IPD/ BIM Thesis Technical Assignment Two CM: Matt Hedrick Justin Miller Chris Wiacek

Advisor: Dr. Chimay Anumba

9 November 2009

TABLE OF CONTENTS

Р	'A	G	F
-		9	-

xecutive Summary	3
etailed Project Schedule	. 4
Overview	4
TE LAYOUT PLANNING	. 9
Demolition	9
Foundations – Part I	9
Foundations – Part II	9
Superstructure	9
Interior Turnover	9
etailed Structural Systems Estimate	10
Foundations	10
Structural Steel Framing	10
Slab	12
eneral Conditions Estimate	13
Overview	13
Construction Durations	13
Cost Breakdown	13
General Conditions Breakdown	14
ritical Industry Issues	15
Energy and the Building Industry	15
Business Networking	15
BIM Execution Planning	16
PPENDIX A	17
PPENDIX B	23
PPENDIX C	

EXECUTIVE SUMMARY

This report primarily focuses on in depth analysis of construction cost and schedule for the New York Times Building. Site utilization and logistics, project schedule, detailed structural estimate and general conditions issues are also addressed. An in depth discussion of the PACE Roundtable is included, covering all three sessions of the conference.

This second technical report further develops the introductory analysis provided from Technical Assignmentone. An updated project schedule was developed to provide a higher level of detail analysis of trade sequencing, structural assembly, façade construction, and mechanical systems installation. In addition, all major milestones are included in this updated schedule.

There were many constraints imposed on the construction team based on the location of the site. Site layouts changed drastically from phase to phase, and these changes are highlighted in the site layout and utilization analysis portion of the report.

Detailed structural and general conditions estimates were also developed for this report. The structural estimate summarizes the expected costs for all steel, concrete, and reinforcing required for the New York Times Building. Conversely, the general conditions estimate includes overhead costs from personnel, site utilities, temporary facilities, fencing, barricades and signage for the project jobsite.

Last, an analysis of topics covered at each of the three technical sessions of the PACE Roundtable is included. The three topics covered include sustainability, Building Information Modeling execution planning, and Business Networking and Relationships.

DETAILED PROJECT SCHEDULE

OVERVIEW

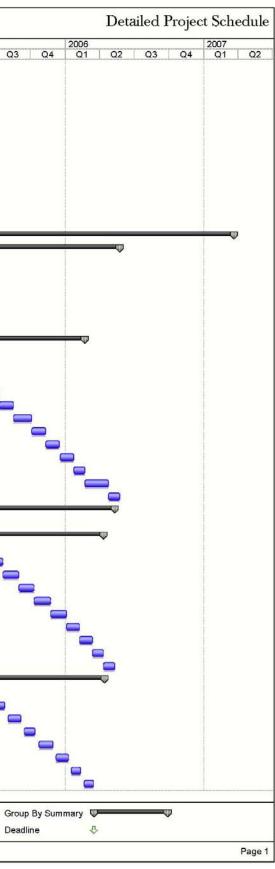
The detailed schedule represents the important activities that occurred during the construction of the New York Times Building. This schedule is a modification of the summary schedule that was provided in the Technical Report 1. Below are some key durations and milestones that were used in the General Conditions Estimate:

Αстіνіту	YEARS	Months	WEEKS	WORK DAYS
Construction Duration	3.5	42	182	910
Tower Crane	1.25	15	65	325
Material Hoists	2	24	104	520
Demolition	0.5	6	26	130
Foundations	1.5	18	78	390
Steel	1.5	18	78	390
Concrete	0.75	9	39	195
Curtainwall	1.25	15	65	325
Mech./Plum.	3	36	156	780
Electrical	2	24	104	520
Interiors	1.75	21	91	455

DURATIONS	DATE	DURATIONS	DATE
Start of Construction	12/1/2003	Concrete Fill / Tower Topout	8/23/2006
Start Demolition	12/1/2003	Curtainwall - Poduim Finish	3/13/2006
Finish Demolition	6/30/2004	Curtainwall - Tower	1/3/2007
Start of Excavation Foundations	4/19/2004	MP - Start	5/3/2004
Finish Foundations	9/12/2005	MP - Finish	4/23/2007
Start of Steel Erection (Tower)	5/2/2005	Electrical - Start	8/19/2005
Start of Steel Erection (Podium)	7/26/2005	Electrical - Finish	4/12/2007
Steel Top Out	5/24/2006	Interior Finishes - Start	10/3/2005
Mobilize Podium Concrete	10/24/2005	Interior Finishes - Finish	6/20/2007
Podium Concrete Finished	12/6/2005	Remove Tower Cranes	7/25/2006
Mobilize Tower Concrete	7/18/2005	Remove Hoists	5/31/2007
Pour Concrete 51,52	7/24/2006	Project Closeout	6/20/2007

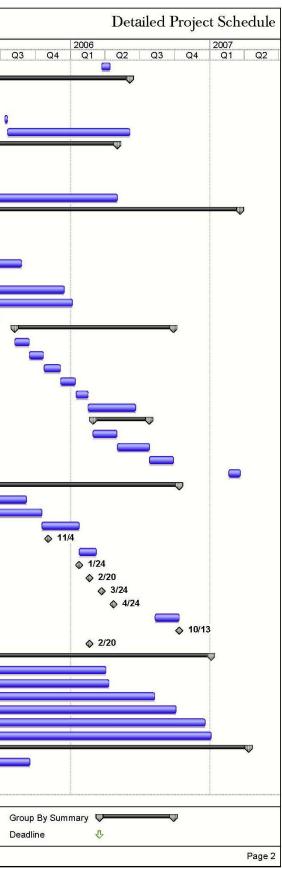
D	Task Name		Duration	Start	Finish	2002 Q3 Q4 Q1 Q2 Q3 Q4	2003 2004 2 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4	2005 Q1 Q2
1 (Owner Acquisition		657 days?	Mon 7/2/01	Tue 1/6/04	<u>4</u>		41 42
	Documents Available		609 days?	Mon 7/2/01	Thu 10/30/03			
5 E	Bid and Award		223 days?	Tue 8/19/03	Thu 6/24/04			
-	Site Mobilization/Abatement and I	Demo	140 days?	Mon 12/1/03	Fri 6/11/04			
\$	Site Fence		10 days	Mon 12/1/03	Fri 12/12/03		0	
F	Pedestrian Walkway		10 days	Mon 12/15/03	Fri 12/26/03		٥	
(Overhead Protection		20 days	Mon 12/29/03	Fri 1/23/04			
F	Foundations		330 days?	Mon 12/22/03	Fri 3/25/05		Ψ Ξ	•
	Award Excavations/Foundati	ons	6 days?	Mon 12/22/03	Mon 12/29/03		0	
)	Start Construction		0 days	Mon 4/19/04	Mon 4/19/04		♦ 4/19	
1	Excavation/Foundations - Ea	st	84 days?	Mon 5/24/04	Thu 9/16/04			
2	Excavation/Foundations - We	est	140 days?	Thu 8/12/04	Wed 2/23/05			
3	Slab On Grade		44 days	Tue 1/25/05	Fri 3/25/05			
4 8	Superstructure		1060 days?	Mon 3/3/03	Wed 3/21/07		Ψ	
5	Steel and Metal Deck		700 days?	Fri 9/19/03	Wed 5/24/06		φ	
3	Award Steel Package		22 days?	Fri 9/19/03	Mon 10/20/03			
1	Shop Drawings		295 days?	Tue 10/21/03	Mon 12/6/04			
	Mill Orders		159 days?	Thu 11/20/03	Tue 6/29/04			
	Material Deliveries		179 days?	Tue 1/27/04	Fri 10/1/04			
1	Fabrication - Podium		90 days?	Mon 6/21/04	Fri 10/22/04			
	Fabrication - Tower		248 days?	Fri 7/16/04	Tue 6/28/05		G	
2	Erect Steel		331 days?	Wed 11/17/04	Tue 2/21/06		W	
3	Erect Steel - Podiu	m: 2nd thru 5th Floor	59 days?	Wed 11/17/04	Mon 2/7/05			
	Erect Steel - Floors	1-6	24 days?	Fri 3/18/05	Wed 4/20/05			
5	Erect Steel - Floors	7-12	27 days?	Thu 4/21/05	Fri 5/27/05			
3	Erect Steel - Floors	13-18	31 days?	Tue 5/31/05	Mon 7/11/05			
7	Erect Steel - Floors	19-24	27 days?	Tue 7/12/05	Wed 8/17/05			
3	Erect Steel - Floors	25-30	34 days?	Thu 8/18/05	Tue 10/4/05			
)	Erect Steel - Floors	31-36	27 days?	Wed 10/5/05	Thu 11/10/05			
)	Erect Steel - Floors	37-42	26 days?	Fri 11/11/05	Fri 12/16/05			
1	Erect Steel - Floors	43-48	26 days?	Mon 12/19/05	Mon 1/23/06			
2	Erect Steel - Floors	49-52	21 days?	Tue 1/24/06	Tue 2/21/06			
3	Roof Screen Support/To	pout/MEP Equipment	44 days?	Wed 2/22/06	Mon 4/24/06			
4	Demobilize		22 days?	Tue 4/25/06	Wed 5/24/06			
5	Concrete		591 days?	Fri 2/6/04	Thu 5/11/06		Ψ	
6	Award		22 days?	Fri 2/6/04	Mon 3/8/04			
7	Pour Concrete		252 days?	Tue 4/26/05	Tue 4/11/06			Ψ
3	Pour Concrete - Flo	oors 1-6	35 days?	Tue 4/26/05	Mon 6/13/05			
Ð	Pour Concrete - Flo	oors 7-12	27 days?	Wed 6/15/05	Wed 7/20/05			
כ	Pour Concrete - Flo	oors 13-18	30 days?	Thu 7/21/05	Wed 8/31/05			
1	Pour Concrete - Flo	oors 19-24	28 days?	Thu 9/1/05	Mon 10/10/05			
2	Pour Concrete - Flo	ors 25-30	32 days?	Tue 10/11/05	Wed 11/23/05			
3	Pour Concrete - Flo	oors 31-36	30 days?	Thu 11/24/05	Wed 1/4/06			
F.	Pour Concrete - Flo	oors 37-42	24 days?	Thu 1/5/06	Tue 2/7/06			
	Pour Concrete - Flo		24 days?	Wed 2/8/06	Mon 3/13/06			
5	Pour Concrete - Flo	ors 49-52	21 days?	Tue 3/14/06	Tue 4/11/06			
	Concrete Fills/Topout		22 days?	Wed 4/12/06	Thu 5/11/06			
3	Conc - N/S Cantilever		237 days?	Fri 5/20/05	Fri 4/14/06			
)	Conc - N/S Cantile	/er - Floors 2-6	20 days?	Fri 5/20/05	Thu 6/16/05			-
)	Conc - N/S Cantile		23 days?	Fri 6/24/05	Mon 7/25/05			
	Conc - N/S Cantile		24 days?	Thu 8/4/05	Tue 9/6/05			
2	Conc - N/S Cantile		21 days?	Thu 9/15/05	Thu 10/13/05			
	Conc - N/S Cantile		27 days?	Mon 10/24/05	Tue 11/29/05			
1	Conc - N/S Cantile		23 days?	Thu 12/8/05	Mon 1/9/06			
5	Conc - N/S Cantile		19 days?	Tue 1/17/06	Fri 2/10/06			
3	Conc - N/S Cantile		19 days?	Mon 2/20/06	Thu 3/16/06			
ject.	PSU IPD BIM Detailed Schedu	Task 🗲	Milestone	•		Rolled Up Task 🛛 🗖 🖉 R	olled Up Progress	0
	าน 11/5/09	Progress	Summary			Rolled Up Milestone 🛇 Si	plit Project Summary	
			- Community	· · · ·	v	······································	interest of the second se	~

DETAILED PROJECT SCHEDULE

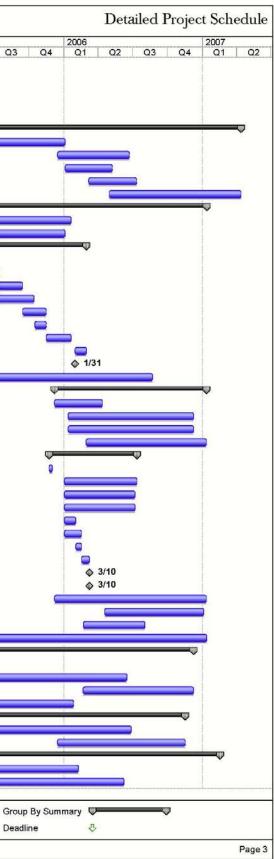


ID T	Fask Name	Duration	Start	Finish	Q3 Q4	2002 Q1	Q2	Q3 Q4	2003 Q1	Q2 Q3	Q4	2004 Q1	Q2 Q3	Q4	2005 Q1
57	Conc - N/S Cantilever - Floors 49-52	16 days?	Fri 3/24/06	Fri 4/14/06		Q1	Q2	<u>u</u> s <u></u> Q4		QZ Q3	Q4	<u> </u>	<u>uz u</u> 3	Q4	UI I
58	Intumescent Paint Fireproofing	289 days?	Thu 4/28/05	Mon 6/5/06											
59	Intumescent FR - Podium Mobilization	5 days?	Thu 4/28/05	Wed 5/4/05											
50	Intumescent FR - Podium	23 days?	Thu 5/5/05	Mon 6/6/05											
61	Intumescent FR - Tower Mobilization	5 days?	Wed 7/13/05	Tue 7/19/05											
32	Intumescent FR - Tower	229 days?	Wed 7/20/05	Mon 6/5/06											
63	Spray Fireproofing	292 days?	Wed 3/23/05	Wed 5/3/06											
64	Mobilize SOFP - Podium	6 days?	Wed 3/23/05	Wed 3/30/05											0
65	Spray Fireproof - Podium	20 days?	Thu 3/31/05	Wed 4/27/05											Ī
66	Spray Fireproof Mobilization - Tower	7 days?	Mon 5/16/05	Tue 5/24/05											
67	Spray Fireproof - Tower	246 days?	Thu 5/26/05	Wed 5/3/06											
68	Curtain Wall	1060 days?	Mon 3/3/03	Wed 3/21/07											
69	Award	22 days?	Mon 3/3/03	Tue 4/1/03											
70	Shop Drawings	249 days?	Wed 4/2/03	Mon 3/15/04											
71	Mock Ups	244 days?	Wed 4/2/03	Mon 3/8/04											
72	Material Procurement and Delivery	559 days?	Tue 7/8/03	Thu 8/25/05					-	_					
73	Fabrication Drawings	317 days?	Mon 9/15/03	Tue 11/30/04								1		1	
74	Shop Assembly/Shipping - Utilized Frames	368 days?	Wed 7/21/04	Thu 12/15/05											
75	Set Inserts/Clips	183 days?	Wed 4/27/05	Thu 1/5/06									-		
76	Curtain Wall Podium	42 days?	Thu 4/28/05	Fri 6/24/05											
77	Curtain Wall Tower	299 days?	Mon 8/8/05	Wed 9/27/06											
78	Curtain Wall Tower - Floors 2-7	285 days?	Mon 8/8/05	Wed 9/14/05											
79	Curtain Wall Tower - Floors 8-13	20 days?	Thu 9/15/05	Fri 10/21/05											
80	Curtain Wall Tower - Floors 14-19	31 days?	Mon 10/24/05	Mon 12/5/05											
81	Curtain Wall Tower - Floors 20-25	29 days?	Tue 12/6/05	Fri 1/13/06											
82	Curtain Wall Tower - Floors 26-28	23 days?	Mon 1/16/06	Wed 2/15/06											
83	Curtain Wall Tower - Floors 29-50	89 days?	Thu 2/16/06	Tue 6/20/06											
84															
85	Curtain Wall Tower North/South Wings Curtain Wall Tower - Floors 31-40	107 days?	Wed 3/1/06 Wed 3/1/06	Wed 7/26/06											
86	Curtain Wall Tower - Floors 31-40 Curtain Wall Tower - Floors 41-51	45 days?	Thu 5/4/06	Tue 5/2/06											
		61 days?		Wed 7/26/06											
87	Roof Top Work - Screen Walls	45 days?	Thu 7/27/06	Wed 9/27/06											
88	Curtain Wall Infill	22 days?	Tue 2/20/07	Wed 3/21/07											
89	Roofing	355 days?	Tue 6/7/05	Fri 10/13/06											
90	Port Authority Lighting Assembly	68 days?	Tue 6/7/05	Wed 9/7/05											
91	Podium Skylights	91 days?	Tue 6/14/05	Mon 10/17/05											
92	Roofing at 5th Floor Podium	70 days?	Tue 10/18/05	Mon 1/23/06											
93	Temp. Watertight Roof Above 15th Floor	0 days	Fri 11/4/05	Fri 11/4/05											
94	5th Floor Roof Pavers	33 days?	Tue 1/24/06	Thu 3/9/06											
95	Weathertight Podium Roof	0 days	Tue 1/24/06	Tue 1/24/06											
96	Temp. Watertight Roof Above 28th Floor	0 days	Mon 2/20/06	Mon 2/20/06											
97	Temp. Watertight Roof Above 36th Floor	0 days	Fri 3/24/06	Fri 3/24/06											
98	Temp. Watertight Roof Above 44th Floor	0 days	Mon 4/24/06	Mon 4/24/06											
99	Roofing at Tower	45 days?	Fri 8/11/06	Thu 10/12/06											
00	Watertight Tower Roof	0 days	Fri 10/13/06	Fri 10/13/06											
01	NY Times Tenant Floors - Weather Tight	0 days	Mon 2/20/06	Mon 2/20/06											
and the second second	Elevators	469 days?	Wed 3/23/05	Thu 1/4/07											W
103	Podium Elevators	270 days?	Wed 3/23/05	Mon 4/3/06											C
104	Low Rise: P1 - P6	217 days?	Tue 6/14/05	Tue 4/11/06											
105	Mid-Low Rise: P7 - P12	304 days?	Tue 6/14/05	Wed 8/9/06											
106	Mid-High Rise: P13 - P18	344 days?	Tue 6/14/05	Wed 10/4/06											
107	High Rise: P19 - P26	398 days?	Tue 6/14/05	Tue 12/19/06											
801	Service Elevators: S27 & S28	410 days?	Tue 6/14/05	Thu 1/4/07											
an a	Building Systems	829 days?	Wed 2/11/04	Thu 4/12/07								W		1	
10	Utilities	242 days?	Fri 10/15/04	Fri 9/16/05										<u></u>	
111	MEP Coordination	214 days?	Wed 2/11/04	Mon 12/6/04								W			
12	MEP Coordination - Shop Standards	33 days?	Wed 2/11/04	Fri 3/26/04											
roject	PSU IPD BIM Detailed Schedu Task	Mileston	e 🔷		Rolled Up T	ask	(Rolled Up Pro	gress 🕳		E×	dernal Tasks	(
	11/5/09		10 (ARA)		and the second s		~					P			
	Progress	Summar	y 🖤		Rolled Up M	nestone	V		Split	1010101	0101010101010	uuuu Pr	oject Summary		

