



Steps for Development of Successful Precast Pavement Projects

HFL Showcase I-280 Project,

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The Reality of Precast Paving

- It's new and unfamiliar to most everybody!
- There are few design guidelines to go by
- Most engineers, contractors and inspectors have never seen the process
- Specialized equipment is not yet widely available
- Contractors may resist it
- Precast pavement costs more than conventional cast-in-place pavement



Two (overwhelming) Reasons for Precast Pavement

- When work windows are very short
- To accomplish long lasting repairs in high traffic areas



Pre-Design



Pre-Design

- Establish need based upon traffic volume
 - Determine allowable work window
 - Consider all other pavement alternatives
 - Especially less costly ones
 - Determine life cycle costs of each option
 - Determine feasibility of precast
 - Develop an overwhelming case for precast pavement on that project
- for presentation to stakeholders**



Determining Feasibility of Precast Pavement

- Determine technical feasibility
 - Does the system actually work?
- Determine economic feasibility
 - Determine all costs of Slabs, grout, bedding material, post-tensioning (if used)
- Develop a realistic installation cost
 - Solicit input from previous users & contractors
 - Use realistic production rates



Develop Consensus Between Stakeholders

- **Internal Agreement**
 - Present case to personnel from Materials, Design, Construction, Program Managers and Top Management
- **Inform industry stakeholders (contractors)**
- **Discuss with public community**
 - Disclose work windows and MPT issues
 - Be up front about higher costs



Final Design Phase



Finalize Construction Feasibility

- Develop detailed installation/MPT plan
- Determined applicability of each System for that particular project
- Make sure there are qualified precasters in the area
- Make sure production rates are consistent with required MPT plan



Develop Required Pavement Details

- For JRCPC pavement show:
 - Slab thickness, lengths, widths
 - Size & spacing of dowels and tie bars
 - Joint details
- For post tensioned systems show:
 - PT requirements – strand spacing & size
 - Show stressing sequence
 - Slab length, width, thickness & mild steel reinforcement details



Develop/Select Workable Specifications

- Consider existing specifications that have worked on previous projects
 - **Make sure pay items are clearly delineated!**
- Develop job-specific Special Provisions
 - Delineate responsibility for gathering field data
 - Clearly present work window rules



Way-Pre-Bid Phase



Way-Pre-Bid Activity

- Discuss rapid repair options with industry – at annual joint DOT/Contractors Association Meetings
 - Let contractors know reasons why precast will be used
 - Very tight work windows
 - For long life pavement in high traffic, inaccessible areas, etc.
 - Let contractors know it is only a “tool” for certain locations, not a major shift in pavement types



Pre-Bid Phase



Pre-Bid Activity

- The DOT should discuss use of precast pavement in pre-bid meeting with prospective bidders
 - Explain reasons for use (MPT, long life, etc.)
- Suppliers (of slabs) should meet with all contractors to acquaint them with:
 - Collecting field data
 - Fabrication time
 - Shipping constraints
 - The entire installation process



Pre-Construction Phase

(before any fabrication)



Pre-Construction Meeting

- Assemble System Designer, precaster, contractor, surveyor, DOT design review personnel, Engineer-in-Charge, inspectors
- Discuss collection of field data
 - “x”, “y”, “z” of all utilities, matching edges, etc.
- Discuss shop drawing review process



Pre-Construction Meeting (cont.)

- **System Designer should present:**
 - Man power requirements for each operation
 - Equipment and material needs
 - Key saw-cutting requirements
 - Key placement techniques
 - Key grouting issues
- **Discuss acceptance criteria**
 - Establish match tolerances



Pre-Installation Phase

**(within one week before
installation)**



Pre-Installation Meeting (and Training)

- Assemble System Designer, precaster, contractor's superintendent & foreman, grout foreman, inspectors
- System Designer should review entire installation process in detail
 - Make sure everyone understands the process
- System Designer should conduct grout training



Installation Phase

(show time)



On-Site Installation Training

- Don't tackle too many slabs the first night!
- System Designer should monitor and train each crew (including inspectors)
- Make sure everyone understands the process



