



AIA
Continuing
Education
Provider

Various Projects,
ETFE & Design Work



**30 YEARS & 1000 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

Ventilation is required to achieve and maintain good air quality, as well as thermal comfort levels but also as the study shows, also the health and safety of staff and guests. Indoor pools are guided by the guidelines set out by ASHRAE 62.1, but per the CDC investigation into the “Investigation of Employee Symptoms at an Indoor Waterpark”¹, if you have a larger space or even a waterpark, these standards are insufficient.

There is little evidence that ventilation directly reduces the risk of disease transmission, but many studies suggest that **insufficient ventilation increases disease transmission**.²

Pools built with non-corrosive materials like aluminum are at a significant advantage both from a strength and durability perspective, plus from a cleanliness one. A bright, open space that also opens and ventilates naturally, simply doesn't corrode. Which allows operators to clean it appropriately, especially during a health crisis such as COVID-19.

A naturally ventilated space is proving to be healthier for guests and staff, as it removes the chloramines from the air. New studies demonstrate the correlation between the transmission of COVID19 in closed environments vs. open air circulation.

2. Maximizes Space and Revenue

If you have an existing pool 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

Length of stay, programming, accessibility, sustainability, increased demand & memberships, and updated amenities are all critical to driving revenue growth but all of these combined increase facility operating costs.

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

*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.*³

3. Lower Life-Cycle Costs

Savings 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.

Typically a retractable roof on an aquatic center can save operators up to 30% y.o.y on energy bills.

This is compared to a traditionally constructed natatorium which requires year round mechanical ventilation.

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.⁴

4. Natural Light and Illumination

There 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.⁵

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.⁶

In other words, a day lit space with good hours and a clean, new environment will make more money. Utilizing natural light can also lead to substantial energy savings, whereby a you won't require artificial lighting during daytime hours.

Lighting loads can be reduced by incorporating natural lighting into the envelope design and by using efficient lighting options.⁷

5. Perfect Year Round Conditions

Open and Close the roof at the push of a button. Typically an aquatic center is just that, an aquatic center. But what if it can be more? A space for events, parties, an indoor outdoor rentable venue. The options are endless and not limited to traditional venue rental issues. 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 clubs, public or private, must stay ahead of the trends to attract new members to their facility. This is called improving your marketability.

Offering upgraded attractions and amenities 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 new members.



7. Maintenance Free Facility

Few buildings present the risks and challenges found in indoor swimming pools enclosures or natatoriums.

Indoor pools, in all locations, suffer from the effects of chloramines, the off-gases in the air, which have become worse as pools have become bigger/warmer and as attractions; such as slides, surfing, splash pads, have become common features.

As a result, operators and owners are continually on the look out for building envelope failures that can appear quickly and severely and are caused by improper design and construction.

*This is because the air in a natatorium often contains nearly three times the moisture per unit volume as a typical, non-humidified building.*⁸

Aluminum 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.⁹

8. Energy Efficient

All 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.***¹¹

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





Original POOL



Scheu Family YMCA, Upland, CA

Already Have a Pool?

**YES... we can add a
Retractable Roof!**

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
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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

Waterparks



Waterparks



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

- Watiki Waterpark Rapid City, SD
 - 30,000 sf
- Water-Zoo Waterpark, Clinton, OK
 - 30,000 sf
- Pump House Waterpark, Jay Peak, VT
 - 50,000 sf
- Aquapark Terminal, Kiev, Ukraine
 - 220,000 sf
- Silverleaf at the Villages, Tyler, TX
 - 19,000 sf
- South Dakota, Rapid City, SD
 - 8,100 sf
- Americana Waterpark, Niagara Falls, ON
 - 25,000 sf
- Epic Waters, Grand Prairie, TX
 - 62,000 sf
- Kalahari Poconos, Pocono Mountains, PN
 - 220,000 sf
- Pirates Cay Waterpark (Fox River), Sheridan, IL
 - 19,000 sf
- Cape Codder Waterpark, Hyannis, MA
 - 30,000 sf
- Zehnders, Frankenmuth, MI
 - 50,000 sf
- Big Splash, French Lick, IN
 - 40,000 sf
- Aqua Sferra, Donetsk, Ukraine
 - 70,000 sf
- Tropicana Waterpark, Stadthagen, Germany
 - 70,000 sf

COMING SOON

- OWA Waterpark, Foley, Alabama
 - 65,000 sf
- The Cove at Lakefront, Little Elm, Texas
 - 40,000 sf



Zehnders Splash Village Phase 2 Renovation of older Waterpark
Frankenmuth, MI



Zehnders Splash Village Phase 2 Renovation of older Waterpark
Frankenmuth, MI



Zehnders Splash Village Phase 2 Renovation of older Waterpark
Frankenmuth, MI



OWA Waterpark - COMING SOON
Foley Alabama



OWA Waterpark - COMING SOON
Foley Alabama





The Cove at Lakefront, Little Elm Aquatic Center - COMING SOON
City of Little Elm, Texas



The Cove at Lakefront, Little Elm Aquatic Center - COMING SOON
City of Little Elm, Texas



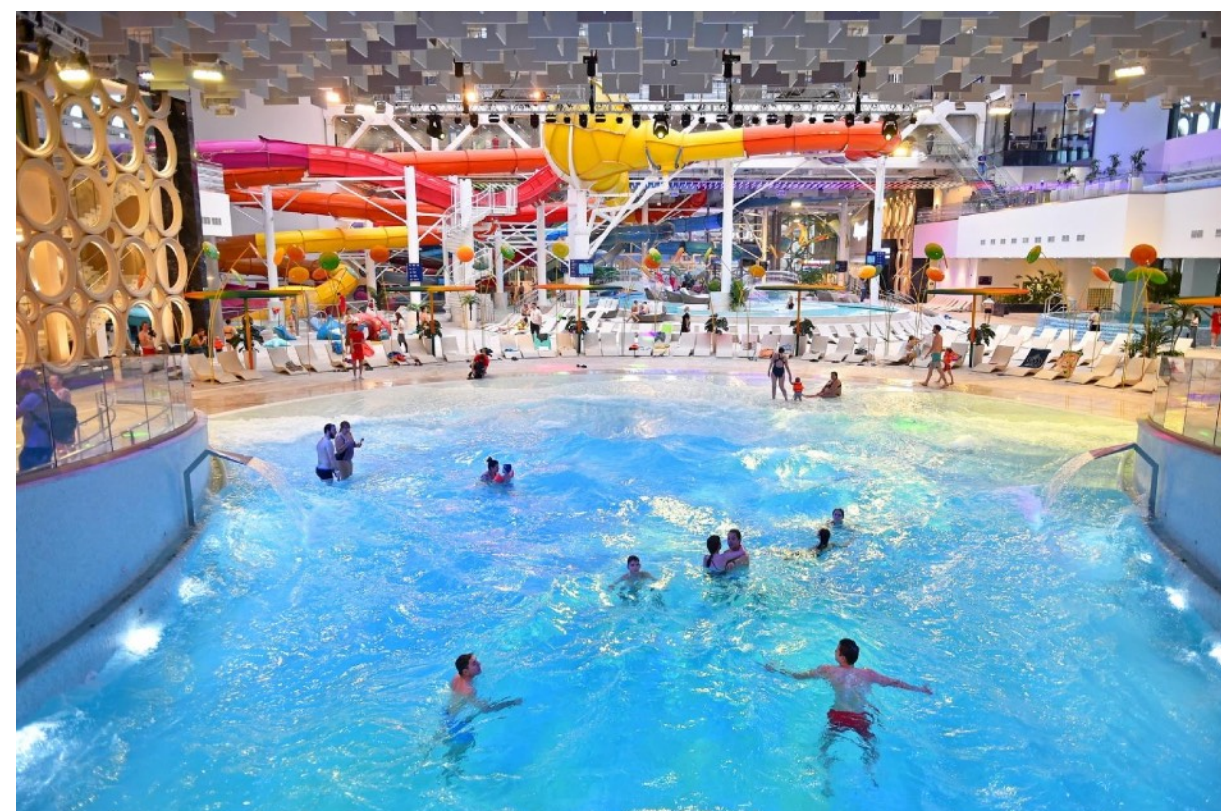
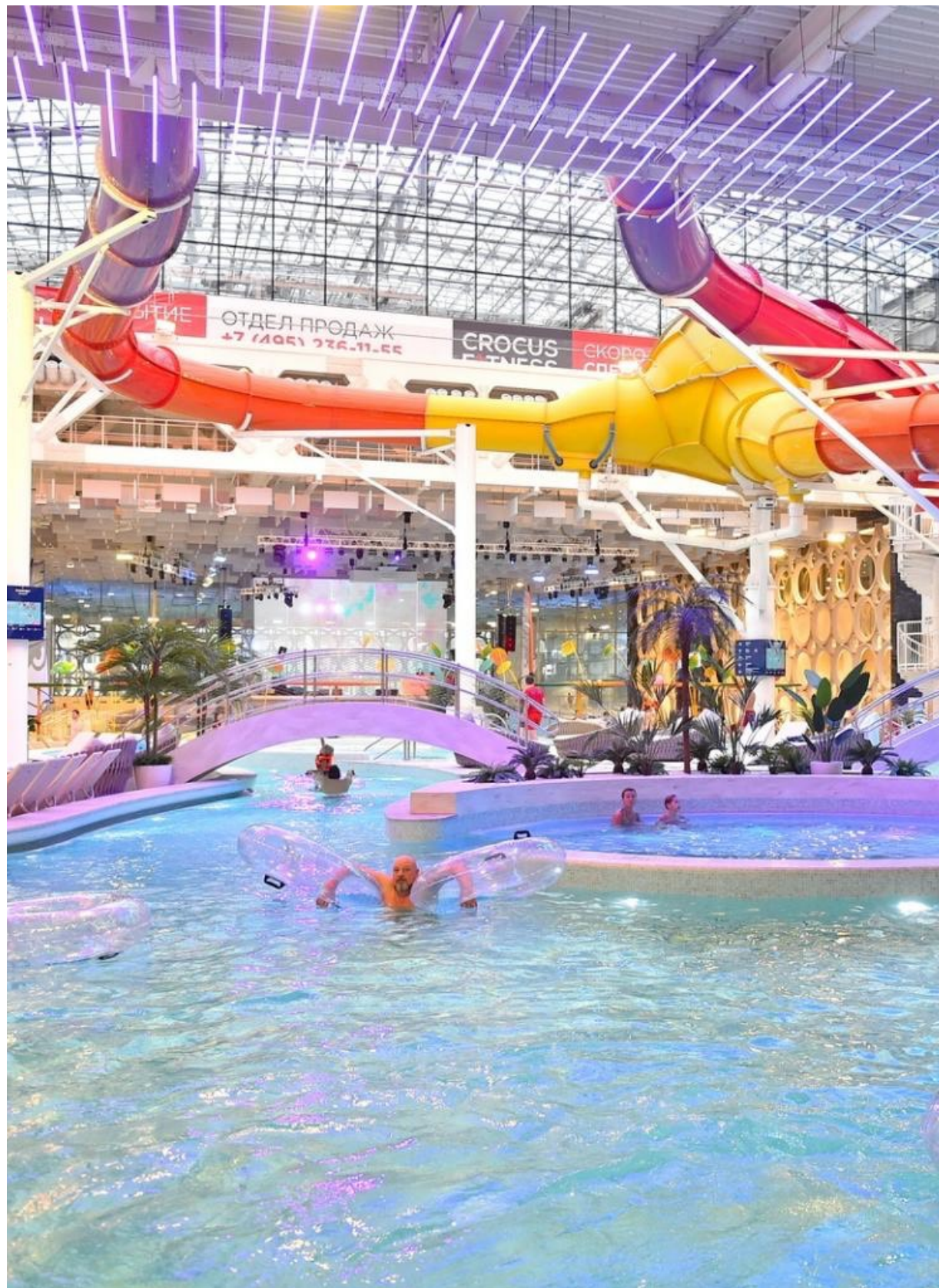
The Cove at Lakefront, Little Elm Aquatic Center - COMING SOON
City of Little Elm, Texas



Luzhniko Aquatic Complex
Moscow, Russia



Luhzniki Aquatic Complex
Moscow, Russia



Luhzniki Aquatic Complex
Moscow, Russia



The Epic Waters - NOW OPEN
Grand Prairie, Texas



The Epic Waters - NOW OPEN
Grand Prairie, Texas



The Epic Waters - NOW OPEN
Grand Prairie, Texas



The Epic Waters - NOW OPEN
Grand Prairie, Texas



Kalahari Resort Poconos - Phase 1 - Biggest Indoor Waterpark in the USA
Pocono Mountains, Pennsylvania



Kalahari Resort Poconos - Phase 2 - Biggest Indoor Waterpark in the USA



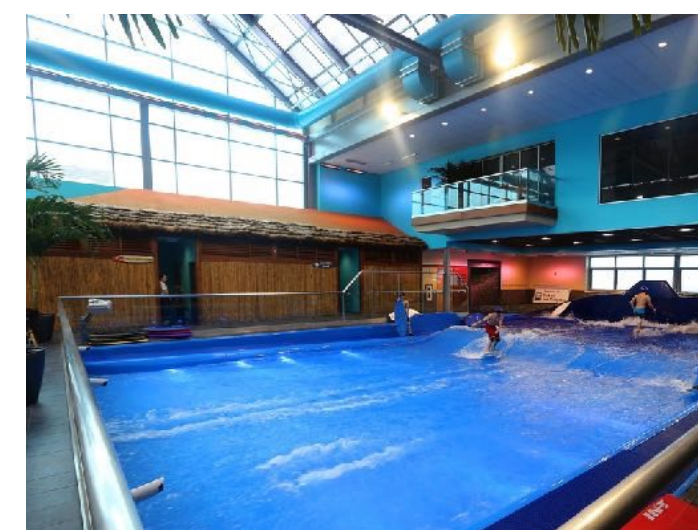
Pirates Cay Waterpark at Fox River Resort
Sheridan, Illinois



Cape Codder Waterpark
Hyannis, Massachusetts



Zehnder's Waterpark
Frankenmuth, MI



Sky Venture Flow (Surf) House
New Hampshire USA



Pump House Indoor Water Park
Jay Peak Resort, Vermont USA



Aquapark - Aqua Sfera
Donetsk, Ukraine, World's Largest retractable aluminum dome



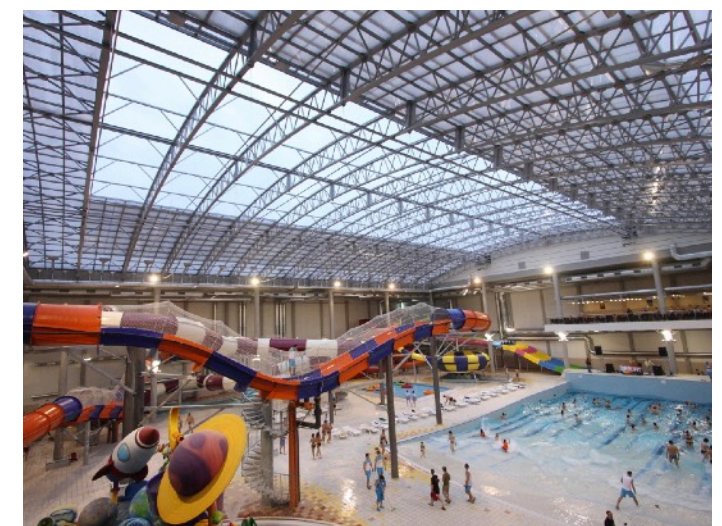
Aquapark - Aqua Sfera
Donetsk, Ukraine, World's Largest retractable aluminum dome



Big Splash Adventure Waterpark
French Lick, IN, USA



Big Splash Adventure Waterpark
French Lick, IN, USA



Aquapark Terminal
Kiev



Silverleaf Resorts at the Villages
Texas, USA



Tropicana Waterpark
Stadthagen, Germany



Waterzoo
Clinton, Oklahoma



Americana Waterpark
Niagara Falls, Canada



WaTiki Waterpark, Restaurant and expanded seating area
Rapid City, South Dakota

ETFE Roof Material





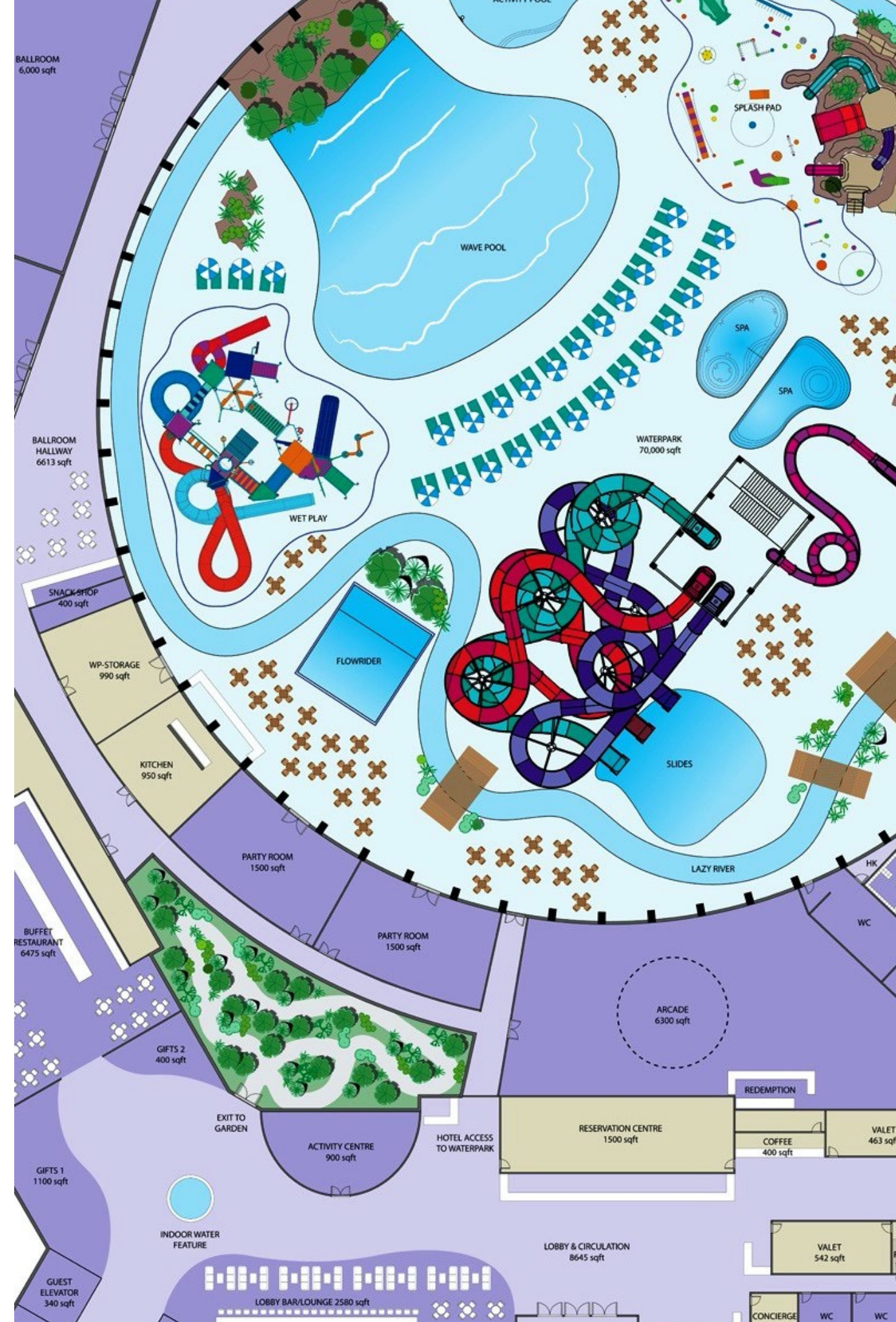
Grand Cascades Lodge - Crystal Springs Resort
Hamburg NJ

