TECHNICAL ASSIGNMENT 1

Construction Project Management – September 29, 2008

BRIDGESIDE BUILDING II

Pittsburgh, PA

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Construction Management

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EXECUTIVE SUMMARY

This technical assignment summarizes the existing conditions and the construction methods utilized on the Bridgeside Building II project. The following report is broken up into eight sections: project schedule summary, building systems summary, project cost evaluation, site plan, local conditions, client information, project delivery system, and a staffing plan. The purpose of developing each of these sections is to gain an understanding of the building process for Bridgeside Building II, which will be used to further research and analyze the project.

The URA, the Ferchill Group, and the Pittsburgh Port Commission are working together to develop the Pittsburgh Technology Center. Bridgeside Building II, which is owned by the Ferchill Group, is a 5 story speculative laboratory and office space, located on the Monongahela River, outside the city of Pittsburgh. This space is being developed to meet the local demands of universities and medical offices for additional lab space. The project duration is 14 months and will cost approximately $18 million. Bridgeside II is being constructed on a site previously occupied by J&L Steel, which created issues when constructing the building foundation because old footers and scrap steel were buried under the site. The structure of choice is steel framing with composite decks. The building exterior is wrapped in storefront windows, cast stone and insulated metal panels. All of the building systems were sized to exceed the average demands of a typical laboratory and office space to accommodate the undetermined tenants.

Turner Construction, who is a well-established General Contractor in Pittsburgh, was contracted under a GMP to construct Bridgeside II. The project delivery method is a design-bid-build; however, Turner put the structural packages out for bid before the design was complete to expedite the schedule. Turner holds lump sum contracts with all of the subcontractors and the Ferchill Group holds a standard AIA Owner Architect Agreement with Strada Architecture, LLC. Each of the engineers is listed as a subconsultant under Strada's contract with the owner.

A. PROJECT SUMMARY SCHEDULE

See Appendix A for the one page Project Schedule Summary

The contract for Bridgeside II was executed on October 22, 2007 followed by a Notice to Proceed issued on November 1, 2007. The building is scheduled to finish on January 9, 2009 making the project duration about 14 months. If a tenant or multiple tenants are determined before the completion date then Turner Construction may be given the contract to fit-out the building therefore lengthening the project duration.

Foundation

The foundations consist of H-piles, concrete pile caps and concrete grade beams. The total duration for the foundation work was about 4 months. The installation of the H-piles caused some delays in the project due to the previous site use. Foundations and steel scraps were left behind by an old steel mill which created problems when drilling for the piles. Most of the obstructions were too deep to be dug out and were drilled through. Others were near the surface and were dug out before the piles were drilled. The entire site required more than 4 feet of fill so to save some time the foundations were installed before the site was brought to the correct grade to avoid excavation for the footers.

Structural

The structure for Bridgeside II consists of structural steel and composite decks. The structural steel took over a month to erect and was followed closely by the metal decking. To lift the steel into place a crawler crane was positioned at the northeast corner of the building and constructed one bay at a time. The crane started inside the building footprint in order to reach the opposite side of the building and then proceeded to move south and backed out of the footprint. The concrete pours started at floor 2 and then worked up to the roof and finished with the slab on grade. Each floor was broken up into 3 pours with a typical layout for each floor. Each pour was about 10,000 square feet and took 2 to 3 days to complete. *See Appendix B for the slab pour sequence*, typical of each floor.

Finishes

Due to Bridgeside II being a shell building, most of the finishes won't be determined until a tenant decides to move into the space. Tenants will have the opportunity to rent out an entire floor or one section of a floor. They also have the option of renting office space or lab space so the necessary finishes will vary. Areas that will need to be finished include the lobby, building core and stairwells. The majority of the finishes are sequenced by floor and follow the order of 2-3-4-1-5.

B. BUILDING SYSTEMS SUMMARY

WORK SCOPE	YES	NO
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		X

Demolition

Bridgeside II was constructed on the site of an old steel mill and some of the building foundations and steel scraps were left buried in the site. Many of the obstructions were up to 25 feet deep and were drilled through when installing the foundation piles rather than digging them up. However, about $4,000 was spent digging up obstructions that were near the surface or could not be drilled through.

Structural Steel Frame

The structural system for Bridgeside II consists of structural steel and composite slab deck. The lateral bracing is located on each side of the building perimeter and is constructed of hollow steel tube cross bracing. Composite slabs are used on floors 2-5 and the roof. They consist of 3" normal weight concrete on 3" 20 gage steel deck. A combination of ¾" shear studs and welds are used to create the composite assembly. The crane used for the steel erection was a 75 ton Crawler Crane. The crane started inside the footprint at the northeast building corner and moved south, ending outside the building footprint.

Cast in Place Concrete

Cast in place concrete is used for the pile caps, slab on grade and composite slabs. The minimum strength requirement for foundation elements is 3,000 psi and the interior slabs are 4,000 psi. A concrete vendor was responsible for supplying the concrete onsite while another company was responsible for pumping the concrete into place. Simon Panels were utilized for the formwork and were capable of being used multiple times. Each floor was divided into three pours, which is about 10,000 square feet each. The pours were positioned side by side and ran the length of the building. Floors 2 through 5 were poured in order, followed by the slab on grade.

