WORKFACE PLANNING
CONFERENCE-WIDE SESSION
FROM CONCEPT TO COMMISSIONING
INTRODUCTION

• From Concept to Commissioning: what does it mean?

• Who is on the panel?

✓ Ron Embury | Engineering Team Leader, NOVA Chemicals (Owner)

✓ Ken Kohlruss | Vice President Operations, Commonwealth Construction [CH2M Hill] (CMT)

✓ Jose Herrero | Vice President, Fluor (Engineering Contractor)

✓ Tannis Liviniuk | Lead Construction Analyst, Cenovus Energy (Construction Contractor)

✓ Lloyd Rankin | Researcher, COAA (Facilitator)
INTRODUCTION
Defines the basic design parameters for the intended project. Generation, review, and approval of the DBM is a prerequisite for the development of the Engineering Design Specification (EDS).
DESIGN BASIS MEMORANDUM (DBM)

1) Develop WFP execution strategy
2) Assign WFP sponsors and champions
3) Define WFP as required for all participants
4) Project Milestone Schedule (PMS) (level 1)
5) Develop WFP execution plan
6) High-level project review with construction input
7) Design a server to host the databases used by all participants
8) Demonstrate capacity to support WFP
9) Write WFP requirements in contracts
10) Design Area Definition
11) Project Milestone Schedule (PMS) (level 1)
12) Demonstrate capacity to apply WFP
13) Path of Construction
DBM: OWNER

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At the DBM phase, we have three documents that set the stage for WorkFace Planning:

- Project Execution Plan
- Construction Execution Plan
- Constructability Implementation Plan
Project Execution Plan (PEP):

• Overall Project Milestone Schedule

• Project Strategy:
  o The project will be Construction-driven
  o Engineering and Procurement will sequence their work to meet Construction needs.
  o There will be extensive constructability input into the design and Engineering Work Package (EWP)
  o WorkFace Planning will be part of the Construction Execution Plan
  o No work packages (FIWPs) will start without all engineering, materials, tools, equipment and labour present on site.
  o Owner’s commissioning sequence will be by operating systems and will be introduced in the engineering and construction schedules.
Construction Execution Plan (CEP):

• With respect to WorkFace Planning, the construction execution plan will:
  
  o Set out the Construction Management Organization.
  
  o Describe the Contracting Strategy
  
  o Contain the WorkFace Planning Execution Plan
    ▪ Workface Planning Approach
    ▪ Workface Planning Overview
    ▪ Workface Planning Implementation
    ▪ Workface Planning Training
    ▪ Workface Audit Process
  
  o Progress Reporting
Constructability Implementation Plan (CIP)

- CIP is developed and started in the DBM phase. CIP is used to support WFP concepts.
  - Led by Construction
  - Sponsor(s) identified, Policy Statements described and Constructability Manager is appointed.
  - Sets out focus groups between engineering disciplines, Procurement, Owner, etc.
  - High-level construction sequence is developed.
  - Details of schedule integration is developed between parties.
    - i.e., Engineering drawing sequence developed to support FIWP Schedule
    - i.e., Procurement deliverables developed to support FIWP Schedule.
  - Various other activities are completed to promote ease of construction (design, layout, modular design, pre-fabrication, construction methods, weather, etc.)
DBM: OWNER

Contract types:
- C
- CM
- EP
- EPC
- EPCM
DBM: CONSTRUCTION MANAGEMENT TEAM

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11) Path of Construction
12) Demonstrate capacity to apply WFP
13) Path of Construction
WorkFace Planning Execution Plan

1.0 Definition
2.0 Purpose
3.0 Scope
4.0 Strategies
5.0 Participants
6.0 Roles and Responsibilities
7.0 Method
8.0 Systems
9.0 FIWP’S Release Process
10. Auditing
DBM: CONSTRUCTION MANAGEMENT TEAM

High-level project review which leads to Path of Construction
Path of Construction

DBM: CONSTRUCTION MANAGEMENT TEAM
DBM: CONSTRUCTION MANAGEMENT TEAM

WFP Automation
Bring your data together in one location

- 3D CAD
- Pipe Isometrics
- Structural Detailing Data
- Line List / Equipment List
- Instrument Index
- Electrical Lists

- L3 Project Schedule
- Rules of Progress
- Unit Rates
- Quantity Tracking (Progress)

Engineering Data
Project Controls
Materials Management
Field Tracking

Virtual Construction Model

ConstructSim V8i

[COAA Logo]

[ConstructSim Logo]

[Bentley Logo]
DBM: CONSTRUCTION MANAGEMENT TEAM
DBM: CONSTRUCTION MANAGEMENT TEAM

- Experienced trainers, educators and assessors (auditors)
- Assessment services
- Self-assessment tools
Sample plot plan (partial)
Click to see process
Click to see table of contents
DBM: CONSTRUCTION CONTRACTOR

1) Develop WFP execution strategy
2) Assign WFP sponsors and champions
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4) Project Milestone Schedule (PMS) (level 1)
5) Develop WFP execution plan
6) High-level project review with construction input
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8) Demonstrate capacity to support WFP
9) Write WFP requirements in contracts
10) Design Area Definition
11) Path of Construction
12) Demonstrate capacity to apply WFP
• Demonstrate high-level capacity to support WorkFace Planning

• WorkFace Planning Awareness for Trades People scheduled for delivery February 2011.

