



Peter Pan Peanut Butter
Sylvester, Georgia Processing Plant



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Executive Summary

This assignment was a collaborative effort of pulling information from sources such as contractors and owners and myself by finding a lot of information on my own or through library sources. This Technical Report demonstrates, on a small scale, what it would take to get a large scale project started. The general conditions estimate is a contractors must have item. It lists out all of your necessities for the entire project. The schedule is the timeline that you follow throughout the project. The site plan is your visual guide of how things are organized on a jobsite. Finally the structural estimate is the object that you need to put a package out for bid, or to choose your bidder.

The Technical Report helped me realize that every project is truly not the same. During my structural estimate I could not get the actual numbers to match up with the numbers that I was getting in my estimate at all. My general conditions estimate came out perfect on the other hand and the same holds true for my schedule. The schedule for the project was extremely tight with construction starting on May 01, 2007 and a completion date of August 27, 2007. The assemblies estimate was done on the roofing system of the building envelope. Since this was a renovation project the only scope of work on the building envelope was the roofing system which is a single-pyl membrane covering insulation.

This assignment shows the effort that goes into a project at a startup phase. It is a good way to learn how the construction industry really works and operates.

Detailed Project Schedule

Key Project Durations:(All dated are in the year 2007)

HVAC System	May 11 – August 27
Steel Modifications and Unloading	May 08 – August 17
Roof	May 22 – July 01
Raw Bin & Receiving	May 08 – June 22
COP, Chem, Fines Rooms	May 11 – June 28
Isolation Area	May 08 – June 29
Wood Mezzanine	May 14 – July 17
Lower Blanching	May 04 – May 08
Grinding & Blending	May 11 – July 25
Upper Blanching	May 08 – June 22
Votator	May 08 – June 29
Tank Room	May 10 – May 16
Packaging	May 21 – June 29
Corridor	May 14 – June 27

* See Appendix A for complete schedule and breakdowns.

Schedule Details:

The Schedule on Project Stallone was broken down in such a way that it would be easier for certain areas to get done before others. ConAgra Food's plan was that if they could get enough of the critical rooms turned over to them that they would be able to produce peanut butter, or at least do initial test runs to ensure everything is working correctly. All items listed above area rooms with the exception of the HVAC System, Steel Modifications & Unloading, and the Roof. The schedule was extremely tight with a start of May 01, 2007 and a finishing up day of August 27, 2007.

Site Layout Planning

The site layout is a general site layout plan, because the site never really changed due to the fact that it is a renovation project and not much work was done to the exterior of the building. The layout shown reflects more around the time of the structural steel repairs to the building. There was a very large amount of people that need parking during this phase of the project, as well as a lot of room for laying out the steel which shows in the plan. There were no traffic problems during the project due to the fact that South Seabrook Drive is not a heavily trafficked road. The access to the site was through one gated entrance, where everybody had to sign with the security guard. For deliveries to the other side of the building, one would have to sign in at the security station and then the guard would escort the person to the other entrance and unlock the gate to allow access. There is also parking in the front of the building where noted, but workers were not permitted to park outside the area or in the front lot due to the fact that ConAgra Foods still had employees present during construction.

* Please see the Site Layout Plan in Appendix B

Assemblies Estimate

The assemblies estimate that was chosen for this assignment was the building envelope. Since the building is a renovation project there was only the roof that was new, the rest of the skin was left untouched. The existing roof of the building is standing seam. This was covered first by filling in the flutes with 3” thick polystyrene, followed by a fiberboard. The fiberboard was mechanically fastened through the 60 mils PVC membrane. Around the edges of the roof was a painted aluminum overhang with drip edge.

Assemblies Estimate					
Material	Material / Labor	Quantity	Unit	Unit Price	Cost
Extruded Polystyrene 3" thick, 25 psi	M	100,000.00	sf	\$2.02	\$202,000.00
Extruded Polystyrene 3" thick, 25 psi	L	100,000.00	sf	\$0.43	\$43,000.00
Low Density Fiber Board 2" thick	M	100,000.00	sf	\$0.92	\$92,000.00
Low Density Fiber Board 2" thick	L	100,000.00	sf	\$0.54	\$54,000.00
Reinforced PVC 60 mils, Partially adhered with Mechanical Fasteners	M	100,000.00	sf	\$1.10	\$110,000.00
Reinforced PVC 60 mils, Partially adhered with Mechanical Fasteners	L	100,000.00	sf	\$0.61	\$61,000.00
Painted Aluminum .05" thick, 6" overhang	M	14,000.00	lf	\$11.60	\$162,400.00
Painted Aluminum .05" thick, 6" overhang	L	14,000.00	lf	\$9.15	\$128,100.00
Total:					\$852,500.00

Figure 3.1, refer to section Appendix C for full sized chart.



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Detailed Structural Systems Estimate

The Structural estimate for Project Stallone is very complicated to estimate because the project is unlike any other project. (See all figures and calculations used for the detailed structural estimate in Appendix D)

Tube Steel Estimate							
Description	Material/Labor	Quantity	Unit	Unit Price	Cost	Modification Factor	Modified Cost
Columns	M	133024.95	lb	\$1.10	\$146,327.45	150%	\$219,491.17
Columns	L	133024.95	lb	\$0.35	\$46,558.73	700%	\$325,911.13
Expansion Anchor Bolts	M	2348.00	ea	\$2.78	\$6,527.44	125%	\$8,159.30
Expansion Anchor Bolts	L	2348.00	ea	\$2.56	\$6,010.88	500%	\$30,054.40
Beams	M	21.50	ton	\$2,650.00	\$56,975.00	150%	\$85,462.50
Beams	L	21.50	ton	\$524.00	\$11,266.00	1000%	\$112,660.00
					\$273,665.50		\$781,738.50

