

Continuing Education Provider- PE#41204

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Tips for Project Managers Designing Existing & New Educational Facilities

Project Management – Scheduling, Phasing and Sequencing



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Project Manager

❖ What is a Project Manager?

- PM has the ownership to the project and sees the project from inception to completion. He or She will have close communication, team work, and complete the project on time and within budget.

❖ How will the Project Manager Succeed?

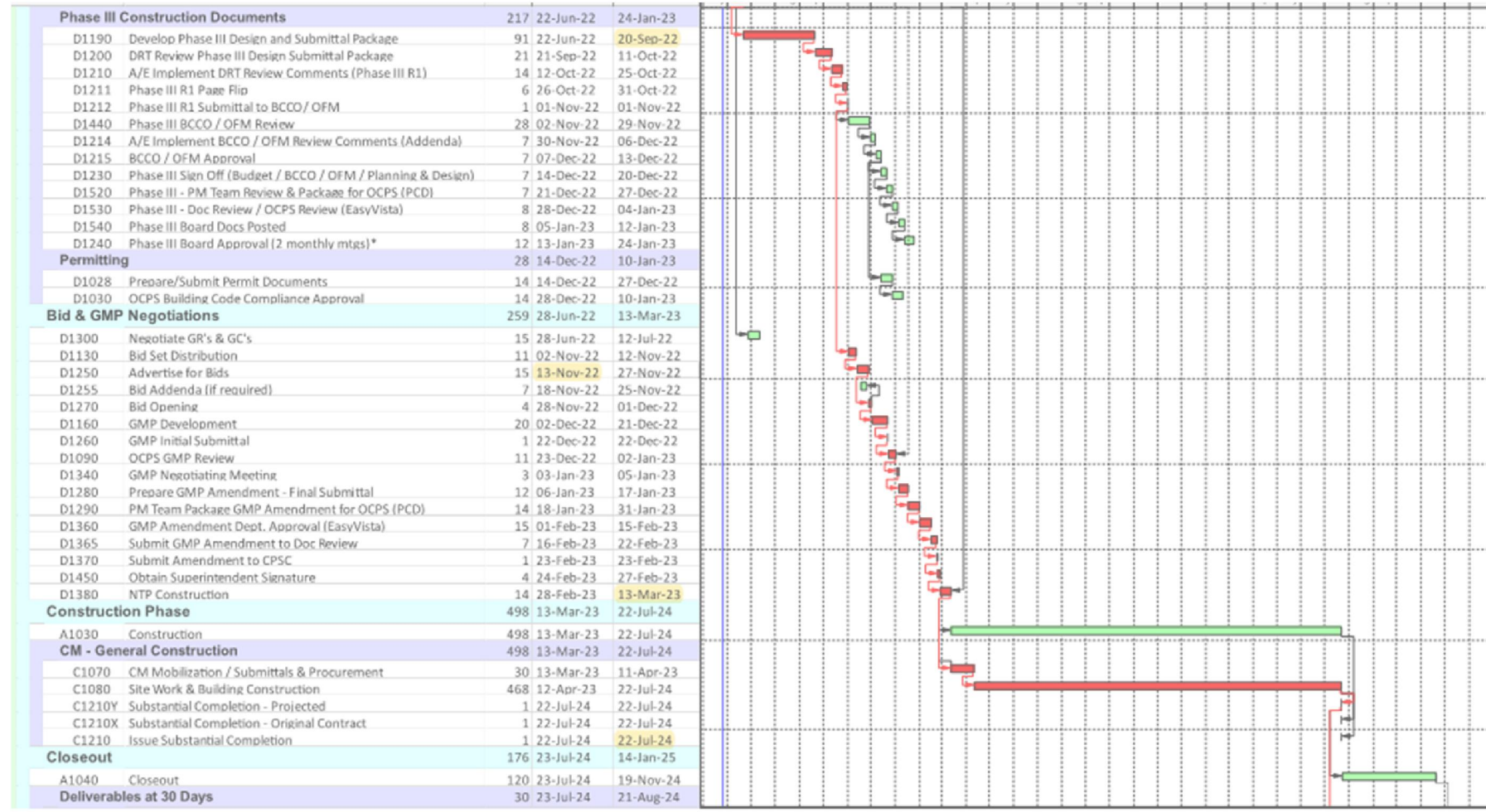
- Developing quality scope validation
- Ensuring budget is maintained
- Ensuring design time accommodates construction schedule
- Allocating resources
- Communication
- Response time



Project Management

- ❖ Renovation and Remodeling Projects
- ❖ Important items for the success of the project.

