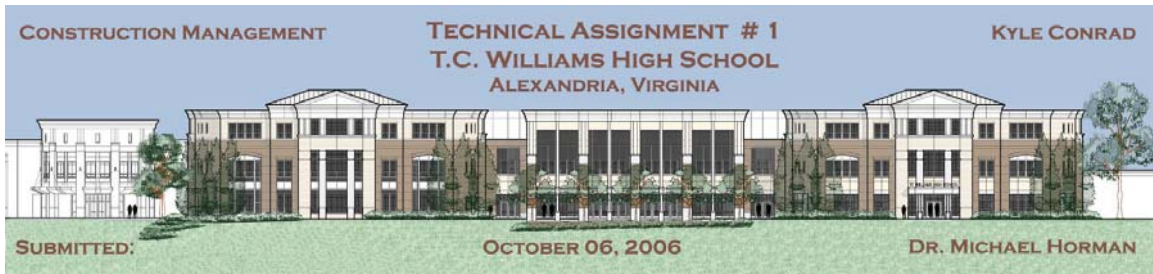


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## **Tech Assignment 1: Construction Project Management**

### **A. Site Plan of Existing Conditions:**

Refer to the site plan, in **Appendix C**, for the location of existing and new site utilities as well as the plan for public and construction traffic flow. With the student parking being so far from the existing school building, there is an increased level of pedestrian traffic around the site. Jersey barriers were set up in higher risk areas to direct the pedestrian flow and provide a safe lane for students to walk to the existing facility. These areas include a stretch along King Street at the North end of the construction site and on the one way portion of Chinquapin Drive near the contractor staging area where it is necessary for pedestrians to share a section of the road with vehicular traffic.

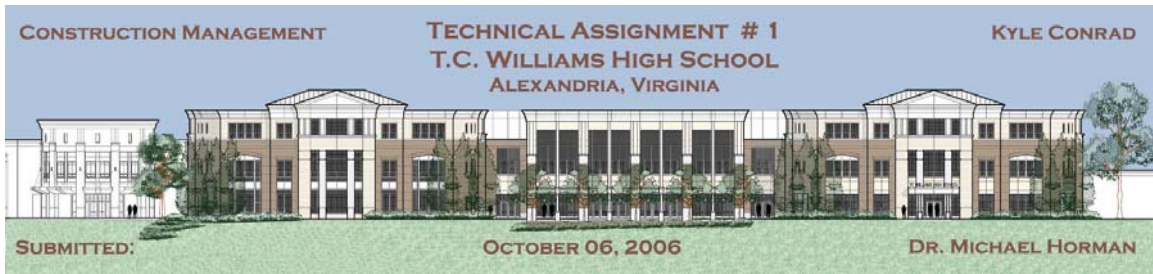
### **B. Local Conditions:**

#### **a. Preferred methods of construction:**

The labor force in the Washington D.C. Area has been skilled in concrete construction. Due to the building height restrictions imposed in the district, as not to detract from the powerful expression of the monuments, concrete is the most practical form of construction. Over the last decade, there has been an increase in the use of steel as a structural system, in the outlying areas. More qualified steel contractors are seeking work in the D.C. area today.

#### **b. Availability for construction parking:**

The construction workers are instructed to park at the east end of Chinquapin Drive. Students that drive to school are also granted parking privileges in the same location. Student and construction parking are separated into two designated areas. Construction foreman are permitted to park beside the office trailers on site.



**c. Available recycling and tipping fees:**

An extensive recycling program has been employed to gain additional LEED points for the project. Two points are the maximum that can be accrued for recycling efforts. While the United States Green Building Council only requires that 75% of construction waste be recycled to achieve these points, the T.C. Williams High School Project is currently at 97% recycled waste. Northern Virginia Waste, NOVA Waste, hauls all debris off site to their separation facility and landfill area in Dumfries, Virginia. The fees and loading limits are summarized in Table 3 below.