DETAILED PROJECT SCHEDULE

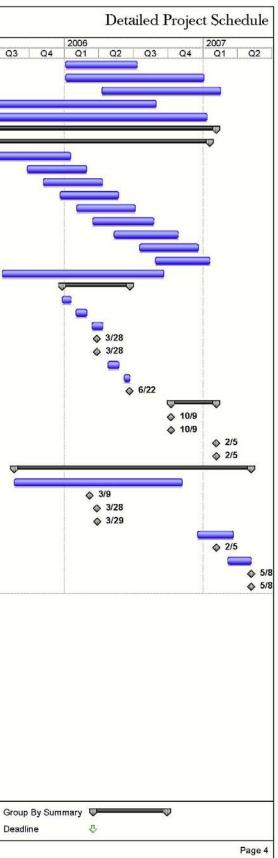


ID	Task Name	Duration	Start	Finish	Q3 Q4	2002 Q1	Q2	Q3	Q4	2003 Q1	Q2	Q3		04 Q1 Q2	2 Q3	Q4	2005 Q1
13	MEP - Underground Coordination	11 days?	Wed 2/11/04	Wed 2/25/04	<u>u</u> 3 U4	QI	02	43	Q4	QI	Q2	QS	04	u □	. 43	Q4	<u>u</u>
4	MEP Coordination - Risers	45 days?	Mon 3/29/04	Fri 5/28/04											1		
5	MEP Coordination - Cellar Floor	33 days?	Mon 3/29/04	Wed 5/12/04													
6	MEP Coordination - Ground Floor	34 days?	Thu 5/13/04	Tue 6/29/04										_			
7	MEP Coordination - Mechanical RMS & Typical Floors	136 days?	Mon 5/31/04	Mon 12/6/04											_		
8	B.A.T.C	471 days?	Mon 6/27/05	Thu 4/12/07													
9	BATC - Low Rise Backbone & Panels: C - 27	139 days?	Mon 6/27/05	Wed 1/4/06													
20	BATC - High Rise Backbone & Panels: 28 - Roof	135 days?	Fri 12/16/05	Thu 6/22/06													
21	BATC - Install Head End Equipment	88 days?	Thu 1/5/06	Mon 5/8/06													
22	BATC - Programming	90 days?	Wed 3/8/06	Tue 7/11/06													
23	BATC - Commissioning	250 days?	Mon 5/1/06	Thu 4/12/07													
24	HVAC	619 days?	Thu 9/2/04	Fri 1/12/07												_	
25	Cellar Level - Chiller Plant and Switchgear Room	363 days?	Thu 9/2/04	Fri 1/20/06											Č.		
26	Ground Floor - 4th Floor	127 days?	Tue 7/12/05	Wed 1/4/06											_		
27	Co-Gen Plant	313 days?	Tue 12/21/04	Wed 3/1/06													
28	Co-Gen: Rig Equipment	6 days?	Tue 12/21/04	Tue 12/28/04													
29	Co-Gen Plant - Structure & Enclosure	113 days?	Tue 2/8/05	Wed 7/13/05													-
30	Co-Gen: HVAC Piping (Heat Exchangers, Radiators)	45 days?	Thu 7/14/05	Wed 9/14/05													-
31	Co-Gen: Switchgear, Gererators, Co-Gen Equipment	67 days?	Thu 7/14/05	Fri 10/14/05													
32	Co-Gen: HVAC Plenumsm Dampers, etc	44 days?	Thu 9/15/05	Tue 11/15/05													
33	Co-Gen: Electrical Wiring/Terminations	22 days?	Mon 10/17/05	Tue 11/15/05													
34	Co-Gen Instrumentation And Controls	48 days?	Wed 11/16/05	Fri 1/20/06													
35	Co-Gen: Testing	22 days?	Tue 1/31/06	Wed 3/1/06													
36	Gas - Blue Card Required	0 days	Tue 1/31/06	Tue 1/31/06													
37	5th Floor MER - Podium Roof	305 days?	Fri 6/24/05	Tue 8/22/06													
38		all and a second se		the second structure is a second structure of the second structure													
	Low Rise	287 days?	Thu 12/8/05	Thu 1/11/07													
39	Rig AHUs: 6th thru 27th Floors	90 days?	Thu 12/8/05	Wed 4/12/06													
40	Piping @ AHUs: 29th thru 50th Floor	237 days?	Fri 1/13/06	Fri 12/8/06													
41	AHU Ductwork: 29th thru 50th Floor	237 days?	Fri 1/13/06	Fri 12/8/06													
42	Pipe/Duct - Floor Run Outs: 29th thru 50th Floor	228 days?	Wed 3/1/06	Thu 1/11/07													
43	28th Floor - Mechanical Room	165 days?	Thu 11/24/05	Wed 7/12/06													
144	Rig All Mech Equipment: 28th Floor	6 days?	Thu 11/24/05	Thu 12/1/05													
45	Steam Station - PRV	137 days?	Tue 1/3/06	Wed 7/12/06													
46	Piping Equipment	134 days?	Tue 1/3/06	Fri 7/7/06													
47	AHU Ductwork	134 days?	Tue 1/3/06	Fri 7/7/06													
148 149	Low Zone Chilled Water Return Loop	22 days?	Tue 1/3/06 Tue 1/3/06	Wed 2/1/06													
	LR - Hot Water Return Loop Testing - Low Zone Chilled Water Loop	33 days?		Thu 2/16/06													
150 151		11 days?	Thu 2/2/06 Fri 2/17/06	Thu 2/16/06 Thu 3/9/06													
	LR - Hot Water System - Testing/Comm.	15 days?															
152	Low Zone Chilled Water Available for NYT	0 days	Fri 3/10/06	Fri 3/10/06													
153	LR - Hot Water Sys Available for NYT	0 days	Fri 3/10/06	Fri 3/10/06													
154	High Rise	287 days?	Thu 12/8/05	Thu 1/11/07													
155	51st Floor - Mechanical Room	188 days?	Wed 4/19/06	Thu 1/4/07													
156	Roof	117 days?	Wed 2/22/06	Wed 8/2/06													
57	Risers	425 days?	Wed 6/1/05	Fri 1/12/07											-		
58	Plumbing	595 days?	Wed 9/1/04	Fri 12/8/06													
59	Underground	77 days?	Wed 9/1/04	Thu 12/16/04												3	
60	Low Rise	271 days?	Mon 6/6/05	Fri 6/16/06													
61	High Rise	210 days?	Tue 2/21/06	Fri 12/8/06													
62	Gas Risers	155 days?	Mon 6/27/05	Thu 1/26/06													
63	Fire Protection	374 days?	Wed 6/15/05	Thu 11/16/06													
64	Low Rise	271 days?	Wed 6/15/05	Tue 6/27/06													
65	High Rise	241 days?	Fri 12/16/05	Thu 11/16/06													
166	Electrical	589 days?	Thu 11/18/04	Fri 2/16/07													
167	Cellar Level - Chiller Plant and Swithgear Room	321 days?	Thu 11/18/04	Wed 2/8/06												<u> </u>	
168	Low Rise	250 days?	Mon 6/27/05	Thu 6/8/06													
	PSU IPD BIM Detailed Schedu Task	Milestone	•		Rolled Up Tas	sk	(Rol	led Up P	rogress	ç		Exter	nal Tasks	G	
ate: T	hu 11/5/09 Progress	Summary			Rolled Up Mile	estone	0		Spl	it		1010301010101		Proje	ct Summary		
	5/151/- - 2/151/-54	0.01 (0.010 MIRCO AND DA	on 2050	2.5.20	- AND 100 State 1227 (1999) 110 Rep. 10	-6-6-677777-	200.457					works during the	CONCERCION OF CONCERCION		an crownership and		



-	Task Name	Duration	Start	Finish	Q3 Q4	2002 Q1 Q	2 Q3	Q4	2003 Q1	Q2	Q3 Q4	2004 Q1	Q2 Q3	3 Q4	2005 Q1 Q2
169	28th Floor - Mechanical Room	134 days?	Thu 1/5/06	Tue 7/11/06	Q3 Q4	<u> </u>	2 45		<u> </u>		us u+		Q2Q,	2 47	
70	High Rise	261 days?	Thu 1/5/06	Wed 1/3/07											
171	51st Floor - Mechanical Room	226 days?	Mon 4/10/06	Fri 2/16/07											
172	Life Safety	467 days?	Thu 11/18/04	Wed 8/30/06											
173	Fire Alarm	404 days?	Wed 6/29/05	Thu 1/11/07											
174	Interior Finishes	427 days?	Mon 6/20/05	Mon 2/5/07											44
175	Core Program	416 days?	Mon 6/20/05	Thu 1/18/07											Ψ.
176	Core Program - Floors 1-6	153 days?	Mon 6/20/05	Tue 1/17/06											_
177	Core Program - Floors 7-12	112 days?	Mon 9/26/05	Tue 2/28/06											
178	Core Program - Floors 13-18	112 days?	Mon 11/7/05	Tue 4/11/06											
179	Core Program - Floors 19-24	110 days?	Wed 12/21/05	Tue 5/23/06											
180	Core Program - Floors 25-30	110 days?	Fri 2/3/06	Thu 7/6/06											
181	Core Program - Floors 31-36	116 days?	Fri 3/17/06	Thu 8/24/06											
182	Core Program - Floors 37-42	122 days?	Fri 5/12/06	Fri 10/27/06											
183	Core Program - Floors 43-48	112 days?	Tue 7/18/06	Tue 12/19/06											
184	Core Program - Floors 49-52	103 days?	Tue 8/29/06	Thu 1/18/07											
185	Perimeter Program	304 days?	Fri 7/22/05	Tue 9/19/06											
186	NYT - Interior Program - Floor Handover	128 days?	Tue 12/27/05	Thu 6/22/06											
187	NYT - Floors 3-6 Handover	17 days	Tue 12/27/05	Wed 1/18/06											
188	NYT - Floors 7-12 Handover	21 days	Wed 2/1/06	Wed 3/1/06											
189	NYT - Floors 13-18 Hando∨er	21 days	Wed 3/15/06	Wed 4/12/06											
190	NYT - Cellar Level Handover	0 days	Tue 3/28/06	Tue 3/28/06											
191	NYT - 1st Floor Area - Handover	0 days	Tue 3/28/06	Tue 3/28/06											
192	NYT - Floors 19-24 Handover	21 days?	Wed 4/26/06	Wed 5/24/06											
193	NYT - Floors 25-28 Handover	11 days?	Thu 6/8/06	Thu 6/22/06											
194	NYT - 2nd Floor Handover	0 days	Thu 6/22/06	Thu 6/22/06											
195	FCRC - Turnovers	85 days	Mon 10/9/06	Mon 2/5/07											
196	FCRC Tenant Turnover A (29-34)	0 days	Mon 10/9/06	Mon 10/9/06											
197	FCRC Tenant Turnover B (35-40)	0 days	Mon 10/9/06	Mon 10/9/06											
198	FCRC Tenant Turnover C (41-46)	0 days	Mon 2/5/07	Mon 2/5/07											
199	FCRC Tenant Turnover D (47-50)	0 days	Mon 2/5/07	Mon 2/5/07											
	Finish and Closeout	446 days?	Tue 8/23/05	Tue 5/8/07											
201	Tower Lobby - Interior and Entrances	316 days?	Tue 8/23/05	Mon 11/6/06											
202	NYT - Times Center - 1st Floor Handover	0 days	Thu 3/9/06	Thu 3/9/06											
203	NYT - Times Center - Cellar Floor Handover	0 days	Tue 3/28/06	Tue 3/28/06											
204	Low Rise TCO	0 days	Wed 3/29/06	Wed 3/29/06											
205	Project Punchlist/Closeout/Demobilization	68 days?	Mon 12/18/06	Wed 3/21/07											
206	High Rise TCO	0 days	Mon 2/5/07	Mon 2/5/07											
207	Internal Garden/Lobby Restoration and Landscaping	44 days?	Wed 3/7/07	Mon 5/7/07											
208	Lobby Completion	0 days	Tue 5/8/07	Tue 5/8/07											
209	Project Close Out	0 days	Tue 5/8/07	Tue 5/8/07											

Project: PSU IPD BIM Detailed Schedu Task Milestone Rolled Up Task Rolled Up Progress External Tasks Date: Thu 11/5/09 Progress Summary Progress Solid Up Milestone Internal Tasks Project Summary	
	T De:
Project: PSU IPD BIM Detailed Schedul Task Milestone 🚸 Rolled Up Task Rolled Up Progress External Tasks	Gro



DETAILED PROJECT SCHEDULE

SITE LAYOUT PLANNING

As outlined in Technical Assignment I, The New York Times Building is located in the Times Square District of Manhattan, directly across 8th Ave. from the Port Authority Bus Terminal and approximately eight blocks Northwest from the Empire State Building. There were four phases for the construction process- demolition, foundations (two parts), superstructure, and interior turnover.

Please refer to Appendix A for more detailed information regarding the site layout planning for The New York Times Building site. General descriptions of major site logistics issues with a particular phase are outlined below. Please note that site layout plans were only obtained for the AMEC portion of the construction process as Turner plans were not obtained. It was assumed that the site layout plan remained largely the same following turnover for interior fit out.

DEMOLITION

This phase consisted of the abatement of the existing structures on the block that the New York Times Building would ultimately occupy. Safety scaffolding was placed above the entirety of the 8^{th} Avenue portion of the site, and partially along both the West 41^{st} Street and West 40^{th} Street site boundaries.

FOUNDATIONS – PART I

The eastern portion of the site was demolished first- excavation then followed with the placement of the ramp in the northeast corner. The entire excavated area was surrounded with site fencing, and scaffolding was placed around the western cluster of existing structures that were still undergoing abatement. During this process, the foundation was placed (including deep foundations were placed in the southeast corner of the site).

FOUNDATIONS – PART II

The remaining western portion of the site was demolished in the second portion of the foundation placement phase. The western portion of the site was then excavated (Ramp in NW corner) and foundations were placed.

SUPERSTRUCTURE

The entirety of the steel erection took place during this phase. One tower crane was placed in the center of each of the northwestern and southwestern quadrants of the site. Personnel site access was allowed through the northern portion of the site, with staging areas on the northern and southern site boundaries. The subway exit could be closed on a provisional bases based on a permit obtained by the construction team.

INTERIOR TURNOVER

For this phase, AMEC turned over the project to Turner Construction to complete the interior fit out of the project. It was assumed by the project team that the site layout plan would remain largely the same, for this portion of the project.

DETAILED STRUCTURAL SYSTEMS ESTIMATE

Note: Please reference Appendix B for a more detailed version of the structural systems estimate.

FOUNDATIONS

The foundations of the New York Times building consist of spread footings over the footprint of most of the site in addition to caissons located on the southeast side of the building. The exact size, locations and quantity for the deep foundation system is unknown, however several assumptions were made from based on the results from D4 cost analysis and RS Means Costworks. The total foundations cost came to approximately \$21,344,000.00 based on these assumptions.

STRUCTURAL STEEL FRAMING

Structural steel member sizes and lengths were taken from the existing Revitmodel, which were updated according to the provided structural drawings. Specialty columns are used throughout the structure, primarily consisting of the built-up plate columns within the core of the building in addition to flanged box columns on the exterior of the building. The structural steel framing estimate is summarized in Figure 1 below.

QUANTITY	Unit	DESCRIPTION	PRICE
		STRUCTURAL STEEL MEMBERS	
398.55	L.F.	HSS6x4x3/8	\$30,758.10
53.7	L.F.	TT14x99	\$13,908.67
673.67	L.F.	W4x13	\$35,905.27
41.33	L.F.	W10x26	\$3,340.66
887.43	L.F.	W12x19	\$58,635.16
18.29	L.F.	W12x26	\$1,387.46
951.23	L.F.	W14x22	\$71,027.39
37.72	L.F.	W14x30	\$3,235.02
57	L.F.	W14x43	\$6,812.53
30	L.F.	W14x48	\$4,339.23
70.47	L.F.	W14x82	\$16,823.16
179.26	L.F.	W14x90	\$42,794.38
134.38	L.F.	W14x109	\$42,251.62
151.18	L.F.	W14x120	\$47,533.86
123.34	L.F.	W14x132	\$41,672.76
22.74	L.F.	W14x257	\$15,186.41
101.25	L.F.	W14x283	\$78,253.80
398.86	L.F.	W16x26	\$29,751.77
114.96	L.F.	W16x31	\$10,151.54
260	L.F.	W16x36	\$29,130.92
2310.15	L.F.	W18x35	\$233,606.99
364.18	L.F.	W18x40	\$41,313.31

280	L.F.	W18x50	\$39,064.76
120	L.F.	W18x60	\$21,241.08
120	L.F.	W18x65	\$21,241.08
72.49	L.F.	W18x71	\$14,827.11
160	L.F.	W18x76	\$32,726.40
174.12	L.F.	W18x106	\$48,734.10
56.5	L.F.	W18x130	\$10,042.54
123	L.F.	W18x143	\$21,862.51
260	L.F.	W21x50	\$35,763.00
122.12	L.F.	W21x57	\$20,506.76
60	L.F.	W21x101	\$15,970.08
78	L.F.	W21x132	\$24,829.90
225	L.F.	W24x76	\$45,424.58
60	L.F.	W33x130	\$20,272.14
60	L.F.	W33x141	\$21,924.00
120	L.F.	W33x221	\$70,898.52
		TOTAL	\$1,323,148.55

QUANTITY	Unit	DESCRIPTION	PRICE
		STRUCTURAL COLUMNS	
110	L.F.	C-Channel-Column: C10X33	\$30,617.40
27.5	L.F.	W-Wide Flange-Column: W14X257	\$13,809.68
110	L.F.	FB-Flanged Box-Column: FB30X1116	\$235,974.53
55	L.F.	BU-Built Up-Column: W23X1168	\$123,408.30
27.5	L.F.	BU-Built Up-Column: W22X1032	\$54,210.38
13.75	L.F.	BU-Built Up-Column: W24X985	\$25,989.08
13.75	L.F.	BU-Built Up-Column: W23X729	\$19,133.06
55	L.F.	BU-Built Up-Column: W29X2063	\$216,841.46
27.5	L.F.	BU-Built Up-Column: W25X1401	\$73,981.23
55	L.F.	W-Wide Flange-Column: W14X665	\$70,154.59
55	L.F.	W-Wide Flange-Column: W14X730	\$76,532.28
	·	TOTAL	\$940,651.99

FIGURE 1 -	Structural	Framing	Take-Off
------------	------------	---------	----------

SLAB SYSTEM

In the slab estimate, structural concrete with a compressive strength of 4000 psi was used. The structural slab takeoff wasgenerated through the common Revit model after applying a metal decking (18 gauge, 2" depth with 3.5" topping). An additional 5% was added to the concrete takeoff to account for waste in the construction process. Without knowing the exact welded wire fabric that was used in the project, a medium-sized fabric was selected (W2.9xW2.9, 42lb per CSF). The structural slab estimate summary is outlinedbelow in Figure 2.

QUANTITY	Unit	DESCRIPTION	PRICE
		Welded Wire Fabric Reinforcing	
2244	C.S.F.	W2.9 x W2.9 (6 x 6) 42 lb. per C.S.F.	\$308,018.17
		TOTAL	\$308,018.17
		NORMAL WEIGHT CONCRETE, READY MIX	
255	C.Y.	4000 PSI, 3.5" topping	\$43,114.89
		TOTAL	\$43,114.89
		FLOOR DECKING	
22440	C.Y.	2" D, 18 ga	\$153,624.24
		TOTAL	\$153,624.24

FIGURE 2 - Structural Slab Take-Off

RS Means pricing was used to acquire the pricing for steel, concrete and reinforcing materials. While some steel members are in RS Means, some were required to be increased price due to RS Means lacking data for members of that size. A multiplier was developed from the change in weight per linear foot, as well as the member sizeto extrapolate a value for the larger-sized members.

Each of the option-based groups analyzing the building agreed to base all analysis off of the eighth floor. For the purposes of this estimate, the eighth floor structural system was analyzed and the results were then extrapolated over the entire building to develop a more complete structural estimate. The total cost for the 8th floor was found to be \$2,768,557.85- this cost was first multiplied by 1.1 to add 10% for the specialty columns designed for the core and exterior of the building. This cost was then multiplied by 58 (48 tower floors along with a 4 story podium floors which are about 2.5 times the square footage of the typical tower floor. The extrapolated cost came to \$176,633,990.57 for the entire tower. Considering the foundations cost of \$21,344,000.00, the final structural system cost comes to \$197,977,990.57.

GENERAL CONDITIONS ESTIMATE

OVERVIEW

The general conditions estimate for the New York Times Building includes costs from field staff and facilities, temporary utilities, temporary site protection, clean up, and rigging and hoisting equipment for the project. The general conditions estimate will be used to assess any cost savings that could be seen if there is an acceleration in the project schedule.

There are a few assumptions that had to be made in order to put the general conditions estimate together:

- The total construction cost of the New York Times Building is \$1 Billion.
- The square footage of the building is \$1.5 million square feet.
- Only on site personnel is included in the general conditions.
- Site offices and crane equipment is rented for the project.
- Site protection has been purchased for the project.
- All lifts and equipment besides the hoists and cranes listed in the general conditions will be provided by the subcontractors.

