

NATIONAL TERRAZZO & MOSAIC ASSOCIATION



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TERRAZZO

SYSTEMS REFERENCE GUIDE





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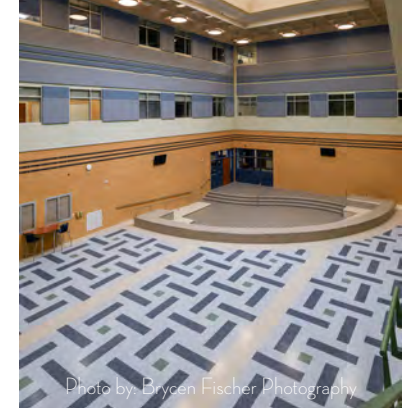


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Introduction

Terrazzo, def., A composite flooring system consisting of either a cement or resinous matrix with marble, granite, onyx, glass (in resinous system) or other aggregate. Terrazzo is poured-in-place, cured, and ground to a smooth, hard surface finish.

Terrazzo is a custom flooring crafted essentially from natural products and subject to slight shade variations. Cement, both white and gray, may not be uniform in color.

Cement Terrazzo Systems

Sand Cushion, def., Cement matrix terrazzo system that is installed independent of the concrete slab. Cement underbed, with wire reinforcing, isolation sheet, and light dusting of sand and terrazzo topping. Interior System. 3 inch thickness, including a 1/2 inch nominal thickness terrazzo topping.

Bonded Terrazzo, def., Cement matrix terrazzo system that bonds directly to the concrete slab. Cement underbed and terrazzo topping. Interior System. 2-1/4 inch thickness, including 1/2 inch nominal thickness terrazzo topping.

Monolithic, def., Cement matrix terrazzo system that bonds directly to the concrete slab. Dependent on quality of the concrete slab for flatness and crack prevention. Interior System. 1/2 inch nominal thickness terrazzo topping.

Polyacrylate, def., Polymer modified cement matrix terrazzo system that bonds directly to the concrete slab. Dependent on quality of the concrete slab for flatness and crack prevention. Interior System. 3/8 inch nominal thickness terrazzo topping.

Resin Terrazzo Systems

Epoxy def., Resin matrix terrazzo system that bonds directly to the concrete slab. Dependent on quality of concrete slab for flatness and crack prevention. Interior System. 3/8 inch nominal thickness terrazzo topping.

BASIC TERRAZZO SYSTEMS INFORMATION AVAILABLE TO FIT VARIABLE JOB CONDITIONS

System	Description	Advantages	Thickness	Weight	Dividers
Epoxy	A nominal 3/8" thick resin matrix veneer placed upon an interior flat concrete slab; in addition to traditional marble chips, also can be specified with granite, glass, plastics, metal, and other aggregates to provide brilliant colors, unique accents, chemical resistance, etc. Epoxy terrazzo has the greatest tensile, compressive, and flexural strength of any system.	Unlimited matrix colors, color control, resiliency, chemical resistance and tensile-compressive strengths not available in cement based systems. Excellent for multi-colored patterns and designs. Light weight and flexibility make it ideal for multi-story use. It has a lower maintenance cost due to low permeability. In sanitary areas it can be installed with minimal dividers providing seamless characteristics. When used in conjunction with a flexible membrane as a specified extra, it can absorb some horizontal concrete crack or control joint movement. Can be installed with a flexible membrane to aid in the suppression of reflective cracking. It also has the quickest pour to grind installation time. Can also be used over properly installed and prepared plywood. Glass and other decorative aggregates normally increase the cost.	Nominal 3/8" epoxy terrazzo topping. #0-1 chip sizes optional. #2 chip for 3/8"	5-6 lbs. PSF.	<p>All these systems adhere to the concrete and require dividers. To minimize cracking in the concrete, "ACI 302.1 Concrete Joint Placement" must be followed. Concrete joints should run off all corridor intersections and corners.</p> <p>In addition other dividers can be set to separate colors or as an accent themselves. In these systems the dividers not located over concrete joints are strictly decorative. They do not function as leveling devices or crack preventers.</p> <p>Dividers may vary in width from 18 gauge to 1/2". 16 gauge or 1/8" are standards. Zinc and brass are available for cement. Zinc, brass, plastic and aluminum divider strips are allowable for use in epoxy terrazzo systems.</p> <p>Architects should design structural inset expansion plates between areas where major movement is anticipated.</p>
Monolithic	This nominal 1/2" thick cement matrix veneer placed upon a provided concrete slab is dependent on the concrete quality for flatness and crack prevention.	Fast installation and the most economical price make it ideal where time and budget are critical but where beauty, low maintenance, and the performance of terrazzo is desired.	1/2" terrazzo topping	5-7 lbs. PSF.	
Bonded	A cement matrix and underbed system for interior and exterior areas where conditions require 1-3/4" of recessed depth to be filled in addition to the 1/2" terrazzo topping.	With the sand-cement mortar underbed it has less dependence on the concrete slab for flatness when compared to monolithic.	2-1/4" including 1/2" terrazzo topping	18-22 lbs. PSF.	
Polyacrylate	A nominal 3/8" thick polymer modified cement matrix veneer placed upon a provided flat concrete slab. Polymer provides added strength to allow for thinner applications of cement systems.	Ideal to replace vinyl or carpet without depth transition difficulties; also good to use in areas subject to high moisture vapor transmission where non-breathing floors will often not suitably adhere without supplemental topical treatments.	Nominal 3/8" polyacrylate with terrazzo topping. Chip sizes #0, 1 & 2	4-1/2 lbs. PSF.	

BASIC TERRAZZO SYSTEMS INFORMATION AVAILABLE TO FIT VARIABLE JOB CONDITIONS

System	Description	Advantages	Thickness	Weight	Dividers
Sand Cushion	A cement matrix topping over underbed/screed with wire reinforcing, isolation sheet, and sand layer system for interior floor use. An independent system un-bonded from the substrate, this is considered by many to be the premier cement-based system.	Due to the underbed's depth, wire mesh reinforcing and sand layer, it will accommodate minor substrate defects and resist mirroring to the surface.	3" including a 1/2" terrazzo topping	25-30 lbs. PSF.	The position of vertically embedded divider strips is essential to performance, serving a dual function: a control for anticipated contraction and an aesthetic enhancement in separating colors. Squares of 4'x4' or less on centers are ideal – rectangles of no more than 25 square feet (aspect ratio maximum 1.5:1) are next best. Architects should design structural inset expansion plates between areas where major movement is anticipated.
Rustic	Terrazzo with a non-ground, textured surface, commonly for exterior use. This system is available with Sand Cushion, Bonded, and Monolithic.	Infinitely variable textures, colors, and patterns may be created in a weather-resistant, skid resistant deck surface.	1/2" to 6" including a 1/2" terrazzo topping	Dependent on system selected	Temporary wood strips are used, and then replaced by a pourable sealant inserted into the joint.
Precast	Prefabricated custom units for flat or coved base work, stair treads & risers, stringers, planters, benches, wall panels.	Virtually unlimited uses.		Custom finish Contact your local NTMA supplier/manufacturer	

Customary Aggregate Sizes for Terrazzo Toppings

Cement	No. 1 and 2	(1/2 inch nominal thickness)
Epoxy	No. 0, 1 and 2	(3/8 inch nominal thickness)
Epoxy	No. 0 and 1	(1/4 inch nominal thickness)
Polyacrylate	No. 1 and 2	(3/8 inch nominal thickness)
Venetian	No. 1, 2, 3, 4 and 5	(5/8 inch nominal thickness)

Price factors include: complexity, number of different colors, local labor rates, divider strip quantity and type, size and source of aggregate, size of areas and total project, number of phases and logistics, new constructions or renovations.

Consult your local NTMA contractor for budget pricing.

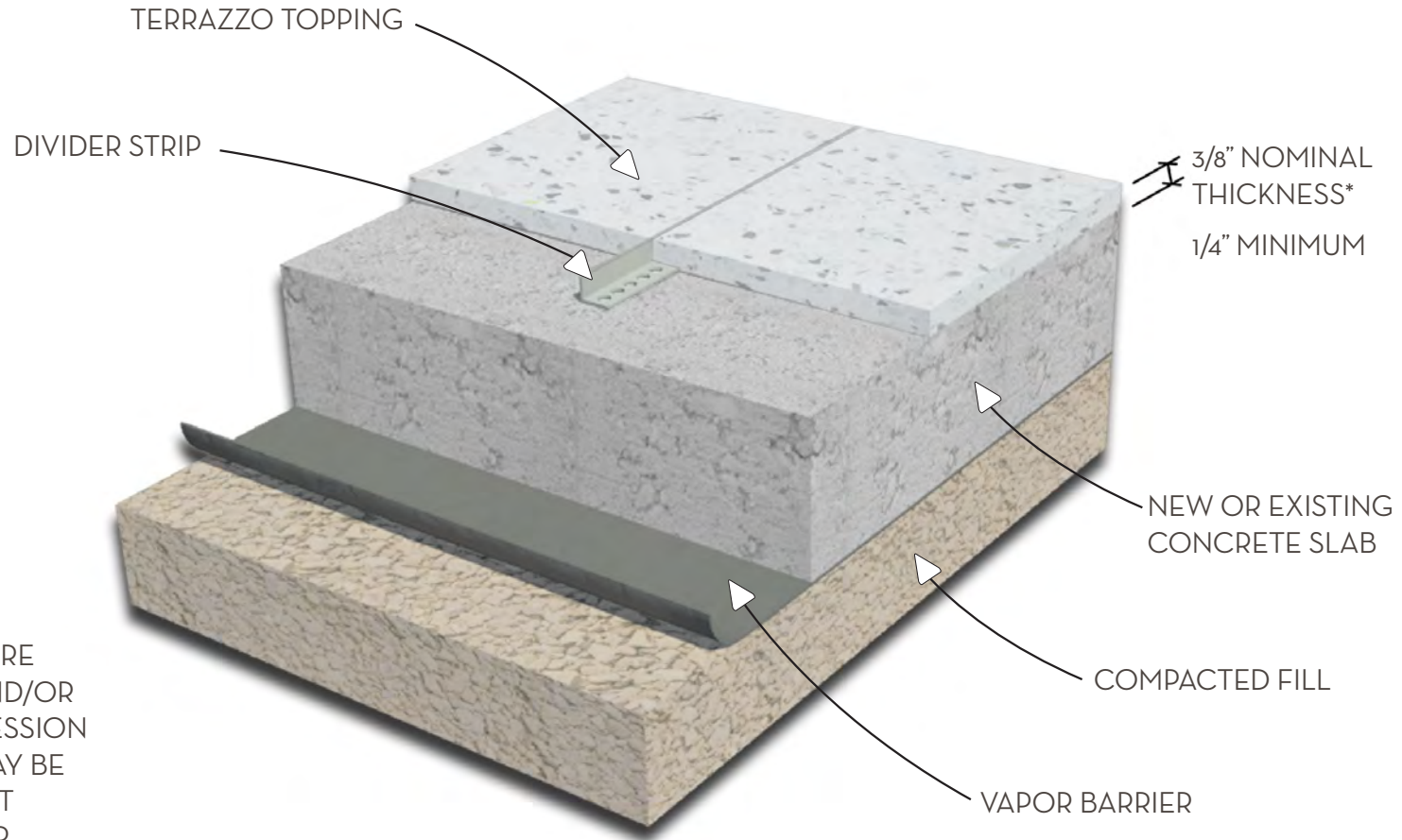
NTMA Aggregate Gradation Standards

Aggregates are graded by number according to size in accordance with standards adopted by producers.

