

*Richard B. Fisher Middle School Building
The William Penn Charter School
Philadelphia, PA*



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Richard B. Fisher Middle School
Philadelphia, PA
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Project Delivery Evaluation
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EXECUTIVE SUMMARY

This assignment allowed me to understand the way that contracts are decided upon and how owners make the decision about what types of requirements they want the contractor to provide. Appropriate contract types vary depending on the type and experience of the owner. Some contractors have an obvious advantage when going after work with a repeat client. In this case, two of the three final contractors were companies that have done projects with Penn Charter previously.

The building systems for this building caused problems in construction. This could have been avoided if a contractor had gotten on board early in the design phase to help make the decisions about major systems in the building. This caused a sequencing problem that the general contractor had to deal with and work around. I hope on finding the best alternative for this conflict that will meet the schedule and budget needs.

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CONTRACTS

The contract between the owner and the general contractor was a Guaranteed Maximum Price (GMP). GMP contracts work well with experienced owners who have an understanding of the construction process. With a Lump Sum contract, the contractor has incentive to come in under budget but none of the benefits go to the owner. If the price of the project overruns the GMP without any changes to the contract, the general contractor would have to pick up the extra cost of the project. However, if the cost of the project comes short of the GMP, the owner and contractor will share the savings.

For this project, the contractor shall not furnish performance and payment bonds. This is partially due to the history that Intech has with Penn Charter and the money that the owner will save without requiring bonds. Intech shall provide Worker's Compensation and Employers' Liability insurance to protect the everyday staff working on this project. Intech must also provide Commercial General Liability insurance including Personal Injury, and Broad Form Property Damage as well as Automobile Liability. The Owner shall purchase and maintain liability and property insurance during all phases of the project.

Intech filed a Waiver of Liens with the City of Philadelphia Prothonotaries Office before the work has commenced. In every subcontractor's contract, a Waiver to file a Mechanics Lien needed to be signed. Since Intech filed the Lien downtown, the owner could feel at ease and know that no subcontractor or supplier could jeopardize the job.

Every subcontractor had a Pennsylvania Sales, Use and Hotel Occupancy Exemption Certificate attached to it. This states that the William Penn Charter School is a Non-Profit Educational Organization. Therefore, the job is allowed to purchase certain materials free from sales and use tax. The contractor must present the certificate up front to the supplier in order to not pay the taxes; otherwise the contractor will need to apply for a refund.

*Richard B. Fisher Middle School Building
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CONTRACTOR SELECTION

Penn Charter received numerous responses to their request for proposal for the Site Renovations and New Middle School Building. After reviewing the proposals, they narrowed down the pool to three contractors. One contractor was very experienced with building educational facilities. They had no previous experience with Penn Charter. Another company, Barclay White Skanska, had built the Field House for Penn Charter about 5 years previous to the start of this project. Intech had previous experience with the school as well. In 1995, they performed \$1.5 Million worth of cafeteria renovations in the Main Building on campus. The proposed staff for the middle school construction included the same project manager and superintendent that worked on the cafeteria project.

One of the most important factors in selecting the contractor was the schedule for the summer of 2001. Penn Charter realized that they needed a dedicated contractor to do whatever it takes in order to substantially complete the site renovations by the beginning of the 2001-2002 school year. They knew that it would take a certain level of commitment to overcome the constraints of the site and schedule. Intech showed in their proposal a schedule that would complete all the work that Penn Charter deemed necessary for students and faculty to return to campus.

Intech had another reason to pursue this project and do what it takes to complete the project successfully and impressively. Craig Sabatino, a Co-Owner of Intech, is a graduate of Penn Charter and takes pride in his Alma Mater. Mr. Sabatino's daughter was also scheduled to start school there at the beginning of the 2001-2002 school year. Due to his relationship with Penn Charter and close relations with the school, Mr. Sabatino had more of an incentive than the other qualified contractors to complete this project on time and in an impressive manner.

