

Concrete Driveways in Tennessee

Local residential building codes in Tennessee - typically International Residential Code (IRC) 2012 or later - offer little guidance on exterior concrete and do not address the design and construction of concrete driveways. ***The Tennessee Concrete Association (TCA) recommends that all exterior residential concrete be designed and constructed in accordance with American Concrete Institute Code Requirements for Residential Concrete (ACI 332) and Commentary.*** This is the ACI's code for residential concrete and it is referenced in the IRC code.

ACI 332-20 Highlights for Tennessee Driveways

For most driveways in Tennessee, to comply with ACI 332 concrete mixes would need to meet the requirements for the "very severe" freeze-thaw exposure class. This exposure class is applicable for plain concrete exposed to moisture and deicing chemicals and the potential to be saturated when exposed to freeze thaw cycles.

Concrete Mix Requirements (from Table 5.3.2)

- 4500 psi compressive strength (@ 28 days)
- Maximum w/cm 0.45
- Air-entrained @ 6% with +/- 1 ½% tolerance (3/4-inch & 1-inch nominal maximum aggregate size)
- Limits on maximum percent of total cementitious material by weight in mix of fly ash or other pozzolan, slag and silica fume are 25%, 50% and 10% respectively.

Concrete Placing Requirements (from Section 7 and 13)

- Subgrade properly prepared and compacted
- Minimum concrete thickness of 3 ½"
- Concrete placed and finished per industry standards
- Jobsite water additions controlled to not exceed design w/cm
- Partially hardened or contaminated concrete should not be placed
- Joints at proper depth and spacing
- Proper curing method immediately applied
- Appropriate measures for cold and hot weather

Homeowner Education

Ready mix producers can supply mixes meeting these requirements and installer training is also readily available in Tennessee. The best avenue for contractors willing to invest the time and effort in learning industry standard practices is the ACI Concrete Flatwork Finisher course, taught regularly by TCA. This course allows contractors meeting the requirements to become certified so that homeowners and contractors can select those contractors who have attained this certification.

Another important part of the process is homeowner education. If concrete is not properly maintained or is subjected to harsh de-icing chemicals early in the life of the driveway, even a properly designed and placed concrete mix can be susceptible to unwanted deterioration. Time spent educating the homeowner is time well spent.

Concrete Driveway Care & Maintenance

- Consider application of a penetrating sealer (after curing)
- DO NOT apply salt or de-icers the first winter
- Limit salt & de-icer use and remove excess after use
- Re-apply penetrating sealer periodically

More detailed information on this topic is available at <https://www.tnconcrete.org/news/-concrete-driveways-in-tennessee>