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Construction Management
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Teachers Education and Technology Center at Salisbury University
Salisbury, MD
10/30/06

TECHNICAL ASSIGNMENT 2

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Executive Summary

Technical Assignment 2 provides a Detailed Project Schedule, Detailed Site Layout Plans for Steel Erection, an Assemblies Estimate of the Building Envelope, a Detailed Structural System Estimate, and a General Conditions Estimate. This report give an introduction to cost and schedule issues for the Teachers Education and Technology Center (TETC).

An on time project delivery is critical to the TETC project because The University of Maryland is aiming to open the building for the start of the fall semester 2008. The project has been split into 3 phases for Building A, B, & C to allow finishes and MEP rough-in to begin prior to the total structure top out. The University of Maryland hopes to start installing FF& E in June 2008.

Site Layout Plans were developed to illustrate steel erection sequencing, crane locations, and steel delivery.

In the Assemblies Estimate, the cost of the exterior brick façade, pre-cast concrete, windows, doors, and roofing system were calculated. The square footage of brick, pre-cast concrete, number of windows, and square footage of roofing were calculated to complete the estimate. Two roofing systems were estimated to see the cost differences between the alternate systems The University of Maryland is considering.

A typical bay, carried through all floors of the building, was used to estimate the structural concrete and steel for foundations and superstructure. The square foot model extrapolated from this data was found to be very close to the actual structural system cost within 1%.

The General Conditions Estimate was calculated using the Staffing Plan illustrated in Technical Assignment 1 and the construction requirements of the General Contractor. Then General Conditions Estimate was found to be 11.4% of the total project cost and very close to the average of 10%.

Detailed Project Schedule

Sequencing

The Salisbury Teachers Education and Technology Center's (TETC) schedule includes 181 activities and is split into three phases for Buildings A, B, and C. Steel erection and elevated slab pours are split into 31 sequences starting with the 2nd floor framing for Building A. A detailed schematic of these sequences can be found in Appendix A of this report. The site plans on pages 8-10 illustrate these sequences as well. The order of sequences can be found in the detailed project schedule.

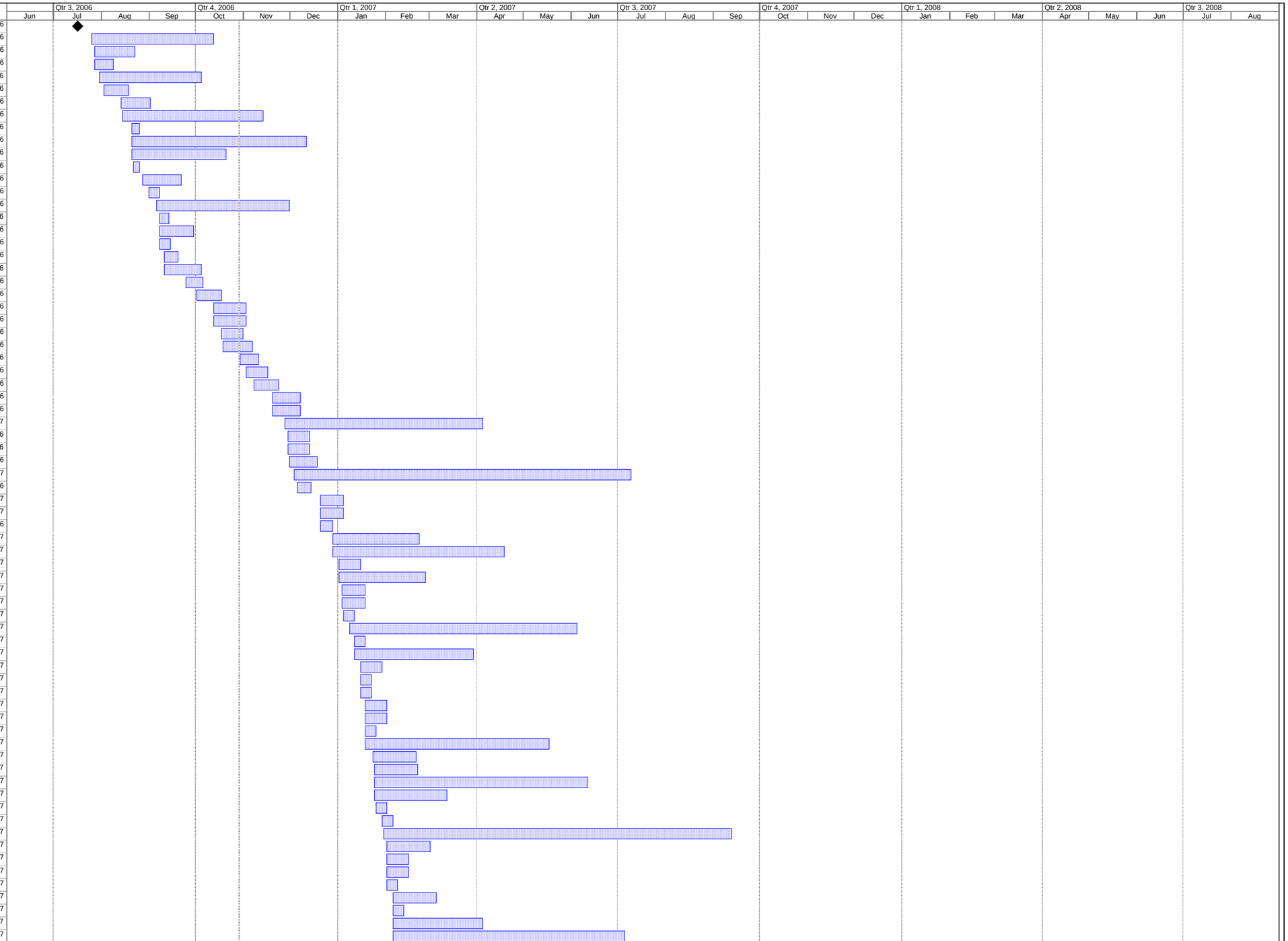
Current Construction

Significant demolition of asphalt parking lots, light poles, and bases on the existing site has already been completed to date. The construction team is currently working to complete the grade beams, pile caps, and slab-on-grade to start steel erection sequence 1 on November 20th. Brick and Pre-Cast Concrete will begin at Building A on January 25th, 2007 close to the completion of Building A structural steel. At this time the crane size for steel erection is unknown.

Substantial Complete & Move-in

The project is scheduled for substantial completion on July 24th, 2008 and the construction team is working towards a date of June 2nd, 2008 to start installation of Furniture, Fixtures, and Equipment. The Holder Construction Company team is working to deliver the project with an earlier substantial completion date and early move-in date for The University of Maryland. Other milestones of interest are the top out date of April 17th, 2007 and the Building A dry-in date of June 11th, 2007 for the start of interior finishes. The detailed project schedule can be found on the following 3 pages.

ID	Task Name	Duration	Start	Finish
1	Notice to Proceed	1 day	Mon 7/17/06	Mon 7/17/06
162	Mobilization/Temp Utilities/Fencing	57 days	Wed 7/26/06	Thu 10/12/06
159	Demo Asphalt at Building A	18 days	Fri 7/28/06	Tue 8/22/06
163	Establish Offsets/Benchmarks Bldg A & B	8 days	Fri 7/28/06	Tue 8/8/06
161	Demo Light Pole Bases	48 days	Mon 7/31/06	Wed 10/4/06
165	Grade Building Pad A & B	12 days	Thu 8/3/06	Fri 8/18/06
3	Test Piles/ Piles Building A	15 days	Mon 8/14/06	Fri 9/1/06
168	Layout Site Utilities	65 days	Tue 8/15/06	Mon 11/13/06
169	Install Water Line Between Buildings	5 days	Mon 8/21/06	Fri 8/25/06
171	Install Sanitary Pipe	81 days	Mon 8/21/06	Mon 12/11/06
177	Install Fire/Water Line	45 days	Mon 8/21/06	Fri 10/20/06
170	Install Sanitary Line Between Buildings	4 days	Tue 8/22/06	Fri 8/25/06
4	Pile Caps Building A	19 days	Mon 8/28/06	Thu 9/21/06
164	Establish Offsets/Benchmarks Bldg C	5 days	Fri 9/1/06	Thu 9/7/06
2	MEP Underground Entire Building	62 days	Wed 9/6/06	Thu 11/30/06
5	Drill Elevator Jack Hole Bldg A	4 days	Fri 9/8/06	Wed 9/13/06
12	Piles Building B	16 days	Fri 9/8/06	Fri 9/29/06
166	Grade Building Pad C	5 days	Fri 9/8/06	Thu 9/14/06
6	Drill Elevator Jack Hole Bldg C	7 days	Mon 9/11/06	Tue 9/19/06
7	Grade Beams Building A	18 days	Mon 9/11/06	Wed 10/4/06
20	Piles Building C	9 days	Mon 9/25/06	Thu 10/5/06
13	Pile Caps Building B	12 days	Mon 10/2/06	Tue 10/17/06
21	Pile Caps Building C	15 days	Fri 10/13/06	Thu 11/2/06
172	Install Power Ductbank	15 days	Fri 10/13/06	Thu 11/2/06
14	Grade Beams Building B	10 days	Wed 10/18/06	Tue 10/31/06
42	Soil Treament & SOG Building A	13 days	Thu 10/19/06	Mon 11/6/06
167	Construct Haul and Crane Road	10 days	Mon 10/30/06	Fri 11/10/06
22	Grade Beams Building C	10 days	Fri 11/3/06	Thu 11/16/06
18	Soil Treament & SOG Building B	12 days	Wed 11/8/06	Thu 11/23/06
43	Superstructure Building A Sequence 1& 2	14 days	Mon 11/20/06	Thu 12/7/06
51	Superstructure Building B Sequence 17& 18	14 days	Mon 11/20/06	Thu 12/7/06
173	Install Telecom Ductbank	92 days	Tue 11/28/06	Wed 4/4/07
44	Superstructure Building A Sequence 3 & 4	10 days	Thu 11/30/06	Wed 12/13/06
52	Superstructure Building B Sequence 19 & 20	10 days	Thu 11/30/06	Wed 12/13/06
26	Soil Treament & SOG Building C	12 days	Fri 12/1/06	Mon 12/18/06
100	Electrical/ Telecom Rough-in Building A	156 days	Mon 12/4/06	Mon 7/9/07
59	Pour Slab Sequence 1	7 days	Wed 12/6/06	Thu 12/14/06
45	Superstructure Building A Sequence 5 &6	11 days	Thu 12/21/06	Thu 1/4/07
53	Superstructure Building C Sequence 21 & 22	11 days	Thu 12/21/06	Thu 1/4/07
61	Pour Slab Sequence 3	6 days	Thu 12/21/06	Thu 12/28/06
101	Plumbing Installation Building A	40 days	Fri 12/29/06	Thu 2/22/07
102	HVAC Sheetmetal/Piping Building A	79 days	Fri 12/29/06	Wed 4/18/07
49	Superstructure Building B Sequence 13 & 14	10 days	Tue 1/2/07	Mon 1/15/07
88	Metal Roof Panels Building A	40 days	Tue 1/2/07	Mon 2/26/07
46	Superstructure Building A Sequence 7 & 8	11 days	Thu 1/4/07	Thu 1/18/07
54	Superstructure Building C Sequence 23 & 24	11 days	Thu 1/4/07	Thu 1/18/07
63	Pour Slab Sequence 5	5 days	Fri 1/5/07	Thu 1/11/07
115	Electrical/ Telecom Rough-in Building B	105 days	Tue 1/9/07	Mon 6/4/07
60	Pour Slab Sequence 2	5 days	Fri 1/12/07	Thu 1/18/07
91	Exterior Studs/Sheathing Building A	55 days	Fri 1/12/07	Thu 3/29/07
50	Superstructure Building B Sequence 15 & 16	10 days	Tue 1/16/07	Mon 1/29/07
71	Pour Slab Sequence 13	5 days	Tue 1/16/07	Mon 1/22/07
99	Toilet Partitions Entire Building	5 days	Tue 1/16/07	Mon 1/22/07
47	Superstructure Building A Sequence 9 & 10	10 days	Fri 1/19/07	Thu 2/1/07
55	Superstructure Building C Sequence 25 & 26	10 days	Fri 1/19/07	Thu 2/1/07
65	Pour Slab Sequence 7	5 days	Fri 1/19/07	Thu 1/25/07
94	Interior Stud Framing Building A	85 days	Fri 1/19/07	Thu 5/17/07
9	Interior CMU Walls Building A	20 days	Wed 1/24/07	Tue 2/20/07
16	Interior CMU Walls 2nd or Building B	20 days	Thu 1/25/07	Wed 2/21/07
92	Masonry & Caulking Building A	98 days	Thu 1/25/07	Mon 6/11/07
156	Elevator Shaft Building B	33 days	Thu 1/25/07	Mon 3/12/07
62	Pour Slab Sequence 4	5 days	Fri 1/26/07	Thu 2/1/07
73	Pour Slab Sequence 15	5 days	Tue 1/30/07	Mon 2/5/07
129	Electrical/ Telecom Rough-in Building C	161 days	Wed 1/31/07	Wed 9/12/07
8	Install Stairs #1 & 2	20 days	Fri 2/2/07	Thu 3/1/07
48	Superstructure Building A Sequence 11 & 12	10 days	Fri 2/2/07	Thu 2/15/07
56	Superstructure Building C Sequence 27 & 28	10 days	Fri 2/2/07	Thu 2/15/07
67	Pour Slab Sequence 9	5 days	Fri 2/2/07	Thu 2/8/07
15	Interior CMU Walls Ist Floor Building B	20 days	Tue 2/6/07	Mon 3/5/07
72	Pour Slab Sequence 14	5 days	Tue 2/6/07	Mon 2/12/07
110	Interior Stud Framing Building B	42 days	Tue 2/6/07	Wed 4/4/07
116	Plumbing Installation Building B	108 days	Tue 2/6/07	Thu 7/5/07



