter grades to various components and aspects of each individual athletic field or feature as well as a composite grade for each based on its overall condition.

While rating areas vary slightly with field type, general factors examined are:

- Size and Flexibility
- Drainage
- Irrigation
- Infield/Outfield condition (field specific)
- Goal Condition (field specific)
- Backstop & Dugout Condition (field specific)
- Surface condition (field specific)
- Amenities (present or not, and condition if present)
    - Bleachers/Benches
    - Lighting
    - Restrooms and Concessions
    - Parking
- Safety
- Overall Condition

Additionally, a major rating factor, particularly in sports field dimensions and equipment, is how closely the fields comply with National Federation of State High School Associations (NFHS) standards. Tennis Courts will be compared to the United States Tennis Association (USTA) requirements and running tracks will be judged by the American Sports Builder Association (ASBA), NFHS and World Athletics construction guidelines. Number grades are defined as follows:

5 – Excellent Condition. The field conditions are immaculate.
4 – Good Condition. The field is maintained in above average conditions with normal maintenance and upkeep
3 – Average Condition. The field is playable and conditions could be elevated with minor upgrades
2 – Below Average Condition. The field is playable but in need of significant upgrading
1 – Unsafe Condition. The field in need of complete renovation or replacement

This format allows the District to easily compare items, such as baseball or football fields and readily note which components of that item need to be added or repaired to quickly improve an athletic feature's condition.

2.0 INVENTORY & ANALYSIS

This section is based on comprehensive site visits, facility photographs, aerial photographs, and discussions with the school athletic department staff conducted by qualified personnel from Rettler Corporation and Water Technology, Inc.

The following sites have been evaluated for this study:

Port Washington High School Baseball
T.J. Middle School Softball Fields & Practice Soccer
Lincoln Elementary Softball & Soccer
Varsity Soccer (at T.J. Middle School)
Port Washington High School Stadium (Al Urness Field)
Port Washington High School Practice Field
Dunwiddie Elementary Soccer
T.J. Tennis Courts
Port Washington-Saukville School District Aquatic Center

2.1 Map of Facilities

The sites have been located on a comprehensive map. Each site is then inventoried with photos and property description, existing site map, and facility rating. These ratings are then analyzed to make recommendations for each site.

2.2 Facility Inventory & Ratings

(Please see the following pages)

Port Washington High School Facilities

1 High School Baseball
2 High School Football (Al Urness Field)
3 High School Practice Field (Football)
4 High School Track & Field (Al Urness Field)

Thomas Jefferson Middle School Facilities

5 Soccer (Practice)
6 Soccer (Varsity)
7 Softball Fields
8 Tennis Courts (Varsity)
9 District Aquatic Center

Dunwiddie Elementary School Facilities

10 Soccer

Lincoln Elementary School Facilities

11 Soccer (Practice)
12 Softball

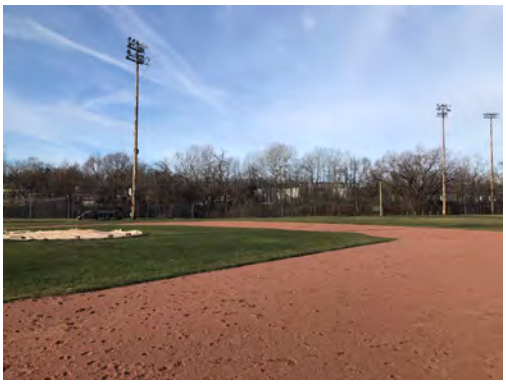
PORT WASHINGTON-SAUKVILLE SCHOOL DISTRICT

FACILITY LOCATION MAP

0' 300' 600' 900'

RETTLER corporation
3317 BUSINESS PARK DRIVE
STEVENS POINT, WI 54482

Name:	**High School Baseball Field**
Field Type:	Baseball
Address:	427 W Jackson Street Port Washington (Port Washington High School Lower Campus)
Amenities	▪ Bleachers ▪ Benches ▪ Backstop ▪ Concessions ▪ Dugouts ▪ Restroom ▪ Scoreboard ▪ Lighting



BASEBALL/SOFTBALL FIELD RATING FORM

Rating Criteria:

5 **Excellent Condition:** conditions are immaculate. Attention to detail is prevalent.

4 **Good Condition:** field is maintained in above average conditions with normal grooming.

3 **Average Condition**: field is playable and conditions could be elevated with minor upgrades.

2 **Below Average Condition:** field is playable but in need of significant upgrading.

1 **Unsafe Condition:** field in need of complete renovation or replacement.

NA **Not applicable/Not Present**

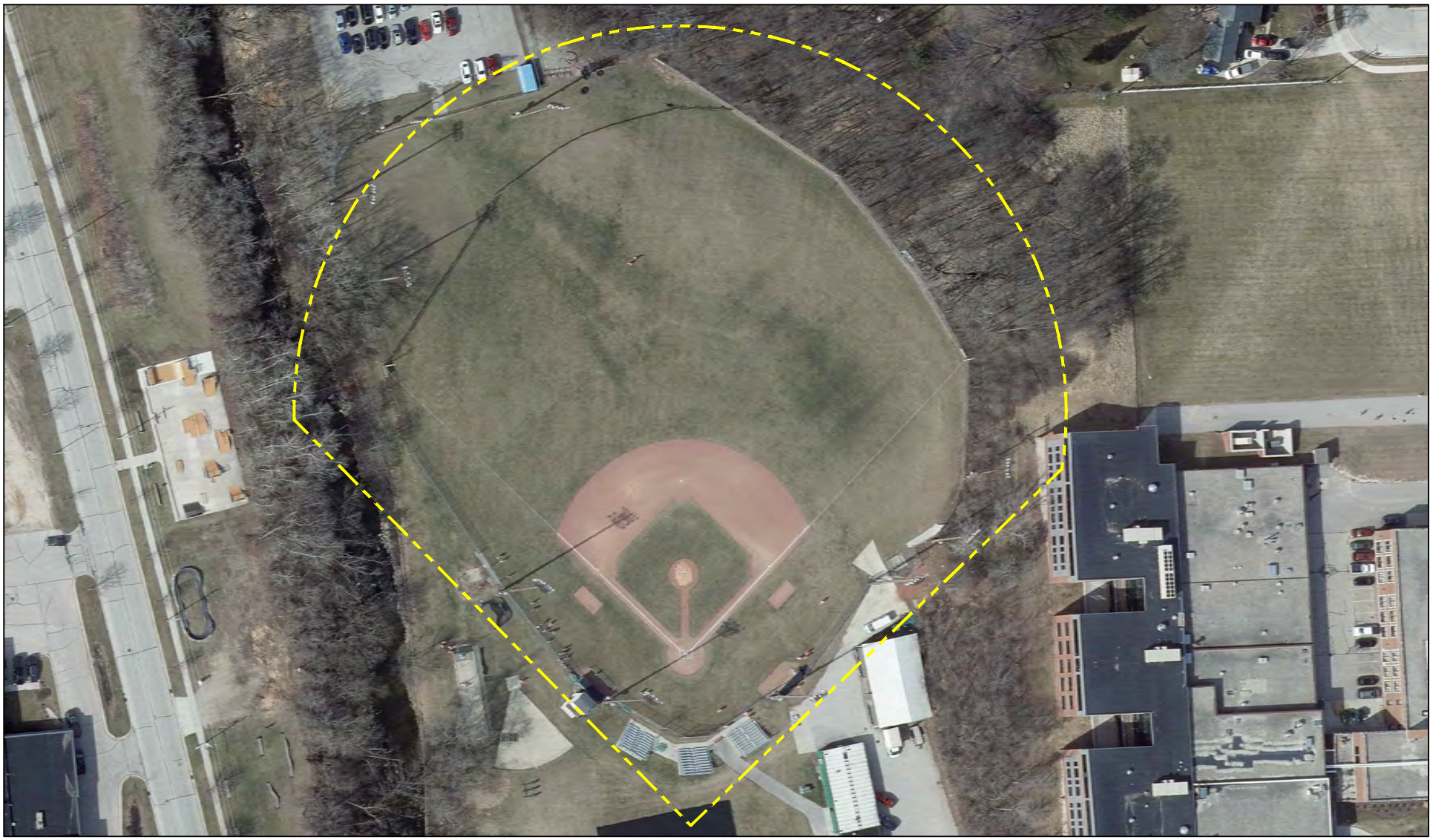
FIELD NAME: High School Baseball Field

LOCATION: High School (Lower Campus)

Specific Area	Rating	Comments
Size (Flexibility)	4	307' / 440' / 296' short in the corners 315' recommended
Drainage	2	
Irrigation	N/A	
Backstop/Dugouts/Bleachers	1.5	
Infield Condition	2	
Outfield Condition	3	
Lighting	2	
Restroom Facilities	3	
Concession	3	
Parking	2	
Fencing	2	

Safety or ADA Issues	**YES**	
Rating Average	2.45	

Backstop and dugout upgrades recommended. Add irrigation. Line and outfeild fence top should be added if exising fence is to remain.



N

RETTLER corporation

3317 BUSINESS PARK DRIVE
STEVENS POINT, WI 54482

HIGH SCHOOL BASEBALL
PORT WASHINGTON, WISCONSIN

0' 100' 200'

Name:	**Thomas Jefferson Middle School**
Field Type:	Softball 1 & 2, Practice Soccer
Address:	1403 N Holden Street Port Washington
Amenities	▪ Bleachers (for Soccer) ▪ Benches ▪ Backstop ▪ Concessions ▪ Drinking Fountain ▪ Picnic Tables ▪ Restroom (Portables)

BASEBALL/SOFTBALL FIELD RATING FORM

Rating Criteria:

5 **Excellent Condition:** conditions are immaculate. Attention to detail is prevalent.

4 **Good Condition:** field is maintained in above average conditions with normal grooming.

3 **Average Condition**: field is playable and conditions could be elevated with minor upgrades.

2 **Below Average Condition:** field is playable but in need of significant upgrading.

1 **Unsafe Condition:** field in need of complete renovation or replacement.

NA **Not applicable/Not Present**

FIELD NAME: Softball Fields 1&2, Practice Soccer

LOCATION: Thomas Jefferson Middle School

Specific Area	Rating	Comments
Size (Flexibility)	4	
Drainage	1	
Irrigation	N/A	
Backstop/Dugouts/Bleachers	1	
Infield Condition	2	
Outfield Condition	2	Combined with practice soccer fields
Lighting	N/A	
Restroom Facilities	1	Portables on site
Concession	2	
Parking	2	Street, or long walking distance parking only.
Fencing	2	

Safety or ADA Issues	**YES**	
Rating Average	1.89	

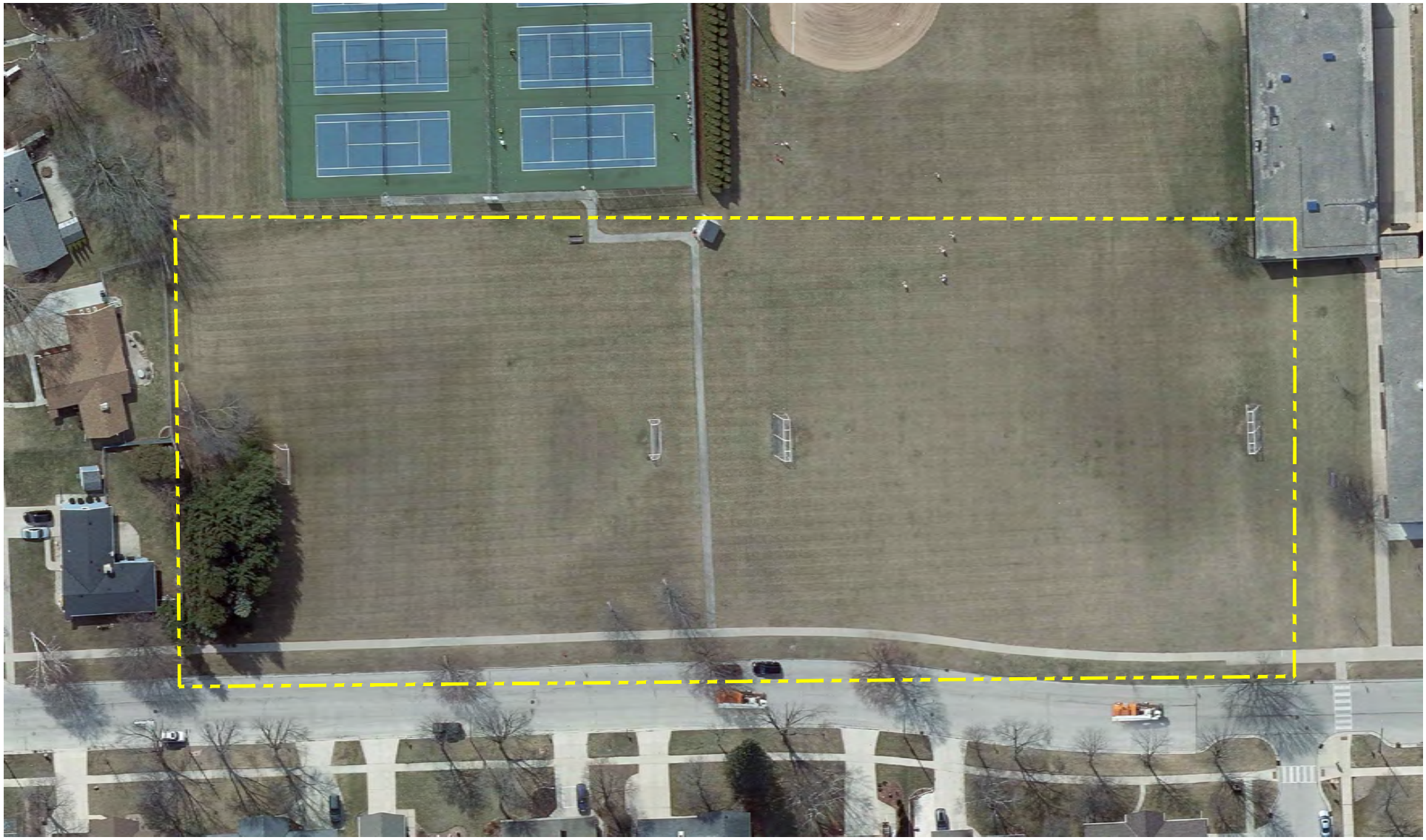
N

RETTLER corporation

3317 BUSINESS PARK DRIVE
STEVENS POINT, WI 54482

TJ MIDDLE SCHOOL SOFTBALL FIELDS
PORT WASHINGTON, WISCONSIN

0' 100' 200'



RETTLER corporation

3317 BUSINESS PARK DRIVE
STEVENS POINT, WI 54482

TJ MIDDLE SCHOOL SOCCER (PRACTICE)
PORT WASHINGTON, WISCONSIN

N

0' 80' 160'

Name:	**Lincoln Softball & Practice Soccer**
Field Type:	Softball, Practice Soccer
Address:	1325 N Theis Lane Port Washington
Amenities	▪ Benches ▪ Backstop ▪ Scoreboard

BASEBALL/SOFTBALL FIELD RATING FORM

Rating Criteria:

5 **Excellent Condition:** conditions are immaculate. Attention to detail is prevalent.

4 **Good Condition:** field is maintained in above average conditions with normal grooming.

3 **Average Condition**: field is playable and conditions could be elevated with minor upgrades.

2 **Below Average Condition:** field is playable but in need of significant upgrading.

1 **Unsafe Condition:** field in need of complete renovation or replacement.

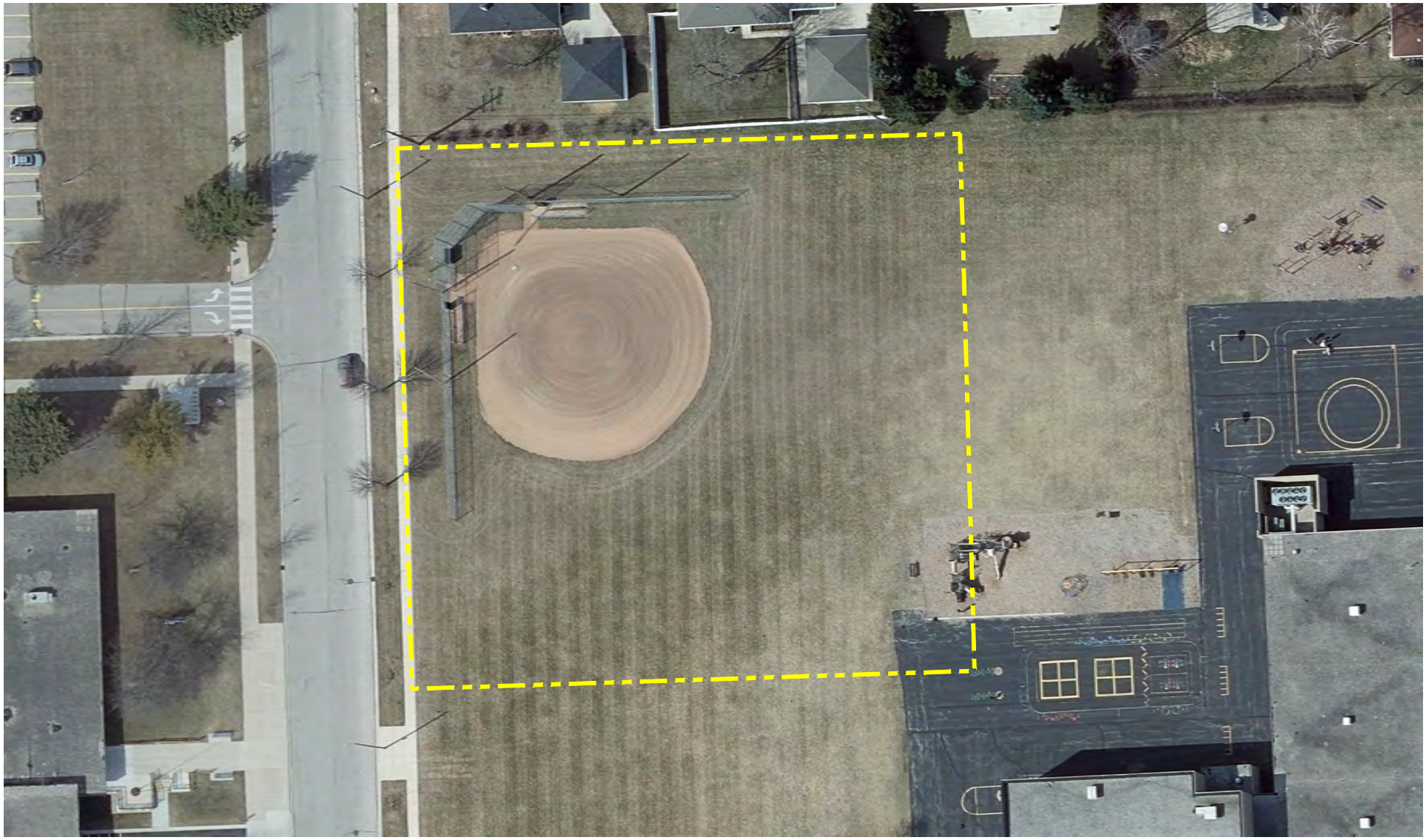
NA **Not applicable/Not Present**

FIELD NAME: Lincoln Softball and Practice Soccer

LOCATION: Lincoln Elementary School

Specific Area	Rating	Comments
Size (Flexibility)	4	
Drainage	4	
Irrigation	N/A	
Backstop/Dugouts/Bleachers	2	
Infield Condition	2	
Outfield Condition	3	No defined outfield, shared with practice soccer
Lighting	N/A	
Restroom Facilities	1	
Concession	N/A	
Parking	3	
Fencing	2	

Safety or ADA Issues		
Rating Average	2.63	



N

RETTLER corporation

3317 BUSINESS PARK DRIVE
STEVENS POINT, WI 54482

LINCOLN ELEMENTARY SOFTBALL
PORT WASHINGTON, WISCONSIN

0' 60' 120'

RETTLER corporation

3317 BUSINESS PARK DRIVE
STEVENS POINT, WI 54482

LINCOLN ELEMENTARY SOCCER (PRACTICE)
PORT WASHINGTON, WISCONSIN

N

0' 60' 120'

Name:	**Varsity Soccer**
Field Type:	Soccer
Address:	1403 N Holden Street Port Washington (At Thomas Jefferson Middle School)
Amenities	▪ Bleachers ▪ Benches ▪ Backstop ▪ Concessions ▪ Grass Fields ▪ Restroom ▪ Scoreboard ▪ Soccer Goals ▪ Team Boxes ▪ Officials Table ▪ Lighting

SOCCER FIELD RATING FORM

Rating Criteria:

5 Excellent Condition: conditions are immaculate. Attention to detail is prevalent.

4 Good Condition: field is maintained in above average conditions with normal grooming.

3 Average Condition: field is playable and conditions could be elevated with minor upgrades.

2 Below Average Condition: field is playable but in need of significant upgrading.

1 Unsafe Condition: field in need of complete renovation or replacement.

NA Not applicable/Not Present

FIELD NAME: Varsity Soccer Field		**FIELD SIZE: 225' x 360'**
LOCATION: Thomas Jefferson Middle School		
Specific Area	**Rating**	**Comments**
Size (Flexibility)	5	Team boxes, officials table, scoreboard for competition events
Drainage	3.5	Field is cross-drained east to west, ultimately should be crowned
Irrigation	4	
Goal Condition	5	
Overall Field Condition	4.5	
Bleachers/Benches	4	
Lighting	5	
Restroom Facilities	5	
Concession	5	
Parking	5	
Fencing	4	

Safety or ADA Issues		
Rating Average	4.55	

Trees, playground equipment, and drainage structure in the field of play make this location a challenge for competion above youth and recreation activities.

N

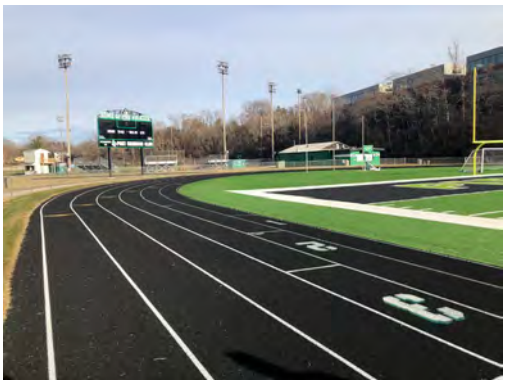
RETTLER corporation

3317 BUSINESS PARK DRIVE
STEVENS POINT, WI 54482

TJ MIDDLE SCHOOL SOCCER (VARSITY)
PORT WASHINGTON, WISCONSIN

0' 80' 160'

Name:	**Al Urness Field**
Field Type:	Football, Track & Field Events
Address:	427 W Jackson Street Port Washington (Lower Campus)
Amenities	▪ Synthetic turf football field ▪ Grandstands (*unsafe condition*) ▪ Press box ▪ Benches ▪ Scoreboard ▪ Lighting ▪ Parking ▪ Track and field events ▪ Entry feature ▪ Concessions ▪ Restrooms ▪ Storage building



FOOTBALL FIELD RATING FORM

Rating Criteria:

5 **Excellent Condition:** conditions are immaculate. Attention to detail is prevalent.

4 **Good Condition:** field is maintained in above average conditions with normal grooming.

3 **Average Condition**: field is playable and conditions could be elevated with minor upgrades.