CONSTRUCTION DURATIONS

Below are listed the construction durations that factored into the general conditions estimate. There are 12 months in a year, 52 weeks in a year, and 5 work days in a work week.

ACTIVITY	YEARS	Months	WEEKS	WORK DAYS
Construction Duration	3.5	42	182	910
Tower Crane	1.25	15	65	325
Material Hoists	2	24	104	520
Demolition	0.5	6	26	130
Foundations	1.5	18	78	390
Steel	1.5	18	78	390
Concrete	0.75	9	39	195
Curtainwall	1.25	15	65	325
Mech./Plum.	3	36	156	780
Electrical	2	24	104	520
Interiors	1.75	21	91	455

COST BREAKDOWN

The general conditions on the New York Times Building project totaled \$ 96,971,123. This accounted for approximately 9.71% of the overall project cost. The field personnel cost contributes \$ 22,865,985 to the general conditions. That adds up to 2.3% of the overall project cost.

GENERAL CONDITIONS BREAKDOWN

Division	Description	Unit	То	tal	Quantity	Total Cost	
01 31 13.20	Field Personnel						
	Clerk, 6	Week	\$	380.00	1,092	\$	414,960
	Field Engineer, 45	Week	\$	1,350.00	8,190	\$	11,056,500
	Project Manager, 20	Week	\$	2,175.00	1,781	\$	3,873,675
	Superintendant, 35	Week	\$	2,025.00	3,714	\$	7,520,850
			Ť.	,	,	\$	22,865,985
01 51 13.80	Temporary Utilities						
	Heat, including fuel and operation, per week, 12 hrs	CSF Flr	\$	30.27	13,846	\$	419,123
	Lighting, including service lamps, wiring, and outlets, maximum	CSF Flr	\$	27.70	15,000	\$	415,500
0600	Power for job duration including elevator, etc., min	CSF Flr	\$	47.00	15,000	\$	705,000
0650	Power for job duration including elevator, etc., max	CSF Flr	\$	110.00	15,000	\$	1,650,000
						\$	3,189,623
10 52 13.20	Office and Storage Space						
	Trailer, furnished, no hookups, 20' x 8', rent per month, 8 Trailers	Each	\$	163.00	576	\$	93,888
	AC, rent per month, add	Each	\$	41.00	576	\$	23,616
	For delivery, add per mile	Mile	\$	4.50	600	\$	2,700
			Ť.			\$	120,204
01 52 13.40	Field Office Expense						
	Office Equipment rental average	Month	\$	155.00	384	\$	59,520
	Office supplies, average	Month	\$	85.00	384	\$	32,640
	Telephone bill; avg. bill per month	Month	\$	80.00	384	\$	30,720
	Lights & HVAC	Month	\$	150.00	384	\$	57,600
						\$	180,480
01 54 19.50	Truck Crane						
0600	Truck Mounted, hydrolic, 100 ton capacity	Month	\$	14,100.00	16	\$	225,600
	Crew	Day	\$	104.90	320	\$	33,568
						\$	225,600
01 54 19.60	Monthly Tower Crane Crew						
	Crane, climbing, 106' jib, 6000 lb. capacity, 410 FPM	Month	\$	13,200.00	60	\$	792,000
	Tower Crane Crew	Day	\$	37.40	2,400	\$	89,760
4550	Hoist and tower, mast type, 6000 lb., 100' high, month	Each	\$	4,136.60	86	\$	357,402
	for each added 10' section, add, month	Each	\$	196.20	5,616	\$	1,101,859
						\$	2,341,021
01 56 26.50	Temporary Fencing						
0020	Chain Link, 11 ga, 6' high	L.F.	\$	8.51	980	\$	8,340
	Plywood, painted, 4" x 4" frame, 8' high	L.F.	\$	18.20	980	\$	17,836
						\$	26,176
01 56 29.50	Temporary Protective Walkways		1				
2200	Sidewalk, 2" x 12" planks, 2 uses	S.F.	\$	1.60	16,000	\$	25,600
2500	Exterior Plywood, 2 uses, 3/4" thick	S.F.	\$	0.95	16,000	\$	15,200
			Γ			\$	40,800
01 58 13.50	Signs		1				
0020	High intensity reflectorized, no posts, buy	S.F.	\$	21.00	1,000	\$	21,000
01 74 13.20	Cleaning Up		T				
0040	Maximum	Job		0.8%	\$1 Billion	\$	8,000,000
0050	Cleanup of floor area, continuous, per day, during construction	M.S.F.	\$	27.23	1,670	\$	45,485
0100	Final by GC at end of job	M.S.F.	\$	56.44	1,670	\$	94,277
			T			\$	8,139,762
			T				
	Subtotal					\$	74,313,871
	Adjusted for Location (New York City, 130.7)					\$	97,128,230

PACE: CRITICAL INDUSTRY ISSUES

The construction industry is one that is perpetually evolving with regards to technology, management practices, and its relationships with related disciplines in architecture and engineering. Trends such as integrated project delivery, sustainable design and construction, building information modeling, and new trends in communication are all topics currently at the forefront of industry discussion and served as the foundations of the PACE conference on October 15th, 2009. Since the IPD/BIM Thesis CM team is comprised of three members, one person was in attendance at each of the three topics.

ENERGY AND THE BUILDING INDUSTRY

Sustainable design and construction is currently one of the most highly publicized aspects of the industry due to a very broad spectrum of reasons. A realization that energy sources are finite, increasing demand and decreasing supply in addition to the deregulation of the energy industry are creating a genuine interest amongst many people in sustainable design practices. Furthermore, pending legislation and portfolio standards by federal and local governmental agencies with regard to sustainable energy usage are currently creating new markets for sustainable technologies, creating an increased demand for these technologies and are leading to new developments in HVAC, lighting, water, and building control systems that were previously only niche markets.

However, the increased publicity that the sustainable design and construction industry is experiencing is primarily not driven by people's interest in saving the environment, or government incentives (although this may change in the future). By far the largest reason for the surge in interest in sustainable technologies is due to marketing and corporate imaging. Recent trends have shown that if a consumer has a choice between purchasing products from a company known to have an environmentally sound corporate philosophy versus a company that is a known polluter, they will typically choose the more environmentally friendly company even if it costs slightly more. Corporations may or may not see the impact of how the technologies behind their sustainable image impact the environment, but almost all of them will be able to identify their positive effects on their sales figures. As with all aspects of business, when a new market opens up there is always a risk of over saturating it with products of dubious quality. In the case of the sustainable design industry, the term "greenwashing" is used to refer to products and technologies that are labeled efficient and sustainable by their creators, often using industry buzzwords from other sustainable fields, but in actuality are anything but and are just an attempt to capitalize on a new market.

Sustainable design and construction practices are highly interdisciplinary, and it is important to understand the synergistic relationships one system has in relation to others. For instance, if a new window system is introduced to a design that allows in more daylight and has better thermodynamic properties, many new secondary changes could naturally arise. Since the windows allow in more daylight, less lighting is needed during the day and could lead to a downsizing of the lighting system. Since they have better thermodynamic properties, a downsizing of the mechanical system may now be possible. With both the mechanical and lighting systems downsized, it may now be possible to reduce the size of structural members in the building.

However, with all of these changes that could take placed based on a singular design change, it is becoming more apparent that the traditional delivery methods used for decades are becoming outdated, and a more integrated project delivery method is required.

BUSINESS NETWORKING

New types of relationships have developed in the building design and construction industry in recent years to accommodate a changing marketplace. A slowing economy paired with a rising demand for sustainable buildings has forced many companies to get creative in forming strategic partnerships with each other. Sustainable projects are requiring a more integrated approach to contracting in comparison to the majority of past projects.

Many sustainable building projects are creating a strain on the traditional Design-Bid-Build contracting method that has been used in many past projects. The integrated approach to design and construction that leads to the most successful project is being found with projects that utilize a Design-Build or Integrated Project Delivery method of contracting. These delivery methods provide a way for designers and contractors to interact with each other and share ideas in an integrated manner by creating an infrastructure of sharing the risk of the project equally between all parties. These integrated project teams can also take on larger projects than they normally undertake by joint venturing with multiple other companies. They can have a larger bonding capacity shared between the team. Some projects, especially projects larger than \$350M, will require that project teams have joint ventures between multiple companies.

With the growing need for integrated project teams coupled with an economic downturn, it is very important for construction industry members to maintain positive relationships with other industry members in order to secure new projects. There were several key points to accomplishing this that were discussed at the conference. First, a contractor can cultivate relationships with owners of previous projects or owners of potential future clients in order to obtain a higher chance of obtaining work in the future. Second, they can get involved in new markets when they are just breaking into the marketplace by undertaking small, low risk projects. This allows for a position of leadership in the future should that new market become a permanent aspect of the industry. Lastly, the contractor can partner with other contractors in a joint venture.

Joint ventures between contractors offer many advantages in undertaking projects that typical structures cannot provide. There is an additional bonding capacity present in a joint venture project, allowing the team to take on a larger project while still managing their risk. In a joint venture, there is a high likelihood that one company will be stronger than the other- the smaller company is able to reap the rewards of being associated with the stronger company with respect to local connections, experience in other market types, and connections to other owners.

BIM EXECUTION PLANNING

A paradigm shift like integrated project delivery will all but require professionals to utilize new tools to aid in the integration process. Building Information Modeling (BIM) design tools have been rising in popularity for several years and are one such tool that allow AEC professionals to become more integrated. The concept of creating a building in a BIM environment is frequently misinterpreted as creating a model in a single program such as Autodesk Revit or creating 4D construction models in Autodesk Navisworks. In actuality, BIM refers to the process by which professionals in various design and construction disciplines interact with a common shared model through the use of many different (and often trade-specific) programs.

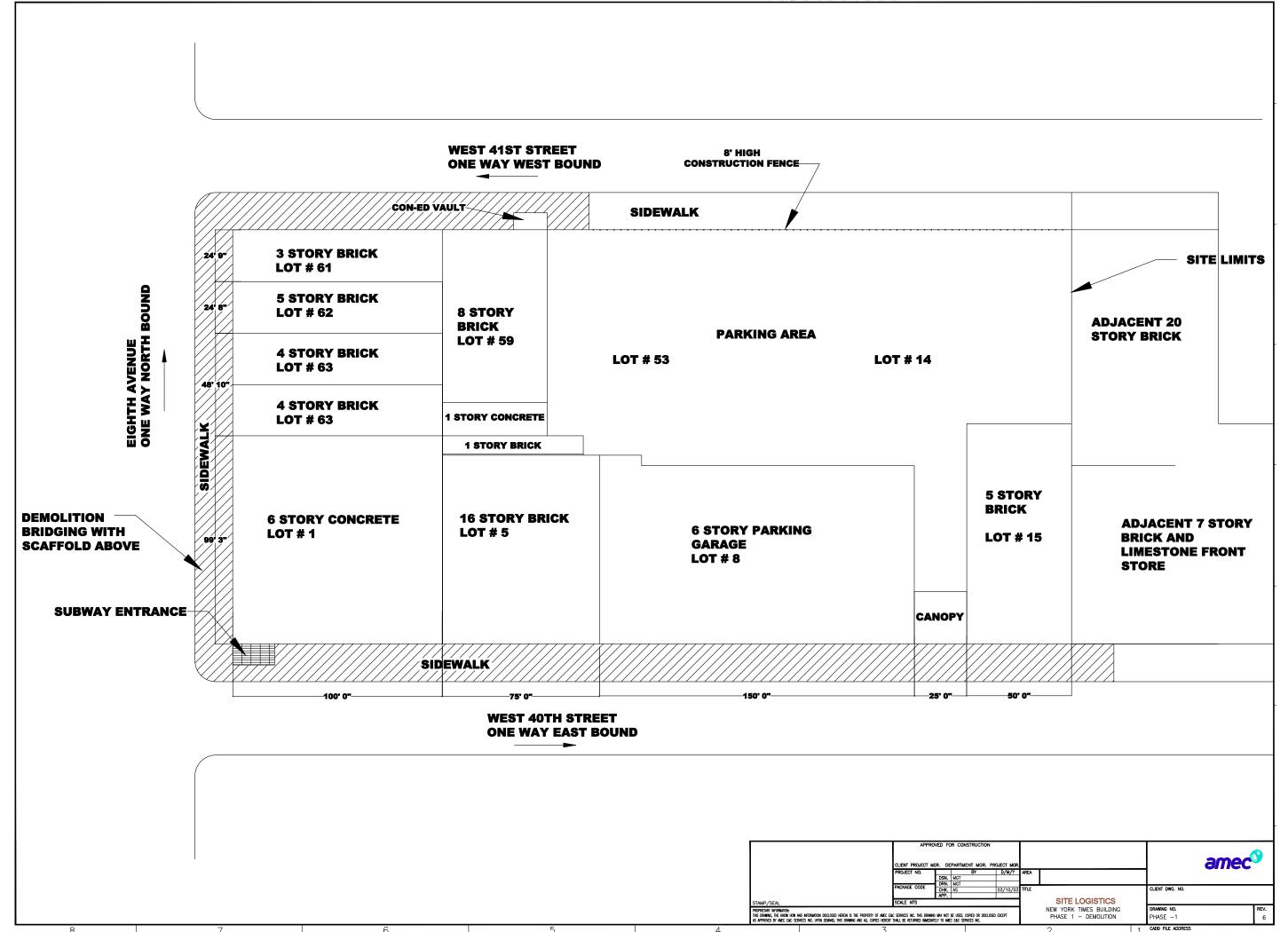
The idea of Building Information Modeling is often very appealing to owners and members of the design and construction fields, but there are several issues that are currently preventing its full adoption by the industry. Foremost, many design and construction professionals are hesitant to make drastic changes to their work methods. The process involved in creating a building using a BIM approach, while not drastic, is in many cases a fairly significant deviation. Owners are also hesitant to pay for BIM technology when told that it could help solve problems before they naturally arise- in their eyes, they have already paid for a "perfect" building design and should not have to pay extra for something that the designer should have resolved anyway. Lastly, even if a project team and owner are enthusiastic about utilizing BIM on projects, there are still many incompatibilities between software packages that can make some workflows very difficult and inefficient.

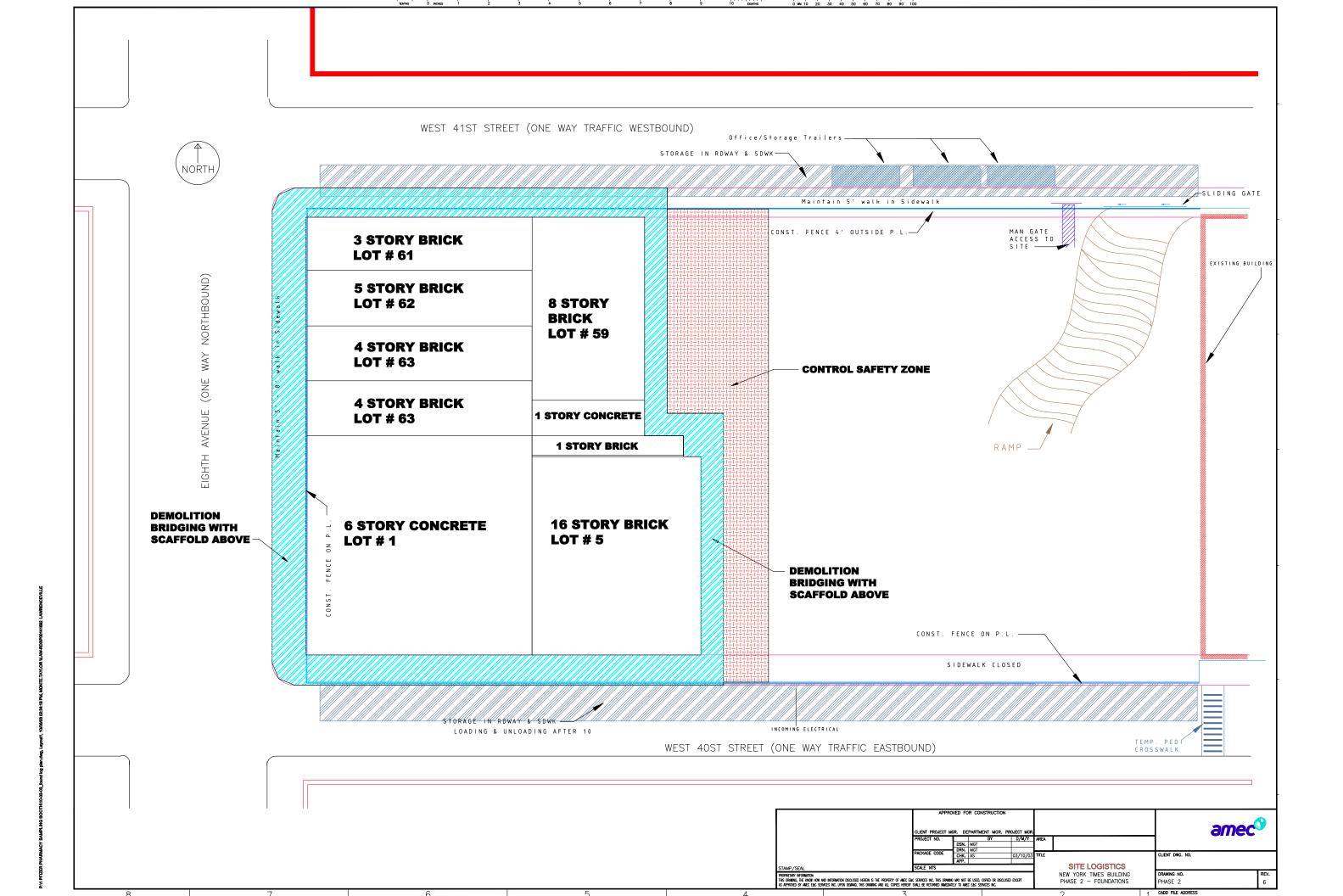
However, the general consensus among industry members is that while the BIM-based delivery method is still very much in its infancy, it is continuing to improve and will be commonplace in the near future. When industry members have given feedback requesting new features to BIM software developers, the developers have typically been very supportive and frequently implement those changes in upcoming releases of the program.