Project: Salisbury Detailed Schedule
Date: Sun 10/29/06

Task | Milestone | Rolled Up Task | Rolled Up Progress | External Tasks | Group By Summary
Progress | Summary | Rolled Up Milestone | Split | Project Summary | Deadline

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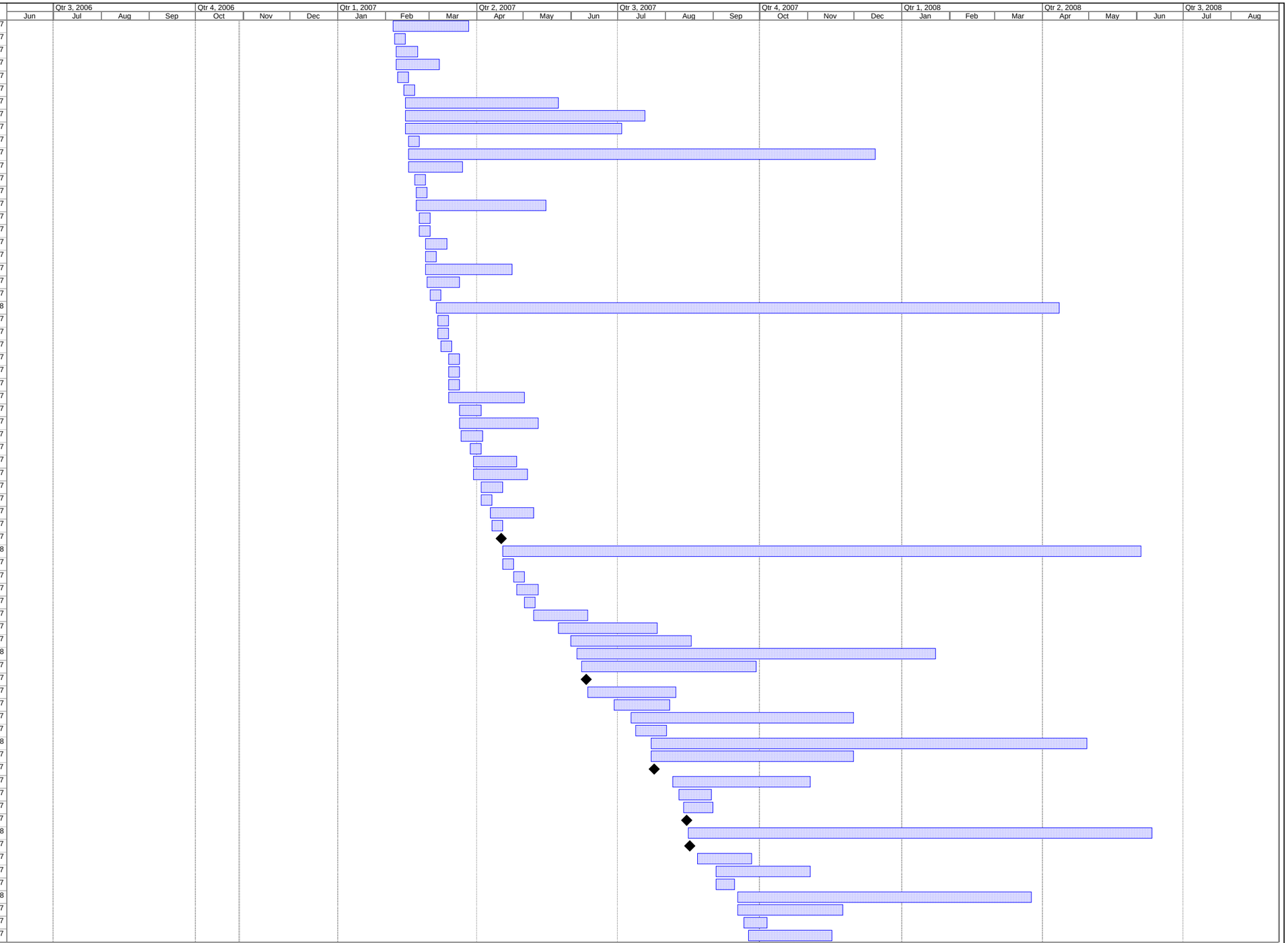
ID	Task Name	Duration	Start	Finish
117	HVAC Sheetmetal/Piping Building B	35 days	Tue 2/6/07	Mon 3/26/07
79	Pour Slab Sequence 21	5 days	Wed 2/7/07	Tue 2/13/07
27	Courtyard Underground Piping	10 days	Thu 2/8/07	Wed 2/21/07
28	Set Fuel Tank and Piping	20 days	Thu 2/8/07	Wed 3/7/07
64	Pour Slab Sequence 6	5 days	Fri 2/9/07	Thu 2/15/07
75	Pour Slab Sequence 17	5 days	Tue 2/13/07	Mon 2/19/07
93	Glass & Glazing Building A	71 days	Wed 2/14/07	Wed 5/23/07
130	Plumbing Installation Building C	111 days	Wed 2/14/07	Wed 7/18/07
131	HVAC Sheetmetal/Piping Building C	100 days	Wed 2/14/07	Tue 7/3/07
69	Pour Slab Sequence 11	5 days	Fri 2/16/07	Thu 2/22/07
95	Doors/Frames/Hardware Building A	216 days	Fri 2/16/07	Fri 12/14/07
157	Elevator Shaft Building A	25 days	Fri 2/16/07	Thu 3/22/07
74	Pour Slab Sequence 16	5 days	Tue 2/20/07	Mon 2/26/07
81	Pour Slab Sequence 23	5 days	Wed 2/21/07	Tue 2/27/07
154	Fire Protection Building C	60 days	Wed 2/21/07	Tue 5/15/07
11	Set Mechanical Equipment Building	5 days	Fri 2/23/07	Thu 3/1/07
66	Pour Slab Sequence 8	5 days	Fri 2/23/07	Thu 3/1/07
19	Install Stair # 3	10 days	Tue 2/27/07	Mon 3/12/07
77	Pour Slab Sequence 19	5 days	Tue 2/27/07	Mon 3/5/07
106	Metal Roof Panels Building B	40 days	Tue 2/27/07	Mon 4/23/07
158	Elevator Shaft Building C	15 days	Wed 2/28/07	Tue 3/20/07
68	Pour Slab Sequence 10	5 days	Fri 3/2/07	Thu 3/8/07
111	Doors/Frames/Hardware Building B	289 days	Tue 3/6/07	Fri 4/11/08
76	Pour Slab Sequence 18	5 days	Wed 3/7/07	Tue 3/13/07
83	Pour Slab Sequence 25	5 days	Wed 3/7/07	Tue 3/13/07
70	Pour Slab Sequence 12	5 days	Fri 3/9/07	Thu 3/15/07
78	Pour Slab Sequence 20	5 days	Wed 3/14/07	Tue 3/20/07
80	Pour Slab Sequence 22	5 days	Wed 3/14/07	Tue 3/20/07
82	Pour Slab Sequence 24	5 days	Wed 3/14/07	Tue 3/20/07
121	Exterior Studs/Sheathing Building C	35 days	Wed 3/14/07	Tue 5/1/07
57	Superstructure Building C Sequence 29 & 30	10 days	Wed 3/21/07	Tue 4/3/07
124	Interior Stud Framing Building C	37 days	Wed 3/21/07	Thu 5/10/07
155	Set Emergency Generator	10 days	Thu 3/22/07	Wed 4/4/07
86	Pour Slab Sequence 28	5 days	Wed 3/28/07	Tue 4/3/07
107	Exterior Studs/Sheathing Building B	20 days	Fri 3/30/07	Thu 4/26/07
144	Thermoplastic Membrane Roofing Bldg A	25 days	Fri 3/30/07	Thu 5/3/07
58	Superstructure Building C Sequence 31	10 days	Wed 4/4/07	Tue 4/17/07
84	Pour Slab Sequence 26	5 days	Wed 4/4/07	Tue 4/10/07
151	Fire Protection Building B	20 days	Tue 4/10/07	Mon 5/7/07
89	Pour Slab Sequence 30	5 days	Wed 4/11/07	Tue 4/17/07
90	Structure Top Out	1 day	Tue 4/17/07	Tue 4/17/07
125	Doors/Frames/Hardware Building C	295 days	Wed 4/18/07	Tue 6/3/08
152	Pour Slab Sequence 31	5 days	Wed 4/18/07	Tue 4/24/07
85	Pour Slab Sequence 27	5 days	Wed 4/25/07	Tue 5/1/07
176	Pull Wire Power Ductbank	10 days	Fri 4/27/07	Thu 5/10/07
87	Pour Slab Sequence 29	5 days	Wed 5/2/07	Tue 5/8/07
145	Thermoplastic Membrane Roofing Bldg B	25 days	Tue 5/8/07	Mon 6/11/07
150	Fire Protection 1st Floor Building A	46 days	Thu 5/24/07	Thu 7/26/07
108	Masonry & Caulking Building B	56 days	Fri 6/1/07	Fri 8/17/07
118	Elec./Telecom Termination/Wire Pulling Bldg B	166 days	Tue 6/5/07	Tue 1/22/08
96	Hang & Finish Drywall Building A	81 days	Fri 6/8/07	Fri 9/28/07
134	Dry-In Date Building A	1 day	Mon 6/11/07	Mon 6/11/07
120	Metal Roof Panels Building C	41 days	Tue 6/12/07	Tue 8/7/07
109	Glass & Glazing Building B	26 days	Fri 6/29/07	Fri 8/3/07
103	Elec./Telecom Termination/Wire Pulling Bldg A	104 days	Tue 7/10/07	Fri 11/30/07
153	Fire Protection Attic Building B	14 days	Fri 7/13/07	Wed 8/1/07
97	Paint Building A	202 days	Mon 7/23/07	Tue 4/29/08
122	Masonry & Caulking Building C	95 days	Mon 7/23/07	Fri 11/30/07
138	AHU Start Up Building B&C	1 day	Wed 7/25/07	Wed 7/25/07
112	Hang & Finish Drywall Building B	65 days	Mon 8/6/07	Fri 11/2/07
29	Install Standpipe	15 days	Fri 8/10/07	Thu 8/30/07
30	Install Lights 1st Floor Bldg A	15 days	Mon 8/13/07	Fri 8/31/07
137	AHU Start Up Building A	1 day	Wed 8/15/07	Wed 8/15/07
132	Elec./Telecom Termination/Wire Pulling Bldg C	214 days	Thu 8/16/07	Tue 6/10/08
136	Dry-In Date Building B	1 day	Fri 8/17/07	Fri 8/17/07
146	Thermoplastic Membrane Roofing Bldg C	25 days	Wed 8/22/07	Tue 9/25/07
10	Install ACT Building A	45 days	Mon 9/3/07	Fri 11/2/07
31	Install Lights 2st Floor Bldg A	10 days	Mon 9/3/07	Fri 9/14/07
113	Paint Building B	136 days	Mon 9/17/07	Mon 3/24/08
123	Glass & Glazing Building C	50 days	Mon 9/17/07	Fri 11/23/07
32	Install Lights 3rd Floor Bldg A	11 days	Fri 9/21/07	Fri 10/5/07
105	HVAC/Controls Trim Out	40 days	Mon 9/24/07	Fri 11/16/07



