

Building Work Packages



Session Format

- **Introduction**
- **Overview of the COAA approach to building Work Packages**
- **The Graham approach to building work packages**
- **The JV Driver approach to building work packages**
- **The Ledcor approach to building work packages**
- **Audience participation**
- **Questions to panel**



What is in an FIWP?



The COAA Approach to Building Work Packages

Field Installation Work Packages (FIWP)

Page 1	3D Coversheet	Attachments
Page 2	Coversheet	Technical Documentation
Page 3	Contents	○ ISO List
Page 4	Work Scope	○ Spool List
Page 5	EH&S Introduction	○ Drawings
Page 6	EH&S site info	Material Forecast
Page 7	QA / QC Requirements	Score Cards
Page 8	Tools and Consumables	○ Spool Score Card
Page 9	Check List	○ Weld Score Card
Page 10	Scaffold Request	3D Model Shots
		Other
		○ Lessons Learned
		○ Notes



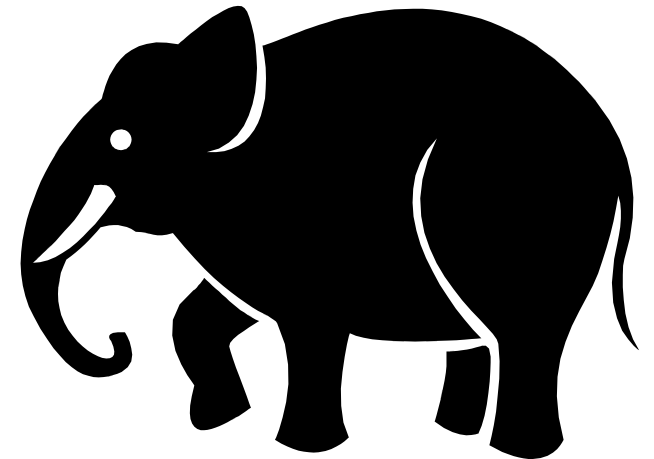
The COAA Approach to Building Work Packages

- **Who develops the FIWP?**
- **FIWPs are developed by dedicated planners (crafts people or engineering types with construction experience).**
- **Note: In some cases General Foremen or superintendents may develop the FIWP**



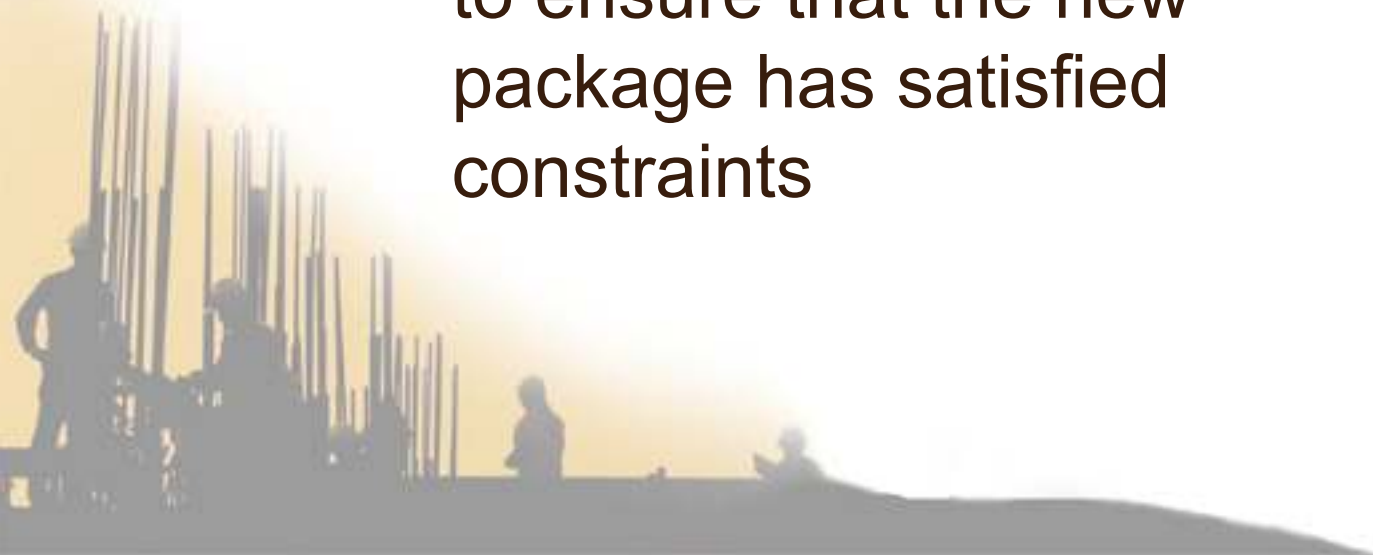
The COAA Approach to Building Work Packages

- **How big is an FIWP?**
 - Normally 500 to 1000 hours (but varies based on discipline and work being done)



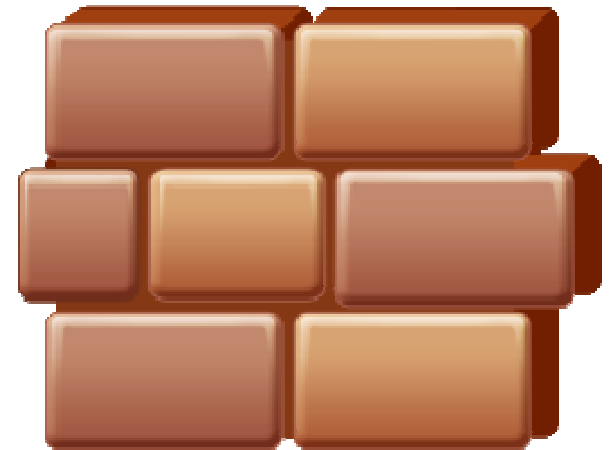
The COAA Approach to Building Work Packages

- **Can you use an FIWP that doesn't have satisfied constraints?**
 - Not normally, but you can modify the package to ensure that the new package has satisfied constraints



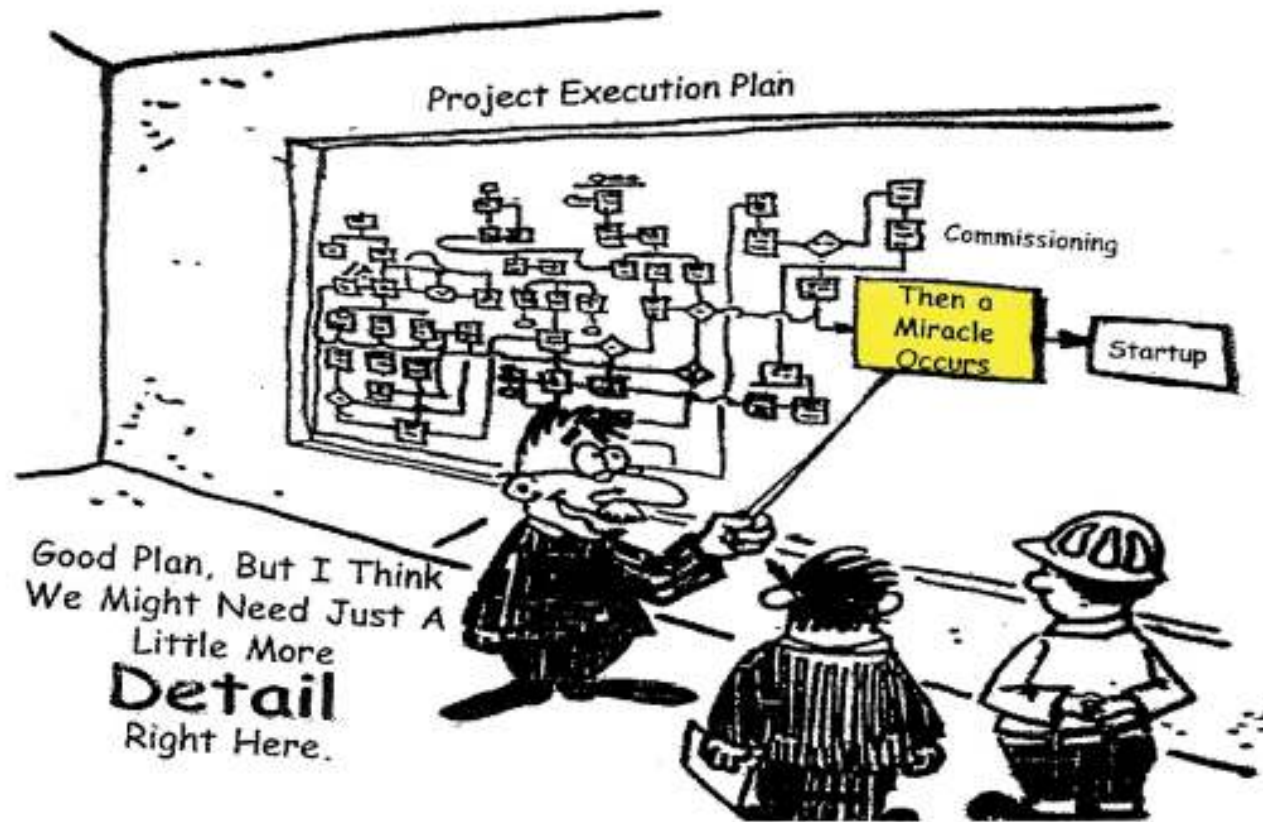
The COAA Approach to Building Work Packages