CONSTRUCTION WASTE MANAGEMENT RECYCLING		
LEED Requirements	1 Point	Divert 50% from Disposal
	2 Points	Divert 75% from Disposal
Project Status	97 % Waste Recycled –	Primarily Masonry Debris
Fees	Hauling	\$415 / Load
	Tipping	None
	Overcharge	\$55 / Ton Over
Material Load Limits	Steel, Wood, Cardboard	5 Tons / Load
	Concrete Block, Brick	8 Tons / Load

**Table 3. Construction Waste Management for the T.C. Williams High School Replacement Project**

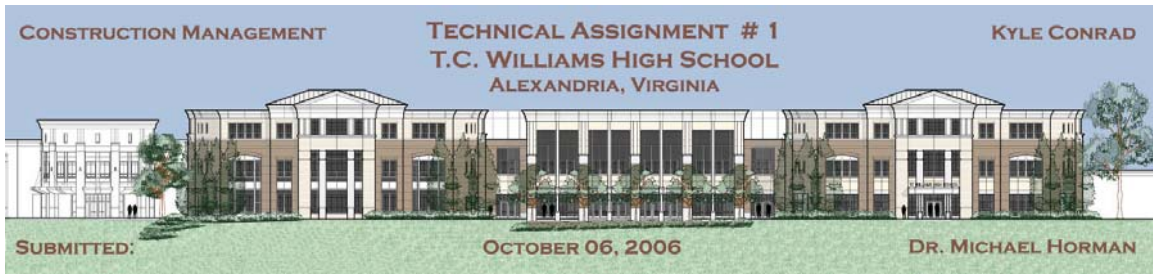
**d. Type of soil/subsurface water conditions:**

The soil has been classified as a type C soil. Due to the poor soil conditions on site, geopiers are constructed to provide for additional bearing support for the continuous and spread footings.

**C. Client Information:**

**a. Describe owner:**

The Alexandria City Public Schools is a governing body of the Alexandria, Virginia school district. They are devoted to constructing a building that is both sustainable and reduces the consumption of raw materials, energy and impacts on the environment. An assigned owner representative, Dan Pierce, works with the general contractor, Hensel Phelps Construction Company [HP], to ensure that the client's expectations are exceeded.



**b. Why are they building the facility:**

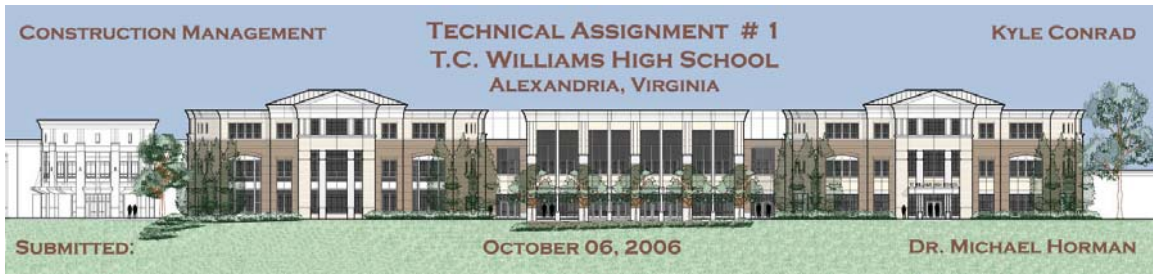
The condition of the existing T.C. Williams High School building has been degrading over the last 50 years. The structure was originally designed to house grades 9<sup>th</sup> through 10<sup>th</sup>, but over the last five decades, the population of the district has grown and the freshman class had to be relocated to another facility. In addition the school district had been forced to hold classes in temporary classroom trailers.

