



Path of Construction



Laying the Foundation for Success

Agenda

Item	Topic	Presenter/Facilitator	Timing (min)
1	Safety Moment	Geoff Ryan	5
2	Introduction	Al Wahlstrom	10
3	Objectives	Al Wahlstrom	5
4	Path of Construction	George Gardner and Geoff Ryan	30
5	Interactive Session	Linda Savage	30
6	Questions	All	10

How to Walk the Safety Talk

Thoughts → Passion → Action → Habits → Character → Destiny



Head



Heart



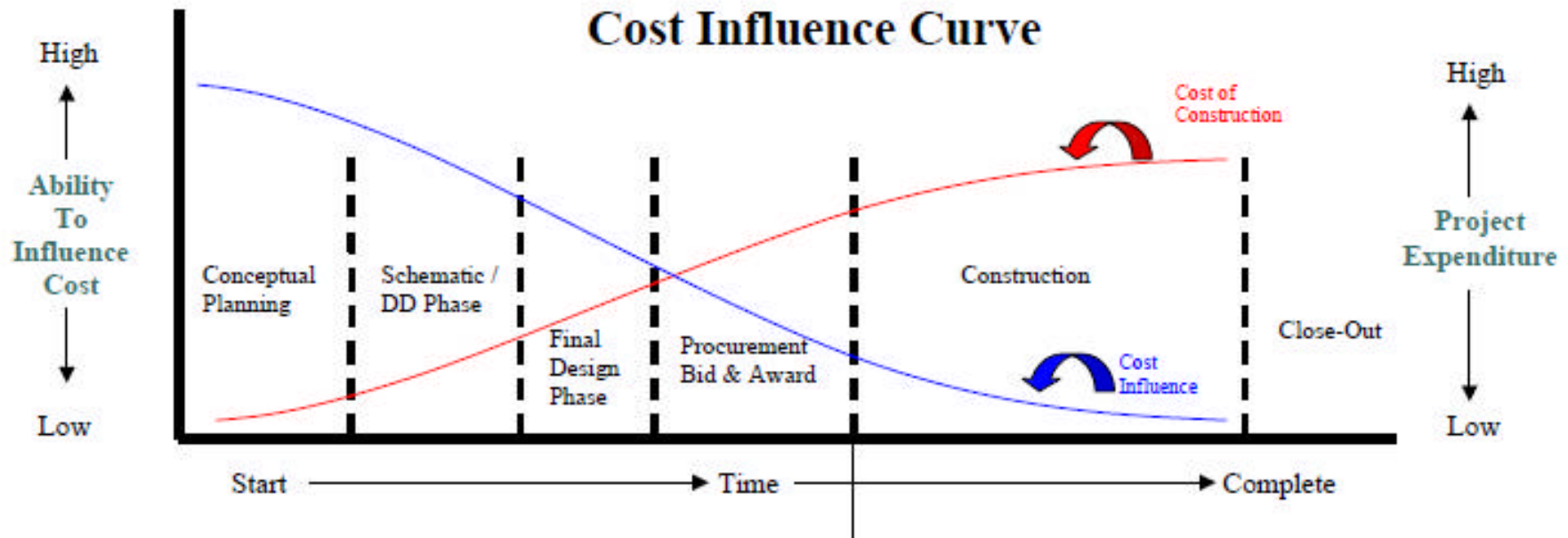
Hands

See over

Introduction

- WorkFace Planning Lesson Learned
 - Construction needs to be “involved” in the Front End?
- CII identified barriers to Front End Planning
 - Silo based project organizations are a barrier to collaboration
 - Contract models institutionalize non-collaborative approaches
 - Decision aids do not exist that allow project managers to prioritize activities that require and benefit from construction input
- Construction Work Packaging can be misaligned with WBS and CBS structures

Cost Influence Curve



KWAME Building Group Inc.

Objectives of Breakout Session

- Buy In to the Importance and Timing for the Development of the Path of Construction
- Acknowledgement that a FORMAL Process is Required
- Understand of the COAA “Path of Construction” Process
- Interactive Real Time Feedback on Path of Construction Concept



