October 28, 2009

TECHNICAL ASSIGNMENT TWO

PENN STATE AE SENIOR THESIS

EPRISCOPAL HIGH SCHOOL
CENTENNIAL GYMNASIUM
ADDITIONS & ALTERATIONS

ALEXANDRIA, VA

PENNSTATE

1855

ERIC FEDDER

CONSTRUCTION MANAGEMENT

DR. CHRIS MAGENT

TECHNICAL ASSIGNMENT TWO

Eric Fedder – CM
Dr. Chris Magent

EXECUTIVE SUMMARY

Technical Assignment Two is intended to analyze the key features and parameters that influence project execution of the Episcopal High School Centennial Gymnasium Addition/Renovation. This project includes a 60,000 SF new gymnasium addition as well as 39,000 SF of renovation work to the existing gymnasium and wrestling facilities. The largest challenge associated with this project is that the proposed site is located in between two existing structures (both of which are included in the renovation work) on an active private high school campus. The surrounding facilities, including the structures to be renovated, must remain open and functional for the athletic department during different phases of construction.

Information regarding the complex phasing/turnover milestones of the new construction and renovation work is shown within the report and a ***detailed project schedule*** is presented to depict the sequencing of trades as work progresses from the new addition through the renovation areas. The superstructure and MEP/interior finishes phases were identified as the two critical phases during construction. Individual ***site layout plans*** are included for each phase to convey proposed locations of the key features of the site and then compared to the actual layout utilized by the contractor. A ***detailed estimate*** was performed for the structural system of the new addition. The estimate produced nearly 3200 CY of concrete and 100 TONS of steel for the project, and total costs of $2.17 million for the cast-in-place concrete system and $620,000 for the structural steel package. The estimates are 2% and 5% below the actual construction costs respectively. A ***general conditions estimate*** is included to show projected costs for supervision/personnel, construction facilities/equipment, temporary utilities and miscellaneous project costs. At an amount of $1.6 million, the general conditions accounts for approximately 7% of the total project cost. Finally, a brief summary of the issues discussed during the ***Business and Networking*** session at the 2009 PACE Roundtable is included and potential research topics are identified.

After analyzing the information contained within this report and the findings from Technical Assignment One, a major focus for upcoming thesis research will be directed towards schedule acceleration techniques and potential re-sequencing of work to better meet the critical turnover dates and phased occupancies set by Episcopal High School. From the discussions during the PACE Roundtable session, it would be a worthy research topic to investigate the influences that shift companies from one market sector to the another and assess the success factors these companies have in obtaining work from unfamiliar clients with different procurement techniques.

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DETAILED PROJECT SCHEDULE

See APPENDIX A for the Detailed Project Schedule

A design competition for the Episcopal High School Centennial Gymnasium addition was held in the summer of 2006, culminating in the selection of Cannon Design and a schematic design submission in March of 2007. Design development began in June of 2007 and construction documents started in January of 2008. Bid documents were delivered to the general contractor in October of 2008. This milestone is the beginning of the attached detailed project schedule in Appendix A.

When working on a school campus, the school year becomes a critical factor in the creation of a successful project schedule. The end of the 2008/2009 EHS school year was May 29, 2009 with graduation ceremonies held that weekend. DAVIS Construction was allowed to begin work three months prior to this date, however full construction activities, including major demolition and excavation, where not to commence until all end-of-year school activities were complete. A great deal of utility relocation and erosion/sediment control phases had to be completed over this initial three month time span in order to be ready for excavation at the beginning of June. The 2009/2010 school year will be impacted by the construction of the new Centennial Gymnasium as well as the renovation to the surrounding buildings. Multiple turnover dates for critical areas, shown in Figure 1, are scheduled throughout the renovation process. The following dates have been set as turnover milestones by DAVIS and EHS to allow use of certain facilities by the athletic department throughout the project duration.

Flippin' Field House: (Renovation)
Turnover to DAVIS: July 1, 2009
Turnover to EHS: July 22, 2009

Existing Wrestling Cage: (Renovation)
Turnover to DAVIS: April 20, 2009
Turnover to EHS: October 9, 2009

Fitness Area/Mechanical Room: (Renovation)
Turnover to DAVIS: October 1, 2009
Turnover to EHS: February 9, 2010

New Gymnasium: (New Construction)
Ground Breaking: June 15, 2009
Turnover to EHS: July 21, 2010

Existing Gymnasium: (Renovation)
Turnover to DAVIS: February 23, 2010
Turnover to EHS: September 3, 2010

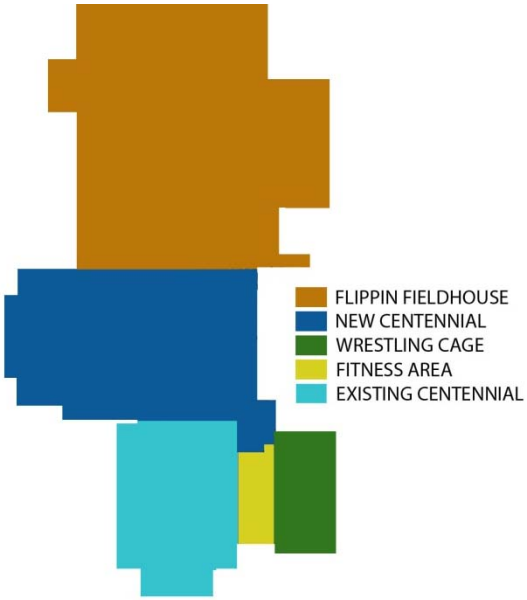


FIGURE 1 **– Turnover Phase Diagram**

The entire Centennial Gymnasium construction and renovation project is slated to be substantially complete by August 4, 2010, nearly a full month before the start of the 2010/2011 school year. The punch list and commissioning processes will comprise the remainder of the project duration with the final overall project completion scheduled for September 3, 2010.

SITE LAYOUT PLANNING

See APPENDIX B for the Site Layout Plans

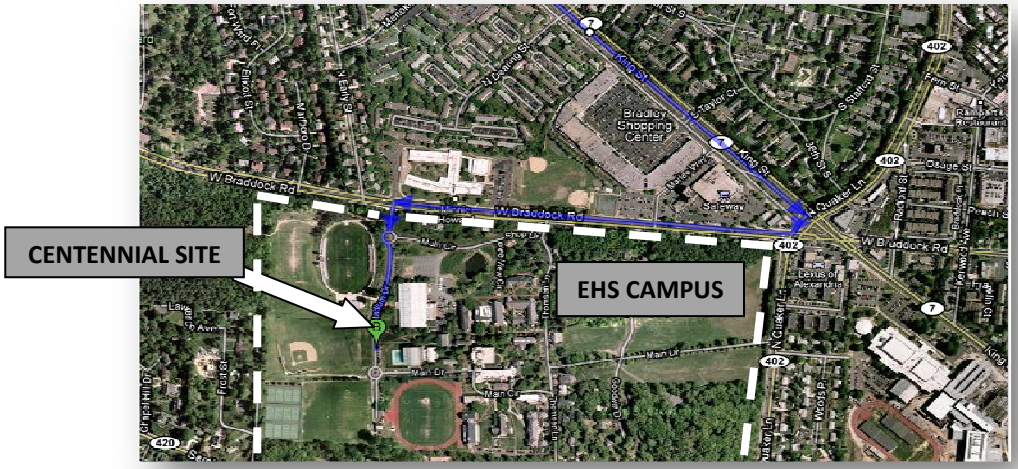


FIGURE 2: **Google Map of Construction Traffic Route to Site**

The site for the New Centennial Gymnasium Addition is located on the campus of Episcopal High School between the existing Flippin' Field House and Centennial Gymnasium. As shown above in Figure 2, construction traffic has been restricted to using only the West campus entrance off of Braddock Road in order to eliminate the congestion and safety concerns at the main campus entrance on N. Quaker Lane. All construction vehicles are restricted to the road directly West of the site and are permitted to use the round-about for turning around only. There is limited on-site parking for construction personnel. All subcontractors are required to have laborers park of campus and then shuttle them to the site. Site parking is restricted to GC/CM personnel and subcontractor foremen. Based on the detailed schedule, the project consists of two major phases: Superstructure and MEP/Interior Finishes. Most notable and of upmost importance to EHS during all construction phases is the mandatory tree protection area for the 100 year old tree located within the construction fence area.

SUPERSTRUCTURE SITE LAYOUT

During the superstructure phase of the project, the site is more congested than any other point during construction. The concrete, steel, masonry, mechanical and electrical subcontractors are all present on site with field trailers and storage facilities. A 180' boom tower crane is stationed within the building footprint to be used for all concrete, steel and masonry work. There are two main concrete pump locations located on the East and West sides of the new addition and plenty of material storage areas allocated for each of the major trades. Adjacent to the new addition site, the existing Wrestling Cage will undergo renovation at this time. The existing Centennial Gymnasium will be occupied during this phase and require egress protection. See Appendix B for the ***Superstructure Phase Site Plan***.

MEP/INTERIOR FINISHES SITE LAYOUT

The transition from the superstructure phase into the MEP/interior finishes site layout is characterized by the removal of the tower crane and loss of the majority of the site due to hardscaping and

landscaping activities. During this phase of construction, the majority of the material storage is inside the building, with only the mechanical and electrical subcontractors having field trailers. The main workflow path will be from West to East utilizing the New Centennial main entrance as the access point for material and labor. At the same time as the interior work on New Centennial, existing Centennial Gymnasium will undergo its' renovation. The adjacent Wrestling Cage will be occupied at this time and require egress protection. See Appendix B for the ***MEP/Interior Finishes Phase Site Plan***.

CONTRACTOR LAYOUT CRITIQUE

Interning on this project during the beginning of the superstructure phase provided an opportunity to analyze and witness the effectiveness of the layout. The layouts shown in Appendix B are similar to the actual layout/techniques utilized by the contractor with a few key changes incorporated. One of the main issues with the contractor layout plan, shown below in Figure 3, is the lack of clear area designation. The only subcontractor that is shown with a distinct material staging/storage area is the masonry subcontractor. This will lead to confusion and frustration when the site becomes increasingly chaotic with several different trades. Another criticism is that the contractor only created one general layout plan for the entire project duration. With all of the different phases and sequencing challenges associated with this schedule, relying on one site layout plan for the entire project presents a challenging and disorganized situation. Each of the site layout plans provided in Appendix B attempt to rectify these identified issues.

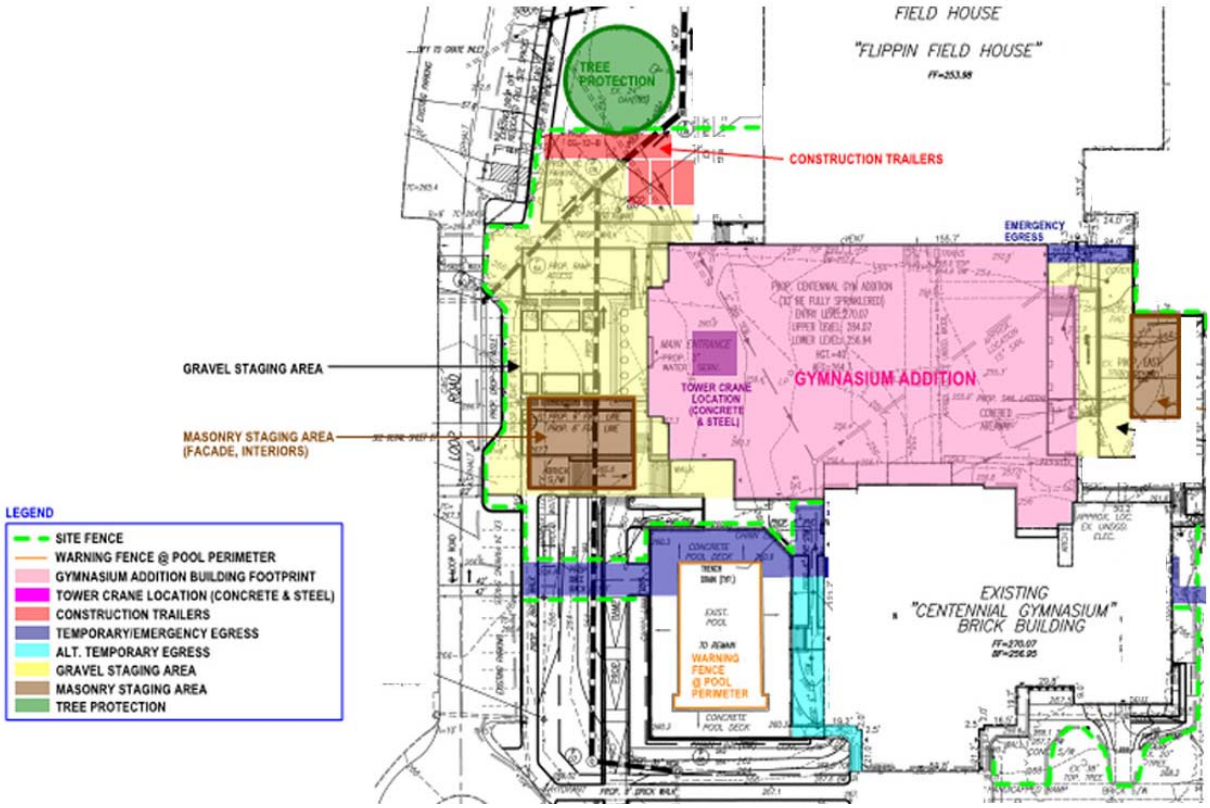


FIGURE 3: **Contractor Site Layout Plan provided by DAVIS**

DETAILED STRUCTURAL SYSTEM ESTIMATE

See APPENDIX C for the complete Structural System Estimate

The superstructure for the New Centennial Gymnasium Addition is primarily CIP concrete with a small portion of structural steel components mainly in the roof system. Table 1 shows the comparison between the actual costs vs. the estimated costs for the two systems analyzed. Due to detailed construction drawings and the manageable size of the structure, which resulted in a complete detailed estimate in lieu of a modular technique, the CIP concrete estimate is within 2% of the actual cost and the structural steel estimate is within 5%. It is felt that this is a more than reasonable estimate for the assignment parameters and expectations.

	ACTUAL		ESTIMATED	
SYSTEM	TOTAL	$/SF	TOTAL	$/SF
CIP Concrete	$2,192,000.00	$36.50	$2,165,365.00	$36.00
Structural Steel	$657,200.00	$11.00	$626,131.00	$10.50

TABLE 1: **Actual vs. Estimated Cost Comparison**

At 60,000 SF, the New Centennial Gymnasium Addition is by no means a large superstructure. However, the difficulties associated with connecting the building to two existing structures results in nearly 3200 CY of concrete and 100 TONS of steel. Table 2 summarizes the cost and quantity for each CSI Masterformat division included in the estimate. The percent break-down of each component for the respective systems is detailed in Figure 4. As expected, the formwork accounts for nearly half of the cast-in-place concrete cost due the labor and rental costs.

