



Elephant Armor® Mortars

Proven advanced technologies that are changing the way we repair concrete surfaces!



Benefits of Elephant Armor® - DOT and Asphalt Repair:

- Fiber reinforced: Superior flexural and tensile strength.
- High ductility, allowing the overlay or repair to 'FLEX' without failure.
- Highly resistant to de-icing salts, freeze/thaw.
- Superior tensile strain capacity over other cement based products for improved crack resistance.
- Superior bond strength to that of other fiber and acrylic based mortars.
- Ideal as a structural underlayment.
- Prevents the propagation of existing cracks through the surface.
- Highly impermeable and abrasion resistant.
- Unparalleled as a stampable overlay.



Global Sealer
Technologies

www.gstinternational.com

Can Your Concrete Do This?



What Sets Elephant Armor® - DOT and Asphalt Repair Mortar Apart From Every Other Repair and Overlay Mortar in the Industry?

Unlike other mortars, Elephant Armor® DOT and Asphalt Repair are single component, fiber based, zero polymer, engineered ductal mortars. In addition to the mechanical bond, our fiber creates a fully engaged molecular bond within the mortar matrix, providing extremely high tensile and flexural strength. This also means our product has vastly superior bond strength to anything on the market and will significantly reduce the potential for failure.

Elephant Armor's ability to flex and take movement is a result of our unparalleled volume of fiber loading within our patented design matrix. These unique characteristics allow Elephant Armor® Mortars to be placed directly over severely broken and degraded surfaces. Even in heavily trafficked areas, Elephant Armor® will greatly reduce the risk for spalling and delamination, eliminating the need for traditional remove and replace practices, helping to reduce the carbon footprint. Elephant Armor's unmatched durability, efficiency and reliability will significantly reduce costs in the repair and restoration of our failing infrastructure.

Our patented Elephant Armor® Engineered Ductile Mortars contain a low embodied energy high cementitious formulation. This green technology product reduces our carbon footprint, through resource conservation and reduced landfill waste. 

Available in
2 Formulations



Just Add Water

PATENTED

Ideal for infrastructure repair and overlay use on concrete walkways, driveways, curbs, ramps, slabs, spalls, cracks, airports-runways, taxiways and gates, bridges, parking structures, tunnels, dams, industrial plants or anywhere a high strength concrete repair mortar is required.

Reconstruction not Deconstruction, Saving Millions of Dollars

Structural Bridge Repair and Overlay – Santa Clara County, CA.



Alimitos Bridge in Santa Clara County, California



Structural repair area of exposed steel on the bridge deck.



Applying Elephant Armor® - DOT as a fill material around the exposed steel.



The first 1/2" lift overlay being applied to the bridge deck.



Areas with exposed rebar are filled and encapsulated with Elephant Armor® - DOT prior to final overlay application of Elephant Armor® - DOT.



The first overlay is cured and ready for the second 1/2" lift.



After the second lift has cured, a grooving machine applies the specified texture.



Completed bridge deck resurfacing taking approximately just one week to perform.

Caltrans Pothole Repair on the Vincent Thomas Bridge - Long Beach, CA.



Photo showing a deteriorating asphalt filled pothole on a concrete bridge deck.



It is important to make clean cuts around the perimeter of area to be repaired.



The damaged surface is removed and any loose material is cleaned away with a broom and a blower.



The clean and stable repair area is 'surface saturated dry' (SSD) prior to the placement of Elephant Armor®.



Elephant Armor® is easy to prepare, just add water. A ColloMix Xo 55 Duo is required for generating the high shear needed to achieve a homogenous mix.



A GST Textured Roller is used to place and evenly spread out the high fiber mix design of Elephant Armor®.



A GST Squeegee Trowel is used to smooth out the Elephant Armor®.



A tining trowel is then applied to the surface to match the existing bridge deck grooved surface.



Elephant Armor - DOT ease of use and quick set time, allowed the pothole to be permanently repaired with a minimum disruption to traffic. This lane was back to service in less than 3 hours!

Save Time and Money

Bridge link installation – Baltimore, MD.



Elephant Armor - DOT's flowable mix ensures steel encapsulation.



Placement of Elephant Armor - DOT using GST Texture Rollers.



Putting final finish on new bridge link.



Bridge link construction completed in just 4 hours. Elephant Armor® - DOT was chosen due to its high compressive, flexural and tensile strength. Its fast setting properties allow for minimal down time and a quick return to service.

Restoration of San Mateo Bridge – San Francisco Bay, CA



Damaged and unsound concrete removed and prepped for Elephant Armor® placement.



Applying a slurry primer coat over the repair area ahead of Elephant Armor® placement.



Placing Elephant Armor® over the properly primed surface.



CalTrans using Elephant Armor® - DOT on a 3 year project to bring the bridge back to its original specification without having to fully deconstruct and reconstruct the failing 1100 columns.

Elephant Armor® is the Solution for Extreme and Remote Environments - Lake Tahoe, NV



Spalled concrete with exposed rebar.



Elephant Armor® applied with GST rollers and trowels.



CBS TV Tower completed reconstruction in just 4 days.



