

# **Application of Project Control Fundamentals in a WFP Environment**

**J. Dees  
N. Chavan**

- **OVERVIEW – Jimmy Dees**
  - Organization structure and accountabilities
  - Brief history of the set-up of foundational principles and processes
  - Where we are today and the what we are trying to accomplish with planning effort
  - Set-up learning's
- **PRACTICAL APPLICATION OF SYSTEM FOR MANAGEMENT (SFM) – Niteen Chavan**
  - Syncrude's process of applying WFP principles

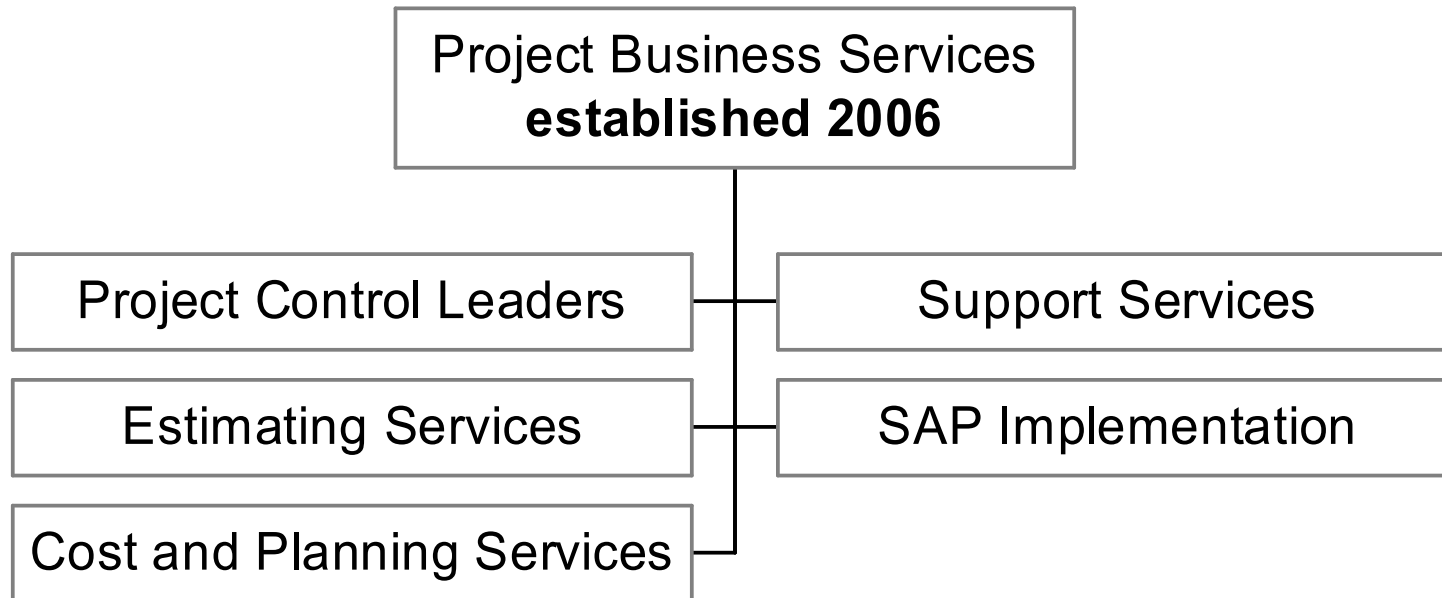
**OVERVIEW**  
**Jimmy Dees**

# Project Control Fundamentals

## **PROJECT CONTROLS BASICS 101**

- Know What has to be done... a detailed budget and tracking profiles which provide schedule and cost control baselines
- Know what has been done...reports providing actual performance data consistent with agreed upon baselines... and in a timely fashion
- Know how actual performance compares with performance norms... analysis of performance to date
- Know what remains to be done ... forecast the potential result
- Identify and recommend corrective actions to bring performance in line with expectations ... control
- Check results of corrective action ... verify

## Organization Structure



# What we do

## Goals

Cost  
Predictability  
(portfolio)

## Why?

- Supports long range portfolio planning (how large is the wave?)
- Assures predictable ROI
- No “surprises”

## How?

- Effective Schedule estimate & Cost estimate development process
- Early execution planning...(do-ability)

Cost  
Effectiveness  
(project)

- **Effective management of engineers/suppliers/contractors**

- **Effective cost and schedule work processes and standards**
- **SFM initiatives (planning)**
- **Meaningful stewardship (weather forecaster vs. reporter)**
- **Effective contracting strategy**

Cost Utilization  
(annual)

- Predictable 1<sup>st</sup> ,2<sup>nd</sup> ,3<sup>rd</sup> , & 4<sup>th</sup> QTR forecasts (provide movement & flexibility of annual monies)

- Effective project controls
- Reliable financial information

## **QUICK HISTORY LESSON**

Question?

## How did we get here?

- Painful learning's... back to the future
- Had to re-establish some basic processes and tools
- Implement over the portfolio of projects
- Build confidence in the greater organization

## Assessment Findings (April 2006)

### PAINFUL LEARNING'S

- Identification and Tracking of projects thru the stages is a problem. (Name, TWR#, AFE#, W/O#, Job#, etc)
- Responsibilities of BA's and PC's varies by Strategy Center
- In most cases, costs are being captured by P-code but budgets are **not** being recorded by P-code
- Some PC staff are involved with preparation/coding of CWA's, Workorders, etc. Many are not.
- With the exception of hours, no tracking of quantities is being done by Project Controls
- Reporting by Contractors is non-existent, verbal, or inconsistent
- Progress and earned-value reporting is inconsistent in both methods used to gather progress data and how it is reported
- There is limited information readily available for management decisions based on schedules and costs for Capital projects.
- Not a good handle of costs for projects "cradle to grave" (including reasons for escalation)



## Establish “List of Projects”

### **OBJECTIVE**

- To locate, consolidate and document ALL the lists that currently exist
- Establish some rules around naming and numbering of projects
- Establish rules around adding and deleting projects from the list

