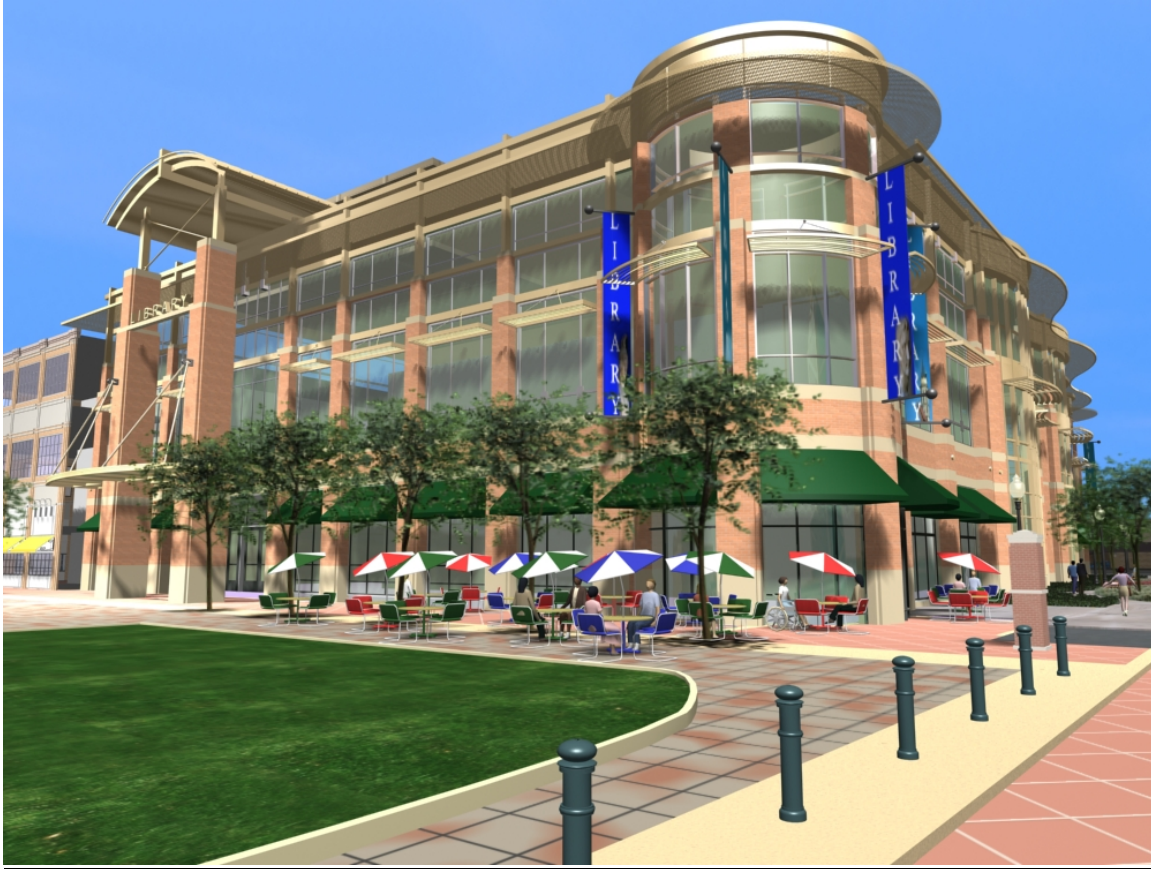


## Technical Assignment 2 Table of Contents

### The Rockville Library



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- IV. HVAC Assemblies Estimate – pgs. 8-11
- V. Detailed Structural Systems Estimate – pgs. 12-14
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## Executive Summary

After continued research into the Rockville Library I have some to several conclusions about the scheduling, sequencing, and estimating of this project. Overall I feel the main point is that there is too much reliance on project sequencing with not enough planning and analysis of the project schedule.

Here is a listing of some of the major project coordination issues:

- Foundation slab pouring and steel erection occurring in the same area
- Building curtain wall erection occurring during steel erection
- Delivery of cast stone and masonry panels while steel laid out
- Hoisting of MEP equipment to rooftop during roof construction
- MEP rough-in during building envelope framing

Those issues just scratch the surface of the sequencing and coordination required to make this project work. Many trades on each level have to work on top of each other in order to complete this project to schedule. Since the building and site are not that big there can be a lot of issues with crowding which I am concerned about. It sounds like a good plan on paper, but how much analysis was put into the project schedule? I was told there was no 4D project modeling which is one tool that could've been used to analyze this sequencing process.

Currently on the Rockville site some of these problems I have mentioned as being potential hazards have come to life. Coordination issues in the curtain wall construction were the main issue with several different trades. These coordination problems have set the project back weeks on the schedule. Now the work on site needs to be accelerated in order to finish to schedule which can create more coordination problems in catching up. Unfortunately with the lack of analysis into this project little room for error was given. A 4D model would've greatly helped the construction process and made it so there was as little confusion and errors as possible.

