

An abstract wireframe graphic of a bridge structure, featuring a series of interconnected triangular mesh elements that form a flowing, organic shape. The structure is composed of thin gray lines on a white background, with a prominent blue horizontal band across the middle containing text.

Streamlining Self-Perform Detailing the Lean Way – CS125490

Mark King

VDC Manager – Skanska Seattle

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Speaker: Mark King

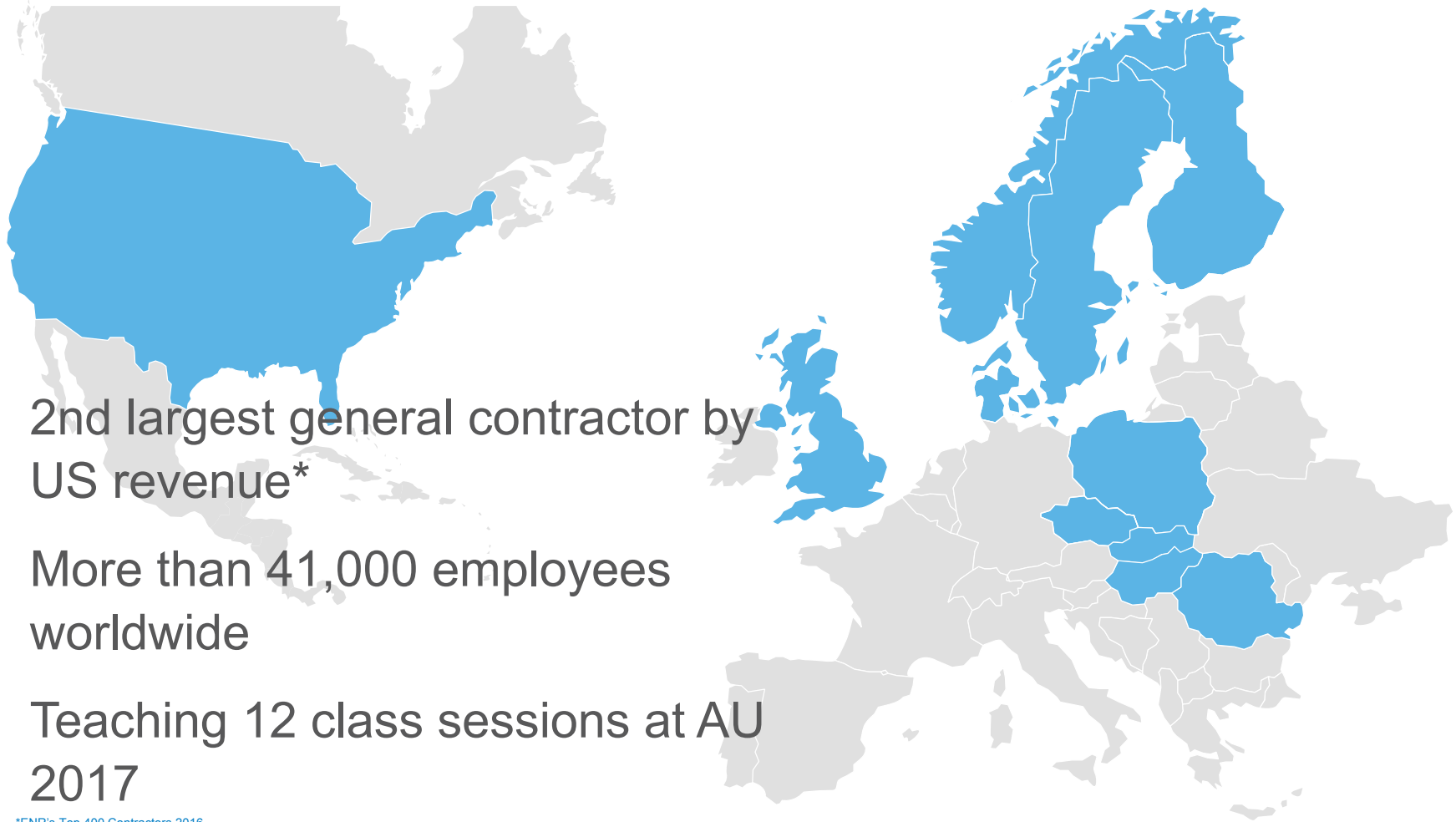
Mark has been working in design and construction for 33 years with a focus on construction detailing and the process surrounding detailing for the past 19 years. Mark transitioned from traditional 2D detailing in 2000, to 3D modeling of structures and systems, and in 2005 began using Revit for construction detailing. Mark became the BIM Manager, and then Director of BIM Services for a Seattle builder, and left that firm in 2011 for a three year stint in the Middle East. He returned in 2014 and has been the Seattle VDC Manager for Skanska since. Mark has taught BIM tools and processes for South Puget Sound CC, the Association of General Contractors, and as a guest speaker at the University of Washington.

