

Floor Preparation Recommendations

*Best Practices to Prepare
Concrete for Polishing*



Polishing Basics

FACT #1

Poorly finished concrete **WILL** result in a substandard polishing process. Finished concrete is the canvas on which a polished work of art is created for the customer...but **ONLY** if the canvas has been properly prepared, maintained, and protected.



Polishing Basics

FACT #2

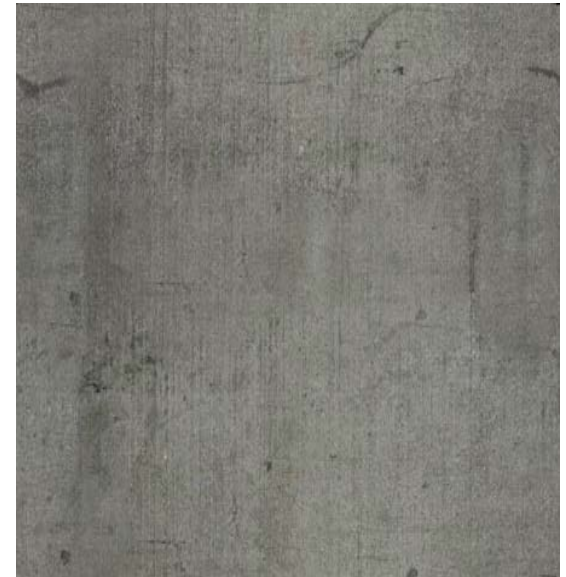
Creating a well-polished, visually appealing, and functional floor requires a partnership between expert concrete finishers and highly-experienced polishers.



Concrete Finish Basics

The typical concrete finish has the following basic steps:

- Laser Screeding and/or Bull Floating
- Pan Troweling (power)
- Edge Troweling (power)
- Combo Troweling (power)
- Finish Troweling – Plastic Blades Recommended (power)
- Curing





Polishing Preparation

The Concrete Finish Basics noted earlier are the cornerstones for success. However, many concrete finishers are not necessarily well-versed in why different preparation steps are required based on the type of floor finish / covering that is specified by a customer. When Polished Concrete is the preferred end-result, careful consideration must be taken in each preparatory step.



Best Finishing Practices for Polished Concrete

The following requests / recommendations are suggested practices meant to maximize the effectiveness of the finish work before the polishing process.

Consolidation

Well-consolidated concrete allows for a beautifully finished, polished floor.
Poorly consolidated concrete will result in unsightly blemishes.





Consolidation of Edges

Consolidation of edges is just as important as the rest of the slab for a well-polished floor. Sloping, non-consolidation, or under-troweling of an edge can ruin the appearance of a floor as much as any other floor defect.



Inadequate Consolidation

Inadequate consolidation of the paste can result in:

- Honeycomb
- Excessive amount of entrapped air voids (bug holes)
- Sand streaks
- Weak / crumbling cold joints
- Placement lines
- Subsidence cracking
- Bad appearance



Poor consolidation cannot be remedied during the grinding / polishing process

Finishing Edges

A properly finished floor does not end in the “field” area of the slab. Finishing must be continued all the way to the edge of the slab in order to avoid improper or incomplete consolidation of the concrete. This results in a consistent appearance to the polished surface.



Vibratory Screeding

Use of screed poles supported by chairs or other mechanical devices are recommended when utilizing a vibratory screed. Visually matching elevations to forms or previous passes may result in poor FF readings and inconsistent polished surfaces.



Laser Screed

The optimum process used to create the most uniform concrete finish for polished concrete, and consequently the best polishing surface, is the utilization of a laser screed. The laser controlled machine enables accurate leveling and vibrating of the concrete.





Bull Floating

Special care is requested during the bull floating process so as to avoid drag marks and/or the creation of “divots” in the finished surface.



Floating

Special care should also be taken when floating. This is to ensure finishers embed the aggregate particles just beneath the surface.

Floating is recommended to remove slight imperfections, humps, voids and to compact the mortar at the surface in preparation for polishing.

In some instances, aggregate will be exposed per the customer's request. Therefore, the finisher and the polisher must communicate throughout the pour process. This communication minimizes the grinding steps necessary to ensure that the desired amount of aggregate is exposed.



Hand Troweling

Hand troweling is requested to be kept to an absolute minimum. This is due to the difference in appearance between mechanical troweling and compaction of the concrete by hand.



Troweling

As evidenced in the image to the right, power troweling with *metal* blades can mark the floor in a manner that generally cannot be removed by the polishing process. Removal of these marks requires grinding below the damage. In most cases, this additional grinding exposes aggregate. For this reason the use of *plastic* blades is requested.



