

TECHNICAL ASSIGNMENT ONE

PENN STATE SENIOR AE THESIS



New York Police Academy
College Point, New York

Shawn Sidelinger
Construction Management
Robert Leicht



Table of Contents

Executive Summary.....	3
Project Schedule Summary.....	4
Building Costs Summary.....	5
Project Cost Evaluation.....	9
Existing Conditions Summary.....	12
Local Conditions.....	13
Client Information.....	14
Project Delivery System.....	15
Staffing Plan.....	16
Appendix A – Summary Schedule.....	17
Appendix B – R.S. Means CostWorks Reports.....	19
Appendix C – D4Costs V 9.5 Estimate Reports.....	24
Appendix D – Existing Conditions Site Plan.....	29
Appendix E – Consultant Listings.....	31



Executive Summary:

Technical Assignment One is intended to present the existing conditions and parameters that influenced the design and construction of the New York Police Academy. The project includes a 720,000 SF new facility construction consisting of two buildings needed for future additions and renovations. At the moment, there are no major challenges that wait for the project team due to size and location of the site.

Information regarding the complex delivery of key milestones and a summary schedule of the overall project to allow substantial completion by December 31, 2013, is provided in this report. An in-depth analysis is presented to help aid in the design and construction methods that will be implemented to achieve project completion. Cost estimates based on local databases and online software was used to achieve a “rough” breakdown of overall division costs for the project. An existing conditions/local conditions was performed on the site due to its location outside of generally known New York City, as construction can be executed in a simpler way. Finally, the client’s views on the project were analyzed and a summarized project delivery system and staffing plan were created to show how the project was to be designed and managed.

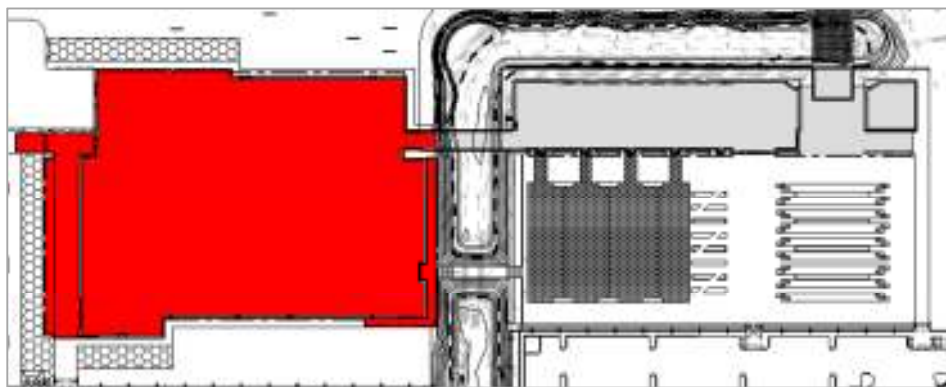
After analyzing the information that was used to generate this report, a key focus of project delivery and scheduling for thesis research arose. Meeting the turnover date is a critical part for success during the construction of New York Police Academy and will make for an intriguing research topic.



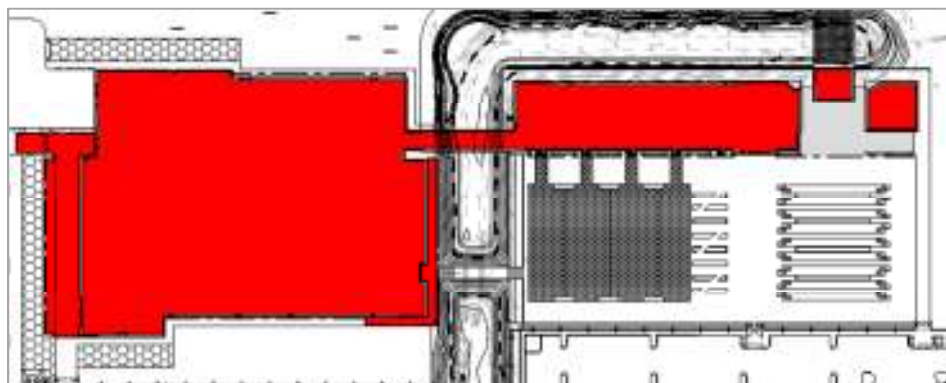
Project Schedule Summary

****See APPENDIX A for the Project Summary Schedule***

The project schedule summary is broken down into a preconstruction phase detailing DD and CD documents and bid documents while the other half portrays a simplistic view on the overall construction of the project. A critical path is a set of activities that must be finished in their allotted time to ensure that the project does not get delayed; the critical path follows from late areas in the document phase throughout the construction phase via the substructure and superstructure processes. Construction will be scheduled from West to East through the foundation, superstructure, building envelope and finally all build-out trades. Figure 1 and Figure 2 shows the site orientation with where construction will start and end according to the schedule. See APPENDIX A for the project summary schedule.



***Figure 1: Start of Construction Process of West Campus
Central Utility Plant and Physical Plant***



***Figure 2: Ending of Construction Process of East Campus
Administration / Academic Building***



Building Systems Summary

Yes	No	Work Scope
X		Demolition Required
X		Structural Steel Frame
X		Cast-in-Place Concrete
X		Precast Concrete
X		Mechanical System
X		Electrical System
	X	Masonry
X		Curtain Wall
X		Support of Excavation

Table 1: Building Systems Summary Checklist

****NOTE: At the time of this report, no subcontractors were contracted for the project. Some items such as equipment are unknown at this time. Typical items are assumed based on other projects in the field.***

Demolition

Demolition work for the project will consist of removing any concrete, asphalt, structures, or any other man-made object that is within the designated construction project. Since the site is a former landfill, any demolished material that has traces of hazardous components will be disposed of according to state law of New York; any material that is recyclable will be.

