



**AIA**  
**Continuing**  
**Education**  
**Provider**

Health & Sport Facilities  
Public and Private





**34 YEARS & 1200 PROJECTS  
LATER...**

**OPENAIRE BUILDS  
RETRACTABLE ROOFS  
AROUND THE GLOBE**

**IS YOURS NEXT?**



# What we do

---



## How to Work with Us

- We work with architects, developers, investors, contractors, construction managers, general contractors, independent builders, property owners and more...
- OpenAire can participate in your project from design to manufacturing, to construction / installation and hand-over plus can provide architectural and engineering services, operations support, financial/investment planning, business planning etc.
- We are typically included in projects at the Concept Design or Schematic Design Phase. We work with your team to implement your vision.
- The best warranty in the industry: minimum 5 year full parts and labour warranty, training, worldwide support and maintenance

## Collaborative Design

- In-house design and engineering
- Certified fabrication & welding facility
- Dedicated customer support and project management
- Revit, Solid Edge, CAD

## Engineer Standards

- Minimum L/200 deflection criteria in every design
- Free span enclosures of over 180' (55 m)
- Free-span dome configurations more than 300' (91 m)
- Custom Engineering for all climates & geographies including:
  - High snow/rain loads
  - Seismic zones
  - Hurricane/tornados

## Aluminum Construction

- Thermally broken aluminum frames/extrusions
- Baked on paint finish prevents corrosion making them Maintenance Free
- Proven Lower Lifecycle Costs for aluminum buildings
- Key component in energy efficient LEED certification



Salinas Municipal Aquatic Center, CA  
**LEED GOLD RATING**



Roger Carter Community Center, MD  
**LEED SILVER RATING**



# 8 BENEFITS OF ADDING A RETRACTABLE ROOF

TO YOUR DESIGN OR FACILITY



## 1 PROMOTES HEALTH AND HYGIENE

Opt for fresh air circulation and daylight for a healthier environment, a new standard in future design.



## 2 MAXIMIZING SPACE AND REVENUE

Convert unused space or extend "usable" space to turn it into a year-round revenue generator.



## 3 LOWER LIFECYCLE COSTS

Reduced operating costs add up to drastic savings.



## 4 NATURAL LIGHT AND ILLUMINATION

Welcome the outdoors inside with a retractable solution that allows for flexibility.



## 5 PERFECT CONDITIONS YEAR-ROUND

Rain or shine, your space converts to an indoor or outdoor space in minutes.



## 6 CREATE A PLACE PEOPLE WANT TO VISIT

Attract people to your bright, airy, stunning venue any time, any day.



## 7 MAINTENANCE-FREE

Never repaint again, means no more extended closures for downtime.



## 8 ENERGY EFFICIENT

Natural ventilation allows heat to escape and for reduced use of mechanical air-handling equipment.



---

# 1. Promotes Health and Hygiene

---

**V**entilation is required to achieve and maintain good air quality, as well as thermal comfort levels for the occupants of any space.

There is little evidence that ventilation directly reduces the risk of disease transmission, but many studies suggest that **insufficient ventilation increases disease transmission.**<sup>1</sup>

In this time of a global pandemic, the health of guests in your business is critical. New studies demonstrate the correlation between the transmission of COVID19 in closed environments vs. open air circulation.

*In a recent Japan study, the odds a primary case transmitted COVID-19 in a closed environment was 18.7x greater compared to an open-air environment.<sup>2</sup>*

---

# 2. Maximizes Space and Revenue

---

**I**f you have a patio, rooftop or any space that is seasonal, you can enclose it (lot coverage permitting) giving you additional footprint for year round programming. You can also add a retractable skylight and retractable walls (to some building types) to areas that may be under-utilized or purpose specific, turning these into more flexible/programmable environments

Adding an amenity with lower maintenance costs and operating costs allows business owners to focus capital on other areas, and reduce overhead.





---

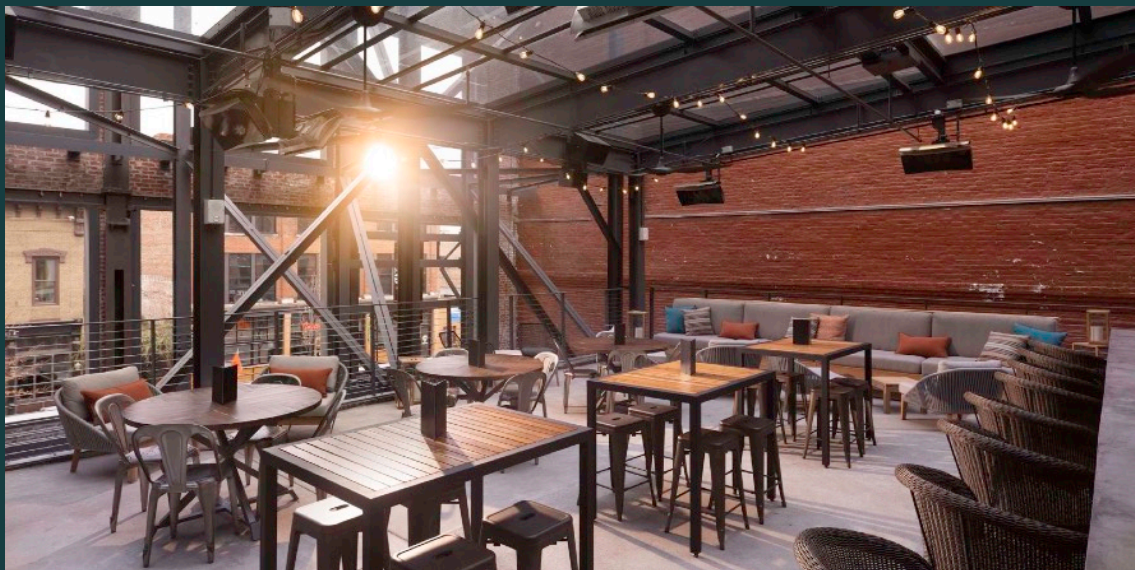
## 3. Lower Life-Cycle Costs

---

**S**avings when operating a retractable roof (translucent or transparent) enclosure include both the cost of hydro, gas and reduce your reliance on electrical lighting during the day.

In a nutshell when the roof is open, you turn off the mechanical systems and lights in the space. This is the intent of all global energy codes. To use less energy.

*Using outdoor air as a dehumidifying source when it is cost effective, rather than using a mechanical dehumidification system, can greatly reduce total operating costs, provide better indoor air quality, and improve system reliability.<sup>3</sup>*



---

## 4. Natural Light and Illumination

---

**T**here is undeniable evidence first, that daylit spaces hold the potential to yield substantial benefits, including increased energy savings, increased revenue in retail applications, and improvements to human health and productivity.<sup>4</sup>

There are a variety of studies showing that daylight is the third most important factor in improving retail sales, behind hours of operation and years since last renovation.<sup>5</sup>

In other words, a day lit space with good hours and a clean, new environment will make more money.

*Lighting loads can be reduced by incorporating natural lighting into the envelope design and by using efficient lighting options.<sup>6</sup>*



---

## 5. Perfect Year Round Conditions

---

Open and Close the roof at the push of a button. Turn your space into one that can be used for events, parties, an indoor/outdoor rentable venue. Mother Nature will no longer have an impact on any use of your space. The roofs of our largest facilities close in minutes. So with the addition of optional rain sensors the enclosure will do the work for you.



---

## 6. Create a place people want to Visit

---

To compete in towns and cities across the country, all hotels, restaurants, bars, etc, must stay ahead of the trends to attract new guests. This is called improving your marketability.

Offering upgraded facilities that are safer and healthier, to compete with other venues, is critical. Ensuring that these can be open year round enhances their value and ROI via programming opportunities.

A retractable roof ensures you are free from weather related concerns. In addition, the ‘peace of mind’ associated with being in a bright, open and naturally ventilated space is appealing and “marketable” to attract guests.



---

## 7. Maintenance Free Facility

---

**A**luminum is lightweight, high-strength, corrosion-resistant and widely recycled. It maximizes building efficiency by balancing the functions of heating, cooling, lighting, shading and ventilation. In addition, aluminum in buildings has been proven to last for multiple decades with minimal maintenance, lowering the lifecycle footprint of a building.<sup>7</sup>



---

## 8. Energy Efficient

---

**A**ll energy codes, globally, require new or renovated structures and buildings to use less energy. Aluminum is superior to steel and iron in its ability to reflect the infrared (heat) rays of the sun. ***Properly coated aluminum roofs can reflect up to 95 percent of the solar energy that strikes them, dramatically improving energy efficiency. This makes aluminum is a key component in LEED-certified green buildings should you be looking for that designation.***<sup>9</sup>

In addition when the roof is open and the walls are open, your space becomes a naturally “chimney”. This is a low cost alternative to expensive energy consuming mechanical ventilation systems.

# **TOP QUESTIONS ABOUT RETRACTABLE ROOFS ANSWERED...**

Here are some snapshots of  
solutions for other clients:



# Our Most Asked Question... Can I cover my pool?

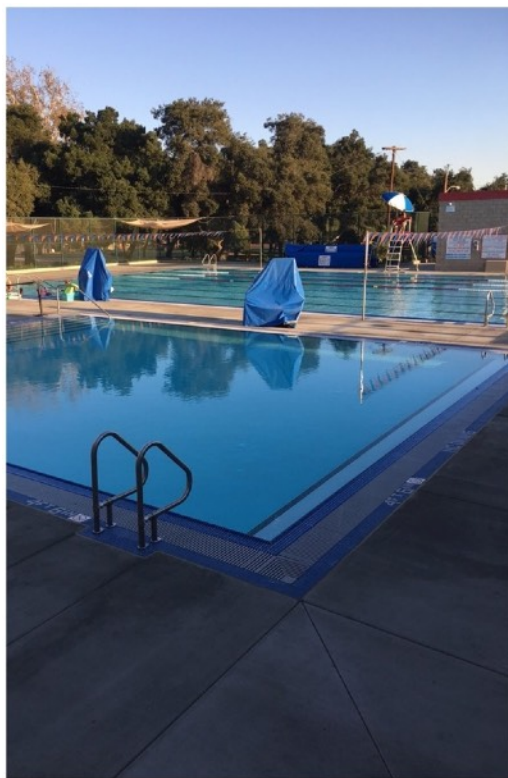
---



**YMCA Upland California**

**YES you can cover an existing pool!**

*NOTE: this also requires upgrading of mechanical equipment (from your pool guy) and possibly refinishing of decks and pools by that same team.*



Before



During



After



# Is a retractable skylight double the cost of a fixed skylight?

---



## **Kellys Landing Restaurant**

The skylight is the same size fixed or retractable. If it opens we add tracks and Motors.

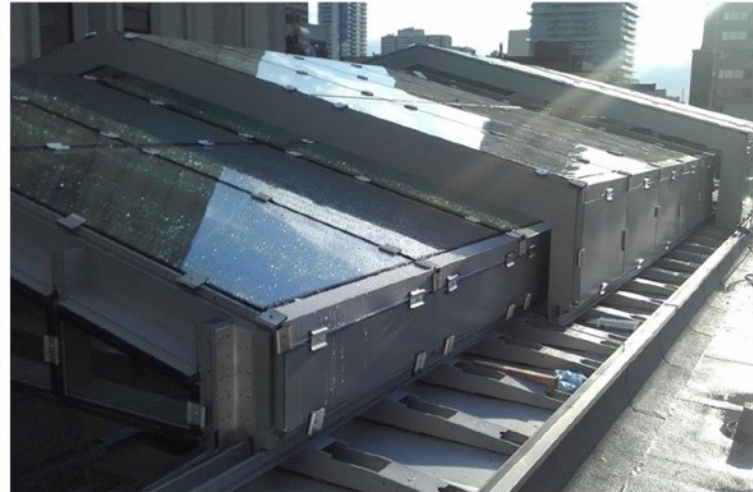
Incremental cost added to open (aka add tracks Motors): 10% +/-

Savings on Energy Bills:  
(Hydro (lighting) and gas)  
15-20% non aquatic  
20-30% Aquatic



# How long does it take? Small project

---

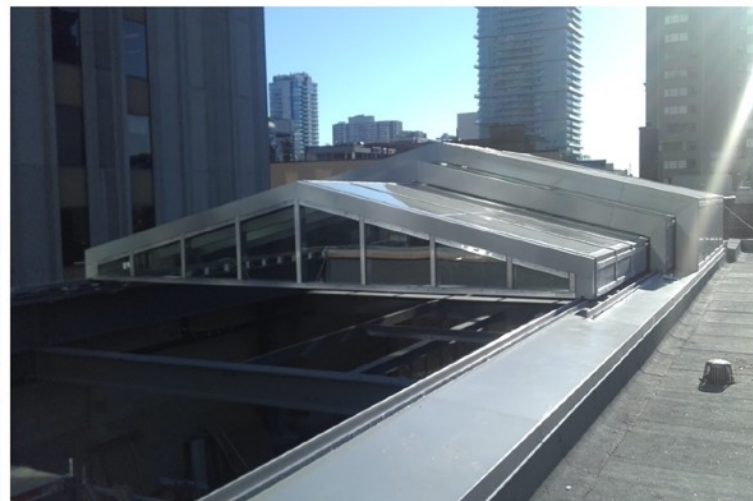


## **Boston Pizza**

27' x 50'

Telescope, glass skylight

Install: 1 month\*



*\* timeline for reference all projects vary*





# How long does it take? Large project

---



## **Epic Waters Waterpark**

162' x 382'

Ground Breaking:

October 2015

OpenAire Start:

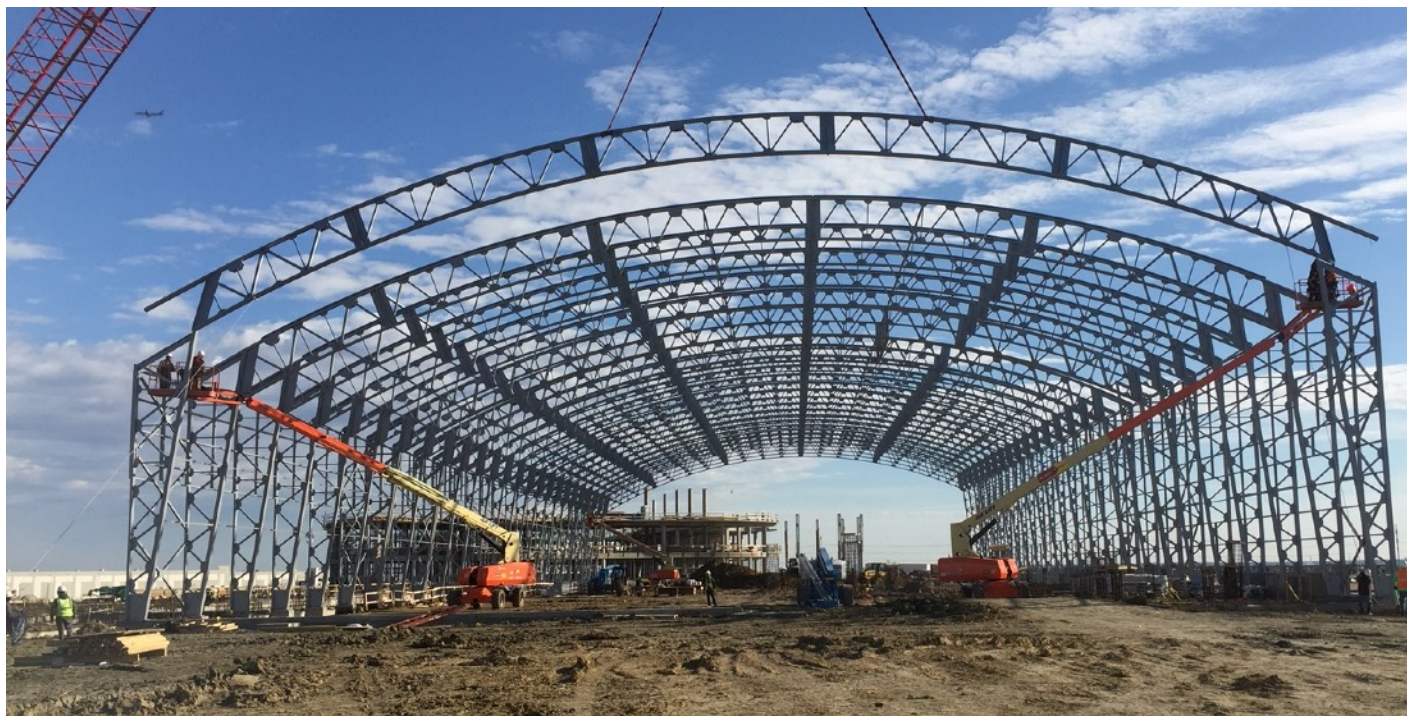
Dec 2016

Last Truss:

Jan 24 2017

Open to the Public:

January 12, 2018



*\* timeline for reference all projects vary*



# I want to keep my patio but use it year round!

---



## **Gusto 101**

Rooftop patio was subject to weather related closures. Now, same patio, open year round



Before

After



# I don't want to lose my best views!

---



## **Hyatt Jersey City**

Facing Manhattan, this rooftop has one primary view. This solution not only enhances it, but allows it to be seen year round.



# My venue is aquatic, what about Corrosion & Mold?



## **Zehnders Splash Village**

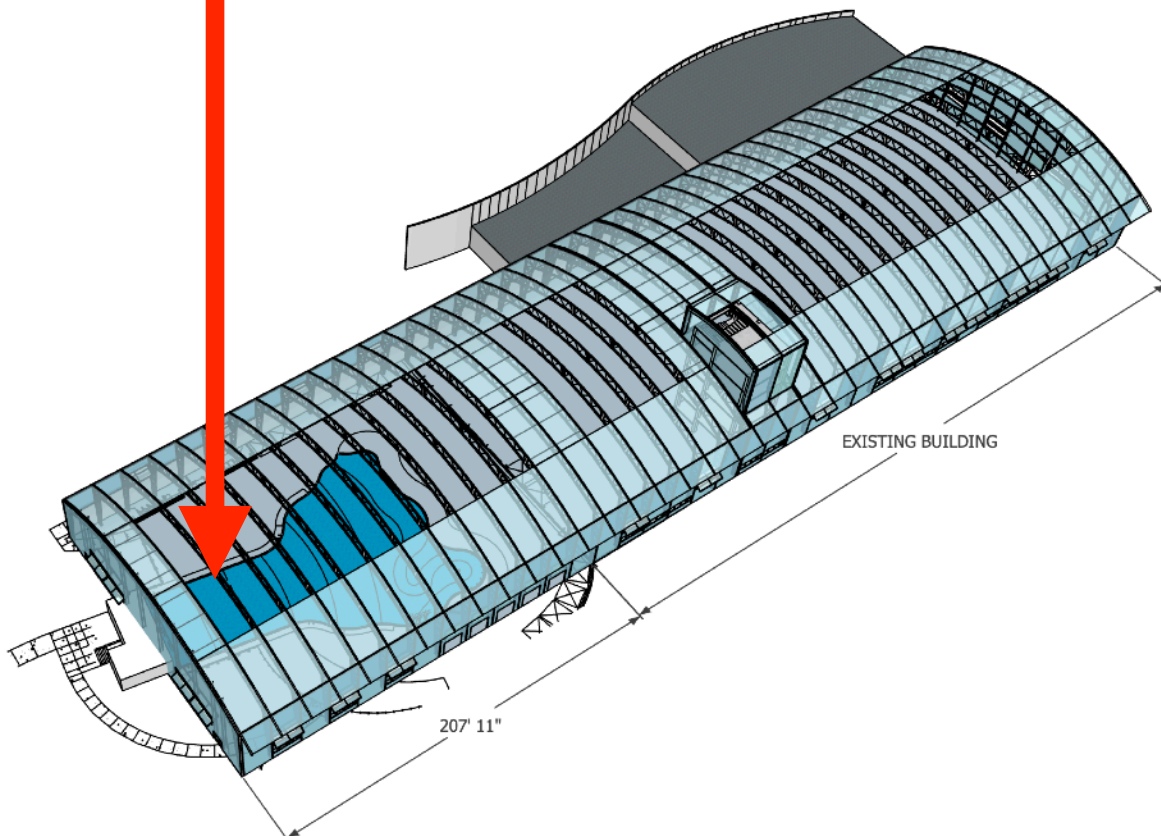
During minor gas line maintenance, a hole in a wall led to the discovery roof and wall black mold. The existing glulam structure was in salvageable condition but all other surfaces needed replacement.