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Who is Skanska?

- 2nd largest general contractor by US revenue*
- More than 41,000 employees worldwide
- Teaching 12 class sessions at AU 2017

*ENR's Top 400 Contractors 2016

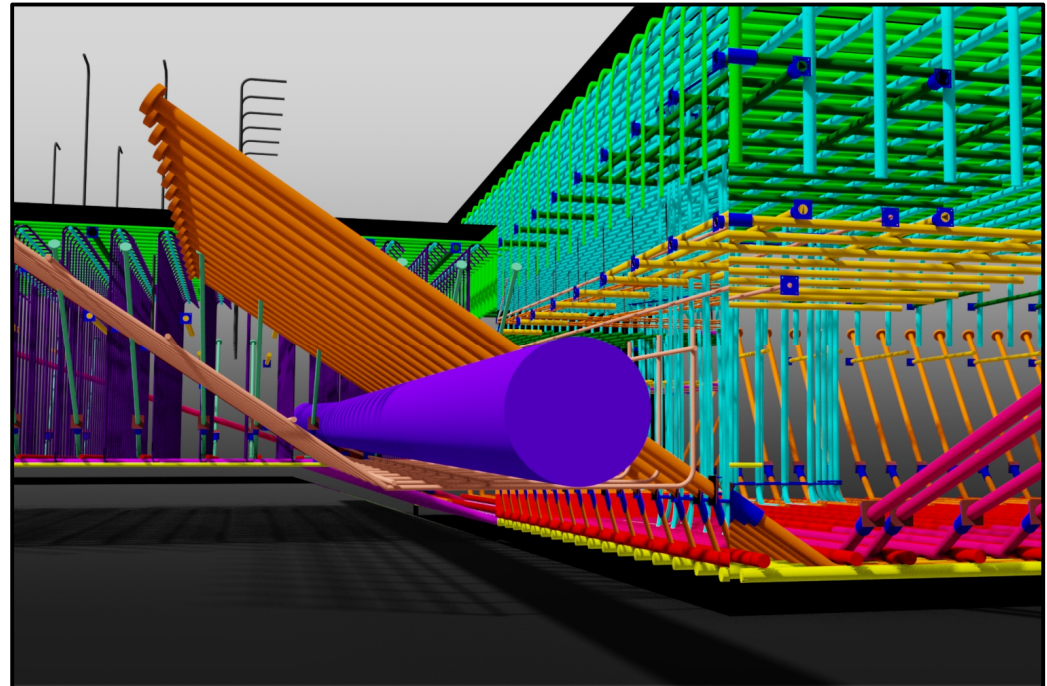


Class summary

Using a Lean process called a Kaizen Event, Skanska gathered a team of in-house stakeholders to develop a workflow for their self-perform Revit detailing. This class will discuss; early engagement with project team to develop detailing scope and budget, meeting with designers to understand their models and relay how you intend to leverage them, lift drawing planning, embed procurement strategies, lift drawing formatting and scheduling, QA/QC of lift drawings, and management of drawings with the field.