Troweling

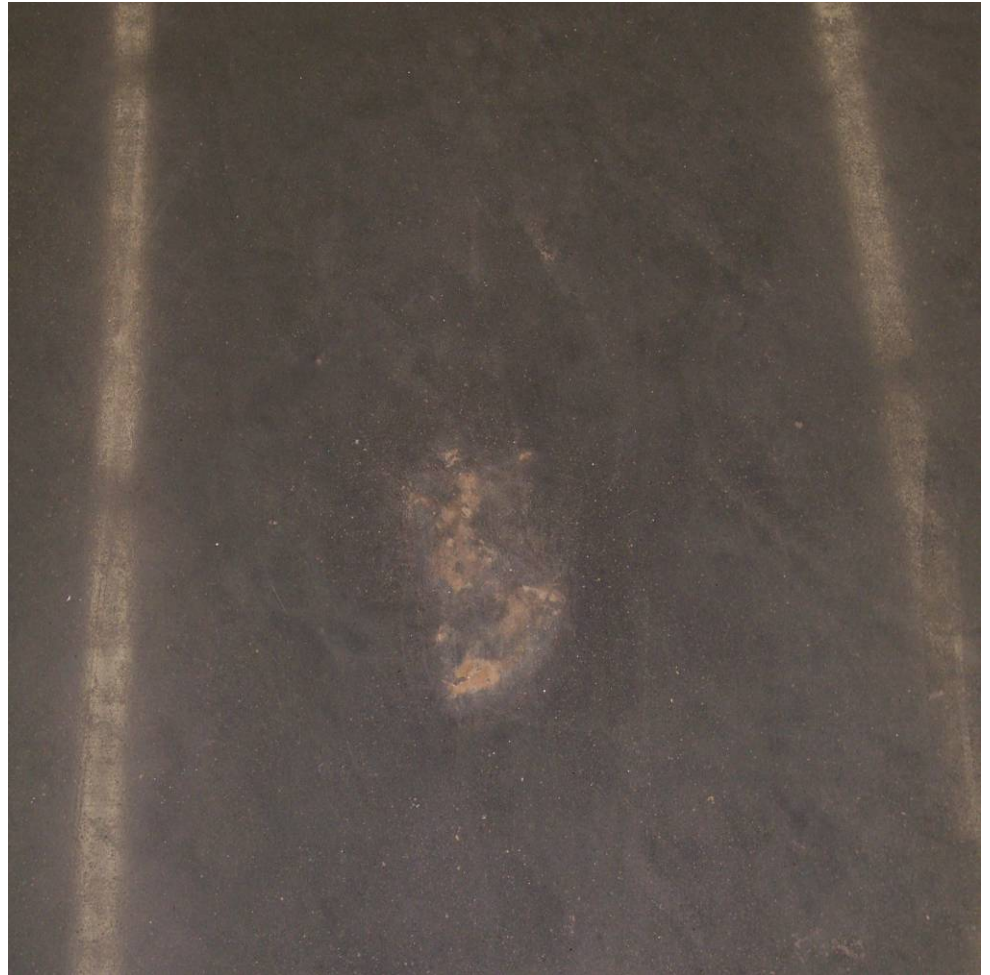
These pictures suggest that the troweling process may have been initiated too late in the curing process and/or continued for too long after the curing process had begun.





Low Spots – Poor FF

Floor flatness is generally noted within a range (Example: 50/35). However, even a very high FF reading does not eliminate the risk that low spots can exist. These depressions cannot be removed without creating a “bowl effect” which involves grinding significantly through the cream of the slab and exposing the aggregate.





Summary

- A well-polished concrete floor requires careful coordination between the finishing contractor and floor polisher.
- Plastic blades are preferred over metal blades and every effort must be taken to not leave ANY trowel marks.
- Edges must be level with the main floor.
- ALL surfaces and edges must be fully and consistently consolidated to give a uniform finish.
- Voids and/or delamination will result in disfiguration of the floor.
- Timing is critical when closing the floor. Waiting too long in the curing process will directly affect the results of the polishing process.
- Laser screeding is the preferred method of finishing.
- ACI (American Concrete Institute) standards are preferred.
- Check flatness and levelness of floor
- All edges need to conform with the rest of the floor, use machines on the edges and cold joints to ensure consolidation of the paste
- Completely smooth concrete with trowel, no pit holes, no trowel marks; concrete should be uniform in color



Proper Wet Cure Procedures

- Use water cured synthetic blankets (no burlap)
- These blankets are organic and are dumpster friendly. They can be purchased from MacTech or PNA.
- Wet the slab to the point of "flooding" the floor. Place the blankets down and squeegee the blankets onto the floor.
- The blankets will retain the moisture for 7 days.
- Leave the blankets on for 7 days and once removed, scrub floor to remove residue



Finishing Guidelines

- Pan float and then finish with plastic blades (strongly recommended). If using steel blades after pan float, finish lightly so as not to burn the floor. Pay special attention to flat troweling at edges and penetrations.
- This mix should be void of any foreign objects (nails, steel or debris, etc.)
- The finish should be performed without bowls or low spots in floor as the polishing process will reveal them.
- The finish should yield consistent surfaces without high/low trowel marks, pits, or areas of poor consolidation.
- When wet curing, the floor does not need to dry out under the blankets within the seven day cure.
- Remove blankets after seven days. Immediately after blankets are removed, scrub floor to remove residue.
- When using a curing seal, seal should be dissipating and put on lightly and consistently without puddling.



Post-Pour Protection Guidelines

- Floor should be void of metal debris (nails, screws, etc.) that can leave rust stains. These stains penetrate deeper into the slab than the depth of usual grinding.
- Oil, hydraulic fluids, and other fluids or chemicals cannot come in contact with the floor. If there is any leaking of such fluids, they should be cleaned up immediately.
- Lifts should be diapered to prevent leaking.
- Pipe cutting should be performed off of the slab or on plastic in a singular area of the building so that cutting oils never touch the surface.
- Delivery of building materials should be done without damaging the surface in any way. Slab should be swept free of rocks and other abrasive debris that can drag under the tires of lifts.
- Materials should not be stored on slab within 28 days of pour. Permanent shadowing will be left in the shape of the materials that are in contact with the surface.