

THE WASHINGTON NATIONALS BALLPARK
WASHINGTON, DC



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Technical Report 2

Cost and Methods Analysis



Technical Assignment 2: Cost and Methods Analysis

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Executive Summary

The Washington Nationals Ballpark is a major fast-tracked design build baseball Major League Ballpark located in the SE of Washington, DC.

This technical assignment gives a major overview to the cost and methods of the construction for The Washington Nationals Ballpark. Within this document, there is a detailed project schedule, which not only highlights the major milestones but states the hard deadlines to make sure the project is completed by opening day in April 2008. The document also contains a detailed site layout that shows the limited space that the general contractor, Clark, Hunt, and Smoot, must work with. There is an assemblies estimate that breaks down the interior woodwork and casework that is included in the premium spaces within the ballpark, and a structural systems estimate for a small part of the stadium that has an extremely high cost because it goes through multiple floors that are not located in the other parts of the ballpark. It also contains a general conditions estimate, which 85% of the cost is project staffing.



Detailed Project Schedule

The detailed project schedule that highlights the major phases of construction, with an emphasis on the foundation and structure for the ballpark can be found in Appendix A.

The ballpark is being created with the most intensive schedule ever created for a Major League Ballpark. It is schedule to only take 2 years to complete, which has never been done before. Because of the hard deadline of opening day the schedule for the ballpark schedule was developed with very little margin for error in construction.

There is a fee of \$1,000,000 per day in liquated damages if the ballpark is not completed by opening day for The Washington Nationals.

Key Project Dates

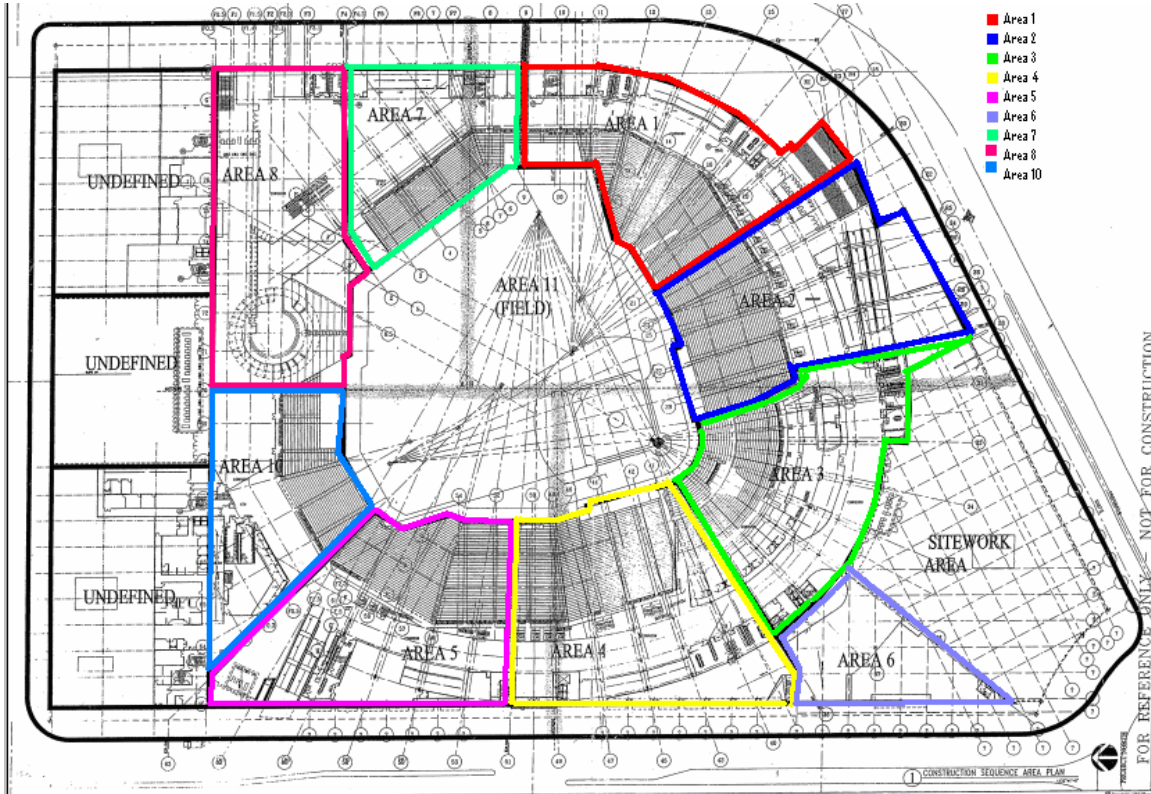
Schematic Design Begins	September 6, 2005
Notice to Proceed	March 22, 2006
Foundations Started	May 22, 2006
CIP Concrete Begins	June 14, 2006
Structural Steel Started	October 5, 2006
Topping Out	July 11, 2007
Playing Field Begins	October 1, 2007
Substantial Completion	April 11, 2008
First Pitch	April 13, 2008

Foundation Sequence

The ballpark consists of a deep foundation system. They are using 14” concrete H-piles which were driven down 45 feet to gain the allowable bearing capacity of 100 tons per pile. They were left 2’6” above the slab-on-grade so that the structure can tie into the foundation system. The foundation system was selected due to the site containing very hard clays and silty sands, which is typical since it is located right along the Anacostia River. The foundation was sequenced by breaking the ballpark into 10 different areas, which can be seen in the plan below. There were 3 different rigs which drilled an average of 12 piles per day. The first rig started in Area 1 and continued to Area 2. (See Construction Area Breakdown to note the location of the different areas) The second rig started in Area 4 and moved to Area 3 and then Area 5. The third rig was started in Area 7 and moved to Area 8 and then to Area 10. This was sequenced by making sure the main concourse area was completed first because that is where the majority of the ballparks

structure is. The rigs worked their way around to meet in between Area 2 and Area 3, which is the center of the main concourse area.

Construction Area Breakdown:



Structural Sequence

The structural sequence is unique because half way through construction it was changed from a concrete structural system to a steel structural system, due to fact that steel was a long lead time item and concrete would allow them to fast-track the project and begin while the steel was being fabricated. The concrete framed areas, the 1st and 2nd level, are cast in place beams and girders. The 3rd level and above will be steel construction. The structural steel is sequenced the same way that the foundation was. They first starting erecting in Area 1 and continued to Area 2. They then started in Area 4 which was followed by Area 3 and then Area 5. They then erected the steel in Area 7, and then Area 8.



Finishing Sequence

The finishing work that must be completed is located inside premium spaces in the ballpark, which includes rooms like the Players Locker Rooms, the Founders Bar and the many Suites. The interior build out sequence is broken down by:

- Subroof
- GWB Framing
- Tie in Conduit/Pull Wire
- Insulate and Hang GWB
- Painting Walls
- GWB Ceiling Frame
- Acoustic Ceiling Grid
- Light Fixtures/MEP Drops
- Millwork
- Finish Pain/Wall Coverings
- Ceramic Tile Flooring
- MEP Devices and Trim
- Special Systems Devices
- Plumbing Fixtures
- Acoustical Ceiling Tiles
- Test and Balance Airside
- Carpet and Flooring
- Toilet Partitions and Accessories
- Doors, Hardware, and Architectural Trim
- Furnishing, Fixtures, and Equipment



Site Layout Planning

The ballpark has a very unique site layout due to the constraints on being located in the heart of the “New Ballpark District” in Washington, D.C. The site layout which is located in Appendix B is for the initial stage of steel erection before the construction of the 2 parking garages, which will be located on the site right next to the ballpark. The position of parking garages were initially used for material lay down, until their construction is to commence. The center of the playing field was the location for all of the steel lay down area. The steel will need to be fully erected before the construction of the playing field’s surface can begin. A major concern with the site plan is that once the stadium is fully erected there will be very few spaces that can be used as material lay down areas. With the limited space that will be created, it will in then in turn create major scheduling issues that dictate when materials can be delivered. It will only allow the material that is absolutely necessary for that weeks work to be able to be delivered to the site so it can be installed right away and not take up any room on the already congested site. There are also 3 cranes operating at the same time to help shorten the time for the building superstructure to go up.

Assemblies Estimate

The assemblies' estimate that was preformed was on the interior woodwork and finish work which can be found in Appendix C. The values were taken from RS Means. The main focus was on the suites area because they are a main focus for bringing revenue into the ballpark after completion. The Nationals are priding themselves on the beauty of the interior finishes and that's what created the interest in estimate the scope of work that is being put into the suites and the other premium spaces. The overall estimate was taken from an initial bid package that Clark, Hunt, and Smoot., the general contractors, sent out for bid. It highlighted the wood casework in the suites, the numerous bars that are located throughout the ballpark, as well as all of the lockers that will go into the Nationals Home Locker Room. The overall estimate was for \$1,040,941. See Appendix D for images of the interior of the suites.

Assemblies Summary

INTERIOR WOODWORK AND FINISH WORK SUMMARY	Group Total
SEATING ESTIMATE	\$172,131.75
BARS ESTIMATE	\$86,157.00
MOLDING ESTIMATE	\$10,879.24
PLASTIC LAMINATE ESTIMATE	\$225,218.67
WOOD CASEWORK ESTIMATE	\$370,038.25
SOLID SURFACE ESTIMATE	\$28,404.00
DIE WALL ESTIMATE	\$592.96
DRINK RAILS ESTIMATE	\$100,864.00
KNEE PANELS ESTIMATE	\$2,574.46
SLAT WALL ESTIMATE	\$4,013.75
WOOD LOCKERS ESTIMATE	\$22,051.50
WOOD TABLES ESTIMATE	\$28,530.00
TOTAL ASSEMBLIES COST:	\$1,051,455.58
LOCATION MULTIPLIER 99% FOR DC:	\$1,040,941.02
TOTAL ASSEMBLIES COST:	\$1,040,941.02

Detailed Structural Estimate

The structural estimate was taken from column line 33 to column line 38, which is located right behind home plate. It penetrates all of the floors of the ballpark by going through, the owner’s suite, as well as both levels of the press box. The structural estimate was for only a small part of the stadium but the cost was so high because it goes through multiple levels that are not located on in the other parts of the ballpark. See Appendix E for the breakdown of the individual floors and foundation. The overall cost of the structural system is \$43,005,2007.