Structural Frame Repairs							
Description	Material/Labor	Quantity	Unit	Unit Price	Cost	Modification Factor	Modified Cost
Structural Steel	M	11.20	ton	\$2,650.00	\$29,680.00	500%	\$148,400.00
Structural Steel	L	11.20	ton	\$524.00	\$5,868.80	2000%	\$117,376.00
					\$35,548.80		\$265,776.00

Structural Equipment Needed/Other Misc						
Description	Material/Labor	Number of units	Quantity	Unit	Unit Price	Cost
Sizzor Lifts	M	22.00	3.00	mo	\$2,500.00	\$165,000.00
Knuckle Boom Lift	M	10.00	3.00	mo	\$3,250.00	\$97,500.00
Drivable Mini-crane	M	2.00	3.00	mo	\$4,000.00	\$24,000.00
Fork Lifts	M	6.00	3.00	mo	\$2,500.00	\$45,000.00
Lull Fork Lifts	M	2.00	3.00	mo	\$2,900.00	\$17,400.00
Shoring Contract	M	1.00	1.00	ls	\$250,000.00	\$250,000.00
Structural Inspectors	L	2.00	13.00	wk	\$2,250.00	\$58,500.00
						\$657,400.00

	<u>Regular</u>	<u>With Mods.</u>
Sub-total:	\$966,614.30	\$1,704,914.50
Location Factor:	0.917	0.917
Totals:	\$886,385.31	\$1,563,406.59

Figure 4.1, refer to Appendix D for full size figures.

Structural Steel Square Foot Costs:

Actual: \$4,349,997 / 200,100 SF = **\$21.74/SF**
 Regular: \$886,385.31 / 200,100 SF = **\$4.43/SF**
 With Mods: \$1,563,406.59 / 200,100 SF = **\$7.81/SF**

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Modification Factors:

Because of the extreme difference from the renovation on Project Stallone as compared to normal construction projects, I felt that it would be helpful to add a modification factor in addition to the standard R.S. Means estimate figure. The actual cost for construction/repair was around \$4.5 million. As you can see is far from both the regular R.S. Means number, and still far from the \$1.33 million figure that I modified. I believe that this extreme difference in figures is due to the complexity of placing the steel.

Factors Affecting the Estimate:

- There was three structural steel contractors on-site working together to get the job done. One contractor was in charge of repairs to all of the 19 frame lines. The other two were in charge of unloading the structure. This included removing almost everything that was supported from the ceiling and placing it on structural stands.
- Shoring was a big part of the contract. Upon inspection of the structure at the beginning of the project, engineers determined that the structure was overloaded to the extent that it was unsafe to use the building without the use of shoring to temporarily relieve the stresses on the structure. This shoring was placed, work was performed and inspected by the onsite inspector, and upon approval of the structural was removed.
- MACTEC was the structural inspectors onsite. There were two representatives that would split a 24-hour day (12 hours per person). This inspection was just enough to keep up with all of the welding of the steel that took place. The steel crews worked (2) 12-hour shifts a day with 75 people during the day shift and 45 during the night shift.
- The building is over 30 years old and access to certain spots was very limited due to processing equipment in the way. (as you can see from the photos below)



Images show extremely tight working conditions



General Conditions Estimate

General conditions for Project Stallone were not typical of what The Haskell Company is used to. There were many things that may appear to be left out of the estimate. This is due to the fact that they were picked up by the owner or another contractor, doing work on process equipment, which was onsite before The Haskell Company. The total cost for general conditions on Project Stallone is \$656,163 this is 5% of the total contract with ConAgra. (See complete Breakdown of figures in Appendix E.)

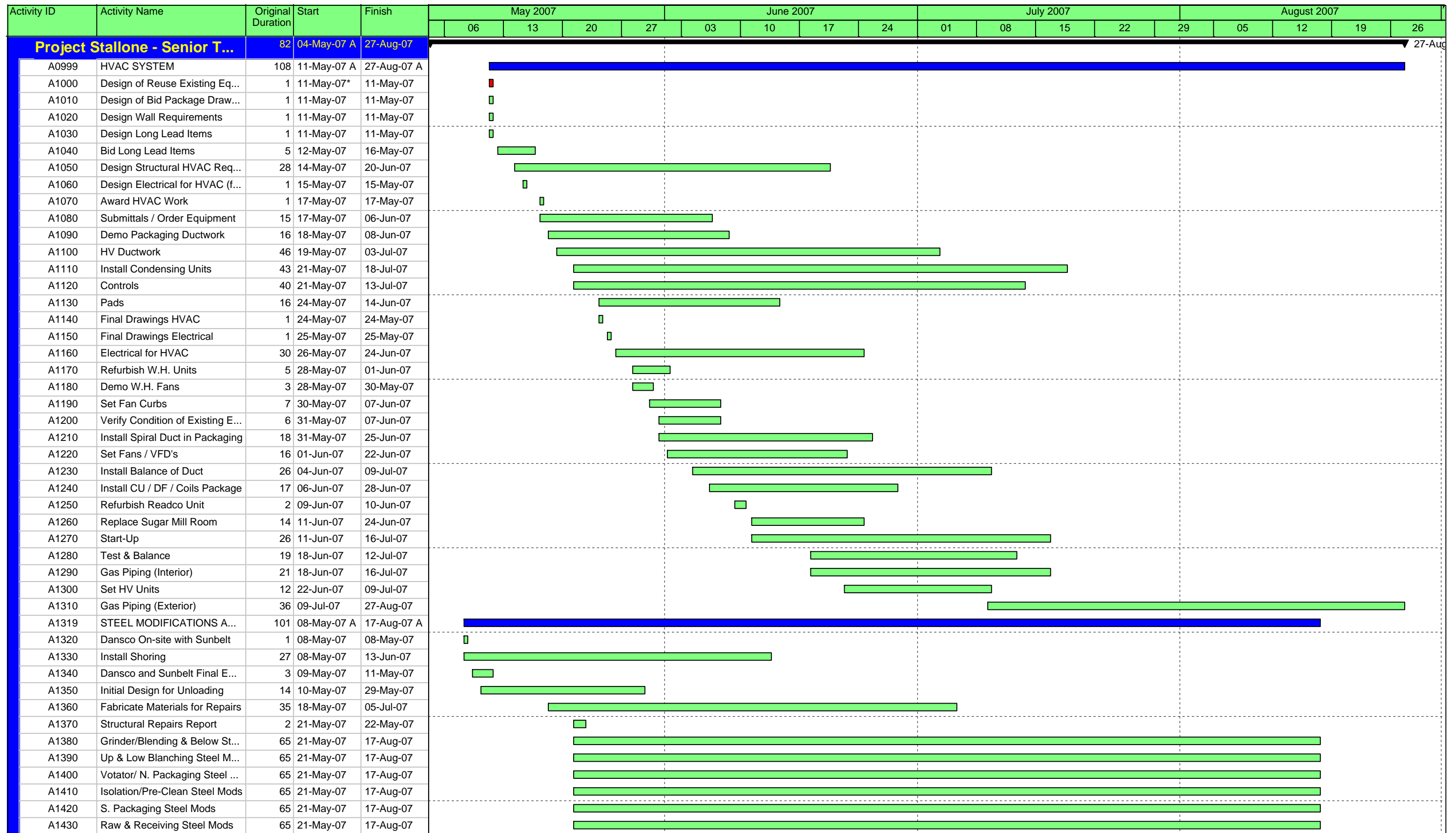
General Conditions Summary	
Field Office Support	\$23,335.00
Personell	\$252,200.00
Safety	\$46,800.00
Clean-up	\$156,500.00
Tools and Equipment	\$33,750.00
Temporary Facilities & Services	\$17,600.00
Bonds & Insurance	\$125,978.00
Total:	\$656,163.00