Structural Steel Frame

New York Police Academy was designed to use a traditional structural steel frame system to support all the loading from the project. Like most buildings and complexes that utilize steel frames, New York Police Academy's steel frame is consisted of a hybrid system between a braced frame and rigid frame. For example, the Administration Building supports moment connections, causing to behave like a rigid frame, along Column Lines A1, A4, and A5. This pattern tends to run along the East-West direction of the building while the braced frame design appears along one bay section that runs from North-South. Bay sizes run on average of fifteen (15) and thirty (30) feet in the Administration and Central Plant, respectively. Even though both buildings appear to form a general box shape, allowing for an easy installation for the steel system, the Administration Building is designed with some irregular installed pieces. Along the eighth floor and mechanical penthouse, the Administration Building shows off many angular connected pieces; these help grant shape for the auditorium that is located on the upper floor as well as some of the mechanical penthouse that is in place. Both Administration and Central



Plant's steel system is made of mostly wide flange steel members, but the Central Plant supports a castellated and cellular beam. These unique beams are crafted into two pieces that are later welded together; what makes them so special is that they have pre-cut hexagons (castellated) or circles (cellular) in their design. This allows for easy collaboration with mechanical system piping and ductwork; as well for any electrical or low voltage conduit.

Composite decks represent the general support system for not only the floor system, but the roof system as well. New York Police Academy's composite deck system is comprised of metal decking, 4000 psi concrete, 6x6 W2.1xW2.1 welded wire fabric with a 3/4" clear from the metal decking, and #4 rebar along the top when necessary.

Cast-in-Place Concrete

Reinforced cast-in-place concrete is the primary system in use for the foundation pile caps, foundation walls, shear walls, grade beams, slab on grade, and all top layers of the composite decking. There is no general formwork needed for all the foundation cast-in-place concrete due to the condition that the ground soil is used as basic formwork; special care is needed to ensure that all foundation trenches and pits are excavated to the exact measurement. However, the composite decking systems have pour stops installed from the manufacturer to ensure that the concrete remains on the deck during the curing process. All concrete will ideally be placed with the use of a concrete truck and pump.

Precast Concrete

Like similar projects, the precast that is to be installed for New York Police Academy is primarily for architectural appearance. There are two kinds of panels that will be installed throughout Administration and Central Plant; angular and vertical pieces both gray in color. Administration's lower level will support the angular pieces, which act as window awnings on the North and South sides, while the levels above use angular metal panels. Along the East and West sides, vertical pieces are installed.

Mechanical System

There are two primary locations for all the current mechanical equipment, Administration's Mechanical Penthouse and Central Plant. Administration houses mostly air handling units to supply itself with enough airflow to ensure a comfortable environment. There will be a total of nineteen (19) AHU's installed in the penthouses that have a supply ranging from 7500 to 30000 cubic feet per minute (CFM). Central Plant will have thirteen (13) AHU's installed that will range from 6500 to 29000 CFM.



With the updated design being smaller than what was originally planned, extra space is being left open for the addition of future equipment when renovations take place. Cooling loads will be delivered through the use of a chilled water system consisting of four (4) chillers and four (4) cooling towers. To aid the chillers with adequate resources, four (4) chilled water pumps and four (4) condenser water pumps are to be installed alongside the chillers. Future additions include three (3) cooling towers, two (2) chillers, two (2) chilled water pumps, and two (2) condenser pumps. Heating will be provided through five (5) industrial boilers that are supplied by eight (8) fuel oil tanks.

Electrical System

Depending on the atmosphere of the space, New York Police Academy can deploy a variety of luminaire designs, which were designed to be high efficiency to help aid with the LEED rating that is being pursued for the project.

Administration is supplied with power via Central Plant with a primary switchboard rated at 3000 A – 460 V 3 Phase, and a secondary 2500 A – 460 V 3 Phase switchboard. Central Plant obtains its power via the exterior utilities and employs two (2) switchboards rated at 4000 A – 460 V 3 Phase. Intended total load for the building is approximately 9000 kW.

Through the above switchboards, power will be provided to the following equipment scattered throughout the facility: mechanical and fire suppression pumps, Administration's AHU's, Central Plant's AHU's, twenty one (21) 460 V 3 Phase motors, twenty (20) 208 V 3 Phase motors, and several other misc. items.

In case of emergencies, two (2) 2.5 MW diesel generators are to be installed, with two (2) future ones, to provide power for the entire complex if the situation calls for it.

Curtain Wall

There are three different design concepts that make up the exterior curtain wall for New York Police Academy; metal panels, precast concrete, and glazed glass. All curtain wall components are attached to the superstructure via metal tubes that run horizontally along the building. As mentioned in the above precast section, the precast panels will either be a vertical panel or angular panel. Like the precast, the metal panels that are being installed on the North and South side will have similar angular and vertical pieces. Besides the areas with glass, the curtain wall shall be constructed with a water barrier, insulation, and either precast or metal panel installed in that order.



Support of Excavation

Excavation is the key starting point to any project, it allows for the beginning of the building by allowing the installation of the foundation system. However, most sites in bigger cities are crowded from neighboring properties and simple step-backs are not possible. In most cases, contractors usually employ a tieback system, shotcrete, or shoring and sheeting.

Due to the size of the site, New York Police Academy is able to use a step-back system as long as it corresponds to OSHA regulations, usually a four foot high by four foot deep step. A step-back system is when the excavators remove the site in a way that it creates a stepping system along the walls. This allows for a cheaper alternative to the methods listed above by saving on installation and materials.



Project Cost Evaluation

The actual construction costs are based on the GMP tabulation provide by TURNER Construction. The amounts are slightly altered and rounded for comparison purposes. All costs shown do not represent actual bid costs for the project.