Elephant Armor® - DOT was successfully used in the harsh and remote environment of Mount Rose in the Sierra Nevada Mountains, where access with conventional methods would be very costly.

Street repair - City of Sebastopol, CA.



Failing road panel.



Application of quarter inch Elephant Armor® - DOT overlay.



Repair completed in two hours and open to traffic in four hours.



Repaired road panel 7 years after installation is still performing perfectly. With minimal environmental impact by significantly reducing the time of repair, a new lifecycle is achieved while also reducing repair costs by as much as 50%.

Ultimate Infrastructure Repair Product

Overlaying badly damaged sidewalks with Elephant Armor® - DOT - Lake Street Bridge in Reno, NV.



Badly cracked and spalled concrete sidewalk.



Placing Elephant Armor® using GST specialized tools.



Finishing Elephant Armor® with a GST Squeegee Trowel.



This repair was completed with a return to service in just 4 hours, saving the city weeks of time, money and significantly reducing the environmental impact and disruption of foot and vehicular traffic.

Repair of damaged curb without deconstruction or forming - Sherman Oaks, CA.



Severely damaged curb.



Finishing curb repair with edging tool.



Finished curb can take immediate vehicular abuse.



Finished curb repair using Elephant Armor® - DOT completed in less than an hour.

16,000 ft² overlay of degraded warehouse floor – Rancho Cucamonga, CA.



Defining repair area by saw cutting and taping.



Applying Elephant Armor® Primer.



GST Gauged Rollers are used to apply Elephant Armor® at a consistent 1/4" thickness.



The installation was completed using Elephant Armor® - DOT in sections allowing for uninterrupted use of the warehouse, saving 80% of the original remove and replace estimate.

Degraded concrete parking deck reconstructed using Elephant Armor® - DOT – Honolulu, HI.



Applying first lift of Elephant Armor® over waterproofing membrane.



Applying second lift of Elephant Armor®.



Repair complete and ready for use.



Elephant Armor® - DOT is the ideal concrete repair and overlay solution for failing infrastructures with substantial time and cost savings.

Crack Better!

Repairing severely degraded sidewalk panels at Middle Tennessee State University – Murfreesboro, TN.



Severely cracked sidewalk panels prior to Elephant Armor® repair.



Applying a slurry coat and crack fill with Elephant Armor®.



Using a GST Squeegee Trowel prior to applying a broom finish.



8 years after initial installation

A sidewalk repair demonstration was performed at MTSU in conjunction with their CIM program to compare traditional 'Remove and Replace' repair methods with Elephant Armor® - DOT encapsulation. The study proved that using Elephant Armor® reduced the repair time by over 80% and significantly lowered the repair cost.

High traffic repair in industrial area – Annacis Island, Vancouver, BC.



Distressed concrete roadway.



Area prepared with Elephant Armor® Primer.



Finishing placement of quarter inch Elephant Armor® overlay.



Roadway repaired for use in a matter of hours. Traffic volume in excess of 100 trucks per hour.

Dangerous Trip Hazards Can Be Repaired Efficiently

Concrete panel repair, Guaranteed Supply Company – Greensboro, NC.



Severely degraded concrete panel ready for a 'fill and cap' application.



After cracks are pre-filled, a 1/4" lift of Elephant Armor® - DOT is applied to the surface.



After GST Squeegee Trowel is used to smooth the surface, a broom finish is applied.



Finished repair stamped with Guaranteed Supply Company logo. Ecobeton®-USA VetroFluid® is applied as a last step after the Elephant Armor® Mortar repair has achieved a full cure.

Dangerous trip and fall hazard eliminated with Elephant Armor® - DOT in less than two hours – Reno, NV



Extreme trip and fall hazard.



Applying Elephant Armor® - DOT using a GST Texture Roller.



Preparing the surface for a broom finish.



Trip and fall hazard was eliminated without having to remove the failing panel.

and Economically with Elephant Armor® Mortars

Elephant Armor® is the perfect solution for repairs to stairs – Carson City, NV.



Concrete stairs degraded down to exposed steel.



Elephant Armor® applied without using forms.



Putting finishing touches on the repair.



Severely weathered and broken stair treads made new, extending the lifecycle with Elephant Armor®. Repair completed by Morgan Construction, Reno, NV.

Full encapsulation of failing concrete stairway, University of Nevada – Reno, NV.



Severely broken and degraded wall cap.



Filling larger cracks prior to full encapsulation.



Finishing vertical wall repair.



Damaged concrete stairs overlaid without deconstruction or forming, saving time, money and reducing the disruption of service.

Elephant Armor® Mortars are the Ultimate Repair

Severely degraded seaway repair – North Scituate, MA.



Broken and spalled seawall.



Applying Elephant Armor® to repair area.



Repair completed during low tide cycle.



Severe fracturing of old seawall due to saltwater and weather exposure given new life using Elephant Armor® - DOT.

Spall repair and full encapsulation of badly failing seawall – New London, CT.



Severely degraded seawall.



Placing Elephant Armor® - DOT on vertical wall.



Using GST Texture Roller for final placement.



Full degraded seawall encapsulation completed between tides.