Roof was replaced with retractable. Walls replaced with glass.





# Can I make it bigger down the road?



## Epic Waters Waterpark

This municipal waterpark was designed to grow.

Starting in 2024, the outdoor wave pool will become an indoor wave pool.

The gable end will be removed, the building will get longer and the gable end will be reinstalled in the new location.



# Learn & Earn

OpenAire now offers a  
Continuing Education Credit  
for Architects = 1 AIA LU-HSW

## LEARN:

- How they can be added to new & existing buildings
- The health, safety, benefits for occupants
- How retractable roofs can save energy costs \$\$
- The benefits of a Naturally Ventilated Space
- How large volumes of air will potentially reduce the load of airborne disease pathogens
- How retractable roofs are a sustainable and can reduce the carbon footprint of a building
- How they can your reduce building yearly operating costs

<https://openaire.com/continuingeducation/>

**AIA**  
**Continuing**  
**Education**  
**Provider**

### Credits:

 0.1 IACET CEU*	 1 AIA LU/HSW	 1 AIBD P-CE	 AAA 1 Structured Learning Hour	 AANB 1 Hour of Core Learning	 AAPEI 1 Structured Learning Hour
 MAA 1 Structured Learning Hour	 NLAA 1 Hour of Core Learning	 NSAA 1 Hour of Core Learning	 NWTAA 1 Structured Learning Hour	 OAA 1 Learning Hour	 SAA 1 Hour of Core Learning



# Municipal Aquatic Centers





# Partial Project List

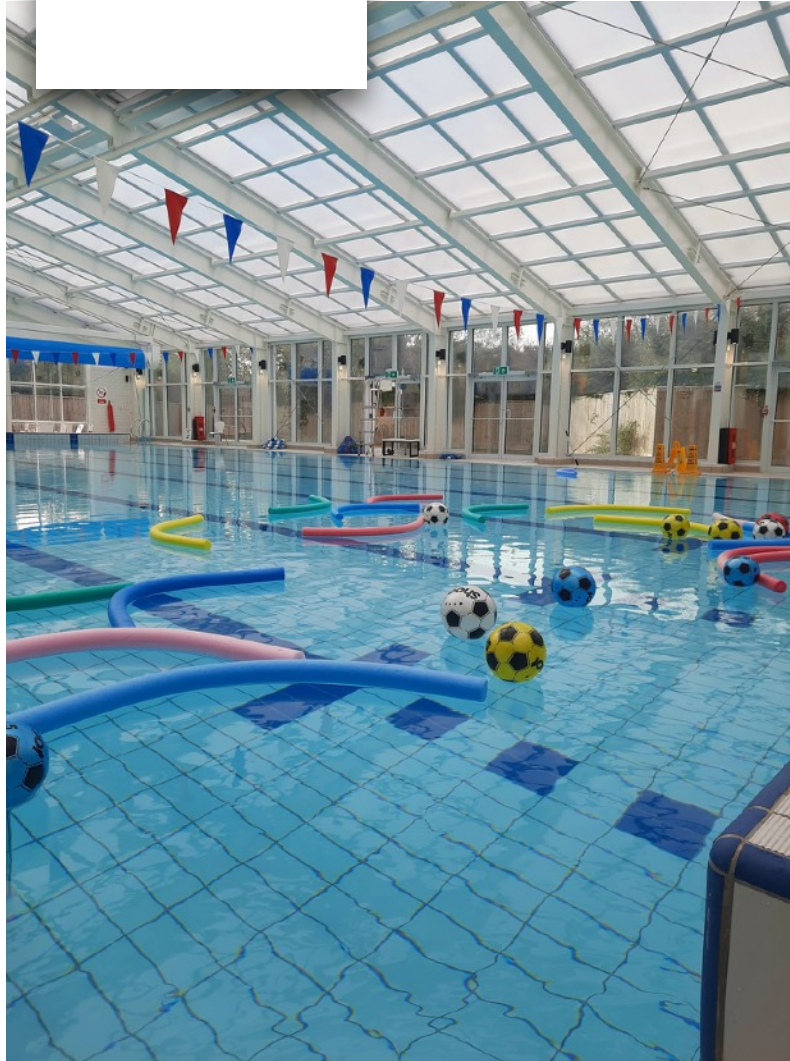
---



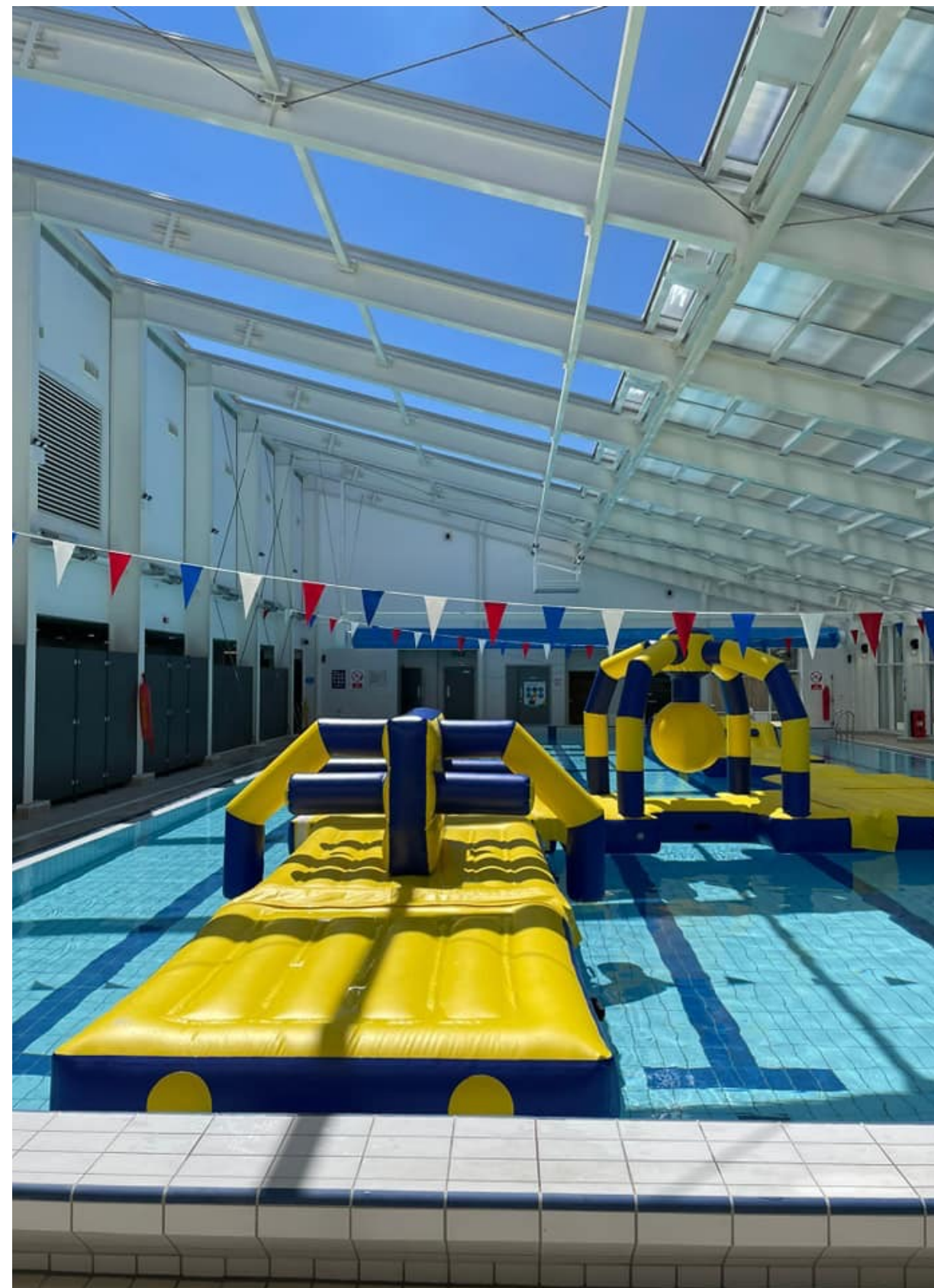
Listed are just a few of the many municipal projects that OpenAire has completed.

- Pocahontas Aquatic Center, Pocahontas, AR
  - Population 6,765
  - Aquatic Enclosure 13,400 sf
- Clarksville Aquatic Center, Clarksville, AR
  - Population 9,524
  - Aquatic Enclosure 14,000 sf
- Batesville Community & Aquatic Center, Batesville, AR
  - Population 10,740
  - Aquatic Enclosure 21,300 sf
- Paragould Community Center, Paragould, AR
  - Population 27,465
  - Aquatic Enclosure 13,300 sf
- Lompoc Aquatic Center, Lompoc, CA
  - Population 43,712
  - Aquatic Enclosure 23,000 sf
- Allan Witt Aquatics Complex, Fairfield, CA
  - Population 114,756
  - Aquatic Enclosure 13,500 sf
- Mike Shellito Indoor Pool, Roseville, CA
  - Population 132,671
  - Aquatic Enclosure 11,900 sf
- Epic Waters Waterpark, Grand Prairie, TX
  - Population 190,682
  - Aquatic Enclosure 62,000 sf
- Whitney Ranch Indoor Pool, Henderson, NV
  - Population 292,969
  - Aquatic Enclosure 14,400 sf
- Dublin Park Recreation Center, Madison, AL
  - Population 42,938
  - Aquatic Enclosure 8,100 sf
- Roger Carter Community Center, Ellicott City, MD
  - Population 65,834
  - Aquatic Enclosure 13,000 sf









Ivybridge Leisure Center  
Ivybridge, UK





Morrisville Aquatic Center  
Morrisville, NC, USA





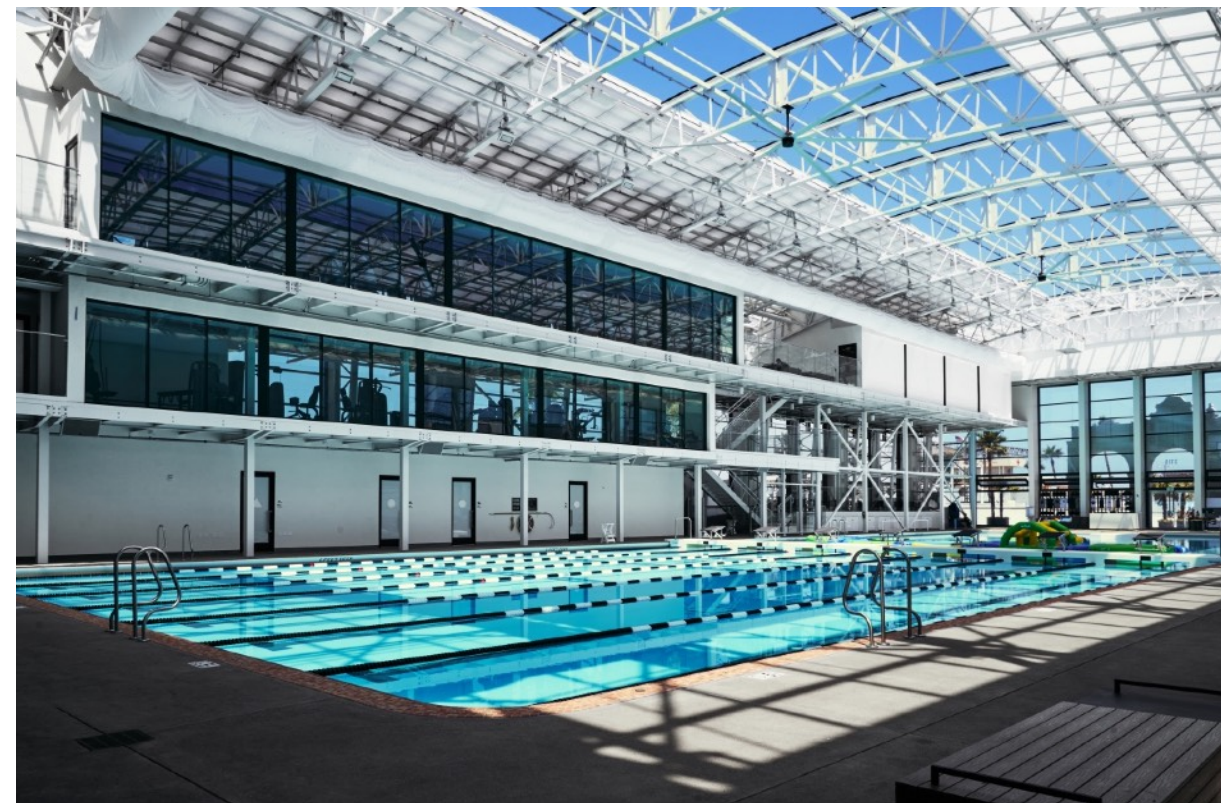
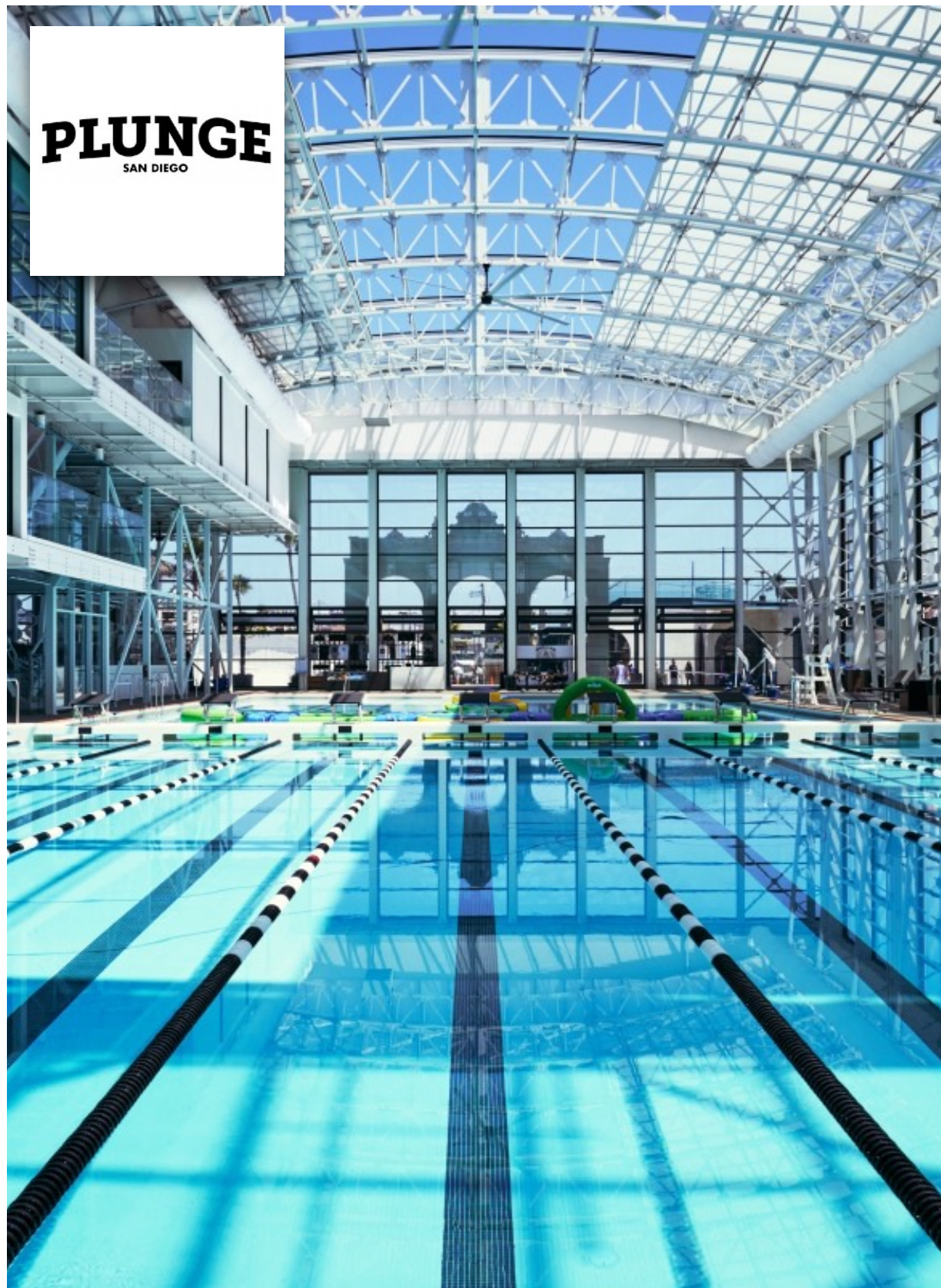
Morrisville Aquatic Center  
Morrisville, NC, USA





Morrisville Aquatic Center  
Morrisville, NC, USA





The Fit at Plunge Fitness Center  
San Diego, California





The Fit at Plunge Fitness Center  
San Diego, California





Roger Carter Community Center  
Ellicott City, MD





Batesville Community Center  
Batesville, Arkansas





Richmond Swim Center  
Richmond, California





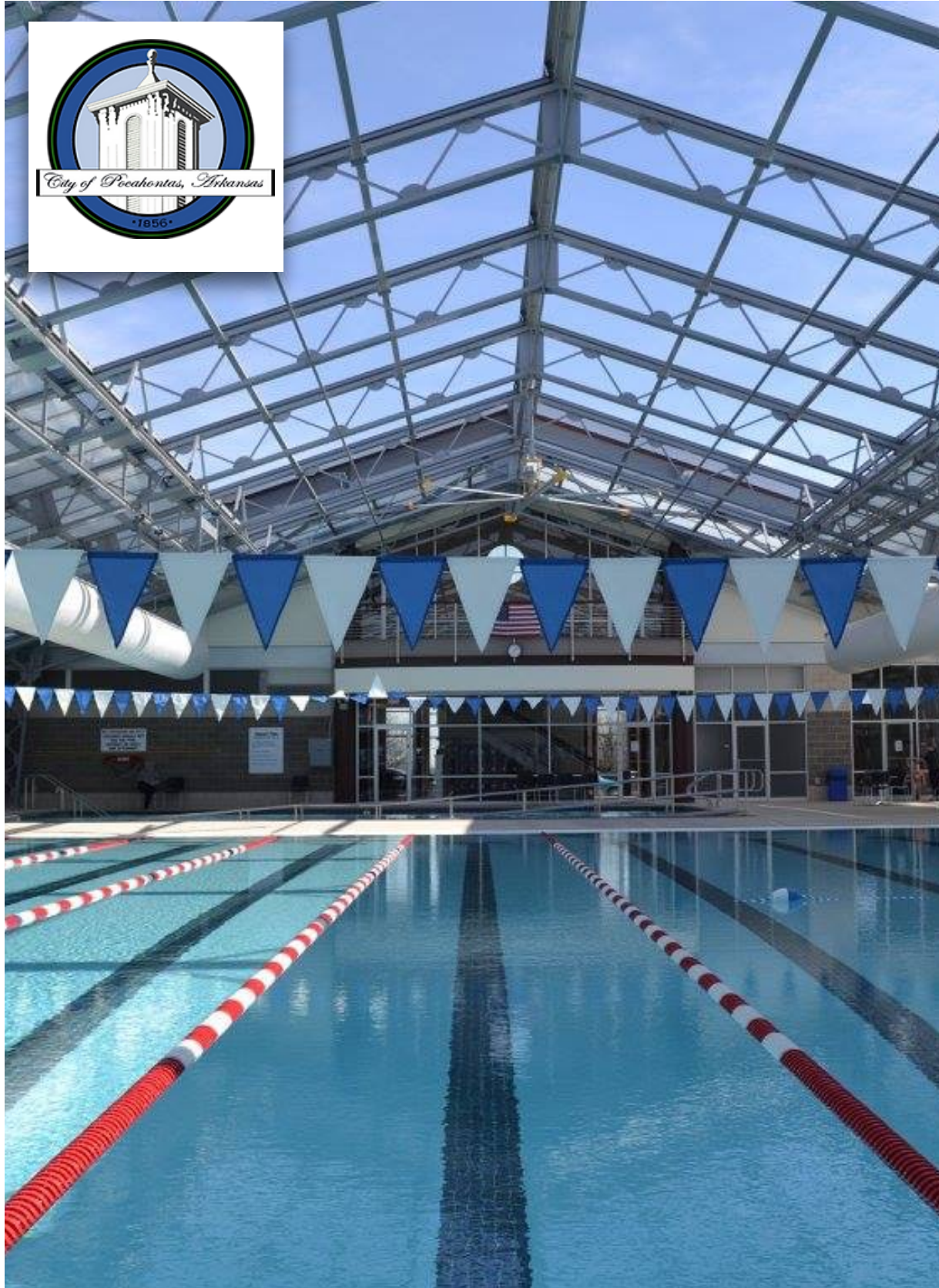
Richmond Swim Center  
Richmond, California





