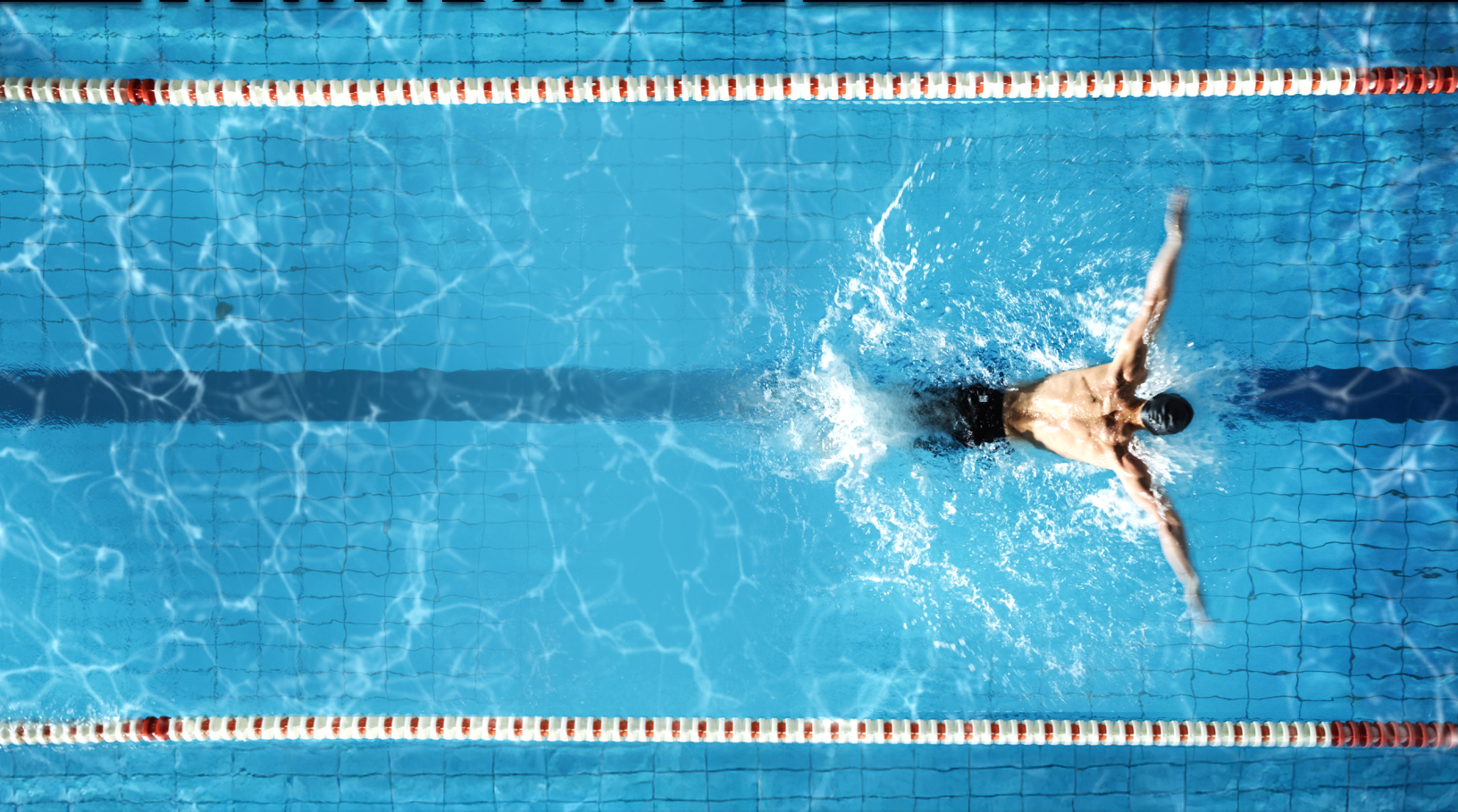


SPI LIGHTING

NATATORIUM LIGHTING GUIDE



FIVE QUESTIONS TO ASK

WILL THE SPACE BE DESIGNED FOR OPTIMAL LIGHTING?

DO LAYOUT SUMMARIES TELL THE TRUE STORY?

ARE FIXTURES ENGINEERED FOR UNIQUELY HARSH ENVIRONMENTS?

ARE YOU COMPARING FIXTURE COSTS APPLES-TO-APPLES?