2 **Below Average Condition:** field is playable but in need of significant upgrading.

1 **Unsafe Condition:** field in need of complete renovation or replacement.

NA **Not applicable/Not Present**

FIELD NAME: Al Urness Field		**FIELD SIZE: Full Size Football**
LOCATION: High School (Lower Campus)		
Specific Area	**Rating**	**Comments**
Size (Flexibility)	3.5	Football only
Drainage	5	
Irrigation	N/A	
Goal Condition	4	
Overall Field Condition	3.5	Grading inconsistency on playing surface in north end zone
Bleachers/Benches	1	Discontinue use of bleachers until replaced
Lighting	3	
Restroom Facilities	3	
Concession	3	
Parking	3	
Fencing	2	

Safety or ADA Issues	**YES**	
Rating Average	3.10	

Field is limited to football use only. Very limited for added activities. Excellent competition venue with extensive improvements.

RETTLER corporation

3317 BUSINESS PARK DRIVE
STEVENS POINT, WI 54482

HIGH SCHOOL FOOTBALL STADIUM - AL URNESS FIELD
PORT WASHINGTON, WISCONSIN

N

0' 80' 160'

Name:	**Port Washington High School**
Field Type:	Practice (Multi-Use)
Address:	427 W Jackson St Port Washington (Upper Campus, North Side)
Amenities	▪ Grass Field

FOOTBALL FIELD RATING FORM

Rating Criteria:

5 **Excellent Condition:** conditions are immaculate. Attention to detail is prevalent.

4 **Good Condition:** field is maintained in above average conditions with normal grooming.

3 **Average Condition**: field is playable and conditions could be elevated with minor upgrades.

2 **Below Average Condition:** field is playable but in need of significant upgrading.

1 **Unsafe Condition:** field in need of complete renovation or replacement.

NA **Not applicable/Not Present**

FIELD NAME: HS Practice Field		**FIELD SIZE: 250' x 265'**
LOCATION: High School (Upper Campus, North Side)		
Specific Area	**Rating**	**Comments**
Size (Flexibility)	3	
Drainage	2	
Irrigation	N/A	
Goal Condition	N/A	
Overall Field Condition	2	
Bleachers/Benches	N/A	
Lighting	N/A	
Restroom Facilities	1	
Concession	1	
Parking	4	
Fencing	N/A	

Safety or ADA Issues	**YES**	
Rating Average	2.17	

N

RETTLER corporation

3317 BUSINESS PARK DRIVE
STEVENS POINT, WI 54482

HIGH SCHOOL PRACTICE FIELD
PORT WASHINGTON, WISCONSIN

0' 60' 120'

Name:	**Dunwiddie Soccer Fields**
Field Type:	Soccer
Address:	1243 W Lincoln Avenue Port Washington
Amenities	▪ Grass Fields ▪ Soccer Goals (Portable)

SOCCER FIELD RATING FORM

Rating Criteria:

5 **Excellent Condition:** conditions are immaculate. Attention to detail is prevalent.

4 **Good Condition:** field is maintained in above average conditions with normal grooming.

3 **Average Condition**: field is playable and conditions could be elevated with minor upgrades.

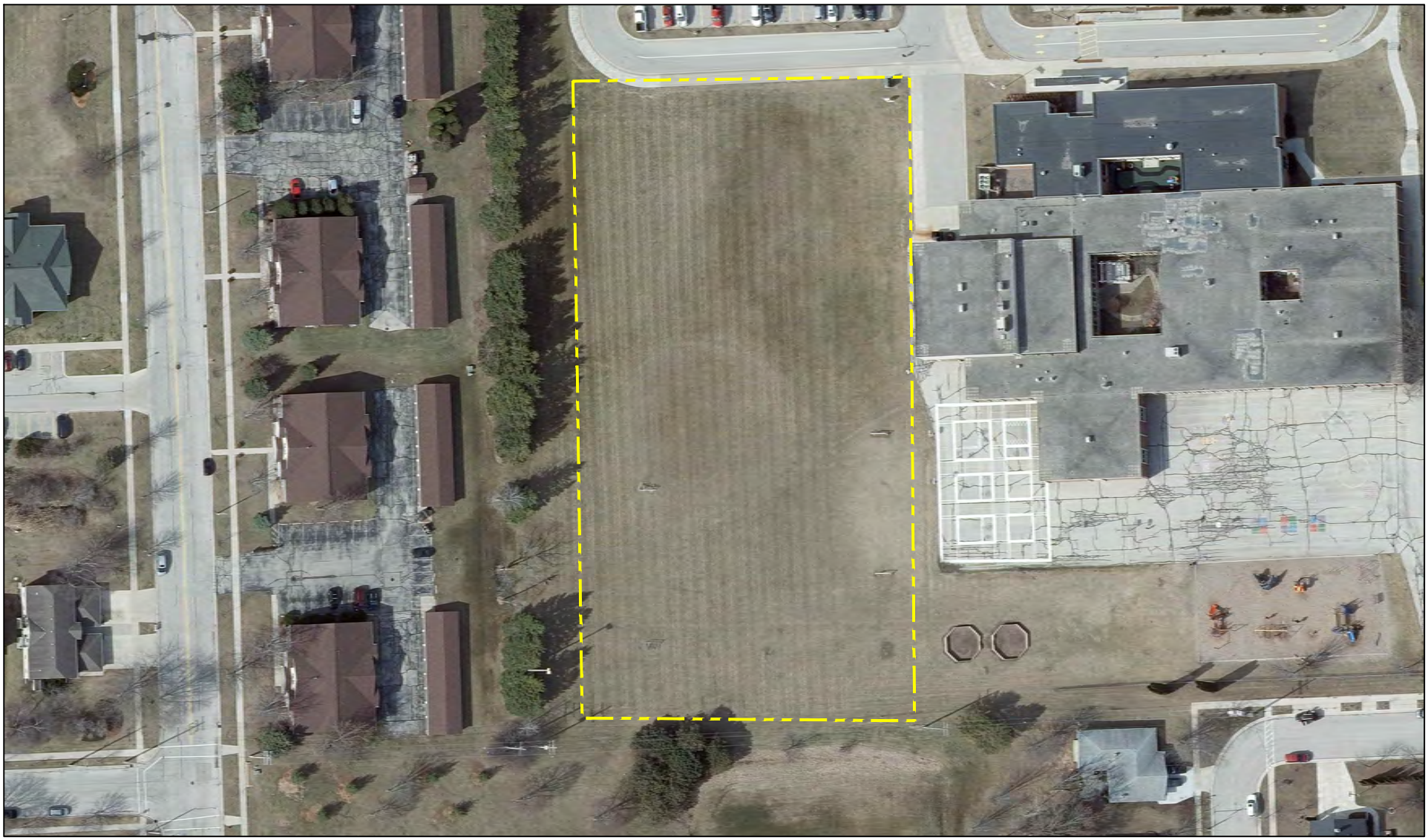
2 **Below Average Condition:** field is playable but in need of significant upgrading.

1 **Unsafe Condition:** field in need of complete renovation or replacement.

NA **Not applicable/Not Present**

FIELD NAME: Dunwiddie Soccer Fields		**FIELD SIZE: 550' x 285' Flexible Field**
LOCATION: Dunwiddie Elementary School		
Specific Area	**Rating**	**Comments**
Size (Flexibility)	4	
Drainage	3	
Irrigation	N/A	
Goal Condition	N/A	
Overall Field Condition	3	
Bleachers/Benches	N/A	
Lighting	N/A	
Restroom Facilities	1	
Concession	N/A	
Parking	3	
Fencing	N/A	

Safety or ADA Issues		
Rating Average	2.80	



N

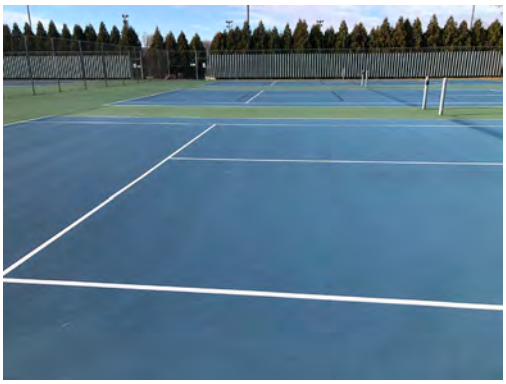
RETTLER corporation

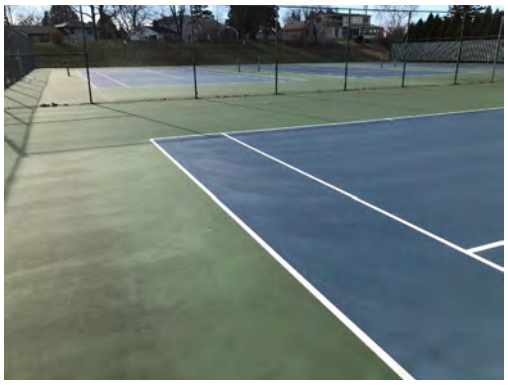
3317 BUSINESS PARK DRIVE
STEVENS POINT, WI 54482

DUNWIDDIE ELEMENTARY SOCCER
PORT WASHINGTON, WISCONSIN

0' 100' 200'

Name:	**T.J. Tennis Courts**
Field Type:	Tennis Courts
Address:	1403 N Holden Street Port Washington
Amenities	▪ Tennis Courts (6) ▪ Benches ▪ Concessions ▪ Portable Restrooms





TENNIS COURT RATING FORM

Rating Criteria:

5 Excellent Condition. Immaculate. Precise attention to detail.

4 Good/Above Average Conditions.

3 Average Condition.

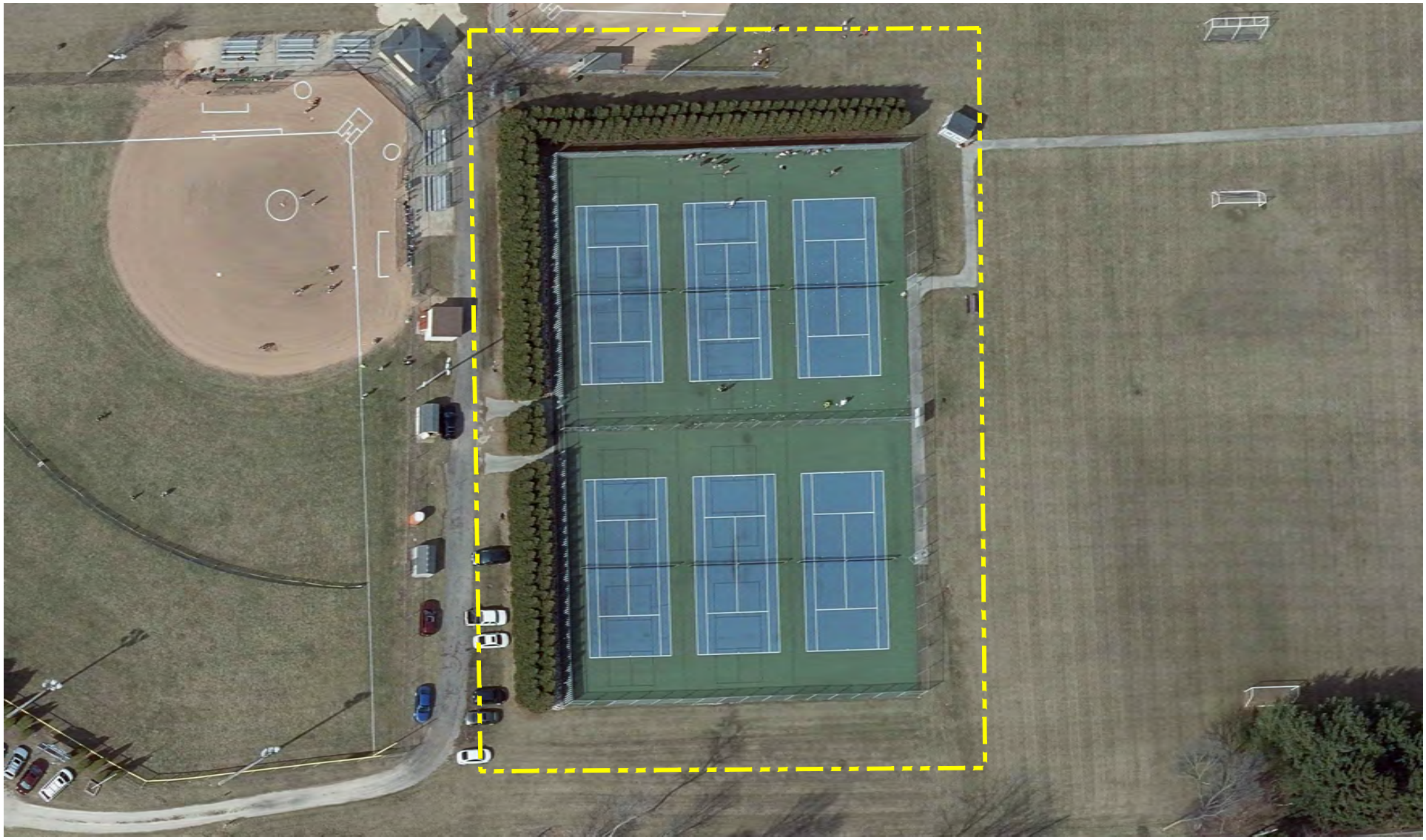
2 Below Average Condition. Useable, but needs upgrades.

1 Needs extensive renovation or replacement. Possibly unsafe.

NA Not Applicable/Not Present.

COURT NAME: T.J. Tennis Courts		**NUMBER OF COURTS: 6**
LOCATION: Thomas Jefferson Middle School		
Specific Area	**Rating**	**Comments**
Size (Striping/Flexibility)	5	
Drainage/Slope	4	
Asphalt & Surface Type and Condition	4	
Nets/Posts/Goals Condition	4	
Fence Condition	3	
Standards (Distance Between Courts & Obstructions)	5	
Bleachers/Benches	N/A	
Lighting	N/A	
Restroom Facilities	1	Portables
Concession	3	
Parking	1	

Safety or ADA Issues	**YES**	
Rating Average	3.33	



N

RETTLER corporation

3317 BUSINESS PARK DRIVE
STEVENS POINT, WI 54482

TJ MIDDLE SCHOOL TENNIS COURTS (VARSITY)
PORT WASHINGTON, WISCONSIN

0' 60' 120'

3.0 NEEDS ASSESSMENT

Guidelines and recommendations are important to consider, but the most accurate way to get a true picture of needs and opportunities is to obtain input directly from the community.

Firsthand accounts provide direct information on how existing facilities and services are being utilized and the reasons why. There is no better way to determine needs and opportunities and to create customized solutions than to listen to what the community is saying.

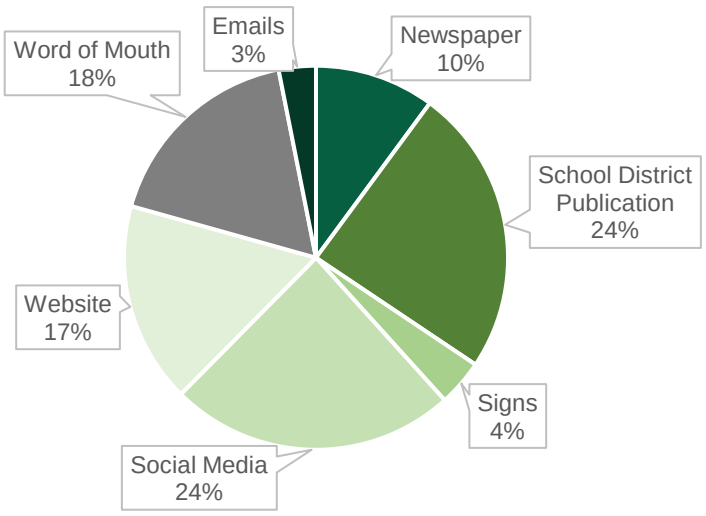
In the course of creating this plan, Community Survey and User Group Survey links were made available online.

3.1 Online Community Survey

The Port Washington-Saukville School District conducted an online community survey from April 14, 2023 to May 2, 2023. The survey contained 21 questions regarding preferred information sources, facility usage, satisfaction with existing facilities, priorities for future development or improvements, and an option for general comments. Efforts to promote the online survey included a writeup and links on social media and the website. The result was a total of 676 completed surveys. The following is a summary of the information shared.

Information Sources
Social media and school district publications are the primary ways people obtain information about PWSSD facilities, programs and events. Word of mouth and the District website were a bit less popular with 18% and 17% respectively.

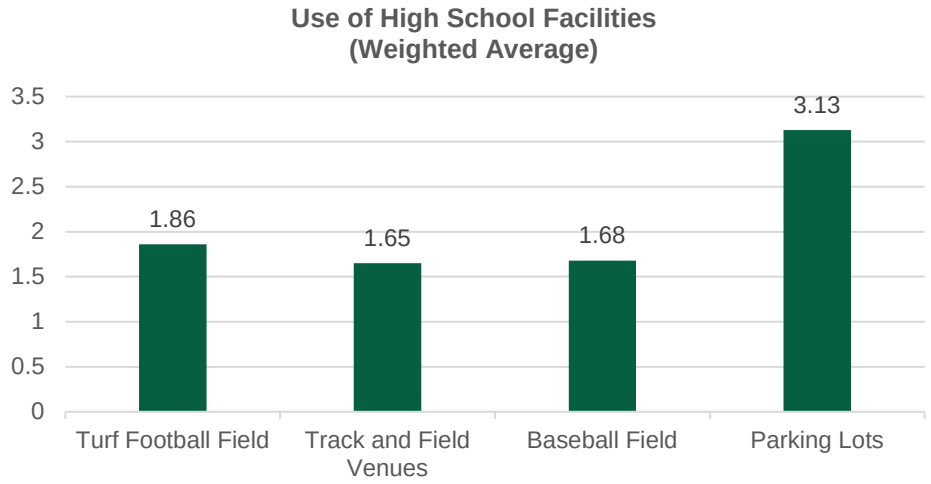
Sources of Information Regarding Port Washington-Saukville School District Facilities, Programs & Events



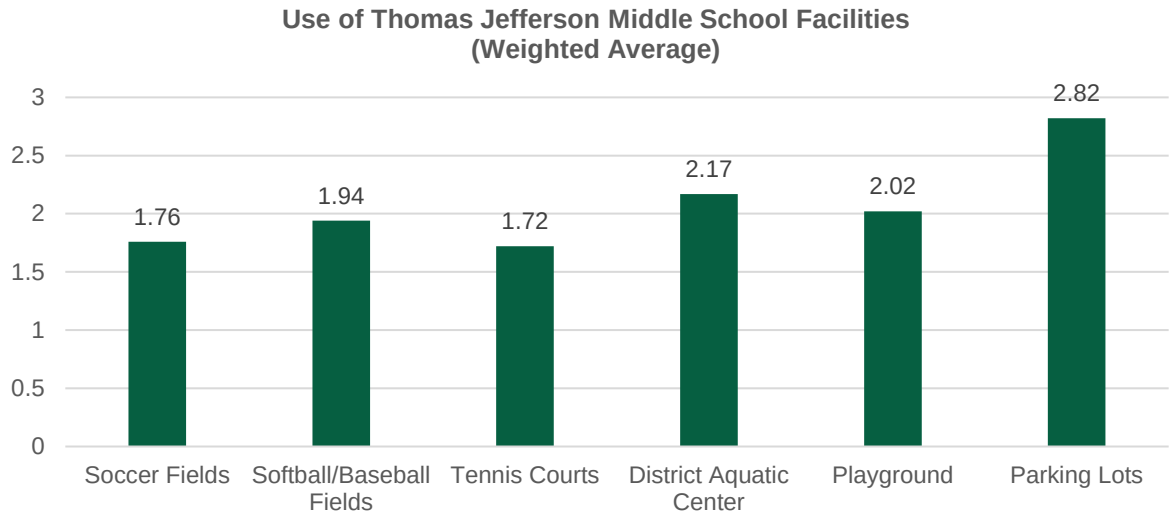
Usage

Survey respondents were asked to complete charts regarding their/their families use of the District's outdoor and aquatic facilities. Options included "often," "occasionally," "rarely" and "never."

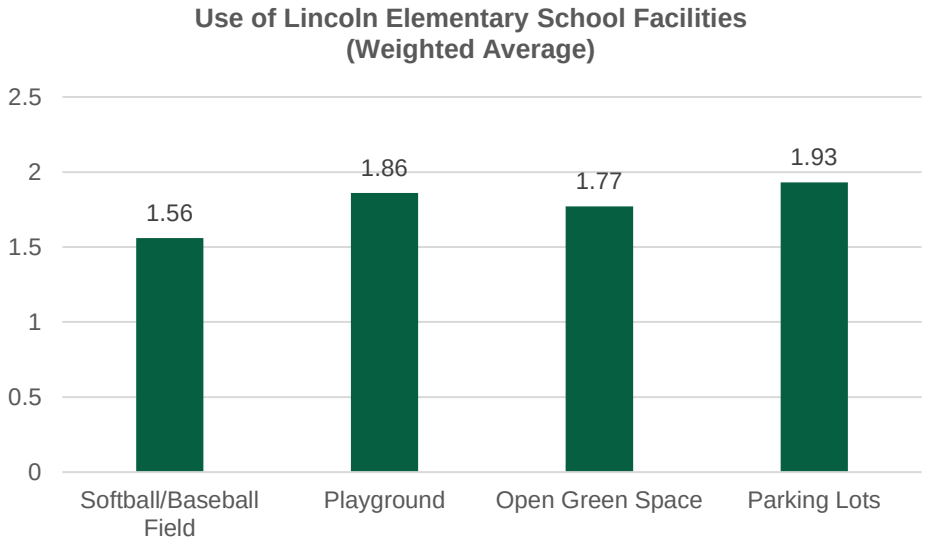
Parking lots and the turf football field are the most heavily utilized facilities at the High School. Comments indicate there is room for improvement/more parking, especially when multiple events are taking place.



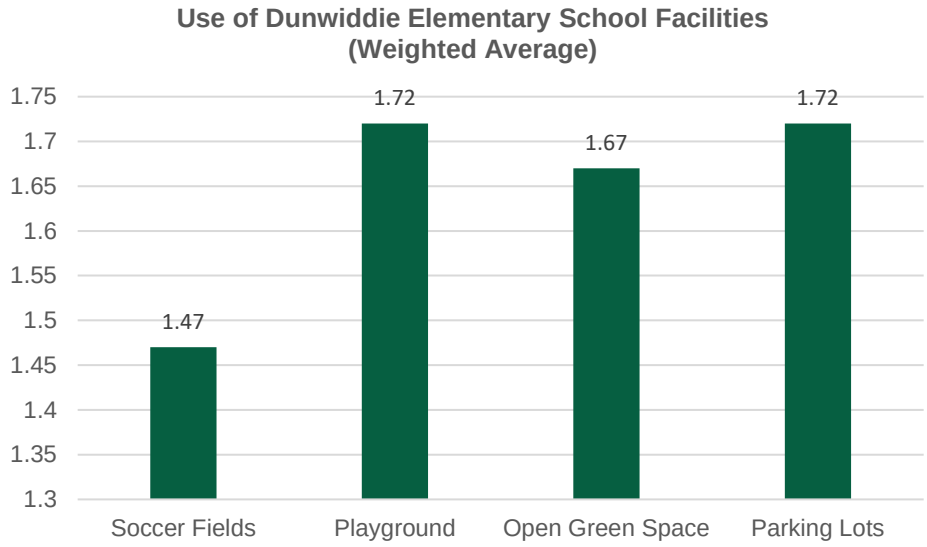
Parking lots are the most often used facility at TJ Middle School, followed by the District Aquatic Center and the playground. Several comments indicate there is interest in greater community access to the pool/expanded open swim hours.