Boys & Girls Club Dorchester  
Dorchester MA





Pocahontas Aquatic Center  
Pocahontas, Arkansas





Aqua Vale Swimming & Fitness Centre  
Aylesbury, UK





Allan Witt Aquatic Complex  
Fairfield, California





Lompoc Aquatic Center  
Lompoc, California





Mike Shellito Indoor Pool & Central Park Fitness Center  
Roseville, California





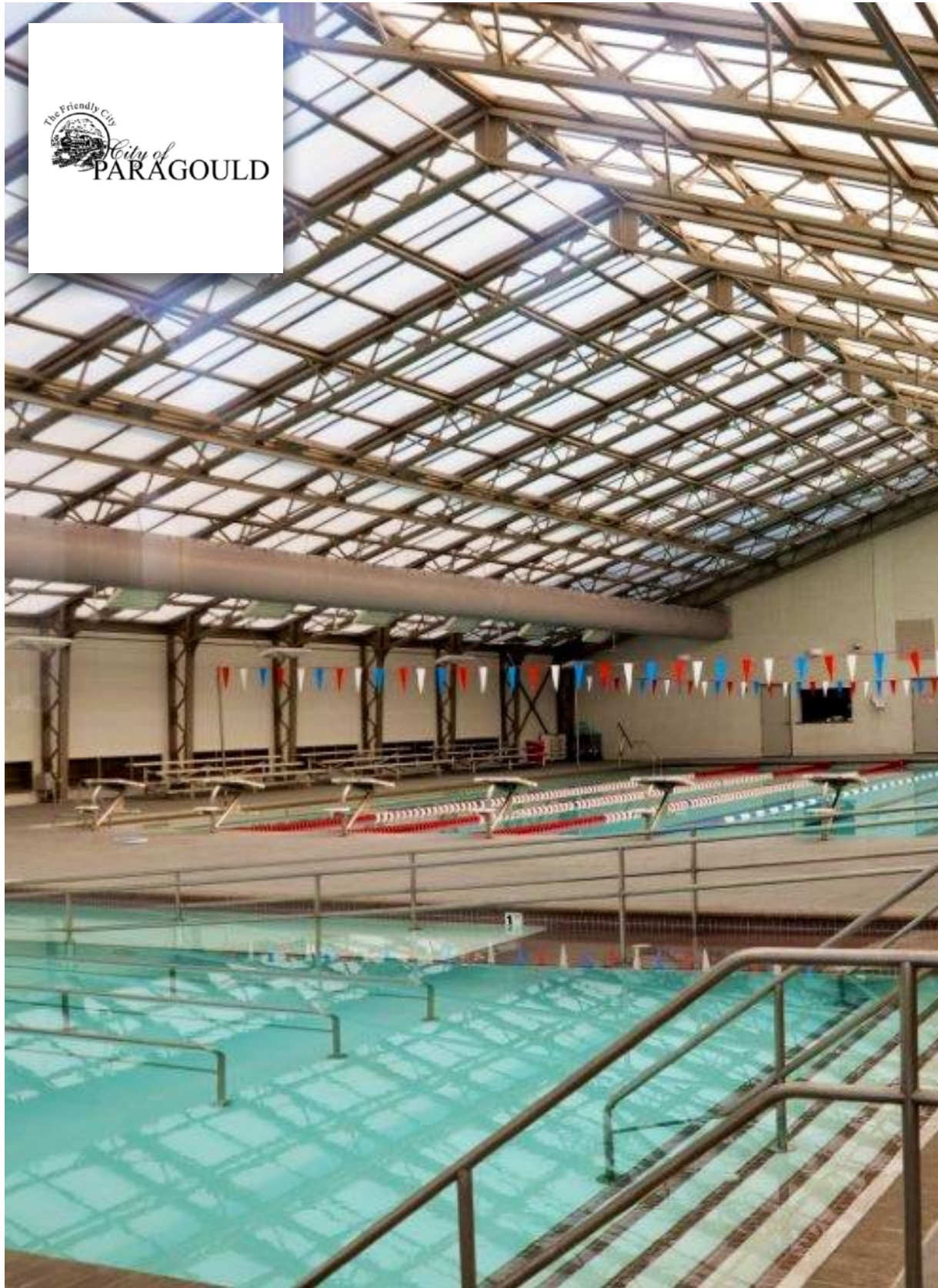
Clarksville Aquatic Center  
Clarksville, AR





Clarksville Aquatic Center  
Clarksville, AR





Paragould Community Center,  
Paragould, AR





YMCA





# YMCA Locations



Listed are just a few of the YMCA projects that OpenAire has completed. For projects & communities of all sizes.

- NEW: Georgette and Cato Johnson YMCA. Whitehaven, TN
  - Population 50,000
  - Aquatic Enclosure 18,800 sf
- Roy Blunt YMCA of Bolivar, Bolivar, MO
  - Population 10,325
  - Aquatic Enclosure 18,800 sf
- Clark County Family YMCA, Vancouver, WA
  - Population 161,791
  - Aquatic Enclosure 6,500 sf
  - (1 of 2 enclosures for Clark County YMCA)
- Woodruff Family YMCA, Milford, CT
  - Population 51, 271
  - Aquatic Enclosure 18,500 sf
- Chasco Family YMCA, Round Rock, Texas
  - Population 120,892
  - Aquatic Skylight 3,000 sf
- Salinas Aquatic Center, Salinas, CA
  - Population 150,441
  - Aquatic Enclosure 11,000 sf

- YMCA of San Diego County:\*\*

- Copley-Price Family YMCA, San Diego, CA
  - Population 1.4 m
  - Aquatic Enclosure 6,900 sf
- Magdalena Ecke Family YMCA, Encinitas, CA
  - Population 63,131
  - Aquatic Enclosure 14,100 sf
- McGrath Family YMCA, Spring Valley, CA
  - Population 28,205
  - Aquatic Enclosure 8,100 sf
- Mission Valley YMCA, San Diego, CA
  - Population 1.4 m
  - Aquatic Enclosure 7,400 sf
  - Original Enclosure plus later expansion
- Toby Wells YMCA, San Diego, CA
  - Population 1.4 m
  - Aquatic Enclosure 11,600 sf

\*\* There are 17 YMCA locations within the San Diego County YMCA group





Georgette and Cato Johnson YMCA  
Whitehaven, Memphis, TN





Georgette and Cato Johnson YMCA  
Whitehaven, Memphis, TN





Salinas Aquatic Center  
Fresno, California





Salinas Municipal Aquatic Center  
Fresno, California





Scheu Family YMCA of Upland  
Upland CA





Copley-Price Family YMCA  
San Diego, California





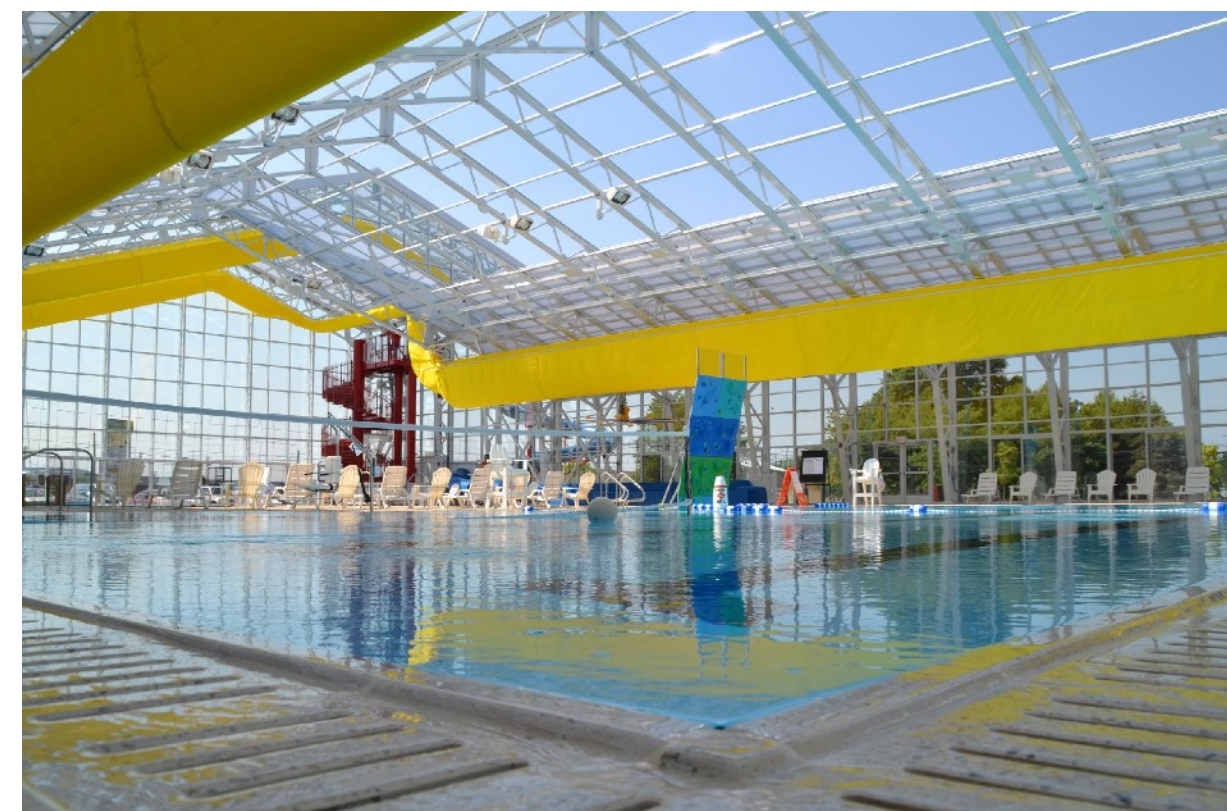
Copley-Price Family YMCA  
San Diego, California





Clark County Family YMCA  
Vancouver, WA





Roy Blunt YMCA of Bolivar  
Bolivar, MO





Roy Blunt YMCA of Bolivar  
Bolivar, MO





Toby Wells YMCA,  
San Diego, California





Toby Wells YMCA  
San Diego, California





Mission Valley YMCA  
San Diego, California





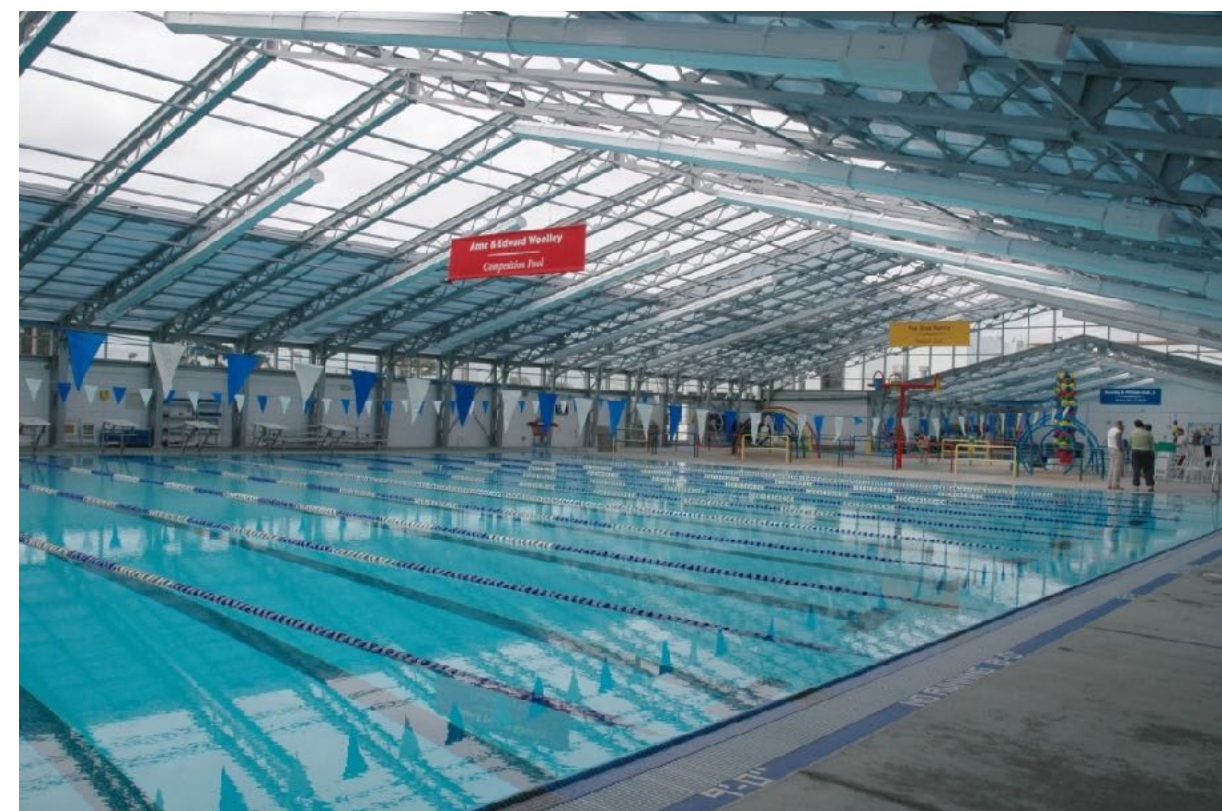
McGrath Family YMCA  
San Diego, California





Magdalena Ecke Family YMCA  
Encinitas, CA





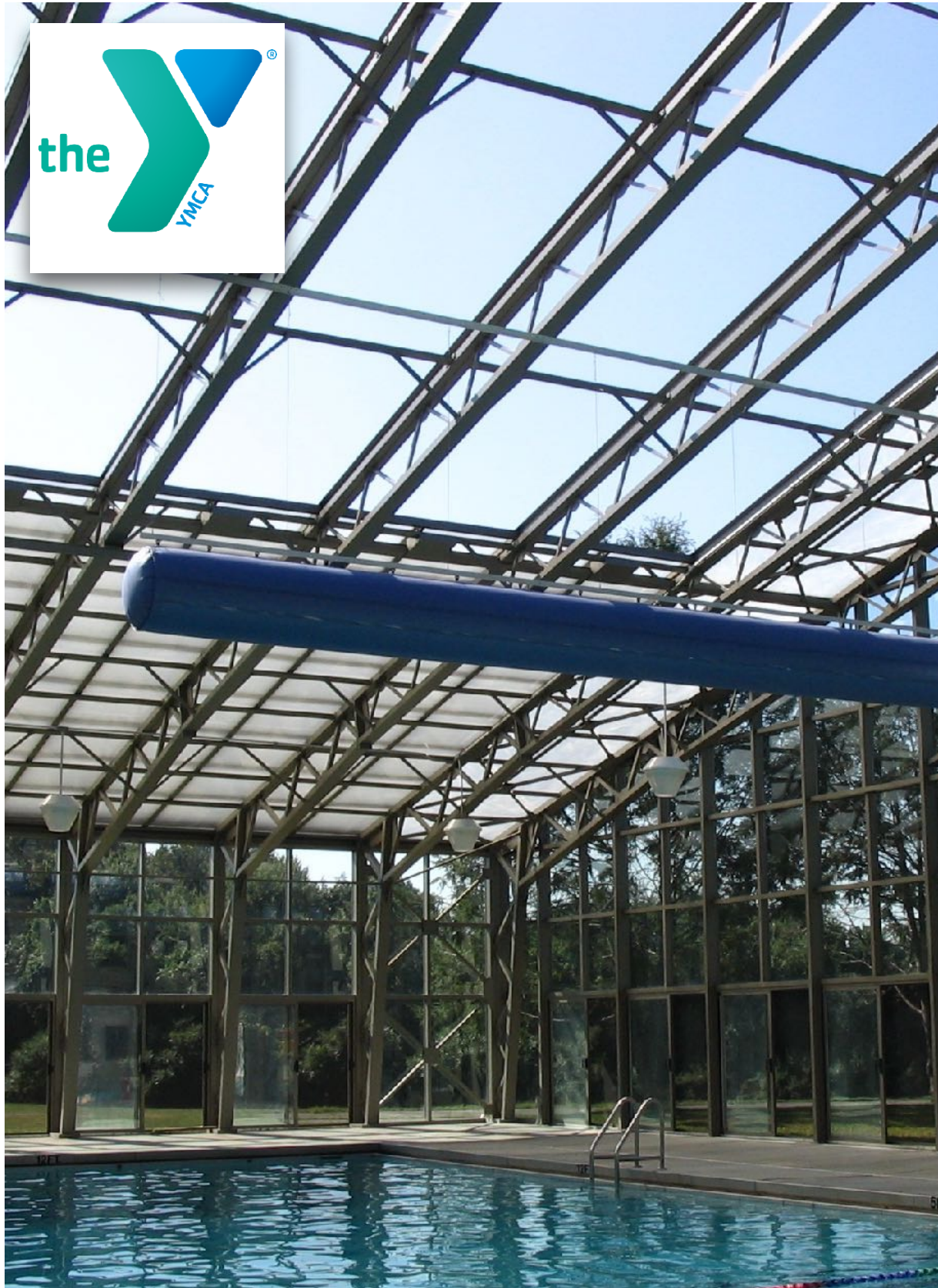
Magdalena Ecke Family YMCA  
Encinitas, CA