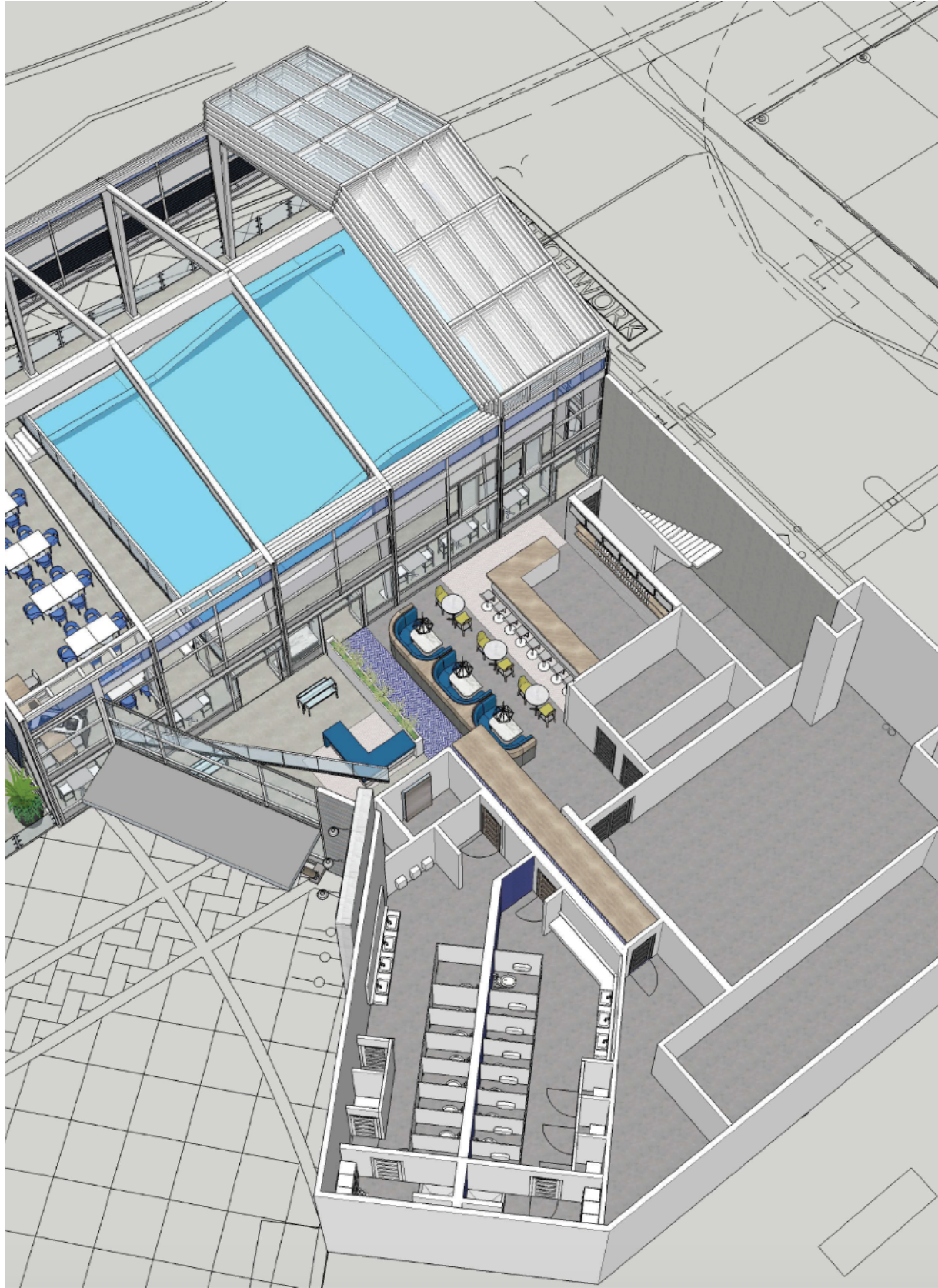


Mein Schiff 2 - Meyer Turku Builder
Built in Finland, Ship Flag in Malta

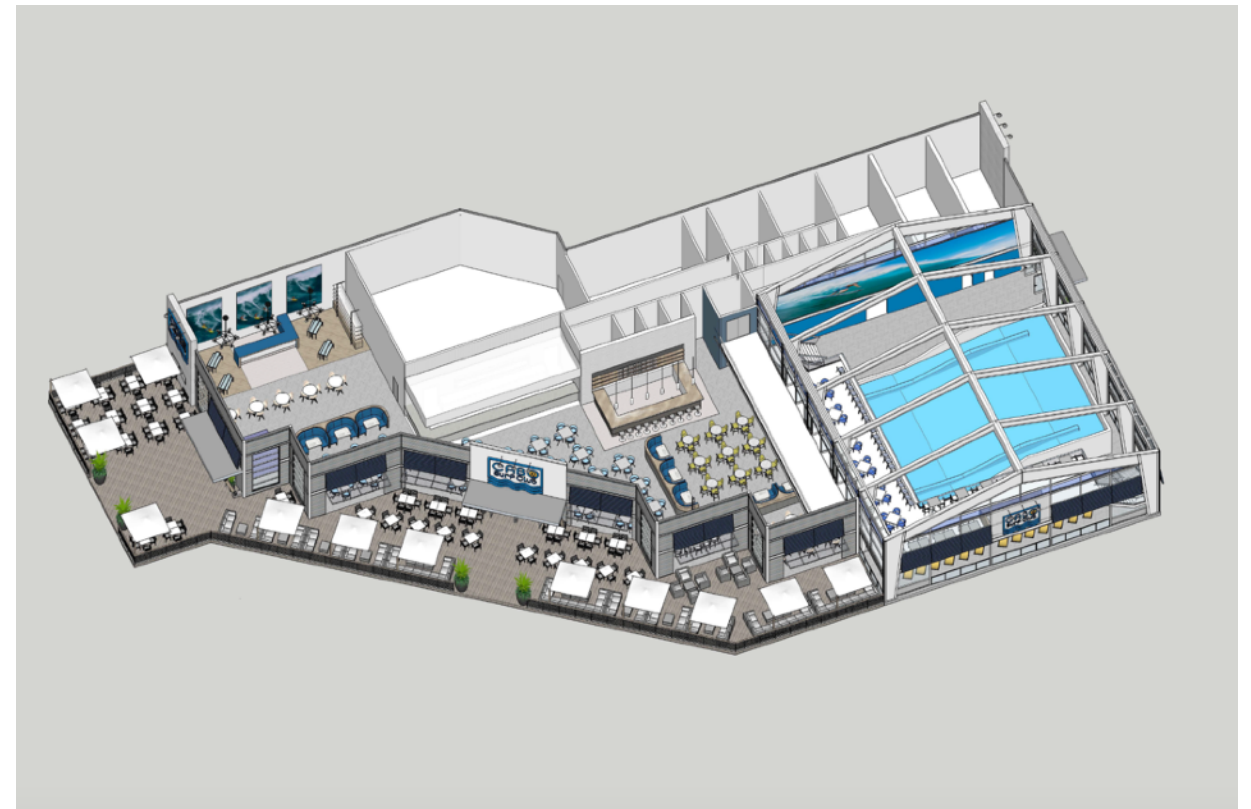
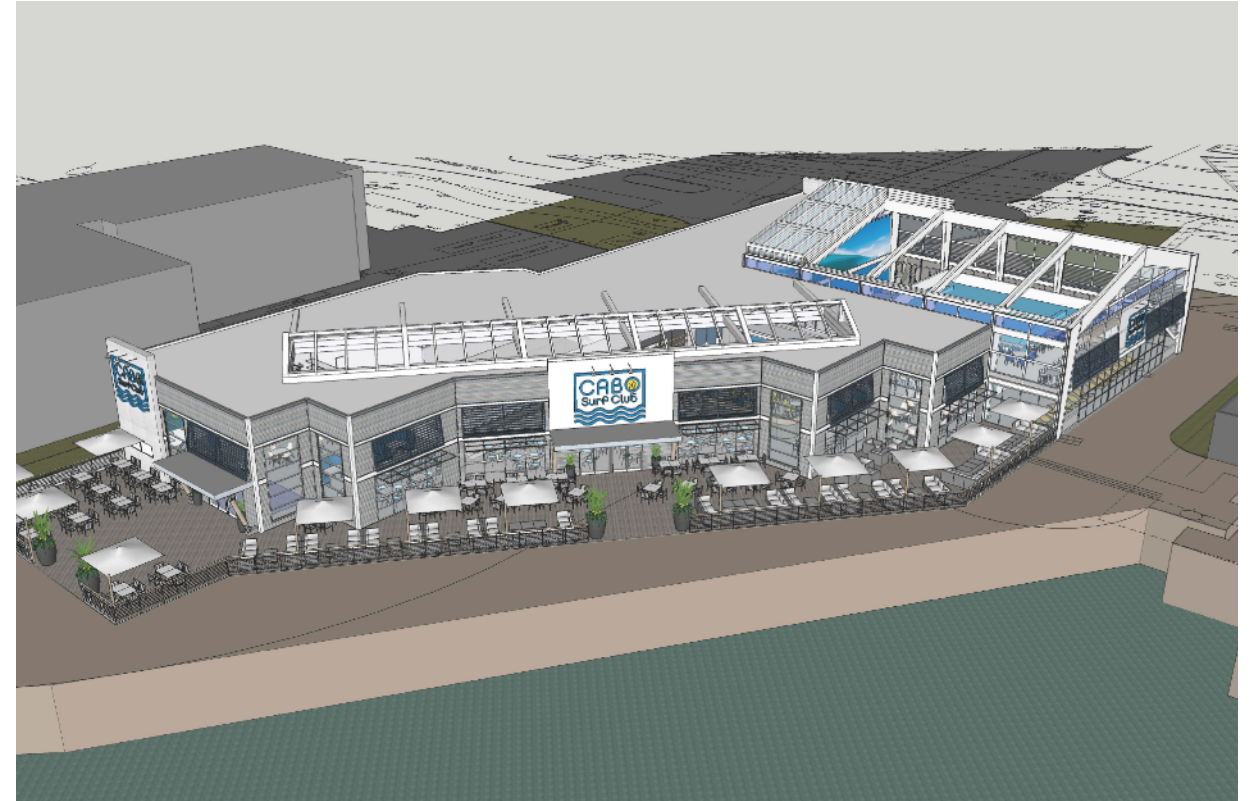


Bus Shelter - ETFE
Essen Germany





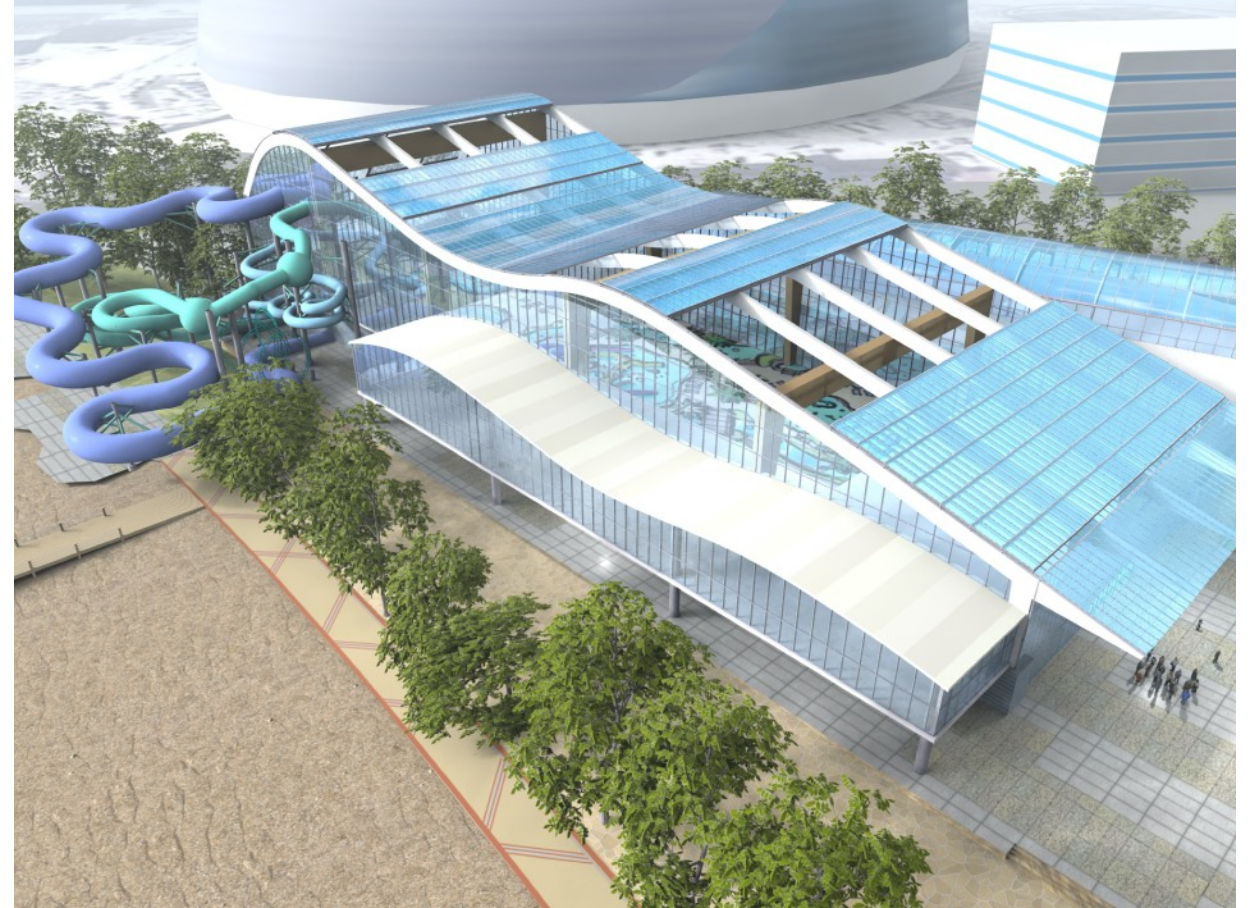
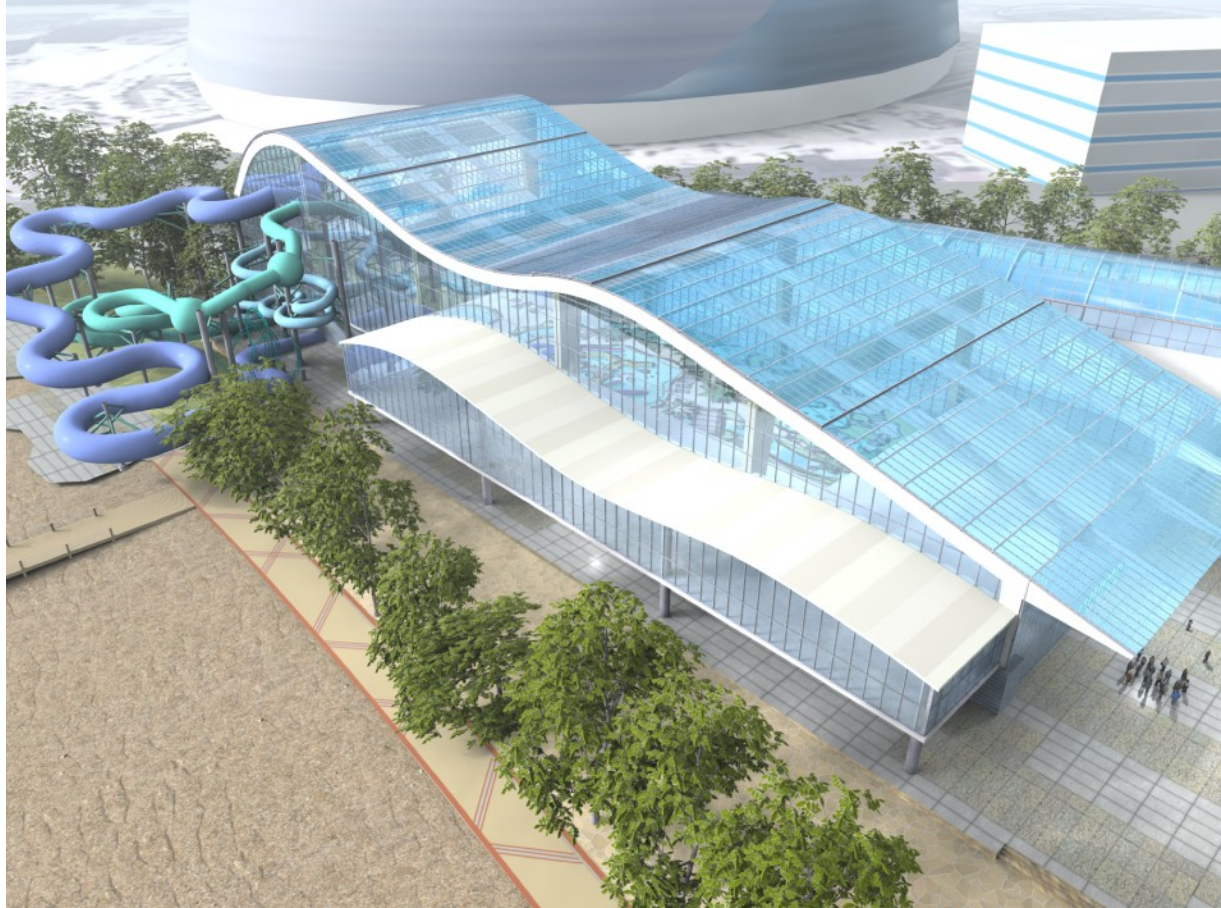
Cabo Surf Club
Various Locations