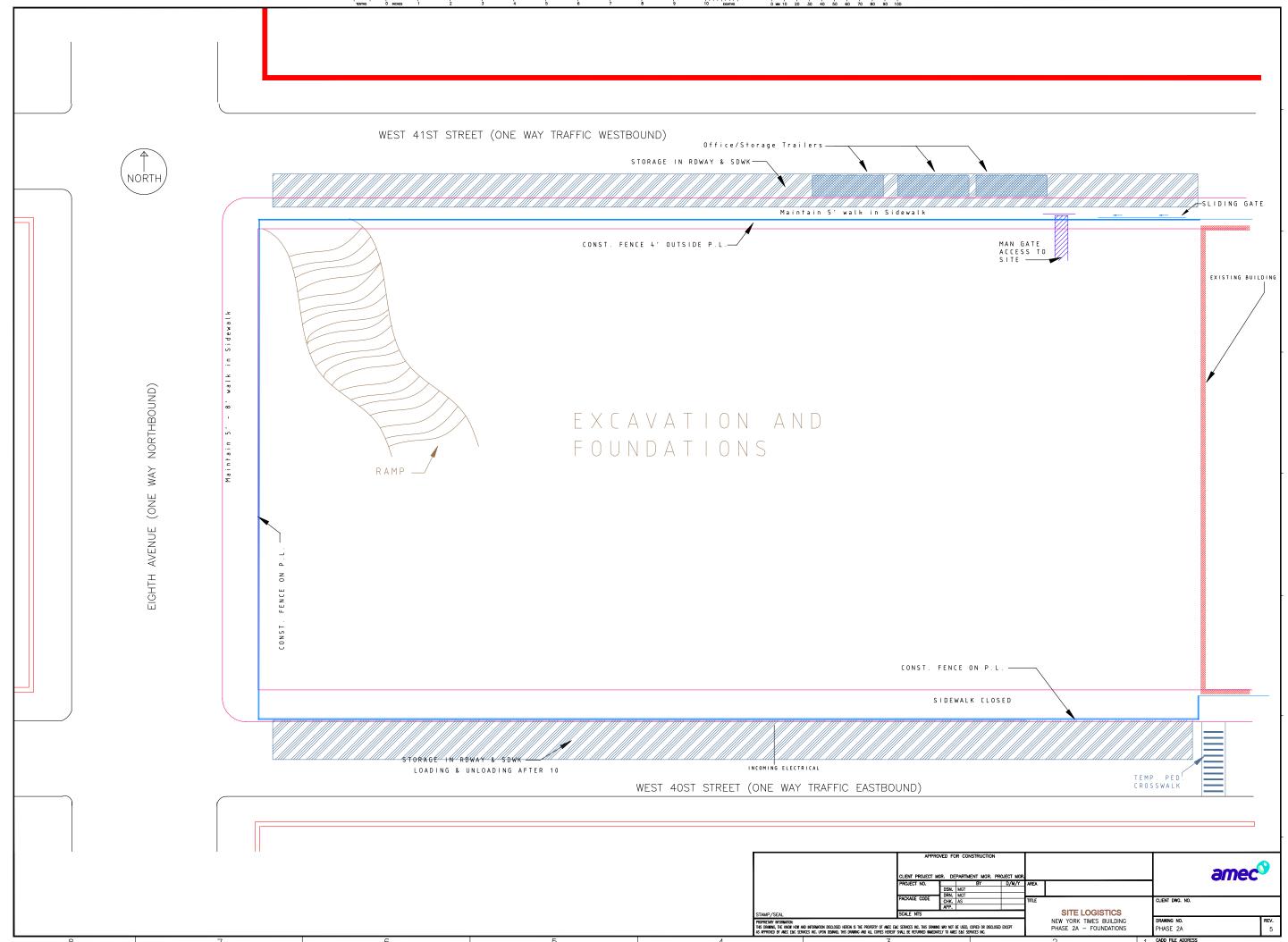
APPENDIX A

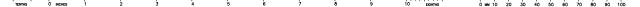
SITE LAYOUT PLAN

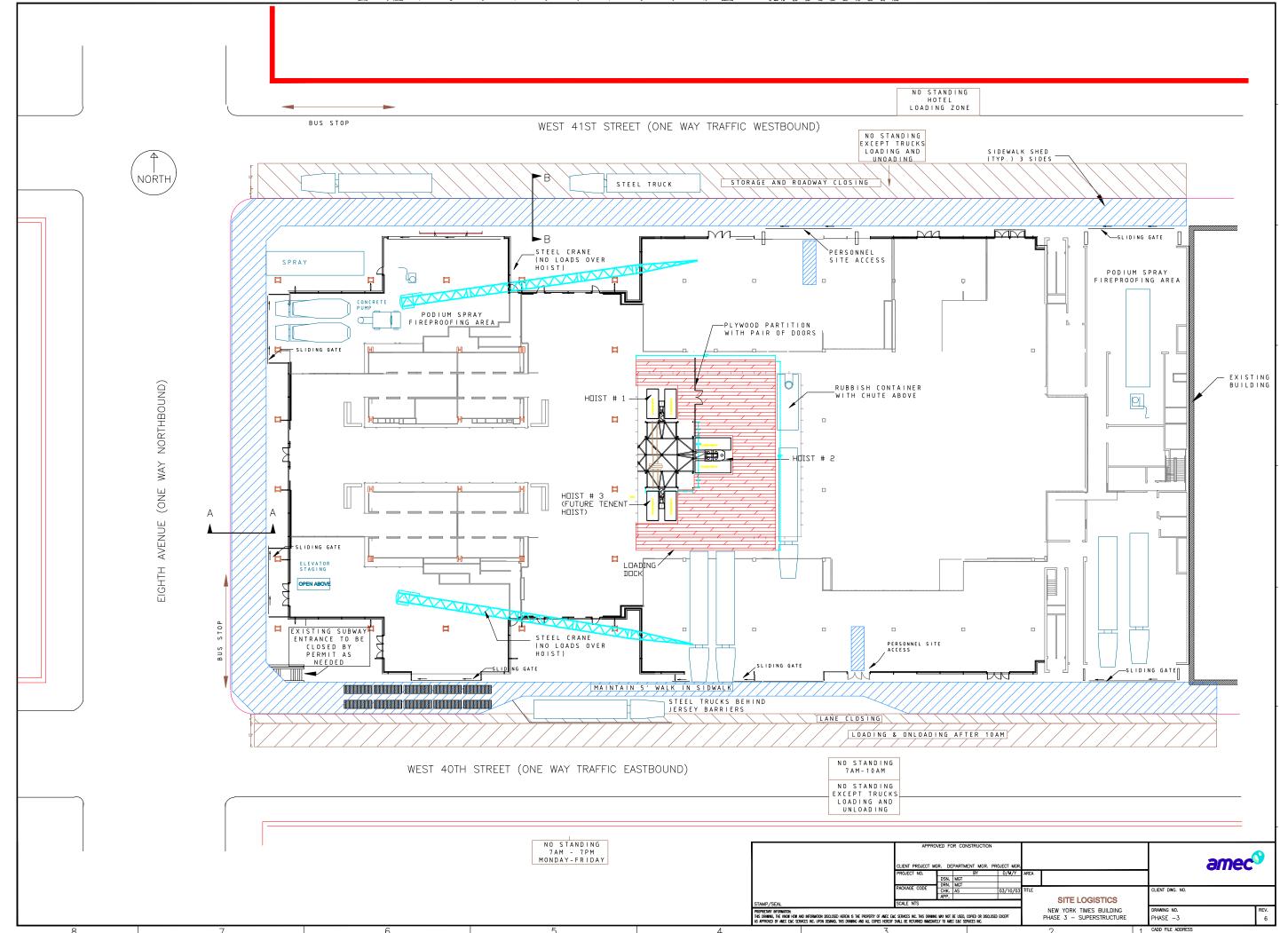
Detailed site layout plans for the New York Times Building



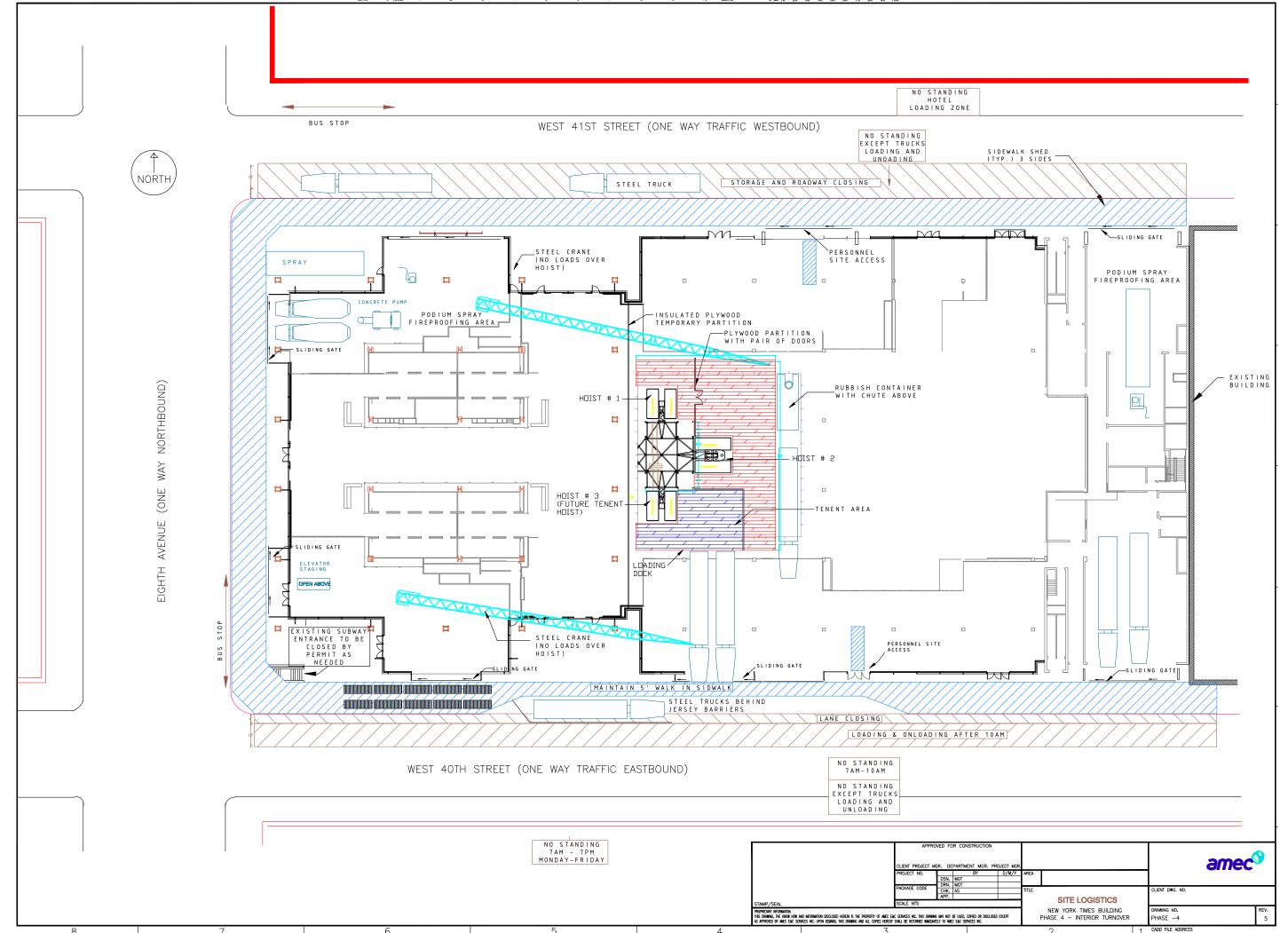












APPENDIX B

DETAILED STRUCTURAL SYSTEMS ESTIMATE

Detailed takeoff sheets for the Structural Systems Estimate

NYT Steel

Data Release : Year 2009 Unit Cost Estimate

Quantity	Line Number	Description	Crew	Daily	Labor	Unit	Material	Labor	Equipment	Total	Ext. Mat.	Ext. Labor	Ext. Equip.	Ext. Total	Mat. O&P	Labor O&P	Equip. O	&P Total O&P	Ext. Mat. O&P	Ext. Labor O&P	Ext. Equip. O&P	xt. Total O&P	Labor			
0	054000750040	STRUCTURAL STEEL MEMBERS		Output	Hours		6	*	*	¢	*	*	¢	¢	¢	•	¢	¢	¢	¢	¢	۴	Type STD			
U	051223750010	Structural steel member, 100-ton project, 1					э -	ф-	ә -	р -	р -	р -	р -	ə -	р -	ә -	ə -	· • -	э -	ə -	р -	ə -	510			
		to 2 story building, W10x26, A992 steel,																								
		shop fabricated, incl shop primer, bolted																								
41.33	051223750720		E2	600	0.093	L.F.	\$ 44.51	\$ 5.75	\$ 3.20	\$ 53.46	\$ 1,839.60	\$ 237.65	\$ 132.26	\$ 2,209.50	\$ 48.65	\$ 9.84	\$ 3.	.52 \$ 62.01	\$ 2,010.70	\$ 406.69	\$ 145.48	\$ 2,562.87	STD 3	\$ 4,772.37	\$4,772.37	
		Structural steel member, 100-ton project, 1							-							-			· · · ·			. ,				
		to 2 story building, W12x26, A992 steel,																								
		shop fabricated, incl shop primer, bolted																								
18.29	051223751500		E2	880	0.064	L.F.	\$ 44.51	\$ 3.92	\$ 2.18	\$ 50.61	\$ 814.09	\$ 71.70	\$ 39.87	\$ 925.66	\$ 48.65	\$ 6.71	\$ 2.	.40 \$ 57.76	\$ 889.81	\$ 122.73	\$ 43.90	\$ 1,056.43	STD	\$ 1,982.09	\$1,982.09	
		Structural steel member, 100-ton project, 1																								
		to 2 story building, W14x30, A992 steel,																								
		shop fabricated, incl shop primer, bolted																								
37.72	051223752100		E2	900	0.062	L.F.	\$ 51.23	\$ 3.84	\$ 2.13	\$ 57.20	\$ 1,932.40	\$ 144.84	\$ 80.34	\$ 2,157.58	\$ 56.41	\$ 6.56	\$2.	.35 \$ 65.32	\$ 2,127.79	\$ 247.44	\$ 88.64	\$ 2,463.87	STD	\$ 4,621.45	\$4,621.45	
		Structural steel member, 100-ton project, 1																								
		to 2 story building, W14x43, A992 steel,																								
		shop fabricated, incl shop primer, bolted	= -						• • • • •												•					
57	051223752320		E2	810	0.069	L.F.	\$ 73.49	\$ 4.26	\$ 2.37	\$ 80.12	\$ 4,188.93	\$ 242.82	\$ 135.09	\$ 4,566.84	\$ 80.73	\$ 7.29	\$2.	.60 \$ 90.62	\$ 4,601.61	\$ 415.53	\$ 148.20	\$ 5,165.34	SID	\$ 9,732.18	\$9,732.18	
		Structural steel member, 100-ton project, 1 to 2 story building, W14x90, A992 steel,																								
		shop fabricated, incl shop primer, bolted																								
170.00	051223752380		E2	740	0.076		¢454.00	¢ 4.67	¢ 0.50	¢101 40	¢ 07.045.40	¢ 00744	¢ 464.00	\$ 28,946.90	¢ 100 71	¢ 0.00	¢ 0	05 \$ 170.50	¢ 20.242.05	\$ 1,434.08	¢ 510.90	\$ 32,187.93	OTD 0	¢ 01 104 00	CC1 104 00	
179.20	051223752360	Structural steel member, 100-ton project, 1	EZ	740	0.076	L.F.	\$154.ZZ	\$ 4.67	φ 2.59	\$101.40	\$ 27,045.46			\$ 28,946.90	\$ 106.71	φ 8.00	φ Z.	.05 \$ 179.50	\$ 30,242.95		\$ 510.89	\$ 32,167.93	510	\$ 01,134.03	Φ 01,134.63	
		to 2 story building, W14x120, A992 steel,																								
		shop fabricated, incl shop primer, bolted																								
151 18	051223752500		E2	720	0.078	IF	\$204.03	\$ 1.80	¢ 267	\$212.40	\$ 30.081.32	¢ 725.66	\$ 403.65	\$ 32,110.63	\$ 225.63	¢ 9.21	¢ 2	03 \$ 236.77	¢ 3/ 110 7/	\$ 1.241.19	\$ 442.96	\$ 35,794.89	STD	\$ 67 905 52	\$67 905 52	
101.10	031223732300	Structural steel member, 100-ton project, 1		120	0.070		φ204.93	φ 4.00	φ 2.07	φ212.40	φ 30,301.32	φ 125.00	φ 403.03	φ 52,110.05	φ 223.03	φ 0.21	ψ Ζ.	.95 \$ 230.77	φ 34,110.74	φ 1,241.13	\$ 442.90	φ 55,794.09		φ 07,303.3Z	ψ07,303.32	
		to 2 story building, W16x26, A992 steel,																								
		shop fabricated, incl shop primer, bolted																								
398.86	051223752700		E2	1000	0.056	L.F.	\$ 44 51	\$ 3.46	\$ 1.92	\$ 49.89	\$ 17 753 26	\$ 1 380 06	\$ 765.81	\$ 19,899.13	\$ 48.65	\$ 5.90	\$ 2	12 \$ 56.67	\$ 1940454	\$ 2,353.27	\$ 845.58	\$ 22,603.40	STD	\$ 42 502 53	\$42,502.53	
330.00	031223132100	Structural steel member, 100-ton project, 1		1000	0.000		ψ51	ψ 0.40	ψ 1.52	ψ 40.00	ψ 17,755.20	φ 1,500.00	φ 705.01	φ 13,033.13	ψ -0.05	φ 5.50	ψ 2.	.12 \$ 50.07	ψ 13,404.04	φ 2,000.21	\$ 045.50	φ 22,005.40		φ 42,502.55	ψ 1 2,502.55	
		to 2 story building, W16x31, A992 steel,																								
		shop fabricated, incl shop primer, bolted																								
114.96	051223752900		E2	900	0.062	L.F.	\$ 52.79	\$ 3.84	\$ 2.13	\$ 58.76	\$ 6.068.74	\$ 441.45	\$ 244.86	\$ 6,755.05	\$ 58.48	\$ 6.56	\$ 2.	.35 \$ 67.39	\$ 6.722.86	\$ 754.14	\$ 270.16	\$ 7.747.15	STD 3	\$ 14,502.20	\$14.502.20	
		Structural steel member, 100-ton project, 1									,			• • • • • • •					,		-					
		to 2 story building, W18x35, A992 steel,																								
		shop fabricated, incl shop primer, bolted																								
2310.15	051223753300	connections	E5	960	0.083	L.F.	\$ 60.03	\$ 5.20	\$ 2.15	\$ 67.38	\$ 138,678.30	\$ 12,012.78	\$ 4,966.82	\$ 155,657.91	\$ 65.72	\$ 8.99	\$ 2.	.37 \$ 77.08	\$ 151,823.06	\$ 20,768.25	\$ 5,475.06	\$ 178,066.36	STD 3	\$ 333,724.27	\$333,724.27	
		Structural steel member, 100-ton project, 1																								
		to 2 story building, W18x40, A992 steel,																								
		shop fabricated, incl shop primer, bolted																								
364.18	051223753500		E5	960	0.083	L.F.	\$ 68.31	\$ 5.20	\$ 2.15	\$ 75.66	\$ 24,877.14	\$ 1,893.74	\$ 782.99	\$ 27,553.86	\$ 75.04	\$ 8.99	\$ 2.	.37 \$ 86.40	\$ 27,328.07	\$ 3,273.98	\$ 863.11	\$ 31,465.15	STD 3	\$ 59,019.01	\$59,019.01	
		Structural steel member, 100-ton project, 1																								
		to 2 story building, W18x50, A992 steel,																								
		shop fabricated, incl shop primer, bolted																								
280	051223753700		E5	912	0.088	L.F.	\$ 85.39	\$ 5.48	\$ 2.27	\$ 93.14	\$ 23,909.20	\$ 1,534.40	\$ 635.60	\$ 26,079.20	\$ 94.19	\$ 9.49	\$2.	.49 \$ 106.17	\$ 26,373.20	\$ 2,657.20	\$ 697.20	\$ 29,727.60	STD	\$ 55,806.80	\$55,806.80	
		Structural steel member, 100-ton project, 1																								
		to 2 story building, W18x65, A992 steel,																								
		shop fabricated, incl shop primer, bolted					.														• • • • •					
120	051223753920	Connections Structural steel member, 100-ton project, 1	E5	900	0.089	L.F.	\$110.75	\$ 5.55	\$ 2.29	\$118.59	\$ 13,290.00	\$ 666.00	\$ 274.80	\$ 14,230.80	\$ 122.13	\$ 9.63	\$ 2.	.52 \$ 134.28	\$ 14,655.60	\$ 1,155.60	\$ 302.40	\$ 16,113.60	SID	\$ 30,344.40	\$30,344.40	
		to 2 story building, W18x76, A992 steel,																								
		shop fabricated, incl shop primer, bolted																								
160	051223753940		E5	000	0.000		¢400.00	¢ = = =	¢ 0.00	¢407.00	¢ 20.700.00	¢ 000.00	¢ 200 40	\$ 21,955.20	¢ 140.00	¢ 0.62	¢ 0	FO @ 454.00	¢ 00.050.00	\$ 1.540.80	¢ 402.20	¢ 04.700.00	OTD 0	¢ 40.750.00	¢40.750.00	
160	031223753940	Structural steel member, 100-ton project, 1	_ <u>⊏</u> 5	900	0.089	L.F.	⇒129.38	ຈ ວ.ວວ	φ 2.29	\$131.22	⊸ ∠∪,700.80	φ 888.00	a 300.40	φ ∠1,955.20	⇒ 142.83	φ 9.63	э 2.	.o∠ ⊅ 154.98	φ 22,852.80	φ 1,540.80	φ 403.20	\$ 24,796.80	י עופי	φ 40,152.00	940,7 SZ.UU	
		to 2 story building, W18x106, A992 steel,	1	1		1							1			1										
1		shop fabricated, incl shop primer, bolted													1											
174 12	051223753980		E5	000	0.020	L.F.	¢101.40	¢ E E F	¢ 2.20	¢100 07	¢ 21 520 20	¢ 066.27	¢ 200 72	\$ 32,903.46	¢ 100 70	¢ 0.00	¢ 0	E2 C 210.07	¢ 24 604 42	\$ 1.676.78	\$ 438.78	\$ 36,716.68	STD	¢ 60 620 14	\$60,620,14	
174.12	031223133960	Structural steel member, 100-ton project, 1	EU	900	0.089	L.F.	φισι.13	ф 5.55	φ 2.29	\$100.97	φ 31,336.3b	\$ 900.37	a 390.73	φ 3∠,9∪3.4b	φ 190.7Z	φ 9.63	φ 2.	.52 \$ 210.87	φ 34,001.13	φ Ι,0/0./8	φ 438.78	φ 30,/10.68	310	φ 09,020.14	ψυ9,020.14	
		to 2 story building, W21x50, A992 steel,																								
		shop fabricated, incl shop primer, bolted		1		1							1			1										
260	051223754300		E5	1064	0.075		¢ 95 20	¢ / 70	¢ 104	¢ 02.02	¢ 22 204 40	¢ 1 222 00	¢ E04.40	\$ 23,927.80	¢ 04.40	¢ 014	¢ 0	14 \$ 104.47	¢ 24 400 40	\$ 2,116.40	¢ ==== /0	\$ 27,162.20	STD	\$ 51 000 00	\$51,000,00	
200	031223/34300	Structural steel member, 100-ton project, 1		1004	0.075	- I .	φ 00.39	φ 4.70	φ 1.94	φ 52.03	ψ ζζ,ζ01.40	ψ 1,222.00	φ 504.40	φ 23,921.00	ψ 94.19	ψ 0.14	ψ Ζ.	. ι-τ φ 104.47	ψ 24,409.40	ψ 2,110.40	φ 555.40	$\psi \simeq i, 102.20$	510	φ 31,090.00	ψυ1,080.00	
		to 2 story building, W21x101, A992 steel,		1		1							1			1										
		shop fabricated, incl shop primer, bolted		1		1							1			1										
60	051223754760		E5	1000	0.08	I F	\$172.85	\$ 5.00	\$ 207	\$179.92	\$ 10 371 00	\$ 300.00	\$ 124.20	\$ 10,795.20	\$ 189 41	\$ 8.64	\$ 2	27 \$ 200.32	\$ 11 364 60	\$ 518.40	\$ 136.20	\$ 12,019.20	STD	\$ 22 814 40	\$22 814 40	
00	551220104100	00111001010		1000	0.00		ψ172.00	ψ 0.00	φ 2.01	ψ110.0Z	÷ 10,071.00	÷ 500.00	ψ 127.20	↓ 10,100.20	ψ 103.41	ψ 0.04	ψ Ζ.	ψ 200.32	÷ 1,007.00	÷ 010.40	¥ 150.20	Ψ 12,010.20	0.0	÷ 22,017.70	YEE,017.70	

