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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Combined Existing Construction Conditions
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EXECUTIVE SUMMARY

This project has a site that is mainly secluded from the main part of the campus. It has a large area for storage of materials compared to tight urban sites that you would normally find in a city the size of Philadelphia. Sheeting and shoring should not be necessary unless unusual conditions would arise. Since this is the case, I feel that a strict site plan should be maintained and enforced to help keep the site as predictable as possible.

The subsurface issues that arose during this project could have been damaging to the overall schedule if it wasn't handled in the correct manner. It could have cost the school another year without a desperately needed new facility to meet the increasing demand for excellent education. Intech and Penn Charter wanted to properly handle the situation and make sure that nothing could come back to haunt them to risk the success of the project. One reason that they wanted to be extra careful is that the neighbor who had issues with the building is a retired lawyer who had his eye on the project from his house that overlooks the construction site. Penn Charter wanted to make sure that they played the concerned neighbor and did not want to cause an uproar throughout the rest of the community. Penn Charter also voluntarily decided to ask all of the neighboring houses to the site if they wanted to have their house documented for damages before the construction started. That way if they noticed damage from vibration of the ground to their house, they would have a legitimate documented claim. I feel that this project shows the importance of playing the political and social game that comes with a construction project appropriately.

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PROJECT DELIVERY SYSTEM

The delivery system for this project runs on a traditional design-bid-build method (see attached organizational chart). Penn Charter contracted Bower Lewis Thrower Architects (BLTA) of Philadelphia for design services. This was done on a Lump Sum contract. BLT then contracted out Lump Sum contracts to their specialty consultants. Together they provided the contract documents for the site improvements and middle school building.

When the construction documents were approximately 90% complete, Penn Charter extended Requests for Proposals from select contractors including Intech Construction. Intech won the bid and proposed a Guaranteed Maximum Price (GMP) contract. The final GMP would be on the basis of 100% construction documents and the final contract between Intech and Penn Charter would not be signed until then. Intech held Lump Sum contracts with their subcontractors.

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PROJECT SCHEDULE SUMMARY

Some of the key elements of the foundation and structural sequencing include the concrete block walls, steel joists, and concrete slabs. After the spread footings were poured the basement block walls were erected. Then the first floor steel joists were laid on top of the load bearing block walls. Steel decking was then placed on top of the joists followed by the pouring of the first floor concrete slab. After the slab was poured, the first floor block could proceed. Since the block contractor had to wait for the joists, decking and concrete, it created a difficult situation. Not only did it create a problem for the block contractor but it also creates a problem for the steel erector and concrete contractor. All of these contractors rely on other trades to finish areas before they can start their work. It is especially difficult for the block contractor because from the time the joists are installed and the concrete is poured, they can not perform any work on this job. This can create a problem in getting the manpower needed at the right time.

Finishes can be sequenced in a few different ways. Sometimes painting can occur before ceiling grid and tile go in. From my experience, when this happens the walls need a significant amount of touch up because of the ceiling contractors marking the walls up while installing. It often gets to the point of having to repaint complete walls. My suggestion in this case is to install the ceiling grid and acoustic ceiling tile before painting the walls. Even though this will increase the amount of protection needed for the painter, it will decrease repainting and protecting the ceiling anyway. The floor finishes and base will be the last of the finishes to be installed, allowing for the least amount of damage. This is suggested because it is more difficult and expensive to replace the flooring then to touch up the base of a wall.

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PROJECT COST EVALUATION

Actual Construction Cost (CC): $7.7 Million

Actual Construction Cost per square foot: $171.40 / SF

Total project costs (Building and Site): $10.8 Million

Total project costs (Building and Site) per square foot: $240 / SF

Structural concrete and steel cost: $560,900, $12.46 / SF

Unit Masonry and Exterior Stone Veneer cost: $1,190,000, $26.44 / SF

Roofing, flashing, sheetmetal cost: $414,287, $9.20 / SF

Mechanical and Plumbing cost: $1,238,810, $27.53 / SF

Electrical cost: $698,210, $15.52 / SF

Design cost: $720,000

D4 Cost 2002 estimate – Building Cost (see attached): $7,538,551

Square Foot estimate using R.S. Means (see attached): $5,746,000, $128 / SF

The actual construction costs and the D4 estimate are approximately the same. The building that was picked in D4 had exterior stone as does my building. They are both middle school educational facilities. One major difference is the roof systems. The main roof on my building is a natural slate roof which is extremely expensive. The building that was used in D4 is a built up roof.