## Detailed Project Schedule

The Rockville Library project depends on coordination of several trades in order to assure the timely completion of the project. The project is broken into several different systems which I have coordinated above. These trades must interact together on several different occasions and observe the schedule frequently in order to understand their space limitations and time management. Landmarks are also noted in the project schedule by circled markers which indicate the major events that will affect the overall project.

<b>Green</b>	<b>Excavation/Foundation</b>
<b>Red</b>	<b>Structural System</b>
<b>Lime</b>	<b>Building Envelope</b>
<b>Aqua</b>	<b>1<sup>st</sup> Floor Coordination</b>
<b>Teal</b>	<b>2<sup>nd</sup> Floor Coordination</b>
<b>Fuchsia</b>	<b>3<sup>rd</sup> Floor Coordination</b>
<b>Yellow</b>	<b>Joint Floor Coordination</b>
<b>Blue</b>	<b>Mechanical/Specialty Systems</b>
<b>Olive</b>	<b>Close Out</b>

Overall, the construction sequencing on the Rockville Library Project is very straightforward. Excavation and foundations begin after notice to proceed is given and site mobilization is completed. After steel fabrication is completed and the foundation is prepared for steel erection, then the building can be put up. From there as the structure is assembled, the building envelope can be constructed so that after steel erection is completed, the envelope is not far off from being sealed. Throughout this process HVAC, piping, electrical, and fire protection systems can be installed on each floor. After climate control is obtained, interiors can begin which continues on each floor until project close out can begin.

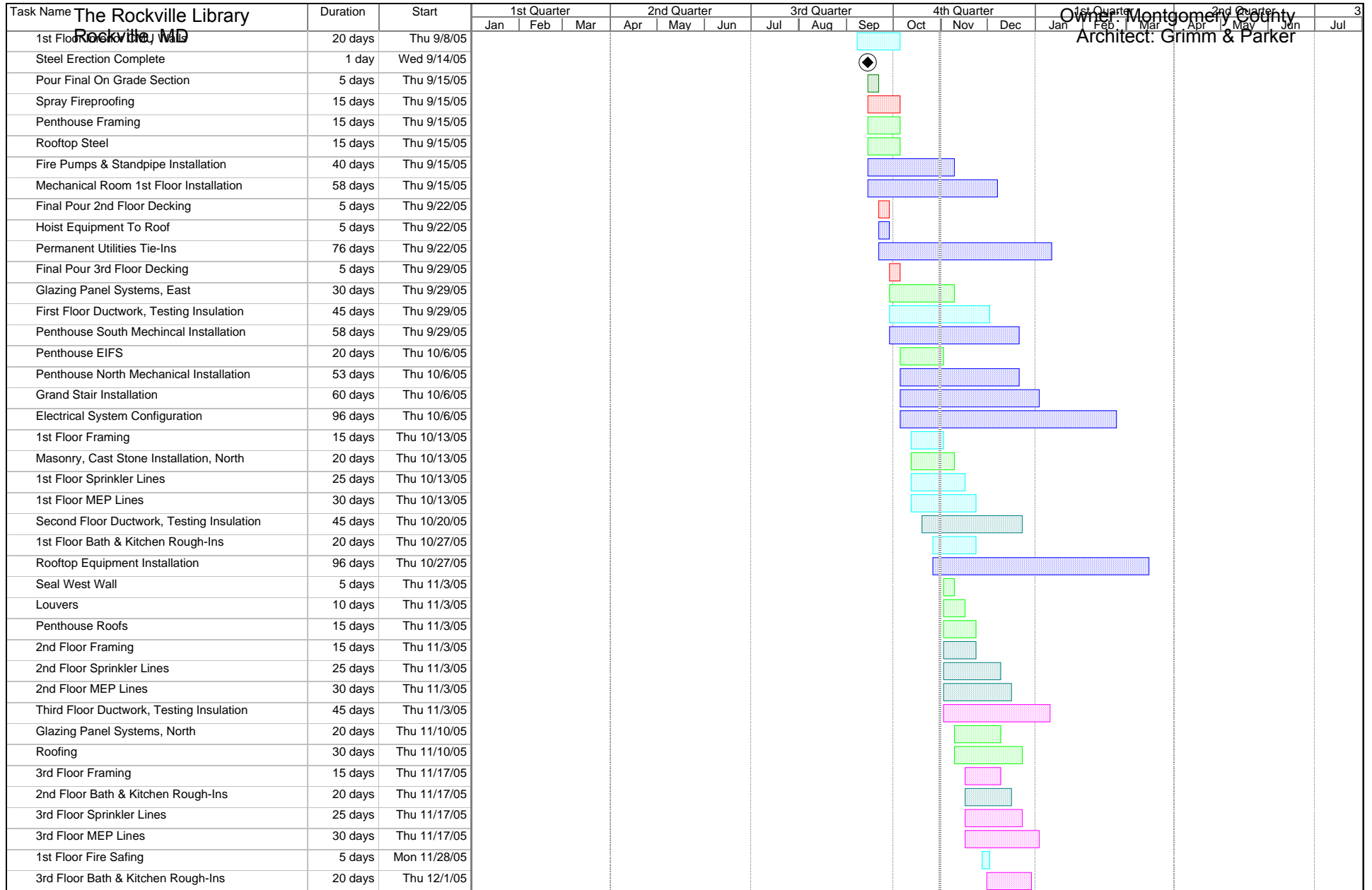
The main coordination issues are with the foundation, structural, and building envelope systems at the beginning of the project. All 3 of these systems are being constructed in sequence in order to try and obtain a building seal as fast as possible. Afterwards MEP trade coordination and interiors are the biggest issue. These trades will be working side by side on each floor frequently and paying close attention to sequencing is a must.

