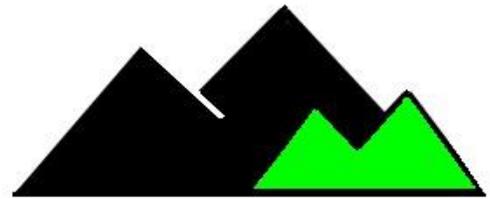


Mountain



Grout

Polyurethane Systems

An introduction to basic crack injection to stop leaks in swimming pools



Presentation Outline

- ❖ General Overview
- ❖ Typical Repairs/Workplaces
- ❖ Safety
- ❖ Equipment
- ❖ Crack Injection
- ❖ Miscellaneous
- ❖ Live Demonstration
- ❖ Product Demonstration
- ❖ Questions

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What is polyurethane?

- Polyurethane is everywhere. Some examples:
 - Skateboard wheels
 - Steering wheels
 - Foam in couch cushions
 - Protective coat for restaurant tables
 - Spray foam insulation
- There are many, many types, but the type we are discussing today will be moisture cured polyurethane that injects into cracks as a liquid and cures into a dense, strong foam to fill cracks in concrete and stop water leaks.

Dual v. Single Components

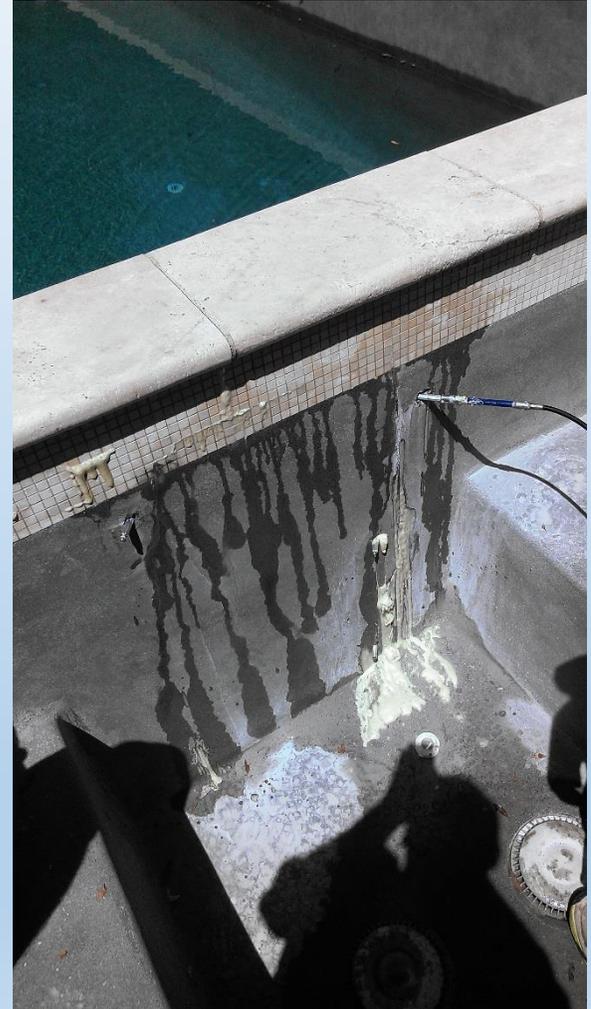
- Dual component formulas have an “A side” and a “B side” that react when they come in contact with one another.
- Single component formulas are a single resin that react when they come in contact with a small amount of water.
- For application in swimming pools, we’ll focus on single component products.

Accelerator

- Accelerator is often used with a single component to speed up the product's reaction time.
- Accelerator is often mistaken for a catalyst. In fact, water is the catalyst for single component products. Accelerator merely *accelerates* the reaction time.
- Because accelerator is not necessary for the reaction to occur, some installers choose not to use it in certain situations.

