



Lean Construction Institute UK



LDI-UK Summer 2013
Lean Logistics
in Integrated
Project Delivery

***“Lean”* in the Delivery of Major Railway Construction Works**

Richard Palczynski, Bechtel Ltd





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“...the smaller your window of opportunity...

**...the more important being
'LEAN' becomes...!!!**





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...my background

Chartered Civil Engineer 2002

Six Sigma Black Belt 2003

Yellow Belt Instructor 2004

Gold Award for Excellence in 6 σ 2007

Milton Keynes DPM





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The Railway Industry

RULE NUMBER 1 – You do NOT delay the Train Timetable

- Access
 - Typically 33hrs/weekend on 2 lines
 - Intermittent mid-week access (7hrs)
 - MAJOR works confined to Bank Holidays, Easter & Christmas





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REAL LIFE Examples

- The Planning Process
 - The Readiness Reviews, Risk Reviews...
 - Easter 2008
- Getting on track
- Switches & Crossings







Output S

Scheme as per SRA Strategy and ORR settlement

- Life expired signalling and P-way renewals.
- 12-car platform extensions.
- New 60mph Bletchley South junction.
- Bedford line connection simplification and new independent platform.
- Wolverton centre turn-back facility.
- Existing Milton Keynes re-signalled.
- All works to be completed by December 2008.

Current Scheme

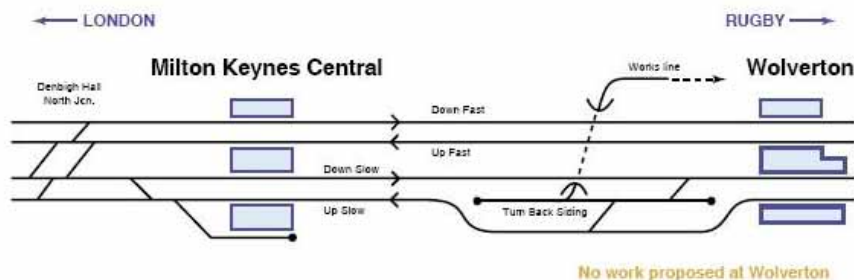
- Scope increased in line with the additional Milton Keynes functional drivers.
- All SRA scope covered except Wolverton centre turn-back facility which is superseded by Milton Keynes remodelling.
- Signalling resource focus on Milton Keynes for December 2008 completion.

Key Dates

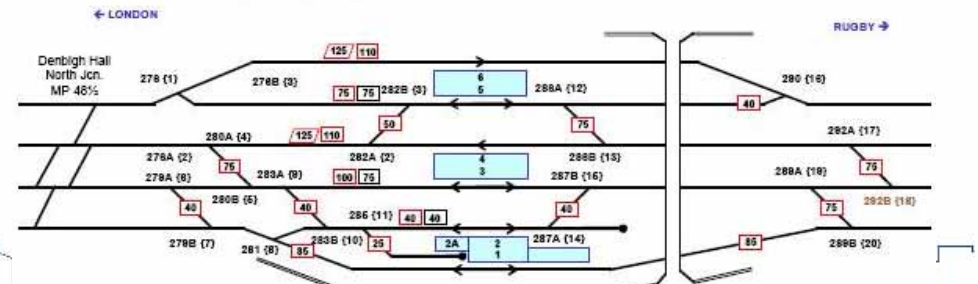
2007/08

Stage 0	De-Veg, Construction of Haul Road	Jun-07	Achieved	✓
Stage 1	Install 280pts, Demolition OB166	Xmas-07	Achieved	✓
Stage 2	Ballast Prep, Bulk Earthworks	Jan-08	Achieved	✓
Stage 3	Gantry Erection, Replace OB166	Easter-08	Achieved	✓
Stage 4	Install 289pts, Ballast renewals	May-08	Achieved	✓
Stage 5	Install 292pts, OLE Southern Boosters	Jun-08	Achieved	✓
Stage 6	Install 290pts, complete Platform 6	Jun-08	Achieved	✓
Stage 7	Opening of new Down Fast	Jun-08	Achieved	✓
Stage 8	Install 282pts & 286pts, build new Platform 1	Aug-08	Achieved	✓
Stage 9	Install 279pts & 283pts, Open Bay Platform 1	Aug-08	Achieved	✓
Stage 10	Install 287pts, complete major OLE works	pkSep-08	On Target	
Stage 11	Install 276pts, complete Platform 2A	Oct-08	On Target	
Stage 12	Install 281pts	Nov-08	On Target	
Stage 13	Complete new track alignment to Platforms 1 & 2A	Dec-08	On Target	
Stage 14	Final Commissioning	29-Dec-08	On Target	