Figure 5.1, refer to Appendix E for breakdown of figures



Appendix A

Detailed Project Schedule



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

Project Stallone
 Technical Assignment #2

Activity ID	Activity Name	Original Duration	Start	Finish	May 2007				June 2007				July 2007				August 2007						
					06	13	20	27	03	10	17	24	01	08	15	22	29	05	12	19	26		
A1440	N. & S. Rail Dock Steel Mods	65	21-May-07	17-Aug-07	[Green bar spanning from May 21 to Aug 17]																		
A1450	Structural Repairs Design (1...	1	01-Jun-07	01-Jun-07	[Small green bar at Jun 01]																		
A1460	Begin Double Shift Work	1	05-Jun-07	05-Jun-07	[Small green bar at Jun 05]																		
A1470	Assess Progress Toward Mi...	14	11-Jun-07	28-Jun-07	[Green bar from Jun 11 to Jun 28]																		
A1480	Votator / N. Packaging Shori...	3	18-Jun-07	20-Jun-07	[Small green bar from Jun 18 to Jun 20]																		
A1490	Grinder/Blending & Below S...	3	14-Jul-07	16-Jul-07	[Small green bar from Jul 14 to Jul 16]																		
A1500	Up & Low Blanching Shoring...	3	15-Jul-07	17-Jul-07	[Small green bar from Jul 15 to Jul 17]																		
A1510	Isolation/Pre-Clean Shoring ...	3	19-Jul-07	23-Jul-07	[Small green bar from Jul 19 to Jul 23]																		
A1520	S. Packaging Shoring Removal	3	20-Jul-07	24-Jul-07	[Small green bar from Jul 20 to Jul 24]																		
A1530	Raw & Receiving Shoring R...	3	21-Jul-07	23-Jul-07	[Small green bar from Jul 21 to Jul 23]																		
A1540	N. & S. Shoring Removal	3	22-Jul-07	24-Jul-07	[Small green bar from Jul 22 to Jul 24]																		
A1549	ROOF	41	22-May-07 A	01-Jul-07 A	[Blue bar from May 22 to Jul 01]																		
A1550	Mobilize	1	22-May-07	22-May-07	[Small green bar at May 22]																		
A1560	Clean Roof	3	23-May-07	25-May-07	[Small green bar from May 23 to May 25]																		
A1570	Roof Flashing	37	26-May-07	01-Jul-07	[Green bar from May 26 to Jul 01]																		
A1580	Replace Rusty Roof Panels	14	28-May-07	14-Jun-07	[Green bar from May 28 to Jun 14]																		
A1590	Roof Insulation and Membrane	1	30-May-07	30-May-07	[Small green bar at May 30]																		
A1600	IMP Walls at Sugar Grinding	14	07-Jun-07	26-Jun-07	[Green bar from Jun 07 to Jun 26]																		
A1609	RAW BIN & RECEIVING	46	08-May-07 A	22-Jun-07 A	[Blue bar from May 08 to Jun 22]																		
A1610	Raw Bin Insulation Removal ...	14	08-May-07	25-May-07	[Green bar from May 08 to May 25]																		
A1620	IMP Walls	10	08-May-07	21-May-07	[Green bar from May 08 to May 21]																		
A1630	Receiving Area Insulation R...	5	14-May-07	18-May-07	[Small green bar from May 14 to May 18]																		
A1640	Lighting	3	04-Jun-07	06-Jun-07	[Small green bar from Jun 04 to Jun 06]																		
A1650	Re-install Peanut Bin Control...	2	04-Jun-07	05-Jun-07	[Small green bar from Jun 04 to Jun 05]																		
A1660	Doors	5	18-Jun-07	22-Jun-07	[Small green bar from Jun 18 to Jun 22]																		
A1669	COP, CHEM, FINES ROOMS	49	11-May-07 A	28-Jun-07 A	[Blue bar from May 11 to Jun 28]																		
A1670	Roaster Replacement Drywa...	28	11-May-07	19-Jun-07	[Green bar from May 11 to Jun 19]																		
A1680	Insulation Removal / Caulking	14	21-May-07	07-Jun-07	[Green bar from May 21 to Jun 07]																		
A1690	COP Slab	3	21-May-07	23-May-07	[Small green bar from May 21 to May 23]																		
A1700	Curbs	7	22-May-07	30-May-07	[Green bar from May 22 to May 30]																		
A1710	Chem, Fines IMP Walls	8	28-May-07	06-Jun-07	[Green bar from May 28 to Jun 06]																		
A1720	COP E2M Work (No Daytim...	16	30-May-07	20-Jun-07	[Green bar from May 30 to Jun 20]																		
A1730	COP Painting (Nights)	5	01-Jun-07	07-Jun-07	[Small green bar from Jun 01 to Jun 07]																		
A1740	Demo Door Openings	4	04-Jun-07	07-Jun-07	[Small green bar from Jun 04 to Jun 07]																		
A1750	COP Overhead Plumbing	15	05-Jun-07	25-Jun-07	[Green bar from Jun 05 to Jun 25]																		
A1760	COP Electrical	15	05-Jun-07	25-Jun-07	[Green bar from Jun 05 to Jun 25]																		
A1770	COP IMP Walls (Nights)	3	06-Jun-07	08-Jun-07	[Small green bar from Jun 06 to Jun 08]																		
A1780	Chem, Fines Lights and Elec...	7	08-Jun-07	18-Jun-07	[Green bar from Jun 08 to Jun 18]																		
A1781	COP Fire Protection	9	11-Jun-07	21-Jun-07	[Green bar from Jun 11 to Jun 21]																		
A1782	Chem, Fines Fire Protection	7	11-Jun-07	19-Jun-07	[Green bar from Jun 11 to Jun 19]																		
A1790	COP Room Joint Day E2M / ...	14	11-Jun-07	28-Jun-07	[Green bar from Jun 11 to Jun 28]																		
A1800	COP E2M SafeAire Work (N...	4	11-Jun-07	14-Jun-07	[Small green bar from Jun 11 to Jun 14]																		
A1810	COP IMP Ceiling	1	14-Jun-07	14-Jun-07	[Small green bar at Jun 14]																		
A1820	COP Hang Lights	2	15-Jun-07	18-Jun-07	[Small green bar from Jun 15 to Jun 18]																		
A1830	COP Plumbing Equipment &...	5	15-Jun-07	21-Jun-07	[Small green bar from Jun 15 to Jun 21]																		
A1840	Doors	11	18-Jun-07	28-Jun-07	[Green bar from Jun 18 to Jun 28]																		
A1850	COP Flooring	6	20-Jun-07	27-Jun-07	[Green bar from Jun 20 to Jun 27]																		