Key learning objectives

- Acquire tools for engaging project teams early to start VDC planning and budgeting
- Lift drawing planning and scheduling tools
- Proven methods for lift drawing QA/QC
- Lift drawing management



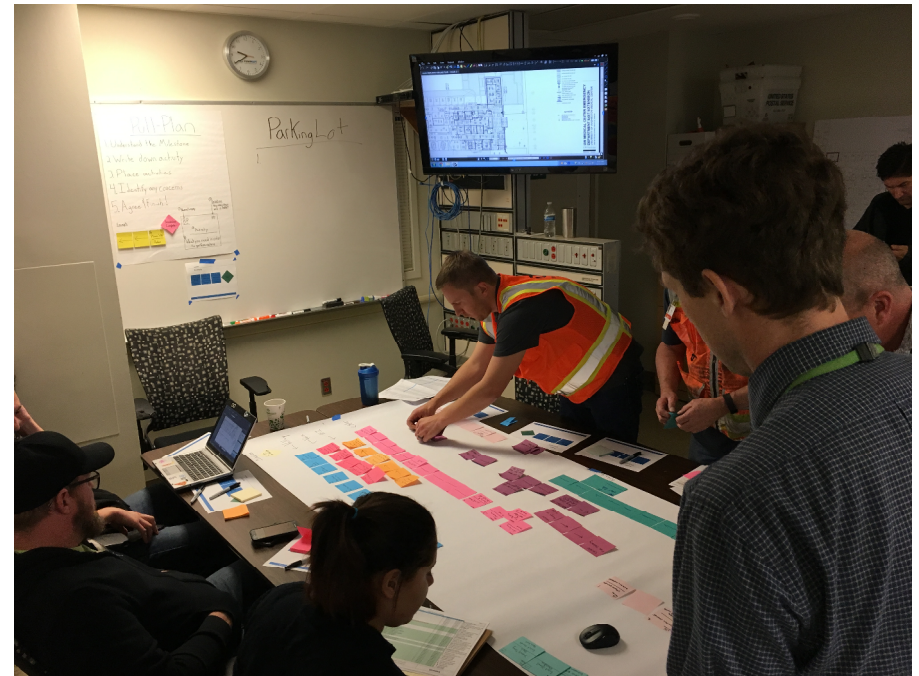
Kaizen Event – Plan/Do/Check/Act

- Kaizen is derived from the two Japanese words meaning “Good” and “Change”
- Seeks to achieve small, incremental changes in processes in order to improve efficiency and quality.
- One day workshop that defines the process’ challenges, determines root cause, and redefines the new standard workflow