- **What are FIWP built from?**
 - Typically FIWPs are developed from Construction Work Packages but we are seeing FIWP developed directly from Engineering Work packages



The Graham Approach to Building Work Packages

Traditional execution:



The Graham Approach to Building Work Packages



- Information
- Materials
- Tools
- Equipment
- Resources
- Access to the Workface



Scope
Drawings
Planned Value
Schedule Dates
Material Confirmation
Construction Equipment
Scaffold Requirements
Safety
Quality Control
Labour
Permit
Requirements

The Graham Approach to Building Work Packages

Workface Planning Applied to Earthmoving



The Graham Approach to Building Work Packages

Workface Planning Applied to Earthmoving

- Standard set of FIWPs
- FIWPs applied to a Lift (not to a foreman)
- Foremen build daily plans to satisfy the FIWP
- Foremen report barriers daily

The Graham Approach to Building Work Packages

Beyond the COAA Model:

- WorkFace Planners develop execution plans with their superintendents for each EWP
- EP guides development of FIWPs
- Standard earthmoving FIWPs (procedures)
- Earthmoving FIWPs assigned to the task not the crew.
- Foremen create daily plans
- Barriers are logged and managed daily
- Subcontract FIWPs: built by our planners with guidance from their supervision

The JV Driver Approach to Building Work Packages

Wedding Scenario:



The JV Driver Approach to Building Work Packages



The JV Driver Approach to Building Work Packages

➡ FIWP Stakeholders

- ✓ Planners are in the Field
- ✓ Extract components to build the FIWP
 - HS&E
 - Quality
 - Project Controls
 - Schedule
 - Material Management
 - Document Control



APPROVED

The JV Driver Approach to Building Work Packages

➡ FIWP Stakeholders

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APPROVED

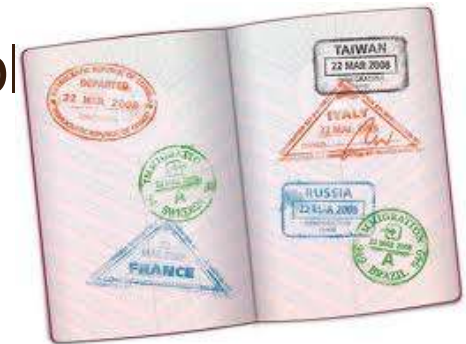
- **TCCC** (Turnover, Care, Custody and Control)



COOAA
Construction Owners
Association of Alberta

• **The JV Driver Approach to Building Work Packages**

- Red Line Drawings
- As Built Drawings
- Construction Punch List
- Signed and Completed ITPs
- Confirmation of Construction Completion
- Precommissioning



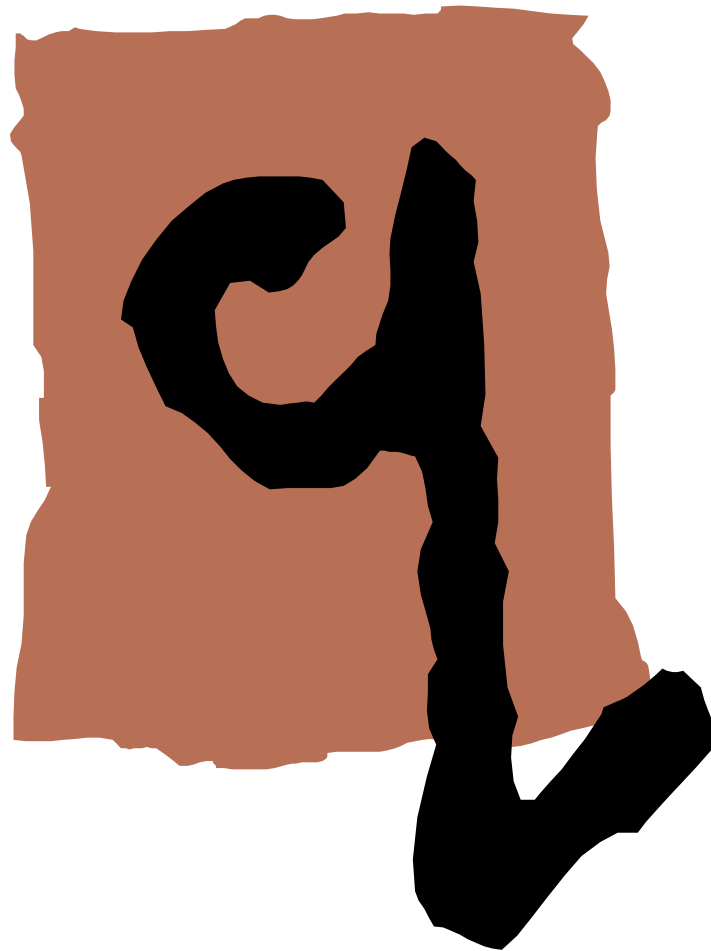


The Ledcor Approach to Building Work Packages

Building Foreman's Workface Packages



Question-and-Answer Period



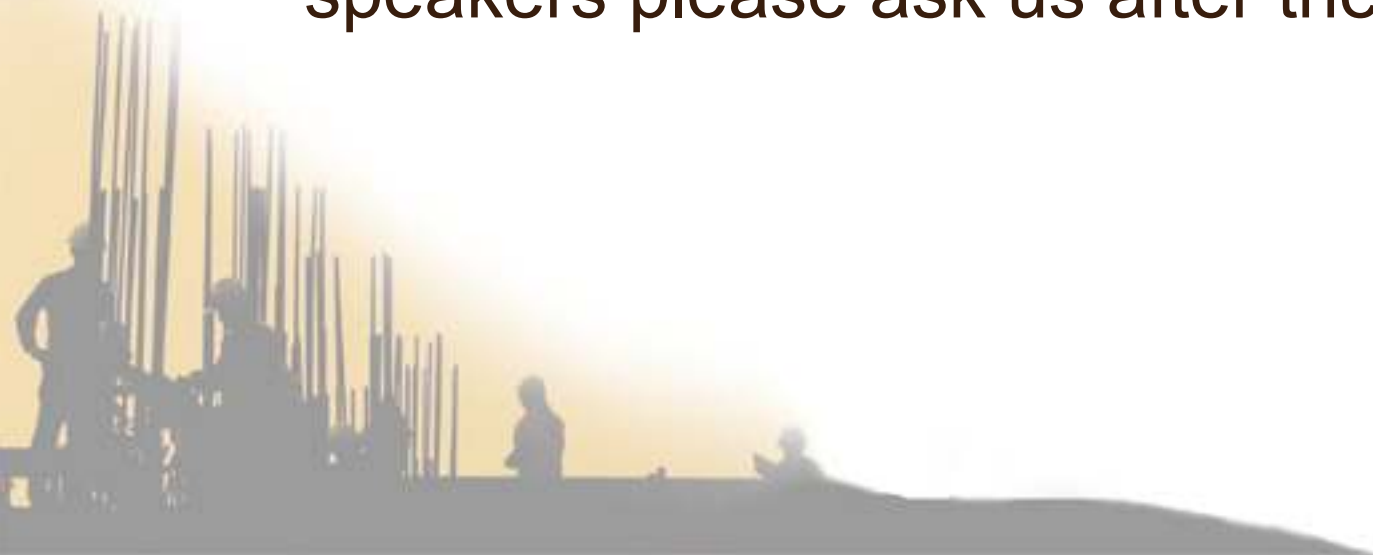
AUDIENCE FEEDBACK

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.



Closing Comments

- Thanks for attending this session and providing us with your feedback
- If you have any further questions for any of the speakers please ask us after the session



Building Foreman's Workface Packages

WFP Conference 2010
Calgary, Alberta
December 1, 2010



FORWARD
TOGETHER



Introduction to FIWP Planning

“Plan the Work”

“Release the Work”

“Work the Plan”



Dedicated Planner

Materials & Equipment
Coordinators

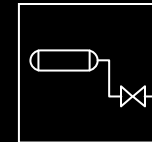
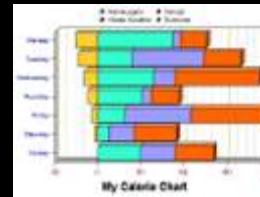
Field Installation Work Package

- ☒ Materials
- ☒ Tools
- ☒ Equipment
- ☒ Trades/Specialists
- ☒ Detailed Plan
- ☒ Drawings
- ☒ Vendor Info.
- ☒ Safety Requirements
- ☒ Supervisor Review
- ☒ Safety and QA

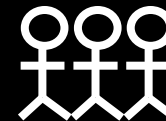
Ready



Supervisor



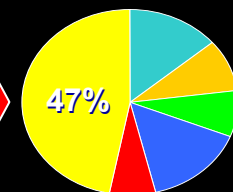
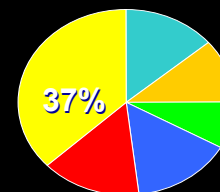
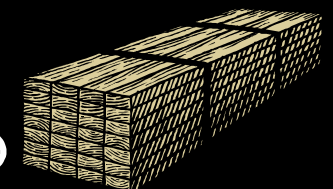
Scope



