SECTION 03 54 16

CEMENT LEVELING COMPOUND

SURFACE PREPARATION AND BONDING AGENT GUIDE SPECIFICATION

CEMENTPRO

\*This guide specification has been developed by CementPro, to provide general guidance on specifications of the company’s products. This guide specification covers use of cement leveling compounds and bonding agents during installation and or preparation of the concrete floor or wall required before flooring installations begins.

CementPro product management and technical teams are available to assist the architect and or specifier, in development final specification in final format. Please contact qualityassurance@cementpro.com for call 951-300-0300 for assistance.

1. **GENERAL**
	1. **SECTION INCLUDES**
		1. Surface preparation materials.
		2. Setting materials.
		3. Adhesives and primers.
		4. Grout materials.
		5. Self-leveling underlayment.
		6. Waterproof Membrane
		7. Crack Isolation Membrane
		8. Flexible sealant.
		9. Penetrating grout sealers.
		10. Penetrating stone, tile, and grout sealers.
		11. Topical stone sealer and finishes.
		12. Stone, tile and grout maintenance, cleaners, and grout haze removers.
	2. **RELATED SECTIONS**

\*\* NOTE TO SPECIFIER \*\* This section does not include any tile or stone materials; be sure that the required tile or stone materials are specified in another section. Delete sections below not relevant to this project; add others as required.

* + 1. Section 03 30 00 – Cast-in-Place Concrete.
		2. Section 03 38 00 – Post-Tensioned Concrete.
		3. Section 03 39 00 – Concrete Curing.
		4. Section 03 54 16 – Hydraulic Cement Underlayment.
		5. Section 04 20 00 – Unit Masonry (CMU wall substrates).
		6. Section 05 40 00 – Cold-Formed Metal Framing.
		7. Section 05 42 00 – Cold-Formed Metal Joist Framing.
		8. Section 06 11 00 – Wood Framing.
		9. Section 06 11 00 – Sheathing.
		10. Section 07 14 00 – Fluid-Applied Waterproofing.
		11. Section 07 60 00 – Flashing and Sheet Metal.
		12. Section 07 76 16 – Roof Decking Pavers.
		13. Section 07 92 13 – Elastomeric Joint Sealants.
		14. Section 07 92 19 – Acoustic Sealants.
		15. Section 09 05 61.13 – Moisture Vapor Emission Control.
		16. Section 09 21 00 – Plaster and Gypsum Board Assemblies.
		17. Section 09 22 16 – Non-Structural Metal Framing.
		18. Section 09 26 00 – Veneer Plastering.
		19. Section 09 28 00 – Backing Boards and Underlayment’s.
		20. Section 09 29 00 – Gypsum Board.
		21. Section 09 30 00 – Tiling.
		22. Section 09 30 33 – Stone Tiling.
		23. Section 09 34 00 – Waterproofing-Membrane Tiling.
		24. Section 09 31 33 – Thin-Set Stone Tiling.
		25. Section 09 75 00 – Stone Facing.
		26. Section 23 83 13 – Radiant-Heating Electric Cables.
		27. Section 23 83 13.16 – Radiant-Heating Electric Mats.
		28. Section 13 11 00 – Swimming Pools.
		29. Section 13 17 00 – Tubs and Pools.
		30. Section 13 24 26 – Steam Baths.
	1. **REFERENCES**

\*\* NOTE TO SPECIFIER \*\* Delete references below that are not actually required by the text of the edited section; add others as required.