Path of Construction



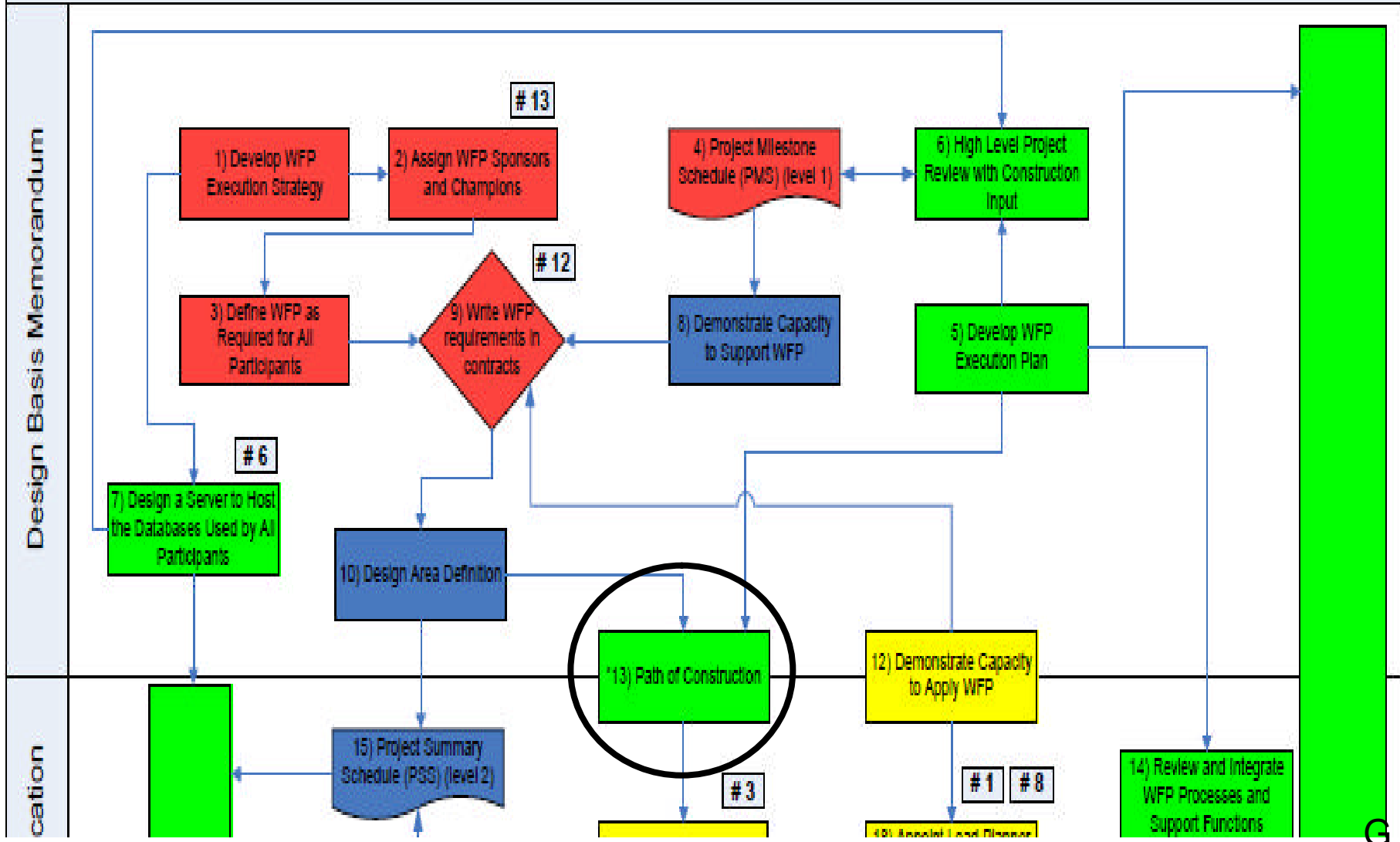
Path of Construction Working Definition

- Path of Construction is the articulation of the optimum building (installation, erection) sequence of the physical components of the facility.

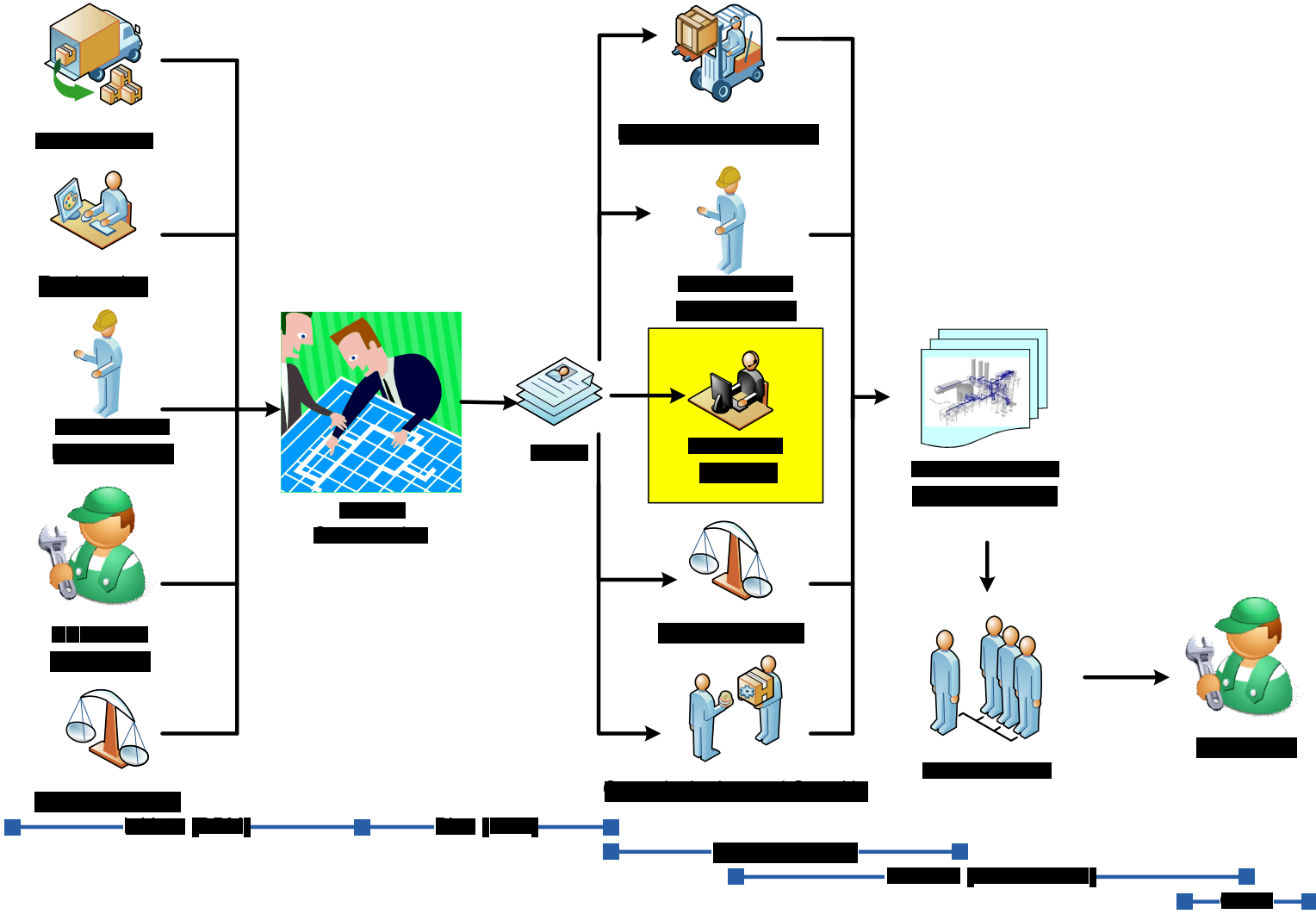
Workforce Planning Flowchart:

An Example of the Processes that are Involved in Workforce Planning

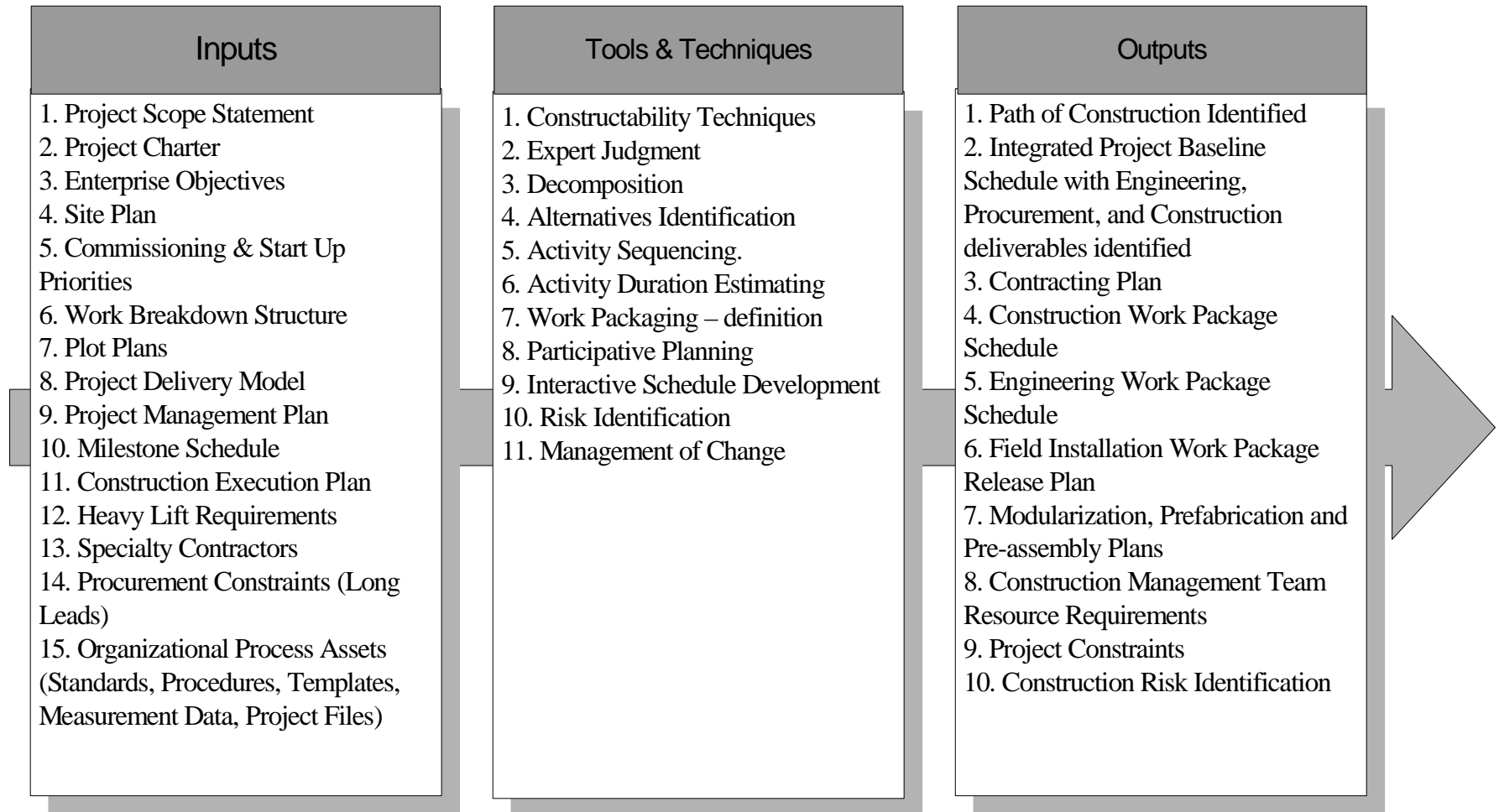
Contract is Cost Reimbursable



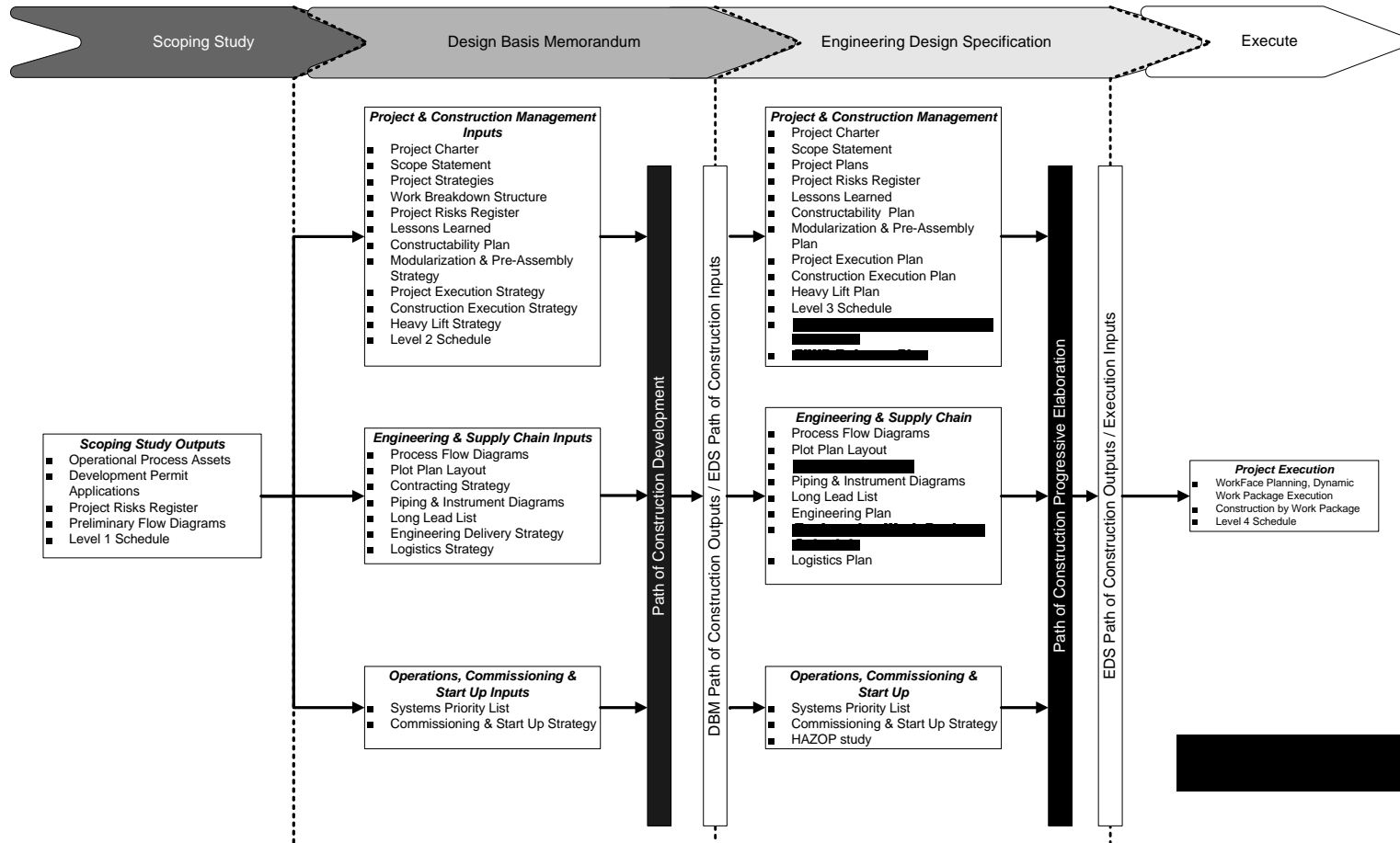
Influence Diagram



Inputs, Tools & Techniques, Outputs



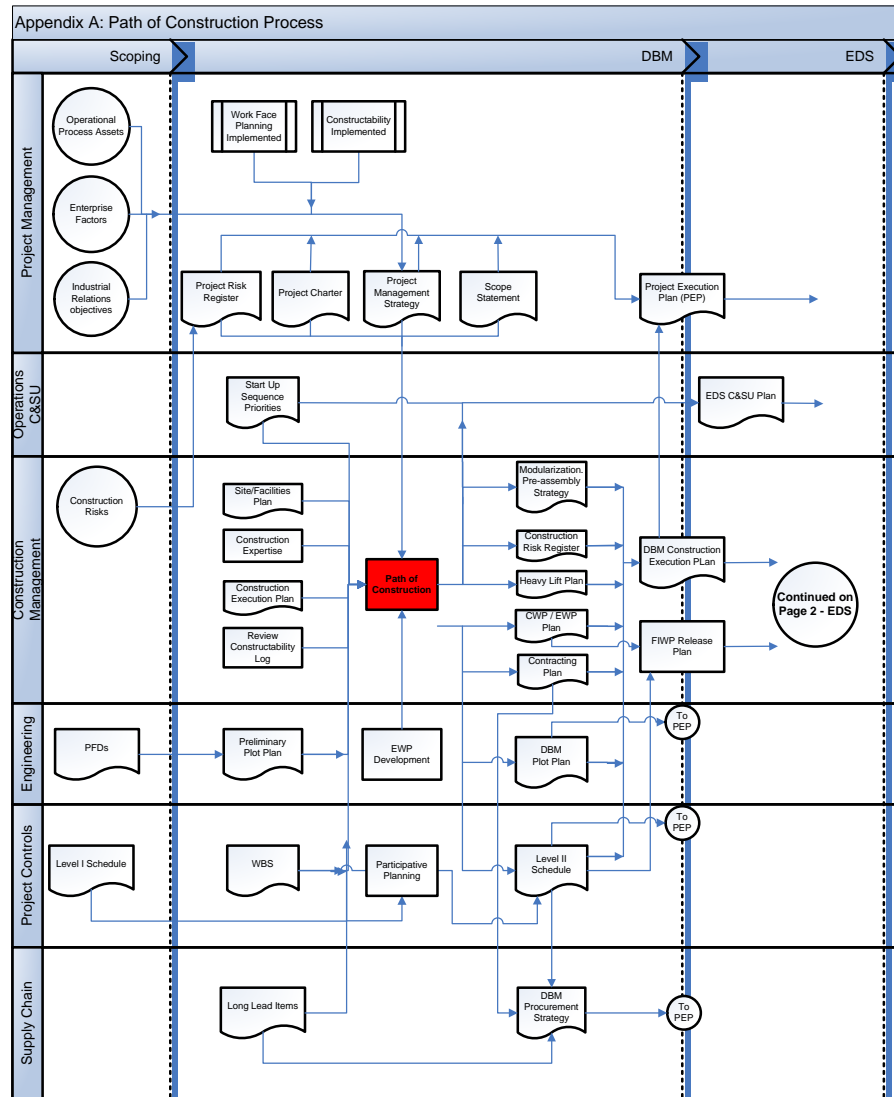
Block Diagram



Procedure

- Procedure – documentation of the established method of performing work. It explains WHO does WHAT by WHEN. Procedures present a step-by-step sequenced way to do a task consistently and with maximum efficiency
- [Link to Procedure](#)

