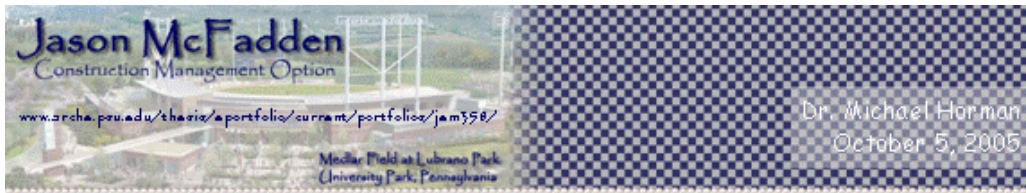


**TECHNICAL ASSIGNMENT #1**  
*CONSTRUCTION PROJECT MANAGEMENT*

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## **A. EXECUTIVE SUMMARY**

This technical assignment provides an introduction to the construction project management techniques for Medlar Field at Lubrano Park which is located in University Park, Pennsylvania. In this assignment, the project is analyzed in terms of existing condition concerns and site plan, local conditions, client information, project delivery system, and construction manager staffing plan.

Medlar Field at Lubrano Park is a fast-track traditional project delivery system. Barton Malow Company was hired by Penn State University to serve as the construction management agency for the project. L. Robert Kimball & Associates is the lead project architect hired by the University. The chosen site for the project is an open field that has only been used for Penn State football parking. There is a significant north/south elevation change on the site; however the design incorporates a balanced site approach. The Pennsylvania State University is a very experienced client when delivering a building with many standards already set in place during construction. Even though the project is only \$23.8 million in construction costs, the staffing plan still shows the needed representatives from a construction company to deliver a successful project.

## **B. SITE PLAN OF EXISTING CONDITIONS**

*Please see Appendix A for Existing Conditions Site Plan.*

### **Site Location**

- The site for the stadium is located near the intersection of Porter and Curtin Road.
- The site is surrounded by Beaver Stadium, the Bryce Jordan Center and the Multi-Sport Indoor facility.
- Also located nearby are the Visitor Centre, Meats Lab, Pig Farms, and the Center for Sustainability.



Aerial View of Athletic Area at PSU (Baseball Stadium Site Circled)

### **Topography**

- In general, the site slopes north to south

### **Neighboring Structures**

- Pictures of neighboring structures are in Appendix B.