Number	Passes Screen (in inches)	Retained on Screen (in inches)
0	1/8	1/16
1	1/4	1/8
2	3/8	1/4
3	1/2	3/8
4	5/8	1/2
5	3/4	5/8

EPOXY TERRAZZO

SYSTEM OVERVIEW
NOT TO SCALE



(NOTE: MOISTURE MEMBRANE AND/OR CRACK SUPPRESSION MEMBRANE MAY BE REQUIRED - NOT SHOWN. VAPOR BARRIER REQUIRED FOR SLAB ON GRADE)

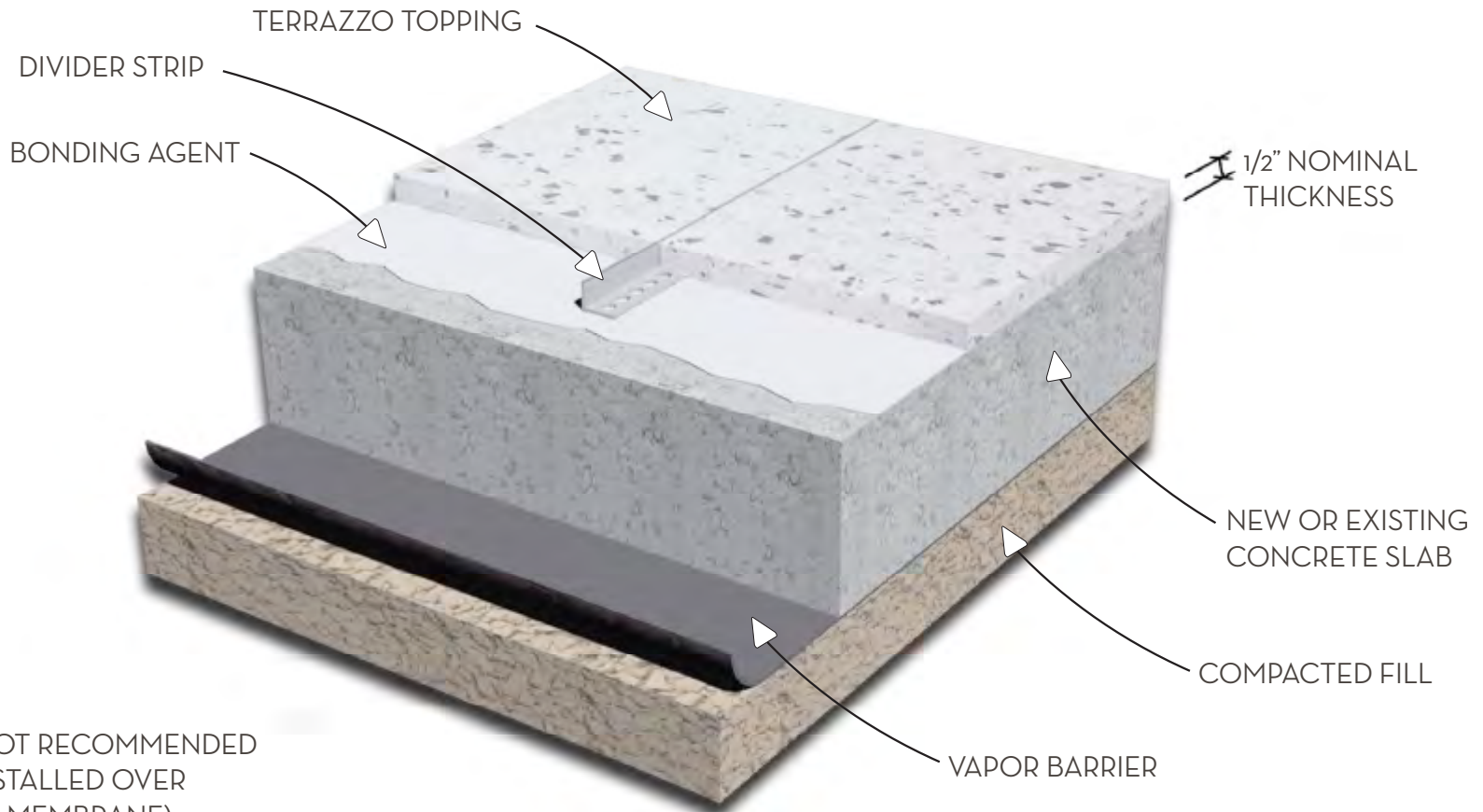
*Optional thickness - 1/4" nominal thickness utilizing #1 and #0 aggregate.



MONOLITHIC TERRAZZO

SYSTEM OVERVIEW

NOT TO SCALE

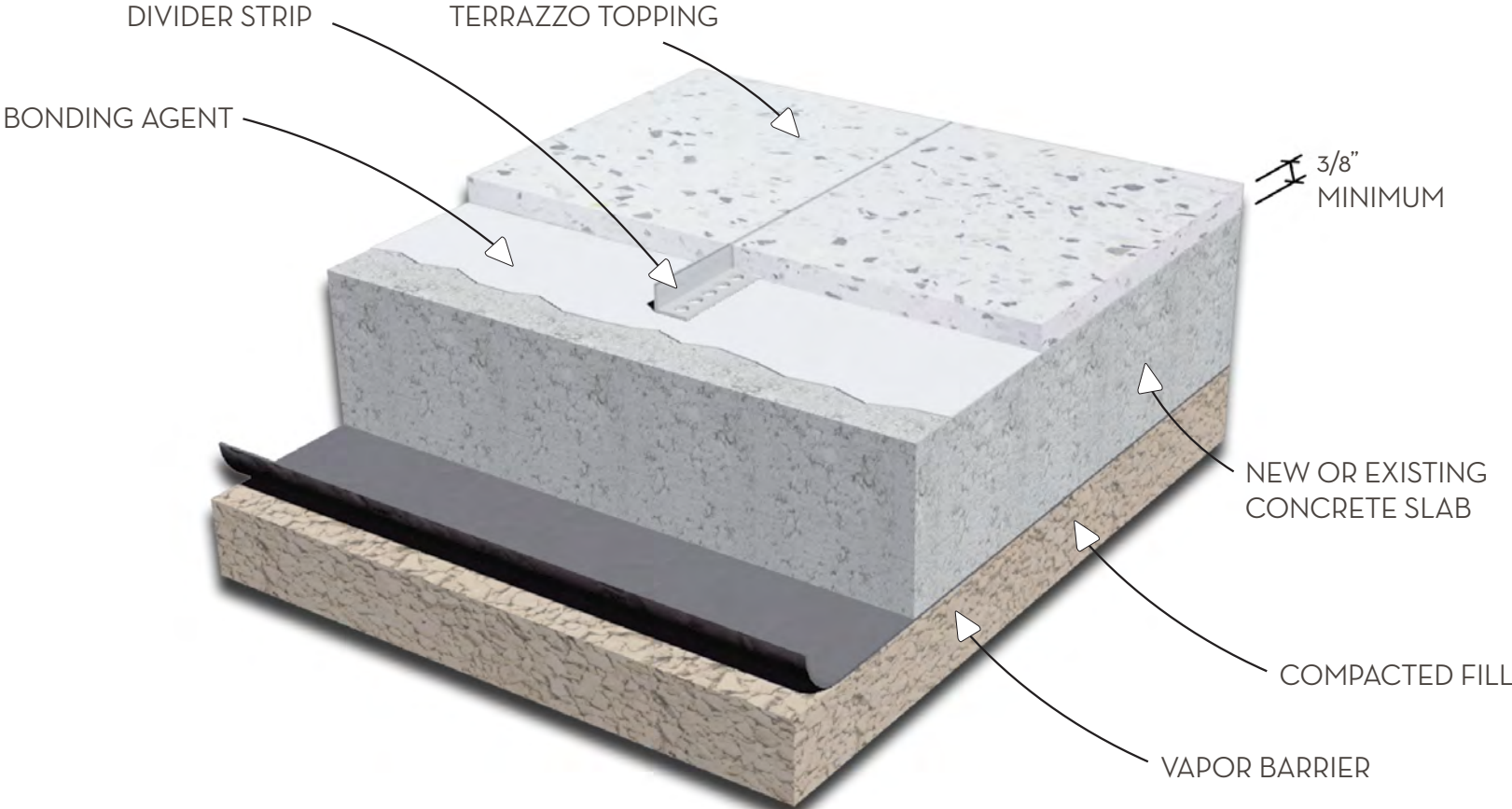


(NOTE: NOT RECOMMENDED TO BE INSTALLED OVER FLEXIBLE MEMBRANE)



