RULES OF CREDIT FOR EWP’S

WHY GO THERE???

Presenter

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Co-Chair COAA WFP Committee
AGENDA

1. Why is progressing EWP important in AWP / WFP Strategy?
2. What is happening now – and why?
3. Example of present scenario
4. Typical EWP Forecast Completion Scenario
5. Example – Piping EWP Rules of Credit
6. Anticipated Results of Introducing Rules of Credit
7. Path Forward
8. Q & A
Why is progressing EWP important in AWP / WFP Strategy?

The entire strategy is dependent on Engineering and Procurement providing their deliverables to meet Path of Construction.

Contractor mobilizes based on Engineering forecast of IFC EWPs.
PLANNED PATH OF CONSTRUCTION PROCESS

ENGINEERING WORK PACKAGE (EWP)

Issued IFC

Recommended 120 day lag

CONSTRUCTION WORK PACKAGE EXECUTED (CWP)

Work commences

Engineering Produces Bill of Material

PROCUREMENT PACKAGE (PP)

Purchase Order to Supplier

SUPPLIER EQPT &/OR MATERIAL

Eqpt / Mat’l arrives Prior to work starting
What is actually happening?

Construction mobilizes resources based on forecast completions of EWP IFC

EWP’s releases continue to slip but construction is now mobilized.

Engineering forced to release partial EWP’s or releases EWP’s out of sequence or EWP’s with HOLDS.
Why is it happening?

EWP process has many steps to get to IFC

The rules of credit (if exists) are either not known or not utilized.

EWP development held back by outside influence (eg Vendor Data or Owner Decision)
CONSTRUCTED PATH OF CONSTRUCTION

Issued IFC

This lag gets squeezed and usually CWP starts late

CONSTRUCTION WORK PACKAGE EXECUTED (CWP)

Vendor Data needed to complete EWP delivered late or incomplete

Work commences

ENGINEERING WORK PACKAGE (EWP)

Procurement Package (PP)

Supplier EQPT &/OR MATERIAL
CONSTRANINED PATH OF CONSTRUCTION

ENGINEERING WORK PACKAGE (EWP)

PROCUREMENT PACKAGE (PP)

SUPPLIER EQPT &/OR MATERIAL

Issued IFC

Work commences

CONSTRUCTION WORK PACKAGE EXECUTED (CWP)

How do we improve this interface
What is individually progressed now?

Example – Piping EWP

• Development of 3D Model
• Drawings
• P & IDs
• Requisitions
• Specifications
• Pipe Stress Analysis
• Calculations
• Others?
What is individually progressed now?

Typical Drawing Rules of Credit

• Initial setup from 3D Model___________ 25%
• Checking complete____________________ 60%
• Issue for Internal Review______________/ 75%
• Issue for Client Review_______________ 85%
• IFC__________________________________ 100%
TOC of EWP (from IR 272)

• Scope of Work
• Relationship with other EWPs and CWP
• Dependencies with other EWPs
• Procurement Dependencies
• Interface Points
• Design Criteria
• Engineering Deliverables
• Contractor Deliverables
• Submittals
• Contact List
Engineering Deliverables?

How do these relate to overall EWP Progress?

- Development of 3D Model
- Drawings
- P & IDs
- Requisitions
- Specifications
- Pipe Stress Analysis
- Calculations
- Others?
Example of Problem on existing projects:

Engineer Claims 95% Complete

Contractor Resources Mobilized

ENGINEERING WORK PACKAGE (EWP)

Recommended 120 day lag

CONSTRUCTION WORK PACKAGE EXECUTED (CWP)

PROCUREMENT PACKAGE (PP)

SUPPLIER EQPT &/OR MATERIAL
Why does Engineering state EWP progress 90% - 95% when:

- Final Vendor Data not received
- Line routing not complete
- P&ID not IFC
- Line Designation Table not IFC
- Isometrics not complete
- Stress analysis not done
- 3D model not complete for EWP scope
- BOM not complete
Typical Forecasting Scenario

EWP is 95% at month-end review
EWP forecast to be “complete” next month
Contractor plans resource mobilization

Next month-end forecast
EWP still 95%
EWP forecast to be “complete” next month
Contractor tries to mitigate loss of one month

Next month – another repeat of above:
Except now Contractor is probably behind schedule to commence CWP.
### Potential Rules of Credit for Piping EWP

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>EWP ID’d and mapped to CWP</td>
<td>5%</td>
</tr>
<tr>
<td>Initial scope identified – line numbers</td>
<td>20%</td>
</tr>
<tr>
<td>Preliminary equipment data received</td>
<td>25%</td>
</tr>
<tr>
<td>Initial routing of lines established</td>
<td>45%</td>
</tr>
<tr>
<td>Initial bulk material (BOM) to supply chain</td>
<td>55%</td>
</tr>
<tr>
<td>Piping studies rec’d for critical lines</td>
<td>60%</td>
</tr>
<tr>
<td><strong>Final vendor data received</strong></td>
<td>70%</td>
</tr>
<tr>
<td>Final routings completed</td>
<td>75%</td>
</tr>
<tr>
<td>P&amp;ID’s and LDT issued IFC</td>
<td>80%</td>
</tr>
<tr>
<td><strong>Stress analysis for large bore completed</strong></td>
<td>85%</td>
</tr>
<tr>
<td>Line List issued IFC</td>
<td>90%</td>
</tr>
<tr>
<td><strong>EWP c/w all drawings/specs issued IFC</strong></td>
<td>95%</td>
</tr>
<tr>
<td>EWP accepted by Construction</td>
<td>100%</td>
</tr>
</tbody>
</table>
Potential Rules of Credit for Piping EWP

Final vendor data received __________________________70%

Stress analysis for large bore completed________85%

EWP c/w all drawings/specs issued IFC _________95%

EWP accepted by Construction _________________100%
Anticipated Results:

More emphasis on aligning vendor data to schedule

Engineering better able to:
  Complete EWP’s on schedule
  More accurately forecast progress

Contractor better able to forecast resources with:
  • Better productivity
  • More predictable results
  • Path of Construction Plan executed as planned
Path Forward

Create Rules of Credit for all discipline EWP’s

Implement these onto your Projects

Follow the Rules of Credit on Projects
Path Forward

Engineering monthly claims not to exceed percentage complete of consolidated progress of all EWP’s. (Similar to the structure of many contracts with Construction Contractors paid by IWP’s completed.)
Q & A

Would this help to align Engineering / Procurement with the Baseline Schedule?

Would Construction have better ability to mobilize resources at right time?

Would this at all help get Owners aligned with the process?