The Rental Car Center is the first major component of the San Diego International Airport's long-range plan to reduce airport traffic congestion and bring passengers closer to currently developed transportation nodes. In doing so, the Center helps to improve air quality by removing multiple shuttle vans from streets. The 2,000,000sf building is to be both technologically advanced and sustainably constructed. It includes state-of-the-art facilities to house 19 rental car companies (local small market operators) and 5400 cars.

The Rental Car Center is also designed to provide a high-end experience to San Diego travelers. Electric busses provide continuous transportation to the terminal. The Center has two full height cores with enhanced public circulation and custom artwork that spans 60' high. The shell space with a decorative storefront is intended to house a restaurant that will have grand views of the airport. The articulated precast façade, curved glass storefront entry, tensile fabric canopies, and public art installations shall provide a striking yet cohesive element at the east border of the airport campus.

STRUCTURAL FRAMING SYSTEM
The Rental Car Center design entailed an open feel and high floor heights of 16.5’ in order to meet program requirements for the rental car companies. These design requirements eliminated the option for shear walls and called for use of special concrete moment frames. With the columns spaced by distances of 60’ and 40’, a system of long-span girder moment frames were created by determining the optimal proportion of girder depth to column size.

UNIQUE STRUCTURAL AND/OR ARCHITECTURAL DESIGN FEATURES
Building Foundation and Subgrade. Since the site was once the bay, the subgrade soil infill required 2,700 piles drilled with an average of 45’ deep to support the massive structure. In addition, groundwater affected excavations deeper than 10’ and required continuous dewatering operations.

Complexity and Magnitude of Concrete Reinforcing. 12,500 tons of rebar were installed on an accelerated schedule. The construction schedule mandated an average pour of 35,000sf of elevated deck per week.

Accelerated Construction Schedule:
• 97,500 cubic yards of concrete poured in 12 months, (averaging about an acre of concrete a week).
• Concrete pours up to five times a week and Structural observation four times per week.
• 1.5 million square feet of formwork set.

REASONS FOR CHOOSING REINFORCED CONCRETE
• Steel Reinforced Concrete provided the long life cycle of the building that the owner was looking for.
• Steel Reinforced concrete allowed the designer to use a moment frame design. Thus the floor space could be completely open and unobstructed because the were no shear walls.