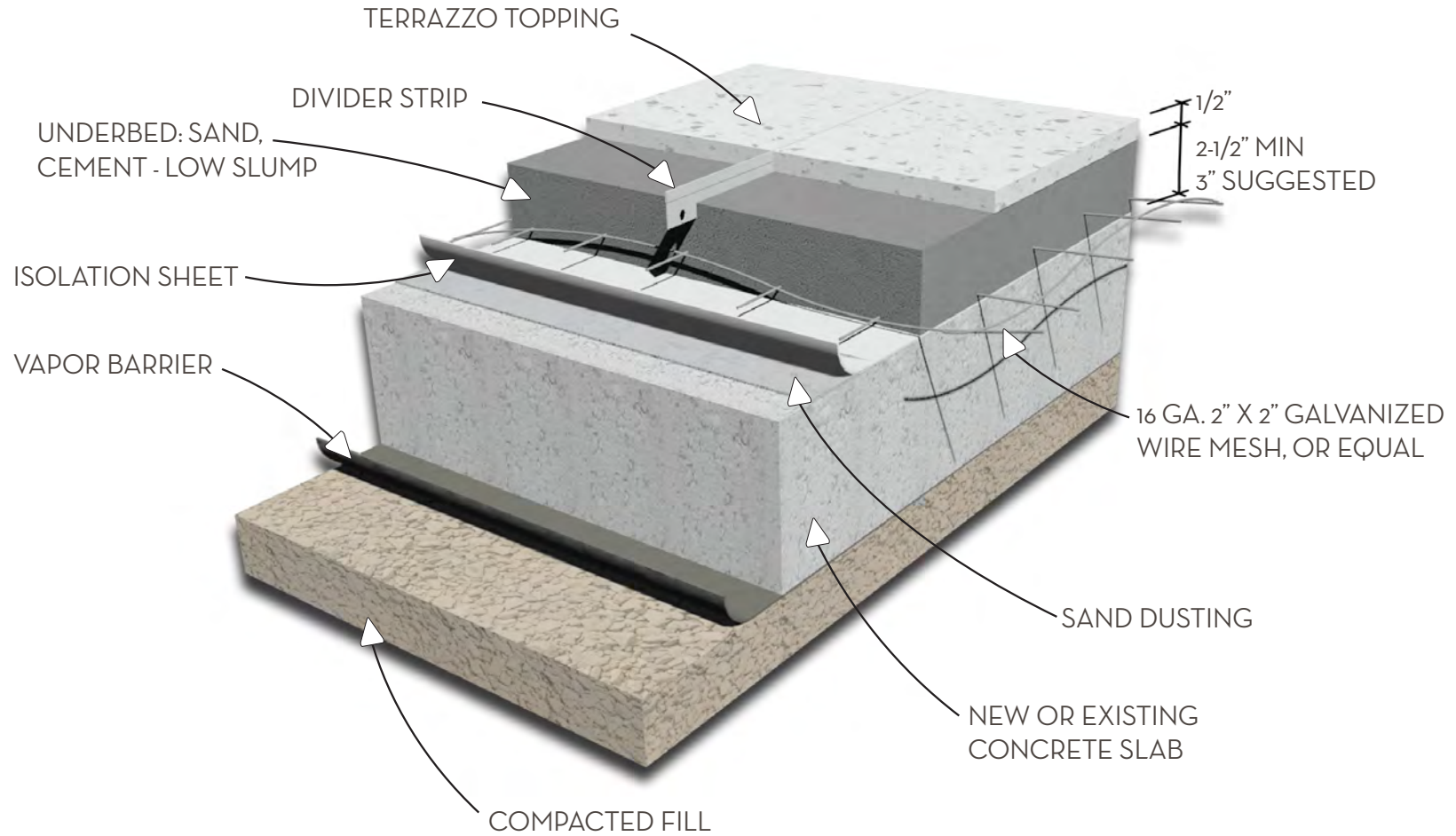
POLYACRYLATE TERRAZZO

SYSTEM OVERVIEW
NOT TO SCALE



SAND CUSHION TERRAZZO

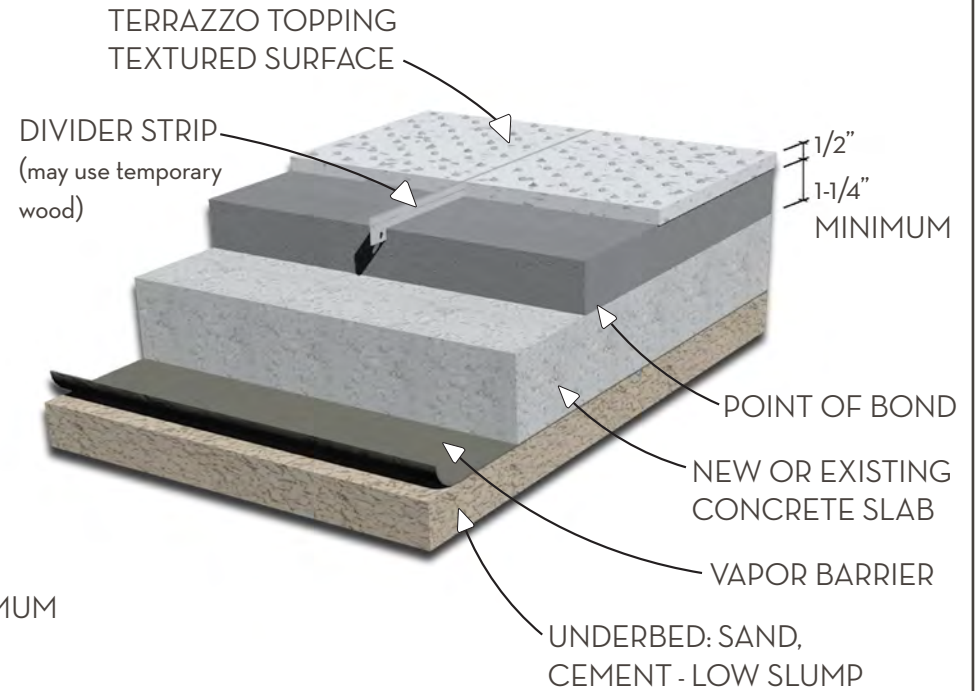
SYSTEM OVERVIEW
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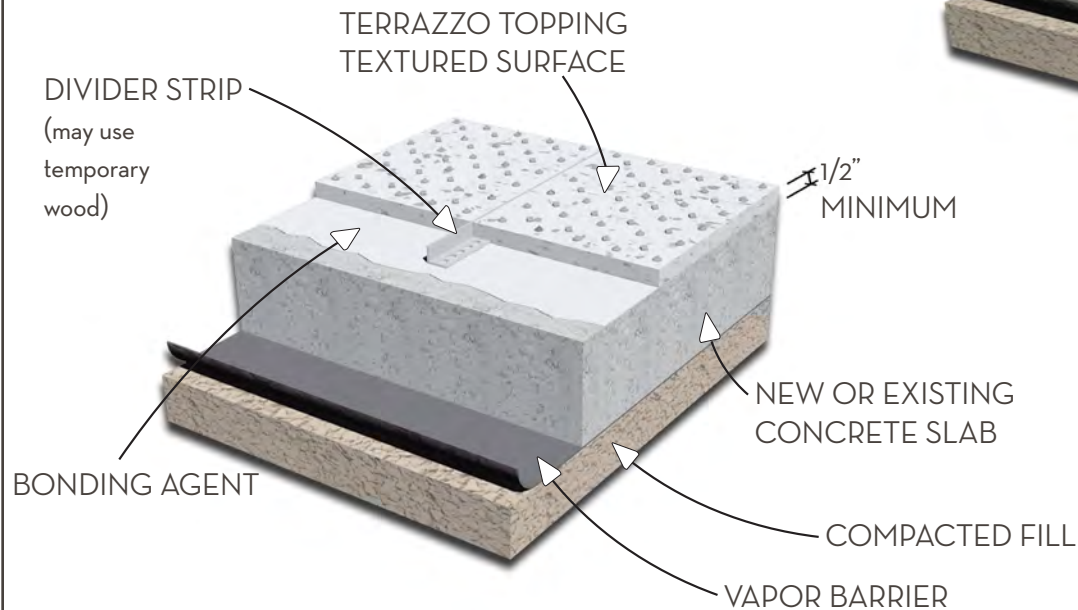
RUSTIC TERRAZZO

