C3D – Intelligent AWP
Planning and Management

Featuring: Implementation Manager - Chehade Kassouf
Agenda

• Why Intelligent AWP is Required?
• Adding Intelligence to AWP
• Some C3D Features
Why Intelligent AWP is Required?
Building IWP Challenges

• Building IWP manually.
• Revisions causes re-definition of IWP’s.
• Data from many sources in different formats and levels of granularities.

• Challenges for Workface:
  • Building IWP is time consuming.
  • Calculations is mainly done outside the system.
  • Knowing the need to revise the IWP.
  • Effort to re-build the IWP.
Information Transfer Challenges

• Handoff of the CWP from engineering to construction is not well managed.
• CWP’s have many revisions.
• No document transmittal used to manage the handoff.

• Challenges for Workface:
  • As CWP scope can change without notice. Workface team is deprived from effective look-ahead planning.
  • Working with immature CWP defeat purpose of AWP.
Constraints Clearance

• When the term constraint is used it usually means only drawings and material.

• Systems provide only checkbox for construction constraints clearance.

• Challenges for Workface:
  • Many open IWP’s due to construction constraints.
  • Visibility on workload on various crews.
  • This is more challenging when more than one contractor share the same site.
What AWP systems cover?

• Current AWP systems focus only the permanent work.
• Many additional systems are deployed to cover supporting activities.

• Challenges for Workface:
  • More systems means more meetings.
  • A large foundation for instance, needs excavation, safety barricade, dewatering, scaffolding, compaction. Permanent work cannot start without them.
Only workable ones shall be released to construction

The plan should depend on resources and construction capacity

Joint constraint removal by engineering and construction

Construction needs enough data to assure if work can be finished on time

Construction shall be able to report progress, check efficiency, improve performance.

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Adding Intelligence to AWP
A Workface Utopia

• Start every construction activity with the readiness of a shutdown activity.

• Needed Information:
  • IFC Drawings without holds.
  • All Material available.
  • Safety trained crews.
  • Access secured.
  • Supporting activities status.
  • Budgeted crew composition and man-hours.
  • Required equipment and their status.
  • ITP and Forms for QC.
  • Calculations are done efficiently (budget and actual)
  • Clear Sequence of Work.
  • Workload for each crew

• In Short add intelligence to AWP
Adding Intelligence

Intelligent AWP

- Crews / Equipment
- Front End Loading
- EDMS
- Procurement / Material
- Fabrication Model / Drawings
- Estimate / Budget
- Timesheet / Stores
- Schedule
- Handover and QC
- Workload, Availability

Manage all constraints based on sequence.

Controls the revision of CWP/IWP and all other documents.

Provide Ex-works dates, current store stock.

Provide fabrication data and their link to model and drawings.

Document and assure QC ITP are met.

Provide early the resource required, how efficient the crew.

Provide actuals spent on every IWP.

Provide a datum to compare against on progress.

Manage all constraints based on sequence.
Some C3D Features
Sample IWP at Short Range Planning

- **IWP Scope**
  - Budgeted Man-Hours: 1098
  - Allowable Duration: 9 Working Days
  - Needed Man-Power: 12

If Less Than 12
Cannot deliver on-time

If More Than 12
Definitely Overrun
Sample IWP at Short Range Planning

- Link With Schedule:
  - Parent Activity
  - Allocated Duration: 56 Days.
  - Allocated Manhours: 18000 MHR.
  - Needed Man-Power 32.

If More Than 32 No Delays

If Less Than 32 Delays will Happen
• 3D model and Constraints Management:
  • Coordination Meeting results update Constraints status.
  • Paving is delayed.
  • Support cannot be installed

Even if All Material, drawings are available work cannot start
Linking to Estimate / Budget

• A welding disposition volume compensation contract treats an installation of super complex spool and that of straight run the same.

Relying on contractual BOQ man-hours and not on budgeted man-hours will be misleading. IWP man-hours shall be managed by the construction.
Crew Specialty

- Progress shall tangible and objective.
- IWP will need various specialties crews.
- Structural Steel Crews:
  - Erection
  - Alignment and shimming
  - Bolt tightening

Disregarding this fact, even the total allocated man-hours tally with budget, the job will have overruns.

IWP will be complemented by work orders to assign the proper job to the right crew
C3D AWP

- CWA Management
- CWP Management
- IWP Definition
- IWP Link to Schedule
- IWP Scoping
- IWP Reporting
- IWP Detailed Planning and Progress
CWA Management
CWA Fast Logical Scoping
CWA as Seen in 3D Model
Scoping 3D and Non-3D AWP Components and their BOQ's
IWP Definition
IWP Scoping

**AWP Components**

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<tr>
<th>AWP Component ID</th>
<th>Parent Component</th>
<th>Type</th>
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**Surrounding Components**

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IWP Scoping via 3D
## IWP Scoping via BOQ

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## Link with Schedule

### Project Data

#### Import Schedule

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IWP Link with Schedule
IWP detailed Planning
IWP Planning at lowest level
## IWP Constraints

### Project Data

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<tr>
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IWP Constraint Clearing via Front End Loading
IWP Printable Report
Samples
Samples
Q & A

Question and Answer Period
Thank You!