COMPONENT	UNIT COST	UNIT	QUANTITY	COST
031100 - Concrete Formwork	$10.00	SFCA	103,550	$961,912.00
032100 - Concrete Reinforcing Steel	$2,580.00	TON	231	$595,835.00
033000 - Cast-In-Place Concrete	$191.00	CY	3,190	$607,618.00
051223 - Steel Columns	$5,728.00	TON	4	$22,911.00
051223 - Steel Beams	$4,960.00	TON	53	$262,862.00
052113 - Deep Long Span Steel Trusses	$3,940.00	TON	47	$185,141.00
053133 - Steel Roof Decking	$3.00	SF	65,588	$155,217.00
			TOTAL:	$2,791,496.00

TABLE 2: **Estimate Summary by CSI Masterformat Divisions**

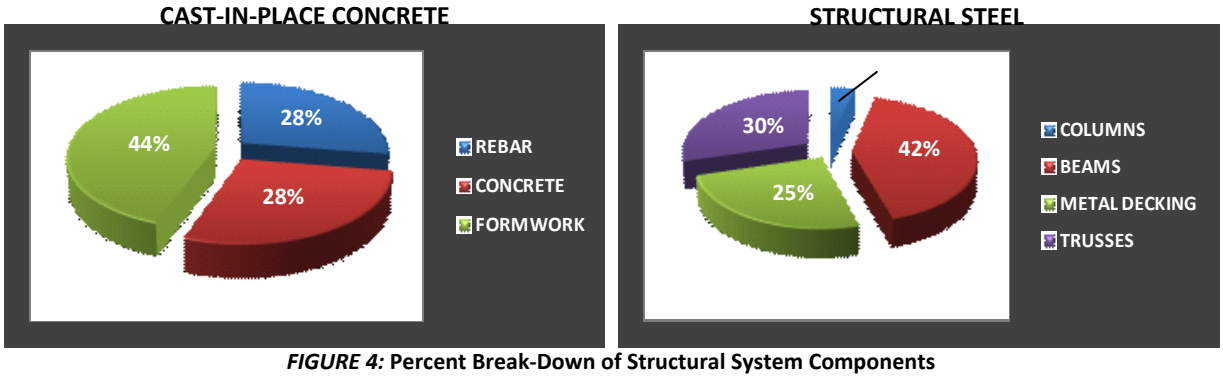


FIGURE 4: **Percent Break-Down of Structural System Components**

Several factors and assumptions were accounted for throughout the estimate to produce an accurate final cost of the superstructure system. *RS Means Costworks 2009* was used for all material, labor and equipment unit costs. The pricing data was released in quarter one of 2009, which is when the actual structural system package was priced and released to DAVIS Construction. Therefore, no time modification was required for the estimate. *Costworks* allowed for the location to be set as Alexandria, VA to provide an accurate location factor on the unit prices.

Given the difficult nature of estimating rebar within CIP concrete, a 10% factor was applied to incorporate all rebar ties and anchors not clearly shown on the drawings. The formwork unit prices reflect the assumption that a 2-use prefabricated system is utilized. For concrete placement, the slab-on-grade and elevated slabs are assumed to be pumped and all other components placed with crane/bucket. A 10% construction waste factor was used for rebar, formwork and concrete.

RS Means Costworks does not provide pricing data for the exact metal decking types specified for the Centennial project. Therefore, comparable galvanized metal decks with the same gauge and rib sizing were used for unit costs. The majority of the structural steel member sizes had pricing available from *Costworks*. In the event that a particular size was not provided, the next available member size was used for unit pricing (i.e. pricing for a 12x18 member was used for a 12x16 member if pricing was not available for a 12x16).

GENERAL CONDITIONS ESTIMATE

See APPENDIX D for the complete General Conditions Estimate

The estimate summarized in Table 3 below shows a representation of the costs for the general condition line items on the Centennial Gymnasium project. These numbers are an approximation and do not reflect the actual amounts contracted between DAVIS Construction and Advanced Project Management.

LINE ITEM	UNIT RATE	UNIT	QUANTITY	COST
Supervision and Personnel	$14,451.33	WEEK	75	$1,083,850.00
Construction Facilities and Equipment	$1,974.77	WEEK	75	$148,107.50
Temporary Utilities	$1,546.50	WEEK	75	$115,987.50
Miscellaneous Costs	$3,517.00	WEEK	75	$263,775.00
TOTAL:	$21,489.60	WEEK	75	$1,611,720.00

***TABLE 3* – General Conditions Estimate Summary**

The estimate was broken down into four categories: Supervision and Personnel, Construction Facilities and Equipment, Temporary Utilities and Miscellaneous Costs. ***Supervision and Personnel*** includes the entire management and support staff for the project, such as the Vice President, Project Managers, Field Supervisors and labor. The ***Construction Facilities and Equipment*** category incorporates items such as the field office trailer, storage containers, tools, dumpsters, construction fence, etc. Allocation for the temporary utilities on the project is difficult to determine due to the renovation portions of the project. Certain areas of the construction phases are utilizing existing utilities supplied by EHS. The majority of the new construction phase will rely on temporary utilities provided by DAVIS. The ***Temporary Utilities*** includes installation and service costs for field LAN/telephone lines, temporary power installation and consumption, temporary water/sanitary supply, and temporary toilet facilities. Finally, the ***Miscellaneous Costs*** accounts for items such as permits, document reproduction, travel expenses, etc.

As shown below in Figure 5, the supervision and personnel costs account for nearly 70% of the general conditions estimate, which is fairly typical for construction projects. The overall general conditions amount of $1.6 million is just over 7% of the total project cost of $22.5 million.

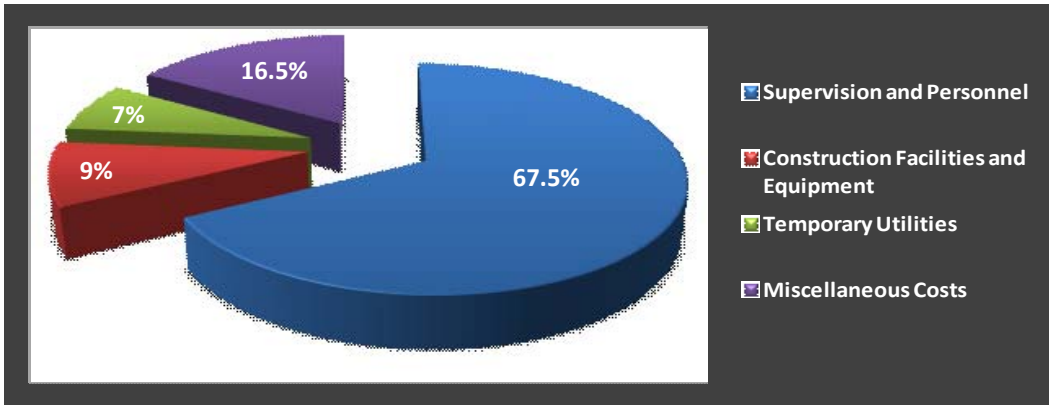


***FIGURE 5* – General Conditions Percent Break-Down**

CRITICAL INDUSTRY ISSUES

The 18th Annual PACE Roundtable was held at The Pennsylvania State University on October 14-15, 2009. The theme of the conference was "Creating Opportunities," which attracted a large amount of industry leaders and AE students. Along with industry and student discussion panels, there were three main break-out sessions pertaining to following issues:

- **Energy and the Construction Industry -** How changing green building energy performance requirements will affect future projects
- **Business and Networking -** Expanding circles, relationships and opportunities
- **BIM Executive Planning -** Putting BIM to work

While BIM and green building energy performance are two increasingly important issues among construction, the topic of business networking is extremely timely and pertinent in today's struggling economy and ever competitive industry. A good portion of the attendees visited the other sessions, but the business networking group had a strong presence of industry leaders. The smaller group allowed for an intimate conversation setting with ample opportunities to express questions and comments.

The general topic of business networking left the direction of the discussion open to suggestions. Many issues were identified as problems plaguing the current construction industry. The prominent issue identified within the group is the slumping economy has had profound impacts on project procurement and delivery systems pursued. Representatives from DAVIS, Forrester, Benchmark and Turner all agreed that a shift from negotiated GMP contracts to ***competitive lump sum bids*** is due to the down economy and owner's desire to construct at the lowest cost possible. The question was raised asking whether this shift was due to construction companies' pursuit of a different market or the typically negotiated GMP driven owner's switching to competitive bids. The industry leaders determined that the current economy has driven companies to different market sectors traditionally known for hard bid processes. Another emerging strategy discussed, that is not new to the construction industry, is joint ventures. ***Joint Ventures*** are gaining popularity to meet bonding requirements on large, public sector projects. The shift from negotiated GMP's to competitive hard bids and increased presence of joint ventures changes the relationships and tactics for procuring work in the industry today.

Due to the decreased number of projects on the market and the increased urgency for companies to obtain work, relationships and tactics for procuring projects have become the most important component of a successful company. The students and industry leaders identified several factors that can aid companies in the procurement process. Forging relationships with owners prior to a project announcement gives a company a competitive edge. The best way to achieve this is building a reputation through service. Owners discuss previous contractor successes and failures with other owners. The concept that everyone is responsible for business development is more prevalent than ever, and may be the difference between having a chance to bid on a project and being left off of the select bid list. Due to the nature of competitive lump sum bids, it is very important to establish quality relationships with subcontractors and obtain buy-in during the bidding process to ensure an accurate

and competitive price at bid time. All of these factors play a large role in the success of companies in procuring work during these down economic times.

The Centennial Gymnasium project is a negotiated GMP contract, the preferred and standard contracting method for DAVIS Construction that prefers to deal with repeat clients. However, due to the shifting economy and decrease in private sector work, DAVIS has been forced to pursue different markets to obtain other projects, such as public school and government. These projects tend to be competitive lump sum bids and require a shift in strategies to procure the work from unknown clients. It would be a worthy research topic to investigate the influences that shift companies from one market sector to the another and assess the success factors these companies have in obtaining work from the unknown clients and different procurement techniques. While this situation does not specifically apply to the Centennial project, it does apply to the general contractor of the project and would be a very interesting thesis research topic to pursue.

All of the industry members at the roundtable were very eager to provide insight on any issues pertaining to the current construction industry. Particular attendees that were a part of the break-out session discussion include Chris Magent from Alexander Building Construction, Bevan Mace from Balfour Beatty Construction, John Bechtel from PSU Office of Physical Plant, Michael Barnhart from Forrester Construction, Chris Smith from Benchmark Construction and Mike Pittsman from DAVIS Construction. There are numerous contacts ranging across several different company sizes and market types that will provide helpful information in pursuing research on the above mentioned topic.