• Pre-beta sample available at this conference
WorkFace Planning Awareness for Trades People:
WorkFace Planning Course Development Roadmap
EDS defines all elements of project scope and is the control document for commencement of detailed engineering and procurement activities on the project. It is also used in scoping the development of the Authorization for Expenditure (AFE).
15) Project Summary Schedule (PSS) (level 2)

16) Review and Approve PSS

17) Define and Issue CWP Release Plan

18) Appoint Lead Planner; Commence WFP Process

14) Review and integrate WFP processes and support functions

* Proactively resolve conflicts between project participants

11) Ensure all databases are provided with the latest data

20) Define and Issue EWP Release Plan by Design Area

21) Project Master Schedule (PMaS) (level 3)

17) Define and Issue FIWP Release Plan
Level 2 Schedule

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### 511176 - Cooling Water Pumps & Tankage

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<th>WBI Number</th>
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**WBI/EWP Structure**

- Activity code breaks down discipline code into different activities

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# Level 3 Schedule

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## CONSTRUCTION

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15) Project Summary Schedule (PSS) (level 2)

16) Review and Approve PSS

17) Define and Issue CWP Release Plan

18) Appoint Lead Planner; Commence WFP Process

19) Define and Issue EWP Release Plan by Design Area

20) Define and Issue PIPS Release Plan by Design Area

21) Project Master Schedule (PMS) (level 3)

14) Review and integrate WFP processes and support functions

* Proactively resolve conflicts between project participants

11) Ensure all databases are provided with the latest data
EDS: CONSTRUCTION MANAGEMENT TEAM

Proactively resolve conflicts
Review and integrate WFP processes and support functions
Ensure all databases are up to date
11) Ensure all databases are provided with the latest data

15) Project Summary Schedule (PSS) (level 2)

16) Review and Approve PSS

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18) Appoint Lead Planner; Commence WFP Process

14) Review and integrate WFP processes and support functions

* Proactively resolve conflicts between project participants

20) Define and Issue EWP Release Plan by Design Area

21) Project Master Schedule (PMaS) (level 3)

17) Define and Issue FIWP Release Plan
Define and Issue CWP release plan

• Identify the size and description of all CWPs
• Determine when those CWPs will be developed and released
• These can be reported in Excel spreadsheets, Primavera schedules, and other documents
• The EWP schedule will be driven by the CWP schedule
Appoint lead planner and commence WFP process
Define and Issue FIWP release plan

• Identify the size and description of all FIWPs
• Determine when those FIWPs will be developed and released
• These can be reported in Excel spreadsheets, Primavera schedules, and other documents
• FIWP development is driven by the CWPs
DETAILED ENGINEERING

22) Engineer develops and releases EWPs

23) Construction develops and releases CWPs

24) Detailed Area Schedule (level 4)

25) Review and approve PMaS

26) Break up CWP into Field Installation Work Packages (FIWP)
DETAILED ENGINEERING: CONSTRUCTION CONTRACTORS

22) Engineer develops and releases EWPs

23) Construction develops and releases CWPs

24) Detailed Area Schedule (level 4)

25) Review and approve PMaS

26) Break up CWP into Field Installation Work Packages (FIWP)
DETAILED ENGINEERING:
CONSTRUCTION CONTRACTORS

Construction develops and delivers CWPs

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Detailed Level 4 Schedule

• This is a schedule of the release of the Field Installation Work Packages (FIWPs)

• These can be reported in Excel spreadsheets, Primavera schedules, and other documents
Detailed Engineering: Construction

Break CWPs into FIWPs

- CWP
- FIWP
- FIWP
- FIWP
Create FIWPs with simple point and click
DETAILED ENGINEERING: CONSTRUCTION

INTERGRAPH
22) Engineer develops and releases EWPs

23) Construction develops and releases CWPs

24) Detailed Area Schedule (level 4)

25) Review and approve PMaS

26) Break up CWP into Field Installation Work Packages (FIWP)
## WBI RELEASE FORM

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<tr>
<td>PREPARED BY</td>
<td>Roopendra Singh</td>
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Construction is informed that Engineering is complete in this WBI and the WBI is released for construction with the drawings listed below.

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## Vendor Drawings

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CONSTRUCTION PHASE

31) Review and update Engineering

30) Issue Request for Information

29) Need for extra information?

34) Identify “Work to Go” items

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36) Approve results and initiate lessons-learned meeting

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CONSTRUCTION PHASE: CONSTRUCTION CONTRACTOR

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CONSTRUCTION PHASE: CONSTRUCTION CONTRACTOR

Implement and Release FIWP

Table of Contents

1. Constraints
2. Scope
3. Safety
4. QA/QC
5. Trade Coordination
6. Material Take Off
7. Scaffold Request
8. Equipment Request
9. FIWP Lookahead
10. Timesheets
11. Model Shots and Isos
CONSTRUCTION PHASE: CONSTRUCTION CONTRACTOR

Execute FIWP

One of our silver-level sponsors - Phoenix Industrial - has incorporated their maintenance experience into the Phoenix WorkFace Planning approach.
CONSTRUCTION PHASE:
CONSTRUCTION CONTRACTOR

*Progress project*
What if execution doesn’t go according to plan?

- Risk Events
- ‘Plan B’
- Backlog
WorkFace Planning Lessons Learned:

• Conduct Lessons Learned at the end of each phase of the project

• Do ‘temperature checks’ during each phase

• At the end of the project, conduct a final Lessons Learned.
Two of our sponsors have been recognized by COAA, winning awards for their excellence and leadership in WorkFace Planning.
WORKFACE PLANNING
FROM CONCEPT TO COMMISSIONING
NOTE: The information collected is anonymous and may be used for research purposes. By participating, you are giving your consent for the use of this data.