	Structural steel member, 100-ton project, 1																					
	to 2 story building, W24x76, A992 steel,																					
	shop fabricated, incl shop primer, bolted																					
225	051223755500 connections Structural steel member, 100-ton project, 1	E5	1110	0.072 L.F.	\$129.38	\$ 4.50	\$ 1.8	6 \$135.74	\$ 29,110.	50 \$ 1,0	012.50	\$ 418.50	\$ 30,541.50	\$ 142.83	\$ 7.	79 \$ 2	2.05	\$ 152.67	\$ 32,136.75 \$	1,752.75 \$	461.25 \$ 34,350.75 STD \$ 64,8	92.25 \$64,892.25
	to 2 story building, W33x130, A992 steel,																					
	shop fabricated, incl shop primer, bolted																					
60	051223756900 connections	E5	1134	0.071 L.F.	\$222.53	\$ 4 40	\$ 18	2 \$228 7	\$ 13 351 2	80 \$ 2	264.00	\$ 109.20	\$ 13 725 00	\$ 244.26	\$ 7	65 \$	2 01	\$ 253.92	\$ 14,655.60 \$	459.00 \$	120.60 \$ 15,235.20 STD \$ 28,9	60.20 \$28,960.20
00	Structural steel member, 100-ton project, 1	20	1104	0.071 2.11	Ψ222.00	ψ 4.40	ψ 1.0	φ220.10	φ 10,001.	φ 2	204.00	φ 100.20	φ 10,720.00	ψ 244.20	ψ 1.	τ, φ	2.01	φ 200.02	φ 14,000.00 φ	400.00 ψ	120.00 \ \ 10,200.20 \ 01D \ \ 20,0	\$20,000.20
	to 2 story building, W33x141, A992 steel,																					
	shop fabricated, incl shop primer, bolted																					
60	051223757100 connections	E5	1134	0.071 L.F.	\$241.16	\$ 4.40	\$ 1.8	2 \$247.38	3 \$ 14,469.6	60 \$ 2	264.00	\$ 109.20	\$ 14,842.80	\$ 264.96	\$ 7.	65 \$ 2	2.01	\$ 274.62	\$ 15,897.60 \$	459.00 \$	120.60 \$ 16,477.20 STD \$ 31,3	20.00 \$31,320.00
	Structural steel member, 100-ton project, 1																					
	to 2 story building, W4x13, A992 steel,																					
	shop fabricated, incl shop primer, bolted																					
673.67	051223750120 connections	E2	600	0.093 L.F.	\$ 25.88	\$ 5.75	\$ 3.2	0 \$ 34.83	3 \$ 17,434.	58 \$ 3,8	873.60	\$ 2,155.74	\$ 23,463.93	\$ 27.95	\$9.	84 \$ 3	3.52	\$ 41.31	\$ 18,829.08 \$	6,628.91 \$	2,371.32 \$ 27,829.31 STD \$ 51,2	93.24 \$51,293.24
	Structural steel member, 100-ton project, 1 to 2 story building, W12x19, A992 steel,																					
	shop fabricated, incl shop primer, bolted																					
887 43	051223751300 connections	E2	880	0.064 L.F.	\$ 37.78	\$ 3.92	\$ 21	8 \$ 13.8	\$ 33.527	11 \$ 3/	178 73	\$ 1 934 60	\$ 38.940.43	\$ 11.10	\$ 6	71 \$	2 40	\$ 50.51	\$ 36,739.60 \$	5,954.66 \$	2,129.83 \$ 44,824.09 STD \$ 83,7	\$4 52 \$83 764 52
007.43	Structural steel member, 100-ton project, 1	62	000	0.004 E.1 .	\$ 51.10	ψ 0.32	Ψ 2.	υ ψ +0.00	φ 33,327.	Π ψ 3,-	410.15	ψ 1,334.00	ψ 30,340.43	ψ -10	ψ 0.	71 Ψ 2	2.40	φ 30.31 ,	φ 30,733.00 φ	5,55 4 .00 φ	2,123.03 \$ 44,024.03 515 \$ 03,7	403,704.32
	to 2 story building, W14x22, A992 steel,																					
	shop fabricated, incl shop primer, bolted																					
951.23	051223751900 connections	E2	990	0.057 L.F.	\$ 44.51	\$ 3.48	\$ 1.9	4 \$ 49.93	3 \$ <u>42,33</u> 9.2	25 \$ 3,3	310.28	\$ 1,845.39	\$ 47,494.91	\$ 48.65	\$ 5.	96 \$ 2	2.13	\$ 56.74	\$ 46,277.34 \$	5,669.33 \$	2,026.12 \$ 53,972.79 STD \$101,4	57.70 \$101,467.70
	Structural steel member, 100-ton project, 1																					
	to 2 story building, W14x48, A992 steel,																					
	shop fabricated, incl shop primer, bolted	50		0.071 5			•						• • • • • •					• • • • • • •				
30	051223752340 connections Structural steel member, 100-ton project, 1	E2	800	0.07 L.F.	\$ 90.56	\$ 4.32	\$ 2.4	0 \$ 97.28	3 \$ 2,716.8	80 \$ 1	129.60	\$ 72.00	\$ 2,918.40	\$ 99.36	\$ 7.	36 \$ 2	2.63	\$ 109.35	\$ 2,980.80 \$	220.80 \$	78.90 \$ 3,280.50 STD \$ 6,1	98.90 \$6,198.90
	to 2 story building, W14x82, A992 steel,																					
	shop fabricated, incl shop primer, bolted																					
70.47	051223752380 connections	E2	740	0.076 L.F.	\$154 22	\$ 4 67	\$ 25	9 \$161 48	\$ 10.867	88 \$ 3	329.09	\$ 182.52	\$ 11,379,50	\$ 168 71	\$ 8	00 \$ 3	2 85	\$ 179.56	\$ 11,888.99 \$	563.76 \$	200.84 \$ 12,653.59 STD \$ 24,0	33 09 \$24 033 09
	Structural steel member, 100-ton project, 1			0.070 2.17	\$10 HZL	v	ψ 2.0		¢ 10,001.	,	020.00	\$ 102.02	¢ 11,010.00	φ 100.11	φ 0.	τ, τ	2.00	¢	,,	φ		42 1,000.00
	to 2 story building, W14x109, A992 steel,																					
	shop fabricated, incl shop primer, bolted																					
134.38	051223752500 connections	E2	720	0.078 L.F.	\$204.93	\$ 4.80	\$ 2.6	\$212.40	\$ 27,538.4	49 \$ 6	645.02	\$ 358.79	\$ 28,542.31	\$ 225.63	\$ 8.	21 \$ 2	2.93	\$ 236.77	\$ 30,320.16 \$	1,103.26 \$	393.73 \$ 31,817.15 STD \$ 60,3	59.46 \$60,359.46
	Structural steel member, 100-ton project, 1																					
	to 2 story building, W16x36, A992 steel,																					
000	shop fabricated, incl shop primer, bolted	50	000	0.07 L.F.	A A A A A		• • •	0 0 75 0						• -	• -		0.00		10 510 10 0	1 0 1 0 0 0 0		
260	051223753100 connections Structural steel member, 100-ton project, 1	E2	800	0.07 L.F.	\$ 68.31	\$ 4.32	\$ 2.4	0 \$ 75.0	3 \$ 17,760.0	60 \$ 1,1	123.20	\$ 624.00	\$ 19,507.80	\$ 75.04	\$ 7.	36 \$ 2	2.63	\$ 85.03	\$ 19,510.40 \$	1,913.60 \$	683.80 \$ 22,107.80 STD \$ 41,6	15.60 \$41,615.60
	to 2 story building, W18x60, A992 steel,																					
	shop fabricated, incl shop primer, bolted																					
120	051223753920 connections	E5	900	0.089 L.F.	\$110.75	\$ 5.55	\$ 2.2	9 \$118.59	\$ 13.290.0	00 \$ 6	666.00	\$ 274.80	\$ 14.230.80	\$ 122.13	\$ 9.	63 \$ 2	2.52	\$ 134.28	\$ 14,655.60 \$	1.155.60 \$	302.40 \$ 16,113.60 STD \$ 30,3	14.40 \$30.344.40
	Structural steel member, 100-ton project, 1						•													,		
	to 2 story building, W18x71, A992 steel,																					
	shop fabricated, incl shop primer, bolted																					
72.49	051223753940 connections	E5	900	0.089 L.F.	\$129.38	\$ 5.55	\$ 2.2	9 \$137.22	2 \$ 9,378.7	76 \$ 4	402.32	\$ 166.00	\$ 9,947.08	\$ 142.83	\$9.	63 \$ 2	2.52	\$ 154.98	\$ 10,353.75 \$	698.08 \$	182.67 \$ 11,234.50 STD \$ 21,1	31.58 \$21,181.58
	Structural steel member, 100-ton project, 1 to 2 story building, W21x57, A992 steel,														1							
	shop fabricated, incl shop primer, bolted														1							
122 12	051223754500 connections	E5	1036	0.077 L.F.	\$105.57	\$ 4.83	\$ 10	9 \$112.30	\$ 12.802	21 \$ #	589 84	\$ 243.02	\$ 13 725 07	\$ 116.96	\$ 8	35 \$ 4	2 19	\$ 127.50	5 14.283.16 \$	1 019 70 \$	267.44 \$ 15.570.30 STD \$ 29.2	95 37 \$29 295 37
122.12	Structural steel member, 100-ton project, 1		1000	5.011 L.I .	ψ100.01	ψ τ.03	ψ 1.5	φτι2.03	φ 12,032.4		555.54	÷ 270.02		φ 110.30	ψ 0.	υ ψ		Ψ 121.00 N	φ 14,200.10 φ	1,010.70 ψ	201.11 \$ 10,010.00 010 \$ 29,2	φεσ,εσσ.στ
	to 2 story building, W21x132, A992 steel,														1							
	shop fabricated, incl shop primer, bolted														1							
78	051223754780 connections	E5	1000	0.08 L.F.	\$208.04	\$ 5.00	\$ 2.0	7 \$215.1 ⁻	\$ 16,227.1	12 \$ 3	390.00	\$ 161.46	<u>\$ 16,778.58</u>	\$ 228.74	\$ 8.	64 \$	2.27	\$ 239.65	\$ 17,841.72 \$	673.92 \$	177.06 \$ 18,692.70 STD \$ 35,4	71.28 \$35,471.28
	Structural steel member, 100-ton project, 1																					
	to 2 story building, W33x221, A992 steel,														1							
400	shop fabricated, incl shop primer, bolted		4405	0.0741	0000	o						0 000 cc		A 101-5					50 404 00 5	000 to (*		
120	051223757900 connections Structural steel member, 100-ton project, 1	E5	1125	0.071 L.F.	\$393.30	\$ 4.45	\$ 1.8	4 \$399.59	9 \$ 47,196.0	00 \$ 5	534.00	\$ 220.80	\$ 47,950.80	\$ 434.70	\$7.	12 \$ 2	2.02	\$ 444.44	\$ 52,164.00 \$	926.40 \$	242.40 \$ 53,332.80 STD \$101,2	33.60 \$101,283.60
	to 2 story building, TT14x99, A992 steel,														1							
	shop fabricated, incl shop primer, bolted														1							
53.7	051223756100 connections	E5	1200	0.067 L.F.	\$168 71	\$ 4 16	\$ 17	2 \$174 50	\$ 9.059	73 \$ 2	223.39	\$ 92.36	\$ 937548	\$ 186.30	\$ 7	22 \$	1.90	\$ 195.42	\$ 10,004.31 \$	387.71 \$	102.03 \$ 10,494.05 STD \$ 19,8	69.53 \$19.869.53
00.1	Structural steel member, 100-ton project, 1		1200	0.007 E.1 .	ψ100./T	ψ -1.10	Ψ 1.7	- \\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	, ç 0,000.	-ς ψ 2	0.00	÷ 02.00	÷ 0,010.40	÷ 100.00	<i>¥</i> 7.	v		↓ 100.42	φ			φ10,000.00
	to 2 story building, W14x132, A992 steel,														1							
	shop fabricated, incl shop primer, bolted														1							
123.34	051223756900 connections	E5	1134	0.071 L.F.	\$222.53	\$ 4.40	\$ 1.8	2 \$228.75	5 \$ 27,446.8	85 \$ 5	542.70	\$ 224.48	\$ 28,214.03	\$ 244.26	\$ 7.	65 \$ 2	2.01	\$ 253.92	\$ 30,127.03 \$	943.55 \$	247.91 \$ 31,318.49 STD \$ 59,5	32.52 \$59,532.52
		-																				