Assumptions:

- All costs were taken from RS Means Building Construction Cost Data 2008
- All cost include material and labor
- Rebar is include in the concrete cost
- Piles all penetrate the same depth 45’
- Steel costs were calculated by averaging 5 different beams.
- The cost of the pre-fabricated concrete seating bowls were not included to the uniqueness of the geometry

Structural Summary

STRUCTURAL SUMMARY	Group Total
PILE ESTIMATE	\$196,452.39
GRADE BEAMS ESTIMATE	\$6,560,308.80
SLAB ON GRADE ESTIMATE	\$156,150.00
CONCRETE COLUMNS ESTIMATE	\$36,312,850.00
CONCRETE BEAMS ESTIMATE	\$105,154.67
STEEL BEAMS ESTIMATE	\$41,156.14
STEEL COLUMNS ESTIMATE	\$66,521.75
TOTAL STRUCTURAL COST:	\$43,438,593.75
LOCATION MULTIPLIER 99% FOR DC:	\$43,004,207.81
TOTAL STRUCTURAL COST:	\$43,004,207.81

General Conditions Estimate

The general conditions estimate was developed from the Specifications and the cost values were taken from RS Means Building Construction Cost Data 2008. The breakdown of the general conditions can be found in Appendix F. The major issue in the general conditions estimate was that it appeared to be low compared to the overall project cost of \$611 million. One reason it is relatively low is that the personnel were assumed to work a 40 hour work week, which with the extremely tight project schedule, is impossible if the ballpark is going to be completed on time. A key note to realize is that 85% of the general conditions cost is for the personnel that will be working on the ballpark. The amount of personal that is working on the ballpark was taken from the staffing plan that was completed in Technical Assignment 1: Construction Project Management. The overall cost of the general conditions is \$4,180,969.56

General Conditions Summary

GENERAL CONDITIONS SUMMARY		Group Total
1010	PERSONNEL	\$3,628,800.00
1020	OFFICE SUPPLIES & EXPENSES	\$95,710.00
1030	BONDS & INSURANCE	\$0.00
1040	PROJECT TRAVEL/MEALS	\$9,500.00
1050	MISCELLANEOUS EXPENSES	\$1,000.00
1060	TEMPORARY FACILITIES	\$2,640.00
1070	TEMPORARY PROTECTION	\$34,009.50
1080	TEMPORARY UTILITIES	\$437,542.08
1090	CLEAN UP AND CHECK OUT	\$14,000.00
1100	EQUIPMENT	\$0.00
SUBTOTAL GENERAL CONDITIONS COST:		\$4,223,201.58
LOCATION MULTIPLIER 99% FOR DC:		\$4,180,969.56
TOTAL GENERAL CONDITIONS COST:		\$4,180,969.56



Appendix A

Detailed Project Schedule




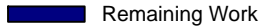

Activity ID	Activity Name	Start	Finish	Original Duration	2006		2007				2008				2009	
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
The Washington Nationals Ballpark					14-Apr-08, The Washing											
Pre-Construction Phase					20-Jun-07, Pre-Construction Phase											
A1000	Schematic Design Documents	06-Sep-05	25-May-07	438	Schematic Design Documents											
A1010	Precurement of Subcontractors	06-Sep-05	25-May-07	438	Precurement of Subcontractors											
A1020	Design Assist	20-Mar-06	25-Apr-07	281	Design Assist											
A1280	Submittals	10-Apr-06	25-May-07	288	Submittals											
A1290	Bid and Purchase	27-Jun-06	20-Jun-07	251	Bid and Purchase											
Construction Phase					14-Apr-08, Construction											
Mobilization and Site Work					05-Sep-06, Mobilization and Site Work											
A1030	Notice To Proceed	22-Mar-06		0	◆ Notice To Proceed											
A1040	Demolition	17-Apr-06	19-Jun-06	45	■ Demolition											
A1050	Mobilization on Site	01-May-06	26-May-06	20	■ Mobilization on Site											
A1060	Excavation	02-May-06	05-Sep-06	88	■ Excavation											
Foundations					06-Oct-06, Foundations											
A1380	Piles Area 1	22-May-06	19-Jun-06	20	■ Piles Area 1											
A1390	Piles Area 2	16-Jun-06	14-Jul-06	20	■ Piles Area 2											
A1400	Piles Area 4	05-Jul-06	29-Aug-06	40	■ Piles Area 4											
A1410	Piles Area 3	10-Jul-06	18-Aug-06	30	■ Piles Area 3											
A1420	Piles Area 5	25-Jul-06	05-Sep-06	30	■ Piles Area 5											
A1430	Piles Area 7	07-Aug-06	02-Oct-06	40	■ Piles Area 7											
A1440	Piles Area 8	18-Aug-06	06-Oct-06	35	■ Piles Area 8											
A1450	Piles Area 10	18-Aug-06	29-Sep-06	30	■ Piles Area 10											
CIP Concrete					31-Aug-07, CIP Concrete											
A1080	Pile Caps Area 1	14-Jun-06	26-Jul-06	30	■ Pile Caps Area 1											
A1320	Grade Beams Area 1	14-Jun-06	26-Jul-06	30	■ Grade Beams Area 1											
A1530	Area 1 - CIP Walls	21-Jun-06	09-Aug-06	35	■ Area 1 - CIP Walls											
A1750	Main Concourse Supported Slab Area 1	26-Jul-06	29-Sep-06	47	■ Main Concourse Supported Slab Area 1											
A1460	Pile Caps Area 2	31-Jul-06	25-Aug-06	20	■ Pile Caps Area 2											
A1680	Grade Beams Area 2	31-Jul-06	25-Aug-06	20	■ Grade Beams Area 2											
A1540	Area 2 - CIP Walls	14-Aug-06	11-Sep-06	20	■ Area 2 - CIP Walls											
A1470	Pile Caps Area 3	25-Aug-06	29-Sep-06	25	■ Pile Caps Area 3											
A1690	Grade Beams Area 3	25-Aug-06	22-Sep-06	20	■ Grade Beams Area 3											
A1550	Area 3 - CIP Walls	28-Aug-06	16-Oct-06	35	■ Area 3 - CIP Walls											
A1760	Main Concourse Supported Slab Area 2	28-Aug-06	19-Oct-06	38	■ Main Concourse Supported Slab Area 2											

Actual Work
 Critical Remaining Work
 Summary
 Milestone

Activity ID	Activity Name	Start	Finish	Original Duration	2006		2007				2008				2009	
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
A1480	Pile Caps Area 4	25-Sep-06	27-Dec-06	65							█					
A1700	Grade Beams Area 4	25-Sep-06	27-Dec-06	65							█					
A1770	Main Concourse Supported Slab Area 3	27-Sep-06	07-Dec-06	50							█					
A1490	Pile Caps Area 7	12-Oct-06	22-Dec-06	50							█					
A1710	Grade Beams Area 7	12-Oct-06	22-Dec-06	50							█					
A1560	Area 4 - CIP Walls	23-Oct-06	04-Jan-07	50							█					
A1610	SOG Area 1	24-Oct-06	29-Nov-06	25							█					
A1570	Area 7 - CIP Walls	01-Nov-06	22-Jan-07	55							█					
A1780	Main Concourse Supported Slab Area 4	15-Nov-06	12-Jan-07	39							█					
A1500	Pile Caps Area 8	18-Dec-06	13-Feb-07	40							█					
A1720	Grade Beams Area 8	18-Dec-06	13-Feb-07	40							█					
A1580	Area 8 - CIP Walls	20-Dec-06	08-Mar-07	55							█					
A1620	SOG Area 2	22-Dec-06	15-Jan-07	15							█					
A1510	Pile Caps Area 5	28-Dec-06	22-Feb-07	40							█					
A1730	Grade Beams Area 5	28-Dec-06	22-Feb-07	40							█					
A1790	Main Concourse Supported Slab Area 7	08-Jan-07	19-Mar-07	51							█					
A1630	SOG Area 3	19-Jan-07	08-Mar-07	35							█					
A1520	Pile Caps Area 10	26-Jan-07	01-Mar-07	25							█					
A1740	Grade Beams Area 10	26-Jan-07	01-Mar-07	25							█					
A1590	Area 5 - CIP Walls	22-Feb-07	14-Mar-07	15							█					
A1800	Main Concourse Supported Slab Area 8	23-Feb-07	25-May-07	66							█					
A1600	Area 10 - CIP Walls	07-Mar-07	17-Apr-07	30							█					
A1640	SOG Area 4	14-Mar-07	08-May-07	40							█					
A1810	Main Concourse Supported Slab Area 10	29-May-07	10-Jul-07	31							█					
A1650	SOG Area 7	14-Jun-07	11-Jul-07	20							█					
A1660	SOG Area 8	28-Jun-07	18-Jul-07	15							█					
A1670	SOG Area 10	01-Aug-07	21-Aug-07	15							█					
A1820	SOG Area 5	14-Aug-07	31-Aug-07	14							█					
Structural Steel		05-Oct-06 A	11-Jul-07	269							█					
A1830	Zone A - Club Level	05-Oct-06	01-Nov-06	20							█					
A1870	Zone A - Suite Level	02-Nov-06	08-Dec-06	25							█					
A1840	Zone B - Club Level	09-Nov-06	08-Dec-06	20							█					
A1880	Zone B - Suite Level	11-Dec-06	16-Jan-07	25							█					
A1860	Zone C - Club Level	18-Dec-06	16-Jan-07	20							█					
A2690	Zone A - Upper Deck	08-Jan-07	16-Feb-07	30							█					