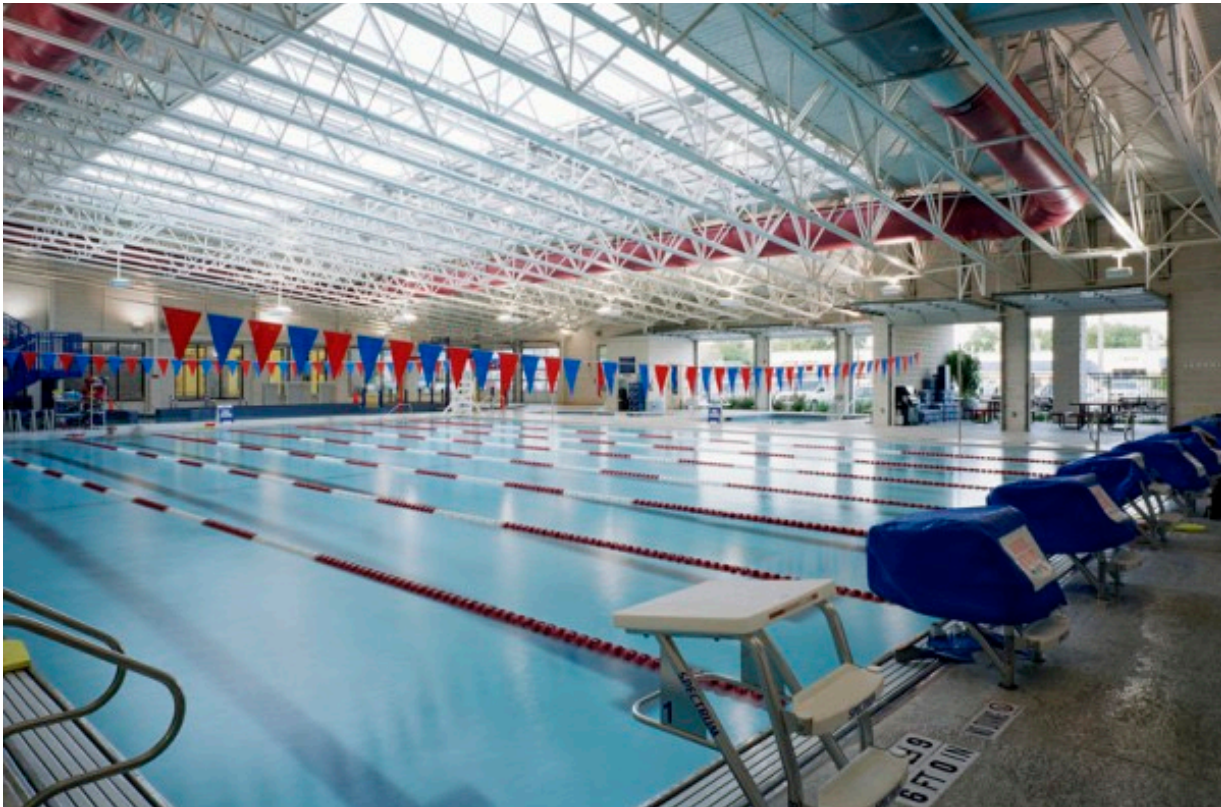
Woodruff Family YMCA  
Milford, CT





Woodruff Family YMCA  
Milford, CT





Chasco Family YMCA  
Round Rock, TX



# Health & Sport (Private)







Lincoln Crossing Clubhouse  
Lincoln Crossing, CA





Lincoln Crossing Clubhouse  
Lincoln Crossing, CA





Lincoln Crossing Clubhouse  
Lincoln Crossing, CA





Saarland Therme Resort, Fitness, Spa  
Rilchingen, Germany





Saarland Therme Resort, Fitness, Spa  
Rilchingen, Germany





Ontario Racquet Club : Private Members Club  
Oakville, Ontario, Canada





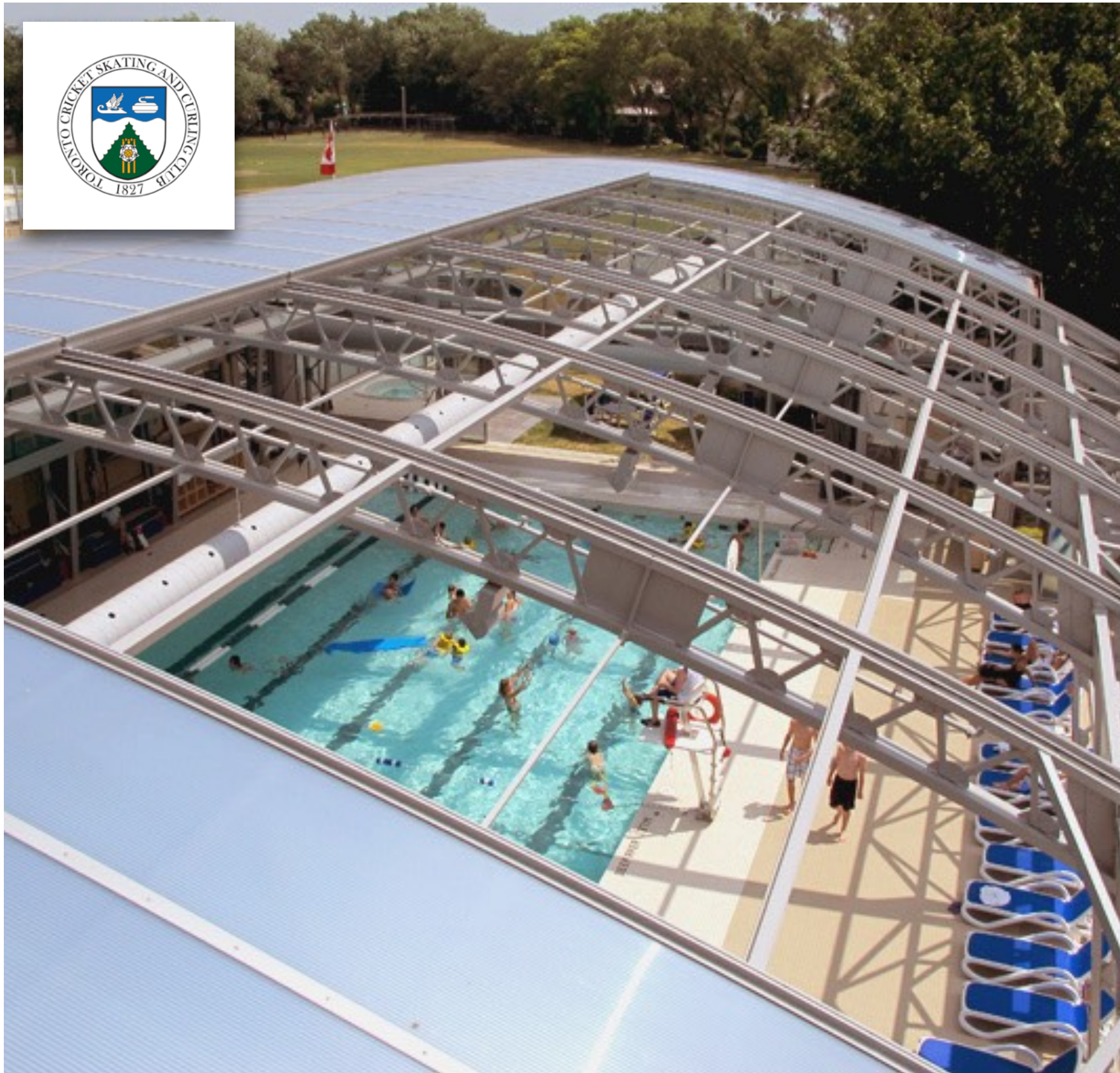
Ontario Racquet Club : Private Members Club  
Oakville, Ontario, Canada





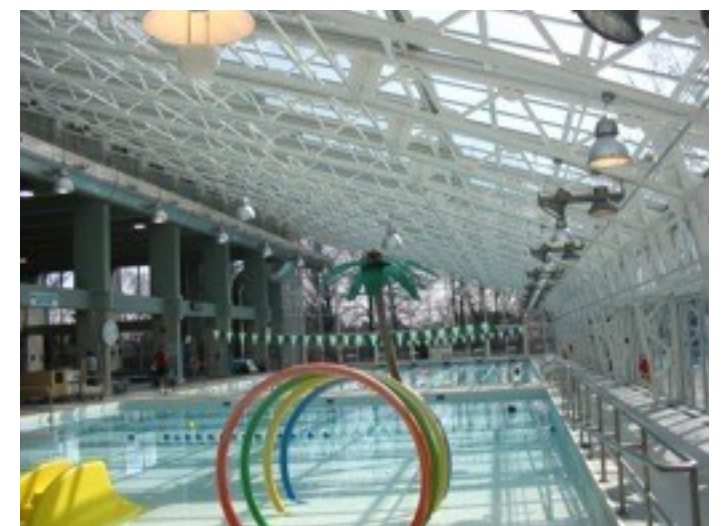
Stock Brook Manor: Private Members Club  
Essex, UK





The Cricket Club: Private Members Club  
Toronto, Ontario, Canada





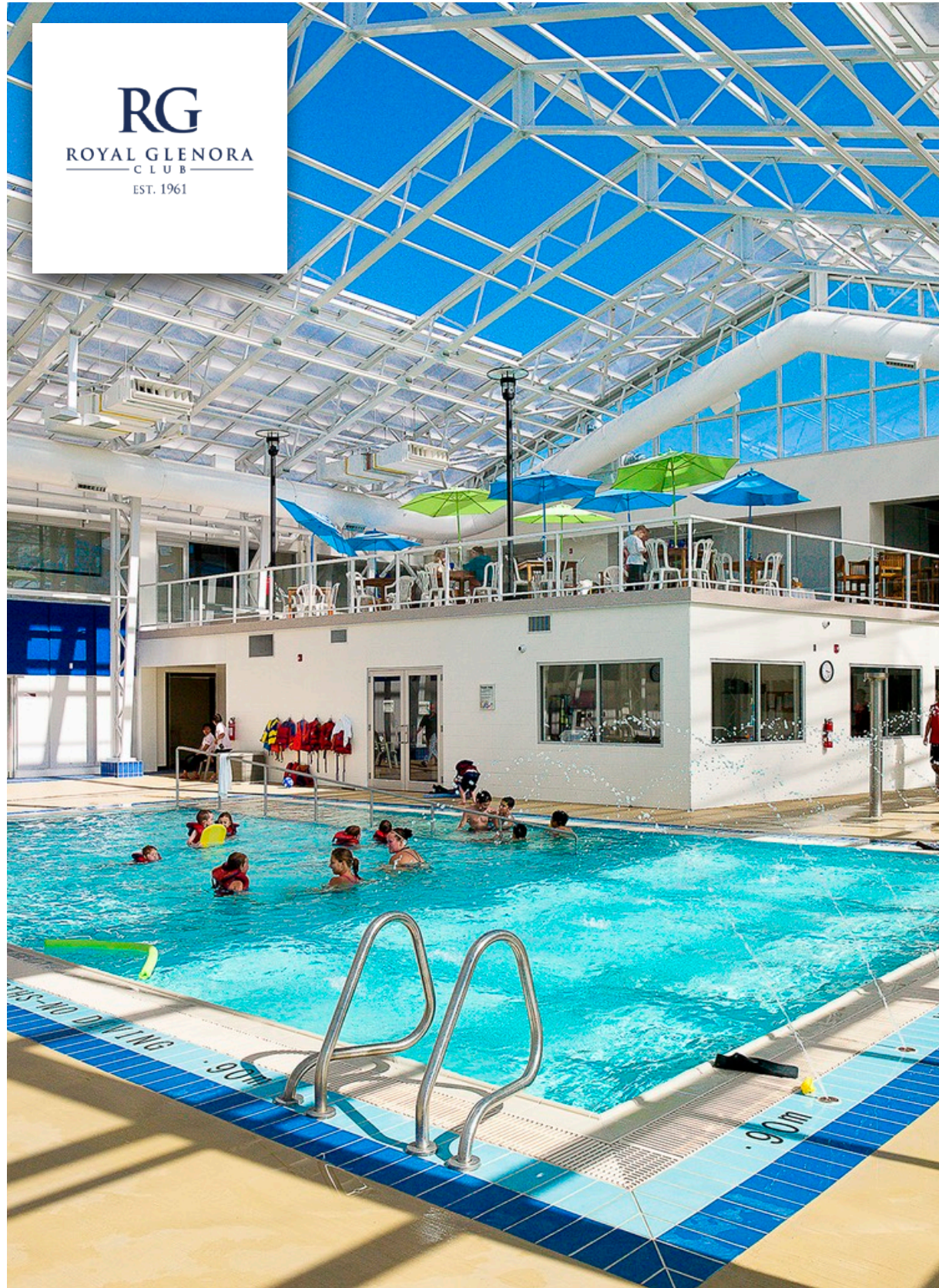
The Granite Club: Private Members Club  
Toronto, Ontario, Canada





