Design Tip: Materials

Material design recommendations for concrete garage projects.

A well-designed and constructed cast-in-place parking structure should include careful material selection. Your choices will impact the final design, project schedule, cost and overall quality of the garage.

REINFORCING

- Use high-strength (80 KSI) steel in foundations and columns.
- Use epoxy-coated rebar for beam stirrups, column ties and slab top steel

CONCRETE MIX DESIGNS

- Minimize the water/cement ratio using mid-range, water-reducing admixtures—but don't go below 0.40.
- Use micro silica (silica fume) to improve permeability resistance to de-icers, but don't go above 5%.
- Use larger aggregate in the beam and slab mix, up to ¾ inch, when beam post-tensioned cables are clustered, and do not create a barrier for concrete to reach the bottom of the beam or girder formwork.
- Ensure column/beam intersections have adequate reinforcing space for concrete placement.
- Consider additional admixtures to limit shrinkage and permeability or to improve corrosion resistance when conditions suggest the need.