Team



Tools



Tool Time Improvement

Prerequisites

GOAL

The goal of Workface Planning is to improve performance by:

- Develop a usable and practical standard planning tool to significantly increase productivity, reduce rework and enhance the probability of project success
- Create and maintain discipline and foster honest communication to proactively resolve issues before and as they arise
- The FIWP process will be a continuously improving body of knowledge
- Based on the COAA Best Practices

PLAN THE WORK

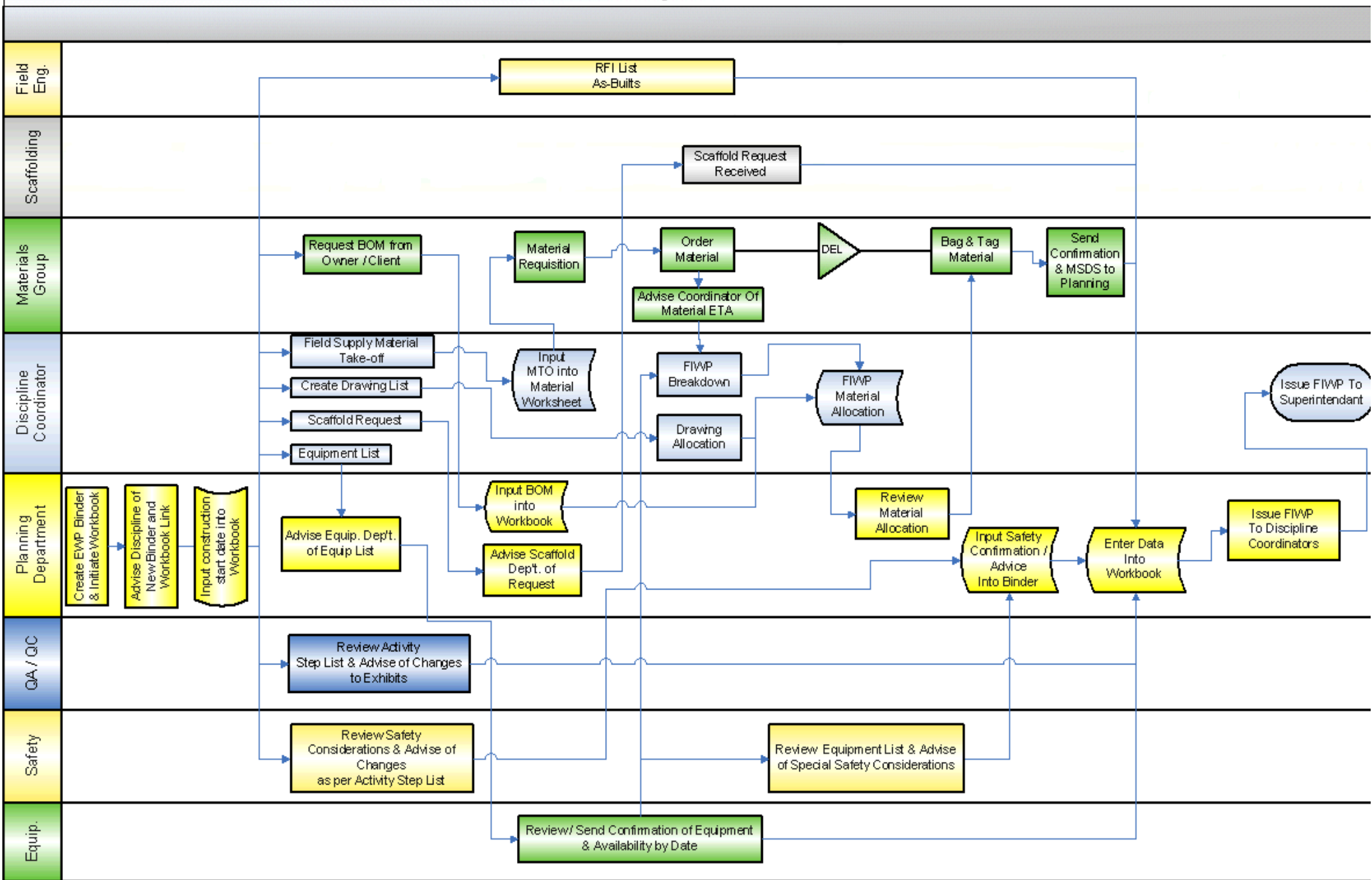
A Field Installation Work Package is a comprehensive package of Information that describes a specific scope of work in detail and typically includes:

- Safety & Quality considerations
- Discipline Drawings
- Material requirements
- Inspection & Test Certification
- Estimated number of man-hours
- Schedule
- Additional information...(To benefit the construction/implementation team.)