Project Parameters

Total Square Footage of Project: 720,000 SF
Total Project Perimeter: 2,300,000 LF

Construction Cost

**Note: The actual construction cost was not released, but a cost for overall project was released which included sitework that ranged in 10%, for calculation of construction load, 90% of project cost was used.*

Actual: \$590,000,000
Per SF: \$820

Total Project Cost

Actual: \$656,000,000
Per SF: \$911

Major Building Systems Cost Estimate

System	Total Construction Cost	Cost Per Square Foot
Superstructure & Envelope	\$207,000,000	\$287.50
MEP & FP	\$236,000,000	\$327.78
Finishes	\$88,000,000	\$122

Table 2: Major Building Systems Costs



R.S. Means Square Foot Estimate – Construction Cost

****See APPENDIX B for R.S. Means CostWorks 2009 Square Foot Cost Estimate***

Administration Building:

<i>Actual:</i>	\$64,623,000
<i>Per SF:</i>	\$187.31

Academic / Physical Training (Central Plant):

<i>Actual:</i>	\$22,124,000
<i>Per SF:</i>	\$192.38

While using R.S. Means, two projects were calculated to help aid in the comparison with New York Police Academy due to differing uses of the facility, an office and a vocational school. Due to the varying facility use, additional allowances were not used.

Total Construction (Administration + Academic / Physical Training)

<i>Actual:</i>	\$86,747,000
<i>Per SF:</i>	\$188.58

D4Cost Estimate – Construction Costs

****See APPENDIX C for D\$COST V9.5 Estimate Reports***

**DeKalb County Sheriff Headquarters and Jail
(Administration – Case # CV960318)**

<i>Actual:</i>	\$76,000,000
<i>Per SF:</i>	\$130

**Recreational Sports Center, Miami University
(Central Plant’s Physical Training Facility – Case # RC950506)**

<i>Actual:</i>	\$75,000,000
<i>Per SF:</i>	\$179.35



Total Construction Cost (Case # CV960318 + Case # RC950506)

<i>Actual:</i>	\$151,000,000
<i>Per SF:</i>	\$150

Cost Comparison

D4Cost and R.S. Means do not employ sitework, contingencies, allowances, fees, or any additional work outside of their scope. To provide a more accurate analysis, the construction cost will be used to compare with the D4Cost and R.S. Means estimates; due to size and complexity of New York Police Academy, both software provided an accurate estimate.

R.S. Means CostWorks estimate has a limited amount of parameters to perform a square foot estimate. New York Police Academy not only was too large in square footage for any building style, but also contains several different building types within the facility (administration, academic, central plant, physical training, and dining). Two different estimates were used to obtain a more accurate estimate but due to the complexity, they did not achieve this goal. Even though the square foot software is a good tool to obtain a rough estimate, it proved difficult to account for the assumptions that arise for a high complexity project.

In comparison to the square foot estimate, D4Cost proved to be a more accurate representation. However, due to the high complexity of New York Police Academy, several projects were used to obtain a more accurate estimate but failed in the process. D4Cost provides more accurate estimates because its database is comprised of over 1,000 constructed buildings with statistics that can be altered to fit the project in question. Although D4Cost has a wide variety of project information, the analysis could not be accurately processed due to the above mentioned fact that New York Police Academy is too complex for the simple “15-minute” estimating software.



Site Plan of Existing Conditions

**See APPENDIX D for Existing Conditions Site Plan*



Figure 3: Bing Map of New York Police Academy Site and Surrounding Area

The site for New York Police Academy is located in College Point, New York on the former NYPD's College Point Tow Pound which is approximately 35 acres in size with face fronts along 28th Avenue and Ulmer Street. To the North on the other side of 28th Avenue lies the MTA Bus Facility and The Crystal Windows manufacturing facility to the South along 31st Avenue. Directly to the right of the site, lies a church facility that runs along the drainage ditch that is seen in the above image. All primary utilities have easy access into the project via surrounding roadways and structure complexes. Pedestrian and vehicular traffic is not of concern due to the privately owned land and somewhat secluded area outside of the busy streets of New York City. See APPENDIX D for the existing conditions site plan.



Local Conditions

New York Police Academy is located 28-11 28th Avenue, College Point, New York. Surrounding the project is the old neighborhood of College Point. College Point is currently going through a zoning revival, known as the Urban Renewal Plan, and is home to several different zoning sections ranging, commercial, industrial, manufacturing, transportation, utility, and public facilities.

College Point's zoning had to be modified to allow for New York Police Academy to be constructed due to the project site consisting of several different zoning areas. During design, the area was designated as M1-1 and M3-1; M1-1 allows for an open area after construction but restricts many construction processes while M3-1 allows for heavy construction but requires the final project to be enclosed to protect public issues. Through modifying the current zoning code, the project was given a zoning of M2-1, which allows for construction that causes noise and vibration but does not need to be enclosed after completion.

According to reports, the site used to maintain a landfill and such is expected to settle after construction. To ensure that this does not happen, pile caps were required to be installed; one of the main factors to change the zoning, since driving piles causes high levels of noise and vibration.

Many project managers and superintendents will say that the biggest hurdle to jump while working construction in New York City is that material storage and onsite parking is either limited or nonexistent. Due to the large size of the site, 35-acre, and the size of the actual project, 720,000 square feet, onsite parking and material storage is available which is a rarity for the area.



Client Information

New York City Department of Design and Construction and New York Police Department are the primary owners of the project with New York Police Department being the primary occupant. The purpose of the project is to bring together all the facilities that are currently training law enforcement for the NYPD, to one central facility. Original designs allowed for a complete facility to be constructed that ranged from academics to tactical and firearm training, but due to funding the project was redesigned to allow for the construction of an academic/administration building and the central plant/physical training facility with plans for the additional training facility. Consultants of all kinds were brought on to ensure that the best possible project be constructed. The original master plan for the project can be found at the New York City website (www.nyc.gov).

As mentioned, funding was an issue with the project and the owners are very diligent in estimates and costs. To ensure that the cost is controlled on the project, special measures and procedures are in place to verify all estimates and costs. To counteract the effect that cost control can have on the quality of the project, the owners have also decided to perform inspections through a confidential third party. Schedule specialists from a third party consultant are employed by the owner to help aid the construction team with keeping the party on track.