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- ❖ General Overview
- ❖ **Typical Repairs/Workplaces**
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- ❖ Equipment
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Typical Repairs

- Leaking / Moving Cracks
- Construction Joints
- Cold Joints
- Expansion Joints
- Pipe Joints
- Pipe Intrusions
- Honeycombed Concrete



Typical Workplaces

- Potable Water Tanks
- Waste Treatment Plants
- Below Grade Walls
- Large Diameter Pipes
- Floors
- Dams
- Elevator Pits
- Swimming Pools



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Make Safety a Priority

- Read MSDS
- Read Safety & Handling sheet
- Always, **ALWAYS** wear safety glasses
- Ensure proper ventilation
- Wear protective clothing
- Protect work area from spills



Proper Safety Clothing



Notice:

Hard Hat

Safety Glasses

Face shield

Tyvek Coveralls

Rubber Gloves

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Important Equipment

- Pump
- Hammer drill
- Assortment of drill bits (3/8", 1/2", 5/8")
- Socket set (deep well, thin wall sockets)
- Assorted hand tools
- Paddle mixer
- Packers
- Clean, DRY bucket
- Waste bucket
- Rags, plastic liner



Pumps

Manual Bucket Pump



Electric Pump



Hammer Drill



Assorted Tools



Paddle Mixer



Shop Vac



Packers



Buckets

One Must be DRY



One to throw away



Rags, Plastic Drop Cloth



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Inspect the Crack

- The three most important considerations are length, width, and depth.
- Determining these values will help you determine:
 - Which Mountain Grout® product is most appropriate
 - How much polyurethane you will need
 - How many workers to have on the job, and
 - How long the job might take.



Polyurethane Choice



- In most cases, our recommendation will be Mountain Grout[®] SLV.
- Mountain Grout[®] SLV is 250 cps, so its relatively low viscosity allows it to penetrate thin cracks.
- It is a single-component, hydrophobic, closed cell formulation ideal for swimming pool applications.

Prepare Workspace

Notice:

- Black plastic drop cloth along the crack
- All tools, materials, etc. on protected space
- Extension chords away from materials to avoid accidental spills



Flush the Crack

- Flush the crack to remove any latent debris or organic material.
- The polyurethane will bond more tenaciously to concrete rather than dirt and debris.
- Organic material will eventually decompose, which will leave new void space for water leaks.
- It will also ensure that the crack contains enough moisture to react the single-component polyurethane.

Drill Bore Holes



- Drill at a 45° angle to intersect crack at midway point.
- Use a stitching pattern to ensure crack intersection.
- Drill bore holes roughly 6"-18" apart, depending on specific crack conditions.

Good Example of Stitching Pattern

- Cracks rarely go straight through the concrete.
- Most of the time, cracks will veer in one direction or the other.
- Using a stitching pattern helps ensure that you are intersecting the crack .



Video: Drilling Bore Hole



Video: Clean Debris from Bore Hole and Area Around Crack



- Use a water bottle to flush the bore hole and introduce moisture into an otherwise dry environment (you just drilled through dry concrete).
- Also keep crack itself wet, which will help react the product and make it easier to clean up the reacted polyurethane after it reacts on the crack face.

Insert Packers

- Depending on packer choice, either tap in or twist packer to achieve tight placement in bore hole.
- Packer is intended to fit snugly in hole in order to keep polyurethane in bore hole and crack during reaction process.



Video: Packer Placement



Video: Multiple Steps at Once



Key Step: Flush the Pump

- **BEFORE** and **AFTER** EACH AND EVERY JOB, use Mountain Grout® Pump Flush to flush pump.
- Any polyurethane remaining in pump will react with humidity in air and will lock pump.
- Pump must be thoroughly pumped with Pump Flush to keep pump in working order.
- Some pumps we have sold have lasted one job, others over 20 years.

Video: Prepare Polyurethane

- Once pump is flushed, prepare polyurethane to be pumped.
- Pour polyurethane into a dry bucket (moisture will cause product to react in bucket and pump).
- Mix accelerator with polyurethane thoroughly with paddle mixer or other device at a ratio of 1 pint per 5 gallons of polyurethane.