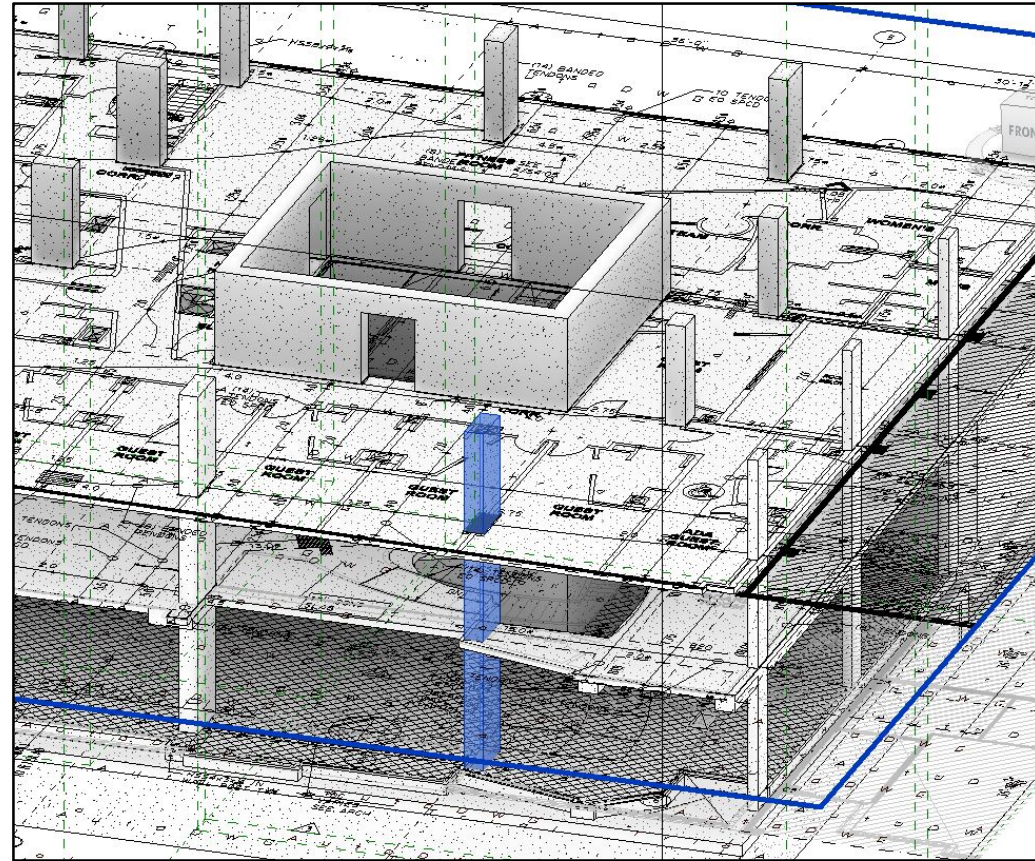
Kaizen Event – Plan/Do/Check/Act

- 3 VDC Staff
- 1 Project Manager
- 1 Estimator / Precon
- 1 Concrete Superintendent
- 1 Sr Superintendent (Process Owner)
- 2 Self Perform Superintendent
- 1 Lean Director