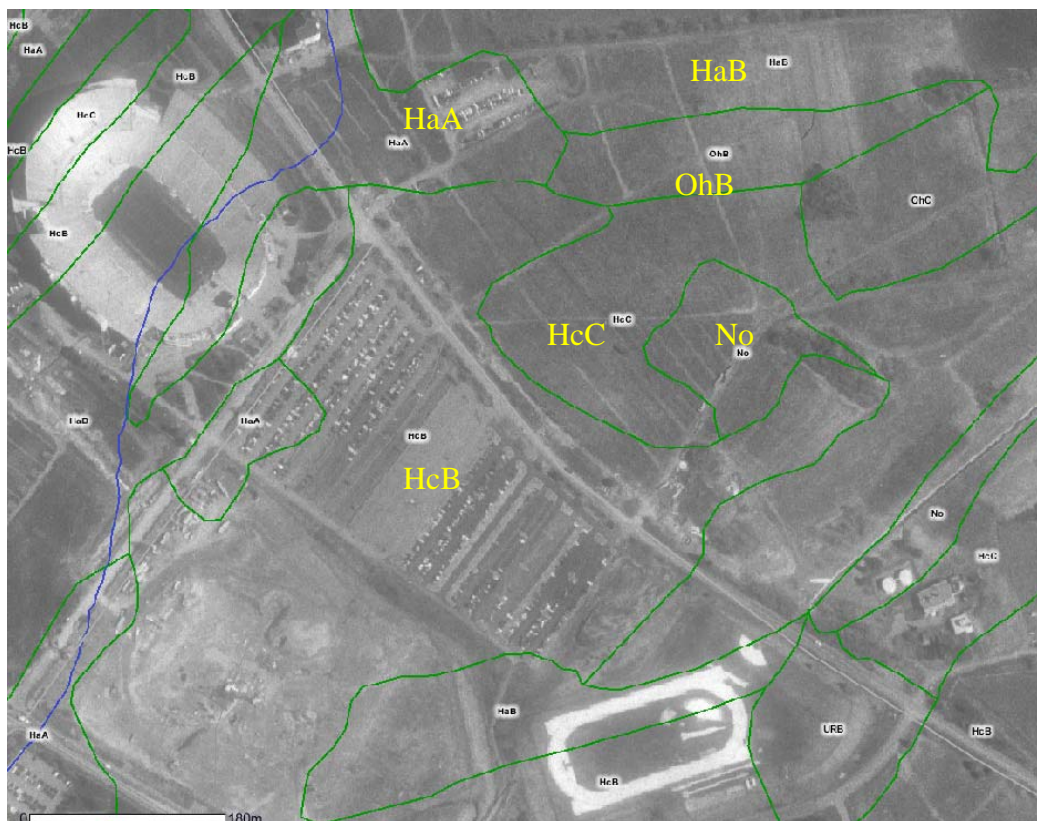
### **Utility Relocation**

- There are several utilities that will need to be relocated.
- Appendix C contains pictures of these current utilities.

## C. LOCAL CONDITIONS

### Soil and Groundwater Conditions

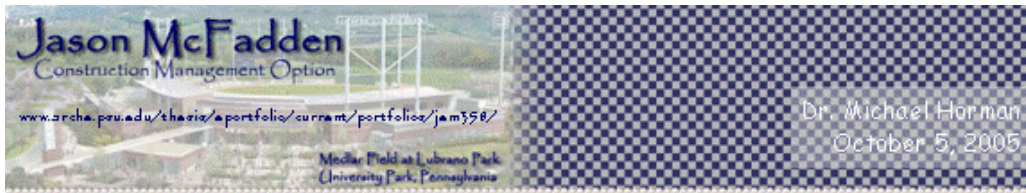
- Soil data is referenced from the United States Department of Agriculture National Resources Conservation Service Soil Data Mart
- The following six soils types are found in the construction area: HaA, HaB, HcB, HcC, No, and OhB.
- This means that there is bedrock significantly near the surface, implying the need for blasting throughout the project.



Soil Map of Athletic Area at PSU

### State College Township Concerns

- Since Sewage at State College Park will flow against gravity field, a booster/ejector will be installed to pump sewage uphill to existing facility.
- The formation of a bus stop along Porter Road will allow visitors to be dropped-off and picked-up. Since there will only be 500 parking spaces added for the new stadium, bus and motor home parking will be provided by the University at another location.
- Scheduling of events at the Stadium will not conflict with University events (ex. football games).



## **C. LOCAL CONDITIONS**

### **Operating Times**

- Penn State Baseball Team: March – May
- Minor League “A” Affiliate: June – September

### **Preferred Construction Methods**

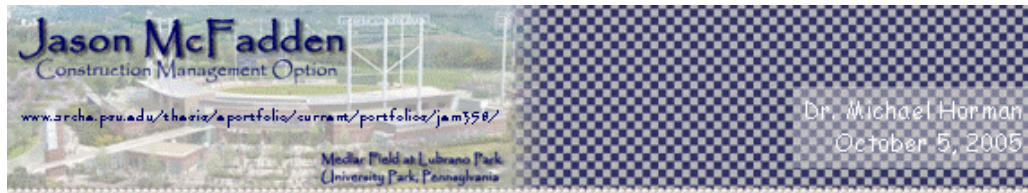
- The typical construction method Penn State using on their project is a steel structural system with concrete elevated slabs and a brick façade.

### **Availability of Construction Parking**

- The Stadium project is unique in the fact that there is an unlimited amount of on-site parking at no cost for the project.

### **Available Recycling and Tipping Fees**

- Penn State is hoping to acquire a LEED Certification for the project.
- Cost to dispose 1 ton of waste in Centre County is \$56.