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

Project Stallone

Technical Assignment #2

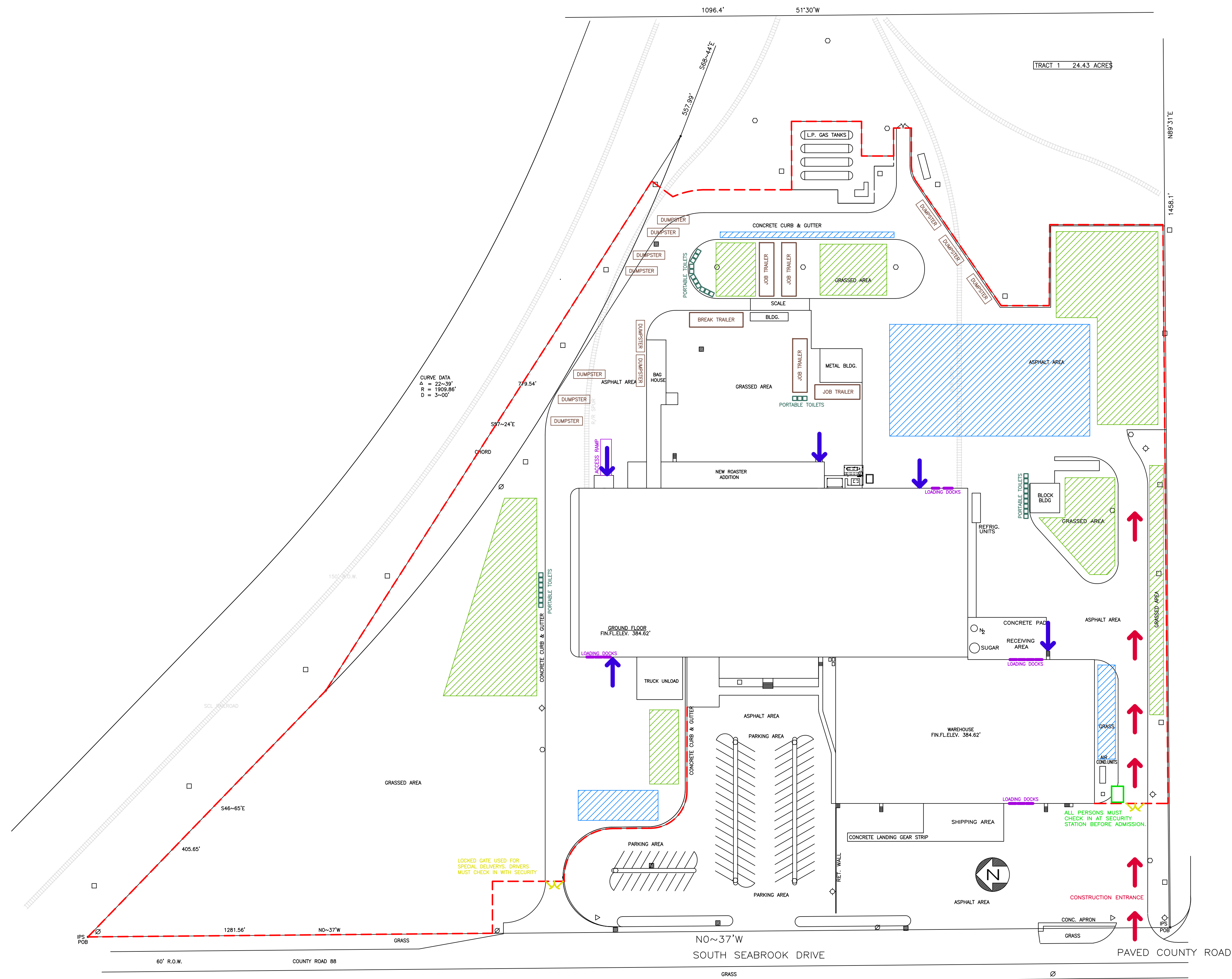
Activity ID	Activity Name	Original Duration	Start	Finish	May 2007				June 2007				July 2007				August 2007			
					06	13	20	27	03	10	17	24	01	08	15	22	29	05	12	19
A1860	Fines Flooring	6	20-Jun-07	27-Jun-07																
A1869	ISOLATION AREA	53	08-May-07 A	29-Jun-07 A	[Actual Work]															
A1870	Insulation Removal / Caulking	20	08-May-07	04-Jun-07	[Remaining Work]															
A1880	Complete Catwalk Steel Des...	1	14-May-07	14-May-07																
A1890	Catwalk Shop Drawings/Fab...	18	15-May-07	07-Jun-07	[Remaining Work]															
A1900	Complete Curbs	1	18-May-07	18-May-07																
A1910	Full Height IMP's	10	21-May-07	01-Jun-07	[Remaining Work]															
A1920	Catwalk IMP	10	31-May-07	13-Jun-07	[Remaining Work]															
A1930	Above Ground Plumbing	10	31-May-07	13-Jun-07	[Remaining Work]															
A1940	Catwalk Steel Erection	7	02-Jun-07	08-Jun-07	[Remaining Work]															
A1950	Lighting & Power	15	06-Jun-07	26-Jun-07	[Remaining Work]															
A1960	Fire Protection	15	11-Jun-07	29-Jun-07	[Remaining Work]															
A1970	Paint Catwalk Steel	5	16-Jun-07	20-Jun-07	[Remaining Work]															
A1980	Doors	11	18-Jun-07	28-Jun-07	[Remaining Work]															
A1990	***Non-COP Flooring-Date T...	8	18-Jun-07	27-Jun-07	[Remaining Work]															
A2000	COP Flooring	5	21-Jun-07	27-Jun-07	[Remaining Work]															
A2009	WOOD MEZZANINE	64	14-May-07 A	17-Jul-07 A	[Actual Work]															
A2010	Insulation Removal / Caulking	20	14-May-07	08-Jun-07	[Remaining Work]															
A2020	Epoxy Paint Floors (Nights)	6	10-Jul-07	17-Jul-07					[Remaining Work]											
A2029	LOWER BLANCHING	5	04-May-07 A	08-May-07 A	[Actual Work]															
A2030	Flooring	3	04-May-07	08-May-07	[Remaining Work]															