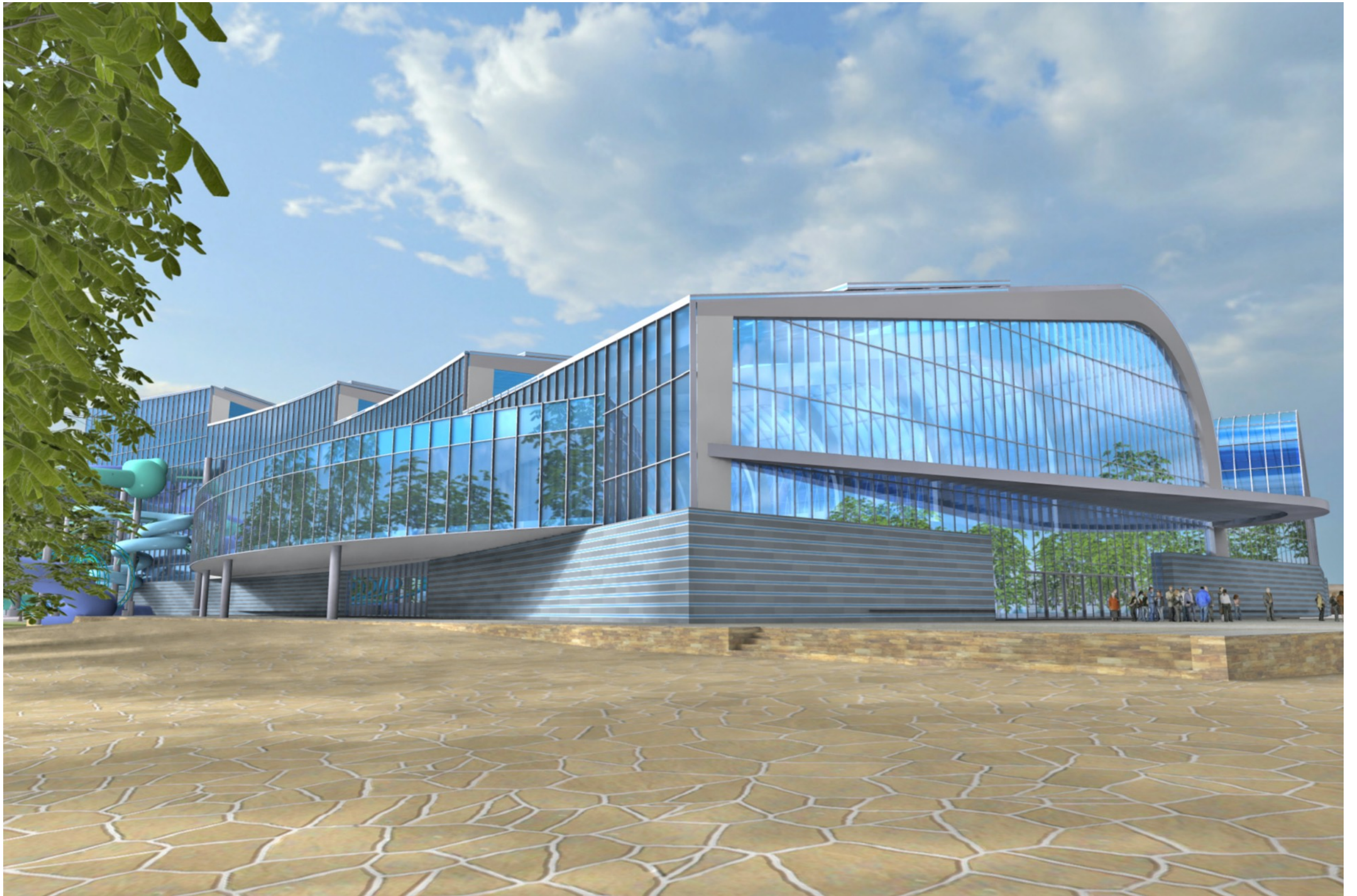
Cabo Surf Club
Various Locations



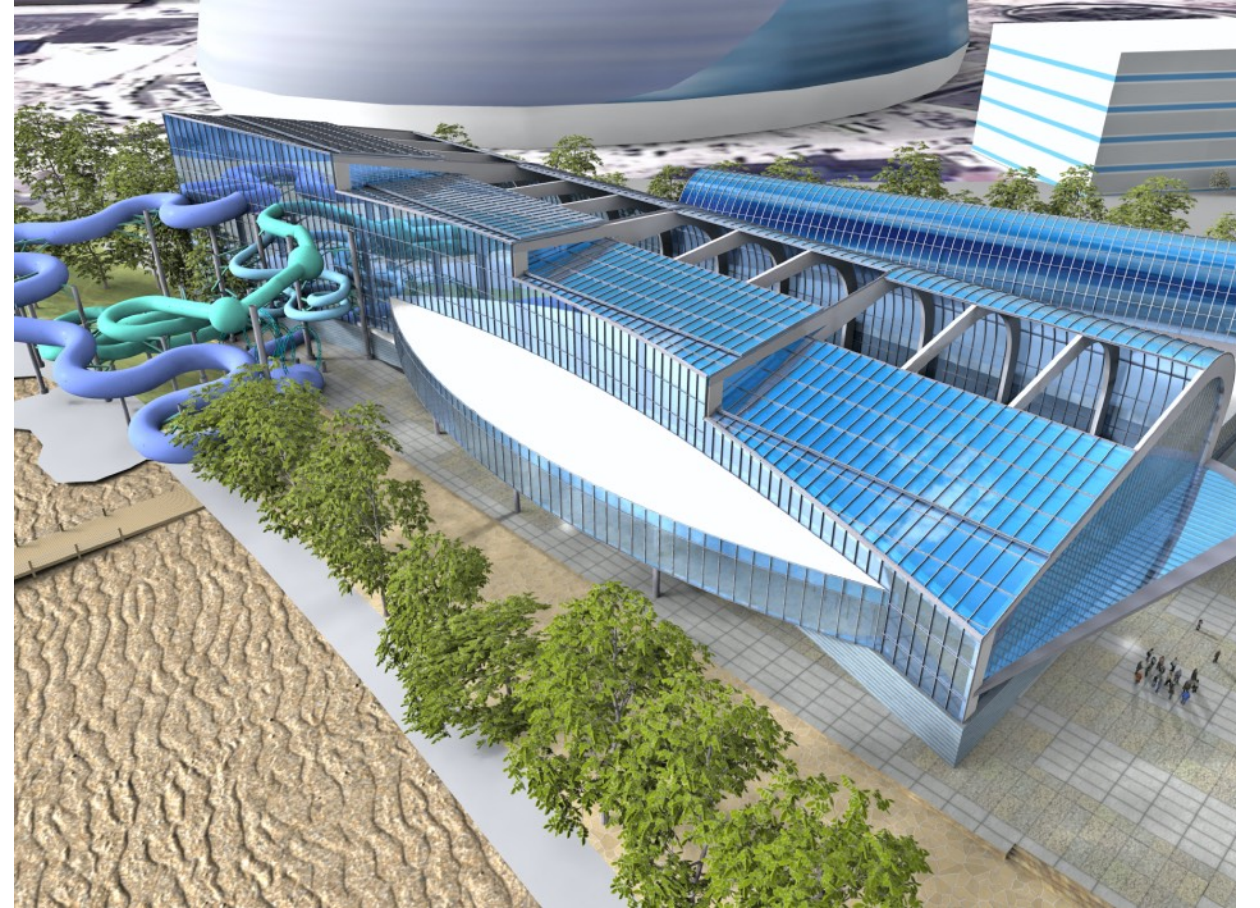
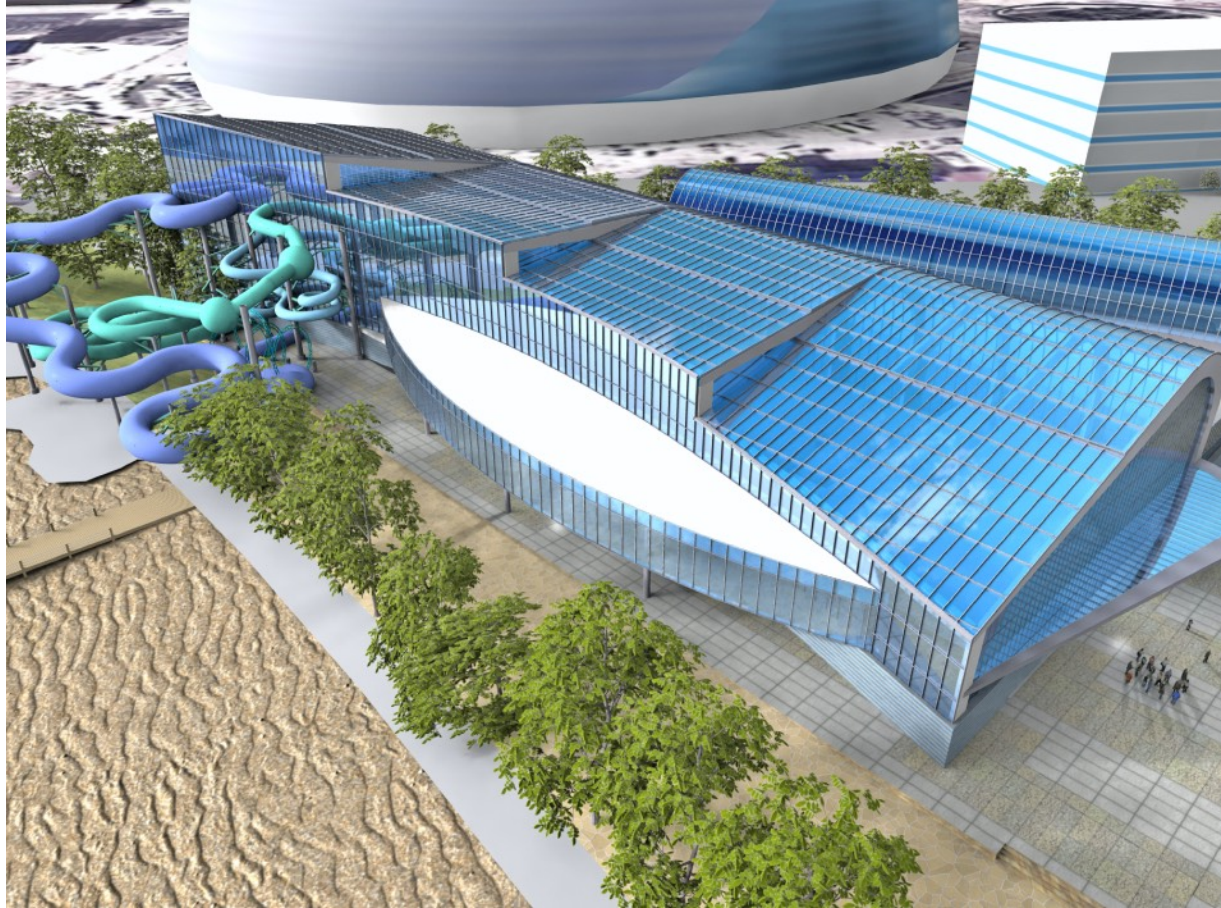
New Projects
waterpark in design phase



