



Lake Constance 5D-Conference 2013



# **Resource Inclusive Model Schedules - Synchronizing “Object-based” Costing and “Activity-based” Actuals**

**Ram Ganapathy**, DPR Construction, Phoenix, Arizona

**Nick Bokhoven**, DPR Construction, San Diego, CA





Lake Constance 5D-Conference 2013



**WE EXIST TO BUILD GREAT THINGS**

# CORE VALUES



integrity



enjoyment



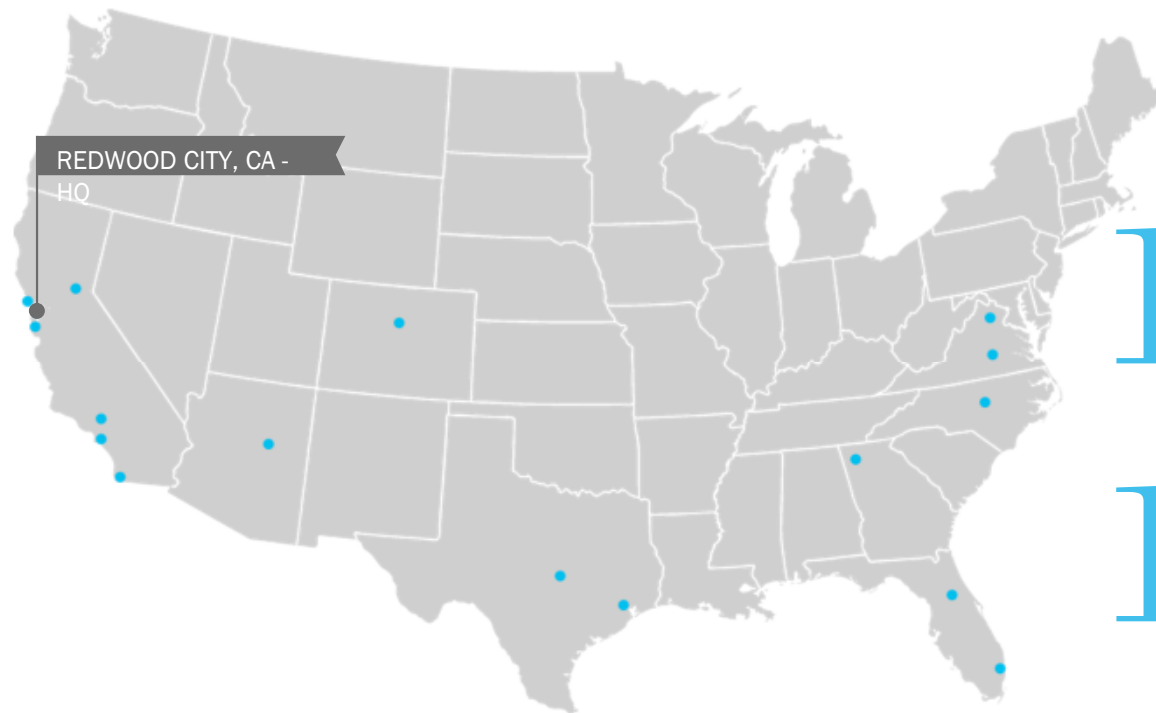
uniqueness



ever forward



# DPR OFFICES

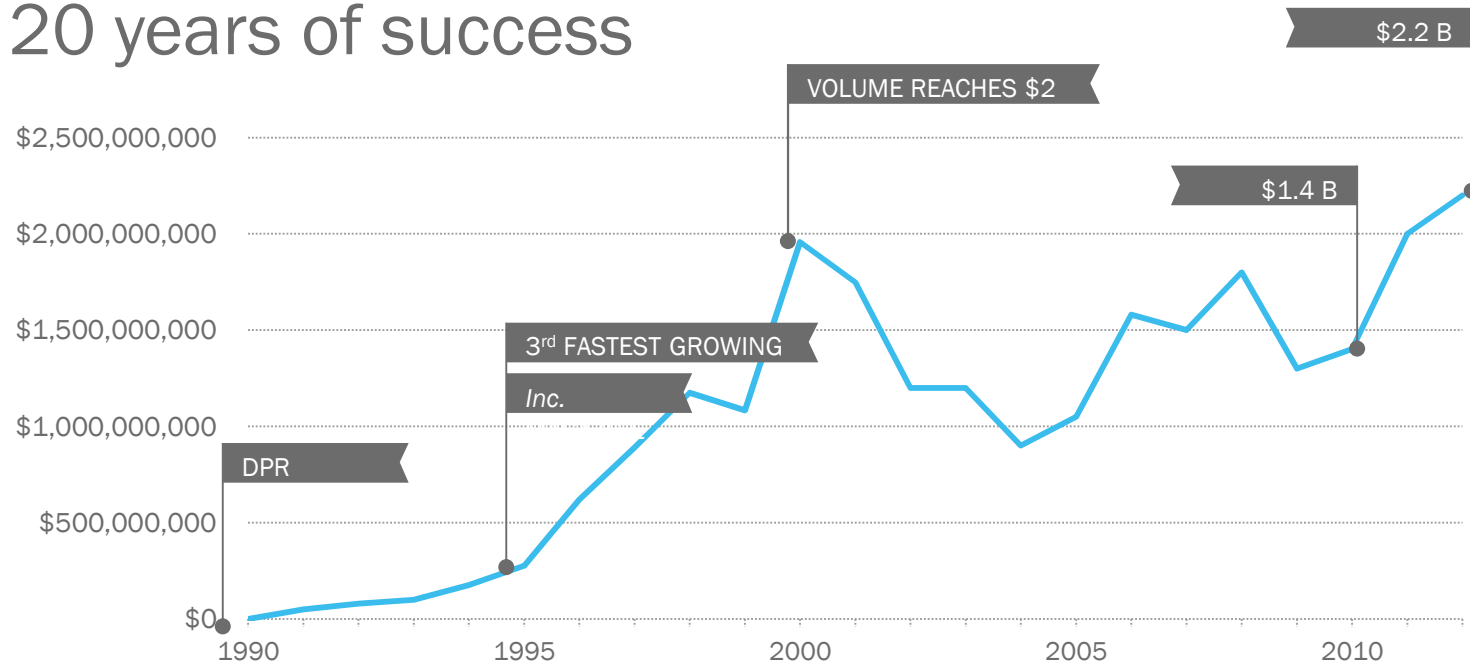


17  
LOCATIONS

1,300  
FULL-TIME STAFF

1,400  
CRAFT EMPLOYEES

## DPR VOLUME 20 years of success





## Lake Constance 5D-Conference 2013



24

LARGEST CONTRACTOR  
IN THE U.S.  
(ENR 2012)

0.97

RECORDABLE  
INCIDENT RATE IN  
2011

13

2012 RANK ON FORTUNE'S  
100 BEST COMPANIES TO  
WORK FOR LIST

90

PERCENT OF ANNUAL  
REVENUE FROM REPEAT  
CUSTOMERS (LAST 5 YRS.)

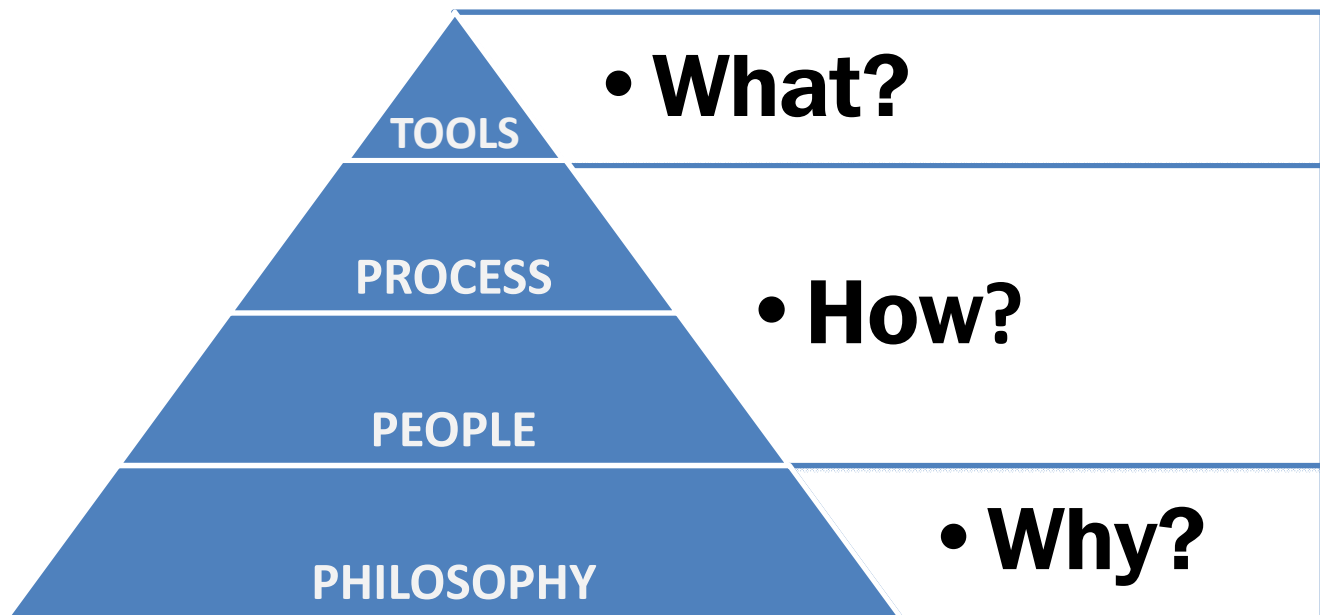
5

DPR FOCUSED CORE  
MARKETS

19

LARGEST GREEN  
CONTRACTOR IN THE  
U.S. (ENR 2011)

# 5D VISION – START WITH WHY





Lake Constance 5D-Conference 2013

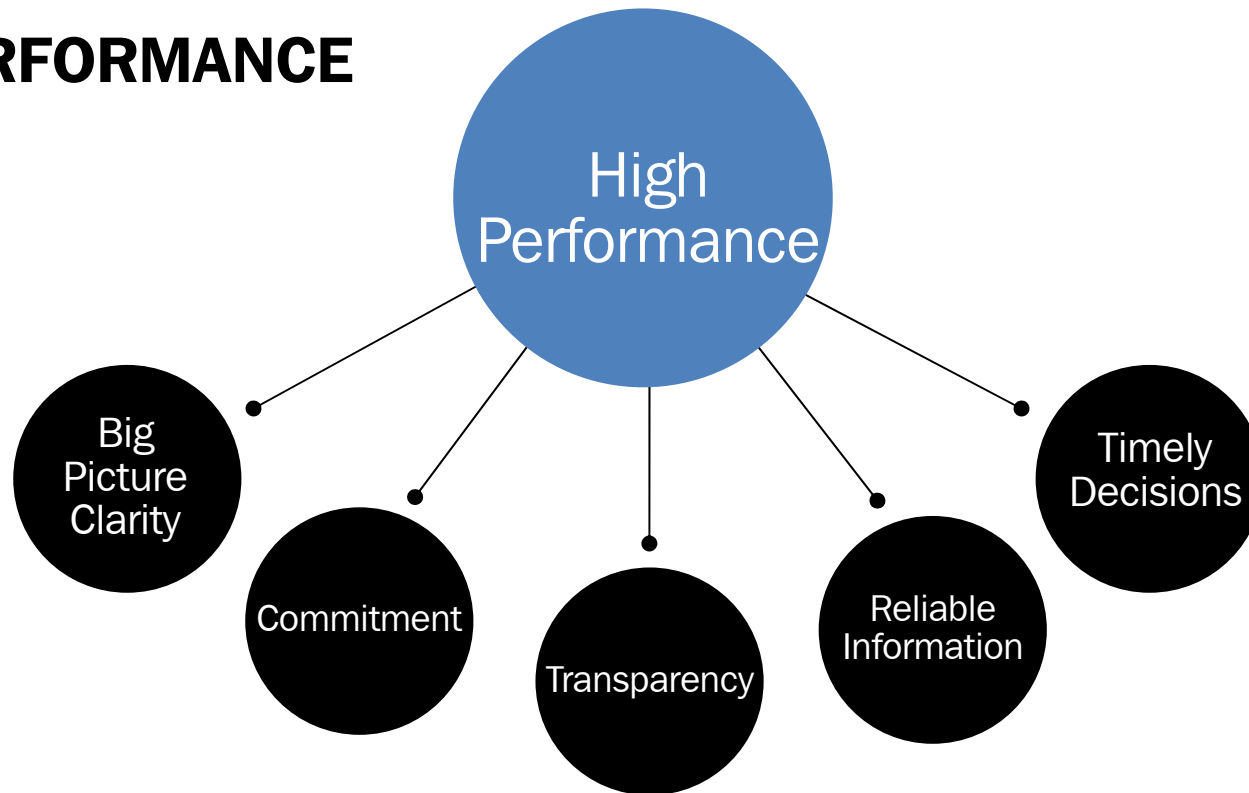


## **WHAT IS OUR WHY?**

“To inspire breakthrough performance in delivering projects”