## Building Estimating Competency

### **OBJECTIVE**

- Establish estimating as a Core Syncrude Competency
- Establish a Professional Estimator Career Path with Documented Expectations for All Levels
- Establish Estimating Training Strategies and Plans
- Build Internal Estimating Competency to Manage, Direct and Review Estimating Workload
- Supplement with External Resources as Required:
  - Other Owners
  - Contracting agency
  - JV's

## Building Estimating Competency

### **COMPLETED**

- Estimates prepared using standard project code of accounts (P-Codes)
- Estimates prepared reporting key unit quantities by major account
- Estimates prepared using standard Estimate Basis Memorandum and Estimate Confidence Packages
- Syncrude Estimate Tracking System (SETS) used to monitor all estimates prepared

## Standard Estimate Preparation And Reconciliation

### **HARD OBJECTIVES**

- All estimates summarized to ALEX format
  - [WHAT] Construction summarized by Major Code of Account (w/summary of key quantities and direct field hours). Hours tend to remain “static” while costs are “fluid”.
  - [WHY] It Supports “HARD” reconciliation between gates
  - [WHY] Allows for hi-level validation
  - [WHY] Begin to establish “Benchmarks”

### **Concerns**

- Need earlier involvement during the Business Planning cycle
- Educate estimators as to “Why” this information is required

## Standard Estimate Preparation And Reconciliation

### **SOFT OBJECTIVES**

- Establish credibility with owners
  - We are able to communicate scope in way everyone understands
  - Helps identify execution risks earlier in the project life cycle
- Inspire confidence early on with the execution team
  - Team “feels” they have more control
  - Ability to make key execution decisions earlier in project life cycle
  - Puts us in a “planning” versus “reactionary” role

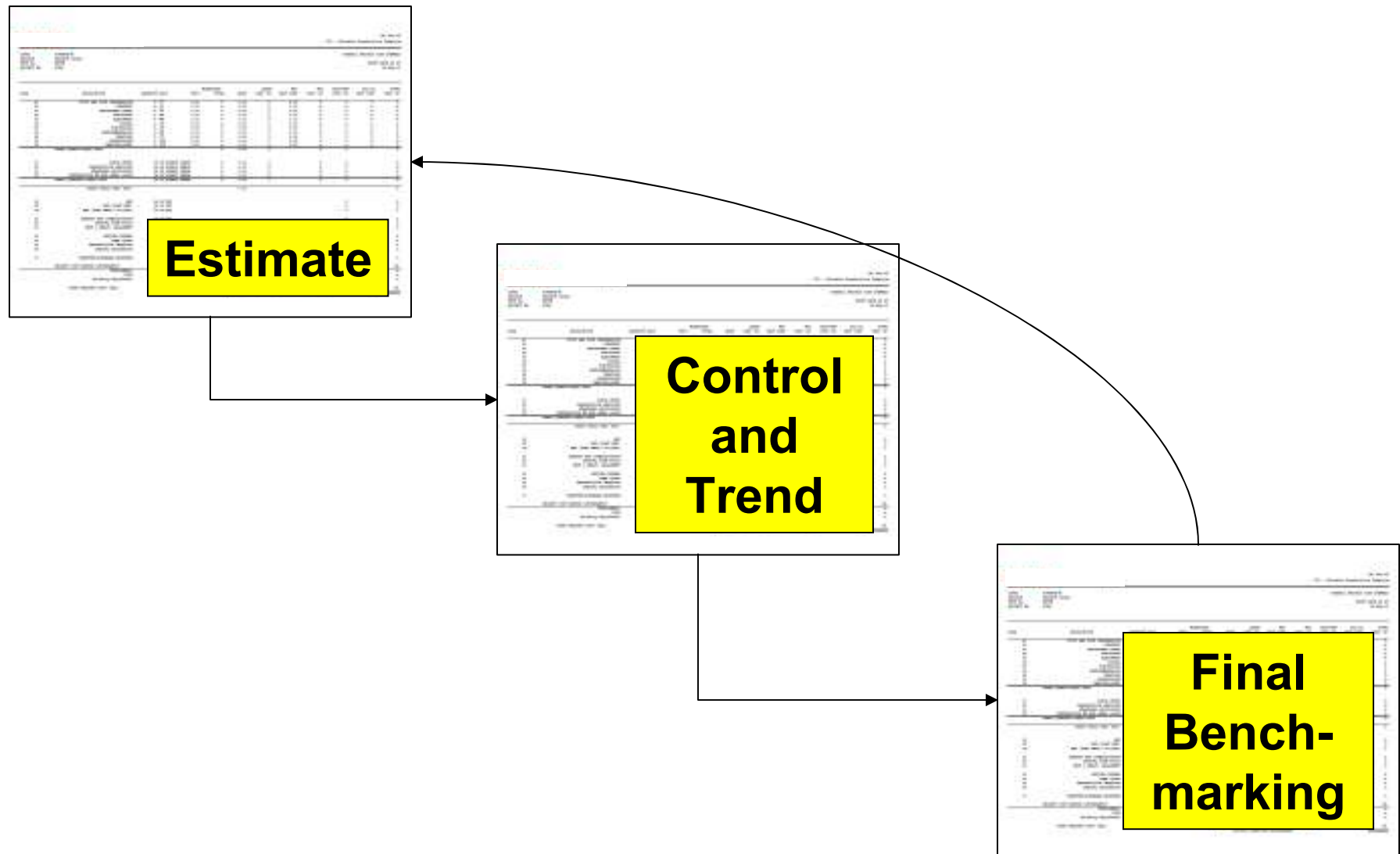
# Estimate Presentation – ALEX Format (T01)