B. BUILDING SYSTEMS SUMMARY

Mechanical System

The mechanical system is located outside on the building's roof surrounded by steel screen walls to shield the units from the public eye. There are 3 roof top units each of which utilizes hot water pre-heat coils and energy recovery wheels. One unit uses 100% outside air and produces 40,000 cfm of supply air. The other two units each use 17,000 cfm of outside air and produce 75,000 cfm of supply air. Bridgeside II also utilizes a boiler, which is located on the roof, and 5 VAV boxes, 1 on each floor. Since Bridgeside II currently does not have a tenant the building is being built as a shell space. Therefore the mechanical system had to be sized based off of assumptions and past projects. The building will accommodate both office and lab spaces. To meet the demands of the future lab spaces each floor was designed for 10,000 cfm of lab exhaust and numerous wet stacks were added to allow for easy installation of lab sinks. It will be the job of the owner to understand the systems limitations and to take this into consideration when discussing lease arrangements. The majority of the fire suppression system consists of concealed sprinkler heads attached to a wet pipe system. Areas such as the loading dock and balconies require a dry pipe system.

Electrical System

The main electrical room is located on the bottom floor along with the generator and back-up generator. There is also an electrical room located in the center core of the building on each floor. The main distribution panel is sized for 4000 amps 480Y/277. Two transformers are located on the first floor and then one on the second, fourth and roof levels. Currently there are only panels designed to feed the mechanical equipment, building core, egress locations, and the building's exterior. Once a tenant moves in there is space for more panels to be installed in the electrical rooms on each of the floors. Similar to the mechanical system the electrical system had to be designed based off of assumptions. The main service feed was sized for a higher watt per square footage than a typical office building. Also, it is assumed that the labs will require a large number of receptacles however there is a large diversity in the amount of usage at any given time. This had to be taken into consideration when sizing the electrical system. The back-up generator is a 1 mega-watt diesel generator that will supply power to life safety systems including the hood exhaust fans. Additionally, the lab equipment will be provided power by the redundancy system.

Masonry

Cast stone masonry is used on the exterior of the building from the ground up to the second floor. The cast stone is non-load bearing and is supported by 6" metal studs with rigid insulation. Mortar and adjustable wire ties secure the panels to the structure. Once the cast stone becomes out of reach, man lifts are used to install the remaining panels.

C. PROJECT COST EVALUATION

Construction and Total Project Costs

Actual Building Construction Cost (CC) = $14,816,497

Actual Building Construction Cost per Square Foot = $14,816,497 / 162019 SF = $99.45/GSF

Total Project Cost = $18,032,803

Total Project Cost per Square Foot = $18,032,803 / 162019 SF = $111.30/GSF

Major Building Systems Costs and Costs per Square Foot:

- Mechanical System = $3,916,609; $24.17/GSF
- Electrical System = $1,263,159; $7.80/GSF
- Structural System = $3,725,927; $23.00/GSF
- Metal Panels = $1,226,772; $7.57/GSF
- Glass and Glazing = $1,303,489; $8.05/GSF

D4Cost 2002 Estimate

See Appendix C for the D4Cost Estimate

The D4Cost estimate was performed by selecting four projects similar in size, cost, and function to obtain a cost per square foot similar to Bridgeside Building II. The three shell office buildings were chosen because Bridgeside II is a shell space and therefore should have a similar cost per square foot. Since Bridgeside II is planned to be 80% lab space, the Medical Office Building Shell was chosen because the mechanical equipment and piping in a Medical Office would be sized closer to a lab space than a typical office building.

Project Name	Building Use	Size (SF)	Floors	Cost
Knollwood Office Building (Shell)	Office	55,998	3	$3,496,274
Atwood Professional Center (Shell)	Office	70,884	3	$2,989,670
Oakbend Office Building (Shell)	Office	18,800	3	$1,556,110
Medical Office (Building Shell)	Medical	122,442	4	$10,832,146

D4Cost reported an estimate of **$143.28/GSF** and **$22,924,306** for the total project cost, which is 27% higher than the actual project cost for Bridgeside II. The elevated price is a result of each of the projects having a different scope than Bridgeside II. If each of the compared projects had the same structure, exterior and MEP systems as Bridgeside II then the estimate would be more exact. D4Cost is appropriate for providing ballpark estimates but not for dependable project estimates.

C. PROJECT COST EVALUATION

R.S. Means 2008 Square Foot Estimate

See Appendix D for the reference page from R.S. Means 2008

The following R.S. Means estimate is based off a 5-10 story Office Building with Face Brick and Concrete Block Back-Up. The model costs are calculated for an 8-story building with 12' story heights and 80,000 square feet. Perimeter, height and location adjustments were necessary to complete the estimate.