* + 1. American National Standards Institute (ANSI):
			1. ANSI A108 Series/A118 Series – American National Standards for Installation of Ceramic Tile.
			2. ANSI A108.14 – Installation of Paper-Faced Glass Mosaic Tile.
			3. ANSI A108.15 – Alternate Method: Installation of Paper-Faced Glass Mosaic Tile.
			4. ANSI A108.16 – Installation of Paper-Faced, Back-Mounted, Edge-Mounted, or Clear Film Face-Mounted Glass Mosaic Tile.
			5. ANSI A 108.19 – American National Standard Specifications for Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs.
			6. ANSI A136.1 – American National Standard for Organic Adhesives for Installation of Ceramic Tile.
			7. ANSI A137.1 – American National Standard for Ceramic Tile.
			8. ANSI A137.2 – American National Standard for Glass Tile.
			9. ANSI A137.3 – Standard Specification for Gauged Porcelain Tile and Gauged Porcelain Tile Panels/Slabs.
			10. ANSI A138.1 – American National Standard Specifications for Green Squared Certification for Tiles and Installation Materials.
			11. ANSI 118.4 – American National Standard Specifications for Modified Dry-Set Cement Mortar
			12. ANSI 118.10 – American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation
			13. ANSI 118.11 – American National Standard Specifications for EGP (Exterior Glue Plywood) Modified Dry-Set Mortar
		2. ASTM International (ASTM):
			1. ASTM A1064 – Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
			2. ASTM C109 – Compression Testing 2-inch concrete tubes.
			3. ASTM C144 – Standard Specification for Aggregate for Masonry Mortar. (Jobsite Mix)
			4. ASTM C150 – Standard Specification for Portland Cement. (Jobsite Mix)
			5. ASTM C191 – Standard Test Method for Time of Setting Hydraulic Cement
			6. ASTM C 207 – Standard Specification for Lime for Masonry Purposes
			7. ASTM C266 – Standard Test Method for Time of Setting of Hydraulic Cement Paste
			8. ASTM C348 – Flexural Hydraulic Cement Mortars Testing Equipment
			9. ASTM C109/C109M – Standard Test Method for Compressive Strength of Hydraulic Cement Mortars. (Using 2-inch [50-mm] Cube Specimens).
			10. ASTM C616 – Standard Specification for Quartz-Based Dimension Stone.
			11. ASTM C645 – Standard Specification for Nonstructural Steel Framing Members.
			12. ASTM C847 – Standard Specification for Metal Lath
			13. ASTM C1708 – Standard Test Method for Self-Leveling Mortars Containing Hydraulic Cement
		3. TCNA (HB) – Handbook for Ceramic Tile, Glass, and Stone Installation; Tile Council of North America.
		4. TTMAC – Specifications Guide 09 30 00 Tile Installation Manual.
		5. International Organization for Standardization (ISO):
			1. ISO 13007 – Ceramic tiles – Grout and adhesives.
		6. Leadership in Energy and Environmental Design (LEED®) – U.S. Green Building Council.
		7. Environmental Product Declaration
	1. **SUBMITTALS**
		1. Submit under provisions of Section 01 30 00 – Administrative Requirements.
		2. Product Data: Manufacturer's technical information for each product specified.
		3. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.
		4. Samples: Color charts for selection of grout.
		5. Manufacturer's Certificates: Certify that products meet or exceed specified requirements. When applicable, submit a Master Grade Certificate signed by the manufacturer and the installer certifying that products meet or exceed the specified requirements of ANSI A137.1.
		6. Installation Instructions: Manufacturer's printed instructions for each product.
		7. Maintenance Data: Include recommended cleaning methods, cleaning materials, and maintenance coatings.
		8. Warranty:
			1. 1-year product limited warranty on all products, except CP-25 & CP-50. Warranty information can be found [www.cementpro.com/warranty](http://www.cementpro.com/warranty).
			2. Warranties up to 25-years are offered when products included herein, are used in combination with a CementPro system.
	2. **QUALITY ASSURANCE**
		1. To ensure single-source warranty requirements and compatibility of products: Please provide cleaners, sealing and maintenance products as well as tile grout, setting materials, underlayment’s, additives, accessories, and factory-prepared dry-set mortars from the same manufacturer.
		2. Installer Qualifications:
			1. Installer must be an approved CementPro installer.
			2. Engage an experienced installer who has completed tile installations similar in material, design, and extent to that indicated for this project and with a record of successful in-service performance. Installer to have a minimum of 5 years’ experience.
		3. Mockups: Build mockups (if required by specifier) to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
	3. **PRE-INSTALLATION CONFERENCE**
		1. Convene one week prior to commencing work of this section.
		2. Require attendance of installation material manufacturer, tile supplier, tile installer and installers of related work.  Review installation procedures and coordination required with related work.
		3. Meeting agenda includes but is not limited to:
			1. Tile and installation material compatibility.
			2. Grouting procedure.
			3. Maintenance and cleaning products and methods.
			4. Surface preparation.
	4. **DELIVERY, STORAGE AND HANDLING**
		1. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Prevent damage or contamination to materials by water, freezing, foreign matter and other causes.
		2. Protect setting materials from freezing and overheating in accordance with manufacturer's instructions.
		3. Store tile and setting materials on elevated platforms, under cover and in a dry location and protect from contamination, dampness, freezing and overheating.
		4. Do not use frozen materials unless specifically allowed by manufacturer.
		5. Deliver and store materials on site at least 24 hours before work begins.
		6. Provide heated and dry storage facilities on site.
	5. **ENVIRONMENTAL REQUIREMENTS**
		1. Comply with requirements of referenced standards and recommendations of material manufacturers for environmental conditions before, during, and after installation.
		2. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.
		3. For interior applications:
			1. Do not begin installation until building is completely enclosed and maintains temperature and humidity conditions consistent with "after occupancy" conditions for a minimum of 2 weeks.
			2. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.
			3. Vent temporary heaters to exterior to prevent damage to tilework from carbon dioxide.
			4. Maintain temperatures at not less than 50°F (10°C) in tiled areas during installation and for 7 days after completion unless higher temperatures are required by referenced installation standards or manufacturer's written instructions.
		4. For exterior applications:
			1. Build a temporary shelter and when needed use indirect auxiliary heaters to maintain an adequate temperature level in the working environment and surfaces.
			2. Exhaust temporary heaters to exterior to prevent damage to the work or injury to personnel from carbon monoxide emissions.
			3. Maintain substrate and ambient temperatures in tiled areas between 50°F (10°C) and 95°F (35°C) during installation and for at least 7 days after completion, unless otherwise indicated in the product instructions and/or ANSI A108 installation standards.
1. **PRODUCTS**
	1. **MANUFACTURERS**
		1. Basis of Design: CementPro 3929 E Gausti Rd Unit C Ontario, California 91761. Email: customerservice@cementpro.com. Web: www.cementpro.com
		2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 – Product Requirements.
		3. Substitutions: Not permitted.
	2. **SURFACE PREPARATION MATERIALS**