█ Actual Work
█ Critical Remaining Work
↘ Summary
█ Remaining Work
◆ Milestone

Activity ID	Activity Name	Start	Finish	Original Duration	2006				2007				2008				2009			
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
A1890	Zone C - Suite Level	17-Jan-07	20-Feb-07	25																
A1850	Zone D - Club Level	26-Jan-07	22-Feb-07	20																
A2700	Zone B - Upper Deck	19-Feb-07	30-Mar-07	30																
A1900	Zone D - Suite Level	23-Feb-07	29-Mar-07	25																
A2710	Zone C - Upper Deck	02-Apr-07	11-May-07	30																
A2720	Zone D - Upper Deck	24-May-07	11-Jul-07	35																
A1110	Topping Out	11-Jul-07 A		0																
Structural Precast		25-Sep-06	18-Jul-07	209																
A1910	Area 1 Precast Seating Main Concourse	25-Sep-06	06-Oct-06	10																
A1920	Area 2 Precast Seating Main Concourse	16-Oct-06	20-Oct-06	5																
A1960	Area 1 Precast Seating Club Level	31-Oct-06	20-Nov-06	15																
A1930	Area 3 Precast Seating Main Concourse	27-Nov-06	16-Jan-07	35																
A1970	Area 2 Precast Seating Club Level	04-Dec-06	15-Dec-06	10																
A2020	Area 1 Precast Seating Suite Level	26-Dec-06	30-Jan-07	25																
A1940	Area 4 Precast Seating Main Concourse	09-Jan-07	12-Feb-07	25																
A1980	Area 3 Precast Seating Club Level	12-Jan-07	01-Feb-07	15																
A1950	Area 7 Precast Seating Main Concourse	12-Feb-07	23-Feb-07	10																
A2030	Area 2 Precast Seating Suite Level	15-Feb-07	28-Feb-07	10																
A2070	Area 2 Precast Seating Upper Concourse	20-Feb-07	26-Feb-07	5																
A2040	Area 3 Precast Seating Suite Level	06-Mar-07	26-Mar-07	15																
A2050	Area 4 Precast Seating Suite Level	26-Mar-07	06-Apr-07	10																
A2080	Area 3 Precast Seating Upper Concourse	05-Apr-07	11-Apr-07	5																
A2110	Area 2 Precast Seating Press Box	09-Apr-07	13-Apr-07	5																
A2060	Area 5 Precast Seating Suite Level	10-Apr-07	23-Apr-07	10																
A1990	Area 7/8 Precast Seating Club Level	31-May-07	13-Jun-07	10																
A2000	Area 4 Precast Seating Club Level	31-May-07	13-Jun-07	10																
A2010	Area 5 Precast Seating Club Level	13-Jun-07	26-Jun-07	10																
A2090	Area 4 Precast Seating Upper Concourse	14-Jun-07	20-Jun-07	5																
A2120	Area 3 Precast Seating Press Box	21-Jun-07	27-Jun-07	5																
A2100	Area 5 Precast Seating Upper Concourse	27-Jun-07	03-Jul-07	5																
A2130	Area 4 Precast Seating Press Box	12-Jul-07	18-Jul-07	5																
MEP		05-Feb-07	11-Apr-08	310																
A2830	Plumbing Rough-In	05-Feb-07	18-Feb-08	271																
A2820	Electrical Rough-In	12-Mar-07	18-Feb-08	246																
A2520	Mechanical Rough-In	19-Mar-07	18-Feb-08	241																






 Actual Work
  Critical Remaining Work
  Summary
 Remaining Work
  Milestone

Activity ID	Activity Name	Start	Finish	Original Duration	2006		2007				2008				2009	
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
A2850	Telecommunications	14-May-07	11-Apr-08	240												
Building Envelope		23-Apr-07	08-Jan-08	187												
A2140	Architectural Precast Building Envelope	23-Apr-07	25-May-07	25												
A2150	Curtain Wall	14-May-07	28-Sep-07	100												
A2170	Metal Panels	23-May-07	08-Jan-08	165												
A2190	Roofing	31-May-07	02-Jan-08	155												
A2160	Exterior Storefront	03-Jul-07	08-Oct-07	70												
A2180	EIFS	13-Jul-07	13-Dec-07	110												
Ballpark Unique Features		14-May-07	17-Mar-08	221												
A1300	Area 1 Sports Lighting	14-May-07	12-Oct-07	110												
A2730	Area 2 Sports Lighting	04-Jun-07	02-Nov-07	110												
A2410	Area 8 Escalator	21-Jun-07	05-Dec-07	120												
A2740	Area 3 Sports Lighting	25-Jun-07	23-Nov-07	110												
A2750	Area 4 Sports Lighting	09-Jul-07	07-Dec-07	110												
A2790	Main Scoreboard	09-Jul-07	17-Aug-07	30												
A2420	Area 5 Escalator 1	13-Jul-07	24-Jan-08	140												
A2590	Area 1 Seating - Suite Level	23-Jul-07	03-Aug-07	10												
A2760	Area 5 Sports Lighting	23-Jul-07	21-Dec-07	110												
A2430	Area 5 Escalator 2	31-Jul-07	07-Jan-08	115												
A2770	Area 7 Sports Lighting	06-Aug-07	04-Jan-08	110												
A2530	Area 1 Seating - Club Level	13-Aug-07	24-Aug-07	10												
A2540	Area 2 Seating - Club Level	13-Aug-07	24-Aug-07	10												
A2440	Area 2 Escalator	16-Aug-07	30-Jan-08	120												
A2780	Area 10 Sports Lighting	20-Aug-07	18-Jan-08	110												
A2550	Area 3 Seating - Club Level	04-Sep-07	17-Sep-07	10												
A2560	Area 4 Seating - Club Level	04-Sep-07	17-Sep-07	10												
A2600	Area 2 Seating - Suite Level	11-Sep-07	24-Sep-07	10												
A2640	Area 1 Seating - Upper Level	13-Sep-07	26-Sep-07	10												
A2570	Area 5 Seating - Club Level	18-Sep-07	01-Oct-07	10												
A2580	Area 7/8 Seating - Club Level	24-Sep-07	05-Oct-07	10												
A2800	Out of Town Scoreboard	01-Oct-07	09-Nov-07	30												
A2840	Playing Field	01-Oct-07	17-Mar-08	121												
A2450	Area 1 Seating - Main Concourse	11-Oct-07	24-Oct-07	10												
A2460	Area 2 Seating - Main Concourse	11-Oct-07	24-Oct-07	10												
A2500	Area 7 Seating - Main Concourse	11-Oct-07	24-Oct-07	10												

Actual Work
 Critical Remaining Work
 Summary

Remaining Work
 Milestone

Activity ID	Activity Name	Start	Finish	Original Duration	2006				2007				2008				2009			
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2				
A2650	Area 2 Seating - Upper Level	11-Oct-07	24-Oct-07	10																
A2470	Area 3 Seating - Main Concourse	29-Oct-07	09-Nov-07	10																
A2810	Bullpen Scoreboard	01-Nov-07	14-Nov-07	10																
A2480	Area 4 Seating - Main Concourse	05-Nov-07	16-Nov-07	10																
A2510	Area 10 Seating - Main Concourse	05-Nov-07	16-Nov-07	10																
A2610	Area 3 Seating - Suite Level	19-Nov-07	30-Nov-07	10																
A2660	Area 3 Seating - Upper Level	19-Nov-07	30-Nov-07	10																
A2490	Area 5 Seating - Main Concourse	05-Dec-07	18-Dec-07	10																
A2620	Area 4 Seating - Suite Level	12-Dec-07	25-Dec-07	10																
A2670	Area 4 Seating - Upper Level	12-Dec-07	25-Dec-07	10																
A2630	Area 5 Seating - Suite Level	17-Dec-07	28-Dec-07	10																
A2680	Area 5 Seating - Upper Level	17-Dec-07	28-Dec-07	10																
Interior Build Out		02-Jul-07	17-Mar-08	186																
A2200	Subroof	02-Jul-07	19-Oct-07	80																
A2210	GWB Framing	11-Jul-07	01-Jan-08	125																
A2220	Tie-in Conduit	30-Jul-07	09-Nov-07	75																
A2230	Insulate and hang GWB Walls	10-Aug-07	06-Dec-07	85																
A2240	Paint Walls	15-Aug-07	20-Nov-07	70																
A2250	GWB Ceiling Framing	27-Aug-07	15-Feb-08	125																
A2260	Acoustical Ceiling Grid	30-Aug-07	09-Jan-08	95																
A2270	Light Fixtures/MEP Drops	03-Sep-07	18-Jan-08	100																
A2280	Millwork	03-Sep-07	14-Mar-08	140																
A2290	GWB Ceilings	24-Sep-07	18-Jan-08	85																
A2300	Finish Paint/Wall Coverings	15-Oct-07	21-Dec-07	50																
A2310	Ceramic Tile Flooring	30-Nov-07	13-Mar-08	75																
A2320	MEP Devices and Trim	03-Dec-07	07-Mar-08	70																
A2330	Special System Devices	10-Dec-07	07-Mar-08	65																
A2340	Plumbing Fixtures	17-Dec-07	22-Feb-08	50																
A2350	Acoustical Ceiling Tiles	02-Jan-08	19-Feb-08	35																
A2360	Test and Balance Airside	04-Feb-08	03-Mar-08	21																
A2370	Carpet and Flooring	04-Feb-08	14-Mar-08	30																
A2380	Toilet Partitions and Accessories	18-Feb-08	14-Mar-08	20																
A2390	Doors, Hardware and Architectural Trim	18-Feb-08	14-Mar-08	20																
A2400	FF and E	25-Feb-08	17-Mar-08	16																
Ballpark Completion		17-Mar-08 A	14-Apr-08	128																