A2039	GRINDING & BLENDING	75	11-May-07 A	25-Jul-07 A	[Actual Work]															
A2040	Insulation Removal / Caulking	15	11-May-07	31-May-07	[Remaining Work]															
A2050	Insulation Removal / Caulkin...	14	28-May-07	14-Jun-07	[Remaining Work]															
A2060	Flooring	5	19-Jul-07	25-Jul-07					[Remaining Work]											
A2069	UPPER BLANCHING	46	08-May-07 A	22-Jun-07 A	[Actual Work]															
A2070	Insulation Removal / Caulking	1	08-May-07	08-May-07																
A2080	***Flooring - Date TBD***	5	18-Jun-07	22-Jun-07	[Remaining Work]															
A2089	VOTATOR	53	08-May-07 A	29-Jun-07 A	[Actual Work]															
A2090	Insulation Removal / Caulking	39	08-May-07	29-Jun-07	[Remaining Work]															
A2100	Votator Mezzanine IMP Walls	14	09-May-07	28-May-07	[Remaining Work]															
A2110	***Flooring - Date TBD***	8	18-Jun-07	27-Jun-07	[Remaining Work]															
A2119	TANK ROOM	7	10-May-07 A	16-May-07 A	[Actual Work]															
A2120	***Flooring - Date TBD***	5	10-May-07	16-May-07	[Remaining Work]															
A2129	PACKAGING	40	21-May-07 A	29-Jun-07 A	[Actual Work]															
A2130	Insulation Removal / Caulking	8	21-May-07	30-May-07	[Remaining Work]															
A2149	CORRIDOR	45	14-May-07 A	27-Jun-07 A	[Actual Work]															
A2140	***Flooring - Date TBD***	10	18-Jun-07	29-Jun-07	[Remaining Work]															
A2150	Insulation Removal / Caulking	1	14-May-07	14-May-07																
A2160	***Flooring - Date TBD***	8	18-Jun-07	27-Jun-07	[Remaining Work]															

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

Project Stallone
 Technical Assignment #2

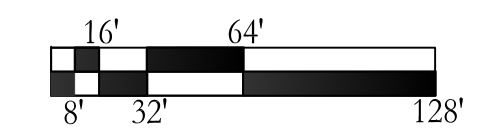
Appendix B

Site Layout Planning



Legend

- - - Site Fence
- - - Gate Access
- Security Station
- ➔ Building Access Points
- ➔ Construction Site Traffic
- Material Access Points
- Site Parking
- Material Laydown Areas