**c. Cost, quality, schedule, and safety expectations:**

The owner expects that the project will be delivered as close to the original contract amount as possible. To date, only 8 change orders have been processed and they were due to unforeseen soils and conditions on site. Since it is a school project, it is imperative that the school be completed and open for classes on the first scheduled day of classes for the 2007-2008 school year. As a general contractor, HP, is known for their dedication to safety and quality. Their S.T.O.P. safety program has proven to be highly successful and they have a total of 15 S.T.O.P. trained employees on site. The program encourages employees to think about the tasks they are performing at all times and recognizes those workers who employ safe working practices.

**d. Sequencing issues of interest to owner:**

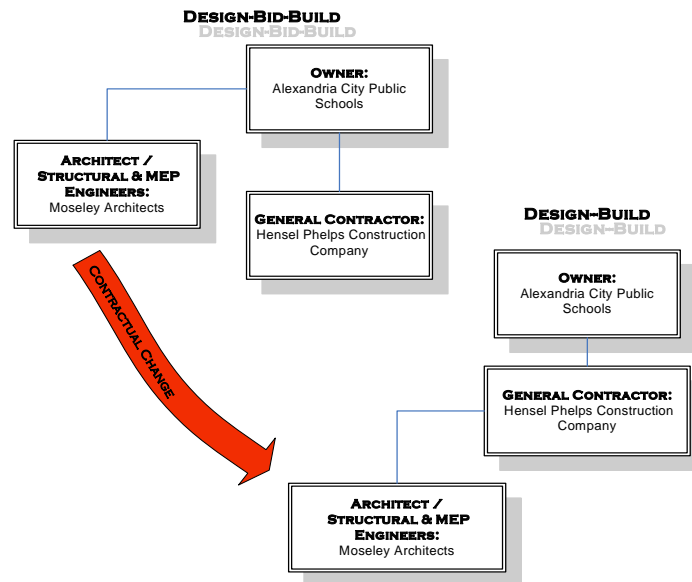
During phase A, some of the classes were moved to two large temporary classroom units that were set up on the existing football field. The new school facility is scheduled for final completion at the end of July 2007. Over the summer months, HP must ensure that the transition is made from the existing school to the newly constructed school building and return the football field to its original conditions by the commencement of the 2007-2008 school year. This is the primary focus of the owner, with cost coming in a close second.



**D. Project Delivery System:**

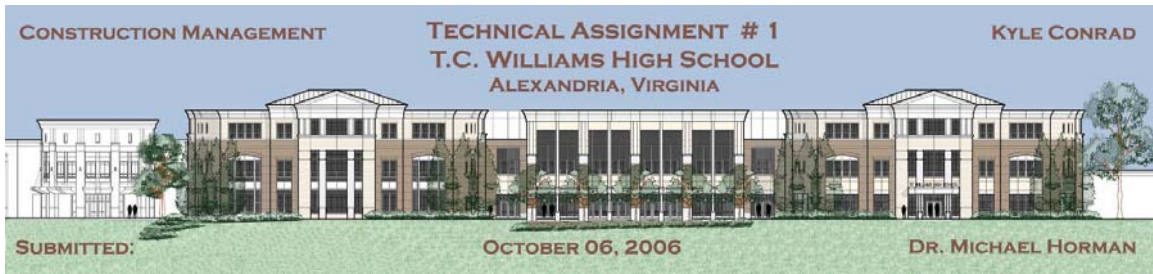
**a. System Description:**

The project was originally set up as a design-bid-build delivery method and was procured through a competitive hard bid. Hensel Phelps was the lowest bidder and was awarded the job. At 100% design completion, HP convinced the owner to transfer the risks associated with errors and omissions to HP by restructuring the project into design-build (see figure 5 below). Hensel Phelps holds the sole contract with the owner. After four months of GMP contract negotiations, a GMP was approved and HP was given the notice to proceed on the construction of phase A-2. The original architect, Moseley Architects, signed a new lump sum contract with Hensel Phelps under the new system. The design-build structure provides HP with an opportunity to actively pursue value engineering ideas. All potential value engineering [PVE] ideas are submitted to the owner and the architect for review. If the PVE is approved by both parties, the idea is executed. For their review time, HP agreed to pay the architect 8% of the cost savings from the executed PVE. The remaining cost savings are either kept by HP or passed down to the appropriate subcontractor.