Flow Diagram



Input Checklist and Tracking Log

Functional Area	Input	Type	Due Date (D/M/Y)	Check ü	Input Owner (specific person)
Project Management	Project Charter	Doc			
	Scope Statement	Doc			
	Project Plans	Doc			
	Project Risks Register	Doc			
	Lessons Learned	Doc			
	Project Execution Plan	Doc			
	Level 3 Schedule	Schedule			
Construction Management	Constructability Plan	Doc			
	Modularization & Pre-Assembly Plan				
	Construction Execution Plan				
	Heavy Lift Plan				
	Construction Work	Doc			
Engineering	FIV				
	Pro	g			
	Plc	g			
	Pip	g			
	En	Doc			
Supply Chain	En	Schedule			
	Co	Doc			
	Lo	Doc			
Operations and Maintenance	Logistics Plan	Doc			
	Systems Priority List	Doc			
	Commissioning & Start Up Strategy	Doc			
	HAZOP study	Doc			

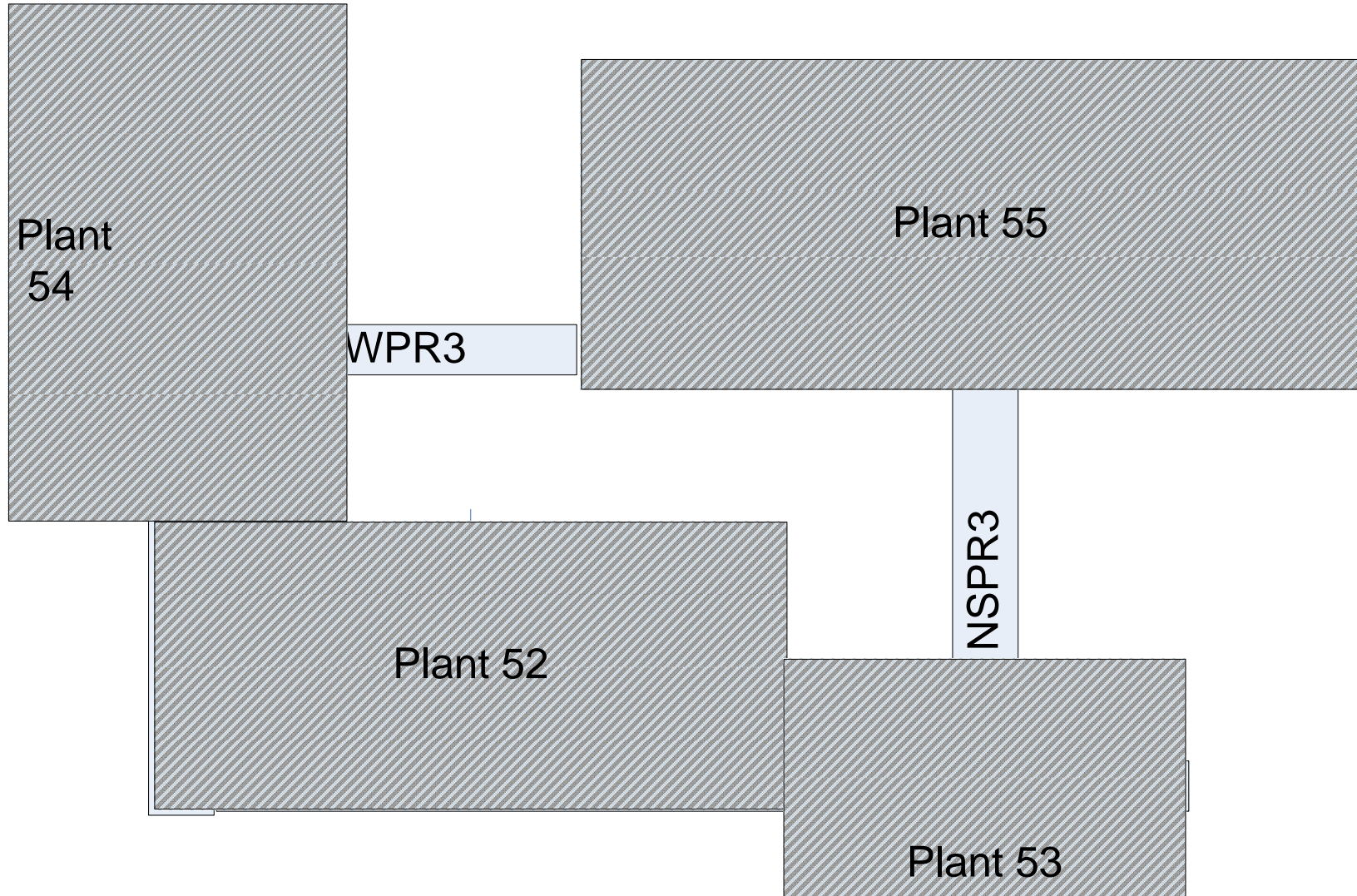
Path of Construction

- The Flow Diagram is a roadmap for the development of the Path of Construction
 - a plot plan and drawings are not enough
- The procedure, checklist, tracking log, etc. are like a compass, providing direction for who does what, when
 - “informal” planning and tracking will get you inconsistent, inexperienced, ill-timed results
- The schedule should be integrated and reflect the path of construction
 - not a bias schedule for just engineering, procurement or construction

