FAST TRACK CONCRETE PAVEMENTS

“Airport authorities and road agencies face major challenges from increasing traffic volumes on existing airports, roadways and urban streets. Agencies must repair or replace deteriorated aging pavements while maintaining traffic on these structures. Traditional pavement construction, repair or replacement solutions are no longer acceptable due to increasing public impatience with traffic interruption.”
FAST TRACK CONCRETE PAVEMENTS

“Traditional solutions are especially inappropriate in urban areas where congestion is severe. Fast-track portland cement concrete (PCC) pavement construction resolves these problems by providing high-quality, long-lasting pavements with quick public access. Fast-track techniques are suitable for new construction, reconstruction or resurfacing projects.”

“Fast-track concrete pavement construction entails many methods for accelerating construction. Traditional acceleration methods include time incentives or disincentives for project completion. “

FAST TRACK CONCRETE PAVEMENTS

“Using fast-track concrete construction techniques, a contractor can often complete a project without increasing crew size or changing normal labor schedules.”

“To build a fast-track project, both the contractor and agency must make some changes to traditional construction specifications and processes. Often this entails high-early-strength (fast-track) concrete, but also can include revising: opening criteria, construction staging, joint construction, and worker responsibilities.”
PROJECT APPLICATIONS

“Fast-track construction techniques allow engineers to consider concrete for projects thought unfeasible because of lengthy concrete cure-times. Some specifications require cure intervals from five to fourteen days for conventional concrete mixes. With fast-track techniques, concrete can meet opening strengths in less than 12 hours.”

Minimize Public Complaints

![Slow for the Cone Zone](image)
Minimize Traffic Disruption

Minimize Business Disruption
Runway Replacement – Repairs
Meets P-501 Specifications

Planning

• Goal is to reduce the construction period
• Develop a traffic handling plan before construction
• Minimize traffic disruption
• Agencies benefit from curtailing of public complaints, business impacts, user delay costs, and traffic control costs.
• Contractor benefits from reducing worker's exposure to accidents, and reduction of time equipment is needed at a project.
• Option for minimizing traffic disruption by shortening lane closure time
Planning

• Assessment of Project Feasibility
• Development of Construction Staging Plans
• Access for Local Traffic
• Local Business Disruption
• Utility Work
• Construction Equipment Access and Operation
• Pavement edge drop-off requirements
• Crossovers that disrupt both directions of traffic
• Detour routes can suffer damage & congestion from prolonged construction zone detours

Specifications – End Results

• Implement partnering-based project management
• Implement lane rental charges
• Allow night construction – Minimize impact to public and businesses
• Allow contractor to use innovative technologies
• Specify a concrete mix for varied strength development
• Provide options to contractors, not step-by-step procedures
• Use time of completion incentives and disincentives
Specifications – End Results

• Analyze local cement performance
• Analyze local SCM performance
• Analyze local aggregates
• Utilize current admixture technology
• Analyze long term durability testing – Freeze / Thaw testing, Rapid Chloride Permeability, Shrinkage Values
• Develop Compressive / Flexural Strength Performance
• Specify Strength Requirement vs Time

Specifications – End Results

• PCE – Polycarboxylate Ether HRWR – Synthetic High Range Water Reducer for Slump / Workability
• Non-Chloride Accelerator – Accelerator for Strength Gain
• Substitute combination of NCA / Calcium Nitrite Corrosion Inhibitor
• Hydration Control / Workability Retaining Admixture
• Air Entrainment
Specifications – End Results

• Specify Curing Materials / Blanketing
• Specify curing cylinders / flexural beams with in-place concrete

Specifications – End Results

• Monitor concrete temperature and understand relationship of ambient, subgrade, and mix temperature on strength gain
• Elevate concrete temperature at batch plant
• Monitor concrete temperature vs strength gain - Maturity
Specifications – End Results

• Flexural Strength Testing for Acceptance

Specifications – End Results

• Specify Flexural Strength for Traffic Opening
Specifications – End Results

• Dense / Uniform Concrete

Strength on Demand Concrete

• Full Depth Pavement Replacement
Strength on Demand Concrete

• Full Depth Lane Replacement
Strength on Demand Concrete

- Overlays

Strength on Demand Concrete

- White Topping
APWA – CRMCA Strength on Demand Demo
10:00 AM – Where’s the Truck?

APWA – CRMCA Strength on Demand Demo
APWA – CRMCA Strength on Demand demo

APWA – CRMCA Strength on Demand Demo
APWA – CRMCA Strength on Demand Demo
10:05 AM – Poured Out

APWA – CRMCA Strength on Demand Demo
10:20 AM – Finish Trowelling
APWA – CRMCA Strength on Demand
10:30 AM – Broom Finish

APWA – CRMCA Strength on Demand
11:00 AM – Adcock Concrete Crew on Slab
APWA – CRMCA Strength on Demand Demo
4:00 PM – Ready Mix Truck Parked on Slab

Strength on Demand – Adcock Concrete Slab
CRMCA Western Marketing
Strength on Demand Concrete

- Alternative to existing systems
- Slump/workability control
- User-friendly - easy to place and finish
- Proven technology - performance history
- No post-grinding for ride quality
- Minimized cracking potential
- Economical - saves tax payers money
- Strength performance met consistently
- Maturity concept - simple, economical
- Open to traffic/airplanes sooner - reduced lane closure time

End Results – CRMCA Western Marketing

- 3 Months Concrete Mix Testing with local materials
- 3000 PSI @ 6 hours targeted

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<th>6x12 – 6 Hours</th>
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CRMCA Western Marketing

• Special Thanks to the following for their efforts

Doug Wolf – Whitewater Building Materials
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Mike Adcock – Adcock Concrete Construction
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