The square foot estimate was off by about 25% of the actual cost of construction. This could be due to the fact that R.S. Means could not factor in the exterior wall comprised of Wissahickon Schist stone that is much more expensive than the assumed face brick. Another reason is that the roof in the Means estimate is a built up roof that is much cheaper than the natural slate roof as mentioned above. There is also heavy timber trusses used in the building in two locations that Means cannot pick up. Overall, I just

don’t think that Means can pick up on the high quality of construction that exists on this project.

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SITE PLAN

All major construction traffic will come in from Fox Street crossing over Coulter Street into the site. Delivery access to this road will be limited. No deliveries for safety concerns will occur during the morning rush before classes and the afternoon rush after school lets out. That gives an approximate window from 8 am until 1:30 pm to get deliveries on site. Deliveries can follow the access road as seen on the attached site plan drawing. The access road will run over an existing all weather sprint track. Intech bid the job assuming that it would need to replace a significant portion of the 100 meter stretch. A mobile crane will be used to erect the structural steel and heavy timber trusses. The crane will be able to move around the whole building footprint by using the access road.

Temporary utilities will feed off of the underground existing utilities on site as seen on the site plan. The electric and telephone will be fed from an existing manhole to the construction trailers. No water line or sewer line will be necessary since Penn Charter is allowing the management from Intech to use their facilities inside of the Main Building. The dumpsters will change in location throughout the project. The locations are noted on the site plan. There will be some right by the entrance to the construction site as well as one by an entrance to the building once it has come out of the ground.

Site access will be restricted by the perimeter temporary construction fence as seen on the site plan. This will leave only one entrance to the site but will limit the possibility of anyone entering the site by accident. Parking for construction workers will be in the school's parking lot located just outside the construction fence leaving plenty of room for the lay down area within the fence.

LOCAL MARKET CONDITIONS

Unions in Philadelphia have always had a prevalent stature in Philadelphia. Intech has always primarily used union workers on their jobs and this job is no different. The fencing contractor in this job offered to lower his contract amount if Intech would allow for his company to do the job non-union. Penn Charter and Intech decided to still use the original amount and stick with the union contractors.

Other major projects nearby are the stadiums for both the Philadelphia Phillies and the Philadelphia Eagles. These projects are approximately 7 miles from the William Penn Charter Campus. Both of these jobs will require a considerable amount of labor on the job. This could vary from iron workers all the way to electricians. Currently, there is an ample amount of labor in the Philadelphia area for the type of construction that is needed to build the new middle school.

Philadelphia is primarily a steel town. In the United States, Philadelphia ranks 6th in the number of skyscrapers that a city has built. These buildings primarily consist of structural steel. You do not find that many buildings that use concrete masonry units to bear most of the load from the structure. The new middle school building uses this method and it causes a problem for sequencing construction in a town that lends itself towards an all structural steel building.

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SUBSURFACE / SOILS

The site of the new middle school building was previously occupied by 7 tennis courts. The following results are from geotechnical services provided between October 30th, 2000 and November 15th, 2000. Underneath the tennis courts, there is Fill which is up to five-foot thick. Directly under the courts, there is a drainage course. This course, which is from two to three feet thick, consists of dark gray and black fine to coarse with cinders. Below the Fill, there are Residual Soils. The density of the soils allows for the buildings foundations to be built on the Residual Soils. Groundwater was not encountered in any of the test borings. Therefore, dewatering the site should not be an issue for excavation. The soils report discussed above was provided to the contractors for bidding. The report was received by Intech Construction on March 5th, 2001 and the bid proposal was due on March 9th, 2001.

In the month of May, a neighbor of the Penn Charter campus approached the school with a concern. His property was directly adjacent to the area of the site where the new middle school was going to be built. The concern was that the soil underneath the tennis courts was contaminated. The neighbor, a lawyer, had objection to the construction of the new building. Intech and Penn Charter saw this as a desperate option to delay the construction of the new middle school. Trying not to cause any conflicts, Penn Charter volunteered to have the soils below the tennis courts tested for contamination, which was not a part of the initial site investigation. As it turned out, the Fill soil that was discussed above was contaminated with a high level of arsenic as found by Pennoni Associates. The level exceeded the Pennsylvania Department of Environmental Protection (PADEP) Statewide Health Standard for the Residential Direct Contact. This was not an uncommon situation in the historic area of Philadelphia. This meant that the neighbor had successfully delayed the project.

