

## Case Study:

### Lang Residential Theater

Auralex Acoustics was hired along with Tri-Phase Technologies to provide acoustical products for the basement of the Scott Lang Residence in Fishers, Indiana. The primary areas of treatment include:

- A. Acoustical Treatment of the Main Theater Area
- B. Acoustical Treatment of the Remaining Basement Area
- C. Implement a Fiber-Optic Starfield Ceiling in the Main Theater Room

Through previously established relationships, Auralex was given the opportunity to be involved with the development of a contemporary living and entertaining space in the basement of a new high-end residence. This project coupled Auralex's staff directly with the talented individuals at **Tri-Phase Technologies**, the custom electronics supplier and installer, in order to develop an effective acoustical design and implementation plan. After reviewing the specifications of the proposed AV system, consulting with the homeowner and taking measurements on-site, several acoustical concerns were made apparent. The main issues included, but were not limited to, excessive reverberation of the main theater due to reflective room surfaces, uneven low-frequency response caused by the high output of the two Triad Platinum 18" sub-woofers, and a harsh listening environment in the bar and pool table area. While there are many products available that are effective at controlling the various problems of this facility, very specific aesthetic requirements were outlined by the homeowner that strictly limited the type of materials used and their finished appearance. The acoustical performance of the facility had to explicitly fit within the parameters put forward by the interior designer and homeowner.

### Treatment of the Main Theater

Auralex's ELiTE Custom Fabric System (CFS) was chosen as the desired treatment solution for the entire basement, but would only be utilized as a full-wall installation in the main theater area. The CFS installation was designed to accomplish several things for the theater. First, it needed to control unwanted room reflections caused by a large windowed wall and other reflective surfaces and create a 'sweet spot' around the intended listening positions. This was accomplished through the use of strategically placed absorptive and diffusive treatment behind the fabric facing of the CFS installation. Second, the system needed to enhance the low-frequency response of the room. The high output of the Triad system required significant bass trapping to be present. In order to achieve this level of control, custom bass trapping was included in the bulk head, the riser and the corner fireplace enclosure. These elements were stuffed with Auralex's Mineral Fiber Insulation, ported to allow sound to enter, and finished with fabric. Finally, the aesthetic appearance needed to match the specific expectations of the homeowner. Through close work with the interior decorator, fabrics were selected to complement the chosen granite counter-tops, the custom trim and cabinetry, and also the chosen carpet and seating. The system also needed to be completely seamless. This was easily accomplished through the appropriate design of vertical trim pieces and chair rail.



Figure 1: Custom Bass Trapping Above Fireplace



Once all specifications had been finalized, Auralex coordinated installation through its certified ELiTE installers. Though Auralex materials were also used during the construction phase of the project, the main CFS installation was completed in one week.

### Treatment of the Bar and Pool Table Area

The bar and pool table area was open to the theater. This created a unique situation where sound from the theater would be able to enter this area, reflect off of the rear wall and return. To reduce the occurrence of these harmful long reflections, pods of absorptive treatment, in the form of a CFS installation, were added to the walls surrounding the pool table. The granite counter top and reflective ceiling was also creating a problem for those sitting at the bar. This was solved by completely covering the area above the bar by absorptive treatment, again in the form of a CFS Installation.



Figure 2: CFS on Ceiling Above Bar

### Implementation of a Fiber-Optic Ceiling

After hearing about the ability to implement a Fiber-Optic ceiling and seeing previous installations where this system had been successfully used, the homeowner eagerly accepted the opportunity to differentiate his theater in this way. Measurements of the ceiling were taken in order to determine the exact size of each Fiber-Optic section. Individual fibers were woven into a custom black curtain and were all run to a central illuminator. The curtain was tucked into the CFS retention channel creating a seamless starfield across the entire ceiling.



Figure 3: Starfield Ceiling

### Conclusion

Once each acoustical element had been successfully implemented and the surround system was turned on, the result was a precise, well-controlled environment that not only made the theater sound as it was intended, but also created a stunning interior environment that fully fit the initial aesthetic expectations established at the beginning of the project.