The owners expect the a safe project by complying with OSHA as well as any site specific protocols that are enforced by either the general contractor or construction manager. A key in the overall safety plan is dealing with all subsurface conditions, due to the land being a former landfill before being implemented as an impound lot. Once contractors and subcontractors become contracted for the project, the owners require them to provide their safety plans before being allowed to work. Owners then review and approve the individual safety plans to meet the minimum requirements detailed by OSHA.



Project Delivery System

New York City Department of Design and Construction typically purchases all contracts with 100% construction documents, which is Design-Bid-Build in nature. Due to the lengthy duration of the build and the political terms of the current administration, the City of New York contracted Turner Construction to help modify the document delivery system to a “modified fast track”. Early packages for piles, foundation, structural steel, curtain wall system, mechanical, electrical and plumbing were released. After the early packages were distributed among early bidders, Turner would then create scope documents to delineate work and fill in missing information on the drawings related to scope. However, at the time of this report, no contracts have been issued to any contractors. See APPENDIX E for a complete list of consultants and engineering firms that were involved with the design and construction.

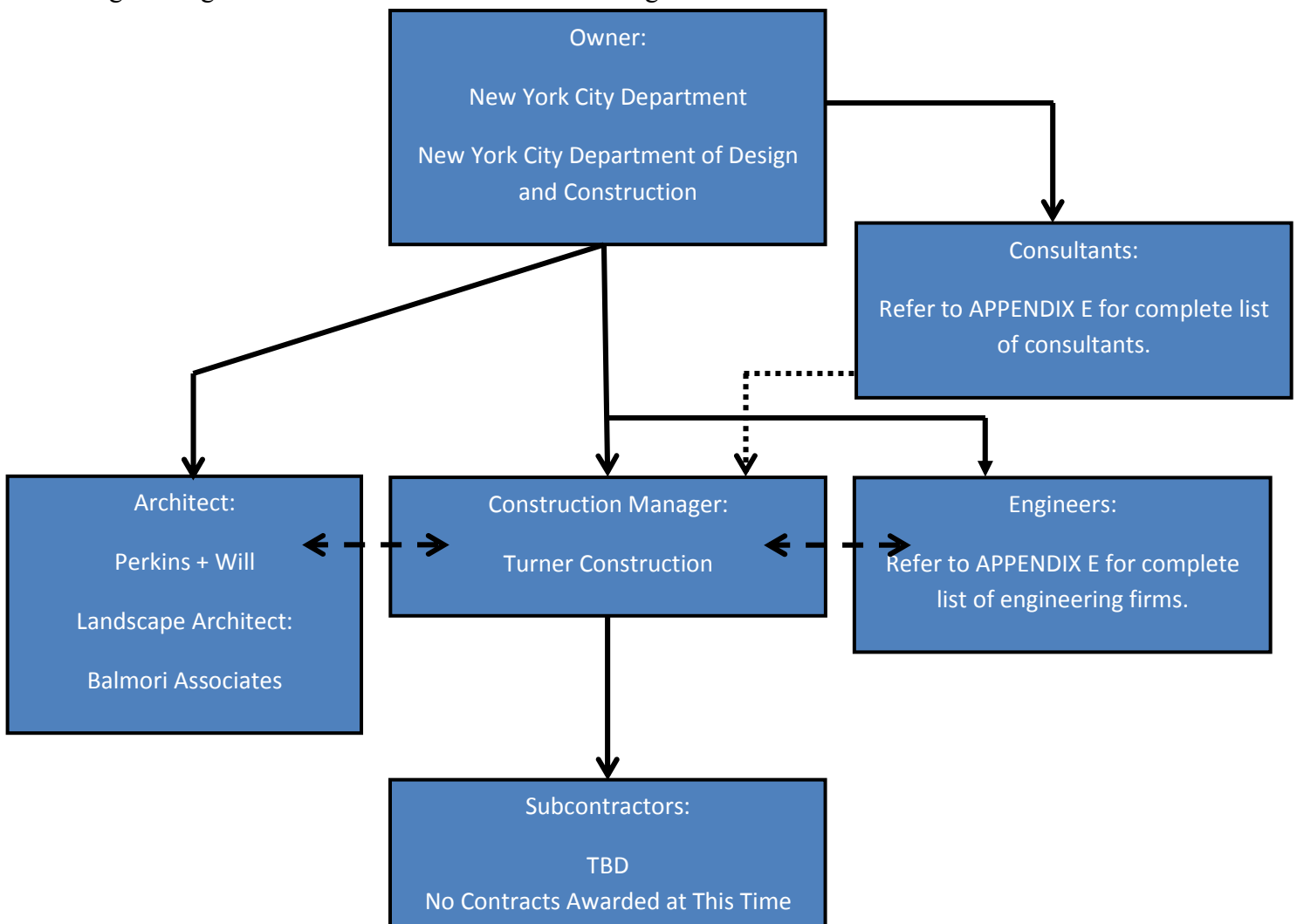


Figure 4: Project Delivery Diagram



Staffing Plan

Turner Construction and SVT are currently involved in a joint venture for the project employing both a preconstruction team and primary construction team. Since this project is consisted of a joint venture, the project staff may be modified from its general apperance. Joint ventures are usually formed for large projects to help share the risk involved; the actual project team will likely be larger and contain more divisions that what was provided at the time of this report. The figure below represents a simple, brokedown version of the project team.