IS YOUR LIGHTING SOLUTION RIGHT-SIZED FOR THE SPACE?

WILL THE SPACE BE DESIGNED FOR OPTIMAL LIGHTING?

NATATORIUM LIGHTING DESIGN CHALLENGES

Water Characteristics



Water is a good transmitter and diffuser of light; however, the surface of the water also acts as a reflector of incident light. The degree of reflection depends on the angle of incidence. Moreover, swimming actions cause surface turbulence, which produces scattered reflections. As the light strikes the water at shallower angles, the reflected component increases until virtually no light penetrates the water surface. This reflection of light causes veiling reflections, making it difficult to see into the water to observe swimmers and divers.

Facility Design Challenges



Daylighting

To maximize the use of daylight and minimize glare, windows and skylights in natatoriums should have matte lenses to disperse natural light evenly and prevent glare.

Windows can cause excessive glare. Window height placement needs to be carefully considered along with the use of diffused lenses.

The illuminance from skylights can be calculated by using any of the generally accepted algorithms.

Design First Steps

- Focus on **indirect lighting** and present it early in the design process
- Allow for early discussions with trades about design elements:
 - Limit ceiling obstructions
 - White/reflective ceilings
 - HVAC location
 - Conduit and other electrical obstructions

IES RP6-22

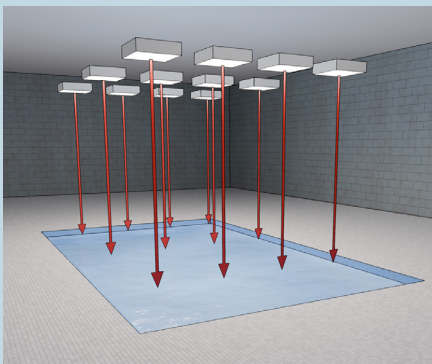
Refer to IES RP6-22 for complete guidance on Natatorium Lighting

"Light from above is required to illuminate pool deck areas, diving platforms, and sport action occurring above the water surface."

How You Light from Above Matters

Option 1

Direct Lighting Above Pool

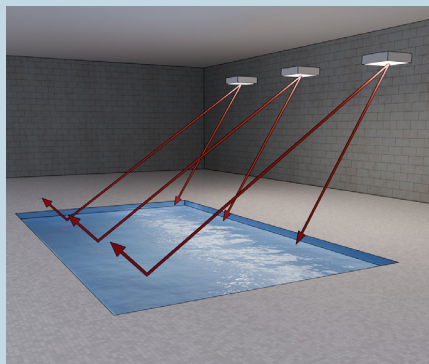


CONS

- Maintenance barriers
- Poor comfort of light for lifeguards, swimmers, and spectators

Option 2

Direct Lighting from the Perimeter

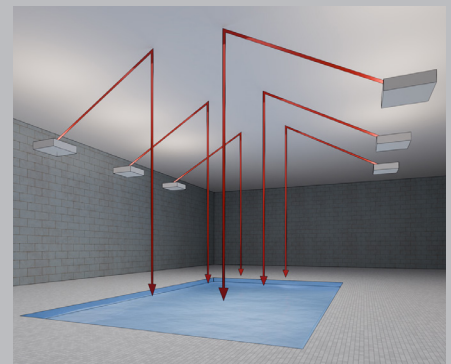


CONS

- Safety Issues – Glare
- Poor comfort of light for lifeguards, swimmers, and spectators
- To reduce glare to an acceptable level, the fixtures would potentially need to be installed at a height of 57ft - 60ft

Option 3

Indirect Lighting from the Perimeter



PROS

- Safest by mitigating glare
- Most comfortable for lifeguards, swimmers, and spectators
- Easier to maintain and service

Indirect lighting solutions meet IES recommended guidelines for light levels, viewing comfort, and safety.

DO LAYOUT SUMMARIES TELL THE TRUE STORY?