Solution for Marine Environments and Vertical Repairs

Loading dock repair, Hershey Park – Hershey, PA.



Extreme damage to loading dock.



Applying Elephant Armor® - DOT to the vertical surface without forming.



Finishing Elephant Armor®.



Damaged loading dock repaired without the need of forming and a lengthy interruption of service.

Elephant Armor® called on to repair this failing skate park – Alexandria, VA.



Damaged concrete surface unsafe for use.



Elephant Armor® applied after primer coat.



Elephant Armor® applied with GST Rollers and trowels without forming.



Overlay of degraded failing concrete completed with Elephant Armor® - DOT.

Elephant Armor® Mortars Make Permanent Concrete

Runway repair, Reno-Tahoe International Airport – Reno, NV.



Emergency spall repairs were completed on the centerline of the primary runway. Elephant Armor® is a quick and cost effective solution for any airport concrete repairs.



Severe fracturing of the centerline of primary runway was given new life using Elephant Armor®- DOT.

Apron repairs at Harry Reid International Airport – Las Vegas, NV.



Instead of removing and replacing 18" thick concrete panels, Elephant Armor®- DOT was used to restore and extend the lifecycle of a badly cracked panel at a fraction of the cost.



In just TWO HOURS the repair was completed and the apron was returned to service.

Repairs to Airport Infrastructure In Hours, Not Days.

Taxiway Repair, Harry Reid International Airport – Las Vegas, NV.



Filling cracks with Elephant Armor® using a roller and squeegee.



Elephant Armor® cap is placed using an edging trowel and squeegee.



Finishing Elephant Armor® Mortar repair with an application of Ecobeton® Vetrofluid®.



Instead of removing a 20'x20'x18" thick concrete panel. Elephant Armor®- DOT can restore and extend the lifecycle of the badly cracked panel at a fraction of the cost. In just TWO HOURS the repair was completed and the apron was returned to service.

Gate repair at LaGuardia International Airport – Queens, NY.



Damaged concrete surface unsafe for use.

The massive weight distributed on the pavement at the gate is apparent in this picture. The indentations in the pavement are caused by the point load of the planes front wheels. International Airports are extremely busy and cannot be shut down for routine maintenance.

Elephant Armor® was applied to the failing area without having to close normal operations to the gate. The Elephant Armor® is not only structural but it is a permanent repair that will increase the life cycle of the pavement.



Elephant Armor DOT's fast setting, high early strength capabilities eliminated the need for gate closure.

Elephant Armor® Mortars, Revolutionizing Micro-Trenching Reinstatement

Elephant Armor® Mortar – Asphalt Repair & Micro-Trenching Reinstatement.

Over 1,000,000 lineal feet placed in Nashville, TN.

Elephant Armor® Mortar – Ultra-High Performance Asphalt Repair is a single component, black, cementitious, fiber reinforced, fast setting mortar that is ideal as a micro-trenching reinstatement material. For high rate production, it can be placed with a pump system specifically designed for this application. In addition to the mechanical bond our fiber creates a fully engaged molecular bond within the mortar matrix, providing extremely high tensile and flexural strength.

- Elephant Armor® Engineered Ductile Mortars contain Proprietary High Performance Fibers meeting requirements of ASTM C-1116.
- It offers high early and superior bond strength.
- Unlike other reinstatement materials:
 - Elephant Armor® Mortars can be easily milled.
 - Elephant Armor® Mortars do not emit offensive chemical or toxic odors.



Elephant Armor® Mortar – Asphalt Repair & Micro-Trenching Reinstatement Material

Elephant Armor® Asphalt Repair being line-pumped into roadway micro-trench for fiber optic cable installation, using a volumetric mixer for an odor free, environmentally friendly, cost effective solution, capable of completing up to 12,000 lineal feet per shift.

Asphalt Repair Mortar ramp installed to correct uneven warehouse entry – Reno, NV.



Rehabilitation of warehouse ramp transition reducing costly forklift maintenance.



Using GST Texture Roller for final placement.



Finishing edges with an edging trowel.



Finished ramp transition completed and ready for use in two hours.

Elephant Armor® Mortars Are Unmatched in Versatility and Durability

Stamped Concrete Overlays are a Natural for Elephant Armor® Mortars.

Unparalleled as a Stampable Overlay

- readily accepting all forms of pigments and stains.
- allows the accelerated use of stamps, skins and rollers, greatly reducing labor and expense.
- can be placed over new or existing flexible substrates such as plywood or masonite.



Elephant Armor® Mortars can be colored to complement surrounding natural and architectural elements.

Uses of Elephant Armor® Mortars Are Only Limited By Your Imagination

Spray on Elephant Armor® Mortars to Achieve Decorative Finishes.

Spray on Elephant Armor®

With its superior flexural and tensile strength, Elephant Armor® Mortars can be sprayed to encapsulate flexible foam, taking movement without cracking, displacing or failing. It can also be used as a spray coat on vertical surfaces that are failing or that are required to emulate a specific existing environment. In this case, Elephant Armor®- DOT was used to simulate the interior walls of a wine cave in Napa Valley, California.