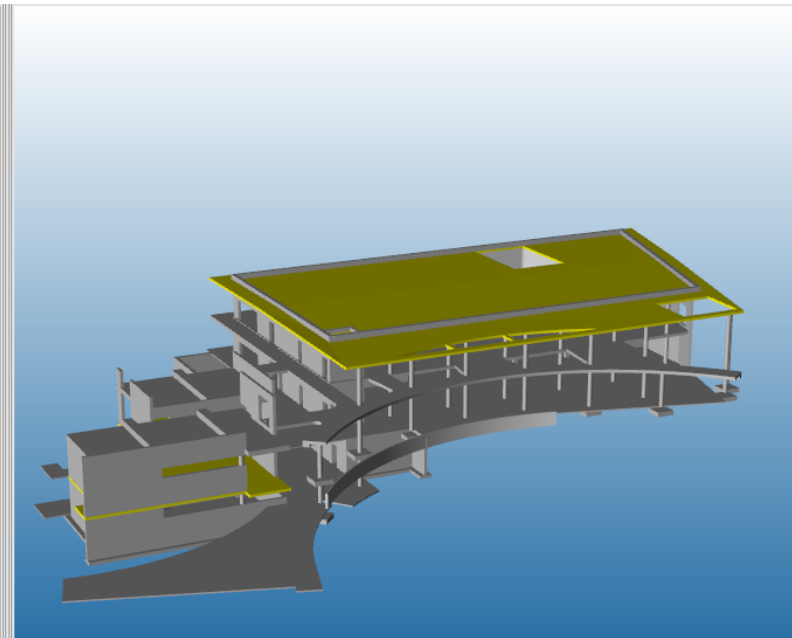


## HIGH PERFORMANCE TEAMING



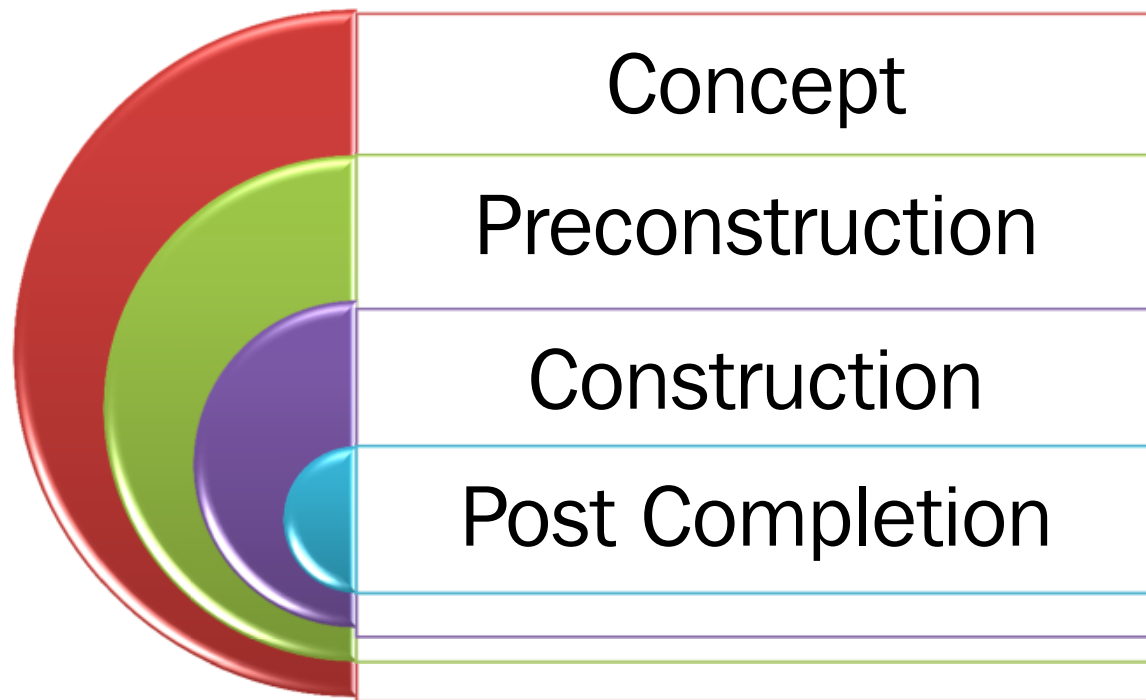
# BIM ... IT'S BEYOND JUST GEOMETRY

Info	Code	Name	Type	Count
+		H-A_Concrete 12"		54
+		H-A_Masonry 8"		5
+		H-A_Concrete Curb - Roof		4
+		H-A_5" Concrete Slab		6
+		H-A_12" Concrete Roof Slab		2
+		H-A_10" Concrete Roof Slab		3
-				
		Name	Unit	Project
		Count	EA	3.0
		Edge Length	FT-IN	1038'-8 3/8"
		Edge Perimeter	FT-IN	1038'-8 3/8"
		Edge Surface Area	SQ FT	865.6
		Gross Volume	CU YD	675.4
		Hole Count	EA	4.0
		Hole Edge Length	FT-IN	268'-6 7/16"
		Hole Joint Length	FT-IN	0'
		Hole Perimeter	FT-IN	268'-6 7/16"
		Hole Surface Area	SQ FT	957.2
		Joint Horizontal Surface Area	SQ FT	0.0
		Joint Length	FT-IN	0'
		Joint Vertical Surface Area	SQ FT	0.0
		Net Bottom Surface Area	SQ FT	20,928.8
		Net Top Surface Area	SQ FT	20,928.8
		Net Volume	CU YD	645.9
		Piece Count	EA	3.0
+		H-A_18" Concrete Roof Slab		2
+		H-A_8" Concrete Slab		1
+		H-A_16" Concrete Roof Slab		1
+		H-A_24" Edge Beam		1
+		Bearing Footing - 48" x 12"		30

