AWP Alignment

A Comprehensive Framework for Consistent Alignment Between Stakeholders

Presented by Group ASI
AWP Alignment

An AWP alignment framework developed by
AWP Alignment

Panel Team Members and Working Team Members

- **Development team**
  - Scott Randall, Senior Project Manager, NOVA Chemicals
  - Ryan Olsen, Project Manager, Construction, Jacobs
  - Ryan Posnikoff, Director, Construction Academy, Bentley Systems
  - Fernando Espana, President, Construct-X
  - Dwayne Leffers, Director Operations, Ledcor

- **Development Team Team**
  - Mark Lambert, Manager, Construction Management, Eastman Chemical
  - Yogesh Srivastava, Co-chair, Advanced Work Packaging Committee, Construction Owners Association of Alberta
  - Peter Tawfik, Business Development, PCL Industrial Management
  - Rick Dunlap, Vice President, Technical Services, Brand/Safway
Comprehensive Framework for Consistent Alignment Between Stakeholders

Drive better alignment between engineering, construction, and owners by creating an effective AWP framework that: establishes an integrated governance structure based on sound AWP contracting strategies, implements robust AWP processes that include deep cross functional collaboration and early stakeholder engagement, and leverages enabling technologies to increase planning capability and attain more optimal solutions.
Agenda

• Review AWP Alignment project stages to be covered
• Introduce the AWP Alignment Panel and Working Team Members
• Preliminary Planning & Design
• Detailed Engineering
• Construction
• Re-Cap the ‘golden nuggets’ developed by the Panel
AWP Alignment Stages
Preliminary Planning and Design
STAGE I
Preliminary Planning/Design

**Construction Planning**
- Plan for Work Packaging
- Refine Contracting Plan
- Refine Sequence of Construction
- Plan for Procurement and Logistics
- Identify Site/Project Constraints
- Consider Weather Risks
- Deliver Construction Plan
- Consider Temporary Structures/Utility Requirements
- Consider Options for Construction Equipment
- System Turnover Sequence

**CWP Boundary Development**
- Plot Plan or General Arrangement Drawings
- Construction Plan
- Contracting/Procurement Execution Plan
- Sequence of Installation
- Trades People Available
- WBS
- Geographical Layout of Systems/Areas
- Materials of Construction
- Client/Contractor Contract Milestones
- System Turnover Sequence

**Project Definition**
- Define Overall Scope of Work/Project
- Define Contracting and Procurement Plan
- Define Construction Sequencing
- Technical Deliverable Requirements
- Levels of Design

**Refine Schedule & WBS Development**
- Level 2:
  - E > by discipline
  - P > by commodity
  - C > by discipline
  - Preliminary WWP release plan

**Engineering Planning**
- Plan for Work Packaging
- Review Contracting Plan
- Review Sequence of Construction
- Review Project Definition Deliverables
- Review Procurement Plan
- General Arrangement / Plot Plan
- Technology Plan

**EWP Boundary Development**
- Consideration for Modular Construction
- Consider Construction Feedback
- Define EWP Standard
8 Gears to set in Preliminary Planning for AWP

1. Knowledge & Education of Team members
2. Understand Overall AWP Framework & Definition
3. Organization & Resource Cost Commitment
4. Supply Chain Integration in AWP
5. Identifying & Aligning Deliverables
6. AWP Project KPIs and Benchmarking
7. Schedule to Incorporate AWP
8. Management Discipline
Key Challenges and Lessons Learned

1. Team members are not educated on AWP
2. Project specific details of AWP are not defined
3. Resourcing does not support AWP
4. Supply Chain Management not involved and Procurement Plan not aligned with AWP
5. Engineering deliverables do not support AWP
6. Project KPIs / Targets do not drive the right behaviours
7. Few schedule considerations are allowed for AWP
8. Lack of discipline to hold to established AWP principles
Plan, Educate & Communicate

**Challenge #1 > Team members are not educated on AWP**

**Solution:** Educate All Project Participants
- AWP and value stream principles
- Timely & Complete engineering, materials, labour = Safety and Productivity
- Importance of workable backlog
- Key constraints for each project phase / stakeholder