## WHY QUANTITIES?

- Engineer Quantities
- Purchase Quantities
- Construct Quantities
- “Force discipline within the Engineering house to design to the estimated quantities”

rev 003.08 T01 - Estimate Presentation Template												
CLASS SCREENING		OVERALL PROJECT COST SUMMARY										
PROJECT	PROJECT TITLE											
SETS NO.	SETS#	PRINT DATE AS OF										
PROJECT NO.	SIF#	05-Feb-10										
CODE	DESCRIPTION	QUANTITY	UNIT	WORKHOURS	TOTAL	RATE	LABOR	MTL	MTL	SUB/OTHR	ALL-IN	TOTAL
41	CIVIL AND SITE PREPARATION	0.00	CY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	CONCRETE	0.00	CY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43	STRUCTURAL STEEL	0.00	TN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44	BUILDINGS	0.00	SF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	EQUIPMENT	0.00	EA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46	PIPING	0.00	LF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47	ELECTRICAL	0.00	LF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48	INSTRUMENTATION	0.00	EA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49	COATINGS	0.00	LF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	SCAFFOLDING	0.00	LOT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	DEMO/RELOCATE	0.00	LOT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL DIRECT FIELD COST					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	FIELD STAFF	0% OF DIRECT LABOR		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	CONSTRUCTION SERVICES	0% OF DIRECT LABOR		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	TEMPORARY FACILITIES	0% OF DIRECT LABOR		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	CONSTRUCTION EQ AND SMALL TOOLS	0% OF DIRECT LABOR		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL INDIRECT FIELD COST					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL FIELD COST (FFC)						0.00						0.00
1X	ENG (POST AFE)	0% OF TEC										0.00
2X	ENG (POST GATE 2 TO AFE)	0% OF TEC										0.00
51	STARTUP AND COMMISSIONING	0% OF TEC										0.00
52	INITIAL LINE FILLS	0% OF TEC										0.00
53	TEST & MAINT. EQUIPMENT	0% OF TEC										0.00
61	CAPITAL SPARES	0% OF MAJOR EQUIPMENT MATERIAL										0.00
62	CAMP COSTS	0.00 PER DIRECT HOUR										0.00
63	FREIGHT/SITE HANDLING	0% OF TOTAL MATERIAL COST										0.00
64	SPECIAL RELOCATION	0% OF TEC										0.00
71	COMPUTER/SOFTWARE EXPENSES	0% OF TEC										0.00
PROJECT COST BEFORE CONTINGENCY												
CONTINGENCY		0.0%										0.00
SCSA		0.0%										0.00
Rounding Adjustment											0.00	
TOTAL ESTIMATED COST (TEC)												
											0.00	
PRICING COMMITTEE ENDORSEMENT *****												

# Project Control, Trending, Benchmarking Process



**NEXT STEP – CONTRACTOR PERFORMANCE INITIATIVE  
(SFM)**



**2007-08 Status**  
**(re: tools to effectively manage)**

**STATUS**

- Limited metrics are historical, not forward looking
- Current metrics do not drive discussion or continuous improvement
  - Reporting is focused on accounting numbers rather than contractor performance (ie. Wage rate, productivity against agreed target, progress against plan, field in-directs against plan, etc.)
- Limited understanding of performance drivers
- Limited understanding of performance norms

## Case for Change (understanding performance norms and drivers)

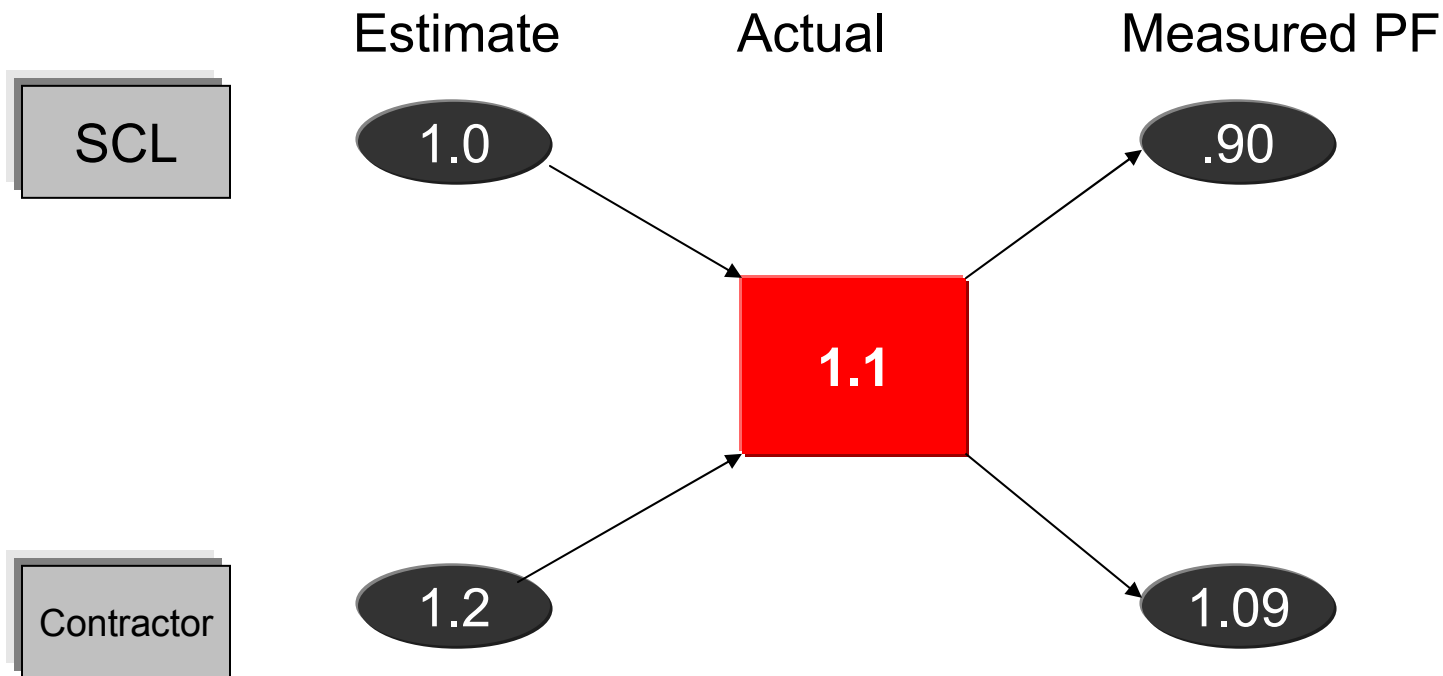
### **CHANGE NEEDED**

- Stewardship reporting is informational rather than changing behaviors and outcomes. Does not address Owner or contractor performance and barrier removal
- Lack of integrated planning / scheduling details (daily / weekly / monthly)
- Contractor planning and execution not validated (quality)
- Limited follow-up on planning and execution
- Unclear roles, responsibilities and accountabilities
- No systematic barrier resolution / continuous improvement process