 Actual Work
  Critical Remaining Work
  Summary
 Remaining Work
  Milestone



Appendix B

Site Layout Planning

First Street, SE

North

Potomac Avenue, SE

N Street, SE

Ballpark Footprint

South Capitol Street

Parking Garage Footprint Un-Built Area Used for Material Storage

Parking Garage Footprint Un-Built Area Used for Material Storage

Steel Staging Area On Playing Field

Staging Area

GC Trailer

GC Parking

General Notes



THE WASHINGTON NATIONALS BALLPARK

WASHINGTON, DC

MATTHEW MOORE | CONSTRUCTION MANAGEMENT | MESSNER

No.	Revision/Issue	Date

Firm Name and Address

Project Name and Address
The Washington National Ballpark

Project Nationals Ballpark	Sheet
Date 11/2/2007	C-1
Scale NTS	



Appendix C

Assemblies Estimate

Assembly of Interior Woodwork and Finish Work

Item	Quantity (LF)	Cost/LF	Overall Cost
Banquet Seating	318	\$462.50	\$147,075.00
Base Molding	10566	\$0.72	\$7,607.52
Bench Seating - Double	25	\$281.55	\$7,038.75
Bench Seating - Single	110	\$163.80	\$18,018.00
Club Bar	134	\$289.50	\$38,793.00
Crown Molding	1244	\$2.63	\$3,271.72
Curved Wood Desk in Diamond Club	17	\$28.75	\$488.75
Diamond Club Bar	54	\$289.50	\$15,633.00
Diamond Club Drink Bar	41	\$289.50	\$11,869.50
Die Wall	68	\$8.72	\$592.96
Drink Rail	1024	\$98.50	\$100,864.00
Founders Back Bar	11	\$226.50	\$2,491.50
Founders Bar	60	\$289.50	\$17,370.00
Metal Knee Panel	34	\$13.56	\$461.04
PL Casework	511	\$207.23	\$105,894.53
PL Knee Panel	38	\$6.34	\$240.92
PL Tops	1642	\$72.67	\$119,324.14
Slat Wall	845	\$4.75	\$4,013.75
Solid Surface Shelf	63	\$91.50	\$5,764.50
Solid Surface Tops	123	\$118.50	\$14,575.50
Solid Surface Vanity	63	\$128.00	\$8,064.00
Wood Casework	1104	\$204.75	\$226,044.00
Wood Closet	480	\$297.75	\$142,920.00
Wood Desk	10	\$19.55	\$195.50
Wood Display Case	1	\$390.00	\$390.00
Wood Knee Panel	107	\$17.50	\$1,872.50
Wood Lockers	122	\$180.75	\$22,051.50
Wood Table	180	\$158.50	\$28,530.00
SUBTOTAL GENERAL CONDITIONS COST:			\$1,051,455.58
LOCATION MULTIPLIER 99% FOR DC:			\$1,040,941.02
TOTAL GENERAL CONDITIONS COST:			\$1,040,941.02

THE WASHINGTON NATIONALS BALLPARK
WASHINGTON, DC



MATTHEW MOORE | CONSTRUCTION MANAGEMENT | MESSNER

Appendix D

Interior Suites Images

View from the door:



Looking into the suite:





Appendix E

Detailed Structural Systems Estimate

Foundation Estimate

PILES ESTIMATE

Line 33

Piles	Number of Piles	Length	Width	Depth	CY of Concrete	Pile Cap Length	Pile Cap Width	Pile Cap Depth	CY of Pile Caps	Cost per CY	Individual Cost
P-2	2	2	2	45	13.33	3.5	7	3.5	3.18	\$205.83	\$653.70
P-4	4	2	2	45	26.67	7	7	3.25	5.90	\$205.83	\$1,214.02
P-7	7	2	2	45	46.67	10.5	8.6	4.58	15.32	\$205.83	\$3,152.81
P-17	17	2	2	45	113.33	15.83	14	5.25	43.09	\$205.83	\$8,869.79
P-15	15	2	2	45	100.00	15.83	14	5	41.04	\$205.83	\$8,447.42
P-14	14	2	2	45	93.33	13.17	14	5	34.14	\$205.83	\$7,027.95
P-6	6	2	2	45	40.00	10.5	7	4	10.89	\$205.83	\$2,241.26
Total:											\$31,606.94

Line 34

Piles	Number of Piles	Length	Width	Depth	CY of Concrete	Pile Cap Length	Pile Cap Width	Pile Cap Depth	CY of Pile Caps	Cost per CY	Individual Cost
P-2	2	2	2	45	13.33	3.5	7	3.5	3.18	\$205.83	\$653.70
P-4	4	2	2	45	26.67	7	7	3.25	5.90	\$205.83	\$1,214.02
P-7	7	2	2	45	46.67	10.5	8.6	4.58	15.32	\$205.83	\$3,152.81
P-17	17	2	2	45	113.33	15.83	14	5.25	43.09	\$205.83	\$8,869.79
P-15	15	2	2	45	100.00	15.83	14	5	41.04	\$205.83	\$8,447.42
P-14	14	2	2	45	93.33	13.17	14	5	34.14	\$205.83	\$7,027.95
Total:											\$29,365.68

Line 35

Piles	Number of Piles	Length	Width	Depth	CY of Concrete	Pile Cap Length	Pile Cap Width	Pile Cap Depth	CY of Pile Caps	Cost per CY	Individual Cost
P-2	2	2	2	45	13.33	3.5	7	3.5	3.18	\$205.83	\$653.70
P-2	2	2	2	45	13.33	3.5	7	3.5	3.18	\$205.83	\$653.70
P-4	4	2	2	45	26.67	7	7	3.25	5.90	\$205.83	\$1,214.02
P-8	8	2	2	45	53.33	10.5	9.67	4.17	15.68	\$205.83	\$3,227.73
P-17	17	2	2	45	113.33	15.83	14	5.25	43.09	\$205.83	\$8,869.79
P-15	15	2	2	45	100.00	15.83	14	5	41.04	\$205.83	\$8,447.42
P-14	14	2	2	45	93.33	13.17	14	5	34.14	\$205.83	\$7,027.95
Total:											\$30,094.30

Line 36

Piles	Number of Piles	Length	Width	Depth	CY of Concrete	Pile Cap Length	Pile Cap Width	Pile Cap Depth	CY of Pile Caps	Cost per CY	Individual Cost
P-2	2	2	2	45	13.33	3.5	7	3.5	3.18	\$205.83	\$653.70
P-4	4	2	2	45	26.67	7	7	3.25	5.90	\$205.83	\$1,214.02
P-8	8	2	2	45	53.33	10.5	9.67	4.17	15.68	\$205.83	\$3,227.73
P-17	17	2	2	45	113.33	15.83	14	5.25	43.09	\$205.83	\$8,869.79
P-17	17	2	2	45	113.33	15.83	14	5.25	43.09	\$205.83	\$8,869.79
P-17	17	2	2	45	113.33	15.83	14	5.25	43.09	\$205.83	\$8,869.79
P-2	2	2	2	45	13.33	3.5	7	3.5	3.18	\$205.83	\$653.70
Total:											\$32,358.50

Line 37

Piles	Number of Piles	Length	Width	Depth	CY of Concrete	Pile Cap Length	Pile Cap Width	Pile Cap Depth	CY of Pile Caps	Cost per CY	Individual Cost
P-1	1	2	2	45	6.67	3.5	3.5	3.5	1.59	\$205.83	\$326.85
P-2	2	2	2	45	13.33	3.5	7	3.5	3.18	\$205.83	\$653.70
P-4	4	2	2	45	26.67	7	7	3.25	5.90	\$205.83	\$1,214.02
P-8	8	2	2	45	53.33	10.5	9.67	4.17	15.68	\$205.83	\$3,227.73
P-18	18	2	2	45	120.00	15.83	14	5.25	43.09	\$205.83	\$8,869.79
P-18	18	2	2	45	120.00	15.83	14	5.25	43.09	\$205.83	\$8,869.79
P-20	20	2	2	45	133.33	17.5	14	5.75	52.18	\$205.83	\$10,739.37
Total:											\$33,901.24

Line 38

Piles	Number of Piles	Length	Width	Depth	CY of Concrete	Pile Cap Length	Pile Cap Width	Pile Cap Depth	CY of Pile Caps	Cost per CY	Individual Cost
P-2	2	2	2	45	13.33	3.5	7	3.5	3.18	\$205.83	\$653.70
P-2	2	2	2	45	13.33	3.5	7	3.5	3.18	\$205.83	\$653.70
P-4	4	2	2	45	26.67	7	7	3.25	5.90	\$205.83	\$1,214.02
P-10	10	2	2	45	66.67	14	9.67	4.25	21.31	\$205.83	\$4,386.20
P-20	20	2	2	45	133.33	17.5	14	5.75	52.18	\$205.83	\$10,739.37
P-20	20	2	2	45	133.33	17.5	14	5.75	52.18	\$205.83	\$10,739.37
P-20	20	2	2	45	133.33	17.5	14	5.75	52.18	\$205.83	\$10,739.37
Total:											\$39,125.73