	Structural steel member, 100-ton project, 1	11 '	T		1						1				1							1	
ļ	to 2 story building, W14x257, A992 steel,		i																				
ļ	shop fabricated, incl shop primer, bolted		1																				
22.74	051223757920 connections	E5	1035	0.077 L.F.	\$445.05 \$	5 4.83 \$	1.99	\$451.87	\$ 10.120.44	\$ 109.83	\$ 45.25	\$ 10,275.52	\$ 491.63	\$ 8.35 \$	2.19	\$ 502.17	\$ 11.179.67	\$ 189.88	\$ 49.80	\$ 11.419.35	5 STD	\$ 21,694.87	\$21,694.87
	Structural steel member, 100-ton project, 1	1			* ******			•	•		• ••••••	· · · · · · · · · · · · · · · · · · ·	•	+		• •••	•			•	-		,
ļ	to 2 story building, W14x283, A992 steel,		i																				
ļ	shop fabricated, incl shop primer, bolted		1																				
101.25	051223758100 connections	E5	1035	0.077 L.F.	\$517.50 \$	\$ 4.83 \$	1.99	\$524.32	\$ 52,396.88	\$ 489.04	\$ 201.49	\$ 53,087.40	\$ 569.25	\$ 8.35 \$	2.19	\$ 579.79	\$ 57,636.56	\$ 845.44	\$ 221.74	\$ 58,703.74	4 STD	\$111,791.14	\$111,791.14
		1	i l																				
ļ	Structural steel member, 100-ton project, 1	1	i																				
ļ	to 2 story building, HSS6x4x3/8, A992		i																				
000 55	steel, shop fabricated, incl shop primer,	E2	550	0.4001 5	¢ 40.00 ¢		0.40	¢ 50.04	¢ 40.000.70	¢ 0.400.04	¢ 4 000 04	¢ 00.400.57	¢ 45.00	¢ 10.70 ¢	0.00	¢ 50.04	¢ 47.040.70	\$ 4,288,40	¢ 4.500.45	5 \$ 23.757.57		¢ 40.040.44	¢ 40,040,44
398.55	051223750360 bolted connections Structural steel member, 100-ton project, 1		550	0.102 L.F.	\$ 40.88 \$	5 6.27 \$	3.49	\$ 50.64	\$ 16,292.72	\$ 2,498.91	\$ 1,390.94	\$ 20,182.57	\$ 45.02	\$ 10.76 \$	3.83	\$ 59.61	\$ 17,942.72	\$ 4,288.40	\$ 1,526.45	5 \$ 23,757.57	1 510	\$ 43,940.14	\$43,940.14
ļ	to 2 story building, W18x130, A992 steel,		i																				
ļ	shop fabricated, incl shop primer, bolted		i																				
56.5	051223756900 connections	E5	1134	0.071 L.F.	\$222.53 \$	\$ 4.40 \$	1.82	\$228.75	\$ 12,572.95	\$ 248.60	\$ 102.83	\$ 12,924.38	\$ 244.26	\$ 7.65 \$	2.01	\$ 253.92	\$ 13.800 69	\$ 432.23	\$ 113.57	\$ 14,346.48	3 STD	\$ 27,270.86	\$14.346.48
,	Structural steel member, 100-ton project, 1				· •			,	,			,	,				,			,		1	,
ļ	to 2 story building, W18x143, A992 steel,		1 I																				
ļ	shop fabricated, incl shop primer, bolted		i							1													
123	051223757100 connections	E5	1134	0.071 L.F.	\$222.53 \$	\$ 4.40 \$	1.82	\$228.75	\$ 27,371.19	\$ 541.20	\$ 223.86	\$ 28,136.25	\$ 244.26	\$ 7.65 \$	2.01	\$ 253.92	\$ 30,043.98	\$ 940.95	\$ 247.23	\$ \$ 31,232.16	6 STD	\$ 59,368.41	\$31,232.16
0	032200000000 Welded Wire Fabric Reinforcing				\$ - \$	i - \$	-	\$ -	\$ -	\$-	\$-	\$-	\$ -	\$ - \$	- 9	\$-	\$ -	\$ -	\$-	\$-	STD		
	Welded wire fabric, sheets, 6 x 6 - W2.9 x		1									.											
2244	032205500300 W2.9 (6 x 6) 42 lb. per C.S.F., A185	2 Rodm	29	0.552 C.S.F	. \$ 34.68 \$	\$46.72 \$	-	\$ 81.40	\$ 77,821.92	\$104,839.68	\$-	\$ 182,661.60	\$ 38.41	\$ 76.28 \$	- 3	\$ 114.69	\$ 86,192.04	\$ 171,172.32	\$-	\$ 257,364.36	6 STD	\$ 440,025.96	\$440,025.96
0	NORMAL WEIGHT CONCRETE, READY 033105350010 MIX				s - s	- 5		s -	•	~		s -	\$ -	s - s		\$-		s -	¢		STD		
U	Structural concrete, ready mix, normal	4	 +		\$ - \$) - Þ	•	э -	\$-	\$-	\$-	э -	р -	\$ - \$	- 9	Þ -	\$-	р -	\$-	ə -	510		
ļ	weight, 4000 PSI, includes local		i																				
ļ	aggregate, sand, Portland cement and		i																				
ļ	water, delivered, excludes all additives and	d	i																				
255	033105350300 treatments	1	(C.Y.	\$115.33 \$; - \$	-	\$115.33	¢ 00.400.45	¢	•		*										\$61,592.70
0		1	•	0.1.	φ110.00 φ				\$ 29,409.15	ъ -	\$-	\$ 29,409.15	\$ 126.21	\$ - \$	- 5	\$ 126.21	\$ 32,183.55	\$-	\$-	\$ 32,183.55	5 STD	\$ 61,592.70	
U	053113500010 FLOOR DECKING			0.1.	\$ - \$	i - \$		\$ -	. ,		\$ - \$ -	. ,		\$ - \$ \$ - \$			\$ 32,183.55 \$ -	\$- \$-			5 STD STD	\$ 61,592.70	
U	053113500010 FLOOR DECKING Metal decking, steel, non-cellular,				\$ - \$		-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ - \$	- !	\$-	\$ -	\$ -	\$ -	\$ -	STD		
0 22440	053113500010 FLOOR DECKING	E4	3380	0.009 C.Y.			-		\$ -	\$ -	\$ -	. ,	\$ -	\$ - \$	- {	\$-	\$ -	\$ -	\$ -		STD		\$219,463.20
	053113500010 FLOOR DECKING Metal decking, steel, non-cellular,	E4	3380		\$ - \$		-	\$ - \$ 4.47	\$ - \$ 85,945.20	\$ - \$ 13,464.00	\$ - \$ 897.60	\$ - \$ 100,306.80	\$ -	\$ - \$	- !	\$-	\$ - \$ 94,472.40	\$ - \$ 23,786.40	\$ - \$ 897.60	\$ -	STD STD		\$219,463.20
	053113500010 FLOOR DECKING Metal decking, steel, non-cellular,	E4	3380		\$ - \$		-	\$ - \$ 4.47	\$ -	\$ - \$ 13,464.00	\$ - \$ 897.60	\$ - \$ 100,306.80	\$ -	\$ - \$	- !	\$-	\$ - \$ 94,472.40	\$ -	\$ - \$ 897.60	\$ - \$ 119,156.40 5 \$ 1,003,182.53	STD STD 3		\$219,463.20
otal	053113500010 FLOOR DECKING Metal decking, steel, non-cellular, 053113505400 composite, galvanized, 2" D, 18 ga			0.009 C.Y.	\$ - \$ \$ 3.83 \$	\$ 0.60 \$	- 0.04	\$ - \$ 4.47	\$ - \$ 85,945.20 \$ 1,033,327.75	\$ - \$ 13,464.00 \$163,534.14	\$ - \$ 897.60 \$22,374.93	\$ - \$ 100,306.80 \$ 1,219,236.81	\$ - \$ 4.21	\$ - \$ \$ 1.06 \$	0.04	\$ - \$ 5.31	\$ 94,472.40 \$ 1,135,716.36	\$ - \$ 23,786.40 \$ 272,868.13	\$ - \$ 897.60 \$ 24,533.45	\$ - \$ 119,156.40 \$ 1,003,182.53 \$ 2,222,419.34	STD 0 STD 3 4	\$ 219,463.20	\$219,463.20
otal uantity	053113500010 FLOOR DECKING Metal decking, steel, non-cellular, 053113505400 composite, galvanized, 2" D, 18 ga LineNumber Description	E4 Crew E3	Daily L	0.009 C.Y.	\$ - \$ \$ 3.83 \$ Material La	3 0.60 \$	- 0.04 uipment	\$ - \$ 4.47 Total	\$ - \$ 85,945.20 \$ 1,033,327.75 Ext. Mat.	\$ - \$ 13,464.00 \$163,534.14 Ext. Labor	\$ - \$ 897.60 \$22,374.93 Ext. Equip.	\$ - \$ 100,306.80 \$ 1,219,236.81 Ext. Total	\$ - \$ 4.21 Mat. O&P	\$ - \$ \$ 1.06 \$ Labor O&P Ec	- \$	\$- \$5.31	\$ - \$ 94,472.40 \$ 1,135,716.36 Ext. Mat. O&P	\$ - \$ 23,786.40 \$ 272,868.13 Ext. Labor O&P	\$ - \$ 897.60 \$ 24,533.45 Ext. Equip. O&P	\$ - \$ 119,156.40 \$ 1,003,182.53 \$ 2,222,419.34 Ext. Total O&P	STD STD 3 4 Notes	\$ 219,463.20	
otal uantity 110	053113500010 FLOOR DECKING Metal decking, steel, non-cellular, 053113505400 composite, galvanized, 2" D, 18 ga 18 ga LineNumber Description 051223400672 C-Channel-Column: C10X33	Crew E3	Daily L	0.009 C.Y. abor Unit 0.667 L.F.	\$ - \$ \$ 3.83 \$ Material La \$ 10.71 \$	3 0.60 \$ abor Eq 343.19 \$	- 0.04 uipment 4.11	\$ - \$ 4.47 Total \$ 58.01	\$ - \$ 85,945.20 \$ 1,033,327.75 Ext. Mat. \$ 1,178.10	\$ - \$ 13,464.00 \$163,534.14 Ext. Labor \$ 4,750.90	\$ - \$ 897.60 \$22,374.93 Ext. Equip. \$ 452.10	\$ - \$ 100,306.80 \$ 1,219,236.81 Ext. Total \$ 6,381.10	\$ - \$ 4.21 Mat. O&P \$ 11.80	\$ - \$ \$ 1.06 \$ Labor O&P Ec \$ 76.46 \$	- 5 0.04 5 uip. O&P T 4.52 5	\$- \$5.31 \$ \$0tal O&P \$92.78	\$ - \$ 94,472.40 \$ 1,135,716.30 <u>Ext. Mat. O&P</u> \$ 1,298.00	\$ - \$ 23,786.40 \$ 272,868.13 Ext. Labor O&P \$ 8,410.60	\$ - \$ 897.60 \$ 24,533.45 <u>Ext. Equip. O&P</u> \$ 497.20	\$ - \$ 119,156.40 \$ 1,003,182.53 \$ 2,222,419.34 Ext. Total O&P \$ 30,617.40	STD 0 STD 3 4 0 Notes 0 X3	\$ 219,463.20 \$ 30,617.40	\$30,617.40
otal uantity 110 27.5	053113500010 FLOOR DECKING Metal decking, steel, non-cellular, 053113505400 composite, galvanized, 2" D, 18 ga LineNumber Description 051223400672 C-Channel-Column: C10X33 051223757920 W-Wide Flange-Column: W14X257	Crew E3 E5	Daily L 36 1035	0.009 C.Y. abor Unit 0.667 L.F. 0.077 L.F.	\$ - \$ \$ 3.83 \$ Material La \$ 10.71 \$ \$445.05 \$	abor Eq 643.19 \$ 6483 \$	- 0.04 uipment 4.11 1.99	\$ - \$ 4.47 Total \$ 58.01 \$451.87	\$ - \$ 85,945.20 \$ 1,033,327.75 Ext. Mat. \$ 1,178.10 \$ 12,238.88	\$ - \$ 13,464.00 \$163,534.14 Ext. Labor \$ 4,750.90 \$ 132.83	\$ - \$ 897.60 \$22,374.93 Ext. Equip. \$ 452.10 \$ 54.73	\$ - \$ 100,306.80 \$ 1,219,236.81 Ext. Total \$ 6,381.10 \$ 12,426.43	 \$ - \$ 4.21 Mat. O&P \$ 11.80 \$ 491.63 	\$ - \$ \$ 1.06 \$ Labor O&P Ec \$ 76.46 \$ \$ 8.35 \$	- 9 0.04 9 00000000000000000000000000000000000	\$ - \$ 5.31 (otal O&P \$ 92.78 \$ 502.17	\$ - \$ 94,472.40 \$ 1,135,716.30 Ext. Mat. O&P \$ 1,298.00 \$ 13,519.83	\$ - \$ 23,786.40 \$ 272,868.13 Ext. Labor O&P \$ 8,410.60 \$ 229.63	\$ - \$ 897.60 \$ 24,533.45 Ext. Equip. O&P \$ 497.20 \$ 60.23	\$ - \$ 119,156.40 \$ 1,003,182.53 \$ 2,222,419.34 Ext. Total O&P \$ 30,617.40 \$ 13,809.68	STD 0 STD 3 4 0 Notes 0 X3 8 X1	\$ 219,463.20 \$ 30,617.40 \$ 13,809.68	\$30,617.40 \$13,809.68
uantity 110 27.5 110	D53113500010 FLOOR DECKING Metal decking, steel, non-cellular, 053113505400 composite, galvanized, 2" D, 18 ga 18 ga LineNumber Description 051223400672 C-Channel-Column: C10X33 051223757920 W-Wide Flange-Column: W14X257 051223758100 FB-Flanged Box-Column: FB30X1116	Crew E3 E5 E5	Daily L 36 1035 1035	0.009 C.Y. abor Unit 0.667 L.F. 0.077 L.F. 0.077 L.F.	\$ - \$ \$ 3.83 \$ Material La \$ 10.71 \$ \$445.05 \$ \$517.50 \$	abor Eq 643.19 \$ 648.3 \$ 648.3 \$	- 0.04 uipment 4.11 1.99 1.99	\$ - \$ 4.47 Total \$ 58.01 \$451.87 \$524.32	\$ - \$ 85,945.20 \$ 1,033,327.75 Ext. Mat. \$ 1,178.10 \$ 12,238.88 \$ 56,925.00	\$ - \$ 13,464.00 \$163,534.14 Ext. Labor \$ 4,750.90 \$ 132.83 \$ 531.30	\$ - \$ 897.60 \$22,374.93 Ext. Equip. \$ 452.10 \$ 54.73 \$ 218.90	\$ - \$ 100,306.80 \$ 1,219,236.81 Ext. Total \$ 6,381.10 \$ 12,426.43 \$ 57,675.20	\$ - \$ 4.21 Mat. O&P \$ 11.80 \$ 491.63 \$ 569.25	\$ - \$ \$ 1.06 \$ \$ 1.06 \$ Labor O&P Ec \$ 76.46 \$ \$ 8.35 \$ \$ 8.35 \$	0.04 (100) 0.04 (100)	 5.31 5.31 5.31 5.31 5.31 502.17 579.79 	\$ - \$ 94,472.40 \$ 1,135,716.36 Ext. Mat. O&P \$ \$ 1,298.00 \$ 1,298.00 \$ 1,3519.83 \$ 62,617.50	\$ - \$ 23,786.40 \$ 272,868.13 Ext. Labor O&P \$ 8,410.60 \$ 229.63 \$ 918.50	\$ - \$ 897.60 \$ 24,533.45 Ext. Equip. O&P \$ 497.20 \$ 60.23 \$ 240.90	\$ 119,156.40 \$ 119,156.40 \$ 1,003,182.53 \$ 2,222,419.34 Ext. Total 0&P \$ 30,617.40 \$ 13,809.68 \$ 235,974.53	STD 0 STD 3 4 0 Notes 0 X3 8 X1 3 X3.7	\$ 219,463.20 \$ 30,617.40 \$ 13,809.68 \$ 235,974.53	\$30,617.40 \$13,809.68 \$235,974.53
uantity 110 27.5 110 55	053113500010 FLOOR DECKING Metal decking, steel, non-cellular, 053113505400 053113505400 composite, galvanized, 2" D, 18 ga LineNumber Description 051223400672 C-Channel-Column: C10X33 051223757920 W-Wide Flange-Column: W14X257 051223758100 FB-Flanged Box-Column: FB30X1116 051223758100 BU-Built Up-Column: W23X1168	Crew E3 E5 E5 E5 E5	Daily L 36 1035 1035 1035	0.009 C.Y. abor Unit 0.667 L.F. 0.077 L.F. 0.077 L.F. 0.077 L.F.	\$ - \$ \$ 3.83 \$ Material La \$ 10.71 \$ \$ \$445.05 \$ \$517.50 \$ \$517.50 \$	abor Eq 343.19 \$ 348.3 \$ 348.3 \$ 348.3 \$ 348.3 \$ 348.3 \$	- 0.04 <u>uipment</u> 4.11 1.99 1.99 1.99	\$ - \$ 4.47 \$ 58.01 \$ 58.01 \$ 5451.87 \$ 5524.32 \$ 5524.32	\$ - \$ 85,945.20 \$ 1,033,327.75 Ext. Mat. \$ 1,178.10 \$ 12,238.88 \$ 56,925.00 \$ 28,462.50	\$ - \$ 13,464.00 \$163,534.14 Ext. Labor \$ 4,750.90 \$ 132.83 \$ 531.30 \$ 265.65	\$ - \$ 897.60 \$22,374.93 Ext. Equip. \$ 452.10 \$ 54.73 \$ 218.90 \$ 109.45	\$ - \$ 100,306.80 \$ 1,219,236.81 Ext. Total \$ 6,381.10 \$ 12,426.43 \$ 57,675.20 \$ 28,837.60	\$ - \$ 4.21 Mat. O&P \$ 11.80 \$ 491.63 \$ 569.25 \$ 569.25	\$ - \$ \$ 1.06 \$ \$ 76.46 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$	- \$ 0.04	 5.31 <li< td=""><td>\$ - \$ 94,472.40 \$ 1,135,716.30 Ext. Mat. O&P \$ 1,298.00 \$ 13,519.83 \$ 62,617.50 \$ 31,308.75</td><td>\$ - \$ 23,786.40 \$ 272,868.13 Ext. Labor O&P \$ 8,410.60 \$ 229.63 \$ 918.50 \$ 459.25</td><td>\$ - \$ 897.60 \$ 24,533.45 Ext. Equip. O&P \$ 497.20 \$ 60.23 \$ 240.90 \$ 120.45</td><td>\$ 119,156.40 10 10 119,156.40 10 10 119,156.40 10 10 10 10 10 10 10 10 10 10 10 10 10</td><td>STD 0 STD 3 X3 4 X3 5 X3 8 X1 3 X3.7 0 X3.87</td><td>\$ 219,463.20 \$ 30,617.40 \$ 13,809.68 \$ 235,974.53 \$ 123,408.30</td><td>\$30,617.40 \$13,809.68 \$235,974.53 \$123,408.30</td></li<>	\$ - \$ 94,472.40 \$ 1,135,716.30 Ext. Mat. O&P \$ 1,298.00 \$ 13,519.83 \$ 62,617.50 \$ 31,308.75	\$ - \$ 23,786.40 \$ 272,868.13 Ext. Labor O&P \$ 8,410.60 \$ 229.63 \$ 918.50 \$ 459.25	\$ - \$ 897.60 \$ 24,533.45 Ext. Equip. O&P \$ 497.20 \$ 60.23 \$ 240.90 \$ 120.45	\$ 119,156.40 10 10 119,156.40 10 10 119,156.40 10 10 10 10 10 10 10 10 10 10 10 10 10	STD 0 STD 3 X3 4 X3 5 X3 8 X1 3 X3.7 0 X3.87	\$ 219,463.20 \$ 30,617.40 \$ 13,809.68 \$ 235,974.53 \$ 123,408.30	\$30,617.40 \$13,809.68 \$235,974.53 \$123,408.30
otal <u>uantity</u> 110 27.5 110 55 27.5	D53113500010 FLOOR DECKING Metal decking, steel, non-cellular, 053113505400 053113505400 composite, galvanized, 2" D, 18 ga LineNumber Description 051223400672 C-Channel-Column: C10X33 051223757920 W-Wide Flange-Column: W14X257 051223758100 FB-Flanged Box-Column: FB30X1116 051223758100 BU-Built Up-Column: W2X1088 051223758100 BU-Built Up-Column: W2X1032	Crew E3 E5 E5 E5 E5 E5	Daily L 36 1035 1035 1035 1035 1035	0.009 C.Y. abor Unit 0.667 L.F. 0.077 L.F. 0.077 L.F. 0.077 L.F. 0.077 L.F.	\$ - \$ \$ 3.83 \$ Material La \$ 10.71 \$ \$ 445.05 \$ \$ 517.50 \$ \$ 517.50 \$ \$ 517.50 \$	abor Eq \$43.19 \$ \$483 \$ \$483 \$ \$483 \$ \$483 \$ \$483 \$ \$483 \$ \$483 \$ \$483 \$ \$483 \$	- 0.04 <u>uipment</u> 4.11 1.99 1.99 1.99 1.99	\$ 4.47 \$ 4.47 \$ 58.01 \$ 58.01 \$ 5451.87 \$ 524.32 \$ 524.32 \$ 524.32	\$ - \$ 85,945.20 \$ 1,033,327.75 Ext. Mat. \$ \$ 1,178.10 \$ 1,238.88 \$ 56,925.00 \$ 28,462.50 \$ 14,231.25	\$ - \$ 13,464.00 \$163,534.14 Ext. Labor \$ 4,750.90 \$ 132.83 \$ 531.30 \$ 265.65 \$ 132.83	\$ - \$ 897.60 \$22,374.93 Ext. Equip. \$ 452.10 \$ 54.73 \$ 218.90 \$ 109.45 \$ 54.73	\$ - \$ 100,306.80 \$ 1,219,236.81 Ext. Total \$ \$ 6,381.10 \$ 12,426.43 \$ 57,675.20 \$ 28,837.60 \$ 14,418.80	\$ - \$ 4.21 Mat. O&P \$ 11.80 \$ 491.63 \$ 569.25 \$ 569.25 \$ 569.25	\$ - \$ \$ 1.06 \$ \$ 1.06 \$ \$ 76.46 \$ \$ 76.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$	- \$ 0.04 \$ 4.52 \$ 2.19 \$ 2.19 \$ 2.19 \$ 2.19 \$	 5.31 5.31<td>\$ -4,472.40 \$ 94,472.40 \$ 1,135,716.30 Ext. Mat. O&P \$ \$ 1,298.00 \$ 1,298.00 \$ 1,3519.83 \$ 62,617.50 \$ 31,308.75 \$ 15,654.38</td><td>\$ - \$ 23,786.40 \$ 272,868.13 Ext. Labor O&P \$ 8,410.60 \$ 229.63 \$ 918.50 \$ 459.25 \$ 229.63</td><td>\$ - \$ 897.60 \$ 24,533.45 Ext. Equip. O&P \$ 497.20 \$ 60.23 \$ 240.90 \$ 240.90 \$ 120.45 \$ 0.23</td><td>\$ 119,156.40 10 10 119,156.40 10 10 119,156.40 10 10 10 10 10 10 10 10 10 10 10 10 10</td><td>STD 0 STD 3 STD 4 Notes 0 X3 3 X1 3 X3.7 0 X3.87 3 X3.4</td><td>\$ 219,463.20 \$ 30,617.40 \$ 13,809.68 \$ 235,974.53 \$ 123,408.30 \$ 54,210.38</td><td>\$30,617.40 \$13,809.68 \$235,974.53 \$123,408.30 \$54,210.38</td>	\$ -4,472.40 \$ 94,472.40 \$ 1,135,716.30 Ext. Mat. O&P \$ \$ 1,298.00 \$ 1,298.00 \$ 1,3519.83 \$ 62,617.50 \$ 31,308.75 \$ 15,654.38	\$ - \$ 23,786.40 \$ 272,868.13 Ext. Labor O&P \$ 8,410.60 \$ 229.63 \$ 918.50 \$ 459.25 \$ 229.63	\$ - \$ 897.60 \$ 24,533.45 Ext. Equip. O&P \$ 497.20 \$ 60.23 \$ 240.90 \$ 240.90 \$ 120.45 \$ 0.23	\$ 119,156.40 10 10 119,156.40 10 10 119,156.40 10 10 10 10 10 10 10 10 10 10 10 10 10	STD 0 STD 3 STD 4 Notes 0 X3 3 X1 3 X3.7 0 X3.87 3 X3.4	\$ 219,463.20 \$ 30,617.40 \$ 13,809.68 \$ 235,974.53 \$ 123,408.30 \$ 54,210.38	\$30,617.40 \$13,809.68 \$235,974.53 \$123,408.30 \$54,210.38
otal 110 27.5 110 55 27.5 13.75	D53113500010 FLOOR DECKING Metal decking, steel, non-cellular, 053113505400 053113505400 composite, galvanized, 2" D, 18 ga LineNumber Description 051223400672 C-Channel-Column: C10X33 051223757920 W-Wide Flange-Column: W14X257 051223758100 FB-Flanged Box-Column: FB30X1116 051223758100 BU-Built Up-Column: W23X1168 051223758100 BU-Built Up-Column: W23X1032 051223758100 BU-Built Up-Column: W23X168	Crew E3 E5 E5 E5 E5 E5 E5 E5	Daily L 36 1035 1035 1035 1035 1035 1035 1035	0.009 C.Y. abor Unit 0.667 L.F. 0.077 L.F. 0.077 L.F. 0.077 L.F. 0.077 L.F.	\$ - \$ \$ 3.83 \$ \$ 3.83 \$ \$ 10.71 \$ \$ 445.05 \$ \$ 517.50 \$ \$ 517.50 \$ \$ 517.50 \$	abor Eq 643.19 \$ 648.3 \$ 648.3 \$ 648.3 \$ 648.3 \$ 648.3 \$ 648.3 \$ 648.3 \$ 648.3 \$ 648.3 \$ 648.3 \$	- 0.04 uipment 4.11 1.99 1.99 1.99 1.99 1.99	\$ 4.47 \$ 4.47 \$ 58.01 \$ 58.01 \$ 5451.87 \$ 524.32 \$ 524.32 \$ 524.32 \$ 524.32 \$ 524.32	\$ - \$ 85,945.20 \$ 1,033,327.75 Ext. Mat. \$ \$ 1,178.10 \$ 1,2,238.88 \$ 56,925.00 \$ 28,462.50 \$ 14,231.25 \$ 7,115.63	\$ - \$ 13,464.00 \$ 163,534.14 Ext. Labor \$ 4,750.90 \$ 132.83 \$ 531.30 \$ 265.65 \$ 132.83 \$ 66.41	\$ - \$ 897.60 \$22,374.93 Ext. Equip. \$ 452.10 \$ 54.73 \$ 218.90 \$ 109.45 \$ 54.73 \$ 27.36	\$ - \$ 100,306.80 \$ 1,219,236.81 Ext. Total \$ \$ 6,381.10 \$ 12,426.43 \$ 57,675.20 \$ 28,837.60 \$ 14,418.80 \$ 7,209.40	\$ - \$ 4.21 Mat. O&P \$ 11.80 \$ 491.63 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25	\$ - \$ \$ 1.06 \$ \$ 1.06 \$ \$ 76.46 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$	- \$ 0.04 \$ 4.52 \$ 2.19 \$ 2.19 \$ 2.19 \$ 2.19 \$ 2.19 \$	 5.31 5.31<td>\$ 94,472.40 \$ 94,472.40 \$ 1,135,716.36 Ext. Mat. O&P \$ \$ 1,298.00 \$ 1,298.00 \$ 1,3519.83 \$ 62,617.50 \$ 31,308.75 \$ 15,654.36 \$ 7,827.15</td><td>\$ - \$ 23,786.40 \$ 272,868.13 Ext. Labor O&P \$ 8,410.60 \$ 229.63 \$ 918.50 \$ 459.25 \$ 229.63 \$ 114.81</td><td>\$ - \$ 897.60 \$ 24,533.45 Ext. Equip. O&P \$ 497.20 \$ 60.23 \$ 240.90 \$ 120.45 \$ 60.23 \$ 120.45 \$ 60.23 \$ 30.11</td><td>\$ 119,156.40 119,156.4</td><td>STD STD STD STD Stress Notes X3 X1 X3.7 X3.87 X3.87 X3.4 X3.4</td><td>\$ 219,463.20 \$ 30,617.40 \$ 13,809.68 \$ 235,974.53 \$ 123,408.30 \$ 54,210.38 \$ 25,989.08</td><td>\$30,617.40 \$13,809.68 \$235,974.53 \$123,408.30 \$54,210.38 \$25,989.08</td>	\$ 94,472.40 \$ 94,472.40 \$ 1,135,716.36 Ext. Mat. O&P \$ \$ 1,298.00 \$ 1,298.00 \$ 1,3519.83 \$ 62,617.50 \$ 31,308.75 \$ 15,654.36 \$ 7,827.15	\$ - \$ 23,786.40 \$ 272,868.13 Ext. Labor O&P \$ 8,410.60 \$ 229.63 \$ 918.50 \$ 459.25 \$ 229.63 \$ 114.81	\$ - \$ 897.60 \$ 24,533.45 Ext. Equip. O&P \$ 497.20 \$ 60.23 \$ 240.90 \$ 120.45 \$ 60.23 \$ 120.45 \$ 60.23 \$ 30.11	\$ 119,156.40 119,156.4	STD STD STD STD Stress Notes X3 X1 X3.7 X3.87 X3.87 X3.4 X3.4	\$ 219,463.20 \$ 30,617.40 \$ 13,809.68 \$ 235,974.53 \$ 123,408.30 \$ 54,210.38 \$ 25,989.08	\$30,617.40 \$13,809.68 \$235,974.53 \$123,408.30 \$54,210.38 \$25,989.08
otal 110 27.5 110 55 27.5 13.75 13.75	D53113500010 FLOOR DECKING Metal decking, steel, non-cellular, 053113505400 053113505400 composite, galvanized, 2" D, 18 ga D51223400672 C-Channel-Column: C10X33 051223757920 W-Wide Flange-Column: W14X257 051223758100 FB-Flanged Box-Column: FB30X1116 051223758100 BU-Built Up-Column: W23X1168 051223758100 BU-Built Up-Column: W23X1032 051223758100 BU-Built Up-Column: W23X1032 051223758100 BU-Built Up-Column: W23X129	Crew E3 E5 E5 E5 E5 E5 E5 E5 E5 E5	Daily L 36 1035 1035 1035 1035 1035 1035 1035 1035 1035	0.009 C.Y. abor Unit 0.667 L.F. 0.077 L.F. 0.077 L.F. 0.077 L.F. 0.077 L.F. 0.077 L.F.	\$ - \$ \$ 3.83 \$ Material La \$ 10.71 \$ \$ 445.05 \$ \$517.50 \$ \$517.50 \$ \$517.50 \$ \$517.50 \$ \$517.50 \$ \$517.50 \$	abor Eq 343.19 \$ 343.19 \$ 348.3 \$ 348.3 \$ 348.3 \$ 348.3 \$ 348.3 \$ 348.3 \$ 348.3 \$ 348.3 \$ 348.3 \$ 348.3 \$ 348.3 \$ 348.3 \$ 348.3 \$ 348.3 \$	- 0.04 4.11 1.99 1.99 1.99 1.99 1.99 1.99	\$ - \$ 4.47 \$ 58.01 \$ 58.01 \$ 524.32 \$ 5224.32 \$ 5224.32 \$ 5224.32 \$ 5224.32 \$ 5224.32 \$ 5224.32	\$ - \$ 85,945.20 \$ 1,033,327.75 Ext. Mat. \$ \$ 1,178.10 \$ 12,238.88 \$ 56,925.00 \$ 14,231.25 \$ 7,115.63 \$ 7,115.63	\$ - \$ 13,464.00 \$ \$ 163,534.14 • Ext. Labor \$ \$ 4,750.90 \$ \$ 132.83 \$ \$ 531.30 \$ \$ 265.65 \$ \$ 132.83 \$ \$ 66.41 \$	\$ - \$ 897.60 \$22,374.93 Ext. Equip. \$ 452.10 \$ 54.73 \$ 218.90 \$ 109.45 \$ 54.73 \$ 27.36	\$ - \$ 100,306.80 \$ 1,219,236.81 Ext. Total \$ \$ 6,381.10 \$ 12,426.43 \$ 57,675.20 \$ 28,837.60 \$ 14,418.80 \$ 7,209.40 \$ 7,209.40	\$ - \$ 4.21 Mat. O&P \$ \$ 11.80 \$ 491.63 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25	\$ - \$ \$ 1.06 \$ \$ 1.06 \$ \$ 76.46 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$	- 8 0.04 9 0.04	 5.31 5.31<td>\$ 94,472.40 \$ 94,472.40 \$ 1,135,716.36 Ext. Mat. O&P 1,298.00 \$ 1,298.00 \$ 1,298.00 \$ 1,298.00 \$ 13,519.83 \$ 62,617.50 \$ 13,080.75 \$ 15,654.36 \$ 7,827.15 \$ 7,827.15</td><td>\$ - \$ 23,786.40 \$ 272,868.13 Ext. Labor O&P \$ 8,410.60 \$ 229.63 \$ 918.50 \$ 459.25 \$ 229.63 \$ 114.81 \$ 114.81</td><td>\$ - \$ 897.60 \$ 24,533.45 Ext. Equip. O&P \$ 497.20 \$ 60.23 \$ 240.90 \$ 120.45 \$ 60.23 \$ 240.90 \$ 120.45 \$ 60.23 \$ 30.11 \$ 30.11</td><td>\$ - \$ 119,156.40 \$ 119,156.40 \$ 2,222,419.34 Ext. Total O&P \$ 30,617.40 \$ 30,617.40 \$ 325,974.53 \$ \$ <</td><td>STD 3 4 0 3 4 0 3 3 3 3 3 3 3 3 3 3 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 4 5 4 5 5 5 5</td><td>\$ 219,463.20 \$ 30,617.40 \$ 13,809.68 \$ 235,974.53 \$ 123,408.30 \$ 54,210.38 \$ 25,989.08 \$ 19,133.06</td><td>\$30,617.40 \$13,809.68 \$235,974.53 \$123,408.30 \$54,210.38 \$25,989.08 \$19,133.06</td>	\$ 94,472.40 \$ 94,472.40 \$ 1,135,716.36 Ext. Mat. O&P 1,298.00 \$ 1,298.00 \$ 1,298.00 \$ 1,298.00 \$ 13,519.83 \$ 62,617.50 \$ 13,080.75 \$ 15,654.36 \$ 7,827.15 \$ 7,827.15	\$ - \$ 23,786.40 \$ 272,868.13 Ext. Labor O&P \$ 8,410.60 \$ 229.63 \$ 918.50 \$ 459.25 \$ 229.63 \$ 114.81 \$ 114.81	\$ - \$ 897.60 \$ 24,533.45 Ext. Equip. O&P \$ 497.20 \$ 60.23 \$ 240.90 \$ 120.45 \$ 60.23 \$ 240.90 \$ 120.45 \$ 60.23 \$ 30.11 \$ 30.11	\$ - \$ 119,156.40 \$ 119,156.40 \$ 2,222,419.34 Ext. Total O&P \$ 30,617.40 \$ 30,617.40 \$ 325,974.53 \$ \$ <	STD 3 4 0 3 4 0 3 3 3 3 3 3 3 3 3 3 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 4 5 4 5 5 5 5	\$ 219,463.20 \$ 30,617.40 \$ 13,809.68 \$ 235,974.53 \$ 123,408.30 \$ 54,210.38 \$ 25,989.08 \$ 19,133.06	\$30,617.40 \$13,809.68 \$235,974.53 \$123,408.30 \$54,210.38 \$25,989.08 \$19,133.06
Cotal 20antity 110 27.5 110 55 27.5 13.75 13.75 55	053113500010 FLOOR DECKING Metal decking, steel, non-cellular, 053113505400 composite, galvanized, 2" D, 18 ga LineNumber Description 051223400672 C-Channel-Column: C10X33 051223757920 W-Wide Flange-Column: W14X257 051223758100 FB-Flanged Box-Column: W14X257 051223758100 BU-Built Up-Column: W23X1168 051223758100 BU-Built Up-Column: W22X1032 051223758100 BU-Built Up-Column: W24X985 051223758100 BU-Built Up-Column: W23X729 051223758100 BU-Built Up-Column: W23X729 051223758100 BU-Built Up-Column: W23X729	Crew E3 E5 E5	Daily L 36 1035 1035 1035 1035 1035 1035 1035 1035 1035 1035 1035	abor Unit 0.667 L.F. 0.077 L.F.	\$ - \$ \$ 3.83 \$ Material La \$ 10.71 \$ \$ \$445.05 \$ \$ \$517.50 \$ \$ \$517.50 \$ \$ \$517.50 \$ \$ \$517.50 \$ \$ \$517.50 \$ \$ \$517.50 \$ \$ \$517.50 \$	abor Eq \$45.019 \$ \$43.19 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$	- 0.04 4.11 1.99 1.99 1.99 1.99 1.99 1.99 1.9	\$ - \$ 4.47 \$ 58.01 \$ 58.01 \$ 5524.32 \$ \$524.32 \$ \$524.32 \$ \$524.32 \$ \$524.32 \$ \$524.32 \$ \$524.32 \$ \$524.32	\$ 85,945.20 \$1,033,327.75 Ext. Mat. \$1,178.10 \$12,238.88 \$56,925.00 \$14,231.25 \$7,115.63 \$7,115.63 \$28,462.50	\$ - \$ 13,464.00 \$ \$ 163,534.14 \$ Ext. Labor \$ \$ 4,750.90 \$ \$ 132.83 \$ \$ 531.30 \$ \$ 531.30 \$ \$ 531.30 \$ \$ 66.41 \$ \$ 66.41 \$ \$ 265.65 \$	\$ - \$ 897.60 \$22,374.93 Ext. Equip. \$ 452.10 \$ 54.73 \$ 218.90 \$ 109.45 \$ 54.73 \$ 27.36 \$ 20.45 \$ 109.45 \$	\$ 100,306.80 \$ 1,219,236.81 Ext. Total \$ \$ 6,381.10 \$ 12,426.43 \$ 57,675.20 \$ 28,837.60 \$ 14,418.80 \$ 7,209.40 \$ 7,209.40 \$ 28,837.60	\$ - \$ 4.21 Mat. O&P \$ 11.80 \$ 491.63 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25	\$ - \$ \$ 1.06 \$ \$ 1.06 \$ \$ 1.06 \$ \$ 1.06 \$ \$ 76.46 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$	- \$ 0.04	 5.31 5.31 5.31 92.78 92.78 502.17 579.79 579.79 579.79 579.79 579.79 579.79 579.79 579.79 	\$ 94,472.40 \$ 94,472.40 \$ 1,135,716.36 Ext. Mat. O&P 1,298.00 \$ 1,298.00 \$ 1,3519.83 \$ 62,617.50 \$ 31,308.75 \$ 7,827.16 \$ 7,827.15 \$ 31,308.75	\$ - \$ 23,786.40 \$ 272,868.13 Ext. Labor O&P \$ \$ 272,868.13 Ext. Labor O&P \$ \$ 229.63 \$ 918.50 \$ 459.25 \$ 229.63 \$ 114.81 \$ 459.25	\$ - \$ 897.60 \$ 24,533.45 Ext. Equip. O&P \$ 497.20 \$ 60.23 \$ 240.90 \$ 120.45 \$ 60.23 \$ 30.11 \$ 30.11 \$ 120.45 } \$ 30.11 \$ 30.11 \$ 30.11 \$ 30.11 } \$ 30.11 \$ 30.	\$ 119,156.40 1 \$ 119,156.40 5 \$1,003,182.53 \$ 2,222,419.34 Ext. Total O&P \$ 30,617.40 \$ 13,809.68 \$ 235,974.53 \$ 123,408.30 \$ 54,210.38 \$ 54,210.38 \$ 25,989.08 \$ 19,133.00 \$ \$ 19,133.00 \$ \$ 216,841.46 }	STD 3 4 Notes 0 3 4 5 4 5 3 3 3 3 3 3 3 3 3 4 5 4	\$ 219,463.20 \$ 30,617.40 \$ 13,809.68 \$ 235,974.53 \$ 123,408.30 \$ 54,210.38 \$ 25,980.08 \$ 25,980.08 \$ 25,980.08 \$ 216,841.46	\$30,617.40 \$13,809.68 \$235,974.53 \$123,408.30 \$54,210.38 \$25,989.08 \$19,133.06 \$216,841.46
Total 110 27.5 110 55 27.5 13.75 13.75 55	D53113500010 FLOOR DECKING Metal decking, steel, non-cellular, 053113505400 053113505400 composite, galvanized, 2" D, 18 ga D51223400672 C-Channel-Column: C10X33 051223757920 W-Wide Flange-Column: W14X257 051223758100 FB-Flanged Box-Column: FB30X1116 051223758100 BU-Built Up-Column: W23X1168 051223758100 BU-Built Up-Column: W23X1032 051223758100 BU-Built Up-Column: W23X1032 051223758100 BU-Built Up-Column: W23X129	Crew E3 E5 E5 E5 E5 E5 E5 E5 E5 E5	Daily L 36 1035 1035 1035 1035 1035 1035 1035 1035 1035 1035 1035	0.009 C.Y. abor Unit 0.667 L.F. 0.077 L.F. 0.077 L.F. 0.077 L.F. 0.077 L.F. 0.077 L.F.	\$ - \$ \$ 3.83 \$ Material La \$ 10.71 \$ \$ 445.05 \$ \$517.50 \$ \$517.50 \$ \$517.50 \$ \$517.50 \$ \$517.50 \$ \$517.50 \$	abor Eq \$45.019 \$ \$43.19 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$ \$48.3 \$	- 0.04 4.11 1.99 1.99 1.99 1.99 1.99 1.99	\$ - \$ 4.47 \$ 58.01 \$ 58.01 \$ 524.32 \$ 5224.32 \$ 5224.32 \$ 5224.32 \$ 5224.32 \$ 5224.32 \$ 5224.32	\$ - \$ 85,945.20 \$ 1,033,327.75 Ext. Mat. \$ \$ 1,178.10 \$ 12,238.88 \$ 56,925.00 \$ 14,231.25 \$ 7,115.63 \$ 7,115.63	\$ - \$ 13,464.00 \$ \$ 163,534.14 \$ Ext. Labor \$ \$ 4,750.90 \$ \$ 132.83 \$ \$ 531.30 \$ \$ 531.30 \$ \$ 531.30 \$ \$ 66.41 \$ \$ 66.41 \$ \$ 265.65 \$	\$ - \$ 897.60 \$22,374.93 Ext. Equip. \$ 452.10 \$ 54.73 \$ 218.90 \$ 109.45 \$ 54.73 \$ 27.36 \$ 20.45 \$ 109.45 \$	\$ - \$ 100,306.80 \$ 1,219,236.81 Ext. Total \$ \$ 6,381.10 \$ 12,426.43 \$ 57,675.20 \$ 28,837.60 \$ 14,418.80 \$ 7,209.40 \$ 7,209.40	\$ - \$ 4.21 Mat. O&P \$ \$ 11.80 \$ 491.63 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25	\$ - \$ \$ 1.06 \$ \$ 1.06 \$ \$ 76.46 \$ \$ 76.46 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$	- \$ 0.04	 5.31 5.31<td>\$ 94,472.40 \$ 94,472.40 \$ 1,135,716.36 Ext. Mat. O&P 1,298.00 \$ 1,298.00 \$ 1,3519.83 \$ 62,617.50 \$ 31,308.75 \$ 7,827.16 \$ 7,827.15 \$ 31,308.75</td><td>\$ - \$ 23,786.40 \$ 272,868.13 Ext. Labor O&P \$ \$ 272,868.13 Ext. Labor O&P \$ \$ 229.63 \$ 918.50 \$ 459.25 \$ 229.63 \$ 114.81 \$ 114.81 \$ 459.25</td><td>\$ - \$ 897.60 \$ 24,533.45 Ext. Equip. O&P \$ 497.20 \$ 60.23 \$ 240.90 \$ 120.45 \$ 60.23 \$ 30.11 \$ 30.11 \$ 120.45 } \$ 30.11 \$ 30.11 \$ 30.11 \$ 30.11 } \$ 30.11 \$ 30.</td><td>\$ 119,156.40 1 \$ 119,156.40 5 \$1,003,182.53 \$ 2,222,419.34 Ext. Total O&P \$ 30,617.40 \$ 13,809.68 \$ 235,974.53 \$ 123,408.30 \$ 54,210.38 \$ 54,210.38 \$ 25,989.08 \$ 19,133.00 \$ \$ 19,133.00 \$ \$ 216,841.46 }</td><td>STD 3 4 Notes 0 3 4 5 4 5 3 3 3 3 3 3 3 3 3 4 5 4</td><td>\$ 219,463.20 \$ 30,617.40 \$ 13,809.68 \$ 235,974.53 \$ 123,408.30 \$ 54,210.38 \$ 25,989.08 \$ 19,133.06</td><td>\$30,617.40 \$13,809.68 \$235,974.53 \$123,408.30 \$54,210.38 \$25,989.08 \$19,133.06 \$216,841.46</td>	\$ 94,472.40 \$ 94,472.40 \$ 1,135,716.36 Ext. Mat. O&P 1,298.00 \$ 1,298.00 \$ 1,3519.83 \$ 62,617.50 \$ 31,308.75 \$ 7,827.16 \$ 7,827.15 \$ 31,308.75	\$ - \$ 23,786.40 \$ 272,868.13 Ext. Labor O&P \$ \$ 272,868.13 Ext. Labor O&P \$ \$ 229.63 \$ 918.50 \$ 459.25 \$ 229.63 \$ 114.81 \$ 114.81 \$ 459.25	\$ - \$ 897.60 \$ 24,533.45 Ext. Equip. O&P \$ 497.20 \$ 60.23 \$ 240.90 \$ 120.45 \$ 60.23 \$ 30.11 \$ 30.11 \$ 120.45 } \$ 30.11 \$ 30.11 \$ 30.11 \$ 30.11 } \$ 30.11 \$ 30.	\$ 119,156.40 1 \$ 119,156.40 5 \$1,003,182.53 \$ 2,222,419.34 Ext. Total O&P \$ 30,617.40 \$ 13,809.68 \$ 235,974.53 \$ 123,408.30 \$ 54,210.38 \$ 54,210.38 \$ 25,989.08 \$ 19,133.00 \$ \$ 19,133.00 \$ \$ 216,841.46 }	STD 3 4 Notes 0 3 4 5 4 5 3 3 3 3 3 3 3 3 3 4 5 4	\$ 219,463.20 \$ 30,617.40 \$ 13,809.68 \$ 235,974.53 \$ 123,408.30 \$ 54,210.38 \$ 25,989.08 \$ 19,133.06	\$30,617.40 \$13,809.68 \$235,974.53 \$123,408.30 \$54,210.38 \$25,989.08 \$19,133.06 \$216,841.46
Cotal 20antity 110 27.5 110 55 27.5 13.75 13.75 55 27.5	053113500010 FLOOR DECKING Metal decking, steel, non-cellular, 053113505400 composite, galvanized, 2" D, 18 ga LineNumber Description 051223400672 C-Channel-Column: C10X33 051223757920 W-Wide Flange-Column: W14X257 051223758100 FB-Flanged Box-Column: W14X257 051223758100 BU-Built Up-Column: W23X1168 051223758100 BU-Built Up-Column: W22X1032 051223758100 BU-Built Up-Column: W24X985 051223758100 BU-Built Up-Column: W23X729 051223758100 BU-Built Up-Column: W23X729 051223758100 BU-Built Up-Column: W23X729 051223758100 BU-Built Up-Column: W23X729	Crew E3 E5 E5	Daily L 36 1035 1035 1035 1035 1035 1035 1035 1035 1035 1035 1035 1035 1035	abor Unit 0.667 L.F. 0.077 L.F.	\$ - \$ \$ 3.83 \$ Material La \$ 10.71 \$ \$ \$445.05 \$ \$ \$517.50 \$ \$ \$517.50 \$ \$ \$517.50 \$ \$ \$517.50 \$ \$ \$517.50 \$ \$ \$517.50 \$ \$ \$517.50 \$	abor Eq 43.19 \$ 5 4.83 \$	- 0.04 4.11 1.99 1.99 1.99 1.99 1.99 1.99 1.9	\$ 4.47 \$ 4.47 Total \$ 58.01 \$451.87 \$524.32 \$524.32 \$524.32 \$524.32 \$524.32 \$524.32 \$524.32 \$524.32	\$	\$ - \$ 13,464.00 \$ \$ 163,534.14 • Ext. Labor \$ \$ 4,750.90 \$ \$ 132.83 \$ \$ 531.30 \$ \$ 132.83 \$ \$ 66.41 \$ \$ 265.65 \$ \$ 265.65 \$ \$ 265.65 \$	\$ - \$ 897.60 \$22,374.93 Ext. Equip. \$ 452.10 \$ 54.73 \$ 218.90 \$ 109.45 \$ 54.73 \$ 27.36 \$ 27.36 \$ 109.45 \$ 109.45	\$ 100,306.80 \$ 1,219,236.81 Ext. Total \$ \$ 6,381.10 \$ 12,426.43 \$ 57,675.20 \$ 28,837.60 \$ 14,418.80 \$ 7,209.40 \$ 7,209.40 \$ 28,837.60	\$ - \$ 4.21 Mat. O&P \$ 11.80 \$ 491.63 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25 \$ 569.25	\$ - \$ \$ 1.06 \$ \$ 1.06 \$ \$ 76.46 \$ \$ 76.46 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$ \$ 8.35 \$	- \$ 0.04	\$5.31 \$5.31 \$5.31 \$2.78 \$5.217 \$579.79 \$579.79 \$579.79 \$579.79 \$579.79 \$579.79 \$579.79 \$579.79 \$579.79 \$579.79 \$579.79	\$ 94,472.40 \$ 94,472.40 \$ 1,135,716.36 Ext. Mat. O&P 1,298.00 \$ 1,298.00 \$ 1,3519.83 \$ 62,617.50 \$ 31,308.75 \$ 7,827.16 \$ 7,827.15 \$ 31,308.75	\$ - \$ 23,786.40 \$ 272,868.13 Ext. Labor O&P \$ \$ 272,868.13 Ext. Labor O&P \$ \$ 229.63 \$ 918.50 \$ 459.25 \$ 229.63 \$ 114.81 \$ 459.25 \$ 229.63	\$ - \$ 897.60 \$ 24,533.45 Ext. Equip. O&P \$ 497.20 \$ 60.23 \$ 240.90 \$ 120.45 \$ 60.23 \$ 30.11 \$ 30.11 \$ 120.45 \$ 60.23 \$ 30.11 \$ 30.11 \$ 120.45 \$ 60.23 \$ 30.11	\$ 119,156.40 1 \$ 119,156.40 5 \$1,003,182.53 \$ 2,222,419.34 Ext. Total O&P \$ 30,617.40 \$ 13,809.68 \$ 235,974.53 \$ 123,408.30 \$ 54,210.38 \$ 54,210.38 \$ 25,989.08 \$ 19,133.00 \$ \$ 19,133.00 \$ \$ 216,841.46 }	STD STD STD STD Notes X3 X1 X3 X1 X3 X3.7 X3.87 X3.48 X3.26 X2.4 X6.8 X4.64	\$ 219,463.20 \$ 30,617.40 \$ 13,809.68 \$ 235,974.53 \$ 123,408.30 \$ 54,210.38 \$ 25,989.08 \$ 25,989.08 \$ 19,133.06 \$ 216,841.46 \$ 73,981.23	\$30,617.40 \$13,809.68 \$235,974.53 \$123,408.30 \$54,210.38 \$25,989.08 \$19,133.06 \$216,841.46 \$73,981.23