Task Name	Duration	Start	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			1st Quarter			2nd Quarter			3					
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun		Jul				
<b>The Rockville Library</b>	<b>354 days</b>	<b>Mon 2/7/05</b>	<b>Owner: Montgomery County</b>																							
Rockville Library, MD			<b>Project Summary</b>																							
Recieve Contract	1 day	Mon 2/7/05	◆																							
Obtain Permits	1 day	Fri 2/11/05	◆																							
Mobilize To Site	1 day	Tue 2/22/05	◆																							
Notice To Proceed	1 day	Tue 2/22/05	◆																							
Rebar Fabrication	10 days	Tue 2/22/05	■																							
Install Sediment Control	5 days	Wed 2/23/05	■																							
Install Site Fencing	5 days	Wed 2/23/05	■																							
Fabricate Steel	70 days	Wed 3/2/05	■																							
Deep Footings SW & NW	10 days	Tue 3/8/05	■																							
Perimeter Footings/Walls South	15 days	Tue 3/22/05	■																							
Perimeter Footings/Walls North	15 days	Tue 4/12/05	■																							
Interior Footings/Walls South	10 days	Tue 5/3/05	■																							
Below Grade Plumbing South	10 days	Tue 5/17/05	■																							
Below Grade Electrical South	10 days	Tue 5/17/05	■																							
Interior Footings/Walls North	15 days	Tue 5/17/05	■																							
Below Grade CMU South	15 days	Tue 5/17/05	■																							
Cast Stone Fabrication, Delivery	30 days	Tue 5/17/05	■																							
Curtainwall Fabrication, Delivery	60 days	Tue 5/24/05	■																							
Elevator Piston Shaft	5 days	Tue 5/31/05	■																							
Below Grade Plumbing North	15 days	Tue 6/7/05	■																							
Below Grade CMU North & East	15 days	Tue 6/7/05	■																							
Below Grade Electrical North	15 days	Tue 6/7/05	■																							
Set Southern Steel Decking & Columns	20 days	Wed 6/8/05	■																							
Perimeter Foundation Drain	5 days	Wed 6/28/05	■																							
Pour 2nd Floor South Slab On Decking	5 days	Thu 7/7/05	■																							
Pour Slab On Grade South	10 days	Thu 7/7/05	■																							
Set Eastern Steel Decking & Columns	15 days	Thu 7/7/05	■																							
Pour 3rd Floor South Slab On Decking	5 days	Thu 7/14/05	■																							
Pour South Penthouse Slab Pads	5 days	Thu 7/21/05	■																							
Backfill Perimeter Walls South	10 days	Thu 7/21/05	■																							
Set Northern Steel Decking & Columns	20 days	Thu 7/28/05	■																							
Masonry, Cast Stone Installation, South	20 days	Thu 8/4/05	■																							
Pour 1st Floor Slab North, East	5 days	Thu 8/25/05	■																							
Pour Slab On Grade North	10 days	Thu 8/25/05	■																							
Set Final Steel Columns & Decking	15 days	Thu 8/25/05	■																							
Pour 2nd Floor Slab North, East	5 days	Thu 9/1/05	■																							
Glazing Panel Systems, South	20 days	Thu 9/1/05	■																							
Masonry, Cast Stone Installation, East	30 days	Thu 9/1/05	■																							
Pour Penthouse Slab North	5 days	Thu 9/8/05	■																							
Backfill Perimeter Walls North	10 days	Thu 9/8/05	■																							










Project: Rockville Library  
Date: Mon 10/31/05

Task		Milestone	◆	External Tasks	
Split		Summary		External Milestone	◆
Progress		Project Summary		Deadline	↓

