

Concrete Construction

General Information

- Information required by ready mixed concrete supplier includes Strength, Minimum Concrete Content, Slump, Maximum Size of Aggregate, and Entrained Air.
- Stiff, relatively dry mix provides maximum strength, pesticide and fertilizer resistance, freeze/thaw resistance, and watertightness.
- Use of super plasticizer admixture will ease workability at placement due to stiffness
- Moist-curing for 28 days provides maximum strength and watertightness
 - Ponding, immersion, fogging, or spraying provides evaporative cooling in high temps
 - Sealing with polyethylene film or curing compounds upon finishing surfaces
 - Supply additional moisture and heat such as steam and heating pads for cold temps

Basic Specifications

- Type I or Type II cement with air entrainment (Type IA or Type IIA)
- (Type I plus super plasticizer admixture – Type II)
- Compressive Strength of 4,000 – 4,500 psi
- Water-Cement ratio of 0.40 – 0.45
- Slump of 1-3 inches
- Air Entrainment of 5% - 7.5%
- Maximum Aggregate Size of 1-1.5 inches

Other Requirements

- Vibration during placement at 5,000 – 15,000 rpm frequency range
- Mix 70-100 revolution at mixing speed and additional 200-230 revolution at agitating speed (maximum of 300 total revolutions)
- Discharge load within 1.5 hours
- Allow no more than 30 minutes between truck loads during placement
- Continuous pour in one day, “cold joint” should be avoided
- Float finish surface with aluminum or magnesium float
- Moist cure for a minimum of 7 days although 28 days provides maximum strength
- Allow several weeks for concrete to cure prior to applying sealants

Reinforcement

- Rebar should be Grade 60, #4 Steel
- Wire mesh or fiber additives alone will not provide resistance to cracking over the life of the facility
- Rebar is usually placed on 12-inch centers except for sumps which are placed on 6-inch centers – Rebar should run in both horizontal directions
- Rebar should be placed at least 2 inches below the surface but not more than half the pad thickness

Slope

- Surface slope of an operational pad should be a minimum of 2% (0.25”/ft)
- Surface slope of containment areas should be a minimum of 1%