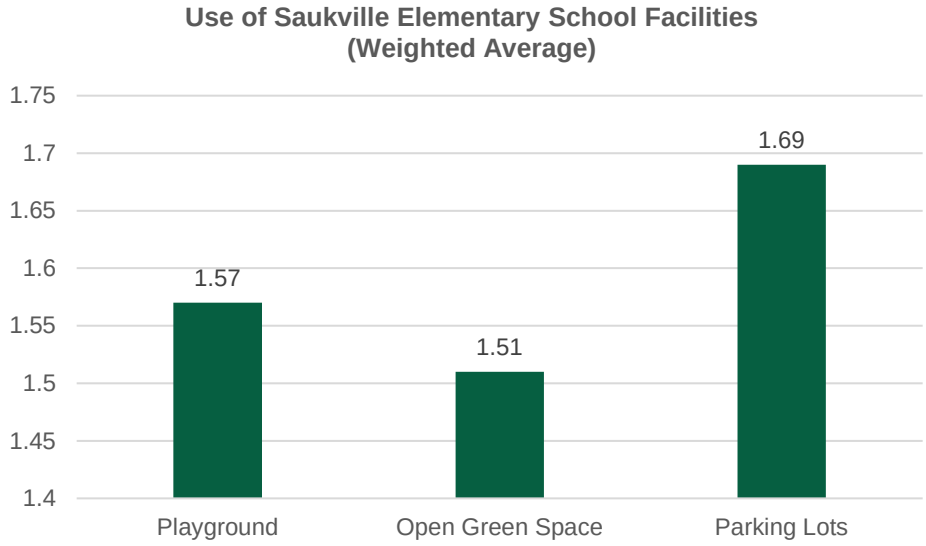
Of the facilities at Lincoln Elementary, the parking lots are used most often, followed by the playground. Feedback provided in the comments indicates parking could be improved/expanded.



Parking lots and the playground are the most often used facilities at Dunwiddie Elementary. Several comments indicate the parking lot and pick-up lanes are congested and possibly unsafe, traffic gets backed up.



Parking lots are the most often utilized facility at Saukville Elementary, followed by the playground.



Satisfaction

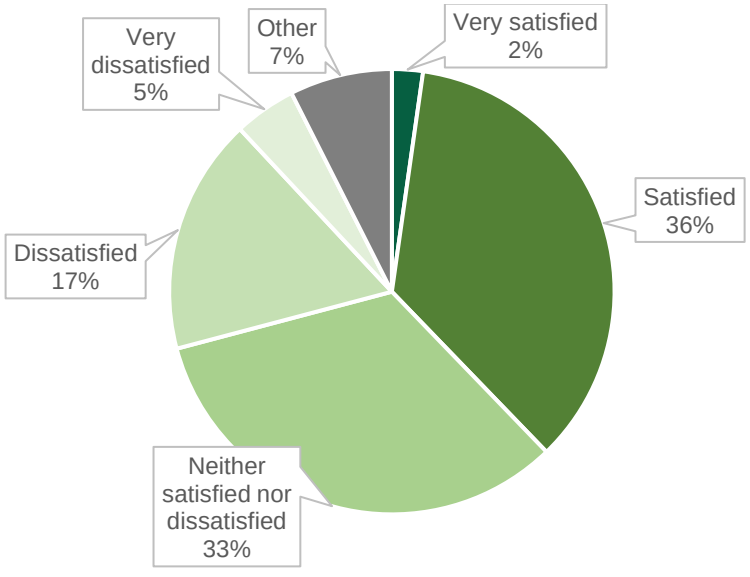
38% of those surveyed describe themselves as “satisfied” or “very satisfied” with the overall condition of Port Washington-Saukville School District outdoor facilities.

36 of the 43 "Other" responses describe areas of dissatisfaction or suggestions for improvements relating to: general upkeep and maintenance, the ability to host varsity track meets and other outdoor events, baseball/softball field usage/condition and maintenance, soccer field repairs, tennis court/facility improvements, and parking.

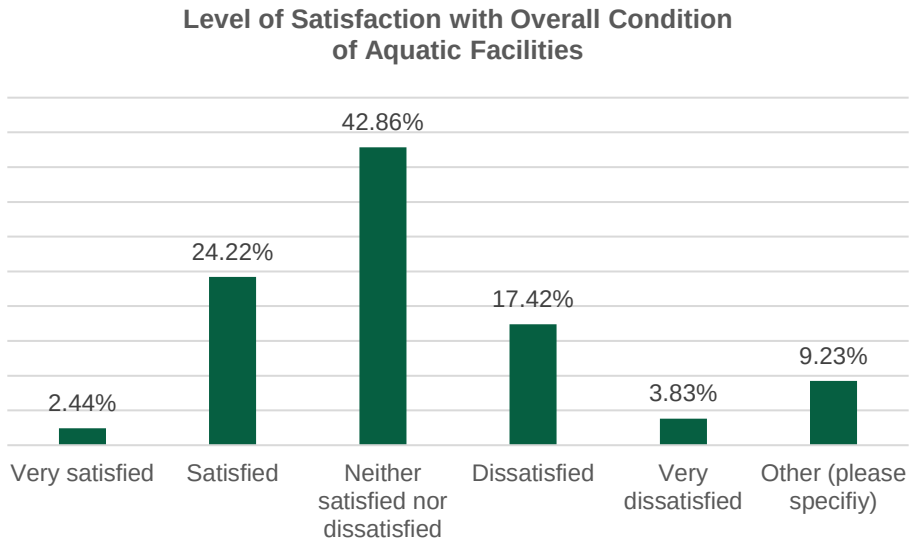
Several respondents expressed the desire for facilities to be competitive with those of surrounding communities/schools in the same conference.

The main safety related concerns include: the condition of the bleachers at the High School Stadium, aging playground equipment, and general ADA accessibility.

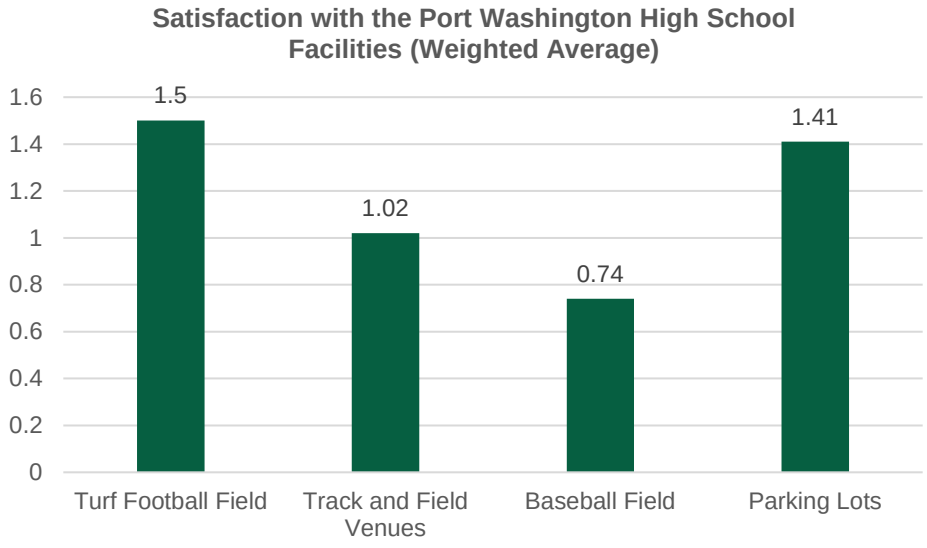
Satisfaction With Overall Condition of PWSSD Outdoor Facilities



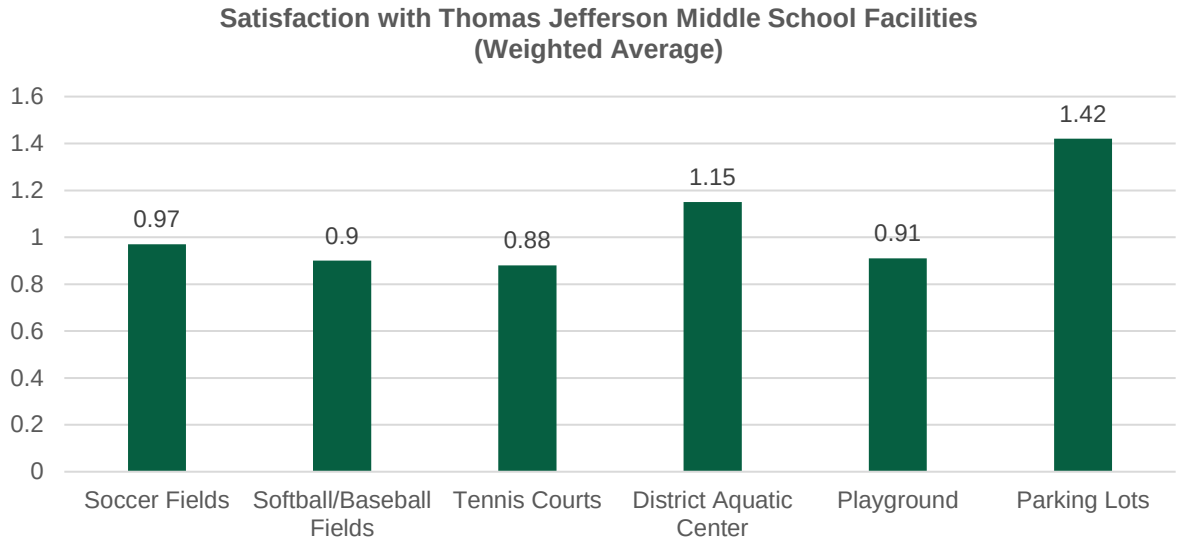
Just over 26% of respondents are “satisfied” or “very satisfied” with the overall condition of the aquatic facilities. About 43% are neither satisfied nor dissatisfied, while approximately 21% are dissatisfied or very dissatisfied. Suggestions for improvements include upgraded seating, updated/better maintained scoreboard and sound system for swim meets, restroom expansion and locker room improvements, and expanded open swim hours (weekends and kid-friendly times). Several respondents noted the pool is a valuable asset for the students and community but it is frequently breaking down and generally needs updates.



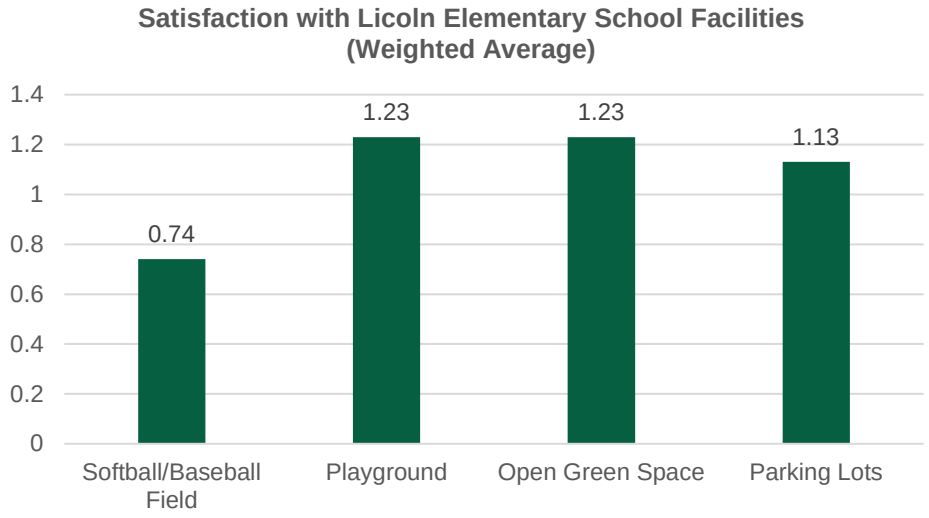
Of the facilities at the High School, based on weighted average, respondents are most satisfied with the turf football field and parking lots. That being said, comments indicate the District could benefit from additional parking, the football stadium bleachers are a safety concern, and there is interest in a multi-use turf field.



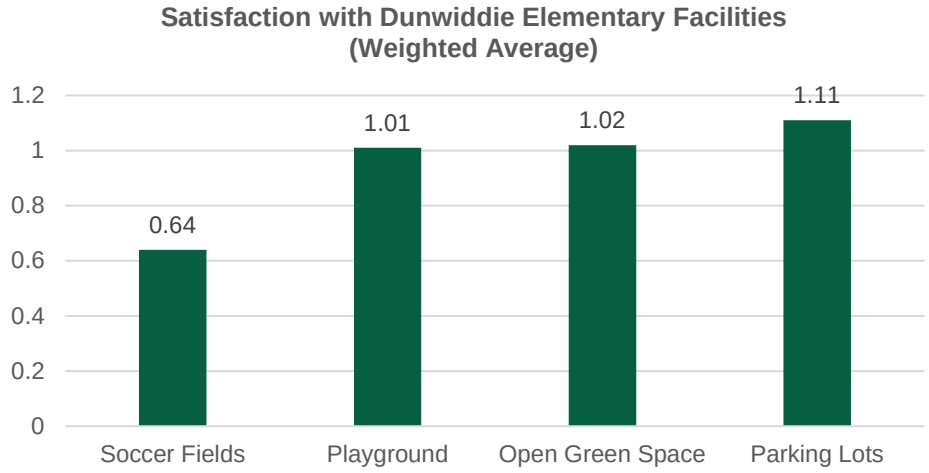
Based on weighted average, respondents are most satisfied with the parking lots and the District Aquatic Center at T.J. Middle School. Requests in the comments include: updates to the Aquatic Center (pool upgrades, sound system, seating, scoring), tennis improvements (restrooms, lighting, backboard and additional courts), baseball/softball improvements, updated sound system for soccer, age-appropriate playground equipment and basketball court improvements, as well as parking lot improvements and expansion. Safety related concerns include the soccer field condition/uneven playing surface and ADA accessibility for softball/baseball.



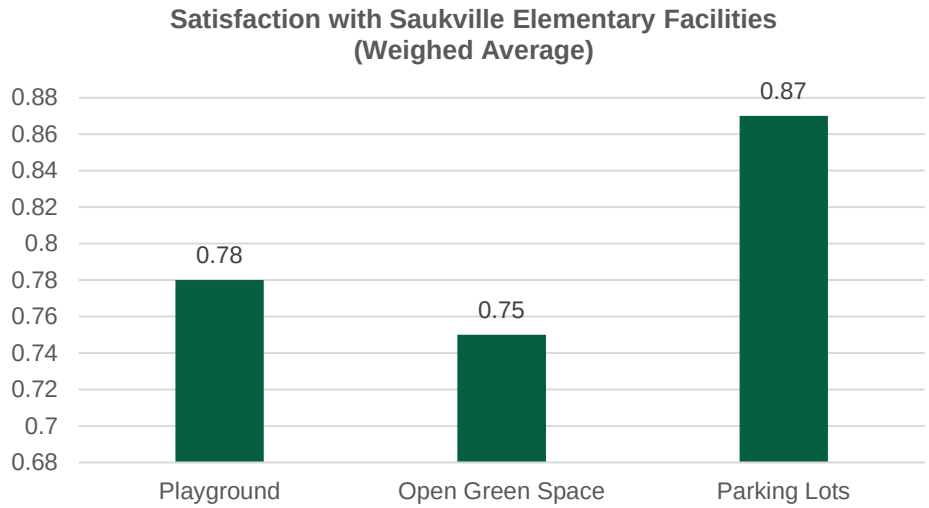
Respondents are most satisfied with the playground and open green space at Lincoln Elementary. Concerns and feedback shared in the comments include safety/condition of playground equipment, ADA accessibility for softball/baseball, and parking lot repairs/expansion.



Of the facilities at Dunwiddie Elementary, based on weighted average, respondents are most satisfied with the parking lots followed by the open green space and playground. Comments indicate there is a need for: updated and inclusive playground equipment and surfacing, improved pick-up/drop-off and parking, and additional signage to help improve traffic flow.

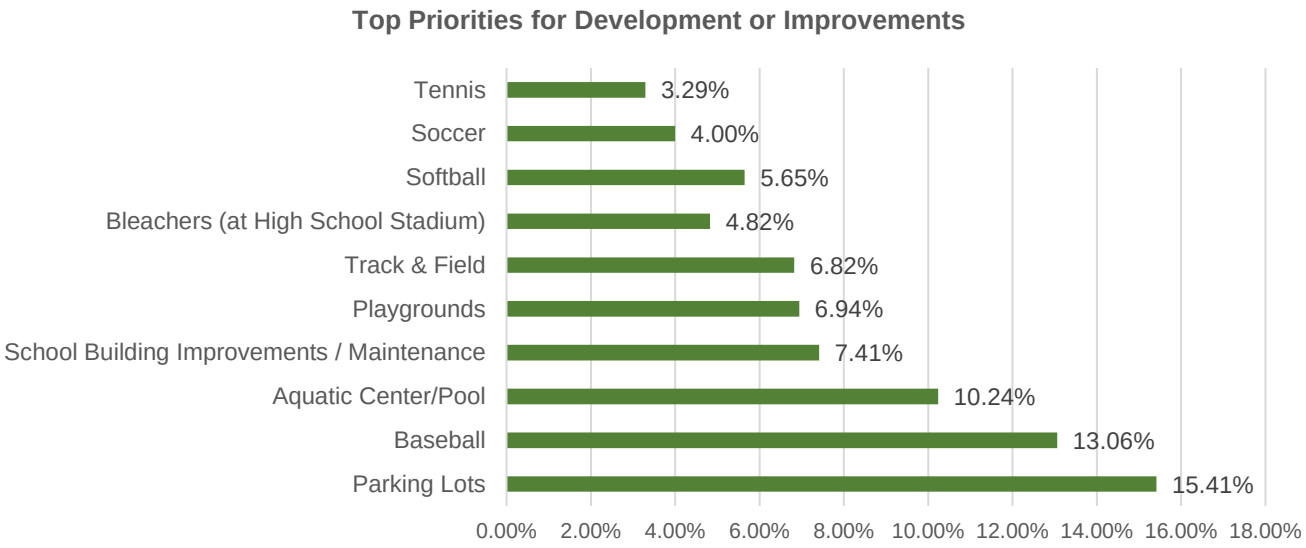


Respondents are most satisfied with the parking lots at Saukville Elementary. That being said, comments indicate parking could be improved (better pavement marking, layout, additional parking spots, steep entrance/exit drives, more lighting).



Priorities for Development or Improvement

Survey participants were asked to list their top 3 priorities for development or improvements. There were many priorities for future development or improvements noted by 397 respondents. The priorities mentioned most often include: parking lots, baseball and the Aquatic Center. School building improvements and maintenance, as well as updated or improved playgrounds and the track were also popular priorities. Mentions of the track were primarily related to expanding the track to regulation size, enabling the school district to host track meets.



General Comments and Suggestions

130 people shared comments or suggestions on a number of topics. The most popular themes were: school building improvements and maintenance, improvements for softball/baseball, and revenue suggestions/monetary concerns (need community and private sponsorships, make improvements to help increase ticket sales, more balanced funding across sports programs, and referendum concerns). Several commenters expressed gratitude to the District for seeking feedback. Improvements to green space/school grounds, academic concerns and parking related concerns were also common themes.

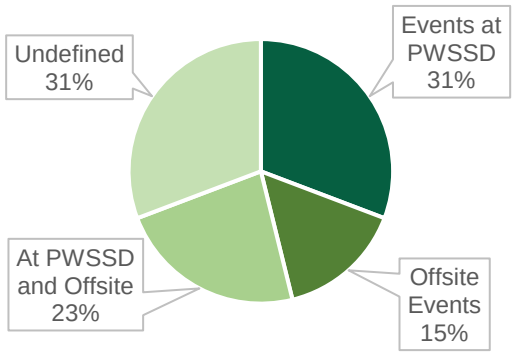
3.2 Online User Group Survey

The District also conducted a User Group Survey concurrently with the Community Input Survey. Questions focused on outdoor and Aquatic Facility use and satisfaction, shortages and desires, number of participants and events, financial contribution ability, and open comments. 24 groups responded. The following are some highlights.

Participating user groups generally host either 1 event per season, or 2 to 5 events per season. Almost 40% of events hosted by user groups have approximately 50 to 100

participants per event. Approximately 31% of user groups host their events at District facilities, while about 16% host events offsite, and 23% host events both at District facilities as well as other locations. A few user groups listed facility/event needs, such as: need a larger track to host competitions, and need a designated area to separate the discuss sector from the baseball field (to help relieve scheduling/use conflicts).

Location of Events Hosted by User Groups

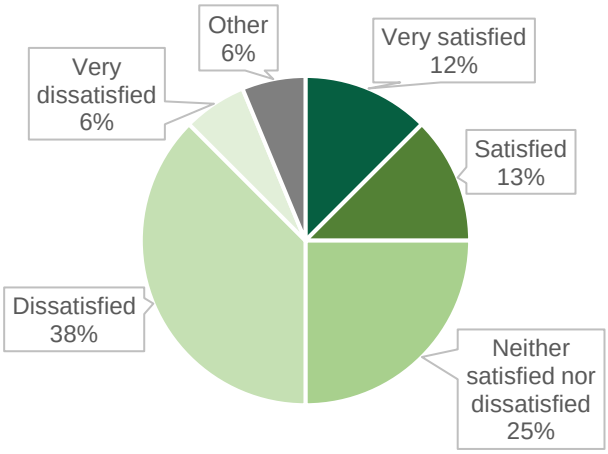


The majority of user groups take advantage of facilities at Port Washington High School or T.J. Middle School, with minimal activity taking place at the elementary school locations.

Of the facilities at the high school, parking lots and the turf football field are the most frequently used. Comments indicate that user groups would benefit from improvements to: parking, the football press box and bleachers, the baseball complex (general updates, field size, fencing), and the track (level track, expand to 8-lanes). One user group noted the entire venue holds great potential if restructured (track, baseball, football, addition of softball). Additionally, several user groups described parking as a significant challenge, stating parking is almost non-existent for athletics, parking makes it hard to host large events, and that lack of parking has made for poorly attended events and frustrated spectators.

The Aquatic Center and parking lots are the most frequently used facilities at the middle school. Suggestions to improve user group experiences include: parking lot repairs, lighting and expanding tennis courts, improving the soccer field surface (to address bumps) and repairing the sound system, upgrading softball/baseball fields to turf, allowing for increased usage/reduce limitations related to weather, adding track and field facilities at the middle school, and updating aquatic facilities (paint and lighting). One user group noted they would love to use the pool more regularly but did not describe existing limitations.