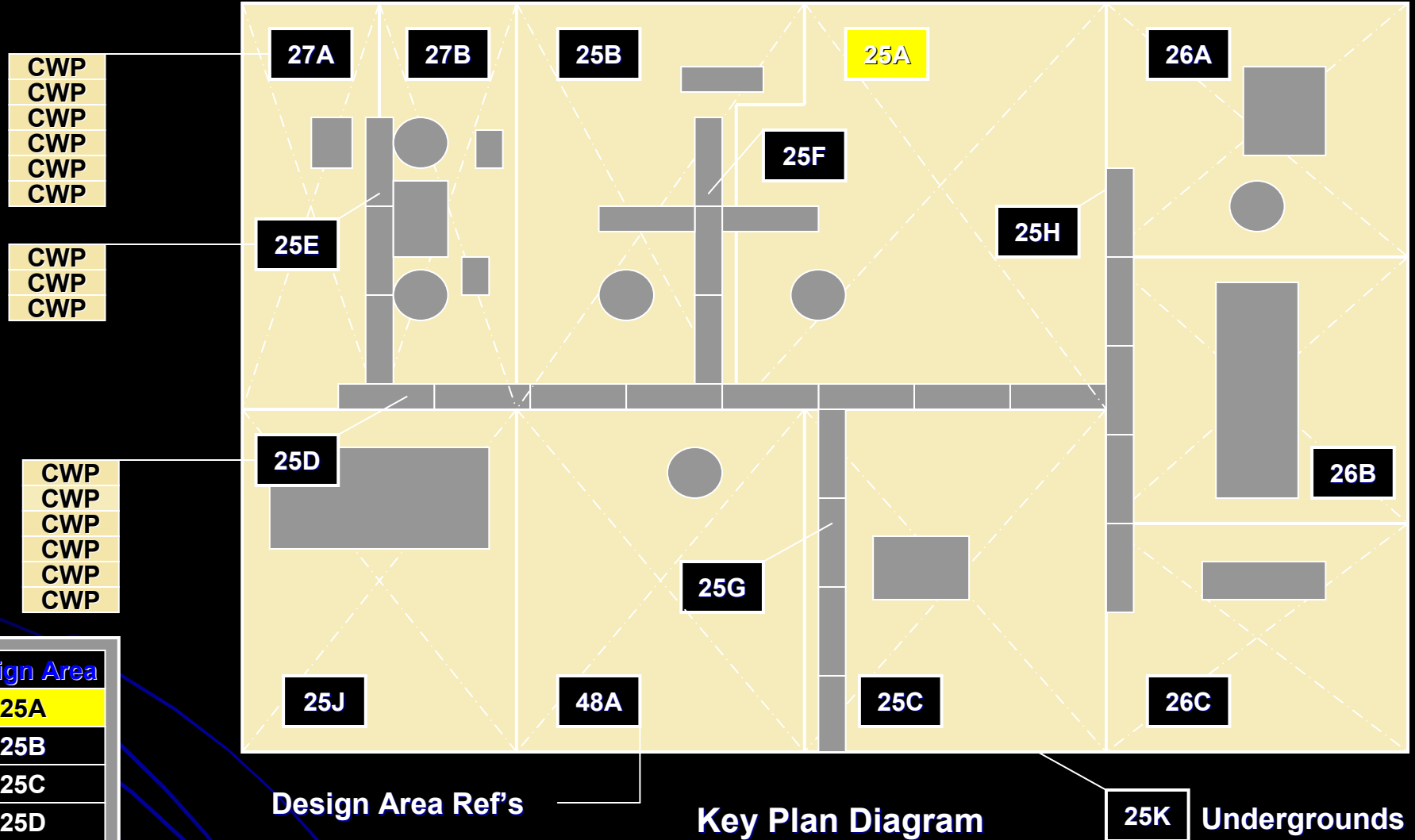
Building a picture



Ledcor Industrial – Workflow Process - EWP Breakdown Life Cycle



CWP Demarcation / Identification



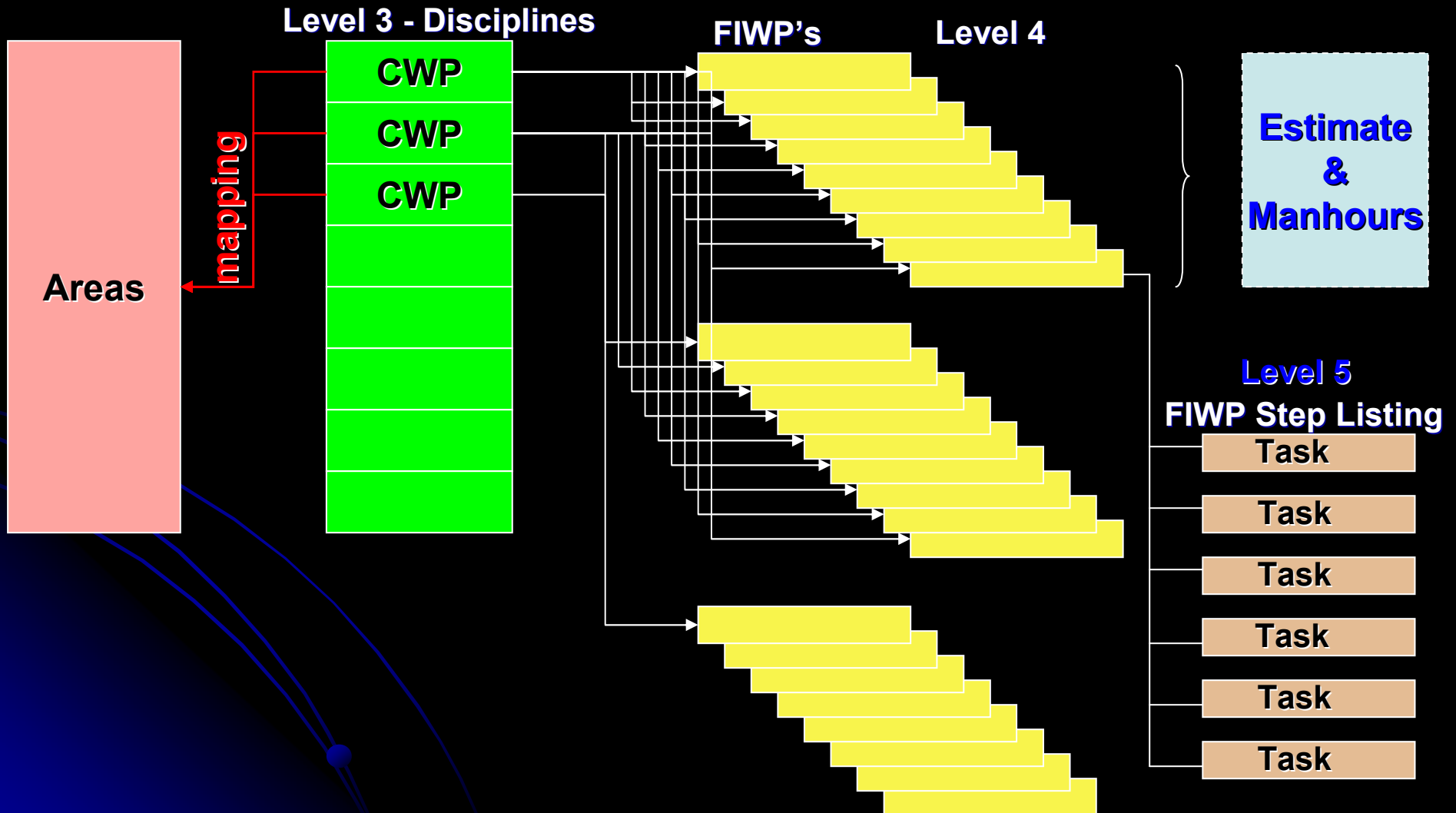
- Design Area(s) are broken into a series of Construction Work Pkgs (CWP)
- CWPs are agreed to with Engineering prior to construction

Packaging Work for FIWP's

2nd Step

1st Step (Typically determined by area)

3rd Step



Foreman's Workface Package Preparation Guiding Principles

- Keep it SIMPLE
- Practical and User Friendly
- Understandable
- Standardize Tools
- Continuous Improvement



Packaging Work for FIWP's (cont')

4th Step Create FIWP

FIWP Document Template

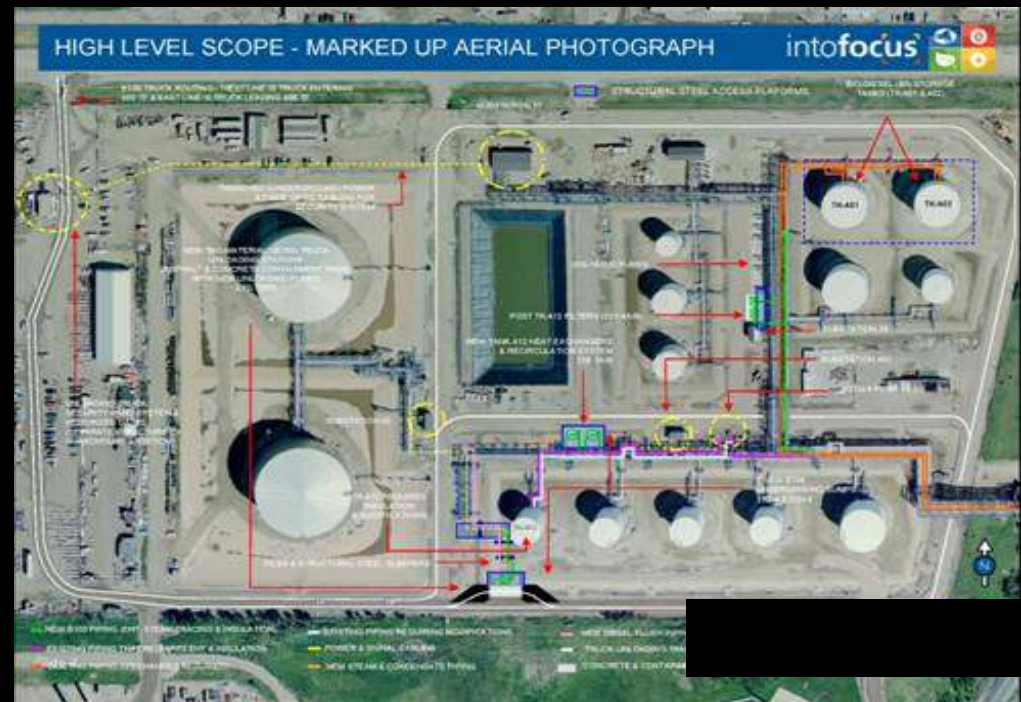
1. Introduction
2. Health Safety & Environmental
3. Scope Of Work
4. Drawings & Data
5. Material Data
6. Inspection & Test Plan (QA/QC)
7. Operation & Maintenance
8. Support Information



- Dedicated AND Experienced planners break out CWP's into specific Field Installation Work Packages (FIWP's)
- The consideration for FIWP Packages is commended during the detailed engineering phase

1.0 Introduction

General overview of the scope of work to be undertaken with specific attention to any items needing consideration by Construction implementation.



2.0 Health Safety & Environmental

- Hazard Management Activities
- Work Pack Risk Assessment
- Material Safety Data Sheets
- Task Risk Assessment
- Manual Handling
- Specialist Safety Requirements
- Provision & Use of Work Equip.
- Toolbox Talks



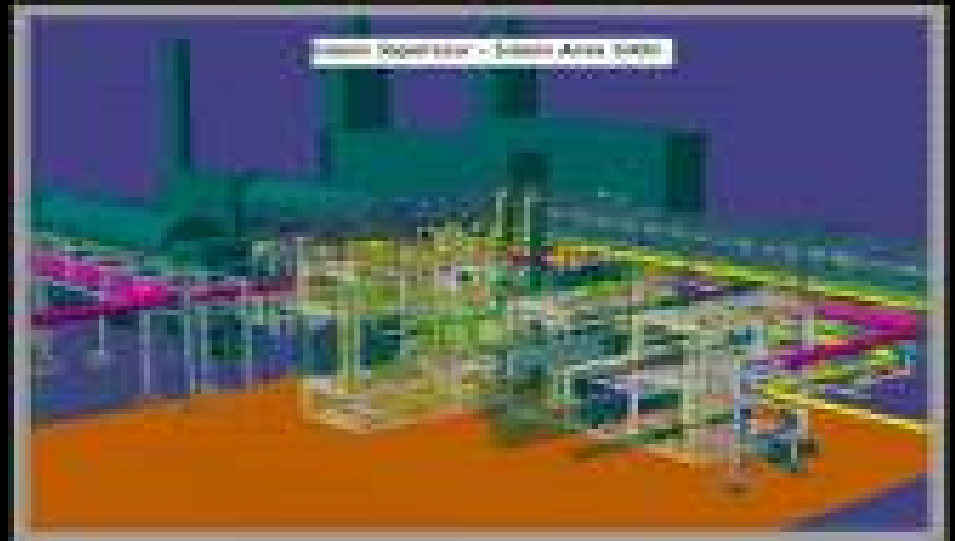
3.0 Scope of Work

- Piping
- Mechanical
- Instruments
- Electrical
- Civil/Structural
- HVAC
- **Job Cards / Activity Sheets**
- Joint Completion Matrix
- Lifting Requirements
- Engineering Queries
- Hydro/ Integrity Testing
 - **Planning**



