Polyurethane Concrete Lifting

SPFA Convention

February 13, 2013
MY AGENDA

- Who Is Opportunity Inc (& Paul)
- Historical Perspective
  - Mudjacking
  - Polyurethane Concrete Lifting & Void Filling
- Why Polyurethane to Lift Concrete
- Equipment Requirements
- Material Options
- Cost Considerations
- Wrap Up
Before I Begin

A Big THANK YOU To

SPFA
Spray Polyurethane Foam Alliance

For Allowing me to Participate
WHO IS PAUL

- CONSULTANT SPECIALIZING IN THE CONCRETE INDUSTRY FOR 15 YEARS

- SPEAKER AND AUTHOR SPECIALIZING IN FAST GROWTH BUSINESSES AND SMALL BUSINESS MERGERS & ACQUISITIONS
MARKETING TRENDS

Real Home Improvement Investment

- Recession
- Home Improvement

 Millions of chained (2000) dollars, SAAR

http://calculatedrisk.blogspot.com/
HISTORY OF THE PROCESS MUDJACKING

- Mechanical pumps
- Hydraulic mud pumps
- High Production Automated Systems
- Affordable trailer packages
- Left looking for ways to make the process easier, cleaner and faster
HISTORY OF THE PROCESS
POLYURETHANE CONCRETE RAISING

- Patented process primarily for large DOT projects.
- Small rigs developed for residential contractors
- Material specifically designed for residential applications
- Conversion Kits designed for Spray Foam Contractors
WHY POLYURETHANE TO LIFT CONCRETE?

- Green
- Increasing Economic Efficiency
- Multiple Dimensions
  - Lifting/Leveling
  - Void Filling
  - Joint/Slab Stabilization
- Strength & Longevity
- Wide Range of Potential Customers
Why Polyurethane to Lift Concrete?

- **Green**
  - The best concrete lifting foam is made from *recycled material*
  - Less Bio Degradable
  - Raise Vs. Replace
    - Prevent waste

- **Increasing Economic Efficiency**
  - Reduced Rework Due To Erosion
  - Does Not Overburden Sub base (Lightweight)
  - Little of No Downtime for Customers
  - Availability Of Equipment & Material
WHY POLYURETHANE TO LIFT CONCRETE?

**Multiple Dimensions**
- Lifting/Leveling
  - Lightweight, Exacting Specifications, Slab Stability with small hole size.
- Void Filling
  - Lightweight, Flow To 1/32” of a Void
- Joint/Slab Stabilization
  - Delayed expansion/cure allows for traveling further

**Strength & Longevity**
- 60-90 psi strength (higher under compression from lifting)
  - Different foams designed for multiple applications will have varied reactions and psi/density.
- Stable other than UV
- ‘Custom Filled Voids’
WHY POLYURETHANE TO LIFT CONCRETE?

Wide Range of Potential Customers

DOT Approved Solutions

- 15 min to full strength ideal for minimal lane closures and traffic disruptions
  - Typically Truck Units Specified

Industrial

Commercial

Residential

- Capacity to carry large volumes of material allows for the capability to complete multiple jobs daily. This increased production results in increased profitability.
**INJECTION HOLE SIZE – 5/8”**

- Less Obtrusive (Walks – Pool Decks – Etc.)
- Perceived Value
- More Conducive to Residential
- Lower Slab Weakening (Hole Size)
POLYURETHANE EQUIPMENT

- Same General Equipment as Spray Foam Rigs
  - Reactor (E-20 or larger)
  - Generator
  - Compressor
  - Heated Hose
  - Fusion Gun with a Concrete Raising Front End Upgrade
- Drill & Saw
- Injection System
  - Ports
  - Tip
  - Clamp
Designed with characteristics specifically for concrete raising.

- **Expansion Rate** – slower than spray foam to allow for more spread
  - 15 seconds to tack free
- **Adhesion** – designed **not** to stick to concrete or foundations to allow for lift
  - Develops skin that also prevents splitting = increases strength
- **2+ lb ft³ foam** (densities vary for different materials/applications)
- **Remains pliable for 15 minutes**
  - Avoids immediate final cure to allow for ‘dropping corners’
Foams designed for different applications (undersealing, joint stabilization, heavy lifting) will have different reactions, density and compressive strengths.

A standard slab of concrete requires 7 psi to lift
POLY HAS CHANGED THE BUSINESS ECONOMICS

- Capacity Of Work Per Day
- Aesthetic Acceptance
- Perceived Value
Why do you need to upgrade your Fusion Gun?

- Concrete Raising with polyurethane includes high amounts of back pressure that can back up material into your gun.
  - The current gun design is for spraying foam and not equipped to handle the back pressure

- The mechanical upgrade is designed to handle back pressure:
  - Avoid downtime from cleaning
  - Avoid re-drilling and installing injection ports when repumping
  - Combines the benefits of an air purged gun and mechanical
EXAMPLES-JOINT STABILIZATION
EXAMPLES-SLAB VIBRATION
EXAMPLES-ROADWAY STABILIZATION
EXAMPLES
MACHINE BASE STABILIZATION
Technology Has Improved the Economic Viability of Raising Concrete with Polyurethane foam.

Diversifying your business to add concrete raising is easy and inexpensive.

A Polyurethane Concrete Repair Division Can be Highly Profitable