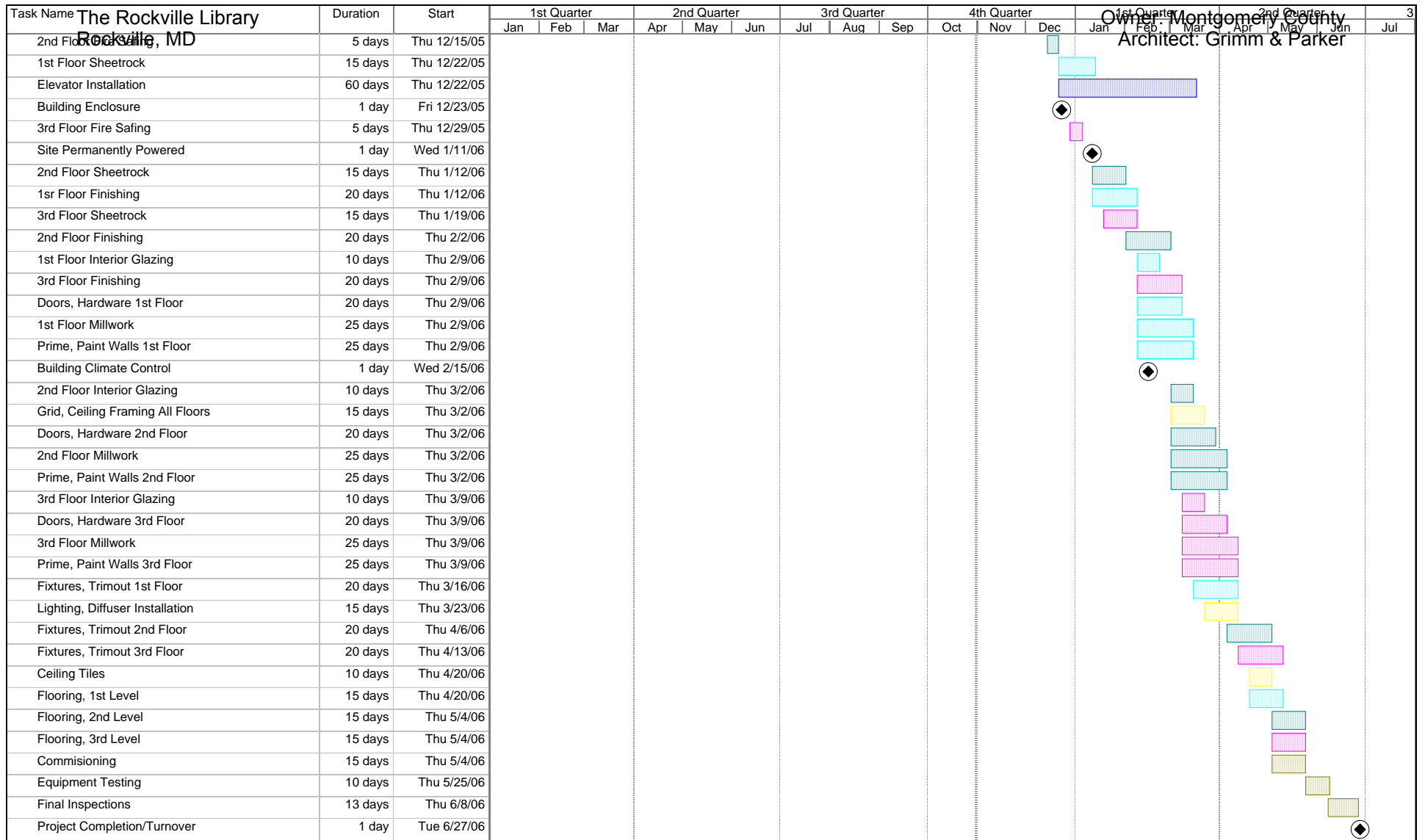
Tom Caldwell  
Construction Management



Owner: Montgomery County  
 Architect: Grimm & Parker










Project: Rockville Library Date: Mon 10/31/05	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

10/31/2005 Page 18 Tom Caldwell  
Construction Management



Owner: Montgomery County  
 Architect: Grimm & Parker

Project: Rockville Library  
 Date: Mon 10/31/05

Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

Tom Caldwell

Construction Management

## Site Plan Analysis

The superstructure site organization is made greatly simple and possible through the mobility of the equipment in use and the sequencing of trades. The mobile crane unit and mobile concrete pump both make it easy to navigate around the site so that every area of construction can be reached. All that matters is that the path of these two vehicles is coordinated not to collide and is free from all site interference. Site staging can be held in numerous locations since the crane is mobile and can pick up objects anywhere on site. The only problem with this site layout is the amount of coordination needed to pump concrete and erect steel for each area of the building. The Rockville Library is broken down into three zones and activities are sequenced and coordinated to be completed at different times in these three zones. If the schedule is not properly analyzed or followed time can be lost in coordination.

