



"Systems with Integrity"

BELLE MEADE COUNTRY CLUB

Direct to Indirect Tennis Court LED Lighting Conversion

Belle Meade Country Club Achieves USTA Class I Lighting
- A Case Study by SES Lighting -

The worst flood in 1,000 years hit Nashville, Tennessee in 2010. At Belle Meade Country Club, the indoor tennis facility, being on one of the lowest areas of the property, found its tennis courts literally underwater. The indoor tennis facilities with two buildings housing eight hard courts suffered significant damage and would have to be rebuilt. After reconstructing the court surfaces, the Club focused its attention to other areas of the Tennis facility rebuilding all 10 outdoor Har Tru courts a couple of years later. The Club's next priority focused on replacing the direct fluorescent lighting system at the indoor facility as it was nearing the end of its 30-year life.

John Oman, Tennis Committee Chair at the time, Director of Tennis, John Yancey and General Manager/COO Michael Seabrook began researching options to improve the lighting and efficiency. The options available at the time were to replace the system with direct lighting which created limitations for the tennis players. A second option was to investigate converting the facility to indirect lighting. In 2013-14, the options were limited in technology to improve the lighting quality. Converting the Club to indirect lighting with Metal Halide lights would improve the light levels over their existing fluorescent system but the draw backs would be a substantial increase in utility costs.



High output LED lighting fixtures were just entering the lighting marketplace and the Club began a process of talking to many professional tennis court builders and lighting companies. In early 2015, Michael Seabrook attended the Club Managers Association of America's World Conference of Club Management in San Antonio, Texas where he met Nelson Scott, Founding Owner of SES Lighting at the Club Industry Trade Show. SES Lighting had a track record of converting clubs across the country to LED technology and was a pioneer in converting tennis facilities to LED technology. Belle Meade Country Club was not looking to be the first to adopt this technology and asked Mr. Scott to find a facility BMCC could visit to see firsthand the new lighting system. Mr. Seabrook tasked Mr. Scott with coming up with a conversion plan that not only would reduce the Club's power consumption in the indoor facilities, but significantly improve the light quality for the members of Belle Meade. Mr. Scott knew without a doubt they could provide the same light levels, but the challenge for SES Lighting was to find a way to significantly improve the light quality in a cost-effective way. The first step in the evaluation was to take a light meter reading according to USTA standards. The readings Mr. Scott recorded indicated that Belle Meade had USTA Class IV lighting with its existing direct fluorescent lighting system. Belle Meade had an average of about 50 foot-candles on the playing surface.

After months of research, there were no facilities anywhere in the South that would be comparable. In the spring of 2016, Mr. Scott discovered a facility that had the same building dimensions, court colors and had been converted with the fixture he recommended to Belle Meade Country Club. Mr. Scott invited Mr. Braswell and Mr. Yancy to view the Fort Collins Country Club indoor tennis facility and lighting design. They visited the facility with SES Lighting co-owner and SES project manager James McKinney. The lighting was impressive at Fort Collins Country Club and was at a level that would be a significant improvement if it could be emulated for the Belle Meade Country Club. After Mr. Scott took light meter readings at Fort Collins Country Club he began to think that there was a possibility that they would be able to achieve Class I lighting for Belle Meade. However, Mr. Scott noted that Fort Collins had the brightness but due to larger building trusses they did not have full saturation of the light on the ceiling to provide optimal light uniformity.

