WBS 8.7

Sustainable Home Construction Project: Week 8 Final Deliverables

Group 3:

Jesse Hoover

Jeremy Rodgers

Lance Salter

Troy Stempfley

Robert Strack

David Wichner

Embry-Riddle Aeronautical University Worldwide

PMGT 501

Dr. Gigi Smith – Instructor

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Reducing the Schedule Length and Impact on Budget

The current project plan has a duration of 201 days, with project completion on 16 October 2015. There is a possibility that the homeowners will need to move in earlier than they are currently planning, because they will be selling their existing home. As a result, the project team assessed an alternate course of action to determine the feasibility of an earlier move-in date. By crashing some of the critical tasks, the team could bring the project time from 201 days down to 188.25 days for a 30 September completion. Further crashing could be done to determine additional time savings, although that would come with a price. This approach assumed that material costs would not change and so the crash could be achieved through paying overtime at a rate of 1.5 times the normal rate.

To figure out which task should be crashed, and knowing we were attempting to meet the schedule by adding overtime work for select workers, we looked at the lowest pay-rate employees first. Since that was the excavators, the first task to be crashed was WBS 1.3.1 – Excavation. By adding 2 hours of overtime per day to each of their schedules, one can see in the Table 5 that the resulting completion time was reduced from 5 to 3.75 days, at a cost of $200.

Table 5 – Example of Crashed Task

	WBS	Task Mode	Task Name	Duration	Start	Finish	Predecessor	Resource Names	Cost
4	1.1.2		Contract signed, Project started	1 day	Tue 1/6/15	Tue 1/6/15	3	Lawyer, Customer,PM	$3,040.0
5	1.2		Project planning	47 days	Thu 1/8/15	Mon 3/16/15	4		$72,680.0
6	1.2.1		Design and Permitting	47 days	Thu 1/8/15	Mon 3/16/15	4		$72,680.0
13	1.3		Executing	147 days	Tue 3/17/15	Mon 10/12/15	12		$527,117.5
14	1.3.1		Excavation	3.75 days	Tue 3/17/15	Fri 3/20/15	12	Excavator1, Excavator2	$1,800.0
15	1.3.2		Foundation	15 days	Thu 3/26/15	Wed 4/15/15	12	Foundation	$15,520.0

Name: Excavation Duration: 3.75 days Effort driven Manually Scheduled Previous Next
Start: Tue 3/17/15 Finish: Fri 3/20/15 Task type: Fixed Units % Complete: 0%

ID	Resource Name	Units	Work	Ovt. Work	Baseline Work	Act. Work	Rem. Work
13	Excavator1	100%	40h	10h	0h	0h	40h
14	Excavator2	100%	40h	10h	0h	0h	40h

Continuing to follow that methodology, we then crashed the following activities:

1.3.2 – Foundation (Concrete workers)

1.3.4.14 – Pour sidewalks and driveways (Concrete workers)

Bumping the concrete workers up to 2 hours per day of overtime resulted in a net time savings for the overall project of 5 1/2 days, at a cost increase of only approximately $1200. With just these few inexpensive crashes, the project saved almost 7 days in the overall schedule.

Further crashing, looking now at the roofing task saved another 3.5 days following the same methodology. Then by adding overtime to the siding installers and also the drywall team, we were able to reduce the project completion date to 30 September. With this addition, as can be seen in table 6 below from the project plan that reflects these crashed activities, we now could meet a 1 October move-in date for the customers at an additional cost of only $2700.

Table 6 – Final Cost and Time for Crashed Project Plan

	WBS	Task Mode	Task Name	Duration	Start	Finish	Cost	P
1	1		Sustainable Home Construction Project	188.25 days	Mon 1/5/15	Wed 9/30/15	$687,737.52	
2	1.1		Project Initiation	2 days	Mon 1/5/15	Tue 1/6/15	$78,040.00	
5	1.2		Project planning	47 days	Thu 1/8/15	Mon 3/16/15	$72,680.00	4
13	1.3		Executing	135.25 days	Tue 3/17/15	Fri 9/25/15	$530,617.52	1
121	1.4		Monitoring and control	129 days	Mon 2/2/15	Mon 8/3/15	$4,480.00	
129	1.5		Closing	3 days	Fri 9/25/15	Wed 9/30/15	$1,920.00	1

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FINAL DELIVERABLES: SUSTAINABLE HOME CONSTRUCTION PROJECT