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STAFFING PLAN

For this project, Intech has staffed the project with a project manager who will perform most of work from the office in downtown Philadelphia, which is approximately 4 miles from the jobsite. He will only be assigned to this particular job until 3 weeks after the substantial completion date in mid-August 2002. Therefore, he will be working full time on this project until the beginning of September. There will also be one superintendent that will be on the jobsite for the entire length of the project. A project administrative assistant will work approximately 13 hours a week on the job from the downtown office. The project executive will work on the project approximately 5 hours a week unless a situation arises in which it is fitting for the executive to be present and help along with the decision process. The PX's fee will be included in the overall fee for the project. For the summer of 2001, an intern was hired to help with the initial workload especially since there was a significant amount of site work to be completed throughout the summer. This was also a big help for the large amount of submittals that needed to be approved throughout the summer. With the extra help, the submittals were not delayed due to insufficient staffing. See the attached staffing plan to help understand the roles of key personnel throughout the project.

The purchasing agents for Intech will work for approximately 19 hours for 4 weeks on the Middle School project. These 4 weeks will occur at the front end of the project while buying out the subcontracts. A project accountant will be assigned to work with the project manager on the finances. He will work an average of 8 hours a week for the full duration of the construction and post-construction.

Since Intech was a General Contractor on this job, there were laborers and carpenters that would come and go throughout the project. Laborers were around to help keep the jobsite clean and to assist the carpenters with the materials for the self-performed work. The carpenters installed doors, frames, and hardware throughout the job

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as well as millwork and trim. Intech also had a few assistant superintendents that would come around when significant activities would commence. They also helped with layouts and surveying.

The laborers and carpenters were covered in the budget for the activities that they were to perform such as millwork. The management and office personnel were clearly defined in the general conditions estimate and budget. These numbers were estimated on the actual cost of the employee to Intech including salary and benefits.

See below for the roles of key players assigned for this project.

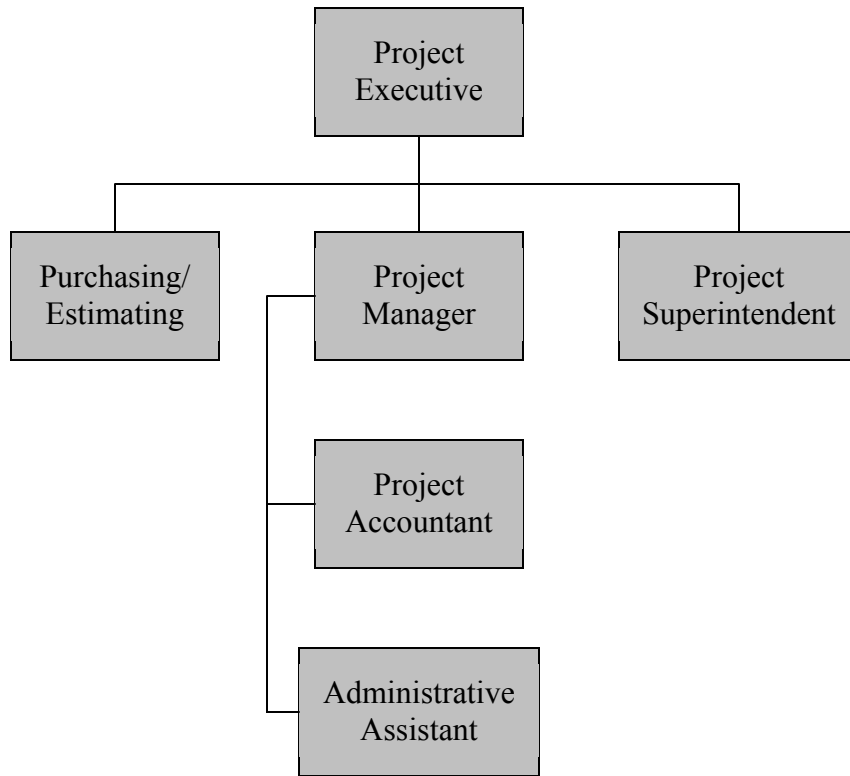
Position	Services
Project Executive	Provides overall control and support through all project phases by taking an active, hands-on approach. Provides Management overview of staff and project through all phases.
Sr. Project Manager	<p>Will be the main point of contact for Intech Construction and will have overall project responsibility while:</p> <ul style="list-style-type: none"> ▪ Providing appropriate support in the permitting process. ▪ Participating in the bidding and purchasing process to insure scope coverage. ▪ Being a point of contact for Intech, with regard to Owner, Consultant and Subcontractor communication. <p>Managing the scheduling, cost control, shop drawings and project close-out processes.</p>
Project Superintendent	<p>Will be the primary field representative for Intech with regards to Owner, Consultant, and Subcontractor Relations with special emphasis on:</p> <ul style="list-style-type: none"> ▪ Site logistics management. ▪ Phasing of work. ▪ Coordination of trades. ▪ Resolution of field problems. ▪ Obtaining information to expedite building process. ▪ Quality Control. ▪ Maintaining schedule. ▪ Managing Safety Program