### **LEARNINGS**

- Had to overcome heavy investment in current processes
  - “this is the way we’ve always done it”
- Need improved teamwork and collaboration between SCL management and contractors
- Roles and responsibilities should be better defined
- Recommended metrics need to be better understood
- Cultures and capabilities varied greatly between contractors
  - Insufficient technical and management skills
  - Need to reward innovation versus compliance

## Measuring Performance



Must measure performance to properly forecast cost and schedule at completion. Formulates achievable target (based on benchmarks) at AFE... health and wellness of project in relation to target

## Stewardship and The SFM

### REPORTING

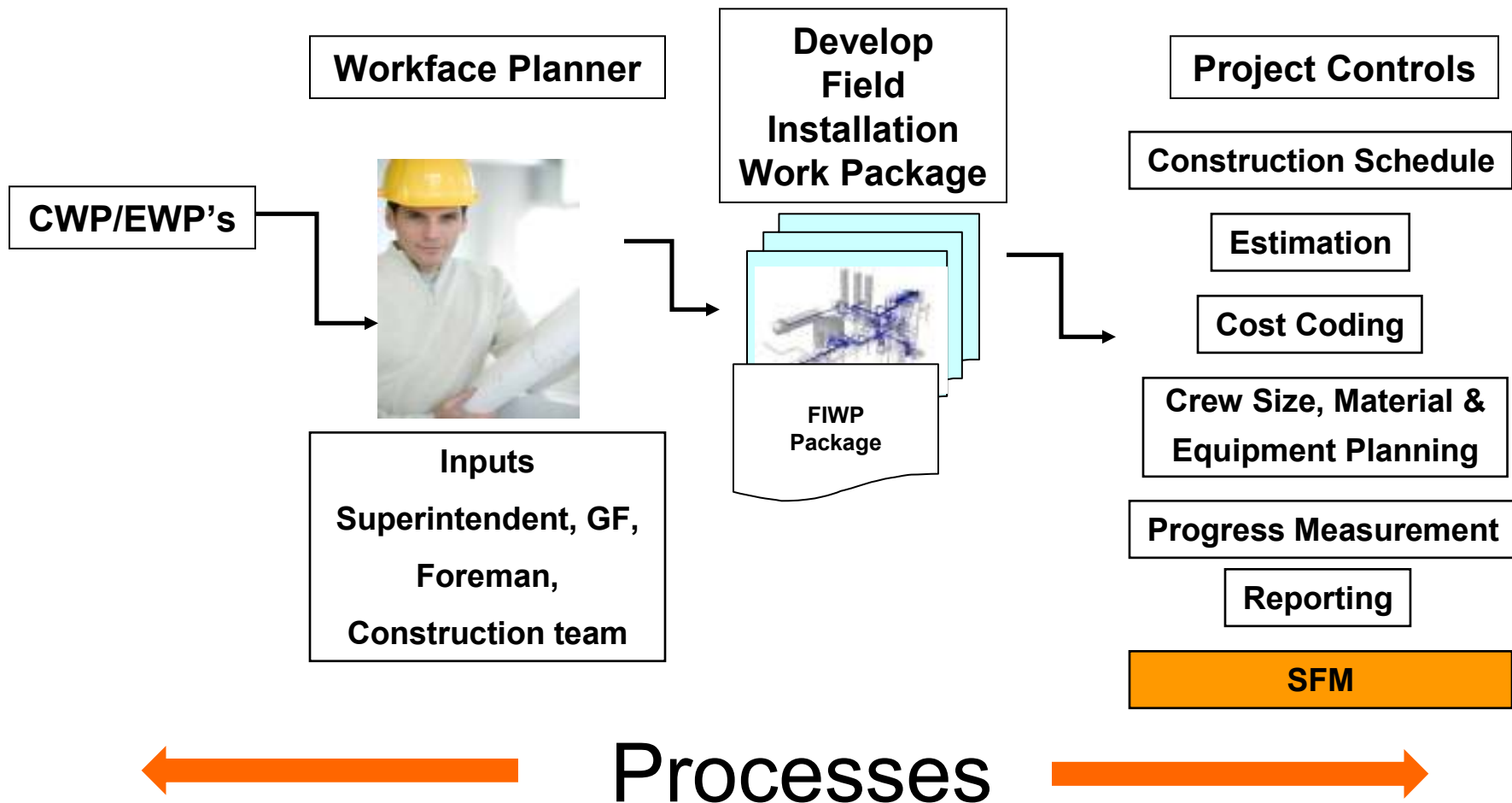
- Project reporting: Weekly and Monthly
  - Dashboard reporting implemented on all projects utilizing SFM (minimum)
  - Metrics tracked:
    - PF over time
    - Field Indirects over time
    - Progress and schedule attainment over time
    - *Plus other financial metrics*
- Portfolio reporting: Frequency aligned with quarterly scorecard calendar
  - Same metrics as Project reporting

### **ACTIONS**

- Set benchmark (time on tools)
- Revisited stewardships to align with new focus & direction
  - Move from accounting focus to contractor performance focus
  - Align on metrics (daily, weekly, monthly)
  - All levels (Project, Department, Business Unit)
- Put in place “core” implementation group
  - Retained “key” pilot members to lead effort
  - Empowered them...
  - Finalized tools (use of existing systems +)
  - Prepared training package for contractor, rolled-out, etc.
- Continue to monitor, measure and maintain