SYSTEM OVERVIEW NOT TO SCALE

BONDED RUSTIC



MONOLITHIC RUSTIC

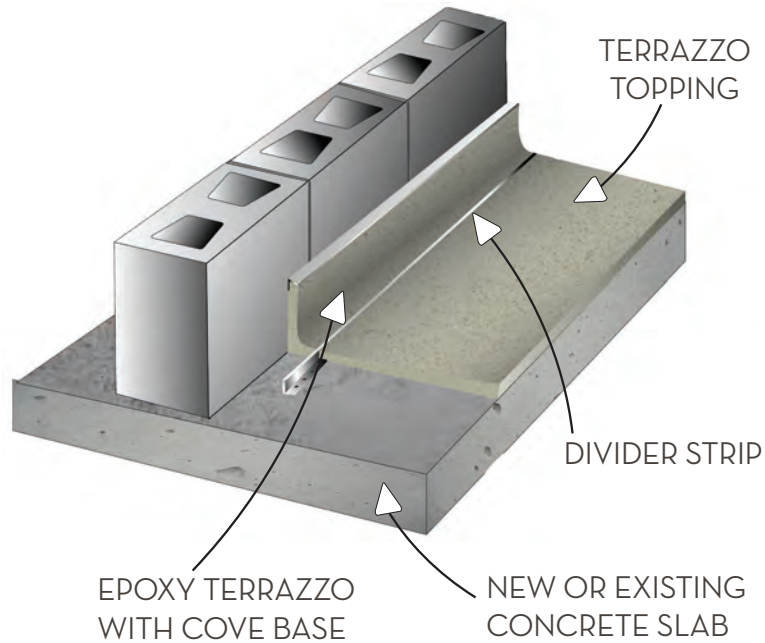


POURED IN PLACE BASE TERRAZZO

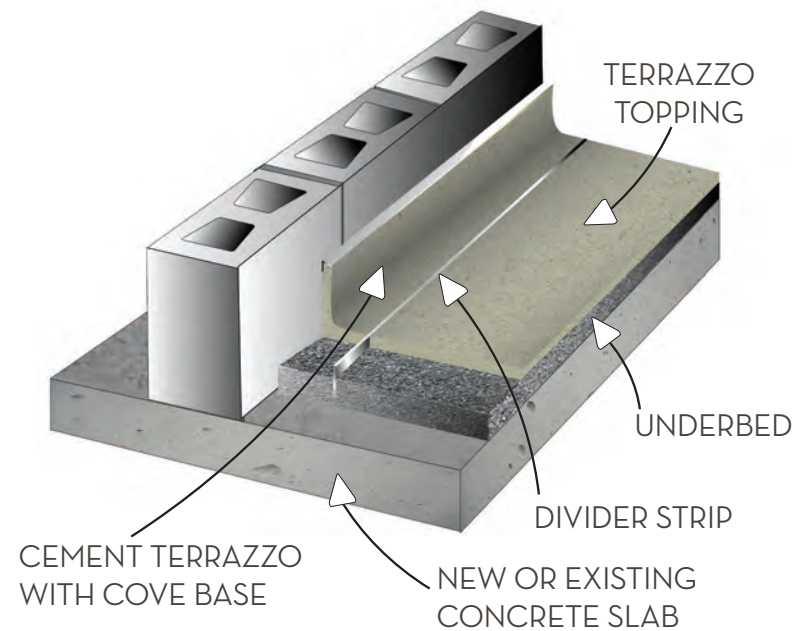
SYSTEM OVERVIEW

NOT TO SCALE

EPOXY BASE



CEMENT BASE

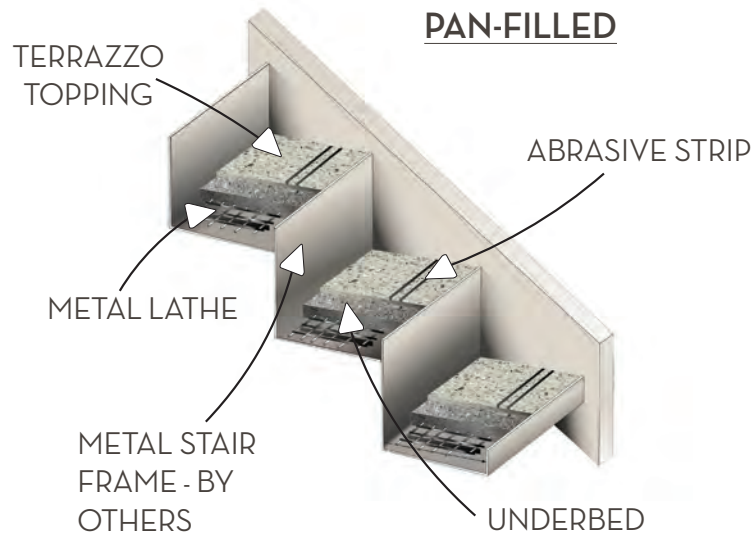
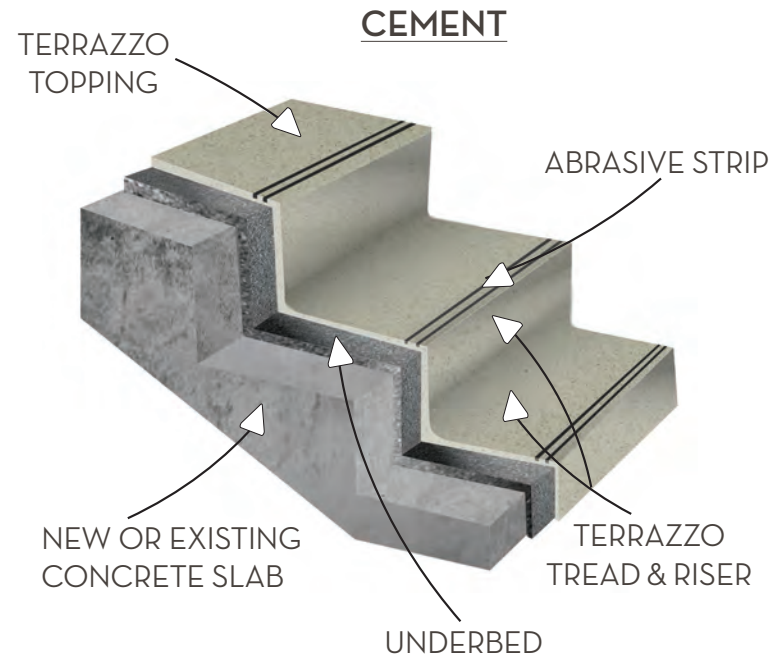
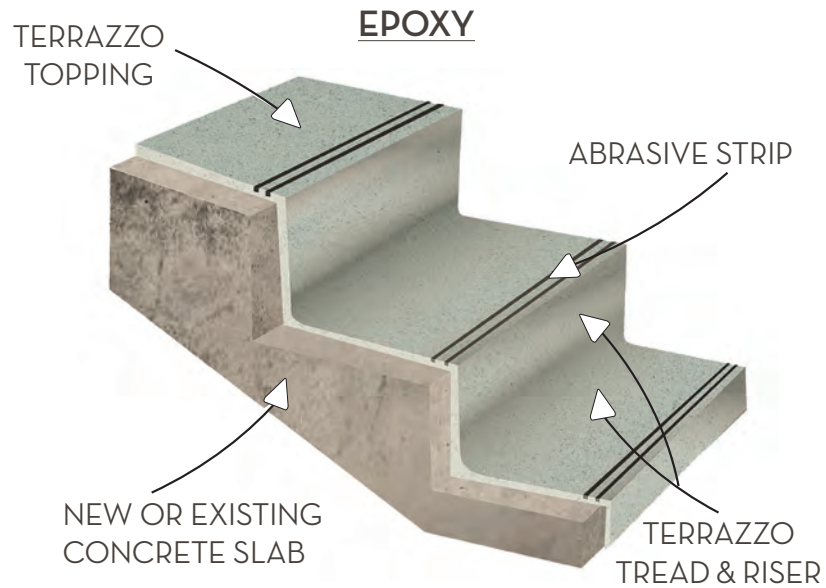


THE NATIONAL
TERRAZZO
& MOSAIC ASSOCIATION
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POURED IN PLACE STAIRS TERRAZZO

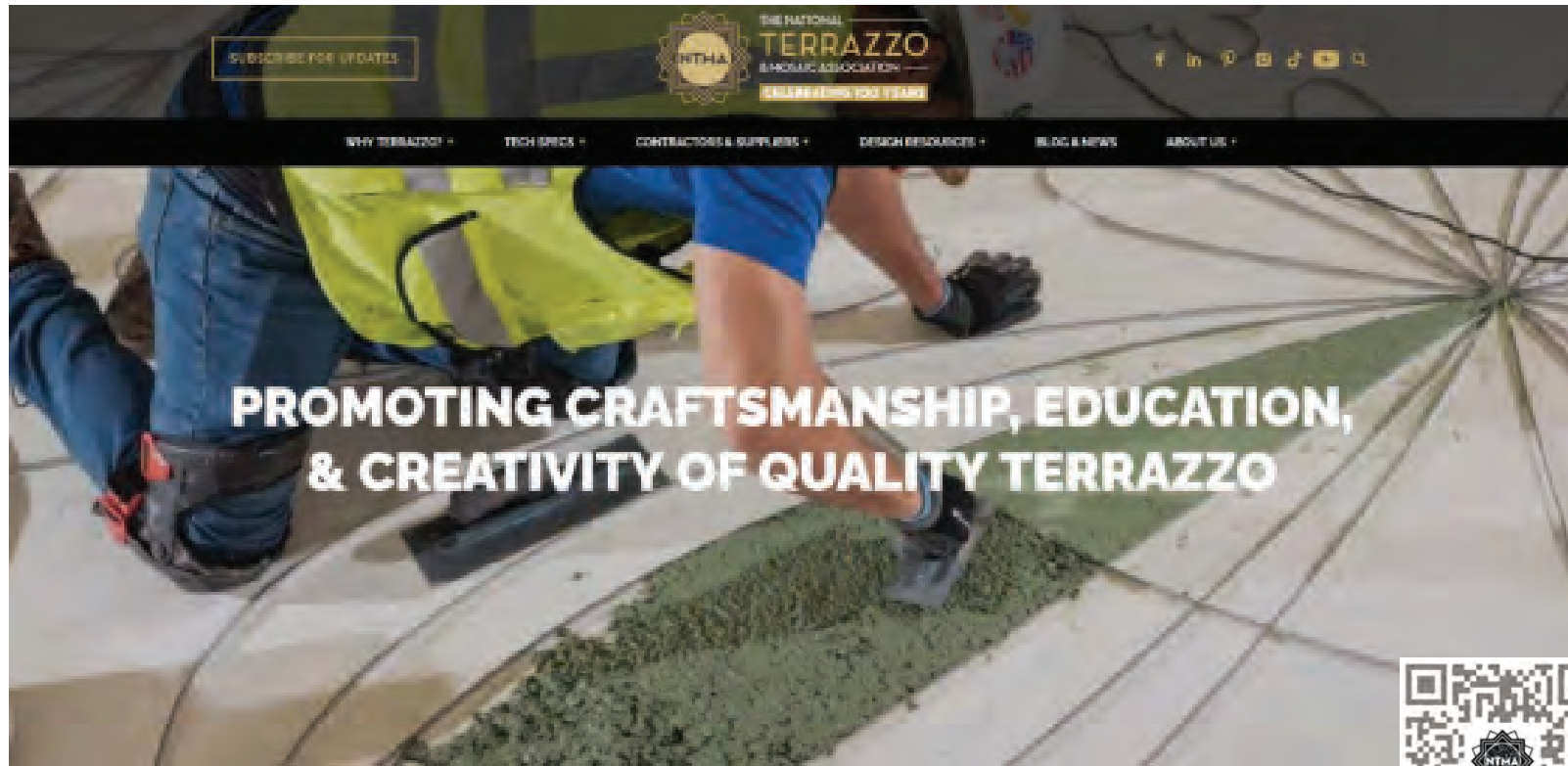
SYSTEM OVERVIEW

NOT TO SCALE



Terrazzo Specifications & Design Guide

Below is a screenshot of our website (www.ntma.com). Click technical for full specifications. Word, PDF (with or without LEED) and DWG-CAD ready.



(scan QR Code for specifications)

You can find us on:



Guide Specifications for Precast Terrazzo Stairs

Section 09

Part 1 - General

1.01 Related work specified in other sections

Note: Delete nonapplicable items

- A. Installation of concrete substrate to receive precast terrazzo stairs,
Section: _____
- B. Installation of metal stairs, either pan type or supporting tubular stringers,
Section: _____
- C. Backup walls of metal lath or masonry to receive precast terrazzo items,
Section: _____
- D. Sufficient water, temporary heat & light and adequate electric power with suitable outlets connected & distributed use within 100 feet of any working space
Note: Ambient temperature shall be maintained at a minimum of 50° Fahrenheit
- E. Substrate must meet L/360 at a minimum
- F. Broom clean area to receive precast terrazzo of all loose chips, laitance and all foreign matter

1.02 Quality Assurance

- A. Acceptable supplier:
 - 1. Materials furnished shall meet NTMA specifications
- B. Installer qualifications:
 - 1. The installer shall be a contractor member of NTMA and shall perform all work in accordance with NTMA standards
 - 2. If the installer is not an NTMA contractor member, the installer shall submit a list of completed projects of a similar magnitude and complexity

1.03 Submittal

- A. Shop Drawings:
 - 1. Submit shop drawings of all precast terrazzo items showing detail sections and profile of all precast items. Details shall show all reinforcing and special hardware for fastening rails
- B. Samples:
 - 1. Submit maximum of 3 samples, 6"x6" in size for each color
 - 2. Submit 2 copies of NTMA maintenance literature
- C. Certification:
 - 1. Suppliers shall furnish certification attesting that materials meet specification requirements

1.04 Delivery, Storage and Handling

- A. Delivery of materials:
 - 1. Deliver materials in a manner to prevent damage to containers
- B. Storage of materials:
 - 1. Store materials in a clean, dry and heated (if necessary) location (50° - 90° Fahrenheit) furnished by others