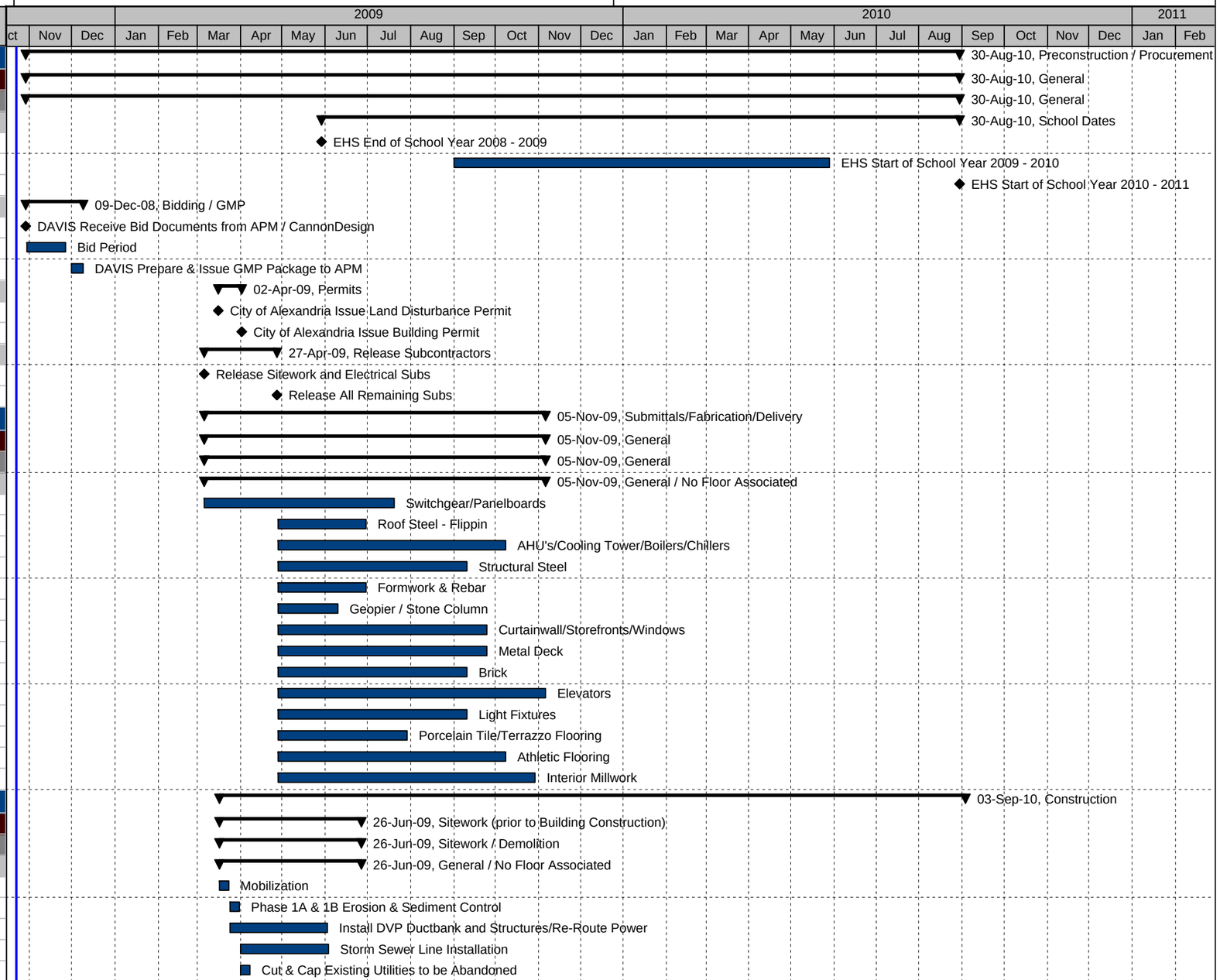
APPENDIX A – Detailed Project Schedule

PENNSTATE

ERIC FEDDER
CONSTRUCTION MANAGEMENT

DETAILED PROJECT SCHEDULE - TECH TWO
OCTOBER 28, 2009

Activity Name	Original Duration	Start	Finish
Preconstruction / Procurement	478	29-Oct-08	30-Aug-10
General	478	29-Oct-08	30-Aug-10
General	478	29-Oct-08	30-Aug-10
School Dates	325	29-May-09	30-Aug-10
EHS End of School Year 2008 - 2009	0		29-May-09*
EHS Start of School Year 2009 - 2010	189	01-Sep-09*	28-May-10
EHS Start of School Year 2010 - 2011	0	30-Aug-10*	
Bidding / GMP	30	29-Oct-08	09-Dec-08
DAVIS Receive Bid Documents from APM / (	0	29-Oct-08*	
Bid Period	20	30-Oct-08*	26-Nov-08
DAVIS Prepare & Issue GMP Package to AP	7	01-Dec-08*	09-Dec-08
Permits	13	16-Mar-09	02-Apr-09
City of Alexandria Issue Land Disturbance Pe	0	16-Mar-09*	
City of Alexandria Issue Building Permit	0	02-Apr-09*	
Release Subcontractors	36	06-Mar-09	27-Apr-09
Release Sitework and Electrical Subs	0	06-Mar-09*	
Release All Remaining Subs	0	27-Apr-09*	
Submittals/Fabrication/Delivery	175	06-Mar-09	05-Nov-09
General	175	06-Mar-09	05-Nov-09
General	175	06-Mar-09	05-Nov-09
General / No Floor Associated	175	06-Mar-09	05-Nov-09
Switchgear/Panelboards	95	06-Mar-09*	20-Jul-09
Roof Steel - Flippin	45	28-Apr-09*	30-Jun-09
AHU's/Cooling Tower/Boilers/Chillers	115	28-Apr-09*	08-Oct-09
Structural Steel	95	28-Apr-09*	10-Sep-09
Formwork & Rebar	45	28-Apr-09*	30-Jun-09
Geopier / Stone Column	30	28-Apr-09*	09-Jun-09
Curtainwall/Storefronts/Windows	105	28-Apr-09*	24-Sep-09
Metal Deck	105	28-Apr-09*	24-Sep-09
Brick	95	28-Apr-09*	10-Sep-09
Elevators	135	28-Apr-09*	05-Nov-09
Light Fixtures	95	28-Apr-09*	10-Sep-09
Porcelain Tile/Terrazzo Flooring	65	28-Apr-09*	29-Jul-09
Athletic Flooring	115	28-Apr-09*	08-Oct-09
Interior Millwork	130	28-Apr-09*	29-Oct-09
Construction	384	17-Mar-09	03-Sep-10
Sitework (prior to Building Construction)	74	17-Mar-09	26-Jun-09
Sitework / Demolition	74	17-Mar-09	26-Jun-09
General / No Floor Associated	74	17-Mar-09	26-Jun-09
Mobilization	5	17-Mar-09*	23-Mar-09
Phase 1A & 1B Erosion & Sediment Control	6	24-Mar-09	31-Mar-09
Install DVP Ductbank and Structures/Re-Rou	50	24-Mar-09	02-Jun-09
Storm Sewer Line Installation	45	01-Apr-09	03-Jun-09
Cut & Cap Existing Utilities to be Abandoned	5	01-Apr-09*	07-Apr-09



Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

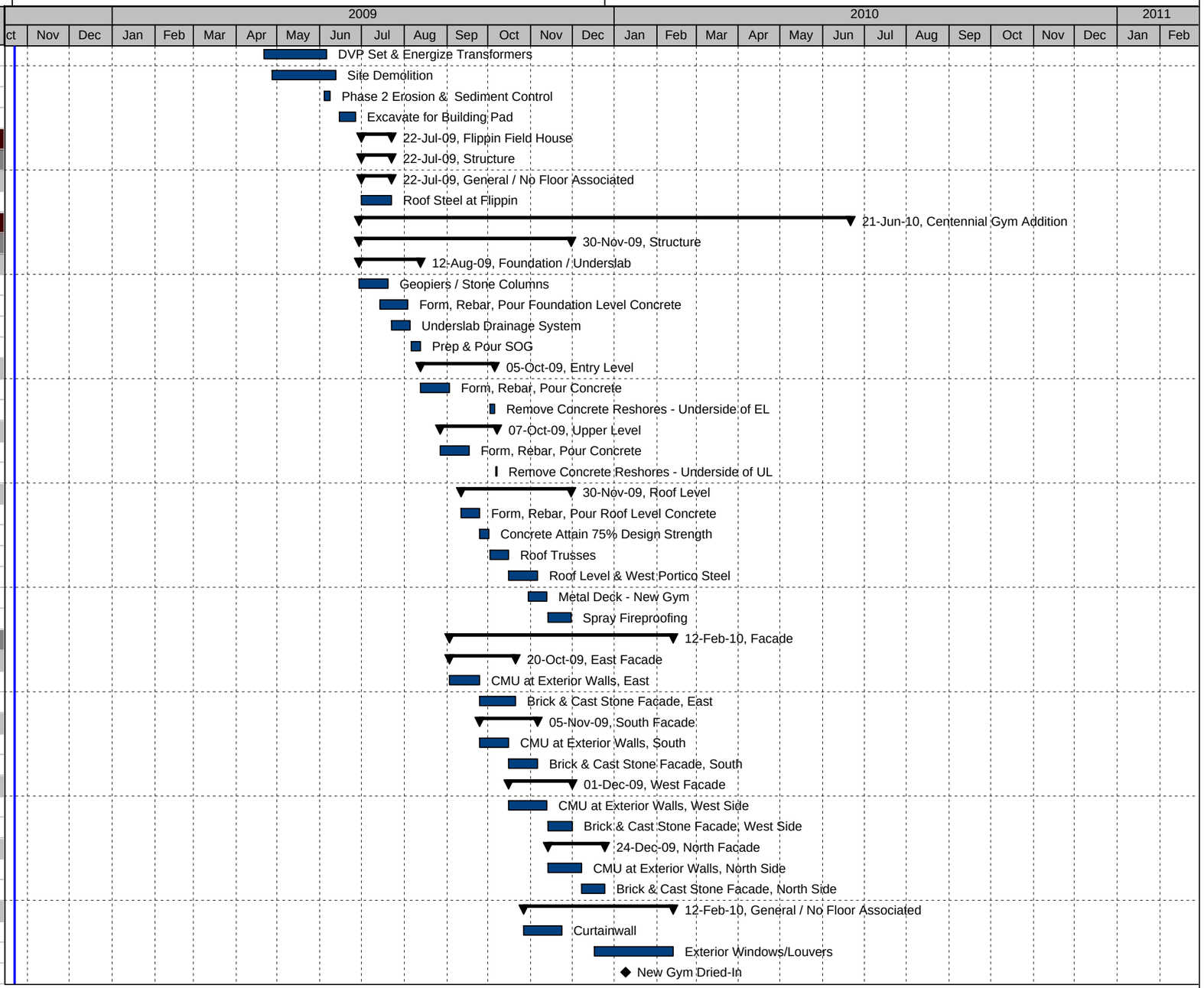
EPISCOPAL HIGH SCHOOL
CENTENNIAL GYMNASIUM PROJECT
ALEXANDRIA, VA

PENNSTATE

ERIC FEDDER
CONSTRUCTION MANAGEMENT

DETAILED PROJECT SCHEDULE - TECH TWO
OCTOBER 28, 2009

Activity Name	Original Duration	Start	Finish
DVP Set & Energize Transformers	33	21-Apr-09*	05-Jun-09
Site Demolition	34	27-Apr-09	12-Jun-09
Phase 2 Erosion & Sediment Control	3	04-Jun-09	08-Jun-09
Excavate for Building Pad	10	15-Jun-09	26-Jun-09
Flippin Field House	16	01-Jul-09	22-Jul-09
Structure	16	01-Jul-09	22-Jul-09
General / No Floor Associated	16	01-Jul-09	22-Jul-09
Roof Steel at Flippin	15	01-Jul-09*	22-Jul-09
Centennial Gym Addition	256	29-Jun-09	21-Jun-10
Structure	111	29-Jun-09	30-Nov-09
Foundation / Underslab	33	29-Jun-09	12-Aug-09
Geopiers / Stone Columns	15	29-Jun-09	20-Jul-09
Form, Rebar, Pour Foundation Level Concrei	15	14-Jul-09	03-Aug-09
Underslab Drainage System	10	23-Jul-09	05-Aug-09
Prep & Pour SOG	5	06-Aug-09	12-Aug-09
Entry Level	38	13-Aug-09	05-Oct-09
Form, Rebar, Pour Concrete	15	13-Aug-09	02-Sep-09
Remove Concrete Reshores - Underside of E	2	02-Oct-09	05-Oct-09
Upper Level	30	27-Aug-09	07-Oct-09
Form, Rebar, Pour Concrete	15	27-Aug-09	17-Sep-09
Remove Concrete Reshores - Underside of U	2	06-Oct-09	07-Oct-09
Roof Level	57	11-Sep-09	30-Nov-09
Form, Rebar, Pour Roof Level Concrete	10	11-Sep-09	24-Sep-09
Concrete Attain 75% Design Strength	5	25-Sep-09	01-Oct-09
Roof Trusses	10	02-Oct-09	15-Oct-09
Roof Level & West Portico Steel	15	16-Oct-09	05-Nov-09
Metal Deck - New Gym	10	30-Oct-09	12-Nov-09
Spray Fireproofing	10	13-Nov-09	30-Nov-09
Facade	117	03-Sep-09	12-Feb-10
East Facade	34	03-Sep-09	20-Oct-09
CMU at Exterior Walls, East	15	03-Sep-09	24-Sep-09
Brick & Cast Stone Facade, East	18	25-Sep-09	20-Oct-09
South Facade	30	25-Sep-09	05-Nov-09
CMU at Exterior Walls, South	15	25-Sep-09	15-Oct-09
Brick & Cast Stone Facade, South	15	16-Oct-09	05-Nov-09
West Facade	33	16-Oct-09	01-Dec-09
CMU at Exterior Walls, West Side	20	16-Oct-09	12-Nov-09
Brick & Cast Stone Facade, West Side	11	13-Nov-09	01-Dec-09
North Facade	30	13-Nov-09	24-Dec-09
CMU at Exterior Walls, North Side	15	13-Nov-09	07-Dec-09
Brick & Cast Stone Facade, North Side	13	08-Dec-09	24-Dec-09
General / No Floor Associated	79	27-Oct-09	12-Feb-10
Curtainwall	20	27-Oct-09	23-Nov-09
Exterior Windows/Louvers	40	17-Dec-09	12-Feb-10
New Gym Dried-In	0		08-Jan-10



Actual Work
Remaining Work
Critical Remaining Work
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Summary

EPISCOPAL HIGH SCHOOL
CENTENNIAL GYMNASIUM PROJECT
ALEXANDRIA, VA

PENNSTATE

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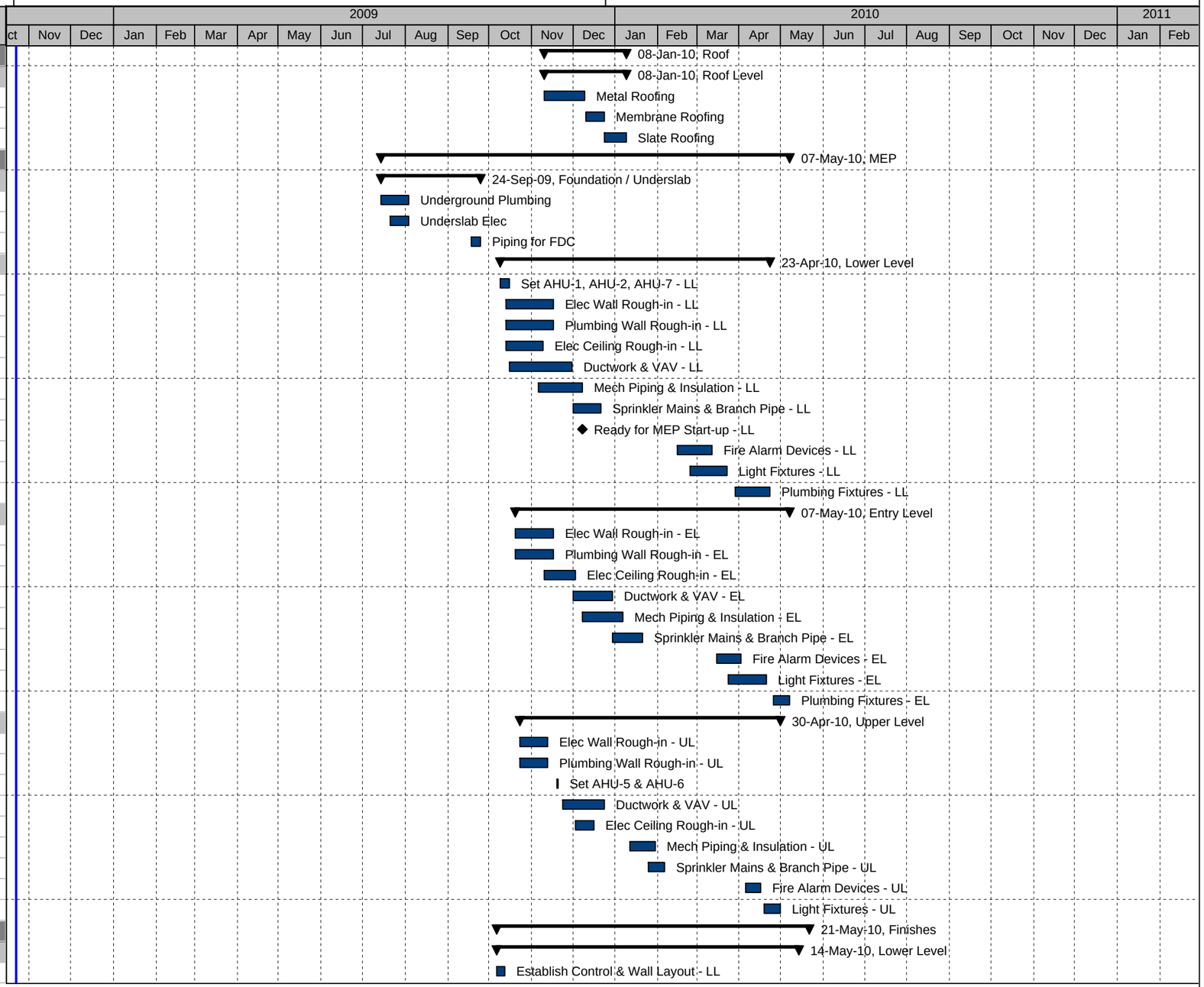
CONSTRUCTION MANAGEMENT