Bridgeside II
SF Area = 160,000 SF
LF Perimeter = 773 LF
5 Stories – 14' Average Story Height

Cost per Square Foot of Floor Area = $129.04/SF

Perimeter Adjustment - $3.32/100LF = $7.87/SF
Height Adjustment - $1.40/1FT = $2.80/SF
Location Modifier: Pittsburgh, PA = .99

Total Cost per Square Foot of Floor Area = $138.31/SF
Estimated Project Cost = $22,129,600

Additives total to $402,900 for 3 3500lb passenger elevators

Total Project Estimate Cost = $22,532,500

The R.S. Means estimate is 25% higher than the actual project cost for Bridgeside II. The cost difference can be attributed to the fact that Bridgeside II is a shell office space and the R.S. Means estimate includes costs for interior fit-out. Another reason for the cost difference is for the R.S. Means estimate the building exterior was assumed to be face brick with concrete block back up and Bridgeside II has insulated metal panels on rigid metal studs.

D. SITE PLAN OF EXISTING CONDITIONS

See Appendix E for a Site Plan of Existing Conditions

There are currently three projects being constructed on Technology Drive. The projects include Bridgeside Building II, a parking garage and the relocation of Technology Drive. Technology Drive is being relocated to sit east of Bridgeside II and will sit between Bridgeside II and the parking garage. The large amount of construction has made the site congested. Turner Construction has had limited space for staging areas and parking because they are surrounded by Technology Drive, the Sunoco Building and the river. This leaves space only on the south side for their trailers, parking and storage. The majority of the utilities had to be installed because the only existing line was an electric line, which serviced the parking lots on the east of Bridgeside II.

E. LOCAL CONDITIONS

Steel has always been the material of choice in Pittsburgh. However, over the past few decades many of the Steel Mills have shut down. Bridgeside II is located on the site of J&L Steel, which shut down in 1981. The large quantities of steel produced in Pittsburgh is said to have built America. Steel is still used for most Pittsburgh buildings; however, the material selection is based on cost and schedule demands rather than tradition.

Since there are three projects being constructed simultaneously, parking on-site is scarce. One of the parking lots was removed to make room for the parking garage therefore the surrounding buildings can't sacrifice anymore of their parking space. Turner Construction only needs two parking spaces and the subcontractors have been able to make due with the space they were given. There are usually multiple subcontractors on site when a building is being fit-out. Since Bridgeside II is a shell space that is not an issue. Bridgeside II is not Leed certified therefore they are not required to utilize separate dumpsters for each of the recycled materials.

The subsurface materials in Pittsburgh consist mostly of bedrock, sandstone, shale and thin limestone. In order to determine the subsurface conditions on site the geotechnical engineer drilled eight borings in the building footprint. Rather than the typical materials the results showed up to 40 feet of man placed fill consisting of rock fragments, brick, slag and clay. Also on site were foundations and debris left from J&L Steel. The man placed fill was determined to not be suitable for the building loads due to its variability. Rather than using shallow concrete foundations, piles were drilled until bedrock was reached.

F. CLIENT INFORMATION

The owner of the Technology Center property and the land that Bridgeside II is located on is the Urban Redevelopment Authority of Pittsburgh. The URA is a group who purchases and develops land that is unwanted by the private sector. They also construct low-income housing, retirement communities and assist with financing. The URA approved a proposal from the Ferchill Group to purchase land and construct the Bridgeside II Building. The Ferchill Group is a successful developer from Cleveland who made their mark in Pittsburgh with the construction of Bridgeside Building I and Heinz Lofts. To further accommodate Bridgeside II the URA is constructing a 750 space parking garage, relocating Technology Drive and relocating existing utilities. The Ferchill Group's goal for the project is to rent the space to a local university who needs additional laboratory space, which could create up to 400 new jobs. Also once Bridgeside II is 50 percent leased the Ferchill Group can begin construction on an adjacent 120,000 square foot facility. Therefore it is important that Bridgeside II is a desired space so that it is leased quickly. The Ferchill Group's long-term goal for Pittsburgh is to develop a million square feet of space and the URA plans to further develop the Technology Center with hotels and mixed-use facilities.