1.05 Guarantee

- A. One year from the date of substantial completion of terrazzo installation

Guide Specifications for Precast Terrazzo Stairs

Part 2 - Products

2.01 Products

- A. Setting material shall be either epoxy or polymer-based cement with approval of precast supplier and material supplier
- B. Marble chips size to conform with NTMA gradation standards
- C. Precast Terrazzo:
 - 1. Shape and size as indicated on drawings
 - a. Typical size would be 3/4" at 6 ft +/- 1/8" length
 - b. Other lengths and thicknesses may be available
Consult precast manufacturer
 - 2. Abrasive safety lines may be added to meet local code
Consult a precast supplier for type of abrasive and quantity of strip

Note: Specify one-to-three-line abrasive inserts

- D. Precast Terrazzo Stair Nosing:
 - 1. Must be a product/system that can be integrated into the fabrication process without impeding the ability to fabricate, grind, and polish the precast terrazzo stairs
 - 2. Stair nosing systems must be verified as acceptable by the precast terrazzo fabricator
- E. Terrazzo Cleaners:
 - 1. Ph factor between 7 and 10, where applicable
 - 2. Biodegradable and phosphate free
- F. Sealer:
 - 1. Ph factor between 7 and 10, where applicable
 - 2. Shall not discolor or amber
 - 3. Type specially prepared for use on terrazzo
 - 4. Flash Point: ASTM D 56, 80° Fahrenheit minimum, where applicable
 - 5. Neither after-market nor high polish systems are recommended on stairs

Part 3 - Execution

3.01 Inspection

- A. Examine areas to receive terrazzo for:
 - 1. Defects in existing work that affect proper execution of terrazzo
 - 2. Deviations beyond allowable tolerances for the substrate
- B. Start work only when all defects have been corrected by others

3.02 Installation

- A. Setting:
 - 1. Set accurately as shown on approved shop drawings
Setting methods are:
 - 2. Typical setting bed is to not exceed 1/4" - additional material to correct deviation from plane in substrate may result in extra cost
 - 3. Alignments of precast should be straight and true to all dimensions - it may not vary more than 1/8" in length, height or width
 - 4. Install anchors as shown in the details
 - 5. Fill joints between sections with caulking as per trade practice, or as specified
- B. Protection:
 - 1. Upon completion, the work shall be ready for final inspection and acceptance by the owner or his agent
 - 2. The general contractor shall protect the finished work from the time that the terrazzo contractor completes the work

National Terrazzo & Mosaic Association (NTMA)
RESTORATION OF TERRAZZO
(Guide Specification - 7/2021)

MasterFormat is the specifications-writing standard for most commercial building design and construction projects in North America. MasterFormat lists titles and section numbers for organizing data about construction requirements, products, and activities. By standardizing such information, MasterFormat facilitates communication among architects, specifiers, contractors and suppliers, which helps them meet building owners' requirements, timelines and budgets. The numbers and titles presented here are the same as contained in the MasterFormat® 2016 publication for the Construction Specifications Institute (CSI) and Construction Specifications Canada (CSC).

This NTMA guide specification is for repair, restoration and re-finishing of terrazzo floors. Terrazzo floors are either a cement or epoxy matrix (binder) with a variety of aggregates. Color matching existing aggregates in floors may not be exact, as these are mined products and may alter over time. A meeting to clarify the extent of repairs and expectations is recommended. This includes mapping out cracks and clarifying various repair options. Once mock-ups are approved, expectations should be better understood. It may be necessary for the contractor to reevaluate conditions once substrates are uncovered, or unknown conditions arise.

Sealers come in all types and finishes. Some are "proprietary" and may require additional processes to maintain warranties. These additional steps should be clarified before attempting any repairs.

NOTE: All staining in existing terrazzo may not be possible to remove when restoring terrazzo.

Section 09 01 60 91
(Floor Restoration-Terrazzo)

PART 1: GENERAL

1.01 SECTION INCLUDES

- A. Refinishing terrazzo floors
- B. Provide all labor, material, and equipment necessary to complete the following terrazzo repair work
- C. Preparation of all surfaces to receive patching compound
- D. Repairs to delaminated areas
- E. Repair of cracks (as per NTMA recommendations)
- F. Placement of patching compounds/terrazzo matrix
- G. Finish and curing of terrazzo

1.02 REFERENCE STANDARDS

- A. NTMA - Terrazzo Specifications; The National Terrazzo and Mosaic Association, Inc.; current edition located at www.ntma.com.

1.03 SUBMITTALS

- A. Product Data: Provide manufacturers technical data for sealer and cleaner and grout

- B. Cleaning products to be used and Terrazzo Maintenance Data/Protocols for facility managers
- C. Submit letter clearly identifying the terrazzo system (Epoxy, Cement, etc) and that the products are suitable/compatible

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this section with not fewer than 5 years of documented experience
 - 1. Installer shall be a contractor member of NTMA in good standing and shall perform all work in accordance with NTMA standards
 - 2. Use only skilled journeyman who are familiar and experienced with the materials and methods specified shall be used for terrazzo restoration/refinishing
 - 3. Crack Repair: Prepare a sample area for each type of crack repair required (hairline cracks 1/64" to 1/16" in size; cracks and voids larger than 1/8") Repair shall demonstrate methods and quality of workmanship of crack repair
 - 4. Patching: Prepare on-floor, a sample of patching. Patch shall demonstrate methods and quality of workmanship of patch repair

National Terrazzo & Mosaic Association (NTMA)
RESTORATION OF TERRAZZO
(Guide Specification - 7/2021)

PART 2: PRODUCTS

2.01 MATERIALS

- A. Cleaner: Potable water, free of iron, all cleaners (optional) must be pH neutral
- B. Sealer: Liquid type to completely seal matrix surface; not detrimental to terrazzo components
- C. Grout: Color to match existing matrix
- D. Matrix: Pigmented epoxy to match sample submitted
- E. Aggregates: Aggregates to match architects approved sample

2.02 EQUIPMENT

- A. All work shall be executed with conventional terrazzo grinding equipment according to NTMA published trade practice

PART 3: EXECUTION

3.01 GENERAL

- A. Perform work in accordance with NTMA recommendations as posted on the NTMA website (www.ntma.com)

3.02 PREPARATION

- A. Cover and protect all adjacent finished surfaces during restoration process

3.03 CRACK REPAIR

- A. Determination
 1. The owner and contractor shall walk the entire floor and identify cracks and agree on:
 - a. NA (No Action) RC (Repair Crack) or RT (Replace Terrazzo)
 - b. Hairline cracks are classified as less than 1/32" (0.030)
 - c. Replacement (RT) shall be from architectural break to architectural break
- B. RC - Repair Crack
 1. Clean crack of loose material, dirt or sealer
 2. Fill with resin/to match existing - use aggregate in the crack if crack is wider than 1/4 inch
- C. RT- Replace Terrazzo (if repair is not to architectural break or existing terrazzo divider strip, the joining edge shall be a saw tooth (jagged edge)

1. Remove areas to be replaced
2. Clean area and prepare concrete for new terrazzo
3. Repair concrete, fill cracks in concrete substrate as needed - fill cracks in concrete with hardening epoxy
Optional upgrade: Employ the use of a mesh (isolation membrane) to cover crack with liquid applied membrane (epoxy systems only)
4. Fill area with epoxy or cement /cement matrix and approved aggregate mixture/blend

3.04 INITIAL GRINDING

- A. Wet or dry grind with appropriate medium diamonds/stones

3.05 GROUTING

- A. Cleanse the floor with clean water and rinse - wet grind with 50 or higher abrasive grit medium diamonds
- B. Remove excess water and machine or hand grout with cement or epoxy material to fill as needed

3.06 CURING GROUT

- A. Allow grout to cure a minimum of 12 hours. Maintain ambient air temperature between 70°F (21°C) and 80°F (27°C)

3.07 FINE (Final) GRINDING

- A. Grind with 120 grit carborundum or 200 grit resin bond diamond until grout has been removed from the terrazzo surface

3.08 CLEANING AND SEALING

- A. Rinse with clean water and allow too thoroughly dry.
- B. Seal: Apply sealer per sealer manufacturer's written directions
- C. Remove protection and clean any adjacent surfaces effected by the refinishing process

3.09 PROTECTION

- A. The general contractor shall protect the finish floor from all site activity until substantial completion

END OF SECTION

TERRAZZO... A BRIEF HISTORY

Terrazzo descended directly from simplified forms of centuries-old styles of marble mosaics that were used in Venice by the mid-16th century. Today's highly evolved terrazzo is an environmentally friendly material that combines extraordinary design potential, optimum durability and low maintenance. Terrazzo is the lowest cost flooring material available based on its life cycle.

Green from the Beginning

Terrazzo was created when resourceful Venetian mosaic workers discovered a way to reuse marble remnants. With off-size chips, they began to build terraces around their living quarters.



Terrazzo Grinders & Finishers...up to 1920

Techniques for leveling these surfaces progressed from rubbing with a stone by hand, to the development of a long-handled, weighted grinding stone, called a galera.

The first sealer for terrazzo was discovered when workers noticed that a coating of goat milk brought out the rich colors and sheen of the marble.

The Immigration of an Industry

The terrazzo and mosaic industry in 16th century Italy was predominantly made up of craftsmen from the Friuli region. This industry has remained remarkably intact, held by the families from this area through many generations and through the shifting of the entire industry to North America.

The first terrazzo in the US was laid by Italian craftsmen in 1890 in the Vanderbilt residence on Fifth Avenue in New York. At that time, mosaics had also been recently introduced in the US, and were generally preferred over terrazzo.

Then, between 1900 and 1915, three million Italians immigrated to the U.S. Terrazzo and mosaic workers, because their work was so highly skilled and valued, were regarded as the aristocracy of the immigrant labor force. The terrazzieri, as these workers were called, were regarded as true artists: they jealously guarded the secrets of their craft, handing them down from father to son. These family businesses built a powerful network of firms that expanded the terrazzo trade and dominated the market across the US.

Terrazzo in the 1920s: Ready for Prime Time

In the post-World War I era, terrazzo became a flooring of choice in the US, suddenly overtaking and replacing the use of marble mosaics, for several reasons.

Architects in the '20s were the first to recognize the vast design potential of terrazzo. For the smooth curvilinear Art Deco/Modern styles of the period, terrazzo happened to be the ideal medium.

Furthermore, the invention of the electric grinder in 1924 brought about a finer finish, greater speed and accuracy and lowered costs, all contributing to the spread of terrazzo all over the US.

Many of the country's most noteworthy buildings of the day, stunning examples of classic design, craftsmanship and durability, were built with terrazzo. These include the Empire State Building, Radio City Music Hall and Frank Lloyd Wright-designed Solomon R. Guggenheim Museum.