Existing layout Milton Keynes & Wolverton



Final layout Milton Keynes Central





Key Lessons

1. You can't spend enough time planning
2. It takes discipline to apply the rigour
3. It's useless unless **EVERYBODY** is briefed on the plan



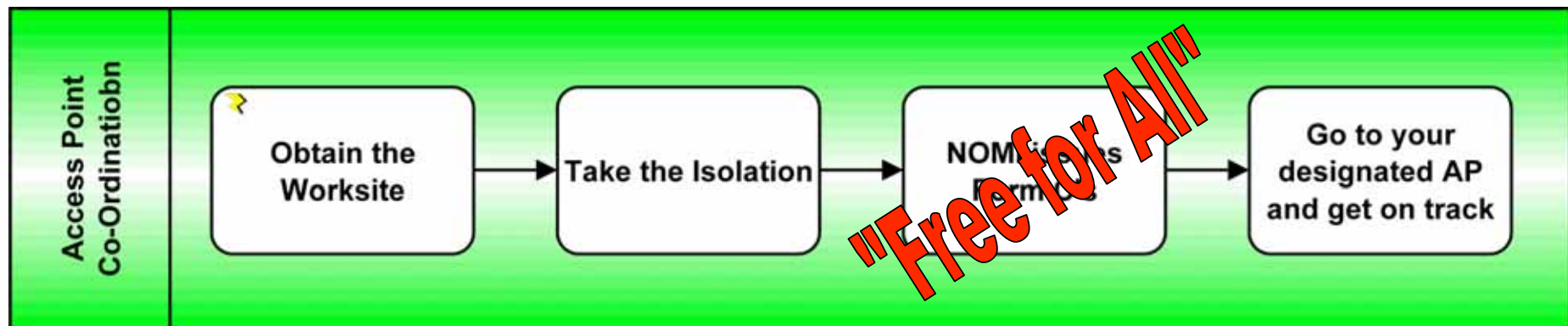
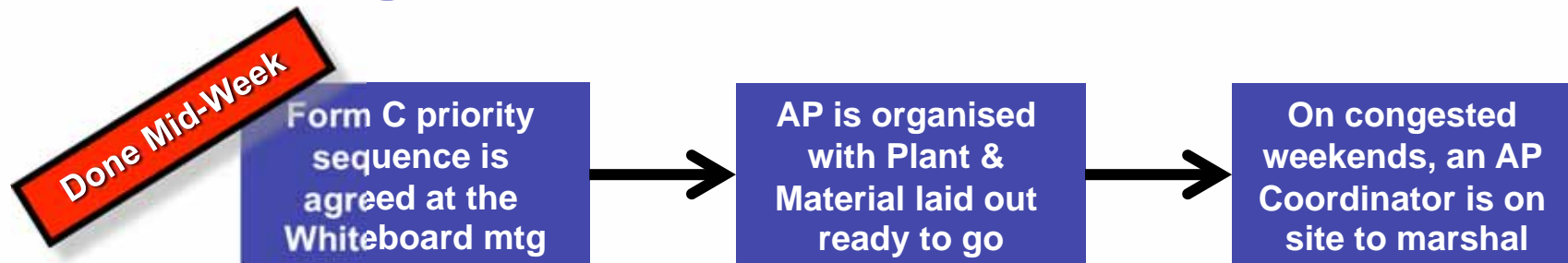


Getting on Track





Getting on Track





Getting on Track

1. The problem was a real headache
2. ...but we had to 'decide' to fix it...
3. The fix was REALLY simple
4. It wasn't data driven, it was about FLOW and not wasting time...