*Richard B. Fisher Middle School Building
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Position	Services
Project Accountant	Will be responsible for all project accounting functions including billings and cost reporting.
Administrative Assistant	Assists staff with all administrative functions with special emphasis on: <ul style="list-style-type: none"> ▪ Communications. ▪ Maintaining logs. ▪ Clerical Duties.

PROJECT ORGANIZATIONAL CHART



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DESIGN COORDINATION

There are no unusual requirements by contract to perform the MEP coordination on the job. During renovations there can sometimes be situations that arise with coordination above the ceilings. New construction consists of its own MEP coordination problems depending on the type of facility and the amount of room in the ceiling plenum. For this project there were no significant issues that arose during the MEP coordination and construction.

Before MEP construction began, the general contractor organized a meeting with the MEP subcontractors to organize coordination of the trade work. The mechanical subcontractor took the lead and issued CAD drawings for the work that they were to perform. Then the other trades were issued electronic files to draft in their appropriate work. There was 3 coordination meetings held until all parties involved were able to agree on appropriate locations for all the MEP work.

Pennoni Associates of Philadelphia performed Testing and Inspections throughout the construction. They were contracted directly by Penn Charter for the duration of the project. Types of testing included soils testing and compaction, which occurred mostly during the Phase 1 Site Improvements. For the building Foundation Inspection occurred with emphasis on backfill, soil bearing capacity, and concrete and reinforcement placement. Other areas of testing included concrete and reinforcement placement throughout the building, masonry bearing wall inspection and mortar testing, steel framing and decking inspection, and steel fireproofing inspection. The metal stud wall system inspection included stud framing, waterproofing, wall ties, brick, mortar, and dryvit panels. All testing must check for conformance with the applicable guidelines and specifications.

The trades need to coordinate the testing and final hook-up of equipment with multiple sources, including the school and utility companies. Some companies, such as the gas company, demands to be there when the boiler is to be hooked-up. It is always a

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good idea to ask the mechanical subcontractor for a start-up report on their equipment. This way the general contractor and mechanical subcontractor can show the owner that all the appropriate steps were taken in order to get the equipment in full operating condition. When training the owner on the use of the equipment in the building, the general contractor should video tape the sessions. This will prove that the GC did their part to integrate the owner with the building as well as give the owner a visual reference for using the equipment.

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PROJECT CONTROLS

Cost controls were managed using Timberline accounting software. In the pre-construction phase of the job, the budget was established using this software. Then throughout the duration of the project, the line items for the budget were updated and compared to the estimated budget. This allowed for management to be able to see where the focus needed to be so that the job would be a profitable one.