G. PROJECT DELIVERY SYSTEM

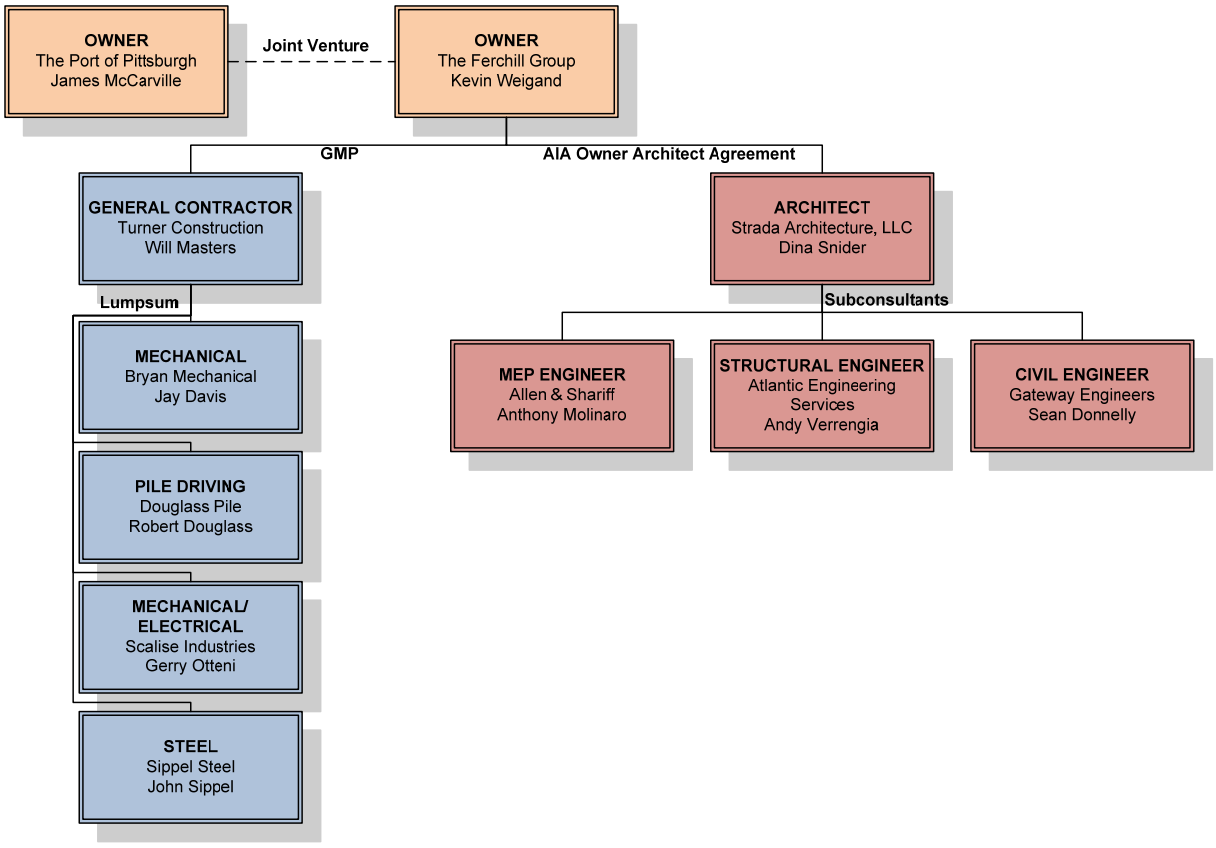
See the following page for an Organizational Chart

The delivery method for Bridgeside II is technically design-bid-build; however, Turner Construction negotiated with the owner to be able to get involved with the project early. Turner was able to bid out the steel, piles, concrete and excavation packages before the design was complete. This was beneficial to the project because the subcontractors were contracted ahead of time and were able to begin procurement and expedite the schedule. Turner established a GMP contract that gave them the flexibility to join the project early and helped to avoid some of the risk that comes with an incomplete design. The GMP also provides the option of change orders, which may be necessary after a scope change during the completion of the design and throughout the duration of the project.

Turner Construction holds a lump sum contract with all of their subcontractors. This contracting method is appropriate because the scope and schedule are spelled out in the bid packages and it also allows the use of change orders if a scope change or an unforeseen incident were to occur. Rather than having Turner bond the project and each of the subs provide a bond, the owner purchased a program from Turner called Subguard. Subguard provides a bond for the entire project including each of the subcontractors. The subcontractors only have to bond any work that they contract to another company. Subguard is beneficial for the project because it prevents double bonding and it gives Turner more solutions and options in the event of a subcontractor default.

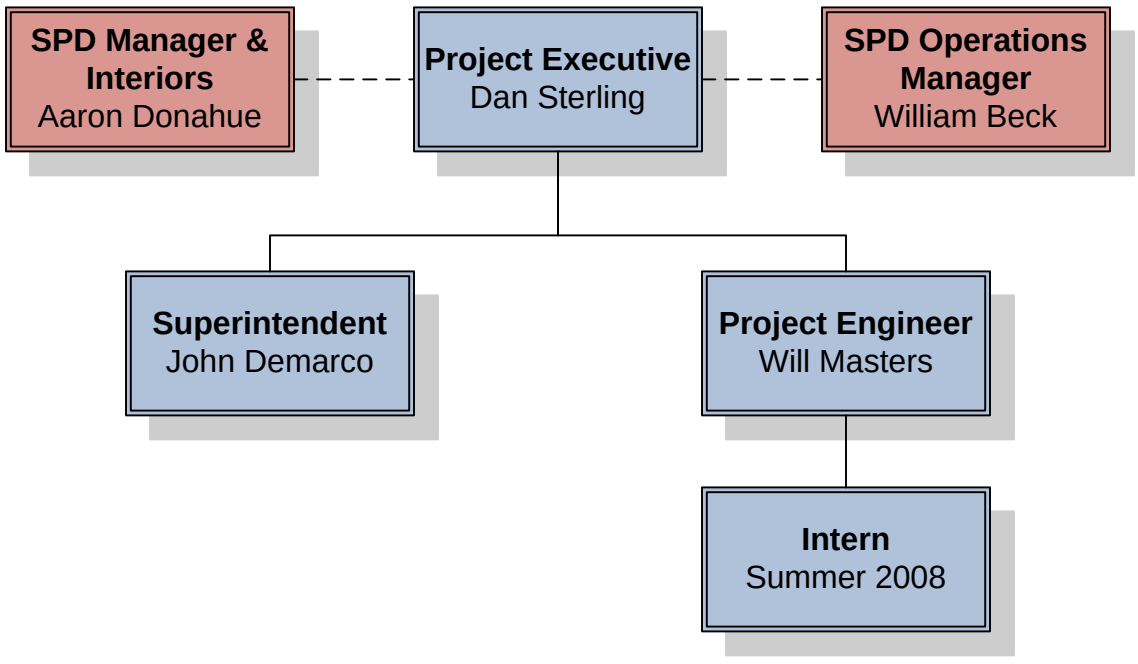
The Ferchill Group and Strada Architecture utilize a standard AIA Owner Architect agreement, which is a negotiated fee that Strada charges for their services on the project. Rather than holding separate contracts for each of the consultants and engineers they are listed as subconsultants to Strada under their contract with the owner. The subconsultants include the MEP, structural, civil and geotechnical engineers.

