

DAGR LED Retrofits for Ice Hockey Arenas: Reduces the thermal load for cool savings in refrigeration costs!

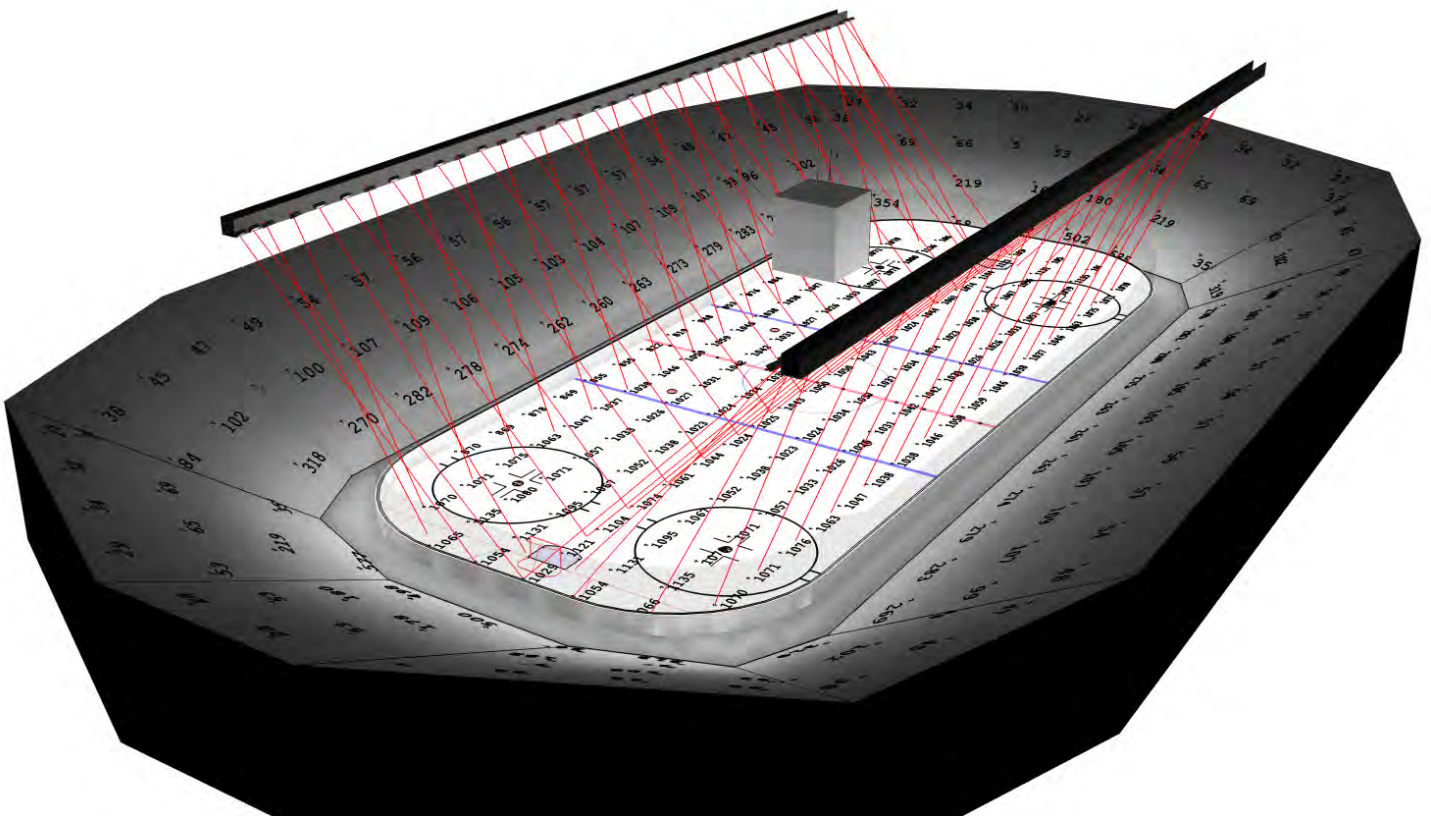
Indoor Ice arenas are a good example of the benefits of leveraging high efficiency LED fixtures and technical lighting design to not only increase lighting quality and lifetime, but also to maximize energy cost savings through lighting systems and cooling loads for the arena's maintenance equipment.