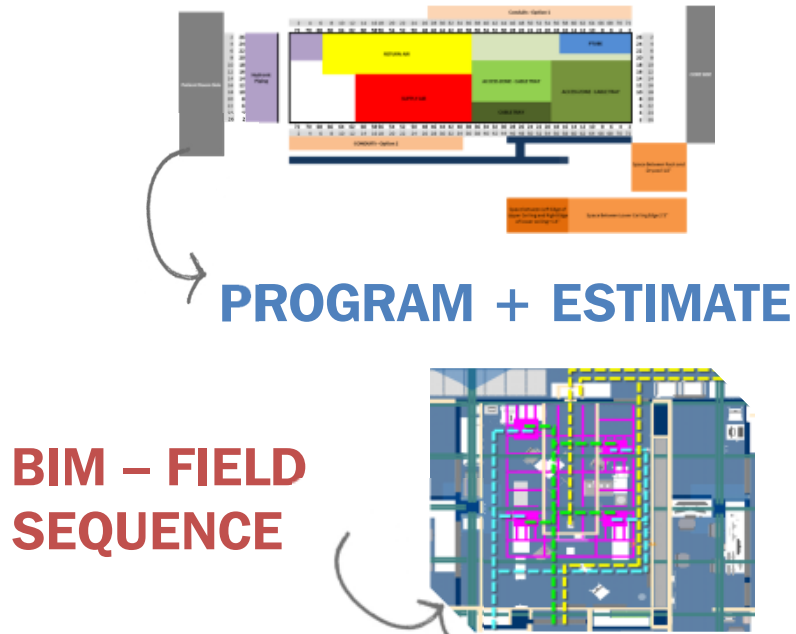


**IT'S A VISUAL DATABASE**

# BIM THROUGH THE PROJECT LIFECYCLE



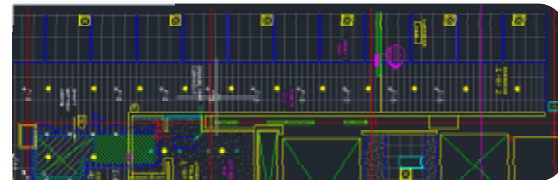
# 5D VISUALIZATION



## CHANGE MANAGEMENT

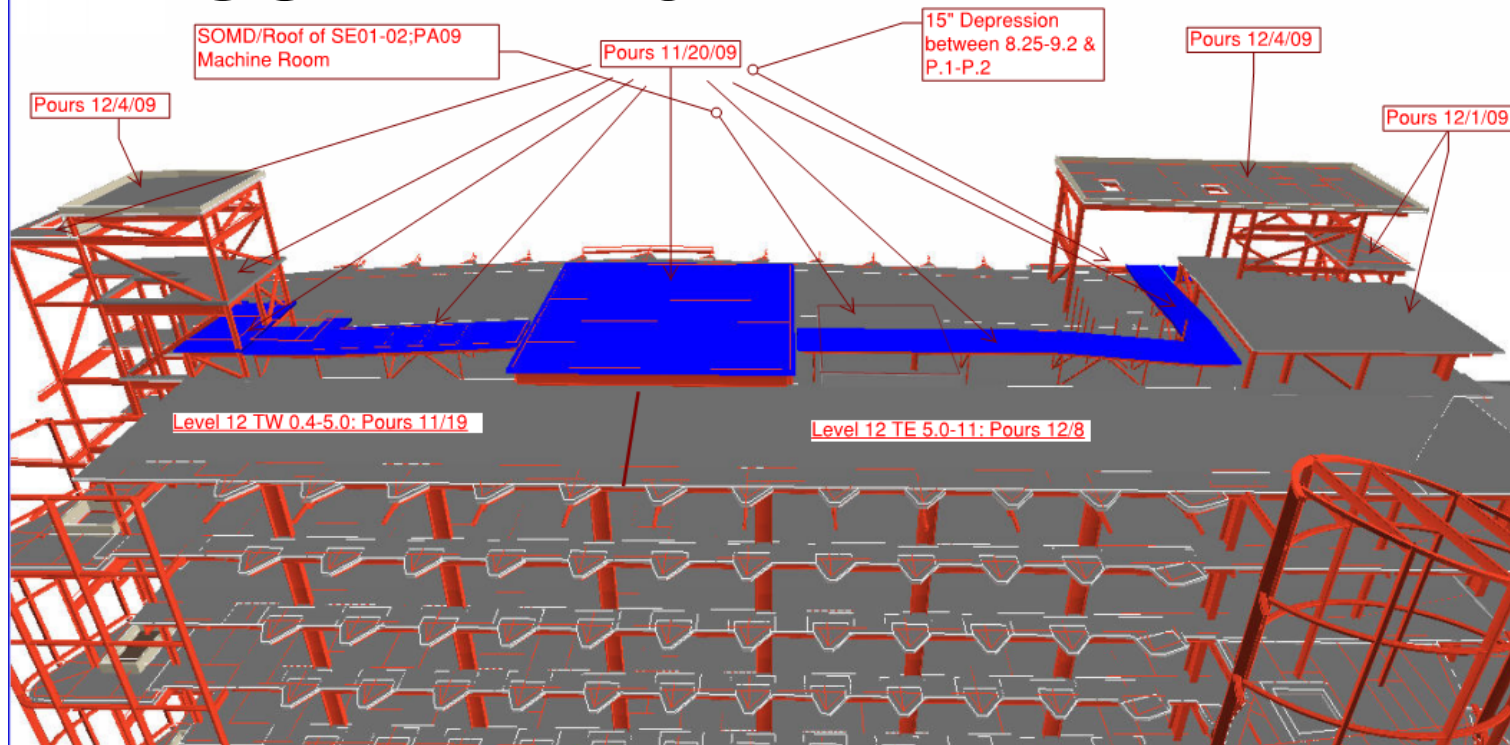


## FIELD-BIM ACTUALS

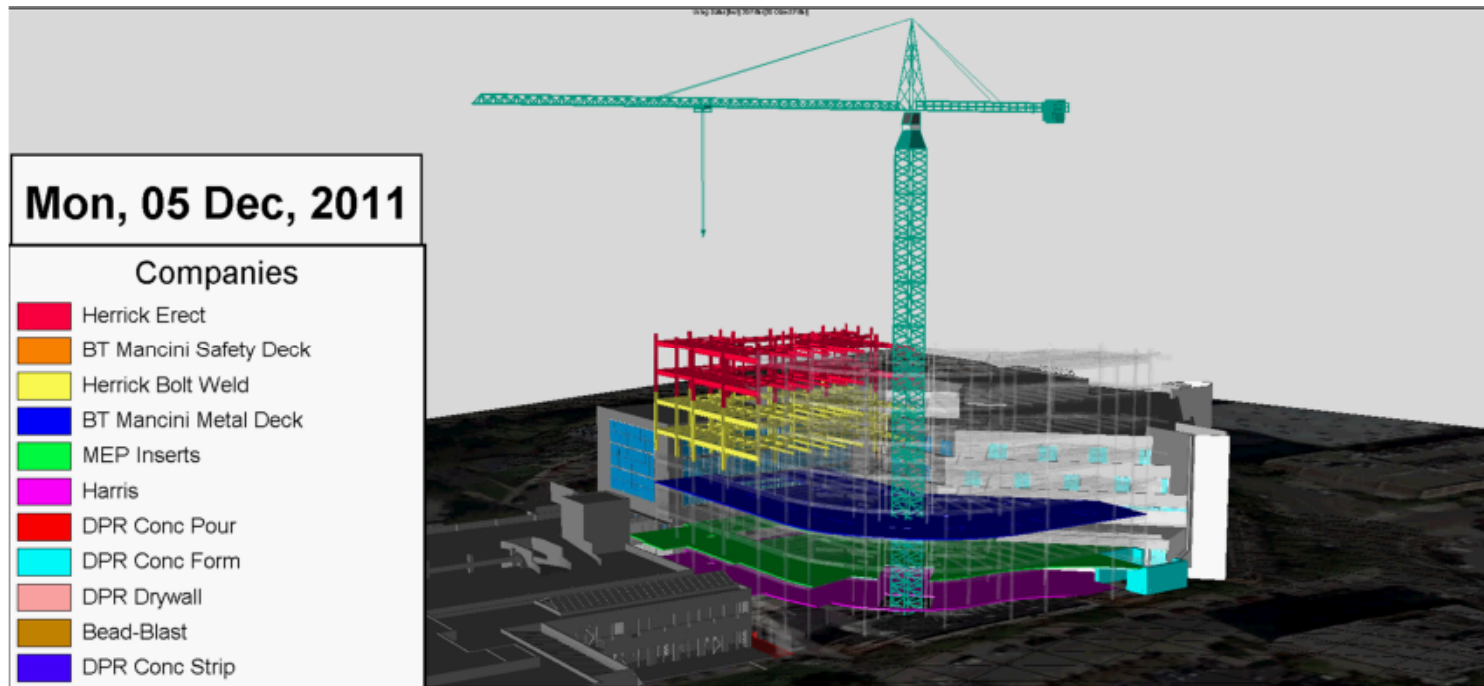


# 5D VISUALIZATION

## BIM – FIELD SEQUENCE



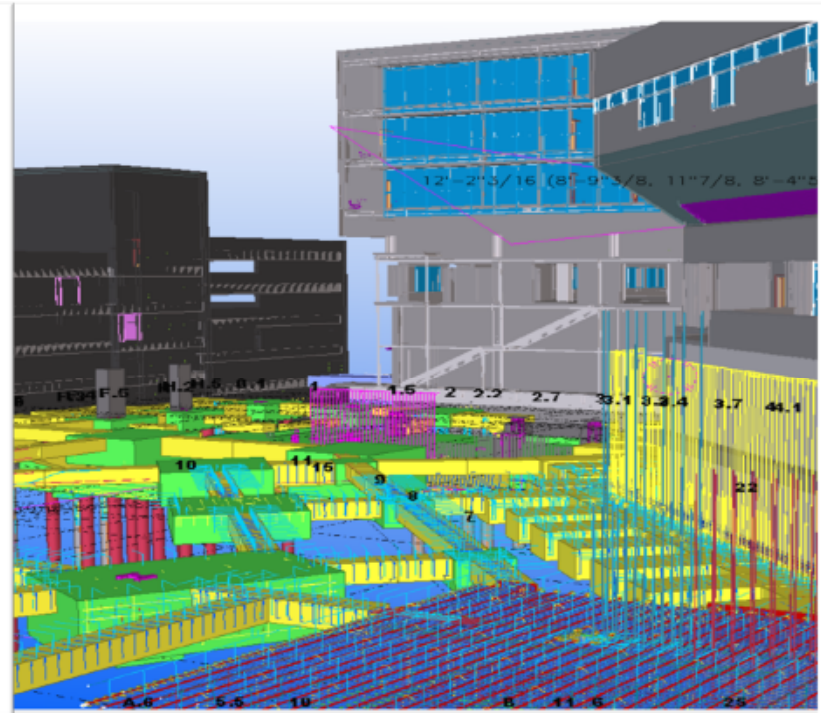
# 5D VISUALIZATION BIM – FIELD SEQUENCE



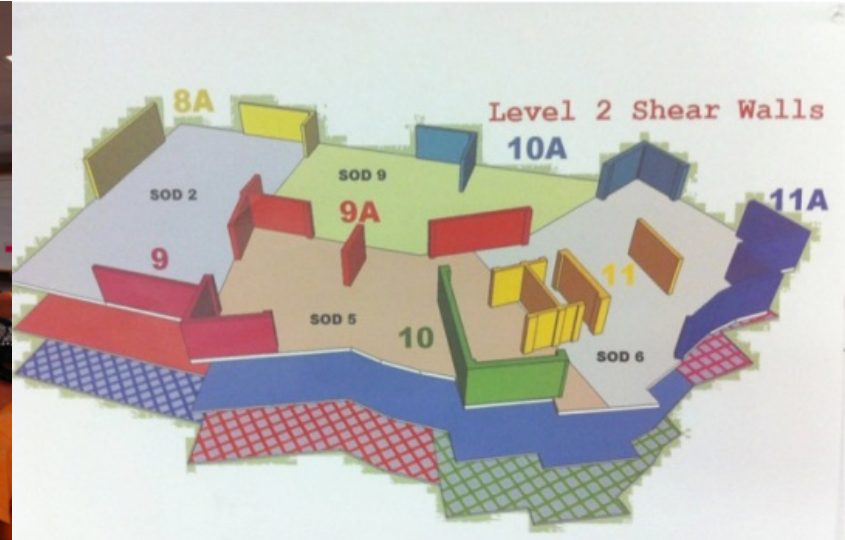


# 5D VISUALIZATION

## BIM – FIELD SEQUENCE



# 5D VISUALIZATION BIM – FIELD SEQUENCE





# 5D VISUALIZATION

# CONSTRAINT MANAGEMENT

Hosp Interior / Level 01 / 1C / -1C Section All

- Non Area Specific Issues (-General)
- Hosp Exterior
- Hosp Interior
  - Level 00
  - Level 01
    - 1A
    - 1B
    - 1C
      - 1C Section All
        - 01-300 CORRIDOR
        - 01-330 CORRIDOR
        - 01-342 CLEAN UTILITY
        - 01-343 SOIL UTILITY
        - 01-344 STORAGE
        - 01-345 MR/CT DRESSING
        - 01-346 PATIENT TOILET
        - 01-347 SHELL SPACE
        - 01-348 CT
        - 01-348B PATIENT TOILET
        - 01-350 MR/CT CONTROL ROOM
        - 01-350A STAFF TOILET
        - 01-352 SHELL SPACE
        - 01-352A MRI VESTIBULE
        - 01-353 MRI COMPUTER
        - 01-354 MRI
        - 01-354A MRI VESTIBULE
        - 01-355 STORAGE
        - 01-360 CORRIDOR



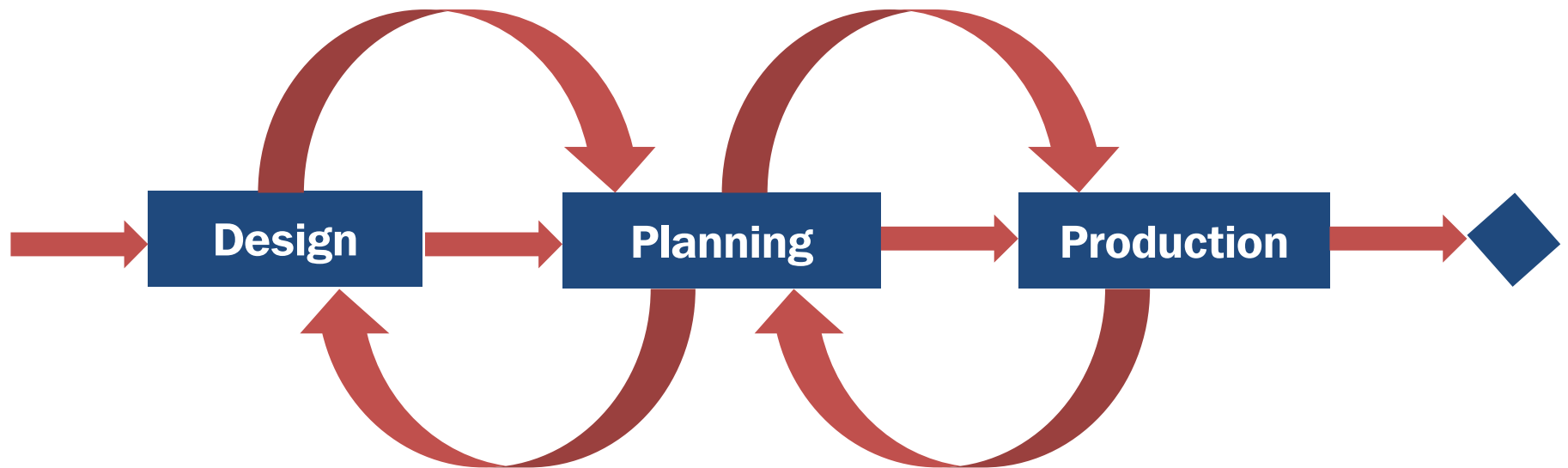
Scale: 100%

<input type="checkbox"/>	Punch #	Created By	Creation ...	Space	Status	Subcontra...	Task: Description: Action	Comments	Due
<input type="checkbox"/>	230	Kevin Britt	10/11/2011		Complete	Bergelectric	Material - H INT: Electrical, Fire Alarm, Auxiliary Systems: -A	Need Berg release to buy breaker	10/12/2011 12:00:00 AM
<input type="checkbox"/>	231	Kevin Britt	10/11/2011	'NA	Complete	KHS&S	Material - H INT: DFH -Action Required	Where is door header? Onsite NL	10/12/2011 12:00:00 AM
<input type="checkbox"/>	232	Kevin Britt	10/11/2011	'NA	Complete	Bergelectric	Material - H INT: Electrical, Fire Alarm, Auxiliary Systems: -A	Where are F37's?	10/12/2011 12:00:00 AM
<input type="checkbox"/>	233	Kevin Britt	10/11/2011	-Procur	Complete	California Sh	Material - H INT: Misc Metals (remaining): -Action Required	Status of cladding at raceway cov	10/12/2011 12:00:00 AM
<input type="checkbox"/>	234	Kevin Britt	10/11/2011	'NA	Complete	Bergelectric	Material - H INT: Electrical, Fire Alarm, Auxiliary Systems: -A	Lutron device at ceiling-status? (b	10/12/2011 12:00:00 AM
<input type="checkbox"/>	235	Kevin Britt	10/11/2011		Complete	Bergelectric	Material - H INT: Electrical, Fire Alarm, Auxiliary Systems: -A	Lutron device at ceiling-status? (b	10/12/2011 12:00:00 AM
<input type="checkbox"/>	236	Kevin Britt	10/11/2011		Complete	California Sh	Material - H INT: Misc Metals (remaining): -Action Required	Status of cladding at raceway cov	10/12/2011 12:00:00 AM
<input type="checkbox"/>	237	Kevin Britt	10/11/2011		Complete	California Sh	Material - H INT: Misc Metals (remaining): -Action Required	Status of cladding at raceway cov	10/12/2011 12:00:00 AM