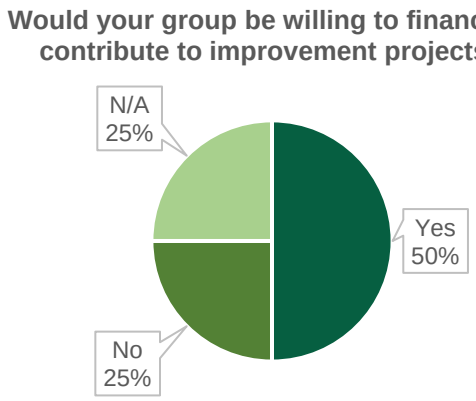
User Group Satisfaction with Overall Condition of PWSSD Outdoor Facilities & Aquatic Facilities



44% of user groups surveyed describe their group as “dissatisfied” or “very dissatisfied” with the overall condition of Port Washington-Saukville School District outdoor

facilities. 25% describe their group as “satisfied” or “very satisfied” and another 25% describe themselves as “neither satisfied nor dissatisfied.”

Over the years, the Port Washington-Saukville School District has partnered with several organizations, acquired grants, and received donations from individuals and organizations to construct or renovate various outdoor facilities. Half of the user groups surveyed said they would be willing to financially contribute to improvement projects. A few user groups expressed gratitude to the District for their partnership and for seeking input.



4.0 RECOMMENDATIONS

The primary purpose of this Outdoor Athletics Facilities Study and Master Plan is to guide the District in the development of facilities, existing and future, and to satisfy the needs of Port Washington-Saukville School district students and families. The recommendations below have been developed based on information gathered from the Facilities Inventory and Analysis, Needs Assessment, community input, the consultant's professional experience, and discussions with District staff.

4.1 Athletic Facility Recommendations

The following is a list of recommendations and estimated costs. These recommendations are intended to provide guidance to the decision makers responsible for implementing the plan. Estimated costs are based on similar bid projects and do not necessarily reflect inflation, regional price differences, and potential future material cost increases.

These recommendations will maximize the ability for all students to utilize these facilities and accommodate significantly more use while facilitating higher levels of competition.

Facility Improvements and Estimated Costs:

- Reconstruct grandstands and press box at Al Urness Field
  $1,000,000 - $1,300,000

- Reconfigure track to 8 lanes and reconstruct synthetic turf field at Al Urness Field
  $1,600,000 - $1,800,000

- Reconfigure and reconstruct new synthetic turf baseball field at current location
  $3,500,000 – $3,900,000

- Construct new synthetic turf softball field at the northeast practice field area
  $1,600,000 – 1,900,000

- Tennis court accessibility improvements and bounding board
  $55,000 - $75,000

The grandstand reconstruction will drastically improve safety, hillside stabilization opportunities, and improve site circulation. Conversion to a multiuse synthetic turf field at the high school would allow for onsite practice rather than traveling to TJ Middle School. Additionally, by constructing turf baseball and softball fields onsite, the District will not have to rely on municipal facilities, allowing the City to independently coordinate and utilize their facilities. Spring sports such as baseball and softball will be able to host events immediately after thaw without major field condition concerns. Most of the parking within the district will need to be at a minimum repaired and resurfaced, if not completely reconstructed.

4.2 Playground Recommendations

Some of the playgrounds throughout the District have been updated with new equipment that meets the recommended safety standards; however, the play equipment at other schools is nearing or at its intended life expectancy. It is recommended that the District continue to improve the playground equipment as necessary to ensure that it meets safety standards and reduces maintenance time and costs. Another main goal is improving accessibility and ensuring that there is a balanced amount of equipment for all age levels and abilities.

Additional amenities such as shade structures and drinking fountains may also be considered for play areas to provide relief from various weather conditions.

KEYNOTES

1. 315'/350'/315' SYNTHETIC TURF BASEBALL FIELD
2. 200' SYNTHETIC TURF SOFTBALL FIELD
3. NEW 8 LANE TRACK
4. NEW SYNTHETIC TURF MULTIPURPOSE FIELD
5. MAINTAIN VISITOR BLEACHERS
6. 2000 SEAT BLEACHERS WITH PRESS BOX
7. BLEACHERS WITH PRESS BOX
8. DISCUS

PORT WASHINGTON

SITE RECOMMENDATIONS ▪ CONCEPT 1

427 W JACKSON ST, PORT WASHINGTON, WI 53074

N

0' 50' 100' 150'

RETTLER CORP. PROJECT # ▪ 22.066

DATE ▪ 08.24.2023

RETTLER corporation

▪ 3317 BUSINESS PARK DRIVE, STEVENS POINT, WI 54482
▪ TELEPHONE ▪ 715 - 341 - 2633, FAX ▪ 715 - 341 - 0431
▪ EMAIL ▪ INFO @ RETTLER.COM, WEBSITE ▪ WWW.RETTLER.COM

KEYNOTES

1. 315'/350'/315' SYNTHETIC TURF BASEBALL FIELD
2. 200' SYNTHETIC TURF SOFTBALL FIELD
3. NEW 8 LANE TRACK
4. NEW SYNTHETIC TURF MULTIPURPOSE FIELD
5. MAINTAIN VISITOR BLEACHERS
6. 2000 SEAT BLEACHERS WITH PRESS BOX
7. BLEACHERS WITH PRESS BOX
8. DISCUS
9. SYNTHETIC TURF FLEX FIELD
10. REMOVABLE FENCE
11. SHOT PUT

PORT WASHINGTON

SITE RECOMMENDATIONS ▪ CONCEPT 2

427 W JACKSON ST, PORT WASHINGTON, WI 53074

0' 50' 100' 150'

RETTLER CORP. PROJECT # ▪ 22.066

DATE ▪ 08.24.2023

RETTLER corporation

▪ 3317 BUSINESS PARK DRIVE, STEVENS POINT, WI 54482
▪ TELEPHONE ▪ 715 - 341 - 2633, FAX ▪ 715 - 341 - 0431
▪ EMAIL ▪ INFO @ RETTLER.COM, WEBSITE ▪ WWW.RETTLER.COM

5.0 COST AND MAINTENANCE CONSIDERATIONS

To maximize the life of any sports facility, the owner must identify and implement a regular schedule of maintenance. While this will require a regular expenditure of time and capital, consistent inspection and repair will ensure the safety of users, avoid catastrophic failure, and significantly extend the life of the facilities.

5.1 Exterior Facilities

General Information

1. Police grounds bi-weekly for litter and debris.
2. Empty all garbage cans as needed.
3. Make sure site is clean after athletic events or field use; make sure all field maintenance has been completed after scheduled event.
4. Use mechanical means to keep weeds and grass from growing in areas unable to be mowed (i.e. along fence lines and around buildings).
5. Spray weeds only with approval of the School District or their representative.
6. Sharpen all mower blades weekly to assure a clean cut of the grass.
7. Blow out / drain / winterize all exterior irrigation systems at the end of the season, including water reels.
8. Before aerating any grass area, all irrigation heads and valve boxes must be flagged to prevent damage.
9. Grounds program to be monitored by the School District personnel and their representatives.

Parking Lots

The entire parking lot surface should be swept twice a year. Once in the spring after snow season and once in the fall after the leaves have fallen.

Sidewalks

All sidewalks shall be edges and fill added to low areas. All sidewalks, parking lots, and paved surfaced should be kept weed free.

General Grass Areas (Non-Athletic)

Grass will be cut to a height of 1 ½” to 3”. A thorough cleanup will be performed each spring and fall to ensure cleanliness of the grass areas. All litter, twigs, leaves, and debris will be removed. All snow plow damage should be repaired.

Fertilization

All fertilizer and applications are the responsibility of the School District and their representatives. A complete Maintenance Program shall be developed specific to each site’s specific soils and turf conditions.

Irrigation

To include the operation of the automatic watering system, relocation of the mobile water wheels and spot watering of areas that would require it.

Track

1. District will sweep as needed during the track season. Remove all dirt, mud, and other abrasive materials that can cause premature wear.
2. Keep track surface clean by removing debris immediately and spot cleaning spills as soon as they occur. Practice preventative maintenance by prohibiting chewing gum, tobacco, smoking, food and beverages (except water) on the track surface.
3. Require proper footwear. Shoe spikes should never exceed 3/16” (5mm) in length and should be conical or pyramidal in design.
4. Clean track with a large-size push broom with soft bristles or a power blower. Power washers should be set at a low pressure to avoid damaging track surface.
5. A protected crossing area should be defined for heavy foot traffic, maintenance personnel and equipment that needs to cross over the track. Protect the track surface in this area by laying down rubber matting, artificial turf, carpeting, etc.
6. Prevent stains by not allowing leaves, grass, bird droppings, or other debris to remain on the track. If removing stains, start with the gentlest treatment - a soft brush and mild cold water detergent solution. If the simple soap and water solution is unsuccessful, contact the track surfacing installer or manufacturer for a recommendation. Do not use petroleum or solvent-based cleaning products.
7. Some wear is normal. Track surfaces tend to wear in lanes 1 and 2 due to high use. Encourage recreational users and physical education classes to use outside lanes.
8. Keep a record of cracks and irregularities that form in the surface over time. Use an approved herbicide if weeds grow in the cracks.
9. Do not shovel snow from a track or attempt to chip ice off, as there is a high risk of damaging the surface. Do not apply salt to the track surface to melt ice or snow.

Tennis Courts

1. Keep all court surfaces clean by removing debris and immediately cleaning spills as soon as they occur.
2. Remove all dirt, mud, and other abrasive materials that can cause premature wear. Consider providing a walk-off mat at the entrance to the courts to reduce these materials.
3. Keep courts clean by removing debris immediately and spot cleaning spills as soon as they occur. Practice preventative maintenance by prohibiting chewing gum, tobacco, smoking, food and beverages (except water) on the courts.
4. Consider providing wastebaskets to encourage users to keep the surface clean.
5. Only tennis shoes should be worn on the courts. Hard-soled shoes may damage the surface.
6. Keep a record of cracks and irregularities that form in the surface over time. Use an approved herbicide if weeds grow in the cracks.
7. Do not shovel snow or attempt to chip ice off, as there is a high risk of damaging the surface. Do not apply salt to the surface to melt ice or snow.

Throwing Events

District shall fill in holes created by disc landing zone weekly. Shot and long jump landing areas must be kept weed free year round.

Natural Grass Athletic Fields
Grass will be cut to a height of 1 ½" to 3" on a regular basis to observe the 1/3 rule. All fields should receive 1" of water per week either from a rainfall or irrigation. All competition fields should be painted weekly. All practice fields should be painted as often as needed to allow practice to flow smoothly. The Athletic Director will determine the location and number of fields.

Baseball and Softball Fields
All grass will be cut to a height of 2 ½" to 3" and cut often enough to observe the 1/3 rule. All grass shall receive 1" of water per week. The infield shall be worked up as needed to prepare fields for games and to keep weed free. Infields shall be dragged by mechanical means and by hand, hand raking is required within 12" of any grass surface. Where the grass and soil meet, this area shall be raked by hand to prevent a build-up (lip) from interfering with play. When a lip has formed, a sod cutter shall be used to cut out existing sod and lip. New sod shall be used to create a smooth playing surface. All soil areas around the baseball and softball fields, i.e. infield, pitcher's mound, base paths, and on-deck circles shall be kept weed free during the growing season.

Synthetic Turf Athletic Fields
Follow all manufacturer recommendations within the Operations and Maintenance Manual provided after installation. Follow all procedures in the warranty documentation. Contact manufacturer for any repairs needed outside of normal maintenance activities.

6.0 CONCLUSIONS

6.1 General Conclusions

In general, K-12 sports fields of all types see a high amount of usage. While maintenance practices seem consistent on the current facilities, the number of available fields is not adequate for the amount of use and many fields display wear and compaction issues due to their inability to recover between the many school and community events.

The use of synthetic turf fields will enable more games and increased practice time in fewer facilities, allowing the Community to meet the needs of the growing School District despite the limited amounts of space on some sites. Because of the increased usage allowed on synthetic turf fields, the high school will need fewer offsite fields and therefore be able to vastly improve the use of their limited space, and offer new sports or improved athletic and outdoor activity infrastructure. Synthetic turf fields are also playable in almost any weather, expanding the season for many sports and offering facilities for other activities such as physical education. Additionally, the remaining natural turf fields will benefit due to increased rest periods.

It is recognized that there will be challenges, both financial and space related, to implementing some of the more large-scale recommendations in this report; however, experience has shown that these recommendations pay dividends financially over the long term in addition to the benefits listed above. First, the increased efficiency of field usage means fewer fields needed, which translates to less maintenance. Secondly, better fields mean less traveling to other schools and sites for games and meets. Third, better facilities can sometimes pay for themselves as other schools and community groups rent the space for their own competitive events. Fourth, new and improved facilities with more resilient turf result in fewer injuries. Finally, the more efficient use of existing space can lead to more space available, which on some sites can make a significant difference.

Overall, despite some challenges, the Port Washington-Saukville School District enjoys the advantages of a large support base, and a growing, active community.

APPENDIX A:

AQUATIC FACILITY STUDY

Matthew W Freeby, AIA, LEED AP
Water Technology, Inc.

THOMAS JEFFERSON MIDDLE SCHOOL

WTI #22338

Wednesday, 23 March 2022

Prepared For Rettler Corporation

1403 N. Holden St.
Port Washington, WI 53074

SUMMARY OF FINDINGS

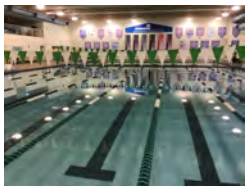
On site observation of Port Washington's Thomas Jefferson Middle School swimming pool was conducted by Matthew Freeby, AIA of Water Technology, Inc. on December 8th, 2022. Observations are attached to this report. Opinions regarding observed conditions provided are graded as excellent, very good, good, fair, and poor. General definitions of these terms are:

Excellent – Item, system or product observed is in new, or like new condition. Item's expected life is that of a new, recently installed item and is anticipated to be 80% to 90% of the original's service life.
Very Good – Item, system or product observed is in good condition for its age and does not appear to require abnormal service or attention. Item's expected life is anticipated to be 60% to 80% of the original's service life.
Good – Item, system or product observed is in average condition for its age and does not appear to require abnormal service or attention. Item's expected life is anticipated to be 40% to 60% of the original's service life.
Fair – Item, system or product observed is showing its age and may require abnormal service or attention to maintain usefulness. Item's expected life is limited. Restoration or replacement should be considered in a 2-to-5-year timeframe.
Poor – Item, system or product observed is at the end of its useful life and may present conditions or dilapidations which are a safety hazard or could result in imminent failure. Item's expected life is exhausted. Restoration or replacement should be considered immediately.

Observations are summarized in four general categories: Pool shell, Pool piping, Pool mechanical, and Pool General. Pool General includes general observations about site, deck and building conditions. General observations are outside the specific discipline of this report and may require additional review by a professional in that discipline.

Respectfully Submitted

Matthew Freeby, AIA, LEED AP



1 GENERAL

The Thomas Jefferson Middle School swimming pool is a "stretch 25" lap pool, with eight lap lanes, a movable bulkhead and two springboards.

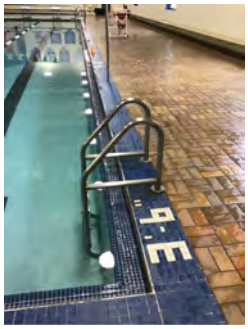
Size and dimensions: (From drawings) 59'-0" x 105'-0" with a 4' x 31' access ramp.

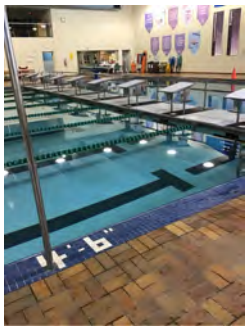
Surface area: 6,359 sf

Perimeter: 349 lf

Depths: 3'-6" to 12'-0"

Volume: 261,961 gallons





2 ACCESS

Access includes depth markings, ramp, stairs, ladders and lifts.

Depth markings are tile mosaic, made up of 1" x 2" tile. Markings are in very good condition, markings lack the International "no diving" symbol at shallow water (Photos 1 - 5).

The pool lacks the required primary and secondary means of access required by ADA.

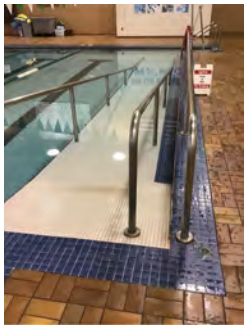
A ramp is provided (Photos 6 & 7), the ramp is 31' long, going into 3'-6" of water. The ramp is non-conformant with ADA requirements for a primary access, exceeding maximum slope, handrail separation and lacking the required landing between water depths of 24" to 30".

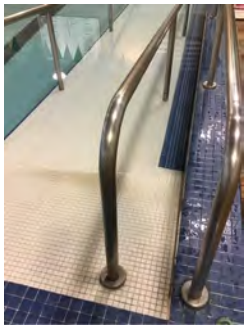
The ramp's handrail is secure and in good condition.

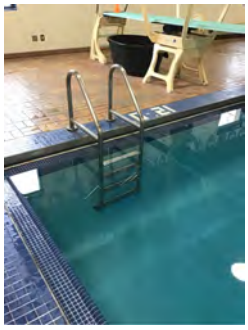
A single set of stairs is provided (Photos 8 & 9). The stairs are not set up as a second means of ADA access.

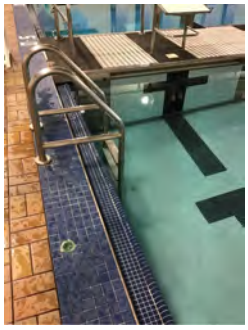
Five pool ladders were observed, the ladders are in very good condition (Photos 10 & 11).

No pool access lift was observed.





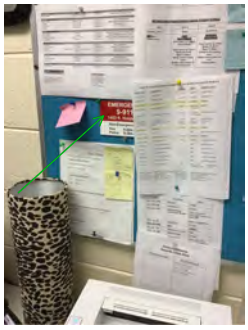




3 EQUIPMENT

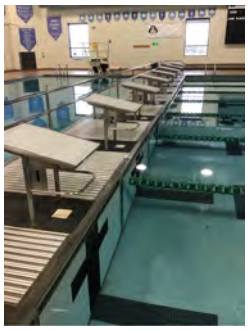
3.1 DECK EQUIPMENT

Two mobile guard chairs were observed, the chairs appear to be in very good condition (Photos 1 - 3).



3.2 RESCUE EQUIPMENT

Two sets of backboards, reach poles and ring buoys were observed.
Both sets appear to be in good condition.
Rescue tubes were observed at guard chairs.
Emergency phone number posting was observed.



3.3 COMPETITION EQUIPMENT

Eight dual post starting platforms were observed. The platforms were secure and in good condition. Platforms lack adjustable foot chalks and start handles (Photos 1 & 2). A single start platform was observed in the deep end of the pool, this platform is not at the maximum allowable starting height (Photo 3).

Anti Wave lane lines were observed, lane lines appear to be in good condition (Photos 4 & 5).

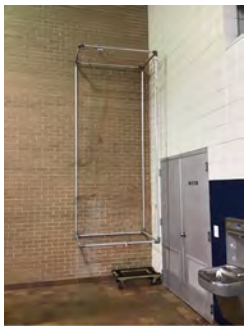
There are two one-meter springboards. One springboard is a Maxi-B board on a Duraflex stand. This board and stand are in excellent condition (Photos 6 - 8).

A second one meter springboard has a Durafirm springboard on a recreational stand. This board and stand are in good condition, some corrosion evident at stand (Photo 10). The first step for the recreational one meter is 23" (Photos 9 - 11).

One recreational water polo net was observed (Photo 12).

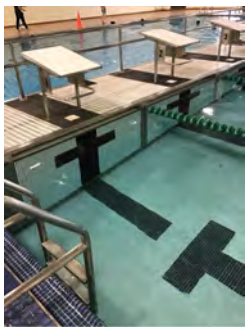
Colorado Timing system components were observed (Photos 13 - 16). Staff reported that on deck cabling is utilized. Staff reported no issues with the timing system.


DURAFLEX




JOHN,
& NORA
PLER


PIRATES
GUEST
TIME
JAGUARS
EVENT
LANE PLACE
HEAT
TIME



3.3.1 MOVABLE BULKHEAD

A movable bulkhead manufactured by Paddock was observed. The bulkhead consists of a stainless steel truss frame, buoyancy tanks and open grating walls and decks. Starting platforms and safety rails are anchored into the bulkhead deck (Photos 1 - 8). The bulkhead has in deck timing boxes, the pool deck lacks a corresponding deck plate. Staff reports that the bulkhead's buoyancy chambers are compromised, rendering bulkhead movement extremely difficult.

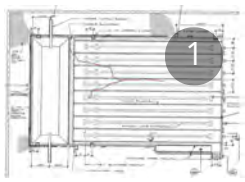
3.4.1 RECREATION EQUIPMENT

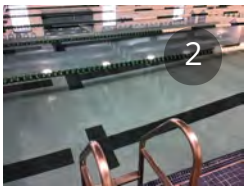
A single water ballasted basketball goal was observed (Photo 1). The goal appears to be in good condition.

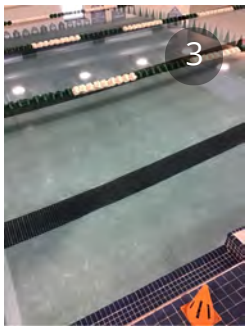
4 POOL SHELL

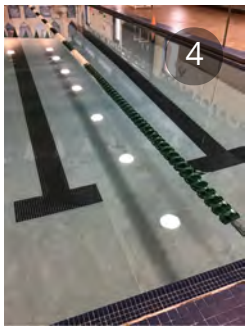
The pool shell is concrete. Several cracks were observed, including an extensive crack at the center of the pool, extending to the pool's break (Photo 1). A swimming observation revealed this crack to exceed the pool finish depth. Staff reported that the pool was drained two years ago, during which undermining of the pool shell was discovered. The cracks were repaired at that time, but has since re-appeared. Staff reported that the pool leaks, but does not have a current quantity estimate. A static bucket test and further evaluation of the pool shell by a structural engineer is recommended.

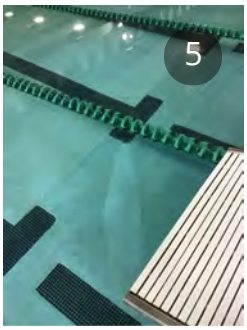
Two pool joints were observed, joint sealant appeared to be in poor condition.

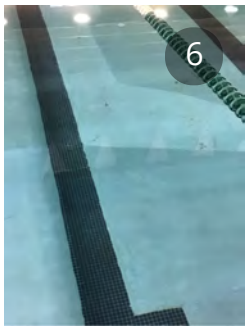


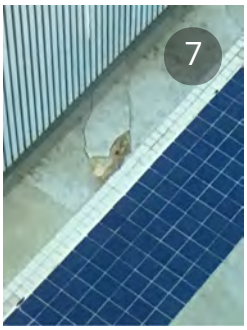










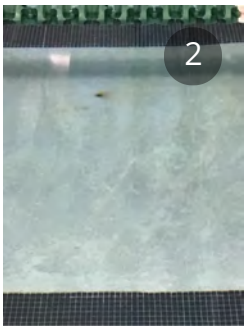


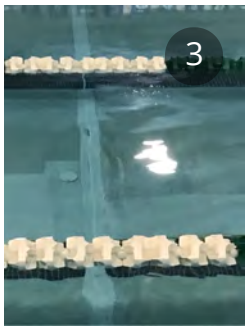
4.1 POOL SHELL- IN POOL LIGHTING

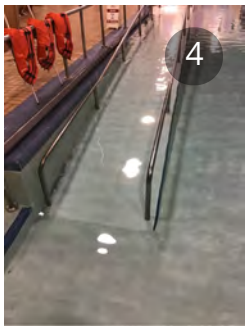
No in pool lighting was observed.