SIMILAR LAYOUT SUMMARIES - VERY DIFFERENT LIGHT DISTRIBUTIONS

Similar Layout Summaries

Layout Summary (A)

Avg = 107

Max = 133

Avg/Min = 1.5

Max/Min = 1.9

Pool Center = 105fc

Layout Summary (B)

Avg = 92

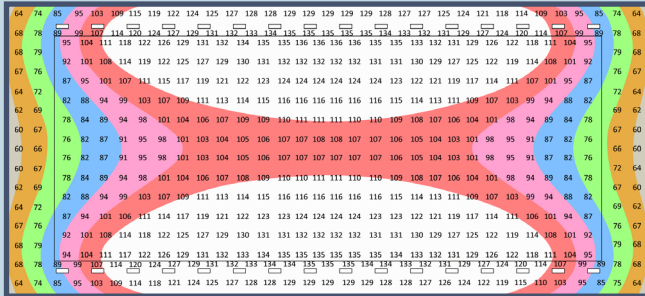
Max = 105

Avg/Min = 1.5

Max/Min = 1.8

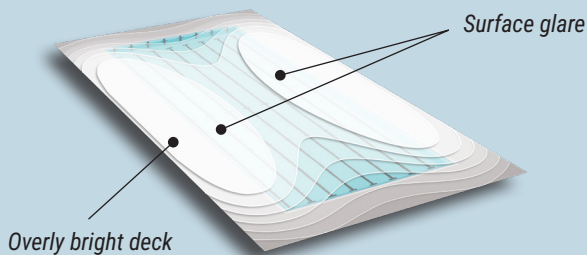
Pool Center = 105fc

Very Different Light Distributions



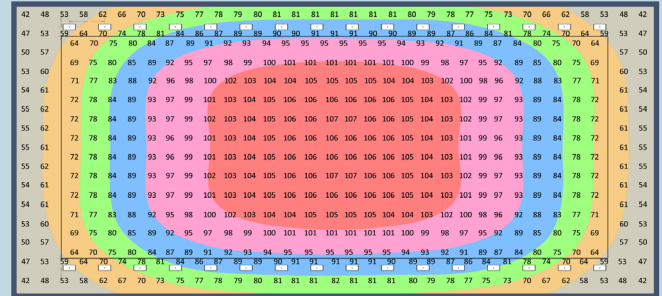
Hot Spots and Glare

- Poor Uniformity
- Overly bright deck and surface glare - harsher viewing
- Hinders visibility
- Poses safety risks



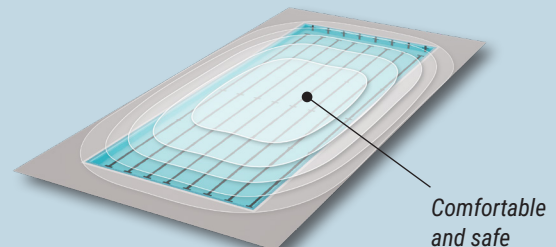
Direct Lighting from the Perimeter

200' x 100' Pool | Mounting: 28.5ft AFF | Luminaires: 32 (16 per side)



Comfortable and Safe

- Excellent Uniformity
- Comfortable viewing
- Optimal visual clarity above and below the surface
- Increased safety



Indirect Lighting from the Perimeter

200' x 100' Pool | Mounting: 20ft AFF | Luminaires: 32 (16 per side)

ARE FIXTURES ENGINEERED FOR UNIQUELY HARSH ENVIRONMENTS?

WITHSTANDING HEAT, HUMIDITY, AND HARSH CHEMICALS

The use of outdoor fixtures may seem viable for natatoriums, but true durability and performance require luminaires engineered specifically for the harsh environment.

Start with the correct parts

Stainless Steel Cables	Standard stainless steel cable will not perform. Higher grade stainless steel is needed to avoid premature breakdown.
Stems	No threads (Susceptible to galling and galvanic corrosion)
LED Chips	Minimal packaging to break down No wire bonds (flip chip design) LEDs for higher temperatures and currents
Light Engine	Sealed
Drivers	Fully potted
Surge Protection	Secondary

Managing Thermal and Electrical Stress

Common Industry Design Approach	SPI LIGHTING Design Approach
<ul style="list-style-type: none"> - More LEDs - Mid-Low Power LEDs - Higher Lumens/\$ 	<ul style="list-style-type: none"> - Less LEDs - High Power LEDs - Slightly Lower Lumens/\$
Higher Electrical Stress	Lower Electrical Stress
Higher Thermal Stress	Lower Thermal Stress
Increased chances of Premature Failure Unplanned Maintenance	Longer Life Better Performance

THE NATATORIUM ENVIRONMENT

Chlorine-rich natatoriums accelerate corrosion, moisture damage, heat stress, and material degradation, demanding sealed, corrosion-resistant lighting with robust thermal and optical protection.

