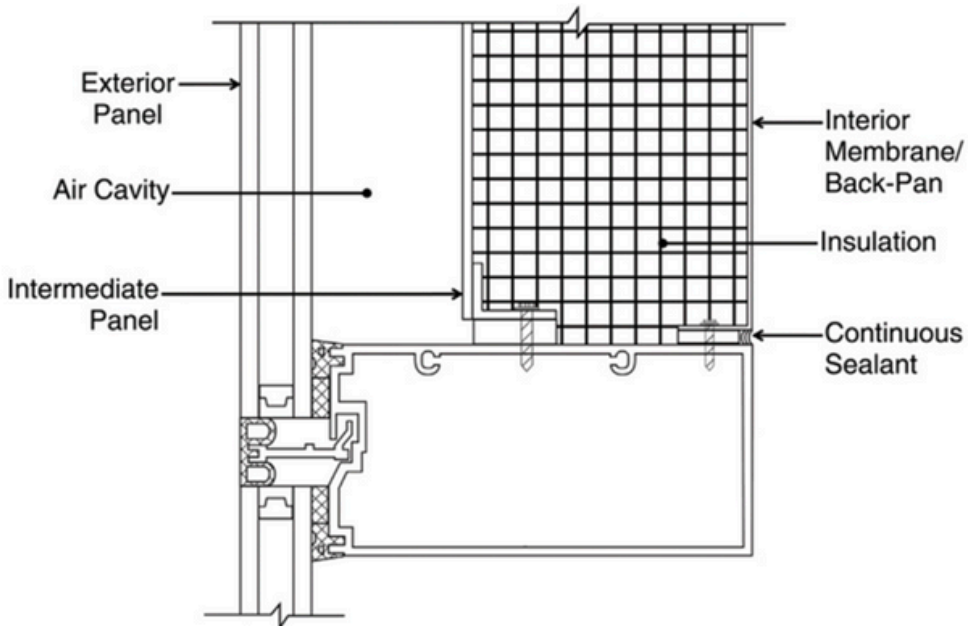
SCGMA

TECHNICAL BULLETIN

Spandrel and Shadowbox Considerations

The glazing industry has always provided innovations to their glazed facades in order to address the aesthetic considerations of the architectural designers. Given the preference of coated glass with greater visible light transmissions and less reflectivity, spandrel conditions matching vision has become a focus. Along with providing spandrels with a fourth surface ceramic frit coating, the use of shadowbox panels has gained in popularity and are the subject of this Technical Bulletin.

Spandrels are defined as the opaque areas of a building façade that typically occur at floor or roof slabs and columns. Spandrels are integrated into glazing systems, such as glass curtain walls or window walls, to provide visual continuity with adjacent vision glass to render an all-glass look to the building façade. Although these glazed conditions are common, the technical considerations of glass spandrels and shadow boxes can be complicated. These issues include the potential for heat build-up in the cavity, glass differential thermal stress, condensation, thermal performance, the accumulation of dust or debris in the cavity, and insulation/edge-of-slab fire-safing details.



Some of the important issues in spandrel and shadowbox design include the following.

Glazing materials

Heat-strengthened transparent or opacified spandrel glass with or without Low E coatings. If the exterior reflectivity of the vision glass and spandrel glass are high, the visual transition from vision to spandrel glass can appear quite seamless. In addition, tinted substrates tend to provide an advantage in reaching this goal.

Air cavity

Either vented within the system or unvented, a 1" deep minimum airspace from the back of the glazing to the adjacent material is typically required. For vented conditions, vent hole size and baffling addressing pressure changes within the air cavity should be considered.

Finished panel

Finished panels are generally used in combination with transparent vision glass, constituting a "shadow box" spandrel design. Metal panels are often solid plate, with attachment to the framing that allows for thermal expansion or contraction. Panel paint colors can be an important factor in achieving the exterior visual effect.

Shadowbox Venting

For shadowbox panel conditions, special consideration of venting of cavity should reduce the possibility of condensation and/or pressure cycling that would introduce dirt or debris.

Insulation

Insulation would typically be rigid mineral wool, with a thickness determined by the project energy requirements. Methods of attachment of the insulation may vary depending upon architectural specifications and/or consultant requirements.

Interior membrane or back-pan

The most common membrane is a foil-facing laminated to the insulation and taped airtight to the glazed framing. In some cases, a metal back-pan anchored and sealed to the perimeter framing is used.

Understanding and addressing these considerations will provide a fully functioning system that avoids future warranty concerns. Input on project specific exterior climate along with interior temperature and relative humidity conditions must also be considered. As always, proper evaluation of the system applications and their ability to comply with performance requirements is essential to having a successful project.