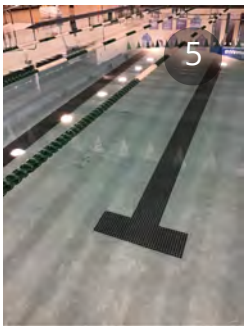
5 FINISHES

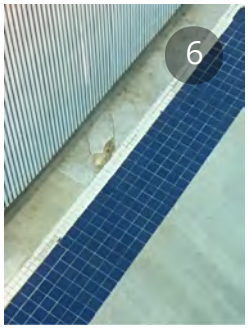
The pool's finish is a troweled, quartz aggregate finish with tile markings and trim. The finish displays numerous patches. Swimming observation revealed multiple areas of deterioration. Boundary tile at joints is missing or loose in several locations. Several perimeter edge tile are damaged (Photo 8). Tile at the floor joint at 4'-3" water depth is stained (Photo 9). Staining appears to be corrosion related.

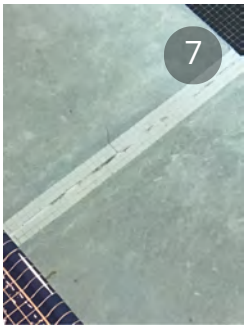


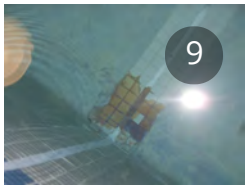


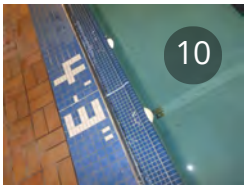






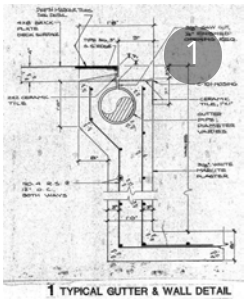


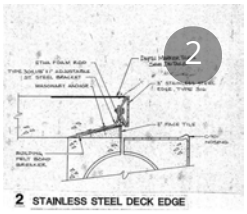


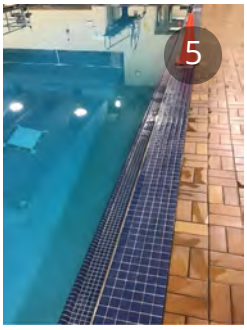


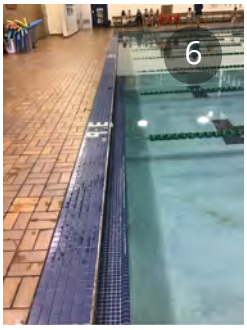
6 PERIMETER SKIMMING - GUTTER

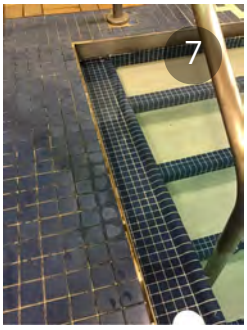
The perimeter gutter is a custom profile, similar to a standard roll-out profile. The gutter has a standard C701 fingergrip tile edge, with a 3" stainless steel freeboard face and a saw cut slot to a pipe for water removal (Photo 1). Perimeter skimming observed during quiescence indicate the perimeter is out of level by as much as 1/4 inch.
The stainless freeboard facing displays limited corrosion.

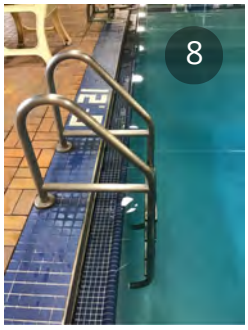


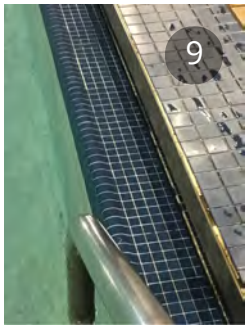


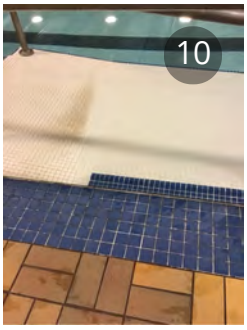






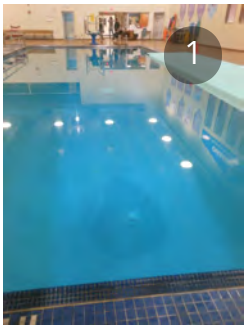


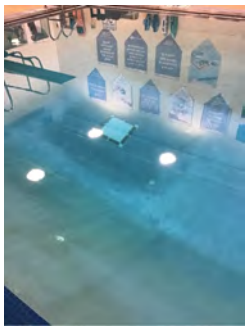


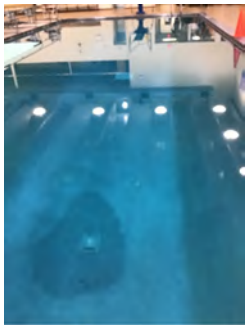


7 INLETS AND OUTLETS

Twenty six floor inlets were observed. The inlets appear to be in good condition.

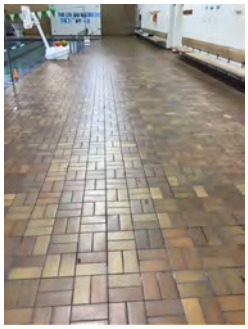


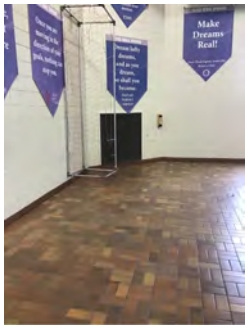


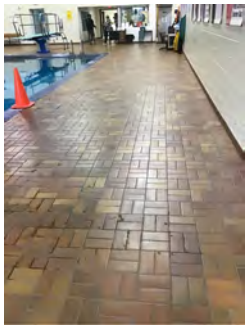


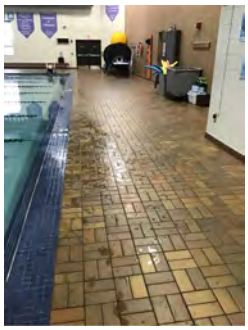
7.1 INLETS AND OUTLETS- SUBMERGED OUTLETS #1

There are three submerged outlets. Per drawing SP-3, the outlets are piped in series. Two of the outlets appear to have 30" x 30" Ageus type covers, the third appears to be an 18" x 18" domed cover. The covers will have unequal flow rates. Spacing between the covers exceeds 10'. It is unlikely that the existing sumps are conformant with current submerged outlet requirements.
It is recommended that the district review files for information related to submerged outlet compliance.







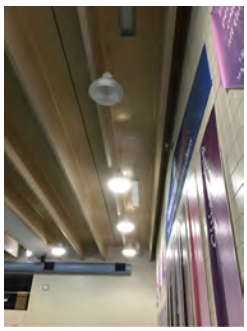


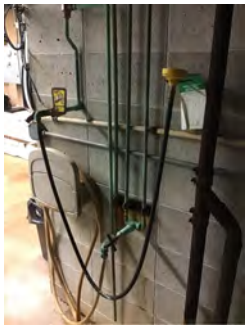
8 POOL AREA

The pool deck finish is 2" x 4" paver tile. The deck finish was slippery when wet. Staff reported no issues with the deck finish. The deck slopes to the pool's gutter, lacking separate deck drainage (Photos 1 - 5). Deck drainage will be required with any significant pool modifications (SPS 390.13(5)).

HVAC supply is located along one length of the pool.

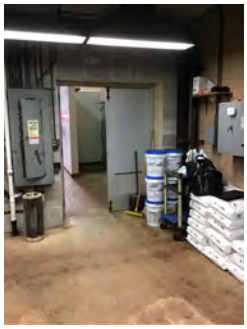
Pool lighting is located over the pool deck, lighting fixtures lack safety restraints.

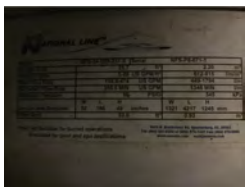




9 POOL MECHANICAL ROOM

The pool's mechanical room is located adjacent to the pool's shallow end. The mechanical room's access is from the pool deck.
Height: 9’ -8”
Width: 16’
Length: 23’-3”
Access door dimensions 60” x 82”
The room is not easily expanded.
Drainage is provided by a single floor drain.
Ventilation is provided.
An emergency eye wash is provided, the eyewash appears to be in poor condition.
Separate chemical rooms for disinfectant and pH chemicals are not provided.





10 FILTRATION

The pool's filters are not original to the project.
The filters appear to be in good condition.
It should be noted that the observed filters manufacturer is no longer in business.
Type: High Rate Sand
Manufacturer: Nemato / National Line
Model: NFS-34-50B-237-S
Media: Sand
Number of filters: 2
Area each filter: 23.7 sf
Total area: 47.4
Backwash frequency:
The calculated filtration rate is 14.66 GPM/SF, which is within the filters operational parameters (695 GPM (observed flow rate)/ 47.4 (total filter area)).

11 FILTRATION PUMP

The pool has a single filtration pump. The pump is in fair condition, the motor is in good condition.

Manufacturer: Aurora

Model: 341 ES

Design flow rate: 728 gpm (Pump tag indicates 750 GPM @ 75' TDH, 695 GPM observed).

Size: 6 x 6 x 9B

Gauges: observed, not operative. Gauges are in poor condition.

Motor

Manufacture: Baldor

Horsepower : 20

RPM: 1765

Voltage: 230/460

Amps: 48/24

Phase: 60 HZ

Strainer

Type: In line

Manufacturer: National Line

Basket material Plastic with SS weave

Spare basket: Observed

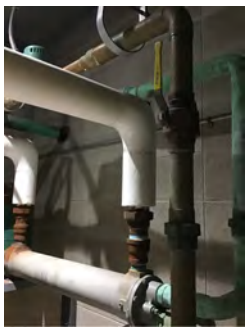
The pool's turnover is 6.28 hours (261,961 gallons/ 695 GPM observed flow rate). THis is non-conformant with SPS 390.14(1), Table 14 390.14.1 which allows a maximum 6 hour turnover for swimming pools.

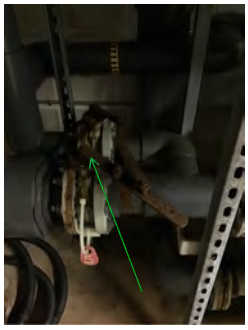

NATIONAL LINE
FLUID STRAINING SYSTEMS
NSF
Flow
COMPONENT

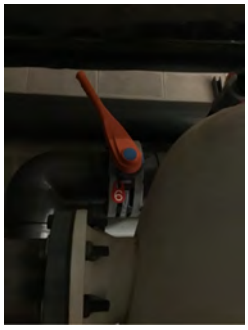
14 PIPING

Observable piping is schedule 80 PVC. Piping appears to be in very good condition.

Piping is copper at heater (Photo 3), this piping is in good condition.



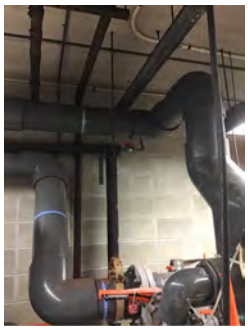


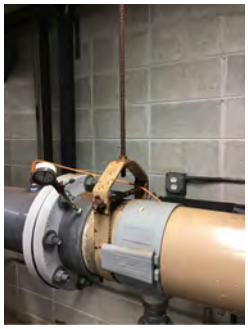


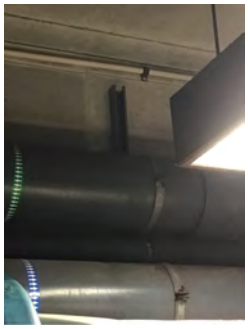
15 VALVES

Observed valves are generally in good condition.

The exception is the linked valve assembly at the pool filters, which are in poor condition (Photo 3).







16 SUPPORTS & HANGERS

Pool piping supports consists primarily of threaded rod and clevis hangers. The piping is un-braced.

The rods and hangers display corrosion (Photo 2), and are in fair condition.

Some piping is wall supported (Photo 3). These pipe supports are in very good condition.

17 WATER TREATMENT

Water chemistry is maintained by an automatic chemical controller. The controller is in very good condition.

Chemical controller

Manufacturer: BecSys

Model : System 7

Sample stream: Yes

18 SANITIZER

Disinfection is provided by a Cal-Hypo chemical feeder. The feeder and pump are in good condition.

Chemical: Calcium Hypochlorite

Feeder: Pulsar 140

Pump type: Side Stream

Model: Century 1.25 HP

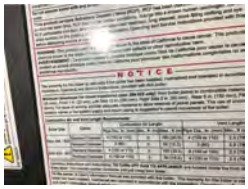
19 PH

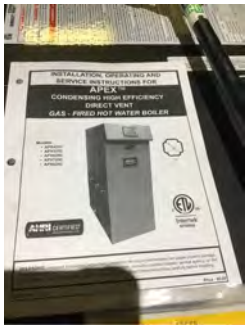
Chemical: Co2

Containment: Cylinders

Feed Control: BecSys

A Co2 detector / alarm was not observed.





22 POOL HEATING

Pool heat is provided by a small, independent boiler (Photo 1) with an external heat exchanger.

The boiler is new, and is in excellent condition.

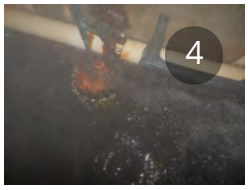
Boiler Manufacturer: APEX

Input BTUH: 625,000 (Calculated)

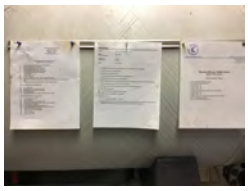
An ITT heat exchanger was observed (Photo 5). The heat exchanger appears to be in good condition.

23 SURGE TANK

Dimensions: 9' x 10' x 6' 9,369 gallon capacity. Capacity meets requirements.
Steady state level: 3'-6"
Material: Concrete







24 MECHANICAL GENERAL

A flow meter was observed.
The flow meter appears to be properly installed and in very good condition (Photo 1).
Auto fill with air gap observed (Photo 2).
Valve legend and operating instructions were observed (Photo 3).
System flow labels were observed (Photo 4)
Air gap at backwash - observed
SPS materials were not observed.

Recommendations

Recommendations provided are divided into four categories.

General – Recommendations about the facility that are outside the scope of this report (such as building and site related items) that were observed and are recommended for further review and evaluation by an architectural/engineering firm. These recommendations are not provided with an implementation cost range nor a recommended implementation timeframe.

Restorative – recommendations that will restore the faculty aquatics to original operative condition or are recommended for safety or code compliance. Restorative recommendations should be considered for immediate implantation.

Intermediate improvements – recommendations enacted in the short term (3 to 5 years) will improve pool operations or enhance the appeal of the facility.

Long Term Improvements – Recommendations that are intended to enhance the appeal of the facility or improve operations, but will require greater investment in capital, time, or an extended disruption of services to implement.

Recommendations (except for General Recommendations) are provided with an implementation cost range. The cost range is intended to provide a guide to the budgeting of the recommendations at this time and anticipates standard design and construction fees, cost of the work and clean up. The range does not include local fees or taxes, escalation, hazardous material handling or other risk factors.

General

- Provide deck drainage (Observation 8).
- Provide safety restraints on pool lighting (Observation 8).
- Replace emergency eyewash (Observation (9).
- Provide separate chemical closet with segregated exhaust for pool PH equipment and chemicals (Observation 9).
- Provide CO2 alarm (Observation 19).

1.0 Restorative

1.1 Revise ramp to comply with Federal ADA access requirements for primary means of access (Observation 2).
Investment range ……. $35,500-$45,000

1.2 Provide second handrail to stair to meet ADA secondary access requirements (Observation 2).
Investment range ……. $4,000-$6,000

1.3 Provide intermediate step at recreational one meter (Observation 3.3).
Investment range ……. $2,500-$3,200

1.4 Re-condition or replace movable bulkhead (Observation 3.3.1).
Investment range ……. $75,500-$195,000

1.5 Investigate pool shell cracks and leaks. Perform bucket test, pressure test piping, engage structural engineer to review pool shell (Observation 4).
Investment range ……. $7,500-$15,700

Note: above costs represent investigation only. Corrective actions would be defined by findings.

1.6 Correct pool structure. Assuming removal of 30% of pool floor, restoration of subgrade, replacing exposed pool piping (Observation 4).
Investment range …… $695,000-$800,000

1.7 Locate and review submerged outlet documentation (Observation 7.1).
Investment range …… $0-$500

Note: above costs represent investigation only. Corrective actions would be defined by findings.

1.8 Correct filtration pump flow rate to meet code required turnover. (Observation 11). Adjust valving or replace pump.
Investment range …… $500-$15,750

1.9 Replace pump gauges (Observation 11).
Investment range …… $1,000-$2,000

1.10 Replace filter single lever linkage and valve assembly (Observation 15).
Investment range …… $25,000-$39,000

1.11 Replace corroded pipe supports (Observation 16).
Investment range …… $5,000-$8,500

2.0 Intermediate Improvements

2.1 Provide International "No Diving" symbols at shallow water (Observation 2)
Investment range …… $5,000-$17,500

2.2 Provide new starting platforms with foot chalks and grab rails (Observation 3.3).
Investment range …… $35,000-$95,000

2.3 Restore or replace pool special aggregate finish (Observation 5.0).
Investment range …… $175,000-$195,000

2.4 Restore gutter level or replace pool gutter (Observation 6.0).
Investment range …… $45,000-$207,000

2.5 Replace pool filters with similar size High-Rate Sand Filters (Observation10).
Investment range …… $125,000-$150,000

2.6 Replace pool filtration pump with premium efficiency pump (Observation 11).
Investment range …… $25,000-$35,000

3.0 Long Term Recommendations

3.1 Replace existing high rate sand filtration with Re-Generative media filtration (See Appendix A). Regenerative Media (RM) filters pushes water through a collection of flexible tubes covered with a polyester woven fabric. The tubes and fabric are coated with filter media (Diatomaceous earth or Perlite) which collects particulates. Cleaning an RM filter involves draining the filter, refilling, and draining again. This process may be required every month to 6 weeks, depending on use. New media is applied when the tank is refilled via a vacuum. The bump cycle is automated, but manually activated by pushing a button. The draining of the filter and refilling the media is a manual process assisted by the filter components. RM filtration reduces water consumption drastically by only requiring cleaning every four to six weeks. This in turn reduces the chemical usage and heating demands since such a small amount of water is leaving the system. RM filters are capable of filtration in the 1 to 5-micron range, filter rates are 1.0 to 2.0 gpm/sf of filter area. Two RM filters would be required due to spae access limitations. Manufacturers of Regenerative media filters include Evoqua and Paddock.
Investment range …… $150,000-$210,000

3.2 Restore pool shell with Myrtha Renovaction technology (See Appendix B). Project would involve temporary relocation of bulkhead, replacement of pool gutter, revisions to pool ramp and stair, new grab rails, lining of pool. Renovation would restore pool shell to "like new" condition and have an available 25 year leak proof warranty. Replaces options 1.1, 1.2, 1.6, 2.3, 2.4. Recommended additional options would be 2.6 & 3.1 (costs not included in this option).
Investment range …… $1,900,000-$2,100,000

3.3 Consider the addition of Ultra-Violet light (UV) supplemental water treatment. UV is a cost effective chemical-less supplemental treatment (See APPENDIX C)
Investment range …… $60,000-$90,000

3.4 Consider relocation of pool mechanical room to west side of building. Project would involve the relocation of pool mechanical, pool surge tank pool piping. Would allow for outside service access of pool equipment, service and chemical deliveries.

Appendix A

Neptune Benson
evoqua

Defender® Regenerative Media Filters: The Proven Choice for Superior Water Quality

NEPTUNE BENSON

Established in 1956, Neptune Benson has proudly served the commercial aquatics industry for over six decades. Our Defender® line of regenerative media filters has become synonymous with the term "RMF" in the industry. With over 20,000 installations in 45 countries, we have the filtration and disinfection experience to help meet your water quality needs, while keeping sustainability and safety of your guests top of mind.

REGENERATIVE MEDIA FILTRATION

Sand and regenerative media filters both operate on the principle of mechanical filtration. Sand filters trap particles in water throughout the depth of their bed. When the filter becomes dirty, it is cleaned by backwashing, a process that sends considerable amounts of water to drain. RMFs trap particles on the surface of flexible tubes coated with perlite media. When the perlite becomes loaded, RMFs regenerate by bumping, a process in which no water is lost. In addition to providing superior 1 vs 20-30 micron particulate removal, RMFs significantly reduce the amount of water sent down the drain.

BENEFITS

- Superior Water Clarity
- 90% Water Savings
- 75% Space Savings
- 50% Energy Savings
- 30% Chemical Savings

REGENERATIVE MEDIA FILTERS

Simply put regenerative media filters are nothing like traditional sand filters. Neptune Benson pioneered development of RMF technology to provide aquatics venues with the clearest, cleanest and safest water possible!

Better Water Filtration

REMOVES PARTICLES DOWN TO 1 MICRON

Defender® filters produce sparkling, crystal clear water by removing particles down to 1 micron; 20–30 times finer than typical sand filters. The difference in water clarity is like night and day. In addition, the dramatic reduction in turbidity improves transmission of UV light, which improves disinfection performance as well.

UP TO 90% WATER SAVINGS

Nobody likes backwashing. With Defender filters you don't have to! Defender filters automatically "bump"—regenerating media for a fresh start without wasting water to drain.

- Reduces footprint and operating weight
- Eliminates backwash holding tank
- Requires smaller waste line to sewer
- Addresses backwash flow rate restrictions

UP TO 50% IN ENERGY, FUEL AND CHEMICAL SAVINGS

Eliminating backwashing translates into significant operational savings. Consider the money that can be saved by not re-heating and chemically re-treating all of the water sent down the drain. Defender filters also operate at lower head pressures, reducing power demand and electrical costs.

UP TO 75% SPACE AND CONSTRUCTION SAVINGS

Running out of space in your mechanical room? The footprint of Defender filters can be up to 75% smaller than equivalently sized sand filters, saving both space and construction costs.

COST SAVINGS ANALYSIS

In addition to superior water quality, Defender filters reduce water, energy and chemical consumption, which translates into significant bottom line savings. Some facilities have realized an ROI of less than one year. Our team of experienced aquatics experts are waiting to help quantify savings for your facility.