**PRACTICAL APPLICATION System for Management (SFM)**  
**Niteen Chavan**

# Workforce Planning and Project Control Process

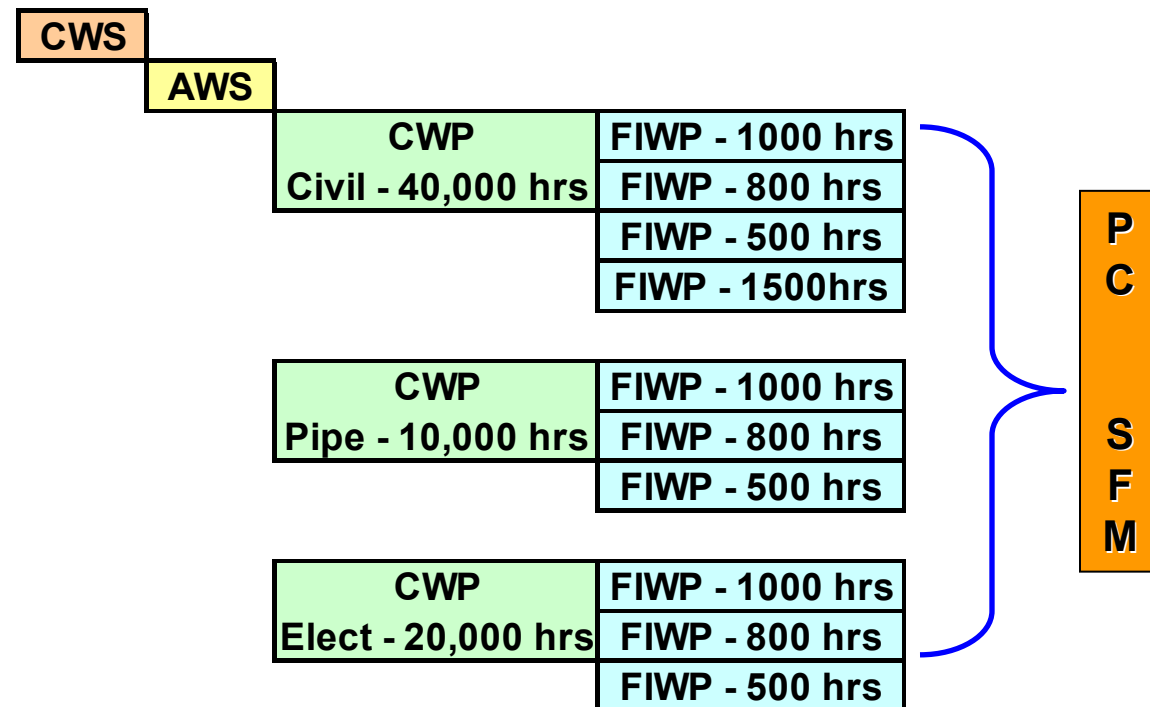




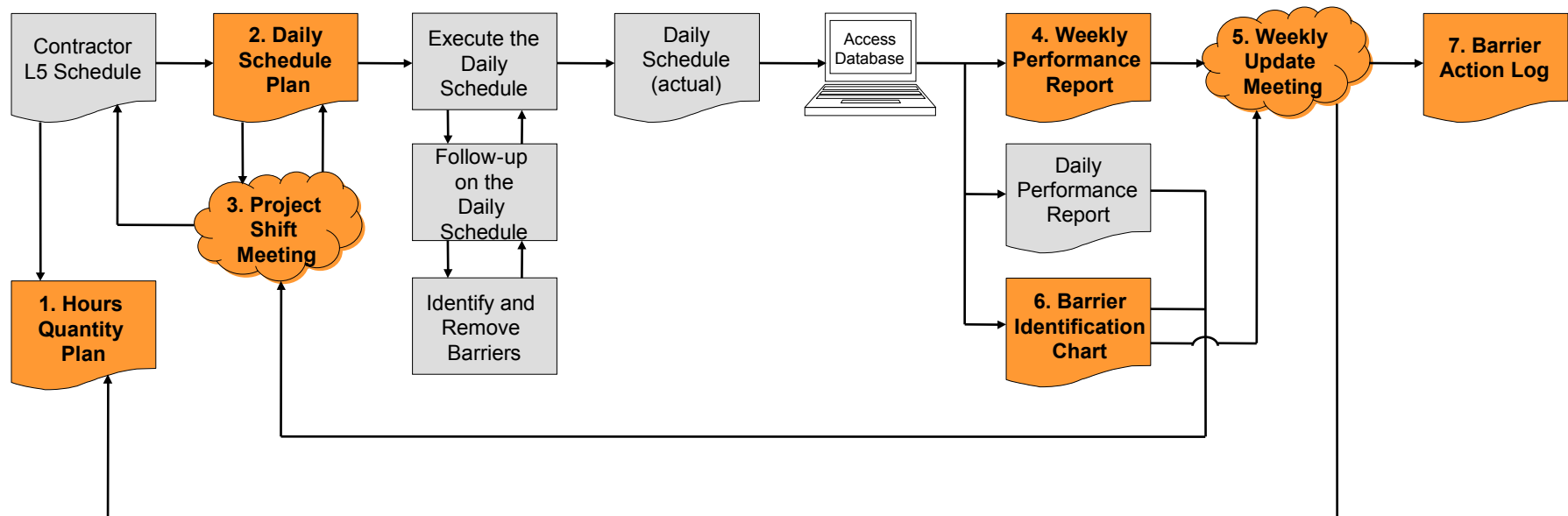
## Work Breakdown Structure

### CWS – AWS – CWP/EWP – FIWP

- CWS – Contractors Work Scope
- AWS – Area Work Scope (Physical area OR plant, OR a specific system/sub-system OR combination of Plant/Area/System)
- CWP/EWP – Construction Work Package / Engineering Work Package



## SFM – System for Managing : PROCESS



Use System for Managing tools to manage the daily work, remove barriers and improve performance

# Our daily Behaviors of detail daily planning makes the difference



Use System for Managing tools to manage the daily work, remove barriers and improve performance

## **7 Key Tools make up the System for Managing**

1. Hours Quantity Plan (HQP)
2. Daily Schedule Control
3. Project Shift Meeting
4. Weekly Performance Report
5. Weekly Update Meeting
6. Barrier Identification Chart
7. Barrier Action Log