Quantin		Description	Ciew	Daily	Labor	Unit	waterial	Labor	Equipmen			ι. IVIαι.	EXL. Labor	EXL	. Equip.	ΞΧι.	Total	Mat. Uar		Eq	uip. Oar	TOLATOAF	EXL.		EXL. Labor		ixi. Equip
110	051223400672	C-Channel-Column: C10X33	E3	36	0.667	L.F.	\$ 10.71	\$43.19	\$ 4.1	1 \$ 58.0	1 \$	1,178.10	\$ 4,750.90) \$	452.10	\$	6,381.10	\$ 11.80	\$ 76.46	S \$	4.52	\$ 92.78	\$	1,298.00	\$ 8,4	10.60	\$
27.5	051223757920	W-Wide Flange-Column: W14X257	E5	1035	0.077	′ L.F.	\$445.05	\$ 4.83	\$ 1.9	9 \$451.8	57	12,238.88	\$ 132.83	3 \$	54.73	\$	12,426.43	\$ 491.63	\$ 8.35	5 \$	2.19	\$ 502.17	\$	13,519.83	\$ 2	29.63	\$
110	051223758100	FB-Flanged Box-Column: FB30X1116	E5	1035	0.077	L.F.	\$517.50	\$ 4.83	\$ 1.9	9 \$524.3	2 \$	56,925.00	\$ 531.30) \$	218.90	\$	57,675.20	\$ 569.25	\$ 8.35	5 \$	2.19	\$ 579.79	\$	62,617.50	\$ 9	18.50	\$
55	051223758100	BU-Built Up-Column: W23X1168	E5	1035	0.077	′ L.F.	\$517.50	\$ 4.83	\$ 1.9	9 \$524.3	2 \$	28,462.50	\$ 265.65	5 \$	109.45	\$	28,837.60	\$ 569.25	\$ 8.35	5\$	2.19	\$ 579.79	\$	31,308.75	\$ 4	59.25	\$
27.5	051223758100	BU-Built Up-Column: W22X1032	E5	1035	0.077	L.F.	\$517.50	\$ 4.83	\$ 1.9	9 \$524.3	2 \$	14,231.25	\$ 132.83	3 \$	54.73	\$	14,418.80	\$ 569.25	\$ 8.35	5 \$	2.19	\$ 579.79	\$	15,654.38	\$ 2	29.63	\$
13.7	051223758100	BU-Built Up-Column: W24X985	E5	1035	0.077	L.F.	\$517.50	\$ 4.83	\$ 1.9	9 \$524.3	2 \$	7,115.63	\$ 66.41	1\$	27.36	\$	7,209.40	\$ 569.25	\$ 8.35	5\$	2.19	\$ 579.79	\$	7,827.19	\$ 1	14.81	\$
13.7	051223758100	BU-Built Up-Column: W23X729	E5	1035	0.077	L.F.	\$517.50	\$ 4.83	\$ 1.9	9 \$524.3	2 \$	7,115.63	\$ 66.41	1\$	27.36	\$	7,209.40	\$ 569.25	\$ 8.35	5 \$	2.19	\$ 579.79	\$	7,827.19	\$ 1	14.81	\$
55	051223758100	BU-Built Up-Column: W29X2063	E5	1035	0.077	L.F.	\$517.50	\$ 4.83	\$ 1.9	9 \$524.3	2 \$	28,462.50	\$ 265.65	5 \$	109.45	\$	28,837.60	\$ 569.25	\$ 8.35	5 \$	2.19	\$ 579.79	\$	31,308.75	\$ 4	59.25	\$
27.5	051223758100	BU-Built Up-Column: W25X1401	E5	1035	0.077	L.F.	\$517.50	\$ 4.83	\$ 1.9	9 \$524.3	2 \$	14,231.25	\$ 132.83	3 \$	54.73	\$	14,418.80	\$ 569.25	\$ 8.35	5\$	2.19	\$ 579.79	\$	15,654.38	\$ 2	29.63	\$
55	051223758100	W-Wide Flange-Column: W14X665	E5	1035	0.077	′ L.F.	\$517.50	\$ 4.83	\$ 1.9	9 \$524.3	2 \$	28,462.50	\$ 265.65	5 \$	109.45	\$	28,837.60	\$ 569.25	\$ 8.35	5\$	2.19	\$ 579.79	\$	31,308.75	\$ 4	59.25	\$
55	051223758100	W-Wide Flange-Column: W14X730	E5	1035	0.077	L.F.	\$517.50	\$ 4.83	\$ 1.9	9 \$524.3	2 \$	28,462.50	\$ 265.65	5 \$	109.45	\$	28,837.60	\$ 569.25	\$ 8.35	5 \$	2.19	\$ 579.79	\$	31,308.75	\$ 4	59.25	\$