## **D. CLIENT INFORMATION**

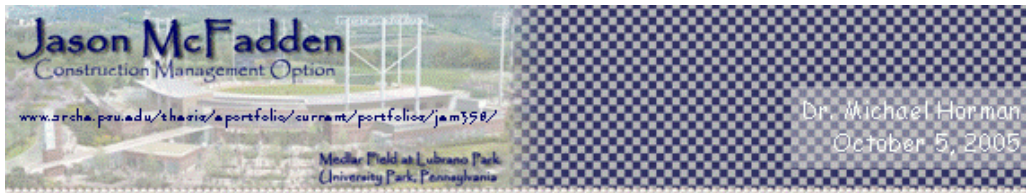
### **The Pennsylvania State University**

The Pennsylvania State University is a very experienced owner during the construction of a facility. Within the Office of the Physical Plant (OPP) at Penn State, there is a design and construction department solely for new and renovated projects for the University. Penn State has a set standard of procedures for procuring design and construction professionals as well as contract administration during a project. Furthermore, OPP employs construction quality representatives to perform daily on-site inspections of the work being performed.

The University is expecting a state-of-the-art facility but still maintain the overall project budget for the project. Unfortunately, the project budget has been increased significantly for the project; the budget in May 2005 was \$23.8M and as of September 2005 is \$30.8M. This is partly due to the fact that there are many project players with different visions for the project. For example, from Penn State there are representatives from OPP (several departments), Inter-Collegiate Athletics, Office of Telecommunications, Police Services, etc. In addition, the minor league affiliate also has a vision of the design for the project and wants to eliminate problems that have occurred at their other facility in Altoona. To help guarantee the project will be delivered safely and with good quality, Penn State University has employed two (2) construction quality representatives (CQR) for the project; this is different than past projects where only one CQR has been assigned to a project. The University employed representatives perform daily inspections of work-in-place and help to solve any issues Barton Malow is having with the L. Robert Kimball & Associates.

With the State College Baseball organization being the lessee for the project, this Stadium project becomes the first project in the country to be conceived this way. State College baseball will lease the facility as well as provide the operation of the concession stands for the events. The State College Baseball organization is an affiliate of the Altoona Curve organization, and they hope to continue to have the same success that is on-going in Altoona.

Even though this facility will be used for baseball, the major concern the University had was the affect the stadium will have on football parking. Because of this concern, Barton Malow completed the new 500 space north parking lot in August 2005 so it could be used for high-profile football parking. The only other major concern is the project must be finished by June 2006 because the minor league team will begin its season then.



## D. CLIENT INFORMATION

### Origination of the Project

- Over the past few years, Penn State has seen an increased need for a better baseball facility on campus. After setting aside money to renovate the current facility, Beaver Field, Penn State decided to entertain the idea of a first-class facility with a minor league franchise.
- After much investigation and meetings with athletic personal, OPP representatives, and the minor league affiliates, a state-of-the-art facility for both the Penn State Baseball Team and a minor league franchise was conceived.

### Penn State Master Plan – Graphical Representation



Map of University Park Master Plan



UP Master Plan for Athletic Area

BUILDING ZONES		LAND USE AREAS	SYMBOLS
ACADEMIC	Existing / Proposed	OPEN SPACE, CAMPUS POTENTIAL	VEHICULAR ROUTES
HOUSING	Existing / Proposed	Primary	TRAILS
RESEARCH	Existing / Proposed	Secondary	MAJOR PEDESTRIAN
COMMON	Existing / Proposed	Tertiary	MINOR PEDESTRIAN
ATHLETIC	Existing / Proposed	OPEN SPACE, CAMPUS POTENTIAL	CAMPUS GATEWAY
PARKING DECKS	P / P	Arbitrium	VEHICULAR ENTRY
SERVICE / SUPPORT	Existing / Proposed	Golf Course	FUTURE REVISIONS
		Club/Clubs	WOODED LOT
		Club/Clubs	
		AGRICULTURAL	
		AGRICULTURAL CENTERS	
		ATHLETIC	
		RESEARCH	
		HOUSING	
		SERVICE / SUPPORT	
		ECOLOGICAL DEVELOPMENT ZONE	

Legend for UP Master Plan

- The baseball stadium site and design furthers the idea for Penn State to create an athletic village on the east edge of campus.
- The current baseball facility located on Park Ave. near Beaver Stadium will be demolished and become additional football parking as well as a locker room facility for the men's and women's soccer team.