GRADE BEAMS ESTIMATE

Grade Beams							
Line	Grade Beams ID	Height	Width	Length	CY of Concrete Grade Beams	Cost per CY	Individual Cost
33	GB002	3	3	36	324	\$402.72	\$130,481.28
33	GB002	3	3	36	324	\$402.72	\$130,481.28
33	GB002	3	3	24	216	\$402.72	\$86,987.52
33	GB018	3	3	36	324	\$402.72	\$130,481.28
33	GB018	3	3	32	288	\$402.72	\$115,983.36
33	GB018	3	3	20	180	\$402.72	\$72,489.60
33-34	GB013	3	3	20	180	\$402.72	\$72,489.60
33-34	GB002	3	3	36	324	\$402.72	\$130,481.28
33-34	GB002	3	3	34	306	\$402.72	\$123,232.32
33-34	GB002	3	3	42	378	\$402.72	\$152,228.16
33-34	GB018	3	3	46	414	\$402.72	\$166,726.08
33-34	GB018	3	3	54	486	\$402.72	\$195,721.92
34	GB002	3	3	36	324	\$402.72	\$130,481.28
34	GB002	3	3	40	360	\$402.72	\$144,979.20
34	GB018	3	3	28	252	\$402.72	\$101,485.44
34	GB018	3	3	36	324	\$402.72	\$130,481.28
34	GB018	3	3	32	288	\$402.72	\$115,983.36
34-35	GB013	3	3	12	108	\$402.72	\$43,493.76
34-35	GB002	3	3	28	252	\$402.72	\$101,485.44
34-35	GB018	3	3	34	306	\$402.72	\$123,232.32
34-35	GB018	3	3	38	342	\$402.72	\$137,730.24
34-35	GB018	3	3	46	414	\$402.72	\$166,726.08
34-35	GB018	3	3	54	486	\$402.72	\$195,721.92
35	GB002	3	3	36	324	\$402.72	\$130,481.28
35	GB018	3	3	40	360	\$402.72	\$144,979.20
35	GB018	3	3	24	216	\$402.72	\$86,987.52
35	GB018	3	3	36	324	\$402.72	\$130,481.28
35	GB018	3	3	32	288	\$402.72	\$115,983.36
35-36	GB013	3	3	36	324	\$402.72	\$130,481.28
35-36	GB002	3	3	24	216	\$402.72	\$86,987.52
35-36	GB010	3	3	28	252	\$402.72	\$101,485.44
35-36	GB018	3	3	34	306	\$402.72	\$123,232.32
35-36	GB018	3	3	40	360	\$402.72	\$144,979.20
35-36	GB018	3	3	46	414	\$402.72	\$166,726.08
35-36	GB018	3	3	54	486	\$402.72	\$195,721.92
36	GB002	3	3	28	252	\$402.72	\$101,485.44
36	GB002	3	3	10	90	\$402.72	\$36,244.80
36	GB018	3	3	40	360	\$402.72	\$144,979.20
36	GB018	3	3	24	216	\$402.72	\$86,987.52
36	GB018	3	3	36	324	\$402.72	\$130,481.28
36	GB018	3	3	34	306	\$402.72	\$123,232.32
36-37	GB013	3	3	12	108	\$402.72	\$43,493.76
36-37	GB002	3	3	24	216	\$402.72	\$86,987.52
36-37	GB002	3	3	28	252	\$402.72	\$101,485.44
36-37	GB018	3	3	36	324	\$402.72	\$130,481.28
36-37	GB018	3	3	38	342	\$402.72	\$137,730.24
36-37	GB018	3	3	46	414	\$402.72	\$166,726.08
36-37	GB018	3	3	54	486	\$402.72	\$195,721.92
37	GB002	3	3	36	324	\$402.72	\$130,481.28
37	GB018	3	3	40	360	\$402.72	\$144,979.20
37	GB010	3	3	24	216	\$402.72	\$86,987.52
37	GB018	3	3	36	324	\$402.72	\$130,481.28
37	GB018	3	3	34	306	\$402.72	\$123,232.32
Total							\$6,560,308.80

SLAB ON GRADE ESTIMATE

Slab On Grade				
Area (SF)	Thickness (in)	CF of SOG	Cost per SF	Individual Cost
45000	8	1111.11	\$3.47	\$156,150.00
Total				\$156,150.00

FOUNDATION ESTIMATE TOTALS

SUBTOTAL FOUNDATION ESTIMATE:	\$6,912,911.19
LOCATION MULTIPLIER 99% FOR DC:	\$6,843,782.08
TOTAL FOUNDATION COST:	\$6,843,782.08

Concrete Estimate

CONCRETE COLUMNS

100 Level

Line 33

Column On Pile	Piles	Length	Width	Height	CY of Concrete Column	Cost per CY	Individual Cost
24x18	P-2	24	18	5	80	\$722.50	\$57,800.00
36x24	P-4	36	24	1	32	\$722.50	\$23,120.00
36x48	P-7	36	48	20	1280	\$722.50	\$924,800.00
36x48	P-17	36	48	32	2048	\$722.50	\$1,479,680.00
36x48	P-15	36	48	32	2048	\$722.50	\$1,479,680.00
36x48	P-14	36	48	32	2048	\$722.50	\$1,479,680.00
36x48	P-6	36	48	32	2048	\$722.50	\$1,479,680.00
Total:							\$6,924,440.00

Line 34

Column On Pile	Piles	Length	Width	Height	CY of Concrete Column	Cost per CY	Individual Cost
24x18	P-2	24	18	5	80	\$722.50	\$57,800.00
36x18	P-4	36	18	10	240	\$722.50	\$173,400.00
36x48	P-7	36	48	20	1280	\$722.50	\$924,800.00
36x48	P-17	36	48	32	2048	\$722.50	\$1,479,680.00
36x48	P-15	36	48	32	2048	\$722.50	\$1,479,680.00
36x48	P-14	36	48	32	2048	\$722.50	\$1,479,680.00
Total:							\$5,595,040.00

Line 35

Column On Pile	Piles	Length	Width	Height	CY of Concrete Column	Cost per CY	Individual Cost
24x18	P-2	24	18	5	80	\$722.50	\$57,800.00
24x18	P-2	24	18	10	160	\$722.50	\$115,600.00
36x18	P-4	36	18	20	480	\$722.50	\$346,800.00
36x48	P-8	36	48	32	2048	\$722.50	\$1,479,680.00
36x48	P-17	36	48	32	2048	\$722.50	\$1,479,680.00
36x48	P-15	36	48	32	2048	\$722.50	\$1,479,680.00
36x48	P-14	36	48	32	2048	\$722.50	\$1,479,680.00
Total:							\$6,438,920.00

Line 36

Column On Pile	Piles	Length	Width	Height	CY of Concrete Column	Cost per CY	Individual Cost
24x18	P-2	24	18	5	80	\$722.50	\$57,800.00
36x18	P-4	36	18	10	240	\$722.50	\$173,400.00
36x48	P-8	36	48	20	1280	\$722.50	\$924,800.00

36x48	P-17	36	48	32	2048	\$722.50	\$1,479,680.00
36x48	P-17	36	48	32	2048	\$722.50	\$1,479,680.00
36x48	P-17	36	48	32	2048	\$722.50	\$1,479,680.00
24x18	P-2	24	18	32	512	\$722.50	\$369,920.00
Total:							\$5,964,960.00

Line 37							
Column On Pile	Piles	Length	Width	Height	CY of Concrete Column	Cost per CY	Individual Cost
24x18	P-1	24	18	5	80	\$722.50	\$57,800.00
24x18	P-2	24	18	8	128	\$722.50	\$92,480.00
36x18	P-4	36	18	10	240	\$722.50	\$173,400.00
36x48	P-8	36	48	20	1280	\$722.50	\$924,800.00
36x48	P-18	36	48	32	2048	\$722.50	\$1,479,680.00
36x48	P-18	36	48	32	2048	\$722.50	\$1,479,680.00
36x48	P-20	36	48	32	2048	\$722.50	\$1,479,680.00
Total:							\$5,687,520.00

Line 38							
Column On Pile	Piles	Length	Width	Height	CY of Concrete Column	Cost per CY	Individual Cost
30x18	P-2	30	18	5	100	\$722.50	\$72,250.00
24x18	P-2	24	18	8	128	\$722.50	\$92,480.00
36x18	P-4	36	18	10	240	\$722.50	\$173,400.00
36x48	P-10	36	48	20	1280	\$722.50	\$924,800.00
36x48	P-20	36	48	32	2048	\$722.50	\$1,479,680.00
36x48	P-20	36	48	32	2048	\$722.50	\$1,479,680.00
36x48	P-20	36	48	32	2048	\$722.50	\$1,479,680.00
Total:							\$5,701,970.00

CONCRETE BEAMS ESTIMATE

200 Level Concrete Beams							
Line	Beams ID	Height	Width	Length	CY of Concrete Beams	Cost per CY	Individual Cost
33	B201C	3	3	9	3.00	\$402.72	\$1,208.16
33	B201B	3	3	10	3.33	\$402.72	\$1,342.40
33	B213	3	3	6	2.00	\$402.72	\$805.44
33	B211B	3	3	9	3.00	\$402.72	\$1,208.16
33	B211C	3	3	8	2.67	\$402.72	\$1,073.92
33-34	B212B	1.5	3	5	0.83	\$402.72	\$335.60
33-34	B212A	2	3	7	1.56	\$402.72	\$626.45
33-34	B260	3	3	8	2.67	\$402.72	\$1,073.92
33-34	B210	3	3	8.5	2.83	\$402.72	\$1,141.04
33-34	B208	3	3	9	3.00	\$402.72	\$1,208.16
33-34	B206	3	3	10	3.33	\$402.72	\$1,342.40
33-34	B204	3	3	11	3.67	\$402.72	\$1,476.64
33-34	B204	3	3	11.5	3.83	\$402.72	\$1,543.76