**Challenge #2 > Project specific details of AWP are not defined**

**Solution:** Create & Communicate a Vision to All Stakeholders
- Establish & Publish AWP Framework specific for this project
- Framework scaled based on project size, duration, and complexity
- AWP Implications of Prefabrication and Modularization
- Path of Construction Visible to all
- AWP Expectations embedded into Contracting Strategy
- Data management strategy – real time, single source of truth
Resource Commitment & AWP Deliverables

Challenge #3 > Resourcing does not support AWP

Solution: Assign appropriate resources
• Engage downstream “customers” early
• Assign AWP champions from E, P, C, and C&SU to manage to the vision
• Operations resources committed early to participate in POC development (start with the end in mind)

Challenge #4 > Supply Chain not involved and Procurement Plan not aligned with AWP

Solution: Assign an AWP champion from Supply Chain
• Collaborate to eliminate duplication between Procurement & Construction
• Focus on work package completions rather than bulk deliveries
• Align deliveries to POC - consideration for workable backlogs and available laydown
• Vendor evaluations include schedule performance and AWP value add options
Organizational Structure to Support AWP
Challenge #5 > Engineering deliverables do not support AWP

Solution: Establish the Details and Collaborate
  • Establish the details of AWP on this project (sample EWP/IWP/etc...)
  • Enhanced stakeholder collaboration for streamlined workflows
    • parallel or joint review processes
    • co-locate teams for improved communication

Challenge #6 > Project KPIs / Targets do not drive the right behaviours

Solution: Measure the Right Things to drive Desired Behaviours:
  • Establish meaningful Project KPIs and Targets – Over reporting is a waste
    • Work Package Fulfillment / Completions (vs. bulk progress)
    • ‘Punchlist’ processes for visibility on late / deficient items
    • Target ranges for work backlogs
  • Set reporting metrics / expectations for all participants
  • RFPs and Contracts to require compliant KPI reporting
Golden Nuggets - Preliminary Planning/Design

- Plan and Educate for AWP
- Establish Project AWP team (champions from each stakeholder)
- Establish specific and measurable AWP details for project stakeholders
- Establish Smart KPIs that drive desired behaviours
- Provision for Workable Backlogs
Detailed Engineering
STAGE II
Detailed Engineering

Schedule Development

Detailed Level 3:
E – by discipline, by EWP
P – by commodity, by construction need date

Preliminary Level 3:
C – by CWP

Engineering

Execute EWP Standard

Detailed Construction Schedule

Final Level 3
3 Key Points of Alignment during Detailed Engineering

• Importance of empowering Construction
• Commercial Strategies influencing decisions
• Lack of consistent AWP program from the Owner
Schedule & Management Discipline

Challenge #1 > Interpretation of the Path of Construction

Solution
- Construction driven engineering
- Construction has to be empowered to influence Engineering
- Getting engineering deliverables aligned and visible

Challenge #2 > Resource Commitment

Solution
- Dedicated stakeholders from Construction & Engineering teams to focus on the AWP program
Commercial Strategies influencing decisions counterproductive to the AWP environment

**Challenge #3 > Contract models / timing of issuance**

**Solution**
- Contracts can be influenced to include effective resources to support AWP

**Challenge #4 > Contractor Selection driven by just $$**

**Solution**
- Sourcing and contract engagement to an overarching AWP strategy
  - Focus on productivity, alignment, efficiency vs. just rates
Lack of consistency and program approach for AWP from the Owner

Challenge #5 > Inconsistent AWP expectations

Solution
- Owners to develop clear & consistent AWP programs and implement early in projects with clear expectations for contractors
- Development of leading and lagging performance indicators for AWP

Challenge #6 > AWP Focus - Keeping the Project collectively focused on AWP through DDE

Solution
- Owner needs to:
  - Provide an overarching hands on approach
  - Be approachable to help keep AWP progressing
  - Oversee and drive the EWP schedule to ensure timely deliverables which support Construction activities
How can we measure if AWP is successful during Detailed Design

- Successful Transfer of Information
- Acceptance of Accountability
- Cost Certainty
- Calculable Risk
Golden Nuggets – Detailed Engineering

- Stakeholder engagement during life cycle of DDE

- Schedule Alignment – development of an integrated schedule

- Owner champion / liaison role
Construction
Construction - Key Challenges and Solutions