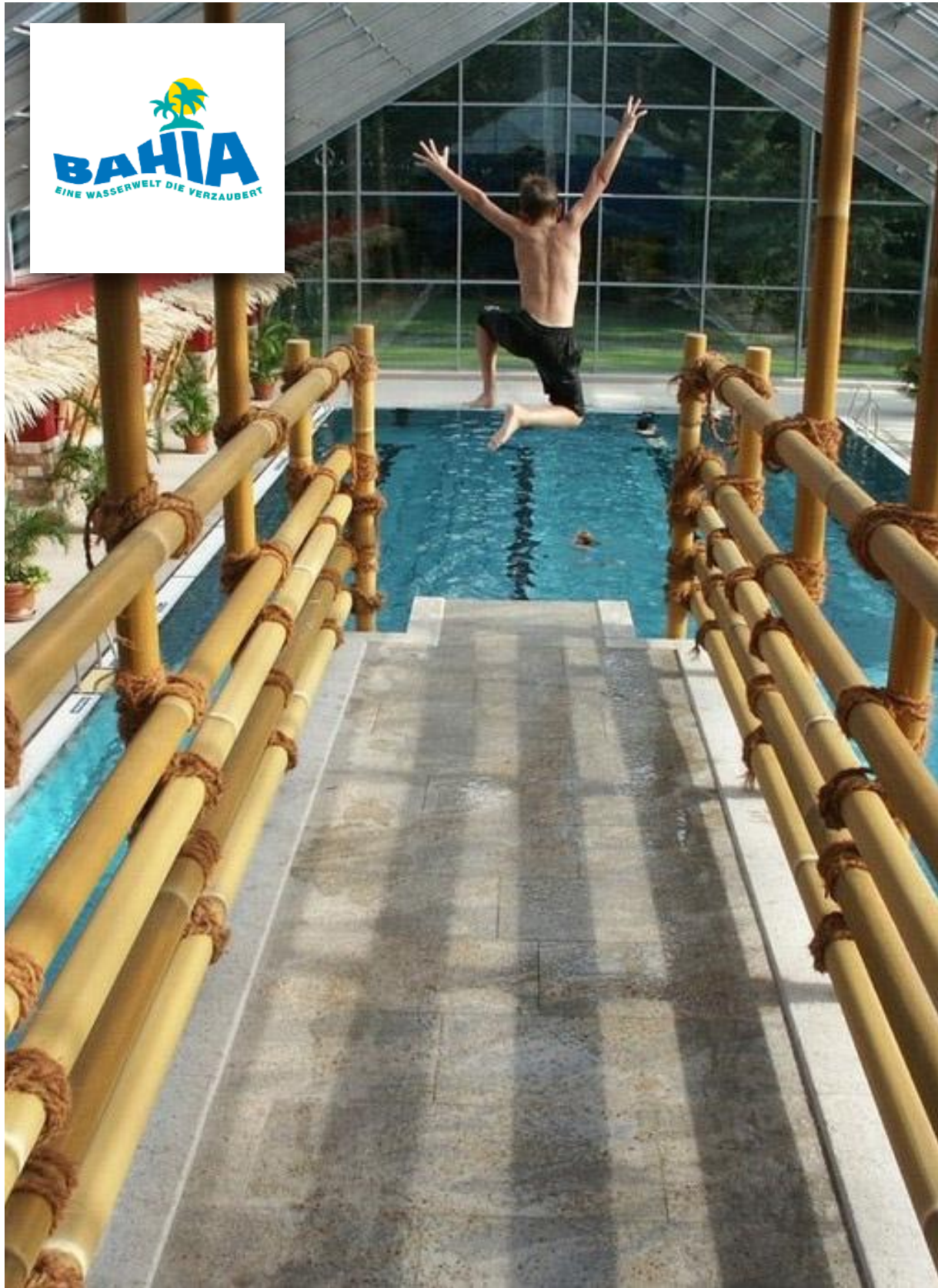
Golds Gym  
Carrolton, GA





Royal Glenora Health Club  
Edmonton, Alberta





Inselbad Bahia  
Bolchod, Germany





Hockessin Athletic Club & Wellness Center  
Hockessin, Delaware



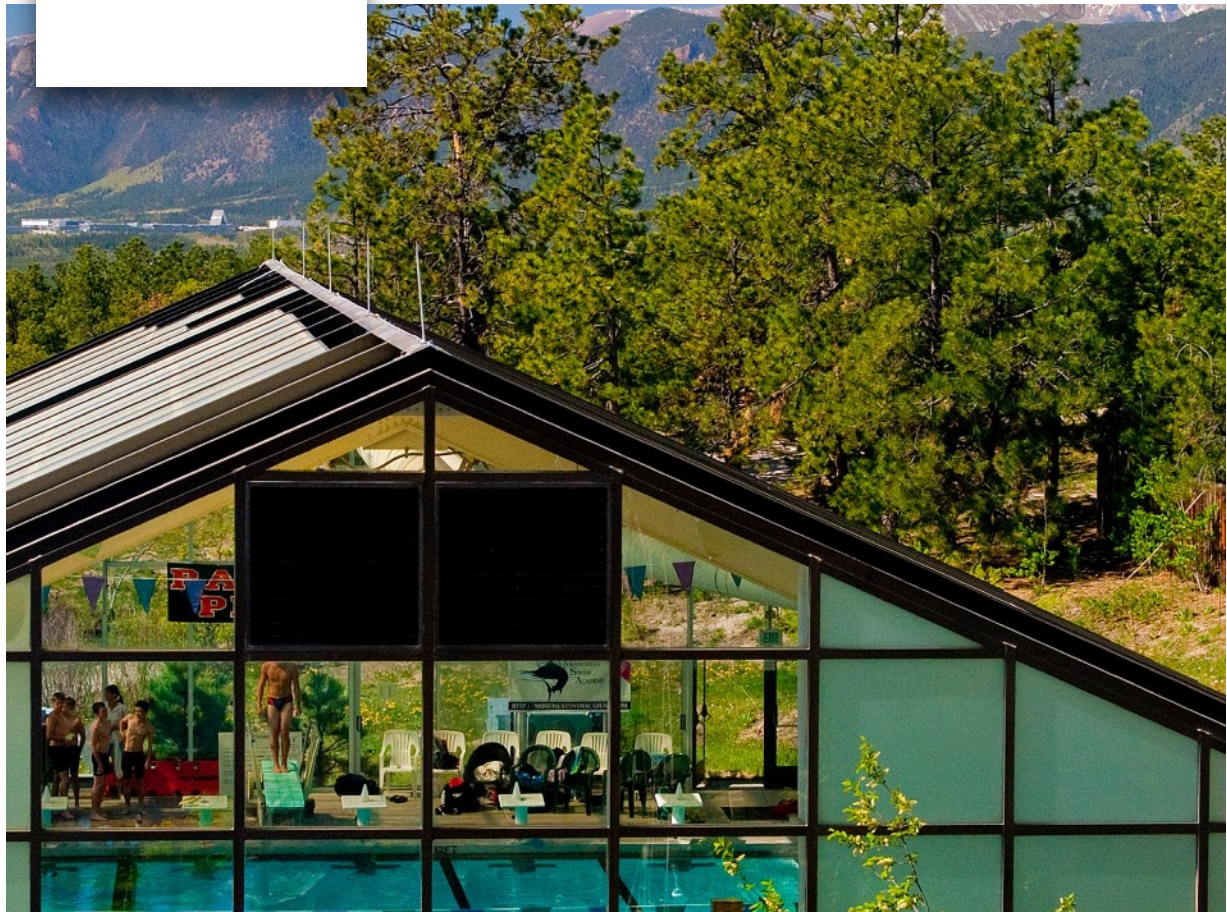


ALMADEN VALLEY  
ATHLETIC CLUB



Almaden Valley Athletic Club  
San Jose, California





The Country Club at Woodmoor  
Monument, Colorado





The Country Club at Woodmoor  
Monument, Colorado



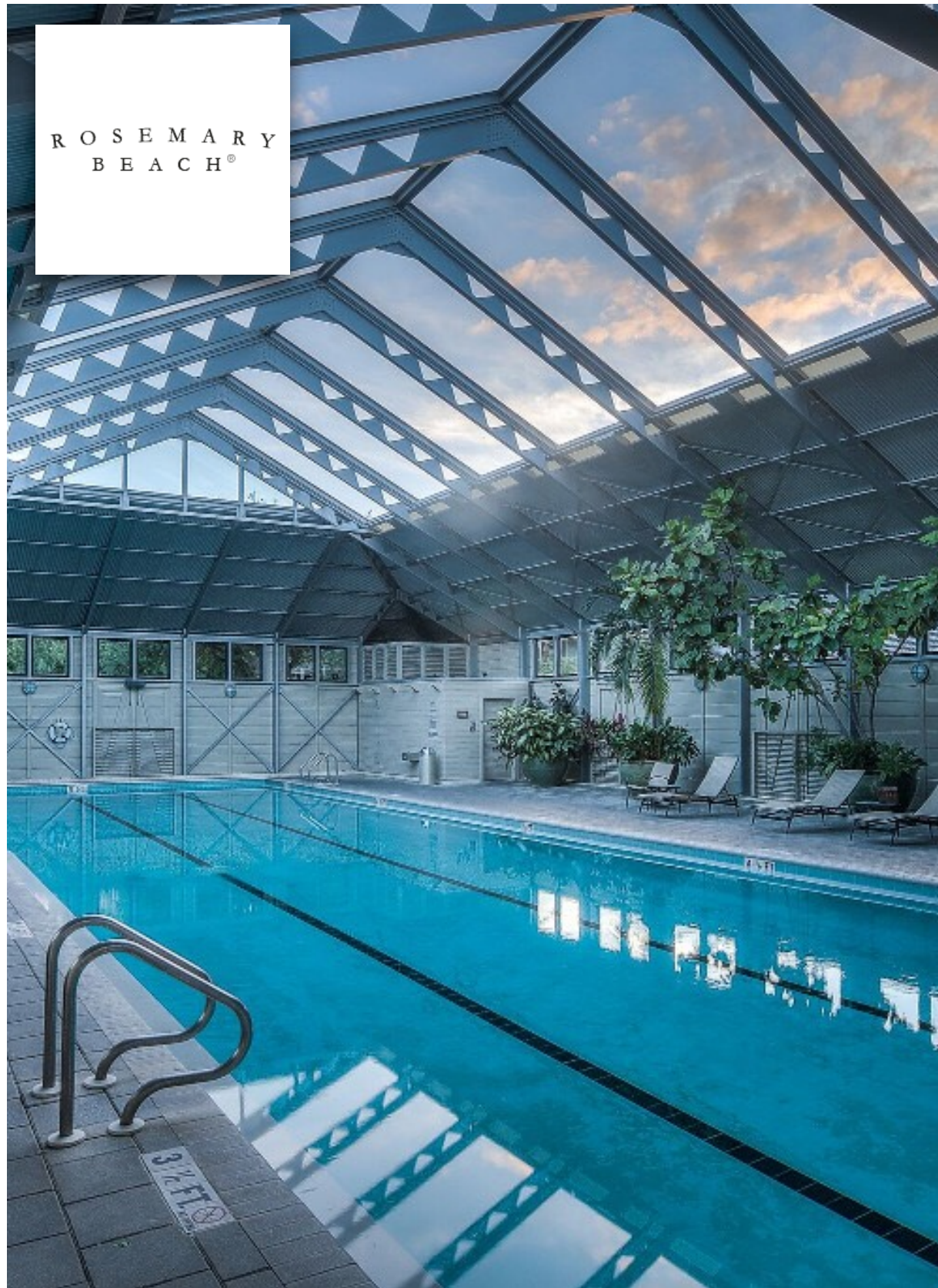


Wilson's Fitness Centre  
Columbia Missouri









Rosemary Beach Clubhouse  
Panama City, Florida



Athletic  
Non Aquatic



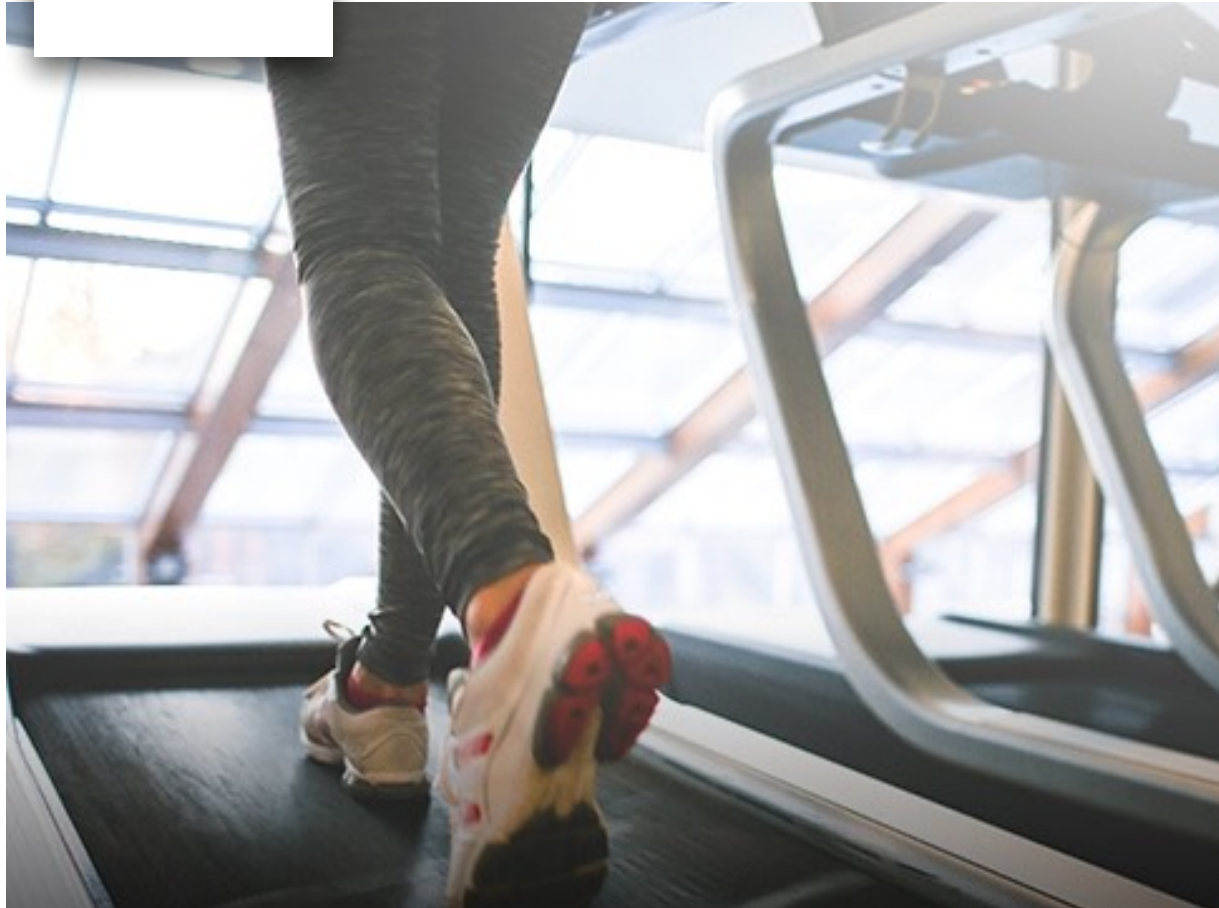




Anatomy Fitness: 3080 Yonge St  
Toronto, Ontario



**ANATOMY**  
FITNESS



Anatomy Fitness: 3080 Yonge St  
Toronto, Ontario





This Complex includes a operable Windows for the fitness studios plus the retractable roof over the pool

Fit Mission Beach at Plunge San Diego  
Belmont Park, San Diego, California





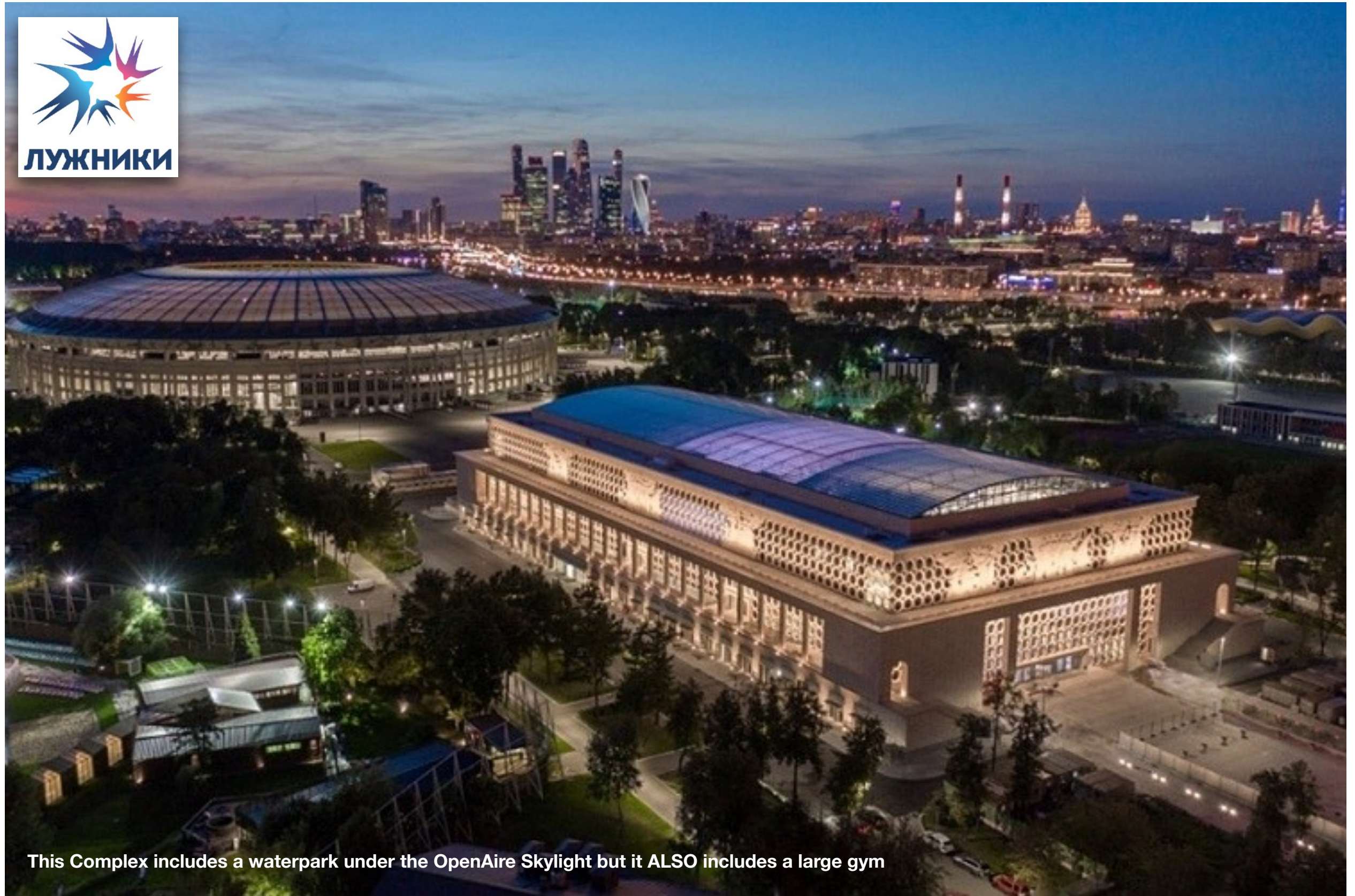
Fit Mission Beach at Plunge San Diego  
Belmont Park, San Diego, California





Fit Mission Beach at Plunge San Diego  
Belmont Park, San Diego, California





This Complex includes a waterpark under the OpenAire Skylight but it ALSO includes a large gym

Luhzniki Mixed Use Sports Complex  
Moscow, Russia





Luhzniki Mixed Use Sports Complex  
Moscow, Russia





Luhzniki Mixed Use Sports Complex  
Moscow, Russia





Sports Viewing Complex  
United Arab Emirates (UAE)





Underground Dance Academy  
Toronto, Ontario

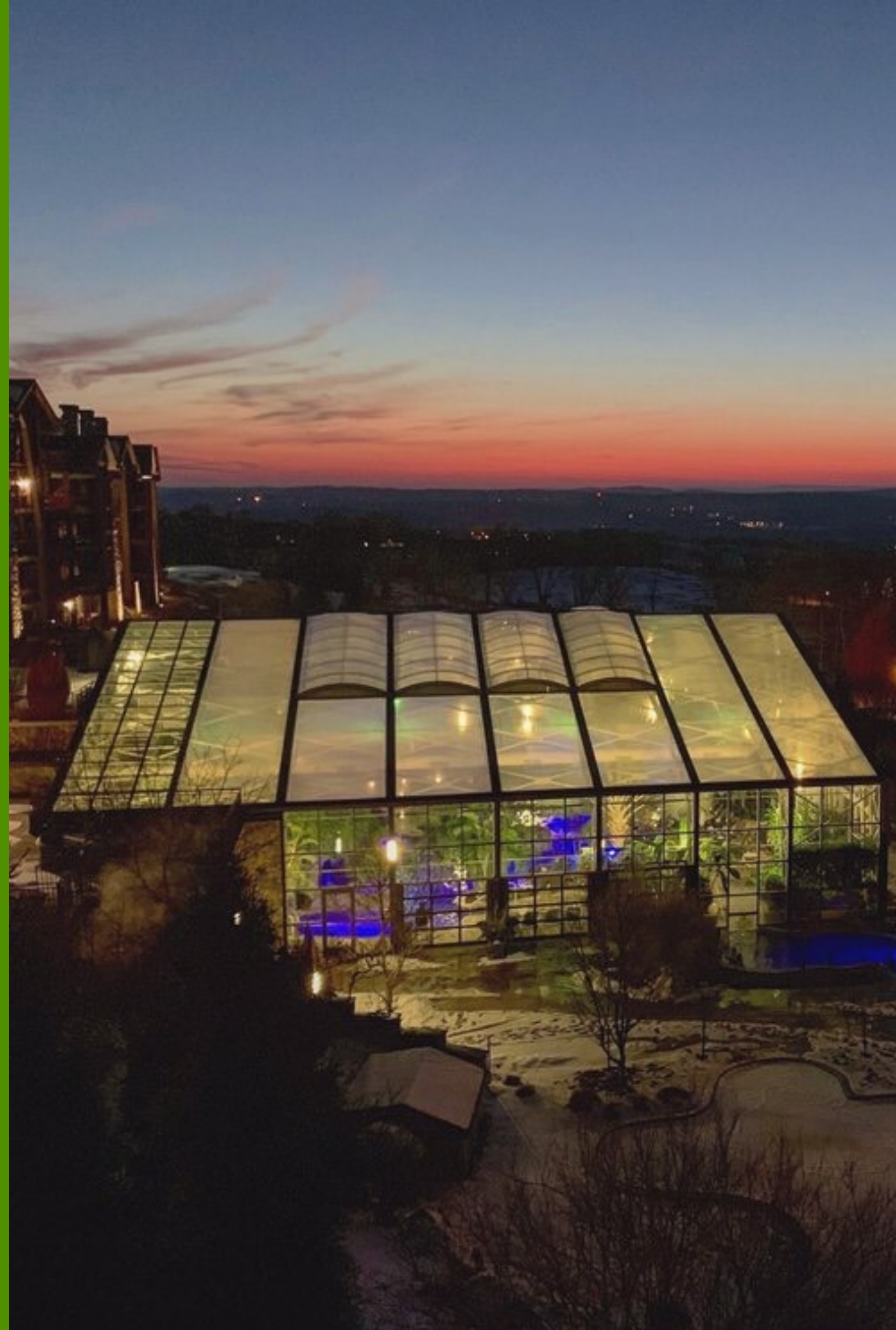




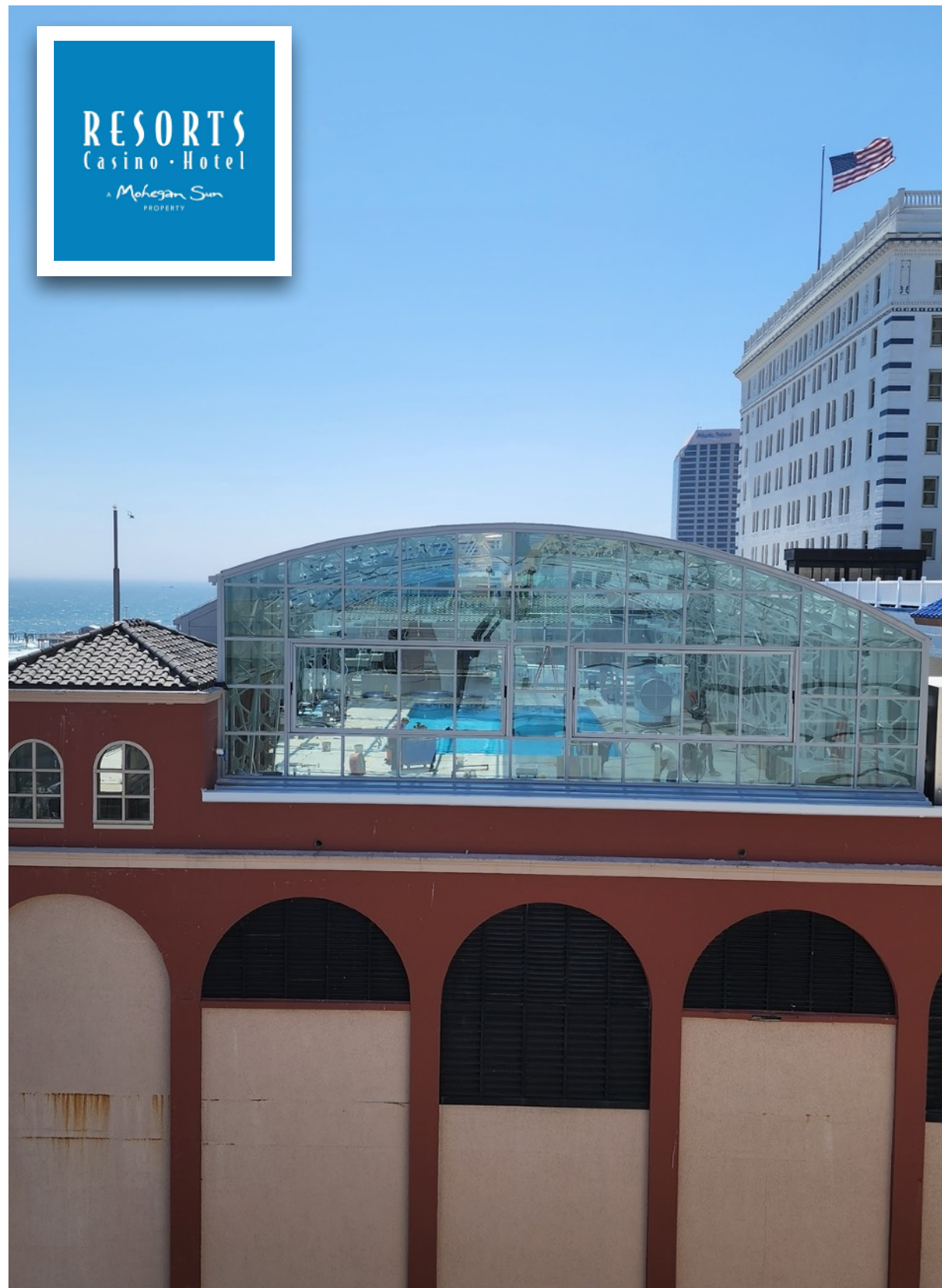
Moxy Hotel by Marriott - Rooftop Yoga Space  
Washington DC