Video: Pumping Polyurethane



Flush the Pump AGAIN

- When polyurethane pumping complete, thoroughly flush pump with Mountain Grout® Pump Flush.
- You may also consider using Xylene, which can be found at most local paint stores.
- Xylene contains solvents. It will eventually degrade some pump parts, but replacing those parts is cheaper than replacing a pump!

VERY IMPORTANT

Cleanup

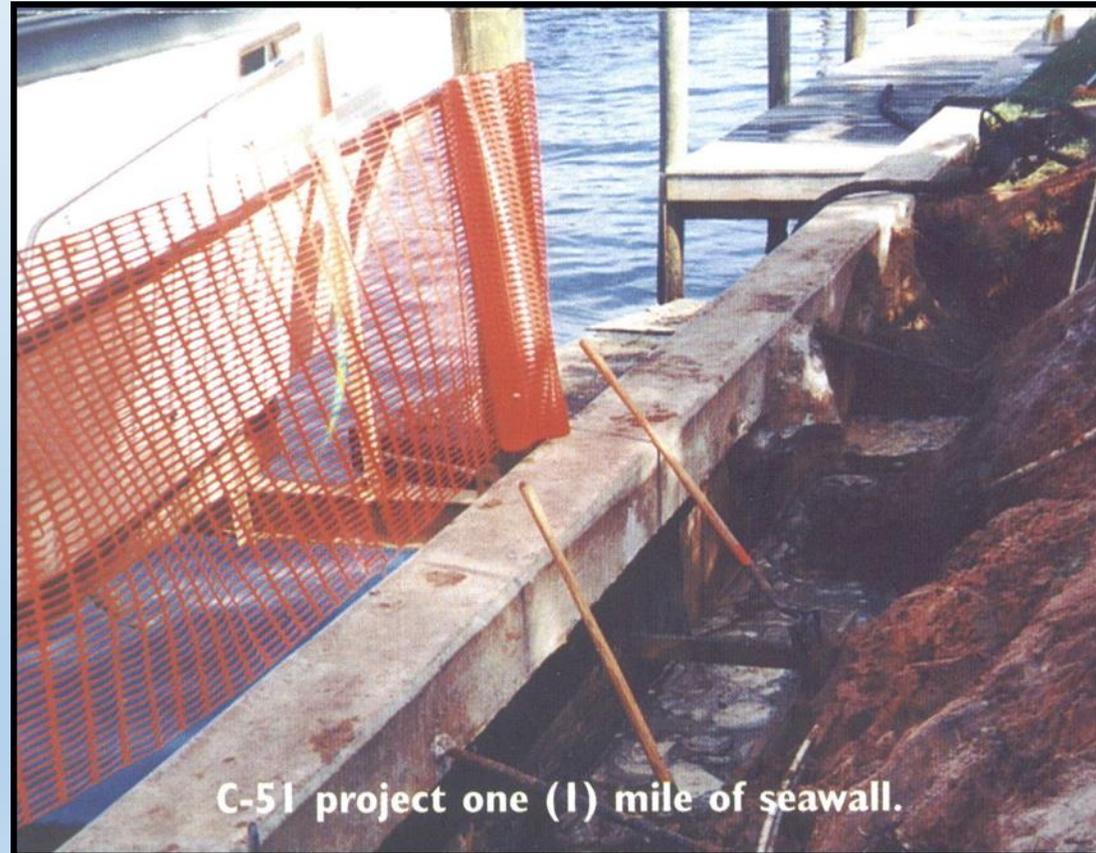
- Once Mountain Grout® is fully reacted, clean from face of crack and around injection ports.
- React polyurethane remaining in bucket and dispose of according to Local, State and Federal Regulations.