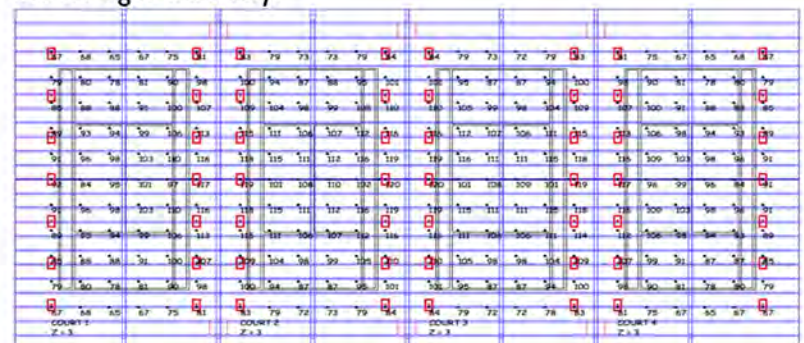
Recommended Horizontal Illumination				
Performance Criteria	Class I	Class II	Class III	Class IV
Average Maintained Horizontal Footcandles within PPA (1,2,4)	125 (1250 lux)	75 (750 lux)	60 (600 lux)	50 (500 lux)
Minimum Maintained Horizontal Footcandles within PPA (2,4)	100 (1000 lux)	60 (600 lux)	50 (500 lux)	40 (400 lux)
Maximum Uniformity Ratio (3)	1.5	1.5	1.7	2.0



Fort Collins Country Club - Large Building Trusses Affected LED Light Distribution

Since SES Lighting is independent of any lighting manufacturer, they could act as an owner's representative and evaluate all the LED Indirect Sports Lighting fixtures in the market. They performed independent photometric analysis' on various fixtures which is a way of modeling the brightness and uniformity of the LED lighting products with the building dimensions, surfaces, reflectance and colors. By the summer of 2015, Nelson and his team of lighting engineers came up with an indirect lighting design for Belle Meade that would provide Class II USTA lighting with an average of 65 foot-candles. SES Lighting's analysis demonstrated significant utility savings averaging \$30,000 per year because of the kWh reduction in the LED fixtures and the maintenance savings. The analysis was presented to Mr. Seabrook and he tasked Mr. Scott with finding a facility that John Yancy and the new Tennis Chairman, Ed Braswell could visit and evaluate. Mr. Scott knew this would be a challenge as LED adoption in indoor tennis facilities was in its infancy. SES Lighting had a track record with indoor tennis bubble conversions but Mr. Scott wanted to find one that had the same court colors and building dimensions as Belle Meade Country Club.

Mr. Scott revised his recommendations to Belle Meade which would include relocating existing HVAC units hung from the rafters so they would not interfere with the light saturation on the ceiling and provide a better uniformity of light distribution. This cost of removing these units which are the size of your average mini-van would not be insignificant. Mr. Scott also used an independent lighting engineer to re-design the lighting layout for Belle Meade. This was significant as Mr. Scott had noted that the manufacturers were suggesting legacy layouts that simply placed LED light fixtures in the same positions as they would metal halide fixtures and in plain view from across the court from the other players. Mr. Scott determined, with his independent lighting designer, that the layouts from the manufacturers were placing four additional fixtures per court that were not needed and adversely affected light uniformity.



-THE RESULTS-

After the research and revisions to the Belle Meade Country Club project and a comparable site visit, Mr. Seabrook informed Mr. Scott in early 2017 the Club was ready to proceed with the project. SES Lighting, acting as the Club's Owner's Representative, worked with the Club facilities engineer Glenn Pearson to assemble the installation team which included Gervais Electric, Inc. and Demand Mechanical, Inc. The project commenced on June 2nd and was completed on August 10th, 2017 including relocating the HVAC units and ductwork and the installation of 114 fixtures on the eight indoor courts. The results were better than Mr. Scott anticipated due to the reflectivity of the ceiling material and the relocation of the HVAC units. Belle Meade had achieved not only the brightness for Class I lighting but the uniformity was excellent with a maximum to minimum ratio of 1.7.



Above: Gervais Electric, Inc. in Nashville was selected by the Club and SES Lighting to convert Belle Meade Country Club to USTA Class I Lighting - The Installation process was organized and efficient with the Courts only being closed for a period of 30 days.

The successful outcome of this project was the culture of partnership Belle Meade Country Club provided the team that worked on the project. Not only does the facility have better lighting, it has a completely different, open feeling. More importantly, Mr. Yancy feels the sport and competition of tennis can be fully enjoyed without the glare and interference of light fixtures and air handling units in the playing areas.





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