APPENDIX A: SITE LAYOUT PLANS

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

MONONGAHELA RIVER

R.R. TRACKS

TEMPORARY POWER SHED

PROPERTY LINE

PROPERTY LINE

CONSTRUCTION PARKING

TOOL AND EQUIPMENT STORAGE

CONSTRUCTION TRAILERS

ACCESS ROAD

LAYOUT SPACE

50'

60 TON TRUCK CRANE

80 TON CRAWLER CRANE

140'

BRIDGESIDE BUIDING II

5 Stories - 75 Feet

LAYOUT SPACE

SUNOCO BUILDING

2 Stories

PORTABLE TOILETS

TECHNOLOGY DRIVE RELOCATION

Manhole

Light Post

Traffic/Pedestrian Flow

Existing Electric Line

Temporary Power

Temporary Telecom. Line

STRADA

25'

12.5' 50'

Erik Carlson

October 24,2008

Project Name

Bridgeside Building 2

Drawing Title

Foundation Site Plan

MONONGAHELA RIVER

R.R. TRACKS

TEMPORARY POWER SHED

PROPERTY LINE

CONSTRUCTION PARKING

TOOL AND EQUIPMENT STORAGE

CONSTRUCTION TRAILERS

ACCESS ROAD

JLG LIFT

LAYOUT SPACE

75 TON CRAWLER CRANE

150'

DUMPSTER

DUMPSTER

DUMPSTER

LAYOUT SPACE

BRIDGESIDE BUIDING II

5 Stories - 75 Feet

PORTABLE TOILETS

JLG LIFT

JLG LIFT

50'

30 TON TRUCK CRANE

BOOM TRUCK

PROPERTY LINE

LAYOUT SPACE

SUNOCO BUILDING

2 Stories

TECHNOLOGY DRIVE RELOCATION

Manhole

Light Post

Traffic/Pedestrian Flow

Existing Electric Line

Temporary Power

Temporary Telecom. Line

STRADA

25'

12.5' 50'

Erik Carlson

October 24,2008

Project Name

Bridgeside Building 2

Drawing Title

Superstructure Site Plan

APPENDIX B: D4 COST 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

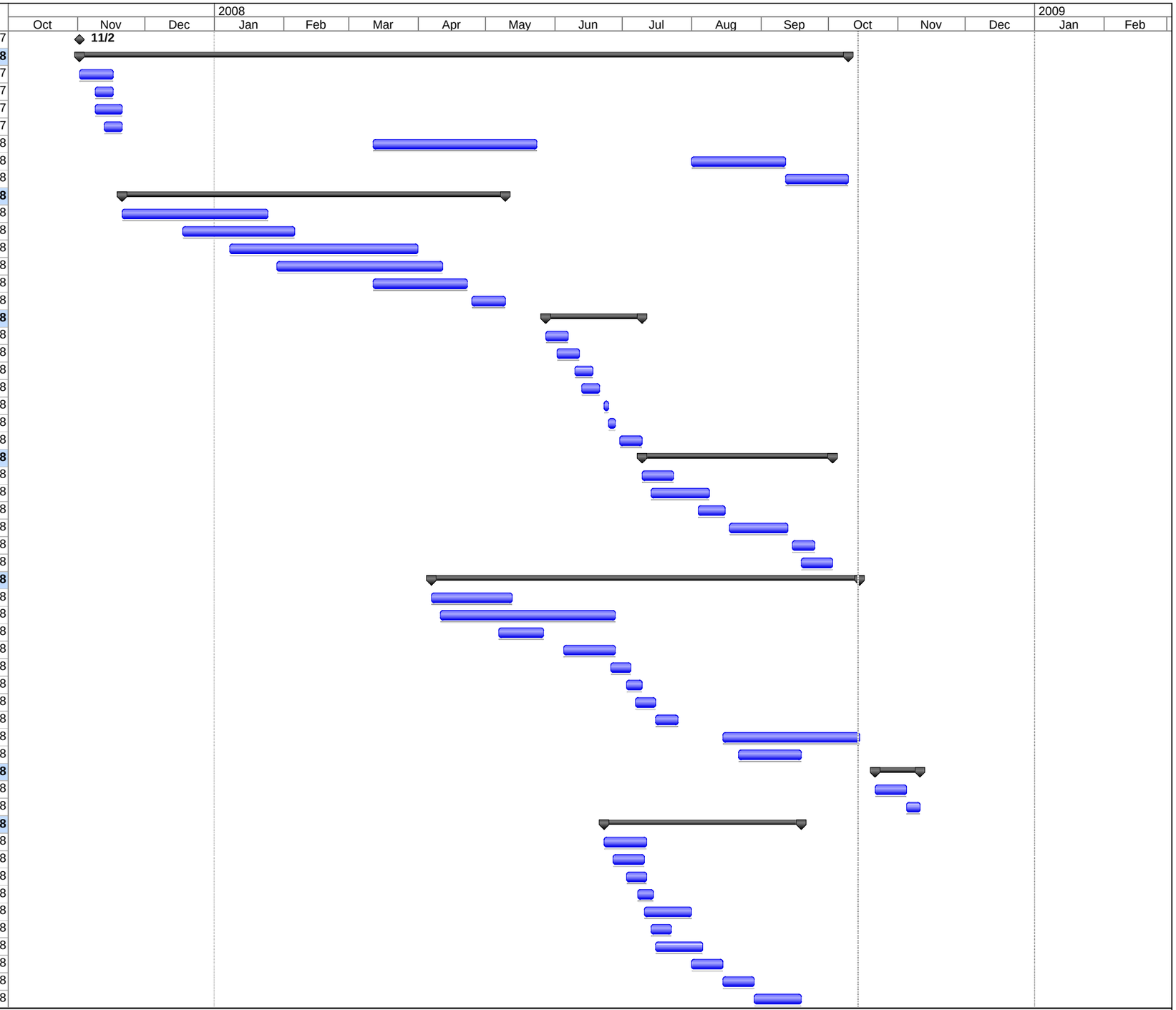
23	**HVAC**	**2.64**	**3.78**	**605,010**
	HVAC	2.64	3.78	605,010
26	**Electrical**	**2.22**	**3.17**	**507,819**
	Electrical	2.22	3.17	507,819
31	**Earthwork**	**4.60**	**6.60**	**1,055,359**
	Earthwork	4.60	6.60	1,055,359
32	**Exterior Improvements**	**1.62**	**2.32**	**371,308**
	Exterior Improvements	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 C: GENERAL CONDITIONS ESTIMATE