## HQP – Hours, Quantity Planning

P CODE	DESCRIPTION	UOM	Current Month Dec'09								
			1st Wk		2nd Wk		Total Month		Jan'10	Feb'10	Total
			Plan	Actual	Plan	Actual	Plan	Actual	Plan	Plan	Plan
<b>Labour Hours</b>											
P41	CIVIL AND SITE PREPARATION	HRS									0
P42	CONCRETE	HRS									0
P43	STRUCTURAL STEEL	HRS									0
P44	BUILDINGS	HRS									0
P45	EQUIPMENT	HRS									0
P46	PIPING	HRS									0
P47	ELECTRICAL	HRS									0
<b>Total Direct Field Hours (Labour)</b>			0	0	0	0			0	0	0
P31	SUPERINTENDENT	HRS									0
P31	GEN. FOREMAN	HRS									0
P31	SAFETY	HRS									0
P31	QA/INSPECTION/SURVEYOR	HRS									0
P31	SITE / FIELD ENGINEER	HRS									0
<b>Total Indirect Field Staff Hours (Labour)</b>			0	0	0	0			0	0	0
<b>Total Dir + Ind Field Hrs (Labour)</b>			0	0	0	0			0	0	0
P34	CONST EQUIP AND SMALL TOOLS	HRS									0
P34	CRANES	HRS									0
P34	LIGHTING PANELS	HRS									0
P34	GEN SETS / COMPRESSOR	HRS									0
P34	PICK UPS / RENTAL TRUCKS	HRS									0
<b>Total (only P34) Indirect Hours (Equipment)</b>			0	0	0	0			0	0	0
<b>Quantity Progress &amp; Measurement</b>			Plan	Actual	Plan	Actual			Plan	Plan	Plan
P410	CIVIL EXCAVATION	CY									0
P410	EXCAVATE TRENCH	CY									0
P420	STRUCTURAL SLAB	CY									0
P430	PIPE RACK	TN									0
P490	COATING	SF									0

**Planning / Scheduling - Assumption / Schedule Basis Memorandum:**

# Daily Schedule Control - Plan

## Daily Schedule Control

**Craft:**                      **Date:**                      **Shift:**                      **G.F / Foreman:**                      **Project:**

Activity / CWP	Schedule Location	Workforce Count		Workforce Hours		Unit Of Work		Equipment Hours		% Complete				OT Hours	Barrier Hours	Barrier Code	Comments		
		Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	1st	2nd					3rd	4th
Foreman:																			
<b>Shift Summary</b>																			
Notes:									Shift Turnover Comments:										

## **Project Shift Meeting: Analysis, Agreement & Action**

Objective of the Daily Project Shift Meeting is to:

- Review performance variance from last shifts plan
- Prioritize resources on daily schedule control.
- Set clear and specific expectations.
- Identify immediate barriers.
- Review & remove barriers as required.
- Inform Construction Specialist of barriers requiring his/her help

## Weekly Performance Report

	Mon		Tue		Fri		Weekly Total	
	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
Headcount (Dir+Ind Labour)	10	7	10	15	10	20		
Direct Field Hours	100	75	200	150	100	70		
Indirect Field Hours	50	75	50	75	50	75		
Total Equipment Hours	50	50	50	50	50	50		
Total Lost Time Hours		10		50		60		
Quantity (UOM)								
Number of Tasks / Activities	10	20	10	10	10	10		
Overtime Direct Hours	20	30	20	30	20	20		



# Weekly Performance Report – KPI's

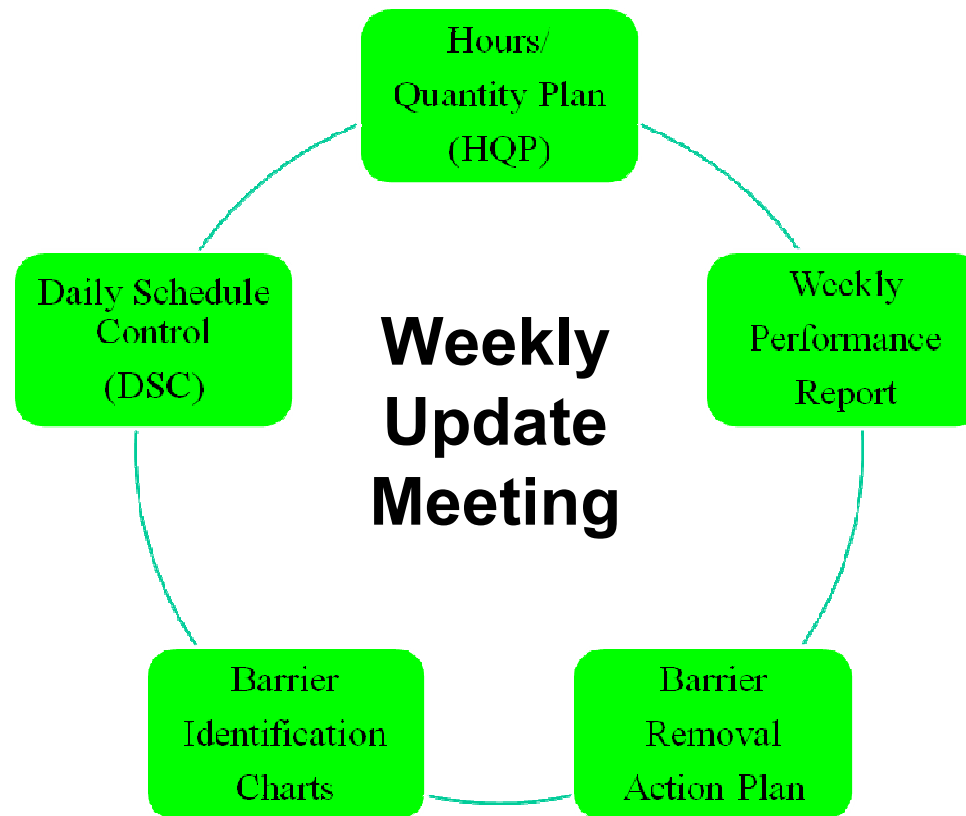
## Key Performance Indicators (KPI) Weekly:

		Tasks						
1	<b>Schedule Attainment (SA)</b>	= $\frac{\text{Actual tasks/qty completed}}{\text{Planned tasks/qty}}$	=	<input type="text"/>	7	<b>Labour Prod. Factor (PF)</b>	= $\frac{\text{Total Hours Earned}}{\text{Total Hours Actual}}$	<input type="text"/>
2	<b>Workforce Utilization (WU)</b>	= $\frac{\text{Actual (Dir + Ind) Hrs}}{\text{Planned (Dir + Ind) Hrs}}$	=	<input type="text"/>	8	<b>Constr. Prod. Unit Rate</b>	= $\frac{\text{Actual Direct Work Hrs}}{\text{Actual Installed Qty}}$	<input type="text"/>
3	<b>Overtime Workhours (OT)</b>	= $\frac{\text{Actual OT Craft Hrs}}{\text{Total Direct Field Hrs}}$	=	<input type="text"/>	9	<b>Prod. Est. Performance</b>	= $\frac{\text{Actual Prod Unit Rate}}{\text{Est. Prod. Unit Rate}}$	<input type="text"/>
4	<b>Equipment Utilization (EU)</b>	= $\frac{\text{Actual Equip. Hrs}}{\text{Planned Equip. Hrs}}$	=	<input type="text"/>	10	<b>Wage Rate</b>		<input type="text"/>
5	<b>Headcount Utilization (HU)</b>	= $\frac{\text{Actual Headcount}}{\text{Planned headcount}}$	=	<input type="text"/>	11	<b>Indirect to Direct Ratio</b>		<input type="text"/>
6	<b>Lost Time Hours (LTH)</b>	= $\frac{\text{Actual Lost Time Hrs}}{\text{Planned Lost Time Hrs}}$	=	<input type="text"/>				

KPI's generated  
through data base

Standard Project  
KPI's generated  
through ALEX

## Weekly Update Meeting



The SFM elements all come together in this meeting

## **Weekly Update Meeting**

The purpose of the Weekly Update Meeting is to review and discuss the status of the project, discuss and address barriers and take a two week look ahead

### **Weekly Performance**

- Analysis of Weekly Performance Report: Schedule Attainment, Headcount Utilization, Workforce & Equipment Hours
- Analysis of Hours, Quantity Plan: Overtime, Workforce Utilization

### **Barriers**

- Analysis of Barrier Identification Chart
- Review and develop Barrier Removal Action Plans

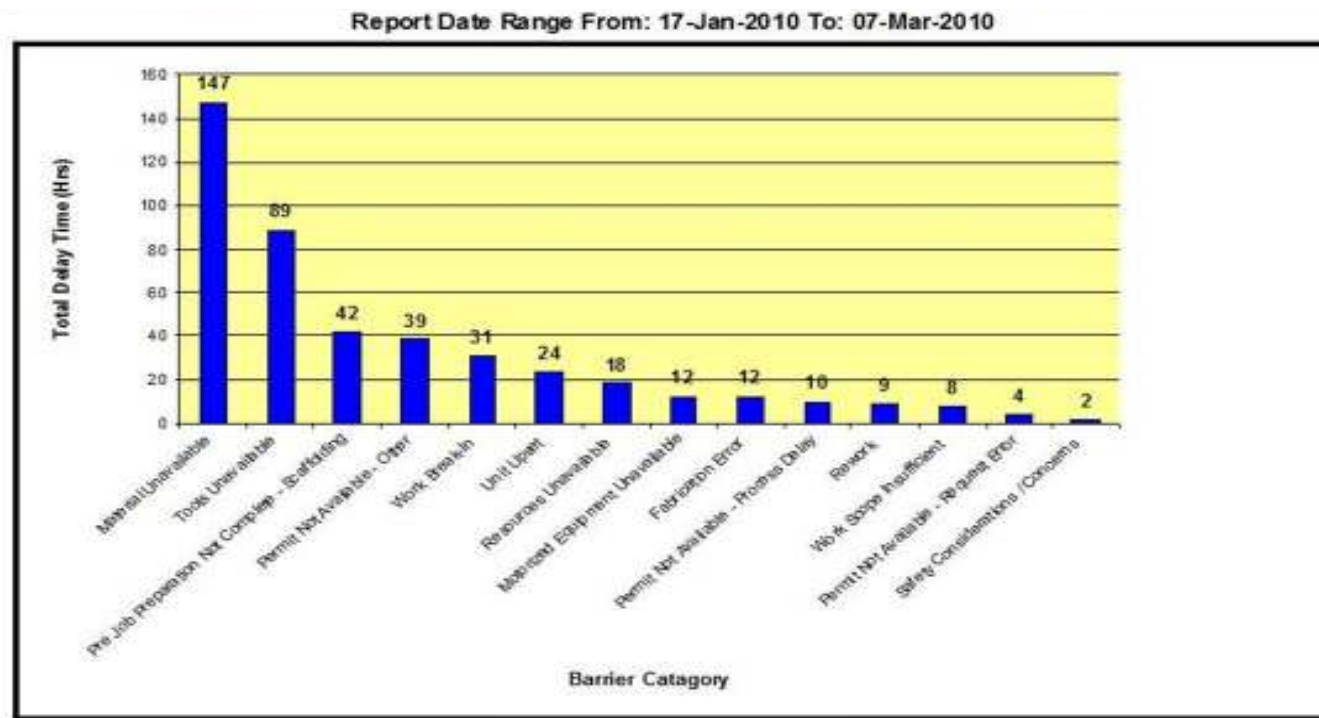
### **Two Week “look ahead”**

- Review of Contractor Schedule

## Barriers

- **Barrier:**
  - Anything which takes time away from the completion of a planned work activity in that shift.
- **Not a Barrier:**
  - Normally scheduled non-work items such as toolbox talks or weekly safety meetings unless their duration is longer than the defined amount of time.
- **Expectation:**
  - 90% of all barriers are solved at the work site by the Foreman/GF/CS