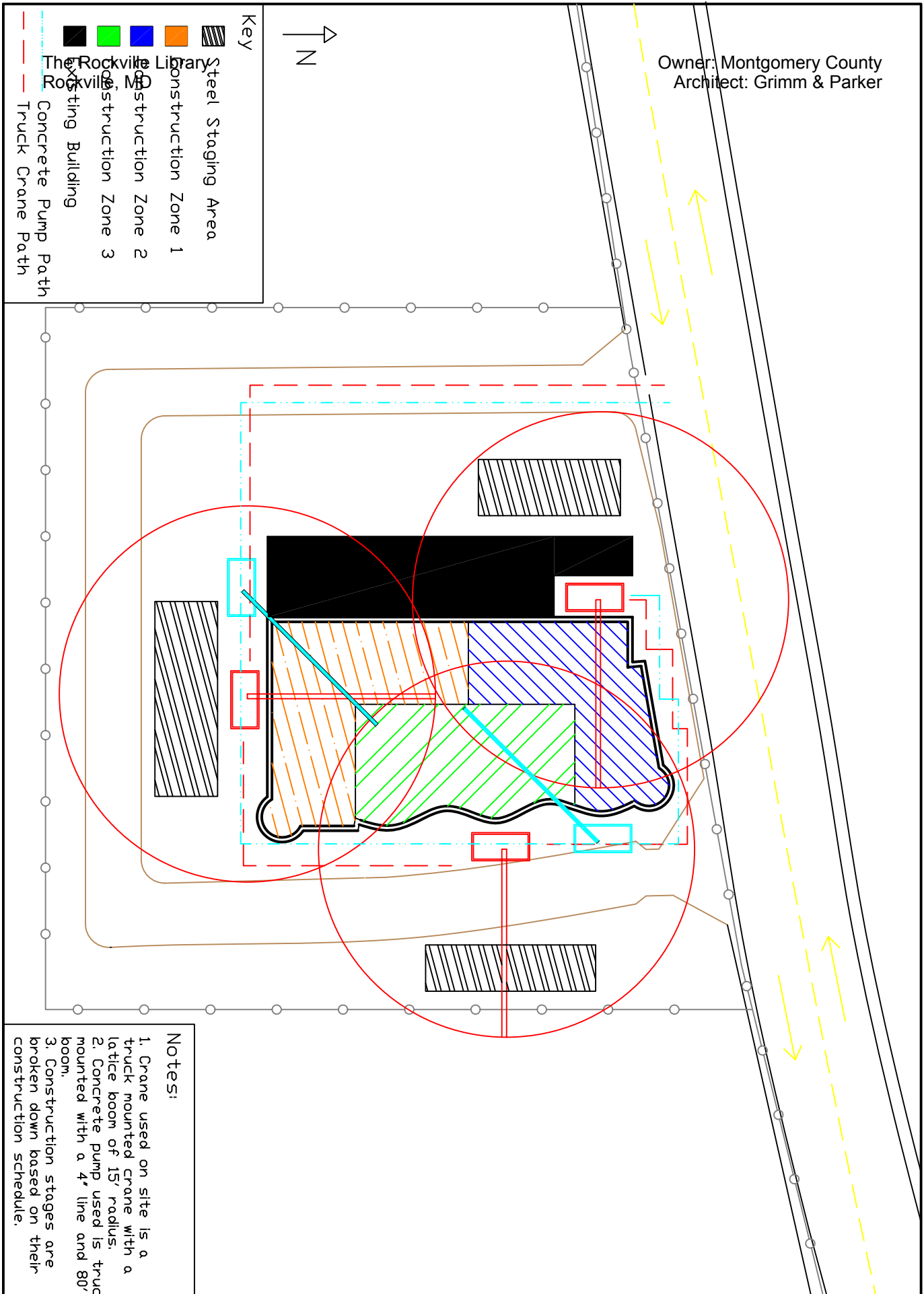
Owner: Montgomery County  
 Architect: Grimm & Parker



Key

- Construction Zone 1
- Construction Zone 2
- Construction Zone 3
- Existing Building
- Steel Staging Area
- Concrete Pump Path
- Truck Crane Path

The Rockville Library  
 Rockville, MD



Notes:

1. Crane used on site is a truck mounted crane with a lattice boom of 15' radius.
2. Concrete pump used is truck mounted with a 4' line and 80' boom.
3. Construction stages are broken down based on their construction schedule.

Sheet 58 of 18

REVISIONS	DATE	DESCRIPTION	APPROVED
1	01/2005		

Superstructure  
 Site Layout

8 of 18

Rockville Library  
 Rockville, MD

Tom Caldwell  
 Construction Management

Designed DESIGNER DDATE	Tom Caldwell	
Drawn DRAWER DRDATE	Tom Caldwell	
Checked CHECKER CDATE		
Approved _____	Date _____	
Title _____	Job Class _____	