DETAILED PROJECT SCHEDULE - TECH TWO
OCTOBER 28, 2009

Activity Name	Original Duration	Start	Finish
Roof	44	10-Nov-09	08-Jan-10
Roof Level	44	10-Nov-09	08-Jan-10
Metal Roofing	20	10-Nov-09	09-Dec-09
Membrane Roofing	10	10-Dec-09	23-Dec-09
Slate Roofing	10	24-Dec-09	08-Jan-10
MEP	214	14-Jul-09	07-May-10
Foundation / Underslab	53	14-Jul-09	24-Sep-09
Underground Plumbing	15	14-Jul-09	03-Aug-09
Underslab Elec	10	21-Jul-09	03-Aug-09
Piping for FDC	5	18-Sep-09	24-Sep-09
Lower Level	141	09-Oct-09	23-Apr-10
Set AHU-1, AHU-2, AHU-7 - LL	5	09-Oct-09	15-Oct-09
Elec Wall Rough-in - LL	25	13-Oct-09	16-Nov-09
Plumbing Wall Rough-in - LL	25	13-Oct-09	16-Nov-09
Elec Ceiling Rough-in - LL	20	13-Oct-09	09-Nov-09
Ductwork & VAV - LL	30	16-Oct-09	30-Nov-09
Mech Piping & Insulation - LL	20	06-Nov-09	07-Dec-09
Sprinkler Mains & Branch Pipe - LL	15	01-Dec-09	21-Dec-09
Ready for MEP Start-up - LL	0		07-Dec-09
Fire Alarm Devices - LL	20	15-Feb-10	12-Mar-10
Light Fixtures - LL	20	24-Feb-10	23-Mar-10
Plumbing Fixtures - LL	20	29-Mar-10	23-Apr-10
Entry Level	144	20-Oct-09	07-May-10
Elec Wall Rough-in - EL	20	20-Oct-09	16-Nov-09
Plumbing Wall Rough-in - EL	20	20-Oct-09	16-Nov-09
Elec Ceiling Rough-in - EL	15	10-Nov-09	02-Dec-09
Ductwork & VAV - EL	20	01-Dec-09	29-Dec-09
Mech Piping & Insulation - EL	20	08-Dec-09	06-Jan-10
Sprinkler Mains & Branch Pipe - EL	15	30-Dec-09	20-Jan-10
Fire Alarm Devices - EL	15	15-Mar-10	02-Apr-10
Light Fixtures - EL	20	24-Mar-10	20-Apr-10
Plumbing Fixtures - EL	10	26-Apr-10	07-May-10
Upper Level	136	23-Oct-09	30-Apr-10
Elec Wall Rough-in - UL	15	23-Oct-09	12-Nov-09
Plumbing Wall Rough-in - UL	15	23-Oct-09	12-Nov-09
Set AHU-5 & AHU-6	2	19-Nov-09	20-Nov-09
Ductwork & VAV - UL	21	23-Nov-09	23-Dec-09
Elec Ceiling Rough-in - UL	10	03-Dec-09	16-Dec-09
Mech Piping & Insulation - UL	15	11-Jan-10	29-Jan-10
Sprinkler Mains & Branch Pipe - UL	10	25-Jan-10	05-Feb-10
Fire Alarm Devices - UL	10	05-Apr-10	16-Apr-10
Light Fixtures - UL	10	19-Apr-10	30-Apr-10
Finishes	164	06-Oct-09	21-May-10
Lower Level	159	06-Oct-09	14-May-10
Establish Control & Wall Layout - LL	5	06-Oct-09	12-Oct-09



Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

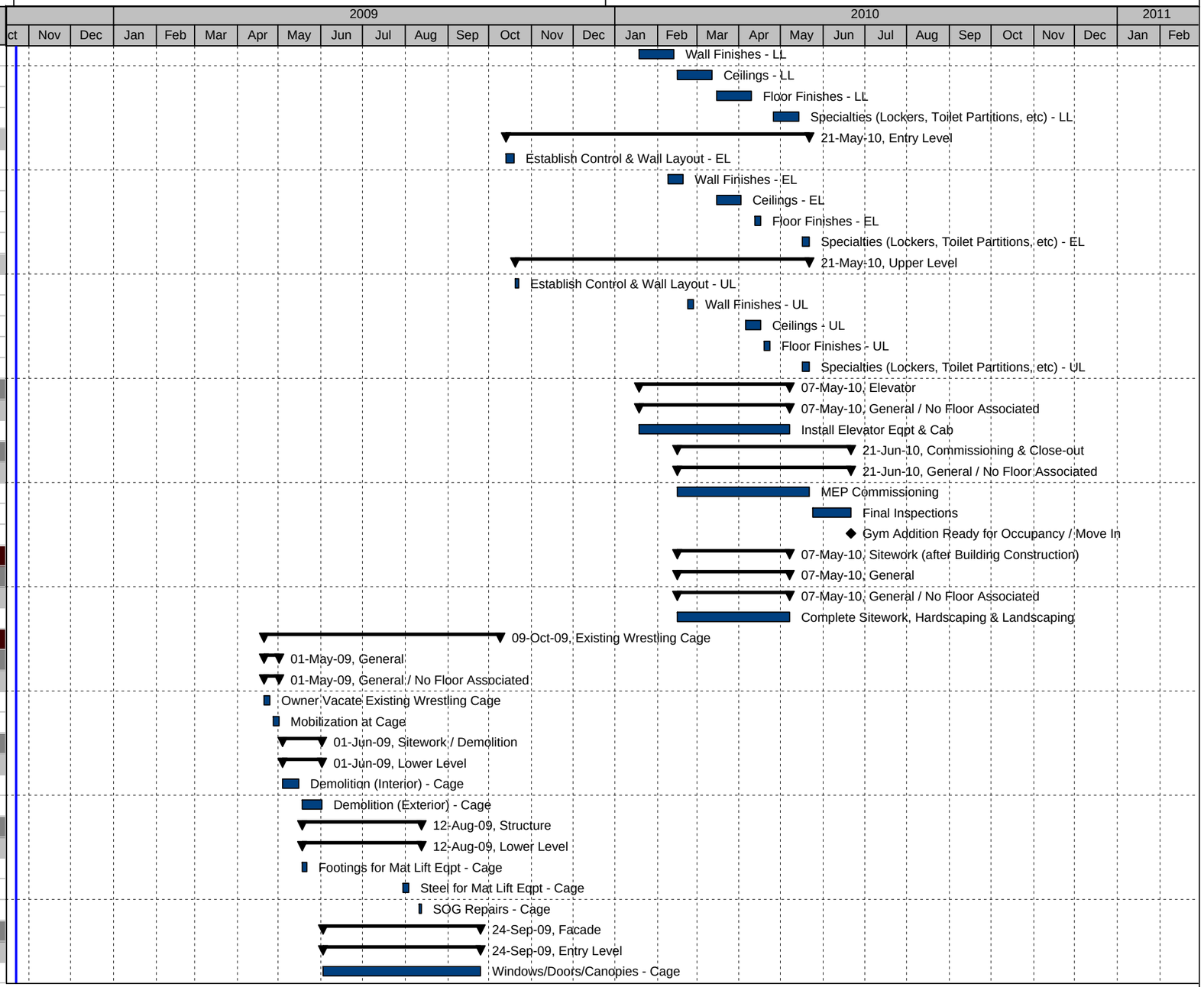
EPISCOPAL HIGH SCHOOL
CENTENNIAL GYMNASIUM PROJECT
ALEXANDRIA, VA

PENNSTATE

ERIC FEDDER
CONSTRUCTION MANAGEMENT

DETAILED PROJECT SCHEDULE - TECH TWO
OCTOBER 28, 2009

Activity Name	Original Duration	Start	Finish
Wall Finishes - LL	20	18-Jan-10	12-Feb-10
Ceilings - LL	20	15-Feb-10	12-Mar-10
Floor Finishes - LL	20	15-Mar-10	09-Apr-10
Specialties (Lockers, Toilet Partitions, etc) - L	15	26-Apr-10	14-May-10
Entry Level	159	13-Oct-09	21-May-10
Establish Control & Wall Layout - EL	5	13-Oct-09	19-Oct-09
Wall Finishes - EL	10	08-Feb-10	19-Feb-10
Ceilings - EL	15	15-Mar-10	02-Apr-10
Floor Finishes - EL	5	12-Apr-10	16-Apr-10
Specialties (Lockers, Toilet Partitions, etc) - E	5	17-May-10	21-May-10
Upper Level	154	20-Oct-09	21-May-10
Establish Control & Wall Layout - UL	3	20-Oct-09	22-Oct-09
Wall Finishes - UL	5	22-Feb-10	26-Feb-10
Ceilings - UL	10	05-Apr-10	16-Apr-10
Floor Finishes - UL	5	19-Apr-10	23-Apr-10
Specialties (Lockers, Toilet Partitions, etc) - L	5	17-May-10	21-May-10
Elevator	80	18-Jan-10	07-May-10
General / No Floor Associated	80	18-Jan-10	07-May-10
Install Elevator Eqpt & Cab	80	18-Jan-10	07-May-10
Commissioning & Close-out	91	15-Feb-10	21-Jun-10
General / No Floor Associated	91	15-Feb-10	21-Jun-10
MEP Commissioning	70	15-Feb-10	21-May-10
Final Inspections	20	24-May-10	21-Jun-10
Gym Addition Ready for Occupancy / Move In	0		21-Jun-10
Sitework (after Building Construction)	60	15-Feb-10	07-May-10
General	60	15-Feb-10	07-May-10
General / No Floor Associated	60	15-Feb-10	07-May-10
Complete Sitework, Hardscaping & Landscap	60	15-Feb-10	07-May-10
Existing Wrestling Cage	125	20-Apr-09	09-Oct-09
General	10	20-Apr-09	01-May-09
General / No Floor Associated	10	20-Apr-09	01-May-09
Owner Vacate Existing Wrestling Cage	5	20-Apr-09*	24-Apr-09
Mobilization at Cage	5	27-Apr-09	01-May-09
Sitework / Demolition	21	04-May-09	01-Jun-09
Lower Level	21	04-May-09	01-Jun-09
Demolition (Interior) - Cage	10	04-May-09	15-May-09
Demolition (Exterior) - Cage	10	18-May-09	01-Jun-09
Structure	63	18-May-09	12-Aug-09
Lower Level	63	18-May-09	12-Aug-09
Footings for Mat Lift Eqpt - Cage	4	18-May-09	21-May-09
Steel for Mat Lift Eqpt - Cage	3	30-Jul-09	03-Aug-09
SOG Repairs - Cage	2	11-Aug-09	12-Aug-09
Facade	83	02-Jun-09	24-Sep-09
Entry Level	83	02-Jun-09	24-Sep-09
Windows/Doors/Canopies - Cage	81	02-Jun-09	24-Sep-09



Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

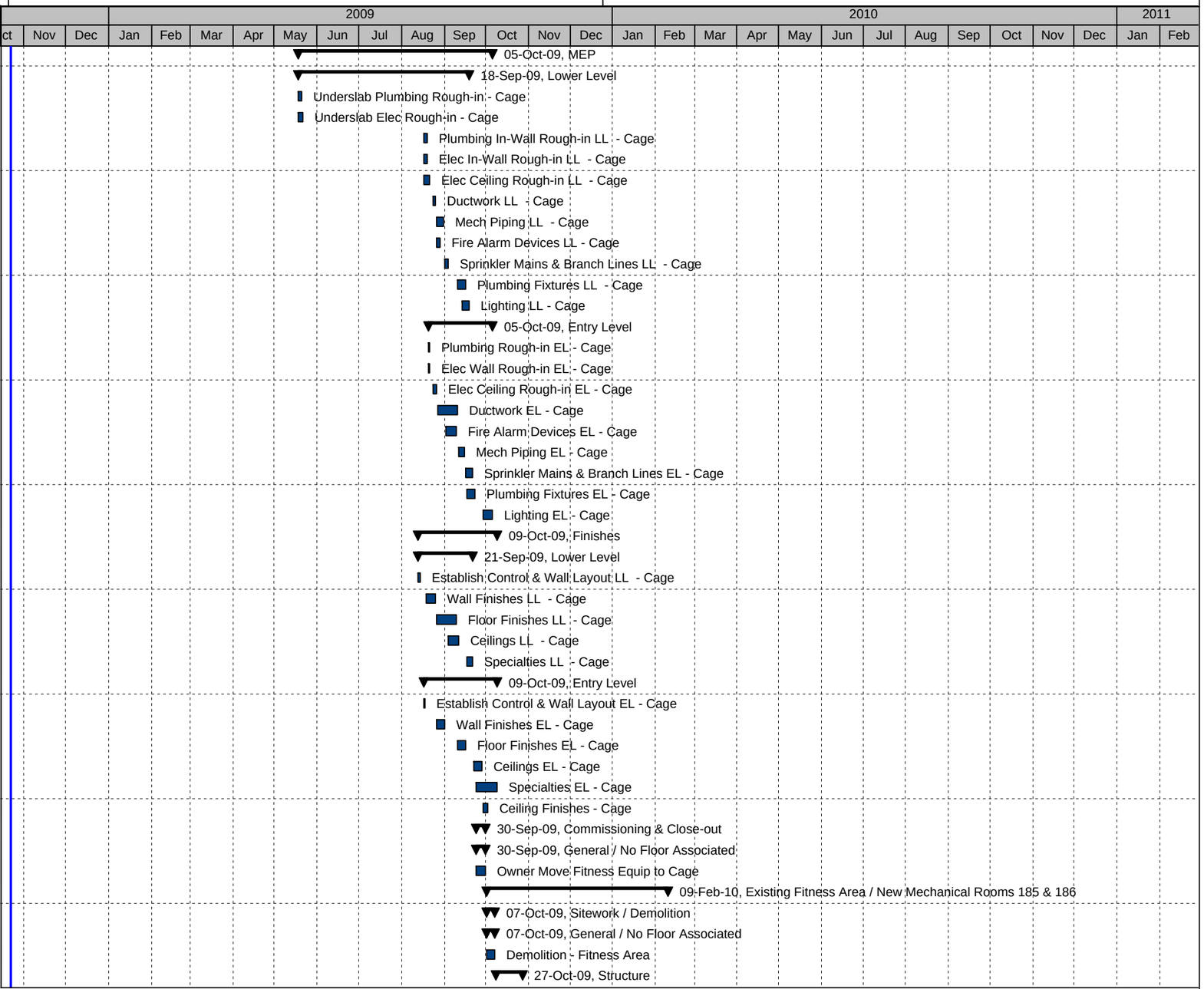
EPISCOPAL HIGH SCHOOL
CENTENNIAL GYMNASIUM PROJECT
ALEXANDRIA, VA

PENNSTATE

ERIC FEDDER
CONSTRUCTION MANAGEMENT

DETAILED PROJECT SCHEDULE - TECH TWO
OCTOBER 28, 2009

Activity Name	Original Duration	Start	Finish
MEP	101	18-May-09	05-Oct-09
Lower Level	90	18-May-09	18-Sep-09
Underslab Plumbing Rough-in - Cage	3	18-May-09	20-May-09
Underslab Elec Rough-in - Cage	4	18-May-09	21-May-09
Plumbing In-Wall Rough-in LL - Cage	3	17-Aug-09	19-Aug-09
Elec In-Wall Rough-in LL - Cage	3	17-Aug-09	19-Aug-09
Elec Ceiling Rough-in LL - Cage	5	17-Aug-09	21-Aug-09
Ductwork LL - Cage	2	24-Aug-09	25-Aug-09
Mech Piping LL - Cage	4	26-Aug-09	31-Aug-09
Fire Alarm Devices LL - Cage	3	26-Aug-09	28-Aug-09
Sprinkler Mains & Branch Lines LL - Cage	3	01-Sep-09	03-Sep-09
Plumbing Fixtures LL - Cage	5	10-Sep-09	16-Sep-09
Lighting LL - Cage	5	14-Sep-09	18-Sep-09
Entry Level	33	20-Aug-09	05-Oct-09
Plumbing Rough-in EL - Cage	2	20-Aug-09	21-Aug-09
Elec Wall Rough-in EL - Cage	2	20-Aug-09	21-Aug-09
Elec Ceiling Rough-in EL - Cage	3	24-Aug-09	26-Aug-09
Ductwork EL - Cage	10	27-Aug-09	10-Sep-09
Fire Alarm Devices EL - Cage	5	02-Sep-09	09-Sep-09
Mech Piping EL - Cage	3	11-Sep-09	15-Sep-09
Sprinkler Mains & Branch Lines EL - Cage	4	16-Sep-09	21-Sep-09
Plumbing Fixtures EL - Cage	5	17-Sep-09	23-Sep-09
Lighting EL - Cage	5	29-Sep-09	05-Oct-09
Finishes	42	13-Aug-09	09-Oct-09
Lower Level	28	13-Aug-09	21-Sep-09
Establish Control & Wall Layout LL - Cage	2	13-Aug-09	14-Aug-09
Wall Finishes LL - Cage	5	19-Aug-09	25-Aug-09
Floor Finishes LL - Cage	10	26-Aug-09	09-Sep-09
Ceilings LL - Cage	5	04-Sep-09	11-Sep-09
Specialties LL - Cage	3	17-Sep-09	21-Sep-09
Entry Level	40	17-Aug-09	09-Oct-09
Establish Control & Wall Layout EL - Cage	1	17-Aug-09	17-Aug-09
Wall Finishes EL - Cage	5	26-Aug-09	01-Sep-09
Floor Finishes EL - Cage	5	10-Sep-09	16-Sep-09
Ceilings EL - Cage	5	22-Sep-09	28-Sep-09
Specialties EL - Cage	12	24-Sep-09	09-Oct-09
Ceiling Finishes - Cage	4	29-Sep-09	02-Oct-09
Commissioning & Close-out	5	24-Sep-09	30-Sep-09
General / No Floor Associated	5	24-Sep-09	30-Sep-09
Owner Move Fitness Equip to Cage	5	24-Sep-09	30-Sep-09
Existing Fitness Area / New Mechanical Room	94	01-Oct-09	09-Feb-10
Sitework / Demolition	5	01-Oct-09	07-Oct-09
General / No Floor Associated	5	01-Oct-09	07-Oct-09
Demolition - Fitness Area	5	01-Oct-09	07-Oct-09
Structure	14	08-Oct-09	27-Oct-09



Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

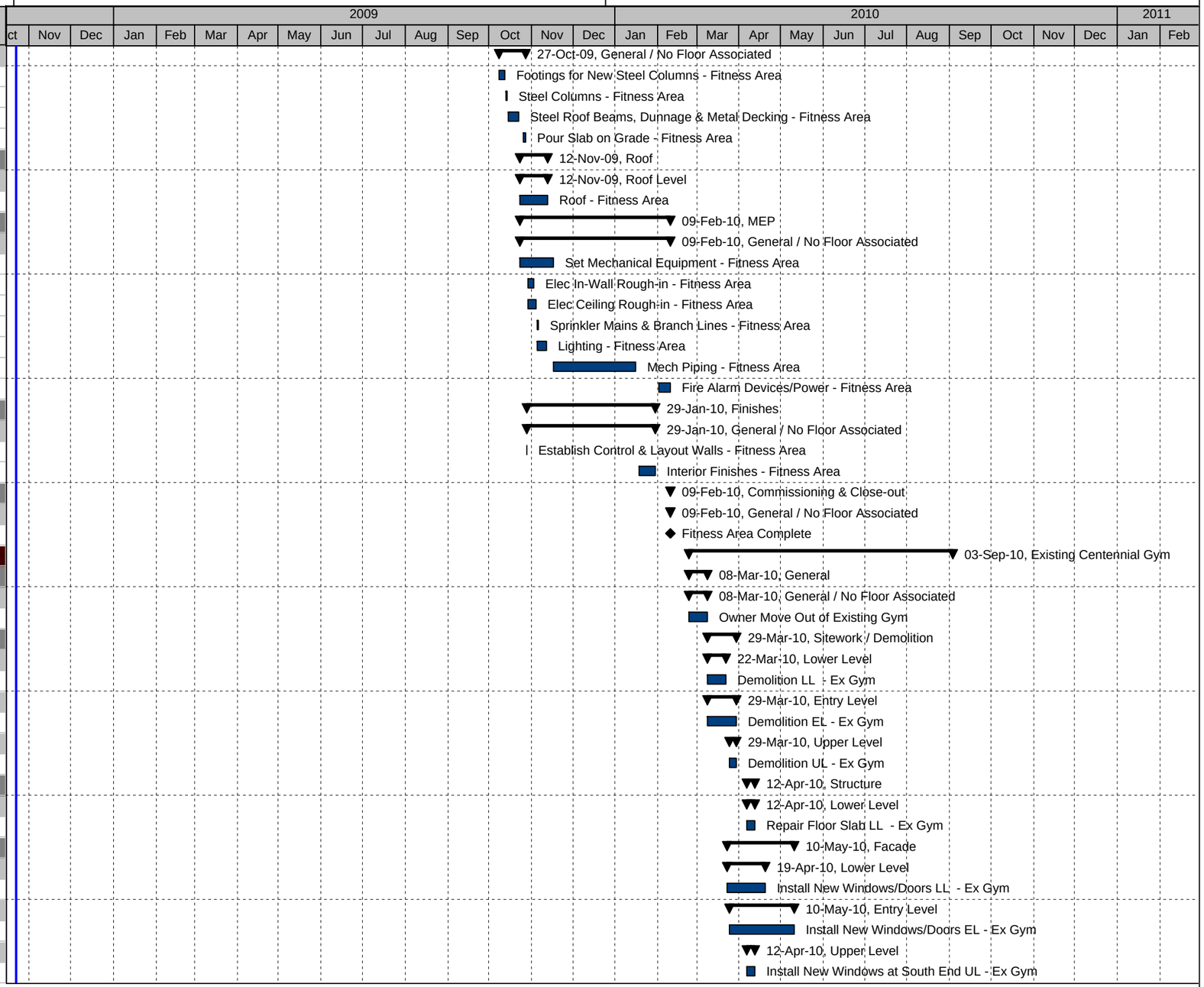
EPISCOPAL HIGH SCHOOL
CENTENNIAL GYMNASIUM PROJECT
ALEXANDRIA, VA

PENNSTATE

ERIC FEDDER
CONSTRUCTION MANAGEMENT

DETAILED PROJECT SCHEDULE - TECH TWO
OCTOBER 28, 2009

Activity Name	Original Duration	Start	Finish
General / No Floor Associated	14	08-Oct-09	27-Oct-09
Footings for New Steel Columns - Fitness Ar	3	08-Oct-09	12-Oct-09
Steel Columns - Fitness Area	2	13-Oct-09	14-Oct-09
Steel Roof Beams, Dunnage & Metal Deckin	6	15-Oct-09	22-Oct-09
Pour Slab on Grade - Fitness Area	2	26-Oct-09	27-Oct-09
Roof	15	23-Oct-09	12-Nov-09
Roof Level	15	23-Oct-09	12-Nov-09
Roof - Fitness Area	15	23-Oct-09	12-Nov-09
MEP	78	23-Oct-09	09-Feb-10
General / No Floor Associated	78	23-Oct-09	09-Feb-10
Set Mechanical Equipment - Fitness Area	17	23-Oct-09	16-Nov-09
Elec In-Wall Rough-in - Fitness Area	3	29-Oct-09	02-Nov-09
Elec Ceiling Rough-in - Fitness Area	5	29-Oct-09	04-Nov-09
Sprinkler Mains & Branch Lines - Fitness Area	1	05-Nov-09	05-Nov-09
Lighting - Fitness Area	5	05-Nov-09	11-Nov-09
Mech Piping - Fitness Area	40	17-Nov-09	15-Jan-10
Fire Alarm Devices/Power - Fitness Area	7	01-Feb-10	09-Feb-10
Finishes	68	28-Oct-09	29-Jan-10
General / No Floor Associated	68	28-Oct-09	29-Jan-10
Establish Control & Layout Walls - Fitness Ar	1	28-Oct-09	28-Oct-09
Interior Finishes - Fitness Area	10	18-Jan-10	29-Jan-10
Commissioning & Close-out	0	09-Feb-10	09-Feb-10
General / No Floor Associated	0	09-Feb-10	09-Feb-10
Fitness Area Complete	0		09-Feb-10
Existing Centennial Gym	139	23-Feb-10	03-Sep-10
General	10	23-Feb-10	08-Mar-10
General / No Floor Associated	10	23-Feb-10	08-Mar-10
Owner Move Out of Existing Gym	10	23-Feb-10	08-Mar-10
Sitework / Demolition	15	09-Mar-10	29-Mar-10
Lower Level	10	09-Mar-10	22-Mar-10
Demolition LL - Ex Gym	10	09-Mar-10	22-Mar-10
Entry Level	15	09-Mar-10	29-Mar-10
Demolition EL - Ex Gym	15	09-Mar-10	29-Mar-10
Upper Level	3	25-Mar-10	29-Mar-10
Demolition UL - Ex Gym	3	25-Mar-10	29-Mar-10
Structure	5	06-Apr-10	12-Apr-10
Lower Level	5	06-Apr-10	12-Apr-10
Repair Floor Slab LL - Ex Gym	5	06-Apr-10	12-Apr-10
Facade	35	23-Mar-10	10-May-10
Lower Level	20	23-Mar-10	19-Apr-10
Install New Windows/Doors LL - Ex Gym	20	23-Mar-10	19-Apr-10
Entry Level	33	25-Mar-10	10-May-10
Install New Windows/Doors EL - Ex Gym	33	25-Mar-10	10-May-10
Upper Level	5	06-Apr-10	12-Apr-10
Install New Windows at South End UL - Ex G	5	06-Apr-10	12-Apr-10



Actual Work · Critical Remaining Work · Summary
Remaining Work · Milestone

EPISCOPAL HIGH SCHOOL
CENTENNIAL GYMNASIUM PROJECT
ALEXANDRIA, VA

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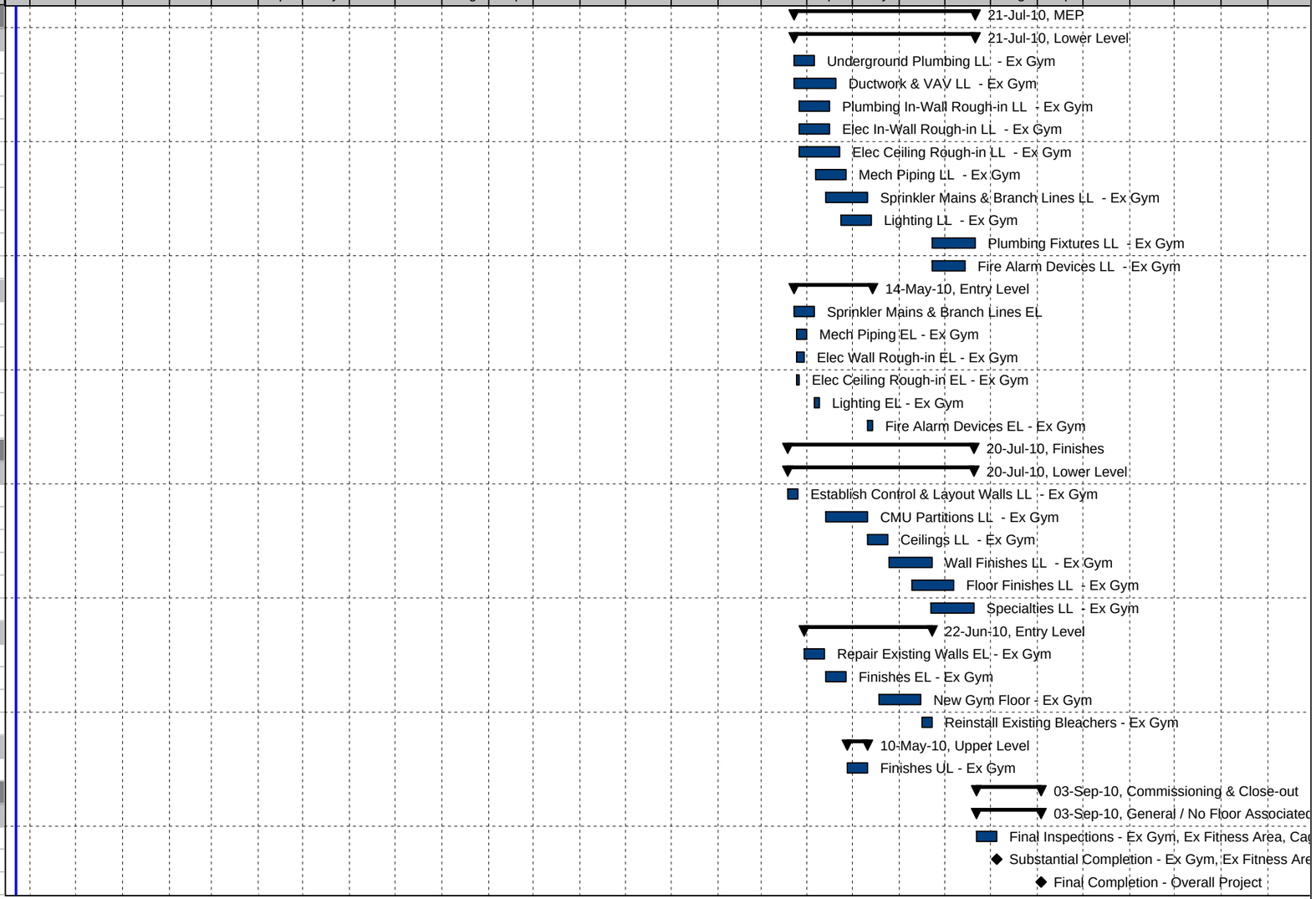
ERIC FEDDER
CONSTRUCTION MANAGEMENT

