AWP Scalability

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Introductions

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• Co-chair, Principles and Best Practices Sub-committee

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Topics

- WFP and AWP defined
- History of WFP and AWP
- AWP Implementation Considerations
- The Challenges of a Guidelines Approach to AWP
- A Principles and Practices Approach
- Six Proposed Principles and Associated Practices
- Next Steps

Tool kit under development

1. Basic definitions
2. Updated rules for workforce planning
3. IWPs for large project / small projects
4. Checklist for AWP / WFP for small projects
5. AWP / WFP procedure
History of WFP

- Model developed by the Construction Owners Association of Alberta (COAA) from 2003 to 2006
- Model made a recommended practice after review from 2006 to 2008
- Goal was to improve large industrial capital project performance by improving the efficiency and effectiveness of construction crews
- Originally focused on field activity in the oil and gas sector
- Minimal involvement of front end engineering and procurement activities in the early days
Plan the work, work the plan: IWP

The drivers behind WorkFace Planning:
- Design certainty
- Material certainty
- Planned resources

Results expected:
- Productivity
- Cost certainty
- Schedule certainty
- Improved Safety

AWP/WFP
Planned Resources
History of AWP

• A collaboration between the Construction Industry Institute (CII) and COAA
• Model developed between 2009 and 2011
• Implementation guide developed between 2011 and 2013
• Validation conducted between 2013 and 2015
• Made a BP in 2015

• Images of 3 RT 272 reports and RS 272 report
AWP Implementation Considerations: Contracting Strategy
Challenges of a Guidelines-based Model

Recommendations:
- CWP/EWP/IWP should follow existing CII/COAA templates
- CWP are typically area based and single discipline
- IWP 500 to 1000 hours
- Dedicated single discipline
  WF Planners create IWP

Challenge:
- Developed based on larger industrial oil and gas based capital projects
Definition: Installation Work Package

- “Installation Work Package (IWP) is a grouping of tasks targeted at one shift in duration. These IWPs will contain all of the necessary documents and descriptions required to carry out the task required.

- “Installation Work Package (IWP) is a grouping of tasks targeted TO ALIGN WITH THE OPTIMUM PATH OF CONSTRUCTION. These IWPs will contain all of the necessary documents and descriptions required to carry out the tasks required. THE GOAL IS MAINTAIN ENOUGH EXECUTABLE IWP’S IN EACH F-MANS BACK LOG TO KEEP THEIR CREWS ACTIVE FOR 2 SHIFTS.
Definition: Paradigm Shift

- IWPs packaged based on hours.
- IWPs packaged based on commodity.
- IWPs are a contractor deliverable NOT engineering
AWP Based on Principles and Practices

- **PRINCIPLE**: a law or fact of nature that explains how something works or why something happens.

- **PRACTICE**: a technique or methodology that, through experience and research, has proven to reliably lead to a desired result.
Definition

“WorkFace Planning is the process of organizing and delivering all elements necessary before work is started, to enable craft persons to perform quality work in a safe, effective and efficient manner.”

➢ **PRINCIPLES** are **timeless**; “There is nothing new under the sun”

➢ **PRACTICES** are **timely**; “Continuous improvement”
You reap what you sow

**Practices** change for different **Industries**

Practice of planting a garden

Practice of planting beets
You reap what you sow

Practice = continual improvement

Practice of the past

Current Practice
You reap what you sow

*Practice changes by discipline*

Iron Workers

Electricians
You reap what you sow

**Practices** *change based on size*

Small Maintenance Project  Large Cap X Project
Why address scalability?

Based on the paradigm shift of Principles and Practices, then:
all construction is completed by using WorkFace Planning.

➢ The practice of how you apply AWP to a variety of projects needs to be
  adjustable for different project sizes and types.

➢ Sustaining projects, small projects, turnarounds can all benefit from
  AWP and obtain improved safety, labor productivity, schedule,
  predictability and quality if we modify the practices as we accomplish
  the principle.
(Proposed) Principles

1. Schedule needs to be aligned to how the facility will be built therefore work needs to follow the Path of Construction
2. Scope needs to be clarified therefore all work needs to be packaged
3. Packages must identify all Resources required to complete the work
4. All constraints need to be statused and available prior to package release
5. All packages need to address how the work will be done safely and with quality
6. The AWP plan needs to include how the construction phases will be transitioned
 Principle 1: 
*Path of Construction (POC)*

Path of Construction is the articulation of the optimum building (installation, erection) sequence of the physical components of the facility.
Principle 1: *Path of Construction (POC)*