- Scheduling
- Phasing
- Sequencing



Schedule

❖ HVAC MEP Approach to Existing vs. New Facilities

➤ Things to Consider:

1. Building Assessment
2. Trends and Market Technology
3. Product Availability



Schedule

- ❖ The success of the project depends on preparing a successful project schedule?
 - A good schedule requires input from many participants who are specialist in their scope. Getting the additional support will make the schedule better.
 - Subcontractors and stakeholders should create all task and milestones.
 - Failed schedules create cost overruns.



Schedule

- ❖ The success of the project depends on preparing a successful project schedule?
 - Potential Stakeholders – PM, Maintenance, Principal, OAR, Building manager, IT, Athletics, transportation, asset protection, etc.
 - Need to make sure that their input on schedules and milestones is incorporated.
- ❖ Make sure the time frames for activities are realistic.
 - Get buy in from the subcontractors and stakeholders that the time frames are acceptable.
 - Almost anything is possible with enough money and resources



Schedule

❖ Make sure the resources flow smoothly?

- Mobilizing and demobilizing resources has cost and time.
- Attempt to create a flow with major subcontractors to flow from one activity to the next.

❖ Make sure everyone is included in the schedule?

- Permitting
- Don't forget cleaning, FFE, TAB, CxA, Inspections, Corrections/Punch.
- Training
- Move in time.



Schedule

❖ Does the schedule incorporate procurement milestones?

- Submittals
- Owner Direct Purchase
- Long Lead Items
- Owner provided items

❖ Are there interim milestones?

- Completion of certain buildings, roads
- Condition building to allow flooring, ceilings, paint.
- Completion to allow for TAB, CxA, IT Installation

❖ Does the schedule meet the completion date?

- Does the schedule have float?
- Is it reasonable to assume everything will be perfect?



Schedule

❖ Product Availability

➤ Challenges with supply chain:

- Propose ODP
- Substitution Request

➤ Obsolescence and discontinuation:

- Stay in touch with vendors/suppliers
- Propose solutions



Schedule

❖ Procurement issues and potential solutions

- There are delays with fire alarm panels, Intercom Systems, Access control panels, fiber optic cables, VFD's, disconnect switches, panelboards, switchboards, transformers, motion sensors, lighting controllers, anything stainless steel, chillers, AHU's, VAV, BAS and anything else with a chip.
- How will the project deal with long lead items? Possible Options:
 1. Issue a NTP and have a 6 -8 month procurement period prior to starting for renovation projects (for buyout, submittals and delivery) since there is no area that can be done without those materials. This would also delay the start of general conditions for 6-8 months so there is no additional cost to the project.
 2. Provide a pre-procurement package to purchase all materials needed to do the work prior to the NTP.
 3. Start with work that has no long lead items such as demo, underground utilities, slab work.

Schedule

- ❖ Procurement Delays during the project and how can you deal with them.
 - Event of Force Majeure. Any cause or event beyond the control of the company.
 - “Delivery dates are approximate and not guaranteed.
 - “Company will use commercially reasonable efforts to deliver the materials on or before the estimated delivery dates and will notify the customer if the dates cannot be honored and will deliver the material as soon as practicable thereafter. In no event will company be liable for any damages or expenses caused by delays in delivery.”

Schedule

❖ Importance of Material Ordering

- Make sure all materials are within the critical path of the project?
- How important is it to get preapproval of equal materials during the bid process?
- How important is it to select the correct vendor with a complete package that is “as specified”?
- Material delivery – ODP is an option to get ahead of lead times



Schedule

❖ Importance of Material Ordering (Continued)

- Leave option on the table for alternate manufacturers subject to review
- Notify owner if design standards cannot be met based on supply chain and request variance
- Product Availability - Supply Chain Issues - Use State Commodity Contracts &/or recommend early package as part of construction deliver.
- How important is it to order spares to account for jobsite damages from staff or accidents?

Schedule

❖ Importance of submittals

- How much time is reasonable for a supplier to provide accurate submittals? Was this considered when deciding which supplier to choose?
- It must be correct the first time.
- Every set of hands an incorrect submittal passes thru is additional time wasted.
- Why didn't the AE return as "Approved as Noted" so we can order everything.
- Submittal to be reviewed by the BCCO or FM must be 100% correct prior to forwarding.