DETAILED PROJECT SCHEDULE - TECH TWO
OCTOBER 28, 2009

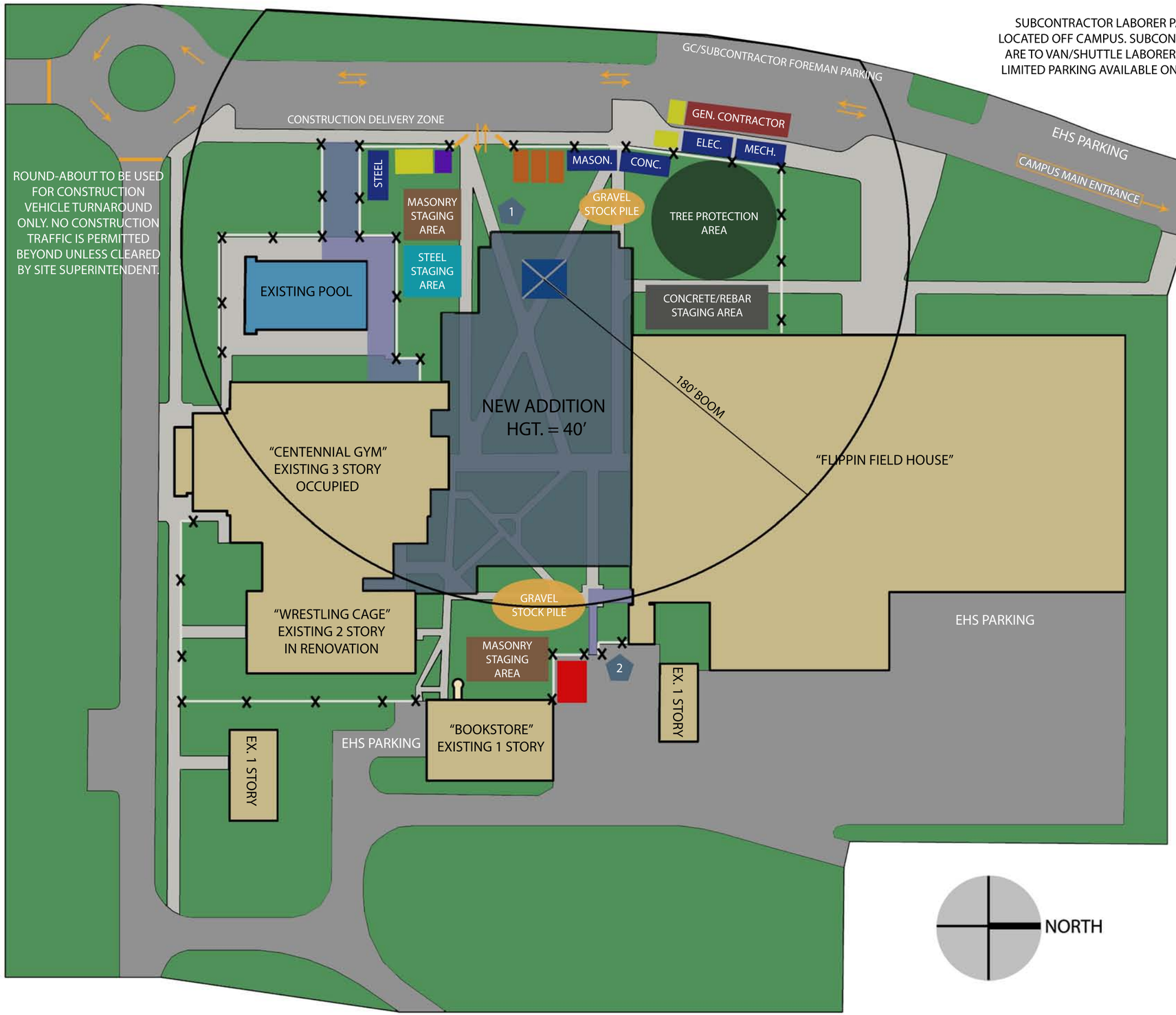
Activity Name	Original Duration	Start	Finish
MEP	87	23-Mar-10	21-Jul-10
Lower Level	87	23-Mar-10	21-Jul-10
Underground Plumbing LL - Ex Gym	10	23-Mar-10	05-Apr-10
Ductwork & VAV LL - Ex Gym	20	23-Mar-10	19-Apr-10
Plumbing In-Wall Rough-in LL - Ex Gym	15	26-Mar-10	15-Apr-10
Elec In-Wall Rough-in LL - Ex Gym	15	26-Mar-10	15-Apr-10
Elec Ceiling Rough-in LL - Ex Gym	20	26-Mar-10	22-Apr-10
Mech Piping LL - Ex Gym	15	06-Apr-10	26-Apr-10
Sprinkler Mains & Branch Lines LL - Ex Gym	20	13-Apr-10	10-May-10
Lighting LL - Ex Gym	15	23-Apr-10	13-May-10
Plumbing Fixtures LL - Ex Gym	20	23-Jun-10	21-Jul-10
Fire Alarm Devices LL - Ex Gym	15	23-Jun-10	14-Jul-10
Entry Level	39	23-Mar-10	14-May-10
Sprinkler Mains & Branch Lines EL	10	23-Mar-10	05-Apr-10
Mech Piping EL - Ex Gym	5	25-Mar-10	31-Mar-10
Elec Wall Rough-in EL - Ex Gym	3	25-Mar-10	29-Mar-10
Elec Ceiling Rough-in EL - Ex Gym	2	25-Mar-10	26-Mar-10
Lighting EL - Ex Gym	4	05-Apr-10	08-Apr-10
Fire Alarm Devices EL - Ex Gym	4	11-May-10	14-May-10
Finishes	88	19-Mar-10	20-Jul-10
Lower Level	88	19-Mar-10	20-Jul-10
Establish Control & Layout Walls LL - Ex Gy	5	19-Mar-10	25-Mar-10
CMU Partitions LL - Ex Gym	20	13-Apr-10	10-May-10
Ceilings LL - Ex Gym	10	11-May-10	24-May-10
Wall Finishes LL - Ex Gym	20	25-May-10	22-Jun-10
Floor Finishes LL - Ex Gym	20	09-Jun-10	07-Jul-10
Specialties LL - Ex Gym	20	22-Jun-10	20-Jul-10
Entry Level	61	30-Mar-10	22-Jun-10
Repair Existing Walls EL - Ex Gym	10	30-Mar-10	12-Apr-10
Finishes EL - Ex Gym	10	13-Apr-10	26-Apr-10
New Gym Floor - Ex Gym	20	18-May-10	15-Jun-10
Reinstall Existing Bleachers - Ex Gym	5	16-Jun-10	22-Jun-10
Upper Level	10	27-Apr-10	10-May-10
Finishes UL - Ex Gym	10	27-Apr-10	10-May-10
Commissioning & Close-out	32	22-Jul-10	03-Sep-10
General / No Floor Associated	32	22-Jul-10	03-Sep-10
Final Inspections - Ex Gym, Ex Fitness Area,	10	22-Jul-10	04-Aug-10
Substantial Completion - Ex Gym, Ex Fitness	0		04-Aug-10*
Final Completion - Overall Project	0		03-Sep-10*



Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

EPISCOPAL HIGH SCHOOL
CENTENNIAL GYMNASIUM PROJECT
ALEXANDRIA, VA

APPENDIX B – Site Layout Plans



LEGEND:

SYMBOLS:

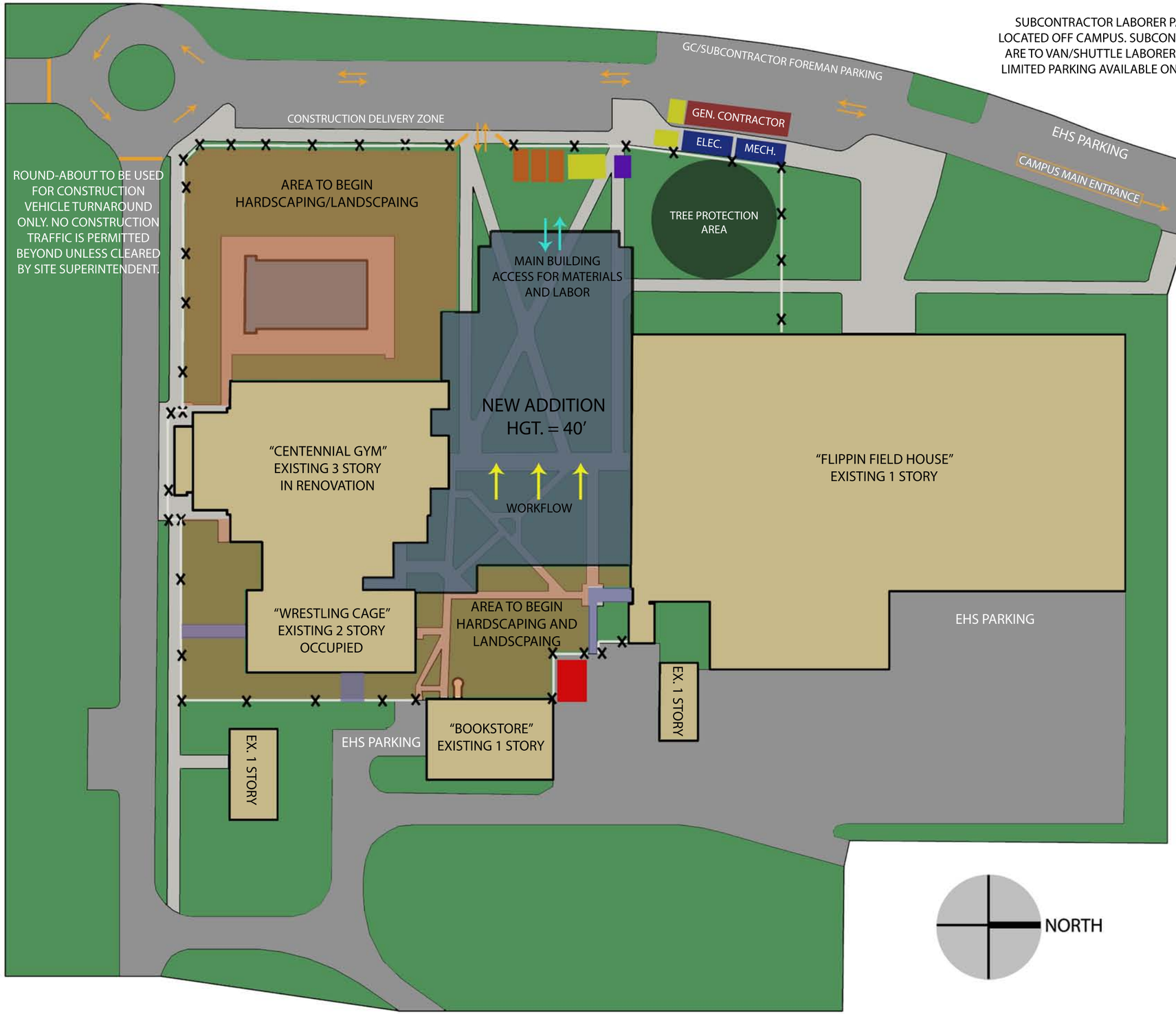
- CONSTRUCTION TRAFFIC.....
- CONSTRUCTION FENCE.....
- COVERED EGRESS.....
- CONSTRUCTION GATE.....
- GC FIELD TRAILER.....
- SUBCONTRACTOR TRAILER.....
- TOOL STORAGE SHED.....
- DUMPSTER.....
- TEMPORARY TOILETS.....
- TOWER CRANE BASE.....
- CONCRETE PUMP LOCATION....
- TEMPORARY/PERMANENT..... TRANSFORMER LOCATION

EPISCOPAL HIGH SCHOOL CENTENNIAL GYMNASIUM

SUPERSTRUCTURE PHASE PLAN
CONCRETE, STEEL AND MASONRY

OCTOBER 28, 2009

ERIC FEDDER - CM



LEGEND:

SYMBOLS:

- CONSTRUCTION TRAFFIC.....
- CONSTRUCTION FENCE.....
- COVERED EGRESS.....
- CONSTRUCTION GATE.....
- GC FIELD TRAILER.....
- SUBCONTRACTOR TRAILER.....
- TOOL STORAGE SHED.....
- DUMPSTER.....
- TEMPORARY TOILETS.....
- TOWER CRANE BASE.....
- CONCRETE PUMP LOCATION....
- TEMPORARY/PERMANENT..... TRANSFORMER LOCATION

EPISCOPAL HIGH SCHOOL CENTENNIAL GYMNASIUM

MEP/INTERIOR FINISHES PHASE PLAN

OCTOBER 28, 2009

ERIC FEDDER - CM

APPENDIX C – Detailed Structural System Estimate

CAST-IN-PLACE CONCRETE ESTIMATE TAKE-OFF CHARTS

FOOTINGS (3000 PSI)

ID	WIDTH (FT)	LENGTH (FT)	DEPTH (FT)	REBAR TYPE	REBAR QUANTITY	REBAR WEIGHT	CONCRETE (CY)	REBAR TOTAL WEIGHT (LBS)
F3	3.00	3.00	1.00	4.00	8.00	0.67	0.33	19.24
F3.5	3.50	3.50	1.00	4.00	10.00	0.67	0.45	28.06
F4	4.00	4.00	1.08	4.00	12.00	0.67	0.64	38.48
F4.5	4.50	4.50	1.17	4.00	14.00	0.67	0.88	50.50
F5	5.00	5.00	1.25	6.00	8.00	1.50	1.16	72.10
F5.5	5.50	5.50	1.42	5.00	14.00	1.04	1.59	96.37
F6	6.00	6.00	1.50	5.00	16.00	1.50	2.00	172.80
F6.5	6.50	6.50	1.67	7.00	10.00	2.04	2.61	159.12
F7	7.00	7.00	1.75	7.00	12.00	2.04	3.18	205.63
F7.5	7.50	7.50	1.92	6.00	18.00	1.50	3.99	243.00
F8	8.00	8.00	2.00	8.00	12.00	2.67	4.74	307.58
F8.5	8.50	8.50	2.08	7.00	18.00	2.40	5.57	440.64
F9	9.00	9.00	2.25	8.00	14.00	2.67	6.75	403.70
F9.5	9.50	9.50	2.33	8.00	16.00	2.67	7.80	487.01
F10	10.00	10.00	2.42	8.00	18.00	2.67	8.95	576.72
F11.5	11.50	11.50	2.75	8.00	24.00	2.67	13.47	884.30
F48	4.00	8.00	1.33	5.00	20.00	1.04	1.58	199.68
F5x11.5	5.00	11.50	2.00	8.00	20.00	2.67	4.26	736.92
F6x14	6.00	14.00	2.33	8.00	25.00	2.67	7.26	1121.40
						TOTALS:	77.21	6243.25

GRADE BEAMS (4000 PSI)

ID	WIDTH (FT)	LENGTH (FT)	DEPTH (FT)	REBAR TYPE	REBAR QUANTITY	REBAR WEIGHT	CONCRETE (CY)	REBAR TOTAL WEIGHT (LBS)
GB1	1.00	68.00	6.75	6.00	2.00	1.50	17.00	244.80
GB2	1.00	89.00	2.75	6.00	2.00	1.50	9.06	320.40
GB3	2.00	55.00	5.75	10.00	3.00	4.30	23.43	851.40
GB4	2.00	100.00	4.00	10.00	4.00	4.30	29.63	2064.00
GB5	2.00	30.00	2.08	8.00	2.00	2.67	4.63	192.24
GB6	1.83	32.00	3.17	8.00	3.00	2.67	6.88	307.58
GB7	1.83	32.00	3.17	8.00	4.00	2.67	6.88	410.11
GB8	1.33	18.00	3.17	8.00	3.00	2.67	2.81	173.02
GB9	1.33	75.00	3.17	8.00	3.00	2.67	11.73	720.90
GB10	1.33	20.00	3.17	8.00	3.00	2.67	3.13	192.24
GB13	15.00	25.00	3.67	8.00	5.00	2.67	50.93	400.50
						TOTALS:	166.11	5877.19

SLAB-ON-GRADE (3000 PSI; 23 LBS/CY BLENDED FIBER REINF.)