Environmental Factors	Primary Failure Modes	Effect on Lifespan / Performance
Airborne chloramines (from chlorine + organic matter)	Corrosion of metal housings, mounting hardware, and fasteners	Can reduce fixture life by 50% or more if untreated
High humidity (50–70% RH)	Condensation inside housing, electrical shorts, LED driver failure	Electronics and wiring degrade faster; may negatively impact driver lifespan
Warm ambient air (78–85°F / 25–29°C)	Accelerated chemical reactions - thermal stress on drivers and LEDs	Shortened LED lumen maintenance period; driver predicted lifespan drops
Chemical-laden condensation	PCB corrosion, fogging or hazing of lenses	Optical loss, early failure
Splash and spray	Physical ingress of water, gasket wear	Immediate failure in luminaires
Degradation of coatings	Paint blistering, peeling, rust creep	Rapid corrosion of exposed base metal

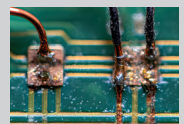
Potential Problem Areas



Stems



Cables



Electronics

ARE YOU COMPARING FIXTURE COSTS APPLES-TO-APPLES?

INSTALLATION COSTS MATTER

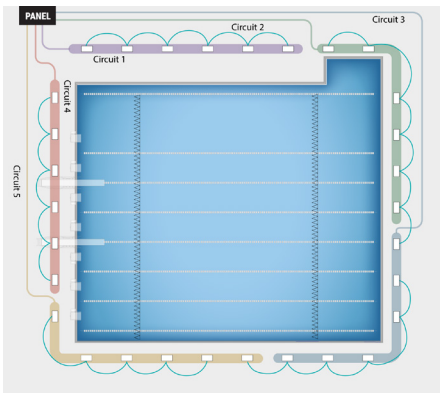
When evaluating a project, consider both base cost and potential extra labor, materials, or maintenance.

Hidden expenses can outweigh initial savings, so assess total ownership for true long-term value and performance.

INSTALLATION COST COMPARISONS

Pendant 1

30 PENDANTS
5 CIRCUITS
TRADITIONAL ZONES



SS Conduit and Wiring Labor:
540 ft \$15.00/ft \$8,100

J-Boxes and Other Materials:
30 boxes \$150

Wire and Mount Units:
30 Units \$2,100

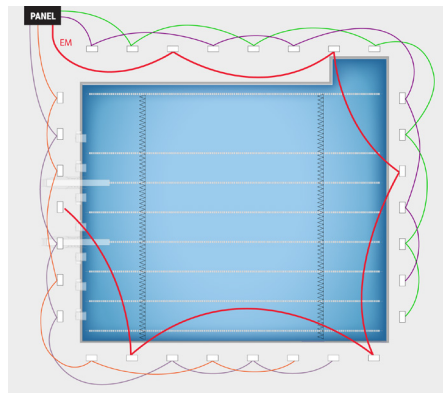
\$10,350

**Additional Per Fixture Cost
+ \$345**

+ \$345

Pendant 2

30 PENDANTS
5 CIRCUITS
• 1 EM CIRCUIT
• ALTERNATING ZONES



SS Conduit and Wiring Labor:
920 ft \$15.00/ft \$13,750

J-Boxes and Other Materials:
30 boxes \$150

Wire and Mount Units:
30 Units \$2,100

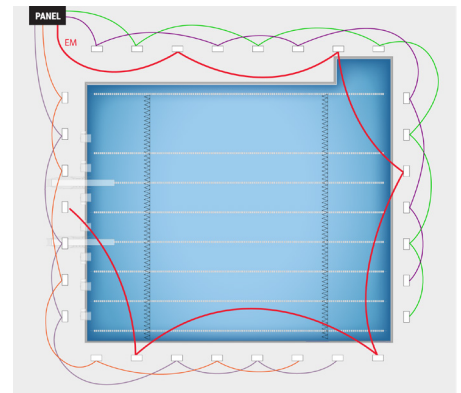
\$16,000

**Additional Per Fixture Cost
+ \$530**

+ \$530

SPI Lightruss System

30 Fixtures
5 CIRCUITS
• 1 EM CIRCUIT
• ALTERNATING ZONES



SS Conduit and Wiring Labor:
0 ft \$15.00/ft \$0

J-Boxes and Other Materials:
6 boxes \$30

Connect Sections
Wire w/Quick Connect:
\$1,600

\$1,630

**Additional Per Fixture Cost
+ \$55**

+ \$55

IS YOUR LIGHTING SOLUTION RIGHT-SIZED FOR THE SPACE?