FINISHLINE  
Project Management Software by Active3D

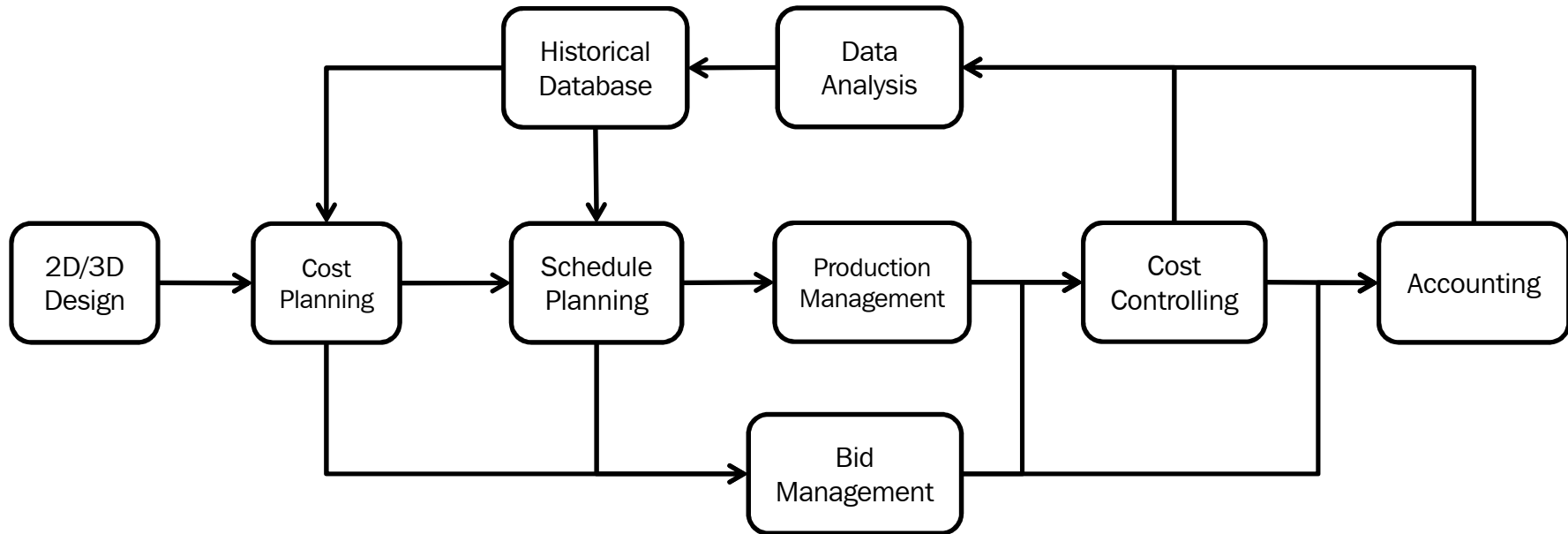
Complete Add Item Total Items Showing: 13