New Projects
waterpark in design phase



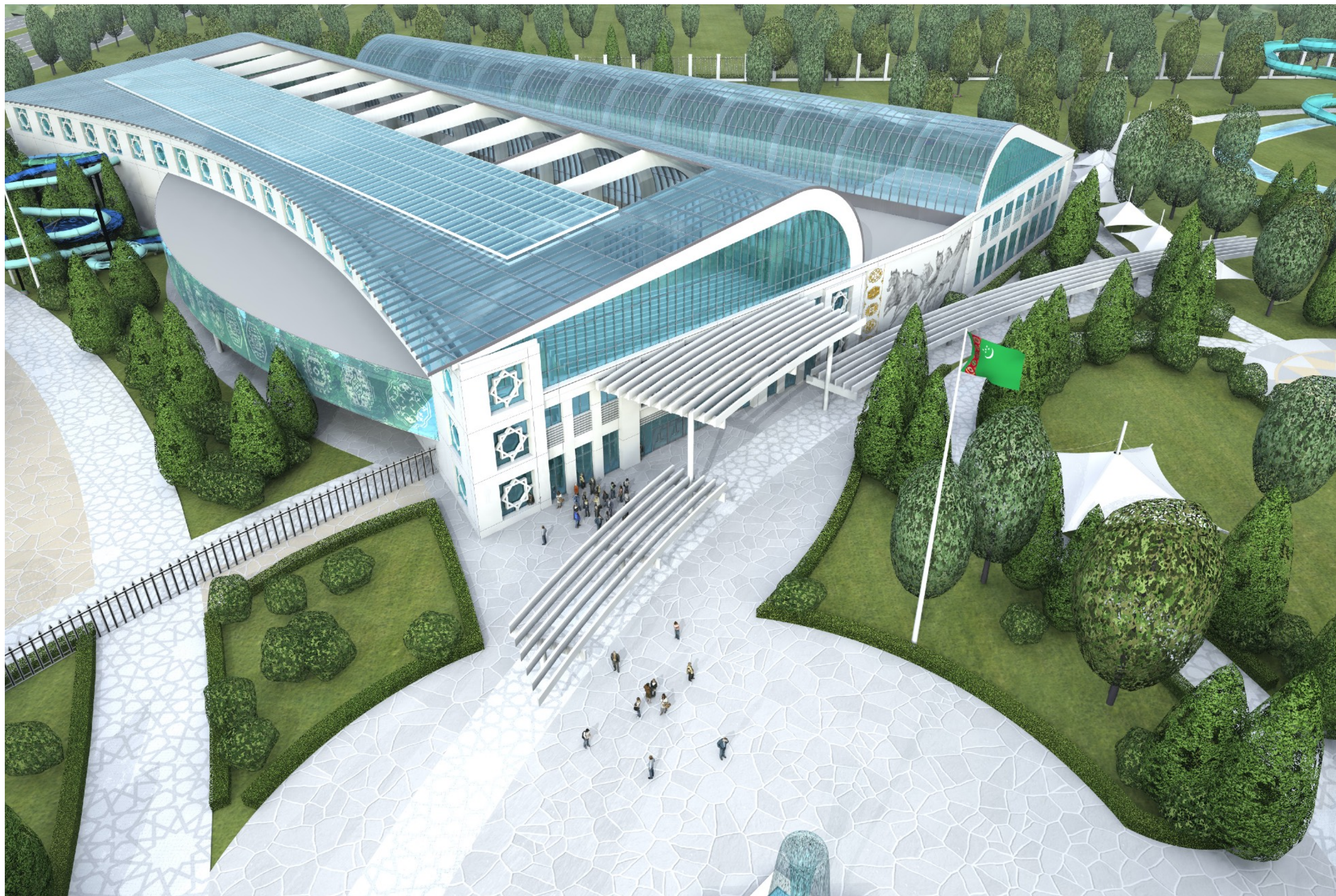
New Projects
waterpark in design phase



New Projects
waterpark in design phase



New Projects
waterpark in design phase



New Projects
waterpark in design phase



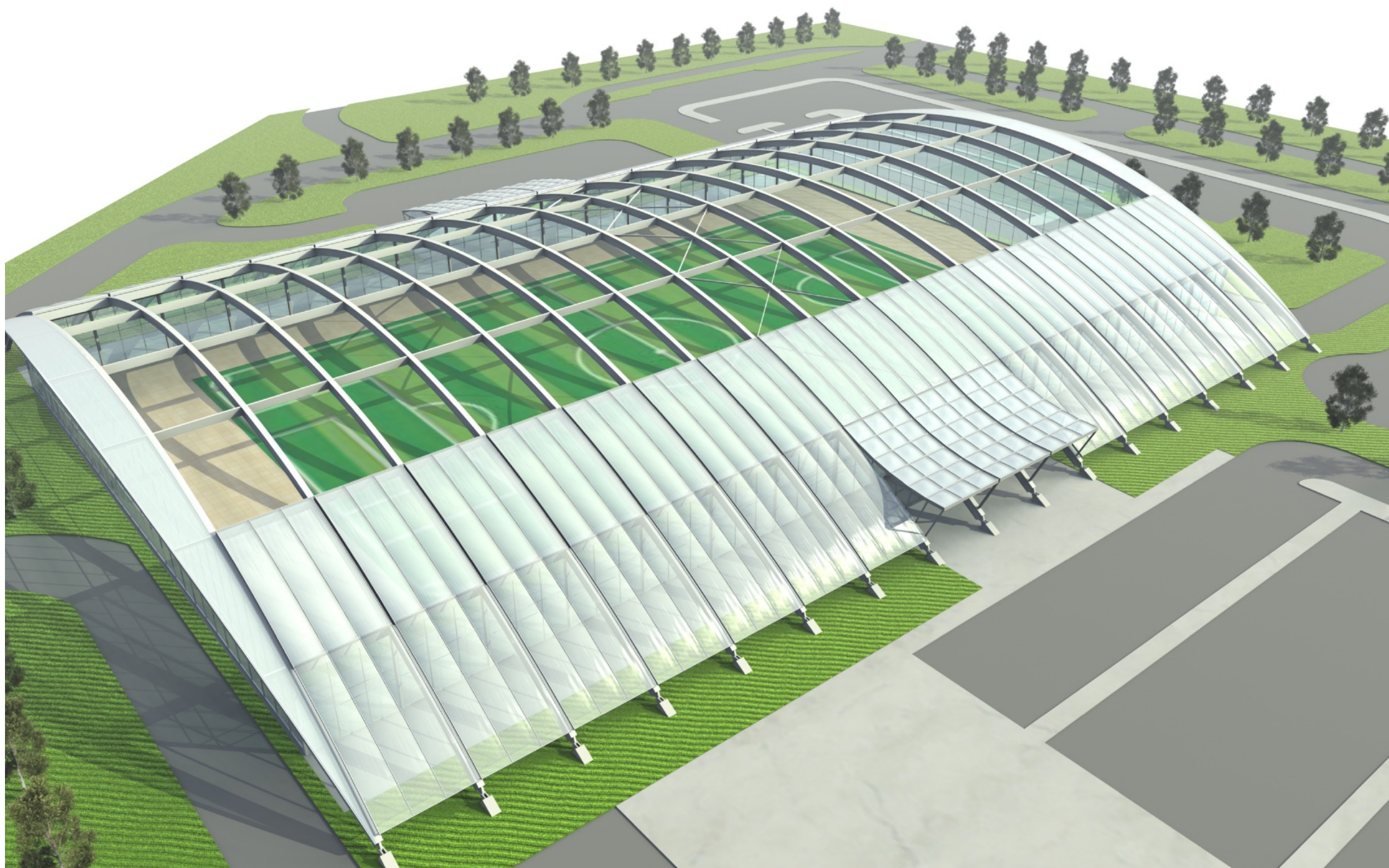
New Projects
waterpark in design phase



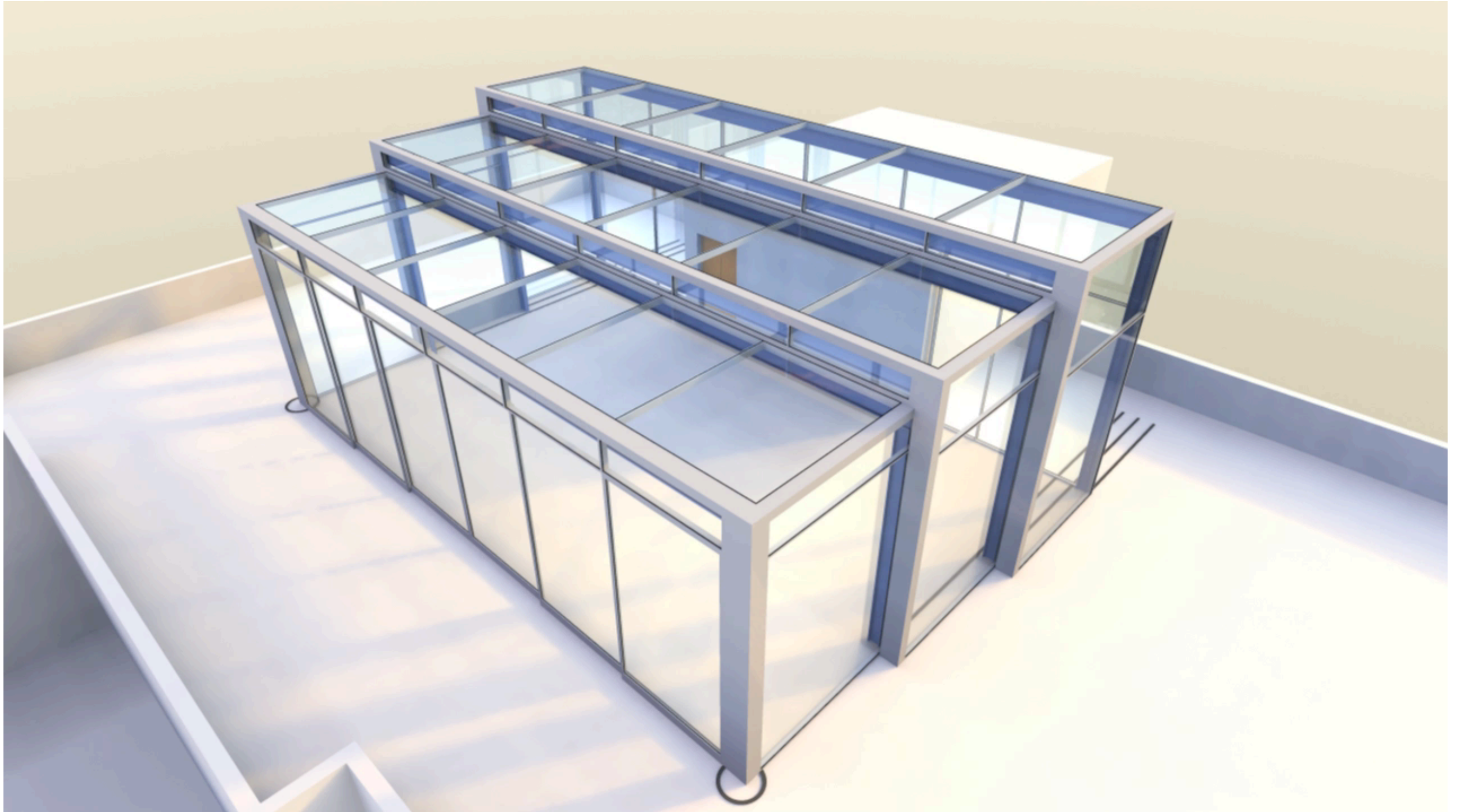
New Projects
waterpark in design phase



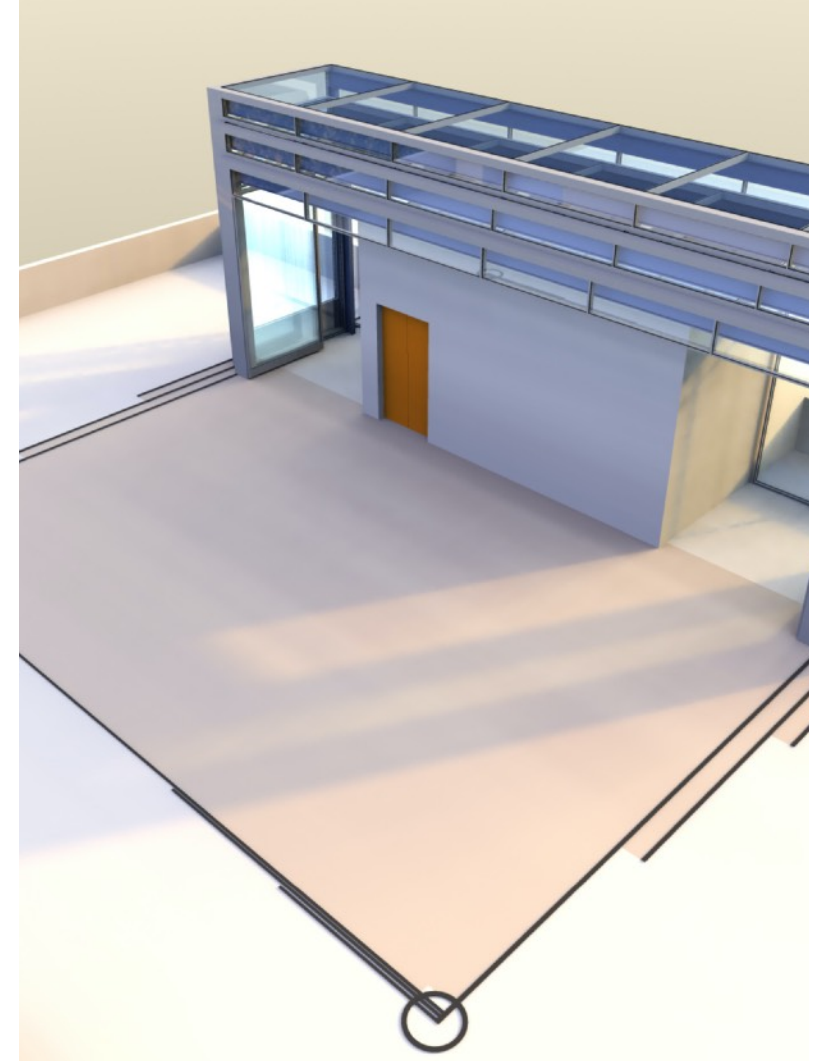
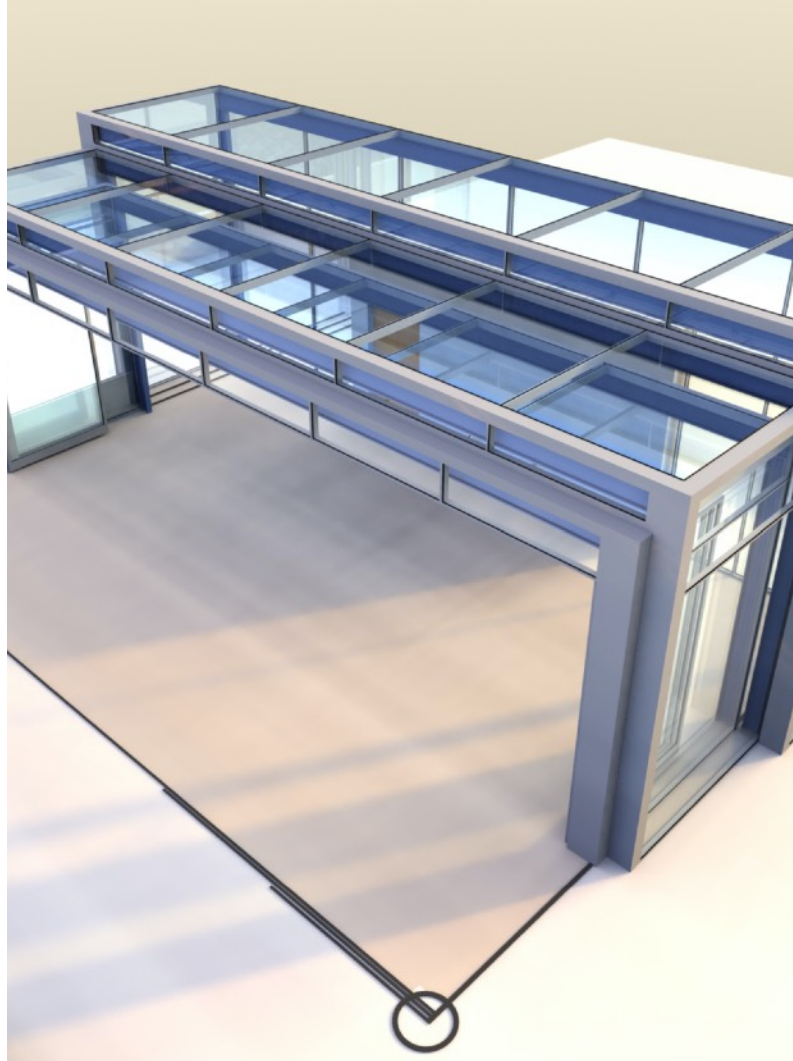
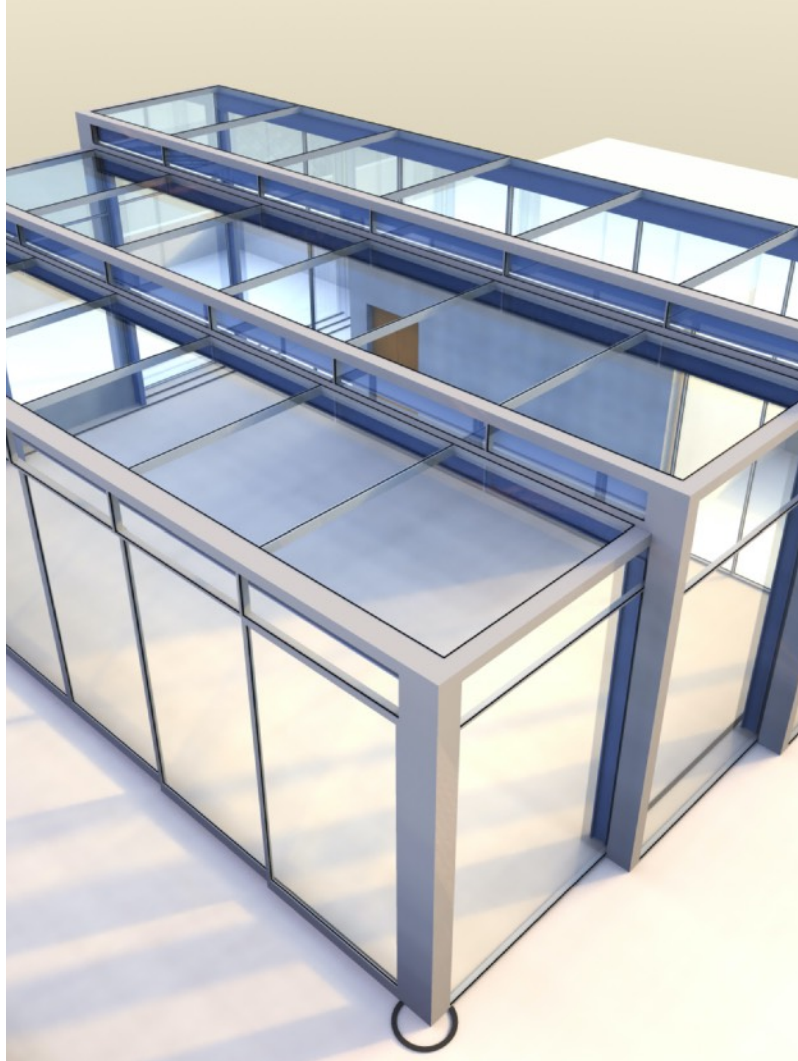
New Projects
sports field in design phase



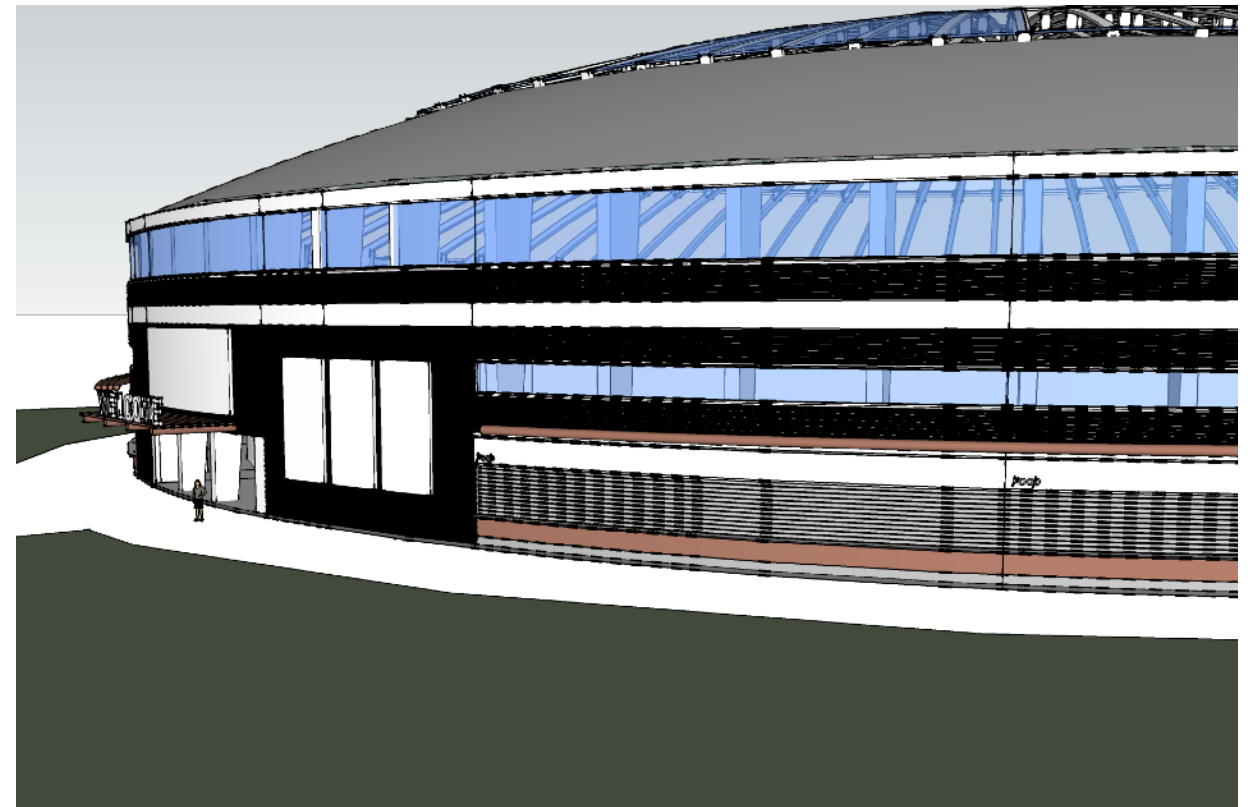
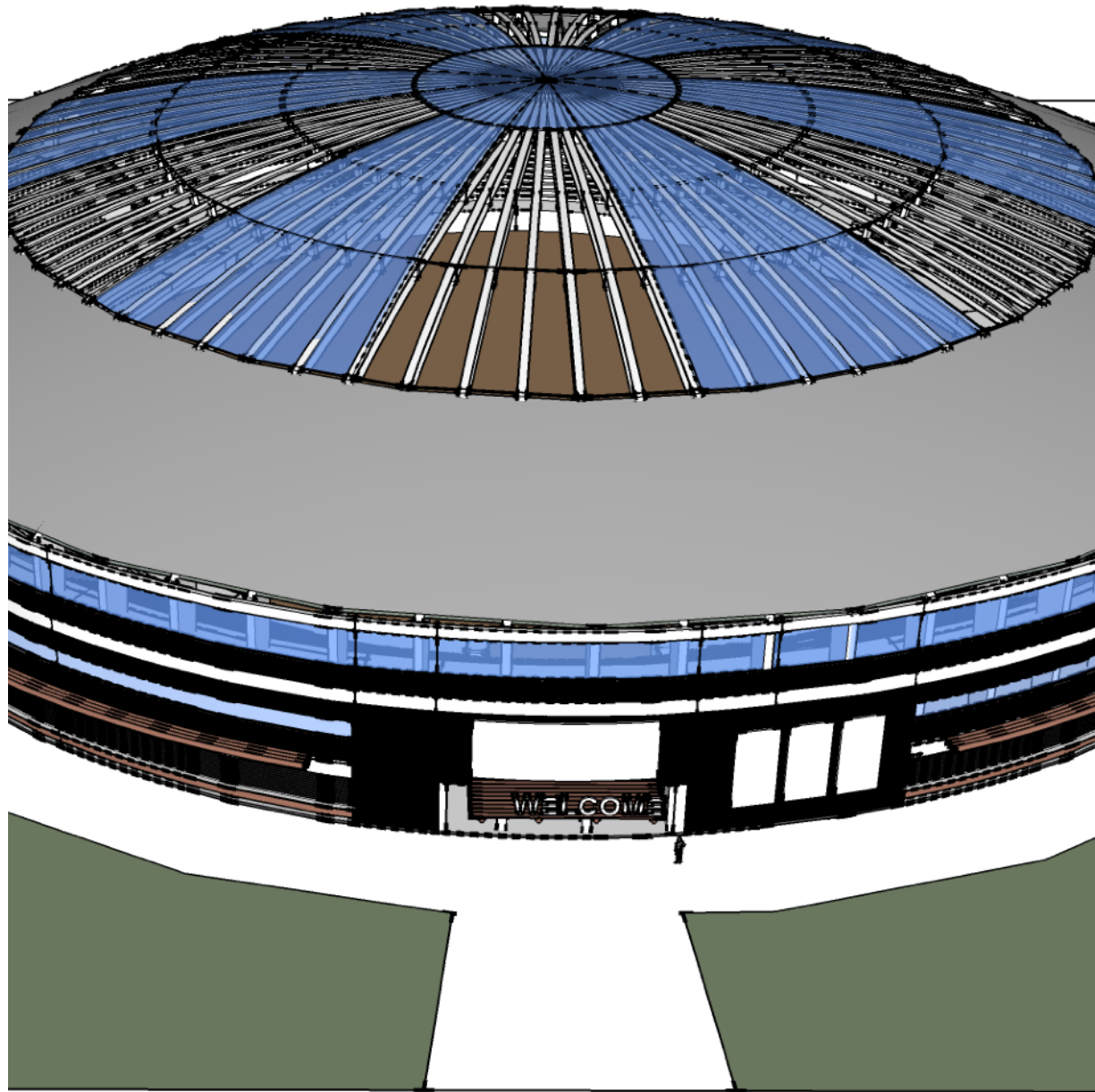
New Projects
stadium in design phase