1. Mobilization to site
2. Mobilization on Site
3. Oversite
4. Planning & Execution
5. Commissioning and Start-up
AWP Alignment at Construction

- Construction
- Engineering
- Procurement & Resourcing
- Operations
- Commissioning and Start up
- Project Controls
- Quality
- Safety

*Where the Rubber Meets the Road!*
Construction – Mobilization to Site

Challenge #1> Path of Construction
- Achieving a final alignment of Path of Construction across all Major Stakeholders

Solution: Ensure Robust IAP session held prior to mobilization, refine engineering priorities and WBS

Challenge #2> Systems in place to support AWP
- AWP Information Management System tools and data integration

Solution: Technology Plan, Bench testing, and Agreements

Challenge #3> AWP Framework
- Contractors/Vendors align with pre-determined AWP Framework

Solution: Training and On-boarding support strategy and program aligned with Agreements

Project Enabled with Clear Expectations!
Construction – Mobilization on Site

Challenge #1> Education & Training
• No formal guidelines, education and training program are in place with heavy reliance on contracts

Solution: Establish education and training Program on site

Challenge #2> Systems in place to support AWP
• Personnel from various organizations and functional groups (including WFP Groups) mobilizing to site not aligned or aware of Project’s AWP Program & Obligations

Solution: Implement AWP Onboarding and Training Program

Early Engagement, Set Expectations!
Construction – Oversight

Challenge #1> Compliance with AWP Framework
• No formal oversight on compliance to Project AWP Program
Solution: Oversight and Continuous Improvement Program

Challenge #2> Monitoring and progress processes align with AWP Framework
• No dedicated team or process in place to status compliance
Solution: Dedicated oversight team to assess status & progress and make continuous improvement recommendations

Challenge #3> Alignment and reporting AWP KPIs
• AWP KPIs not agreed or in place
Solution: Produce AWP KPIs on a frequent basis to be leveraged by all affected stakeholders aligned with the AWP Program

Adherence to Program, Desired Outcomes!
Construction – Planning & Execution

Challenge #1> Aligning Organizations to changing project needs
• Changes disrupt adherence to the AWP Program

Solution: Preserve integrity of AWP Program, advanced revision notice process in place, decision making to reduce risk & impact

Challenge #2> Module fabrication
• Module fabricators visibility and alignment with on-site construction

Solution: Module fabricators integral part of AWP Program including management of shipped loose and carryover work

Challenge #3> WFP/IWP Management
• Maintaining a holistic perspective across stakeholders

Solution: Maintain consistency in IWP approach, shared resource management, short range production planning

Challenge #4> Material Management
• Coordination, trial allocations, and packaging issues

Solution: Put robust IMM processes in place and resist attempts to “game the system” or hoard materials
Construction – C&SU

Challenge #1> Mechanical Completions aligning to optimal start-up plan
- You get what we give or One team, One mission, One plan

Solution: Align and monitor mechanical completions with C&SU plan with robust and aligned ITPs, TOPs, and proactive IWP enabled punchlist program.

Challenge #2> Operations integration/ cooperation
- Handover to Operations

Solution: Ensure early involvement and proactive engagement by Operations for smooth and efficient handover of the facility.

Delivering with the End in Mind!
Holistic Approach

Aligned Teams

Proactive & Collaborative

Safety

Construction

Engineering

Resourcing

Operations

C&SU

Project Controls

AWP/WFP

Trust & Respect

Well-Defined Solutions

Shared Knowledge
Golden Nuggets - Construction

- Build upon the “shoulders of giants”
- The ROI of FEED and maintaining a “CWP release readiness” focus is truly realized during Construction
- AWP Champions require authority to encourage and enforce AWP Compliance
AWP Alignment - Golden Nuggets Summary

• Establish specific and measurable AWP details for project stakeholders
• Establish Smart KPI’s that drive desired behaviours
• Establish Project AWP team (Champions from each stakeholder)
• Stakeholder engagement during life cycle of DDE
• Plan and Educate for AWP
• Schedule Alignment – development of an integrated schedule
• Owner champion / liaison role
• Build upon the “shoulders of giants”
• The ROI of FEED is truly realized during Construction
• AWP Champions require authority to encourage and enforce AWP Compliance
Q & A

Question and Answer Period
Thank You!