Live Cost Modeling & Production Analytics w BIM

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This new 245,000-sq.-ft. high rise biomedical research laboratory consists of ten floors, a basement and rooftop mechanical penthouse. The facility includes live imaging, a 200 person seminar room, loading dock, centralized RO water, centralized liquid nitrogen and wet benches with flow cytometry, histology, microscopy, radioisotope and tissue culture distributed core spaces supporting genomics and proteomics research. Upper floors will consist of dry laboratories supporting and biomechanical engineering. Four interior lab floors will be shelled for future build out.

Quick Facts:
$104 million
245,000 sq. ft.
Targeting LEED-NC Silver
TIMELINE
INFLUENCING PROJECT COST
TRADITIONAL VS LIVE COST

Week 1: 50% SD
($50%SD)

Week 6: 100% SD
($100%SD)

Week 10: 50% DD
($75%DD)

Week 14: 75% DD

MODELED OBJECTS

TAKEOFF ITEMS & QUANTITIES

MBE

ESTIMATING & COST VERSIONING

MBC

PRODUCTION ANALYSIS

COST TRENDING
CHANGE MANAGEMENT
MODEL SCOPE CONTROL
PROJECT VALUE ENGINEERING
SCOPE DEFINITION
BENCHMARKING

TRADITIONAL VS LIVE COST
SCOPE EVOLUTION

Modeled Objects → Takeoff Items & Quantities → MBE → Estimating & Cost Versioning → MBC → Production Analysis
ENTERPRISE WORKFLOW
COST VARIANCE ANALYSIS
TARGET COST & PROCUREMENT
LPS – PROGRESS TRACKING

Master Schedule
- Set milestones and key dates

Should Do
- Phase Schedule
  - Specify handoffs between trades

Can Do
- Look-Ahead Plan
  - Make ready and initiate re-planning as required

Improving
- Feedback & Learning

Weekly Work Plan
- Will Do

Progress Tracking
- Doing & Done

Measure progress and remedy issues
Finalize Work Packages

Group objects in BIM to create 3D work Packages

Plan the Sequence of Work Packages

Custom Views & Filters in Assemble for Work Packages

Import BIM + P6 into Assemble

Create P6 Task Schedule for Work Packages

Feed Actuals (weekly) into Assemble

Import Spreadsheet into Dashboard

Share “Lean Thoughts” with the Team

DATA EXCHANGE - CDE
DASHBOARD - PRODUCTIVITY

Concrete Production Trending
Project: Biomedical Partnership Building
Location: Level 3

Work Package: L3-WCW

Resource Graph

Productivity Differential

Work Package Quantities

Visualization of Workpackage

+10

Planned Production Rate 392.08
Actual Production Rate 718.81

Flowline
Flowline
LOOK AHEAD PLANS
SUPPLY CHAIN
| Hierarchy | Code   | Name | Quantity | Unit | Consumption | Production rate | Resources | Target | Degree of completion | Begin time | End point | Duration | Max HOURS | Begin time | End point | Duration | Max HOURS |
|-----------|--------|------|----------|------|-------------|-----------------|-----------|--------|----------------------|------------|-----------|----------|-----------|------------|-----------|----------|-----------|-----------|
| 1.0       | O2021  |      |          |      |             |                 |           |        |                      |            |           |          |           |            |           |          |           |           |
| 1.1       | 0101   |      |          |      |             |                 |           |        |                      |            |           |          |           |            |           |          |           |           |
| 1.2       | 0102   |      |          |      |             |                 |           |        |                      |            |           |          |           |            |           |          |           |           |
| 1.3       | 0103   |      |          |      |             |                 |           |        |                      |            |           |          |           |            |           |          |           |           |
| 1.4       | 0104   |      |          |      |             |                 |           |        |                      |            |           |          |           |            |           |          |           |           |
| 1.5       | 0105   |      |          |      |             |                 |           |        |                      |            |           |          |           |            |           |          |           |           |
| 1.6       | 0106   |      |          |      |             |                 |           |        |                      |            |           |          |           |            |           |          |           |           |
| 1.7       | 0107   |      |          |      |             |                 |           |        |                      |            |           |          |           |            |           |          |           |           |
| 1.8       | 0108   |      |          |      |             |                 |           |        |                      |            |           |          |           |            |           |          |           |           |
| 1.9       | 0109   |      |          |      |             |                 |           |        |                      |            |           |          |           |            |           |          |           |           |
| 2.0       | O2022  |      |          |      |             |                 |           |        |                      |            |           |          |           |            |           |          |           |           |
| 2.1       | 0201   |      |          |      |             |                 |           |        |                      |            |           |          |           |            |           |          |           |           |
| 2.2       | 0202   |      |          |      |             |                 |           |        |                      |            |           |          |           |            |           |          |           |           |
| 2.3       | 0203   |      |          |      |             |                 |           |        |                      |            |           |          |           |            |           |          |           |           |
| 2.4       | 0204   |      |          |      |             |                 |           |        |                      |            |           |          |           |            |           |          |           |           |
| 2.5       | 0205   |      |          |      |             |                 |           |        |                      |            |           |          |           |            |           |          |           |           |
DESIGN CHALLENGE - TREND

BIMFORUM
Would you end your vacation as soon as your GPS Unit turns clunky?

“BIM is a Continuous Improvement Dataset”

Just Make it Work!!