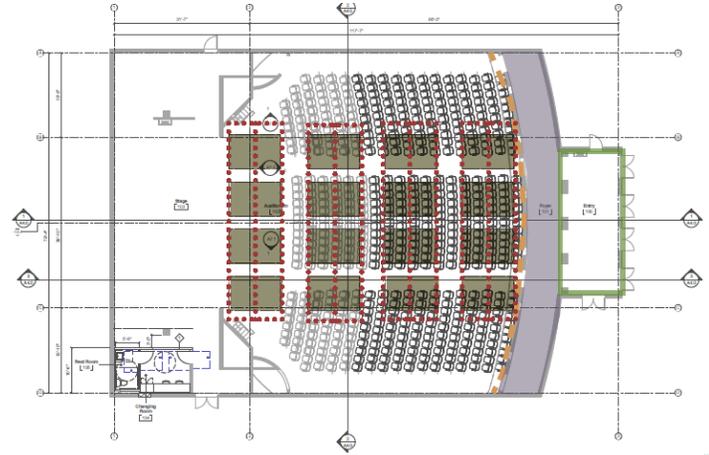


## PROJECT PROFILE: AUDITORIUM



Critical components of the acoustical design included:

**PROJECT:** BUTTE HIGH SCHOOL  
Butte, Montana

The Butte High School Auditorium was constructed in 1935. The District wanted to renovate the Auditorium as a 21<sup>st</sup> century performance and concert venue while reestablishing its historic character. Big Sky Acoustics completed the acoustical design for the Project.

**BSA's SERVICES AND SOLUTIONS:**

- Based on user comments, sound did not travel well to the back of the existing Auditorium, voices and higher-pitched instruments were difficult to hear, and sound did not project well off the stage.
- BSA measured the reverberation time throughout the Auditorium, which was low, making the existing space seem "dry."
- BSA determined that the location of the existing glued-on acoustical wall tiles and the ceiling orientation hindered the beneficial reflections of sound to the audience.
- For the analysis, BSA developed computer models to determine the changes in the room acoustics due to various acoustical modifications.

- Removing the fiberboard tiles from the ceiling, and installing reflective acoustical "clouds" to diffuse sound evenly, and improve the projection and distribution of sound from the Stage.
- Adding impact-resistant panels to the rear wall to absorb the reflected sounds.
- Replacing the fiberboard tiles on the side walls with tackable panels to reduce the flutter echo between the side walls, while maintaining the historic decorative columns.
- Installing new chairs with cushioned seats and backs to balance the acoustics throughout the space, whether or not the Auditorium is fully occupied.
- Specifying highly directional loudspeakers for the new sound system to focus sound into the seating area and not the reflective surfaces.
- Renovating the foyer and entry ceilings to reduce the overall noise levels in the adjacent spaces.

BSA's acoustical design improved the natural acoustical characteristics of the Auditorium, balancing the space for a wide variety of uses.