Soil Stabilization for Sinking/Moving Pools

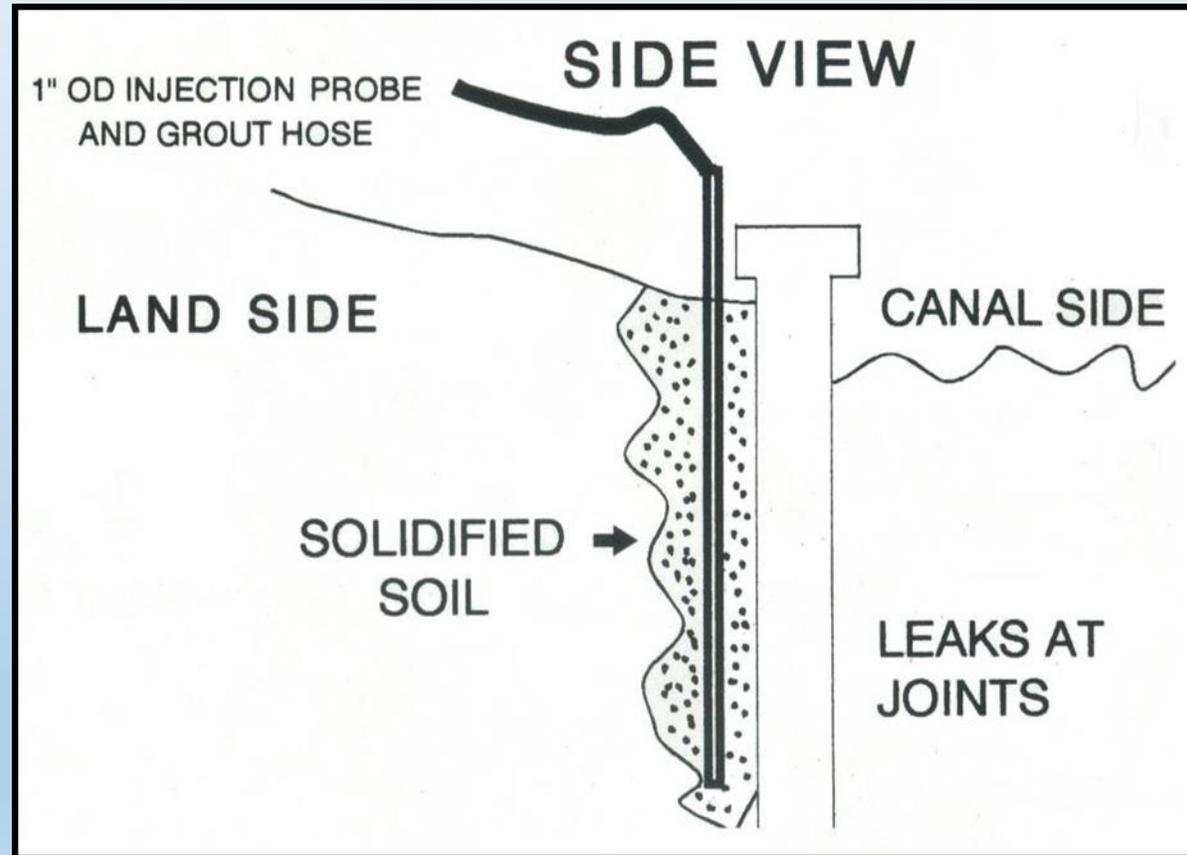


Same Premise as Stabilizing Sea Walls



C-51 project one (1) mile of seawall.