## VDC Processes Drive Integration

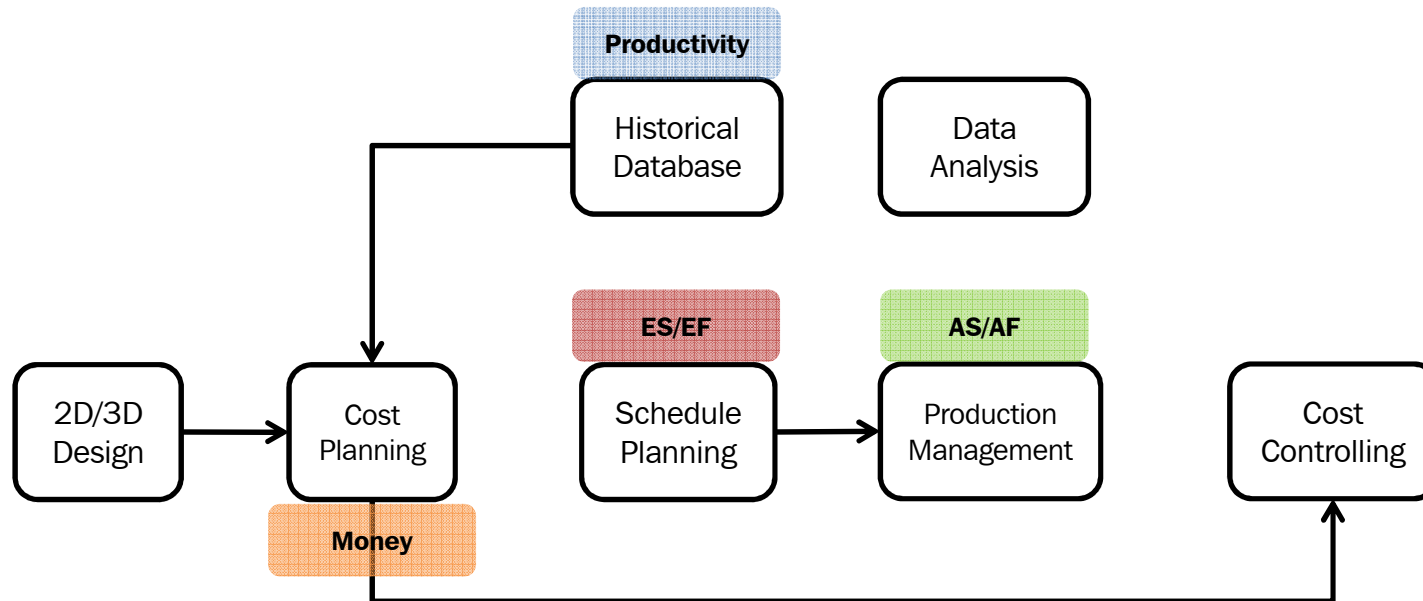


# 5D VISION

- Integrating our Estimates and Schedules

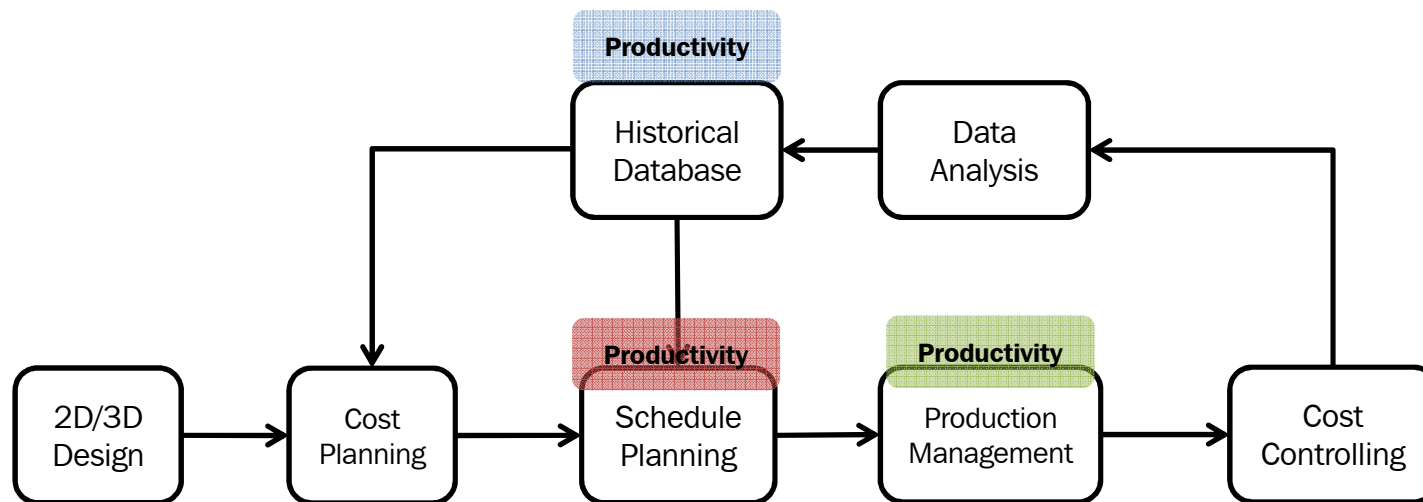


# CURRENT STATE



# SOCIAL PLANNING WITH SCIENTIFIC SCHEDULING

Future State



## INTEGRATED SCHEDULING

Quantity

×

Hr/Unit

÷

# Crews

=

Duration

- **Duration + Date**  
**or**
- **Productivity + Crew**  
**Does it matter?**



**Date**

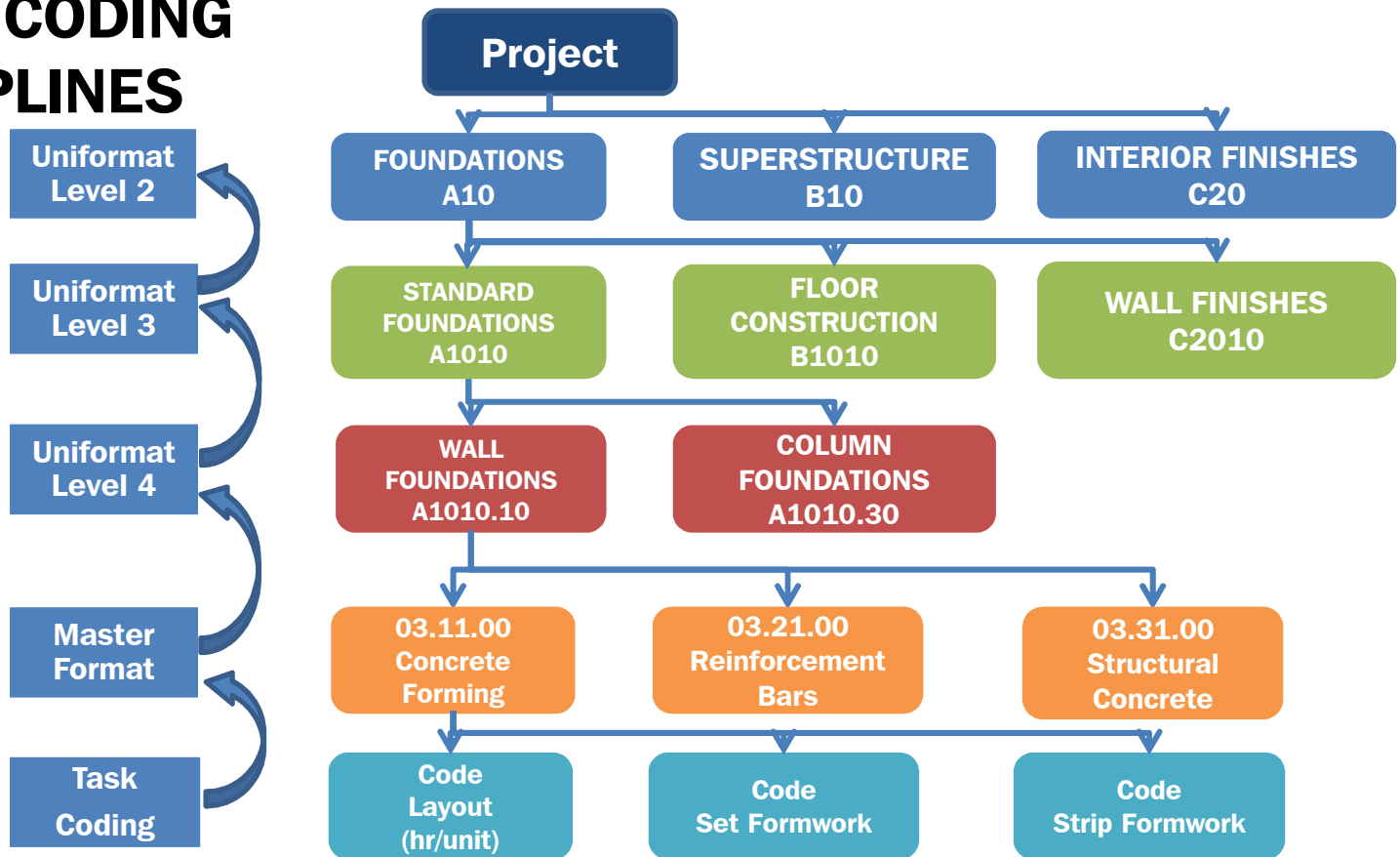


# CONSISTENT CODING BASIC DISCIPLINES



Designation: E2691 – 09

Standard Practice for  
Job Productivity Measurement<sup>1</sup>



Uniformat  
Level 2

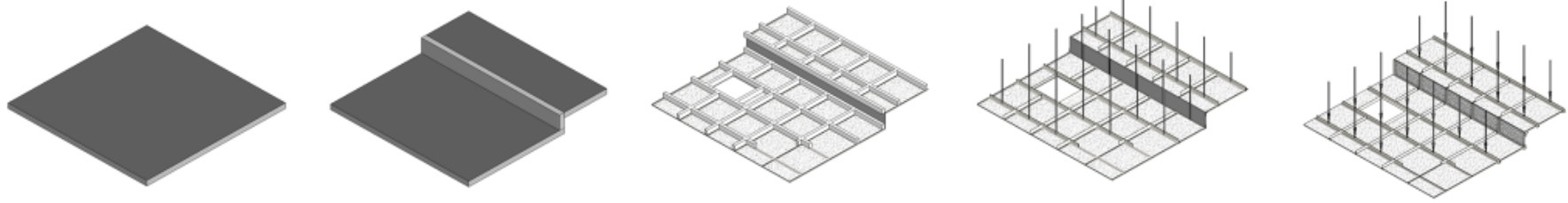
Uniformat  
Level 3

Uniformat  
Level 4

Master  
Format

Task  
Coding

# MODEL PROGRESSION



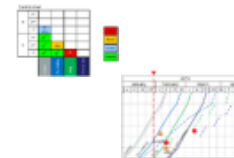
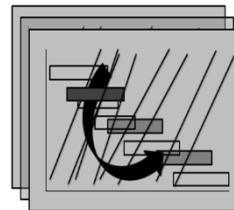
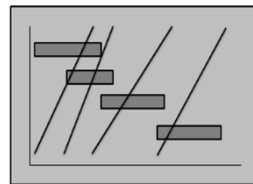
**1. LEADERSHIP TEAM**

**2. SUPERINTENDENTS & MANAGERS**

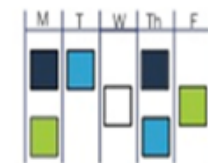
**3. SUPERINTENDENTS, GENERAL FOREMEN & BUILDING FOREMEN**

**4. BUILDING FOREMEN & CREW FOREMEN**

**5. CREW FOREMEN**



Weekly Work Plan + Daily Check-in





# STANDARDIZED CONTENT

Example - C1010\_A3A\_1hr\_35

ASTM Uniformat II Classification for Building Elements (E1357-07)

Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements
A. STRUCTURE	A10 Foundations	A101 Special Foundations
		A102 Special Foundations
	A103 Foundation	A1031 Foundation
	A104 Foundation	A1041 Foundation
B. WALL	B10 Exterior Construction	B101 Masonry Construction
	B102 Exterior Construction	B1021 Masonry Construction
	B103 Exterior Construction	B1031 Masonry Construction
	B104 Exterior Construction	B1041 Masonry Construction
C. DOOR/FRAME	C10 Interior Construction	C101 Interior Construction
	C102 Interior Construction	C1021 Interior Construction
	C103 Interior Construction	C1031 Interior Construction
	C104 Interior Construction	C1041 Interior Construction
D. SERVICES	D10 Electrical	D101 Electrical
	D102 Electrical	D1021 Electrical
	D103 Electrical	D1031 Electrical
	D104 Electrical	D1041 Electrical
E. EQUIPMENT & FURNISHING	E10 Equipment	E101 Equipment
	E102 Equipment	E1021 Equipment
	E103 Equipment	E1031 Equipment
	E104 Equipment	E1041 Equipment
F. SPECIAL CONSTRUCTION & REMEDIATION	F10 Special Construction	F101 Special Construction
	F102 Special Construction	F1021 Special Construction
	F103 Special Construction	F1031 Special Construction
	F104 Special Construction	F1041 Special Construction

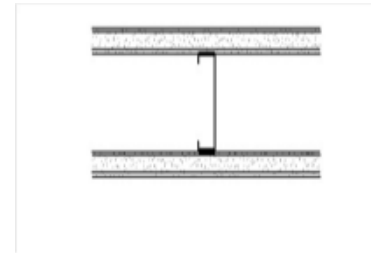
STANDARD PARTITION "SERIES" CONSTRUCTION ASSEMBLIES

SERIES	SHEATHING	FRAMING MEMBERS	SHEATHING
A	1-LAYER	METAL C-STUD	1-LAYER
B	2-LAYERS	METAL C-STUD	2-LAYERS
C	1-LAYER	METAL C-STUD	2-LAYERS
D	1-LAYER	METAL C-STUD	NONE
E	2-LAYERS	METAL C-STUD	NONE
F	1-LAYER	METAL HAT CHANNEL	NONE
G	1-LAYER	NONE	NONE
H	1-LAYER	METAL C-H STUD	NONE
J	2-LAYERS	METAL C-H STUD	LINER PANEL
K	1-LAYER	(2) METAL C-STUDS	1-LAYER
L	2-LAYERS	(2) METAL C-STUDS	2-LAYERS
M	NONE	CMU-4"	NONE
N-Z	CUSTOM		

**Stud Depths:**  
 0 = no stud/ lamination  
 1 = 1-5/8" stud  
 2 = 2-1/2" stud  
 3 = 3-5/8" stud  
 4 = 4" stud  
 6 = 6" stud  
 7 = 7/8" furring channel

**CMU Depths:**  
 1 = 10" unit  
 2 = 12" unit  
 4 = 4" unit  
 6 = 8" unit

**C-H Stud Depths:**  
 2 = 2 1/2" stud  
 4 = 4" stud  
 6 = 6" stud



PARTITION TYPE	STUD		DETAILS		FIRE RATING	TESTED ASSEMBLY	STC RATING	REMARKS
	THICKNESS (MILS)	SPACING	SHEATHING THK	ATTENUATION THK				
			TOP	BOTTOM				

- 1 HR
- 2 HR
- STC -
- 35
- STC - 90





Lake Constance 5D-Conference 2013



# Case Study: DPR Drywall



# Lake Constance 5D-Conference 2013



Vico Office R4.1 - BMDACC II\_Test - JD\_Version 01

Cost Planner

Assemblies and Components: New Component, New Subcomponent, Activate Assembly, Up, Down, Add Note, Add Row, Delete, Enable Text Wrap

References: Descriptions and Consumptions Only, Include Formula, Include Quantities, Reference Browser

Navigate: From Project, From Reference

View Controls and Layout Presets: TOQ Filter, Quantity, Margins, Cost, Cost Ranges, Variance, Manage

Add-Ons & Markup: Show, Add, Undivide, Activate, Markup Values

Import/Export: Import, Export, Disable Cost Ranges

05 - Cost Planner

Cost Planner | Project & References | Cost Planner & 3D

1 Project Setup

- View Dashboard
- Define Settings
- Edit Tags
- Select Module
- Import from Excel
- Compare & Update
- Define Targets

2 Model Management

- Model Register

3 Takeoff

- Takeoff Model
- Manage Takeoff

4 Cost Planning

- Plan Cost
- Explore Cost

5 Reports

- Create Reports

Code	Description	Source Qty	Consumption	Unit/UOM	Waste	Qty	UOM	Unit Cost	Net Total
000	BMDACC II_Test - JD_Version 01	1.0	1.00000		1.00000	1.0	-	1,158,771.84	▲ 1,158,771.84
08.09250	Metal Studs and Drywall	1.0	1.00000		1.00000	1.0	-	1,158,771.84	▲ 1,158,771.84
08.09250.0010	Full Height Walls	11,165.2	1.00000		1.00000	11,165.2	-	61.61	▲ 687,902.23
08.09250.0010.L	Frame Full Height Wall - Labor	11,165.2	1.00000		1.00000	11,165.2	-	16.53	▲ 184,580.27
08.09250.0010.M1	Frame Full Height Wall - Materials_Generic	11,165.2	1.00000		1.00000	11,165.2	-	1.08	▲ 12,013.96
08.09250.0010.M2_2 1/2	Frame Full Height Walls 2 1/2" - Material_Size	42.9	1.00000		1.00000	42.9	LF	5.17	▲ 221.41
08.09250.0010.M2_3 5/8	Frame Full Height Walls 3 5/8" - Material_Size	11,054.4	1.00000		1.00000	11,054.4	LF	7.90	▲ 87,281.44
08.09250.0010.M2_6	Frame Full Height Walls 6" - Material_Size	68.0	1.00000		1.00000	68.0	LF	13.68	▲ 929.97
08.09250.0010.M3	Frame Full Height Walls - Material_Fire	1,730.5	1.00000		1.00000	1,730.5	-	0.00	0.00
08.09250.0011.L1	Hang and Finish Full Height Walls - Labor_Generic	193,261.5	1.00000		1.00000	193,261.5	-	1.57	▲ 303,261.55
08.09250.0011.L2	Hang and Finish Full Height Walls - Labor_2nd Layer	23,957.6	1.00000		1.00000	23,957.6	-	0.94	▲ 22,483.68
08.09250.0011.M1	Hang and Finish Full Height Walls - Materials_Generic	193,261.5	1.00000		1.00000	193,261.5	-	0.37	▲ 70,700.84
08.09250.0011.M2	Hang and Finish Full Height Walls - Material_2nd Layer	23,957.6	1.00000		1.00000	23,957.6	-	0.27	▲ 6,429.18
08.09250.0020	Shaft Walls	761.6	1.00000		1.00000	761.6	-	115.42	▲ 87,909.68
08.09250.0030	Chase Walls	111.5	2.00000		1.00000	223.0	-	67.71	▲ 15,100.87
08.09250.0040	Partial Height Walls	1,204.2	1.00000		1.00000	1,204.2	-	46.40	▲ 55,874.49
08.09250.0100	Hard Lid Ceilings - Non Rated	9,806.5	1.00000		1.00000	9,806.5	-	7.11	▲ 69,762.11
08.09250.0200	Soffits	4,181.9	1.00000		1.00000	4,181.9	-	57.92	▲ 242,222.46



# Lake Constance 5D-Conference 2013



Vico Office R4.1 - BMDACC II\_Test - JD\_Version 01

Cost Planner

Assemblies and Components | References | Navigate | Auto Complete | View Controls and Layout Presets | Add-Ons & Markup | Import/Export | Cost Ranges | Mode