General Conditions Estimate				
Description	**Quantity**	**Unit**	**Cost/Unit**	**Total**
General Expenses				
Field Office	14	mo	$282	$3,948
Office Equipment	14	mo	$150	$2,100
Office Supplies	14	mo	$95	$1,330
Office Furniture	1	LS	$1,000	$1,000
Water and Ice	14	mo	$100	$1,400
Additional Plans	1	LS	$2,000	$2,000
Portable Toilets (2)	14	mo	$165	$4,620
Fire Extinguishers	7	ea	$50	$350
Final Clean-up	20,000	SF	$0.20	$4,000
Dumpsters (3)	20	pulls	$440	$26,400
On-Site Computers	2	ea	$1,500	$3,000
IT Maintenance	14	mo	$200	$2,800
First Aid Supplies	1	LS	$1,000	$1,000
Hardhats, Gloves, Glasses	1	LS	$1,500	$1,500
Courier Service	14	mo	$150	$2,100
Cell Phones	14	mo	$200	$2,800
Project Staff				
Superintendent	62	wks	$1,875	$116,250
Project Engineer	62	wks	$1,250	$77,500
Project Executive	15	wks	$2,500	$37,500
Summer Intern	13	wks	$600	$7,800
Building Mgmt. Consultant	1	LS	$24,000	$24,000
Temporary Utilities				
Temporary Lighting	1	LS	$80,000	$80,000
Temporary Water Tap Fees	1	LS	$45,000	$45,000
Temporary Heaters (15)	7	mo	$69	$7,245
Fees and Permits				
Subguard	1	LS	$161,757	$161,757
Building Permit	1	LS	$65,040	$65,040
Owner Contingency	1	LS	$230,000	$230,000
			Subtotal	**$912,440**
			CM Fee (3.6%	**$32,848**
			Total	**$945,288**