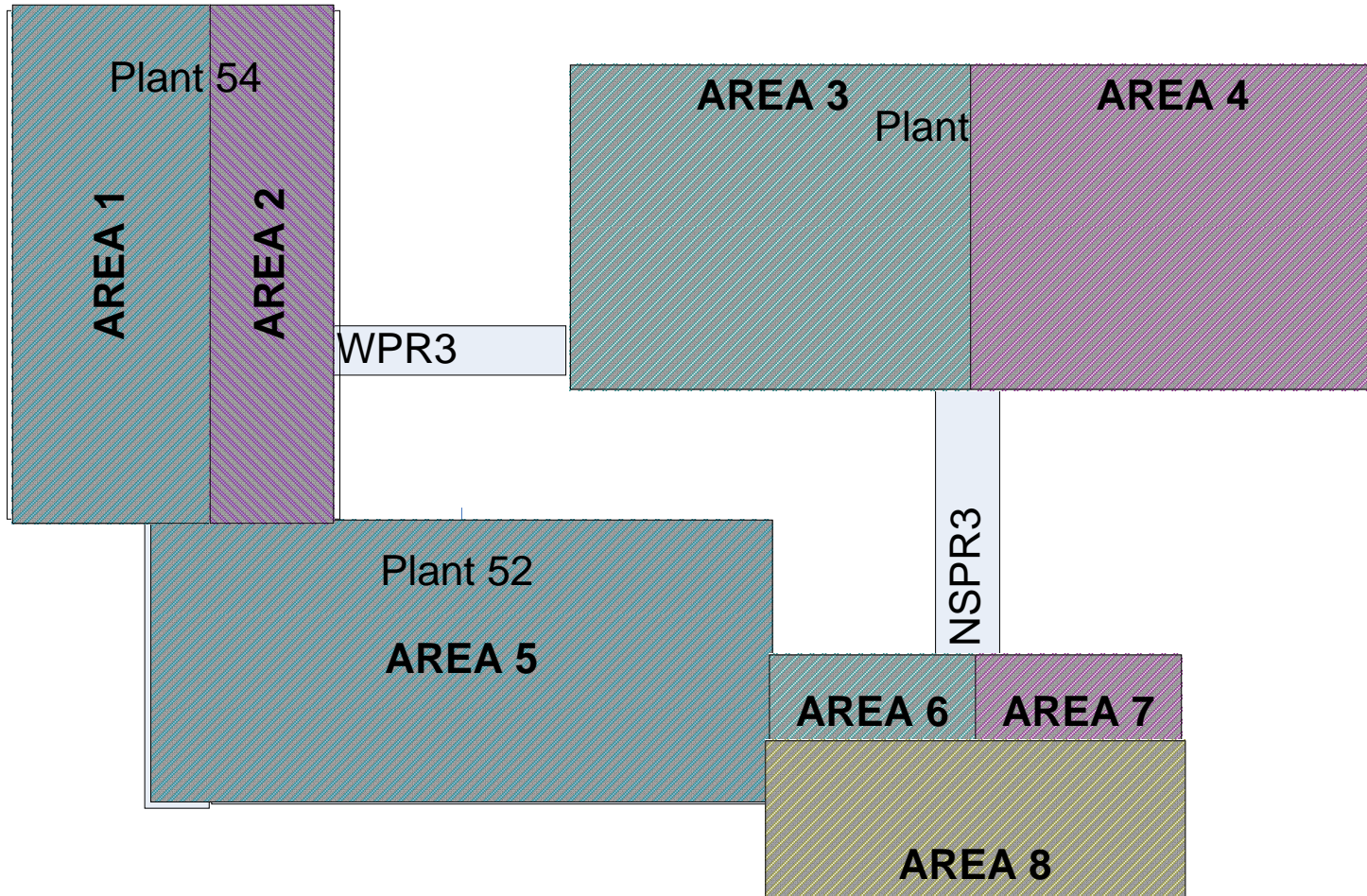


Project 123

Project 123



Project 123

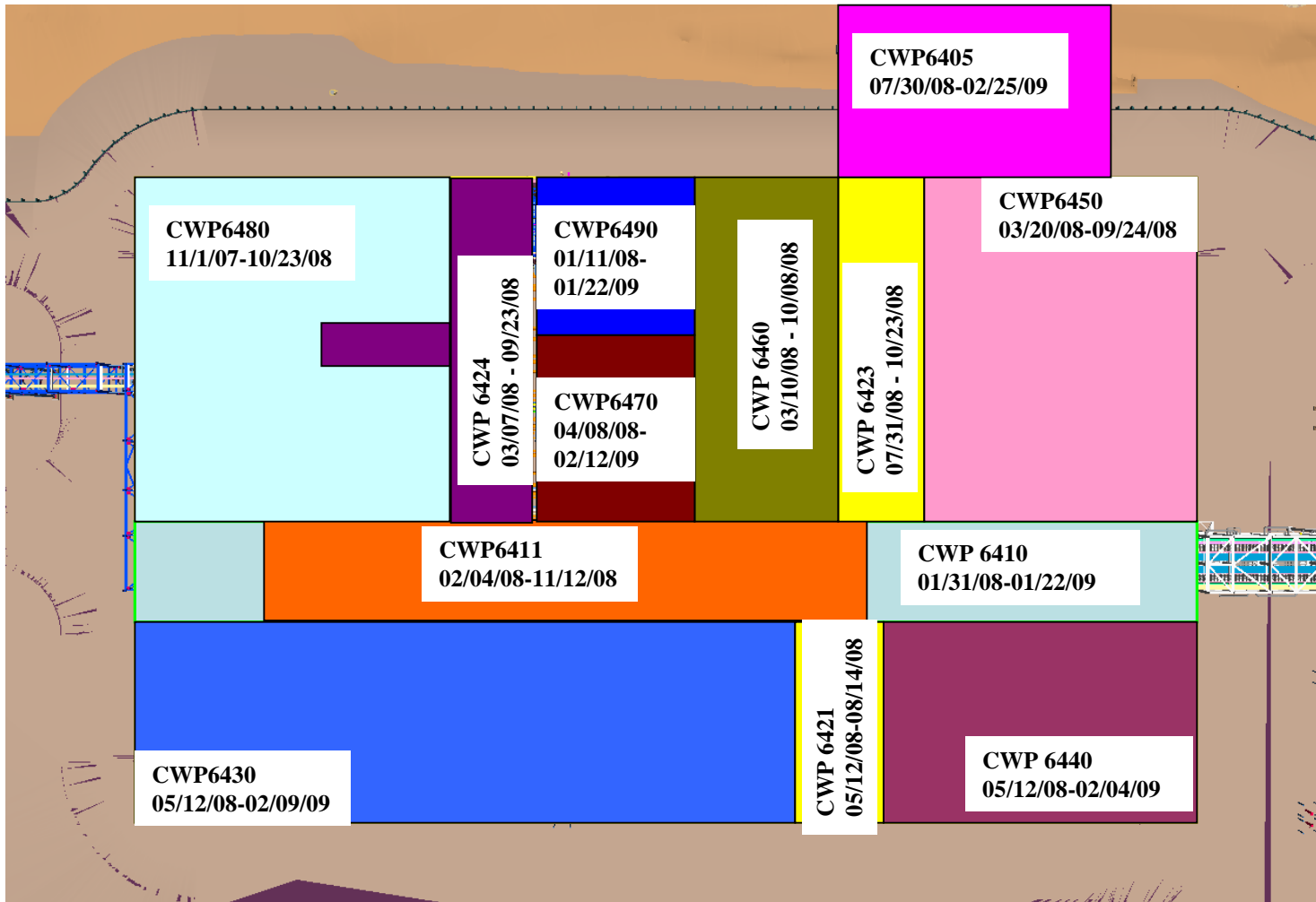


Suncor MNU Project

ISBL&OSBL and Hydrogen

Presentation to:
Suncor
14 January 2008

Path of Construction - ISBL

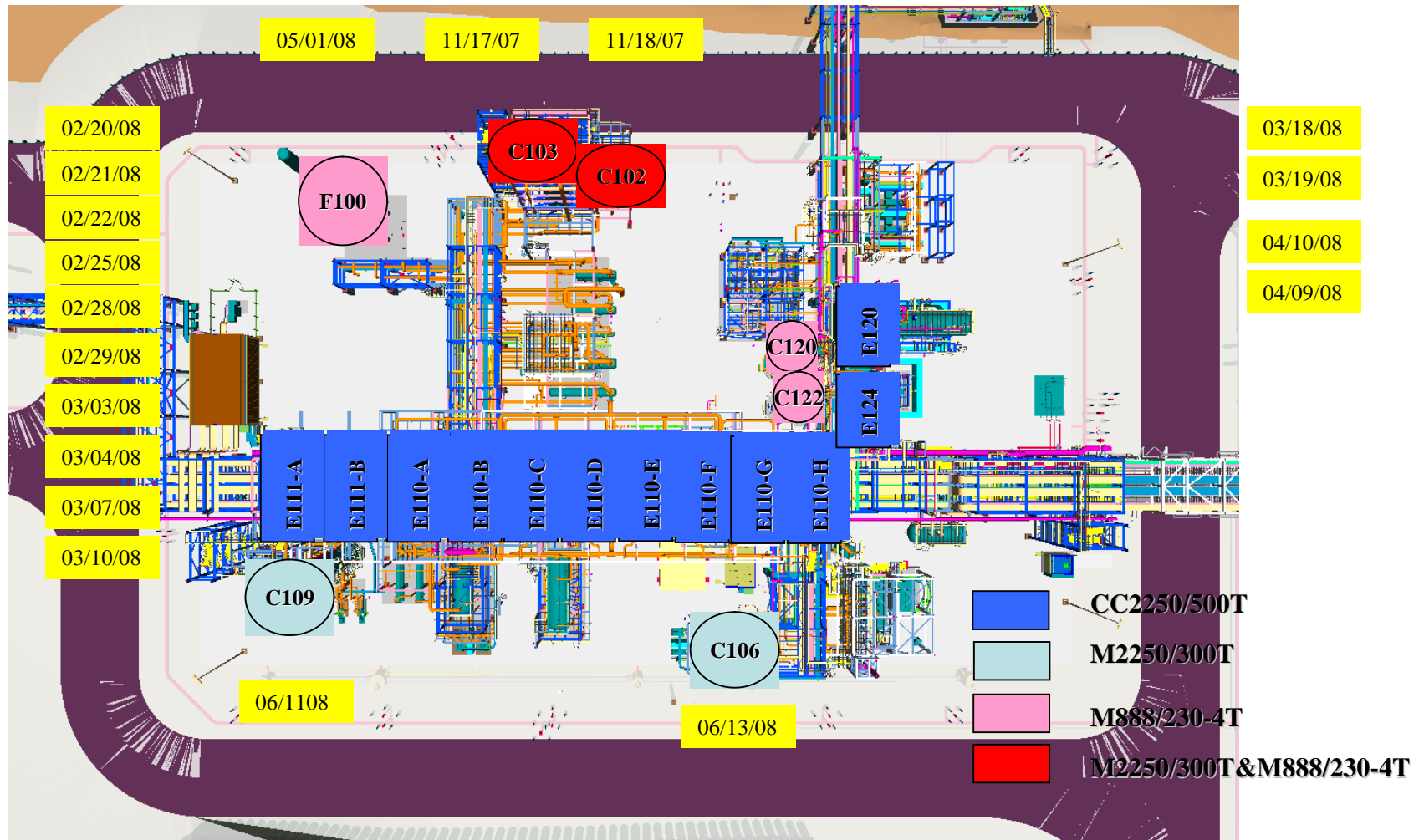


Edmonton Module Yard Schedule

Scope	CWA	Module ID	Finished Dates
ISBL	CWA 64-05	64-PRM-1201	7-Apr-08
	CWA 64-10	64-PRM-100A	13-Dec-07
		64-PRM-101A	10-Jul-07
		64-PRM-100B	21-Jan-08
		64-PRM-101B	11-Dec-07
		64-PRM-100C	11-Feb-08
		64-PRM-101C	14-Dec-07
		64-PRM-100D	14-Feb-08
		64-PRM-101D	31-Oct-07
		64-PRM-100E	17-Jan-09
		64-PRM-101E	31-Oct-07
	CWA 64-21	64-PRM-100H	31-Mar-08
	CWA 64-23	64-PRM-100F	20-Feb-08
		64-PRM-101F	7-Mar-08
	CWA 64-24	64-PRM-100G	14-Mar-08
		64-PRM-100J	28-Mar-08
	CWA 64-30	64-PRM-100K	13-Mar-08
		64-PM-204	26-Mar-08
	CWA 64-60	64-PM-202	14-Mar-08
		64-PM-203	19-Mar-08