## **D. CLIENT INFORMATION**

- The new stadium will also serve as a recruiting tool for the Penn State Baseball team. The state-of-the-art facility will help attract prospective players to the join the Penn State Baseball team. Penn State also hopes to now be able to hold Pennsylvania state baseball championships with the new facility.
- Furthermore, the minor league affiliate (State College Baseball) will help attract more people to the University during the summer when campus is not as crowded.

### **Design Guidelines**

- The Open Spaces and Natural Systems concept will be used by preserving the view of Mount Nittany and incorporating an area for grass lawn seats in the design. The surrounding area will be landscaped with trees to preserve the natural beauty of Penn State.
- The Architectural gridlines used for this building are community interface and preserving a campus community. Since the building will be used to serve both Penn State and the Minor league team there will be a strong community interface. This construction will further the idea of an “athletic village” on the eastern edge of campus.
- Penn State must embrace the heritage of the Land Grant Institution by promoting a strong agricultural image. This is embraced by maintaining a rural area surrounding the new stadium
- This stadium will have a “campus in the fields” environment due to its tree lined paths and low profile to the surroundings.

### **Circulation Guidelines**

- A bus stop along Porter Road will transport on campus students to the stadium
- Off Campus students and visitors will be able to utilize the commuter parking or use the new 500 spaces that will be provided with the building. They will then be able to visit the campus by way of the bus systems.
- Crosswalks will be added to the area surrounding the new stadium so that the walking campus atmosphere will be maintained.

### **Funding**

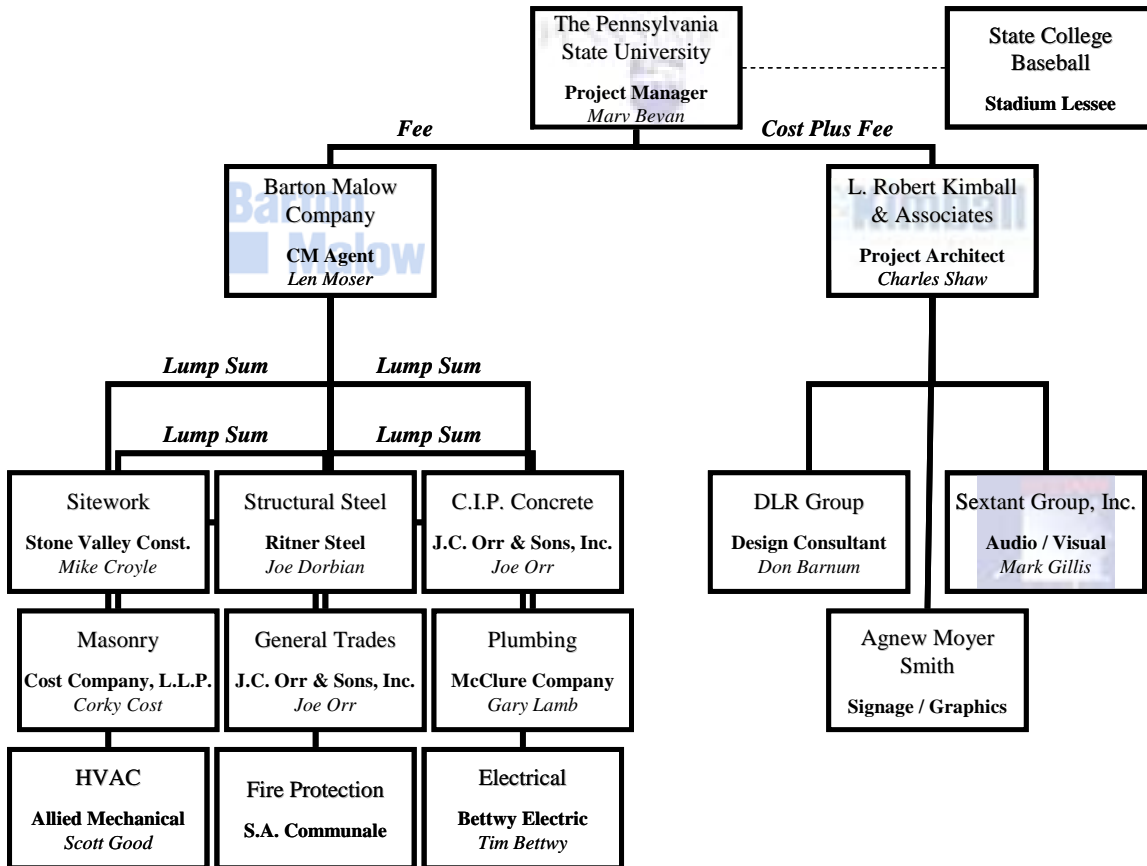
- The project budget is \$30.8 million including design costs as well as FF&E.
- Penn State will contribute the land, parking, intersection improvements and five million dollars in gift funds invested by the Intercollegiate Athletics.
- Under the Pennsylvania Act 40, the State will contribute up to \$12 million.
- There has also been a private donation made of \$2.5 million for the project.