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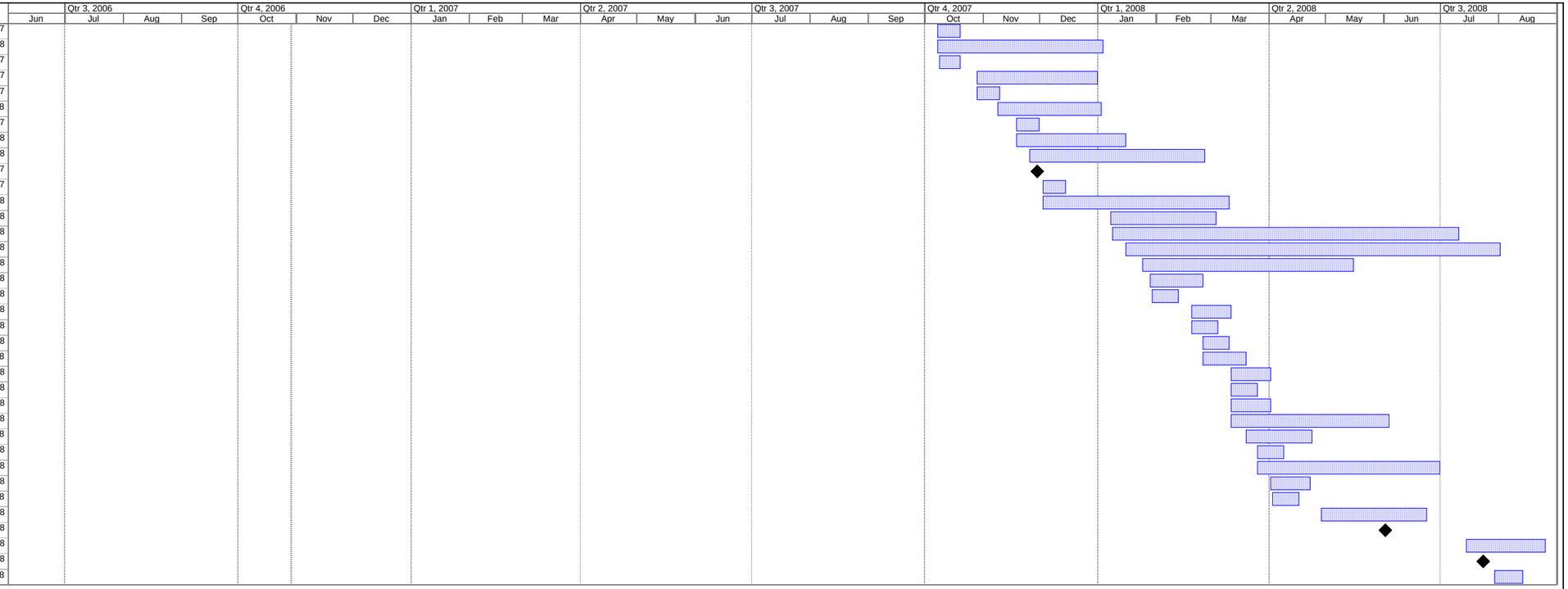
Task | Progress | Milestone | Summary | Rolled Up Task | Rolled Up Milestone | Rolled Up Progress | Split | External Tasks | Project Summary | Group By Summary | Deadline

ID	Task Name	Duration	Start	Finish
34	Install Lights 1st Floor Bldg B	10 days	Mon 10/8/07	Fri 10/19/07
98	Carpet/ VCT/ Ceramic Tile Building A	64 days	Mon 10/8/07	Thu 1/3/08
33	Install Lights Attic Floor Bldg A	9 days	Tue 10/9/07	Fri 10/19/07
17	Install ACT Building B	46 days	Mon 10/29/07	Mon 12/31/07
35	Install Lights 2st Floor Bldg B	10 days	Mon 10/29/07	Fri 11/9/07
147	Millwork Building A	39 days	Fri 11/9/07	Wed 1/2/08
36	Install Lights 3rd Floor Bldg B	10 days	Mon 11/19/07	Fri 11/30/07
119	HVAC/Controls Trim Out Building B	42 days	Mon 11/19/07	Tue 1/15/08
126	Hang & Finish Drywall Building C	67 days	Mon 11/26/07	Tue 2/26/08
135	Dry-In Date Building C	1 day	Fri 11/30/07	Fri 11/30/07
37	Install Lights Attic Floor Bldg B	10 days	Mon 12/3/07	Fri 12/14/07
114	Carpet/ VCT/ Ceramic Tile Building B	71 days	Mon 12/3/07	Mon 3/10/08
148	Millwork Building B	40 days	Tue 1/8/08	Mon 3/3/08
127	Paint Building C	132 days	Wed 1/9/08	Thu 7/10/08
139	Commissioning	143 days	Wed 1/16/08	Fri 8/1/08
140	Lanscaping/Irrigation/Final Grading	80 days	Fri 1/25/08	Thu 5/15/08
174	Install Storm Infiltration System	20 days	Tue 1/29/08	Mon 2/25/08
38	Install Lights 1st Floor Bldg C	10 days	Wed 1/30/08	Tue 2/12/08
23	Install ACT 1st Floor Building C	15 days	Wed 2/20/08	Tue 3/11/08
39	Install Lights 2st Floor Bldg C	10 days	Wed 2/20/08	Tue 3/4/08
175	Install Site Lighting	10 days	Tue 2/26/08	Mon 3/10/08
178	Install Curb & Gutter	17 days	Tue 2/26/08	Wed 3/19/08
24	Install ACT 2nd Floor Building C	15 days	Wed 3/12/08	Tue 4/1/08
40	Install Lights 3rd Floor Bldg C	10 days	Wed 3/12/08	Tue 3/25/08
104	Set Plumbing Fixtures Entire Building	15 days	Wed 3/12/08	Tue 4/1/08
133	HVAC/Controls Trim Out Building C	60 days	Wed 3/12/08	Tue 6/3/08
179	Install Asphalt/Line Striping/Signage	25 days	Thu 3/20/08	Wed 4/23/08
41	Install Lights Attic Floor Bldg C	10 days	Wed 3/26/08	Tue 4/8/08
128	Carpet/ VCT/ Ceramic Tile Building C	69 days	Wed 3/26/08	Mon 6/30/08
25	Install ACT 3rd Floor Building C	15 days	Wed 4/2/08	Tue 4/22/08
180	Install Concrete Sidewalks	10 days	Thu 4/3/08	Wed 4/16/08
149	Millwork Building C	40 days	Tue 4/29/08	Mon 6/23/08
160	FFE Installation Begins	1 day	Mon 6/2/08	Mon 6/2/08
141	Punchlist	30 days	Tue 7/15/08	Mon 8/25/08
143	Substantial Completetion	1 day	Thu 7/24/08	Thu 7/24/08
142	Owner Training/ O&M Manuals	11 days	Wed 7/30/08	Wed 8/13/08



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Site Layout Planning

Layout & Access

Main access to the site can be found off U.S. Route 13 to the east. Dumpsters for the recycling steel, drywall, and concrete are located inside the construction entrance for haul service. The construction trailers were also placed near the entrance for deliveries, on site meetings, and to better control the site.

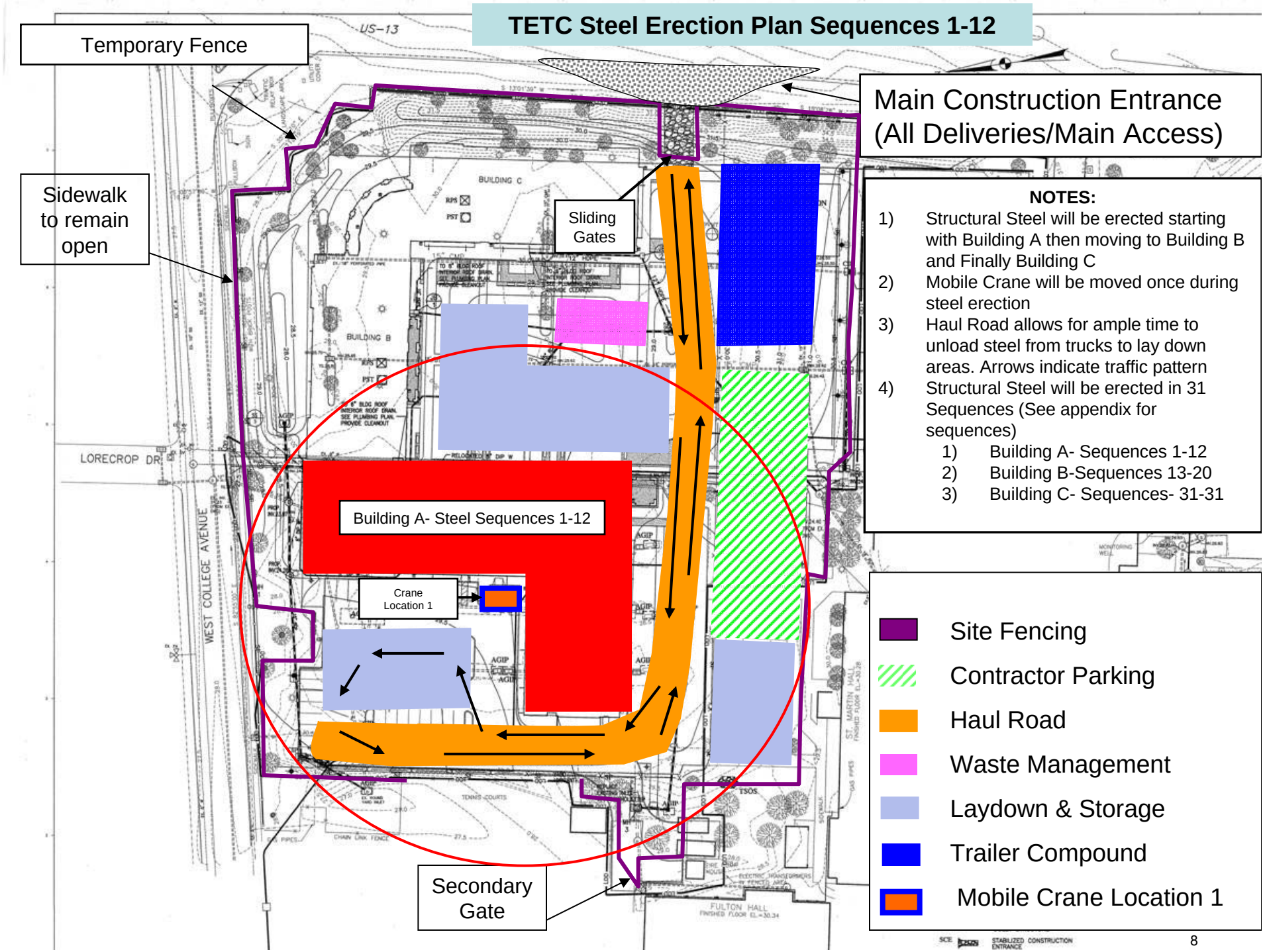
Steel Phasing & Crane Locations

Two mobile cranes will be necessary to erect the steel and their locations are shown on the following 3 pages. The 2nd of the mobile crane will be removed on February 15th, 2007 when Building A is complete. Steel will be staged in two major areas that will allow on site unloading of members and no traffic interruptions. As mentioned above, structural steel erection and placement of elevated slabs will begin with sequence 1 at Building A. The order of these sequences can be found on the detailed project schedule on pages 4-6. The relevant sequences to Building are A, B, & C are as following:

- Building A: Sequences 1-12
- Building B: Sequences 13-20
- Building C: Sequences 21-31

Site plans for the TETC project illustrate the erection sequence of Buildings A, B, and C and the site layout.