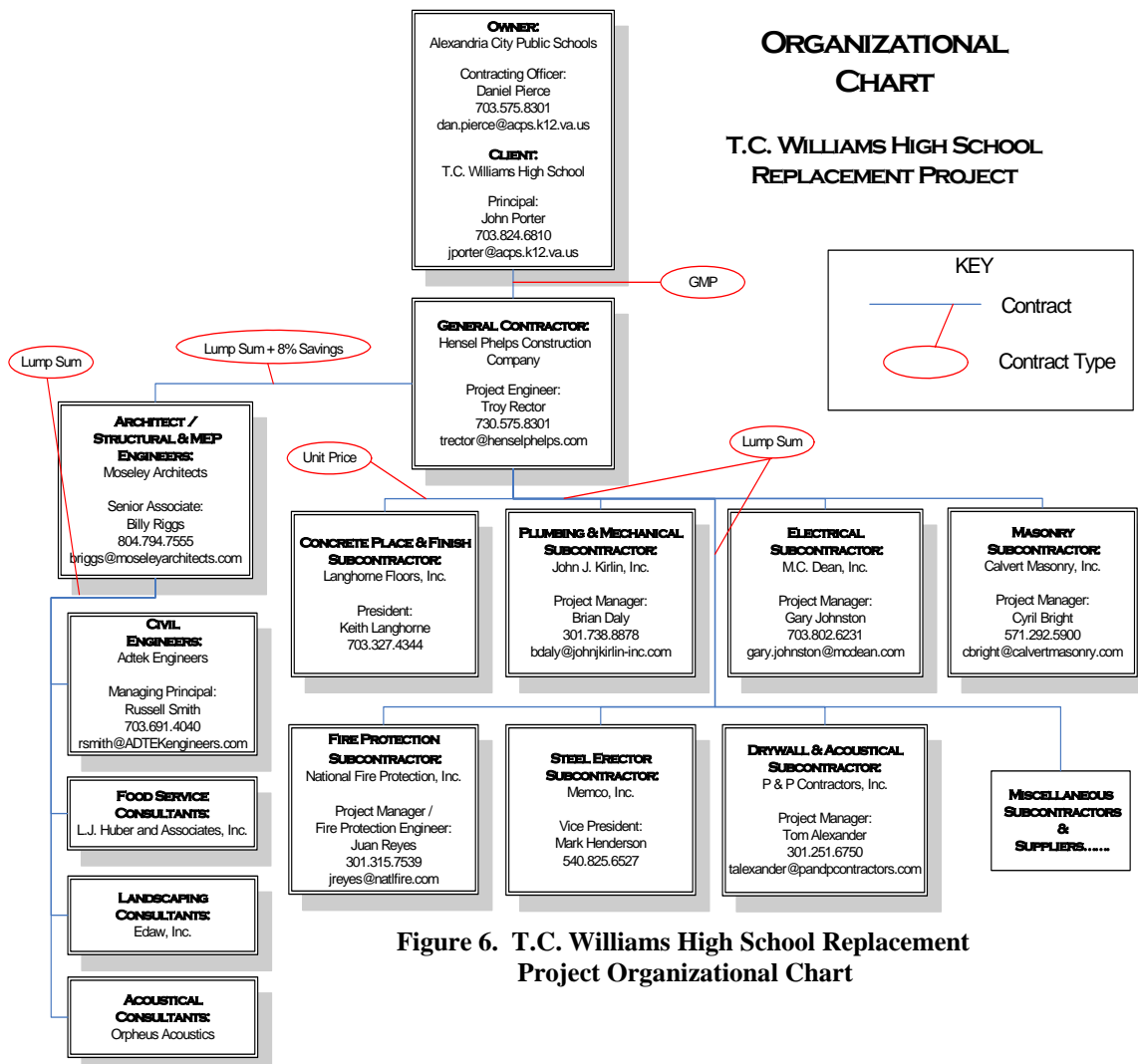
**Figure 5. Restructuring of the project delivery system**





