



Minitab Headquarters
State College, PA

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Combined Existing Construction Conditions

Alexander Constructors is to provide Minitab with a modern, technologically advanced building that will aid in the day-to-day activities of the company. Analysis of existing conditions prior to the start of construction is essential so that foresight into issues can be evaluated and unexpected problems are minimized.

A study of the project delivery system, schedule summary, and cost evaluation provide an overall view of the project scope. Alexander Constructors, Inc. serves as the construction manager and general contractor on the project, contractually as the CM At-Risk. Alexander holds contracts with the mechanical engineer/contractor and general construction subcontractors. The owner, Minitab, Inc., holds contracts with the architect, CM/GC, civil/site engineer, and the interior designer. The architect holds the contracts of the electrical/plumbing/fire protection engineer/contractor and the structural engineer. The purpose for this arrangement is to subdivide the contractual arrangements into stages of construction and facilitates fast-tracking of the project. Contract documents were sixty-percent complete as of the start of construction. Construction is to be sixteen months and a preliminary cost estimate yields a total building cost of \$9.5M.

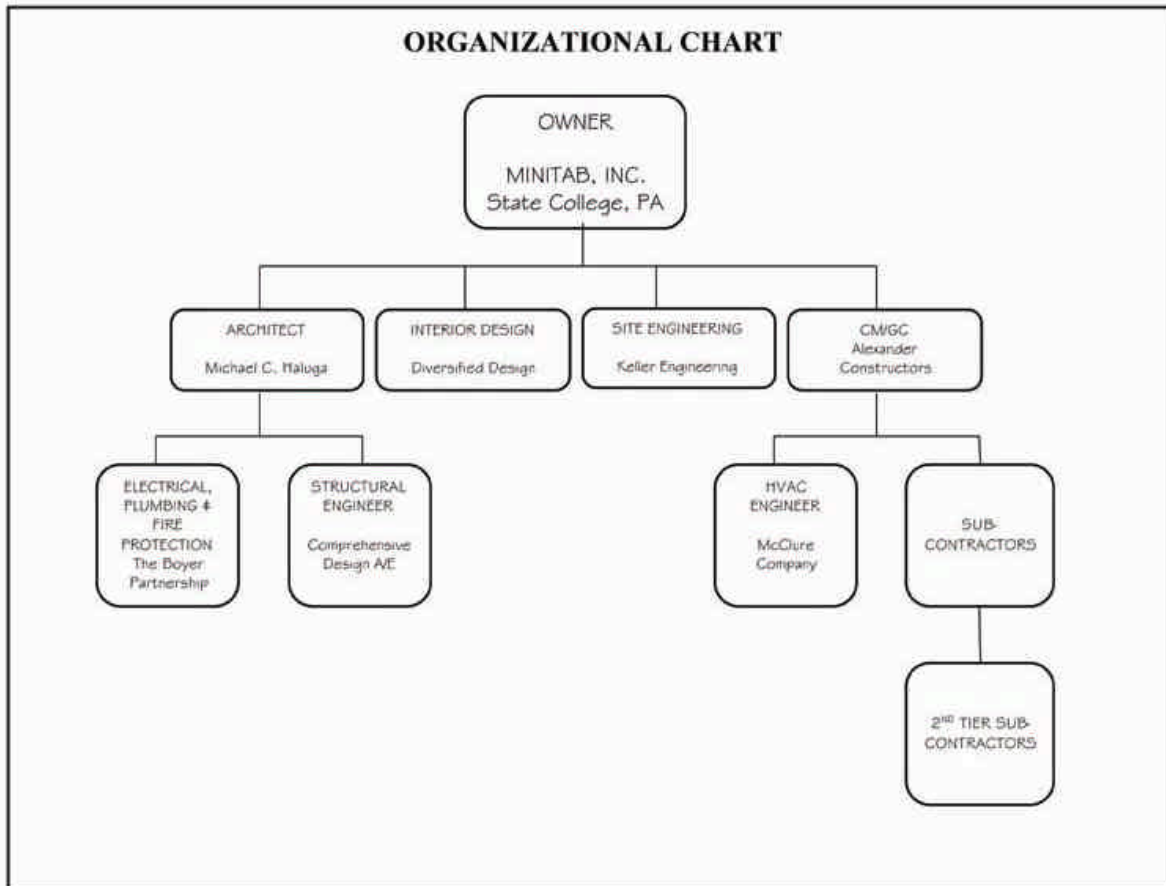
Site logistics do not appear to cause difficulty as the site is 16.8 acres and the surrounding area is largely undeveloped. The local job market is strong and most labor will be from union workforces. A soils report provided prior to construction indicates that the site is typical of the State College area with a clayey soil present. It is not expected that much rock will be encountered during excavation.