Scheduling was controlled using Suretrak software from Primavera Scheduling Systems. The original schedule was created for the proposal to the owner. This schedule was the one that Intech used as a milestone for the project. When delays occurred, the schedule was revisited and worked thru in order to assure that the job would be completed on time. The schedule was updated weekly to reflect actual construction dates and durations to allow management to accurately track the progress of the job.

For the overall project management, Prolog Project Manager was used to control all correspondence including submittals and RFI's. Prolog tracked dates and where each item was at a particular time. All contact information was kept in the database including information on the owner, architect, engineers, suppliers, and subcontractors. Change orders and contingency items were also tracked in Prolog.

Before construction began, a site-specific safety plan was developed to address the pertinent concerns for this project. Intech's Corporate Safety Director developed this plan. All subcontractors received this before their contracted work began. Some of the items included in this plan are outlined below.

The site safety coordinator was the Project Superintendent for the project. The superintendent met with all Intech employees and subcontractor foreman weekly to inform them, and train if necessary, about the relevant safety procedures and concerns on the project. Each subcontractor's foreman will forward verification of a weekly Safety

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meeting being conducted among employees to train them of relevant safety procedures to be followed at this site. The superintendent will inspect the jobsite and equipment on a daily basis. All safety concerns must be addressed immediately after the superintendent brings it to the attention of the foreman. The superintendent on a weekly basis will complete a formal Safety Inspection.

In the site-specific safety manual there are issues raised concerning dangerous activities from steel erection to welding and cutting. All potential hazards are mentioned and a safety plan for each possible unsafe task is outlined.

Quality in the project can be achieved by multiple means and methods. Delivery inspections need to take place on site. Quality mock-ups need to be complete and ready to for approval well in advance to avoid any possible delays over disagreement between the designer and contractor. Engineering logs including contract drawings, specifications, RFI's, submittals, samples, and shop drawings need to be established and maintained throughout the project. For work that does not require a mock-up, an inspection during installation by the contractor and architect should occur to assure that the work has the quality that should be expected.

*Richard B. Fisher Middle School Building
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BUILDING SYSTEMS ANALYSIS

One alternative that should be analyzed is the substitution of steel trusses for wood trusses for the roof of the building. The heavy wood timbers wood stay as proposed on the plans because of aesthetics. During the construction of the building, the wood trusses created problems for workers when they needed to perform work between the trusses. It made it difficult to work in the roof and took extra time to complete activities because of the congestion. I propose using steel trusses instead of the wood roof trusses. This would allow the same structural capability with more room to maneuver in the attic space. In the Main Building on campus, in an addition that was put on several decades ago, they used steel trusses for the roof. When you enter the attic area you can see the major difference between that area and the area were wood trusses are found. Switching to steel trusses can relieve some of the headache of working in a tight attic space.

A major problem that existed was the way that the structural system needed to be erected. The exterior and interior walls consisted of load bearing concrete masonry units. The way that the detail was drawn up didn't allow for the CMU walls on the exterior to be built from the footings to the top of the second floor continuously. It meant that the masons needed to be sent off-site while the bar joists and concrete deck were installed. It created a situation where the contractor could create no flow of work for the subcontractors in order to keep them on-site and active. I propose looking at the possibility of using either cast-in-place concrete or using a structural steel frame for the majority of the building.

Advantages of steel

- Flexibility in design, layouts can be maneuvered to fit owner's needs
- Easy site assembly, less field labor
- Fast construction on-site, meets demands of a tight schedule
- Can allow for other trades to work on-site concurrently if phased correctly

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Advantages of cast-in-place concrete

- No fabrication phase or lead time
- Design flexibility, unlimited shape
- Shallow members can create more plenum space
- No additional fireproofing necessary
- Easier to coordinate construction

I feel that structural steel would be the most reasonable option for this building. Philadelphia is a steel town compared with Washington DC which is mostly a concrete town. Concrete could possibly lengthen the schedule for the project due to the increase of on-site labor. I think that the better option between CIP concrete and structural steel will be determined by looking at how it affects the schedule and budget of the project.