Also in 1924, terrazzo and mosaic contractors from all over the US created the National Terrazzo and Mosaic Contractors Association, today known as the National Terrazzo and Mosaic Association, Inc.

Divide and Conquer: Functional Beauty

Yet another mid-20s advance in terrazzo came with the availability of brass divider strips, which made possible the creation of highly artistic and intricate patterns and designs in terrazzo floors. The early forms of terrazzo divider strips, beginning with wood and evolving to marble, zinc, metal and even plastic, have allowed for expansion and contraction of the surface to prevent cracking.

Limitless Colors, Ultimate in Design & Performance

In more recent years, new developments with epoxies, polyesters, latex and acrylics have continued to make terrazzo ever more cost-effective, high functioning and versatile. The spectrum of colors is now unlimited. The newer thin-set and epoxy-based terrazzo options are less labor intensive with greater design flexibility. Rustic terrazzo is a uniformly textured surface designed for exterior use in which the matrix is depressed to expose the chips.



Terrazzo Grinders after 1920

For more information please call:
The National Terrazzo & Mosaic Association
800.323.9736 Fax: 888.362.2770
www.ntma.com info@ntma.com

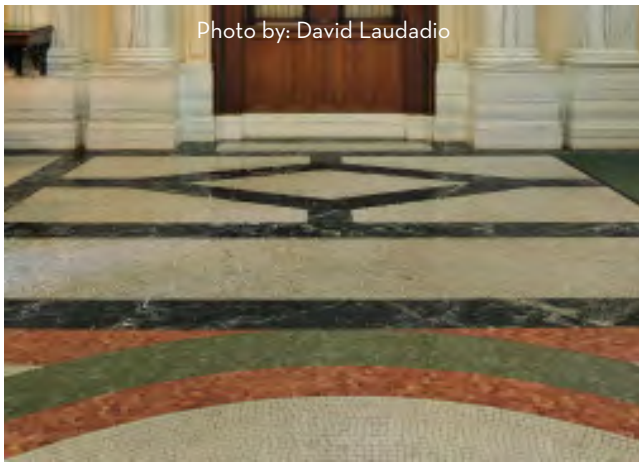


Photo by: David Laudadio

Spokane's Federal Building and U.S. Post Office - 1909



Photo by: David Laudadio

Tacoma Union Station - 1911




Photo by: David Laudadio


Pioneer Courthouse - 1905


History Lessons:


Life Cycle for a Lifetime


Original terrazzo 100 years strong in historic courthouses


 In Washington, Spokane's Federal Building and U.S. Post Office celebrated 100 years in 2009, and Tacoma Union Station in 2011. In Oregon, Portland's Pioneer Courthouse boasts terrazzo floors dating from 1905.


 One of the lessons the history of these buildings teaches us is the value of using materials that last.

 Today, use of terrazzo makes the same sense as it did in the day of these historic courthouses, and even more because of the awareness now of the environmental impact of building choices.

 One of the earliest, original recycling ideas, terrazzo began as the creative reuse of leftover chips of marble some 500 years ago in Italy. Terrazzo was green before green was trendy.

 Widely considered the most historically significant building in the Pacific Northwest, Pioneer Courthouse in Portland was completed in 1875. The second oldest courthouse west of the Mississippi, it's also the oldest federal building in the region.

 Unique mosaics - the only historic mosaics in a four-state area of historic federal buildings adorn the 1910 vestibule of Spokane's Federal Building and U.S. Post Office.

 Today's trends are back to more permanent, forward-looking building standards and greater initial investment in building well to conserve resources long-term. The concept of green is in part just a new way of talking about going back to the use of what has proven to endure and perform.

Terrazzo Maintenance Guide



National Terrazzo and
Mosaic Association

Terrazzo floors have ease of maintenance, but this does not mean that no care is required. Once you understand the care requirements in the early stages of a newly installed terrazzo floor, you lessen the possibility of future problems and recognize the economy of maintenance of this product. Following these instructions will get your new or existing floor to look its best and will help to realize the long-term benefits of the low-maintenance cost of caring for a terrazzo floor.

To help prevent stains and damage to terrazzo, spills should be cleaned up as quickly as possible.

The following are minimum recommendations, however please note that each situation will be different.

- 1 Dust Mopping
- 2 Wet Mopping
- 3 Floor Scrubber
- 4 Spray Buffing
- 5 Control Joint, Expansion Joint or Isolation Joint
- 6 Stripping
- 7 Sealer Application
- 8 Scuff, Scratch Stain Removal
- 9 Treads, Risers, Cove
- 10 Other

1 - Dust Mopping

• Dust, dirt or other grit can lead to scratching of the finish which reduces gloss and cleanability



• Dust mopping should be done daily; sprays may be added to dust mop to facilitate pick up



• Keep dust mop clean

• Change dust mop head when dirty



2 - Wet Mopping



- Wet mopping is used to remove surface dirt and liquid spills

- It is important to use clean water; change water when it becomes cloudy

- Clean mop often

- Mop in semicircle walking backwards



3 - Floor Scrubber

- Floor should be scrubbed at least once a week

- Use clean water

- Use scrubber with white pad

- Use of diamond impregnated pads is not recommended

- Vacuum



4 - Spray Buffing



- Use to restore gloss lost due to traffic

- Use products specifically designed for this purpose

- Follow all directions from supplier



5 - Control Joint, Expansion Joint or Isolation Joint

- Due to concave shape or the hardness of material, joints may require extra attention



- Hand clean with pad and neutral cleaner recommended by manufacturer of joint material



6 - Stripping

- Properly maintained floors rarely need stripping



- Use only products designed to strip floors

- Know what sealer you have on the floor



- Not all sealers are strippable; check with sealer supplier

- Strip floors per manufacturer's recommendation; caution - the use of aggressive black pads may unintentionally sand or grind the floor



- All old sealers must be completely removed

- All residue must be completely removed

7 - Sealer Application

- Apply only sealers recommended for terrazzo; instructions of sealer supplier must be followed explicitly



- Be sure floor is clean before applying sealer

- Most sealers are best applied with microfiber pad



- Thin coats are better than one heavy coat

- Allow a coat of sealer to dry before placing another



- Gloss is the result of polish and sealer; do not expect sealer to provide all the gloss

8 - Scuff, Scratch Stain Removal



- If dust mopping and wet mopping are completed, stain and scratch removal will need to be infrequent



- Remove damage such as scratches and stain by the use of fine grit (100) diamond pad

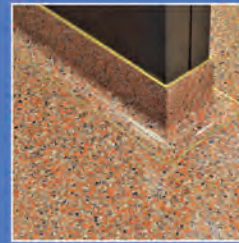


- If (100) diamond pads do not remove stains or scratches, call your NTMA terrazzo contractor

- Do not overuse diamond pads

9 - Treads, Risers, Cove

- Some areas will not be easily maintained with power equipment, however these must be maintained as often as the field of the floor



- These areas should be maintained by hand



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Maintenance Video

10 - Other

- Use maintenance products designed specifically for terrazzo
- Follow the instructions of all of your NTMA product suppliers explicitly
- Qualified suppliers can be found at

www.ntma.com

- Do not make judgements based on recommendations to buy a product without consulting an NTMA supplier or contractor member
- Call your local NTMA terrazzo contractor if the floor needs to be grouted



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The Care of Terrazzo

Terrazzo floors have **ease of maintenance**, but this does not mean that **NO CARE IS REQUIRED**. Once you understand the care requirements in the early stages of a new terrazzo floor, you lessen possible problems, and recognize the economy of care and the aesthetics of this product. **NTMA terrazzo flooring specifications highly recommend a sealer applied to this surface immediately following the final polishing.**

Sealers help protect the surface and inhibit the penetration of spilled materials upon initial contact with the terrazzo floor. Spills must be cleaned immediately in order to prevent stains caused by repeated or long term exposure. Even standing water can eventually damage some sealers.

As most sealers are low solids liquid material, they do not normally produce a high gloss sheen appearance to the floor surface. When a building is eventually occupied, the terrazzo sealer can be stripped or used as a base and the surface may be retreated as implemented by ownership. The eventual degree of gloss is determined by the particular products selected and the recommended application process. This includes proprietary options.

TAKE THE NECESSARY TIME TO LEARN WHICH TERRAZZO SYSTEM YOU ARE MAINTAINING

There are three types of binders used to anchor marble chips or other aggregate in your terrazzo floor. Originally, and still used, is a Portland cement product; next a polyacrylate modified cement. The most common matrix today is epoxy resin.

All Terrazzo Systems: Contain marble or other types of aggregate materials that have surface exposure. Marble aggregates have a low porosity. Other aggregate types may have little or no porosity.

Portland Cement Systems: The portion of this floor system that most benefits from primary protection is the Portland cement binder. Sealers will also assist protecting the marble chips or other aggregate.

Epoxy Resin Systems: The binder for this terrazzo system is fundamentally non-porous. Sealers assist protecting the aggregate and normally enhance aesthetics of the surface only.

Although each system has the role of anchoring the aggregate into the topping, maintenance procedures are essentially common to all terrazzo installations.

OWNER'S GUIDE FOR THE MAINTENANCE OF TERRAZZO FOR STANDARD FINISHES

MAINTENANCE PRECAUTIONS: Harsh cleaners and sealers can damage terrazzo. Only materials that are neutral pH should be used when scrubbing or mopping floors. Sealers should achieve a slip resistance coefficient of friction rating applicable to code. Water based sealers are most commonly recommended and utilized today. Apply, in one or more coats, in accordance with the instructions of the sealer manufacturer. This can also be followed by a water based finish (dressing) for daily or weekly buffing if a high sheen is desired.

CLEANING PROCEDURES: Neutral cleaners are designed to react only in solution with clean water, mixed in accordance to the manufacturer instructions, and allowed to remain on the floor surface for several minutes. This provides the necessary time for the grime-dissolving action to take place. Then rinse the dirt-laden solution from the surface by squeegee, vacuum or mopping. Rinse with ample clean water. It is important to keep the floor wet during this entire cleaning process so the dirt and cleaning residue does not dry on the surface. Auto-scrubbers are recommended for larger areas.

FAQ "How often must we sweep or scrub this floor?" is answered by the amount of traffic that moves across the floor daily. Daily dust mopping is a requirement in most public buildings. Daily dust mopping removes both the dust and the grit tracked into the building.

The Care of Terrazzo



CUSTODIAN'S GUIDE TO THE PROPER MAINTENANCE OF TERRAZZO

FOLLOW THESE MINIMUM MAINTENANCE SUGGESTIONS TO KEEP YOUR TERRAZZO FLOOR CLEAN AND LONG-LASTING:

DAILY: DUST MOP - Hand work stubborn stains and scuff marks with neutral cleaner diluted in warm water.