## HVAC System Assemblies Estimate

1. System D 3020 104 1240  
Large Heating System, Hydraulic, Electric Boiler
  - Boiler, electric hot water, standard controls, fittings, valves, 135 KW, 461 MBH
    - Unit - 1 Each System
    - Material Cost - \$ 8,400.00
    - Installation - \$ 2,737.50
    - Total - \$ 11,137.50
  - Expansion Tank, painted steel, 60 gallon capacity ASME
    - Unit - 1 Each System
    - Material Cost - \$ 2,475.00
    - Installation - \$ 148.00
    - Total - \$ 2,623.00
  - Circulating pump, close cpld, 50 GPM, 2 HP, 2" pipe connection
    - Unit - 1 Each System
    - Material Cost - \$ 1,250.00
    - Installation - \$ 295.00
    - Total - \$ 1,545.00
  - Unit heater, 1 speed propeller, horizontal, 200 degree EWT, 72.7 MBH
    - Unit - 7 Each System
    - Material Cost - \$ 4,585.00
    - Installation - \$ 1,127.00
    - Total - \$ 5,712.00
  - Unit heater piping hookup with controls
    - Unit - 7 Sets Per System
    - Material Cost - \$ 2,695.00
    - Installation - \$ 7,350.00
    - Total - \$ 10,045.00
  - Pipe, steel, black, schedule 40, welded, 2 1/2" diameter
    - Unit - 380 L.F.
    - Material Cost - \$ 2,242.00
    - Installation - \$ 7,862.20
    - Total - \$ 10,104.20
  - Pipe covering, calcium silicate with cover, 1" wall, 2 1/2" diameter
    - Unit - 380 L.F.
    - Material Cost - \$ 1,124.80
    - Installation - \$ 1,995.00
    - Total - \$ 3,119.80

**\*\*Modified**

For 18,600 S.F. 296 KW, 1010 MBH, 3 Floor System

<u>Material Cost per S.F.</u> -	\$ 2.93
<u>Installation Cost per S.F.</u> -	\$ 4.12
<u>Total Cost per S.F.</u> -	\$ 7.05

\$ 7.05 (102,400 S.F.) = **\$ 721,920**

2. System D3030 115 1320  
Packaged Chiller, Water Cooled, with Fan Coil Unit

- Fan coil AC unit, cabinet mounted + filters, chilled water
  - Unit - 2 Each System
  - Material Cost - \$ 3,969.88
  - Installation - \$ 542.35
  - Total - \$ 4,512.23
- Water chiller, reciprocating, water cooled, 1 compressor semihermetic
  - Unit - 1 Each System
  - Material Cost - \$ 10,167.60
  - Installation - \$ 2,633.50
  - Total - \$ 12,801.10
- Cooling tower, draw through single flow, belt drive
  - Unit - 1 Each System
  - Material Cost - \$ 667.03
  - Installation - \$ 112.15
  - Total - \$ 779.18
- Cooling tower pumps and piping
  - Unit - 1 System
  - Material Cost - \$ 333.52
  - Installation - \$ 267.55
  - Total - \$ 601.07
- Chilled water unit coil connections
  - Unit - 2 Each System
  - Material Cost - \$ 1,220.00
  - Installation - \$ 2,200.00
  - Total - \$ 3,420.00
- Chilled water distribution piping
  - Unit - 520 L.F.
  - Material Cost - \$ 5,824.00
  - Installation - \$ 17,680.00
  - Total - \$ 23,504.00

\*\*Modified

For Banks and Libraries, 60,000 S.F., 250 ton system

<u>Material Cost per S.F.</u> -	\$ 6.50
<u>Installation Cost per S.F.</u> -	\$ 5.30
<u>Total Cost per S.F.</u> -	\$ 11.80

\$ 11.80 (102,400 S.F.) = \$ **1,208,320**

3. System D3050 155 1280  
Rooftop, Multi-zone, Air Conditioners

- Rooftop multi-zone units, standard controls, curbs

<u>Unit</u> -	1 Each System
<u>Material Cost</u> -	\$ 35,640.00
<u>Installation</u> -	\$ 1,353.00
<u>Total</u> -	\$ 36,993.00

- Ductwork package for rooftop multi-zone units

<u>Unit</u> -	1 System
<u>Material Cost</u> -	\$ 2,447.50
<u>Installation</u> -	\$ 9,762.50
<u>Total</u> -	\$ 12,210.00

\*\*Modified

For Banks and Libraries, 15,000 S.F., 62.5 ton system

<u>Material Cost per S.F.</u> -	\$ 10.45
<u>Installation Cost per S.F.</u> -	\$ 8.10
<u>Total Cost per S.F.</u> -	\$ 18.55

\$ 18.55 (102,400 S.F.) = \$ **1,899,520**

Total Cost

<u>Heating System</u> -	\$ 721,920.00
<u>Cooling System</u> -	\$ 1,208,320.00
<u>Rooftop Units/Ductwork</u> -	\$ 1,899,520.00

**HVAC Assemblies Estimate - \$ 3,829,760.00**

**Actual HVAC System Cost - \$ 3,646,169.00**

The estimate for the Rockville Library HVAC system turned out to be a very good assemblies estimate with the price being off by less than three hundred thousand dollars. If a more detailed estimate was made with exact system sizes and components then the price could've been even closer. However, using the general unit sizes, types, weight, and building type and size I was able to piece together a very close estimate to the Rockville Library's HVAC system.

First, using R.S. Means 2005 Assemblies Estimate I saw the three components for estimating the HVAC system; the heating system, the cooling system, and if applicable rooftop units and ductwork. For my heating system I chose the large heating system, hydraulic, with electric boilers since it was the closest match to the Rockville heating system which utilizes a large heating system with electric boilers while pumping the water through the building's piping system. After I got the initial heating system figures from R.S. Means I modified the system in order to make them more tailored to my building. When modifying the system to be larger, more powerful and three stories to closely match the specs of the Rockville Library, the estimate produced a good value close to the actual system cost.