# Barrier Identification Chart - Weekly



INCLUDED BARRIER CODES: ALL BARRIER CODES

Wednesday, March 03, 2010

Chart Total Barrier Hours: 447

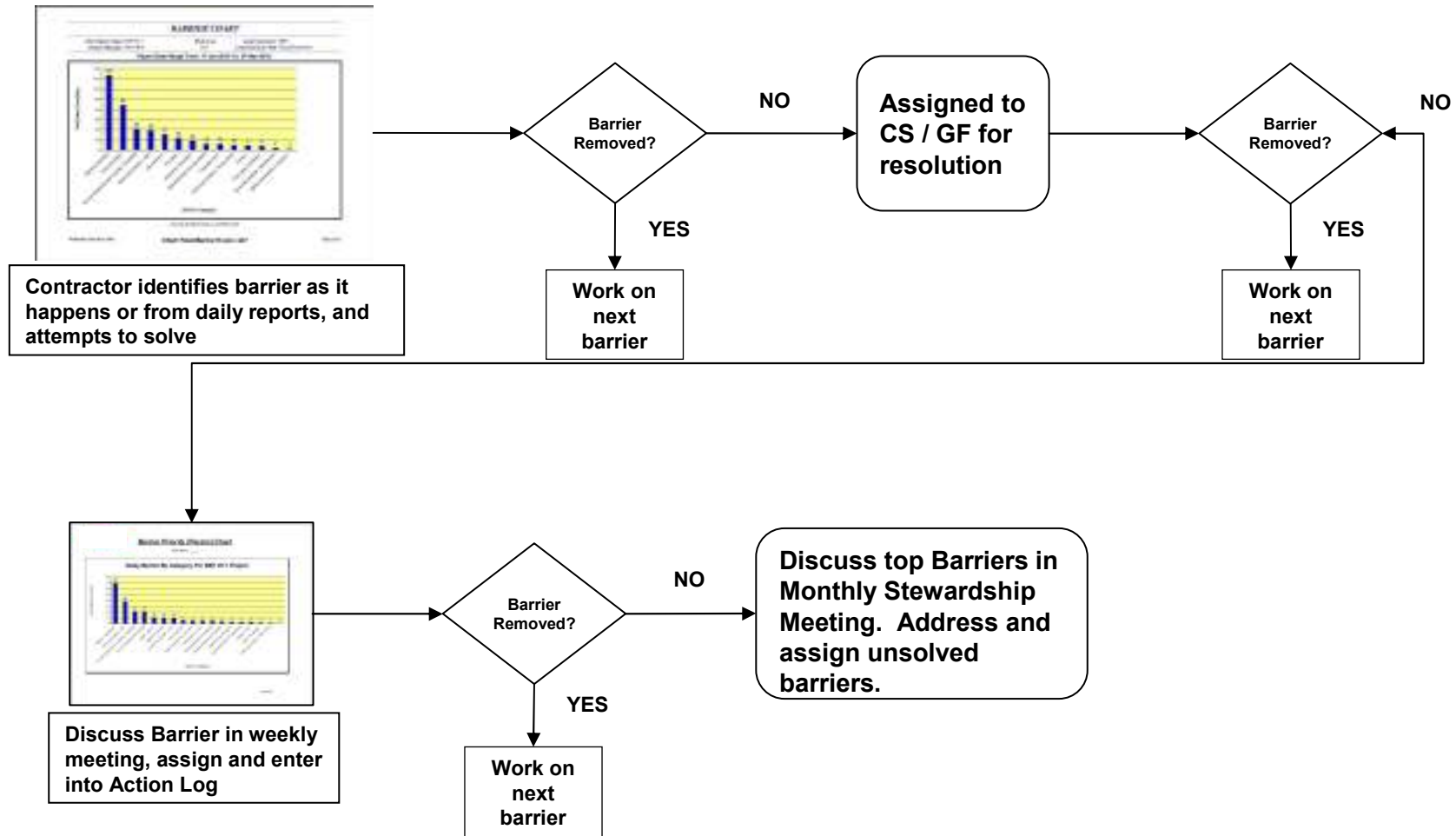
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# Barrier Action Log

CAPX_ Project Barrier Removal - Issue & Action Log								Meeting :	Barrier Removal
								Meeting Date:	13-Jan-10
								Today's Date:	03-Feb-10
Attendees :									
Distribution : Attendees +									
#	Meeting Date	Issue	Action	Comments	Responsibility	Due Date	Status	Days Past Due	
1	25-Nov-09	MATERIAL	WORK IN PROGRESS - SANFORD	COSYN	SANFORD/ Niel Wilson	JAN 21/10	OPEN		
2	25-Nov-09	O'BRIANS WAY	USE BRLTING	SPARE	DAVE CLARKE	DEC 1/09	COMPLETED		
3	02-Dec-09	Pipe weld Cracking/ weld material	IRA-Ring is to small for the pipe Capitil is currently working to reslove	Capital Group Will impact Schedule	Eng - IRA CORE (Trevor Duke)	ASAP	COMPLETED		
4	09-Dec-09	Neptune stuck in road	Dig up road in Jan	Schedule Delay	Greg Day	12-Jan-10	COMPLETED		Train one outage on Dec 11/09
5	09-Dec-09	IRA-Core heaters	Switch to blanket	3 Day Dilevery	Greg Day	16-Dec-09	COMPLETED		Blankets have arrived
6	09-Dec-09	Delay in welding start Cost 32 WELDS as per schedule	Look at Modified shift or more machines	To pull back schedule	Dave Clarke Neil Wilson	6-Jan-10	COMPLETED		Working day/night Back on Schedule
7	16-Dec-09	Demolition of Fiber & PW	AEPR FHR to repair	Fiber failure waiting on outage	Dave Clarke John Allen	30-Mar-10	OPEN		
8	16-Dec-09	Cold snap for a week	Lost scheduled hours due to cold snap - Syncrude sent contractors home	Schedule Delay	Dave Clarke Neil Wilson		COMPLETED		
9	06-Jan-10	Neptune drill bit worn	Push through sand area and replace head	Schedule Delay	Dave Clarke Doug Geres	13-Jan-10	COMPLETED		Willbros to complete
10	13-Jan-10	Weld Cracks	Aceran to compete test	Schedule Delay	Trevor Duke	20-Jan-10	OPEN		
11	13-Jan-10	Turnover Packages	Why is it taking so long - Greg to talk to John	Turnover delay for operations	Trevor Duke Greg Day	20-Jan-10	OPEN		
12									
13									
14									
15									
16									

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# Barrier Removal Process



**Wrap-up**

Questions?