DAGR undertook redesigns of several large indoor ice hockey arenas, which typically had over 100 - 1,000W Metal Halide fixtures directed at the ice surface. The lighting standard for televised National-Level Hockey Arenas of this size recommends 1,000 lux. The high operation temperatures of metal halides creates significant additional costs in refrigeration in order to keep the ice surface at top quality for all activities

High efficacy LEDs minimize heat generation and DAGR's hockey arena retrofit clients not only achieve energy savings from lighting based energy savings but also gain energy savings from minimizing the arena's refrigeration costs due to heat generated by the traditional metal halides.

DAGR's Hockey Arena lighting designs minimize unwanted reflections into the crowd and glare. Each light is angled to make optimal use of its output and provide uniform illuminance across the ice surface. Through DAGR's careful design, the lighting counts are typically reduced by 25%, from the original 100 x 1000W metal halides to less than 75 x 400W MPHDS DAGR LEDs.

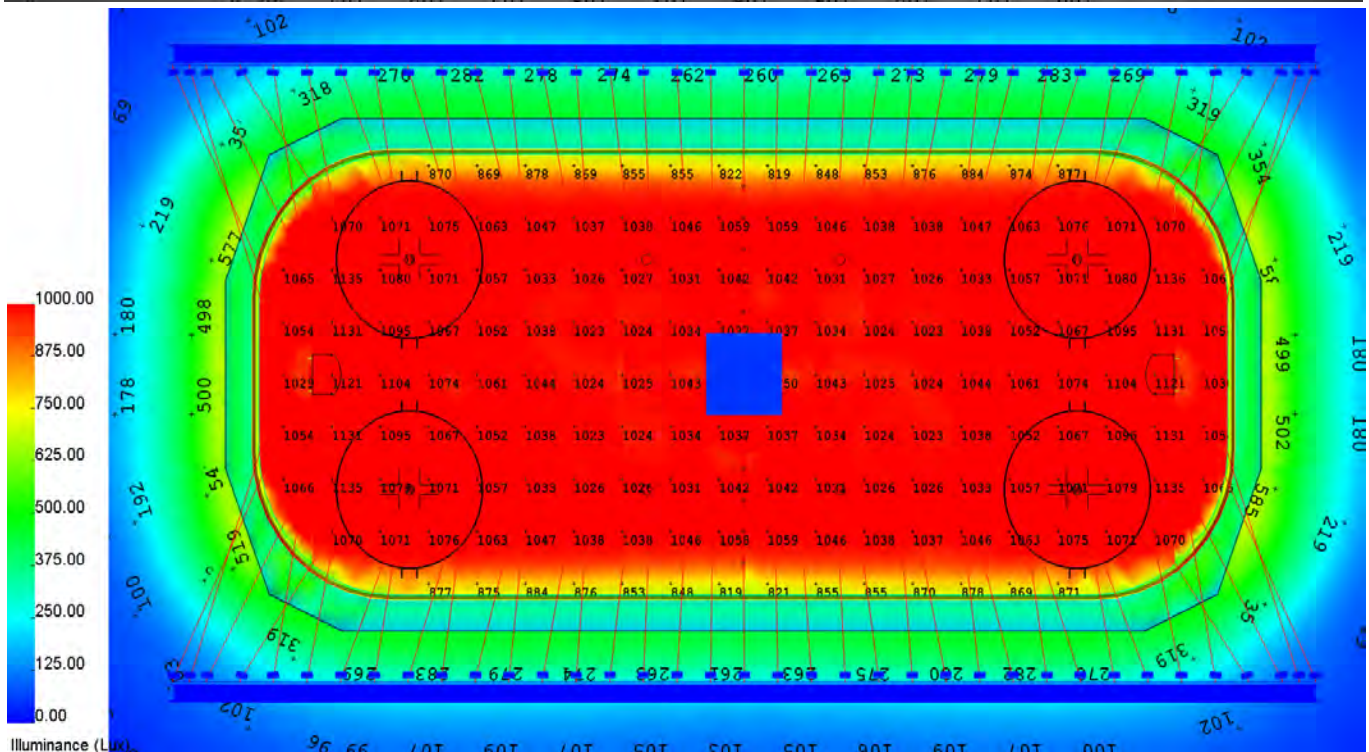
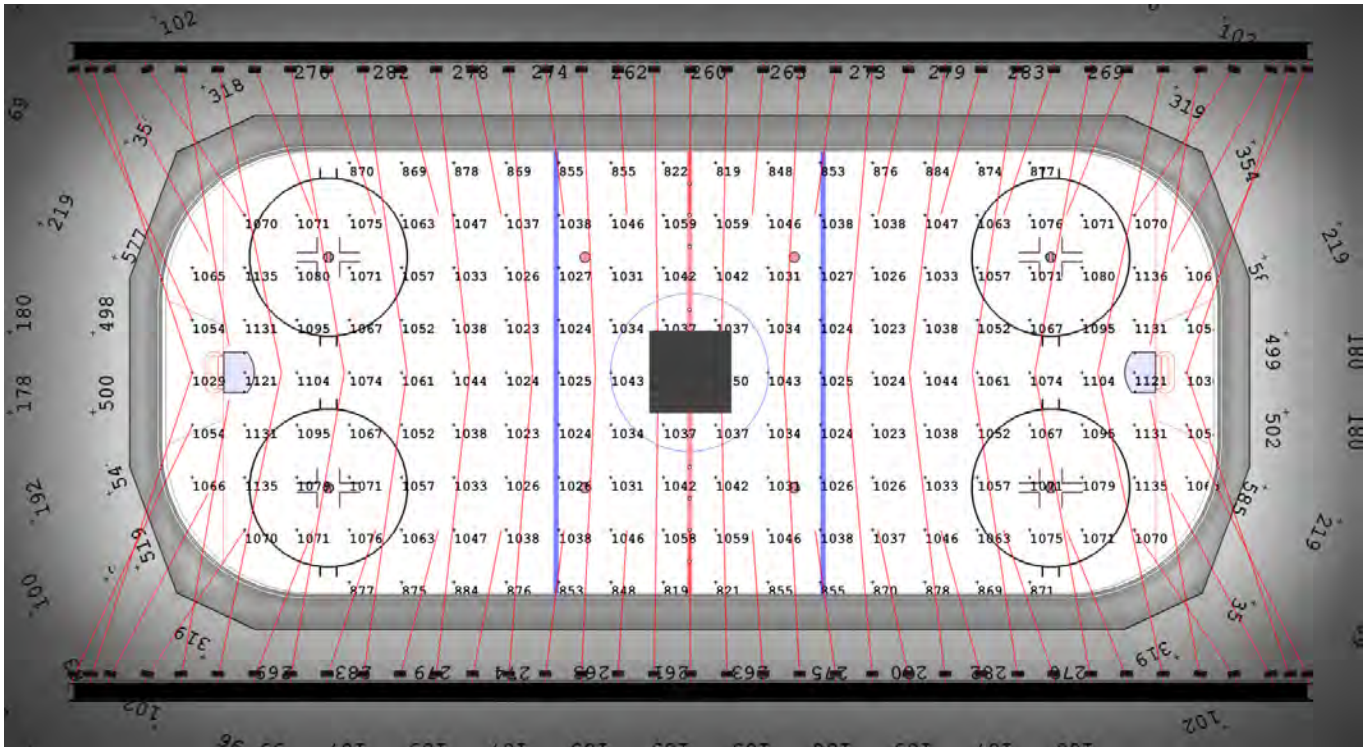
DAGR's expertise in lightning design services and fixtures are for ice arenas of all sizes and uses. Whether it's a community rink or a large nationally televised stadium, DAGR works to maximize client's savings.