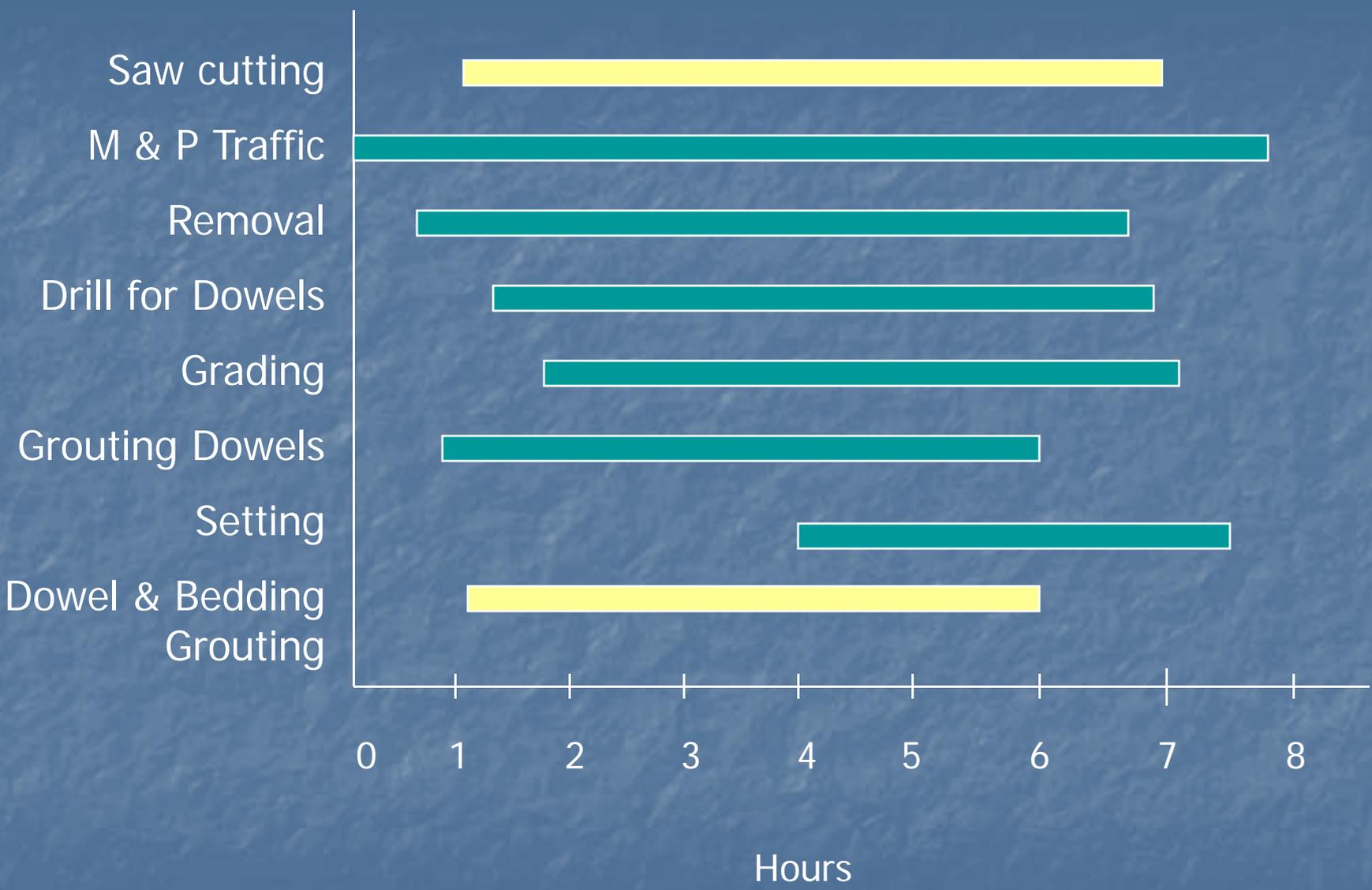
Realities

- There is a learning curve!
 - Expect it to take at least one week (possibly more) before full production is realized
- Precast slabs are not “swiss watches”
 - Recognize and understand the tolerances
- Weather happens!
 - Precast slabs can be set in wet and colder weather – use common sense!



Keys For Increased Production

- Establish work crew with proper skills
- Keep crew together after it has been trained
- Keep “on” the saw cutter
- Check hole sizes to preempt problems
- Maximize work windows
 - Go for “one more slab” each night



What's Needed for Rapid (Overnight) Repair

Actual Production Rates on (Selected) Completed Projects

PROJECT	TYPE	WORK WINDOW	TOT. NO. SLABS	SLABS PER SHIFT	AREA PER SHIFT (SF)
I-287(TZ)	CONT.	8 HOURS (DAY)	1062	20 – 24	3064
i-90 ALBANY, NY	INT.	8 HOURS (NIGHT)	564	12-15	1,500
I-95 NEW YORK	INT.	5 HOURS NIGHT	800	6-8	960
MONTREAL	CONT.	WEEK END	193	58	9,280

Keys to Success

(Still More to Learn)

- *Good Engineering*
- *Open Minds*
- *Real Partnering*





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