Hotels/Resorts  
Casinos  
Camp Grounds  
RV Parks







Resorts Casino; Rooftop Pool  
Atlantic City, New Jersey





Resorts Casino; Rooftop Pool  
Atlantic City, New Jersey





Resorts Casino; Rooftop Pool  
Atlantic City, New Jersey





Sites: 179

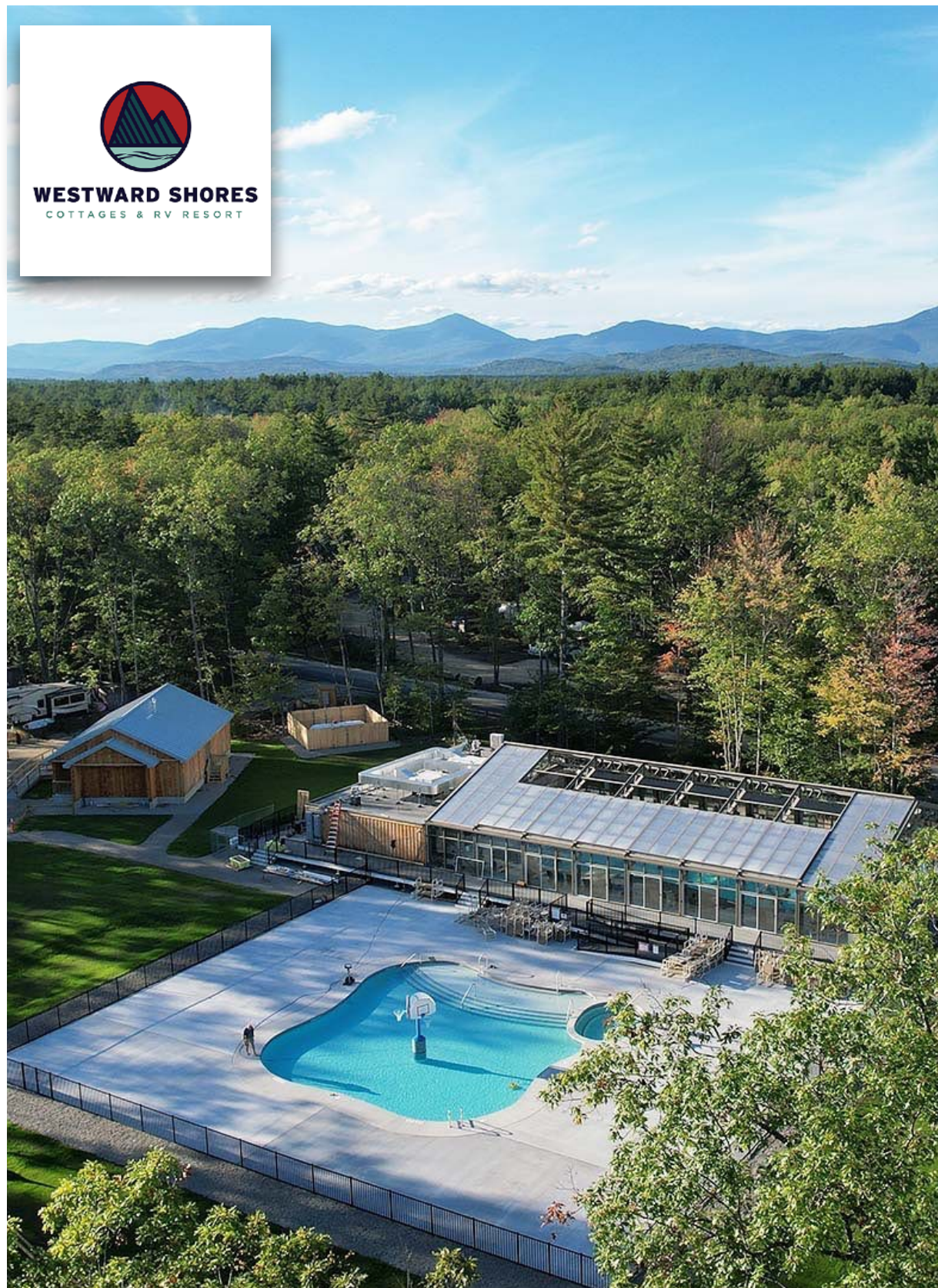




Sites: 179

Duck Creek RV Resorts  
Muskegon, Michigan





Westward Shores Cottages and RV Resort  
Ossipee NH





**WESTWARD SHORES**  
COTTAGES & RV RESORT



Westward Shores Cottages and RV Resort  
Ossipee NH



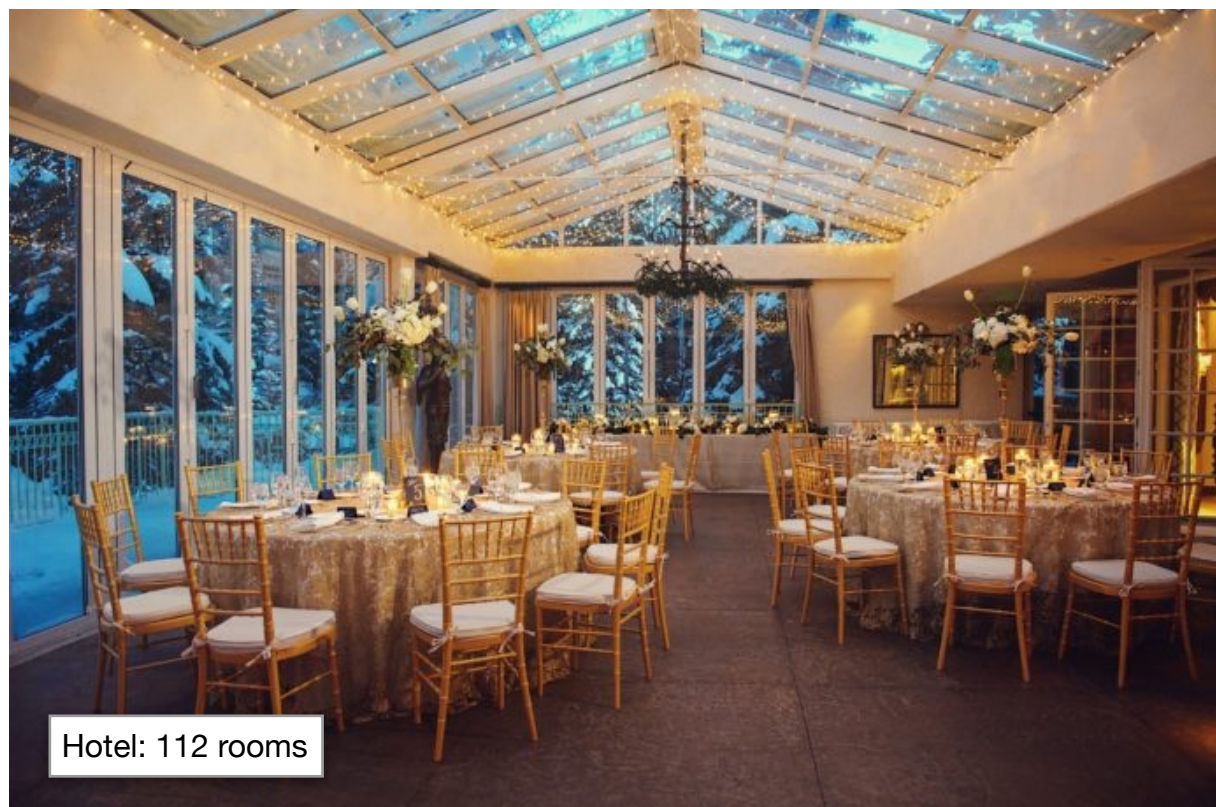


Hotel: 112 rooms



Ludwig's at Sonnenalp Hotel  
Vail Colorado





Ludwig's at Sonnenalp Hotel  
Vail Colorado





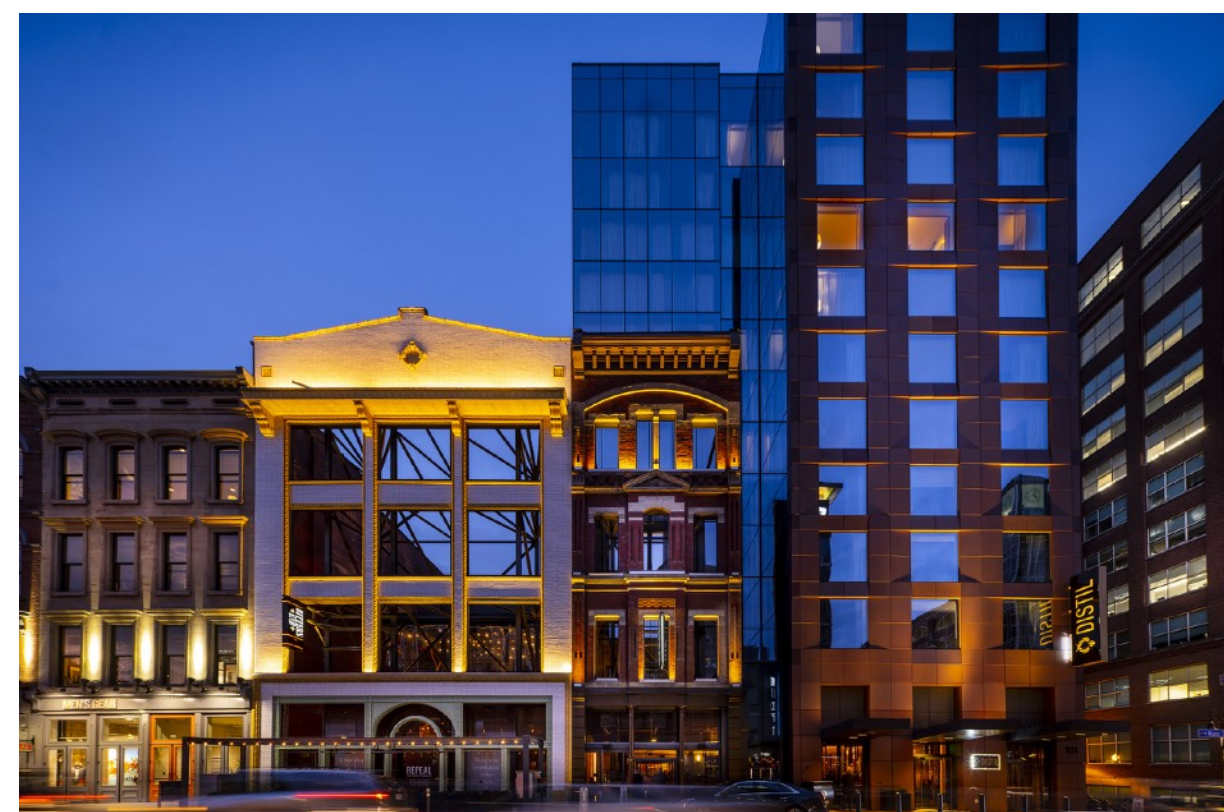
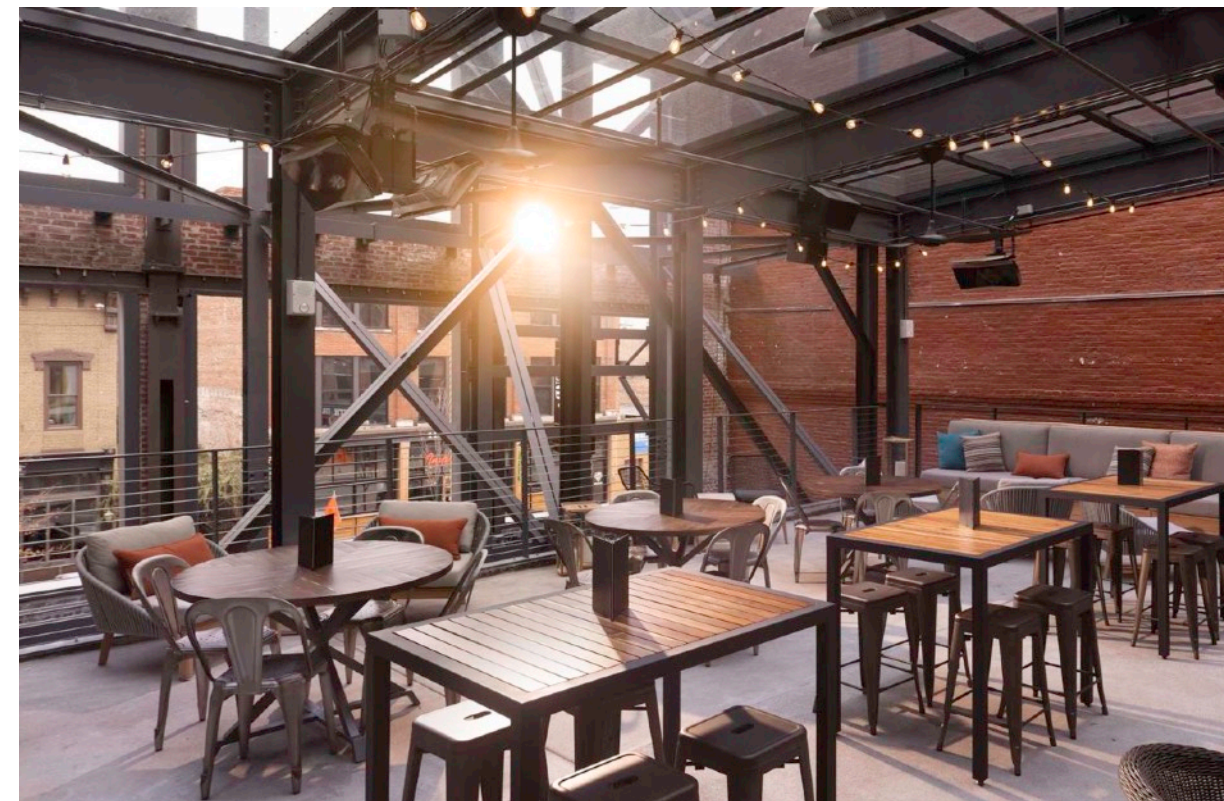
Hotel: 156 rooms





Westin Bear Mountain Resort  
Victoria BC



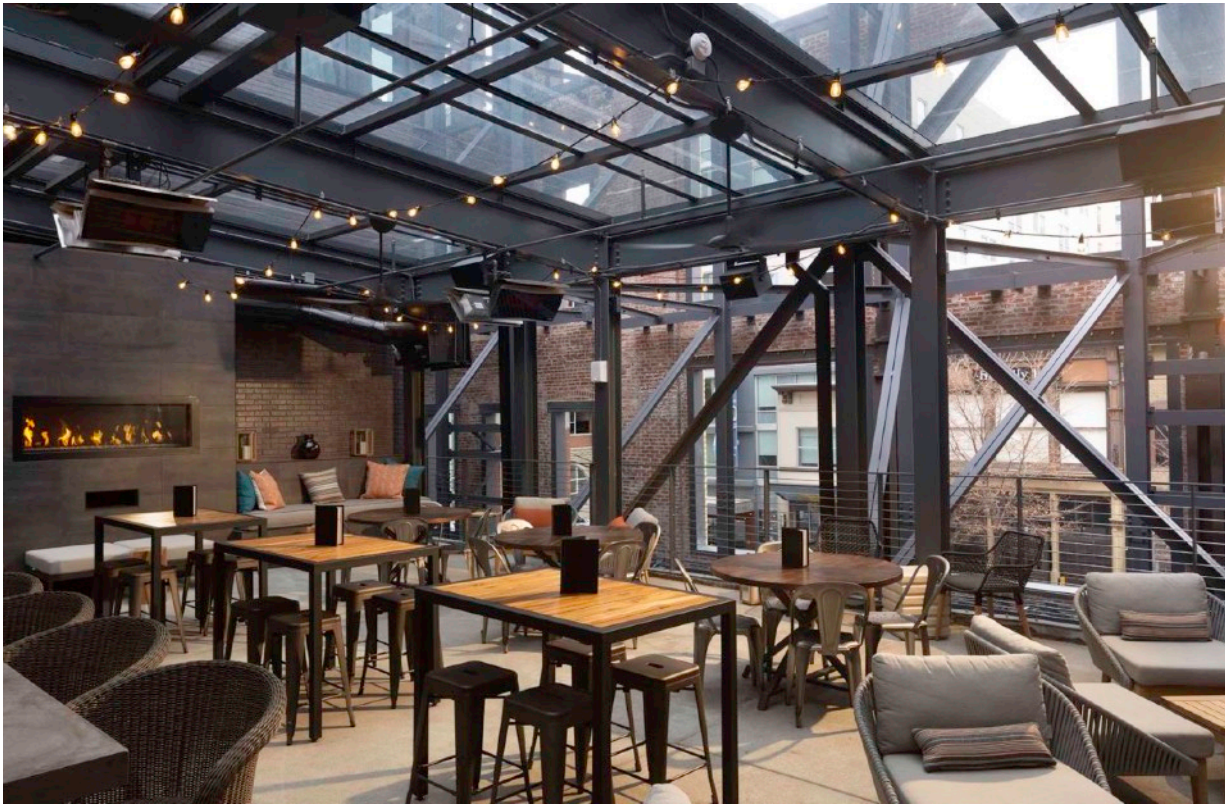


Bitters End @ Hotel Distil and Moxy Louisville  
Louisville, Kentucky



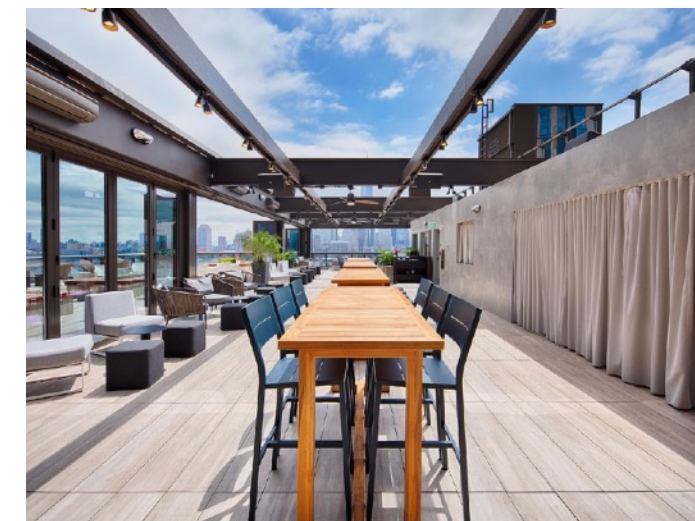


Hotel: 205 rooms



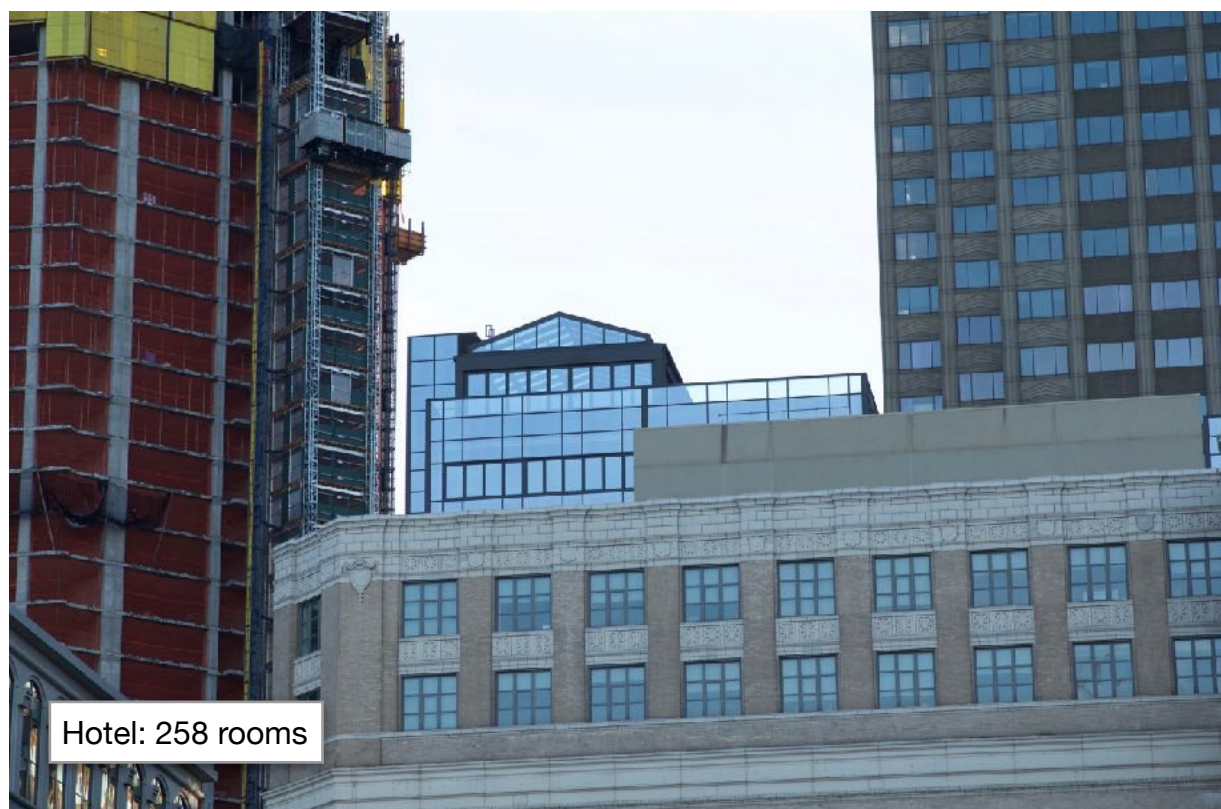
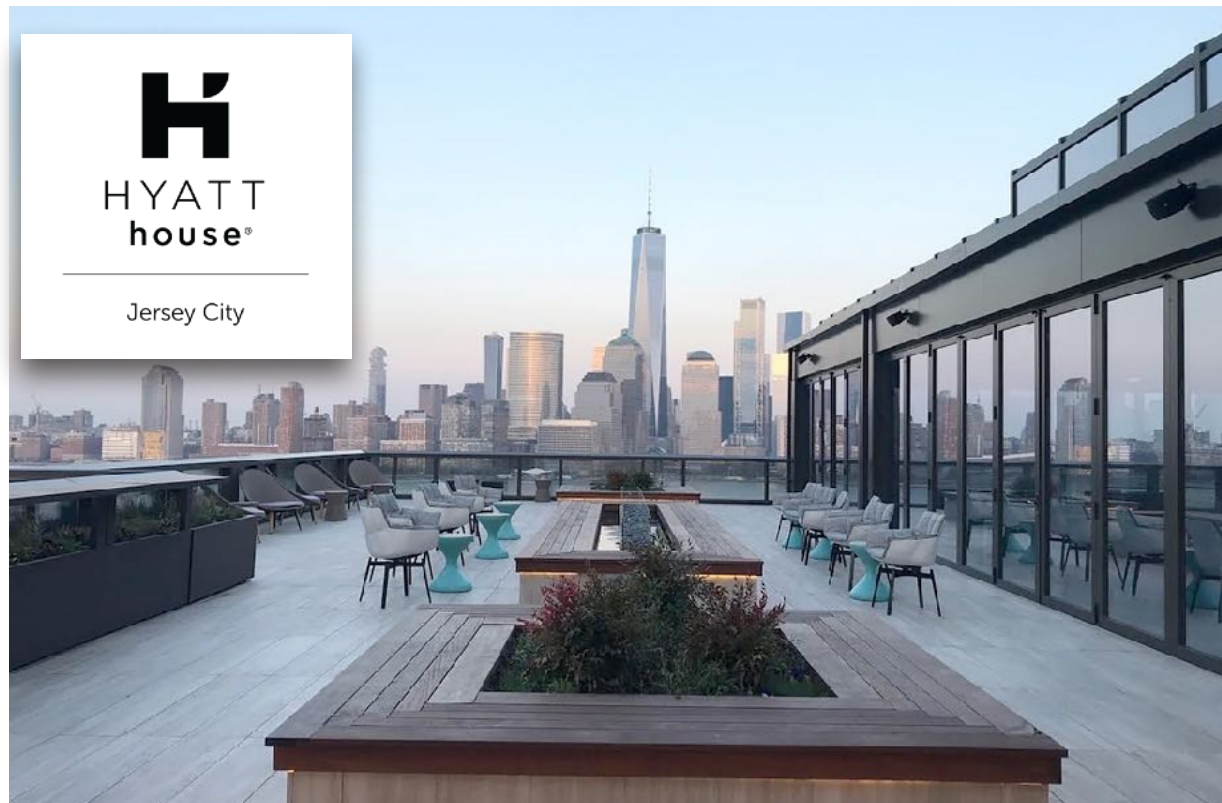
Bitters End @ Hotel Distil and Moxy Louisville  
Louisville, Kentucky