\* NOTE TO SPECIFIER \*\* Consult with CementPro for additional surface floor preparation recommendations

1. Deck MudPro: Premium mixture of washed and graded plaster sand. Bedding material for floors, countertops, and showers for use as a leveling material over metal lathe for tile installations.
	1. Testing References:
		1. ASTM C144
		2. Type S Lime that conforms to ASTM C207
		3. Portland Cement that conforms to ASTM C150
2. ElasticPro: liquid applied, ready to use elastomeric membrane for tile and tone installations for floors, walls, and ceilings.
	1. Testing References: Exceeds ANSI A118.10
3. LevelPro: self-leveling underlayment formulated with polymers, specialty chemical additives, and size-controlled silica sand. Levels properly prepared concrete, masonry, mortar beds, plywood, and ceramic tile. Before installations of different floor coverings. No troweling required with no shrinkage.
	1. Testing References
		1. ANSI: Exceeds ANSI A118.4 and ANSI A118.11
		2. ASTM: Exceeds ASTM 1708, ASTM C109, ASTM C191
4. PatchPro: Fast setting, polymer modified Portland Cement based patching compound. For interior and exterior surfaces developing high compressive strength without shrinkage.
	1. Testing References
		1. ASTM C266
		2. ASTM C109
5. Wall FloatPro: Mixture of washed and graded plaster sand, Type S lime, and Portland Cement. Applied as a scratch and brown and as a leveling coat over metal lathe in tile installations.
	1. Testing References:
		1. Plaster Sand that conforms to ASTM C144
		2. Type S Lime that conforms to ASTM C207
		3. Portland Cement that conforms to ASTM C150
	2. **BONDING AGENTS**
6. ProMastic: Premixed water based acrylic adhesive, for interior wall and floor installations. Manufactured with styrene acrylic emulsions, first quality additives, and inert aggregates.
	1. Testing References
		1. Exceeds ANSI A136.1
7. VinylPro: Premium water-based adhesive for the installation of Vinyl Tile over wood and concrete. Products used in conjunction should have a minimum compressive strength of 3000 psi.
8. Concrete Glue: Liquid additive bonding adhesive for bonding new concrete, mortar of gypsum plaster to existing surfaces.

**PART III EXECUTION**

3.01 **EXAMINATION**

\*\* NOTE TO SPECIFIER \*\* Consult with CementPro for additional surface floor preparation recommendations