Scope	CWA	Module ID	Finished Dates	
OSBL	CWA 56-40	56-PRM-0040M	31-Jul-07	
		56-PRM-0040N	31-Jul-07	
		56-PRM-0040P	31-Jul-07	
		56-PRM-0040Q	1-Aug-07	
		56-PRM-0040R	2-Aug-07	
	CWA 56-50	56-PRM-0080A	23-Nov-07	
		56-PRM-0080B	16-Nov-07	
		56-PRM-0080C	14-Nov-07	
		56-PRM-0080D	29-Jan-08	
		56-PRM-0080E	30-Jan-08	
		56-PRM-0080F	31-Jan-08	
		56-PRM-0080G	14-Nov-07	
		56-PRM-0080H	31-Jan-08	
		56-PRM-0080J	7-Aug-07	
		56-PRM-0080K	6-Sep-07	
		56-PRM-0080L	19-Sep-07	
		56-PRM-0080M	3-Oct-07	
		56-PRM-0080N	28-Aug-07	
		CWA 56-52	56-PRM-C100	28-Feb-08
			56-PRM-C101	18-Apr-08
	56-PRM-C102		3-Mar-08	
	56-PRM-C103		21-Apr-08	
	Hydrogen		East PR Module	30-Apr-08
			West PR Module	30-Apr-08
			East Cable Tray Modle	2-Apr-08
			West Cable Tray Modle	5-Mar-08
			Process Module 1	Technip
			Process Module 2	Technip

Construction Execution Plan – ISBL (Heavy Lift Equipments Setting)





Path of Construction



Interactive Session

- Goal
 - Get Your Feedback on this DRAFT Path of Construction Process
 - Harness Your Experience. We need Your HELP!
 - Gather Your Comments on the Handout

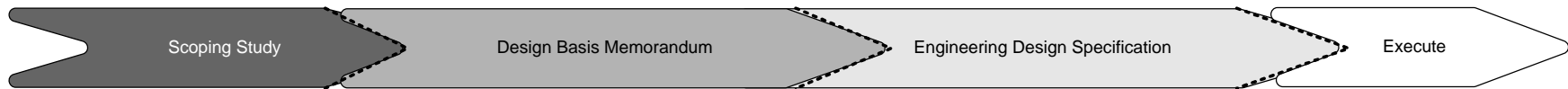
Interactive Session

- Rules of Engagement
 - Cell phones off
 - When you have a comment or question raise your hand and wait to be called on
 - Respect other speakers, wait your turn
 - Voting will be done with a show of hands
 - Linda's gavel is the great silencer **ORDER!**



Interactive Session Agenda

Item	Topic	Timing
1	Conceptually Sound	10
2	Players	10
3	Timing	10



- Scoping Study Outputs**
- Operational Process Assets
 - Development Permit Applications
 - Project Risks Register
 - Preliminary Flow Diagrams
 - Level 1 Schedule

- Project & Construction Management Inputs**
- Project Charter
 - Scope Statement
 - Project Strategies
 - Work Breakdown Structure
 - Project Risks Register
 - Lessons Learned
 - Constructability Plan
 - Modularization & Pre-Assembly Strategy
 - Project Execution Strategy
 - Construction Execution Strategy
 - Heavy Lift Strategy
 - Level 2 Schedule

- Engineering & Supply Chain Inputs**
- Process Flow Diagrams
 - Plot Plan Layout
 - Contracting Strategy
 - Piping & Instrument Diagrams
 - Long Lead List
 - Engineering Delivery Strategy
 - Logistics Strategy

- Operations, Commissioning & Start Up Inputs**
- Systems Priority List
 - Commissioning & Start Up Strategy

Path of Construction Development

DBM Path of Construction Outputs / EDS Path of Construction Inputs

- Project & Construction Management**
- Project Charter
 - Scope Statement
 - Project Plans
 - Project Risks Register
 - Lessons Learned
 - Constructability Plan
 - Modularization & Pre-Assembly Plan
 - Project Execution Plan
 - Construction Execution Plan
 - Heavy Lift Plan
 - Level 3 Schedule

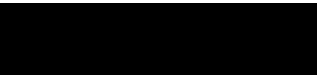
- Engineering & Supply Chain**
- Process Flow Diagrams
 - Plot Plan Layout
 - Piping & Instrument Diagrams
 - Long Lead List
 - Engineering Plan
 - Logistics Plan

- Operations, Commissioning & Start Up**
- Systems Priority List
 - Commissioning & Start Up Strategy
 - HAZOP study

Path of Construction Progressive Elaboration

EDS Path of Construction Outputs / Execution Inputs

- Project Execution**
- WorkFace Planning, Dynamic Work Package Execution
 - Construction by Work Package
 - Level 4 Schedule



Players

- ü Project Management
- ü Construction Management
- ü C&SU
- ü Operations
- ü Engineering
- ü Project Controls
- ü Supply Chain

Timing

- Scoping Study
- DBM...to early...why?
- EDS...better time...why?
- Detailed Design...too late...why?

Q&A