APPENDIX D: DETAILED PROJECT SCHEDULE

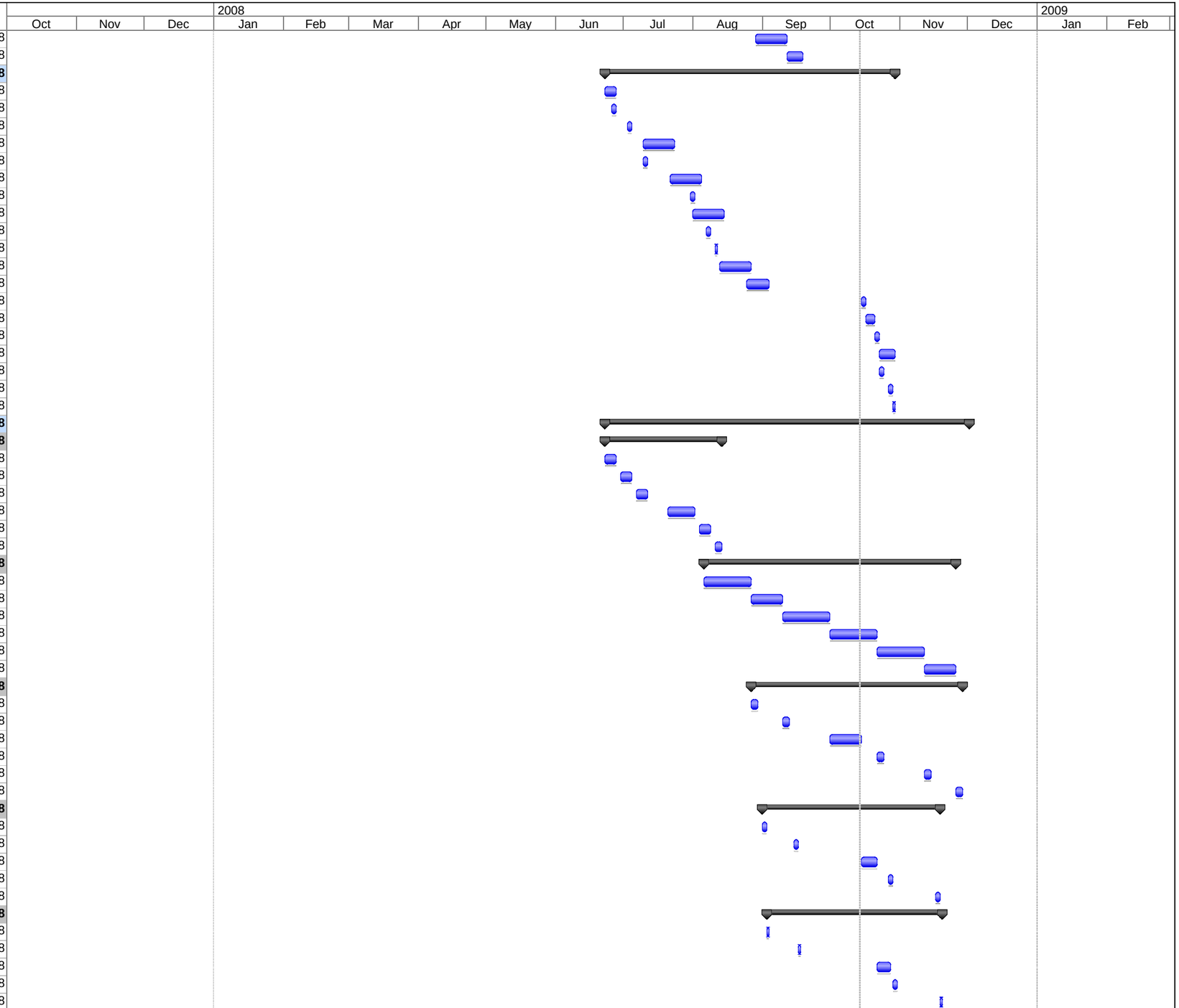
ID	Task Name	Duration	Start	Finish
1	Notice to Proceed	0 days	Fri 11/2/07	Fri 11/2/07
2	**Site Construction**	**245 days**	**Fri 11/2/07**	**Thu 10/9/08**
3	Mobilization	11 days	Fri 11/2/07	Fri 11/16/07
4	Erosion and Sediment Controls	6 days	Fri 11/9/07	Fri 11/16/07
5	Site Clearing/Preparation/Fence	8 days	Fri 11/9/07	Tue 11/20/07
6	Construction Entrance and Temp Road	6 days	Tue 11/13/07	Tue 11/20/07
7	Backfill and Site Grading	53 days	Wed 3/12/08	Fri 5/23/08
8	Site Utilties/Concrete/Pavers	30 days	Fri 8/1/08	Thu 9/11/08
9	Landscaping	20 days	Fri 9/12/08	Thu 10/9/08
10	**Foundations**	**123 days**	**Wed 11/21/07**	**Fri 5/9/08**
11	Pre-drill Piles	47 days	Wed 11/21/07	Thu 1/24/08
12	Install H-Piles	36 days	Tue 12/18/07	Tue 2/5/08
13	Concrete Pile Caps	60 days	Tue 1/8/08	Mon 3/31/08
14	Concrete Grade Beams and Piers	54 days	Tue 1/29/08	Fri 4/11/08
15	Concrete Foundation Walls	30 days	Wed 3/12/08	Tue 4/22/08
16	Grout Base Plates	11 days	Fri 4/25/08	Fri 5/9/08
17	**Concrete**	**31 days**	**Wed 5/28/08**	**Wed 7/9/08**
18	Slab on Deck Level 2	8 days	Wed 5/28/08	Fri 6/6/08
19	Slab on Deck Level 3	8 days	Mon 6/2/08	Wed 6/11/08
20	Slab on Deck Level 4	6 days	Tue 6/10/08	Tue 6/17/08
21	Slab on Deck Level 5	6 days	Fri 6/13/08	Fri 6/20/08
22	Pour Metal Stair Pans	2 days	Mon 6/23/08	Tue 6/24/08
23	Penthouse Slab on Deck	3 days	Wed 6/25/08	Fri 6/27/08
24	Slab on Grade	8 days	Mon 6/30/08	Wed 7/9/08
25	**Masonry**	**61 days**	**Thu 7/10/08**	**Thu 10/2/08**
26	Interior Masonry Level 1	10 days	Thu 7/10/08	Wed 7/23/08
27	Exterior Cast Stone West Elevation	20 days	Mon 7/14/08	Fri 8/8/08
28	Exterior Cast Stone North Elevation	10 days	Mon 8/4/08	Fri 8/15/08
29	Exterior Cast Stone East Elevation	20 days	Mon 8/18/08	Fri 9/12/08
30	Exterior Cast Stone South Elevation	8 days	Mon 9/15/08	Wed 9/24/08
31	Balcony Pavers	10 days	Fri 9/19/08	Thu 10/2/08
32	**Structural/Misc. Steel**	**137 days**	**Mon 4/7/08**	**Tue 10/14/08**
33	Erect Structural Steel	26 days	Mon 4/7/08	Mon 5/12/08
34	Detailing and Decking	56 days	Fri 4/11/08	Fri 6/27/08
35	Stair ST-1/ST-2	14 days	Wed 5/7/08	Mon 5/26/08
36	Exterior Metal Stud Framing East Elev.	17 days	Thu 6/5/08	Fri 6/27/08
37	Exterior Metal Stud Framing North Elev.	7 days	Thu 6/26/08	Fri 7/4/08
38	Exterior Metal Stud Framing West Elev.	5 days	Thu 7/3/08	Wed 7/9/08
39	Exterior Metal Stud Framing South Elev.	7 days	Mon 7/7/08	Tue 7/15/08
40	Exterior Metal Studs at Mechanical Room	8 days	Wed 7/16/08	Fri 7/25/08
41	Railings and Handrails	43 days	Fri 8/15/08	Tue 10/14/08
42	Aluminum Sunshades	20 days	Fri 8/22/08	Thu 9/18/08
43	**Woods and Plastics**	**14 days**	**Wed 10/22/08**	**Mon 11/10/08**
44	Vanity Tops	10 days	Wed 10/22/08	Tue 11/4/08
45	Reception Desk	4 days	Wed 11/5/08	Mon 11/10/08
46	**Thermal and Moisture Protection**	**64 days**	**Mon 6/23/08**	**Thu 9/18/08**
47	Spray on Fireproofing Level 1-5 Shafts	15 days	Mon 6/23/08	Fri 7/11/08
48	Insulation and Vapor Barrier East Elev.	10 days	Fri 6/27/08	Thu 7/10/08
49	Insulation and Vapor Barrier North Elev.	7 days	Thu 7/3/08	Fri 7/11/08
50	Insulation and Vapor Barrier West Elev.	5 days	Tue 7/8/08	Mon 7/14/08
51	Metal Panels East Elev.	15 days	Fri 7/11/08	Thu 7/31/08
52	Insulation and Vapor Barrier South Elev.	7 days	Mon 7/14/08	Tue 7/22/08
53	Roof Insulation and Membrane	15 days	Wed 7/16/08	Tue 8/5/08
54	Metal Panels North Elevation	10 days	Fri 8/1/08	Thu 8/14/08
55	Metal Panels West Elevation	10 days	Fri 8/15/08	Thu 8/28/08
56	Metal Coping and Roof Flashing	15 days	Fri 8/29/08	Thu 9/18/08