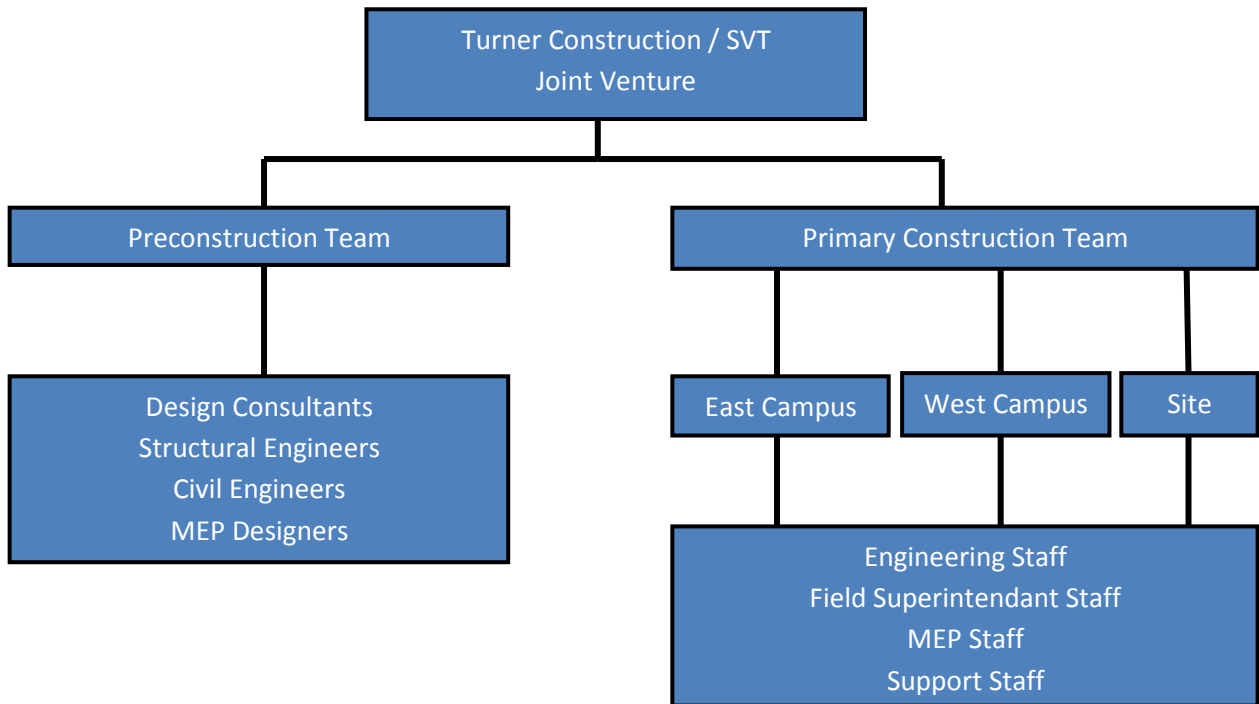


Figure 5: Staffing Plan Diagram



APPENDIX A – Project Summary Schedule


ID	Task Name	Duration	Start	Finish	2010			2011			2012			2013			2014			2015			
					Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan
0	New York Police Academy	1078 days	Mon 12/7/09	Wed 1/22/14	<ul style="list-style-type: none"> Document Development 100% DD Documents 100% CD Documents - Review Set 100% CD Documents - Bid Documents Pile / Demolition Bid Docs Pile Addendum Foundations Bid Docs 100% CD Structural Steel Bid Docs Pile Permit (Due 7, 2010) Foundation Permit Full Building Permit Bid / Recommend / Award Building Piles Building Envelope Foundations Pre-Purchased Equipment Superstructure Build-Out Trades Submittals / Construction Building Piles Building Envelope Foundations Superstructure Build-Out Trades Site Utilities Build-Out Trades FFE by Owner Punch List Substantial Completion - CUP Substantial Completion - Physical Building/Central Plant Substantial Completion - Academic/Administration 																		
1	Document Development	0 days	Mon 12/7/09	Mon 12/7/09																			
2	100% DD Documents	105 days	Mon 12/7/09	Fri 4/30/10																			
3	100% CD Documents - Review Set	166 days	Wed 4/14/10	Wed 12/1/10																			
4	100% CD Documents - Bid Documents	0 days	Fri 1/14/11	Fri 1/14/11																			
5	Pile / Demolition Bid Docs	30 days	Thu 12/24/09	Wed 2/3/10																			
6	Pile Addendum	23 days	Thu 1/28/10	Mon 3/1/10																			
7	Foundations Bid Docs 100% CD	85 days	Mon 2/15/10	Fri 6/11/10																			
8	Structural Steel Bid Docs	91 days	Wed 4/28/10	Wed 9/1/10																			
9	Pile Permit (Due 7, 2010)	67 days	Fri 4/30/10	Mon 8/2/10																			
10	Foundation Permit	90 days	Wed 7/28/10	Tue 11/30/10																			
11	Full Building Permit	103 days	Mon 8/2/10	Wed 12/22/10																			
12	Bid / Recommend / Award	0 days	Thu 1/28/10	Thu 1/28/10																			
13	Building Piles	80 days	Thu 1/28/10	Wed 5/19/10																			
14	Building Envelope	80 days	Wed 4/28/10	Tue 8/17/10																			
15	Foundations	80 days	Mon 5/31/10	Fri 9/17/10																			
16	Pre-Purchased Equipment	48 days	Mon 6/21/10	Wed 8/25/10																			
17	Superstructure	66 days	Thu 9/2/10	Thu 12/2/10																			
18	Build-Out Trades	196 days	Mon 12/6/10	Mon 9/5/11																			
19	Submittals / Construction	0 days	Wed 10/27/10	Wed 10/27/10																			
20	Building Piles	238 days	Wed 10/27/10	Fri 9/23/11																			
21	Building Envelope	742 days	Mon 11/8/10	Tue 9/10/13																			
22	Foundations	329 days	Mon 11/8/10	Thu 2/9/12																			
23	Superstructure	434 days	Fri 12/31/10	Wed 8/29/12																			
24	Site Utilities	673 days	Thu 1/20/11	Mon 8/19/13																			
25	Build-Out Trades	588 days	Tue 8/23/11	Thu 11/21/13																			
26	FFE by Owner	107 days	Thu 7/25/13	Fri 12/20/13																			
27	Punch List	130 days	Thu 7/25/13	Wed 1/22/14																			
28	Substantial Completion - CUP	0 days	Wed 8/21/13	Wed 8/21/13																			
29	Substantial Completion - Physical Building/Central Plant	0 days	Wed 11/6/13	Wed 11/6/13																			
30	Substantial Completion - Academic/Administration	0 days	Fri 12/20/13	Fri 12/20/13																			