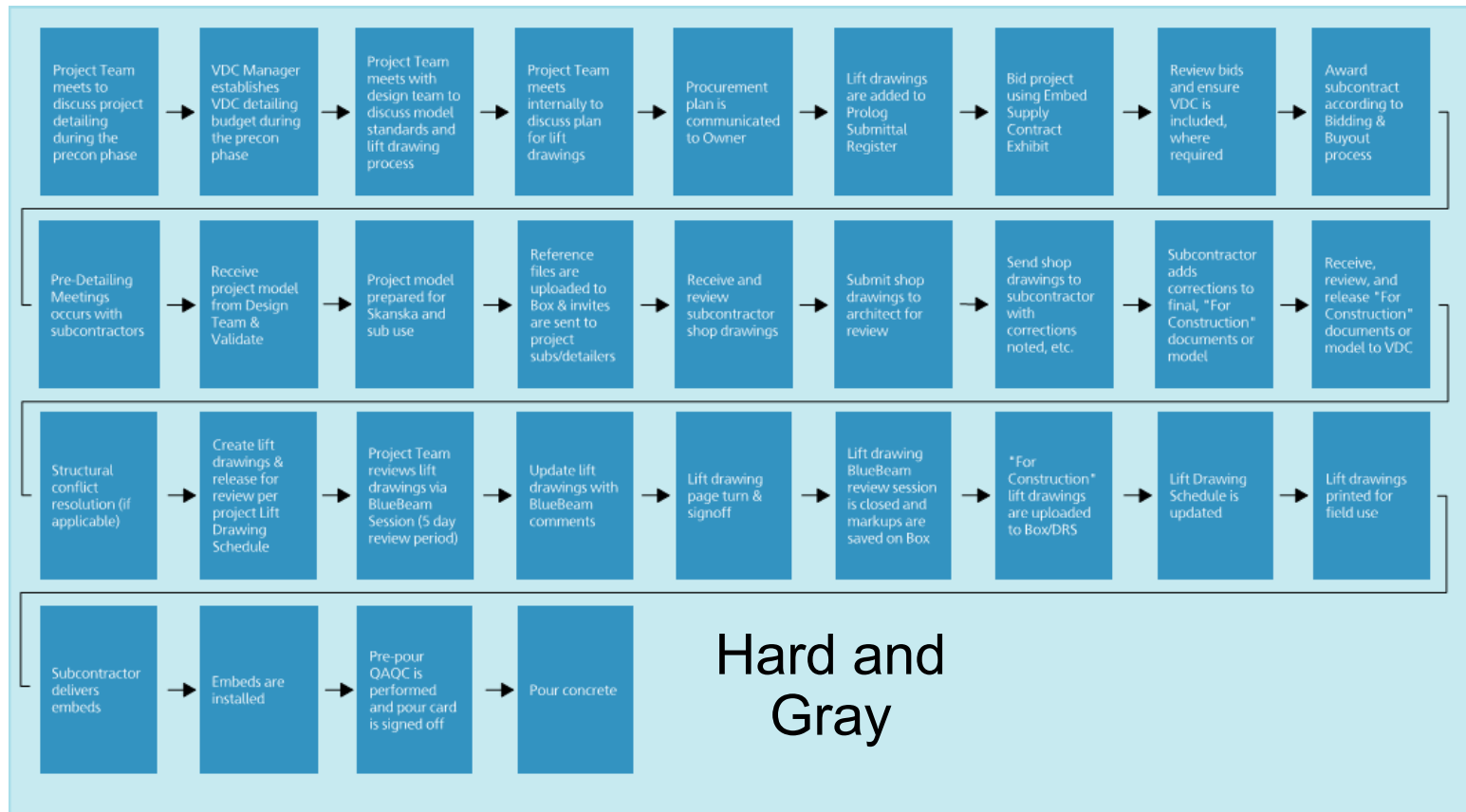
Challenges of self-perform detailing

- Insufficient budget and schedule
 - Often no input from VDC
- Keeping up with design changes
- Proper QA/QC process (Or no QA process!)
- Ensuring field crews have the latest information