TABLE OF CONTENTS

A. Existing Construction Conditions.....	3 – 6
1. Project Delivery System	3
2. Project Schedule Summary	4-5
3. Project Cost Evaluation	6
B. Site Plan.....	7
C. Local Market Conditions.....	8
D. Subsurface / Soils.....	8 - 9
E. Client Information.....	9

Project Delivery System

Alexander Constructors, Inc. serves as the construction manager and general contractor on the project, contractually as the CM At-Risk. Alexander holds contracts with the mechanical engineer/contractor and general construction subcontractors. The owner, Minitab, Inc., holds contracts with the architect, CM/GC, civil/site engineer, and the interior designer. The architect holds the contracts of the electrical/plumbing/fire protection engineer/contractor and the structural engineer. The purpose for this arrangement is to subdivide the contractual arrangements into stages of construction and facilitates fast-tracking of the project. The contractual setup for the project is outlined below.



Project Schedule Summary

The project schedule is in total twenty-two months, with the construction phase lasting sixteen months. The scheduled work is to progress in a top-down manner; interior fit-out will begin on the 4th floor and progress down to the garden level (the ground floor). For purpose of producing a one-page schedule summary, each floor is grouped together rather than breaking out the schedule by floor (see Project Schedule Summary – following page). Prefabricated EIFS panels on the exterior, coupled with 4 ft. ribbon windows, are a key element to pay attention to on the schedule. Panels must be fabricated and delivered to site in close coordination with the rate of work that the crew is doing. The panels should not be stored on site for long periods of time and neither should the crew be required to waste time waiting for delivery. On site alteration to the prefab panels is difficult and, as this is a fairly new approach, some problems are expected. Also of concern in this regard is that installation of the EIFS panels is to begin in the middle of January. Weather may be a hindrance to the timely installation of the panels.

Project Cost Evaluation

Through project cost evaluation using D4 Cost Estimating software and also R.S. Means square foot cost data analysis, attention is drawn to the dramatic differences in the two estimates compared to each other and, more importantly, the substantial contrast to the actual construction cost. D4 cost estimating returned a cost of \$8,545,482; while R.S. Means square foot data lends a total construction cost of \$7,253,871. Actual building construction cost (CC) for the project is \$9,587,104. The building is 88,000 SF which leads to a CC/SF of \$108.94/SF. The total project cost is \$11,971,912 which is \$136.00/SF.

Major building costs include the following:

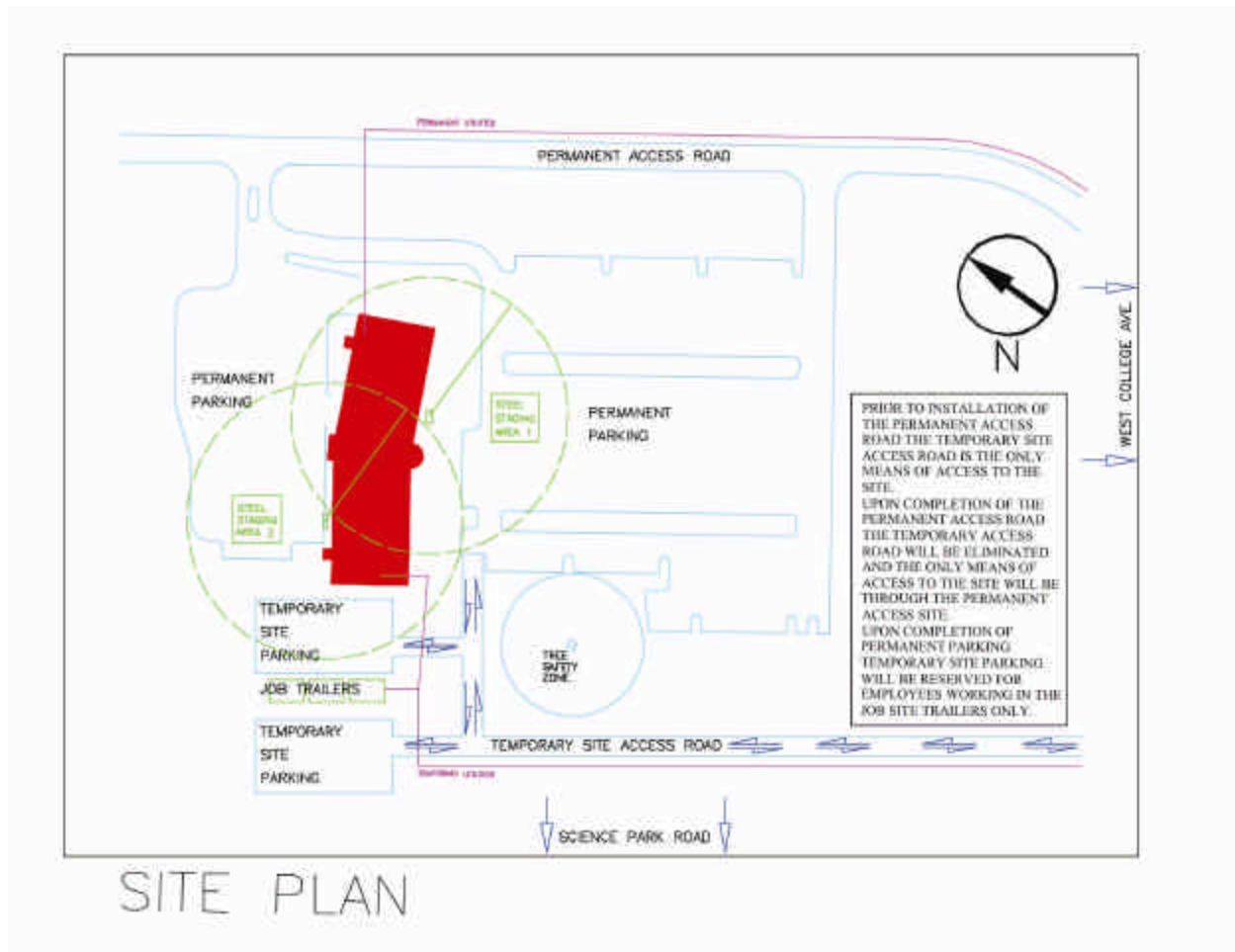
Building Shell	\$2,924,846	\$33.24/SF
Interior Buildout		
Metals	140,000	1.59/SF
Carpentry	12,450	0.14/SF
Architectural Woodwork	179,294	2.04/SF
Doors & glass	469,447	5.33/SF
Interior Partitions	623,710	7.09/SF
Ceilings	362,400	4.12/SF
Tile	64,535	0.73/SF
Floor Coverings	229,664	2.61/SF
Painting and Finishing	97,566	1.11/SF
Specialties	76,726	0.87/SF
Equipment	54,000	0.61/SF
Furnishings	12,465	0.14/SF
Elevators	115,000	1.31/SF
Interior Buildout Total:	\$ 2,297,258	\$26.11/SF
Mechanical	\$2,025,600	\$23.02/SF
Electrical	\$1,253,400	\$14.24/SF
General Conditions	\$1,086,000	\$12.34/SF
TOTAL:	\$ 9,587,104	\$108.94/SF

D4 Cost Estimate for the project is \$8,545,482; \$97.11/SF. A difference of \$1,041,622 to the actual building cost.