Elephant Armor®- DOT was sprayed, troweled and rolled to the desired finish. A single step installation process that provides a structural and architectural finish, greatly reducing construction costs.

Spray on Elephant Armor® Mortars for a structural and architectural finish, greatly reducing construction costs.

Elephant Armor® Mortars – DOT and Asphalt Repair

Technical Data & Application Instructions



DESCRIPTION

Elephant Armor® Mortars – DOT and Asphalt Repair are single component, cementitious, fiber based, medium to fast setting, zero polymer, repair and overlay **Engineered Ductal Mortars (EDM)**. In addition to a mechanical bond, our fiber creates a fully engaged molecular bond within our patented mortar matrix, providing extremely high tensile and flexural strength. It can be placed with a textured roller (*preferred method*) or traditional placement tools.

FEATURES / BENEFITS:

- Fiber reinforced: Superior flexural and tensile strength as thin as ¼".
- High ductility, allowing the overlay or repair to 'FLEX' without failure.
- Highly resistant to de-icing salts, freeze/thaw.
- Superior tensile strain capacity over other cement based products for improved crack resistance.
- Superior bond strength to that of other fiber and acrylic based mortars.
- Ideal as a structural underlayment.
- Prevents the propagation of existing cracks through the surface.
- Highly impermeable and abrasion resistant.
- Unparalleled as a stampable overlay.

SHELF LIFE

Up to 3 years in its original unopened package and stored in a humidity controlled environment. (Not exposed to moisture or high humidity.)

PACKAGING

- 10 lb (4.5 kg) plastic pails
- 50 lb (22.7 kg) plastic lined bags

COVERAGE/YIELD

A 50 lb (22.7kg) bag of Elephant Armor® Mortars will yield approximately 0.5 ft³ (0.014 m³) of material.

Applied at the following thicknesses, one 50 lb (22.7 kg) bag of **Elephant Armor® Mortar** will cover:

- ¼" (6.3 mm) – 22 ft² (2 m²)
- ½" (12.7 mm) – 11 ft² (1 m²)

Note: Coverage rates are approximate

PRIMARY APPLICATIONS

Walkways, curbs, ramps, slabs, spalls, cracks, airports-runways, taxiways and gates, bridges, ICF walls, parking structures, tunnels, dams, industrial plants or anywhere a high strength concrete repair mortar is called for.

Structural monolithic underlayment or overlay for interior and exterior applications.

DIRECTIONS FOR USE

Surface Preparation: Surfaces to be treated with Elephant Armor® Mortars must be clean, sound and free from contaminants that can act as a bond breaker (such as oil, grease, dirt, curing compounds, acids, etc.) *It is the applicator's responsibility to ensure a proper bond. It is mandatory to chemically or mechanically remove any and all curing compounds or contaminants that are present.*

The surface may require pre-treatment with GST International Degreaser Pro or Pro-Grade Cleaner, followed by power-washing to clean the contaminated surface.

Mechanical preparation options:

1. Fastest method for vertical and overhead preparation: Pressure washing, hydro blasting or sand blast to remove the cream of the concrete, paints or other contaminants. If pressure washing, hydro blasting or sand blasting do not remove contaminates go to step #2.
2. Fastest method for horizontal preparation: Mechanical grind the concrete surface using metal bonded tooling (16 grit or 35 grit) using walk behind grinders with vacuum systems. Hand held grinders with shrouds, vacuum and metal coarse wheel.

Priming: For best practices refer to EA Primer technical specifications under 'Downloads' on our website.

A Slurry/Bond Coat is a blend of Elephant Armor® Mortar with enough undiluted Elephant Armor® Primer to make a paint-like consistency. If there is any exposed steel or rebar, first apply a rust inhibitor. Work slurry into the repair area or substrate with a stiff masonry brush coating the entire area. Pay special attention to the corners, sides and any exposed rebar. Place Elephant Armor® Mortars prior to the slurry coat becoming tack-free. Elephant Armor®

Primer can also be used in a NEAT application. This application conforms to the structural bonding requirements of ASTM C 1059-13, Type II. *Elephant Armor® Primer is not a substitute for water in any proportion with standard mixes of Elephant Armor® Mortars.*

Mixing:

Mix the dry contents prior to adding water. Add approximately 6 – 7 US quarts (5.7 – 6.6 liters) of water (depending on desired slump) and is mandatory to thoroughly mix with a dual shaft power mixer. (example: ColloMix Xo 55 Duo)

Please review our mixing video on our website Video Gallery at www.gstinternational.com/.

Due to our unique product design, this type of mixer is required to ensure sufficient shear capacity needed to properly provide a homogeneous mix. Do not use a dry wall paddle blade. While mixing, ensure there is no unhydrated Elephant Armor® on the sides or bottom of the bucket, as this will alter the water/cement ratio. Continue mixing until the mixture is lump free and has achieved the desired consistency (*slump*) for your application. When mixing our ten pound buckets or a small amount of Elephant Armor® Mortar, a ½" drill or larger, using an egg beater, mortar or Jiffy Bit can be used. Actual mixing time will depend on mixer speed, shear capacity, and desired consistency or flow required.