IES Pool Classifications

Class I Competition Pool

A pool designed and certified for accredited competitive aquatic events like those governed by FINA, USA Swimming, or NCAA.

Class II Public Pool

A pool used for general public recreation, excluding those falling under other classifications.

Class III Semi-Public Pool

A pool operated within establishments like hotels, motels, apartments, or residences for the exclusive use of their guests or residents.

Class IV Pools

This broad category encompasses various specialized pools.

IES RP6-22

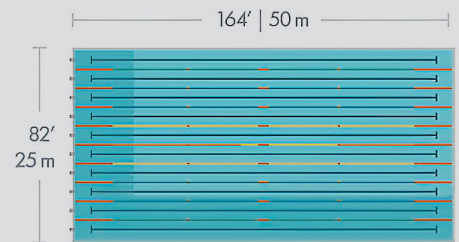
RECOMMENDED MAINTAINED ILLUMINANCE TARGETS

Natatorium	Class of Play	Footcandles
Illuminances on pool	I	(75 @ 0.0)
Illuminances on pool	II	(50 @ 0.0)
Illuminances on pool	III	(30 @ 0.0)
Illuminances on pool	IV	(30 @ 0.0)
Start, finish, and turning lanes	I	(100 @ 0.0)
Start, finish, and turning lanes	II	(75 @ 0.0)
Start, finish, and turning lanes	III	(50 @ 0.0)
Illuminances on deck	I	(50 @ 0.0)
Illuminances on deck	II	(20 @ 0.0)
Illuminances on deck	III	(10 @ 0.0)
Illuminances on deck	IV	(10 @ 0.0)

Competition Pools

Competition pools require significantly higher lighting levels, often 75-100 footcandles or more, for visibility during events and broadcasting, depending on resolution.

Olympic-Sized

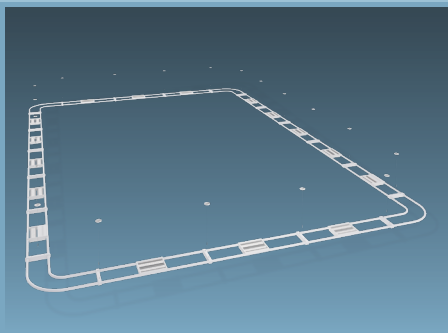


Deck	
Start/Finish/Turn	Middle of Pool
Deck	
Middle of Pool	75fc
Start/Finish/Turn Lanes	100fc
Deck	50fc

We have a solution for all your natatorium lighting projects

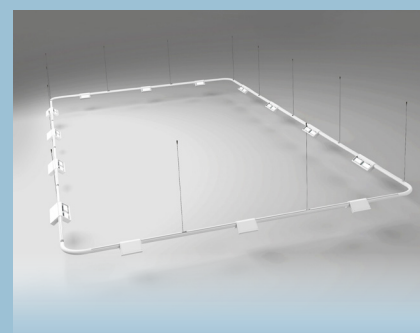
SYSTEMS

Competition Pools



Lightruss GEN 2

Recreational and Hospitality



Lightruss Rail

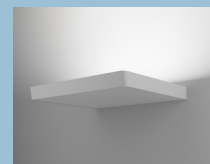
PENDANT OPTIONS



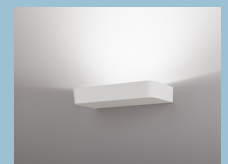
Echo Expanse



Echo Round



Echo Blade



Echo Blade Micro Max

COMPETITION POOL

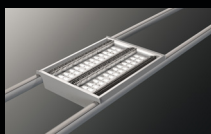


Lightruss GEN 2

Our industry leading indirect system is engineered specifically for a natatorium's uniquely harsh environment. The layered light improves safety and creates a comfortable viewing environment for lifeguards, swimmers, and spectators.