Total

\$ 226,885.74 \$ 6,876.11 \$ 1,327.71 \$ 235,089.53

\$ 249,633.47 \$ 12,084.61 \$

1,460.81 \$ 940,651.99

\$ 3,163,071.33 TOTAL

\$ 177,131,994.66 BLDG TOTAL

\$940,651.99 \$1,003,182.53 \$1,219,236.81 \$3,163,071.33

CHECK

APPENDIX C

GENERAL CONDITIONS ESTIMATE

Detailed estimate sheet for General Conditions Estimate

IDP/BIM Thesis - CM Option Tech 2 Assignment General Conditions Estimate

General Co.	nditions Estimate																
Division	Description	Crew	Daily Output	Labor Hours	Unit	Material	Labor	Equipment	Total		Quantity	Total Material	Tot	al Labor	Total Equipment	Tota	l Cost
1 31 13.20	Field Personnel																
0020	Clerk, 6				Week		\$ 380.0	00	\$ 8	380.00	1,092	\$ -	\$	414,960.00	\$ -	\$	414,960.00
0140	Field Engineer, 45				Week		\$ 1,350.0	00	\$ 1,3	350.00	8,190	\$ -	\$	11,056,500.00	\$ -	\$	11,056,500.00
0220	Project Manager, 20				Week		\$ 2,175.0	00	\$ 2,1	75.00	1,781		\$	3,873,675.00	\$ -	\$	3,873,675.00
	Superintendant, 35				Week		\$ 2,025.0		\$ 2,0		3,714		\$	7,520,850.00		\$	7,520,850.00
							, ,		,		,	*	1	, ,		\$	22,865,985.00
01 51 13.80	Temporary Utilities														<u> </u>	Ť	
	Heat, including fuel and operation, per week, 12 hrs	1 Skwk	100	0.08	3 CSF Flr	\$ 27.00	\$ 3.2	97	\$	30.27	13,846	\$ 373,846.15	\$	45,276.92	\$ -	\$	419,123.08
	Lighting, including service lamps, wiring, and outlets, maximum	1 Elec	17		CSF Flr					27.70	15,000			330,000.00		\$	415,500.00
	Power for job duration including elevator, etc., min	1 Liee	17	0.171	CSF Flr	φ 0.70	φ 22.0	00		47.00	15,000		\$	-	\$ 	\$	705,000.00
	Power for job duration including elevator, etc., max				CSF Flr					110.00	15,000		\$	-	ф -	\$	1,650,000.00
0030	1 ower for job duration including elevator, etc., max				CSF FI				φι	110.00	13,000	φ -	φ	-	φ -	• •	3,189,623.08
10 50 10 00													_			•	3,169,023.06
	Office and Storage Space				P 1				60.00		ф	φ.				00.000.00
	Trailer, furnished, no hookups, 20' x 8', rent per month, 8 Trailers				Each	\$ 163.00	-		<u>\$</u> 1	163.00	576			-	<u>ð</u> -	\$	93,888.00
	AC, rent per month, add				Each	\$ 41.00			\$	41.00	576			-		\$	23,616.00
0800	For delivery, add per mile				Mile	\$ 4.50			\$	4.50	600	\$ 2,700.00	\$	-	\$ -	\$	2,700.00
																\$	120,204.00
	Field Office Expense																
	Office Equipment rental average				Month	\$ 155.00			\$ 1	155.00	384			-	\$ -	\$	59,520.00
0120	Office supplies, average				Month	\$ 85.00			\$	85.00	384	\$ 32,640.00	\$	-	\$ -	\$	32,640.00
0140	Telephone bill; avg. bill per month				Month	\$ 80.00			\$	80.00	384	\$ 30,720.00	\$	-	\$ -	\$	30,720.00
0160	Lights & HVAC				Month	\$ 150.00			\$ 1	150.00	384	\$ 57,600.00	\$	-	\$ -	\$	57,600.00
																\$	180,480.00
01 54 19.50	Truck Crane															1	
	Truck Mounted, hydrolic, 100 ton capacity				Month			\$ 14,100.00	\$ 14.1	00.00	16	s -	\$	_	\$ 225,600.00	\$	225,600.00
	Crew				Day		\$ 104.9			104.90	320		\$	33,568.00		\$	33,568.00
					Duy		ψ 101.0	50	ψ.	101.00	020	Ψ	Ψ	00,000.00	Ψ	\$	225,600.00
01 54 19.60	Monthly Tower Crane Crew														<u> </u>	—	220,000.00
	Crane, climbing, 106' jib, 6000 lb. capacity, 410 FPM				Month			\$ 13,200.00	\$ 120	200.00	60	\$ -	\$		\$ 792,000.00	\$	792,000.00
0100	Tower Crane Crew				Day		\$ 37.4			37.40	2,400		э \$	- 89,760.00		э \$	89,760.00
4550					•								,			Ŷ	
	Hoist and tower, mast type, 6000 lb., 100' high, month				Each		\$ 1,161.6			136.60	86		\$	100,362.24			357,402.24
4570	for each added 10' section, add, month				Each		\$ 19.2	20 \$ 177.00	\$ 1	196.20	5,616	\$ -	\$	107,827.20	\$ 994,032.00	\$	1,101,859.20
																\$	2,341,021.44
01 56 26.50	Temporary Fencing														<u> </u>		
0020	Chain Link, 11 ga, 6' high	2 Clab	400		4 L.F.	\$ 7.25			\$	8.51	980	ţ,		1,234.80		\$	8,339.80
	Plywood, painted, 4" x 4" frame, 8' high	A-4	110	0.218	3 L.F.	\$ 9.85	\$ 8.8	35	\$	18.20	980	\$ 9,653.00	\$	8,183.00	\$ -	\$	17,836.00
																\$	26,175.80
01 56 29.50	Temporary Protective Walkways																
2200	Sidewalk, 2" x 12" planks, 2 uses	1 Carp	350	0.023	3 S.F .	\$ 0.69	\$ 0.9	91	\$	1.60	16,000	\$ 11,040.00	\$	14,560.00	\$ -	\$	25,600.00
2500	Exterior Plywood, 2 uses, 3/4" thick	1 Carp	600	0.018	3 S.F.	\$ 0.42	\$ 0.5	53	\$	0.95	16,000	\$ 6,720.00	\$	8,480.00	\$ -	\$	15,200.00
				1			1									\$	40,800.00
01 58 13.50	Signs						1									1	
	High intensity reflectorized, no posts, buy				S.F.	\$ 21.00	1		\$	21.00	1,000	\$ 21,000.00	\$	-	\$ -	\$	21,000.00
						,							+			Ť	,
01 74 13.20	Cleaning Up			1			1		1				+		<u> </u>	+	
	Maximum				Job		1		-	0.8%	1,000,000,000	\$ -	\$		\$	\$	8,000,000.00
	Cleanup of floor area, continuous, per day, during construction	A-5	24		5 M.S.F.	\$ 1.70	¢ 094	50 \$ 2.03	¢	27.23	1,000,000,000			39,254.40	\$ 3,390.91	¥	45,484.99
	Final by GC at end of job	A-5 A-5			5 M.S.F.	\$ 1.70 \$ 2.71		50 \$ 2.03 50 \$ 4.23		56.44	1,670						45,484.99 94,277.38
0100	That by GC at end of job	A-3	11.5	1.303	J MI.S.F.	ð 2./1	ф 49.3	30 a 4.2 3	φ	30.44	1,070	\$ 4,526.78	ð	82,684.80	\$ 7,065.79	- 0 - 0	
															 	<u> </u>	8,139,762.37
																<u> </u>	
	Subtotal				1		ļ					\$ 822,914.62		23,727,176.36			74,313,871.37
	Adjusted for Location (New York City, 130.7)											\$ 1,075,549.41	\$	31,011,419.51	\$ 2,978,821.22	\$	97,128,229.88