APPENDIX B – R.S. MEANS COSTWORKS 2009 REPORTS



Administration Estimate:

Estimate Name:	Administration Building	
Building Type:	Office, 5-10 Story with Precast Concrete Panel / Steel Frame	
Location:	QUEENS, NY	 <p>Costs are derived from a building model with basic components.</p> <p>Scope differences and market conditions can cause costs to vary significantly.</p>
Story Count:	8	
Story Height (L.F.):	15	
Floor Area (S.F.):	345000	
Labor Type:	Union	
Basement Included:	No	
Data Release:	Year 2010 Quarter 3	
Cost Per Square Foot:	\$187.31	
Building Cost:	\$64,623,000	

			% of Total	Cost Per S.F.	Cost
A Substructure			2.00%	\$2.78	\$957,500
A1010	Standard Foundations			\$1.62	\$559,500
A1030	Slab on Grade			\$0.81	\$280,500
A2010	Basement Excavation			\$0.06	\$22,000
A2020	Basement Walls			\$0.28	\$95,500
B Shell			25.80%	\$36.53	\$12,604,500
B1010	Floor Construction			\$21.92	\$7,562,500
B1020	Roof Construction			\$0.82	\$282,500
B2010	Exterior Walls			\$10.38	\$3,580,000
B2020	Exterior Windows			\$2.29	\$788,500
B2030	Exterior Doors			\$0.31	\$108,000
B3010	Roof Coverings			\$0.82	\$283,000
C Interiors			20.60%	\$29.09	\$10,036,500
C1010	Partitions			\$3.29	\$1,135,500
C1020	Interior Doors			\$2.82	\$973,500
C1030	Fittings			\$0.84	\$289,000
C2010	Stair Construction			\$2.88	\$992,000
C3010	Wall Finishes			\$1.30	\$449,000
C3020	Floor Finishes			\$8.59	\$2,962,000
C3030	Ceiling Finishes			\$9.38	\$3,235,500
D Services			51.60%	\$72.97	\$25,173,500
D1010	Elevators and Lifts			\$16.67	\$5,752,000




D2010	Plumbing Fixtures			\$2.83	\$976,500
D2020	Domestic Water Distribution			\$0.56	\$192,000
D2040	Rain Water Drainage			\$0.34	\$116,500
D3050	Terminal & Package Units			\$20.80	\$7,176,000
D4010	Sprinklers			\$3.85	\$1,327,000
D4020	Standpipes			\$0.84	\$289,500
D5010	Electrical Service/Distribution			\$0.52	\$180,000
D5020	Lighting and Branch Wiring			\$17.30	\$5,969,500
D5030	Communications and Security			\$8.02	\$2,766,000
D5090	Other Electrical Systems			\$1.24	\$428,500
E Equipment & Furnishings			0.00%	\$0.00	\$0
E1090	Other Equipment			\$0.00	\$0
F Special Construction			0.00%	\$0.00	\$0
G Building Sitework			0.00%	\$0.00	\$0

Subtotal		100%	\$141.37	\$48,772,000
Contractor Fees (General Conditions,Overhead,Profit)		25.00%	\$35.34	\$12,193,000
Architectural Fees		6.00%	\$10.60	\$3,658,000
User Fees		0.00%	\$0.00	\$0
Total Building Cost			\$187.31	\$64,623,000



Academic/Physical Training:

Estimate Name:	Academic/Physical Training
Building Type:	School, Vocational with Metal Sandwich Panel / Steel Frame
Location:	QUEENS, NY
Story Count:	3
Story Height (L.F.):	15
Floor Area (S.F.):	115000
Labor Type:	Union
Basement Included:	No
Data Release:	Year 2010 Quarter 3
Cost Per Square Foot:	\$192.38
Building Cost:	\$22,124,000



Costs are derived from a building model with basic components.

Scope differences and market conditions can cause costs to vary significantly.

			% of Total	Cost Per S.F.	Cost
A Substructure			6.20%	\$8.85	\$1,018,000
A1010	Standard Foundations			\$1.59	\$182,500
A1030	Slab on Grade			\$5.63	\$647,500
A2010	Basement Excavation			\$0.10	\$11,000
A2020	Basement Walls			\$1.54	\$177,000
B Shell			23.50%	\$33.75	\$3,881,500
B1010	Floor Construction			\$15.10	\$1,736,000
B1020	Roof Construction			\$3.17	\$364,000
B2020	Exterior Windows			\$12.10	\$1,392,000
B2030	Exterior Doors			\$0.67	\$76,500
B3010	Roof Coverings			\$2.55	\$293,500
B3020	Roof Openings			\$0.17	\$19,500
C Interiors			25.00%	\$35.96	\$4,135,000
C1010	Partitions			\$11.39	\$1,310,000
C1020	Interior Doors			\$1.88	\$216,500
C1030	Fittings			\$1.73	\$199,000
C2010	Stair Construction			\$1.35	\$155,500
C3010	Wall Finishes			\$5.55	\$638,000
C3020	Floor Finishes			\$8.43	\$969,000
C3030	Ceiling Finishes			\$5.63	\$647,000
D Services			45.30%	\$65.13	\$7,490,500
D1010	Elevators and Lifts			\$2.23	\$256,500



D2010	Plumbing Fixtures			\$5.53	\$635,500
D2020	Domestic Water Distribution			\$0.34	\$39,500
D2040	Rain Water Drainage			\$0.37	\$43,000
D3010	Energy Supply			\$12.36	\$1,421,000
D3030	Cooling Generating Systems			\$17.10	\$1,966,500
D4010	Sprinklers			\$3.98	\$458,000
D4020	Standpipes			\$1.01	\$116,000
D5010	Electrical Service/Distribution			\$1.96	\$225,000
D5020	Lighting and Branch Wiring			\$15.73	\$1,809,000
D5030	Communications and Security			\$4.40	\$506,000
D5090	Other Electrical Systems			\$0.13	\$14,500
E Equipment & Furnishings			0.10%	\$0.14	\$16,000
E1020	Institutional Equipment			\$0.14	\$16,000
E1090	Other Equipment			\$0.00	\$0
F Special Construction			0.00%	\$0.00	\$0
G Building Sitework			0.00%	\$0.00	\$0