4.0 Drawings & Data

- Piping
- Mechanical
- Instruments
- Electrical
- Civil/ Structural
- HVAC
- Architectural
- Lifting Requirements



5.0 Materials

Material Requisitions

- Piping
- Mechanical
- Instruments
- Electrical
- Civil/Structural
- HVAC



FIWP - SmartPlant Materials Integration

- Forecasts are created by Field Installation Work Package (FIWP) priority
 - Only Inventory – Identify lines with 100% material on hand
 - Approved Purchase Orders – Create shortage reports
- Shortage reports forwarded to expediting group
 - Identify possible long lead items impacting schedule
 - Focus expediting efforts where most needed
- Material list added to FIWP package and signed off
- Pick tickets for 100% on hand inventory packages forwarded to the warehouse for bag & tag and staging
 - Release Authorization from warehouse
 - Picked heat numbers recorded for later user by Quality Assurance Department

Buildable List by FIWP



BOM Summary Status Report

SUNCOR

Forecast Code	Run Number	Short Desc	Description	Type	Job Status	All Positions
9311-14-51	1	Tier 1	Batch B Tier 1	FR	FORECASTED	Yes
Issue Status	List Status	Allocate Level	Shortage	Split Type	Split Attribute	
Best Qty	0	Only inventory	2-Pass Optimized (Any)	None	Only inventory	

Assigned Warehouses

Order Seq	Warehouse	Short Desc	Description	Company Code	Company Name
1		Mod Yard Warehouse	Mod Yard Warehouse 2		

List of Work Packages:

Prio#	1
Work Package	9311-14-51

BOM Status Report

Prio# 1 Work Package: 9311-14-51

Total BOM's: 10

Total 100% Issued: 0

BOM Path	Issue Progress	% Issued	Total List Qty	Total Allocated Qty	Actual Resv Qty	Total Issued Qty	Available
FIELD PING ISO/99PR-9311-14/MT99-L-BD9003-14	None	0.0	3.000	0.000	3.000	0.000	Yes
FIELD PING ISO/99PR-9311-14/MT99-L-BD9008-11	None	0.0	4.000	0.000	3.000	0.000	No
FIELD PING ISO/99PR-9311-14/MT99-L-NG9035-3	None	0.0	3.000	0.000	3.000	0.000	Yes
FIELD PING ISO/99PR-9311-14/MT99-L-P9003-3	None	0.0	2.000	0.000	2.000	0.000	Yes
FIELD PING ISO/99PR-9311-14/MT99-L-P9003-4	None	0.0	1.000	0.000	1.000	0.000	Yes
FIELD PING ISO/99PR-9311-14/MT99-L-P9003-5	None	0.0	1.000	0.000	1.000	0.000	Yes
FIELD PING ISO/99PR-9311-14/MT99-L-P9015-26	None	0.0	3.000	0.000	0.000	0.000	No
FIELD PING ISO/99PR-9311-14/MT99-L-PW9012-3	None	0.0	2.000	0.000	2.000	0.000	Yes
FIELD PING ISO/99PR-9311-14/MT99-L-PW9012-4	None	0.0	1.000	0.000	1.000	0.000	Yes
FIELD PING ISO/99PR-9311-14/MT99-L-PW9012-5	None	0.0	1.000	0.000	1.000	0.000	Yes

Reported by FIWP Package at Isometric Level

List of all Lines that are available to begin construction



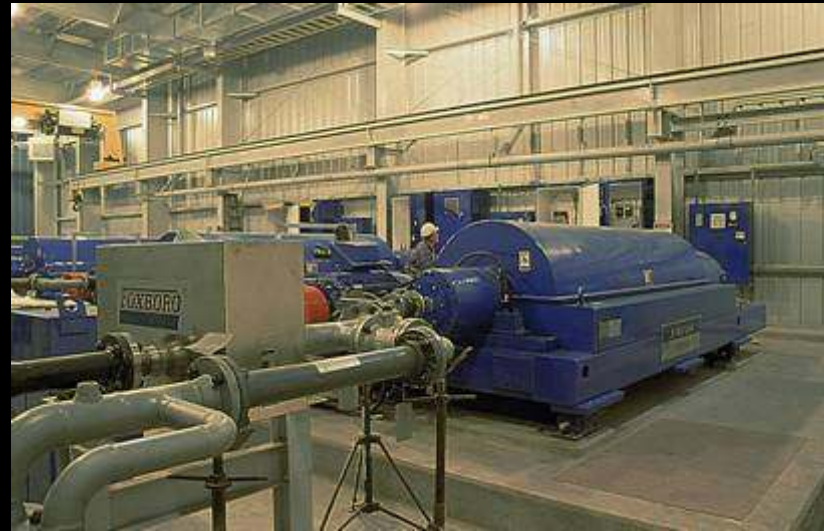
6.0 Inspection & Test Certification

- Owner Specification/ Code Inspection & Test requirements
- Mechanical Completion Certification
- Punch lists
- Joint Integrity Certificate
- Integrity Test Certificate
- Control Completion Certificate (process control items)
- System Handover Certificate



7.0 Operation & Maintenance

- Operating Manual Updates
- Maintenance Routine Updates

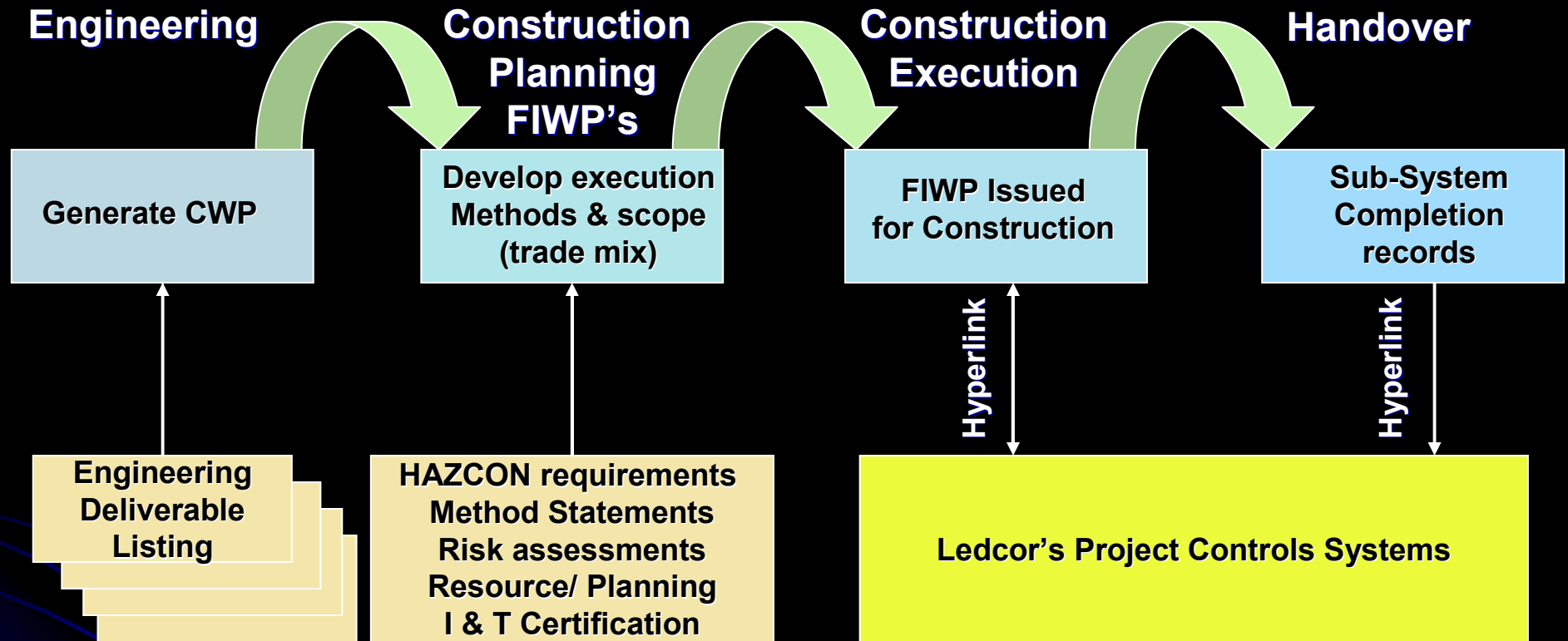


8.0 Additional Information

- Procedures/ Work Instructions
- Specifications
- Miscellaneous Data
- Weight Control
- Vendor Data
- Other Data



FIWP – Release The Work



- Responsible parties, which are to always include the Foreman, review the completeness and accuracy of the FIWP package prior to commencing work in the field
- Superintendents/PMs/Coordinators make final go/no-go decisions on FIWP release
- Foremen execute FIWP's
- Project Controls monitor FIWP's
- Quality Assurance audit FIWP's