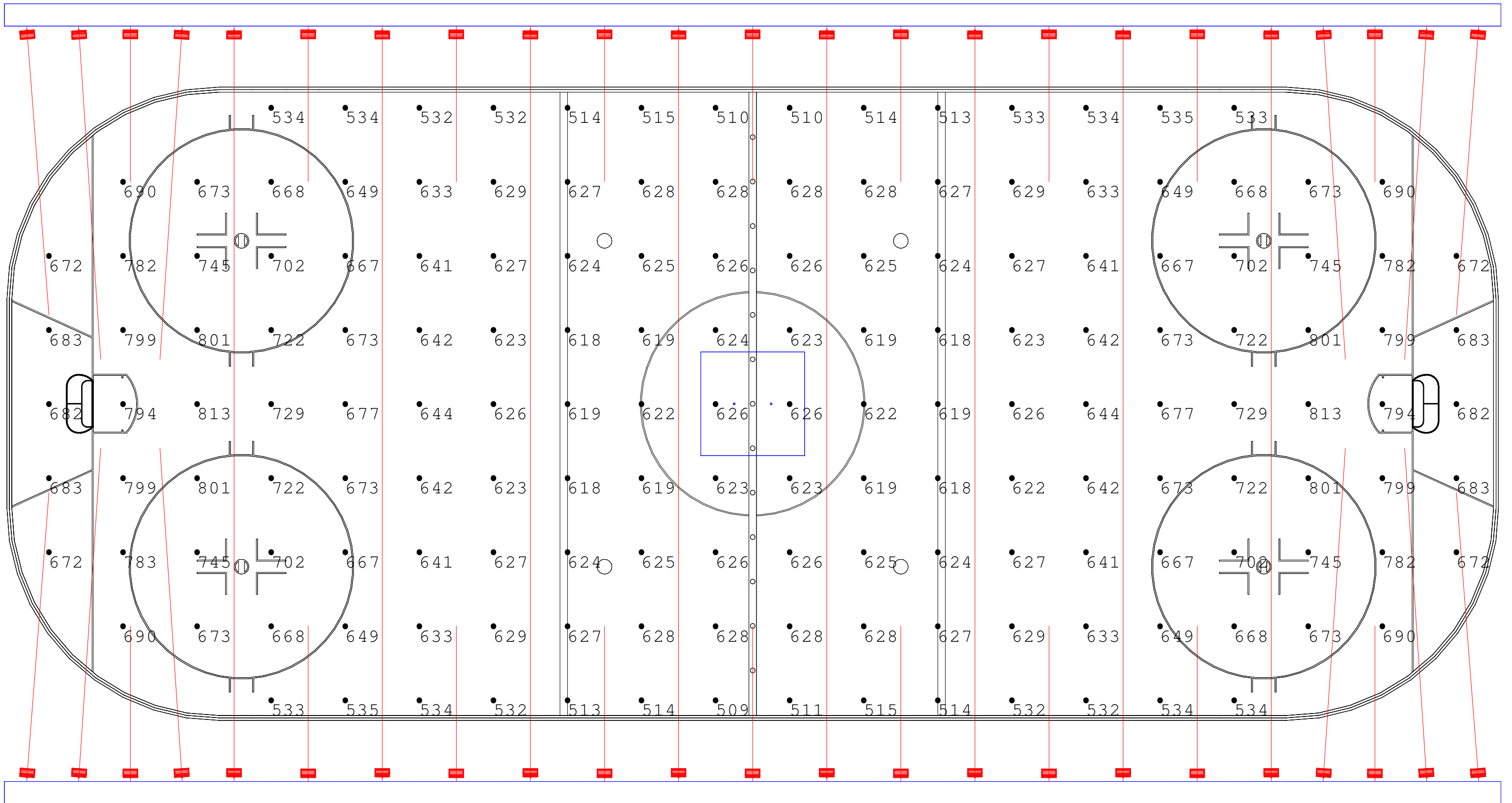


DAGR offers Clients several different options, the following renderings are an example of what was presented to one particular client.


The layouts provide End of Life illuminance levels (at 70% Light Loss Factor (LLF)) designed for Regional-Level Ice Hockey (500 lux), and one for Televised National-Level Ice Hockey (1,000 lux).

The 1,000 lux option below, include a pseudo-colour rendering of the ice surface with red representing the requirement of 1,000 lux.