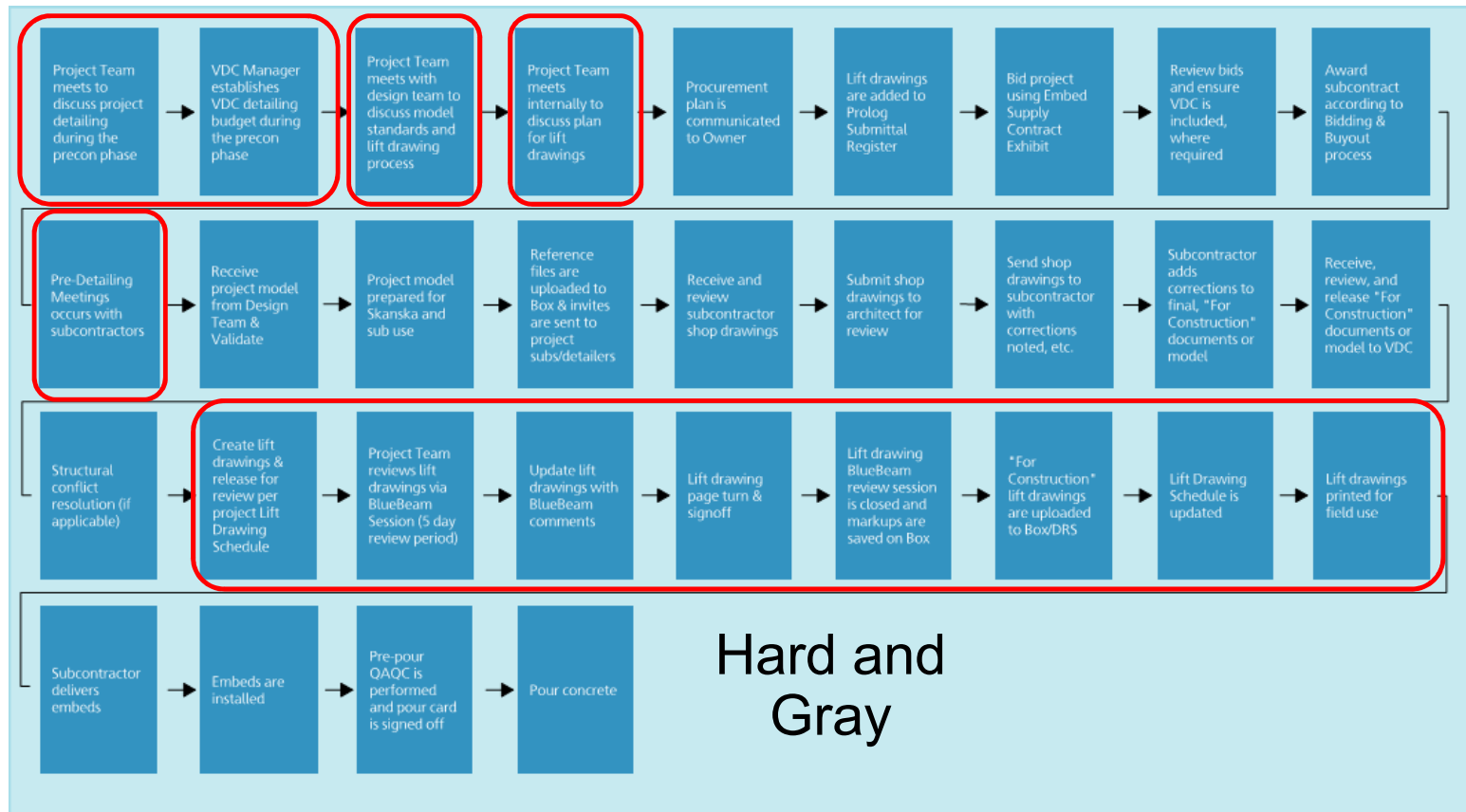
New detailing workflow

Project Award

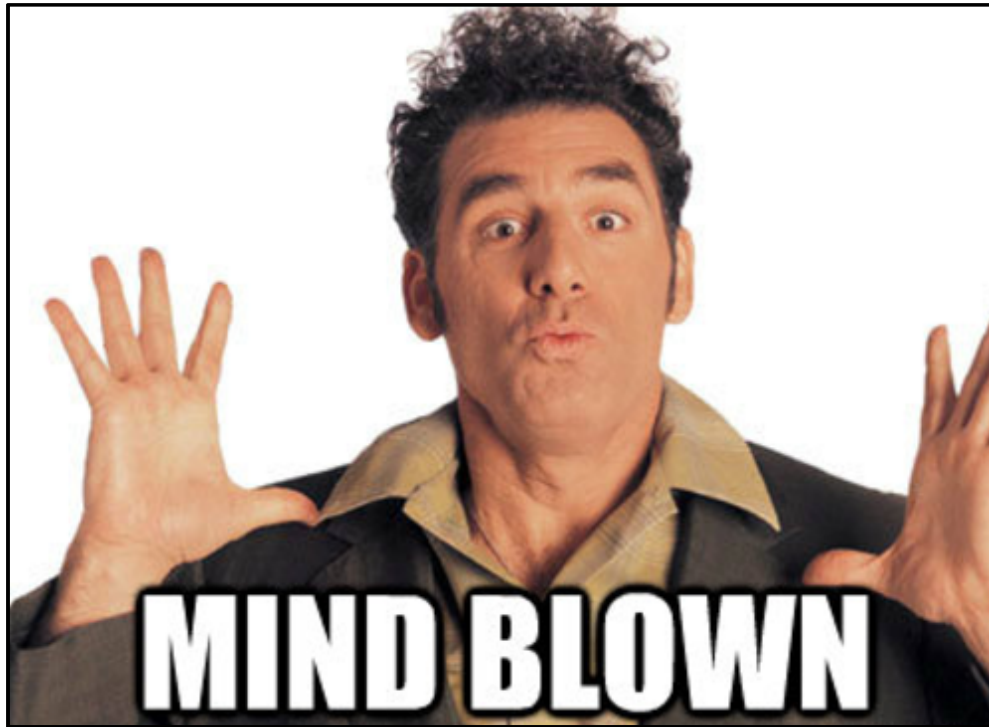


New detailing workflow

Project
Award



Early engagement with Project Team



Project Team
meets to
discuss project
detailing
during the
Precon phase



VDC Manager
establishes
VDC detailing
budget during
the Precon
phase

Early engagement with Design Team

- Develop a relationship with the design team
- Discuss design and construction modeling standards
 - Software/version/base point...
- Discuss lift drawing submittals
- Understand any concerns the design team might have

Project Team
meets with
design team to
discuss model
standards and
lift drawing
process

Project Team “Lift” drawing kick-off

- Develop lift drawing log and schedule
- Establish point person for QA/QC (Bulldog)
- Review Bluebeam review process
- Establish field and office embed “champions”
- Stop-the-line
 - Attendees, pour zones, pour schedule