Application:

- Can be placed with a textured roller (*preferred method*) or traditional placement tools.
- ¼" and ½" gauges are available to be attached to the textured rollers for a more even finish.
- Do not over trowel. Wait for initial set before applying final trowelling or a smooth roller finish. Initial set has begun as soon as the 'bleed water' begins to dissipate. Set times will vary with weather conditions.
- Will accept trowelled, broomed, decorative roller or stamped finish.
- Will accept integral powder or liquid colors, acid stain and water based or acrylic stains.
- Elephant Armor® Delay added to the mixing water will allow additional working time. (*Please refer to package instructions*)
- When placing Elephant Armor® Mortars, all repairs should be water-cured for approximately one hour after the mortar has achieved final set.

Clean-Up:

Elephant Armor® Mortars are fast curing; have additional water on hand to clean the mixer blades and other tools as they are used.

PRECAUTIONS / LIMITATIONS:

- Use required Safety Equipment and Best Practices.
- A feathered edge is not acceptable.
- Do not add more water than recommended.
- Do not over work or over trowel the spall repair or overlay.
- Follow ACI Hot Weather Concreting 305R-99 procedures.
- Do not apply Elephant Armor® Mortars to frozen surfaces, at temperatures below 40° F (4° C).
- Consult the Safety Data Sheet in all cases before use. Available at www.gstinternational.com

KEEP THIS PRODUCT OUT OF THE REACH OF CHILDREN

This product is made from the finest raw materials available and manufactured to proven formulation under strict quality control for its intended use. However, results obtained with the use of this product under a variety of conditions may depend on circumstances beyond our control. GST International, Inc. (including the seller thereof) warrants only that its products will be free from defects in materials. GST International, Inc.'s (including the seller thereof) sole obligation, and the purchaser's (including the person using or benefiting from its use) sole and exclusive remedy in the event of a defect covered by the foregoing warranty, shall be, at GST International, Inc.'s discretion, to (a) replace the defective product, or (b) refund to the purchaser the purchase price paid for such defective product. There are no warranties other than the limited express warranty provided above. In no event shall GST International, Inc. (or the seller of its products) be liable for incidental or consequential damages resulting or arising from the use of its products.

Manufactured Under Patent in the USA
by Global Sealer Technologies International

GST International, Sparks , NV
(775) 829-2626

For Elephant Armor® Mortars - DOT and Asphalt Repair,
find the SDS, Technical Specifications, full Installation Guide,
Project Gallery and Videos, at www.gstinternational.com

For Elephant Armor® Technical Sheets with ASTM test results and SDS,
please visit www.gstinternational.com



Surface Armor™ System

The Ultimate Thin-mil Concrete & Asphalt Resurfacing System



Surface Armor™



1:1 Elephant Armor®
Primer/water mixture



Ecobeton-USA® Vetrolfluid®

Features and Benefits

- Fills and hides small spalls and cracks.
- Brings surfaces back to a 'like new' appearance.
- Significantly increases lifecycle of applied surface.
- Accepts liquid and powder pigments.
- Can be finished smooth or textured.
- Fast and easy to apply.
- Interior and exterior use, including drive surfaces.
- Can be applied over concrete or asphalt.
- Can be applied to vertical surfaces.
- Extremely abrasion resistant.

GST International's Surface Armor™ System is a polymer-modified, thin-mil single component, two-coat cement based resurfacing system for use on existing concrete or asphalt surfaces. Surface Armor™ contains an ultra-fine aggregate and can be applied as a smooth or textured finish. Surface Armor™ can be applied with a stiff bristle broom, concrete broom, trowel, GST Squeegee Trowel or most types of spray equipment.

Surface Armor™ is a structural micro-topping for resurfacing concrete and asphalt, including heavy vehicular applications. Surface Armor™ readily accepts liquid and powder pigments. For best results when adding a pigment, do a test on a small area to ensure desired tint and tone.

Surface Armor™ can also accept paint after installation and the final application of Ecobeton®- USA Vetrolfluid®.

The Surface Armor™ System includes the Surface Armor™, EA Primer and the Ecobeton®- USA Vetrolfluid®.

The Surface Armor™ System requires the application of Ecobeton®- USA Vetrolfluid® which allows it to sustain heavy use, including vehicular traffic.

For more information on Ecobeton® Vetrolfluid, visit www.ecobeton-usa.com

This product is made from the finest raw materials available and manufactured to proven formulation under strict quality control for its intended use. However, results obtained with the use of this product under a variety of conditions may depend on circumstances beyond our control. GST International, Inc. (including the seller thereof) warrants only that its products will be free from defects in materials. GST International, Inc.'s (including the seller thereof) sole obligation, and the purchaser's (including the person using or benefiting from its use) sole and exclusive remedy in the event of a defect covered by the foregoing warranty, shall be, at GST International, Inc.'s discretion, to (a) replace the defective product, or (b) refund to the purchaser the purchase price paid for such defective product. There are no warranties other than the limited express warranty provided above. In no event shall GST International, Inc. (or the seller of its products) be liable for incidental or consequential damages resulting or arising from the use of its products.