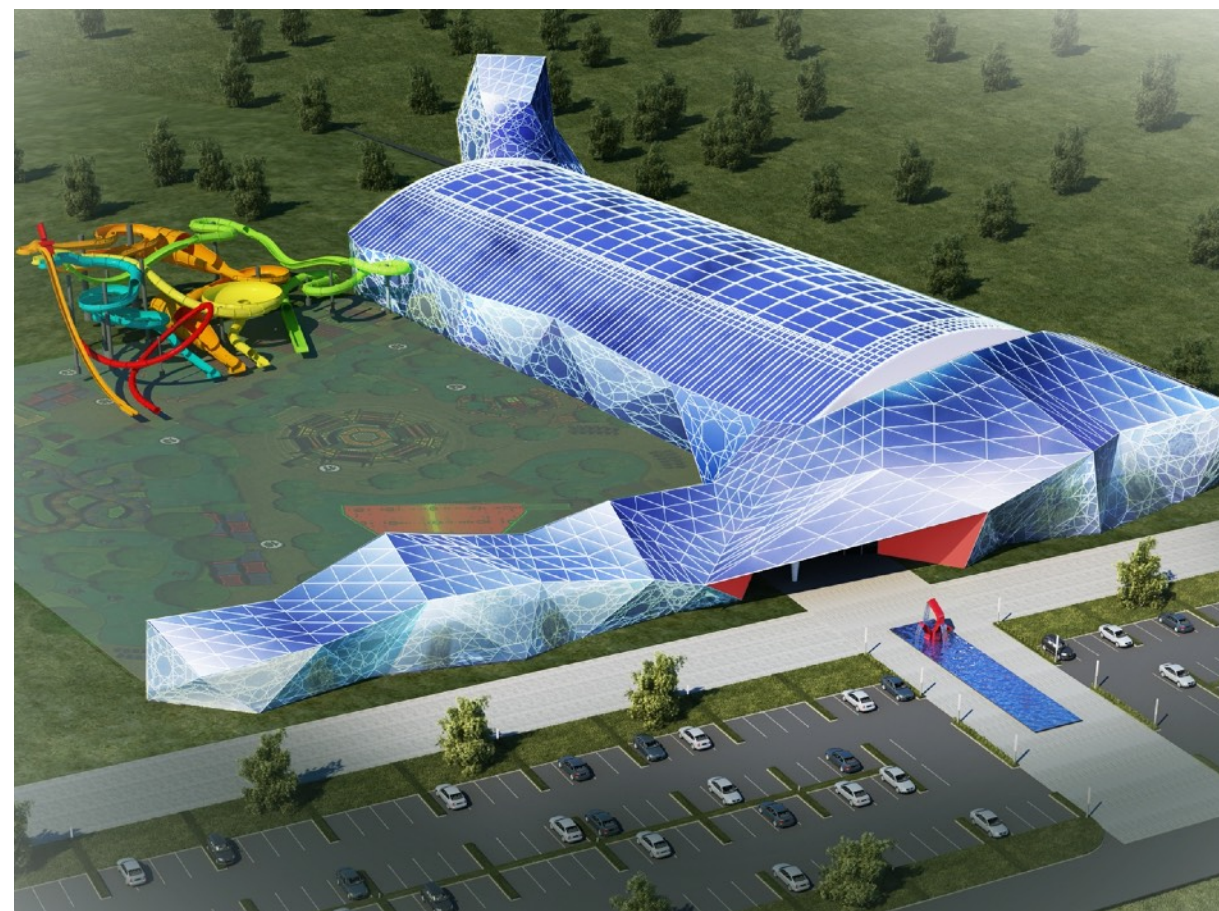
New Projects
royal sun deck in design phase



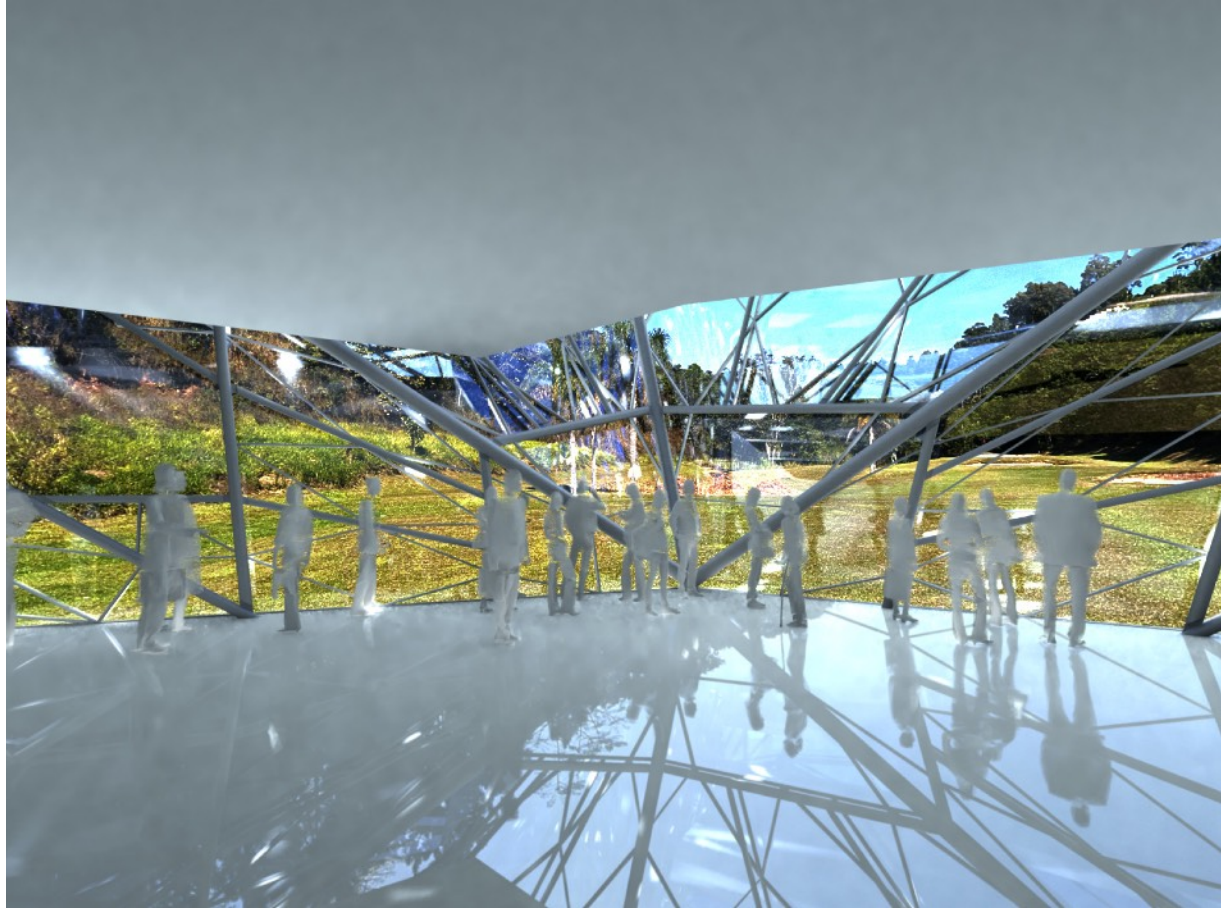
New Projects
royal sun deck in design phase



New Projects
arena in design phase



Indoor and Outdoor Waterpark
Under Construction



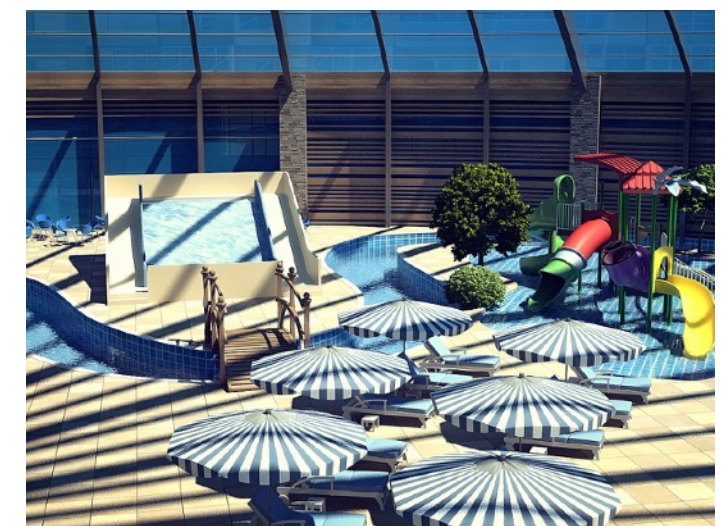
Indoor and Outdoor Waterpark
Under Construction



Waterpark designed to look like “modern/stylized” german village
Indoor & Outdoor Park



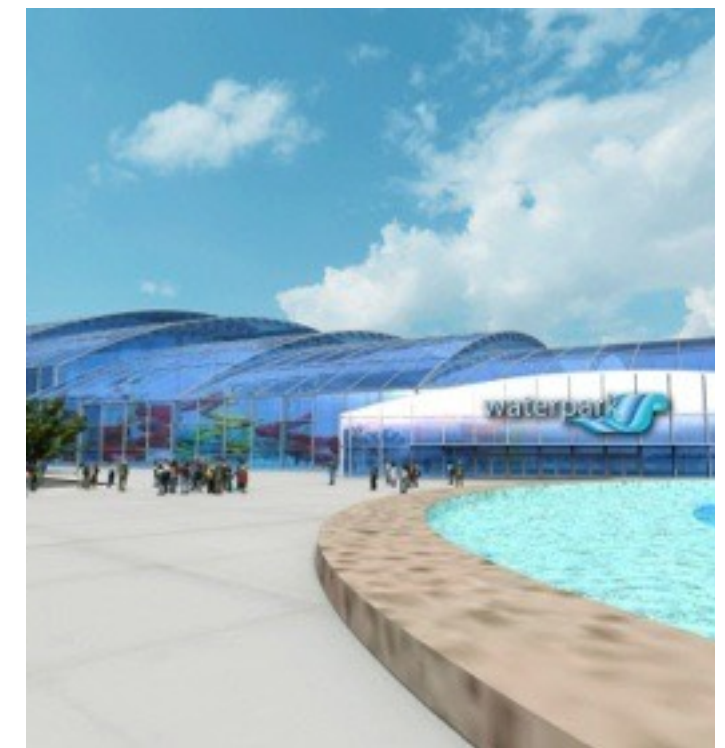
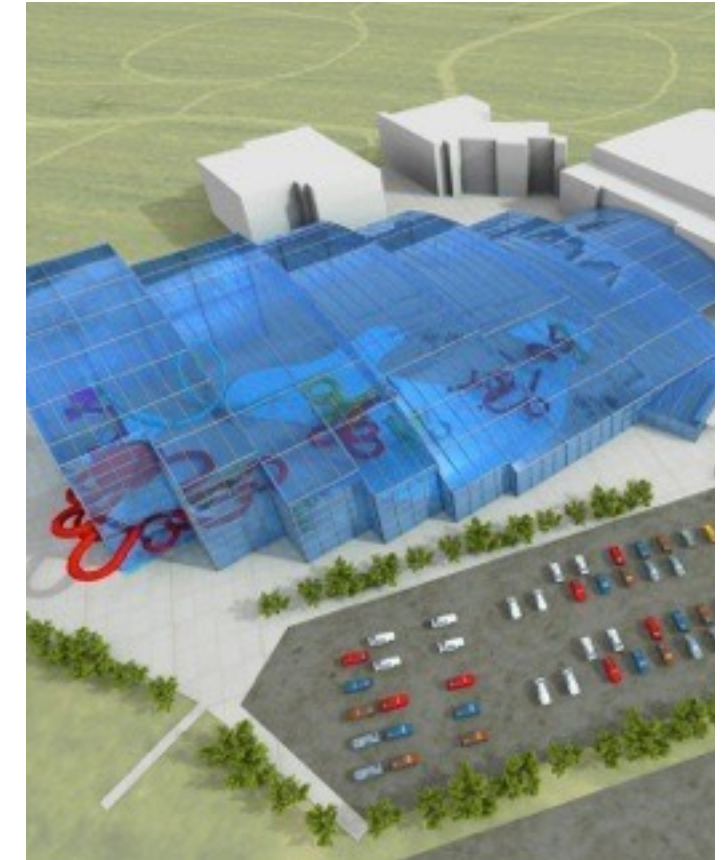
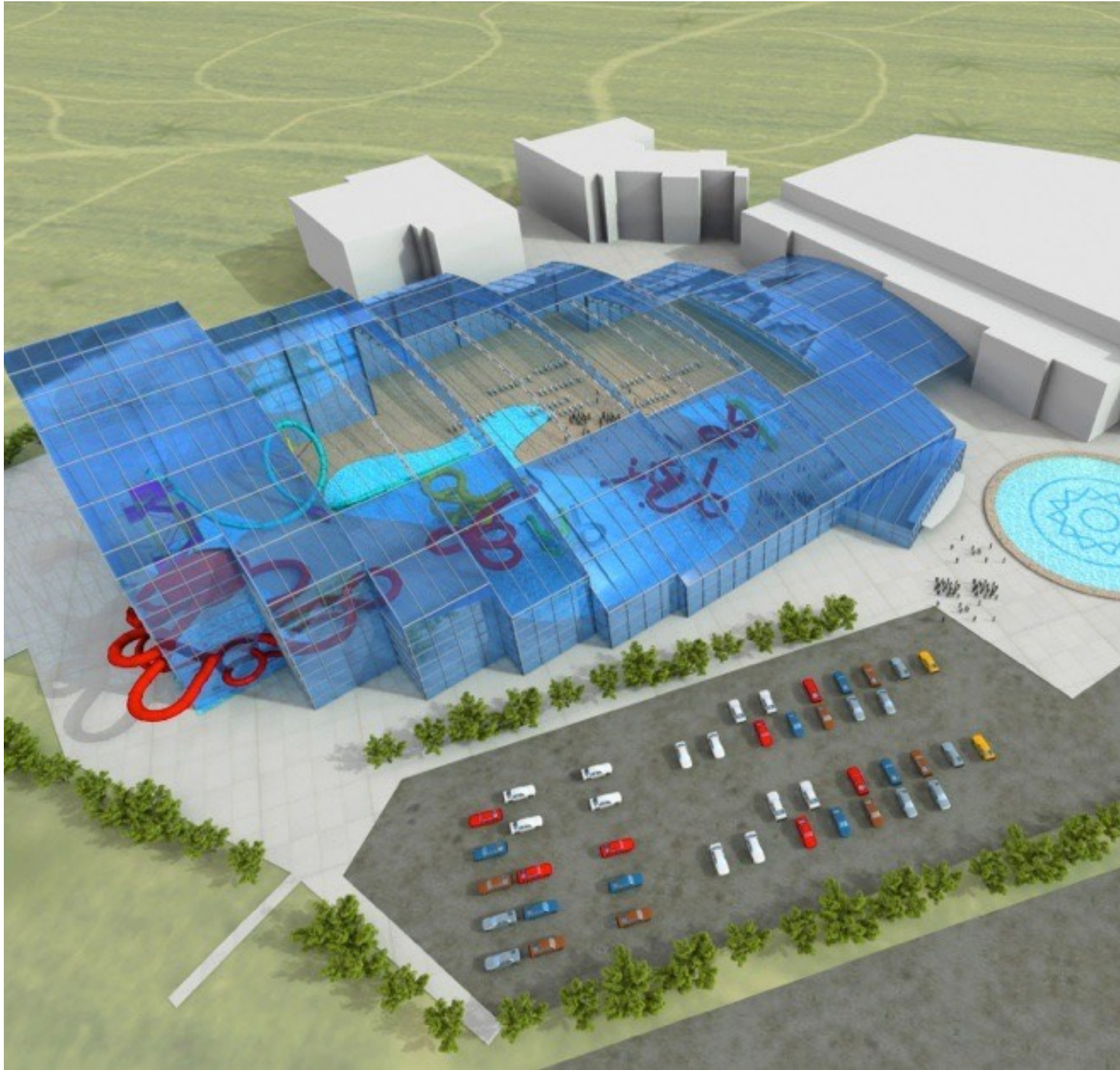
Hotel, Entertainment Zone, Event Spaces & Indoor Waterpark
USA



Hotel, Entertainment Zone, Event Spaces & Indoor Waterpark
USA



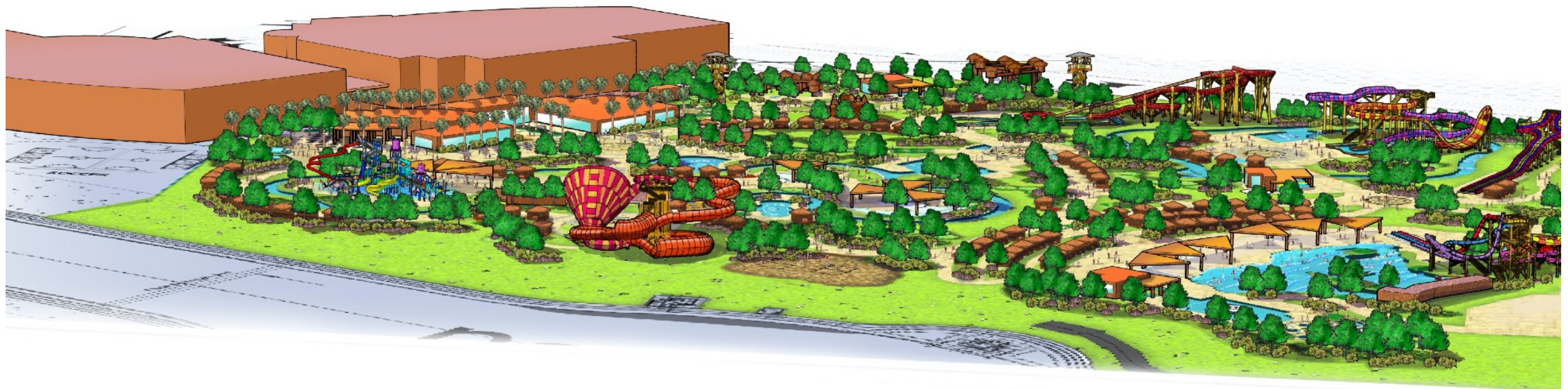
Hotel, Entertainment Zone, Event Spaces & Indoor Waterpark
USA