Switches & Crossings



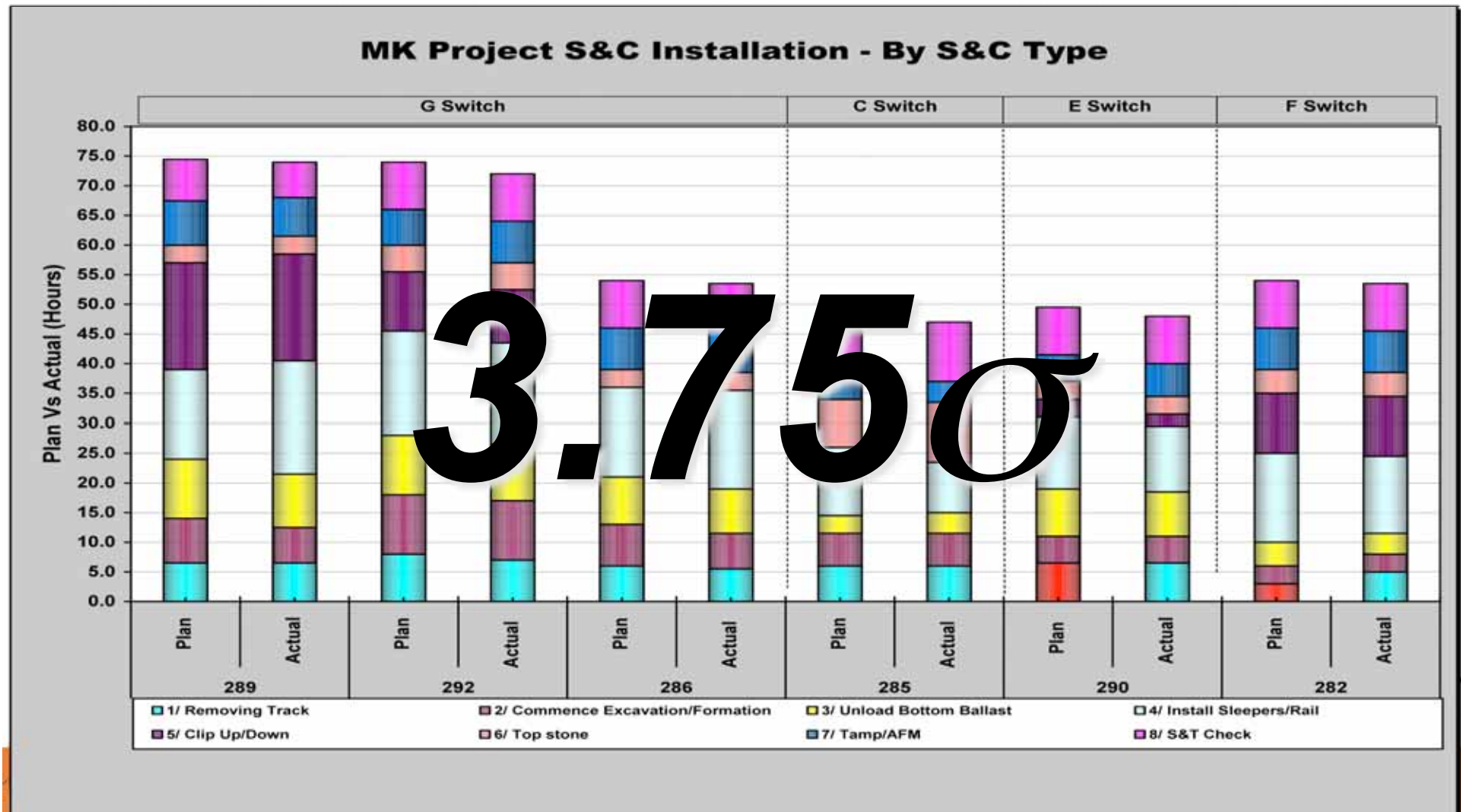
8 Basic Process Steps

1. Remove the track
2. Dig to formation level
3. Lay Bottom ballast
4. Lay the new panels
5. Clip everything up
6. Lay Top ballast
7. Tamp the layout for line & level
8. Weld / S&T connections





Switches & Crossings





Switches & Crossings

1. Critical Path for the Project
2. Logistically VERY challenging
3. No room for mistakes
4. The 'LEAN' approach works...
5. This weekend is our last installation, so wish us good luck!!





