METRICS

What We Know

What We Are Learning

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Suncor Energy
Productivity on large oil & gas construction projects is typically quite low (about 35 to 40%).
Definitions

**COAA Definition:** The process of organizing and delivering all the elements necessary, before work is started, to enable craft persons to perform quality work in a safe, effective, and efficient manner.

**Working Definition:** The work required for planning, packaging, executing and turning over Field Installation Work Packages.

In support of Workface Planning, the following construction planning tools are required to be complete and organized:

- System Identification
- Path of Construction
- Participative Planning
- Construction Work Areas
- Construction Work Packages
- Engineering Work Packages
- Field Installation Work Packages
- TAG Numbering
- Start-up & Turnover
WFP Objectives

- Administered through Suncor Construction Management Team
- Front End Planning Tools support
- Structured through CWP, EWP and FIWP release plans
- Contractors assume majority of development work
- Motivation – Pay by FIWP completion
Process

SCOPE DEFINITION → START-UP PLAN

SYSTEM IDENTIFICATION → PATH OF CONSTRUCTION

CWA DEFINITION → TURNOVER PLAN

PATH OF CONSTRUCTION → PARTICIPATIVE PLANNING

CONSTRUCTION WORK PACKAGES

ENGINEERING WORK PACKAGES → VENDOR DATA

TAG's Referencing Work Packages to Line & Systems

FIELD INSTALLATION WORK PACKAGES

Contract Signature & FIWP Handover to the Contractor

CONSISTANCY, CONSISTANCY, CONSISTANCY

SCOPE DEFINITION

START-UP PLAN

SYSTEM IDENTIFICATION

CWA DEFINITION

TURNOVER PLAN

PATH OF CONSTRUCTION

PARTICIPATIVE PLANNING

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CONSISTANCY, CONSISTANCY, CONSISTANCY

START-UP & TURNOVER

SYSTEM PERSPECTIVE

WORK PACKAGING PERSPECTIVE

SYSTEM PERSPECTIVE
Consider a project...

- Collection of Systems
- Broken into Construction Work Areas (CWA)
- Divided into Construction Work Packages (CWP)
- Detailed in Field Installation Work Packages (FIWP)
- Discipline Specific FIWP’s
- Track Progress of Discipline Specific FIWP’s

FIWP’s SPREAD HORIZONTALLY AND VERTICALLY
Cross Referencing
WFP In The Project Model

Suncor Project Implementation Model (SPIM)

<table>
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<tr>
<th>Project Stages</th>
<th>Idea Generation</th>
<th>Front End Loading</th>
<th>Implementation</th>
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<tr>
<td>Scoping Study</td>
<td>Design Basis Memorandum</td>
<td>Engineering Design Specification</td>
<td>Execution (EPCM)</td>
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Project Focus Areas:

- Close Out
- Commissioning and Start Up
- Execution (EPCM)
- Engineering Design Specification
- Design Basis Memorandum
- Scoping Study

Gate Stages:

- Gate 1
- Gate 2
- Gate 3
- Gate 4
- Gate 5
- Gate 6

POC Development

System Definition

CWA Definition

CWP Definition

FIWP Definition

FIWP Execution

Certification & As-builts Completed Per FIWP & System Completion
The Gasoline Benzene Reduction (GBR) Project

- Suncor Refinery Restart Project in Denver, Colorado
- ~$200M Environmental Addition to the Refinery

Project consists of a:
- Tank
- Vessel
- Reactor
- Two separation cells
- Flare System
- Piping
Reality

The GBR Project …

- Lump Sum EP + C Contract
- Suncor: Construction Management Role
- WFP introduced after restart (Gate 3)
- WFP introduced to project when:
  - Procurement 0% complete
  - Engineering 50% complete
  - Construction Contracts negotiated
Suncor Construction Management Team
Setting Expectations

- Assess State of Project
- Review & Draft WFP Program
- Review with Project Participants
- Write up & Roll out
Construction Contractor
Setting Expectations

- Establishes the ground rules
- Create the Working Structures
- Plan the Work
- Define FIWP and Schedule By FIWP
Contractor Executing

- Define, Validate & Assemble the FIWP’s
- Detail & Check the Plan
- Execute
Contractor Control

➢ Tracking to Completion
➢ Ensuring Turnover
Project
WFP Workflow

1. Contractor Sent Scope of Work
2. Contractor Returns Execution Plan
3. CMT Review
4. Clarification Meeting with Contractor
5. Internal Owner Review
6. Construction Readiness Review Conducted
7. Construction & Project Director Sign-off Execution Plan
8. Work Authorization issued Supply Chain
9. CMT monitors and controls
Meetings to cover:
- Construction and Project Updates
- 30 and 90 day look-ahead's
- Incurred Cost Review
- Construction/Project Change
- Individual Contractor Progress
- Overall Project Progress/Health

Tools:
- Work Packages
- Project Baselines
- Project Management of Change Process
- Variance Reports (with communication plans)
- Schedules (Baseline, 30, 90, current)
- Cost reports
Suncor Evaluating

- Progress
  - Contractor – Measurement & Reporting
  - Suncor CMT – Verification
- Schedule
  - Server Dedicated to Integrated Schedule
- Cost
  - Contractor – Measurement & Reporting
  - Suncor CMT – Verification
- Change
  - Suncor driven/Contractor driven
The End

There are some questions that can’t be answered by Google.