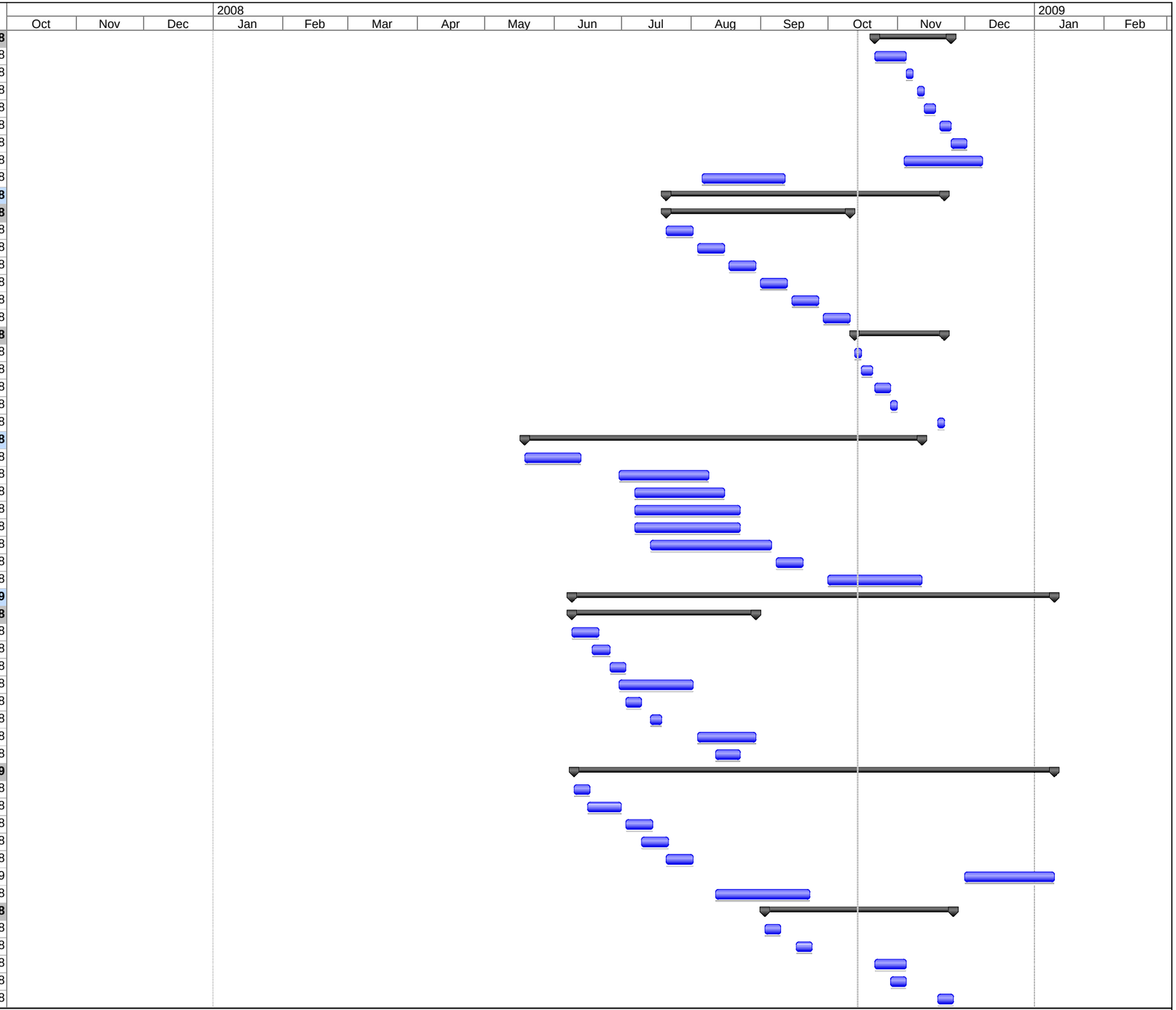
Project: Detailed Project Schedule.mp
Date: Tue 10/14/08

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

ID	Task Name	Duration	Start	Finish
57	Metal Panels South Elevation	10 days	Fri 8/29/08	Thu 9/11/08
58	Waterproofing Membrane at Balconies	5 days	Fri 9/12/08	Thu 9/18/08
59	**Doors and Windows**	**93 days**	**Mon 6/23/08**	**Wed 10/29/08**
60	Exterior Aluminum Entrance Doors	5 days	Mon 6/23/08	Fri 6/27/08
61	Hollow Metal Door Frames Level 2	2 days	Thu 6/26/08	Fri 6/27/08
62	Hollow Metal Door Frames Level 3	2 days	Thu 7/3/08	Fri 7/4/08
63	Punch Windows Level 1	10 days	Thu 7/10/08	Wed 7/23/08
64	Hollow Metal Door Frames Level 4	2 days	Thu 7/10/08	Fri 7/11/08
65	Punch Windows Level 2	10 days	Tue 7/22/08	Mon 8/4/08
66	Hollow Metal Door Frames Level 1	2 days	Thu 7/31/08	Fri 8/1/08
67	Punch Windows Level 3	10 days	Fri 8/1/08	Thu 8/14/08
68	Hollow Metal Door Frames Level 5	2 days	Thu 8/7/08	Fri 8/8/08
69	Hollow Metal Door Frames Penthouse	1 day	Mon 8/11/08	Mon 8/11/08
70	Punch Windows Level 4	10 days	Wed 8/13/08	Tue 8/26/08
71	Punch Windows Level 5	8 days	Mon 8/25/08	Wed 9/3/08
72	Doors and Hardware Level 1	2 days	Wed 10/15/08	Thu 10/16/08
73	Doors and Hardware Level 2	2 days	Fri 10/17/08	Mon 10/20/08
74	Doors and Hardware Level 3	2 days	Tue 10/21/08	Wed 10/22/08
75	Interior Glazing	5 days	Thu 10/23/08	Wed 10/29/08
76	Doors and Hardware Level 4	2 days	Thu 10/23/08	Fri 10/24/08
77	Doors and Hardware Level 5	2 days	Mon 10/27/08	Tue 10/28/08
78	Doors and Hardware Penthouse	1 day	Wed 10/29/08	Wed 10/29/08
79	**Interior Finishes**	**116 days**	**Mon 6/23/08**	**Mon 12/1/08**
80	**Interior Metal Studs**	**38 days**	**Mon 6/23/08**	**Wed 8/13/08**
81	Level 2	5 days	Mon 6/23/08	Fri 6/27/08
82	Level 3	5 days	Mon 6/30/08	Fri 7/4/08
83	Level 4	5 days	Mon 7/7/08	Fri 7/11/08
84	Level 1	10 days	Mon 7/21/08	Fri 8/1/08
85	Level 5	5 days	Mon 8/4/08	Fri 8/8/08
86	Penthouse	3 days	Mon 8/11/08	Wed 8/13/08
87	**Hang/Tape/Finish GWB**	**80 days**	**Wed 8/6/08**	**Tue 11/25/08**
88	Level 2	15 days	Wed 8/6/08	Tue 8/26/08
89	Level 3	10 days	Wed 8/27/08	Tue 9/9/08
90	Level 1	15 days	Wed 9/10/08	Tue 9/30/08
91	Level 4	15 days	Wed 10/1/08	Tue 10/21/08
92	Level 5	15 days	Wed 10/22/08	Tue 11/11/08
93	Penthouse	10 days	Wed 11/12/08	Tue 11/25/08
94	**Paint Walls**	**68 days**	**Wed 8/27/08**	**Fri 11/28/08**
95	Level 2	3 days	Wed 8/27/08	Fri 8/29/08
96	Level 3	3 days	Wed 9/10/08	Fri 9/12/08
97	Level 1	10 days	Wed 10/1/08	Tue 10/14/08
98	Level 4	3 days	Wed 10/22/08	Fri 10/24/08
99	Level 5	3 days	Wed 11/12/08	Fri 11/14/08
100	Penthouse	3 days	Wed 11/26/08	Fri 11/28/08
101	**ACT Ceiling Grid**	**57 days**	**Mon 9/1/08**	**Tue 11/18/08**
102	Level 2	2 days	Mon 9/1/08	Tue 9/2/08
103	Level 3	2 days	Mon 9/15/08	Tue 9/16/08
104	Level 1	5 days	Wed 10/15/08	Tue 10/21/08
105	Level 4	2 days	Mon 10/27/08	Tue 10/28/08
106	Level 5	2 days	Mon 11/17/08	Tue 11/18/08
107	**ACT Ceiling Tile**	**56 days**	**Wed 9/3/08**	**Wed 11/19/08**
108	Level 2	1 day	Wed 9/3/08	Wed 9/3/08
109	Level 3	1 day	Wed 9/17/08	Wed 9/17/08
110	Level 1	4 days	Wed 10/22/08	Mon 10/27/08
111	Level 4	2 days	Wed 10/29/08	Thu 10/30/08
112	Level 5	1 day	Wed 11/19/08	Wed 11/19/08