While HP required each subcontractor to submit payment and performance bonds, the owner only required that HP provide a performance bond for the full amount of the project. All of the subcontractors hold lump sum contracts with Hensel Phelps except for the concrete contractor responsible for placing and finishing concrete. The concrete contract is unit price, based on the square foot of concrete. The rate varies depending on the thickness of the concrete. A thicker pour results in a lower rate. Refer to the project organizational chart (see figure 6 below) for a clear understanding of contractual arrangements.

**b. Organizational Chart:**



**Figure 6. T.C. Williams High School Replacement Project Organizational Chart**

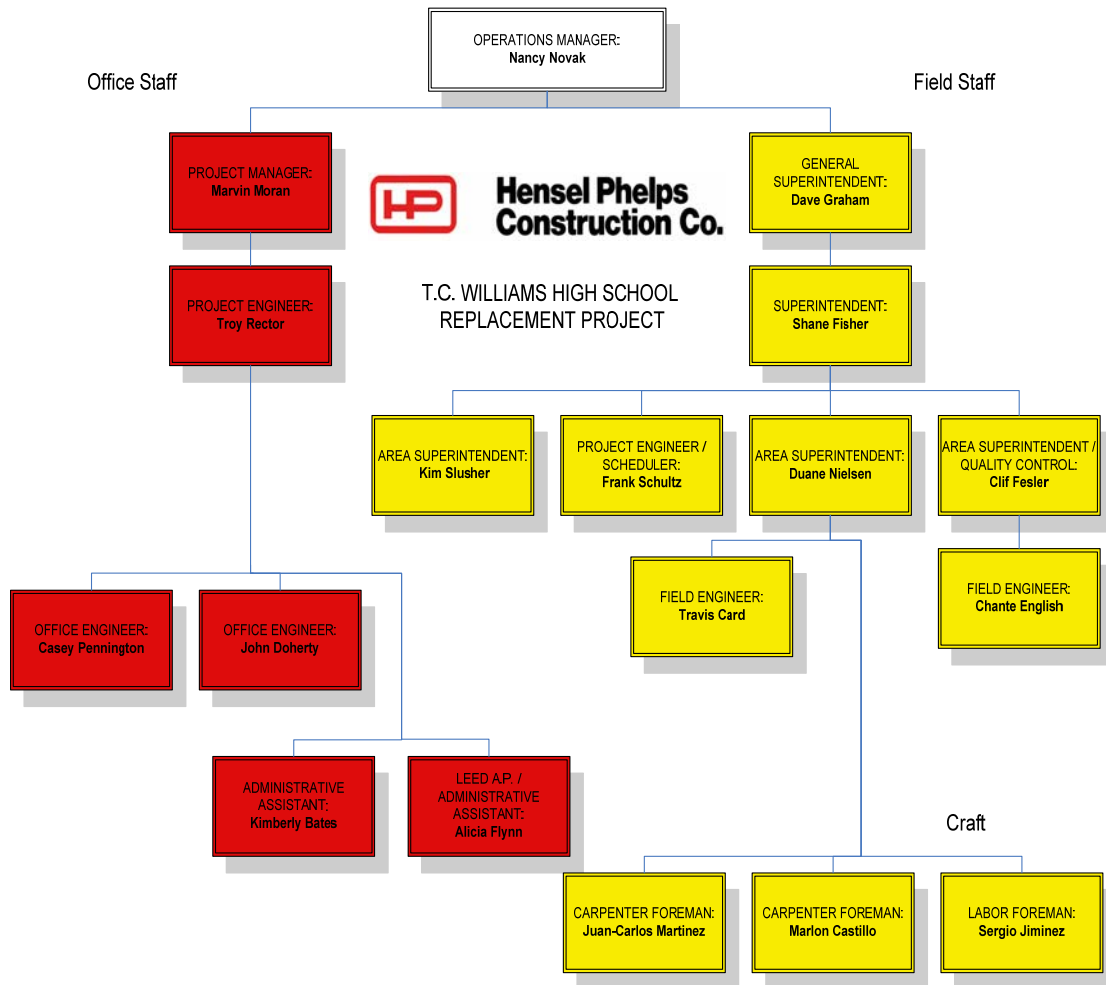
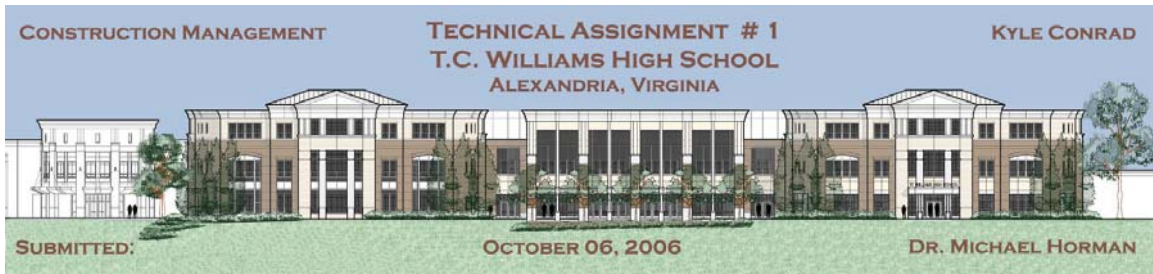