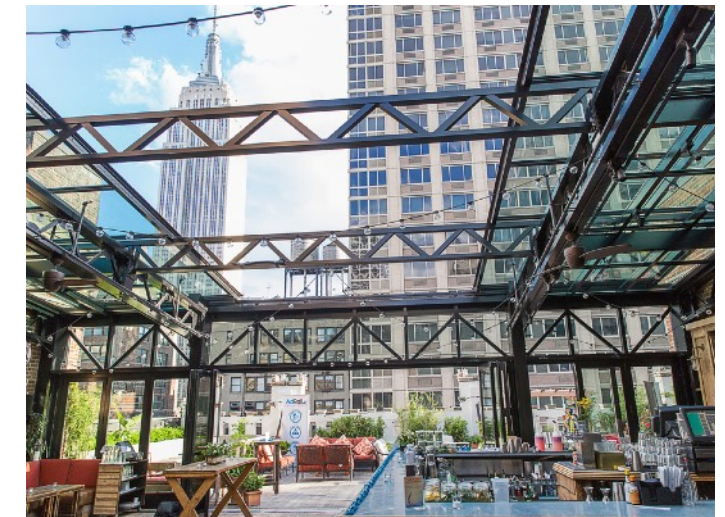
Hyatt House Rooftop Bar/Lounge  
Jersey City, New Jersey





Hyatt House Rooftop Bar/Lounge  
Jersey City, New Jersey





Refinery Hotel: Rooftop Patio  
New York City, New York





Hotel: 200 rooms

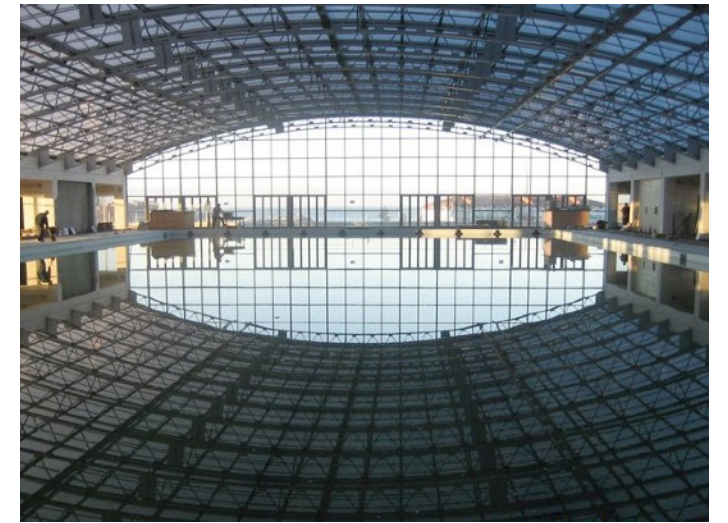


Moxy Hotel by Marriott - Rooftop Yoga Space  
Washington DC





Hotel: 42 rooms



Mardi Plaza Hotel; Batumi Plaza  
Adjara, Republic of Georgia





Mardi Plaza Hotel; Batumi Plaza  
Adjara, Republic of Georgia









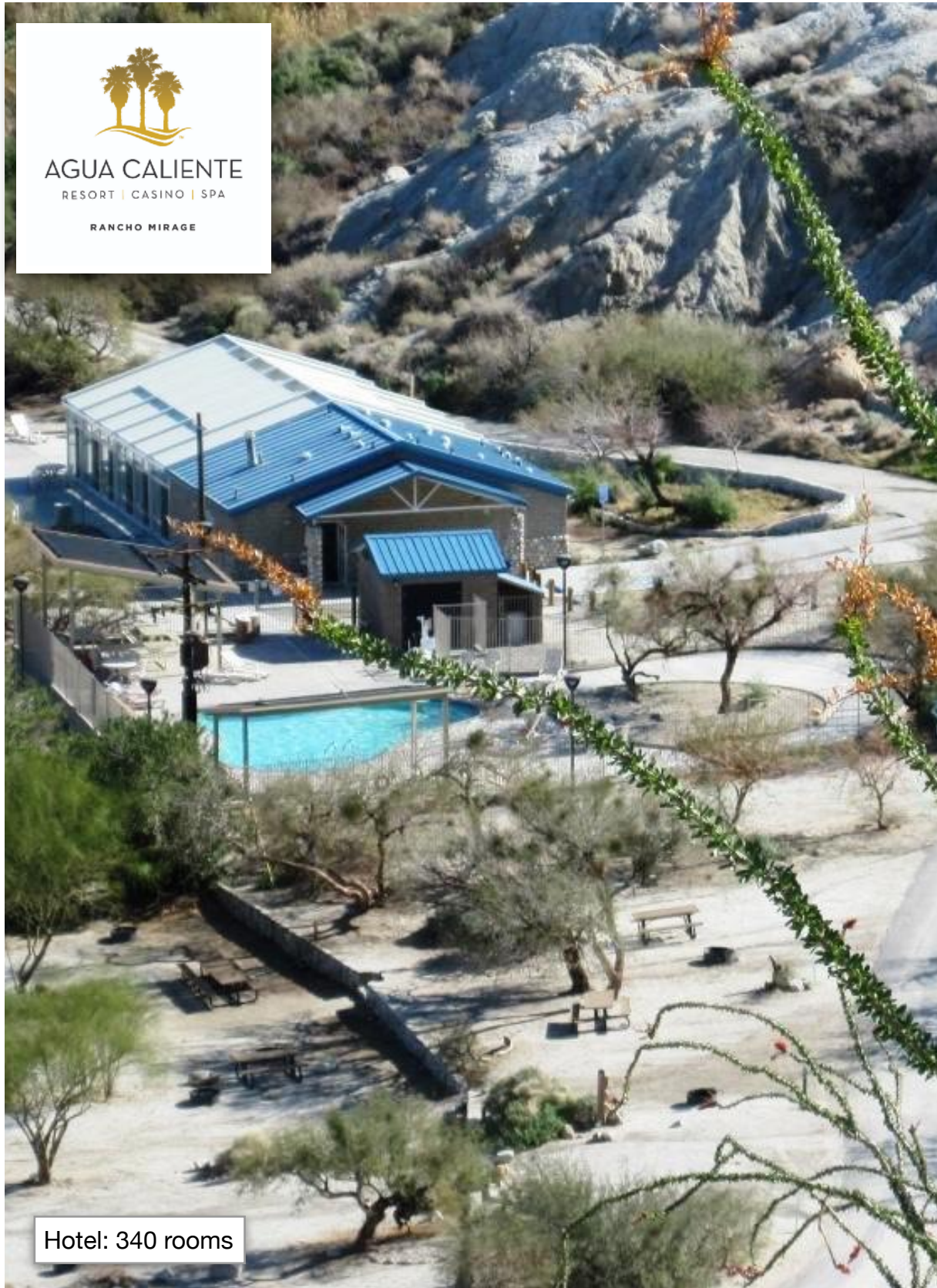
Grand Cascades Lodge - Crystal Springs Resort  
Hamburg NJ





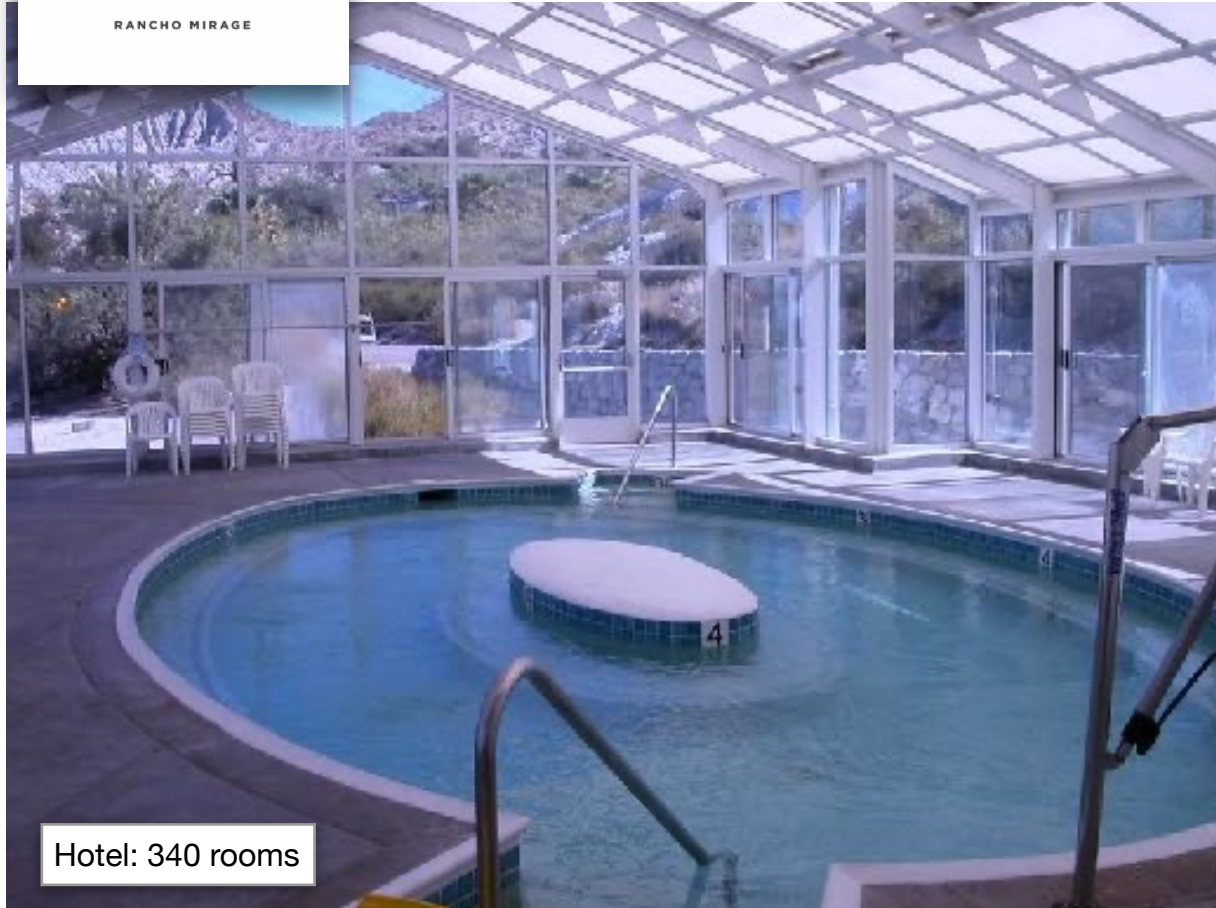
Grand Cascades Lodge - Crystal Springs Resort  
Hamburg NJ





Agua Caliente Casino Resort  
Rancho Mirage, California





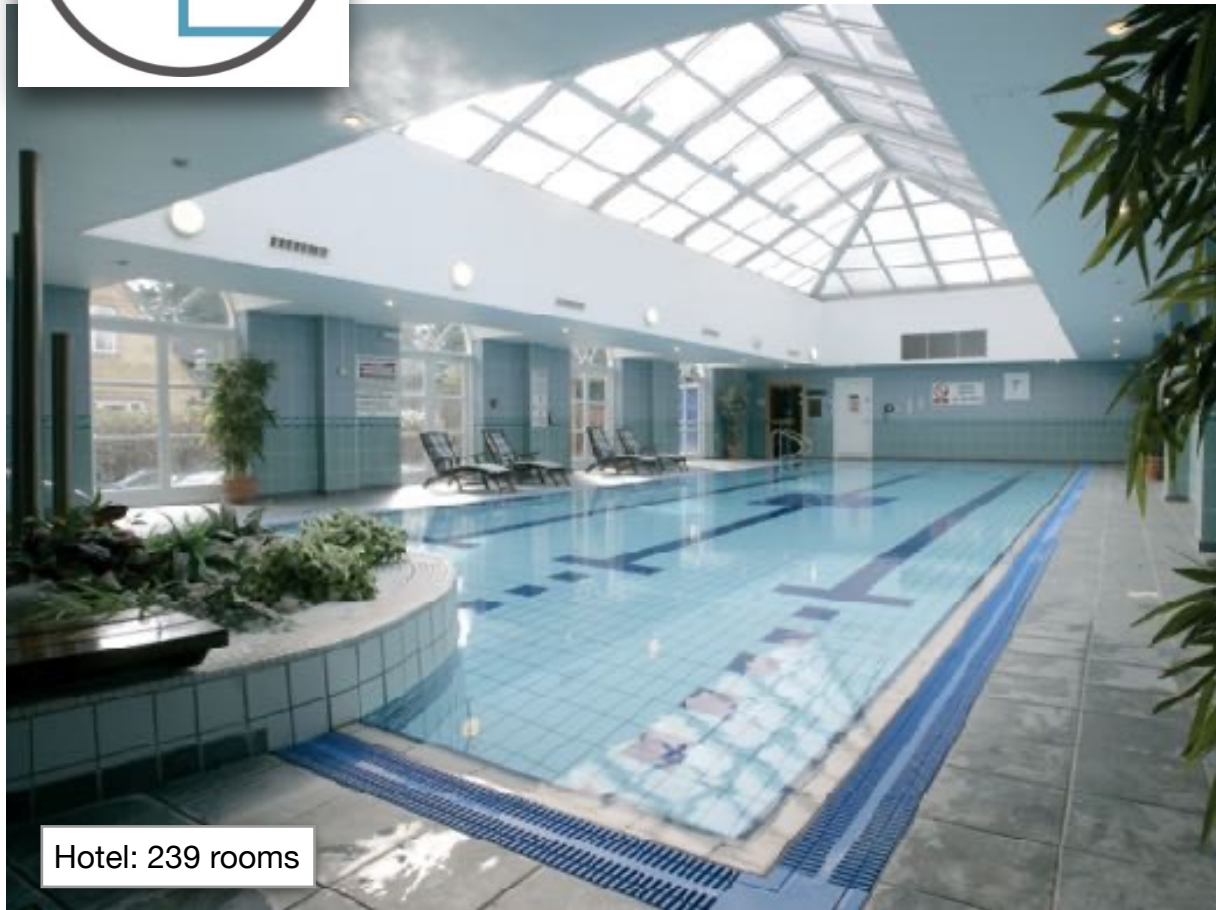
Agua Caliente Casino Resort  
Rancho Mirage, California





Cricket St. Thomas Hotel and Leisure Club  
Somerset, UK





Cricket St. Thomas Hotel and Leisure Club  
Somerset, UK





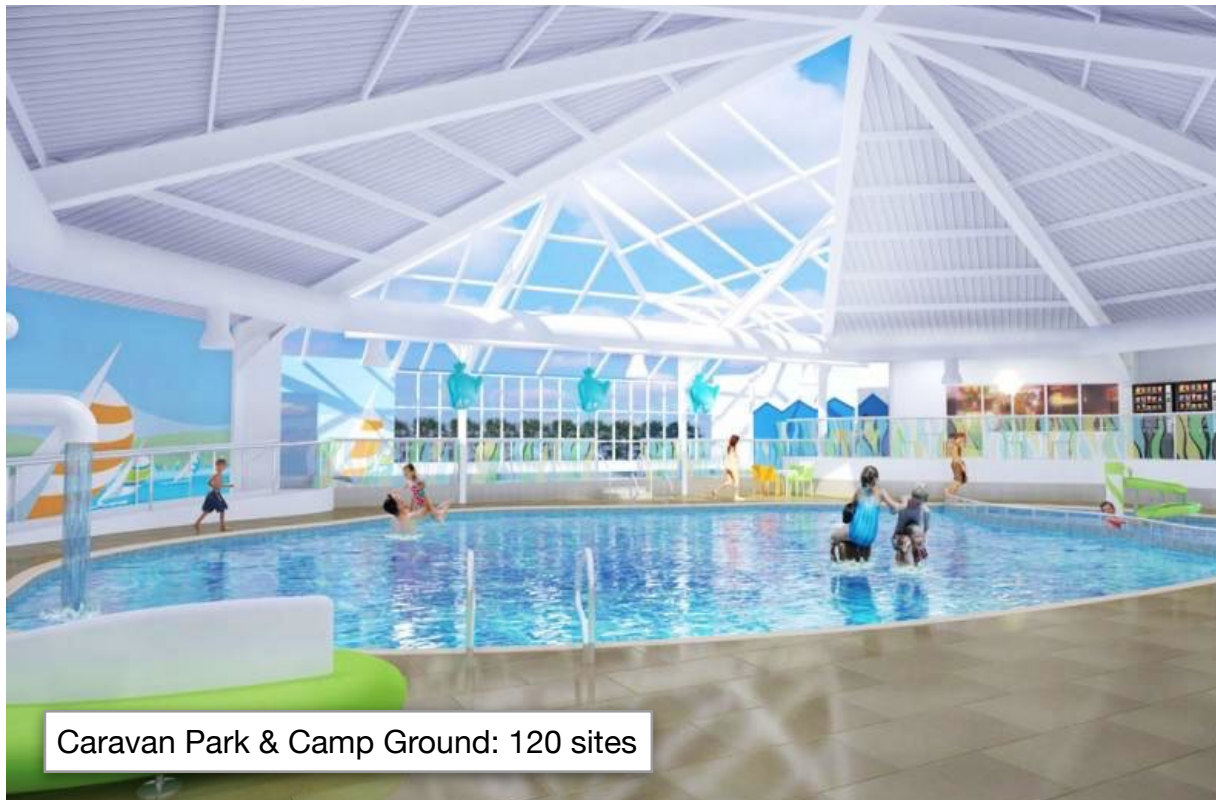
  
Lamplighter Inn  
& Conference Centre

Hotel: 172 rooms



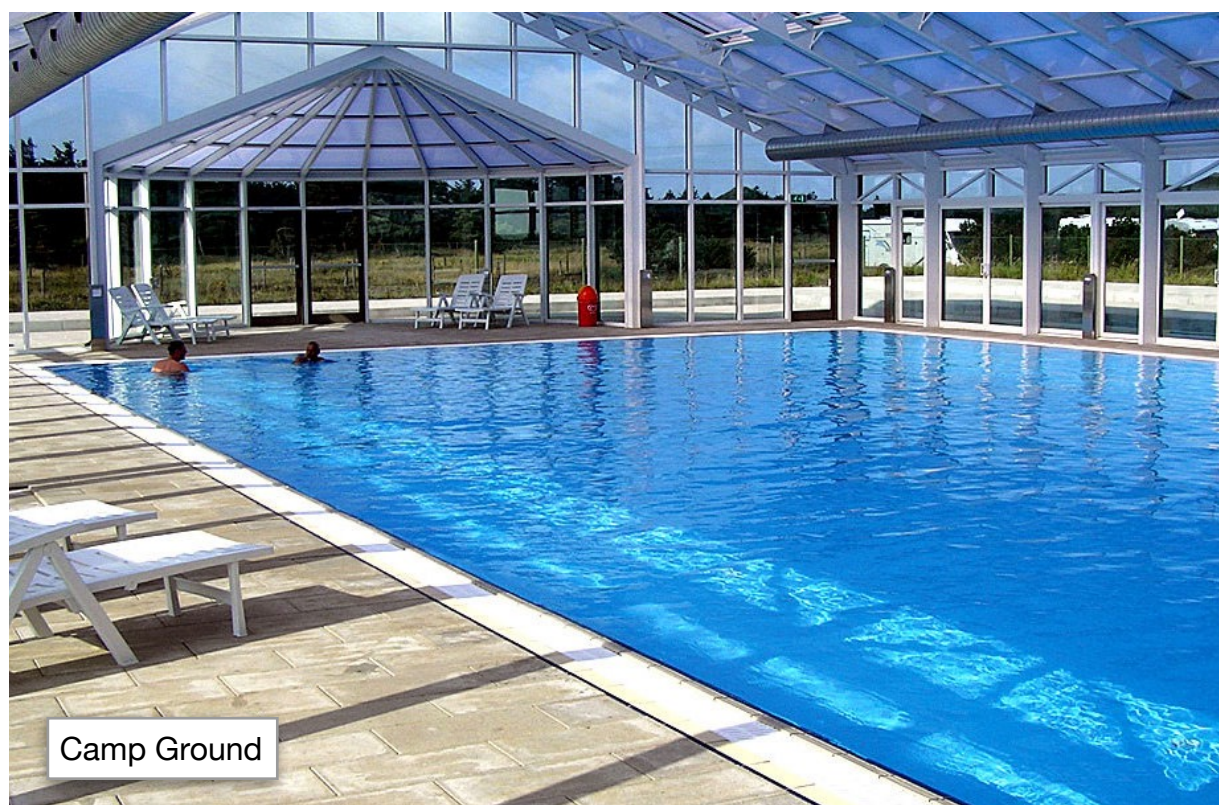
Best Western Plus Lamplighter Inn  
London Ontario