Subtotal		100%	\$143.83	\$16,541,000
Contractor Fees (General Conditions,Overhead,Profit)		25.00%	\$35.96	\$4,135,500
Architectural Fees		7.00%	\$12.59	\$1,447,500
User Fees		0.00%	\$0.00	\$0
Total Building Cost			\$192.38	\$22,124,000



APPENDIX C – D4Cost V 9.5 Estimate Reports



Administration Estimate:

DeKalb County Sheriff HQ & Jail	
Case Number	1
Project Name	DeKalb County Sheriff HQ & Jail
Project Cost	76417676
Site Size	588060
Building Use	Civic/Gov.
Bid Date	1/1/1992
Num Floors	8
Read Only	False
Historic	False
Base Month	Dec
Base Year	2013
Base Location	NY - N.Y.C.
Projected Month	Dec
Projected Year	2013
Projected Location	NY - N.Y.C.
Building Size	720000
Auto Calc	True
Num Buildings	2
Project Height	162.8
1st Floor Height	14
1st Floor Size	67500
Foundation	CAI
Exterior Wall	MET
Interior Wall	GYP
Roof Type	EPD
Floor Type	COM
Project Type	NEW
By Firm	Rosser International, Inc.
By Street	524 West Peachtree St., N.W.
By City	Atlanta
By State	GA
By Zip	30308

Code	Division Name	%	Sq. Cost	Projected
01	General Requirements	12.48	13.24	9,535,850
	General Requirements	6.63	7.04	5069686.86
	OCIP & Builder's Risk	5.84	6.20	4466163.20
03	Concrete	24.25	25.74	18,530,121
	Concrete	24.25	25.74	18530121.14
04	Masonry	6.46	6.85	4,933,840
	Masonry	6.46	6.85	4933839.54



05	Metals	2.31	2.45	1,764,646
	Metals	2.31	2.45	1764646.40
06	Wood & Plastics	0.71	0.75	542,332
	Wood & Plastics	0.71	0.75	542332.34
07	Thermal & Moisture Protection	2.57	2.72	1,961,581
	Thermal & Moisture Protection	2.57	2.72	1961580.80
08	Doors & Windows	1.10	1.17	842,850
	Doors & Windows	1.10	1.17	842849.83
09	Finishes	3.55	3.76	2,710,552
	Finishes	3.55	3.76	2710551.77
10	Specialties	0.35	0.37	266,109
	Specialties	0.35	0.37	266109.26
11	Equipment	12.58	13.35	9,613,156
	Equipment	5.09	5.40	3890330.51
	Security & Vault	7.49	7.95	5722825.14
12	Furnishings	0.01	0.02	11,116
	Multiple Seating	0.01	0.02	11115.89
14	Conveying Systems	2.34	2.48	1,786,353
	Conveying Systems	2.34	2.48	1786353.37
15	Mechanical	18.98	20.15	14,504,794
	Mechanical	17.19	18.24	13133072.46
	Pre-Purchased Equipment	1.80	1.91	1371721.14
16	Electrical	12.32	13.08	9,414,376
	Electrical	5.39	5.72	4120620.80
	Electronic Security	6.93	7.35	5293755.43
	Total Building Costs	100.00	106.14	76,417,676



Physical Training Estimate:

Recreational Sports Center, Miami University	
Case Number	2
Project Name	Rec Sports Center
Project Cost	74915155
Site Size	418176
Building Use	Recreational
Bid Date	6/1/1992
Num Floors	3
Read Only	False
Historic	False
Base Month	Jun
Base Year	1992
Base Location	OH - Other
Projected Month	Jun
Projected Year	1992
Projected Location	OH - Other
Building Size	720000
Auto Calc	True
Num Buildings	1
Project Height	52
1st Floor Height	16
1st Floor Size	107900
Foundation	CON
Exterior Wall	MAS
Interior Wall	GYP
Roof Type	MET
Floor Type	TER
Project Type	NEW
By Firm	Moody/Nolan, Ltd. + HOK
By Street	1776 East Broad Street
By City	Columbus
By State	OH
By Zip	43203