33-34	B204	3	3	12.5	4.17	\$402.72	\$1,678.00
33-34	B238	3	3	13.5	4.50	\$402.72	\$1,812.24
34	B201C	2	3	9	2.00	\$402.72	\$805.44
34	B201B	3	3	10	3.33	\$402.72	\$1,342.40
34	B213	3	3	6	2.00	\$402.72	\$805.44
34	B211B	3	3	9	3.00	\$402.72	\$1,208.16
34	B211C	3	3	8	2.67	\$402.72	\$1,073.92
34-35	B212B	1.5	3	4.5	0.75	\$402.72	\$302.04
34-35	B212A	2	3	5	1.11	\$402.72	\$447.47
34-35	B212A	3	3	7	2.33	\$402.72	\$939.68
34-35	B260	2	3	8	1.78	\$402.72	\$715.95
34-35	B210	3	3	8.5	2.83	\$402.72	\$1,141.04
34-35	B208	3	3	9	3.00	\$402.72	\$1,208.16
34-35	B206	3	3	10	3.33	\$402.72	\$1,342.40
34-35	B204	3	3	11	3.67	\$402.72	\$1,476.64
34-35	B204	3	3	11.5	3.83	\$402.72	\$1,543.76
34-35	B204	3	3	12.5	4.17	\$402.72	\$1,678.00
34-35	B238	3	3	13.5	4.50	\$402.72	\$1,812.24
35	B201D	2	3	9	2.00	\$402.72	\$805.44
35	B201D	3	3	10	3.33	\$402.72	\$1,342.40
35	B201B	3	3	8	2.67	\$402.72	\$1,073.92
35	B213	3	3	6	2.00	\$402.72	\$805.44
35	B11B	3	3	9	3.00	\$402.72	\$1,208.16
35	B211C	3	3	8	2.67	\$402.72	\$1,073.92
35-36	B212A	3	3	7	2.33	\$402.72	\$939.68
35-36	B262	3	3	8	2.67	\$402.72	\$1,073.92
35-36	B260	3	3	8.5	2.83	\$402.72	\$1,141.04
35-36	B210	3	3	9	3.00	\$402.72	\$1,208.16
35-36	B208	3	3	10	3.33	\$402.72	\$1,342.40
35-36	B206	3	3	11	3.67	\$402.72	\$1,476.64
35-36	B204	3	3	11.5	3.83	\$402.72	\$1,543.76
35-36	B204	3	3	12.5	4.17	\$402.72	\$1,678.00
35-36	B238	3	3	13.5	4.50	\$402.72	\$1,812.24
36	B201D	3	3	9	3.00	\$402.72	\$1,208.16
36	B201D	3	3	10	3.33	\$402.72	\$1,342.40
36	B201B	3	3	8	2.67	\$402.72	\$1,073.92
36	B213	3	3	6	2.00	\$402.72	\$805.44
36	B211	3	3	9	3.00	\$402.72	\$1,208.16
36	B211C	3	3	8	2.67	\$402.72	\$1,073.92
36-37	B212B	3	3	7	2.33	\$402.72	\$939.68
36-37	B213A	3	3	8	2.67	\$402.72	\$1,073.92
36-37	B212A	3	3	8.5	2.83	\$402.72	\$1,141.04
36-37	B262	3	3	9	3.00	\$402.72	\$1,208.16
36-37	B260	3	3	9.5	3.17	\$402.72	\$1,275.28
36-37	B210	3	3	9.75	3.25	\$402.72	\$1,308.84
36-37	B208	3	3	10	3.33	\$402.72	\$1,342.40
36-37	B206	3	3	11	3.67	\$402.72	\$1,476.64
36-37	B204	3	3	11.5	3.83	\$402.72	\$1,543.76
36-37	B204A	3	3	12.5	4.17	\$402.72	\$1,678.00
36-37	B224	3	3	13	4.33	\$402.72	\$1,745.12
36-37	B238	3	3	13.5	4.50	\$402.72	\$1,812.24
37	B201E	3	3	9	3.00	\$402.72	\$1,208.16

37	B201C	3	3	10	3.33	\$402.72	\$1,342.40
37	B201B	3	3	8	2.67	\$402.72	\$1,073.92
37	B213	3	3	6	2.00	\$402.72	\$805.44
37	B211B	3	3	9	3.00	\$402.72	\$1,208.16
37	B211C	3	3	8	2.67	\$402.72	\$1,073.92
37-38	B212B	3	3	6.5	2.17	\$402.72	\$872.56
37-38	B264	3	3	7	2.33	\$402.72	\$939.68
37-38	B212A	3	3	8	2.67	\$402.72	\$1,073.92
37-38	B262	3	3	8.5	2.83	\$402.72	\$1,141.04
37-38	B260	3	3	9	3.00	\$402.72	\$1,208.16
37-38	B210	3	3	10	3.33	\$402.72	\$1,342.40
37-38	B208	3	3	11	3.67	\$402.72	\$1,476.64
37-38	B206	3	3	11.5	3.83	\$402.72	\$1,543.76
37-38	B204	3	3	12.5	4.17	\$402.72	\$1,678.00
37-38	B204B	3	3	13.5	4.50	\$402.72	\$1,812.24
38	B201B	3	3	8.5	2.83	\$402.72	\$1,141.04
38	B201C	3	3	9	3.00	\$402.72	\$1,208.16
38	B201B	3	3	10	3.33	\$402.72	\$1,342.40
38	B203	3	3	8	2.67	\$402.72	\$1,073.92
38	B207	3	3	6	2.00	\$402.72	\$805.44
38	B211A	3	3	9	3.00	\$402.72	\$1,208.16
38	B211	3	3	8	2.67	\$402.72	\$1,073.92
Total:							\$105,154.67

CONCRETE ESTIMATE SUMMARY

SUBTOTAL FOUNDATION ESTIMATE:	\$304,972.70
LOCATION MULTIPLIER 99% FOR DC:	\$301,922.97
TOTAL FOUNDATION COST:	\$301,922.97

Steel Estimate

STEEL BEAMS

300 Level Steel Beams

Line	Beam Type	Beam Length (ft)	Beam Weight (Tons)	Cost per Ton	Individual Cost
33-34	W 14 x 90	32	1.44	\$186.35	\$268.34
33-34	W 18 x 76	36	1.368	\$186.35	\$254.93
33-34	W 21 x 44	40	0.88	\$186.35	\$163.99
33-34	W 27 x 84	42	1.764	\$186.35	\$328.72
33-34	W 27 x 84	44	1.848	\$186.35	\$344.37
33-34	W 24 x 55	48	1.32	\$186.35	\$245.98
33-34	W 24 x 55	50	1.375	\$186.35	\$256.23
33-34	W 24 x 62	52	1.612	\$186.35	\$300.40
33-34	W 36 x 150	54	4.05	\$186.35	\$754.72
34-35	W 14 x 43	32	0.688	\$186.35	\$128.21
34-35	W 18 x 76	36	1.368	\$186.35	\$254.93
34-35	W 21 x 44	40	0.88	\$186.35	\$163.99
34-35	W 27 x 84	42	1.764	\$186.35	\$328.72
34-35	W 27 x 84	44	1.848	\$186.35	\$344.37
34-35	W 24 x 55	48	1.32	\$186.35	\$245.98
34-35	W 24 x 55	50	1.375	\$186.35	\$256.23
34-35	W 24 x 62	52	1.612	\$186.35	\$300.40
34-35	W 36 x 150	54	4.05	\$186.35	\$754.72
35-36	W 14 x 90	32	1.44	\$186.35	\$268.34
35-36	W 18 x 76	36	1.368	\$186.35	\$254.93
35-36	W 21 x 44	40	0.88	\$186.35	\$163.99
35-36	W 27 x 84	42	1.764	\$186.35	\$328.72
35-36	W 27 x 84	44	1.848	\$186.35	\$344.37
35-36	W 24 x 55	48	1.32	\$186.35	\$245.98
35-36	W 24 x 55	50	1.375	\$186.35	\$256.23
35-36	W 24 x 62	52	1.612	\$186.35	\$300.40
35-36	W 36 x 150	54	4.05	\$186.35	\$754.72
36-37	W 14 x 43	32	0.688	\$186.35	\$128.21
36-37	W 18 x 76	36	1.368	\$186.35	\$254.93
36-37	W 21 x 44	40	0.88	\$186.35	\$163.99
36-37	W 24 x 55	42	1.155	\$186.35	\$215.23
36-37	W 24 x 62	44	1.364	\$186.35	\$254.18
37-38	W 14 x 90	32	1.44	\$186.35	\$268.34
37-38	W 14 x 90	36	1.62	\$186.35	\$301.89
37-38	W 18 x 76	40	1.52	\$186.35	\$283.25
37-38	W 21 x 44	42	0.924	\$186.35	\$172.19
37-38	W 24 x 55	44	1.21	\$186.35	\$225.48
37-38	W 24 x 62	48	1.488	\$186.35	\$277.29
Total:					\$11,157.89

