MBA 520 - Group Project Guidelines

Interim inspection to document accepted deliverables

This week, you will begin work on your Group Project for this module. You will work as a group but will submit the assignments individually. Your Group Project for this course will be completed in four stages and submitted in Modules 2, 3, 4, and 8. The purpose of the Group Project is to apply the concepts and techniques of the module employing the following processes:

1. Validate Scope
2. Control Scope
3. Control Schedule
4. Control Cost
5. Control Procurements and Control Stakeholder Engagement

Each of these will form a separate section of the Final Project.

The project is the construction of a new house. You are the project manager responsible for building the house. The contract has been signed, which includes the final floor plan (enclosed as Figure 1) and options selected at your company’s “Design Center.” One change order has been processed: the addition of a swimming pool (in Module 1). You don’t need to update the schedule yet; that will be assigned with other changes and due Module 8. More details are below the Assignment.

Assignment: Complete the first stage of your Group Project—The Validate Scope Process. To validate scope, your company requires five interim inspections and one final inspection. The inspections are:

1. Grading inspection; pre-slab and underground plumbing stake-out (completed)
2. Slab inspection; pre-framing plan (completed)
3. Framing and exterior inspection; pre-drywall inspection (your current assignment)
4. Drywall inspection; pre-cabinets and fixtures
5. Cabinets and fixtures inspection
6. Final (closing) inspection

Group Project, Part I (Module 2) – Work together with your team to prepare a validate scope document for the framing and exterior inspection, pre-drywall inspection. This inspection includes the following:

- Completed exterior, including roof, windows, doors (pre-painting)
- Completed internal wall framing
- In-wall plumbing for sinks, tubs, dishwasher, clothes washer, wet bar, etc.
- Completed electrical for wall switches, outlets, ceiling fixtures, etc.
- Low-voltage wiring and conduit for security system, AV equipment, internet and computer wiring, thermostat, telephones, etc.
- HVAC ducts and returns

All of these items are shown on the construction plans approved by the Browns. If the items are as shown on the plans, they should be approved. The Browns know that if they want to make
any changes not shown on the plans, they will be charged a lump sum of $250 for making the change and any additional costs incurred to construct the change. Some changes may require the review and approval of the local building department, which will add at least two weeks to the construction schedule. You don’t anticipate any issues; the Browns live in the area and stop in at the site once or twice each week. You have shown the location of various appliances and the kitchen island by painting the outline of these on the floor. This allows for the owners to better visualize the final layout.

The purpose of this week’s submission is for your team to develop a generic procedure that uses the inputs, tools, and techniques, and produces the outputs in the Validate Scope process. In addition, your team must develop a quality control procedure for just the electrical switches and outlets to eliminate rework and demonstrate your knowledge of the core value of Responsible Stewardship by installing these features correctly the first time. Remember the carpenter’s adage: “Measure twice, cut once.”

The case study on which the four part assignment is based is as follows:

**Project Background:** Mr. and Mrs. Brown are buying a new house, the “San Leo” model, in a local subdivision. The house is a 4-bed, 2-bath with a 2 car garage. The Browns have selected their options and signed the contract and addendums. Their financing is approved. The house is now under construction. It is nearing the end of the third month in a seven-month construction schedule. The Browns have previously approved the two earlier interim inspections, 1) regarding the lot grading, underground plumbing; and 2) slab and interior wall framing. It is now time for the third interim inspection described above.

**Company Background:** Your company, HappiHouses (HH), builds standard houses in several new subdivisions in your area. HH has been in business for over 40 years and is a licensed general contractor in your area. HH sells the house and lot as a package. HH’s profit comes from mark-up on the lot, construction management, a mark-up on subcontractors, as well as the margin from self-performing the structural, concrete, drywall, painting, and finishing work. HH self-performs this work to better control the quality and schedule for these items.

HH uses several subcontractors (subs) during construction. These subs are typically those trades that are separately licensed in your area. For this house, the subs are constructing the electrical, plumbing, heating, roofing, and ventilation and air conditioning (HVAC) items. The construction of each house is managed by a single project manager who has two assistants. This project management team typically has 10 to 20 houses in various stages of construction to manage.