Organizational Chart



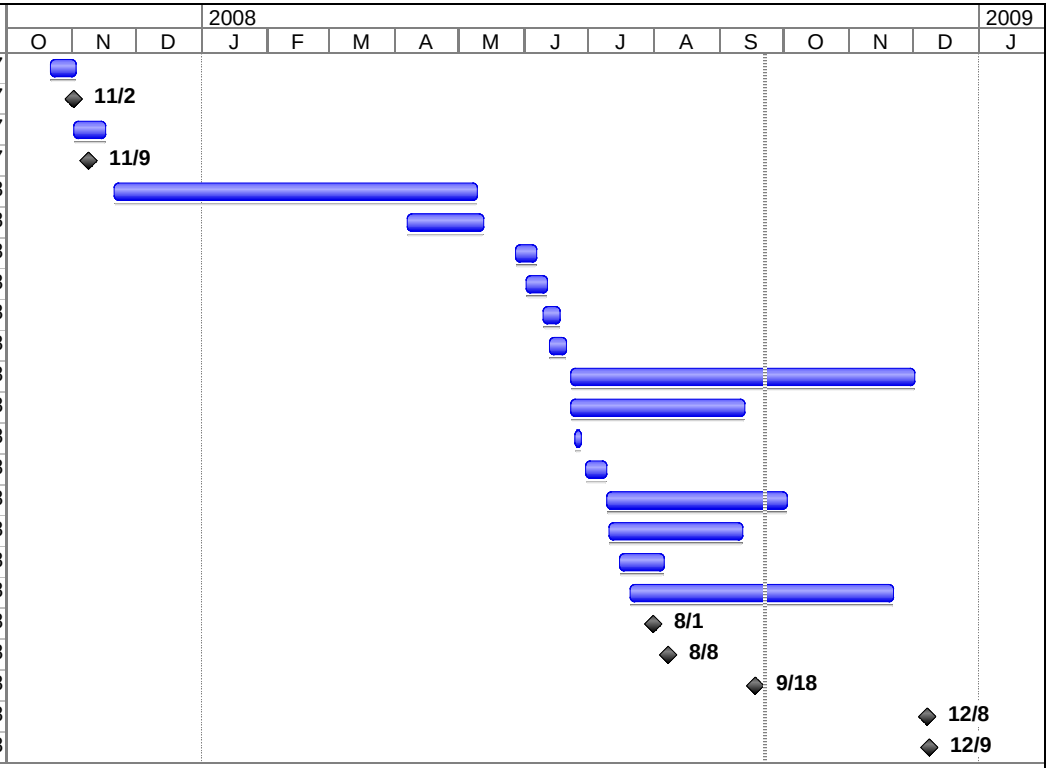
H. STAFFING PLAN

Turner Construction uses a simple staffing plan for this project. Very few people are involved with the project; however, it is enough to get the job done. The Superintendent and the Project Engineer work out of the on site trailer and report to Dan Sterling, the Project Executive. John, the Superintendent, is responsible for updating the schedule, holding subcontractor meetings and controlling the flow of the trades. Will, the Project Engineer, is responsible for RFI's, submittals, payment requisitions and etc. Between the two of them there has not been a need for a Project Manager. The staffing plan has stayed constant with the exception of adding an intern for the summer months. Turner Construction also has a Special Projects Division that works on interior construction, renovations, and small buildings. Aaron Donahue and William Beck work for Turner's SPD and have contributed to the project.