ID	Task Name	Duration	Start	Finish
113	**Ceramic Tile**	**24 days**	**Wed 10/22/08**	**Mon 11/24/08**
114	Level 1	10 days	Wed 10/22/08	Tue 11/4/08
115	Level 2	3 days	Wed 11/5/08	Fri 11/7/08
116	Level 3	3 days	Mon 11/10/08	Wed 11/12/08
117	Level 4	3 days	Thu 11/13/08	Mon 11/17/08
118	Level 5	3 days	Thu 11/20/08	Mon 11/24/08
119	Rubber Base Level 1-5	5 days	Tue 11/25/08	Mon 12/1/08
120	Toilet Partitions and Accessories	25 days	Tue 11/4/08	Mon 12/8/08
121	Elevator Rails/Door Frames/Cabs	27 days	Wed 8/6/08	Thu 9/11/08
122	**Fire Protection**	**90 days**	**Mon 7/21/08**	**Fri 11/21/08**
123	**Piping and Heads**	**60 days**	**Mon 7/21/08**	**Fri 10/10/08**
124	Level 1	10 days	Mon 7/21/08	Fri 8/1/08
125	Level 2	10 days	Mon 8/4/08	Fri 8/15/08
126	Level 3	10 days	Mon 8/18/08	Fri 8/29/08
127	Level 4	10 days	Mon 9/1/08	Fri 9/12/08
128	Level 5	10 days	Mon 9/15/08	Fri 9/26/08
129	Penthouse	10 days	Mon 9/29/08	Fri 10/10/08
130	**Building Core Heads**	**30 days**	**Mon 10/13/08**	**Fri 11/21/08**
131	Level 2	3 days	Mon 10/13/08	Wed 10/15/08
132	Level 3	3 days	Thu 10/16/08	Mon 10/20/08
133	Level 1	5 days	Wed 10/22/08	Tue 10/28/08
134	Level 4	3 days	Wed 10/29/08	Fri 10/31/08
135	Level 5	3 days	Wed 11/19/08	Fri 11/21/08
136	**Plumbing**	**127 days**	**Mon 5/19/08**	**Tue 11/11/08**
137	Underground Plumbing	19 days	Mon 5/19/08	Thu 6/12/08
138	RO/DI Water Equipment/Piping	30 days	Mon 6/30/08	Fri 8/8/08
139	Above Ground Storm Piping	30 days	Mon 7/7/08	Fri 8/15/08
140	Domestic Water	35 days	Mon 7/7/08	Fri 8/22/08
141	Rough-In Toilet Rooms	35 days	Mon 7/7/08	Fri 8/22/08
142	Above Ground Sanitary Piping	40 days	Mon 7/14/08	Fri 9/5/08
143	Gas Riser	10 days	Mon 9/8/08	Fri 9/19/08
144	Install Fixtures and Trim	30 days	Wed 10/1/08	Tue 11/11/08
145	**HVAC**	**155 days**	**Mon 6/9/08**	**Fri 1/9/09**
146	**Install Ductwork**	**60 days**	**Mon 6/9/08**	**Fri 8/29/08**
147	Level 2	10 days	Mon 6/9/08	Fri 6/20/08
148	Level 3	6 days	Wed 6/18/08	Wed 6/25/08
149	Level 4	5 days	Thu 6/26/08	Wed 7/2/08
150	Supply Air Shafts	25 days	Mon 6/30/08	Fri 8/1/08
151	Level 5	5 days	Thu 7/3/08	Wed 7/9/08
152	Level 1	5 days	Mon 7/14/08	Fri 7/18/08
153	Return/Outside Air	20 days	Mon 8/4/08	Fri 8/29/08
154	Rooftop Units	9 days	Tue 8/12/08	Fri 8/22/08
155	**Install HVAC Piping**	**154 days**	**Tue 6/10/08**	**Fri 1/9/09**
156	Level 2	5 days	Tue 6/10/08	Mon 6/16/08
157	Level 3	11 days	Mon 6/16/08	Mon 6/30/08
158	Level 4	8 days	Thu 7/3/08	Mon 7/14/08
159	Level 5	8 days	Thu 7/10/08	Mon 7/21/08
160	Level 1	10 days	Mon 7/21/08	Fri 8/1/08
161	Mechanical Room	30 days	Mon 12/1/08	Fri 1/9/09
162	Install Rooftop Units	30 days	Tue 8/12/08	Mon 9/22/08
163	**Install GRD's**	**60 days**	**Wed 9/3/08**	**Tue 11/25/08**
164	Level 2	5 days	Wed 9/3/08	Tue 9/9/08
165	Level 3	5 days	Wed 9/17/08	Tue 9/23/08
166	Level 1	10 days	Wed 10/22/08	Tue 11/4/08
167	Level 4	5 days	Wed 10/29/08	Tue 11/4/08
168	Level 5	5 days	Wed 11/19/08	Tue 11/25/08



