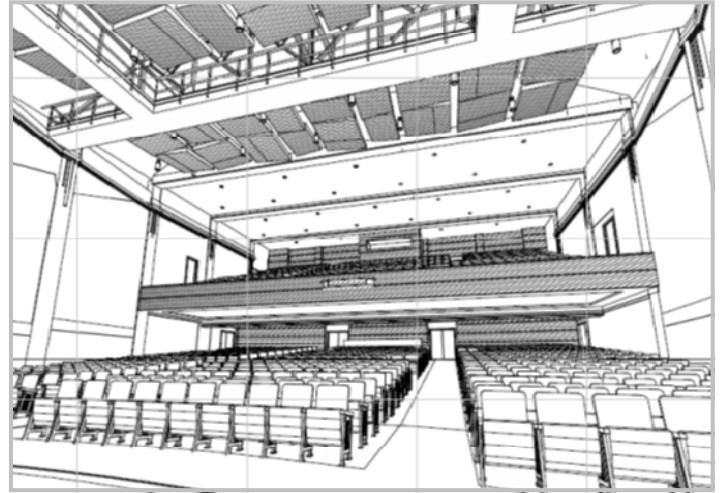


PROJECT PROFILE: AUDITORIUM



PROJECT: WILLSON AUDITORIUM
Bozeman, Montana

The Willson Auditorium serves Bozeman and surrounding area as the premier venue for the *Bozeman Symphony Orchestra*, *Intermountain Opera Bozeman*, concerts and theater. A major renovation was required to alter the acoustics of the space and fix the mechanical system. The Architect confidently chose Big Sky Acoustics for room acoustics design expertise and mechanical system noise control.

BSA's SERVICES AND SOLUTIONS:

- User comments indicated that spoken words, singing voices, and mid- and high-frequency instruments had difficulty projecting from the stage and being heard in the audience, and there were acoustical "dead spots" in the First Floor seating.
- The acoustics within the main and balcony seating functioned differently than under the balcony, which required separate analyses. BSA's acoustical design elements included increasing the room volume, providing reflective surfaces for projection and distribution of sound, and adding sound-absorption to reduce non-beneficial reflections.

- Measured the reverberation time throughout the existing space, and developed computer models to analyze the reverberation time and the changes in the acoustical characteristics due to various acoustical modifications.
- Recommended removing the existing concave ceiling to increase the room volume to provide an acoustical balance for both music and spoken word performances.
- Evaluated reflective ceiling designs and seven suspended "cloud" options to project mid- and high frequency sounds, and diffuse and distribute sounds evenly throughout the auditorium.
- Specified sound-absorbing wall panels on the rear wall and to the balcony face to prevent sounds from reflecting back toward the front of the auditorium.
- Calculated noise levels due to the proposed mechanical system and provided noise control recommendations to quiet the system.

The acoustical modifications to the auditorium will provide a better experience for the audience no matter where they sit.