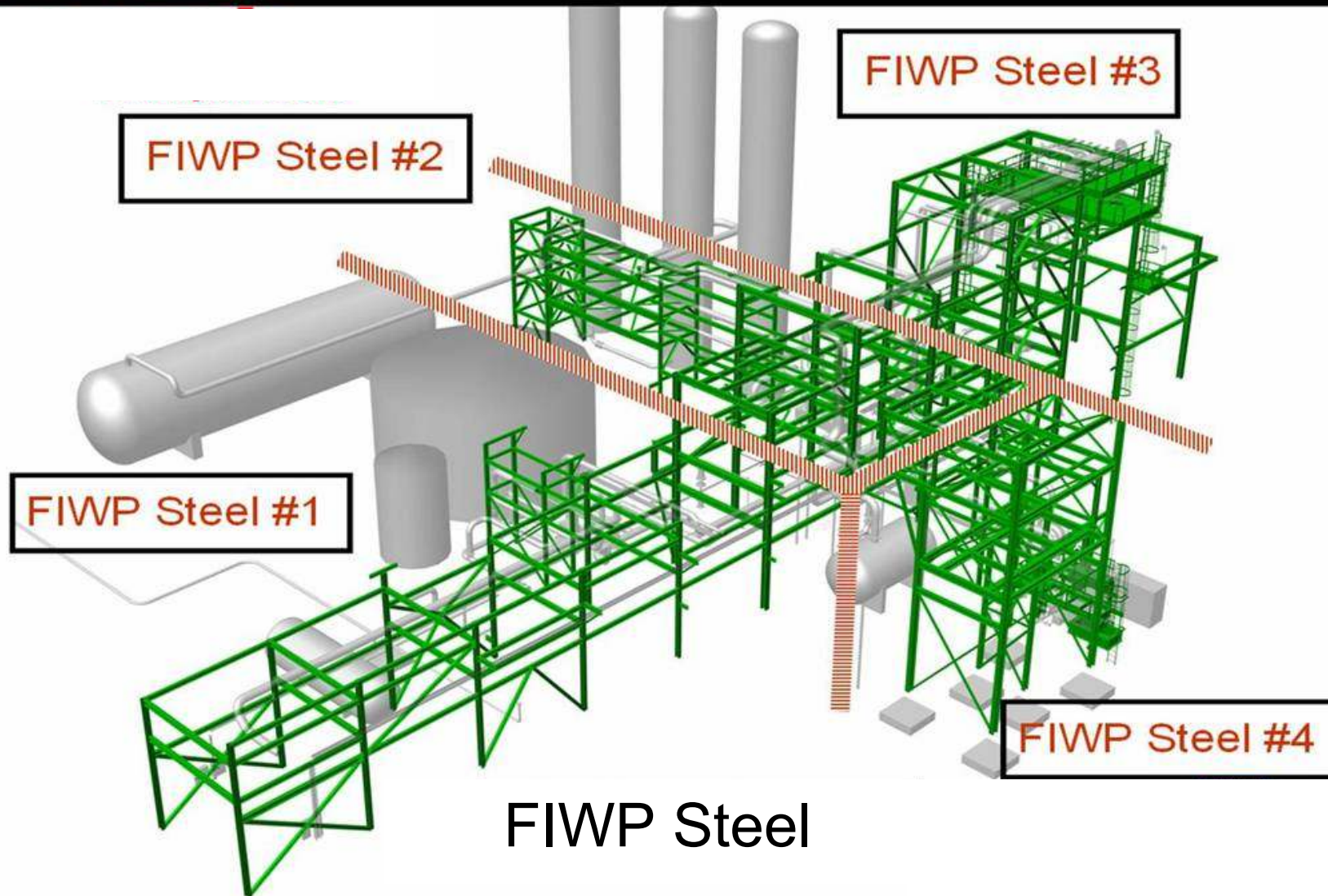
SUMMARY

The Ledcor Group...Workface Planning to improve performance by:

- Planning using Practical methods
- Making the “Bar” clear
- Creating discipline
- Proactively resolving issues
- Significantly increasing productivity
- Reducing rework
- Continuously Improving



OPEN PANEL DISCUSSION



How Big is an FIWP Package?

Use Common Sense: It is a package of work as would normally be given to a foreman to build.

- Work for an FIWP is to be discipline specific and to a individual Foreman's crew.
- The size of an FIWP can depend on the complexity of the work. Therefore work may be of longer (or shorter) than 2-3 weeks in duration. (example - Large concrete foundation (4 weeks), setting a piece of equipment (4 days).)
- FIWP packaging needs to align with all systems. (i.e. Estimating, FWP, Schedule)
- An FIWP may remain 'open' for longer periods (on hold at <100% complete) awaiting the completion of dependant and integrated activities from another FIWP. (example - Final termination of a group of cables, may be on hold until the equipment is set.)

Clarifier Base – *Concrete Pour*



OIL SANDS PROJECT



Heavy lift of rotary crusher at C&C silo



First pipe module being set at U&O silo

Oilsands SAGD Expansion *Setting OTSG Stack*



DIAMOND MINE – *Structural Steel*



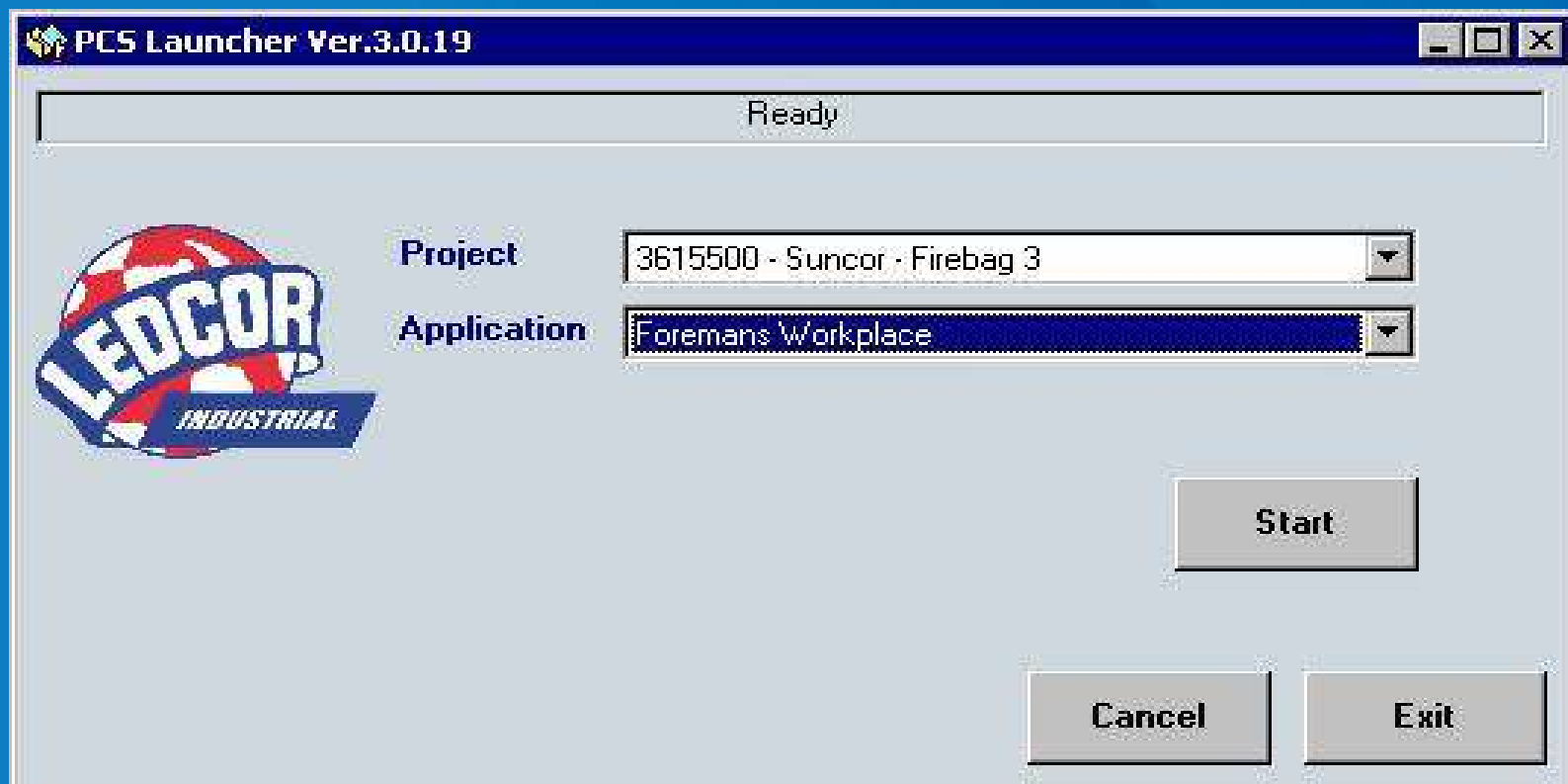
Central Processing Plant – *PIPERACK MODULES*