Project: Detailed Project Schedule.mp
Date: Tue 10/14/08

Task
Split
Progress
Milestone
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External Tasks
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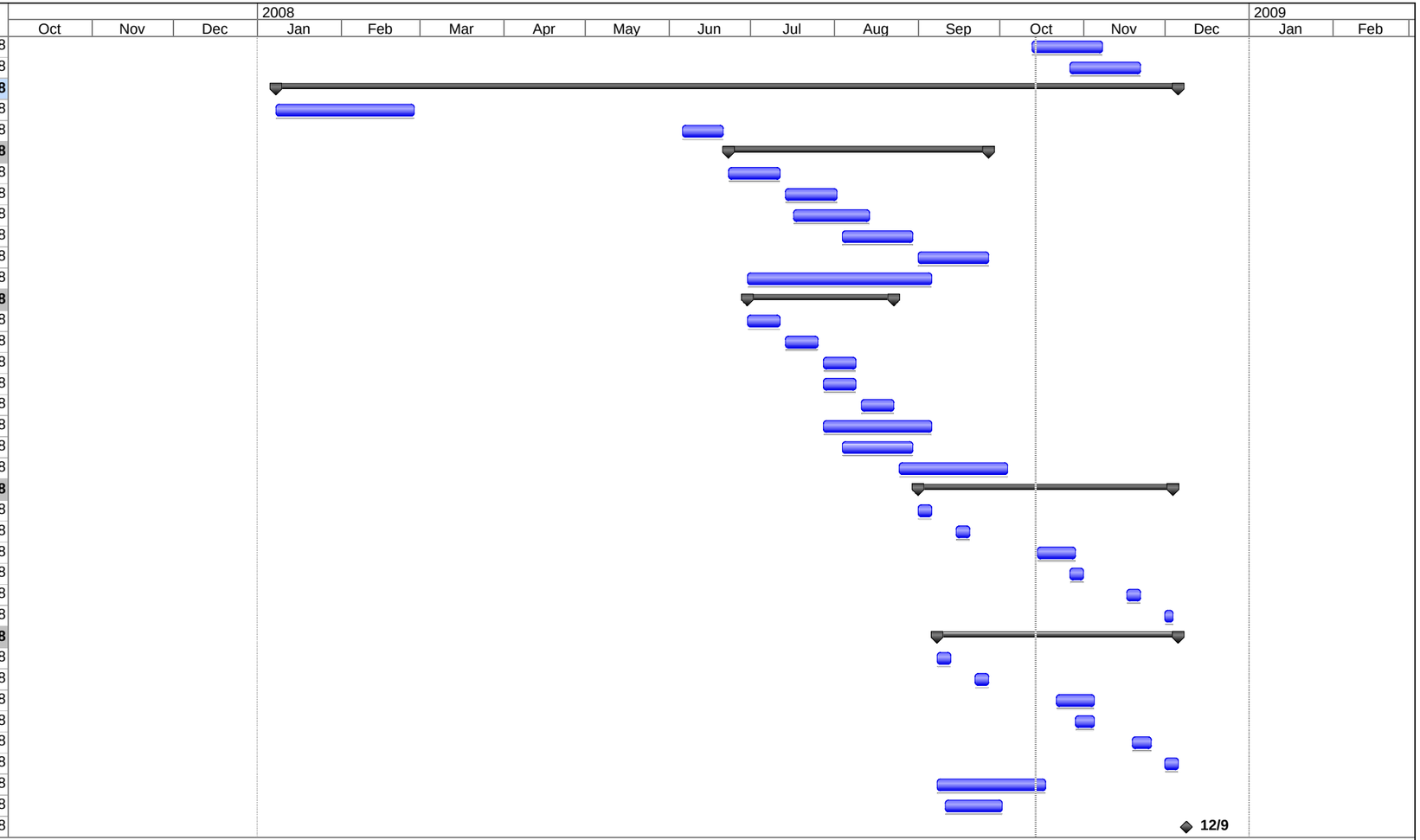
ID	Task Name	Duration	Start	Finish
169	Install FPB and VAV's	20 days	Mon 10/13/08	Fri 11/7/08
170	Install Boiler	20 days	Mon 10/27/08	Fri 11/21/08
171	**Electrical**	**239 days**	**Tue 1/8/08**	**Fri 12/5/08**
172	Temporary Power	37 days	Tue 1/8/08	Wed 2/27/08
173	Underground Electrical	11 days	Fri 6/6/08	Fri 6/20/08
174	**Above Ceiling Rough-In**	**70 days**	**Mon 6/23/08**	**Fri 9/26/08**
175	Level 2	15 days	Mon 6/23/08	Fri 7/11/08
176	Level 3	15 days	Mon 7/14/08	Fri 8/1/08
177	Level 1	20 days	Thu 7/17/08	Wed 8/13/08
178	Level 4	20 days	Mon 8/4/08	Fri 8/29/08
179	Level 5	20 days	Mon 9/1/08	Fri 9/26/08
180	Conduit/Power Rough-In - Elec Room	50 days	Mon 6/30/08	Fri 9/5/08
181	**Electrical Wall Rough-In**	**40 days**	**Mon 6/30/08**	**Fri 8/22/08**
182	Level 2	10 days	Mon 6/30/08	Fri 7/11/08
183	Level 3	10 days	Mon 7/14/08	Fri 7/25/08
184	Level 1	10 days	Mon 7/28/08	Fri 8/8/08
185	Level 4	10 days	Mon 7/28/08	Fri 8/8/08
186	Level 5	10 days	Mon 8/11/08	Fri 8/22/08
187	Fire Alarm Rough-In	30 days	Mon 7/28/08	Fri 9/5/08
188	Install Switchgear	20 days	Mon 8/4/08	Fri 8/29/08
189	Install Emergency Generator	30 days	Mon 8/25/08	Fri 10/3/08
190	**Install Devices/Trimout**	**68 days**	**Mon 9/1/08**	**Wed 12/3/08**
191	Level 2	5 days	Mon 9/1/08	Fri 9/5/08
192	Level 3	5 days	Mon 9/15/08	Fri 9/19/08
193	Level 1	10 days	Wed 10/15/08	Tue 10/28/08
194	Level 4	5 days	Mon 10/27/08	Fri 10/31/08
195	Level 5	5 days	Mon 11/17/08	Fri 11/21/08
196	Penthouse	3 days	Mon 12/1/08	Wed 12/3/08
197	**Install Light Fixtures**	**65 days**	**Mon 9/8/08**	**Fri 12/5/08**
198	Level 2	5 days	Mon 9/8/08	Fri 9/12/08
199	Level 3	5 days	Mon 9/22/08	Fri 9/26/08
200	Level 1	10 days	Wed 10/22/08	Tue 11/4/08
201	Level 4	5 days	Wed 10/29/08	Tue 11/4/08
202	Level 5	5 days	Wed 11/19/08	Tue 11/25/08
203	Penthouse	5 days	Mon 12/1/08	Fri 12/5/08
204	Install Fire Alarm Devices	30 days	Mon 9/8/08	Fri 10/17/08
205	Install Exterior Lighting Fixtures	15 days	Thu 9/11/08	Wed 10/1/08
206	Certificate of Occupancy	0 days	Tue 12/9/08	Tue 12/9/08