Appendix C

Assemblies Estimate



Assemblies Estimate

Assemblies Estimate					
Material	Material / Labor	Quantity	Unit	Unit Price	Cost
Extruded Polystyrene 3" thick, 25 psi	M	100,000.00	sf	\$2.02	\$202,000.00
Extruded Polystyrene 3" thick, 25 psi	L	100,000.00	sf	\$0.43	\$43,000.00
Low Density Fiber Board 2" thick	M	100,000.00	sf	\$0.92	\$92,000.00
Low Density Fiber Board 2" thick	L	100,000.00	sf	\$0.54	\$54,000.00
Reinforced PVC 60 mils, Partially adhered with Mechanical Fasteners	M	100,000.00	sf	\$1.10	\$110,000.00
Reinforced PVC 60 mils, Partially adhered with Mechanical Fasteners	L	100,000.00	sf	\$0.61	\$61,000.00
Painted Aluminum .05" thick, 6" overhang	M	14,000.00	lf	\$11.60	\$162,400.00
Painted Aluminum .05" thick, 6" overhang	L	14,000.00	lf	\$9.15	\$128,100.00
				Total:	\$852,500.00

Appendix D

Detailed Structural System Estimate



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Technical Report #2

Detailed Structural Systems Estimate

Columns						
Material	Sheet No.	Number of Pieces	Length of Members	Total Linear Feet of 4x4	Total Linear Feet of 6x6	Total Linear Feet of 7x4
TS 4X4X5/16	SR103	67	15	1005	0	0
TS 6X6X1/4	SR103	16	15	0	240	0
TS 4X4X5/16	SR104	16	15	240	0	0
TS 6X6X1/4	SR104	16	15	0	240	0
TS 4X4X5/16	SR106	64	15	960	0	0
TS 6X6X1/4	SR106	31	15	0	465	0
TS 6X6X1/4	SR107	29	15	0	435	0
TS 4X4X5/16	SR102	64	15	960	0	0
TS 4X4X5/16	SR112	64	20	1280	0	0
TS 4X4X5/16	SR113	69	20	1380	0	0
TS 6X6X1/4	SR113	16	20	0	320	0
TS 6X6X1/4	SR114	16	20	0	320	0
TS 4X4X5/16	SR114	5	20	100	0	0
TS 4X4X5/16	SR116	50	20	1000	0	0
TS 6X6X1/4	SR116	31	20	0	620	0
TS 6X6X1/4	SR117	29	20	0	580	0
TS 4X4X5/16	SR117	4	20	80	0	0
Total Linear Feet of TS 4x4x5/16 Columns:				7005		
Total Linear Feet of TS 6X6X1/4 Columns:					3220	
Total Linear Feet of TS 7X4X5/16 Columns:						0



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Horizontal Beams						
Material	Sheet No.	Number of Pieces	Length of Members	Total Linear Feet of 4x4	Total Linear Feet of 6x6	Total Linear Feet of 7x4
TS 7X4X5/16	SR103	1	5	0	0	5
TS 7X4X5/16	SR103	1	8.5	0	0	8.5
TS 7X4X5/16	SR103	1	3.5	0	0	3.5
TS 7X4X5/16	SR103	5	6.5	0	0	32.5
TS 7X4X5/16	SR103	1	7.5	0	0	7.5
TS 7X4X5/16	SR103	1	4.5	0	0	4.5
TS 7X4X5/16	SR106	7	3	0	0	21
TS 7X4X5/16	SR106	3	8.5	0	0	25.5
TS 7X4X5/16	SR106	1	6.5	0	0	6.5
TS 7X4X5/16	SR106	2	6	0	0	12
TS 7X4X5/16	SR106	1	7	0	0	7
TS 7X4X5/16	SR106	2	4.5	0	0	9
TS 7X4X5/16	SR113	1	16.5	0	0	16.5
TS 7X4X5/16	SR113	8	64	0	0	512
TS 7X4X5/16	SR113	1	54.5	0	0	54.5
TS 4X4X5/16	SR113	6	9.5	57	0	0
TS 4X4X5/16	SR114	3	9.5	28.5	0	0
TS 7X4X5/16	SR114	1	16	0	0	16
TS 4X4X5/16	SR116	8	11	88	0	0
TS 4X4X5/16	SR116	2	9.5	19	0	0
TS 4X4X5/16	SR116	7	7	49	0	0
TS 4X4X5/16	SR116	1	6	6	0	0
TS 4X4X5/16	SR116	11	5.5	60.5	0	0
TS 4X4X5/16	SR116	4	37	148	0	0
TS 4X4X5/16	SR116	1	45	45	0	0
TS 4X4X5/16	SR116	1	16	16	0	0
TS 4X4X5/16	SR116	1	75	75	0	0
TS 4X4X5/16	SR116	1	68	68	0	0
TS 7X4X5/16	SR116	2	20.5	0	0	41
TS 7X4X5/16	SR116	2	63	0	0	126
TS 7X4X5/16	SR116	4	21	0	0	84
TS 7X4X5/16	SR116	1	29.5	0	0	29.5
TS 7X4X5/16	SR116	1	16.5	0	0	16.5
TS 7X4X5/16	SR116	1	19.5	0	0	19.5
TS 7X4X5/16	SR116	9	20	0	0	180
TS 4X4X5/16	SR117	8	7	56	0	0
TS 4X4X5/16	SR117	3	6.5	19.5	0	0
TS 4X4X5/16	SR117	3	9.5	28.5	0	0
TS 7X4X5/16	SR117	2	53.5	0	0	107

Total Linear Feet of TS 4x4x5/16 Horizontal Beams: **764**

Total Linear Feet of TS 6X6X1/4 Horizontal Beams: **0**

Total Linear Feet of TS 7X4X5/16 Horizontal Beams: **1345**

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Columns:

TS 4X4X5/16:	18.99	LB/FT	X	7005 L.F.	=	133024.95 LBS	66.51248
TS 6X6X1/4:	14.78	LB/FT	X	3220 L.F.	=	47591.60 LBS	23.7958
TS 7X4X5/16:	21.19	LB/FT	X	0 L.F.	=	0.00 LBS	0

Beams:

TS 4X4X5/16:	18.99	LB/FT	X	764 L.F.	=	14508.36 LBS	7.25418
TS 6X6X1/4:	14.78	LB/FT	X	0 L.F.	=	0.00 LBS	0
TS 7X4X5/16:	21.19	LB/FT	X	1345 L.F.	=	28500.55 LBS	14.25028

Total Column Tonnage: 90.30828

Total Beam Tonnage: 21.50446

Total Tonnage: 111.8127

Number of Anchor Bolts: 2348

Frames Take-off

Frame Lines: 1, 2, and 19 (Typical)

Flange Braces (L 2x2x1/8):

- 82 – Braces per Frame Line at 2' ea.
- 164 L.F. of L 2x2x1/8 Flange Brace per Frame Line X 3 (Number of Typical Frames)
Total L.F. of L 2x2x1/8 = 492 L.F.
- Weight of Flange Braces: 1.65 lbs/ft X 492 L.F. = 811.8 lbs = **0.41 tons**

Total Weight for Column Lines 1, 2, and 19:

0.41 tons

Frame Lines: 3, 4, 5, 6, 7, 8, 11, 12, 13, 17, and 18 (Typical)

Flange Braces (L 2x2x1/8):

- 44 – Braces per Frame Line at 2' ea.
- 88 L.F. of L 2x2x1/8 Flange Brace per Frame Line X 11 (Number of Typical Frames)
Total L.F. of L 2x2x1/8 = 968 L.F.
- Weight of Flange Braces: 1.65 lbs/ft X 968 L.F. = 1597.2 lbs = **0.80 tons**

Bottom Flange Reinforcement (PL 8x3/8x *Length*):

- 90 L.F. of Plate Steel per Frame Line X 11 (Number of Typical Frames)
Total L.F. of Plate Steel = 990 L.F.
- Weight of Plate Steel: 10.21 lbs/ft X 990 L.F. = 10107.9 lbs = **5.05 tons**

Web Stiffeners (PL 3x28x3/8):

- 35 per Frame Line at 8.93 lbs/plate = 312.55 lbs
- 312.55 lbs X 11 (Number of Typical Frames) = 3438.05 lbs = **1.72 tons**

Total Weight for Column Lines 3, 4, 5, 6, 7, 8, 11, 12, 13, 17, and 18:

7.57 tons

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Frame Line: 9

Flange Braces (L 2x2x1/8):

- 44 – Braces at 2' ea.
- 88 L.F. of L 2x2x1/8 Flange Brace
- Weight of Flange Braces: 1.65 lbs/ft X 88 L.F. = 145.2 lbs = 0.073 tons

Bottom Flange Reinforcement (PL 8x3/8x *Length*):

- 18 L.F. of Plate Steel
- Weight of Plate Steel: 10.21 lbs/ft X 18 L.F. = 183.78 lbs = 0.092 tons

Top Flange Reinforcement (L 3x3x1/4):

- 57 L.F. per side X 2 (Sides of the flange) = 114 L.F.
- Weight of Top Flange Reinforcement: 4.90 lbs/ft X 114 L.F. = 558.6 lbs = 0.28 tons

Web Stiffeners (PL 3x28x3/8):

- 37 Web Stiffeners at 8.93 lbs/plate = 330.41 lbs = 0.17 tons

Total Weight for Column Line 9:

0.62 tons

Frame Line: 10

Flange Braces (L 2x2x1/8):

- 44 – Braces at 2' ea.
- 88 L.F. of L 2x2x1/8 Flange Brace
- Weight of Flange Braces: 1.65 lbs/ft X 88 L.F. = 145.2 lbs = 0.073 tons

Bottom Flange Reinforcement (PL 8x3/8x *Length*):

- 27 L.F. of Plate Steel
- Weight of Plate Steel: 10.21 lbs/ft X 27 L.F. = 275.67 lbs = 0.14 tons

Web Stiffeners (PL 3x28x3/8):

- 14 Web Stiffeners at 8.93 lbs/plate = 125.02 lbs = 0.063 tons

Total Weight for Column Line 9:

0.28 tons

Frame Lines: 14, 15, and 16 (Typical)

Flange Braces (L 2x2x1/8):

- 44 – Braces per Frame Line at 2' ea.
- 88 L.F. of L 2x2x1/8 Flange Brace per Frame Line X 3 (Number of Typical Frames)
Total L.F. of L 2x2x1/8 = 264 L.F.
- Weight of Flange Braces: 1.65 lbs/ft X 264 L.F. = 435.60 lbs = **0.22 tons**

Bottom Flange Reinforcement (PL 8x3/8x *Length*):

- 67 L.F. of Plate Steel per Frame Line X 3 (Number of Typical Frames)
Total L.F. of Plate Steel = 201 L.F.
- Weight of Plate Steel: 10.21 lbs/ft X 201 L.F. = 2052.21 lbs = **1.03 tons**

Top Flange Reinforcement (L 3x3x1/4):

- 57 L.F. per side X 2 (Sides of the flange) = 114 L.F. per Frame Line
- 114 L.F. of L 3x3x1/4 per Frame Line X 3 (Number of Typical Frames)
Total L.F. of Top Flange Reinforcement: 342 L.F.
- Weight of Top Flange Reinforcement: 4.90 lbs/ft X 342 L.F. = 1675.8 lbs = **0.84 tons**

Web Stiffeners (PL 3x28x3/8):

- 17 per Frame Line at 8.93 lbs/plate = 151.81 lbs
- 151.81 lbs X 3 (Number of Typical Frames) = 455.43 lbs = **0.23 tons**

Total Weight for Column Lines 14, 15, and 16:

2.32 tons

Total Weight of Steel for Structural Repairs to Existing Frames:

11.20 tons



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Tube Steel Estimate							
Description	Material/Labor	Quantity	Unit	Unit Price	Cost	Modification Factor	Modified Cost
Columns	M	133024.95	lb	\$1.10	\$146,327.45	150%	\$219,491.17
Columns	L	133024.95	lb	\$0.35	\$46,558.73	700%	\$325,911.13
Expansion Anchor Bolts	M	2348.00	ea	\$2.78	\$6,527.44	125%	\$8,159.30
Expansion Anchor Bolts	L	2348.00	ea	\$2.56	\$6,010.88	500%	\$30,054.40
Beams	M	21.50	ton	\$2,650.00	\$56,975.00	150%	\$85,462.50
Beams	L	21.50	ton	\$524.00	\$11,266.00	1000%	\$112,660.00
					\$273,665.50		\$781,738.50

Structural Frame Repairs							
Description	Material/Labor	Quantity	Unit	Unit Price	Cost	Modification Factor	Modified Cost
Structural Steel	M	11.20	ton	\$2,650.00	\$29,680.00	500%	\$148,400.00
Structural Steel	L	11.20	ton	\$524.00	\$5,868.80	2000%	\$117,376.00
					\$35,548.80		\$265,776.00

Structural Equipment Needed/Other Misc						
Description	Material/Labor	Number of units	Quantity	Unit	Unit Price	Cost
Sizzor Lifts	M	22.00	3.00	mo	\$2,500.00	\$165,000.00
Knuckle Boom Lift	M	10.00	3.00	mo	\$3,250.00	\$97,500.00
Drivable Mini-crane	M	2.00	3.00	mo	\$4,000.00	\$24,000.00
Fork Lifts	M	6.00	3.00	mo	\$2,500.00	\$45,000.00
Lull Fork Lifts	M	2.00	3.00	mo	\$2,900.00	\$17,400.00
Shoring Contract	M	1.00	1.00	ls	\$250,000.00	\$250,000.00
Structual Inspectors	L	2.00	13.00	wk	\$2,250.00	\$58,500.00
						\$657,400.00

	<u>Regular</u>	<u>With Mods.</u>
Sub-total:	\$966,614.30	\$1,704,914.50
Location Factor:	0.917	0.917
Totals:	\$886,385.31	\$1,563,406.59

Appendix E

General Conditions Estimate



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General Conditions Estimate

General Conditions				
Description	Quantity	Units	Unit Price	Amount
Field Office Support				
As-Built Drawings	1	LS	\$2,000	\$2,000
Cell Phones	4	MO	\$450	\$1,800
Computers / Software	4	MO	\$330	\$1,320
Copier/Fax/Scanner	1	LS	\$600	\$600
Network Connection / Internet	4	MO	\$150	\$600
Office Furniture	1	LS	\$2,300	\$2,300
Office Supplies	4	MO	\$350	\$1,400
Photocopying / Drawings Out-sourced	4	MO	\$450	\$1,800
Postage / Expressage	4	MO	\$1,000	\$4,000
Substance Abuse Testing	1	EA	\$75	\$75
Telephone	4	MO	\$850	\$3,400
Telephone Setup	1	LS	\$2,500	\$2,500
Temporary Power (Trailer)	4	MO	\$300	\$1,200
Temporary Water (Trailer)	4	MO	\$85	\$340
			Sub-total:	\$23,335
Personell				
Assistant Project Manager	15	WK	\$1,400	\$21,000
Project Assistant	15	WK	\$1,450	\$21,750
Project Managers (2)	15	WK	\$5,100	\$76,500
Project Managers' Cars (2)	4	MO	\$1,850	\$7,400
Senior Project Manager	15	WK	\$3,150	\$47,250
Senior Project Manager's Car	4	MO	\$1,000	\$4,000
Superintendent (Day)	15	WK	\$2,250	\$33,750
Superintendent (Night)	15	WK	\$2,050	\$30,750
Superintendents' Trucks (2)	4	MO	\$2,450	\$9,800
			Sub-total:	\$252,200
Safety				
First Aid	1	LS	\$3,000	\$3,000
Safety Program	4	MO	\$1,200	\$4,800
Safety Supervisor	15	WK	\$2,600	\$39,000
			Sub-total:	\$46,800



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General Conditions Continued:

Clean-up				
Clean-up Foreman	15	WK	\$1,300	\$19,500
Clean-up Labor (2 Persons)	15	WK	\$2,000	\$30,000
Dump Carts	4	MO	\$500	\$2,000
Dumpsters	300	EA	\$350	\$105,000
			Sub-total:	\$156,500
Tools and Equipment				
Fork Lift	4	MO	\$2,500	\$10,000
Knuckle Boom Lift	2	MO	\$3,250	\$6,500
Lull Forklift	2	MO	\$2,900	\$5,800
Sizzor Lift	3	MO	\$2,650	\$7,950
Small Tools	1	LS	\$3,500	\$3,500
			Sub-total:	\$33,750
Temporary Facilities & Services				
Job Signs	1	LS	\$1,200	\$1,200
Temporary Toilets (20)	4	MO	\$4,000	\$16,000
Water Coolers / Coffee	4	MO	\$100	\$400
			Sub-total:	\$17,600
Bonds & Insurance				
Builders Risk / General Liability Insurance		LS		\$67,435
Payment / Performance Bonds		LS		\$58,543
			Sub-total:	\$125,978

Grand Total: \$656,163

General Conditions Summary	
Field Office Support	\$23,335.00
Personell	\$252,200.00
Safety	\$46,800.00
Clean-up	\$156,500.00
Tools and Equipment	\$33,750.00
Temporary Facilities & Services	\$17,600.00
Bonds & Insurance	\$125,978.00
Total:	\$656,163.00