APPENDIX A: PROJECT SCHEDULE SUMMARY

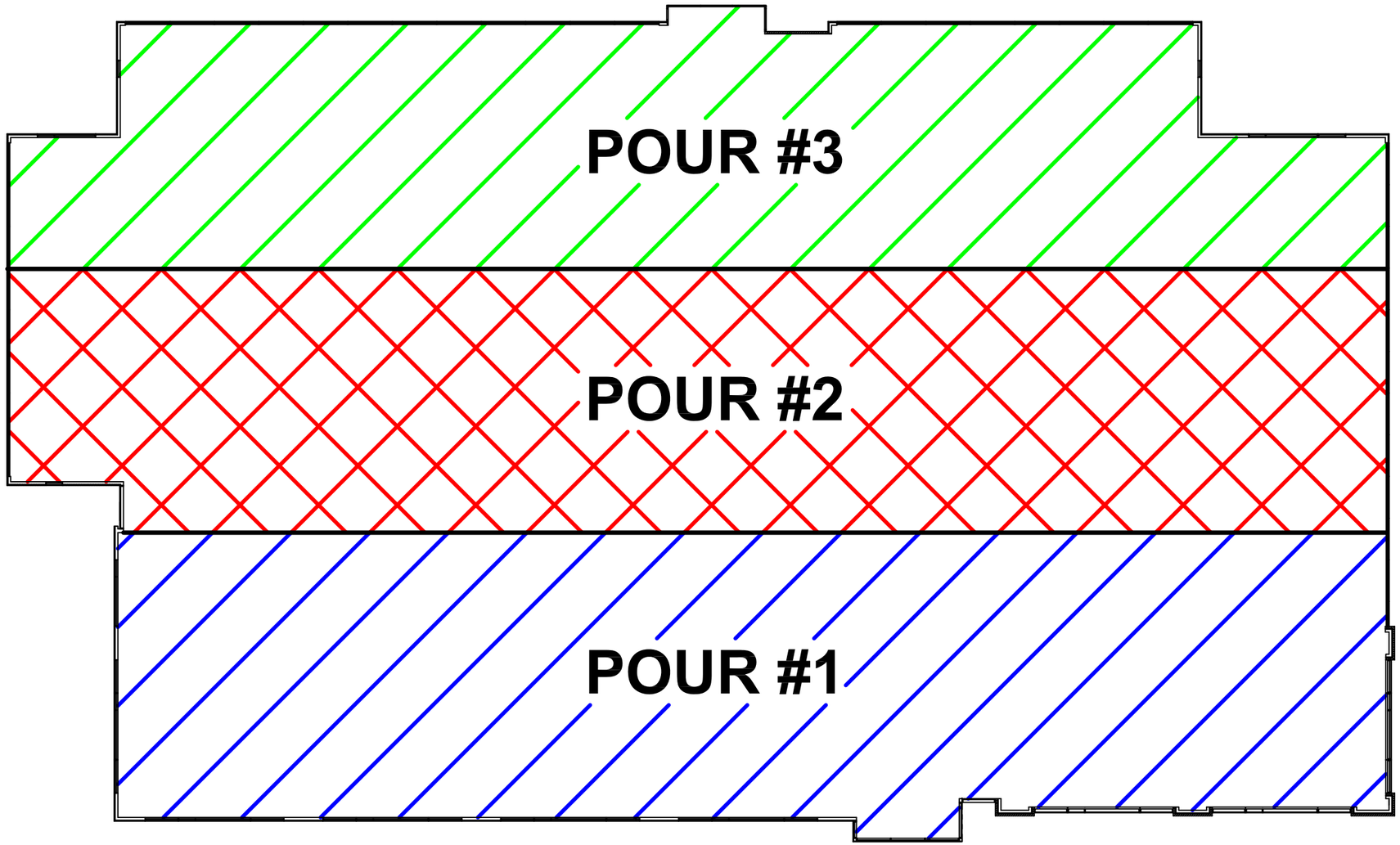
ID	Task Name	Duration	Start	Finish
1	Preconstruction	10 days	Mon 10/22/07	Fri 11/2/07
2	Notice to Proceed	0 days	Fri 11/2/07	Fri 11/2/07
3	Mobilization	11 days	Fri 11/2/07	Fri 11/16/07
4	Sitework Begins	0 days	Fri 11/9/07	Fri 11/9/07
5	Foundations	123 days	Wed 11/21/07	Fri 5/9/08
13	Erect Structural Steel	26 days	Mon 4/7/08	Mon 5/12/08
6	Slab on Deck Level 2	8 days	Wed 5/28/08	Fri 6/6/08
7	Slab on Deck Level 3	8 days	Mon 6/2/08	Wed 6/11/08
8	Slab on Deck Level 4	6 days	Tue 6/10/08	Tue 6/17/08
9	Slab on Deck Level 5	6 days	Fri 6/13/08	Fri 6/20/08
17	Interior Finishes	116 days	Mon 6/23/08	Mon 12/1/08
18	Procure Elevators	60 days	Mon 6/23/08	Fri 9/12/08
10	Slab on Deck Penthouse	3 days	Wed 6/25/08	Fri 6/27/08
11	Slab on Grade	8 days	Mon 6/30/08	Wed 7/9/08
12	Masonry	61 days	Thu 7/10/08	Thu 10/2/08
14	Metal Panels	45 days	Fri 7/11/08	Thu 9/11/08
15	Roofing	15 days	Wed 7/16/08	Tue 8/5/08
19	Sprinkler Systems	90 days	Mon 7/21/08	Fri 11/21/08
23	Deliver Switchgear	0 days	Fri 8/1/08	Fri 8/1/08
20	Deliver Roof Top Units	0 days	Fri 8/8/08	Fri 8/8/08
16	Building Enclosure	0 days	Thu 9/18/08	Thu 9/18/08
21	Final Building Inspection	0 days	Mon 12/8/08	Mon 12/8/08
22	Certificate of Occupancy	0 days	Tue 12/9/08	Tue 12/9/08