Project: Detailed Project Schedule.mp
Date: Tue 10/14/08

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

Mat Slab Structural Calcs

Foundation Area

220' x 60' = 13200 SF
245' x 62' = 15190 SF
192' x 19' = 3648 SF
32038 SF

Building Area

1 → 31340 SF
2 → 32703 SF
3 → 32590 SF
4 → 32590 SF
5 → 32590 SF

Roof Area

Total → 32590 SF
SSD → 5440 SF

Live Loads (max LL due to unknown floor layout; snow load)

161813 SF x 150 PSF + 32590 SF x 21 PSF
= 24271.95 kips + 684.39 kips
= 24956.34 kips ≈ 24956 kips

Dead Loads

composite slabs (6" - 3" 20 ga)
→ 130473 SF x 57 psf = 7436.96 kips

partitions
→ 161813 SF x 20 psf = 3236.26 kips

Roof Loads

comp slabs → 5440 SF x 57 psf = 310.1 kips
RTU's → 50,000 lbs x 3 = 150 kips
Deck, insulation, built up roof → 25 psf x 29676 SF = 741.9 kips
Misc → 15 psf x 32590 SF = 488.9 kips
1690.9 kips

Dead Loads cont

Steel

Beams → 931.94 kips

Roof / Penthouse → 228.96 kips

Columns → 290.72 kips

Bracing → 38.96 kips

Total Dead load = 13854.7 kips ≈ 13855 kips

Non-Factored load = 38,811 kips

Factored Load = 1.2(13855) + 1.6(24956) = 56555.6 k ≈ 56556 kips

Slab Thickness

critical column load → 805 kips (col E-3) = P_u

Base plate dimensions → 2.5" x 22" x 22" = B, C

Foundations required concrete strength → 3000 psi

punching sheer controls $4d^2 + 2d(b+c) = \frac{P_u}{v_c}$

$$v_c = \frac{0.75(4)\sqrt{3000}}{1000} = 0.164 \text{ kips}$$

$$4d^2 + 2d(22+22) = \frac{805}{0.164}$$

$$4d^2 + 88d = 4908.5 \qquad d = 25.71''$$

use d = 30"

Reinforcing Requirements

$$A_{s\,min} = \frac{200}{f_y} bd = \frac{200}{60{,}000}(12)(30) = 1.2 \text{ in}^2/\text{ft}$$

use #6's @ 12" - 3 layers E.W.

A_s = 1.32 > 1.2 ✓

Weight of Mat Slab

Concrete → $\frac{30}{12}$ × 32038 SF × 150 PCF × 1.05 (waste) = 12,615 kips

→ 3114.8 CY

Reinforcement → 6 #/SF × 32038 SF = 192,228 #

192,228 # × 1.502 lb/# = 289 kips

Total wt = 12,615 kips + 289 kips = 12,904 kips

Bearing Capacity

allowable bearing pressure = 1500 psf

Actual bearing pressure → $\frac{56,336 \text{ kips} + 12,904 \text{ kips}}{32038 \text{ SF}} \times 1000 \text{ lbs/kip}$

= 2168 psf

2168 psf > 1500 psf ∴ unacceptable

Excavation / Fill

Frost depth = 3.5'

Slab depth = 2.5'

required undercut = 2'

8'

8' × 32038 SF × $\frac{1 \text{ CY}}{27 \text{ CF}}$ = 9493 CY

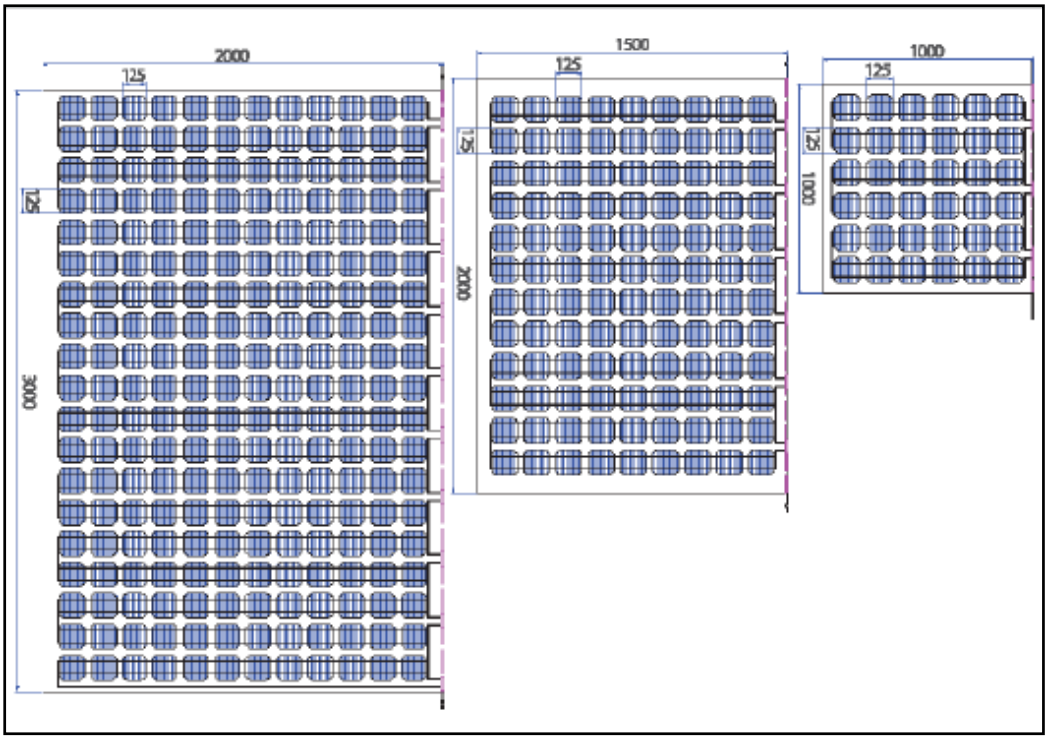
Fill → 2' × 32038 × $\frac{1}{27}$ = 2373 CY

Technical specifications

Light Thru modules are made to custom order (refer to page 3 for options).
Examples of typical characteristics are given as a guide.