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08.09250.0010	Full Height Walls	11,165.2	1.00000		1.00000	11,165.2	-	61.61	▲ 687,902.23
08.09250.0010.L	Frame Full Height Wall - Labor	11,165.2	1.00000		1.00000	11,165.2	-	16.53	▲ 184,580.27
08-0120-10-2	Layout - Interior Framing	11,165.2	0.04000	25	1.00000	446.6	HR	45.00	20,097.33
08-0130-10-1	Frame Full Height Wall	11,165.2	0.25000	4	1.00000	2,791.3	HR	40.00	111,651.85
08-0270-10-1	Install Backing - 6" 16GA Flat Strap Metal	11,165.2	0.02083	24	1.00000	232.6	HR	40.00	9,302.83
08-0270-10-2	Install Backing - 8" 16GA Flat Strap Metal	11,165.2	0.01375	24	1.00000	153.5	HR	40.00	6,140.85
08-0349-10-1	Deck Closure Plates	0.0	1.00000	24	1.00000	0.0	HR	40.00	0.00
08-0350-10-1	Track - Install	11,165.2	0.04800	25	1.00000	535.9	HR	40.00	21,437.16
08-9399-10-1	Install Z-Metal	2,791.3	0.14286	-	1.00000	398.8	HR	40.00	15,950.25
08.09250.0010.M1	Frame Full Height Wall - Materials_Generic	11,165.2	1.00000		1.00000	11,165.2	-	1.08	▲ 12,013.96
08-0104-20-39	PAN HEAD TEK FRAMERS 7/16" (DS234Z)	33.5	1.00000	1000	1.10000	36.8	BOX	5.80	213.70
08-0106-20-168	BACKING 8" 16GA FLAT STRAP	11,165.2	0.33000	-	1.10000	4,053.0	LF	0.76	3,080.25
08-0106-20-176	BACKING 6" 16GA FLAT STRAP	11,165.2	0.50000	-	1.10000	6,140.9	LF	1.01	6,202.26
08-0106-20-41	SPC - 3/4" SHOT PIN CONCRETE	11.2	1.00000	1000	1.10000	12.3	BOX	95.00	1,166.76
08-0106-20-68	ZMETAL - 1-1/2" x 1-1/2" 20GA	2,791.3	1.00000	-	1.10000	3,070.4	EA	0.44	1,350.99
08.09250.0010.M2_2 1/2	Frame Full Height Walls 2 1/2" - Material Size	42.9	1.00000		1.00000	42.9	LF	5.17	▲ 221.41
08-0106-20-62	S 250S125-33 - STUD 2-1/2" 20 GA 1-1/4" FLANGE	447.3	1.00000	-	1.10000	492.0	LF	0.45	221.41
08.09250.0010.M2_3 5/8	Frame Full Height Walls 3 5/8" - Material Size	11,054.4	1.00000		1.00000	11,054.4	LF	7.90	▲ 87,281.44
08-0106-20-102	S 362S125-33 - STUD 3-5/8" 20 GA 1-1/4" FLANGE	110,400.8	1.20000	-	1.10000	145,729.1	LF	0.46	67,035.36
08-0106-20-103	T362T125-33 - TRACK 3-5/8" 20 GA 1-1/4" LEG / DW	11,054.4	1.30000	-	1.10000	15,807.7	LF	0.45	7,113.49

Vico Office R4.1 - EMDACC\_B\_Test - JD\_Version 01

Cost Planner 3D View

Assembly and Components

Project and References

Cost Planner & 3D

New ViewGet(L)

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Info	Quantity	C.	Description	Type
			Interior - Type C4 - Shaft (1-1x)	(13)
			Interior - Type H3_207_E	(23)
			Interior - Type D4 - Shaft (2-1x)	(94)
			Exterior - HWA-2A (Thick overflashing)	(1)
			Exterior - HWA-2	(5)
			Interior - Type Y6	(7)
			Interior - Type Y3	(136)
			Interior - Type K1	(15)
			Interior - Type H6	(1)
			Interior - Type A3	(96)
			Interior - Type Y6	(5)
			22 CMU 8"	(14)
			Interior - Type A3 - Fire (1-1x) w/round	(22)
			Interior - Type A3 - Fire and Smoke (1-1x) w/round	(14)
			Interior - Type 23	(99)
			Interior - Type A3 - Fire and Smoke (1-1x)	(30)
			Interior - Type H3	(1)

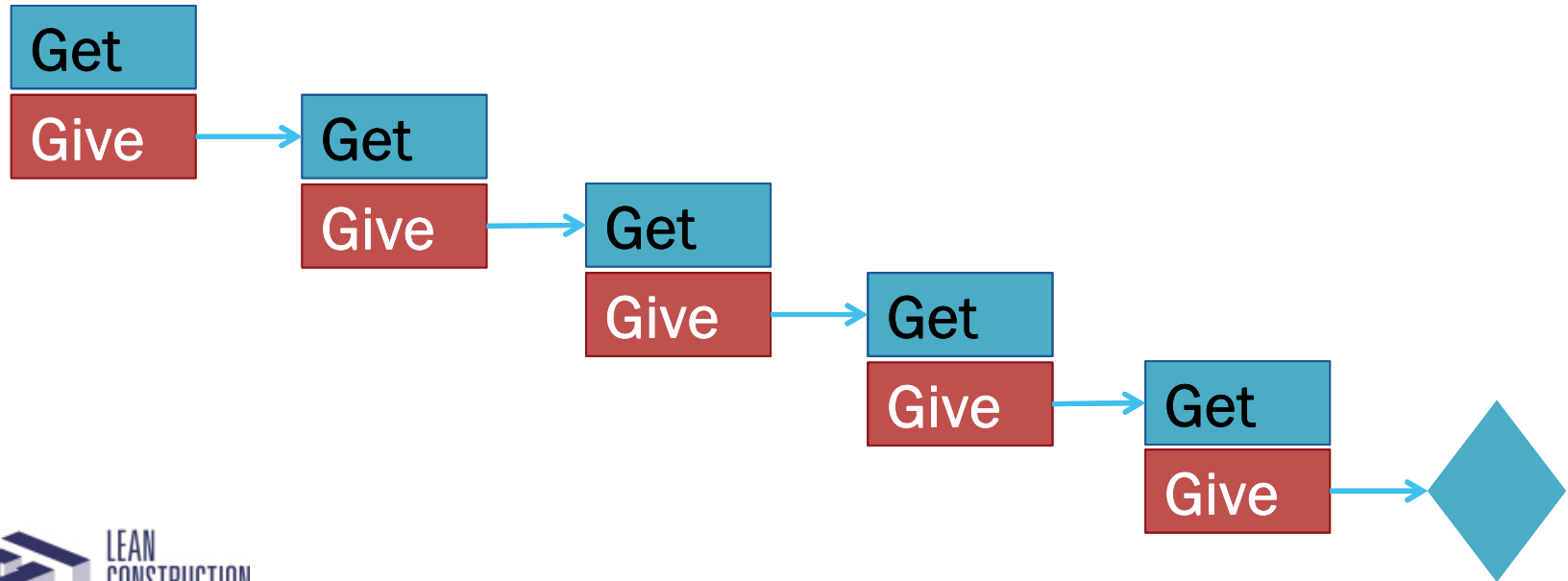
Takeoff Manager

Quant Quantity

Code	Description	Source Qty	Consump.	Waste	Qty	UOM	Unit Cost	CostPar	Net Total	%Parent
000	EMDACC_B_Test - JD_Version 01	5.0	1.00000	1.00000	1.0		1,155,777.54	AV4	1,155,777.54	100.00 %
08.09250	Metal Studs and Drywall	1.0	1.00000	1.00000	1.0		1,155,777.54	1,155,777.54	1,155,777.54	100.00 %
08.09250.0010	Full Height Walls	11,955.2	1.00000	1.00000	11,955.2		61.61	687,962.23	687,962.23	59.38 %
08.09250.0020	Shaft Walls	761.6	1.00000	1.00000	761.6		115.42	87,969.68	87,969.68	7.59 %
08.09250.0030	Chase Walls	111.5	2.00000	1.00000	223.0		67.71	15,100.87	15,100.87	1.30 %
08.09250.0040	Partial Height Walls	1,284.2	1.00000	1.00000	1,284.2		46.49	59,674.49	59,674.49	4.82 %
08.09250.0100	Hard Lid Ceilings - Non Rated	9,886.5	1.00000	1.00000	9,886.5		7.11	69,762.11	69,762.11	6.02 %
08.09250.0200	Soffits	4,181.9	1.00000	1.00000	4,181.9		57.92	242,222.46	242,222.46	20.90 %