Next, I did the same thing for the cooling system and the rooftop units. I chose large systems with similar components closely matching the specs for Rockville's HVAC systems. Then I modified them to match a library's typical cooling/rooftop components and found a similar size and weight for each unit. The values for these two systems along with the heating system estimate produced overall a very close estimate.

## Detailed Structural Systems Estimate

Structural Steel Beams & Girders – Due to the lack of uniformity in my building structure there was no typical bay in order to analyze my building. Thus due to the building's relatively small size and height I took off the entire steel system.

<u>Steel Member</u>	<u>Length (in L.F.)</u>	<u>Cost per L.F.</u>
W 8 x 15	48	\$ 20.11
W 8 x 21	54	\$ 25.66
W 10 x 15	227	\$ 20.11
W 12 x 14	475	\$ 17.36
W 12 x 16	2120.6	\$ 17.36
W 12 x 19	324	\$ 24.86
W 12 x 26	984	\$ 28.86
W 14 x 22	2333.16	\$ 28.43
W 14 x 26	160	\$ 28.43
W 16 x 26	4086.6	\$ 28.40
W 18 x 35	3066.56	\$ 38.09
W 18 x 40	723.8	\$ 43.09
W 21 x 44	347	\$ 46.64
W 21 x 50	534	\$ 52.14
W 21 x 57	255	\$ 63.76
W 24 x 55	1722.4	\$ 56.97
W 24 x 62	643	\$ 63.47
W 24 x 68	327	\$ 69.47
W 24 x 76	119.6	\$ 76.97
W 27 x 48	51.2	\$ 84.70
W 27 x 84	578.4	\$ 84.70
W 27 x 94	156	\$ 94.20
W 27 x 102	20	\$ 113.83
W 33 x 118	33	\$ 117.75

Structural Steel Columns – Overall the Rockville Library doesn't need a lot of steel members to properly support the building. Heavy loads and high occupancy are not expected thus the building can make due with a reasonable quantity of steel members. In particular columns where there are only 35 present in the building.

<u>Steel Member</u>	<u>Length (in L.F.)</u>	<u>Cost per L.F.</u>
W 8 x 48	461.6	\$ 49.29
W 8 x 67	288.5	\$ 67.95
W 12 x 50	980.9	\$ 51.29
W 12 x 87	230.8	\$ 86.95
W 12 x 120	57.7	\$ 119.54

Steel Connections – Continuous fillet, stick welding, including equipment

Single Pass – 3/16” thick, 0.2 #L.F.

**Cost per L.F. - \$ 11.28**



Concrete Footings – Strip footings, 36” x 12” reinforced

Typical footing size –  $(5.75' \times 1') + (2.75' \times 6') = 22.25' \times (6')$   
= 4.9 cy per footing section  
w/ estimated 78 sections

**Cost per C.Y. - \$ 169.39**

Pouring Slab On Grade / Deck - > 6" thick w/ crane and bucket

Slab Size Floor 1 -  $35750 \text{ ft}^2(5/12') = 551.7 \text{ C.Y.}$   
Slab Size Floor 2 -  $35750 \text{ ft}^2(3/12') = 331 \text{ C.Y.}$   
Slab Size Floor 3 -  $35750 \text{ ft}^2(3/12') = 253.7 \text{ C.Y.}$   
Roof -  $35750 \text{ ft}^2(4.5/12') = 380.55 \text{ C.Y.}$

**Cost per C.Y. - \$ 152.89**

Concrete Finishing – screen, float, broom finish

Total S.F. Concrete – 102,400  
**Cost per S.F. - \$ 0.61**

Concrete Cost - 3000 psi, 3000 psi lightweight

1<sup>st</sup> Floor – 5" 3000 psi concrete  
2<sup>nd</sup> & 3<sup>rd</sup> Floors – 3" 3000 psi lightweight concrete  
Roof – 4.5" 3000 psi concrete

**Cost per C.Y. 3000 psi concrete – \$ 89.00**  
**Cost per C.Y. 3000 psi lightweight concrete - \$ 117.45**

Concrete Reinforcement – 6 x 6 W(2.1) x W(2.1) (8 x 8) 30 lb. per C.S.F.