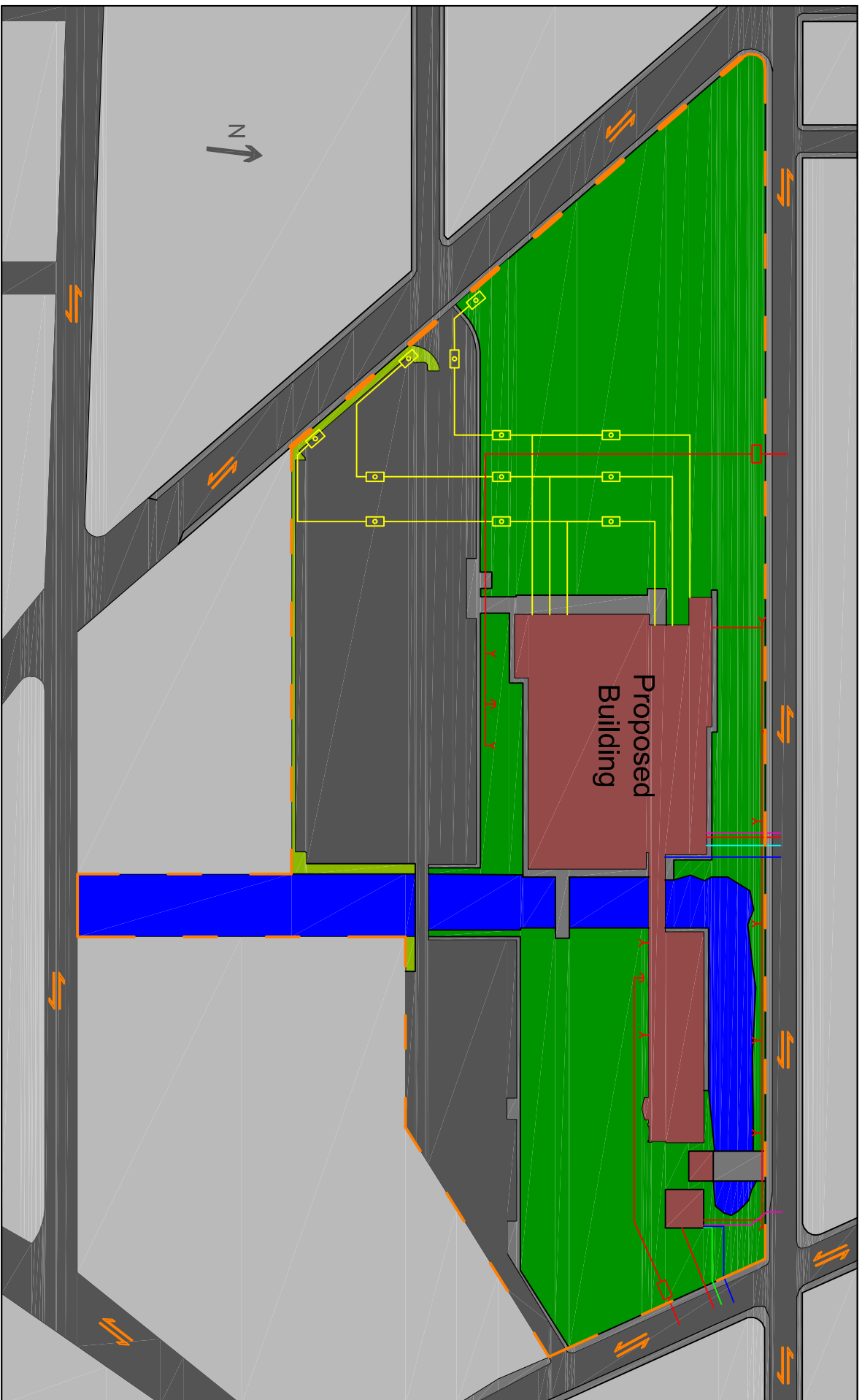
Code	Division Name	%	Sq. Cost	Projected
00	Bidding Requirements	2.48	2.58	1,857,627
	Bidding Requirements	2.48	2.58	1857627.12
03	Concrete	5.10	5.30	3,816,949
	Concrete	5.10	5.30	3816949.15
04	Masonry	17.25	17.95	12,926,554
	Masonry	17.25	17.95	12926553.67
05	Metals	15.96	16.60	11,954,802



	Metals	15.96	16.60	11954802.26
06	Wood & Plastics	0.60	0.62	447,458
	Wood & Plastics	0.60	0.62	447457.63
07	Thermal & Moisture Protection	8.21	8.54	6,146,893
	Thermal & Moisture Protection	8.21	8.54	6146892.66
08	Doors & Windows	3.03	3.15	2,268,927
	Doors & Windows	3.03	3.15	2268926.55
09	Finishes	7.29	7.59	5,464,407
	Finishes	7.29	7.59	5464406.78
10	Specialties	0.82	0.85	614,689
	Specialties	0.82	0.85	614689.27
11	Equipment	0.36	0.38	271,186
	Equipment	0.36	0.38	271186.44
12	Furnishings	0.39	0.41	293,785
	Furnishings	0.39	0.41	293785.31
13	Special Construction	12.39	12.89	9,279,096
	Special Construction	12.39	12.89	9279096.05
14	Conveying Systems	0.36	0.37	266,667
	Elevators	0.36	0.37	266666.67
15	Mechanical	16.54	17.21	12,393,121
	Mechanical	16.54	17.21	12393120.90
16	Electrical	9.23	9.60	6,912,994
	Electrical	9.23	9.60	6912994.35
	Total Building Costs	100.00	104.05	74,915,155



APPENDIX D – Existing Conditions Site Plan



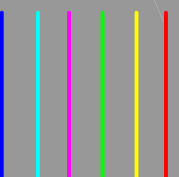
New York Police Academy

College Point
October 4, 2010

Shawn Sidelinger - CM

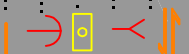
Legend:

- EXISTING UTILITIES:**
- FIRE DEPT WATER.....
 - ELECTRICAL.....
 - GAS MAIN.....
 - SANITARY WATER.....
 - WATER.....
 - TELECOMMUNICATIONS.....



SYMBOLS:

- VEHICULAR TRAFFIC.....
- SIAMESE.....
- ELECTRICAL MANHOLE.....
- FIRE HYDRANT.....
- CONSTRUCTION FENCE.....





APPENDIX E – Consultant and Engineering Firm



Consultants:

Civil Consultant	Langan Engineering and Environmental Services
Blast Consultant	Weidlinger Associates
Traffic Consultant	Eng-Wong, Taub & Associates
Parking Consultant	Walker Parking Consultant
Security Consultant	Kroll
Food Service Consultant	Cini-Little
Signage Consultant	Two Twelve Designs
Lighting Consultants	Bartenbach Lichtlabor GmbH, Hillman DiBernardo Leiter Castelli
IT Consultant	TM Technology Partners, Inc.
AV, Acoustics Consultant	Cerami & Associates Inc.
Geotechnical Consultant	URS Corporation
Cost Estimating	Davis Langdon
Cost Control	Gardiner & Teobald Inc.

Engineering Firms:

Structural Engineer	Robert Silman Associates
MEPF Engineering	ESP Flack + Kurtz
Urban Design	FXFowle
Vertical Transportation	Van Desusen Associates