Project Team
meets internally
to discuss plan
for lift drawings

“Lift” drawing creation and review process

- Create drawings per schedule incorporating all elements cast in concrete
- Close coordination with Project Engineers required
- VDC initiates Bluebeam Studio session and invites required QA/QC staff
- Typically five day turn around (or enter the Bulldog)

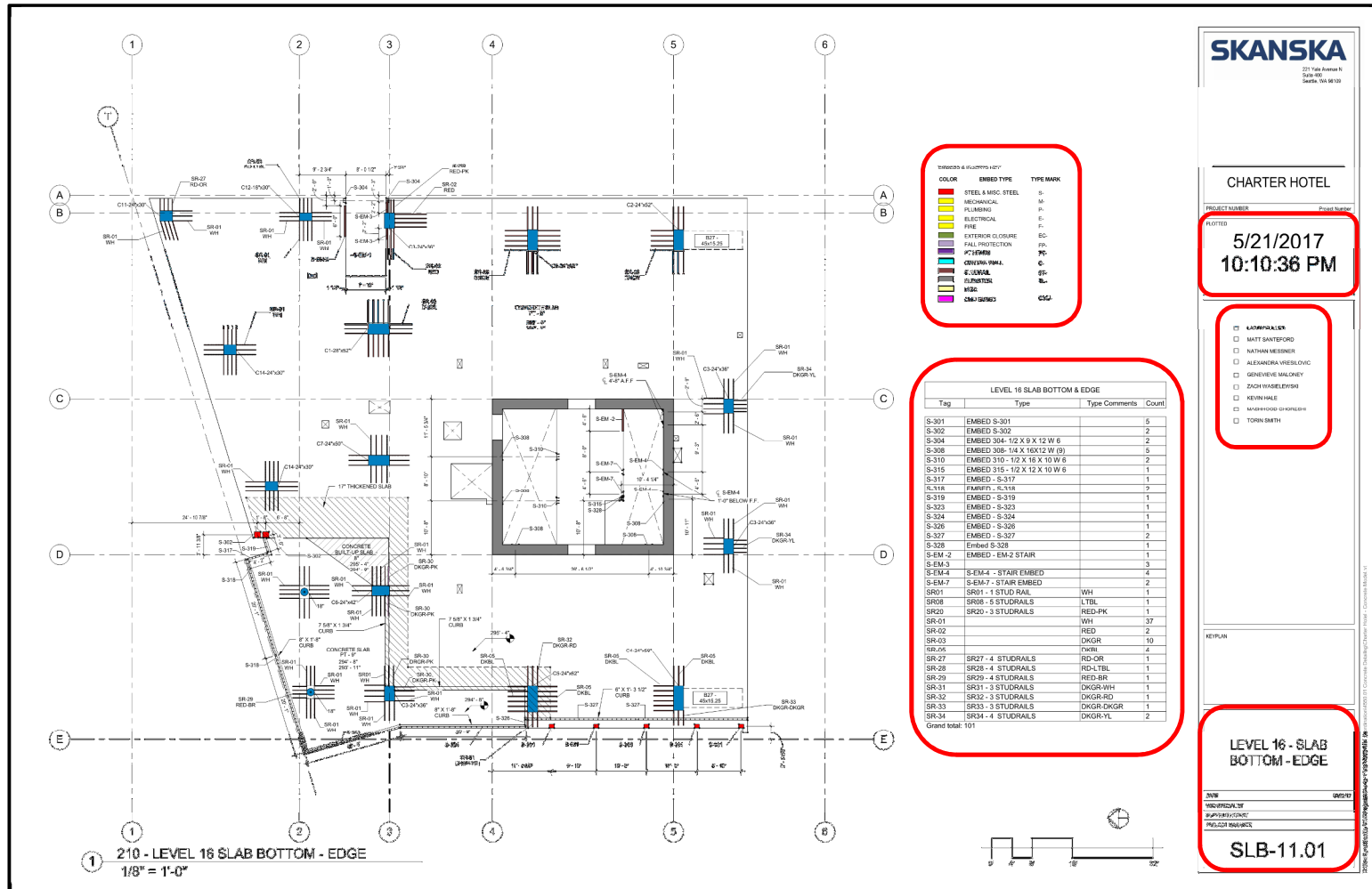
Create lift drawings & release for review per project lift drawing schedule