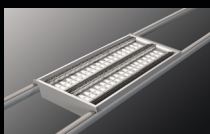
- Sections are pre-wired, saving installation time and materials
- Lumen packages up to 109,000 lumens
- All aluminum construction
- Gasketed and fully sealed LED modules
- Fully potted power supplies
- Corrosion-resistant nickel alloy stainless steel aircraft cables
- Handcrafted in Mequon, WI
- BABA Compliant

LRU12239



18" 54,904 Lumens

LRU12394

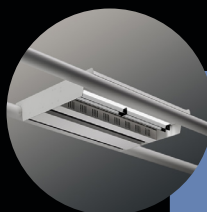


18" 82,293 Lumens

LRU12243



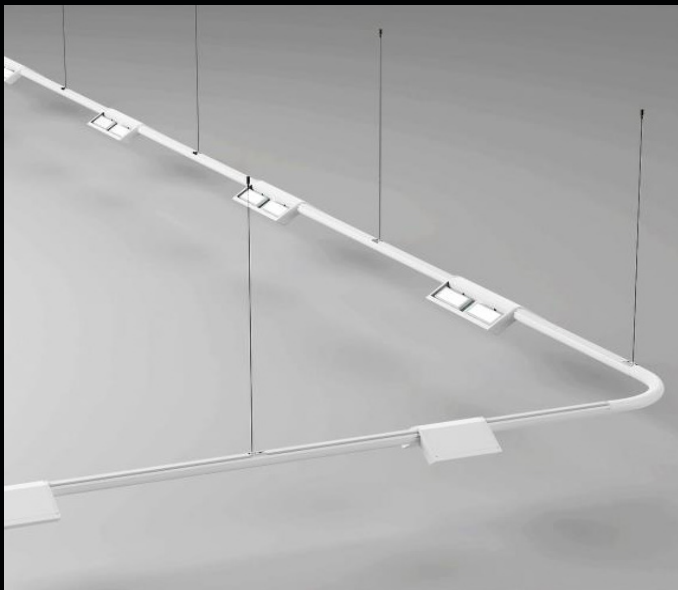
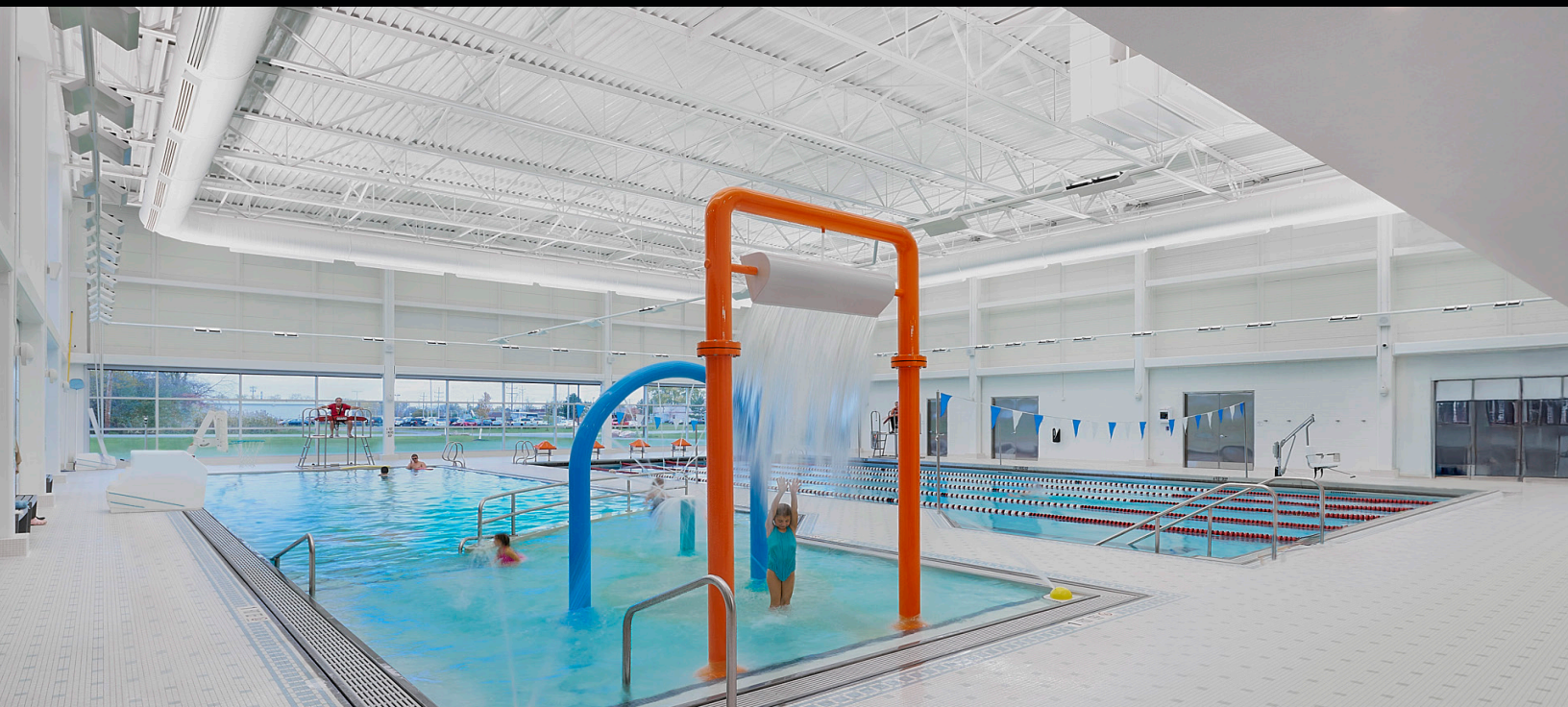
34" 109,809 Lumens