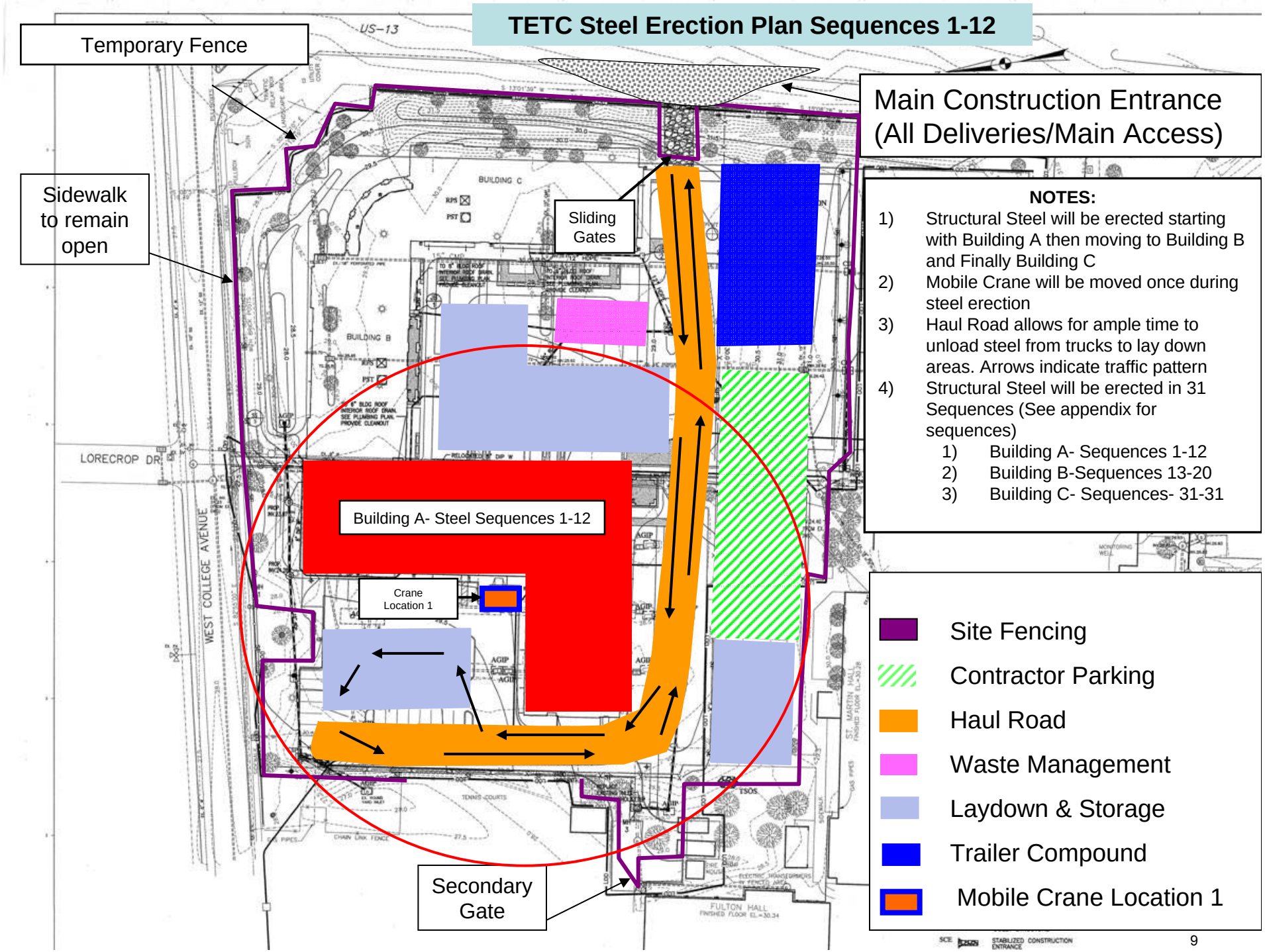
TETC Steel Erection Plan Sequences 1-12



NOTES:

1) Structural Steel will be erected starting with Building A then moving to Building B and Finally Building C
2) Mobile Crane will be moved once during steel erection
3) Haul Road allows for ample time to unload steel from trucks to lay down areas. Arrows indicate traffic pattern
4) Structural Steel will be erected in 31 Sequences (See appendix for sequences)
    1) Building A- Sequences 1-12
    2) Building B-Sequences 13-20
    3) Building C- Sequences- 31-31

TETC Steel Erection Plan Sequences 1-12



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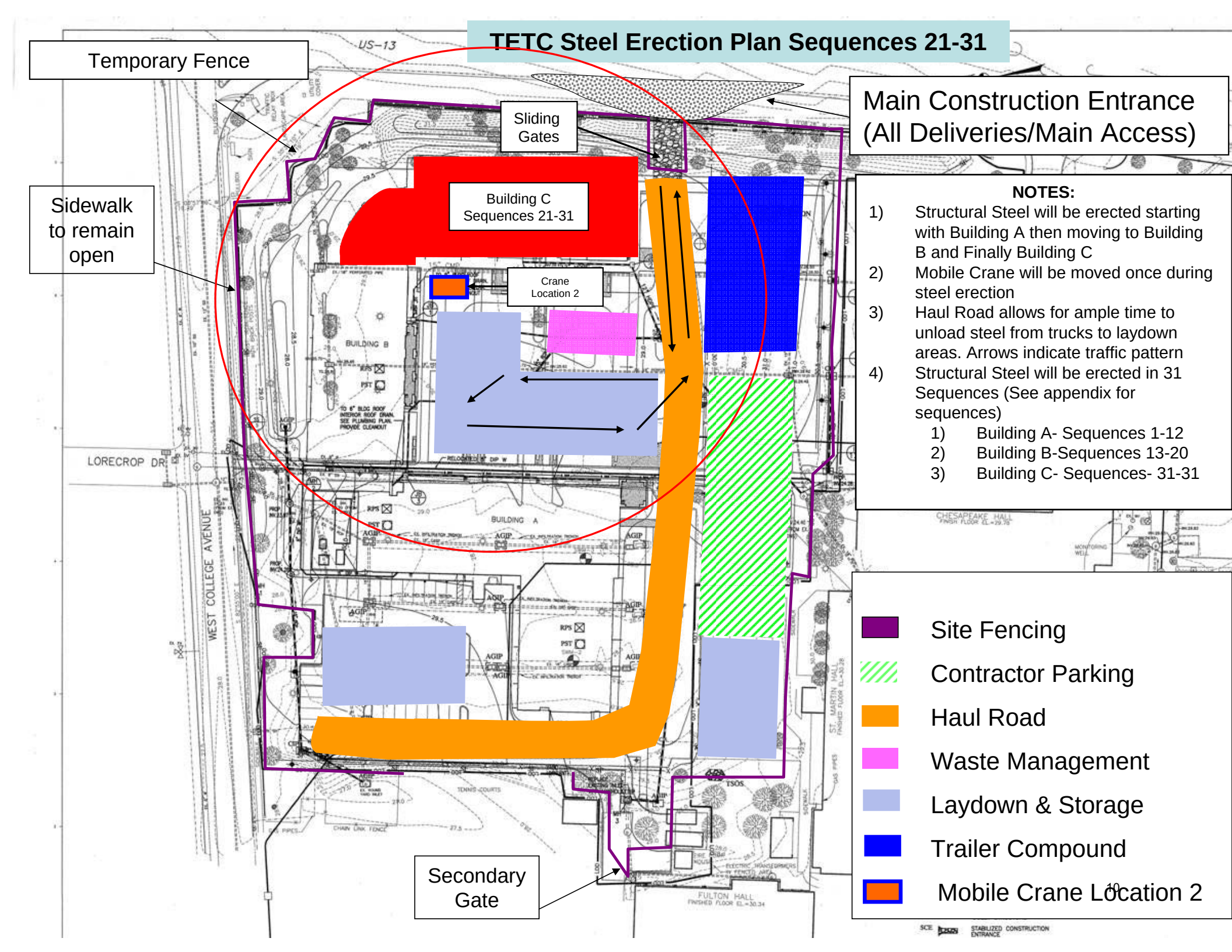
SCE TSOS STABILIZED CONSTRUCTION ENTRANCE

TETC Steel Erection Plan Sequences 21-31



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Assemblies Estimate

An Assemblies Estimate was used to find the cost of the building envelope and roofing. The owner of TETC is still deciding on a shingled or standing seam metal roof. The standing seam metal roof was found to be $20,336.40 more expensive. The building skin is composed of Standard Running Bond Brick and Architectural Pre-Cast Concrete on an 8" metal stud back-up. A 6"metal stud back-up had to be used because R.S. Means Cost Works 2005 does not have an 8" stud size. The TETC project has several custom window sizes therefore sizes had to be approximated in R.S. Means. The differences in roofing systems and the building envelope estimate can be seen in Table 1 below.

Building Skin & Roofing Assemblies Estimate					
Division	**Item**	**Qty**	**Unit**	**$/Unit**	**Total Cost**
7500	**Option # 1**				
	Preformed Metal Roofing	36,315	SF	$2.89	**$104,950.35**
	- Colored, 26 Gauge				
	Option # 2				
	4" Strip Shingles, Class C	36,315	SF	$2.33	**$84,613.95**
	Aluminum Panels	4,330	SF	$4.69	$20,307.70
	SBS Roofing Membrane, 150 mils	28,615	SF	$2.07	$59,233.05
	5" Aluminum Box Gutter/5" Round Downspout	3,860	LF	$5.78	$22,310.80
	Polyisocyanurate Board Insulation	105,575	SF	$1.25	$131,968.75
	-3.5", R25				
	Total With Metal Paneling (sloped areas)				**$338,770.65**
	Total With Shingles (sloped areas)				**$318,434.25**
	Difference				**$20,336.40**
4200	Normal Brick with 20 Gauge x 6" Stud Back-Up	65,000	SF	$16.35	$1,062,750.00
3450	Flat Pre-Cast Concrete Panels	7,022		$25.01	$175,620.22
	- 4" thick, 4'x8' White Face				
8800	4'-5"x 5'-3" Aluminum Windows, Std. Glass	317	EA	$445.00	$141,065.00
	9'x5'	79	EA	$1,014.00	$80,106.00
	8'x4'	11	EA	$674.00	$7,414.00
	Aluminum & Glass Entrance Doors	33	EA	$3,200.00	$105,600.00
	-Double, Hardware, 6'x7'				
	Storefront Glazing Panels	593	SF	$15.10	$8,954.30
	Total With Metal Roofing				**$1,920,280.17**
	Total With Shingled Roofing				**$1,899,943.77**

Table 1- Building Envelope Assemblies Estimate

* All Unit Costs Provided by R.S. Means Cost Works 2005

Detailed Structural System Estimate

The detailed structural estimate was completed for the bay between column lines 2-3 and E-4 for the ground, 2nd, 3rd, Attic, and Roof Floors. This area was chosen because it includes all of the structural elements that are typical throughout the building such as SOG, SOD, Grade Beams, Pile Caps, Deep Foundations, and varying length Steel Columns/Beams. In this are 4 different types of Pile Caps are used and only two columns require Piers. The bay also includes a vertical truss that is typical throughout the building. Please note that grouting and welding of column base plates was not accounted for. A summary of this estimate can be found below in Table 2.