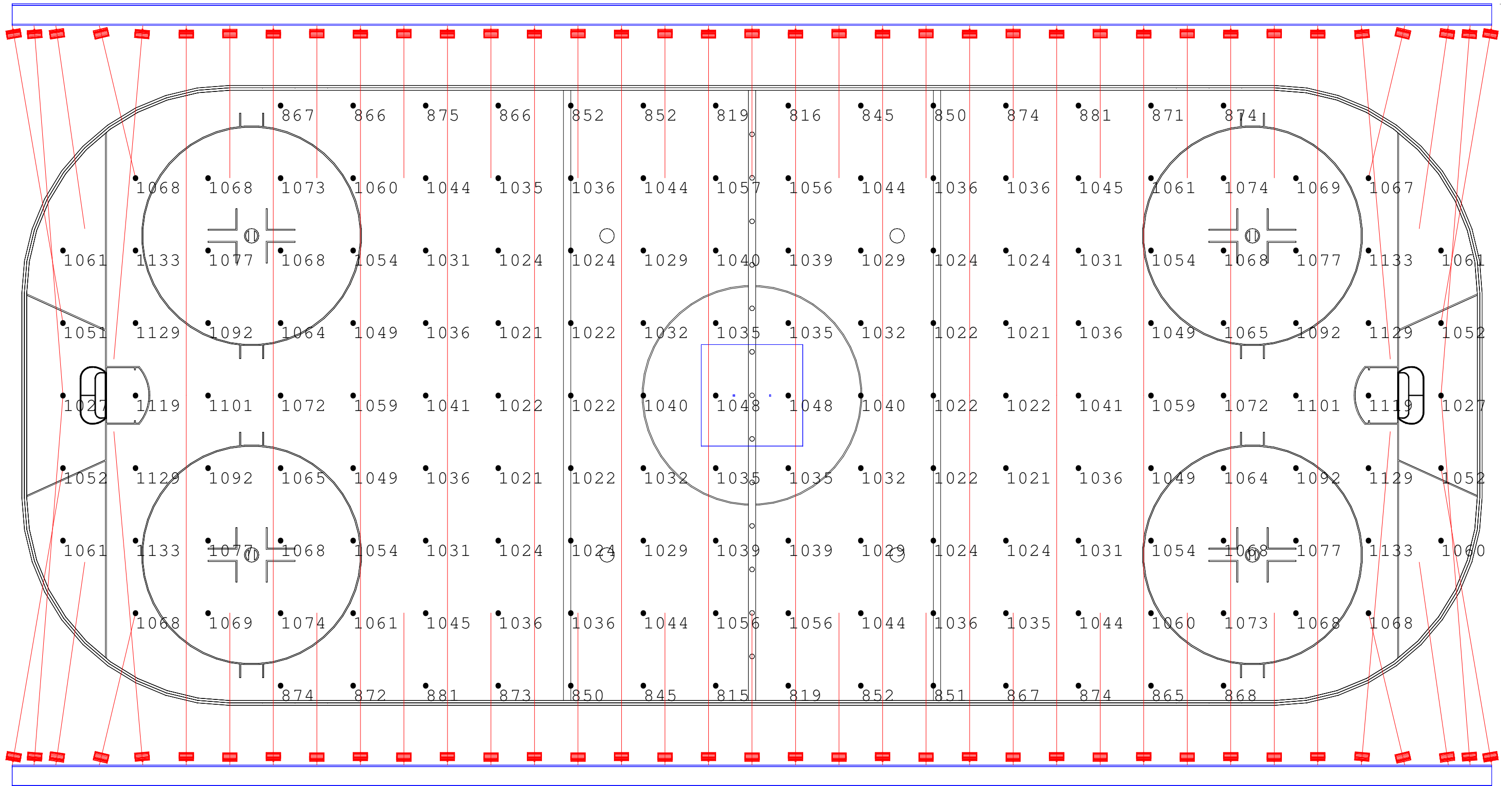
Ice Hockey Arena - 500 lux End-of-Life Illuminance Option


Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF
	46	MPHDS 400W 6000K 20D	SINGLE	48000	0.700

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Min/Avg	Min/Max
Ice Surface Calculation Grid	Illuminance	Lux	644.55	813	509	1.27	1.60





Ice Hockey Arena - 1000 lux End-of-Life Illuminance Option					
Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF
	74	MPHDS 400W 6000K 20D	SINGLE	48000	0.700

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Min/Avg	Min/Max
Ice Surface Calculation Grid	Illuminance	Lux	1020	1133	815	1.25	1.39