*Please make sure that you cite and reference all your outside sources properly. You must have a minimum of three references, including one peer-reviewed journal article.*

Even though you complete this assignment as a group, *all students must submit their own paper to their own individual Dropbox.* (This Dropbox basket is linked to Turnitin.)
Group Project, Part II (Module 3) The Control Schedule Process

The baseline project schedule in MS Project 2013 is contained in the course documents. The start date (notice to proceed) is set for May 1, 2024 so that the schedule does not need to be changed during the expected life of this course material. Please ignore the year. For your convenience, a 2024 calendar is available at the end of this file. The building inspector requires a three-day window, which can include weekend days. The building department is very good on performing the inspections within the three-day window. The schedule has been approved by all stakeholders. WBS items 3.5 and 3.6 are for two-story houses and were deleted from this schedule because the San Leo is one story. For consistency, the remaining WBS numbers are the same as a two-story house.

An Excel workbook: **House Schedule of Values** is included with the course materials. This workbook has a WBS Budget that includes the initial budget for the WBS items. Notice that the roll-up items do not have a subtotal. You should also refer to the Microsoft Project form: **Schedule Compression**, to help with your assignment for this week.

**Situation.** The project was on or ahead of schedule during May and June. However, Tropical Storm Cody sat off the coast, and the jobsite was shut down because of wind, lightning, and/or rain for the entire first two weeks of July. We were fortunate that lintel and block inspection passed on June 28. Today is Friday, July 12. It is too wet to work until Monday, but you have ordered the materials for the roof and the framing, and all materials will be delivered on Sunday. You’ve probably heard of “saving up for a rainy day.” Well, in the home building business, we “save up to recover from rain delays”.

In the course materials, there is an Excel workbook that contains the budgeted cost, the planned value, the percent complete, and the earned value that your team has estimated as of July 12. The sheet has subtotals and formulas for PV, EV, AC, and BAC. Unfortunately, the other formulas are missing, and you have to recalculate them.

Your supervisor has asked you and your project management team to develop a recovery plan to start the drywall work on time by the end of July. That gives you two weeks to do essentially four weeks of work. The building department has agreed to inspect the day you call in for an inspection as long as you pay the $200 overtime fee per inspection. For weather delays, your company’s policy is to always pay this additional inspection cost and costs for extra inspections out of general company overhead so as not to impact your project budget.

To make up for the weather delay, you’ve talked with the structural engineer regarding the framing inspection that is required before windows can be installed. (The building department requires that all structural walls be completed before any windows are installed). You also talked to the building officials about installing the windows after the inspection of the load bearing wall, and they agreed. You don’t need to complete all of the framing, just the interior load bearing wall shown in Figure 1. You realize that your crew can erect this in a 12-hour day. The building department will have to inspect this wall before the windows are installed, but they agreed to do that at 6:00 a.m. on Tuesday, so that allows you to install windows all day Tuesday. The cost for the additional inspection will be paid out of company overhead and not charged to your project.

The sheathing can be started when half of the trusses are installed, but it will still take one day after the trusses are installed for the sheathing to be installed. The inspector has agreed to be there first thing in the morning the next day after the sheathing is completed.
You can also shorten the duration for framing, trusses, sheeting, windows, and roofing by working your crews on overtime pay. You can get up to 12 hours labor per day from your crews, and they like the overtime pay!

Your foreman estimated 48 hours total for the framing crew to do all of the framing. He estimated 32 hours for the trusses. The time for the roofing is 80 hours with one roofing crew. The windows are 56 hours for one crew. You can also pay these crews overtime for 4 hours per work day and 12 hours on Saturday at a cost of $45 additional per hour. (The straight time hourly wages are included in the budget.) If needed, your crews can work Sunday at double time, which would cost an additional $90 per hour. (See the Crew Cost spreadsheet for calculations.) One of your assistants started a spreadsheet in the budget workbook called “Schedule Compression” to help develop the cost for the new schedule. She didn’t get it finished before she went into labor and she will be out for the next 12 weeks.

**Assignment:** You will complete the second stage of your Group Project—The Control Schedule process. Work with your group to prepare a recovery plan that can be used to bring the project back on schedule. Prepare a report to your supervisor that provides a detailed description of which tasks you will crash and/or fast track, the additional cost for crashing and/or fast-tracking, the revised activity start and end dates, and any other issues you think should be reported.

Also, explain how crashing and fast tracking will shorten the schedule. Demonstrate your knowledge of the core value of responsible stewardship by minimizing the cost for overtime pay.