Detailed Structural Estimate			October 30th, 2006
Summary Sheet			
Teacher Education & Technology Center			
Category	**Qty**	**Unit**	**Total Cost**
Reinforcing Steel	56.72	TN	$5,858.23
Deep Foundations	440	LF	$12,073.60
Foundation Material/Labor	27	CY	$27,999.38
Elevated Slabs	4053	SF	$33,247.33
Structural Steel	33	TN	$86,242.00
	Total		**$165,420.54**

Table 2- Structural Estimate Summary Sheet Col. Lines 1-3, E-F

Assumptions

- Bay Size= 1351 SF/ Floor (31'-8"x 42'-8")
- SOG uses 3500 PSI Concrete
- SOG uses 3500 PSI Lightweight Concrete
- Foundation Concrete is placed directly out of chute
- Elevated Slab Concrete is placed using a concrete pump truck
- Grade Beams & Pile Caps are formed using job-built plywood
- Grouting/Welding of Column Base Plates is not accounted for

The total of 165,420.54 accounts for 2.5 % of the actual structural cost of $6.6 million. The occupied space of 4053 SF accounts for 2.4% of the entire building area of 165,000 SF. The 33 tons of steel estimated is approximately 2.2% of the total Steel tonnage of 1500 tons. Using this estimate, the total Structural System can be estimated at $6.73 Million with a cost of $40/SF.

* A copy of the Detailed Structural System Estimate can be found in Appendix B.

General Conditions Estimate

The GC estimate was calculated using current industry unit costs provided by Holder Construction Company and R.S. Means Cost Works 2005. The total GC cost was $5,382,344 and 11.4 % of the total building cost. This amount includes a 2.46% General Contractor's fee of $1,163,313, 3%, construction contingency and staffing costs for the team members reported in Technical Assignment 1. General Conditions costs such as hoisting were not included in the estimate since they were included in the subcontractor's bids. A copy of this estimate can be seen below in Table 3.

General Conditions Estimate

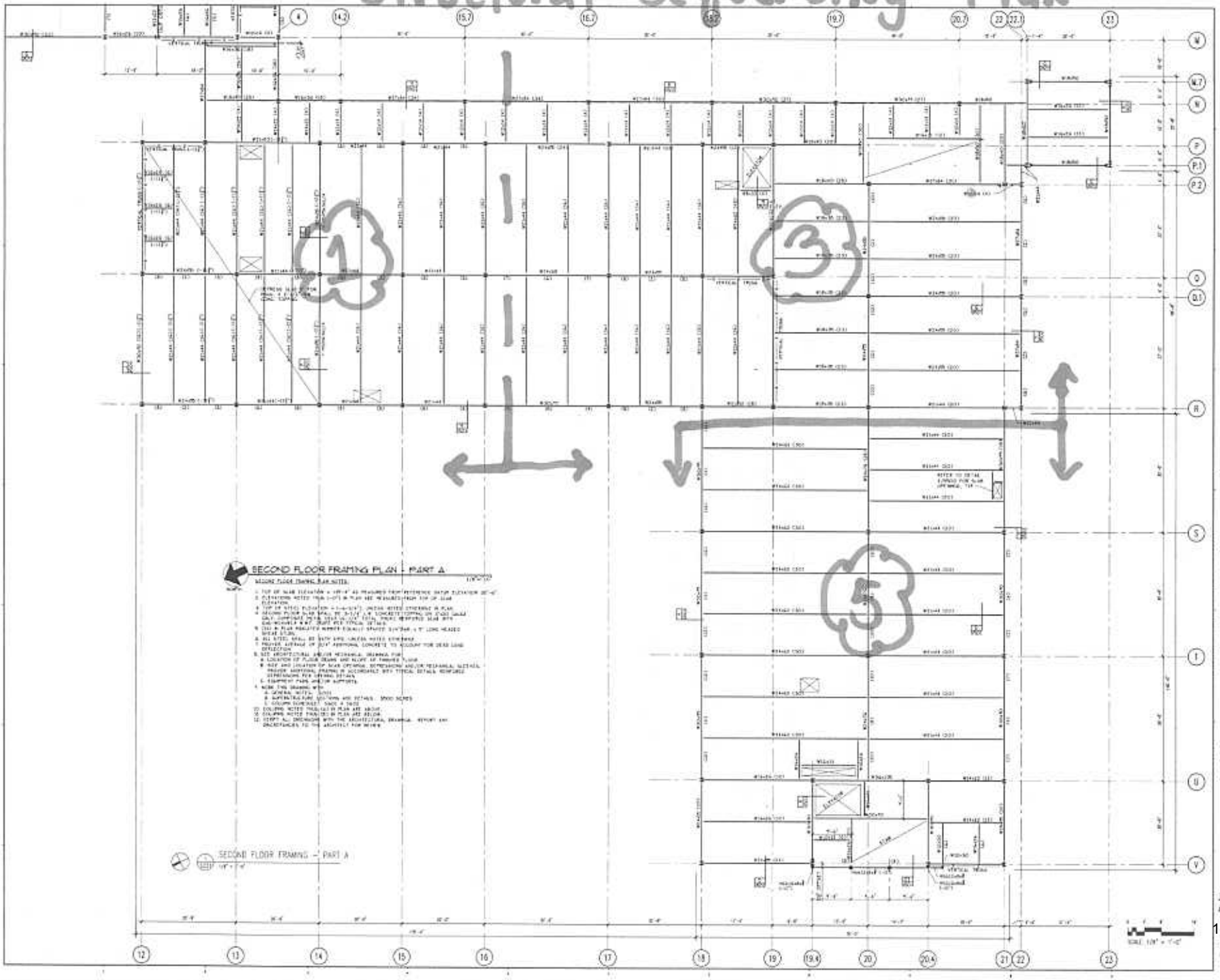
Category	Item	Qty.	Unit	Months	$/Month	Unit Cost	Total Cost
Fee							
	General Contractor Fee	2.46%	LS	-	-	-	$1,163,313.00
Staffing							
	Vice President	1	EA.	6	$10,600.00	-	$63,600.00
	Project Director	1	EA.	12	$9,300.00	-	$111,600.00
	Senior Project Manager	1	EA.	24	$8,200.00	-	$196,800.00
	Senior Project Engineer	1	EA.	24	$5,700.00	-	$136,800.00
	Superintendent	1	EA.	24	$8,600.00	-	$206,400.00
	Assistant Supt.	1	EA.	24	$7,900.00	-	$189,600.00
	Project Engineer	1	EA.	24	$4,400.00	-	$105,600.00
Field Office							
	Office Supplies	1	EA.	24	$91.50	-	$2,196.00
	Telephone/Internet	1	EA.	24	$220.00	-	$5,280.00
	Trailers (50' x 12')	4	EA.	24	$310.50	-	$29,808.00
	Office Equip. Rental	1	EA.	24	$154.00	-	$3,696.00
	Office Lights/HVAC	1	EA.	24	$106.00	-	$2,544.00
Utilities							
	Temporary Heating	1	EA.	4	-	-	$40,000.00
	Temporary Electric	1	EA.	24	250		$6,000.00
	Temporary Water	1	EA.	12	-	$800.00	$800.00
	Temporary Lighting	1	EA.	18	20		$360.00
	Toilets	5	EA.	24	150		$18,000.00
Contingency							
	Const. Contingency	3%	LS	-	-	-	$1,130,504.00
	Design Contingency	2%	LS	-	-	-	$682,579.00
Ins./Bonds							
	Performance Bond	0.70%	LS	-	-	-	$330,556.00
	Builders Risk	0.25%	LS	-	-	-	$118,056.00
Misc.							
	Dumpsters	5		24	$665.00	-	$79,800.00
	Temporary Fence	1250	LF	24	-	$6.90	$8,625.00
	Layout/Engineering	1	LS	-	-	-	$108,250.00
	Testing/Inspections	1	LS	-	-	-	150,000
	Cleaning	1	LS	-	-	-	58,165
	Commissioning	1	LS	-	-	-	182,300
	Partnering Sessions	1	LS	-	-	-	$15,000.00
	Permits	0.50%	LS	-	-	-	$236,112
				Total General Conditions (11.4%)			**$5,382,344.00**

Table 3- General Conditions Estimate

* Pricing Data Provided by R.S. Means Cost Works 2005 and Holder Construction Company

Appendix A
Steel Sequencing Schematics
Teachers Education and Technology Center at Salisbury University

Structural Sequencing Plan



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SECOND FLOOR FRAMING PLAN PART A

S221

THIRD FLOOR FRAMING PLAN - PART A

1/8"=1'-0"

THIRD FLOOR FRAMING PLAN NOTES:

1. TOP OF SLAB ELEVATION = +30'-0" AS MEASURED FROM REFERENCE DATUM ELEVATION 30'-6".
2. ELEVATIONS NOTED THUS (-0") IN PLAN ARE MEASURED FROM TOP OF SLAB ELEVATION.
3. TOP OF STEEL ELEVATION = C-G-1/4", UNLESS NOTED OTHERWISE IN PLAN.
4. THIRD FLOOR SLAB SHALL BE 3-1/4" LW. CONCRETE TOPPING ON 3"x20 GAUGE GALV. COMPOSITE METAL DECK (2"-1/4" TOTAL THICK). REINFORCE SLAB WITH 6x6-W1.4xW1.4 W.W.F. DRAPE PER TYPICAL DETAILS.
5. (XX) IN PLAN INDICATES NUMBER EQUALLY SPACED 3/4"DIAM. x 5" LONG HEADED SHEAR STUDS.
6. ALL STEEL SHALL BE ASTM A992, UNLESS NOTED OTHERWISE.
7. PROVIDE AVERAGE OF 3/4" ADDITIONAL CONCRETE TO ACCOUNT FOR DEAD LOAD DEFLECTION.
8. SEE ARCHITECTURAL AND/OR MECHANICAL DRAWINGS FOR:
   A. LOCATION OF FLOOR DRAINS AND SLOPE OF FINISHED FLOOR.
   B. SIZE AND LOCATION OF SLAB OPENINGS, DEPRESSIONS AND/OR MECHANICAL SLEEVES. PROVIDE ADDITIONAL FRAMING IN ACCORDANCE WITH TYPICAL DETAILS. REINFORCE DEPRESSIONS PER OPENING DETAILS.
   C. EQUIPMENT PADS AND/OR SUPPORTS.
9. WORK THIS DRAWING WITH:
   A. GENERAL NOTES: S001
   B. SUPERSTRUCTURE SECTIONS AND DETAILS: S500 SERIES
   C. COLUMN SCHEDULE: S601 + S602
10. COLUMNS NOTED THUS (A3) IN PLAN ARE ABOVE.
11. COLUMNS NOTED THUS (B3) IN PLAN ARE BELOW.
12. VERIFY ALL DIMENSIONS WITH THE ARCHITECTURAL DRAWINGS. REPORT ANY DISCREPANCIES TO THE ARCHITECT FOR REVIEW.