WEEKLY: DAMP MOP LIGHTLY SOILED FLOORS WITH NEUTRAL CLEANER - Heavily soiled floors should be scrubbed with a mechanical buffing machine and neutral cleaner. Mop up residue with clean water before it dries. Allow to dry and buff with a soft dry brush. Auto-scrubbers are recommended for larger areas.

NOTE: ALLOW YOUR NEUTRAL CLEANER, ONCE APPLIED TO THE TERRAZZO SURFACE, TIME TO REACT. IT IS DESIGNED TO LOOSEN FOREIGN MATTER. SEVERAL MINUTES SHOULD BE ADEQUATE, BUT DO NOT ALLOW SOLUTION TO DRY ON THE SURFACE.

AS REQUIRED: Strip all old sealer and any finish coats.
Re-seal clean floor.

CAUTION: Before deviation from the instructions, contact your local NTMA Terrazzo Contractor for advice. ALWAYS KEEP RINSE WATER, MOPS & PAILS CLEAN!

DO'S AND DON'T'S FOR MAINTENANCE OF TERRAZZO FLOORING

DO dust mop your floors daily; this not only picks up the dust, but also the grit tracked into your building. The grit acts as an abrasive on your hard surface floor.

DO use maintenance products designed specifically for terrazzo.

DO scrub new terrazzo floors approximately once or twice a week for the initial two to three months, as the new construction dust will still be in the air and will eventually be deposited on your floor.

DO after the initial period, once per week, depending on the amount of foot traffic, keep your floor clean in appearance. Always rinse your floors well to prevent a build-up of cleaner residue. Use a dry cotton or microfiber cloth to dry the terrazzo floor surface.

DO allow your neutral cleaner, once applied to the terrazzo surface, time to react as designed to loosen foreign matter. Several minutes should be adequate, but **DON'T** allow the cleaning solution to dry on the surface.

DO seal your floors with a water-based sealer in accordance to the sealer manufacturer's instructions.

DON'T use degreasers, bleach, vinegar, ammonia or other household chemicals.

DON'T use purely surface waxes, or all purpose sealers. Employment of such can result in slippery surfaces.

DON'T use all purpose cleaners containing water soluble inorganic or crystallizing salts, harmful alkali or acids. Use of such products could prove harmful to your terrazzo floor.

(Take care if using abrasive disc/pads with proprietary systems so grout is not removed and pinholes exposed.)

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f.813.620.1119
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website: www.stewardmellon.com

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f.402.341.0102
email: demarcobros@gmail.com

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5915 Middle View Way
Knoxville, TN 37909
865.588.3630
email: terrazzo@bonitz.com
website: www.bonitz.com

DAVID ALLEN COMPANY

4029 Lavergne Couchville Pike
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website: www.davidallen.com

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f.972.276.4736
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website: www.americanterrazzo.com

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f.713.649.6141
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website: www.southerntileterrazzo.com

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San Antonio, TX 78223
210.533.7231
f.210.533.7269
email: vatco@theveniceart.com
website: www.veniceartterrazzo.com

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Midvale, UT 84047
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f.801.566.1064
email: adam@finn-wall.com
website: www.fwspecialties.com

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website: www.bonitz.com

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733 Blue Crab Road
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website: www.pompeiinc.com

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12727 412th Ave. SE
North Bend, WA 98045
360.805.9911
email: kyle@floorsolutions.com
website: www.floorsolutions.com

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501 South Lucile Ste. 100
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206.762.2803
f.206.762.2409
email: paul@naterrazzo.com
website: www.naterrazzo.com

WEST VIRGINIA

ALLEGHENY INSTALLATIONS
1039 North Canal Street
Pittsburgh, PA 15215
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email: africk@alleghenyinstallations.com
website: www.alleghenyinstallations.com

WISCONSIN

WISCONSIN TERRAZZO & TILE, INC.
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f.608.779.9444
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website: www.wisconsinterrazzo.com

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HQ: 1410 Broadway Ste. 29-02
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201.645.1814
c.201.645.5285
email: anil.bandari@ariminc.com
website: www.arimstone.com

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f.510.548.3956
email: info@fribel.com
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website: www.kleincoinc.com

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website: www.tmsupply.com

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f.410.633.6201
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website: www.tmsupply.com

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email: anil.bandari@ariminc.com
website: www.arimstone.com

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Fairfield, IA 52556
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888.462.2813 or 336.622.4247
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website: www.manhattanamerican.com

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425 South Sandusky Street
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website: www.nationalmetalsshapes.com

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website: www.husqvarnaconstruction.com

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website: www.runyonsurfaceprep.com

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website: www.wausau.com

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website: www.kleincoinc.com

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website: www.tmsupply.com



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Photo by: David Laudadio

Terrazzo Design Ideas for Schools

Terrazzo floors last a lifetime! The school seal that your grandmother saw when she started will still be beautiful when your granddaughter comes along. Non-porous terrazzo does not support microbial growth, nor does it allow moisture to accumulate, contributing to a mold-free, healthy environment. This is a floor material that keeps it's school spirit and fights high maintenance costs for generations.



Photo by: Brycen Fischer Photography



Photo by: Brett Beyer
Mount Vernon Group



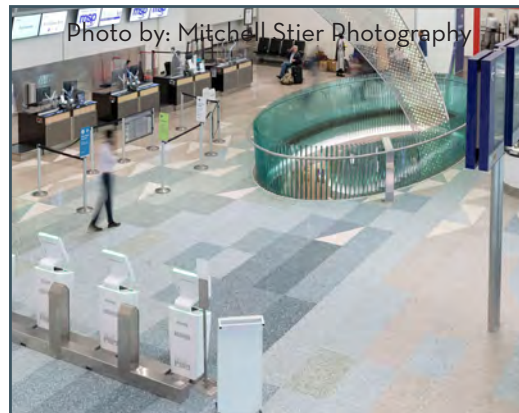
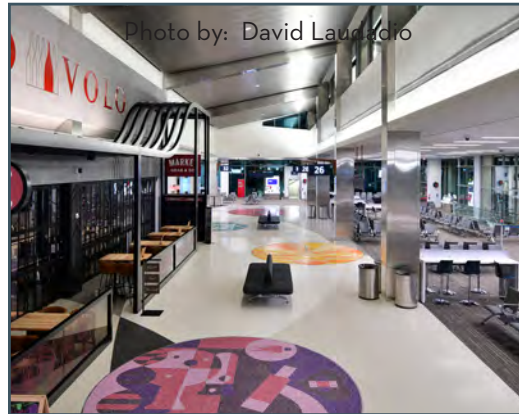
Photo by: Mike Matthews Photography

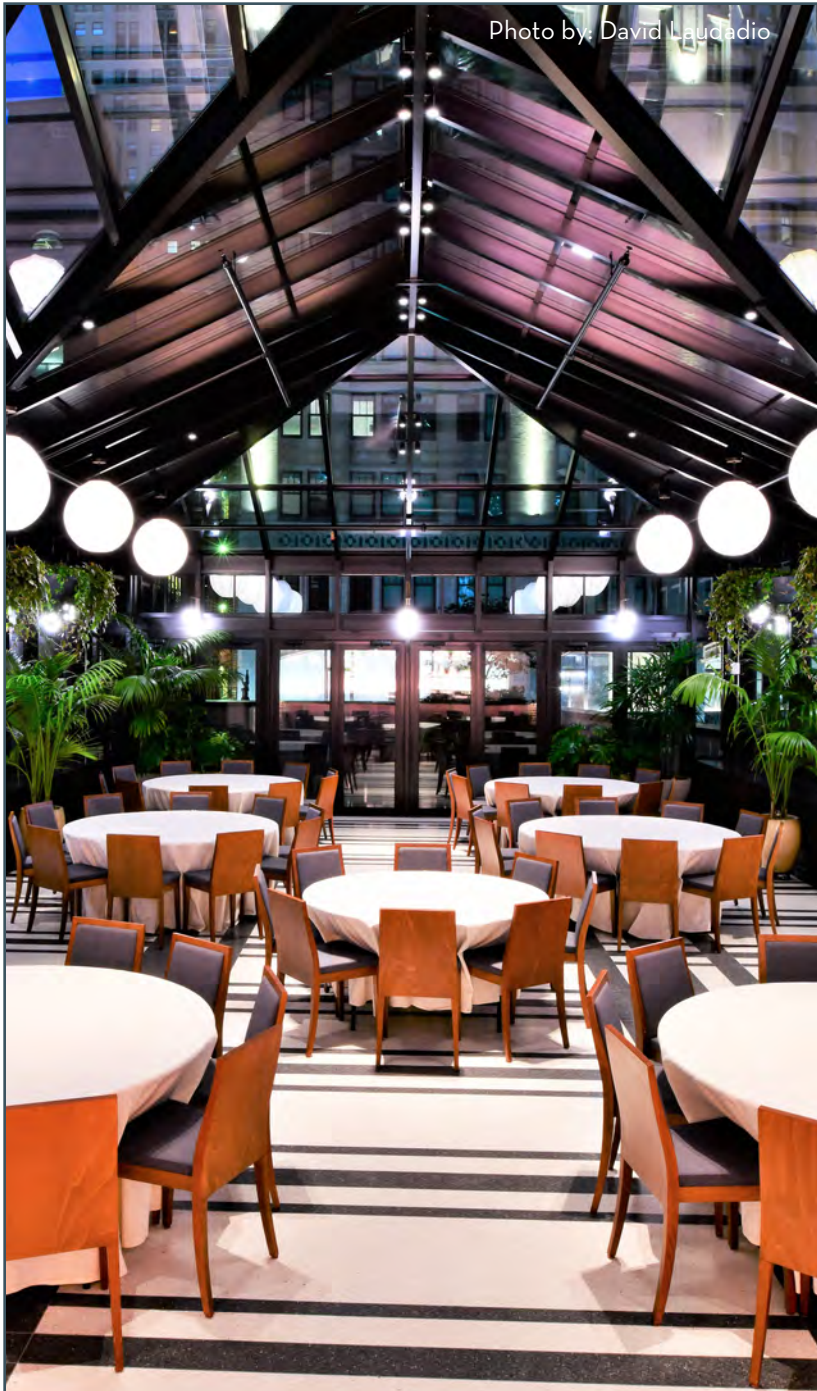


Photo by: David Laudadio

Terrazzo Design Ideas for Airports

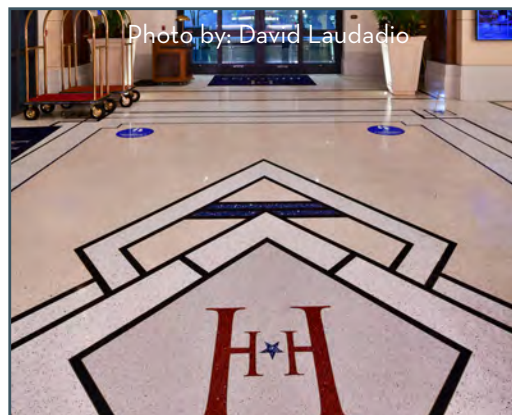
Airports are the gateway to the city. Terrazzo can be used to create lasting first impressions while providing a long lasting durable and economical flooring surface. A terrazzo floor will not have grout joints, which allows for smooth, quiet handling of rolling carts and luggage. Terrazzo is arguably the most durable and lowest life cycle cost flooring available today, perfect for high traffic public access buildings such as airports.