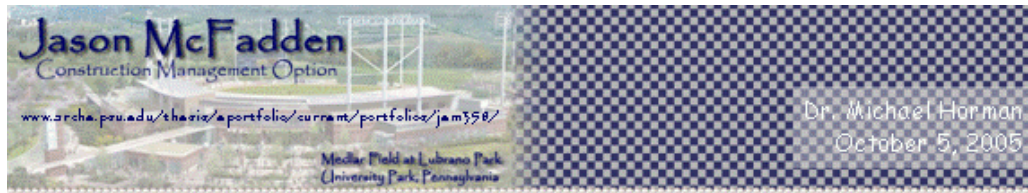


**E. PROJECT DELIVERY SYSTEM**

**Medlar Field at Lubrano Park**  
**Project Organizational Chart**



Medlar Field at Lubrano Park is a design-bid-build, fast-tracked project delivery system. Barton Malow Company acts as a construction management agency for Penn State University. As part of the contractual agreement between Penn State and Barton Malow, Barton Malow is required to procure and hold all subcontractor contracts for the project. Over the past few years, Penn State has chosen several different delivery systems for their projects and recently they have chosen to use a CM agency approach. Penn State has found that a CM agency approach typically leads to a more successful project in terms of cost and quality and that was a main factor in continuing this delivery system approach on this project.