NEW! Lightruss Focus

Direct modules that can be incorporated into an indirect Lightruss system to boost footcandles in hard to reach places.

RECREATIONAL POOL

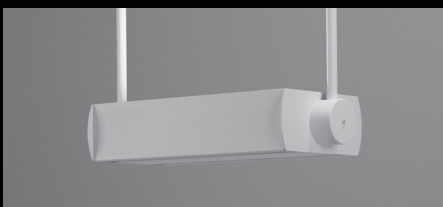


Lightruss Rail

Our low profile, single rail design blends seamlessly with the ceiling environment. Engineered specifically for a natatorium's uniquely harsh environment, Lightruss Rail provides indirect layered light that improves safety and creates a comfortable viewing environment for lifeguards, swimmers, and spectators.

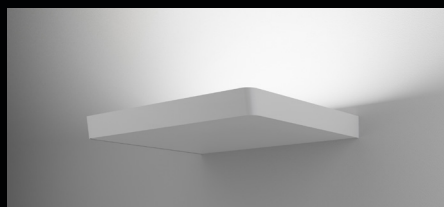
- The rail system reduces the number of electrical drops and the amount of conduit needed, simplifying installation
- Lumen packages up to 25,480 lumens
- All aluminum construction
- Gasketed and fully sealed LED modules
- Fully potted power supplies
- Corrosion-resistant nickel-alloy stainless steel aircraft cables
- Handcrafted in Mequon, WI
- BABA Compliant

Echo Expanse



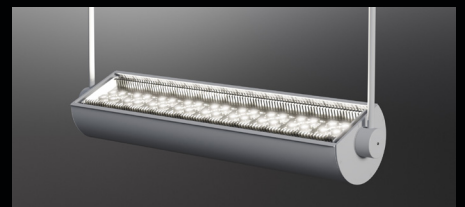
Max 168,000 Lumens

Echo Blade



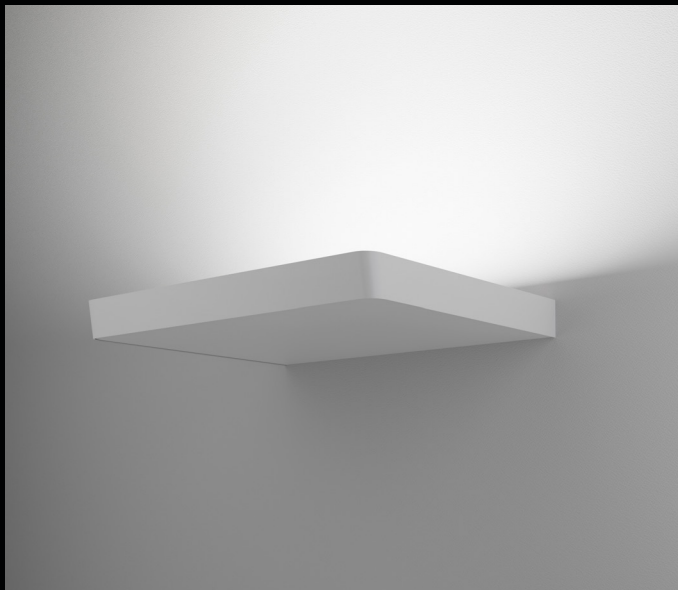
Max 36,320 Lumens

Echo Round



Max 42,500 Lumens

HOSPITALITY POOL



Echo Blade

Echo Blade is the slimmest, most discreet high output asymmetric lighting tool on the market. It can deliver from 12,000 to 36,000 lumens and is available in either a deep forward throw or a wide distribution. The Echo Blade is ideal for illuminating large spaces with comfortable, glare-free light.