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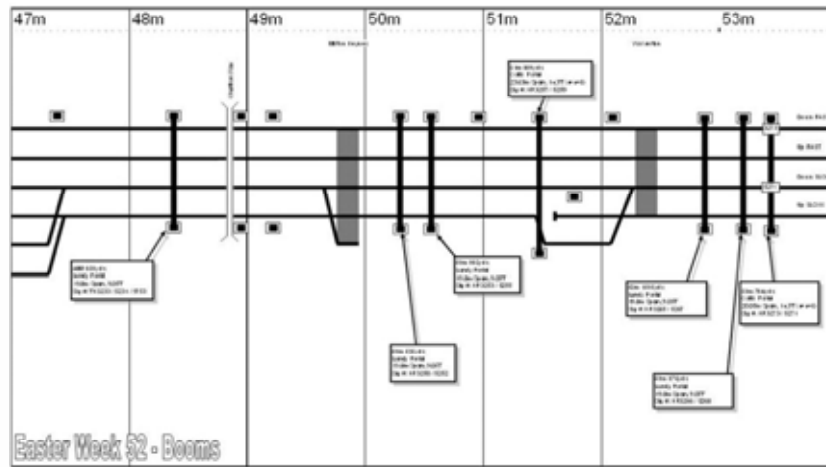
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Questions ?

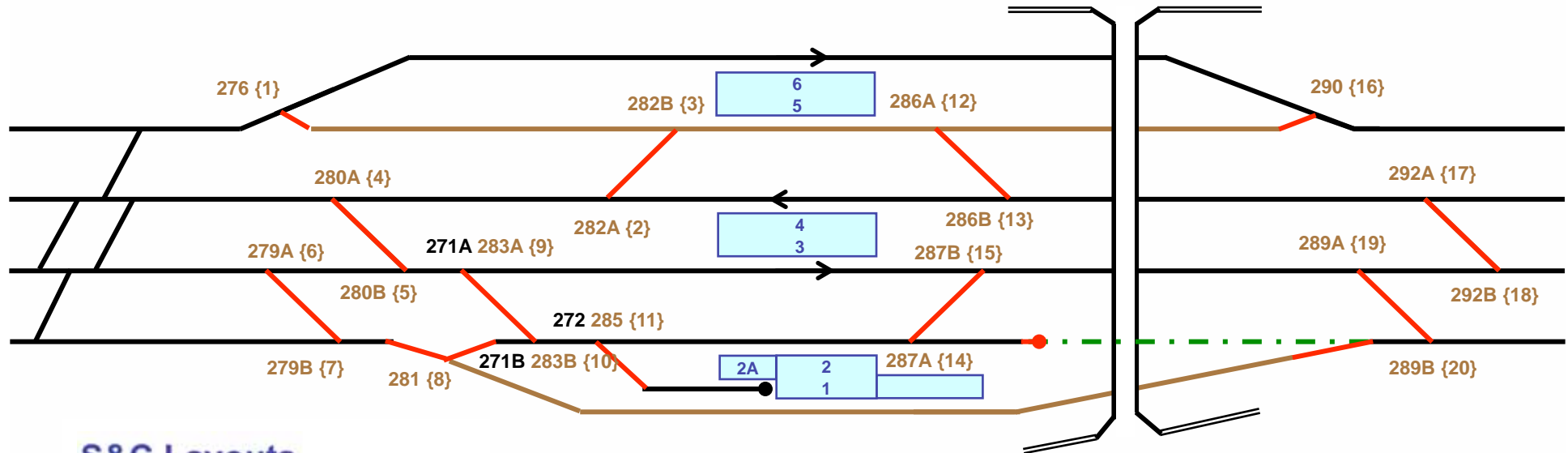




Key Decisions

1. Work in 1 sequence (Nth 2 Sth)
2. Separate teams
 1. Erection team
 2. Materials Delivery team
3. Get components as close as pos.
4. Align shift patterns
5. Control Room





S&C Layouts

- | | | | |
|----|-----|-----|-----|
| 1. | 280 | 7. | 286 |
| 2. | 285 | 8. | 279 |
| 3. | 289 | 9. | 283 |
| 4. | 292 | 10. | 287 |
| 5. | 290 | 11. | 276 |
| 6. | 282 | 12. | 281 |