## **E. PROJECT DELIVERY SYSTEM**

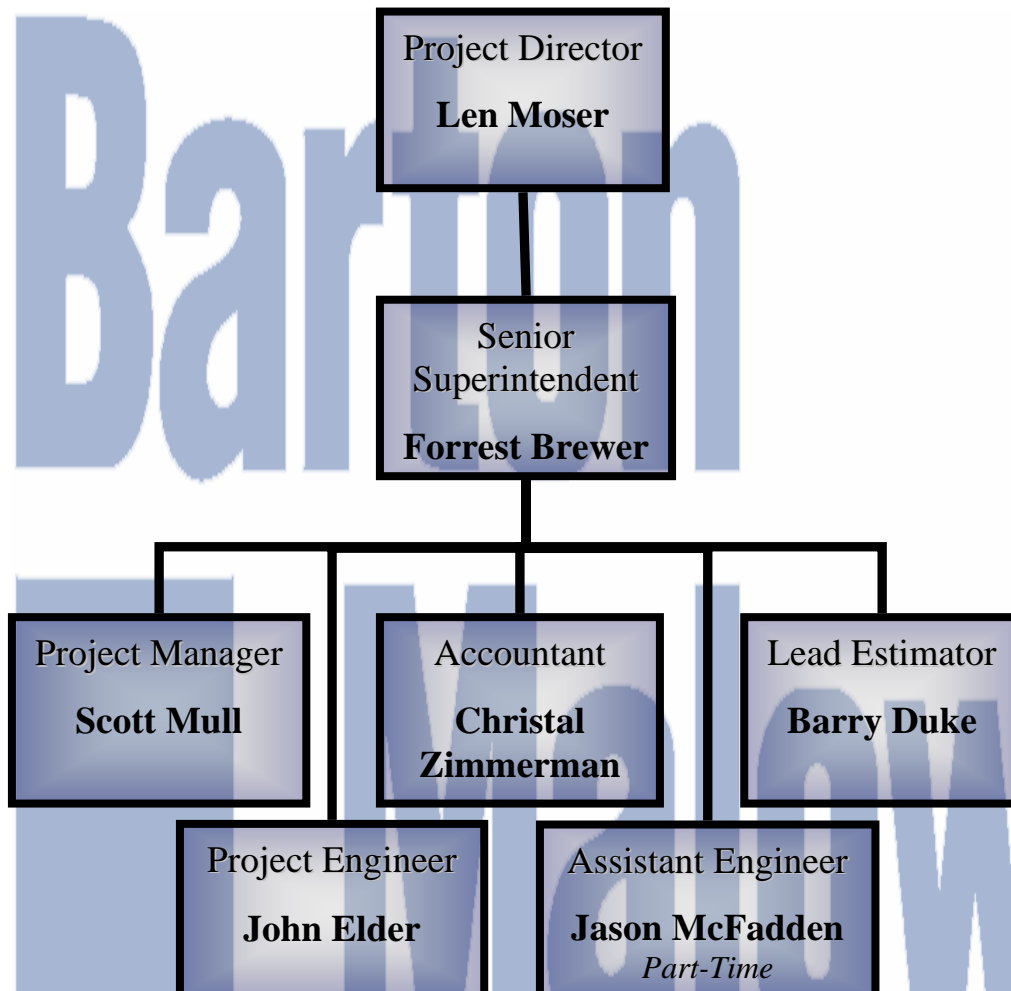
As shown on the project organizational chart, there are three (3) main parties for the project. The Pennsylvania State University is the building owner, Barton Malow Company is the construction manager, and L. Robert Kimball & Associates is the project architect. Barton Malow was selected as the construction manager based on past project performance and knowledge of sport facility construction. Barton Malow entered a negotiated fee contract with Penn State University in the Spring of 2005. Kimball was selected as the architect based on past project performance with a principal in the company and entered a cost plus fee contract with Penn State University in early 2005. Typically, Penn State selects both the architectural firm and construction after a proposal and presentation period, but that method was not used for this project.

L. Robert Kimball and Associates is the lead, project architect for the project and are managed directly by Penn State. Kimball is able to perform architectural, civil, mechanical, electrical, and plumbing services in their office. Consequently, Kimball has contracted DLR Group to design the structural system and the interior spaces for the project. The Sextant Group, Inc. and Agnew Moyer Smith, Inc. have also established a contract with Kimball to design other aspects of the stadium. The Sextant Group is responsible for designing the scoreboard, videoboards, sound system, and distributed televisions throughout the project. Agnew Moyer Smith is responsible for designing the interior and exterior signage and graphics for the project.

The subcontractors depicted underneath Barton Malow each were the lowest, competent bidder in their respective trade specialty and hold a lump sum contract with Barton Malow. This means that any change order work will result in a variation to their contract price. In all, Barton Malow will hire twenty (20) prime contractors to perform the work on-site. Each contract was required to submit a bid bond, 100% payment and performance bond as well insurance for their portion of the work for the duration of the project.

The delivery system for the project is typical for a Penn State project. However, the could have been value in using a design-build approach for this project due to the short project duration and the expertise with sporting facilities displayed by the construction manager. Also, Penn State should have entertained a CM-at-Risk approach if the project budget was an immediate concern.

## E. CONSTRUCTION MANAGER STAFFING PLAN



### **Project Director**

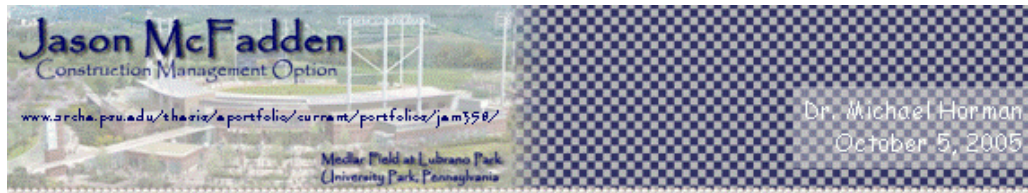
- The *Project Director* is the liaison between The Pennsylvania State University and the Barton Malow on-site construction staff.

