



The Composite Revolution

Steel is strong. Concrete is strong. Together, they become composite floor systems that can be used extensively to achieve cost-savings and competitive advantages that are easily quantifiable.



Composite steel deck is made by roll-forming structural grade steel into a repeating pattern of parallel ribs. The concrete bonds to the ribs, providing structural strength and rigidity.

The composite approach to building design and construction brings superior strength and rigidity to a variety of composite floor applications. These bonded systems allow the designer to place weight-bearing walls and columns at optimized spans for increased space and cost savings.

The range of composite floor systems includes decks, joists, architectural (exposed) decks, and long-span composite floor systems. Here is a short explanation for each of these system options.

Composite Steel Deck

While basic form decking serves as stay-in-place forms for the pouring of concrete, a standard composite deck is manufactured with additional embossments in the vertical

ribs that bond with the poured concrete slab as it cures, to develop a composite floor system. The system can also include shear studs to mechanically lock the concrete and steel together, so the loads are transferred onto the steel frame. Once the concrete cures, the resulting composite floor system provides superior strength and stiffness.

Composite deck profiles are available in various depths. Here the old adage "deeper is cheaper" still applies, as the deeper the decking, the wider the spacing of the structural members.

For standard 1.5"-deep composite deck, the structural members can be spaced over 11' on center. For 2" composite deck, the structural members can be spaced over 14' on center. For 3" composite deck, the structural members can be spaced over 16' on center.

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Architectural deck is often left exposed to present a bold ceiling pattern. Deck can be painted by the factory for long-term protection.



Long-span composite floor systems can accommodate acoustical treatment, fireproofing, vibration control, and other additions to meet the requirements of your design.



The advantages of choosing the right composite building system can really add up — or down — when designing multi-story buildings. A long-span composite floor system can reduce building height, while offering more open and aesthetic spaces.

Composite Steel Joists

Composite steel joists integrate steel joists and composite deck using shear studs that are welded to the decking. Concrete is then poured on top of the decking. Floor-to-floor elevations can be narrowed due to the thinner floors. Mechanical runs can be passed through the open web steel joists, rather than under a solid, wide flange beam. Longer spans mean fewer columns and a more space-efficient design. Lighter and fewer joists mean lower costs at every step, including joist erection and joist fireproofing. The combined time saved can often lead to earlier building occupancy.

Architectural Composite Floor Deck

When the underside of a composite floor is left exposed, it can often serve as a highly aesthetic ceiling to the space below. Architects can capitalize on this economy in form and function by specifying from a range of rolled decking patterns, including ribbed, lineal plank and smooth surface panels. Deck channels can be perforated and filled with sound absorbing material for acoustical ceilings, or can be made with deeper ribs for added strength and longer spans. The channels can be used for MEP runs, and the decking can be painted by the factory to meet the color palette of a space.

Long-Span Composite Floor Systems

Composite floor systems achieve a high-density, “thin slab” floor that is ideal for cleanly integrated, long-span floor applications. They optimally combine the erection speed and design versatility of steel with the strength and durability of concrete. Plus, this approach will use up to 40% less concrete than poured-in-place concrete floors. Long-span composite floor systems can offer clear spans up to 36’, UL fire-tested to 2-hour exposure, controlled vibration, and MEP pass-through.

Long-Span Composite Floor Systems

Compared to some other building system options, a long-span composite floor system can optimize space to a significant level. In fact, a six-story building can be designed under 60’, using the long-span composite approach.



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