Indoor and Outdoor Waterpark adjacent fitness facility
Europe

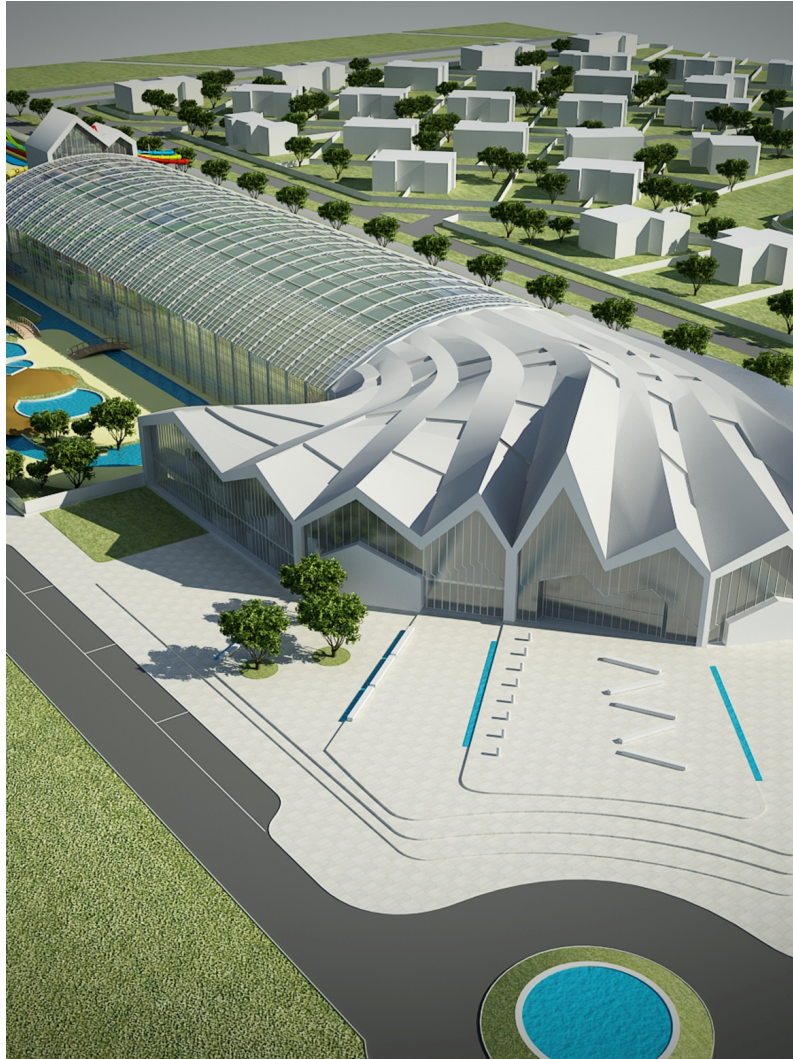


KEY PLAN



BIRD'S EYE VIEW

Indoor and Outdoor Waterpark adjacent fitness facility
Europe

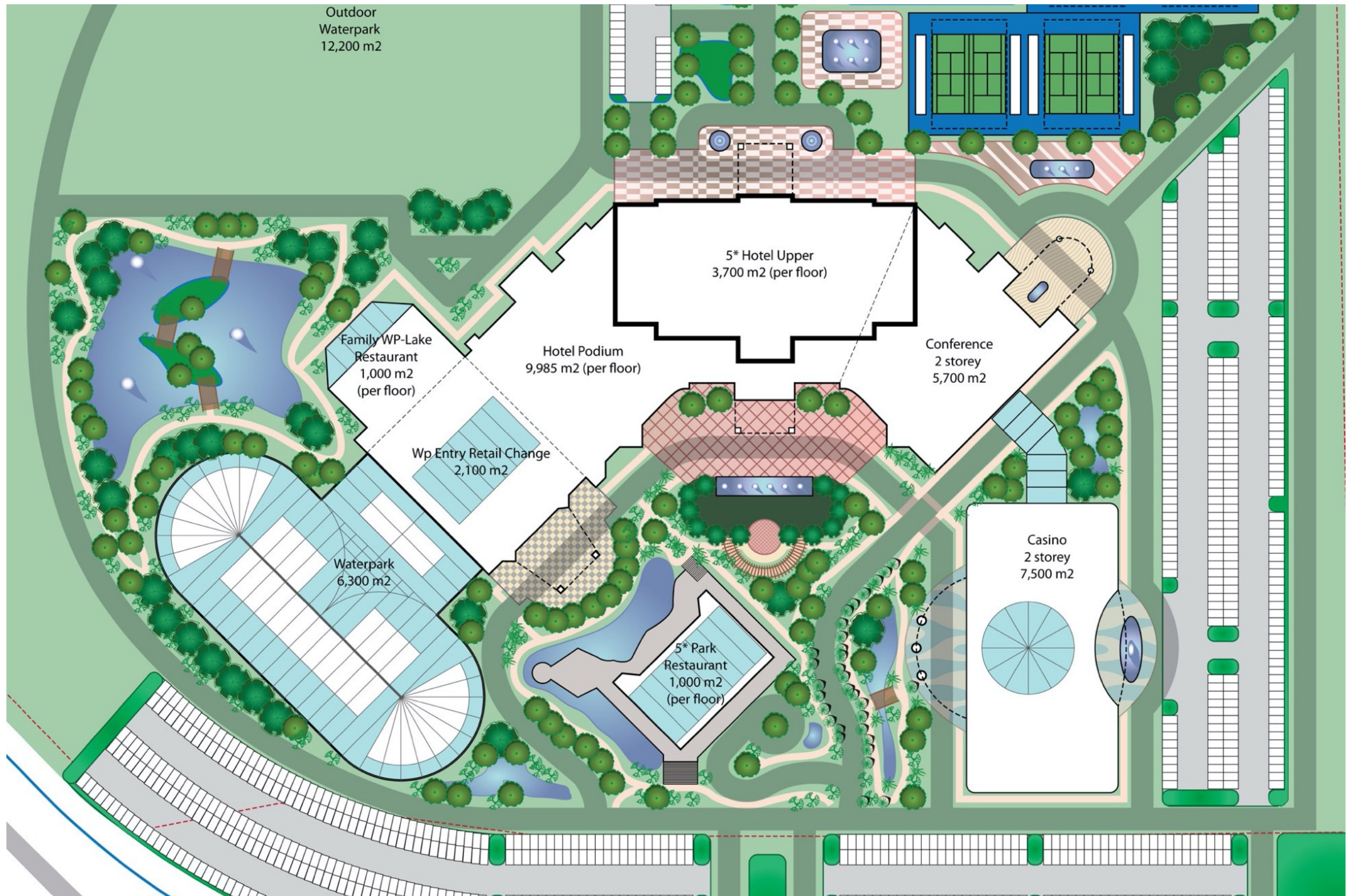


Waterpark designed to look like “modern/stylized” german village
Europe

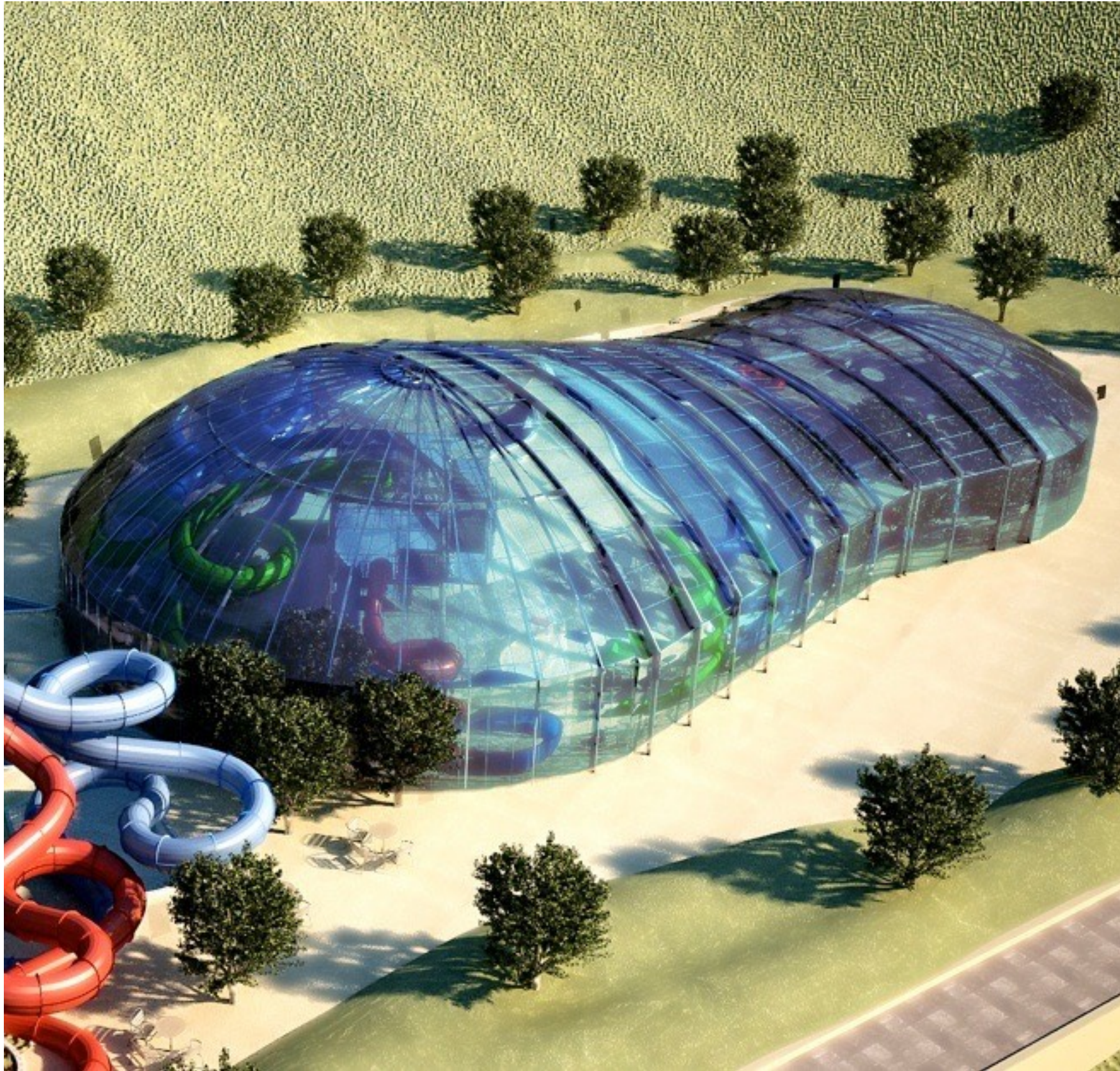


Indoor and Outdoor Waterpark

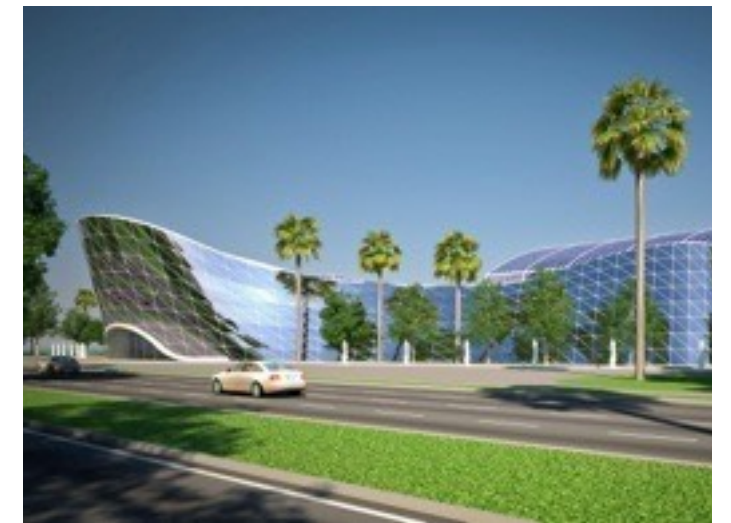
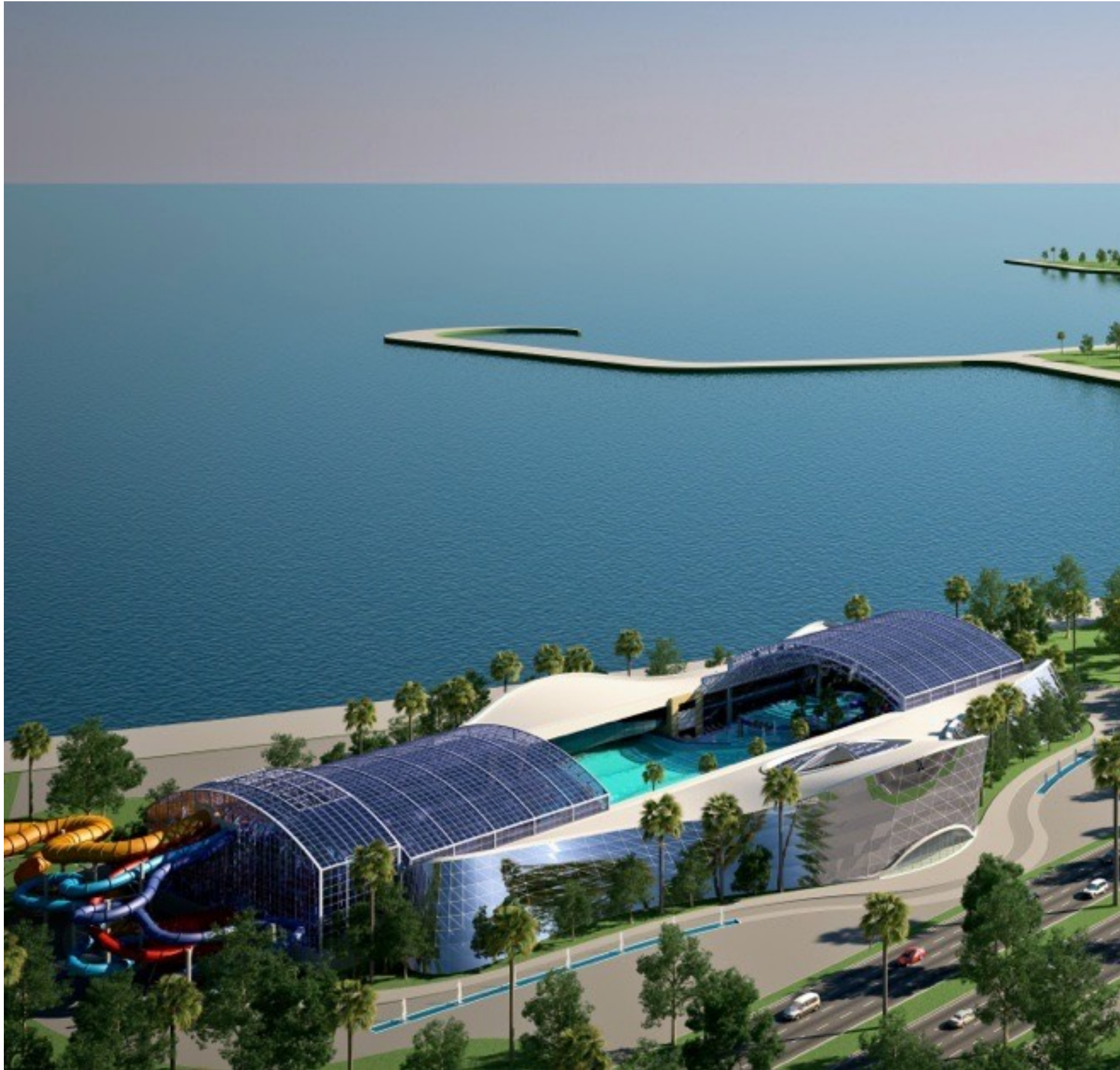
Includes: mini golf, bumper cars, hotel, entertainment zone and conference centre