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**Group Project, Part III (Module 4) The Control Cost Process**

_Situation:_ You’re back on schedule. However, on your last visit to the house, you saw that the baseboards and casings are not acceptable after 8 hours of charged work to activity 7.3 by Curley and Moe, a standard crew. On closer examination, it appears that the initial framing and drywall work were not exact, but are well within building standards. You are concerned that your standard two man crew, Curley and Moe, may not have the skill to install the baseboards and casings without a significant amount of rework and delay. You call Gus and Leo, the elite carpentry crew you can use. They can be made available, but their combined hourly rate, including fringe and overhead, is $50/hour more than the budget. (See the crew cost spreadsheet.) Gus is confident that he and Leo can fix what has been constructed and finish the remaining work in 72 hours without overtime. Gus also mentioned that he and Leo could do the 80 hours of finish work. You’ll consider that, but you’re pretty confident that Curley and Moe can get it done in the 96 hours budgeted. What should you recommend to your supervisor? There are two worksheets (which you need to complete) for baseboards and finishwork that can assist you with making your decision.

**Assignment:** Complete the third stage of your Group Project—The Control Cost Process. Your assignment for Module 4 is to work with your group to prepare a report to your supervisor
regarding your issues from the situation and any other issues that you think should be reported. Also, include Earned Value calculations for VAC, CPI, EAC (using the remaining formulas not completed last week except the bottoms-up), ETC (no need to re-estimate), TCPI using the BAC formula, and the EAC formula. (Include calculations for all methods of calculating EAC except the bottoms-up.) Although PV, EV, AC, BAC, SV, SPI, and the EAC (using the EAC=AC+BAC-EV formula) were completed last week, include those in your report. Compare the different methods used to calculate EAC and TCPI. Explain why the values differ. Which would you give the most credence in forecasting this project?

Also, explain how you need to control costs on this project. Demonstrate your knowledge of the core value of responsible stewardship by minimizing the cost.

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Group Project, Part IV (Module 8)

Situation: It is now July 31 and Activities 1.1 through 5.1 are 100% complete as shown on the WBS EV Jul 31 worksheet. Your actual cost equals the budgeted cost except for the additional costs to get back on schedule. You need to calculate the actual cost for WBS 3.4 and 3.7 $__________ actual cost to WBS item 7.3-baseboards, casings, and other details that you changed in Module 4.

Assignment: Update your project schedule with the start/duration changes generated in Module 2 to recover from the storm. Complete the activity “Pool-if ordered” as WBS item 8.3. The pool costs $30,000 and takes 28 days to build. It must be completed in order to start landscaping. Include a screen shot of your revised schedule. Trim the excess and use an appropriate time scale to show the activity durations. Finally, you received the attached letter from Ralph Acme requesting an additional $350. What would you do to resolve this issue?

Update all your earned value calculations, including the revised percent completes through activity 4.8 and the $_______ actual cost in WBS item 7.3. Compare the different methods to calculate EAC and TCPI. Explain why the values differ. Which would you give the most credence in forecasting this project?

Also, explain how you need to control costs on this project. Demonstrate your knowledge of the core value of Responsible Stewardship by minimizing the cost.

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HappiHouses
1 HappiHouses Blvd.
Grand, FL 30333

RE: A/C system for the San Leo, 7734 Mt. Olive Dr.

Dear Sir/Madam,

As you know, our quote for this house was $3,200. We completed the work on schedule and to specifications. Thank you for promptly paying our invoice.

Last week, we had to make a repair to the duct work, because the electrician ran a piece of conduit through a duct, which we repaired yesterday by replacing 10 feet of duct. We sent a two-man crew, and the repair required two hours with one hour travel time. The materials were $5/foot for a total of $50. Our two man crew has an hourly rate of $100.00 for a crew cost of $300 and a total cost of $350. In that this repair was no fault of ACME, we request an additional payment of $350. As you know, we rarely ask for additional payments, except when we feel that the additional cost is not caused by us. We enjoy working for HappiHouses and look forward to continuing our long and mutually beneficial relationship. Thanks in advance for your consideration of this request.

Please call if you have any questions.

Sincerely,

Ralph Acme
Ralph Acme
President
Licensed HVAC Contractor
No. HVAC 1234
Figure 1. Floor plan of the San Leo showing the interior load bearing wall.
Figure 2: 2024 Calendar