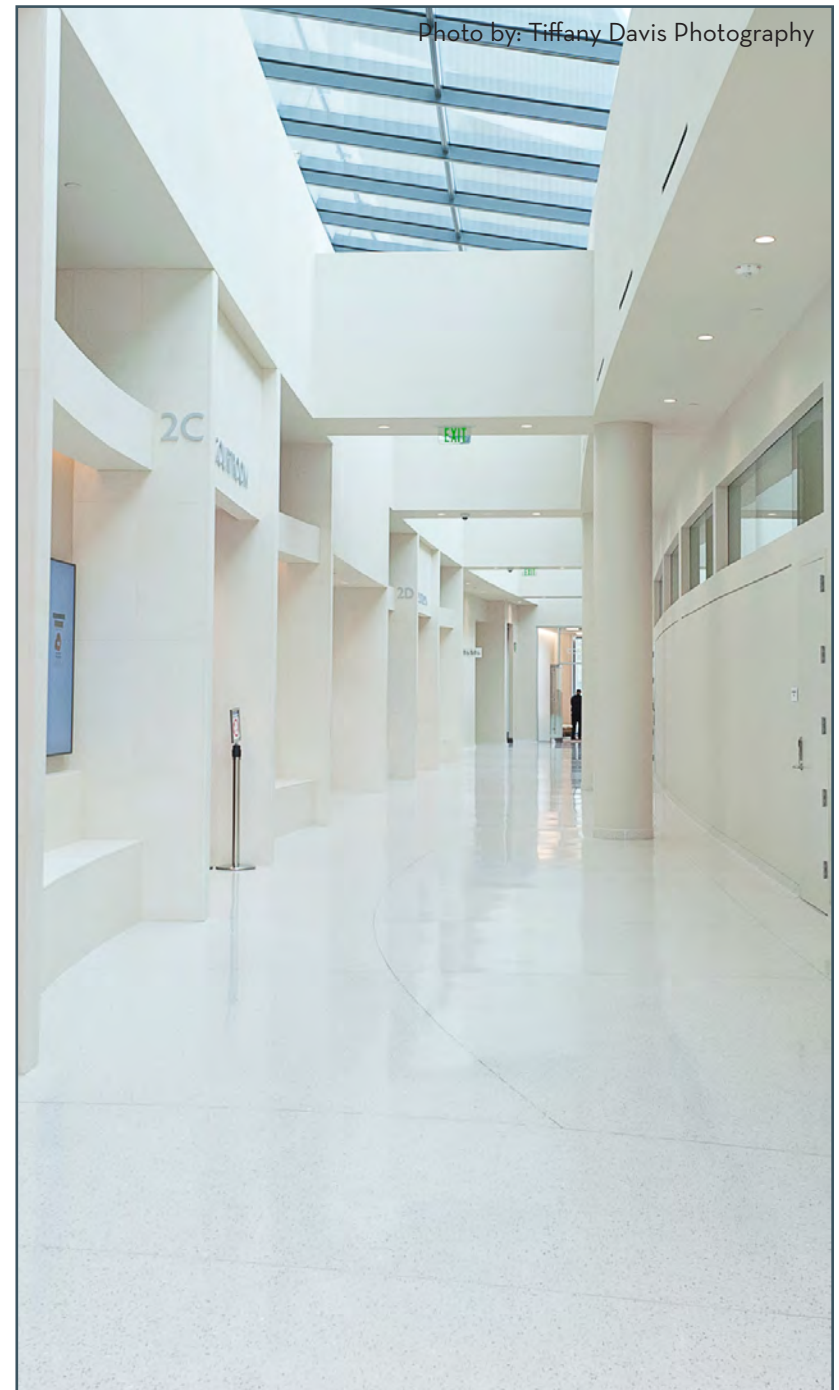
Terrazzo Design Ideas for Hospitality

An unlimited color palette, and state of the art water-jet cutting techniques create a visually stunning hospitality environment. Color transitions and design can immediately impact guests by reinforcing a variety of themes and offering navigational clues throughout the building. Terrazzo is anti-microbial, non-porous and easily cleanable with a damp mop and neutral cleaners leaving no harsh odors to irritate guests.



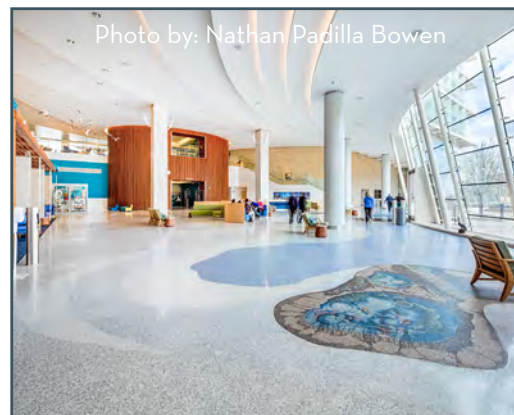
Terrazzo Design Ideas for Classic Terrazzo

Over the lifetime of a building, the total cost of maintaining or replacing flooring can multiply as much as 35 times its initial cost. Alternatives like carpet, ceramic tile, vinyl or wood might be less expensive to install, but a classic terrazzo matrix and a practical design can be surprisingly competitive with the added benefit of sustainability and durability. Terrazzo resists microbes and moisture accumulation - essential for a mold-free, healthy environment.



Terrazzo Design Ideas for Medical Facilities

Terrazzo is the ideal solution for maintaining a healthy building. It does not support microbial growth - nor allow moisture to accumulate - which greatly contributes to a mold-free environment. Additionally, terrazzo is comprised of zero VOC material, and exhibits little to no off-gassing over the life of the cured floor. This floor needs only to be cleaned with an environmentally friendly, neutral pH cleanser, which will not irritate sensitive eyes or noses.



Terrazzo Design Ideas for Stadiums, Arenas & Convention Centers

Terrazzo is the ideal flooring for public venues. It is extremely durable - a necessity for buildings that accommodate millions of fans and foot traffic every year. Corridors are subjected to heavy traffic and high point loads during boat shows, car shows, concerts, etc. Terrazzo provides a decorative finish and has ten times the strength of concrete.



Photo by: David Laudadio



Photo by: David Laudadio

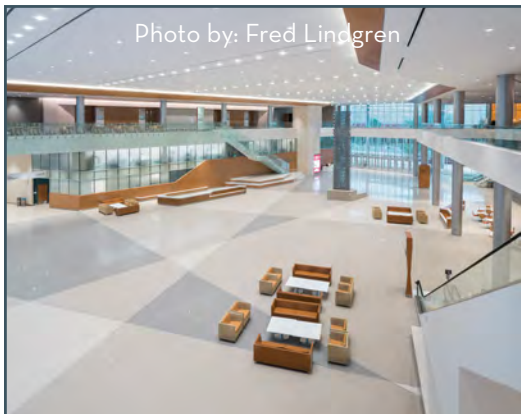


Photo by: Fred Lindgren



Photo by: American Terrazzo Co.Ltd.



Photo by: David Laudadio



Photo by: Anna Migeon

Terrazzo Design Ideas for Museums, Libraries, and Cultural Buildings

Terrazzo's design opportunities are well suited to public libraries, museums, and other cultural spaces. The unlimited color palette and ability to create free form shapes and patterns can help define sections and provide directional clues to visitors. The long life of the terrazzo floor helps minimize costs associated with renovations to public facilities.



Photo by: David Laudadio



Photo by: David Laudadio



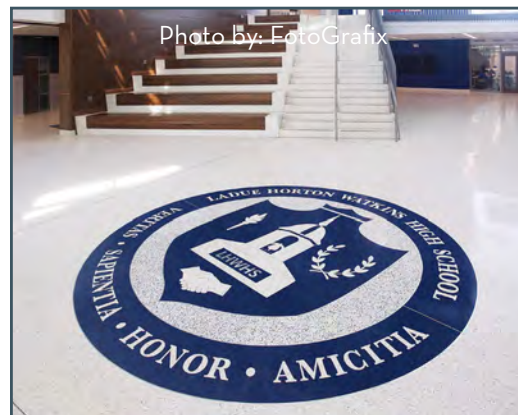
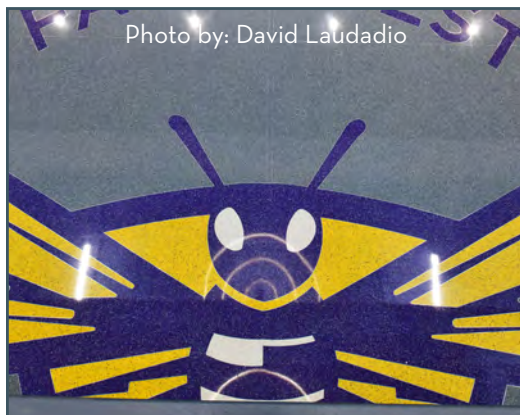
Photo by: Jaime Leigh Sonnier
Casa de Camera



Photo by: FotoGrafix

Terrazzo Design Ideas for Logos

Terrazzo's exceptional design flexibility lends itself to the most complex logo designs in multiple colors. Intricate custom graphics concentrated in one area make high visual impact affordable within simple floor designs and color palettes. Your logo, mascot or artistic medallion creates an eye-catching entrance for every visitor, while dramatically accenting large spaces and durably reinforcing brand identity or school spirit.



Artist:

Tiffany Black
Brooklyn, NY



Photo by: David Laudadio

Artist:

Julie Chang
San Francisco, CA



Photo by: Albert Benichou

Artist:

Matt Goad
Oklahoma City, OK



Photo by: David Laudadio

PUBLIC ART PLAYS AN IMPORTANT ROLE BY CONNECTING PEOPLE AND PLACE

Art in Public Spaces

Terrazzo’s unlimited color palette and design flexibility make it the medium of choice for a growing number of art-in-public-places projects. Artists are limited only by their imagination in designing free-form or intricate patterns for terrazzo floors, walls or sculpture. Depending upon the location, funding from state, local or federal sources may be allocated to support the creation of durable works of art in the built environment.



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