Length (m)	1	1	1	2	2	2	3	3	3
Width (m)	1	1	1	1.5	1.5	1.5	2	2	2
Cell spacing (mm)	4	15	30	4	15	30	4	15	30
Transparency (%)	25		45	18	30	45	18	26	43
Cells (No)	7x7	6x6	6x6	11x15	10x14	9x12	15x22	13x21	12x19
	49	36	36	165	140	108	330	273	228
Pmax (W)	109	80	80	368	312	241	736	609	509
Vpm (V)	25.0	18.4	18.4	84.2	71.4	55.1	168.3	139.2	116.3
Ipm (A)	4.37	4.37	4.37	4.37	4.37	4.37	4.37	4.37	4.37
Voc (V)	30.1	22.1	22.1	101.5	86.1	66.4	203.0	169.7	140.2
Isc (A)	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80
Wind load (Pa)	27,563	27,563	27,563	9,188	9,188	9,188	4,594	4,594	4,594
Snow load (Pa)	18,375	18,375	18,375	6,125	6,125	6,125	3,063	3,063	3,063

(Loads assume module is fixed on all four sides. Glass thickness 5mm+5mm tempered glass.)



APPENDIX G: XANTREX INVERTER PRODUCT DATA

Specifications

Models	GT5.0		GT4.0N		GT3.8		GT3.3N		GT2.8	
Output	240 V	208 V	240 V	208 V	240 V	208 V	240 V	208 V	240 V	208 V
Max. AC power output	5000 W	4500 W	4000 W	3800 W	3800 W	3500 W	3300 W	3100 W	2800 W	2700 W
AC output voltage (nominal)	240 V	208 V	240 V	208 V	240 V	208 V	240 V	208 V	240 V	208 V
AC output voltage range	211-264 Vac 183-229 Vac									
AC frequency (nominal)	60 Hz									
AC frequency range	59.3 - 60.5 Hz									
Startup current	0 Aac									
Max. continuous output current	21 A	22 A	16.7 A	18.3 A	15.8 A	16.8 A	13.8 A	14.9 A	11.7 A	13.0 A
Max. output over-current protection	30 A		25 A		20 A	25 A	20 A		15 A	
Max. utility backfeed current	O A									
Total harmonic distortion (THD)	< 3 %									
Power factor	> 0.99 % (at rated power), > 0.95 % (full power range)									
Utility monitoring, islanding protection	UL1741-2005 / IEEE 1547									
Output characteristics	Current Source									
Output current waveform	True sine wave									

Max. array open-circuit voltage	600 Vdc									
MPPT voltage range (CEC & CSA)	240 - 550 Vdc		240 - 480 Vdc		195 - 550 Vdc		200 - 400 Vdc		195 - 550 Vdc	
MPPT operating range	235 - 550 Vdc		235 Vdc - 550 Vdc		195 Vdc - 550 Vdc		200 Vdc - 550 Vdc		193 Vdc - 550 Vdc	
Max. input current	22.0 Adc	20.0 Adc	18.0 Adc	17.0 Adc	20.8 Adc	19.5 Adc	17.5 Adc	16.5 Adc	15.4 Adc	14.9 Adc
Max. array short-circuit current	24.0 Adc									
Reverse-polarity protection	Short-circuit diode									
Ground-fault protection	GF detection, IDIF > 1 A									
Max. inverter efficiency	95.9%	95.5%	96.0%	95.7%	95.9%	95.6%	95.9%	95.6%	95.0%	94.6%
CEC efficiency	95.5%	95.0%	95.5%	95.0%	95.0%	95.0%	95.5%	95.0%	94.0%	93.5%
Night-time power consumption	1 W									

Operating temperature range	-13°F to +149°F (-25°C to +65°C)				
Enclosure type	NEMA 3R (outdoor rated)				
Inverter weight	58.0 lb (25.8 kg)	58.0 lb (25.8 kg)	58.0 lb (25.8 kg)	49.0 lb (22.2 kg)	49.0 lb (22.2 kg)
Shipping weight	65.0 lb (27.2 kg)	65.0 lb (27.2 kg)	65.0 lb (27.2 kg)	57.0 lb (25.9 kg)	57.0 lb (25.9 kg)
Inverter dimensions (H x W x D)	28 1/2 x 16 x 5 3/4" (724 x 403 x 145 mm)				
Shipping dimensions (H x W x D)	34 x 20 1/2 x 10 5/16" (866 x 518 x 262 mm)				

Mounting	Wall mount (mounting bracket included)				
Input and output terminal	AC and DC terminals accept wires sizes of #14 to #6 AWG				
PV / Utility disconnect	Eliminates need for external PV (DC) disconnect. Complies with NEC requirements				
Cooling	Convection cooled, fan not required				
Display	Backlit, two-line, 16-character liquid crystal display provides instantaneous power, daily and lifetime energy production, PV array voltage and current, utility voltage and frequency, time online "selling", fault messages, and installer-customizable screens				
Communications	Integrated RS232 and Xanbus™ RJ45 communication ports				
Wiring box	PV, utility, ground, and communications connections. The inverter can be separated from the wiring box.				
Warranty	10-year standard				
Model name (negative ground)	GT5.0-NA-240/208 UL-05	GT4.0N-NA-240/208 UL-05	GT3.8-NA-240/208 UL-05	GT3.3N-NA-240/208 UL-05	GT2.8-NA-240/208 UL-05
Part number (negative ground)	864-1009	864-1008	864-1032	864-1006	864-1001
	Positive ground inverters are also available				