Cost Planner

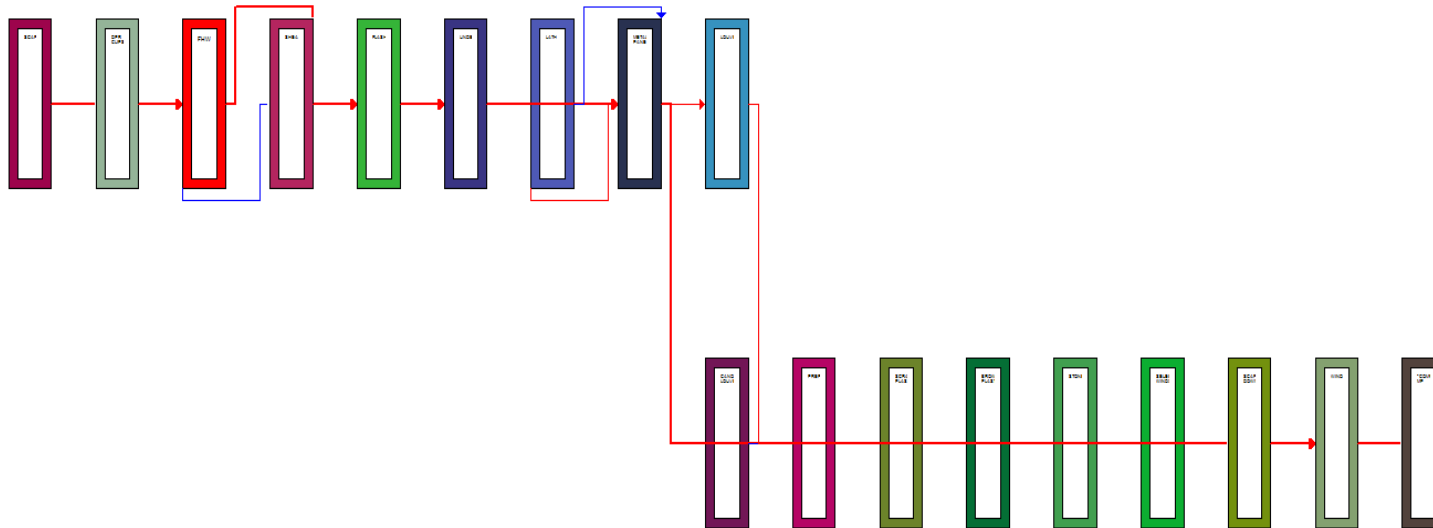


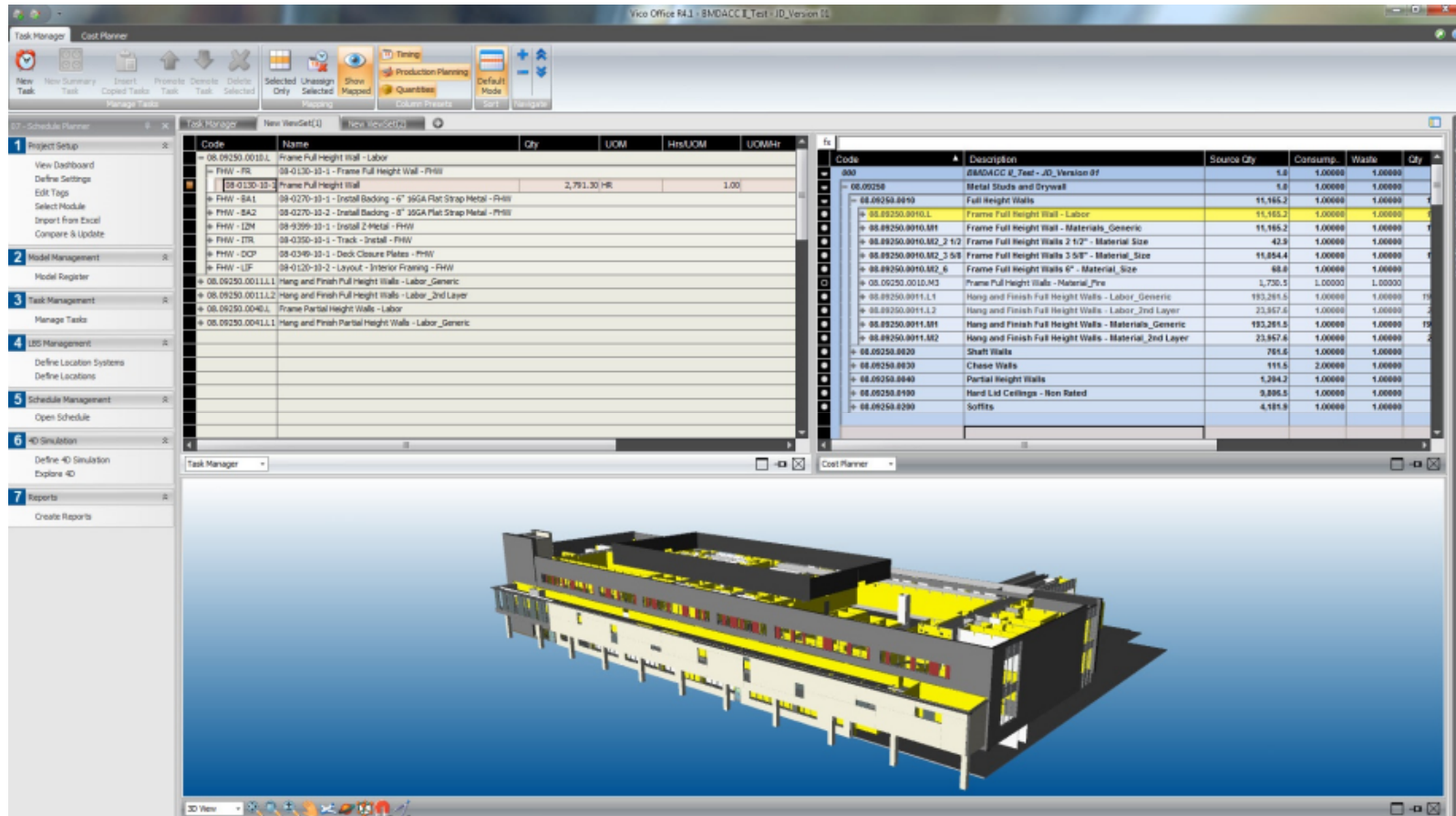


DPR Construction  
Responsible person: John McDougall

Network view  
version 9/9/2013 11:29

TOPS Exterior Skin  
Planner: Patrick Doyle





The screenshot displays a software interface for 5D project management, divided into several functional areas:

- Task Manager:** A table listing construction tasks with columns for Code, Name, Qty, UOM, HrsUOM, and UOMHr.
 

Code	Name	Qty	UOM	HrsUOM	UOMHr
08.09250.0010.L	Frame Full Height Wall - Labor				
08.0150-10-1	Frame Full Height Wall - PHS	2,791.30	HR	1.00	
08.0150-10	Frame Full Height Wall				
08.0270-10-1	Install Backing - 6" 30GA Flat Strap Metal - PHS				
08.0270-10-2	Install Backing - 8" 30GA Flat Strap Metal - PHS				
08.0399-10-1	Install 2-Metal - PHS				
08.0350-10-1	Track - Install - PHS				
08.0340-10-1	Deck Closure Plates - PHS				
08.0120-10-2	Layout - Interior Framing - PHS				
08.09250.0011.L1	Hang and Finish Full Height Walls - Labor_Generic				
08.09250.0011.L2	Hang and Finish Full Height Walls - Labor_2nd Layer				
08.09250.0040.L	Frame Partial Height Walls - Labor				
08.09250.0041.L1	Hang and Finish Partial Height Walls - Labor_Generic				
- Cost Planner:** A table showing cost breakdowns with columns for Code, Description, Source Qty, Consump., Waste, and Qty.
 

Code	Description	Source Qty	Consump.	Waste	Qty
08.09250	08ADACC_0_Teer - JD_Version 07	5.0	1.00000	1.00000	
08.09250.0000	Metal Studs and Drywall	5.0	1.00000	1.00000	
08.09250.0010.L	Full Height Walls	11,165.2	1.00000	1.00000	
08.09250.0010.M1	Frame Full Height Wall - Labor	11,165.2	1.00000	1.00000	
08.09250.0010.M2_3 1/2	Frame Full Height Walls 2 1/2" - Material_Generic	42.9	1.00000	1.00000	
08.09250.0010.M2_6	Frame Full Height Walls 3 5/8" - Material_Size	11,854.4	1.00000	1.00000	
08.09250.0010.M2_6	Frame Full Height Walls 6" - Material_Size	68.0	1.00000	1.00000	
08.09250.0010.M3	Frame Full Height Walls - Material_Pne	1,720.5	1.00000	1.00000	
08.09250.0011.L1	Hang and Finish Full Height Walls - Labor_Generic	193,261.5	1.00000	1.00000	
08.09250.0011.L2	Hang and Finish Full Height Walls - Labor_2nd Layer	23,857.6	1.00000	1.00000	
08.09250.0011.M1	Hang and Finish Full Height Walls - Materials_Generic	193,261.5	1.00000	1.00000	
08.09250.0011.M2	Hang and Finish Full Height Walls - Material_2nd Layer	23,857.6	1.00000	1.00000	
08.09250.0020	Shaft Walls	791.6	1.00000	1.00000	
08.09250.0030	Chase Walls	111.5	2.00000	1.00000	
08.09250.0040	Partial Height Walls	1,294.2	1.00000	1.00000	
08.09250.0100	Hard Lid Ceilings - Non Rated	8,895.5	1.00000	1.00000	
08.09250.0200	Soffits	4,181.9	1.00000	1.00000	
- 3D View:** A 3D architectural rendering of a building structure, showing the exterior walls and roofline in a perspective view.



Edit task: 08-0130-10-1 - FRAME FULL HEIGHT WALL - FHW (Total monitored quantity: 2791.3 HR, Target production rate: 8.0 HR/shift)

Task Part: 08-0130-10-1 - Frame Full Height Wa | Split... | Combine... | Copy

6: Risks | 7: Monitoring | 8: Cost | 9: Expense events | 10: Customize | 11: Diary  
 1: General | 2: Resources | 3: Dependencies | 4: Quantities | 5: Duration

Crew composition

	Code	Name	Quantity	Pf	Supplier
1	DW02	FRAMER	1	1	<no selection>
2					

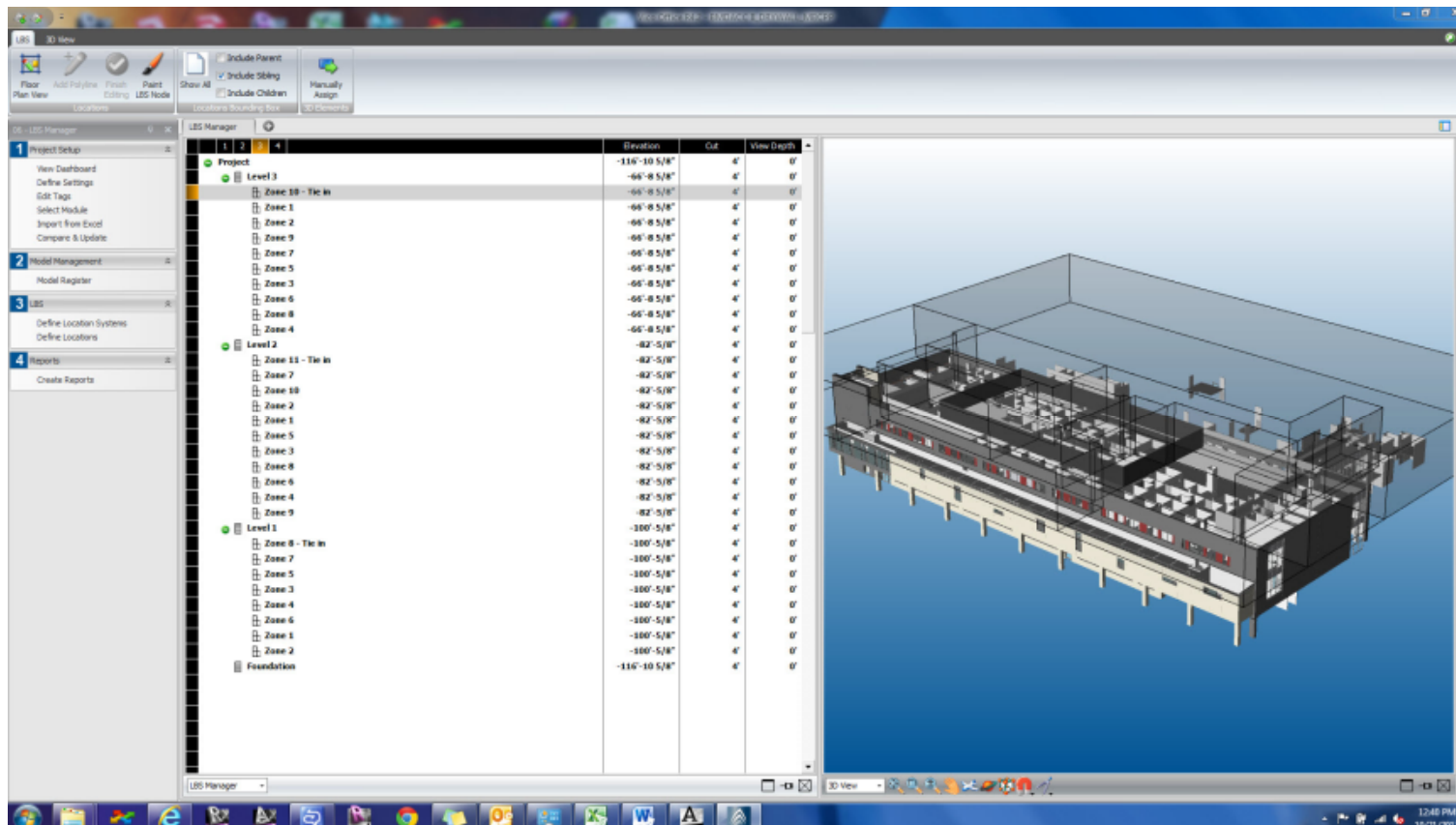
Number: 1  
 Duration: 348.9 shifts

Update resources from quantities  
 Risks

Consumption

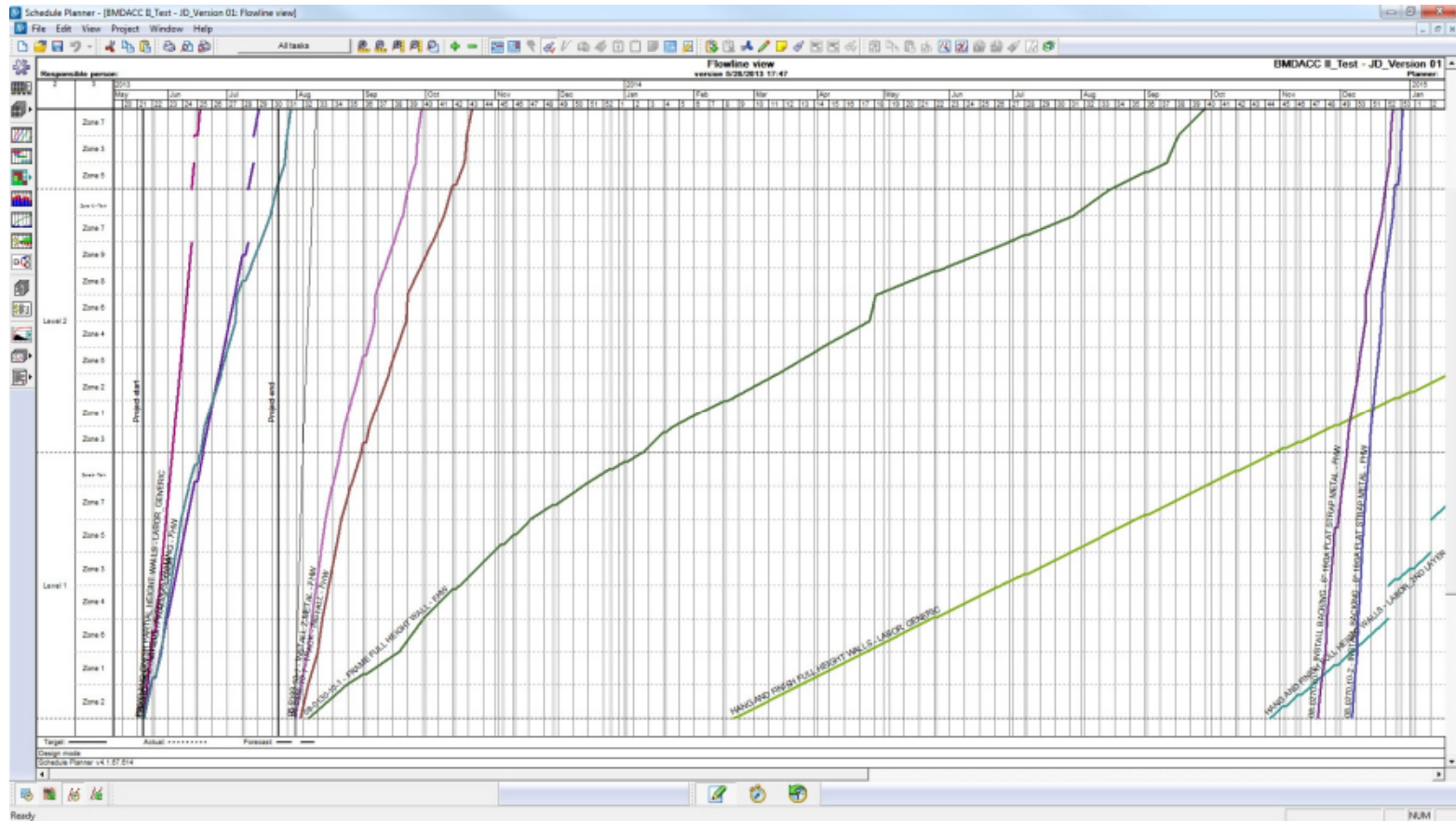
	Item	Consumption person hours/units	Production rate units/shift	Quantity	Cost type
0	Frame Full Height Wall	1	8	2791.3 HR	

