

Six Tips For Better Slabs



Proper planning is the key for placing large, high performance floors.

Slab-on-ground placements are becoming larger and more complex. Owners are demanding tighter flatness numbers, increased jointing distances, along with more durable surfaces. Meeting these expectations involves a coordinated effort of the entire placement team.

Every successful complex game begins with a good plan. The concrete contractor must create a coordinated approach to the placement that ensures all parts of the plan will come together smoothly and efficiently.

Brian Tracy, a widely read motivational speaker, suggests that the payback for every minute spent in planning is 10 minutes in execution. This 1,000 percent return on energy quickly translates into better quality when dealing with a variable product such as fresh concrete.

Job preplanning for concrete placements has been made easier by using the Checklist for the Concrete Pre-Construction Conference.

Published by the American Society of Concrete Contractors (ASCC) and the National Ready Mixed Concrete Association (NRMCA), the checklist allocates responsibilities and establishes procedures related to concrete construction. The document provides specific recommendations for: subgrade preparation, forming, concrete mixture proportioning, equipment requirements, ordering and scheduling materials and

operational procedures, placing, consolidating, finishing, jointing, curing and protection, testing and acceptance, as well outlining safety and environmental concerns.

The ASCC/NRMCA checklist is suitable for all types of concrete placements. But to identify pre-job planning concerns specific to large concrete slab placements, we recently spoke with Kyle Baker, National Sales Manager for Allen Engineering. For more than 50 years, Allen Engineering's team has aided flatwork contractors on projects around the world.

Baker suggested 6 key items for contractors to incorporate in their pre-job planning for large slab-on-ground pours.

1. When reviewing the bid documents, contractors should take a realistic review of their recent placements. It's important their experience matches the owner's expectation on this project. For example, if a contractor's team has never placed a slab to a similar floor flatness requirement on a previous smaller job, they probably won't achieve these numbers on a larger slab.

Along with the flatness consideration comes the experience of creating special surface finishes or textures. There can be significant operational differences when placing and finishing a floor that will be polished as compared to a surface that will be treated with a coating.



Special surface finishes and textures often require testing and additional planning.

When tasked with executing a new surface treatment, finishing contractors should practice by placing and

treating a mock-up prior to placement. The mock-up's final surface demonstrates the finisher's ability and helps develop owner expectations of the final project.

Another level of self-examination prior to bidding a project is to look for requirements regarding the American Concrete Institute (ACI) flatwork certification.

2. Large slab placements often involve a wide range of inspections and approvals. Contractors must clearly designate "Who's in Charge" at each stage of the project on the pre-job placement call.

Taking a proactive approach involves closely monitoring the successful completion of preplacement tasks. Perhaps the most important approval is with subgrade construction. A properly prepared subgrade is the key to preventing potential surface defects. This inspection involves more than a soil density report. A visual inspection prior to vapor barrier installation will discover any unevenness caused by truck tire ruts. If there is truck traffic on the subgrade during placements, contractors should have compactors onsite to reconsolidate the subgrade and eliminate any rutting



In preplanning, agree who is in charge of the various phases of production.

The most critical task is that of accepting fresh concrete on a project. This task master must know the concrete specs in the job document, monitor the testing engineer to ensure proper procedures, and be current with the rules as outlined in ASTM C-94. During the pre-conference meeting with the ready-mixed concrete supplier, contractors can negotiate their expectations for acceptance of fresh concrete during placements with the ready-mixed concrete producer.

3. Good planning includes a realistic determination of the pace of work. An important initial question is whether placement can occur in one or two stages. This answer can help the contractor select the proper screed.

Many moving parts must be considered when determining a workable production plan. Local conditions such as traffic patterns, truck-mixer unloading positions, and drum cleanout requirements must be coordinated with the concrete producer prior to the project. And it is important to discuss a back-up plan if there are plant problems, or additional projects occurring at the same time.

When the production rate has been established, contractors must turn their planning to jobsite equipment and labor needs. Effective planning includes not only having enough equipment and supplies on the job, but the right tools. Equipment manufacturers have increased the efficiency of screeds and trowels in the last few years. For example, new riding trowels are equipped with power transmissions that aid operators by adjusting blade speed to surface conditions.

All good plans have an efficient exit strategy. The placing tools needed for the last slab placement are



often much different than those used on the main floor. Some contractors have set up special teams that only deal with the challenge of filling that last bulkhead while maintaining surface quality.