PATENTED

Surface Armor™ is ideal for filling minor cracks and spalls, resurfacing sidewalks, driveways, warehouse floors, loading docks, bridges, airports, malls and much, much more.

Introducing GST's Surface Armor™ System

Tram rail resurfacing, International Airport – NV.



Ecobeton®-USA Vetrofluid® sprayed on prior to Surface Armor™ application.



2 coats of Surface Armor™ were applied for durability and texture.



Surface Armor™ replaces traditional epoxies for long lasting, visually attractive appearance and functions at a reduced cost and expedited timeframe.

Sidewalk crack repair and resurfacing, International Airport – NV.



Sidewalk panel prior to crack fill with first Surface Armor™ coat.



Using a trowel to complete first coat of Surface Armor®.



Applying second coat of Surface Armor™ to surface prior to brooming.



Finished panels showing a new appearance. Inset photo shows Ecobeton-USA Vetrofluid® being applied as the final step of the Surface Armor™ System.

Surface Armor™ is the Ultimate Thin

Franciscan University – Steubenville, OH.



Ageing concrete showing cracking and calcium being released and formation of mold due to water retention.



Apply Surface Armor® vertically using a brush, then use a Squeegee Trowel to remove brush marks.



A damp sponge is used to smooth out the Surface Armor® and give it a soft texture.



Surface Armor's ease of use and quick set time, allowed the base to be permanently repaired with a minimum disruption to the sanctuary in less than 2 hours!

Asphalt driveway resurfacing with Surface Armor™, Haddenfield – NJ.



Worn out asphalt driveway prior to applying Surface Armor™.



Applying Surface Armor™ is quick and easy with a GST Squeegee Trowel.



Driveway is given a new visual and service life with a final application of Ecobeton-USA® Vetrofluid®.



Powder pigment was added to the Surface Armor™ to achieve a similar finish to the original asphalt. The 1250 ft² driveway was completely resurfaced in approximately 5 hours.

-mil Concrete Resurfacing System

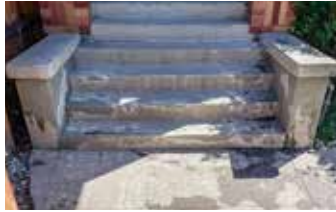
Residential stair and landing reconstruction, Reno – NV.



Severely spalled and degraded stairway, properly cleaned and sealed with Ecobeton® Vetrofluid®



Elephant Armor® - DOT used to fill all spalls, deep cracks and displacements. Forming not required.



Elephant Armor® - DOT reconstruction complete, now ready for Surface Armor™ permanent micro-topping.



Restoration complete in 5 hours using 1 bag of Elephant Armor®- DOT and 1 bag of Surface Armor™ without the need for the traditional and extremely costly, time consuming deconstruction/reconstruction process greatly extending its life-cycle.

E. Frank Hopkins Seafood Co, loading dock overlay, Philadelphia – PA.



Constant vehicular traffic in a refrigerated wet environment has caused extensive wear.



Clean floor with Pro-Grade Cleaner before applying Ecobeton® Vetrofluid.



Applying Surface Armor™ is quick and easy with a GST Squeegee Trowel.



Surface Armor™ is a heavy duty cementitious micro-topping that accepts liquid or powder pigments.
(not compatible with spray dried granular pigments)

Using Surface Armor® with Elephant Armor® Mortars

American Airlines hangar floor repair at International Airport – Queens, NY.



Photo showing extensive damage to the concrete around the drains, including a 3" 'point load' depression in the parking area at the jet's nose gear.



A combination of Elephant Armor®-Dot, followed by a wear coat of Surface Armor™, was used to complete this major repair. The volume fill, spall and deep crack remediation were performed with Elephant Armor®-Dot after Ecobeton-USA® Vetrofluid® was applied to stabilize the existing concrete surface. Surface Armor™ was then used to micro-top the repair, enhancing the surface appearance. A final application of Ecobeton-USA® Vetrofluid® was then applied to greatly improve durability and extend the lifecycle. Elephant Armor®-DOT and the Surface Armor™ System significantly reduced costs versus a 'remove and replace' scenario.



Clean cuts are made around the perimeter of area to be repaired.



All loose unstable concrete is chipped away to provide a solid surface.



Area to be repaired is washed and all loose material is removed.



A coat of Ecobeton®-USA Vetrofluid® is applied to stabilize the existing concrete.



A coat of EA Primer is applied over the repair area.



Elephant Armor®-DOT is applied in 3 panels to fill and level the repair area.



Elephant Armor® is easily placed and levelled with GST Rollers and Squeegee Trowels.



The last panel is ready to be filled and levelled with the two outside panels.



The center panel is filled with Elephant Armor®-DOT to the level of the two outside panels.



A coat of Surface Armor® is applied over the entire repaired (filled) area.



The second damaged area on the outside perimeter of drain is now overlaid with Elephant Armor®-DOT.



Finished repair ready for a coat of Ecobeton®-USA Vetrofluid®.

GST's Surface Armor™ Concrete Resurfacing System

Patio resurfacing – Haddonfield, PA.