R.S. Means estimate for the project is \$7,253,871; \$78.26/SF. A difference of \$2,33,233 to the actual building cost.

Site Plan

The project location is a 16.8 acre site about 2 miles West of State College, Pennsylvania. The site is just off Science Park Rd. in Ferguson Township. The plot chosen for Minitab, Inc. is currently undeveloped and the site is very unrestricted. With a site of 16.8 acres and a building footprint of 22,000 SF or 0.5 acres, there are many options as to how to layout the site plan. Shown below is a general layout; including site access, job site trailers, parking, crane locations, and steel staging areas.



Local Market Conditions

Labor forces for the project are pulled from local union shops. Availability of workers does not pose a problem although there are many construction projects currently underway in the area. As the construction manager, Alexander Constructors does not self-perform and therefore has no need for laborers. Subcontractors on the job predominately choose to hire union work forces due to their reputation of quality workmanship and availability. Hiring union forces allows utilization of workers as needed; it facilitates increases in manpower during busy phases of the project. During slower periods, the union laborers can be assigned to other projects in the area.

In the State College area, most buildings are a structural steel frame with either spread footings or driven pile foundations depending on the size of the building. Floors are poured slab on deck and roofing is primarily EPDM. Laborers in this area are experience with this type of construction and little learning is involved for the Minitab project.

Construction materials are not recycled on this project. The cost of recycling defeats the purpose of such an activity. Waste is collected in onsite dumpsters rented from a local operation and emptied as needed.

Subsurface / Soils

State College soil is predominately clay with some limestone swells near the surface. The clayey soil does not drain well and high moisture content is incessantly a problem. Measures are taken to ensure good drainage systems around the building. A bulk of the excavated soil is removed from site and good draining backfill must be brought in. Some of the excavated soil is used for site work.

Alexander was provided with a soils report and is, by contract, responsible for all unclassified rock encountered during excavation. Alexander in turn contracts the excavator and includes a clause in the contract assigning responsibility for all unclassified rock. In State College it is unlikely that any large quantity of rock will be uncovered.

The building has an exposed basement which is called the 'Garden Level.' Utilization of this space requires ceiling height to be 14'-0" to allow for the plenum ceiling. With a building footprint of 22,000 SF and the depth of excavation, on average, 14 FT; there is a total of 11,000+ CY of soil to be removed. The deepest cut is along the back side of the building, as the site

slopes slightly toward the front of the building. Temporary shoring is used for soil retention as opposed to a step back. Shoring does not need to be extensive and is preferred to additional excavation for the step back.

Client Information

Minitab, Inc. is a software development company. State College has been home to Minitab since their beginning. Currently they occupy two buildings in the CATO Industrial Park, just down the street from where the new building is going up. Being split into two buildings causes difficulty in communication throughout the company and they wish to house all services under one roof to alleviate this problem. Minitab, Inc. announced the desire to build a new facility in 2000 and began working with architect, Michael C. Haluga of State College. A decision was made to offer the contract through CM proposal and Alexander was awarded the project in 2001.

The scope of this project overwhelmed Minitab, as they had not been involved in a construction project of this magnitude before. They desire to have one building to serve all their needs and also create a more modern, technologically advanced environment. A high-tech data system allows communication within the company and also facilitates communication with clients. Minitab allows Alexander to monitor the construction process in a role of owner's representative. The Alexander team is responsible for control over the project finances, schedule, quality, and safety. The project manager attends to cost issues and the schedule. All team members hold responsibility for quality control; the superintendents monitor quality issues on site. The project engineer continually affirms that all materials used are as per the specifications and are supplied as per the approved submittal. Alexander employs a safety officer for each project and it is his responsibility to assist the project team to ensure that the site is kept in a safe manner at all times. Preconstruction meetings with all subcontractors ensured all involved were aware of project expectations and goals. Through proactive project management, Alexander is able to provide Minitab assurance that their needs are met.