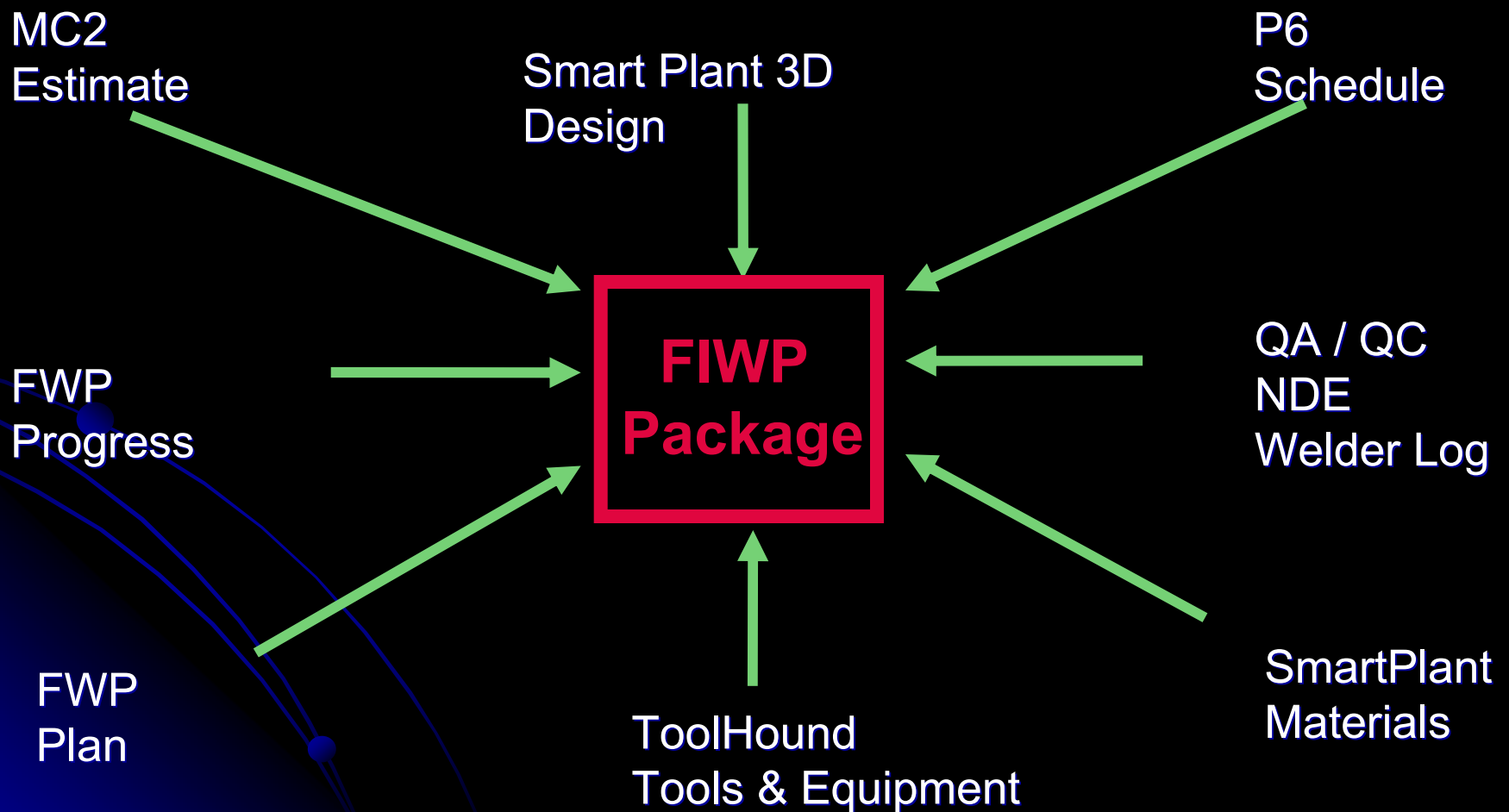
HEAT TRACING



Progress Monitoring and Control of FIWPs



Field Installation Work Package (FIWP) Planning Interfaces



Foreman's Workplace

- Foreman's Planning Tool
- Compile Earned Progress
- Report Earned Progress by
 - Foreman
 - Schedule ID
 - JDE Cost Code
 - System
 - CWP
 - FIWP
- Data from IFC estimate information
- Worksheets continually updated to reflect current scope of work

Project: 300006	User Name: tpulish	Category: Furniture	30 Dec 06	30 Dec 06	Reported by:	Full Category	Other Options	
Item ID & Prio		Description			Activities			
Item ID	Item Prio	Item Name	Item Description	Item ID	Item Prio	Item Name	Item Description	Item ID
20	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
30	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
40	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
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580	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
590	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
600	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
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710	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
720	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
730	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
740	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
750	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
760	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
770	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
780	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
790	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
800	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
810	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
820	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
830	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
840	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
850	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
860	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
870	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
880	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
890	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
900	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
910	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
920	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
930	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
940	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
950	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
960	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
970	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
980	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
990	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C
1000	L.R. A-01	1001	FR - Crown Oak Din. Dining FR	1001200	1000	FR	C	C

FWP – Levels of Detail

PIPE



Area



CWP / EWP



FIWP



Line



ISO



Spool



Installation Progress

CONCRETE



Design Area



CWP / EWP



FIWP





































Foundation

Scorecard Components

Concrete:

Project: 3615920		User : gbarlage		<div><div></div></div>	09-Dec-07	15-Dec-07	Change Category	Grouping	Refresh %	Full Collapse													
Item ID & Hrs			Descriptions								Activities												
SCOPEGROUP ID	SCHED	HRS	UM	DESCR	CWP	FWP	AREA	DRAWING	SYSTEM	PRIORITY	EXCAVATE	FORMWORK	ANCHOR BOLTS EMBEDS	REBAR	QC RELEASE	PLACE CONCRETE FINISH	STRIP FORMS	PATCH & RUB	PREBACKFILL PREP	QC RELEASE 2	BACKFILL COMPACT	TURNOVER	COMPLETE
5	LCC23A08-C	435.3	MB	(#12) N/S Elev Beam-West	23A08		23A	005B-210-03				0%	0%										0%
10	LCC23A08-C	1,287.2	MB	(#4) Complete E/W South B	23A08		23A	005B-210-03															0%
15	LCC23A08-C	308.8	MB	(#7) N/S Elev Beam-Central	23A08		23A	005B-210-03															0%

Piping:

Project: 3615920		User : gbarlage		 26-Aug-07	01-Sep-07	Change Category	Grouping	Refresh %	Full Collapse																		
Item ID & Hrs			Descriptions												Activities												
SCOPEGROUP ID	SCHED	HRS	FWP	AREA	DRAWING	SYSTEM	PRIORITY	SPOOL	SIZE	ISOMETRIC	FLD DIA INCHES	TESTPACK	GLYCOL TRACE	WEIGHT	RECEIVED	SHAKEOUT DISTRIBUTE	RIGGED	BOLT-UPS	FIELD WELD	SUPPORTS	RELEASED FOR HYDRO	PREHYDRO WORK	HYDROTEST	REINSTATE	INSULATE	TURNOVER	COMPLETE
5	LCC14289-C	5.0	321-5	142	E456	CAB			12	142-BW421C	12	321	Y														
10	LCC14289-C	61.1	321-6	142	E235	CAB			12	142-BW480C	12	331	N														
15	LCC14289-C	51.1	142	142		BWS			10	142-BW480C	10	215	N														

- Itemized scope of work
- Schedule IDs
- Estimate MHs
- Area/System/EWP/Line#/Iso#/Priority/etc...
- Activity steps

FWP Main Screen

LEDCOR FWP - [Project: 3615500 --> FWP: Concrete --> User: gbarlage --> Version: 4.1.91]

Utilities Menu: Exit

Project: 3615500 User: gbarlage 02-Dec-07 08-Dec-07 Change Category Grouping Refresh % Full Collapse