Damaged and unsightly concrete patio prior to resurfacing.



Elephant Armor® is used to fill deep cracks.



Two coats of Surface Armor™ are applied with a GST Squeegee Trowel.



The patio brought back to 'new' appearance and ready for use.

Fuel tank farm wall repair and resurfacing – Las Vegas, NV.



Surface Armor™ is sprayed on the degraded block wall after an initial application of Vetrofluid®.



A standard pool trowel, is used to spread the Surface Armor™ and achieve an even thickness.



Using a grout float to apply the desired finish prior to the final application of Vetrofluid®.



A newly resurfaced CMU block wall with a 'like new' appearance, eliminating the visual cracks and discoloration.
The wall is now waterproof and structurally sound.

Surface Armor™ System

Technical Data & Application Instructions



DESCRIPTION

GST International's Surface Armor™ System is a polymer modified, thin-mil single component, two-coat cement based resurfacing system for use on existing concrete or asphalt surfaces. Surface Armor™ contains an ultra-fine aggregate and can be applied as a smooth or textured finish. Surface Armor™ can be applied with a stiff bristle broom, concrete broom, trowel, GST Squeegee Trowel or most types of spray equipment.

Surface Armor™ is a structural micro-topping for resurfacing concrete and asphalt, including heavy vehicular applications. Surface Armor™ readily accepts liquid and powder pigments. For best results when adding a pigment, do a test on a small area to ensure desired tint and tone.

It can also accept paint after installation and the final application of Ecobeton®- USA Vetrofluid®. (www.ecobeton-usa.com)

The Surface Armor™ System includes: Surface Armor™, EA Primer/water mixture (1:1), and the Ecobeton®- USA Vetrofluid®. (www.ecobeton-usa.com)

Surface Armor™ is ideal for filling minor cracks and spalls, resurfacing sidewalks, driveways, warehouse floors, loading docks, bridges, airports, malls and much, much more.

The Surface Armor™ System requires the application of Ecobeton®- USA Vetrofluid® which allows it to sustain heavy use, including vehicular traffic. (www.ecobeton-usa.com)

FEATURES / BENEFITS:

- Fills and hides small spalls and cracks.
- Brings surfaces back to a 'like new' appearance.
- Significantly increases lifecycle of applied surface.
- Accepts liquid and powder pigments.
- Can be finished smooth or textured.
- Fast and easy to apply.
- Interior and exterior use, including drive surfaces.
- Can be applied over concrete or asphalt.
- Can be applied to vertical surfaces.
- Extremely abrasion resistant.

SHELF LIFE

Up to 3 years in its original unopened package and stored in a humidity controlled environment. (Not exposed to moisture or high humidity.)

PACKAGING

- 10 lb (4.5 kg) plastic pails • 50 lb (22.7 kg) plastic lined bags
- Elephant Armor® (EA) Primer comes in 1 and 5 gal. containers.
- Ecobeton®- USA Vetrofluid® comes in 2 gal. containers.

COVERAGE/YIELD

A 50 lb. bag of Surface Armor™, with a two coat application, will cover approximately 200 ft² and a 10 lb. pail 40 ft². Coverage can change based on the mixing ratio and existing substrate condition.

For all applications, a second coat is mandatory. Additional coats may be required to achieve the desired finish. Note: Coverage rates are approximate.

PRIMARY APPLICATIONS

Walkways, curbs, ramps, slabs, spalls, cracks, airports, bridges, ICF walls, parking structures, tunnels, dams, malls, industrial plants or anywhere a high strength concrete resurfacing material is called for.

PRECAUTIONS / LIMITATIONS:

- Use required Safety Equipment and Best Practices.
- Do not over-work or over-trowel the overlay.
- Follow ACI Hot Weather concrete 305R-99 procedures.
- Do not apply Surface Armor™ at temperatures below 40° F (4° C) or to frozen surfaces.
- Consult the Safety Data Sheet, available at www.gstinternational.com, in all cases before use.

DIRECTIONS FOR USE

Surface Preparation:

Surfaces to be treated with the Surface Armor™ System must be clean, sound and free from contaminants that can act as a bond breaker (such as oil, grease, dirt, curing compounds, acids, etc.)

It is the applicator's responsibility to ensure a proper bond. It is mandatory to chemically or mechanically remove any and all curing compounds or contaminants that are present.

The surface may require pre-treatment with GST International Degreaser Pro or Pro-Grade Cleaner, followed by power-washing to clean the contaminated surface.

Once the surface is clean and free of contaminants, apply a mist coat of Ecobeton®-USA Vetrofluid® at a rate of 250 ft²/gal. to stabilize the surface. Allow 72 hours curing time prior to the placement of Surface Armor™.

Priming – Priming is not necessary with Surface Armor™.

Mixing

Standard mix design in most applications ranges from 1:1 to 2:1, meaning 2 parts Surface Armor™ with 1 part EA Primer/water mixture (1:1), by volume. Adjust your ratio based on the flow-ability and material consistency required for the specific application.