Caravan Park & Camp Ground: 120 sites





Norre Lyngvig Camping  
Hvide Sande, Denmark



# Retirement







Waterford Retirement Residence  
Ottawa Ontario





Heritage El Dorado Hills Fitness Center  
El Dorado Hills, California





Eskaton Village Seniors Swim & Fitness  
Roseville California





Eskaton Village Seniors Swim & Fitness  
Placerville California





Reata Glen and The Glen at Scripps Ranch Retirement Communities  
Rancho Mission Viejo, CA & San Diego, CA





Reata Glen and The Glen at Scripps Ranch Retirement Communities  
Rancho Mission Viejo, CA & San Diego, CA





Reata Glen and The Glen at Scripps Ranch Retirement Communities  
Rancho Mission Viejo, CA & San Diego, CA





Rossmoor - Del Valle Pool Enclosure,  
Walnut Creek, California



# FOUR SEASONS RETIREMENT COMMUNITY

PROPERTY OF COUNTRYSIDE HEALTHCARE CENTER

Four Seasons at Lakewood  
Ocean City, NJ

Four Seasons at Mapleton  
Mansfield, NJ

Four Seasons at Metedeconk Lakes  
Jackson, NJ

Four Seasons at Cranberry  
Princeton, NJ

Four Seasons Health Club  
Sioux City, Iowa

Four Seasons at Smithville  
Smithville, NJ

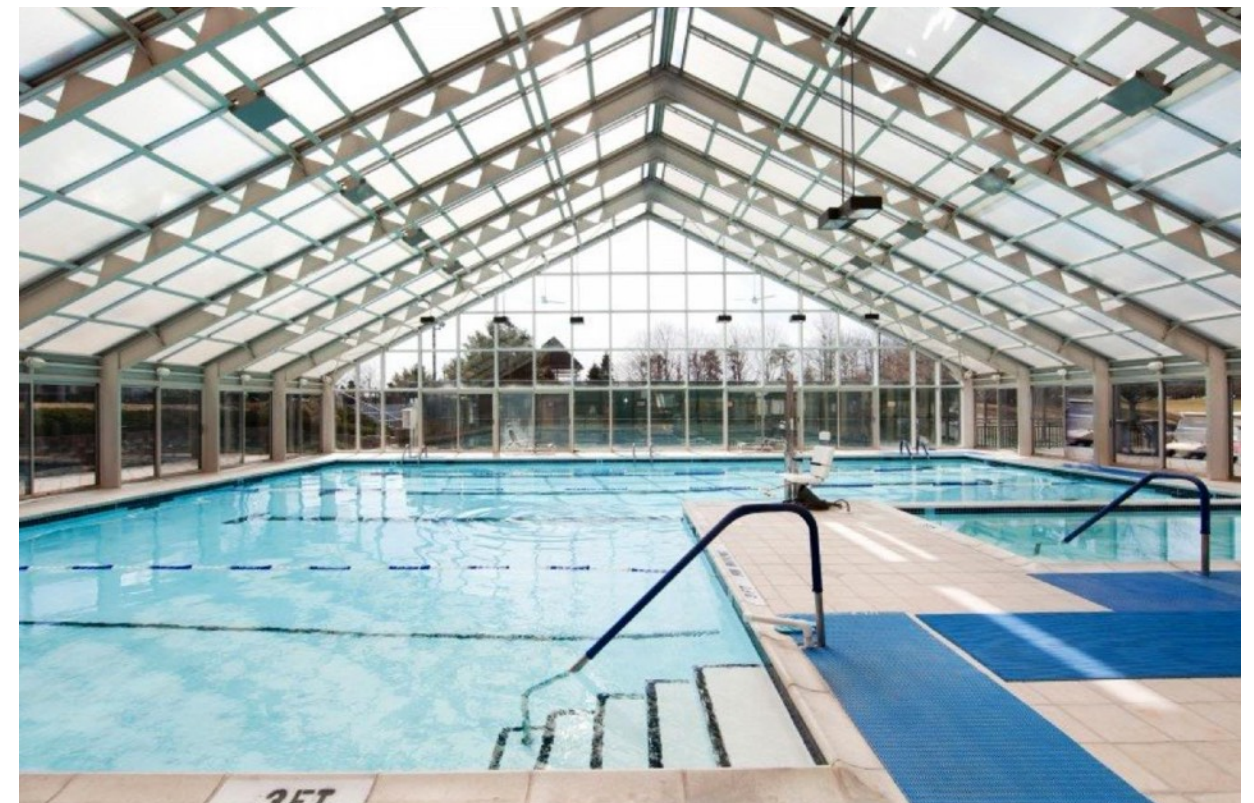
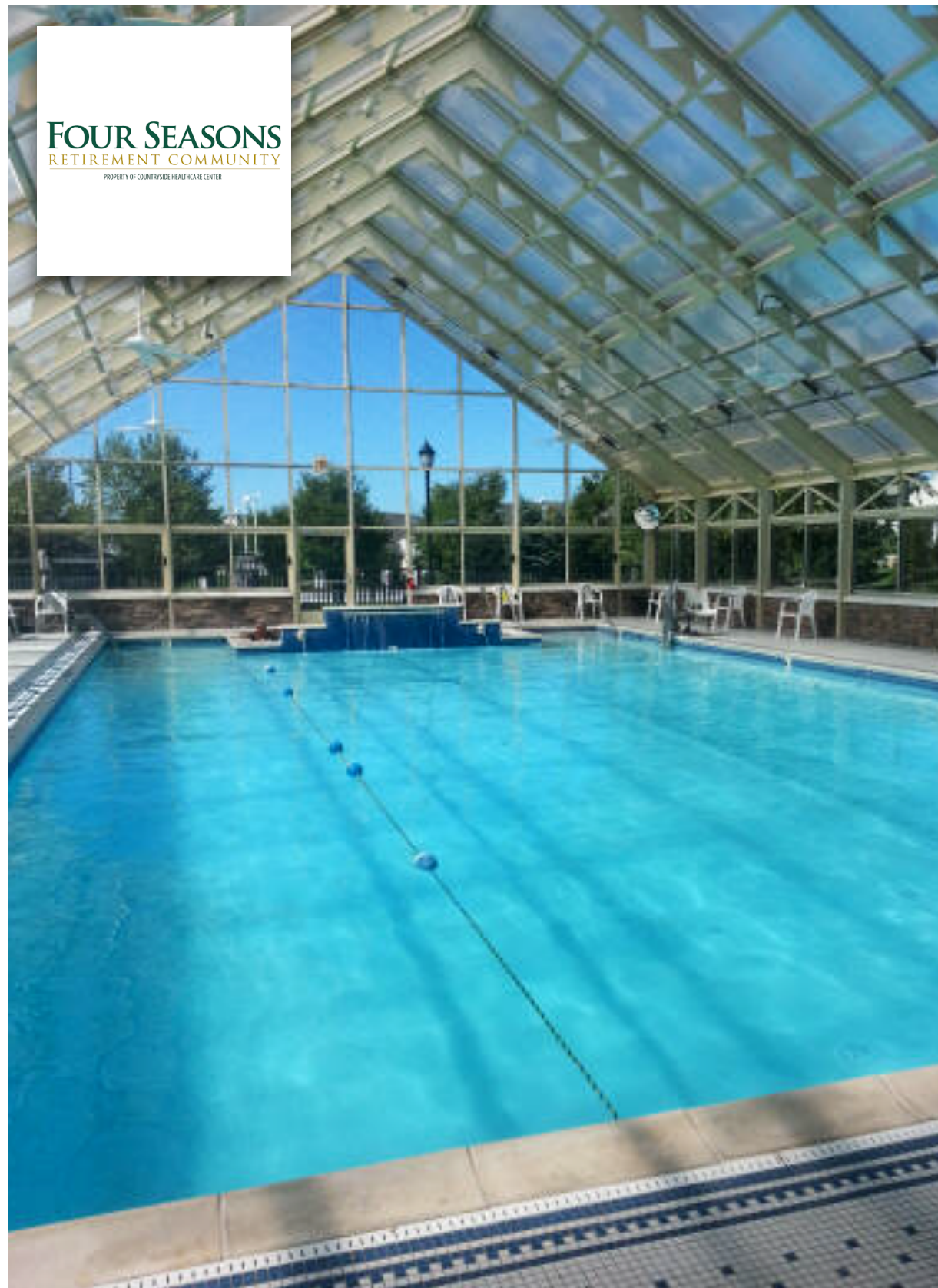
Four Seasons at Upper Freehold  
Allentown, NJ

Four Seasons at Wall  
Wall, NJ

Four Seasons at Weatherby  
Weatherby, NJ

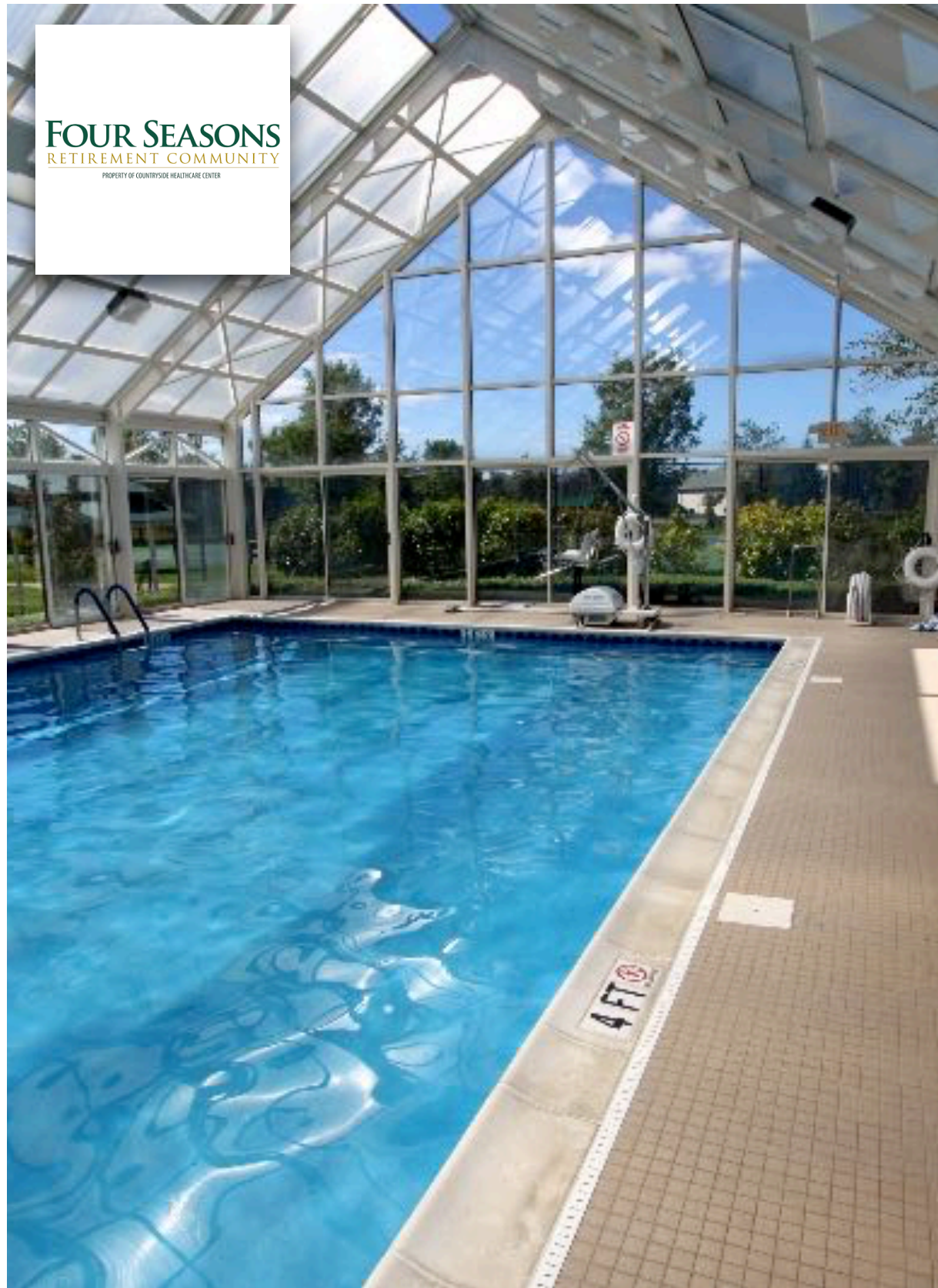






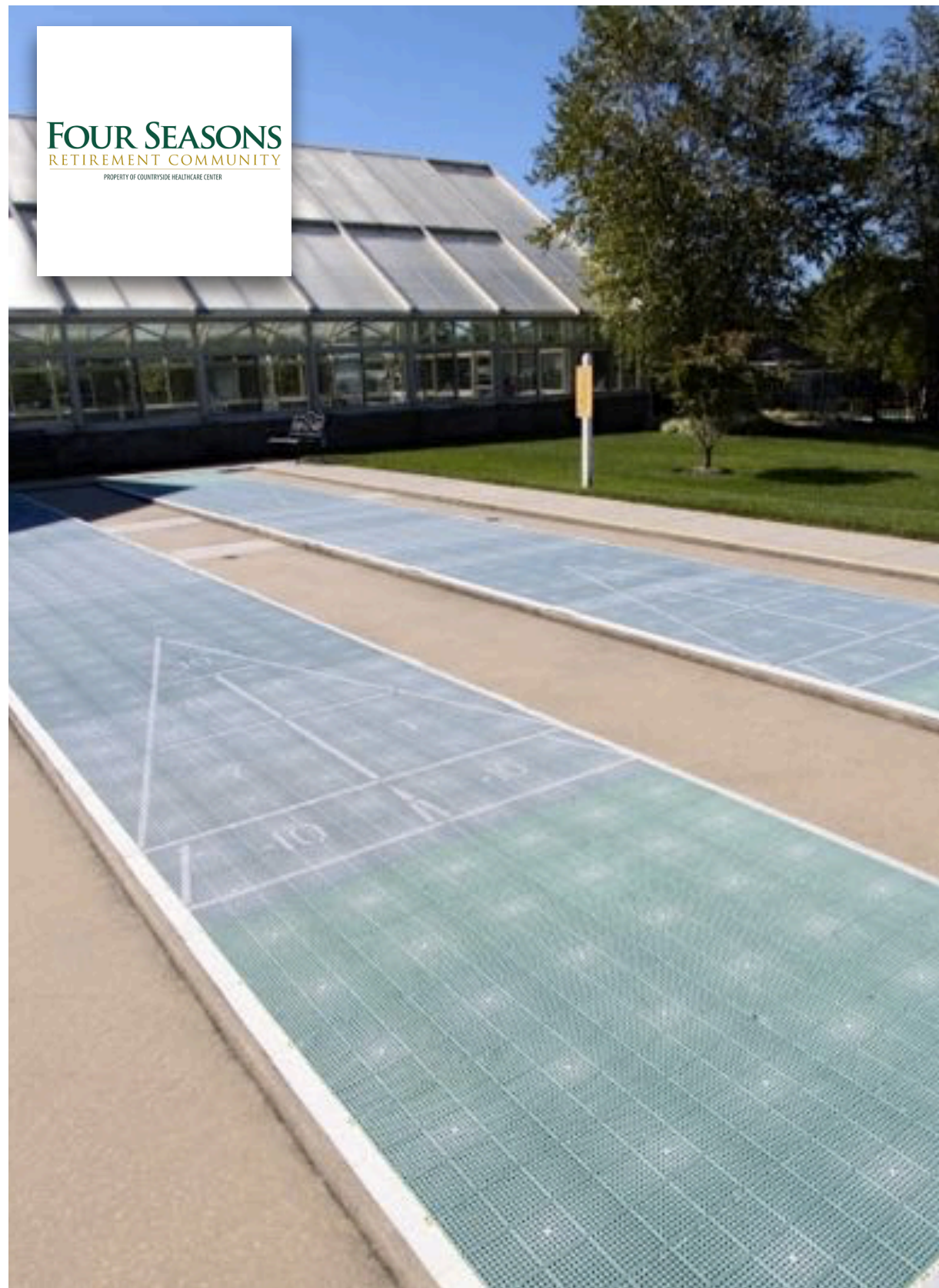
Four Seasons Spa & Country Club Community  
Various Locations





Four Seasons Spa & Country Club Community  
Various Locations





Four Seasons Spa & Country Club Community  
Various Locations





**AIA**  
**Continuing**  
**Education**  
**Provider**

# Thank you

---

**OpenAire Inc. (Head Office)**

2360B Cornwall Road  
Oakville, ON, Canada, L6J 7T9  
Toll Free: 1-800-267-4877  
Tel: 905-901-8535

[www.openaire.com](http://www.openaire.com)

**Key Contacts:**

Dave Bolwerk, VP  
[dbolwerk@openaire.com](mailto:dbolwerk@openaire.com)

Nancy Patterson, Dir. Design & Business Development  
[npatterson@openaire.com](mailto:npatterson@openaire.com)

General Mailbox  
[Sales@openaire.com](mailto:Sales@openaire.com)



## End Notes:

1. CDC Workplace Safety and Health; Investigation of Employee Symptoms at an Indoor Waterpark, Lilia Chen MS, Health Hazard Evaluation Report HETA 2007-0163-3062, Great Wolf Lodge, Mason, Ohio, June 2008
2. WHO; Natural Ventilation for Infection Control in Health-Care Settings, Edited by: James Atkinson, Yves Chartier, Carmen Lúcia Pessoa-Silva, Paul Jensen, Yuguo Li and Wing-Hong Seto, ISBN 978 92 4 154785 7 (NLM classification:WX 167), © World Health Organization 2009
3. Closed environments facilitate secondary transmission of coronavirus disease 2019 (COVID-19) Hiroshi Nishiura, Hitoshi Oshitani, Tetsuro Kobayashi, Tomoya Saito, Tomimasa Sunagawa, Tamano Matsui, Takaji Wakita, MHLW COVID-19 Response Team, Motoi Suzuki, medRxiv 2020.02.28.20029272; doi: <https://doi.org/10.1101/2020.02.28.20029272>
4. Energy efficiency in indoor aquatic facilities. Thoughtful choices yield significant energy savings, by Gary Lochner, Unison Comfort Technologies, [innoventair.com](http://innoventair.com)
5. The Benefits of Natural Light: Research supports daylighting's positive effect on building performance and human health. Kevin Van Den Wymelenberg. [architecturallighting.com](http://architecturallighting.com); March 19, 2014
6. *ibid.*
7. Energy efficiency in indoor aquatic facilities. Thoughtful choices yield significant energy savings, by Gary Lochner, Unison Comfort Technologies, [innoventair.com](http://innoventair.com)
8. Avoiding Problems in Aquatics Facilities: Atypical design for atypical buildings, Construction Specifier, December 25, 2013, Jason S. Der Ananian, PE, and Sean M. O'Brien, PE, LEED AP, <https://www.constructionspecifier.com/avoiding-problems-in-aquatics-facilities-atypical-design-for-atypical-buildings/>
9. <https://www.aluminum.org/aluminum-advantage/aluminum-101>
10. <https://www.aluminum.org/product-markets/building-construction>
11. *ibid.*