Total Concrete C.S.F. – 102.4  
**Cost per C.S.F. - \$ 45.10**



Total Cost

Steel Beams & Members	\$ 1,276,545
Steel Columns	\$ 119,632
Steel Connections	\$ 245,966
Concrete Footings	\$ 64,741
Concrete Slab Pouring	\$ 231,927
Concrete Finishing	\$ 62,464
Concrete Cost	\$ 158,453
Concrete Reinforcement	\$ 43,008
<b><i>Grand Total</i></b>	<b><i>\$ 2,202,736</i></b>



The Rockville Library  
 Rockville, MD  
**General Conditions Estimate**

Owner: Montgomery County  
 Architect: Grimm & Parker

<b>0100 Personnel</b>		<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Total</u>
101	Project Engineer	69	Weeks	\$1,550.00	\$106,950.00
102	Project Manager	69	Weeks	\$2,875.00	\$198,375.00
103	Superintendent	69	Weeks	\$2,675.00	\$184,575.00
104	Quality Control Specialist	69	Weeks	\$1,835.00	\$126,615.00
105	Project Executive	69	Weeks	\$3,400.00	\$234,600.00
<b>Burden at (25%)</b>					\$212,779.00
<b>Subtotal</b>					<b>\$1,063,894.00</b>

<b>0200 Office Fees</b>		<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Total</u>
301	Trailer Rental (50' x 12')	18	Months	\$315.00	\$5,670.00
302	Office Power, Heating, AC	18	Months	\$65.00	\$1,170.00
303	Trailer Setup		L/S	\$600.00	\$600.00
<b>Subtotal</b>					<b>\$7,440.00</b>

<b>0300 Office Supplies / Expenses</b>		<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Total</u>
201	General Office Supply Set	6	Ea.	\$135.00	\$810.00
202	Copy Machine	1	Ea.	\$400.00	\$400.00
203	Blueprinting		L/S		\$1,850.00
204	Water Coolers	2	Ea.	\$175.00	\$350.00
205	Telephone Equipment, Usage	18	Months	\$224.00	\$4,032.00
206	Radios	5	Ea.	\$150.00	\$750.00
207	Postage		L/S		\$3,300.00
<b>Subtotal</b>					<b>\$11,492.00</b>

<b>0400 Safety + Security</b>		<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Total</u>
401	Safety Supplies + Expenses		L/S		\$5,400.00
402	Fire Extinguishers	8	Ea.	\$45.00	\$360.00
403	Chain Link Fencing (6' High)	5,800	LF	\$7.30	\$42,340.00
<b>Subtotal</b>					<b>\$48,100.00</b>

<b>0500 Misc. Expenses</b>		<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Total</u>
501	Project Signs		L/S		\$600.00
<b>Subtotal</b>					<b>\$600.00</b>

<b>0600 Temporary Facilities</b>		<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Total</u>
The Rockville Library Rockville, MD Architect: Grimm & Parker					
601	Crew Sheds	4	Ea.	\$250.00	\$1,000.00
602	Portable Bathrooms	5	Ea.	\$195.00	\$975.00
<b>Subtotal</b>					<b>\$1,975.00</b>

<b>0700 Temp. Facilities</b>		<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Total</u>
702	Stairs/Ladders		L/S		\$600.00
706	Scaffolding, steel tubular 1-5 stories, 6'-4" x 5' frames	20	100 Sf	\$59.00	\$1,180.00
707	Roads & Sidewalks, 8" gravel depth Temporary Partitions	1052	S.Y. L/S	\$8.99	\$9,457.48 \$650.00
<b>Subtotal</b>					<b>\$11,887.48</b>

<b>0800 Temp Utilities</b>		<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Total</u>
801	Electric Heaters (4 @ 100 MBH)	60	Days	\$86.00	\$5,160.00
802	Temp Power Installation		L/S		\$780.00
803	Temp Water Services Installation		L/S		\$675.00
804	Power Consumption	18	Months	\$110.00	\$1,980.00
805	Water Consumption	18	Months	\$57.00	\$1,026.00
<b>Subtotal</b>					<b>\$9,621.00</b>

<b>0900 Clean Up</b>		<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Total</u>
901	Garbage Removal		L/S		\$2,700.00
902	Dumpsters	12	Ea.	\$125.00	\$1,500.00
<b>Subtotal</b>					<b>\$4,200.00</b>

<b>1000 Equipment</b>		<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Total</u>
1001	Pump truck mounted 4" line, 80' Boom	7	Months	\$7,975.00	\$55,825.00
1002	Finisher, gas powered	60	Days	\$91.60	\$5,496.00
1003	Crane, truck mounted, lattice boom, 90 tons at 15' radius	4	Months	\$14,600.00	\$58,400.00
1007	Roller, smooth drum, 20 H.P.	5	Days	\$107.40	\$537.00
1101	Forklift, wheeled for cast stone	3	Months	\$1,600.00	\$4,800.00
1102	Welders	6	Ea.	\$365.00	\$2,190.00
1103	Backhoe- loader 5/8 C.Y. capacity Hydraulic Lifts	20 2	Days Ea.	\$173.20 \$1,785.00	\$3,464.00 \$3,570.00
<b>Subtotal</b>					<b>\$134,282.00</b>

<b>General Conditions</b>	\$1,293,492.00
<b>Commisioning (@ 0.5%)</b>	\$97,000.00
<b>Contingency (@ 10%)</b>	\$129,350.00
<b>Total General Conditions</b>	<b>\$1,519,842.00</b>