Project Team reviews lift drawings via Bluebeam Studio session (5 day review period)

Subject	Page Label	Lock	Status	Checkmark	Author	Date	Color	Comments
1 (1)								
Callout 1					brian.urban	4/10/2017 10:34:15 PM		Do we want to define "related specifications"?
2 (3)								
Callout 2					brian.urban	4/10/2017 10:38:57 PM		Is this typical to all bid packages?
Callout 2					brian.urban	4/15/2017 7:06:31 PM		Let's add 30min each day during safety week. I've had guys try and get an extra for that...
Callout 2					brian.urban	4/15/2017 7:32:38 PM		Need to add asbestos training due to existing structures.
3 (3)								
Highli...	3				brian.urban	4/10/2017 10:40:40 PM		CK doesn't have any. Are we? If so, what? (See email with Edwina)
Callout 3					brian.urban	4/15/2017 7:08:37 PM		I think I'm a fan of providing a link to the union agreements. Helps kill any arguments that come up?
Callout 3					brian.urban	4/10/2017 10:53:11 PM		

“Lift” drawing creation and review process



“Lift” drawing creation and review process

- At the end of the review period the VDC Specialist incorporates the markup in the construction model / lift drawings
 - Usually one or two day turn-around
- Important: The project team gathers for a lift drawing “page turn”



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graph LR; A[Update lift drawings with Bluebeam comments] --> B[Lift drawing page turn and sign-off]
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Update lift drawings with Bluebeam comments

Lift drawing page turn and sign-off

“Lift” drawing creation and review process

- Bluebeam session is archive with graphic markups and a log of all activity
- “For Construction” files are moved to a public folder on Box and revisioned if changes occur after released to the field

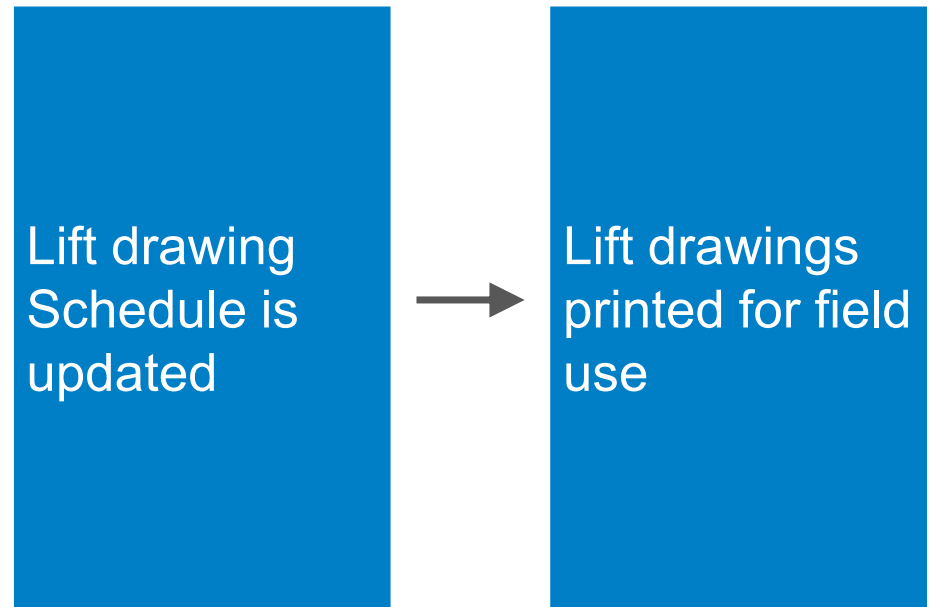
Lift drawing
Bluebeam
review session
is closed and
markups are
archived



“For
Construction”
lift drawings
are uploaded
to Box / Digital
Resource
Station

“Lift” drawing creation and review process

- If any variance to the original lift drawing schedule, it is updated
- Discussion as to who is the gate keeper for the field
- How many active copies?
- Communication at this point is crucial





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