NORTH

THIRD FLOOR FRAMING - PART A

1/8" = 1'-0"

SCALE: 1/8" = 1'-0"

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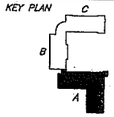
Seal

Number	Date	Revision
1	08/22/2006	Addendum No. 1

KEY PLAN



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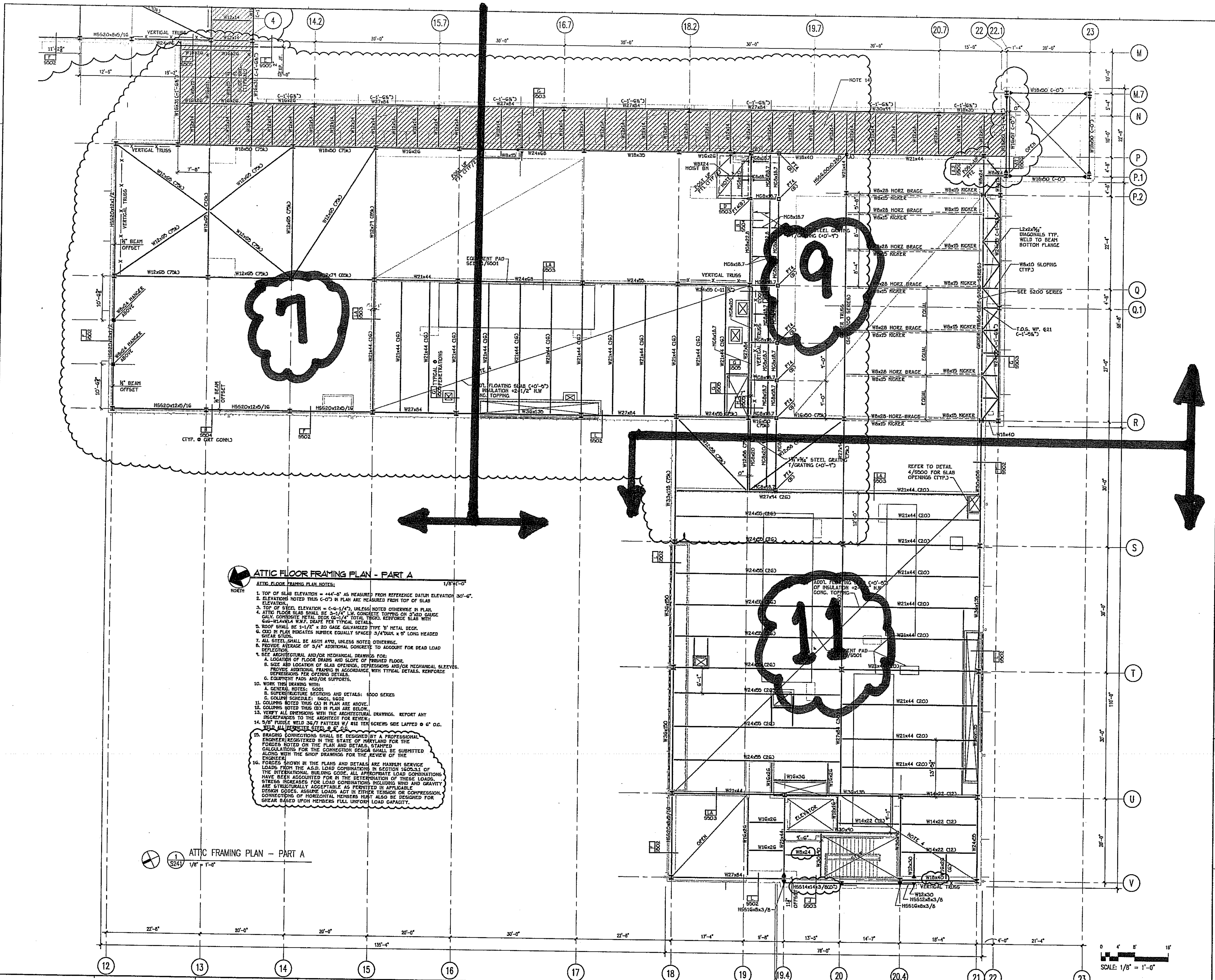
THIRD FLOOR FRAMING PLAN PART A

Job Number *20156.00* Date *20 January 2005*
Drawn By *MTH* Scale *1/8" = 1'-0"*

Drawing No.
S231



ATTIC FLOOR FRAMING PLAN - PART A

1/8"=1'-0"

NORTH

ATTIC FLOOR FRAMING PLAN NOTES:

1. TOP OF SLAB ELEVATION = +44'-8" AS MEASURED FROM REFERENCE DATUM ELEVATION 30'-6".
2. ELEVATIONS NOTED THUS (-0") IN PLAN ARE MEASURED FROM TOP OF SLAB ELEVATION.
3. TOP OF STEEL ELEVATION = (-6-1/4"), UNLESS NOTED OTHERWISE IN PLAN.
4. ATTIC FLOOR SLAB SHALL BE 3-1/4" L.W. CONCRETE TOPPING ON 3"x20 GAUGE GALV. COMPOSITE METAL DECK (6-1/4" TOTAL THICK). REINFORCE SLAB WITH 6x6-W1.4xW1.4 W.W.F. DRAPE PER TYPICAL DETAILS.
5. ROOF SHALL BE 1-1/2" x 20 GAGE GALVANIZED TYPE 'B' METAL DECK.
6. (XX) IN PLAN INDICATES NUMBER EQUALLY SPACED 3/4"DIAM. x 5" LONG HEADED SHEAR STUDS.
7. ALL STEEL SHALL BE ASTM A992, UNLESS NOTED OTHERWISE.
8. PROVIDE AVERAGE OF 3/4" ADDITIONAL CONCRETE TO ACCOUNT FOR DEAD LOAD DEFLECTION.
9. SEE ARCHITECTURAL AND/OR MECHANICAL DRAWINGS FOR:
   A. LOCATION OF FLOOR DRAINS AND SLOPE OF FINISHED FLOOR.
   B. SIZE AND LOCATION OF SLAB OPENINGS, DEPRESSIONS AND/OR MECHANICAL SLEEVES. PROVIDE ADDITIONAL FRAMING IN ACCORDANCE WITH TYPICAL DETAILS. REINFORCE DEPRESSIONS PER OPENING DETAILS.
   C. EQUIPMENT PADS AND/OR SUPPORTS.
10. WORK THIS DRAWING WITH:
   A. GENERAL NOTES: S001
   B. SUPERSTRUCTURE SECTIONS AND DETAILS: S500 SERIES
   C. COLUMN SCHEDULE: S601, S602
11. COLUMNS NOTED THUS (A) IN PLAN ARE ABOVE.
12. COLUMNS NOTED THUS (B) IN PLAN ARE BELOW.
13. VERIFY ALL DIMENSIONS WITH THE ARCHITECTURAL DRAWINGS. REPORT ANY DISCREPANCIES TO THE ARCHITECT FOR REVIEW.
14. 5/8" PUDDLE WELD 36/7 PATTERN W/ #12 TEK SCREWS SIDE LAPPED @ 6" O.C. WELD ALL PERIMETER STEEL @ 6" O.C.
15. BRACING CONNECTIONS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MARYLAND FOR THE FORCES NOTED ON THE PLAN AND DETAILS. STAMPED CALCULATIONS FOR THE CONNECTION DESIGN SHALL BE SUBMITTED ALONG WITH THE SHOP DRAWINGS FOR THE REVIEW OF THE ENGINEER.
16. FORCES SHOWN IN THE PLANS AND DETAILS ARE MAXIMUM SERVICE LOADS FROM THE A.S.D. LOAD COMBINATIONS IN SECTION 1605.3.1 OF THE INTERNATIONAL BUILDING CODE. ALL APPROPRIATE LOAD COMBINATIONS HAVE BEEN ACCOUNTED FOR IN THE DETERMINATION OF THESE LOADS. STRESS INCREASES FOR LOAD COMBINATIONS INCLUDING WIND AND GRAVITY ARE STRUCTURALLY ACCEPTABLE AS PERMITTED IN APPLICABLE DESIGN CODES. ASSUME LOADS ACT IN EITHER TENSION OR COMPRESSION. CONNECTIONS OF HORIZONTAL MEMBERS MUST ALSO BE DESIGNED FOR SHEAR BASED UPON MEMBERS FULL UNIFORM LOAD CAPACITY.

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Number	Date	Revision
1	02/22/2005	Addendum No. 1

KEY PLAN

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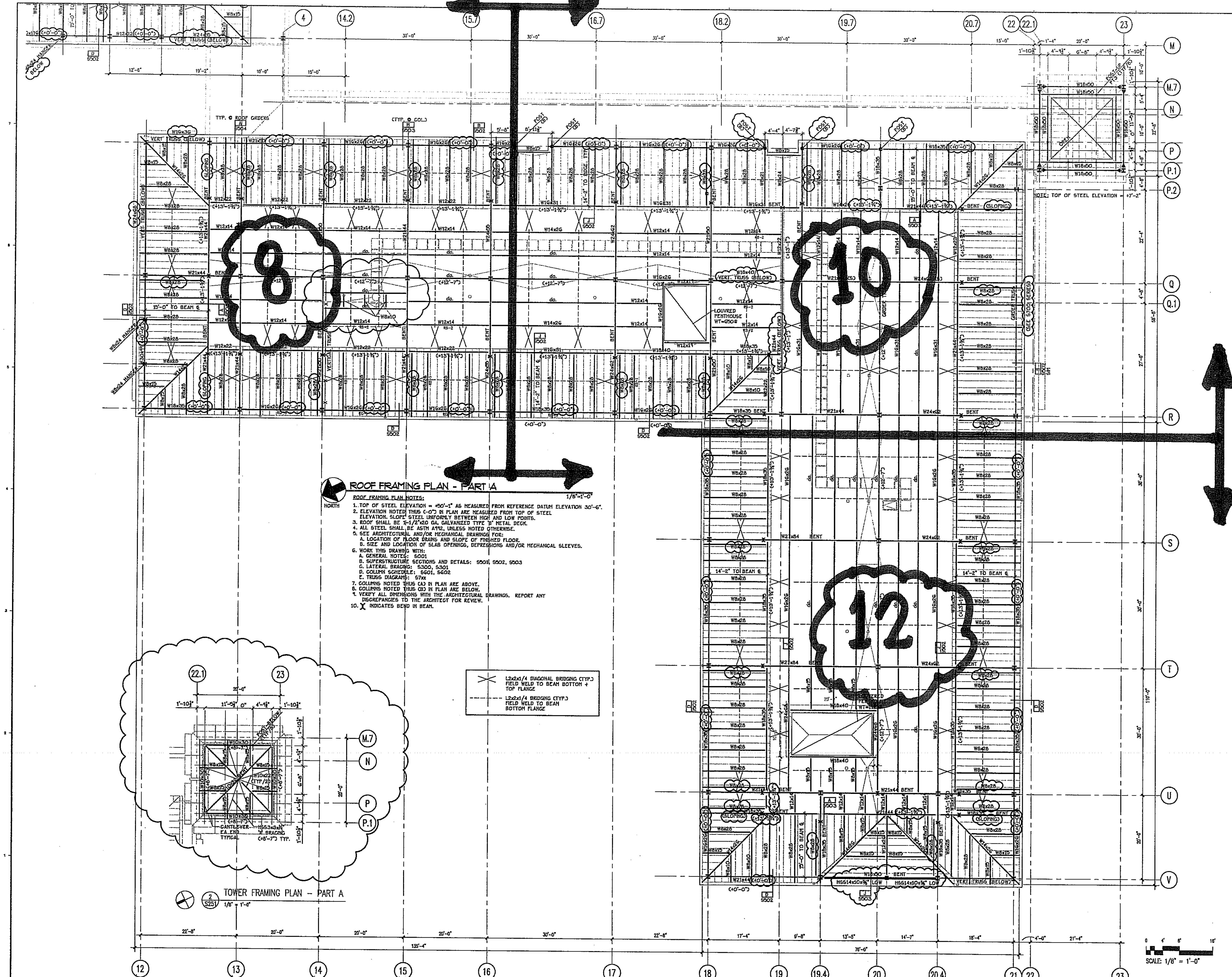
ATTIC FRAMING PLAN PART A

Job Number: *20356.00*
Date: *20 January 2005*
Drawn By: *M.T.H.*
Scale: *1/8" = 1'-0"*
Drawing No.
S241



ROOF FRAMING PLAN - PART A

1/8"=1'-0"

NORTH

ROOF FRAMING PLAN NOTES:

1. TOP OF STEEL ELEVATION = +50'-1" AS MEASURED FROM REFERENCE DATUM ELEVATION 30'-6".
2. ELEVATION NOTED THUS (-0") IN PLAN ARE MEASURED FROM TOP OF STEEL ELEVATION. SLOPE STEEL UNIFORMLY BETWEEN HIGH AND LOW POINTS.
3. ROOF SHALL BE 1-1/2"x20 GA. GALVANIZED TYPE 'B' METAL DECK.
4. ALL STEEL SHALL BE ASTM A992, UNLESS NOTED OTHERWISE.
5. SEE ARCHITECTURAL AND/OR MECHANICAL DRAWINGS FOR:
   A. LOCATION OF FLOOR DRAINS AND SLOPE OF FINISHED FLOOR.
   B. SIZE AND LOCATION OF SLAB OPENINGS, DEPRESSIONS AND/OR MECHANICAL SLEEVES.
6. WORK THIS DRAWING WITH:
   A. GENERAL NOTES: S001
   B. SUPERSTRUCTURE SECTIONS AND DETAILS: S501, S502, S503
   C. LATERAL BRACING: S300, S301
   D. COLUMN SCHEDULE: S601, S602
   E. TRUSS DIAGRAMS: S7xx
7. COLUMNS NOTED THUS (A) IN PLAN ARE ABOVE.
8. COLUMNS NOTED THUS (B) IN PLAN ARE BELOW.
9. VERIFY ALL DIMENSIONS WITH THE ARCHITECTURAL DRAWINGS. REPORT ANY DISCREPANCIES TO THE ARCHITECT FOR REVIEW.
10. X INDICATES BEND IN BEAM.

