functional and structural design to maintenance. As the name suggests, there is extensive guidance on stall, drive lane, and ramp configuration along with discussions of building codes, fire-protection requirements, ADA requirements, and structural framing. The book offers guidance on what slab systems to choose and how to design them. Temperature and shrinkage effects are covered with suggested details and guidance on reducing cracking in the slab. The text includes a section on steel framing supporting concrete slabs.

Steel Design Guide 18: Steel-Framed Open-Deck Parking Structures

Published by AISC, this reference is the industry standard for steel-framed parking structural frame considerations throughout the life of a garage. The structural frame is covered in two parts: deck systems and framing systems.

Various deck systems are discussed, including cast-in-place post-tensioned flat slabs, precast double tees, and concrete-on-metal deck. Each system is evaluated for its advantages and disadvantages. Recommendations are made for deck selection depending on environmental exposure. Figure 1 indicates where the three main systems are generally most appropriate based on slab durability alone. In areas of high seismic activity the structural system should be evaluated for the increased demands, especially a system with a diaphragm consisting of precast double tees. Drainage, curing, temperature effects, slab cracking, construction and expansion joints, maintenance, and good practice for durable construction for deck systems are also covered.

The arrangement of structural framing depends on the deck system and the parking layout. Efficient bay arrangements and typical steel member sizes for typical arrangements are tabulated. Lateral bracing, camber, connection design, and temperature effects are also discussed. The design guide contains in-depth examples of structural design for several framing systems.

Figure 2. Service Life for Galvanized Coatings (source: American Galvanizers Association).

Figure 3. Building Code Requirements.