400 Level Steel Beams					
Line	Beam Type	Beam Length (ft)	Beam Weight (Tons)	Cost per Ton	Individual Cost
33-34	W 18 x 35	36	0.63	\$186.35	\$117.40
33-34	W 18 x 35	38	0.665	\$186.35	\$123.92
33-34	W 24 x 62	40	1.24	\$186.35	\$231.07
33-34	W 36 x 231	54	6.237	\$186.35	\$1,162.26
33-34	W 18 x 50	54	1.35	\$186.35	\$251.57
34-35	W 18 x 35	36	0.63	\$186.35	\$117.40
34-35	W 18 x 35	38	0.665	\$186.35	\$123.92
34-35	W 24 x 62	40	1.24	\$186.35	\$231.07
34-35	W 24 x 62	42	1.302	\$186.35	\$242.63
34-35	W 21 x 44	44	0.968	\$186.35	\$180.39
34-35	W 36 x 231	54	6.237	\$186.35	\$1,162.26
34-35	W 18 x 50	54	1.35	\$186.35	\$251.57
35-36	W 18 x 35	36	0.63	\$186.35	\$117.40
35-36	W 18 x 35	38	0.665	\$186.35	\$123.92
35-36	W 24 x 62	40	1.24	\$186.35	\$231.07
35-36	W 24 x 62	42	1.302	\$186.35	\$242.63
35-36	W 21 x 44	44	0.968	\$186.35	\$180.39
35-36	W 21 x 44	46	1.012	\$186.35	\$188.59
35-36	W 21 x 44	47	1.034	\$186.35	\$192.69
35-36	W 14 x 90	48	2.16	\$186.35	\$402.52
35-36	W 18 x 40	49	0.98	\$186.35	\$182.62
35-36	W 24 x 55	50	1.375	\$186.35	\$256.23
35-36	W 24 x 55	51	1.4025	\$186.35	\$261.36
35-36	W 24 x 62	52	1.612	\$186.35	\$300.40
35-36	W 36 x 231	54	6.237	\$186.35	\$1,162.26
35-36	W 18 x 50	54	1.35	\$186.35	\$251.57
36-37	W 18 x 35	36	0.63	\$186.35	\$117.40
36-37	W 18 x 35	38	0.665	\$186.35	\$123.92
36-37	W 24 x 62	40	1.24	\$186.35	\$231.07
36-37	W 24 x 76	42	1.596	\$186.35	\$297.41
36-37	W 21 x 50	44	1.1	\$186.35	\$204.99
37-38	W 18 x 76	36	1.368	\$186.35	\$254.93
37-38	W 18 x 0.5	38	0.0095	\$186.35	\$1.77
37-38	W 24 x 62	40	1.24	\$186.35	\$231.07
37-38	W 24 x 62	42	1.302	\$186.35	\$242.63
37-38	W 21 x 50	44	1.1	\$186.35	\$204.99
Total:					\$10,199.31

500 Level Steel Beams					
Line	Beam Type	Beam Length (ft)	Beam Weight (Tons)	Cost per Ton	Individual Cost
33-34	W 14 x 43	32	0.688	\$186.35	\$128.21
33-34	W 21 x 44	36	0.792	\$186.35	\$147.59
33-34	W 24 x 55	40	1.1	\$186.35	\$204.99
33-34	W 21 x 44	43	0.946	\$186.35	\$176.29
33-34	W 24 x 76	44	1.672	\$186.35	\$311.58
33-34	W 8 x 13	8	0.052	\$186.35	\$9.69
33-34	W 8 x 13	8	0.052	\$186.35	\$9.69
33-34	W 8 x 13	8	0.052	\$186.35	\$9.69
33-34	W 30 x 99	47	2.3265	\$186.35	\$433.54
33-34	W 24 x 55	48	1.32	\$186.35	\$245.98
33-34	W 24 x 62	52	1.612	\$186.35	\$300.40
33-34	W 30 x 150	54	4.05	\$186.35	\$754.72
34-35	W 14 x 90	32	1.44	\$186.35	\$268.34

34-35	W 18 x 35	36	0.63	\$186.35	\$117.40
34-35	W 18 x 40	40	0.8	\$186.35	\$149.08
34-35	W 21 x 44	42	0.924	\$186.35	\$172.19
34-35	W 21 x 44	43	0.946	\$186.35	\$176.29
34-35	W 24 x 62	44	1.364	\$186.35	\$254.18
34-35	W 8 x 13	8	0.052	\$186.35	\$9.69
34-35	W 8 x 13	8	0.052	\$186.35	\$9.69
34-35	W 8 x 13	8	0.052	\$186.35	\$9.69
34-35	W 8 x 13	8	0.052	\$186.35	\$9.69
34-35	W 30 x 99	47	2.3265	\$186.35	\$433.54
34-35	W 24 x 55	48	1.32	\$186.35	\$245.98
34-35	W 24 x 62	52	1.612	\$186.35	\$300.40
34-35	W 36 x 150	54	4.05	\$186.35	\$754.72
35-36	W 14 x 43	32	0.688	\$186.35	\$128.21
35-36	W 18 x 35	36	0.63	\$186.35	\$117.40
35-36	W 18 x 40	40	0.8	\$186.35	\$149.08
35-36	W 21 x 44	42	0.924	\$186.35	\$172.19
35-36	W 21 x 44	44	0.968	\$186.35	\$180.39
35-36	W 24 x 62	46	1.426	\$186.35	\$265.74
35-36	W 8 x 13	8	0.052	\$186.35	\$9.69
35-36	W 8 x 13	8	0.052	\$186.35	\$9.69
35-36	W 8 x 13	8	0.052	\$186.35	\$9.69
35-36	W 8 x 13	8	0.052	\$186.35	\$9.69
35-36	W 30 x 99	47	2.3265	\$186.35	\$433.54
35-36	W 24 x 55	48	1.32	\$186.35	\$245.98
35-36	W 24 x 62	52	1.612	\$186.35	\$300.40
35-36	W 36 x 150	54	4.05	\$186.35	\$754.72
36-37	W 14 x 90	32	1.44	\$186.35	\$268.34
36-37	W 18 x 35	36	0.63	\$186.35	\$117.40
36-37	W 18 x 40	40	0.8	\$186.35	\$149.08
36-37	W 21 x 44	41	0.902	\$186.35	\$168.09
36-37	W 21 x 44	42	0.924	\$186.35	\$172.19
36-37	W 24 x 62	44	1.364	\$186.35	\$254.18
37-38	W 14 x 90	32	1.44	\$186.35	\$268.34
37-38	W 18 x 35	36	0.63	\$186.35	\$117.40
37-38	W 18 x 40	40	0.8	\$186.35	\$149.08
37-38	W 21 x 44	41	0.902	\$186.35	\$168.09
37-38	W 21 x 44	42	0.924	\$186.35	\$172.19
37-38	W 24 x 62	44	1.364	\$186.35	\$254.18
Total:					\$10,697.89

600 Level Steel Beams					
Line	Beam Type	Beam Length (ft)	Beam Weight (Tons)	Cost per Ton	Individual Cost
34-35	W 14 x 22	7	0.077	\$186.35	\$14.35
34-35	W 24 x 76	40	1.52	\$186.35	\$283.25
34-35	W 24 x 76	40	1.52	\$186.35	\$283.25
34-35	W 14 x 22	40	0.44	\$186.35	\$81.99
34-35	W 24 x 104	34	1.768	\$186.35	\$329.47
34-35	W 24 x 55	20	0.55	\$186.35	\$102.49
34-35	W 12 x 16	20	0.16	\$186.35	\$29.82

34-35	W 21 x 44	39	0.858	\$186.35	\$159.89
34-35	W 24 x 55	18	0.495	\$186.35	\$92.24
34-35	W 30 x 90	8	0.36	\$186.35	\$67.09
35-36	W 21 x 44	39	0.858	\$186.35	\$159.89
35-36	W 24 x 68	40	1.36	\$186.35	\$253.44
35-36	W 21 x 48	40	0.96	\$186.35	\$178.90
35-36	W 21 x 44	22	0.484	\$186.35	\$90.19
35-36	W 21 x 44	34	0.748	\$186.35	\$139.39
35-36	W 30 x 90	34	1.53	\$186.35	\$285.12
36-37	W 21 x 44	8	0.176	\$186.35	\$32.80
36-37	W 14 x 22	40	0.44	\$186.35	\$81.99
36-37	W 24 x 68	40	1.36	\$186.35	\$253.44
36-37	W 21 x 48	40	0.96	\$186.35	\$178.90
36-37	W 21 x 44	42	0.924	\$186.35	\$172.19
36-37	W 21 x 44	40	0.88	\$186.35	\$163.99
37-38	W 14 x 22	8	0.088	\$186.35	\$16.40
37-38	W 21 x 44	40	0.88	\$186.35	\$163.99
37-38	W 24 x 68	40	1.36	\$186.35	\$253.44
37-38	W 24 x 84	40	1.68	\$186.35	\$313.07
37-38	W 21 x 44	42	0.924	\$186.35	\$172.19
37-38	W 21 x 44	40	0.88	\$186.35	\$163.99
37-38	W 30 x 116	34	1.972	\$186.35	\$367.48
37-38	W 30 x 90	8	0.36	\$186.35	\$67.09
Total:					\$4,951.69

700 Level Steel Beams					
Line	Beam Type	Beam Length (ft)	Beam Weight (Tons)	Cost per Ton	Individual Cost
34-35	W 21 x 48	38	0.912	\$186.35	\$169.95
34-35	W 18 x 40	41	0.82	\$186.35	\$152.81
34-35	W 24 x 84	42	1.764	\$186.35	\$328.72
34-35	W 14 x 22	22	0.242	\$186.35	\$45.10
34-35	W 24 x 55	15	0.4125	\$186.35	\$76.87
34-35	W 24 x 68	22	0.748	\$186.35	\$139.39
34-35	W 24 x 55	38	1.045	\$186.35	\$194.74
34-35	W 30 x 90	8	0.36	\$186.35	\$67.09
34-35	W 30 x 90	8	0.36	\$186.35	\$67.09
35-36	W 16 x 31	38	0.589	\$186.35	\$109.76
35-36	W 18 x 40	41	0.82	\$186.35	\$152.81
35-36	W 24 x 84	42	1.764	\$186.35	\$328.72
35-36	W 21 x 44	44	0.968	\$186.35	\$180.39
35-36	W 21 x 44	38	0.836	\$186.35	\$155.79
36-37	W 16 x 26	38	0.494	\$186.35	\$92.06
36-37	W 18 x 40	41	0.82	\$186.35	\$152.81
36-37	W 24 x 84	42	1.764	\$186.35	\$328.72
36-37	W 21 x 44	44	0.968	\$186.35	\$180.39
36-37	W 21 x 44	46	1.012	\$186.35	\$188.59
37-38	W 21 x 48	38	0.912	\$186.35	\$169.95
37-38	W 18 x 40	41	0.82	\$186.35	\$152.81
37-38	W 24 x 84	42	1.764	\$186.35	\$328.72
37-38	W 21 x 44	44	0.968	\$186.35	\$180.39
37-38	W 21 x 48	46	1.104	\$186.35	\$205.73
Total:					\$4,149.36