REVIEWED REVIEWED AS NOTED
 REJECTED REVISE AND RESUBMIT

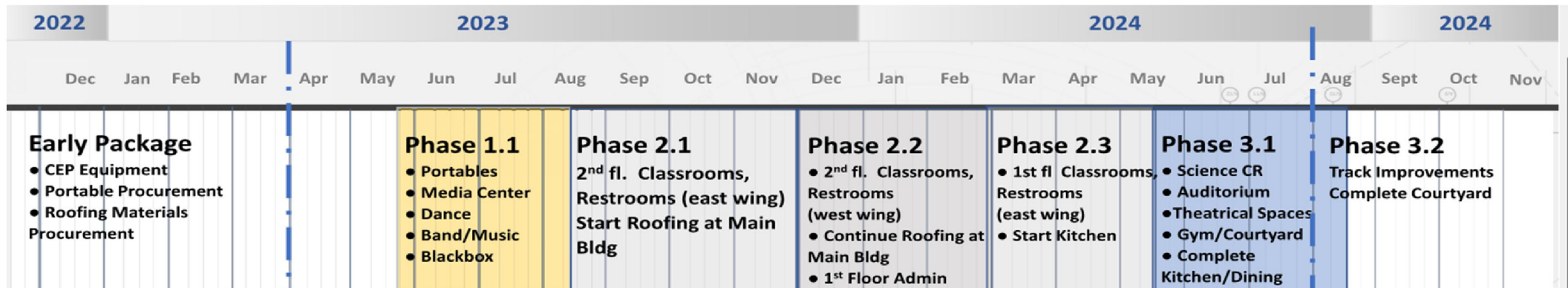
Corrections or comments made on equipment submittals or shop drawings during this review do not relieve contractor from compliance with requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for: conforming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of all other trades, and performing his work in a safe and satisfactory manner.

DATE _____ BY _____

Phasing

❖ How will the phasing of the project be completed to allow the Owner to function without some of their buildings.

- Cafeterias, Admin, Gyms, Theaters are typically needed to be done in the summer when students are gone from the campus.
- Check to find out the summer school or schedules of classes during the summer months.
- Maybe the building is always in use and work needs to be completed at night?
- How will the building function while under construction?
- Do you need to relocate spaces during construction.



Phasing

❖ How will life safety systems be maintained?

- Temporary chillers/ AHUs connections may be needed during construction
- Fire alarm must remain on in any occupied building.
- Temporary fire alarm connections may be needed to allow the 2 systems to talk (Alarm, Trouble, Supervisory 2 way communication) to each other while both systems remain active.
- Fire protection must remain active in any building that is occupied.
- Temporary intercom connections may be required to keep the system active or to communicate between 2 systems similar to fire alarm.
- Plan to keep an active ERRES system functional.
- The area of refuge must be maintained for the building.



Phasing

❖ Appropriate barriers be need to be provided to protect staff and students?

- Egress and emergency lighting must be provided to a public way for all buildings. Will barriers block the existing creating a need for temporary paths?
- Make sure the ADA egress path maintained?
- Maintain the path to areas of rescue assistance.

❖ Will you need to create temporary roads?

- Could be required for the new flow of traffic.
- May be needed to access construction lay down areas.
- Potentially needed to gain access to the area of work.

❖ Temporary utilities may be required for the work?

- Switchgear being replaced may feed additional buildings
- Are any utilities being relocated for new buildings or roads.



Phasing

❖ Temporary MDF/IDF may be required when phasing a project.

- If current MDF/IDF is too small, a relocation may be part of the scope.
- The MDF/IDF may serve portions of buildings that are not part of the current phase.
- Maybe the room can be isolated out of the construction so that it can continue to function inside the construction zone.

❖ Additional close out processes may be created by phasing.

- When the project is phased, material warranties need to be considered. Longer time durations or start at substantial for each phase.
- T & B and CxA will be done at completion of each phase.
- Additional start up or testing site visits may be required.
- Multiple punch list may be created by multiple phases

Sequencing

- ❖ **Make sure the sequence of each task is scheduled correctly.**
 - Is the sequence of work correct s-s, s-f, f-f?
 - Make sure all relationships are accurate. (Can't install fixtures with no grid)
 - Do new rooms need to be built prior to starting work in areas?
 - Will areas be completed to move students minimally?
 - Who roughs in areas first?
 - Can you replace and FTB with a VAV without replacing the AHU?
 - Will the cooling tower need to be moved to allow for new CEP to be built.
 - New fire alarm devices may not be able to connect to the existing fire alarm panel. Will the new panel be available?

Conclusion

❖ The Plan

- Create a well defined schedule plan with reasonable durations and appropriate float.
- Participation from **ALL** contractors, suppliers and stakeholders is required to successfully schedule, phase and sequence a project.
- Procurement of materials is important.
- Honesty among the team to provide accurate reporting and expectations
- Weekly updates and managing milestones
- Don't plan to finish on the last day.