EXAMPLE SAVINGS ANALYSIS

Water Impact	Sand	Defender
Backwash Volume	1,483,560 gal 5,616 m^3	88,938 gal* 337 m^{3*}
Potable Water (Make-up) Fees**	$5,192	$311
Discharge Fees**	$5,192	$311
Energy & Fuel Impact		
Pump Power Consumption (kW)	216,569	170,170
Pump Power Cost**	$13,308	$10,456
Heating Requirements (Therms)	4,449	489
Heating Costs**	$4,004	$240
Chemical Impact		
Chemical Costs**	$4,451	$267
Total Costs	**$32,147**	**$11,585**

* Includes 5% of the sand filter backwash volume to account for makeup water
** USD

SYSTEM CONTROLLER

RMF operations are controlled through a fully redesigned high resolution LCD control panel. Crisp real-time graphics depicting system status, user-friendly on-screen menus and touch-screen navigation make operation simple and intuitive. Remote monitoring capabilities allow you to access system data from outside of the mechanical room.

evoqua WATER TECHNOLOGIES

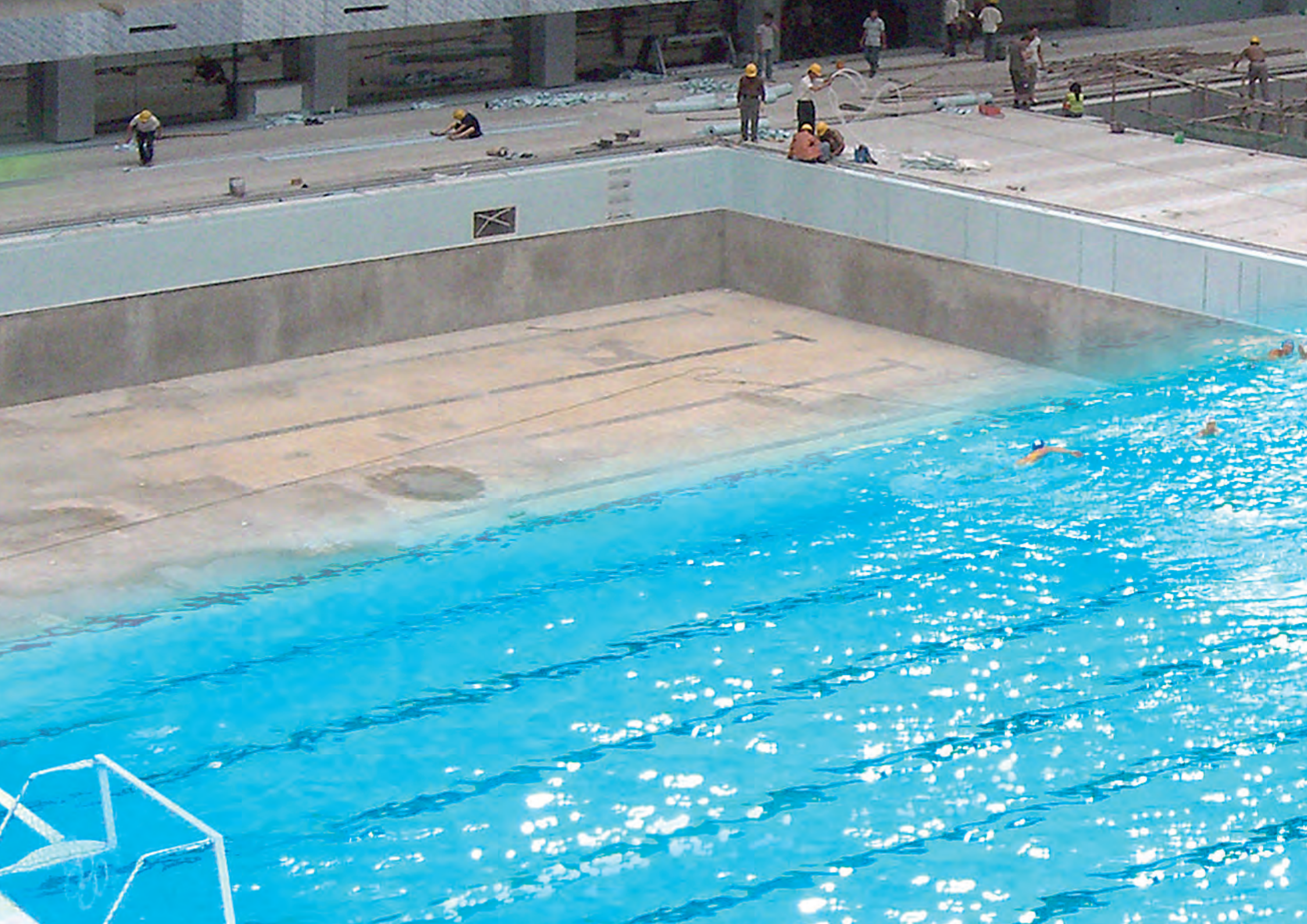
334 Knight Street, Suite 3100, Warwick RI 02886

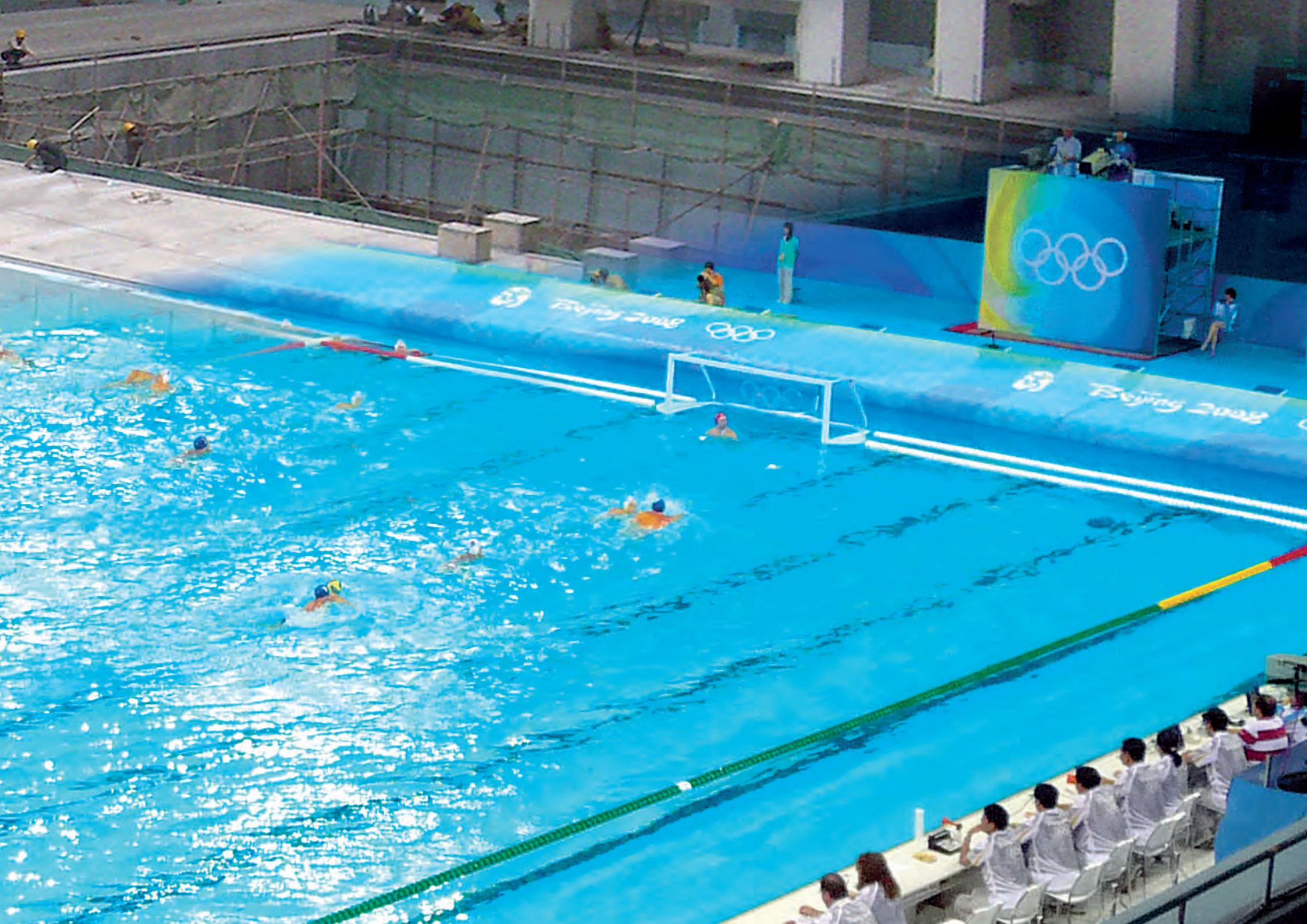
+1-800-832-8002 (toll-free) **+1-401-821-2200 (toll)** evoqua.com

Appendix B

RenovAction

Exclusive Technology for
Pool Refurbishment




Beijing 2008

New Technologies **to Outperform Concrete**

RenovAction is Myrtha Pools' patented and exclusive technology specifically developed for swimming pool refurbishment and renovation of existing pools.

The process is based on Myrtha technology's pre-engineered modular system, which incorporates the use of precision-engineered PVC laminated stainless steel panels and a buttress system. **RenovAction** solves all of the problems that often arise in concrete, gunite, or shotcrete pools that have been in operation for extended periods of time.

Why Renovate?

1. Many existing pools fail to meet today's health code regulations and therefore require modifications necessary to bring them into compliance.

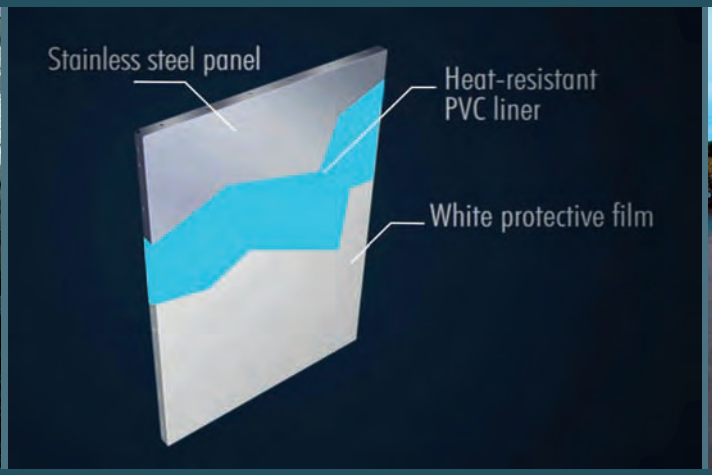
2. In order to meet new design and engineering criteria, refurbishment is the perfect solution. Older pools can be modernized with numerous additional leisure components including: free-form sections, lazy rivers, water play equipment and hydro-massage areas.

3. Outdated filtration equipment and older recirculation technology need to be updated from a skimmer system to overflow gutter technology.

4. Traditional reinforced concrete, gunite and shotcrete pools will eventually develop structural problems that require significant maintenance and repairs resulting in a substantial investment of both time and resources.

The **Materials**

RenovAction uses superior materials that Myrtha Pools has specifically designed for swimming pool use.



Stainless Steel

High-quality stainless steel guarantees extremely long life of the structure. RenovAction uses exclusive modular components eliminating welding of the panels, which are subject to increased risk of corrosion. Stainless steel ensures maximum mechanical strength of the individual panels, guaranteeing the structural integrity of the entire pool.

PVC

Perfect waterproofing is ensured through the unique process of bonding PVC to the Myrtha steel panel. A hard PVC membrane is hot-laminated to the steel in the manufacturing process and reinforced membrane is used on the floor of the pool in order to ensure waterproofing.

Finishes

To achieve high-level finishes, RenovAction uses ceramic and special vitreous mosaics, as well as distinctive stone and marbles that complement the range of PVC colors.

Unlike traditional concrete installations RenovAction exclusively uses ceramic tiles to cover the upper part of the pool panels. The superior quality of the adhesive materials utilized, significanlty limits the occurrence of traditional problems such as the detachment of the tiles.

Why **RenovAction?**

Company Experience and Knowledge

Myrtha Pools' over 50 years of experience is proven by the installation of 1,500 pools per year. With 300 pools installed annually for public use and more than 50 installations for international swimming events, Myrtha has references in over 70 countries worldwide. Myrtha Pools boasts an advanced technical department that allows for direct transmission of the manufacturing drawings to production of the pool components; a Research & Innovation team that continually strives to improve on the Company's already industry leading technology; installation personnel trained at the Company's Pool Academy; and a Company incumbent on a complete pool package. All of these factors ensure that you will have one of the best products on the market today.

Minimum Interventions, Zero Demolitions

RenovAction does not require destructive demolition of the existing structure, thereby resulting in considerable savings with regard to both the installation time and overall costs. The internal surface of the original pool remains unchanged and only the accessories on the walls or floor will need to be replaced.

Renovation Speed

The renovation of a concrete pool requires an extended period time for preparation, curing of adhesives, and drying time for plaster and waterproofing materials. RenovAction allows for rapid installation stages without lengthy pool preparation times or the use of specialized building equipment. This avoids any prolonged pool down time.

Fixed Costs

RenovAction reduces both refurbishment and routine operating costs of the pool. Much higher costs are typically associated with maintaining traditional pool finishes as well as regular ongoing pool maintenance. The speed of installation also significantly reduces the risk of cost overruns.

Long Life, Extensive Guarantee

RenovAction pools offer a virtually unlimited lifespan thanks to the structural integrity of the materials and advanced technological features of this modular system. For these reasons Myrtha can confidently warranty its RenovAction pools for many years.

Suitable for Difficult Field Conditions

Seismic activities, soil conditions or dramatic temperature swings will damage traditional concrete pools. The RenovAction design and seismic engineering are flexible and are therefore the ideal system for pools built in such conditions. In specialized and challenging environments, such as elevated floors of buildings or in limited spaces, there is minimal change required to accomodate the pool dimensions thanks to the ability to adjust the distances.

Low and Easy Maintenance

Unlike traditional construction, RenovAction pools do not require a significant maintenance schedule. The RenovAction structure is sturdy and not subject to dimensional variation. It will not experience cracking or deterioration of the pool shell and is not affected by the aggressive action of chlorinated pool water.

Environmentally Friendly

With most governments recommending the reduction of CO_2 emissions Myrtha Pools commissioned ACOR Consultants to calculate the energy used in building a Myrtha Pool. The carbon footprint of a Myrtha Pool is significantly lower by 50% compared to a traditional pool made with concrete and tiles.
What does this mean? The energy savings of a Myrtha Pool is enough to provide heat for a 100 sqm house for at least 45 years!

The **Installation Process**

The RenovAction installation process is both simple and fast, without the possibility of mistakes or delays in the renovation work.

Rail Installation

The existing surface of the pool is commonly left untouched. Stainless steel rails are aligned and affixed to the pool wall prior to panel installation.

Spacer Installation

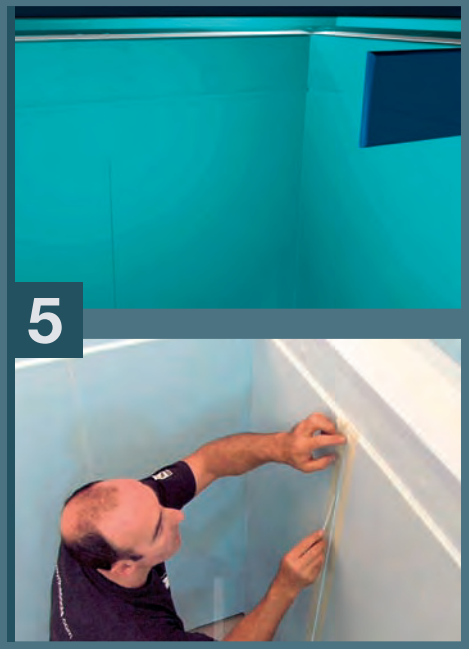
High density foam spacers are installed between each rail to avoid any bending of the panel. The spacers allow for a high degree of installation precision. They are glued to the concrete wall and trimmed to panel level with the use of a high temperature electric cable.

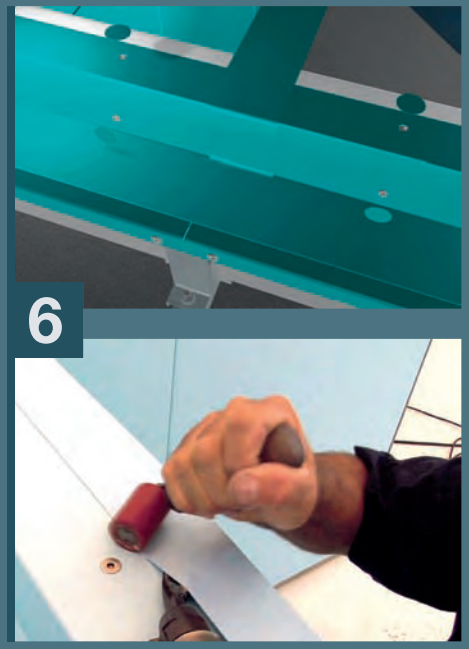
Panel Installation

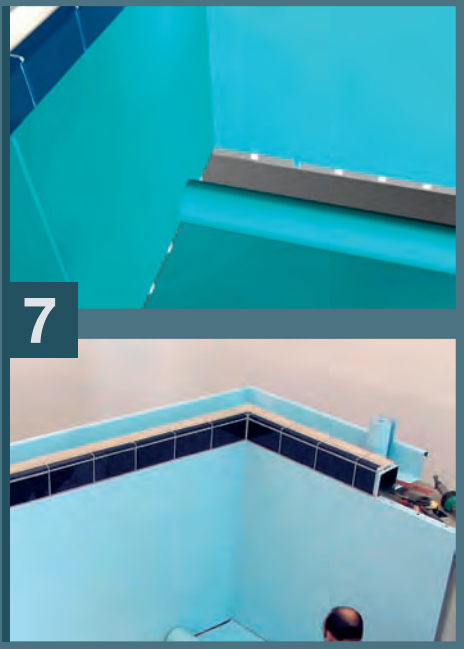
Wall panels are inserted into the pre-aligned rails. Special corner pieces are manufactured, which are the starting point for the RenovAction installation.

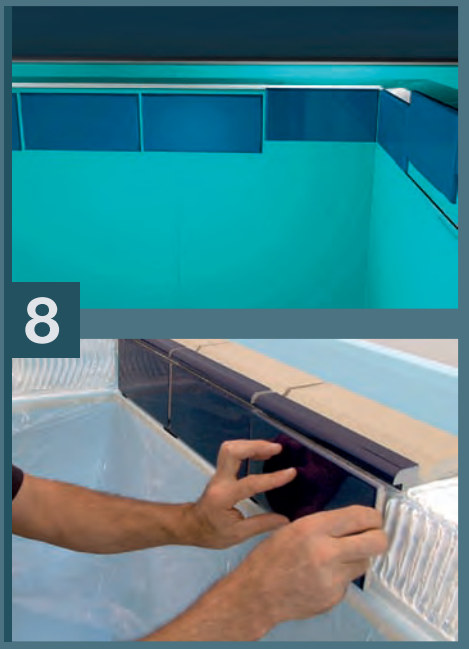
Overflow Gutter Installation

The overflow gutter is installed on steel supports, which are anchored to the existing concrete. The gutter is manufactured with Myrtha stainless steel and is able to be installed at adjustable heights and with a transversal sloping angle.









Panel Sealing

Once installed, the entire structure is waterproofed with a combination of semi-rigid PVC profiles and a special Myrtha sealant, which is applied to the joints of the wall panels, guaranteeing a perfect weld on the entire surface.

Joint Protection

Reinforced PVC tape is welded to the gutter joints to ensure additional waterproofing.

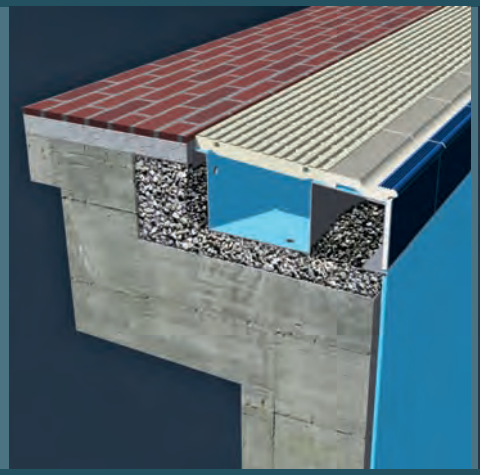
Floor Covering with Reinforced PVC Membrane

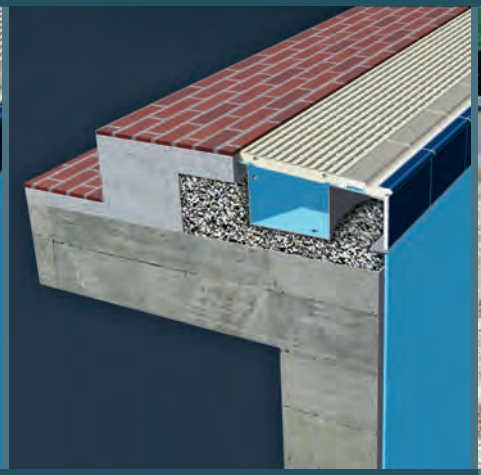
The floor is lined with a special reinforced PVC membrane. The membrane is supplied in rolls which are hot welded together at the seams. The wall panels and the floor are joined together by a PVC profile, which is also hot-welded to the walls and the floor.

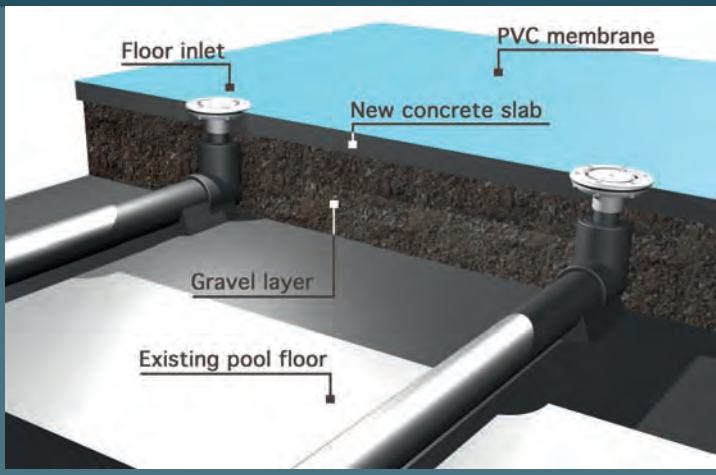
Finish Installation

Ceramic tiles are applied on the top of the Myrtha surface for a clean and elegant finish. Adhesion of tile to a Myrtha stainless steel surface is much easier and safer than to a concrete surface, as there is no possibility of water penetration beneath the tiled surface.

Individual Solutions
for Every Installation Challenge







Overflow Gutter Case A

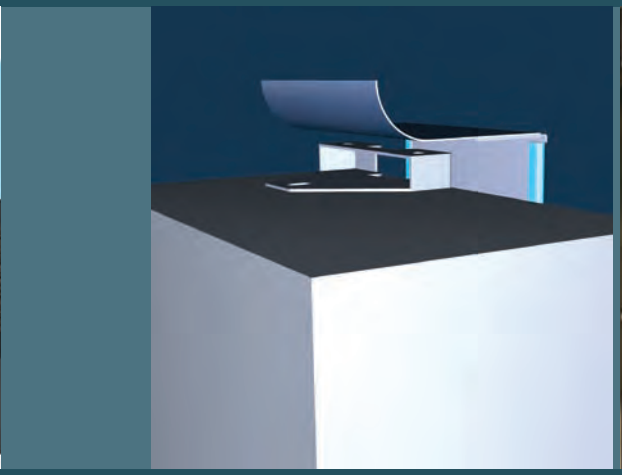
As per project requirements, the new gutter section can be positioned by partial removal of the existing concrete deck, which creates a recess for the installation of the Myrtha gutter. This solution does not obligate changes to the surrounding pool deck level.