### **Senior Superintendent**

- The *Superintendent* is responsible for scheduling all construction activities as well as coordinating daily construction events.

### **Project Manager**

- The *Project Manager* is responsible for tracking all change orders, pay applications, budget reports, etc. for the the project.



## **F. CONSTRUCTION MANAGER STAFFING PLAN**

### **Project Engineer**

- The *Project Engineer* is responsible for tracking all rfi's, submittals, and shop drawings as well as assembling the monthly project report.

### **Assistant Engineer**

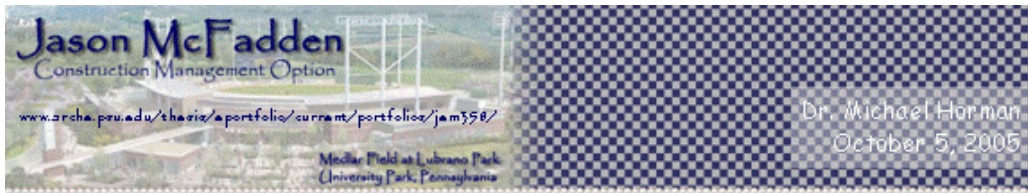
- The *Assistant Engineer* is responsible for assisting the PM and PE with his responsibilities as listed above.

### **Lead Estimator**

- The *Lead Estimator* is responsible for assembling cost estimates throughout the design phase of the job.