					THICKNESS (FT)	AREA (SF)	CONCRETE (CY)	REBAR TOTAL (LBS/CY)
					0.42	27400.00	422.84	9725.31
					0.33	1000.00	12.35	283.95
						TOTALS:	435.19	10009.26

FOUNDATION WALLS (4000 PSI)

WIDTH(FT)	LENGTH(FT)	HEIGHT (FT)	REBAR TYPE	REBAR QUANTITY (18" O.C.)	REBAR WEIGHT	CONCRETE CY	REBAR TOTAL (LBS)	FORMWORK SFCA
1.33	75.00	13.00	5.00	2.00	1.50	48.03	2340.00	975
1.33	545.00	14.00	5.00	2.00	1.50	375.85	18312.00	7630
1.33	500.00	17.00	5.00	2.00	1.50	418.70	20400.00	8500
					TOTALS:	842.58	41052.00	17105.00

COLUMNS (4000 PSI)										
ID	SIZE	WIDTH (FT)	DEPTH (FT)	HEIGHT (FT)	REBAR TYPE	REBAR LBS/LF	CONCRETE CY	REBAR TOTAL WEIGHT (LBS)	FORMWORK SFCA	ROUND FORMWORK LF
A3	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
A5	18X18	1.5	1.5	48	(8) #8 Vert./ #4 8" O.C.	22.362	4.00	1288.0512	288	
A5.4	18X18	1.5	1.5	48	(8) #8 Vert./ #4 8" O.C.	22.362	4.00	1288.0512	288	
A6	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
A7	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
A8	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
A9	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
A10	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
A11	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
A11.7	16X16	1.33	1.33	18	(4) #8 Vert./ #4 24" O.C.	11.014	1.18	237.9024	95.76	
A9.12	16X16	1.33	1.33	48	(4) #8 Vert./ #4 24" O.C.	11.014	3.14	634.4064	255.36	
B2	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
B3	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
B5	18X18	1.5	1.5	27	(8) #8 Vert./ #4 8" O.C.	22.362	2.25	724.5288	162	
B5.4	18X18	1.5	1.5	27	(8) #8 Vert./ #4 8" O.C.	22.362	2.25	724.5288	162	
C6	18X18	1.5	1.5	52	(8) #8 Vert./ #4 8" O.C.	22.362	4.33	1395.3888	312	
C7	18X18	1.5	1.5	18	(8) #8 Vert./ #4 8" O.C.	22.362	1.50	483.0192	108	
C8	18X18	1.5	1.5	18	(8) #8 Vert./ #4 8" O.C.	22.362	1.50	483.0192	108	
C9	18X18	1.5	1.5	18	(8) #8 Vert./ #4 8" O.C.	22.362	1.50	483.0192	108	
C10	18X18	1.5	1.5	18	(8) #8 Vert./ #4 8" O.C.	22.362	1.50	483.0192	108	
C11	18X18	1.5	1.5	52	(8) #8 Vert./ #4 8" O.C.	22.362	4.33	1395.3888	312	
C5.12	16X16	1.33	1.33	42	(4) #8 Vert./ #4 24" O.C.	11.014	2.75	555.1056	223.44	
D2	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
D4	18X18	1.5	1.5	48	(8) #8 Vert./ #4 8" O.C.	22.362	4.00	1288.0512	288	
D5	18X18	1.5	1.5	48	(8) #8 Vert./ #4 8" O.C.	22.362	4.00	1288.0512	288	
D5.4	18X18	1.5	1.5	27	(8) #8 Vert./ #4 8" O.C.	22.362	2.25	724.5288	162	
D6	18X18	1.5	1.5	48	(8) #8 Vert./ #4 8" O.C.	22.362	4.00	1288.0512	288	
D7	18X18	1.5	1.5	13	(8) #8 Vert./ #4 8" O.C.	22.362	1.08	348.8472	78	
D8	18X18	1.5	1.5	13	(8) #8 Vert./ #4 8" O.C.	22.362	1.08	348.8472	78	
D9	18X18	1.5	1.5	13	(8) #8 Vert./ #4 8" O.C.	22.362	1.08	348.8472	78	
D10	18X18	1.5	1.5	13	(8) #8 Vert./ #4 8" O.C.	22.362	1.08	348.8472	78	
D11	18X18	1.5	1.5	48	(8) #8 Vert./ #4 8" O.C.	22.362	4.00	1288.0512	288	
D2.12	16X16	1.33	1.33	42	(4) #8 Vert./ #4 24" O.C.	11.014	2.75	555.1056	223.44	
D8.12	16X16	1.33	1.33	42	(4) #8 Vert./ #4 24" O.C.	11.014	2.75	555.1056	223.44	
E2	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
E4	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
E5	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
E5.4	16X16	1.5	1.5	27	(8) #8 Vert./ #4 8" O.C.	22.362	2.25	724.5288	162	
E6	18X18	1.5	1.5	48	(8) #8 Vert./ #4 8" O.C.	22.362	4.00	1288.0512	288	
E7	18X18	1.5	1.5	13	(8) #8 Vert./ #4 8" O.C.	22.362	1.08	348.8472	78	
E8	18X18	1.5	1.5	13	(8) #8 Vert./ #4 8" O.C.	22.362	1.08	348.8472	78	
E9	18X18	1.5	1.5	13	(8) #8 Vert./ #4 8" O.C.	22.362	1.08	348.8472	78	

E10	18X18	1.5	1.5	13	(8) #8 Vert./ #4 8" O.C.	22.362	1.08	348.8472	78	
E11	18X18	1.5	1.5	48	(8) #8 Vert./ #4 8" O.C.	22.362	4.00	1288.0512	288	
E5.12	16X16	1.33	1.33	42	(4) #8 Vert./ #4 24" O.C.	11.014	2.75	555.1056	223.44	
F6	18X18	1.5	1.5	48	(8) #8 Vert./ #4 8" O.C.	22.362	4.00	1288.0512	288	
F7	18X18	1.5	1.5	13	(8) #8 Vert./ #4 8" O.C.	22.362	1.08	348.8472	78	
F8	18X18	1.5	1.5	13	(8) #8 Vert./ #4 8" O.C.	22.362	1.08	348.8472	78	
F9	18X18	1.5	1.5	13	(8) #8 Vert./ #4 8" O.C.	22.362	1.08	348.8472	78	
F10	18X18	1.5	1.5	13	(8) #8 Vert./ #4 8" O.C.	22.362	1.08	348.8472	78	
F11	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
G2	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
G3	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
G5	18X18	1.5	1.5	27	(8) #8 Vert./ #4 8" O.C.	22.362	2.25	724.5288	162	
G5.4	16X16	1.33	1.33	27	(4) #8 Vert./ #4 24" O.C.	11.014	1.77	356.8536	143.64	
G1.12	16X16	1.33	1.33	42	(4) #8 Vert./ #4 24" O.C.	11.014	2.75	555.1056	223.44	
H3	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
H5	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
H5.6	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
H6	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
H7	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
H8	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
H9	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
H10	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
H11	18X18	1.5	1.5	42	(8) #8 Vert./ #4 8" O.C.	22.362	3.50	1127.0448	252	
H11.1	12" ROUND	3.16	SF	27	(6) #7 Vert./ #4 24" O.C.	12.598	3.16	408.1752		27
H12.1	12" ROUND	3.16	SF	27	(6) #7 Vert./ #4 24" O.C.	12.598	3.16	408.1752		27
J5	12" ROUND	3.16	SF	27	(6) #7 Vert./ #4 24" O.C.	12.598	3.16	408.1752		27
K7.2	12" ROUND	3.16	SF	27	(6) #7 Vert./ #4 24" O.C.	12.598	3.16	408.1752		27
K7.3	12" ROUND	3.16	SF	27	(6) #7 Vert./ #4 24" O.C.	12.598	3.16	408.1752		27
K8.4	12" ROUND	3.16	SF	27	(6) #7 Vert./ #4 24" O.C.	12.598	3.16	408.1752		27
K8.9	12" ROUND	3.16	SF	27	(6) #7 Vert./ #4 24" O.C.	12.598	3.16	408.1752		27
K9.2	12" ROUND	3.16	SF	27	(6) #7 Vert./ #4 24" O.C.	12.598	3.16	408.1752		27
K9.8	12" ROUND	3.16	SF	27	(6) #7 Vert./ #4 24" O.C.	12.598	3.16	408.1752		27
K16.4	12" ROUND	3.16	SF	27	(6) #7 Vert./ #4 24" O.C.	12.598	3.16	408.1752		27
K11.1	12" ROUND	3.16	SF	27	(6) #7 Vert./ #4 24" O.C.	12.598	3.16	408.1752		27
K25.1	12" ROUND	3.16	SF	27	(6) #7 Vert./ #4 24" O.C.	12.598	3.16	408.1752		27
K5.11	14X14	1.167	1.167	27	(8) #8 Vert./ #4 24" O.C.	21.694	1.36	702.8856	126.036	
K6.53	12" ROUND	3.16	SF	27	(6) #7 Vert./ #4 24" O.C.	12.598	3.16	408.1752		27
K6.57	12" ROUND	3.16	SF	27	(6) #7 Vert./ #4 24" O.C.	12.598	3.16	408.1752		27
K6.58	12" ROUND	3.16	SF	27	(6) #7 Vert./ #4 24" O.C.	12.598	3.16	408.1752		27
K6.61	12" ROUND	3.16	SF	27	(6) #7 Vert./ #4 24" O.C.	12.598	3.16	408.1752		27
K7.12	12" ROUND	3.16	SF	27	(6) #7 Vert./ #4 24" O.C.	12.598	3.16	408.1752		27
K8.11	12" ROUND	3.16	SF	13	(6) #7 Vert./ #4 24" O.C.	12.598	1.52	196.5288		13
L10.6	16X10	1.33	0.083	27	(6) #8 Vert./ #4 24" O.C.	16.354	0.11	529.8696	143.64	
L11.4	16X10	1.33	0.083	27	(6) #8 Vert./ #4 24" O.C.	16.354	0.11	529.8696	143.64	
						TOTALS:	239.09	65203.07	13719.276	472

BEAMS (4000 PSI)								
ID	DEPTH (FT)	WIDTH (FT)	LENGTH (FT)	REBAR TYPE	REBAR LBS/LF	CONCRETE CY	REBAR TOTAL (LBS)	FORMWORK SFCA
EB1	1.67	0.64	44.00	(1) #8 BOT/(2) #8 TOP	8.01	1.73	422.93	205.00
EB2	2.33	0.64	20.00	(1) #8 BOT/(3) #8 TOP	10.68	1.11	256.32	121.92
EB3	1.00	1.00	32.00	(2) #7 BOT/(2) #7 TOP	8.16	1.19	313.34	130.00
EB4	1.33	1.00	251.00	(3) #8 BOT/(3) #8 TOP	16.02	12.40	4825.22	1174.00
EB5	1.50	1.00	150.00	(2) #8 BOT/(3) #8 TOP	13.35	8.33	2403.00	753.00
EB6	1.83	1.00	40.00	(2) #6 BOT/(2) #7 TOP	7.08	2.72	339.84	230.33
EB7	2.00	1.00	22.00	(3) #7 BOT/(3) #8 TOP	14.13	1.63	373.03	136.00
EB8	2.17	1.33	111.00	(2) #8 BOT/(3) #8 TOP	13.35	11.85	1778.22	782.02
EB9	1.67	1.50	30.00	(2) #7 BOT/(3) #8 TOP	12.09	2.78	435.24	195.00
EB10	2.00	1.50	32.00	(5) #8 BOT/(8) #8 TOP	34.71	3.56	1332.86	230.00
EB11	2.17	1.50	120.00	(3) #8 BOT/(5) #8 TOP	21.36	14.44	3075.84	886.50
EB12	2.33	1.50	176.00	(4) #8 BOT/(6) #8 TOP	26.70	22.81	5639.04	1356.33
EB13	2.50	1.50	206.00	(4) #8 BOT/(8) #8 TOP	32.04	28.61	7920.29	1655.50
RB1	1.67	0.64	150.00	(1) #8 BOT/(1) #8 TOP	5.34	5.94	961.20	695.14
RB2	1.33	1.00	170.00	(2) #8 BOT/(2) #8 TOP	10.68	8.37	2178.72	794.86
RB3	1.67	1.00	30.00	(2) #7 BOT/(2) #8 TOP	9.42	1.86	339.12	163.54
RB4	2.00	1.33	65.00	(2) #7 BOT/(2) #7 TOP	8.16	6.40	636.48	438.22
RB5	2.67	1.50	256.00	(3) #8 BOT/(4) #8 TOP	18.69	37.93	5741.57	2141.33
RB6	1.33	1.33	50.00	(2) #7 BOT/(2) #7 TOP	8.16	3.28	489.60	269.54
RB7	2.17	1.50	128.00	(4) #8 BOT/(5) #8 TOP	24.03	15.43	3691.01	946.03
RB8	2.67	1.50	154.00	(3) #8 BOT/(4) #8 TOP	18.69	22.84	3453.91	1292.37
RB9	2.67	1.50	108.00	(3) #8 BOT/(4) #8 TOP	18.69	16.02	2422.22	908.73
RB10	1.38	0.64	108.00	(1) #8 BOT/(2) #4 TOP	4.01	3.52	519.18	437.00
RB11	1.38	0.64	108.00	(1) #8 BOT/(2) #4 TOP	4.01	3.52	519.18	437.00
UB1	1.67	0.64	12.00	(1) #7 BOT/(1) #7 TOP	4.08	0.48	58.75	57.58
UB2	2.67	0.64	20.00	(1) #8 BOT/(3) #8 TOP	10.68	1.27	256.32	135.82
UB3	2.67	0.70	16.00	(1) #8 BOT/(1) #8 TOP	5.34	1.11	102.53	111.58
UB5	1.00	1.00	160.00	(2) #7 BOT/(2) #7 TOP	8.16	5.93	1566.72	642.00
UB6	1.33	1.00	105.00	(2) #7 BOT/(3) #8 TOP	12.09	5.17	1523.34	491.96
UB7	1.50	1.00	200.00	(2) #8 BOT/(3) #8 TOP	13.35	11.11	3204.00	1003.00
UB8B	1.83	1.00	44.00	(2) #8 BOT/(2) #8 TOP	10.68	2.98	563.90	252.70
UB8C	1.83	1.00	16.00	(3) #7 BOT/(6) #7 TOP	18.36	1.08	352.51	94.22
UB9	1.33	1.50	125.00	(2) #7 BOT/(4) #8 TOP	14.76	9.24	2214.00	711.49
UB10	2.00	1.33	293.00	(3) #8 BOT/(5) #8 TOP	21.36	28.87	7510.18	1956.70
UB11	2.67	1.33	497.00	(2) #8 BOT/(4) #8 TOP	16.02	65.37	9554.33	3983.10
UB12	1.33	1.50	100.00	(3) #8 BOT/(4) #8 TOP	18.69	7.39	2242.80	569.99
UB13	2.17	1.50	92.00	(4) #8 BOT/(8) #8 TOP	32.04	11.09	3537.22	681.79
UB14	3.00	1.50	56.00	(5) #8 BOT/(4) #8 TOP	24.03	9.33	1614.82	513.00
					TOTALS:	398.66	84368.78	27584.29