Overflow Gutter Case B

Alternatively, the Myrtha gutter can be situated directly onto the existing pool deck without demolition. The surrounding deck level will need to be raised to the new overflow level by means of a step adjacent to the new RenovAction gutter. The resulting increase in the pool depth allows for a comprehensive modification of the water circulation system, as there is enough space to install pipes and fittings necessary for floor return inlets. This solution eliminates the need for excavation to access the old piping.

The Circulation System

New pipes are embedded in a 20 cm bed of gravel which is covered by a light layer of concrete. It is then lined with PVC floor membrane to ensure water tightness. This allows for a remarkable improvement of water circulation in the pool and is a considerable departure from an obsolete recirculation system with an insufficient number of inlet fittings.

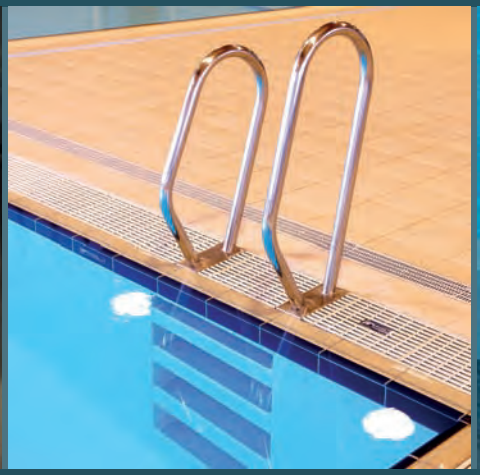


Regulator

In some cases when it is not possible to eliminate the existing concrete gutter, RenovAction gives the opportunity to use a special adjustable steel profile called "Regulator". The Regulator is anchored to the existing concrete wall and allows for adjustment to the new overflow level. A reinforced membrane is then welded on this profile and connected to the old gutter, to guarantee waterproofing of the surface. This special solution is cost effective although the scope of work is not as comprehensive as in a standard RenovAction.

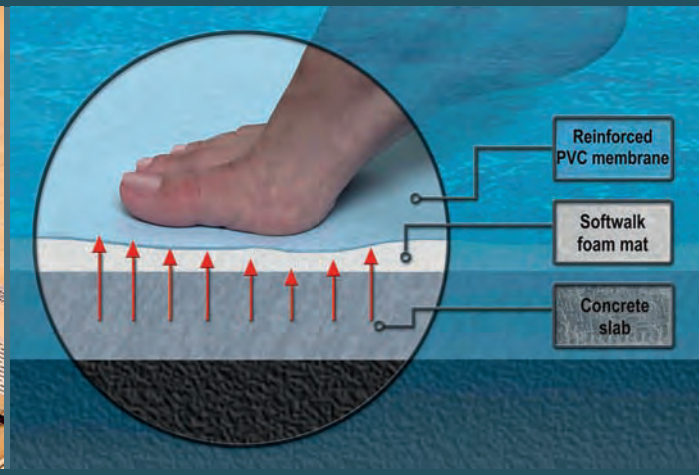
Portholes and Windowed Walls

For competition pools originally equipped with portholes or windowed walls, RenovAction technology offers the possibility to maintain the same accessories in the renovated project. RenovAction panels are positioned in the original openings in the walls. Portholes or windows for the underwater photography or video are installed in the panels with a special flange system.



Staircases and Recessed Steps

RenovAction guarantees maximum flexibility of design with recessed stairs and built-in steps. Recessed ladders are built into a RenovAction panel, with a minimum depth allowance for treads, then installed in the same manner as all other panels.



SoftWalk® Floor

The special SoftWalk® foam mat is permanently adhered to the floor and covered by PVC membrane. It does not deform and maintains elasticity through the years. Combined with the non-slip floor membrane, it is the ideal solution for obtaining greater safety in the pool. SoftWalk® is an excellent choice for multi-purpose pools that include activity for shallow water pools, spray-pads and beach entries.

Variations **and Finishes**

The RenovAction technology has been developed with the goal of providing the same range of design solutions and finish options as are available with new installations. Most finishes can be applied both on rectangular shapes and on free-form pools.

Skimmer

The traditional Skimmer version, which establishes the water level below deck level, has a ceramic finish that enriches the visible part of the pool and aids with cleaning operations. This skimmer system is ideal for public pools with smaller dimensions.

Overflow Gutter
Classic

The Myrtha Classic Overflow gutter is ideal for all pools and guarantees an excellent water flow. It has reduced dimensions while still maintaining an aesthetically uniform mirroring surface. It is completed with a simple but smart PVC finish on the upper part of the panel.

Overflow Gutter
Classic Competition

This structure is ideal for large competition pools, as the PVC coping is flush with the wall panels, either on entire perimeter of the pool or on the two short sides only. This technology is also the most suitable for the renovation of pools that need to meet international regulations. Both the Classic and the Classic Competion gutter styles are available with a wide variety of finishes.

Overflow Gutter
Ceramic 1

For public pools used mainly for training sessions, the Myrtha Ceramic 1 is the most commonly used and appreciated technology. Its ceramic tile, with integral finger hold, places the overflow gutter slightly removed from the pool wall so the wave produced by the swimmer is better absorbed and does not affect the swimmer's pace.

Overflow Gutter
Ceramic 2

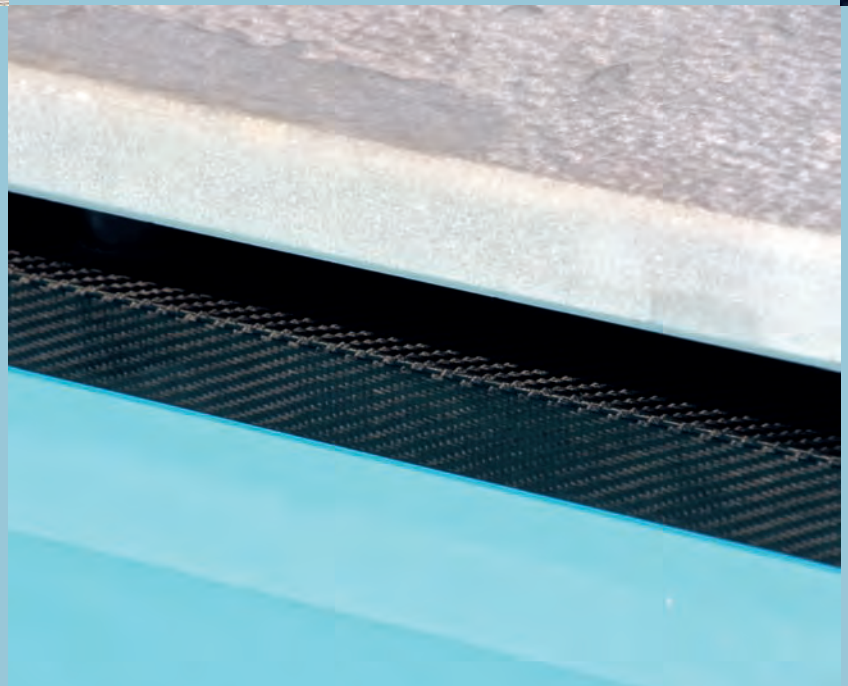
The Myrtha Ceramic 2 gutter profile incorporates two ceramic tiles, one provided with integral finger hold, that place the overflow gutter slightly further back from the pool wall. This guarantees the maximum absorption of the waves created during training sessions and competitive events. This is the most suitable technology for competition venues.

Overflow Gutter
Structural

The Myrtha Structural Overflow technology is distinguished by a ceramic tile that functions as a structural component of the wall panels. This structure guarantees a perfect overflow level while maintaining an attractive finish and can be considered the ideal technology for public leisure pools with any design.

Vanishing Edge
Ceramic 1

The Vanishing Edge Ceramic 1 profile is available with an infinity edge effect that provides a perfect solution for sites with slopes or irregular topography. Commonly it is utilized on the side of the pool with a deck level that is lower than the water level and is finished with ceramic tile. The overflow creates a cascading effect into the gutter. This technology is an elegant and efficient solution for leisure pools, particularly in condominium or hotel facilities.



Recessed Overflow Gutter

The Recessed Overflow Gutter finishing solution is Myrtha's newest alternative to a standard ABS grate. Special edge elements, specially designed for swimming pool use, are fixed to the overflow gutter and allow for the perfect flow of water while providing an elegant finish to the pool. A variety of materials and finishes are available for both the deck and the edge of the pool, such as marble, stone, wood and porcelain stoneware. These materials are highly durable and provide high-tech performance.

Vanishing Edge
Structural

The Vanishing Edge Structural technology is an evolution of the Vanishing Edge Ceramic 1 profile. Structural ceramic tiles overlay the Myrtha wall panels in a gentle slope, creating a cascade effect into the gutter.

Headwalls

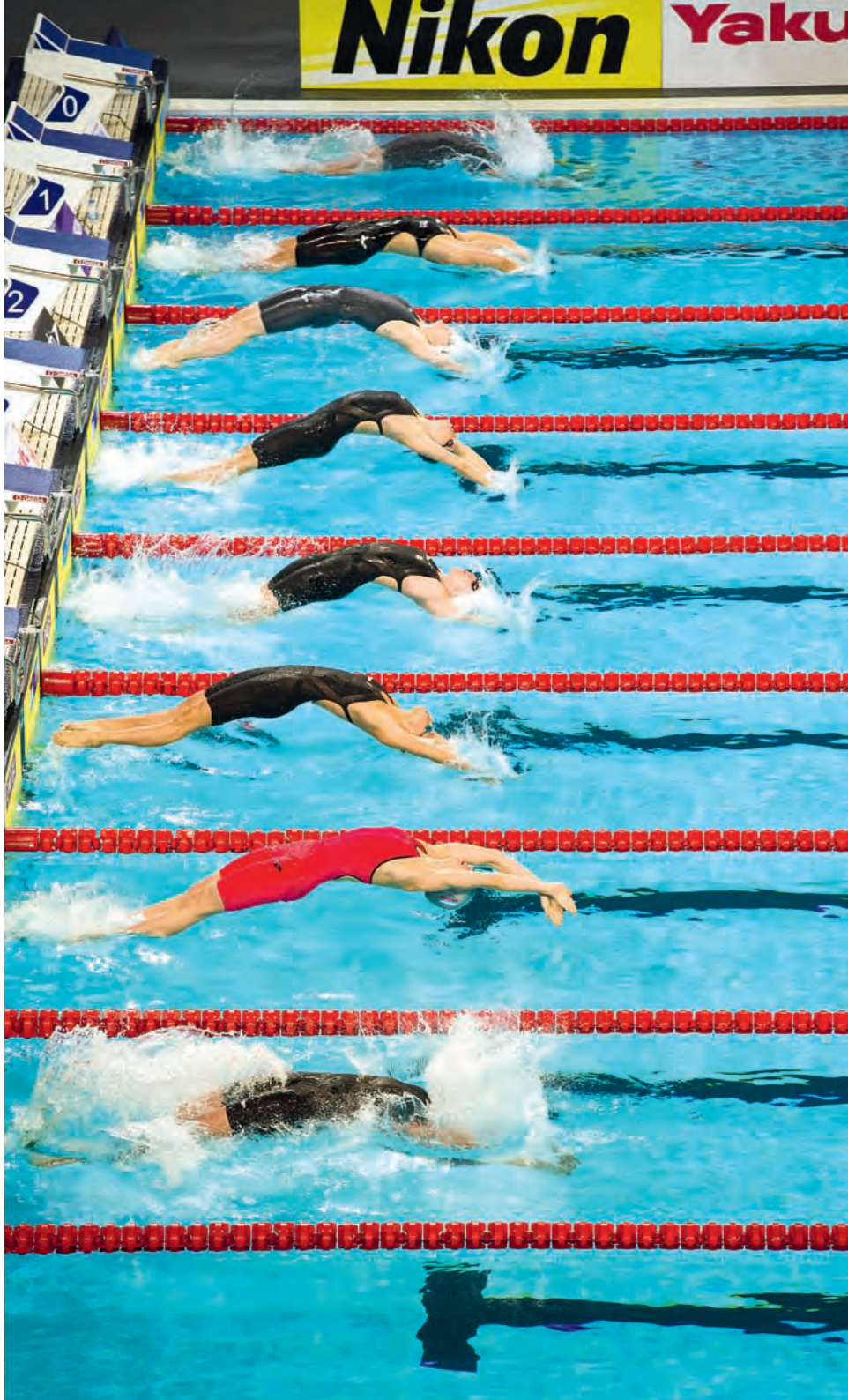
To comply with F.I.N.A. regulations for competition pools that do not have an overflow structure on all four sides, a headwall is required at 30 cm above the water level. The Myrtha headwall offers a ceramic tile finish that guarantees ease of cleaning while also maintaining the pool aesthetic.

Combined Technologies

All of the technologies described above can be combined to meet specific design requirements. For example, competition pools can combine overflow technologies with headwalls; public and leisure pools combine skimmer systems with one or more vanishing edges or headwall systems. Myrtha Pools offers the work of a specialized technical staff who continuously search for the best solutions for the client according to their needs and surroundings.

Systems, solutions, **accessories**

A precise installation is imperative in the construction of competition pools. This is why RenovAction has been selected and specified by Swimming Federations and Organizing Committees throughout the world for some of their most important competitions, such 2012 London Olympic Games. For competition swimming pools, the RenovAction system and accessories have been developed to meet F.I.N.A. regulations for international competitions, without compromising safety or quality.



Bulkhead

The Myrtha Bulkhead is used to define separate areas within the pool and easily moves along rails installed on the pool deck thanks to a patented movement system. The movement system can be either mechanically or electrically driven. Anchors for starting blocks are included and other options such as a footrest step, handgrips, and floating lane line anchors are also available.

Floating Movable Floor

This allows the depth of the pool to be varied providing multifunctional use of the pool. The floating structure is anchored to the floor through a system of steel cables and an actuating mechanism outside the pool allows the cables to be positioned and the movable floor to be fixed to the desired depth.

Air Safety Cushion

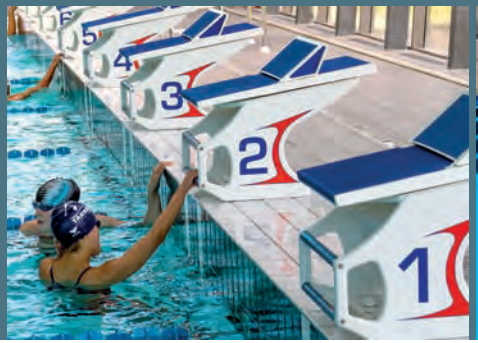
This reduces the diver's impact by producing a uniform mixture of water and air in the area where the diver enters the pool. Spargers positioned under the diving board provide adjustable bubbling volume and intensity.

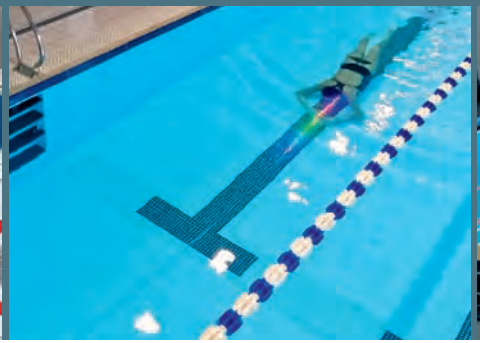
Removable Headwalls

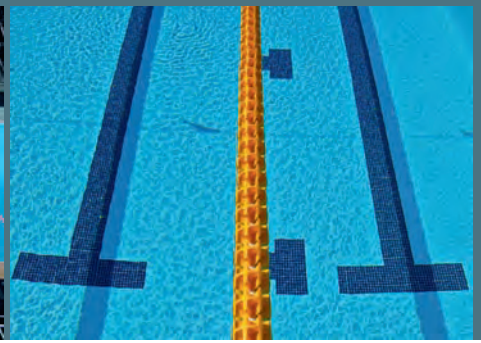
This provides pools with overflow gutter on four sides with a 30 cm headwall as required by F.I.N.A. regulations. It also serves as an ideal support for timing touch pads, starting blocks and floating lane anchors.











Starting Blocks

Myrtha Track-Start blocks are officially approved by FINA and are now used in all international competitions. The Track Start starting blocks allow for an Omega top to be integrated and are compatible most timing systems. They have been utilized in the 2012 Summer Olympics and the U.S. Olympic Team Trials.

Virtual Trainer

LED strips, installed on the pool floor, are used to monitor the performance of swimmers during training sessions. The system contains a number of preinstalled training programs and can be operated easily with a wireless system.

Waterpolo Visual System

This F.I.N.A. approved system employs LED markings placed in the specific areas of water-polo match rules inside and outside the pool and allows athletes, referees, judges and spectators to more easily follow the progress of the match.

Lane Markings and Targets

Ceramic lane markings and targets are available.

Beijing 2008, **Olympic Games**

YingTung Natatorium at the Beijing Olympics was a major focus for the Olympic competition venue renovation project. The natatorium revealed signs of aging due to its continuous use since being built nearly 20 years prior. Cracking and leakage had become a severe issue rendering the facilities far short of competition standards.

Completely replacing the pool would have been both costly and time-consuming. The renovation of the pool with RenovAction involved minimal impact to the existing structure with a marked savings in time and resources. Only a few short months after commencement of work, the pool was officially inaugurated in September 2007 and was ready to host the water-polo and modern pentathlon competitions for 2008 Olympic Games.

Phase 1

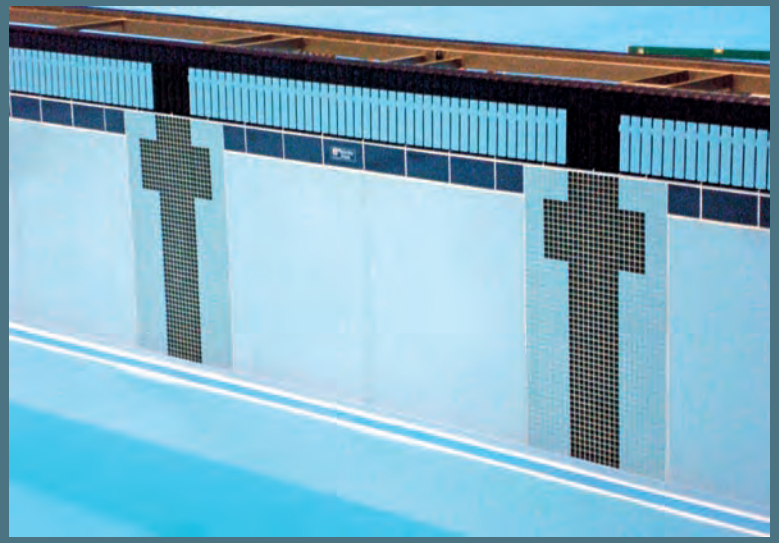
Phase 4

Phase 5

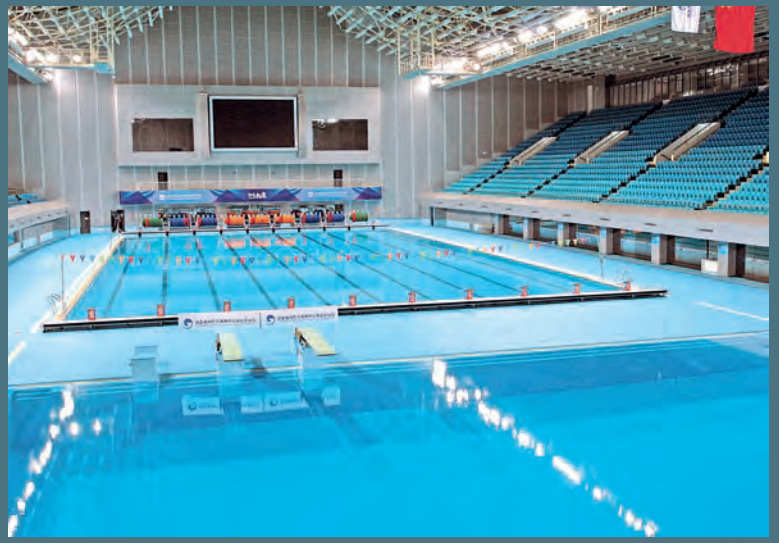
Phase 2

Phase 3

Phase 6



Phase 7



Challenge Stadium Aquatic Center, **Perth**

The Center has hosted outstanding international sporting events and has world-class swimming facilities, which include an outdoor water-polo pool built by Myrtha Pools for the 8th F.I.N.A. World Championships, in 1998.

In 2007 the Center's management selected RenovAction for the refurbishment of two 50 m outdoor pools. As proven from the results of a comparative study performed on the pools, it was determined that the maintenance of a concrete pool is more complex and onerous as compared to that of a Myrtha pool. The Myrtha pool, built in 1996, had not undergone any substantial maintenance until 2003. Alternatively, the indoor concrete tiled 50m pools, after only 9 years of operation, have since required the total replacement of the ceramic tiles along with major water-proofing repairs. The renovation of the pools started in September 2007 and each pool took only few weeks to finish.