Contractors should avoid waiting too long when assessing their final truck order. One way to check actual volume is to conduct yield and/or unit weight tests of the delivered concrete about 1/3 of the pour. When the results match the mix design's original proportions, over-or-under ordering on that last truck can be avoided.

4. Many large slab projects now incorporate materials and techniques that extend jointing patterns. These special requirements can create additional contractor costs and may affect traditional production rates. While the concrete placement approaches are like traditional slabs, pre-job planning can highlight some major differences.

Most of these projects incorporate special dowels that mitigate slab movement. It's important to have extra inventory on hand and the proper tools that install them.

Many propriety floor mixtures can contain high dosages of steel fibers that often result in a stiffer mix. Contractors should discuss the workability characteristics with the concrete producer.



Extended joints are possible by using special mixes and/or dowels and spacers.

An important consideration of these type of floor installations is the saw cut and joint treatment. Many of these floors require time-sensitive Ultra Early Entry saw cuts. The contractor must be diligent in inspecting the saw cutting layout and execution. One misplaced cut can ruin a great placement. On critical placements, many contractors require backup finishing and joint-cutting equipment on-hand to guard against untimely failures.

5. The contractor's responsibility for quality doesn't end at placement. Protecting the slab begins with proper curing. Contractors must coordinate their curing technique with the owner's representative.

If the approved curing method involves a membrane, it's best that the application occurs following the joint-cutting. This ensures that the membrane is placed on the slab's surface with little contamination. One important tool for proper and efficient curing application is the right sprayer. The proper match to nozzle and pump capacity can streamline the application.



On many interior floors, finished slab surfaces are exposed to other non-concrete construction activities. Concrete contractors should discuss how the general contractor intends to protect concrete during its

curing. There are several temporary floor covering products designed for construction sites that allow the slab's concrete to properly cure, while eliminating any exposure to scratches, spills, and chipping.

6. There can be many different concrete contracting firms involved during large placements. At the pre-job meeting, the lead concrete contractor must ensure that all workers will be following the same set of rules.

A well-accepted approach is to use The Pre-Construction Checklist for Safety Policies & Procedures, developed by the ASCC. Developed by the safety directors of the nation's leading contractors, this simple document goes into depth to assure that the most important piece of every project is in place, and communicated to all stakeholders prior to startup.

Every successful project includes the proper use of personal protective equipment. These go beyond the traditional items such as hardhats, glasses, and gloves. Safety vest, hearing protection, and indoor air monitoring are important elements to a smooth placement procedure.

Lighting On Large Pours

Most large pours start before dawn, and often the general site lighting isn't sufficient for concrete placing and finishing. Some common lighting options include:

- Portable Light Towers
- Balloon Lighting
- Roadway Luminaires
- Factory-Installed Lights On Equipment
- Personal Lighting



Milwaukee MX FUEL™ ROCKET™ Tower Light/Charger

For more information on lighting plans check out our article on [Night Construction Guidelines](#).

Managing Indoor Air Quality During Pours

Providing safe indoor air quality is often challenging on large floor placements. Many placements occur in temporary work enclosures erected to protect the pour area from either cold temperatures or impending rain. The enclosures typically lack proper ventilation for the intensity that large placements generate. There are two major air quality concerns, exposure to CO2 and to fugitive dust. Both contaminants must be monitored during construction activity.

Many contractors use hand-held monitors to measure CO2 levels during placement. Large fans can be situated at key locations to either exhaust contaminated air or to provide fresh air.



A more acceptable approach is to eliminate the sources of CO2. Many placing equipment manufacturers have replaced gasoline engines with propane and electric power units. These non-CO2 generating power units operate at the same efficiency as gas powered units. Manufacturers have buggies, screeds, and riding power trowels with these non-contaminating power sources.

Containment of fugitive dust is just as important. Contractors must adopt dust containment on all portions of the placement. This includes using dust evacuators when drilling holes for dowels, forms, and anchors.

The greatest employee exposure to fugitive dust can occur during saw cuts and polishing. These procedures can generate great amounts of fine dust that require high performance vacuums that provide powerful suction and are anti-clogging to keep production at maximum levels.

Path To Success

While good concrete placements are needed for every project, moving up to larger placements requires additional planning considerations. Contractors who plan well, utilize modern equipment, and follow industry safety placement practices have a better chance to achieve high floor quality, and greater profits.

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<https://news.whitecap.com/large-slab-placement/>