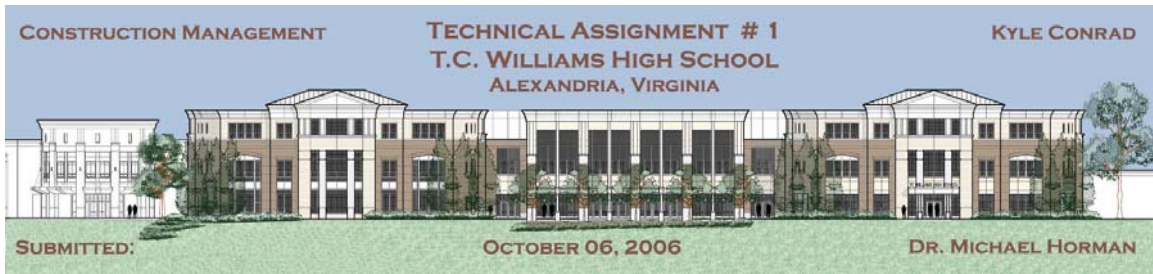
Figure 7. Hensel Phelps Construction Co. Project Staff Organizational Chart

**E. Staffing Plan:**

Hensel Phelps Construction Company (see Figure 7 above) provides a full time project management and field supervision staff on-site, complete with 17 carpenters and laborers to self-perform work.

General Contractor Self-performed Work:

- Door Frames, Doors, & Hardware
- Fire Extinguisher Cabinets
- Projection Screens
- Cast-in-place Concrete  
excluding site concrete (foundations, SOG, SOD, stairs)



- Site Erosion Control Maintenance
- Safety Maintenance (fall protection – handrails & hole covers)

The office staff is overseen by a project manager and project engineer. Since the T.C. Williams High School Replacement Project is seeking a LEED rating, Hensel Phelps sent an interested employee to train for her LEED certification. The general superintendent and superintendent are in charge of assuring that the work being performed in the field is in accordance with the design and on time. Hensel Phelps has a dedicated quality control department on-site to guarantee that the work in place meets their company's high standards as well as the expectations of their client.