After the soil was found to be contaminated, a soil management plan was developed to protect construction workers and future occupants who will use the middle school building. The PADEP offers a release of liability for clean-up to owners who voluntarily investigate and remediate environmentally impacted properties in accordance with the Land Recycling and Environmental Remediation Standards Act ("Act 2"). After the soil issue has been handled according to Pennoni, they will submit a proposal to the PADEP to request a release from liability for the subject property.

The millings from the tennis courts and the soils that were found to be contaminated were placed in a section of the site with none of the clean excavated soil. A Pennoni geotechnical engineer observed the process to make sure that the appropriate procedures outlined in their Soil Management Plan were followed. The contaminated soil needed to be covered by an impervious material until dispersal of the soil throughout the site. The soil and millings were used as base for a new parking lot on campus. When the time came, the soil was compacted, millings and stone base were spread out and the parking lot was paved with asphalt. This securely covered the contaminated soil and helped to limit the cost impact of the delay. The excavation of the building was delayed approximately one month.

Pennoni Associates were contracted directly with Penn Charter to assist them in dealing with the contamination issue. On this job Intech had a three percent contingency in the budget. Since there was a Differing Site Conditions clause in the contract, Penn Charter decided to use the contingency to deal with the cost impact of the soil contamination. The cost impact included the added costs of handling the soil in a particular manner including the extra labor and impervious material as well as addressing the added cost to get the middle school back on schedule to be complete for the 2002-2003 school year.

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CLIENT INFORMATION

The owner of the project is the William Penn Charter School. Penn Charter was founded in 1689 in Philadelphia, PA. The main contacts for Penn Charter on this project were Hal Davidow, the Chief Financial Officer, and Bill Quinn, the Head of Facilities. The school consists of 855 students from kindergarten thru 12th grade. Since all of the students were in two buildings for the majority of the school day, an upgrade for a new middle school was needed. Currently kindergarten through 5th grade attended classes in the Lower School building. From 6th grade thru 12th grade, students spent most of their day in the Main Building on campus. The new middle school will relieve the Main Building of approximately 250 students from the 6th grade thru 8th grade. The other part of the project deals with the site improvements. Before construction, all of the access roads and parking lots throughout campus needed to be repaved severely. Some of the student lots even consisted of wood chips. Two of the athletic fields required new grading and sodding. Also, since the new middle school is going where the current tennis courts are going, new courts need to be built on another part of campus. With these improvements there will need to be an upgrade in utilities for the building as well as the site. Storm sewer pipes will need to be added around a significant portion of the 45 acre campus.

Quality of this project is an important aspect to the success of receiving positive opinions from the stakeholders. Stakeholders in this project consist of parents of students, neighbors to the school, the students, and faculty. These are the main stakeholders that have driven this project in the direction that it has taken. Parents want the school's appearance to look prominent, especially since they are paying $15,000 per year for their son or daughter to attend. There were dozens of trees that needed to be cut down in order for this project to take place. Parents, as well as the neighbors in the upper middle class historic neighborhood, did not take to the removal of so many trees older trees with great

enthusiasm. For this reason, it is important that the final appearance of the site, as well as the middle school building, overwhelm any critics of the project to help overshadow the negative aspects of the project. The middle school also was set out to resemble the Main Building on campus that has been around since the early 20th century.

The schedule was an important aspect to this project. The school year at Penn Charter runs from the beginning of September until the beginning of June. Phase 1 of the project included all the site improvements on campus except for the middle school construction site. All of the Phase 1 work needed to be completely finished for the start of the 2001-2002 school year. Therefore, the first key date for Intech Construction was August 30th 2001. This was important so that the site could accommodate the traffic as well as parking that is necessary on a normal school day. The 2 new fields needed to be sodded in ample time for the sod to root before teams practiced on them by the middle of August. The tennis courts needed to be ready for the tennis team to practice on by mid August as well. Phase 2 included the remainder of the site improvements as well as the middle school. Phase 2 was required to be complete by the 2002 school year to handle the increase in students entering the 6th grade.

The key to completing the project to the owner's satisfaction was to accommodate the schedule as well as working around any activities that may occur on site. Throughout the summer of 2001, Intech needed to work around multiple camps that occurred that summer. That meant that Intech had an extra responsibility to make sure that no children or adults walked onto the construction site, which consisted of most of the campus. For example, Intech had two security guards assisting pedestrian traffic crossing an area that dump trucks filled with millings passed thru about every 3 to 4 minutes. The full time security guard for Penn Charter had access to our site and it was part of his job to watch Intech's construction fences and gates. Completing this project on time with allowing no students or general public walking onto the site unsupervised was a key to satisfying Hal Davidow and Bill Quinn.