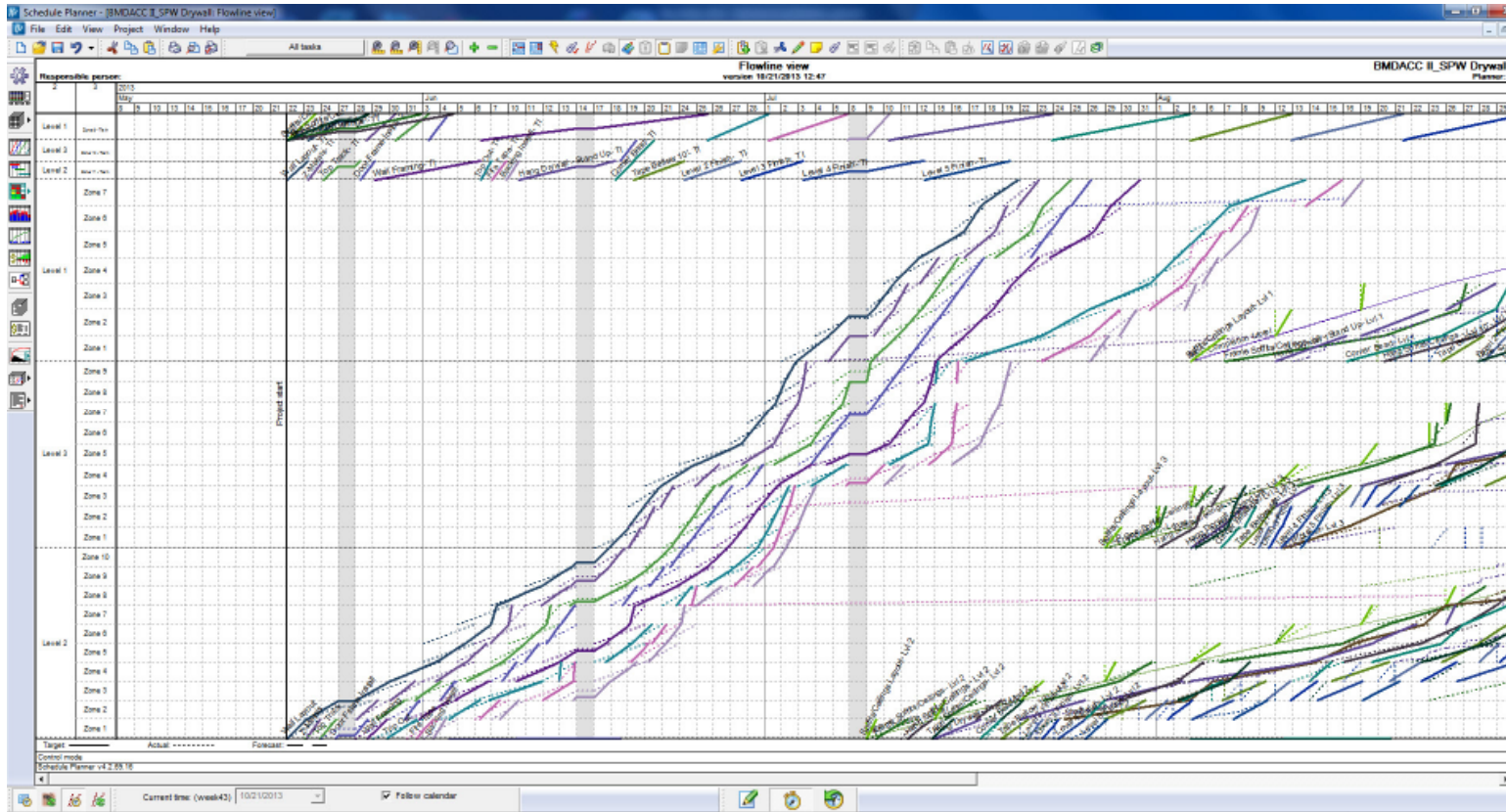
Use dependency order  | << OK and previous | OK and next >> | OK | Cancel



The screenshot displays the LRS 3D View software interface. On the left, there is a navigation pane with sections: 1 Project Setup, 2 Model Management, 3 LRS, and 4 Reports. The main area is divided into a tree view on the left and a 3D model on the right. The tree view shows a hierarchy of levels and zones. The 3D model shows a multi-story building with a complex internal structure, including rooms and corridors, rendered in a semi-transparent style to show internal details.

	Elevation	Out	View Depth
Project	-116'-10 5/8"	4'	0'
Level 3	-66'-0 5/8"	4'	0'
Zone 10 - Tie in	-66'-0 5/8"	4'	0'
Zone 1	-66'-0 5/8"	4'	0'
Zone 2	-66'-0 5/8"	4'	0'
Zone 9	-66'-0 5/8"	4'	0'
Zone 7	-66'-0 5/8"	4'	0'
Zone 5	-66'-0 5/8"	4'	0'
Zone 3	-66'-0 5/8"	4'	0'
Zone 6	-66'-0 5/8"	4'	0'
Zone 8	-66'-0 5/8"	4'	0'
Zone 4	-66'-0 5/8"	4'	0'
Level 2	-82'-5 1/8"	4'	0'
Zone 11 - Tie in	-82'-5 1/8"	4'	0'
Zone 7	-82'-5 1/8"	4'	0'
Zone 10	-82'-5 1/8"	4'	0'
Zone 2	-82'-5 1/8"	4'	0'
Zone 1	-82'-5 1/8"	4'	0'
Zone 5	-82'-5 1/8"	4'	0'
Zone 3	-82'-5 1/8"	4'	0'
Zone 8	-82'-5 1/8"	4'	0'
Zone 6	-82'-5 1/8"	4'	0'
Zone 4	-82'-5 1/8"	4'	0'
Zone 9	-82'-5 1/8"	4'	0'
Level 1	-100'-5 1/8"	4'	0'
Zone 8 - Tie in	-100'-5 1/8"	4'	0'
Zone 7	-100'-5 1/8"	4'	0'
Zone 5	-100'-5 1/8"	4'	0'
Zone 3	-100'-5 1/8"	4'	0'
Zone 4	-100'-5 1/8"	4'	0'
Zone 6	-100'-5 1/8"	4'	0'
Zone 1	-100'-5 1/8"	4'	0'
Zone 2	-100'-5 1/8"	4'	0'
Foundation	-116'-10 5/8"	4'	0'





Task ID : 196356 Override

Status - Status - Completed

Label *	SM INSERTS: 21.1->3	For *	Eugene Acosta
Work Breakdown:	<input checked="" type="checkbox"/>	Company	Pacific Rim Mechanical Contract
Location Breakdown:	<input checked="" type="checkbox"/>	Trade	<input type="checkbox"/>
Master Schedule ID	find Master Schedule ID	Team	TOPS Shell
Description	Crew Size 3	Finish *	September 24, 2013

Roadblocks

Notes

Date	From	Note	Attachment

CANCEL DONE

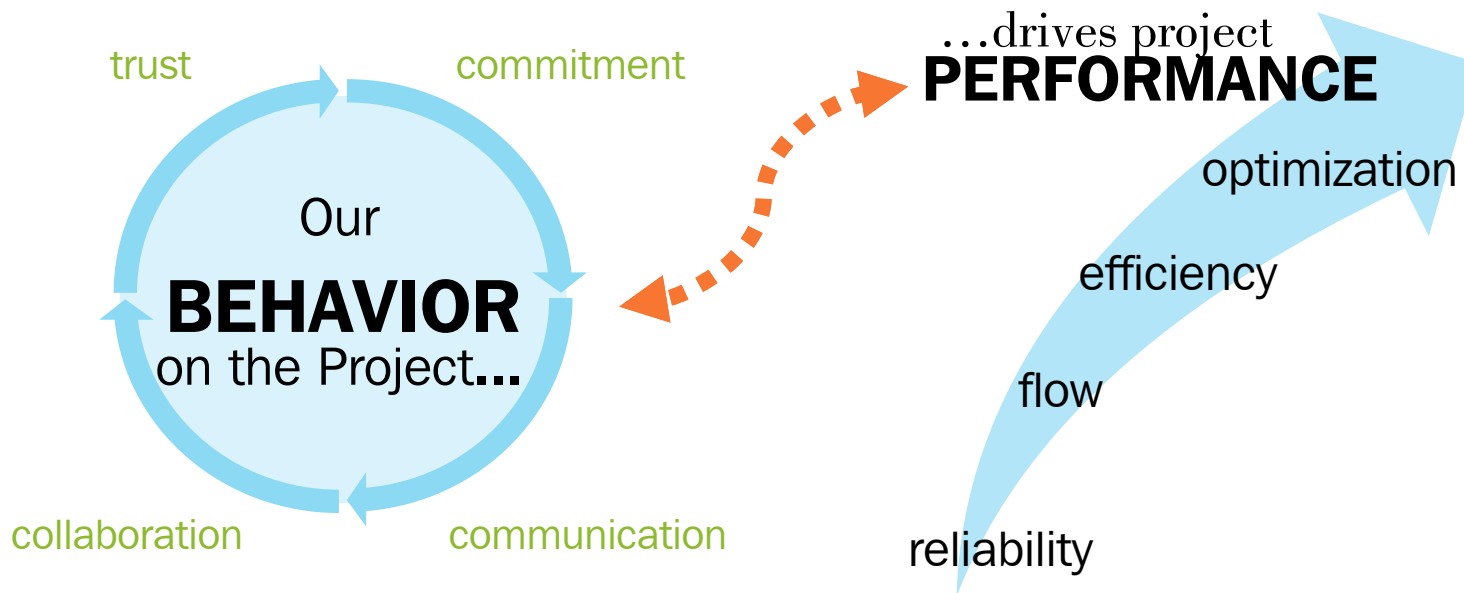
**Confirm the deliverable was met**



## When theory fails...Lessons learned

- Transparency & Honesty in Commitments
- Estimate vs. Schedule Level of Granularity
- Actuals quantification
- Disruptions to continuous work flow

**The line between success and failure is rarely “the technology doesn’t work as advertised.” It’s almost always about the people.**





Lake Constance 5D-Conference 2013



**Questions & Discussion**

**Thank You**