The Fort Miller Co., Inc.

Super-Slab® Precast Pavement System
I-165 SB
Service Road Left Turn lanes

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The Fort Miller Co., Inc.
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• Located in upstate New York
• Transportation products
  – Highway barrier
  – Precast retaining walls
  – Bridges
  – Precast pavement slabs
• Specializing in accelerated bridge construction
• Developer of the Super-Slab® Precast Pavement System

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Precast Concrete Pavement Slabs = Overnight, Durable Repairs in
Work Windows as Short as 5-8 Hours

200,000 ADT
I-15, Ontario, CA

145,000 ADT
I-287, Tarrytown, NY

180,000 ADT
I-66, Fairfax, VA

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Precast Pavement Emulates Cast in Place

• Full Bedding Support
• Load transfer Dowels
• Slab Top Surface Geometry

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Super-Slab® System – Bottom Slots

- Slab-on-grade system; slabs typically set on an accurately-graded granular base
- Standard dowels and tie bars (JRCP)
- Precision grading equipment
- Built-in bedding grout distribution
- Planar and non-planar (warped) surfaces
- 28,000+ slabs & 3,000,000+ SF INSTALLED
- Industry-leading experience

110+ projects, 47 lane-miles completed in 19 States + ON & QC, 30 Owner Agencies

Super-Slab® Installations

47+ Lane Miles, 3+ Million Sq Ft, 28,000+ Slabs
110+ projects in 19 States and 2 Provinces, 30 Agencies

Super Slab Technology Transfer

On a Typical Project:
- FMC licenses the Super Slab Technology to local precasters
- FMC generates the shop drawings
- FMC provides the formwork to the precaster
- FMC provides grading equipment and field support for the installation contractor

Super-Slab® Load Transfer Dowel System

- Dowels engage slots in adjacent slab
- Pump dowel grout into ports
  - Grout reaches 2500 psi in about 2 hours
- Fill slots and joints between slabs
- Dove-tail slot resists dowel bar pop out

Two Slab Types

- Single Plane
  - Slopes of opposite sides are equal
- Warped Plane
  - Slopes of opposite sides are not equal, OR
  - One corner is up, or down, from the plane formed by the other three corners

Small Scale Grading

Rail Supported and Hand Operated

Auger H.O.G.
Hand Operated Grader (H.O.G.)
Mini-H.O.G
Shutter Screed
Automated Grading Equipment:
The "Wave of the Future" That's Here Right Now
- For large scale grading
- Grades single and warped planes
- Crawler skid-steer, dozer, or other equipment is controlled by robotic total station

Uses same surface model as FM HOG

Achieving Full and Complete Bedding:
A Two - Step Process
1. Accurate Grading
2. Bedding Grout Fills Any Voids

I-165 SB Service Road Left Turn Lanes
- Development of the Super Slab System has been driven by the need for durable repairs to concrete pavement, in short work windows, frequently in tightly-constricted work zones
- To maximize the quantity of slabs installed per shift, methods of accurately grading a fine granular subgrade were developed to achieve essentially full support of the precast slabs so that they could support traffic immediately, before grouting
- Grouting was typically done the following work shift
- I-165 plans and specs required a minimum of ½" of bedding grout beneath the slabs. ALDOT was concerned about a fine granular bedding material pumping out from beneath the slabs; Cement-Treated Sand was proposed and accepted as a substitute

FM Lifter
Developed and Tested by Fort Miller
The FM Lifter uses the Dayton Superior P-1, 1-1/4" diam. insert in combination with various plate sizes and thicknesses to accommodate various loading conditions

Indicators for Long Life - Full-Scale load testing in California
Falling Weight Deflectometer
- Test results show no cracks or distress

Heavy vehicle simulator
- 143 Million ESALs (100 KN Load)
- 4.3 Million Cycles

Intermittent Repairs (CPR)
I-95, New Rochelle, NY
I-15 Salt Lake City, Utah
I-90 Albany, NY
I-678 Vine St Expressway Philadelphia, PA
Continuous Repairs
Tappan Zee Bridge Toll Plaza

3,000 SF / 8 Hour Shift
(Within ± 1/8")

Open for Rush Hour
(135,000 ADT)

Mainline I-15, Ontario, CA
(200,000 VPD)

Continuous - Mainline Placement

Ramps
Oak Brook, IL
Brooklyn, NY

Brooklyn Bridge Approaches

Intersections – Replacing Composite Pavement, – Rotterdam, NY
New & Old
Complex Geometry
Undercuts
Replaced in 17 Nights

NJDOT Bridge & Approach Slabs
US 46 Over Broad St. - Clifton, NJ

- Bridge replaced over two weekends
- Two-span (40.2', 40.2') continuous, 28.76° skew
- Precast Approach Slabs - tied to prefabricated bridge units

Brooklyn Bridge Approaches

Engineers: URS & Weidlinger

Grading
Looking toward Manhattan

Looking toward Brooklyn
Bus Pad, Hollywood & Santa Monica Blvd.  
North Hollywood, CA

Lincoln Tunnel – NJ Approach  
The Port Authority of NY & NJ

KDOT US 73 Mainline & Intersections Leavenworth, KS

I-77 East River Tunnel  
WV DOH Bluefield, WV

I-676 Vine St. Expressway  
Philadelphia, PA  
PennDOT District 6-0   85 slabs

LA 169 at I-20 EB  
Ramp Replacement
Other Places for Fast-Track Precast Pavement

- Instrumented pavement
  - Toll booth treadles
- Weigh-in-Motion Stations
- Removable - re-usable pavement panels over utilities (intersections)

Instrumented High Speed EZ Pass Slabs

Spring Valley, NY

Alabama I-165 SB Service Road Left Turn Lanes

Slabs Cast at Universal Precast Theodore, AL

Jobsite Installation: Grading Existing Base Material

Existing Limestone Base Material was very hard; +/- 1” had to be removed to provide room for ½” Cement-Treated Sand, ½” underslab grout, and 9” precast slabs
½” Thick Layer of Cement-Treated Sand, (1:6 Ratio) Used as Slab Support, Over Existing Limestone Base

Cement and Sand were mixed on-site using a Bobcat-mounted Mixing Auger Bucket, then Distributed onto the subgrade.

Grading the Cement-Treated Sand

Bedding Grout material cost: $2.22/SF
Grading Labor + Eqpt. Cost: $0.35/SF
Therefore, it is economical to put effort into precision grading to save on grout material costs.

Setting Slabs

Jacking Slabs to Final Elevation
Grouting Slabs

Jacking bolts hold slabs ½” above subgrade.

Keys to Success

Good engineering
Open minds
Real partnering

www.super-slab.com
Thank You

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