Project: Project schedule summary
Date: Mon 9/22/08

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

APPENDIX B: CONCRETE SLAB POUR SEQUENCE



CONCRETE SLAB POUR SEQUENCE (TYP)

STRADA

Erik Carlson
September 29, 2008

Project Name
Bridgeside Building 2

Drawing Title
Concrete Slab
Pour Sequence

APPENDIX C: D4COST ESTIMATE

Statement of Probable Cost

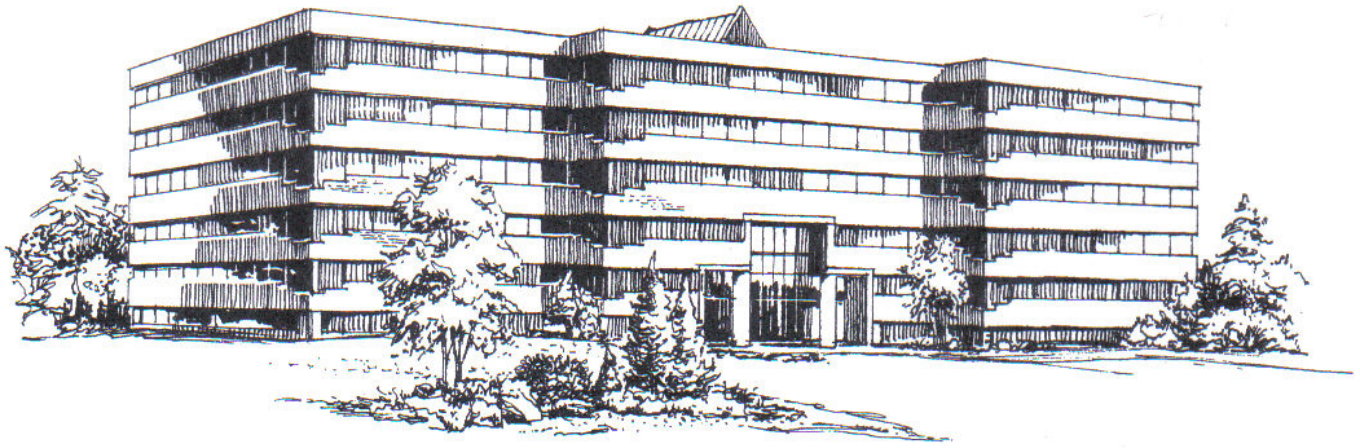
Bridgeside Building II - Nov 2007 - PA - Pittsburgh

Prepared By:	**Erik Carlson**	Prepared For:	**Dr. Messner**
	,		,
	Fax:		**Fax:**
Building Sq. Size:	**160000**	Site Sq. Size:	**84637**
Bid Date:	**10/22/2007**	Building use:	**Office**
No. of floors:	**5**	Foundation:	**PIL**
No. of buildings:	**1**	Exterior Walls:	**PAN**
Project Height:	**75**	Interior Walls:	**GYP**
1st Floor Height:	**14**	Roof Type:	**MEM**
1st Floor Size:	**32000**	Floor Type:	**COM**
		Project Type:	**NEW**

Division		Percent	Sq. Cost	Amount
01	**General Requirements**	**7.93**	**11.36**	**1,817,402**
	General Requirements	7.93	11.36	1,817,402
02	**Existing Conditions**	**3.95**	**5.66**	**904,809**
	Existing Conditions	3.95	5.66	904,809
03	**Concrete**	**7.84**	**11.24**	**1,798,313**
	Concrete	7.84	11.24	1,798,313
04	**Masonry**	**7.28**	**10.44**	**1,669,705**
	Masonry	7.28	10.44	1,669,705
05	**Metals**	**10.81**	**15.48**	**2,477,537**
	Metals	10.81	15.48	2,477,537
06	**Wood, Plastics, and Composites**	**2.00**	**2.87**	**459,591**
	Wood, Plastics, and Composites	2.00	2.87	459,591
07	**Thermal and Moisture Protection**	**5.10**	**7.31**	**1,170,107**
	Thermal and Moisture Protection	5.10	7.31	1,170,107
08	**Openings**	**2.93**	**4.20**	**672,152**
	Openings	2.93	4.20	672,152
09	**Finishes**	**6.13**	**8.79**	**1,406,231**
	Finishes	6.13	8.79	1,406,231
10	**Specialties**	**0.22**	**0.32**	**51,221**
	Specialties	0.22	0.32	51,221
11	**Equipment**	**0.07**	**0.10**	**16,466**
	Equipment	0.07	0.10	16,466
12	**Furnishings**	**0.24**	**0.34**	**54,119**
	Furnishings	0.24	0.34	54,119
13	**Special Construction**	**1.19**	**1.70**	**272,483**
	Special Construction	1.19	1.70	272,483
14	**Conveying Systems**	**2.16**	**3.09**	**495,144**
	Conveying Systems	2.16	3.09	495,144
15	**Mechanical**	**17.63**	**25.26**	**4,041,826**
	Mechanical	17.63	25.26	4,041,826
16	**Electrical**	**10.01**	**14.34**	**2,294,027**
	Electrical	10.01	14.34	2,294,027
21	**Fire Suppression**	**1.08**	**1.55**	**247,716**
	Fire Suppression	1.08	1.55	247,716
22	**Plumbing**	**1.60**	**2.29**	**366,977**
	Plumbing	1.60	2.29	366,977