Mix the dry contents in a clean and dry bucket to 'fluff' the material prior to adding the EA Primer/water mixture. Add the EA Primer/water mixture and mix thoroughly using a ColloMix Xo-55 Duo. For small amounts of material (10 lbs or less) a ½" drill with an egg beater bit is acceptable.

Mix for approximately 60 seconds or until the Surface Armor™ achieves the consistency desired. NOTE: Surface Armor™ has a short workability period with an initial set time of 15-20 minutes.

Initial Application of Ecobeton-USA® Vetrofluid®

All concrete that Surface Armor™ will be applied to, must be thoroughly cleaned and pre-treated with Ecobeton-USA® Vetrofluid®. (Allow 72 hours prior to Surface Armor™ application.)

Application of Surface Armor™:

Surface Armor™ is a micro-topping that should be placed in very thin lifts, not to exceed 1/16" (1.6mm), to avoid excessive build-up and potential failure.

Evenly place the first coat of Surface Armor™ on to the surface using a stiff bristle broom (preferred), concrete broom, trowel, or GST Squeegee Trowel. Allow the first coat of Surface Armor™ to fully dry (approx 60 minutes) prior to placing the second and final coat. The final coat may be textured using a standard concrete broom or other finishing methods (sponge, nap roller, or paint brush). Finishing texture should be done immediately upon placement of the second coat.

Surface Armor™ can also be applied using appropriate spray equipment for vertical applications. It is recommended that the spray equipment selected is tested prior to starting the project. Coverage may decrease with vertical applications, depending on the substrate and thickness required.

Final Application of Ecobeton-USA® Vetrofluid®

Once the Surface Armor™ has cured (1-3 hours, depending on the ambient temperature) a single light coat of Ecobeton®- USA Vetrofluid® must be applied to the newly finished surface. Using a low-pressure sprayer, apply the Ecobeton®- USA Vetrofluid® in one even coat at an application rate of approximately 200 ft²/gallon. To avoid any surface pooling, use a clean concrete finishing broom to evenly disperse the Ecobeton®- USA Vetrofluid®.

For additional durability, especially in high traffic areas, a second application of Ecobeton®- USA Vetrofluid® should be applied at a rate of approximately 300 ft²/gallon, 8-12 hours after the initial application. Allow 1-2 hours prior to opening the surface to foot traffic and 12 hours prior to opening to vehicular traffic.

Note: wait 5 to 7 days after Ecobeton®- USA Vetrofluid® application for light surface cleaning and 21 days for heavy surface cleaning.

Clean-Up

Surface Armor™ is fast curing, have additional water on hand to clean the mixer blades and other tools as they are used.

For product information and videos, visit www.gstinternational.com

IMPORTANT: Any major spalls or displacements to the area being treated should be repaired using GST International Elephant Armor® DOT Mortar prior to the placement of Surface Armor™. Be sure to refer to Elephant Armor® Mortars installation instructions as they differ from the Surface Armor™ instructions.

Elephant Armor® Tools & Ancillary Products Make Heavy Work Lighter



**9" (230mm) and 18" (457mm)
Smooth Roller**



**9" (230mm) and 18" (457mm)
Textured Roller**



**1/4" and 1/2" Roller Depth Gauges
for 9" and 18" rollers**



Expandable Aluminum Roller Frame *(rollers not included)*
Showing Expandable Roller Frame at 9" to 18"
with 1/4" and 1/2" depth gauges *(sold separately)*



Squeegee Trowels
Place and finish Elephant Armor® Mortars quickly and
easily. Available in 12", 18" and 26" blade widths.



**Mandatory for mixing
Elephant Armor® Mortars!**



**Replacement
Xo 55 Duo Paddles**



Elephant Armor® Mixing Bucket
Rugged 70 quart polypropylene mixing
bucket. Use our mixing bucket cart for
easy handling.



Mixing Bucket Cart
Makes moving the mixed Elephant Armor®
from the mixing station to the placement
area faster and easier.



Elephant Armor® Primer
is a high solids, acrylic polymer latex bonding agent
specifically designed to be used with Elephant Armor®
on any concrete or asphalt surface.

Elephant Armor® Primer is not a substitute for water
in any proportion with 'standard' mixes of Elephant
Armor® Mortars.



Elephant Armor® Delay
to increase working time.
(comes with measuring scoop)



Degreaser Pro and Pro-Grade Cleaner
Use GST's professional quality cleaners to
prepare the repair surface before applying
Elephant Armor® Mortars.



Global Sealer
Technologies



Elephant Armor® & Surface Armor™

*Proven advanced technologies that are changing
the way we repair concrete surfaces!*

Elephant Armor® Mortars

The World's Most Amazing Cementitious Repair & Overlay Products!



Elephant Armor® Mortar - DOT

Elephant Armor® Mortar
Asphalt Repair

Surface Armor™ System

The Ultimate Thin-mil Concrete & Asphalt Resurfacing System



Ecobeton-USA®
Vetrofluid®

Surface Armor™

Elephant Armor®
Primer



Find a GST International Dealer Near You
at www.gstinternational.com/dealers

Your GST International Dealer

GST International
Sparks, NV 89431 775 829 2626
info@gstinternational.com