No Dig Approach



Grout Column

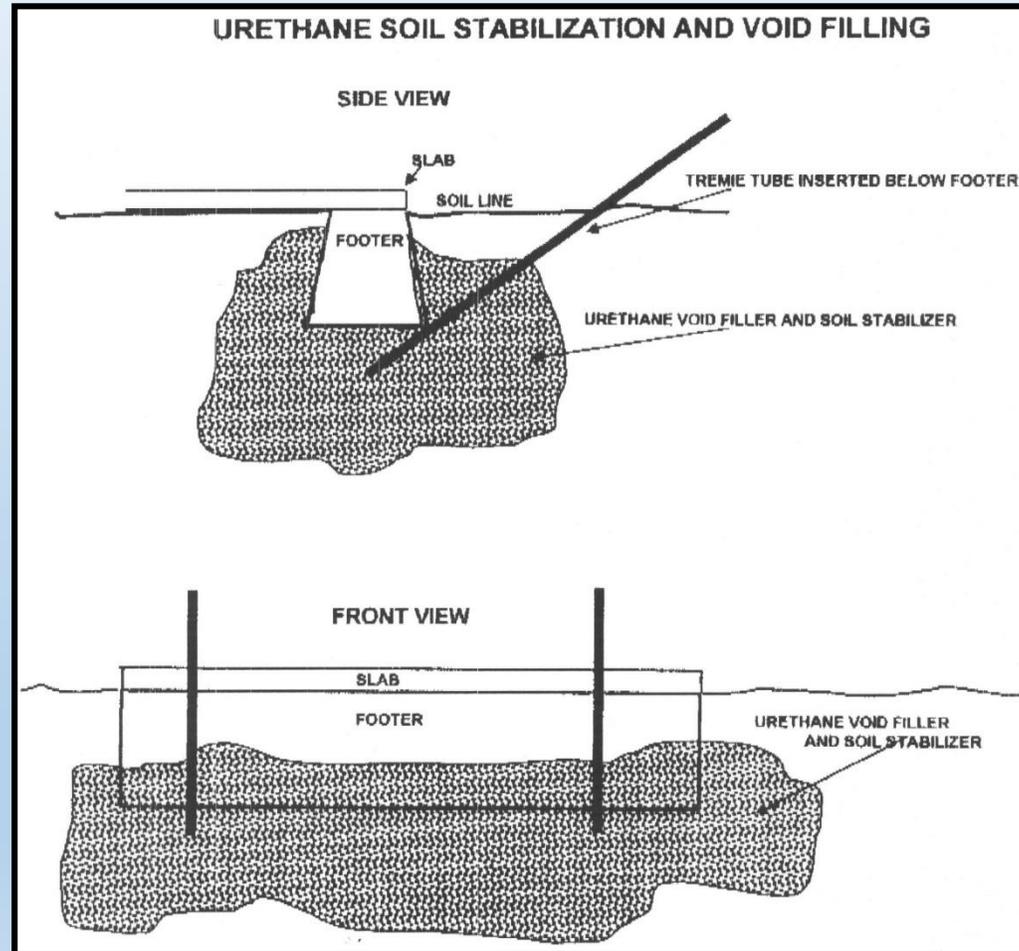


Grout columns
within the soil
typically 8"-24"
in diameter.

Foundation Stabilization



How to...



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Choice of Installer/Technician

- Not everyone is cut out to work with polyurethane.
- It is messy and at times tedious work.
- Mountain Grout® has been successfully installed in thousands of pools both in the United States and abroad. The grout is the “constant.” The installer is the “variable.”
- Find a technician who isn’t prone to blaming tools, materials or site conditions for jobsite challenges. Find a technician who is patient enough to learn the skill and is willing to troubleshoot on the go.



Mountain Grout® has History



- We may be new to the Master Pools Guild, but Mountain Grout® is far from new.
- Since 1987, Mountain Grout® has been trusted by industry professionals in the concrete repair industry.

Special for Master Pools Guild Members

- Members of the Master Pools Guild enjoy a 10% discount off the retail price.
- The Master Pools Guild also benefits, receiving 3% on each sale to Guild Members.



Give Us a Call

- For more information, visit www.mountaingrout.com or call us toll free at 1 (800) 942-5151.
- We are happy to answer questions, before, during and after jobs, but before you start drilling is always best!
- We welcome feedback and always appreciate photographs and video from jobs.

Quick Plug: Klingstone Paths



A polyurethane binder for stone aggregate – perfect for swimming pool patios and backyard landscaping!

Visit www.klingstonepaths.com for additional information.

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- ❖ Miscellaneous
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- ❖ Equipment
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A Special Thanks to...



Matthews, North Carolina



Medallion Pool

Asheville, North Carolina



Charleston, South Carolina

...all members of the Master Pools Guild



Thank You

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