**Larger Cap projects:**
- EWP’s support CWP’s
- CWP Area Based
- IWP Level 3/4 Area Based

**Transitioning to System Module & T/A Projects:**
- EWP or alternate support CWP’s
- CWP System Based
- IWP Level 5/6
Principle 2: 
All work needs to be packaged

Larger Cap projects:
• EWP – Engineering Work Package
• CWP – Construction Work Package
• PWP – Procurement Work Package
• IWP - Installation Work Package
• 3D Model

Sustaining & T/A Projects:
• EWP or Master Document Index
• Work order (In house engineering)
• IWP may be developed directly from EWP
• Material requisitions / Contractor purchase
Principle 3: Packages must identify all resources required to complete the work

**Larger Cap projects:**
- Material
- Predecessor work
- Equipment
- Speciality tools / Equipment
- Scaffolding

**Sustaining & T/A Projects:**
- Material
- Predecessor work
- Equipment
- Speciality tools / Equipment
- Scaffolding
Principle 4:
All constraints need to be satisfied prior to package release

Larger Cap projects:
• Is Predecessor work complete?
• Is the material at the work face?
• Is the scaffold built?
• Tools & equipment available

Sustaining & T/A Projects:
• Is Predecessor work complete?
• Is the material on site?
• Is the scaffold built?
• Tools & equipment available
Principle 5: 
All packages need to address how the work will be done safely and with quality

Larger Cap projects:
- Safety
  - HAZOP / JSA / FLRA
- Quality
  - ITP / ITR’s / NDT’s
- Work practices
- Specifications & SID’s

Sustaining & T/A Projects:
- Safety
  - HAZOP / JSA / FLRA
- Quality
  - ITP / ITR’s / NDT’s
- Work practices
- Specifications & SID’s
Principle 6: Transitioning as part of the AWP plan

- Area to System
- System to Commissioning
- Commissioning to Start-up
- Start-up to Turnover
DISCIPLINE

DISCIPLINE SPECIFIC TASKS THAT ALIGN WITH OPTIMUM PATH OF CONSTRUCTION

SPECIFIED MILESTONES FOR SYSTEM COMPLETION – COMMISSIONING – START UP AND TURN OVER
CONTRACTOR WALK DOWN
CONSTRUCTION DECLARES THAT THE IWP IS COMPLETE, CONTRACTOR QC WILL WALK DOWN THE INSTALLATION OF THE TAGS IN THE IWP AND PUNCH LIST ALL FOUND DEFICIENCIES.

SIWP (SYSTEM INSTALLATION WORK PACKAGE)

ENG TAG
- JUNCTION BOX
- SUPPORT
- GRND CONN
- GRND WIRE

IWP (INSTALLATION WORK PACKAGE)

ENG TAG
- ITR

CONTRACTOR PUNCH LIST
SYSTEM CONSTRUCTION COMPLETE

SYSTEM MECHANICALLY COMPLETE

TRANSFER CARE, CUSTODY & CONTROL TO OWNER

PROJECT CLOSURE

# WEEKS

COMMISSIONING & START UP

OWNER DRIVEN

OWNER / CONTRACTOR WALKDOWN

CONFIRM COMPLETION OF ALL OUTSTANDING “A” PUNCHES

CONFIRM COMPLETION OF ALL OUTSTANDING “AA” PUNCHES

CONFIRM COMPLETION OF ALL OUTSTANDING “BSU” PUNCHES

CONFIRM COMPLETION OF ALL OUTSTANDING “BCC” PUNCHES

CLEAR ALL “A” PUNCHES

FINAL WALK DOWN

VALIDATION OF OWNER

CLEAR ALL “AA” PUNCHES

CLEAR ALL “BSU” PUNCHES

CLEAR ALL “BCC” PUNCHES
Next Steps

- Individual companies need to start building their own repository of AWP documents.
- Better understanding of discipline-specific planning requirements.
- Deeper understanding on the soft side.
Discipline Specific Integrated Planning
Deeper understanding on the soft side

1 TO LIVE
2 TO LOVE & BE LOVED
3 TO FEEL IMPORTANT
4 VARIETY

BASIC HUMAN
BELIEF WINDOW
RULE; IF - THEN
BEHAVIOUR
RESULTS

PRINCIPLES ON OUR BELIEVE WINDOW
INTERNAL AUTOMATIC PROGRAMMING
THE BELIEF ON YOUR BELIEF WINDOW WILL DETERMINE HOW YOU ACT
IF THE RESULTS DO NOT MEET THE NEEDS THERE IS AN INCORRECT BELIEF ON OUR BELIEF WINDOW

True results take time to measure
Q and A