The 8-lane warm-up pool

- 50x21x2-3 m
- Ceramic overflow gutter on long sides
- Ceramic competition headwalls on the pool ends
- Pool equipment: recessed steps, 4 sets of recessed steps, starting blocks, mosaic lane markings and targets

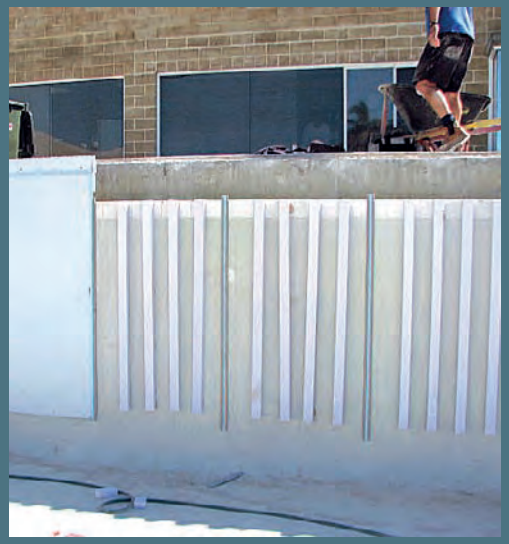
Phase 1

The 10-lane competition pool

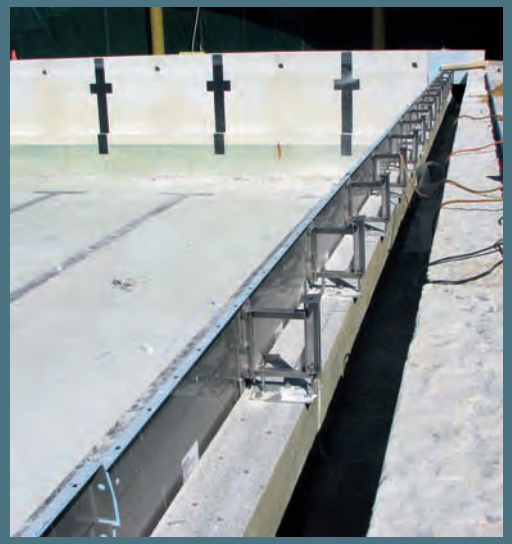
- 51x25x2 m. Initially 50 m. Modified and lengthened to include a movable bulkhead. To accommodate the movable bulkhead one end of the pool had to be demolished and replaced with Myrtha panels
- Ceramic overflow gutter on three sides
- Ceramic competition headwall
- Pool equipment: movable bulkhead, 8 sets of recessed steps, starting blocks, mosaic lane markings and targets

Phase 1

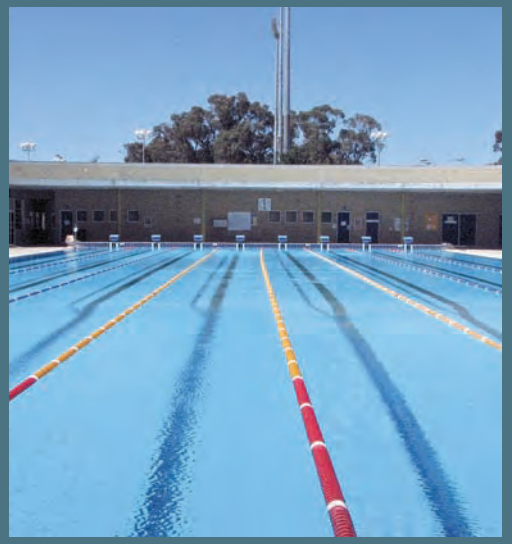
Phase 2



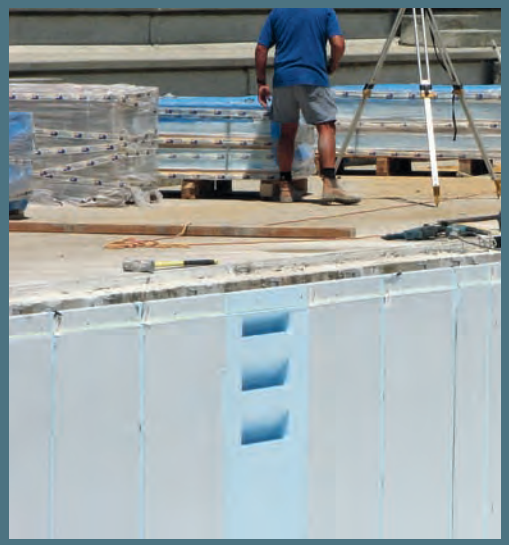
Phase 3



Phase 4

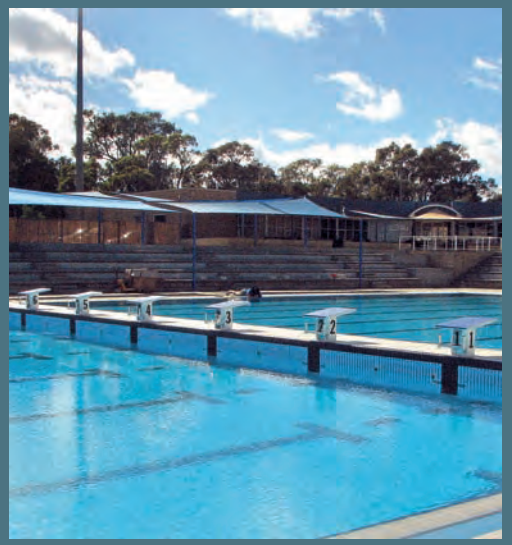


Phase 2



Phase 3

Phase 4



Birrong Swim Center, **Sydney**

The 50 m outdoor reinforced concrete tiled pool of the Center was completely renovated in 2007 using RenovAction technology. For many years the pool had been unusable due to its deteriorated condition and required major refurbishment. A combination of RenovAction and Myrtha technology was selected for the complete refurbishment of the failed concrete pool. The width of the pool was reduced, which would provide area for the installation of a special needs, barrier free access ramp. Additionally, this solution provided for an ease of installation for wall inlets circulation system and lighting systems. The pool is a 50x21x3 m with ceramic overflow gutter on the long sides and ceramic competition headwalls on the short sides. The completed pool also accomodates 5 sets of recessed steps, barrier free access ramp and mosaic marking lines on the floor.

Phase 1

Installation of Myrtha components started from the side with the ramp. This side was completely built with Myrtha Technology and adjusted according to the width of the ramp. Once the base frame was installed, the new RevovAction panels were affixed to the existing wall. Upon completion of the panels installation, the overflow channel is positioned and secured in place. The RenovAction panels were installed directly onto the walls of the other three sides of the pool.

Vertical spacers were installed between the RenovAction panels and the concrete pool walls to compensate for any imperfections in the existing structure. Finally, the floor membrane and mosaic lane markings were applied.

Phase 2

Phase 3

Phase 4

Phase 5

Centre Nautique Le Kremlin-Bicêtre, **France**

Built in the mid Sixties, after more than 30 years of activity the Center's facilities and the pools were damaged and obsolete. The introduction of new standards, health requirements and safety regulations made the refurbishment of the sport facility necessary. The renovation of the pool began a few months before the Center reopened in November 2008. The pool, refurbished with RenovAction, is a 50x20 m with variable depth, from 0.80 m up to 4.20 m in the diving area. It is equipped with a movable bulkhead anchored to the wall and the "aileron mobile" (movable aileron) that divides the pool into "modules" allowing for multiple activities to take place in the pool.

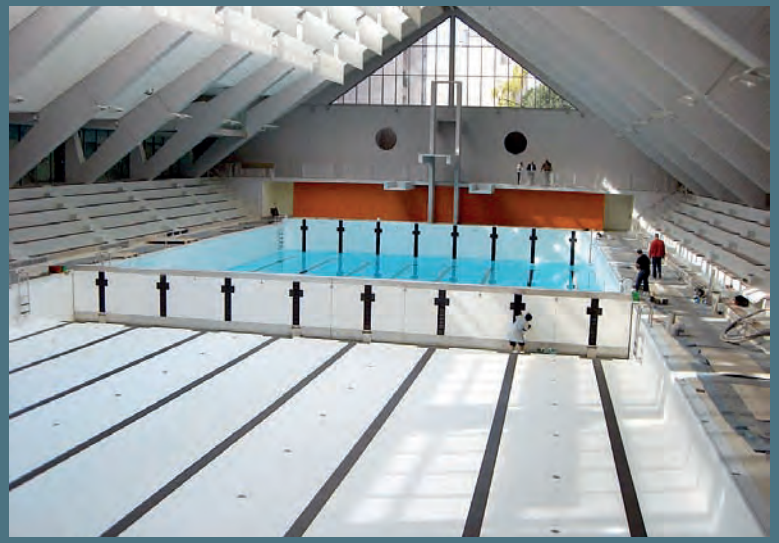
Phase 1

Phase 4

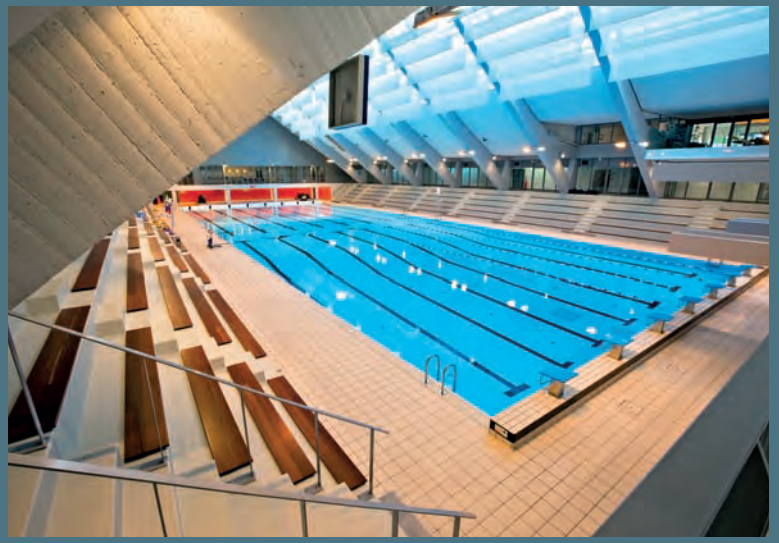
Phase 2

Phase 3

Phase 5



Phase 6



Saronno Municipal Aquatic Center

Saronno, Italy

The 25 m indoor pool in Saronno (Northern Italy) was renovated by Myrtha Pools in just 3 months from the time of the project's approval. The pool, as well as the entire venue, has been completely refurbished with the ultimate goal of creating a comfortable and functional structure, with environmentally friendly and energy saving solutions. Construction on the existing pool began first with the leveling of the floor. The existing pool depth was 4 m but actually was varying from 1.30 to 1.80 m. The number of lanes was increased from 6 to 8. And finally, the pool was equipped with a blind cover integrated into the structure. This allows for reduction of heat dispersion and water evaporation while also protecting the environment from the damage caused by humidity.

Phase 1

Phase 2

Phase 3

Phase 4

Phase 5

Trecate Community Pool

Turin, Italy

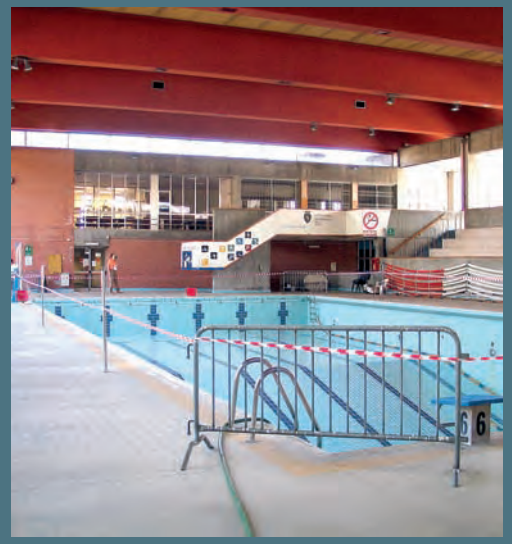
This project was developed with the goal of creating diversified large aquatic areas, that would provide for both competitive and recreational swimming activities (outdoor and indoor).

Myrtha Pools has refurbished two pools within the center:

- A 50x21 m Olympic outdoor pool which was later equipped with a new fixed cover allowing the pool to be used during the winter months to host competitions at an international level. The pool has also been equipped with removable headwalls and starting blocks.
- A 25 m indoor pool equipped with removable headwalls and starting blocks.

In addition to the RenovAction, two new Myrtha pools were installed, one multipurpose indoor 19x8.50 m and a new 30x26 m outdoor recreational pool.

Phase 1
25 m



Phase 1
50x21m

Phase 2
50x21m

Phase 3
50x21m

Phase 2

25 m

Phase 3

25 m

Phase 4

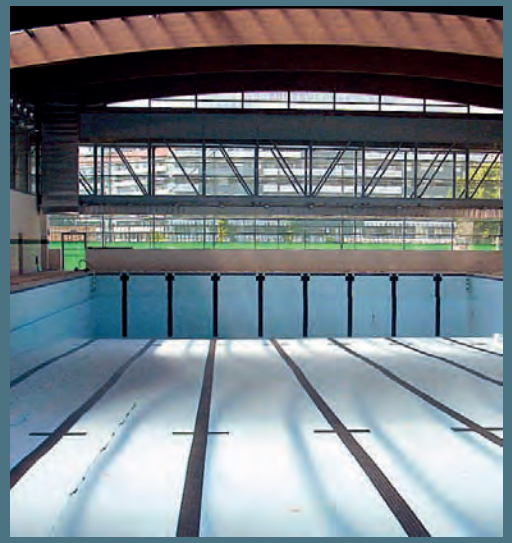
25 m

Phase 4

50x21m

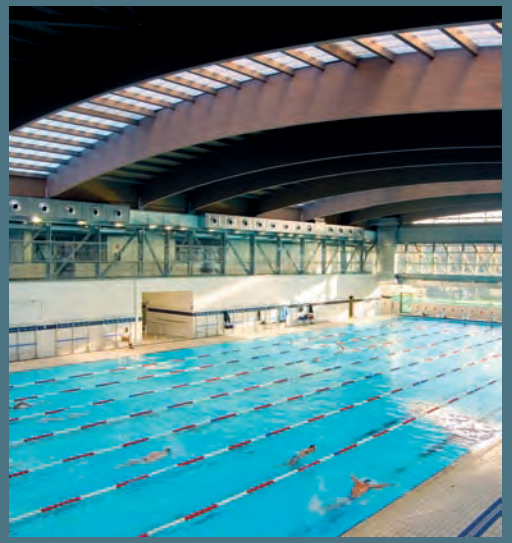
Phase 5

50x21m



Phase 6

50x21m



JW Marriott Hotel

Seoul, South Korea

After a few years of operation, the two reinforced concrete tiled swimming pools at the Thermal&Spa Fitness Center of JW Marriott Hotel in Seoul were damaged and required major refurbishment.

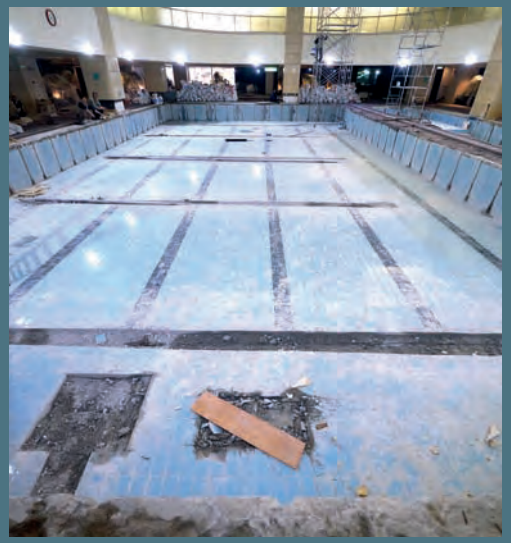
Pools were slightly leaking due to cracks in the original tiles that allowed water to go behind the tiles. Also the columns adjacent to the pool had not been properly waterproofed and increased the issue.

Both pools have been refurbished using RenovAction technology, with a special Ceramic 3 Overflow gutter.

The main pool (24x12,30x1,20 m) accommodates 4 recessed steps and is provided with SoftWalk mat on the pool floor, mosaic lane marking and floating lane lines.

The children pool (20x3,70x0,60-1,30 m) has been refurbished following the original pool design: the pool's floor has a double level depth, created by a large underwater stair that separates the children's area from the leisure area. SoftWalk mat has been used for the floor and steps, and wall hydromassage inlets have been placed in the leisure area.

Phase 1 – Main pool

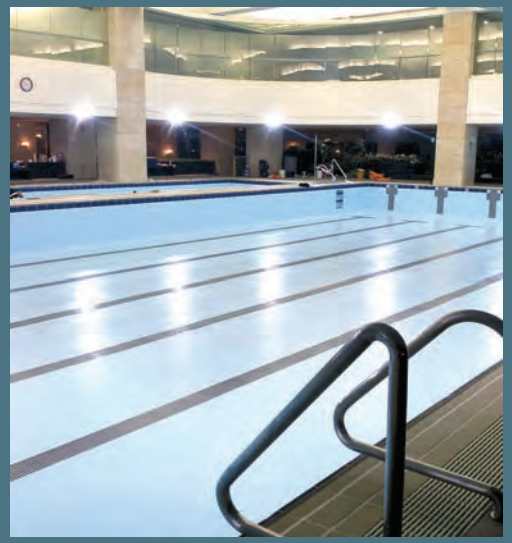


Phase 2 – Main pool

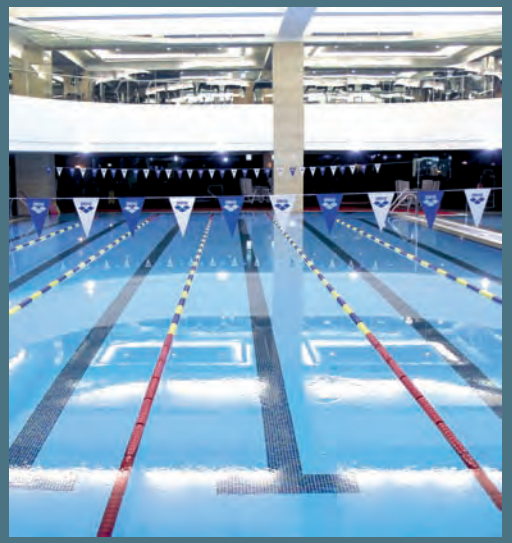
Phase 1 – Children pool

Phase 3 Main pool

Phase 4 Main pool

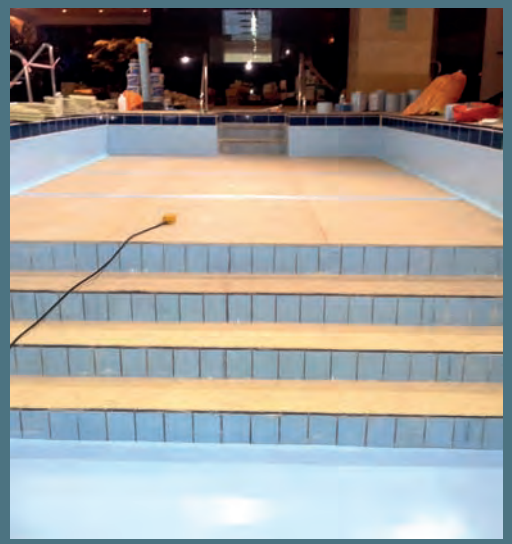


Phase 5 Main pool



Phase 2 Children pool

Phase 3 Children pool



Phase 4 Children pool

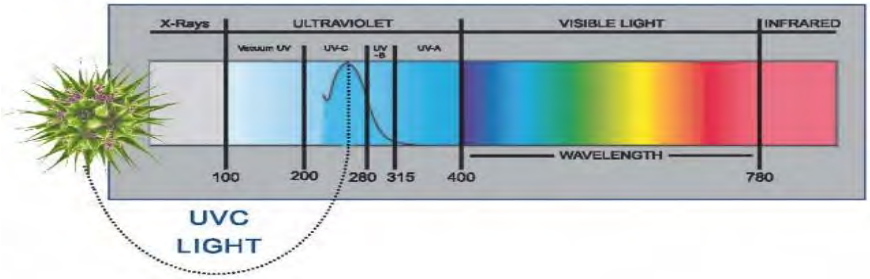
MYRTHA POOLS®

Via Solferino, 27
46043 Castiglione d/Stiviere (MN), Italy
P. O. Box 7
Tel. + 39 0376 94261
Fax + 39 0376 631482
info@myrthapools.com
www.myrthapools.com

COD: 0011106

Medium Pressure UV System: Summary and Benefits

Situated in the electro-magnetic spectrum between X-rays and visible light, Ultraviolet (UV) light has many beneficial properties. UV light is split into four main categories, UV-A, UV-B, UV-C and Vacuum UV. The area between 240 and 280 nanometres (nm) is **UV-C**, commonly known as the **germicidal region.**



UVC light has the ability to cause permanent damage to a wide variety of nuisance microorganisms in water. Certain species of microorganisms have now developed or adapted immunity to traditional disinfection techniques such as chlorine; Cryptosporidium Parvuum is one such "emerging" pathogen that chlorine cannot kill. An outbreak of Cryptosporidium in Milwaukee in 1993 made 400,000 people ill and hospitalized 4400 people.

UV light is a physical, non intrusive method of ensuring that organisms present in water, are unable to replicate, and hence remain inert. Properly sized UV systems can also be used to reduce chloramines in pool water. Additionally, UV does not affect the taste, color, or ph of the water being disinfected.

WTI specifies medium pressure lamps with a polychromatic output to remove nuisance mono-, di- and tri- chloramine species. Medium Pressure lamps with their high output are not affected by changes in water temperature. Medium pressure lamps are polychromatic and unlike low pressure lamps which have a peak output of 254nm, medium pressure lamps have a broader output between 185 and 400 nm. DNA has its maximum absorption at 265nm. The optimum wavelength for destroying Cryptosporidium is 271nm. In addition, studies have shown that micro-organisms after exposure to low pressure UV have the ability to repair themselves. No such affect occurred when exposed to Medium Pressure lamps. This is known as photo-reactivation.

Since the surface temperature of low pressure lamps is relatively low, the influence of pool water, especially spas and therapy pool water is significant. Medium pressure lamps, with a higher surface temperature, are not influenced by water temperature and can operate effectively in temperatures ranging from -20 Degrees Celsius to +80 degrees Celsius. In addition, they emit the wavelengths used to effectively remove chloramines from pool water.

The benefits of medium pressure UV technology include:

- UV is effective against all micro-organisms
- Vastly improved water quality and a more pleasant bathing environment
- Crystal clear water and fresh clean air
- Breaks down chloramines and other organics
- No chemical by-products created by the UV system
- Reduces the need for "shock treatments" to reduce combined chlorine levels
- Fully automatic and cannot be over dosed
- UV is a non hazardous, green technology

The benefits of a properly specified UV system include:

- Simple and easy to maintain
- Validated system performance
- Fully monitored to ensure the correct dose of UV
- Control panels can easily interface with existing management systems
- Compact in design and require minimal space
- Fully approved by UL/MET, ANSI/NSF50 and validated to the USEPA Disinfection Guidance Manual

The main cost benefits from installing a properly specified UV system include:

- Custom unit design available for restricted space applications
- Simple maintenance and installation
- Improved health and safety
- Improved water quality, reduces the need for excessive backwashing
- Improved air quality, reduces building maintenance

WAFER™ UV GENERATOR

NEW UV DISINFECTION PRODUCT FOR THE AQUATICS INDUSTRY

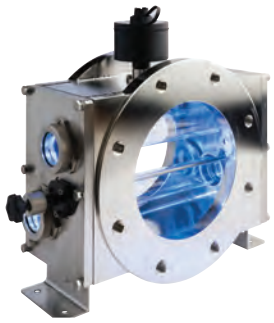
The Wafer™ UV disinfection generator system from Evoqua differs from any other UV generator currently on the market, with a unique UV chamber that offers the most compact UV disinfection generator available today. At about one third of the size of comparative UV offerings, and with a significantly reduced maintenance envelope, the Wafer generator delivers an easy to install and retrofit solution that will fit the tightest of mechanical rooms.

Not only does the Wafer UV generator represent the most compact UV solution available on the market, it features a hydraulically optimized generator design and leading polychromatic lamp technology, making it one of the most efficient and highest performing generators. The Wafer generator is designed to provide 99.9% inactivation of chlorine-resistant microorganisms such as Cryptosporidium and Giardia.

Operators will benefit from the inclusion of the Spectra control system as standard, which includes a wide range of features such as data stream monitoring, process interlocks and programmable set points. A key Spectra control feature includes variable power stepping from 100% to 30% at no extra cost, allowing operators to optimize the operational power of their system to match bather loads and pool operating schedules.

In addition, the Spectra controller features a reactive boost function that automatically operates the lamps at maximum power from a combined chlorine alarm signal, when teamed with a suitable chlorine controller. This is a feature specifically designed for swimming pool applications to break down problematic chloramines as soon as they are detected, significantly improving water quality and eliminating the cause of strong chemical smells, red burning eyes, itchy skin and natatorium corrosion.

THE WAFER UV GENERATOR OFFERS A COMPACT TREATMENT SOLUTION FOR APPLICATIONS REQUIRING 200-3,500 GPM IN A SINGLE HIGH OUTPUT UV GENERATOR.



PERFORMANCE AND INSTALLATION

- Smaller installation footprint
- Horizontal or vertical installation
- More efficient and enhanced power control
- Higher performance
- Simpler and faster to maintain
- Increased safety
- Modbus®

6 Jefferson Drive, Coventry, RI 02816

+1 (800) 832-8002 (toll-free) +1 (401) 821-2200 (toll) **www.evoqua.com/ets-uv**

EVOQUA WATER TECHNOLOGIES