23	**HVAC**	**2.64**	**3.78**	**605,010**
	HVAC	2.64	3.78	605,010
26	**Electrical**	**2.22**	**3.17**	**507,819**
	Electrical	2.22	3.17	507,819
31	**Earthwork**	**4.60**	**6.60**	**1,055,359**
	Earthwork	4.60	6.60	1,055,359
32	**Exterior Improvements**	**1.62**	**2.32**	**371,308**
	Exterior Improvements	1.62	2.32	371,308
33	**Utilities**	**0.74**	**1.06**	**168,984**
	Utilities	0.74	1.06	168,984
Total Building Costs		**100.00**	**143.28**	**22,924,306**
Total Non-Building Costs		**100.00**	**0.00**	**0**
Total Project Costs		**--**	**--**	**22,924,306**

APPENDIX D: R.S. MEANS 2008 REFERENCE PAGE



Costs per square foot of floor area

Exterior Wall	S.F. Area	20000	40000	60000	80000	100000	150000	200000	250000	300000
	L.F. Perimeter	260	360	400	420	460	520	600	640	700
Precast Concrete Panel	Steel Frame	193.70	166.10	151.60	143.05	138.95	132.15	129.30	126.65	125.30
	R/Conc. Frame	193.10	165.25	150.70	142.10	137.90	131.10	128.20	125.60	124.20
Face Brick with Concrete Block Back-up	Steel Frame	184.25	159.40	146.65	139.10	135.50	129.55	127.00	124.70	123.50
	R/Conc. Frame	183.10	158.30	145.55	138.05	134.40	128.45	125.85	123.65	122.40
Limestone Panel Concrete Block Back-up	Steel Frame	231.60	192.30	171.00	158.30	152.25	142.20	137.95	134.10	132.05
	R/Conc. Frame	230.55	191.15	169.85	157.20	151.15	141.10	136.80	132.95	130.90
Perimeter Adj., Add or Deduct	Per 100 L.F.	26.35	13.20	8.80	6.55	5.25	3.50	2.60	2.15	1.75
Story Hgt. Adj., Add or Deduct	Per 1 Ft.	5.45	3.80	2.80	2.25	1.95	1.45	1.20	1.10	1.00
For Basement, add $33.50 per square foot of basement area										

The above costs were calculated using the basic specifications shown on the facing page. These costs should be adjusted where necessary for design alternatives and owner's requirements. Reported completed project costs, for this type of structure, range from $68.65 to $201.80 per S.F.

Common additives

Description	Unit	$ Cost
Clock System		
20 room	Each	15,400
50 room	Each	37,400
Closed Circuit Surveillance, One station		
Camera and monitor	Each	1750
For additional camera stations, add	Each	940
Directory Boards, Plastic, glass covered		
30" x 20"	Each	580
36" x 48"	Each	1450
Aluminum, 24" x 18"	Each	570
36" x 24"	Each	635
48" x 32"	Each	925
48" x 60"	Each	1950
Elevators, Electric passenger, 5 stops		
2000# capacity	Each	127,300
3500# capacity	Each	134,300
5000# capacity	Each	139,800
Additional stop, add	Each	7875
Emergency Lighting, 25 watt, battery operated		
Lead battery	Each	278
Nickel cadmium	Each	800

Description	Unit	$ Cost
Intercom System, 25 station capacity		
Master station	Each	2500
Intercom outlets	Each	160
Handset	Each	440
Smoke Detectors		
Ceiling type	Each	174
Duct type	Each	445
Sound System		
Amplifier, 250 watts	Each	2225
Speaker, ceiling or wall	Each	181
Trumpet	Each	345
TV Antenna, Master system, 12 outlet	Outlet	299
30 outlet	Outlet	192
100 outlet	Outlet	179

Important: See the Reference Section for Location Factors

APPENDIX E: SITE PLAN OF EXISTING CONDITIONS

MONONGAHELA RIVER

R.R. TRACKS

PROPERTY LINE

PROPERTY LINE

18" PLASTIC PIPE

36" CONC. PIPE

54" STORM SEWER

CONSTRUCTION PARKING

CONSTRUCTION TRAILERS

BRIDGESIDE BUIDING II

5 Stories - 75 Feet

SERVICE COURT

SUNOCO BUILDING

2 Stories

TECHNOLOGY DRIVE RELOCATION

12" PLASTIC PIPE

Manhole

Light Post

Traffic/Pedestrian Flow

Electric Line

Existing Electric Line

Gas Line

Telecommunications Line

Water Line

Fire Hydrant

S+RADA

Erik Carlson

September 29,2008

Project Name

Bridgeside Building 2

Drawing Title

Existing Conditions Site Plan