X	L2x2x1/4 DIAGONAL BRIDGING (TYP.) FIELD WELD TO BEAM BOTTOM + TOP FLANGE
- - - -	L2x2x1/4 BRIDGING (TYP.) FIELD WELD TO BEAM BOTTOM FLANGE

2 / S251 TOWER FRAMING PLAN - PART A

1/8" = 1'-0"

SCALE: 1/8" = 1'-0"

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1	02/22/2006	Addendum No. 1

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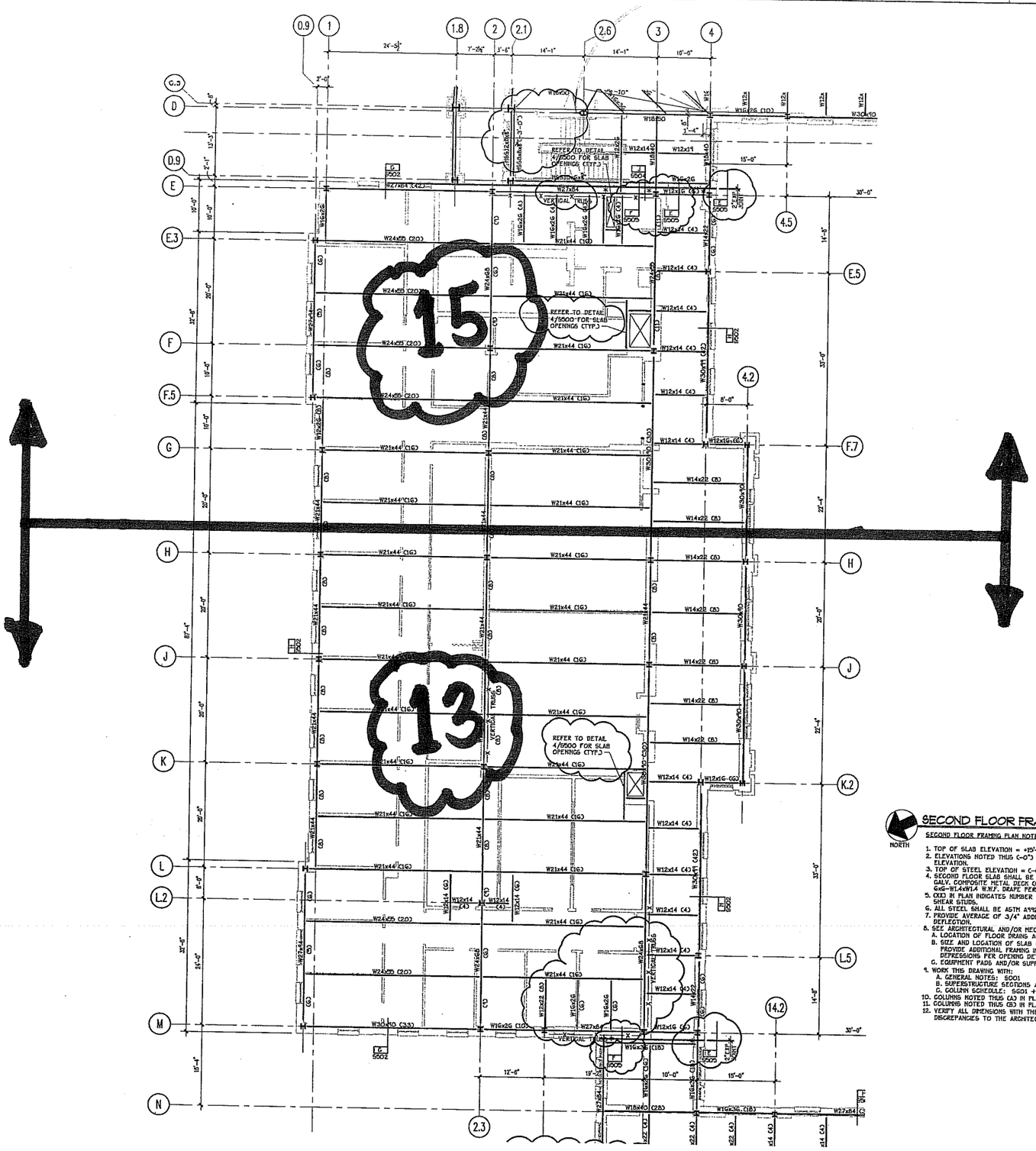
ROOF FRAMING PLAN PART A

18

Job Number 20356.00
Date 20 January 2005
Drawn By MTH
Scale 1/8" = 1'-0"

Drawing No. S251



SECOND FLOOR FRAMING - PART B

S222 — 1/8" = 1'-0"

SECOND FLOOR FRAMING PLAN - PART B

1/8"=1'-0"

SECOND FLOOR FRAMING PLAN NOTES:

1. TOP OF SLAB ELEVATION = +75'-4" AS MEASURED FROM REFERENCE DATUM ELEVATION 30'-0".
2. ELEVATIONS NOTED THUS C-0") IN PLAN ARE MEASURED FROM TOP OF SLAB ELEVATION.
3. TOP OF STEEL ELEVATION = C-6-1/4"), UNLESS NOTED OTHERWISE IN PLAN.
4. SECOND FLOOR SLAB SHALL BE 3-1/4" LW. CONCRETE TOPPING ON 3"x20 GAUGE GALV. COMPOSITE METAL DECK (6-1/4" TOTAL THICK). REINFORCE SLAB WITH 6x6-W1.4xW1.4 W.W.F. DRAPE PER TYPICAL DETAILS.
5. (X) IN PLAN INDICATES NUMBER EQUALLY SPACED 3/4"DIAM. x 5" LONG HEADED SHEAR STUDS.
6. ALL STEEL SHALL BE ASTM A992, UNLESS NOTED OTHERWISE.
7. PROVIDE AVERAGE OF 3/4" ADDITIONAL CONCRETE TO ACCOUNT FOR DEAD LOAD DEFLECTION.
8. SEE ARCHITECTURAL AND/OR MECHANICAL DRAWINGS FOR:
   A. LOCATION OF FLOOR DRAINS AND SLOPE OF FINISHED FLOOR.
   B. SIZE AND LOCATION OF SLAB OPENINGS, DEPRESSIONS AND/OR MECHANICAL SLEEVES. PROVIDE ADDITIONAL FRAMING IN ACCORDANCE WITH TYPICAL DETAILS. REINFORCE DEPRESSIONS PER OPENING DETAILS.
   C. EQUIPMENT PADS AND/OR SUPPORTS.
9. WORK THIS DRAWING WITH:
   A. GENERAL NOTES: S001
   B. SUPERSTRUCTURE SECTIONS AND DETAILS: S500 SERIES
   C. COLUMN SCHEDULE: S501 + S502
10. COLUMNS NOTED THUS (A) IN PLAN ARE ABOVE.
11. COLUMNS NOTED THUS (B) IN PLAN ARE BELOW.
12. VERIFY ALL DIMENSIONS WITH THE ARCHITECTURAL DRAWINGS. REPORT ANY DISCREPANCIES TO THE ARCHITECT FOR REVIEW.

NORTH

SCALE: 1/8" = 1'-0"

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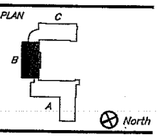
Number	Date	Revision
1	02/23/2006	Addendum No. 1

KEY PLAN



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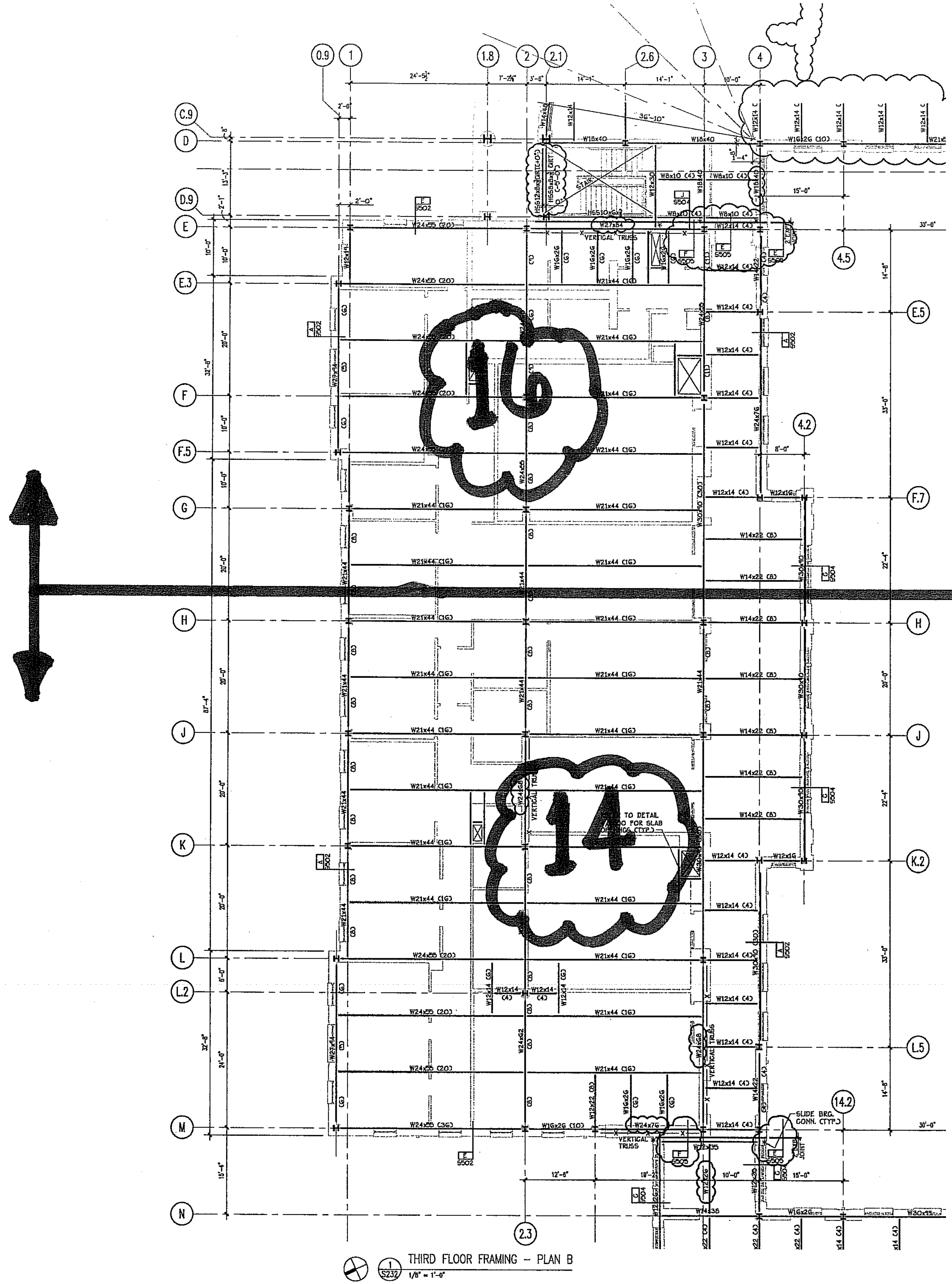
SECOND FLOOR FRAMING PLAN PART B