Item ID & Hrs			Descriptions						Activities												
SCOPEGROUP ID	SCHED	HRS	UM	DESCR	CWP	FWP	AREA	DRAWING	EXCAVATE	FORMWORK	ANCHOR BOLTS EMBEDS	REBAR	QC RELEASE	PLACE CONCRETE FINISH	STRIP FORMS	PATCH & RUB	PREBACKFILL PREP	QC RELEASE 2	BACKFILL COMPACT	TURNOVER	COMPLETE
215	3550245003	55.1	MG	G.B. Sec.C B-1 to C-1	EWP-E2-10-02-4	E2-10-02-4-02	3615520G	D093-0-5042-1	C	C	C	C									51%
210	3550245003	55.1	MG	G.B. Sec.C A4 to B-4	EWP-E2-10-02-4	E2-10-02-4-02	3615520G	D093-0-5042-1	C	C	C	C	22%	3%							51%
205	3550245003	56.5	MG	G.B. Sec.C A4 to A-3	EWP-E2-10-02-4	E2-10-02-4-02	3615520G	D093-0-5042-1	C	C	C	C									50%
200	3550245003	64.4	MG	G.B. Sec.C A3 to A-2	EWP-E2-10-02-4	E2-10-02-4-02	3615520G	D093-0-5042-1	C	C	C	C	80%	52%	7%						51%
195	3550245003	56.5	MG	G.B. Sec.C A2 to A-1	EWP-E2-10-02-4	E2-10-02-4-02	3615520G	D093-0-5042-1	C	C	C	C	55%								50%
190	3550245003	55.1	MG	G.B. Sec.C A1 to B-1	EWP-E2-10-02-4	E2-10-02-4-02	3615520G	D093-0-5042-1	C	C	C	C	22%	10%							51%
185	3550330000	2,857.4	MG	Floor Slab - Structural	EWP-E1-10-02-4	E1-10-02-4-01	3615510C	D093-0-3060-2	C	20%											2%
180	3550330000	3,390.4	MG	Floor Slab - Cellular	EWP-E1-10-02-4	E1-10-02-4-01	3615510C	D093-0-3060-2	C	20%											2%
175	3550245003	360.3	MG	F5060-5	EWP-E2-10-02-4	E2-10-02-4-02	3615520G	D093-0-5041-6	C	C	C	C	C	C	C	C	C	C	C		99%
170	3550245003	148.5	MG	F5060-4	EWP-E2-10-02-4	E2-10-02-4-02	3615520G	D093-0-5041-4	C	C	C	C	C	C	C	C	C	C	C		100%
165	3550245003	602.0	MG	F5060-3	EWP-E2-10-02-4	E2-10-02-4-02	3615520G	D093-0-5041-5	C	C	C	C	C	C	C	C	C	C	C		99%
160	3550245003	276.2	MG	F5060-2	EWP-E2-10-02-4	E2-10-02-4-02	3615520G	D093-0-5041-4	C	C	C	C	C	C	C	C	C	C	C		99%
155	3550245003	98.9	MG	F5060-1 FDN TYPE 2	EWP-E2-10-02-4	E2-10-02-4-02	3615520G	D093-0-5041-3	C	C	C	C	C	C	C	C	C	C	C		100%
150	3550245003	98.9	MG	F5060-1 FDN TYPE 1	EWP-E2-10-02-4	E2-10-02-4-02	3615520G	D093-0-5041-3	C	C	C	C	C	C	C	C	C	C	C		100%
145	3550245003	2,484.2	MG	F5060-1	EWP-E2-10-02-4	E2-10-02-4-02	3615520G	D093-0-5041-2	C	C	C	C	C	C	C	C	C	C	C		99%
140	3550245003	360.3	MG	F5045-5	EWP-E2-10-02-4	E2-10-02-4-02	3615520G	D093-0-5041-6	C	C	C	C	C	C	C	C	C	C	C		99%
135	3550245003	148.5	MG	F5045-4	EWP-E2-10-02-4	E2-10-02-4-02	3615520G	D093-0-5041-4	C	C	C	C	C	C	C	C	C	C	C		100%
130	3550245003	602.0	MG	F5045-3	EWP-E2-10-02-4	E2-10-02-4-02	3615520G	D093-0-5041-5	C	C	C	C	C	C	C	C	C	C	C		99%
125	3550245003	276.2	MG	F5045-2	EWP-E2-10-02-4	E2-10-02-4-02	3615520G	D093-0-5041-4	C	C	C	C	C	C	C	C	C	C	C		99%
120	3550245003	98.9	MG	F5045-1 FDN TYPE 2	EWP-E2-10-02-4	E2-10-02-4-02	3615520G	D093-0-5041-3	C	C		C	C	C	C	C	C	C	50%		72%

- Sort and filter immediately by any column
- Edit information directly on screen
- Progress activities by percentage complete
- Progress by standard sets of activities in a step-by-step manner

Construction to Production FWP Seamless Transition...

LEDCOR FWP - [Project: 3010068 --> FWP: Piping --> User: gbarlage --> Version: 4.1.105]

Utilities Menu Exit

Project: 3010068 User: gbarlage 07-Oct-2007 13-Oct-2007 Change Cat

Item ID & Hrs				Descriptions					RECEIVED
SCOPEGROUP	SCHED	HRS	QTY	UM	DESCR	CWP	ISOMETRIC	SYSTEM	
5	LR-A20900	83.3	4	M	3100-825	31205110	3900-133-05	4300-6	C
10	LR-A20900	72.2	3	M	3100-826	31205110	3900-133-05	4300-6	C
15	LR-A20900	46.5	4	M	3100-827	31205110	3900-133-05	4300-6	C
20	LR-A20900	35.5	3	M	3100-828	31205110	3900-133-05	4300-6	C
25	LR-A20900	46.5	4	M	3100-829	31205110	3900-133-05	4300-6	C
30	LR-A20900	35.5	3	M	3100-830	31205110	3900-133-05	4300-6	C
35	LR-A20900	46.5	4	M	3100-831	31205110	3900-133-05	4300-6	C
40	LR-A20900	35.5	3	M	3100-832	31205110	3900-133-05	4300-6	C
45	LR-A20900	46.5	4	M	3100-833	31205110	3900-133-05	4300-6	C
50	LR-A20900	35.5	3	M	3100-834	31205110	3900-133-05	4300-6	C
55	LR-A20900	46.5	4	M	3100-835	31205110	3900-133-05	4300-6	C
60	LR-A20900	35.5	3	M	3100-836	31205110	3900-133-05	4300-6	C
65	LR-A20900	42.5	4	M	3100-837	31205110	3900-133-05	4300-6	C
70	LR-A20900	35.5	3	M	3100-838	31205110	3900-133-05	4300-6	C
75	LR-A21780	282.8	119.97	M	3100-840	31205110	3100-133-01	4300-7	C
80	LR-A21780	264.2	116.97	M	3100-841	31205110	3100-133-01	4300-7	C
85	LR-A21780	478.8	209.95	M	3100-842	31205110	3100-133-01	4300-7	C
90	LR-A21780	273.5	116.97	M	3100-843	31205110	3100-133-01	4300-7	C
95	LR-A21780	672.3	346.91	M	3100-844	31205110	3100-133-01	4300-7	C
100	LR-A21780	661.6	346.91	M	3100-845	31205110	3100-133-01	4300-7	C

LEDCOR FWP - [Project: 3010068 --> FWP: Piping --> User: gbarlage --> Version: 4.1.105]

Utilities Menu Exit

Project: 3010068 User: gbarlage 07-Oct-2007 13-Oct-2007 Change Cat

Item ID & Hrs				Descriptions					RECEIVED	SHAKEOUT DISTRIBUTE	RIGGED
SCOPEGROUP	ID	SCHED	HRS	QTY	UM	DESCR	CWP	ISOMETRIC			
16180	LR-A20890	129.3	6.1	M	5100-900-1	5100512	5100-132-900X		C	C	C
16185	LR-A20890	97.5	4.8	M	5100-900-2	5100512	5100-132-900X		C	C	C
16190	LR-A20890	176.3	9.6	M	5100-903-1	5100512	5100-132-903X		C	C	C
16195	LR-A20890	69.8	3.8	M	5100-903-2	5100512	5100-132-903X		C	C	C
4343											
SYSTEM: 4300-5											
14645	LR-A21770	145.3	7	M	4300-838-1	4000512	4300-132-838X		C	C	C
14650	LR-A21770	78.9	3.8	M	4300-838-2	4000512	4300-132-838X		C	C	C
14670	LR-A21770	144.8	6.9	M	4300-840-1	4000512	4300-132-840X		C	C	C
14675	LR-A21770	79.6	3.8	M	4300-840-2	4000512	4300-132-840X		C	C	C
17400	LR-A21770	147.4	7.1	M	4300-834-1	4000512	4300-132-834X		C	C	C
17405	LR-A21770	76.8	3.7	M	4300-834-2	4000512	4300-132-834X		C	C	C
17425	LR-A21770	147.4	7.1	M	4300-836-1	4000512	4300-132-836X		C	C	C
17430	LR-A21770	76.8	3.7	M	4300-836-2	4000512	4300-132-836X		C	C	C
440.5											
SYSTEM: 4300-6											
5	LR-A20900	83.3	4	M	3100-825	3120511	3900-133-0500		C	C	C
10	LR-A20900	72.2	3	M	3100-826	3120511	3900-133-0500		C	C	C
15	LR-A20900	46.5	4	M	3100-827	3120511	3900-133-0500		C	C	C
20	LR-A20900	35.5	3	M	3100-828	3120511	3900-133-0500		C	C	C
25	LR-A20900	46.5	4	M	3100-829	3120511	3900-133-0500		C	C	C
30	LR-A20900	35.5	3	M	3100-830	3120511	3900-133-0500		C	C	C

FWP ADVANTAGE

- Can switch between Standard and System Sorts on the fly

- Typically do not receive complete detailed system definition until 75% complete
- Need system definition as early as possible
- FWP allows system information to be entered progressively as information becomes available
- Greatly enhances ability to plan and execute final system by system turnover

Construction to Production

- Change the way we approach scheduling execution.
- Use existing Ledcor systems to tie in EWP's, FIWP's and turnover packages to achieve optimum balance between construction and start up.
- At the early onset of the project, focus superintendents on the sequence of start up, not mechanical completion.
- Continuous cross discipline interactive planning from EWP release through construction to start up.