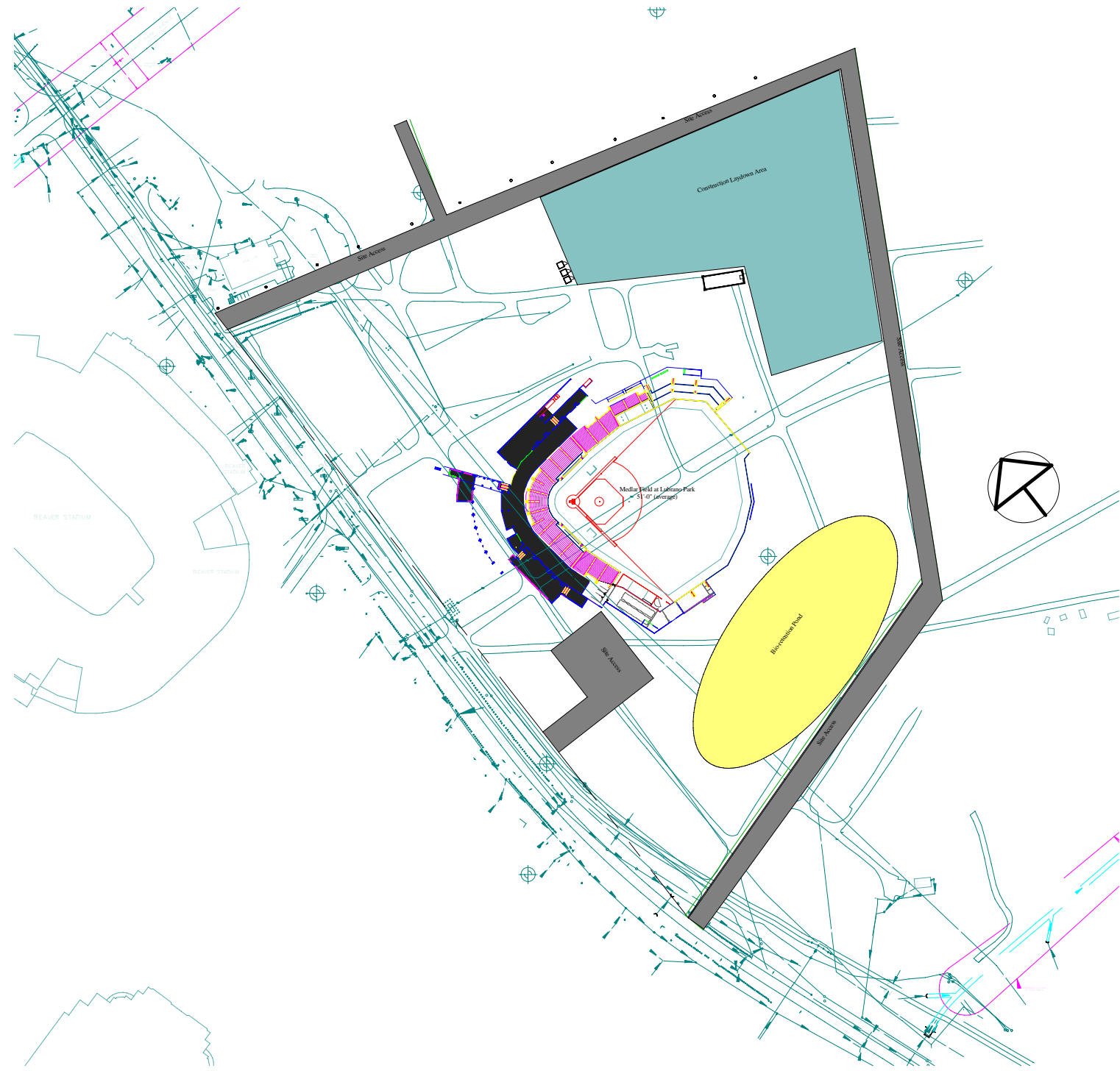
### **Accountant**

- The *Accountant* is responsible for tracking all project costs including general conditions costs and issuing subcontractors checks.

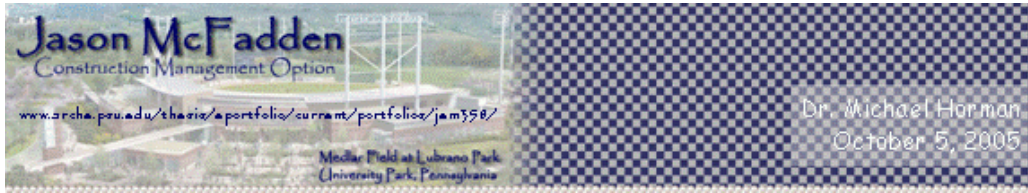


## APPENDIX A

### *Medlar Field at Lubrano Park* Existing Condition Site Plan

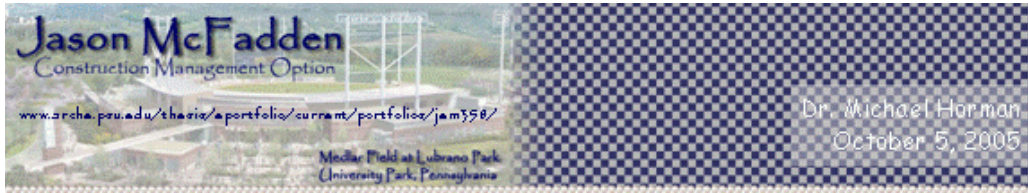


① Site  
1" = 80'-0"



## **APPENDIX B**

*Medlar Field at Lubrano Park*  
Neighboring Structures Pictures



## H. APPENDIX B



Beaver Stadium Adjacent to the Northwest



Penn State Meats Lab Located to the North



Bryce Jordan Center to the West



Multi-Sport Indoor Facility to the Southwest

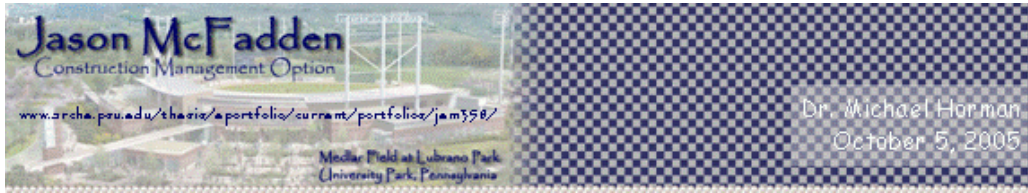


Animal Farm(s) [pig and cow] to the Southeast



Material Storage to the South





## APPENDIX C

### *Medlar Field at Lubrano Park* Utility Relocation Pictures

## I. APPENDIX C

### Utility Relocation

- The following pictures show existing on-site utilities that were relocated for the Stadium project.



Overhead High-Voltage Power Lines on Site



Electrical Substation & Transformer for High-Voltage Lines



Underground Electrical Vaults Next to Substation



Street Lights Located on West Edge of Site