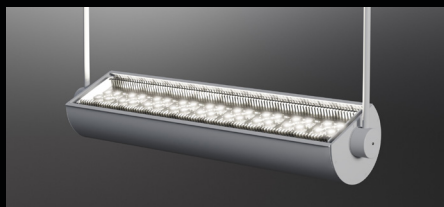
- True asymmetric optics with full horizontal cutoff
- Super-high 127 lm/W efficacy
- Lights from the perimeter
- Specially designed to operate in high ambient temperature environments
- Handcrafted in Mequon, WI
- BABA Compliant.

Echo Expanse



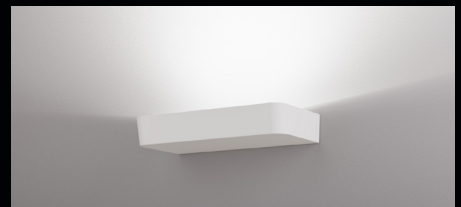
Max 168,000 Lumens

Echo Round



Max 42,500 Lumens

Echo Blade Micro Max



Max 5,000 Lumens

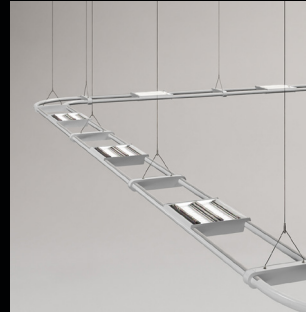
SOLUTIONS FOR ALL NATATORIUM FUNCTIONS AND SIZES

Competition

Lightruss GEN 2

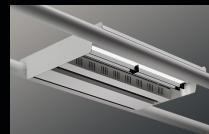


Universities | High Schools | Aquatic Centers



- Industry leading indirect system
- Engineered specifically for harsh natatorium environments
- 127 lm/W with full cutoff
- Pre-run wiring in each section

Echo Round

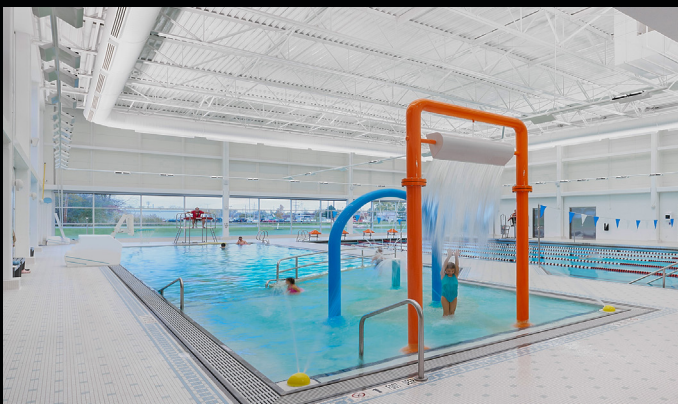


NEW! Lightruss Focus
Supplemental direct
lighting fixtures to
light focused areas

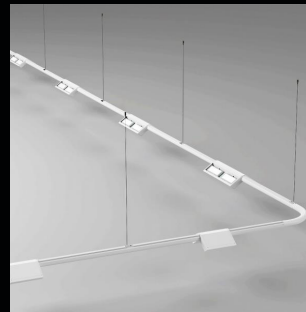


Recreational

Lightruss Rail



YMCA's | Indoor Water Parks | Multi-use



- Engineered specifically for harsh natatorium environments
- 127 lm/W with full cutoff
- Pre-run wiring in each section

Echo Round

Echo Expanse

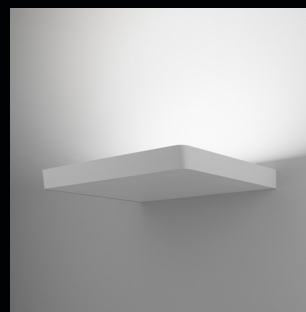


Hospitality

Echo Blade



Hotels | Spas | Therapy | Multi Family



- True asymmetric optics with full horizontal cutoff
- Super-high 127 lm/W efficacy
- Lights from the perimeter
- Specially designed to operate in high ambient temperature environments

Echo Round

Echo Blade
Micro Max