Waterpark and hotel planning



Waterpark designed to look like a sea creature



Waterpark on waterfront in central city location



Modern Waterpark with VIP interior spaces



Various Project Samples: Waterpark exteriors



Waterpark interior with roof open



Waterpark interior with roof open



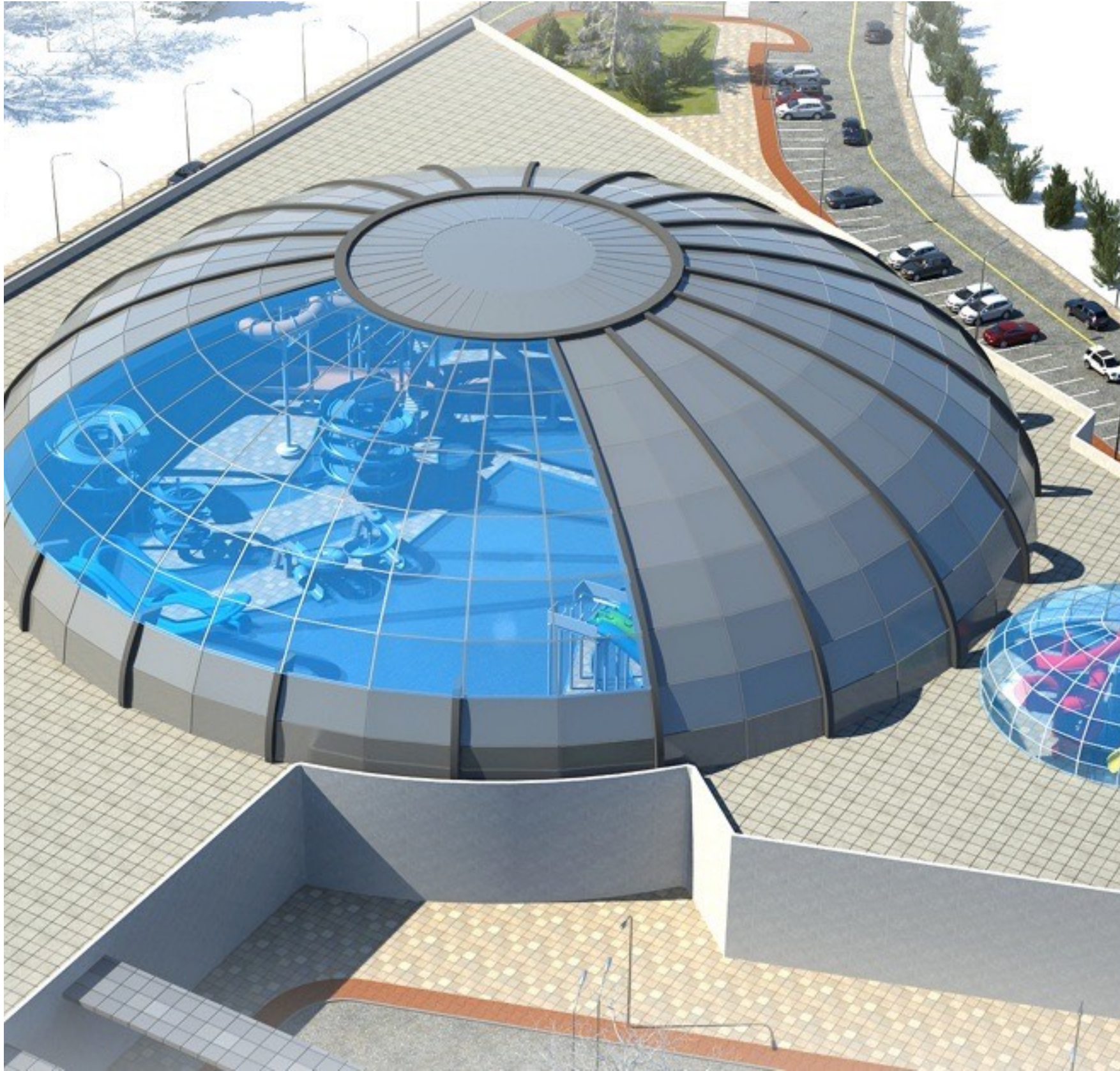
Indoor Waterpark



Indoor water park, outdoor recreation, casino, racetrack and hotel



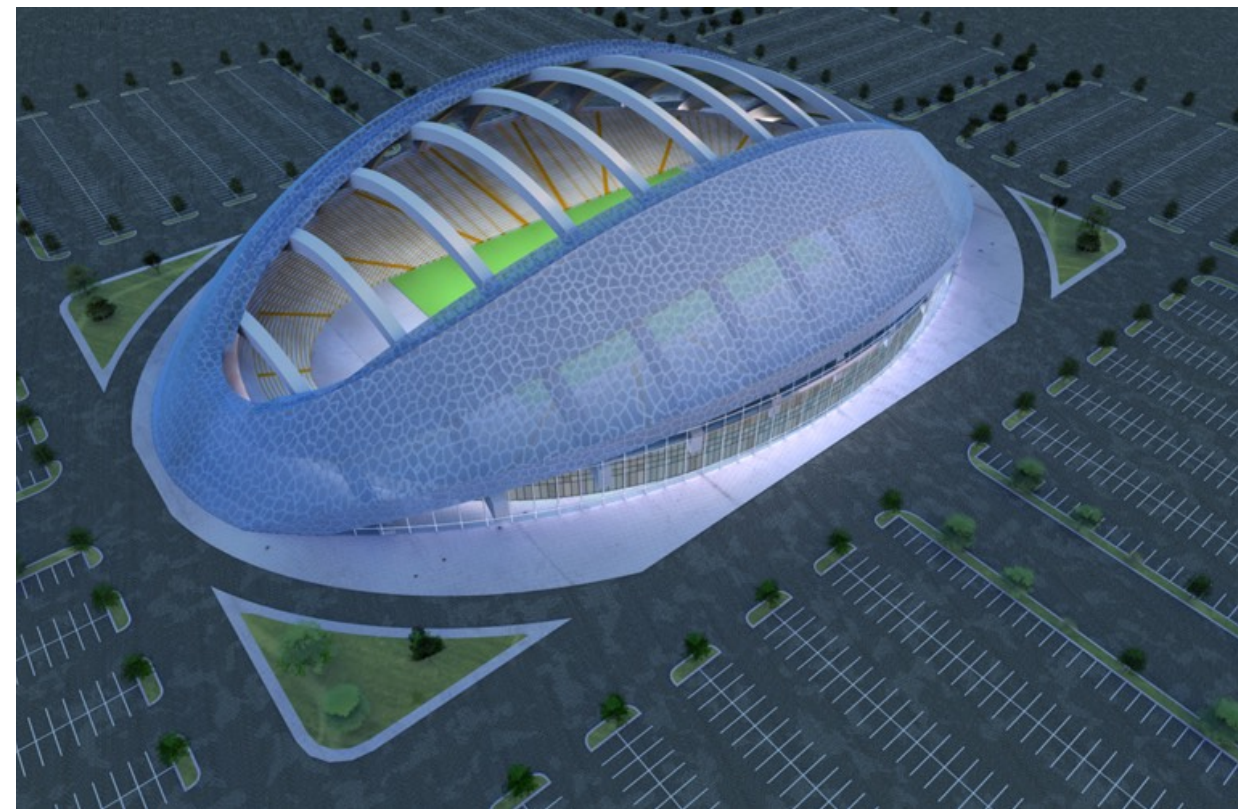
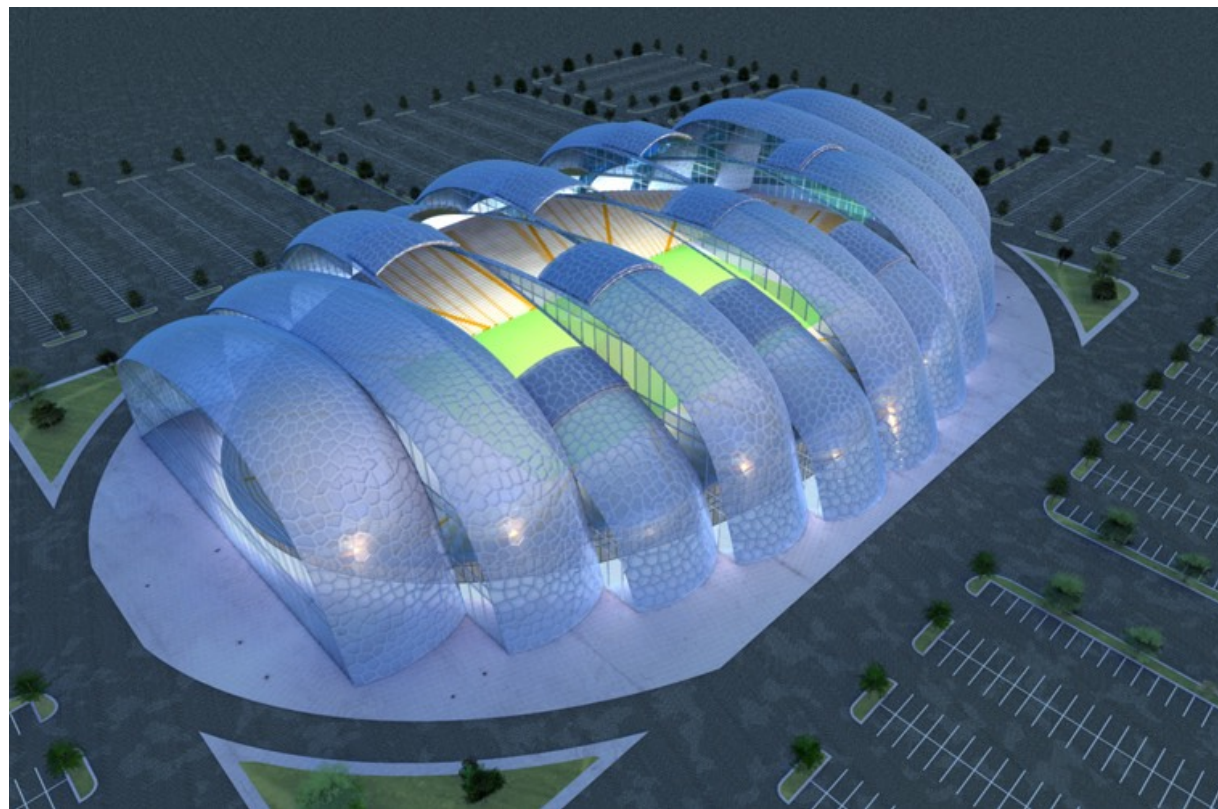
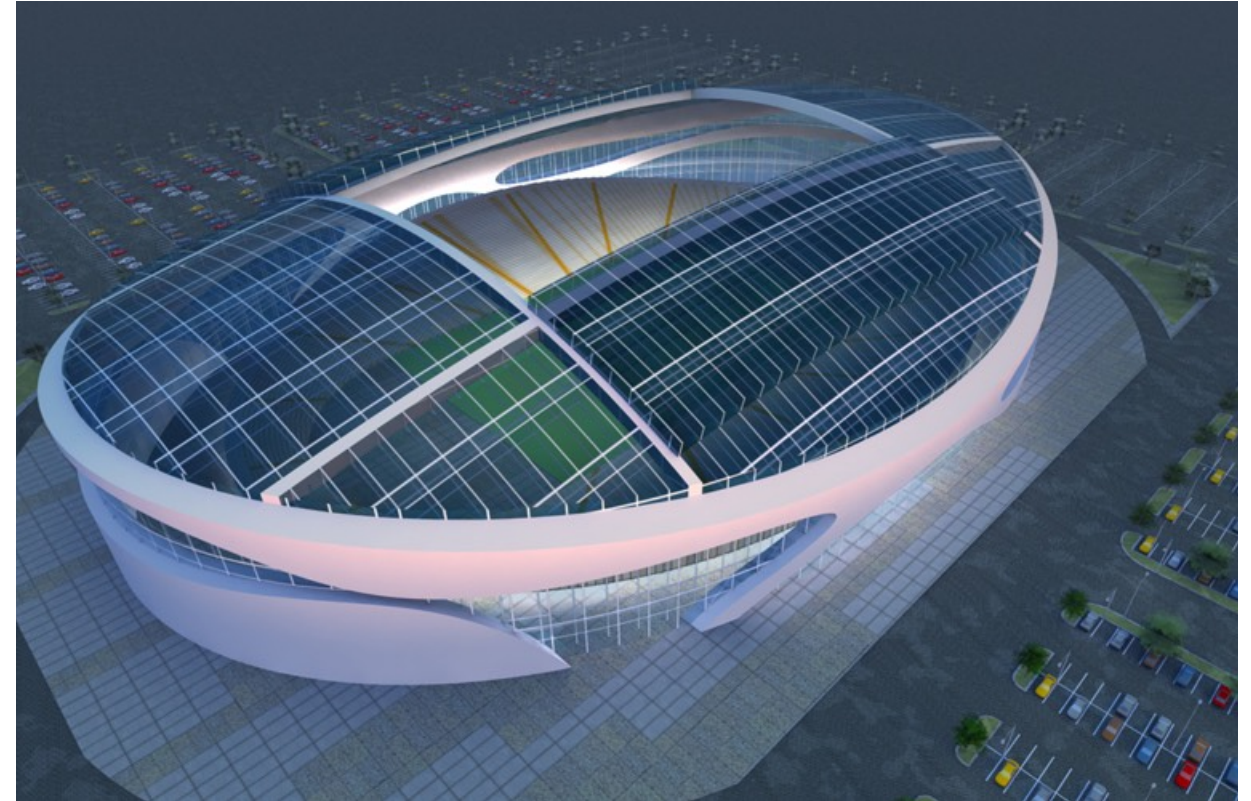
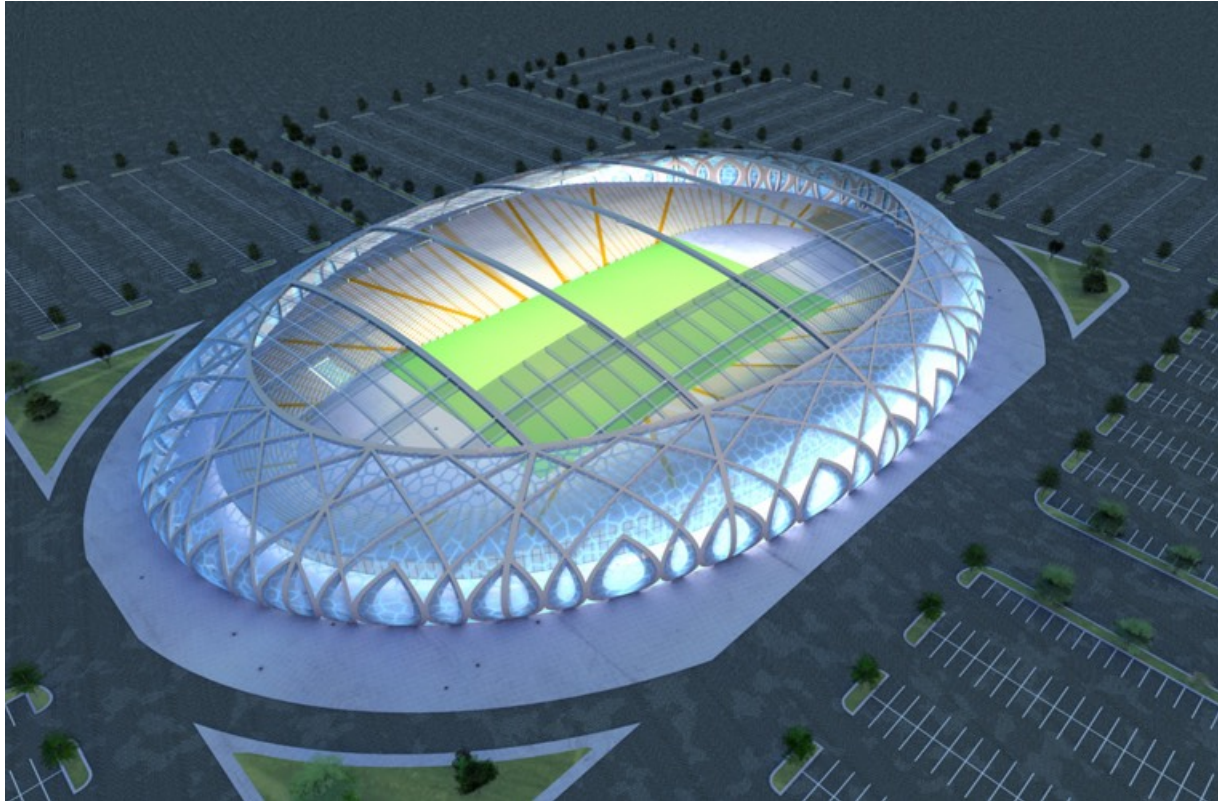
Waterpark connected to traditional hotel