ELEVATED SLABS (4000 PSI)							
ID	DEPTH (FT)	AREA (SF)	REBAR TYPE	REBAR LBS/SF	CONCRETE CY	REBAR TOTAL (LBS)	FORMWORK SFCA
S01	0.77	4020.00	(2) #6 TOP/(2) #6 BOT/#5 18" O.C.	3.50	114.77	16884.00	4824.00
S02	0.77	3139.00	(2) #6 TOP/(2) #6 BOT/#5 18" O.C.	3.50	89.62	13183.80	3766.80
S03	0.77	3280.00	(2) #6 TOP/(2) #6 BOT/#5 18" O.C.	3.50	93.64	13776.00	3936.00
S04	0.50	1534.00	(2) #5 TOP/(2) #5 BOT/#5 18" O.C.	2.60	28.41	4786.08	1840.80
S11	0.77	650.00	(2) #6 TOP/(2) #6 BOT/#5 18" O.C.	3.50	18.56	2730.00	780.00
S12	0.77	2653.00	(2) #6 TOP/(2) #6 BOT/#5 18" O.C.	3.50	75.74	11142.60	3183.60
S13	0.77	1560.00	(2) #6 TOP/(2) #6 BOT/#5 18" O.C.	3.50	44.54	6552.00	1872.00
S14	0.77	1685.00	(2) #6 TOP/(2) #6 BOT/#5 18" O.C.	3.50	48.11	7077.00	2022.00
S15	0.77	2975.00	(2) #6 TOP/(2) #6 BOT/#5 18" O.C.	3.50	84.93	12495.00	3570.00
S16	0.50	940.00	(2) #5 TOP/(2) #5 BOT/#5 18" O.C.	2.60	17.41	2932.80	1128.00
S21	0.50	1050.00	(2) #5 TOP/(2) #5 BOT/#5 18" O.C.	2.60	19.44	3276.00	1260.00
GYM SLAB	0.77	13735.00	(12) #6 TOP/(2) #6 BOT/#5 18" O.C.	9.00	391.70	148338.00	16482.00
				TOTALS:	1026.86	243173.28	44665.20

CAST-IN-PLACE CONCRETE ESTIMATE PRICING								
Description	Quantity	Unit	Bare Material	Bare Labor	Bare Equipment	Bare Total	Total O & P	Total Cost
REBAR								
Footings (Grade 60)	4	Tons	$ 1,475.00	$ 680.00	$ -	$ 2,155.00	$ 2,725.00	$ 10,900.00
Grade Beams (Grade 60)	3	Tons	$ 1,550.00	$ 530.00	$ -	$ 2,080.00	$ 2,704.00	$ 8,112.00
Slab-On-Grade (Blended Fiber Reinforcement)	436	CY	$ 17.50	$ -	$ -	$ 17.50	$ 19.25	$ 8,393.00
Foundation Walls (Grade 60)	21	Tons	$ 1,475.00	$ 475.00	$ -	$ 1,950.00	$ 2,400.00	$ 50,400.00
Columns (Grade 60)	33	Tons	$ 1,550.00	$ 620.00	$ -	$ 2,170.00	$ 2,725.00	$ 89,925.00
Beams (Grade 60)	43	Tons	$ 1,550.00	$ 530.00	$ -	$ 2,080.00	$ 2,565.00	$ 110,295.00
Elevated Slabs (Grade 60)	122	Tons	$ 1,650.00	$ 490.00	$ -	$ 2,140.00	$ 2,605.00	$ 317,810.00
							TOTAL	$595,835.00
CONCRETE								
Footings (3000 PSI)	78	CY	$ 101.00	$ 27.50	$ 13.30	$ 141.80	$ 185.00	$ 14,430.00
Grade Beams (4000 PSI)	167	CY	$ 106.00	$ 20.50	$ 10.00	$ 136.50	$ 178.00	$ 29,726.00
Slab-On-Grade (3000 PSI)	436	CY	$ 101.00	$ 11.75	$ 4.27	$ 117.02	$ 153.00	$ 66,708.00
Foundation Walls (4000 PSI)	843	CY	$ 106.00	$ 26.00	$ 12.60	$ 144.60	$ 188.00	$ 158,484.00
Columns (4000 PSI)	240	CY	$ 106.00	$ 45.00	$ 22.00	$ 173.00	$ 225.00	$ 54,000.00
Beams (4000 PSI)	399	CY	$ 106.00	$ 55.00	$ 26.50	$ 187.50	$ 244.00	$ 97,356.00
Elevated Slabs (4000 PSI)	1027	CY	$ 106.00	$ 22.50	$ 10.90	$ 139.40	$ 182.00	$ 186,914.00
							TOTAL	$607,618.00
FORMWORK								
Square Columns	13720	SFCA	$ 2.49	$ 6.40	$ -	$ 8.89	$ 12.63	$ 173,283.60
Round Columns	472	LF	$ 8.40	$ 8.10	$ -	$ 16.50	$ 21.75	$ 10,266.00
Foundation Walls	17105	SFCA	$ 1.51	$ 3.11	$ -	$ 4.62	$ 6.48	$ 110,840.40
Beams	27585	SFCA	$ 0.99	$ 5.95	$ -	$ 6.94	$ 10.29	$ 283,849.65
Elevated Slabs	44665	SFCA	$ 2.62	$ 3.67	$ -	$ 6.29	$ 8.59	$ 383,672.35
							TOTAL	$961,912.00
							TOTAL ESTIMATE:	$2,165,365.00

STRUCTURAL STEEL ESTIMATE TAKE-OFF CHARTS

COLUMNS

ID	TYPE	LENGTH (FT)	# OF 12' SECTIONS	QUANTITY	TOTAL SECTIONS
C.6-1	HSS8x8x.25	30	3	1	3
C.9-1	HSS8x8x.25	32	3	1	3
D.3-1	HSS8x8x.25	34	3	1	3
D.6-1	HSS8x8x.25	34	3	1	3
E.1-1	HSS8x8x.25	32	3	1	3
E.4-1	HSS8x8x.25	30	3	1	3
M-10.5	HSS6x6x.25	12	1	1	1
M-11.5	HSS6x6x.25	12	1	1	1
N-10.5	HSS6x6x.25	18	2	1	2
N-11.5	HSS6x6x.25	18	2	1	2

BEAMS

ID	TYPE	UNIT	LENGTH (LF)	QUANTITY	TOTAL
ROOF	W8x18	LF	13	70	910
FLIPPIN	W10x12	LF	10	20	200
ROOF	W12x14	LF	10	18	180
ROOF	W14x22	LF	10	22	220
ROOF	W14x22	LF	15	20	300
ROOF	W14x22	LF	18	20	360
ROOF	W24x55	LF	25	2	50
ROOF	W30x99	LF	65	4	260
ROOF	W21x50	LF	33	2	66
ROOF	W12x35	LF	33	1	33
ROOF	W18x40	LF	33	3	99
ROOF	C10x15.3	LF	25	10	250
ROOF	C10x15.3	LF	30	4	120
ROOF	C8x11.5	LF	10	1	10
LOW ROOF	W12x14	LF	10	28	280
UPPER ROOF	W12x26	LF	6	4	24
UPPER ROOF	W16x26	LF	25	8	200
UPPER ROOF	W18x35	LF	30	7	210
UPPER ROOF	W18x40	LF	30	2	60
UPPER ROOF	W8x10	LF	6	2	12
UPPER ROOF	W8x24	LF	10	3	30
FLIPPIN	C8x11.5	LF	6.5	20	130
UPPER ROOF	C8x11.5	LF	8	5	40
UPPER ROOF	HSS6x6x.25	EA	12	2	2
UPPER ROOF	HSS3x3x5/16	EA	12	3	3

METAL DECK

ID	TYPE	UNIT	AREA		TOTAL
ER3.5A	ER3.5A	SF	14000		15400
RD01	1.5" Type B	SF	9850		10835

LONGSPAN ROOF TRUSSES

ID	TYPE	UNIT	WEIGHT	QUANTITY	TOTAL
Truss 1	108' Span	TON	5.2	9	46.8

DETAILED STRUCTURAL STEEL ESTIMATE PRICING								
Description	Quantity	Unit	Bare Material	Bare Labor	Bare Equipment	Bare Total	Total O & P	Total Cost
COLUMNS								
HSS8x8x.25 (14' sections)	18	EA	$ 880.00	$ 49.00	$ 35.00	$ 964.00	$ 1,087.00	$ 19,566.00
HSS6x6x.25 (12' sections)	6	EA	$ 405.00	$ 45.00	$ 32.00	$ 482.00	$ 557.50	$ 3,345.00
							TOTAL	**$22,911.00**
BEAMS								
W8x10	12	LF	$ 16.50	$ 4.06	$ 2.90	$ 23.46	$ 28.29	$ 339.48
W8x18	910	LF	$ 34.50	$ 4.06	$ 2.90	$ 41.46	$ 48.14	$ 43,807.40
W8x24	30	LF	$ 39.50	$ 4.43	$ 3.17	$ 47.10	$ 54.58	$ 1,637.40
W10x12	200	LF	$ 19.80	$ 4.06	$ 2.90	$ 26.76	$ 32.14	$ 6,428.00
W12x14	460	LF	$ 26.50	$ 2.77	$ 1.98	$ 31.25	$ 35.92	$ 16,523.20
W12x26	24	LF	$ 43.00	$ 2.77	$ 1.98	$ 47.75	$ 53.92	$ 1,294.08
W12x35	33	LF	$ 58.00	$ 3.01	$ 2.15	$ 63.16	$ 71.01	$ 2,343.33
W14x22	880	LF	$ 43.00	$ 2.46	$ 1.76	$ 47.22	$ 53.14	$ 46,763.20
W16x26	200	LF	$ 43.00	$ 2.44	$ 1.74	$ 47.18	$ 53.09	$ 10,618.00
W18x35	210	LF	$ 58.00	$ 3.67	$ 1.95	$ 63.62	$ 72.00	$ 15,120.00
W18x40	160	LF	$ 66.00	$ 3.67	$ 1.95	$ 71.62	$ 81.00	$ 12,960.00
W21x50	66	LF	$ 82.50	$ 3.32	$ 1.76	$ 87.58	$ 98.69	$ 6,513.54
W24x55	50	LF	$ 91.00	$ 3.18	$ 1.69	$ 95.87	$ 107.36	$ 5,368.00
W30x99	260	LF	$ 163.00	$ 2.94	$ 1.56	$ 167.50	$ 186.82	$ 48,573.20
HSS3x3x5/16 (12' sections)	3	EA	$ 215.00	$ 40.00	$ 27.00	$ 282.00	$ 366.60	$ 1,099.80
HSS6x6x.25 (12' sections)	2	EA	$ 405.00	$ 45.00	$ 32.00	$ 482.00	$ 557.50	$ 1,115.00
C8x11.5	180	LF	$ 10.35	$ 30.50	$ 3.73	$ 44.58	$ 69.50	$ 12,510.00
C10x15.3	370	LF	$ 12.40	$ 36.78	$ 4.60	$ 53.78	$ 80.67	$ 29,847.90
							TOTAL	**$262,861.53**
METAL DECKING								
ER3.5A	15400	SF	$ 5.25	$ 0.39	$ 0.04	$ 5.68	$ 6.54	$ 100,716.00
RD01	10835	SF	$ 3.91	$ 0.38	$ 0.04	$ 4.33	$ 5.03	$ 54,500.05
							TOTAL	**$155,216.05**
ROOF TRUSSES								
108' Long Span Trusses	47	TON	$ 2,900.00	$ 320.00	$ 183.00	$ 3,403.00	$ 3,956.00	$ 185,140.80
							TOTAL	**$185,140.80**
							TOTAL ESTIMATE:	**$626,129.38**

APPENDIX D – General Conditions Estimate

SUPERVISION and PERSONNEL

LINE ITEM	UNIT RATE	UNIT	QUANTITY	COST
Vice President	$2,200.00	WEEK	37.5	$82,500.00
Project Executive	$1,824.00	WEEK	37.5	$68,400.00
Senior Superintendent	$3,860.00	WEEK	85	$328,100.00
Project Manager	$2,580.00	WEEK	95	$245,100.00
Assistant Project Manager	$1,520.00	WEEK	105	$159,600.00
Layout Engineer	$580.00	WEEK	55	$31,900.00
Project Administrator	$800.00	MONTH	17.4	$13,920.00
Safety Coordinator	$146.00	WEEK	65	$9,490.00
Project Scheduler	$202.00	WEEK	45	$9,090.00
Estimating Expenses	$42,000.00	LS	1	$42,000.00
Site Labor	$1,250.00	WEEK	75	$93,750.00
			TOTAL	**$1,083,850.00**

CONSTRUCTION FACILITIES and EQUIPMENT

LINE ITEM	UNIT RATE	UNIT	QUANTITY	COST
Field Office Trailer Set-up	$2,000.00	LS	1	$2,000.00
Field Office Trailer Rental	$1,000.00	MONTH	17.4	$17,400.00
Field Office Trailer Removal	$2,500.00	LS	1	$2,500.00
Construction Site Fence	$600.00	MONTH	18.5	$11,100.00
Storage Trailer	$140.00	MONTH	18.5	$2,590.00
Survey/Layout Equipment	$200.00	MONTH	17.5	$3,500.00
Gang Box	$55.00	MONTH	18.5	$1,017.50
Tools/Equipment	$650.00	MONTH	18	$11,700.00
Clean-up Equipment	$25.00	WEEK	70	$1,750.00
Fire Extinguishers	$75.00	MONTH	18.5	$1,387.50
Field Copier/Fax/Printer	$400.00	MONTH	16	$6,400.00
Computer/LAN Equipment	$2,432.43	MONTH	18.5	$45,000.00
Mobile Phones	$325.00	MONTH	18.5	$6,012.50
Personal Protective Equipment	$100.00	MONTH	18	$1,800.00
Signage	$2,600.00	LS	1	$2,600.00
Dumpsters	$550.00	WEEK	57	$31,350.00
			TOTAL	**$148,107.50**

TEMPORARY UTILITIES

LINE ITEM	UNIT RATE	UNIT	QUANTITY	COST
Field IT/Network Set-up	$4,500.00	LS	1	$4,500.00
Field Telephone Hook-up	$1,500.00	LS	1	$1,500.00
Field Telephone Service	$100.00	MONTH	17.4	$1,740.00
Temporary Power Installation	$15,000.00	LS	1	$15,000.00
Temporary Power Consumption	$12,000.00	MONTH	6	$72,000.00
Temporary Water/Sanitary Supply	$2,100.00	LS	1	$2,100.00
Temporary Toilets	$975.00	MONTH	18.5	$18,037.50
Potable Water	$60.00	MONTH	18.5	$1,110.00
			TOTAL	**$115,987.50**

MISCELLANEOUS COSTS

LINE ITEM	UNIT RATE	UNIT	QUANTITY	COST
Occupancy Permit	$1,000.00	LS	1	$1,000.00
Trade Permits	$1,000.00	LS	1	$1,000.00
Progress Photographs	$350.00	MONTH	17.5	$6,125.00
Document Reproduction	$35,000.00	LS	1	$35,000.00
Travel Expenses (Staff Vehicles)	$4,100.00	MONTH	18.5	$75,850.00
Delivery/Shipping Expenses	$300.00	MONTH	15	$4,500.00
Clean-up Expenses	$490.00	WEEK	70	$34,300.00
Misc. Field Expenses	$1,000.00	MONTH	18.5	$18,500.00
Insurance	$87,500.00	LS	1	$87,500.00
			TOTAL	**$263,775.00**

GENERAL CONDITIONS SUMMARY

LINE ITEM	UNIT RATE	UNIT	QUANTITY	COST
Supervision and Personnel	$14,451.33	WEEK	75	$1,083,850.00
Construction Facilities and Equipment	$1,974.77	WEEK	75	$148,107.50
Temporary Utilities	$1,546.50	WEEK	75	$115,987.50
Miscellaneous Costs	$3,517.00	WEEK	75	$263,775.00
TOTAL	**$21,489.60**	**WEEK**		**$1,611,720.00**