1. Examine substrates for compliance with requirements for conditions affecting performance of the work. Refer to ANSI A108.01, ANSI A108.02 and if applicable ANSI A108.19.
2. Do not proceed with tilework until surfaces and conditions comply with requirements indicated in reference tile installation standard and manufacturer's printed instructions.
3. When patching, leveling mortar, grout and rendering materials are needed, they must be from the supplier of the setting materials. For improved warranty and single-source responsibility.
4. When using tiles with all edges shorter than 15 inches (38 cm) in length, maximum allowable variation in the substrate – 1/4-inch (6 mm) in 10 feet (3.05 m) from the required plane, with no more than 1/16-inch (1.5 mm) variation in 12 inches (30 cm) when measured from the high points in the surface.
5. When using large-format tiles with at least one edge of 15 inches (38 cm) in length, the maximum allowable variation in the substrate is 1/8 inch in 10 feet (3 mm in 3.05 m) from the required plane, and 1/16-inch variation in 24 inches (1.5 mm in 61 cm) when measured from the high points in the surface.
6. When using stone tile, the maximum allowable variation in the substrate is 1/8 inch in 10 feet (3 mm in 3.05 m) from the required plane.
7. Follow mixing instructions from manufacturer.
8. Surface must be clean dry free from dust, wax, grease paint, efflorescence, and any materials that will reduce adhesion,
9. Walls and ceilings must be structurally sound, free from movement and dimensionally stable.
10. Repair all cracks.
11. Concrete slabs musts be fully cured (28 days), structurally sound dimensionally stable accept water penetration and be free from efflorescence.
12. Concrete must be free from any negative hydrostatic pressure and or excessive moisture.
13. Smooth surfaces must be mechanically scarified.
14. Do not use solvent or liquid adhesive removers.
15. Mechanically remove any material that would interfere with adhesion.

**3.02 INSTALLATION**

* + 1. Install tile in accordance with manufacturer's printed instructions and the applicable requirements of ANSI A108 series for the materials being used.
		2. When patching, leveling, and rendering materials are needed, they must be from the supplier of the setting materials. For improved warranty and single-source responsibility.
		3. Apply waterproof membrane only in dry weather, when ambient and substrate temperatures are above 40°F (4°C).
		4. Waterproofing: Install necessary components to form a watertight installation. Dry film thickness (DFT) must comply with manufacturer’s recommendations.

\*\* NOTE TO SPECIFIER \*\* The following paragraphs are examples of how to specify different TCNA methods for different applications. Delete if TCNA methods are shown on the drawings.

\*\* NOTE TO SPECIFIER \*\* For ease of specifying installation methods refer to the Tile Council of North America (TCNA) "Handbook for Ceramic, Glass, and Stone Tile Installation"

* + 1. Install tile using TCNA methods specified on the drawings.
			1. Floor Tile at \_\_\_\_: Install in accordance with TCNA method F\_\_ \_\_ \_\_.
			2. Wall Tile at \_\_\_\_\_: Install in accordance with TCNA method W\_\_ \_\_ \_\_.
			3. Tile on Soffits: Install in accordance with TCNA method C31\_\_.
			4. Tile Countertops: Install in accordance with TCNA method 51\_\_.
			5. Tile in Refrigerated Rooms: Install in accordance with TCNA method R612.
			6. Tile in Steam Rooms: Install in accordance with TCNA method SR61\_\_.
			7. Tile on Stairs: Install in accordance with TCNA method S151C/M/W (Concrete/Metal/Wood).
			8. Tile over Tile Floors: Install in accordance with TCNA method TR712.
			9. Tile over Tile Walls: Install in accordance with TCNA method TR71.
			10. Install expansion and control joints in accordance with TCNA method EJ171.
		2. Apply tile and grout cleaners, sealers, and maintenance products in accordance with manufacturer's printed instructions and technical data sheets.

\*\* NOTE TO SPECIFIER \*\*Specify this for Pools only.

* + 1. Fill no more than the pool can be filled with fresh water, the rate of filling being the same as when it was originally filled for the water test, 24 inches to 30 inches (61 cm to 76 cm) per day. If the pool water is heated, the temperature should be raised slowly, at a rate not exceeding about 2ºF (1ºC) per hour.
	1. **PROTECTION**

\*\* NOTE TO SPECIFIER \*\* The following are general recommendations for protection during construction. Specific applications and products may allow tiled areas to be occupied sooner.

* + 1. Floors: Protect from all traffic for at least 72 hours after installation.
			1. Do not step on floor for at least 24 hours; if traffic is unavoidable after that, use plywood stepping boards.
			2. Protect from heavy traffic for at least 7 days after installation.
			3. When fast-setting materials are used to allow faster occupancy, comply with the manufacturer's recommendations.
		2. Walls: Protect from impact, vibration, and heavy hammering on adjacent and opposite walls for at least 14 days after installation, unless manufacturer's instructions allow a shorter period.
		3. Protect from stain-causing food products and chemicals for at least 14 days.

\*\* NOTE TO SPECIFIER \*\* When dealing with cement-based products, it should be noted that temperature and humidity during and after installation of tile affect final curing time. That is, low temperatures -- 60°F (15°C) and under -- and high humidity -- 70% and above -- will delay final cure time.

* + 1. Protect from freezing and total water immersion for at least 21 days after installation.

**END OF SECTION**