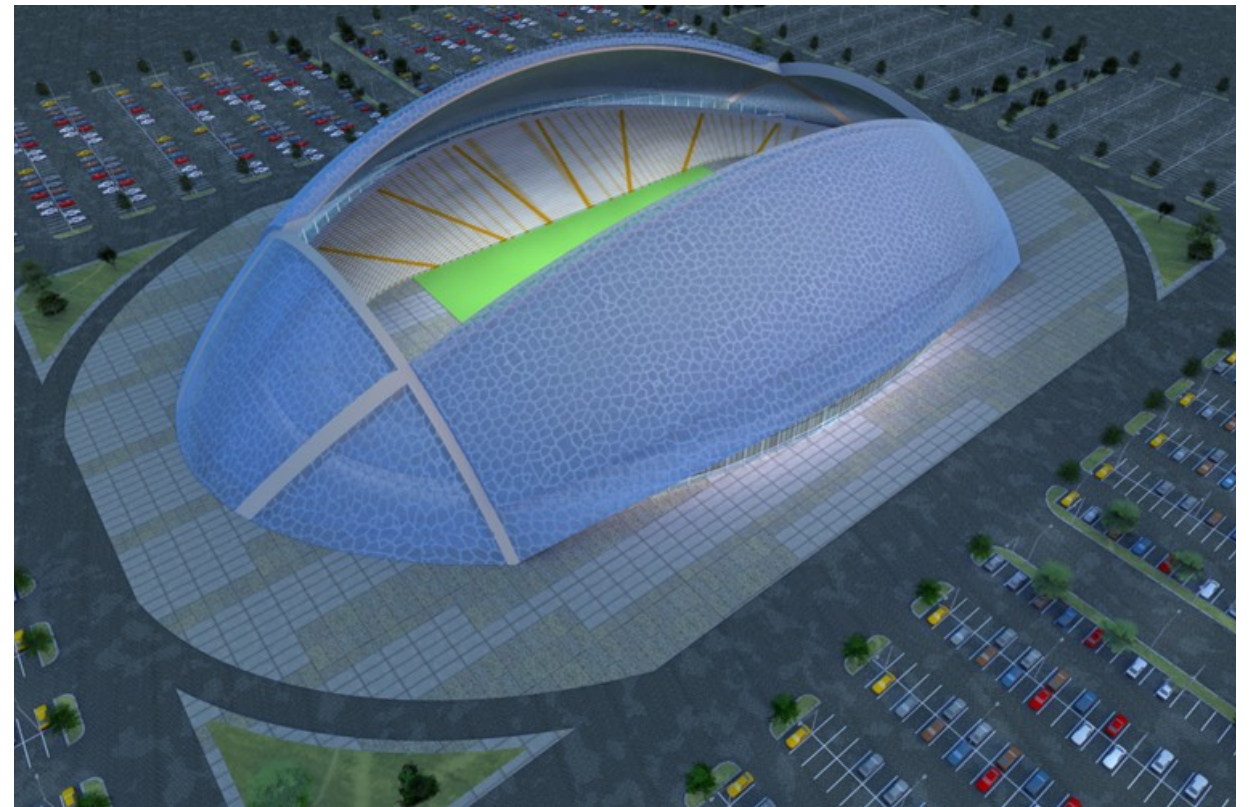
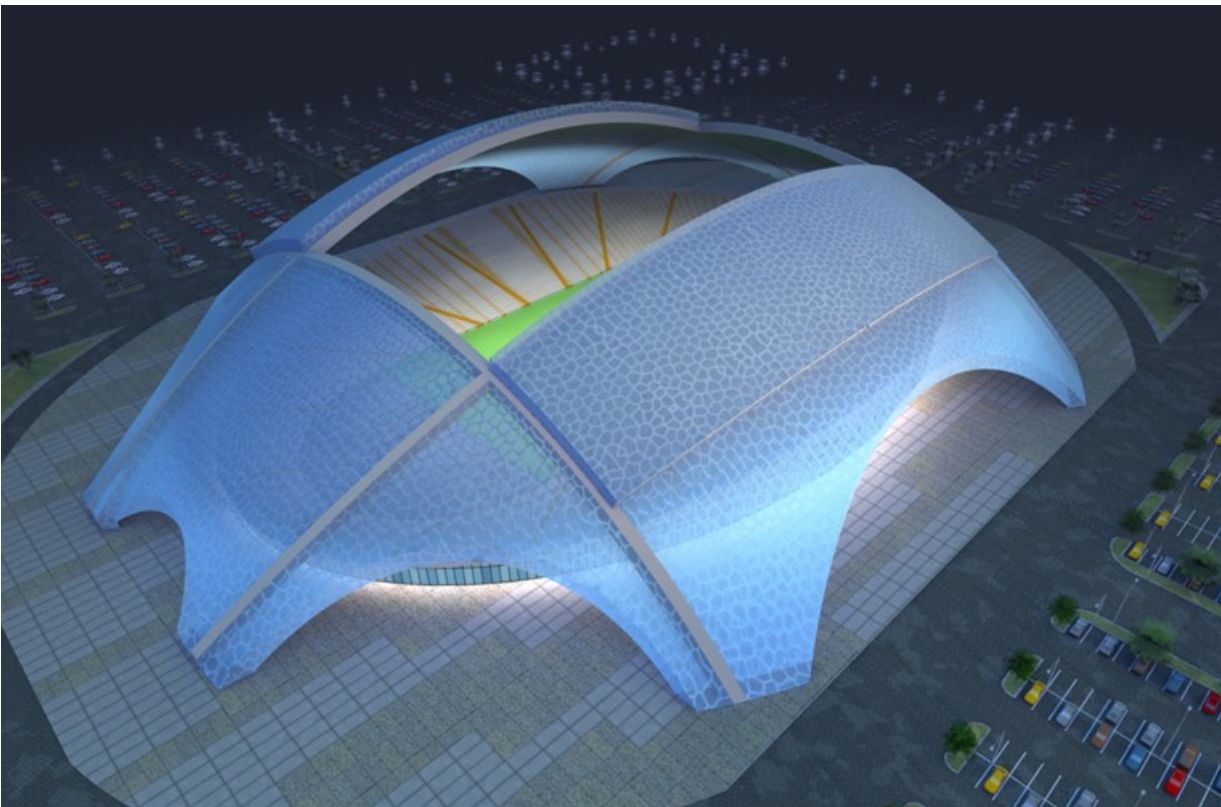
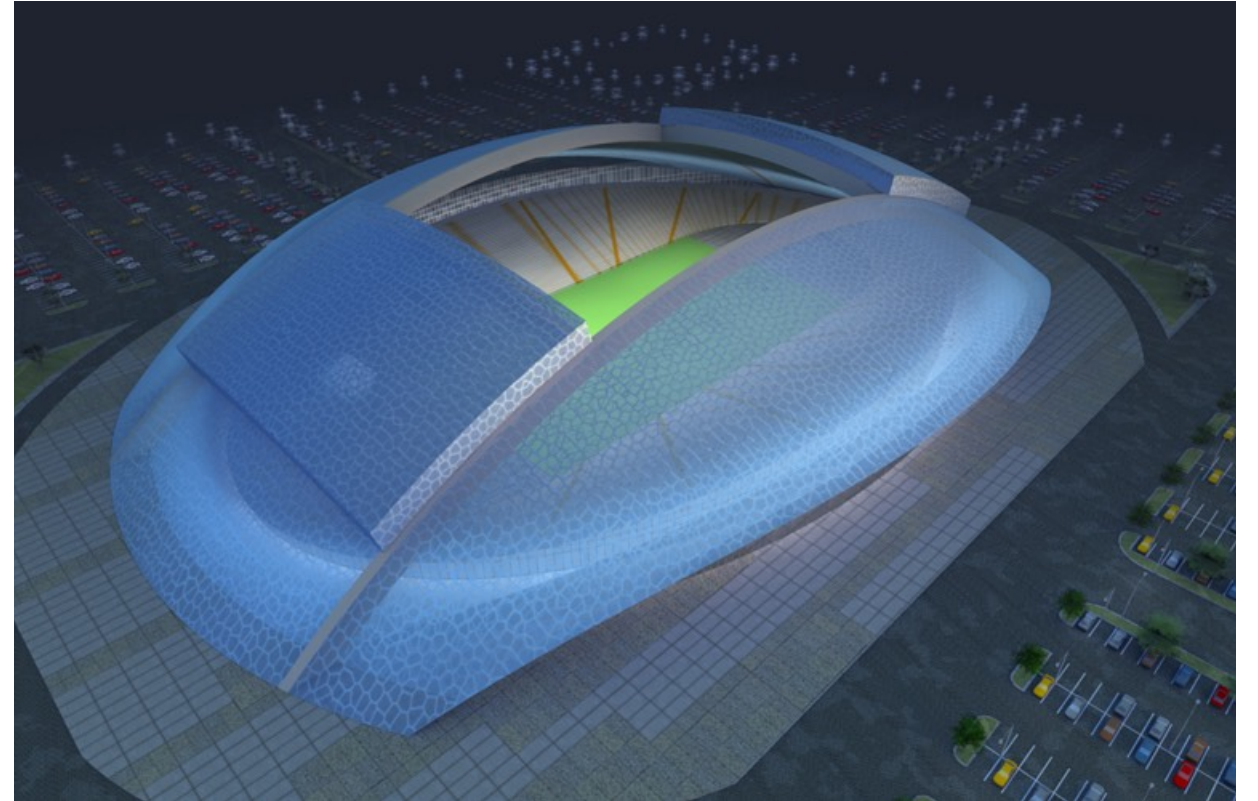
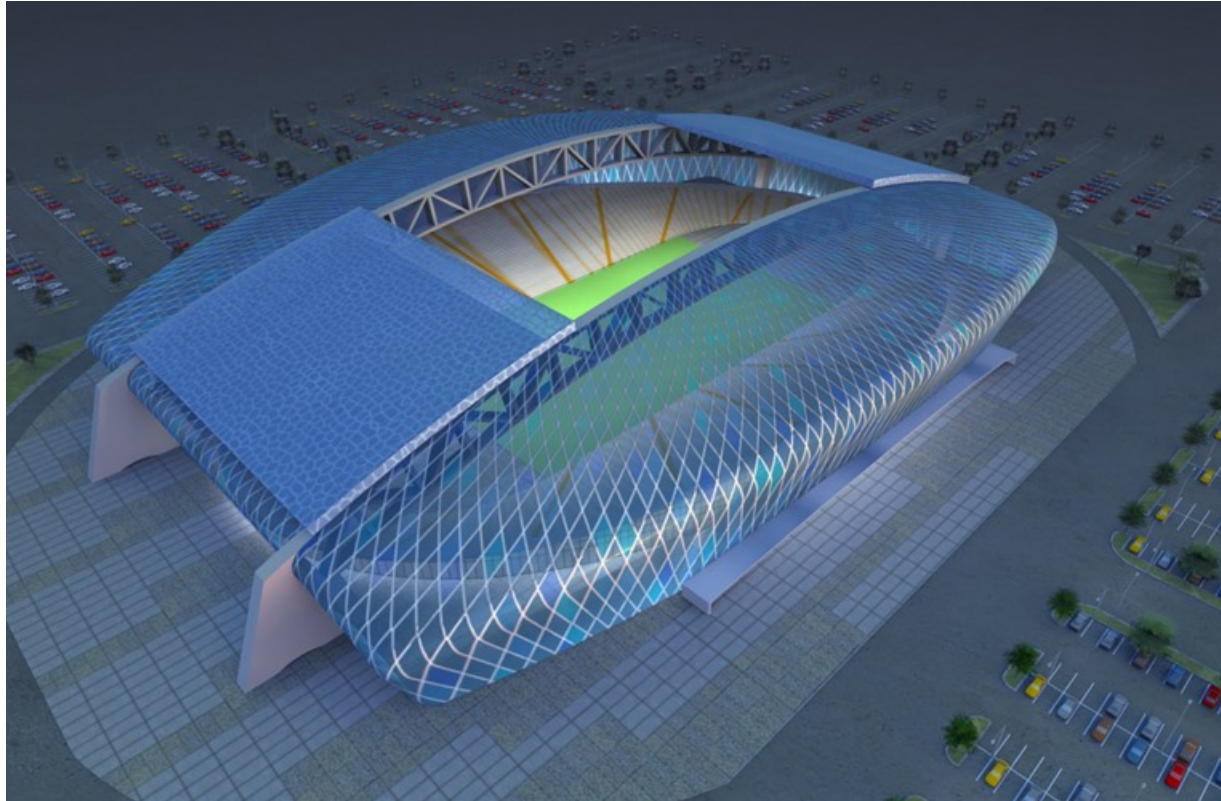
Dome design for high snowfall climate



Private Residence



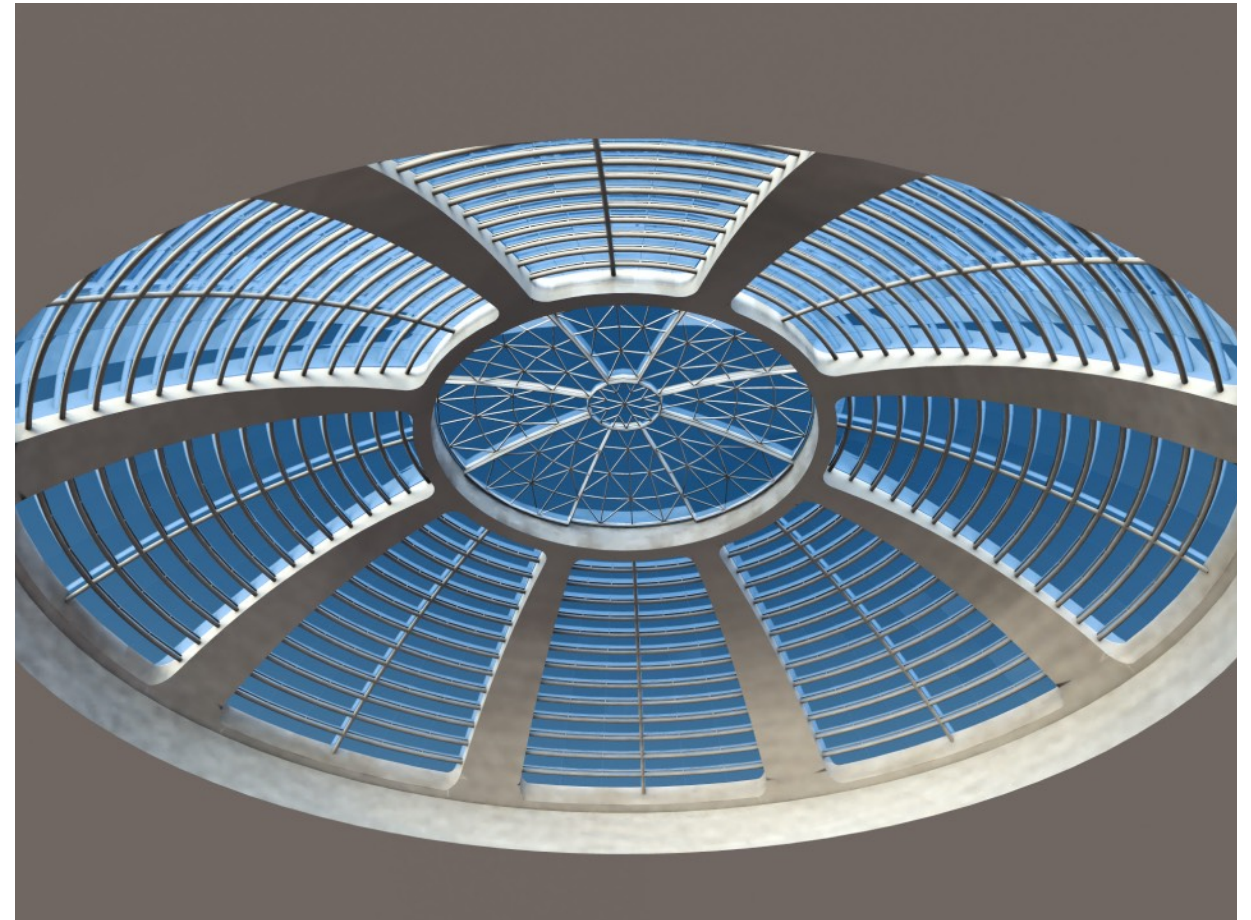
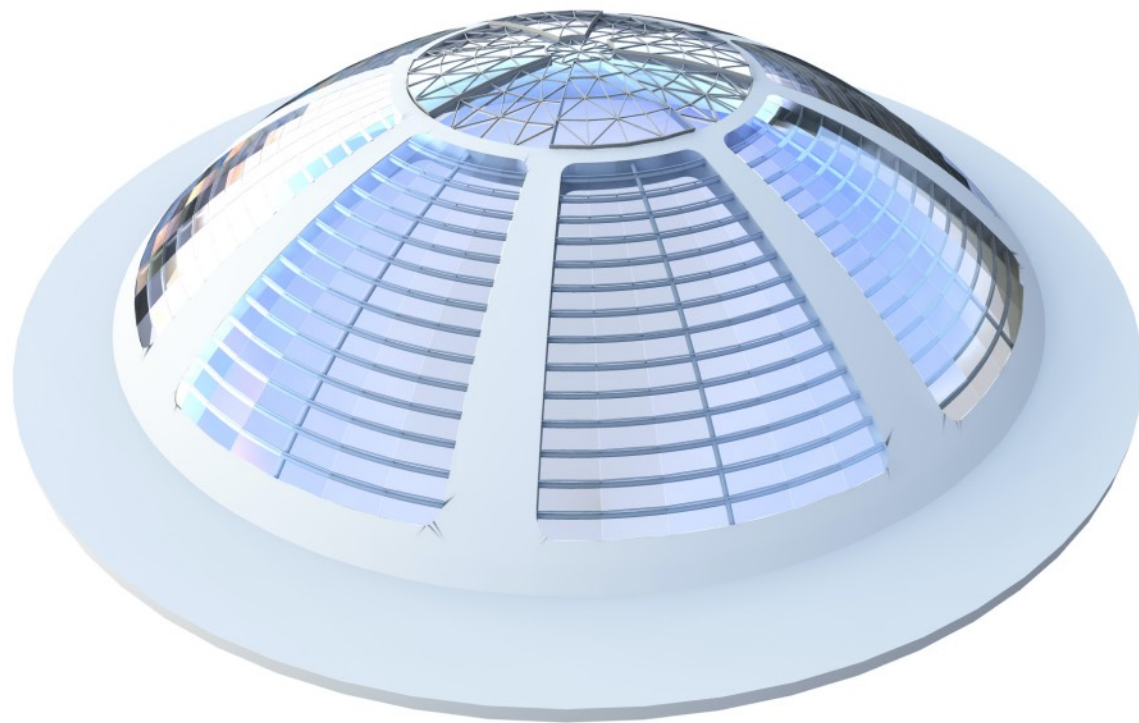
Stadium Concepts
20,000 person Soccer Stadiums



Stadium Concepts
20,000 person Soccer Stadiums



Indoor Outdoor Sports Facility



Night club Skylight



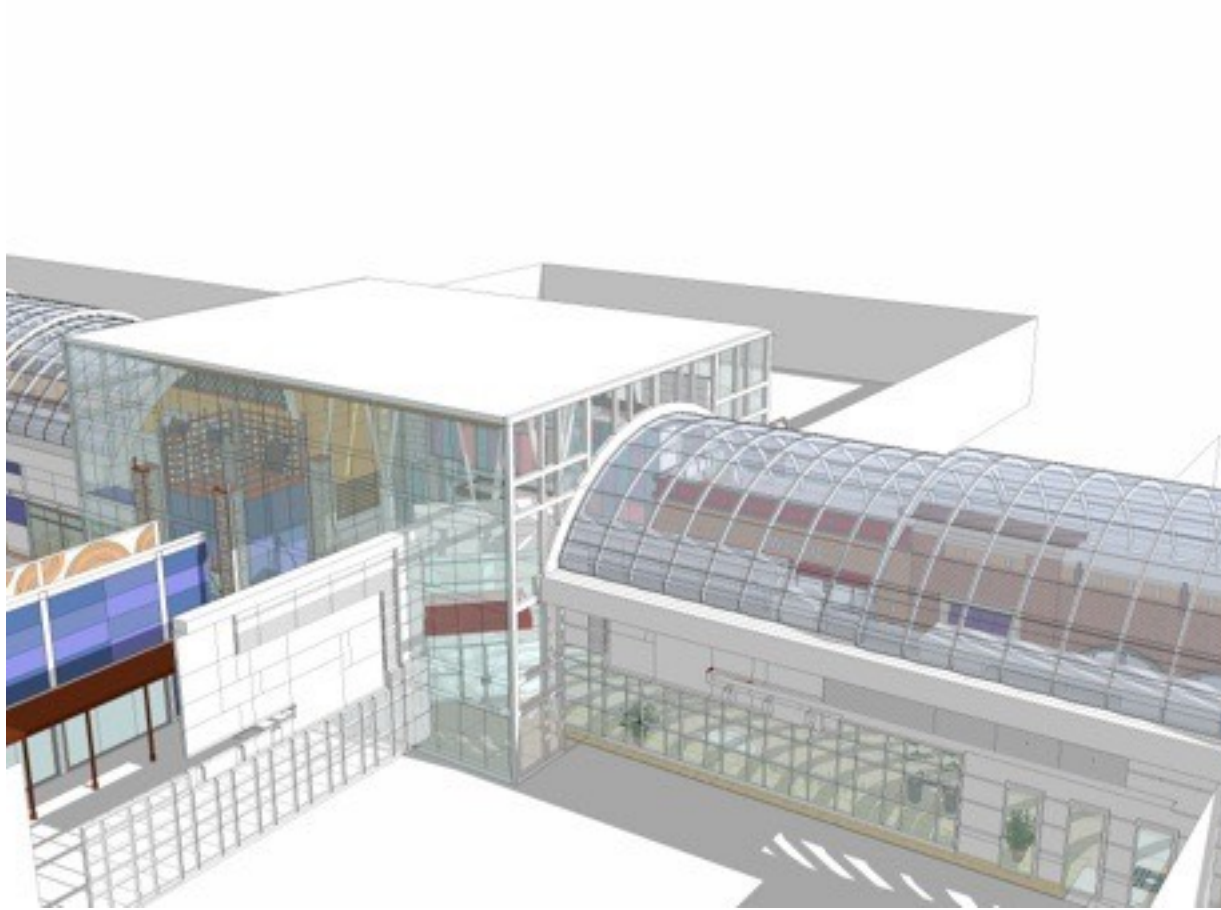
Shopping Mall - Roof like a sail



Event Space



Indoor-Outdoor Shopping Mall



Shopping Mall with Indoor-Outdoor “streets”



AIA
Continuing
Education
Provider

Thank you

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Oakville, ON

L6J 7T9

Canada

Toll Free: 1-800-267-4877

Tel: 905-901-8535

www.openaire.com

Key Contacts:

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npatterson@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
5. The Benefits of Natural Light: Research supports daylighting's positive effect on building performance and human health. Kevin Van Den Wymelenberg. architecturallighting.com; March 19, 2014
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