STEEL COLUMNS

Steel Columns					
Line	Beam Type	Beam Length (ft)	Beam Weight (Tons)	Cost per Ton	Individual Cost
33	W 14 x 311	56	8.708	\$300.87	\$2,619.98
33	W 36 x 170	8	0.68	\$301.87	\$205.27
33	W 33 x 330	46	7.59	\$302.87	\$2,298.78
33	W 36 x 43	26	0.559	\$303.87	\$169.86
33	W 36 x 395	56	11.06	\$304.87	\$3,371.86
34	W 14 x 68	16	0.544	\$305.87	\$166.39
34	W 14 x 311	56	8.708	\$306.87	\$2,672.22
34	W 14 x 109	28	1.526	\$307.87	\$469.81
34	W 14 x 109	48	2.616	\$308.87	\$808.00
34	W 36 x 361	56	10.108	\$309.87	\$3,132.17
34	W 36 x 247	40	4.94	\$310.87	\$1,535.70
34	W 36 x 330	56	9.24	\$311.87	\$2,881.68
35	W 14 x 68	16	0.544	\$312.87	\$170.20
35	W 14 x 311	56	8.708	\$313.87	\$2,733.18
35	W 14 x 109	28	1.526	\$314.87	\$480.49
35	W 14 x 109	48	2.616	\$315.87	\$826.32
35	W 36 x 361	56	10.108	\$316.87	\$3,202.92
35	W 36 x 247	40	4.94	\$317.87	\$1,570.28
35	W 36 x 330	56	9.24	\$318.87	\$2,946.36
36	W 14 x 68	16	0.544	\$319.87	\$174.01
36	W 14 x 311	56	8.708	\$320.87	\$2,794.14
36	W 14 x 109	28	1.526	\$321.87	\$491.17
36	W 14 x 109	48	2.616	\$322.87	\$844.63
36	W 36 x 361	56	10.108	\$323.87	\$3,273.68
36	W 36 x 247	40	4.94	\$324.87	\$1,604.86
36	W 36 x 330	56	9.24	\$325.87	\$3,011.04
37	W 14 x 68	16	0.544	\$326.87	\$177.82
37	W 14 x 311	56	8.708	\$327.87	\$2,855.09
37	W 14 x 109	28	1.526	\$328.87	\$501.86
37	W 14 x 109	48	2.616	\$329.87	\$862.94
37	W 36 x 361	56	10.108	\$330.87	\$3,344.43
37	W 36 x 247	40	4.94	\$331.87	\$1,639.44
37	W 36 x 330	56	9.24	\$332.87	\$3,075.72
38	W 14 x 311	56	8.708	\$333.87	\$2,907.34
38	W 36 x 170	8	0.68	\$334.87	\$227.71
38	W 33 x 330	46	7.59	\$335.87	\$2,549.25
38	W 36 x 43	26	0.559	\$336.87	\$188.31
38	W 36 x 395	56	11.06	\$337.87	\$3,736.84
Total:					\$66,521.75

STEEL SUMMARY

SUBTOTAL STEEL ESTIMATE:	\$107,677.89
LOCATION MULTIPLIER 99% FOR DC:	\$106,601.12
TOTAL STEEL COST:	\$106,601.12



Appendix F

General Conditions Estimate

General Conditions Estimate

1010 - PERSONNEL		Quantity (months)	Unit Price/month	Individual Total
1011	Project Executive	24	\$8,400.00	\$201,600.00
1012	Project Manager	24	\$7,400.00	\$177,600.00
1012	Project Manager	24	\$7,400.00	\$177,600.00
1012	Project Manager	24	\$7,400.00	\$177,600.00
1012	Project Manager	24	\$7,400.00	\$177,600.00
1012	Project Manager	24	\$7,400.00	\$177,600.00
1013	Project Engineer	24	\$5,200.00	\$124,800.00
1013	Project Engineer	24	\$5,200.00	\$124,800.00
1013	Project Engineer	24	\$5,200.00	\$124,800.00
1013	Project Engineer	24	\$5,200.00	\$124,800.00
1013	Project Engineer	24	\$5,200.00	\$124,800.00
1013	Project Engineer	24	\$5,200.00	\$124,800.00
1013	Project Engineer	24	\$5,200.00	\$124,800.00
1013	Project Engineer	24	\$5,200.00	\$124,800.00
1013	Project Engineer	24	\$5,200.00	\$124,800.00
1013	Project Engineer	24	\$5,200.00	\$124,800.00
1013	Project Engineer	24	\$5,200.00	\$124,800.00
1013	Project Engineer	24	\$5,200.00	\$124,800.00
1013	Project Engineer	24	\$5,200.00	\$124,800.00
1013	Project Engineer	24	\$5,200.00	\$124,800.00
1014	Senior Superintendent	24	\$7,800.00	\$187,200.00
1015	Superintendent	24	\$6,800.00	\$163,200.00
1015	Superintendent	24	\$6,800.00	\$163,200.00
1015	Superintendent	24	\$6,800.00	\$163,200.00
1015	Superintendent	24	\$6,800.00	\$163,200.00
1015	Superintendent	24	\$6,800.00	\$163,200.00
1015	Superintendent	24	\$6,800.00	\$163,200.00
PERSONNEL TOTAL:				\$3,628,800.00

1020 - OFFICE SUPPLIES & EXPENSES		Quantity (months)	Unit Price	Individual Total
1021	Office Trailer	2	\$28,850.00	\$57,700.00
1022	Trailer Setup	LS	\$1,000.00	\$1,000.00
1023	Office Equipment Rental	24	\$150.00	\$3,600.00
1024	Office Supplies	24	\$95.00	\$2,280.00
1025	Office Cleaning	24	\$150.00	\$3,600.00
1026	Telephone Bill; avg. bill/month, incl. long distance.	24	\$210.00	\$5,040.00
1027	Office lights and HVAC	24	\$110.00	\$2,640.00
1028	Photographic Time Lapse Cameras	2	\$3,775.00	\$7,550.00
1029	Computers/Printers	LS	\$1,500.00	\$1,500.00
1030	Postage/Overnight Express	24	\$450.00	\$10,800.00
OFFICE SUPPLIES & EXPENSES TOTAL:				\$95,710.00

1030 - BONDS & INSURANCE		Quantity	Unit Price	Individual Total
1031	Controlled By Owner (OCIP)			\$0.00
BONDS & INSUR TOTAL:				\$0.00

1040 - PROJECT TRAVEL/MEALS		Quantity	Unit Price	Individual Total
1041	Out of Town Travel	30	150	\$4,500.00
1042	Business Meals	LS	\$5,000.00	\$5,000.00
PROJECT TRAVEL/MEALS TOTAL:				\$9,500.00

1050 - MISCELLANEOUS EXPENSES		Quantity	Unit Price	Individual Total
1051	Project Signs		LS	\$1,000.00
MISCELLANEOUS EXPENSES TOTAL:				\$1,000.00

1060 - TEMPORARY FACILITIES		Quantity	Unit Price	Individual Total
1061	Sanitary Facilities: Portable Toilets	16	\$165.00	\$2,640.00
TEMPORARY FACILITIES TOTAL:				\$2,640.00

1070 - TEMPORARY PROTECTION		Quantity	Unit Price	Individual Total
1071	Temporary Site Fence	3,950	\$8.61	\$34,009.50
1072	Inclement Weather Protection - Purchased By Subs.			\$0.00
TEMPORARY PROTECTION TOTAL:				\$34,009.50

1080 - TEMPORARY UTILITIES		Quantity	Unit Price	Individual Total
1081	Temporary Power Consumption	24	\$14,100.00	\$338,400.00
1082	Temporary Water Consumption	24	\$62.00	\$1,488.00
1083	Temporary Lighting, incl. serv. lamps, wiring, & outlets	24	\$51.92	\$1,246.08
1084	Temporary Heat, incl. fuel & operation; 12 hrs/day; per wk	24	\$4,017.00	\$96,408.00
TEMPORARY UTILITIES TOTAL:				\$437,542.08

1090 - CLEAN UP AND CHECK OUT		Quantity	Unit Price	Individual Total
1091	Daily Clean Up	24	26.07	\$50.07
1092	Final Clean Up		LS	\$5,000.00
1093	Dumpsters	10	\$900.00	\$9,000.00
CLEAN UP AND CHECK OUT TOTAL:				\$14,000.00

1100 - EQUIPMENT		Quantity	Unit Price	Individual Total
1101	All Equipment Purchased By Subcontractor			\$0.00
EQUIPMENT TOTAL:				\$0.00

SUBTOTAL GENERAL CONDITIONS COST:	\$4,223,201.58
LOCATION MULTIPLIER 99% FOR DC:	\$4,180,969.56
TOTAL GENERAL CONDITIONS COST:	\$4,180,969.56