Job Number 20050.00 | Date 20 January 2005
Drawn By MTH | Scale 1/8" = 1'-0"

Drawing No.
S222



(1/S232) THIRD FLOOR FRAMING – PLAN B
1/8" = 1'-0"

THIRD FLOOR FRAMING PLAN - PART B

NORTH

1/8"=1'-0"

THIRD FLOOR FRAMING PLAN NOTES:

1. TOP OF SLAB ELEVATION = +30'-0" AS MEASURED FROM REFERENCE DATUM ELEVATION 30'-6'
2. ELEVATIONS NOTED THUS (-0") IN PLAN ARE MEASURED FROM TOP OF SLAB ELEVATION.
3. TOP OF STEEL ELEVATION = (-6-1/4"), UNLESS NOTED OTHERWISE IN PLAN.
4. THIRD FLOOR SLAB SHALL BE 3-1/4" L.W. CONCRETE TOPPING ON 3"x20 GAUGE GALV. COMPOSITE METAL DECK (6-1/4" TOTAL THICK). REINFORCE SLAB WITH 6x6-W1.4xW1.4 W.W.F. DRAPE PER TYPICAL DETAILS.
5. (XX) IN PLAN INDICATES NUMBER EQUALLY SPACED 3/4"DIAM. x 5" LONG HEADED SHEAR STUDS.
6. ALL STEEL SHALL BE ASTM A992, UNLESS NOTED OTHERWISE.
7. PROVIDE AVERAGE OF 3/4" ADDITIONAL CONCRETE TO ACCOUNT FOR DEAD LOAD DEFLECTION.
8. SEE ARCHITECTURAL AND/OR MECHANICAL DRAWINGS FOR:
   A. LOCATION OF FLOOR DRAINS AND SLOPE OF FINISHED FLOOR.
   B. SIZE AND LOCATION OF SLAB OPENINGS, DEPRESSIONS AND/OR MECHANICAL SLEEVES. PROVIDE ADDITIONAL FRAMING IN ACCORDANCE WITH TYPICAL DETAILS. REINFORCE DEPRESSIONS PER OPENING DETAILS.
   C. EQUIPMENT PADS AND/OR SUPPORTS.
9. WORK THIS DRAWING WITH:
   A. GENERAL NOTES: S001
   B. SUPERSTRUCTURE SECTIONS AND DETAILS: S500 SERIES
   C. COLUMN SCHEDULE: S601 + S602
10. COLUMNS NOTED THUS (A) IN PLAN ARE ABOVE.
11. COLUMNS NOTED THUS (B) IN PLAN ARE BELOW.
12. VERIFY ALL DIMENSIONS WITH THE ARCHITECTURAL DRAWINGS. REPORT ANY DISCREPANCIES TO THE ARCHITECT FOR REVIEW.

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

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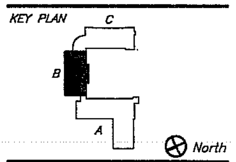
PROJECT MANAGER DATE

CONSTRUCTION DOCUMENTS

Seal

Number	Date	Revision
1	02/28/2005	Addendum No. 1

KEY PLAN



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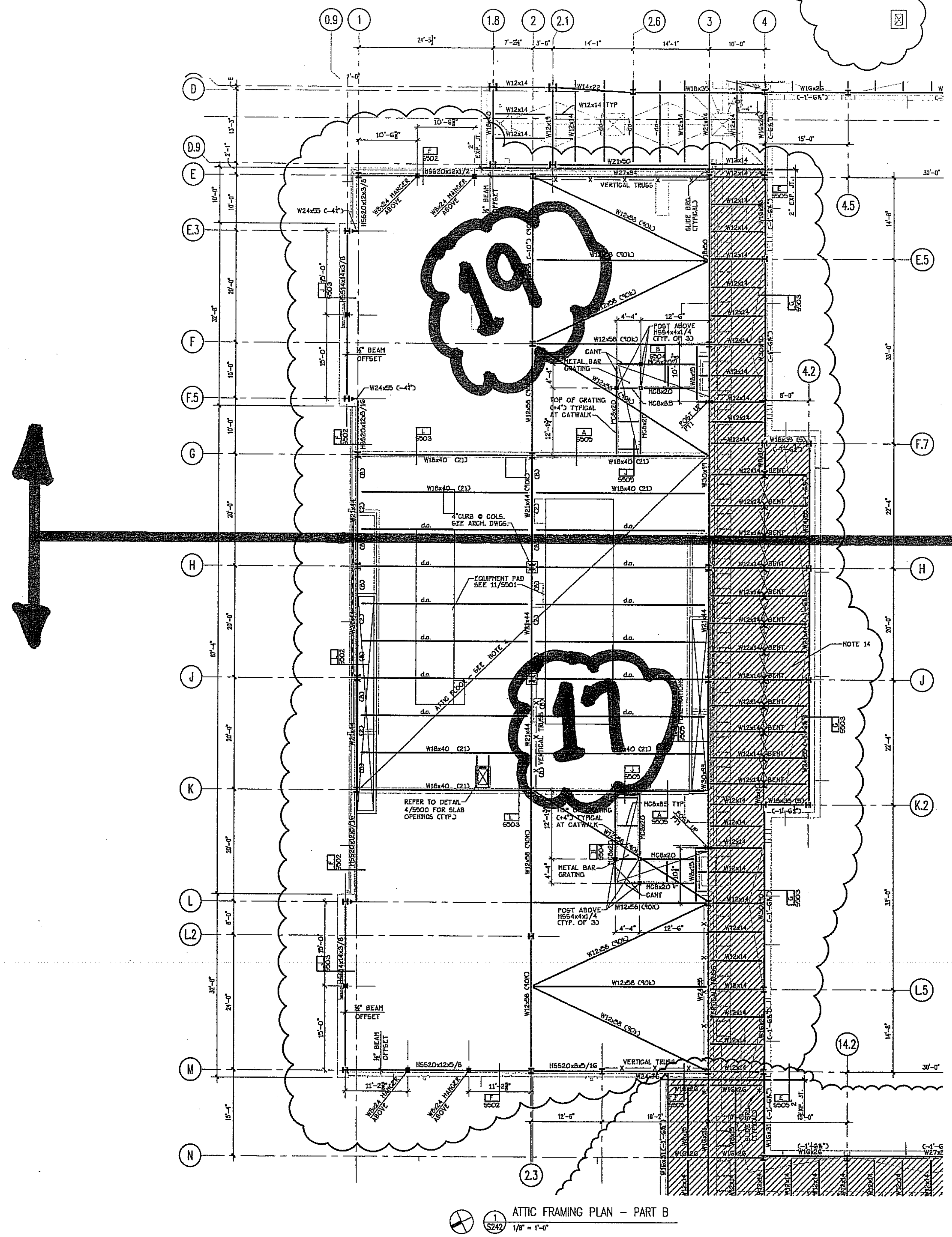
THIRD FLOOR FRAMING PLAN PART B

Job Number 20356.00
Date 20 January 2005
Drawn By M.T.H.
Scale 1/8" = 1'-0"

Drawing No.
S232



ATTIC FRAMING PLAN – PART B

1/S242 1/8" = 1'-0"

ATTIC FLOOR FRAMING PLAN - PART B

1/8"=1'-0"

NORTH

ATTIC FLOOR FRAMING PLAN NOTES:

1. TOP OF SLAB ELEVATION = +44'-8" AS MEASURED FROM REFERENCE DATUM ELEVATION 30'-6".
2. ELEVATIONS NOTED THUS (-0") IN PLAN ARE MEASURED FROM TOP OF SLAB ELEVATION.
3. TOP OF STEEL ELEVATION = (-6-1/4"), UNLESS NOTED OTHERWISE IN PLAN.
4. ATTIC FLOOR SLAB SHALL BE 3-1/4" L.W. CONCRETE TOPPING ON 3"x20 GAUGE GALV. COMPOSITE METAL DECK (6-1/4" TOTAL THICK). REINFORCE SLAB WITH 6x6-W1.4xW1.4 W.W.F. DRAPE PER TYPICAL DETAILS.
5. ROOF SHALL BE 1-1/2" x 20 GAGE GALVANIZED TYPE 'B' METAL DECK.
6. (XX) IN PLAN INDICATES NUMBER EQUALLY SPACED 3/4"DIAM. x 5" LONG HEADED SHEAR STUDS.
7. ALL STEEL SHALL BE ASTM A992, UNLESS NOTED OTHERWISE.
8. PROVIDE AVERAGE OF 3/4" ADDITIONAL CONCRETE TO ACCOUNT FOR DEAD LOAD DEFLECTION.
9. SEE ARCHITECTURAL AND/OR MECHANICAL DRAWINGS FOR:
   A. LOCATION OF FLOOR DRAINS AND SLOPE OF FINISHED FLOOR.
   B. SIZE AND LOCATION OF SLAB OPENINGS, DEPRESSIONS AND/OR MECHANICAL SLEEVES. PROVIDE ADDITIONAL FRAMING IN ACCORDANCE WITH TYPICAL DETAILS. REINFORCE DEPRESSIONS PER OPENING DETAILS.
   C. EQUIPMENT PADS AND/OR SUPPORTS.
10. WORK THIS DRAWING WITH:
   A. GENERAL NOTES: S001
   B. SUPERSTRUCTURE SECTIONS AND DETAILS: S500 SERIES
   C. COLUMN SCHEDULE: S601, S602
11. COLUMNS NOTED THUS (A) IN PLAN ARE ABOVE.
12. COLUMNS NOTED THUS (B) IN PLAN ARE BELOW.
13. VERIFY ALL DIMENSIONS WITH THE ARCHITECTURAL DRAWINGS. REPORT ANY DISCREPANCIES TO THE ARCHITECT FOR REVIEW.
14. 5/8" PUDDLE WELD 36/7 PATTERN W/ #12 TEK SCREWS SIDE LAPPED @ 6" O.C. WELD ALL PERIMETER STEEL @ 6" O.C.
15. X INDICATES BEND IN BEAM.
16. BRACING CONNECTIONS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MARYLAND FOR THE FORCES NOTED ON THE PLAN AND DETAILS. STAMPED CALCULATIONS FOR THE CONNECTION DESIGN SHALL BE SUBMITTED ALONG WITH THE SHOP DRAWINGS FOR THE REVIEW OF THE ENGINEER.
17. FORCES SHOWN IN THE PLANS AND DETAILS ARE MAXIMUM SERVICE LOADS FROM THE A.S.D. LOAD COMBINATIONS IN SECTION 1605.3.1 OF THE INTERNATIONAL BUILDING CODE. ALL APPROPRIATE LOAD COMBINATIONS HAVE BEEN ACCOUNTED FOR IN THE DETERMINATION OF THESE LOADS. STRESS INCREASES FOR LOAD COMBINATIONS INCLUDING WIND AND GRAVITY ARE STRUCTURALLY ACCEPTABLE AS PERMITTED IN APPLICABLE DESIGN CODES. ASSUME LOADS ACT IN EITHER TENSION OR COMPRESSION. CONNECTIONS OF HORIZONTAL MEMBERS MUST ALSO BE DESIGNED FOR SHEAR BASED UPON MEMBERS FULL UNIFORM LOAD CAPACITY.

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

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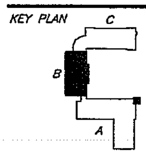
CONSTRUCTION DOCUMENTS

Seal

Number	Date	Revision
1	02/22/2006	Addendum No. 1

KEY PLAN



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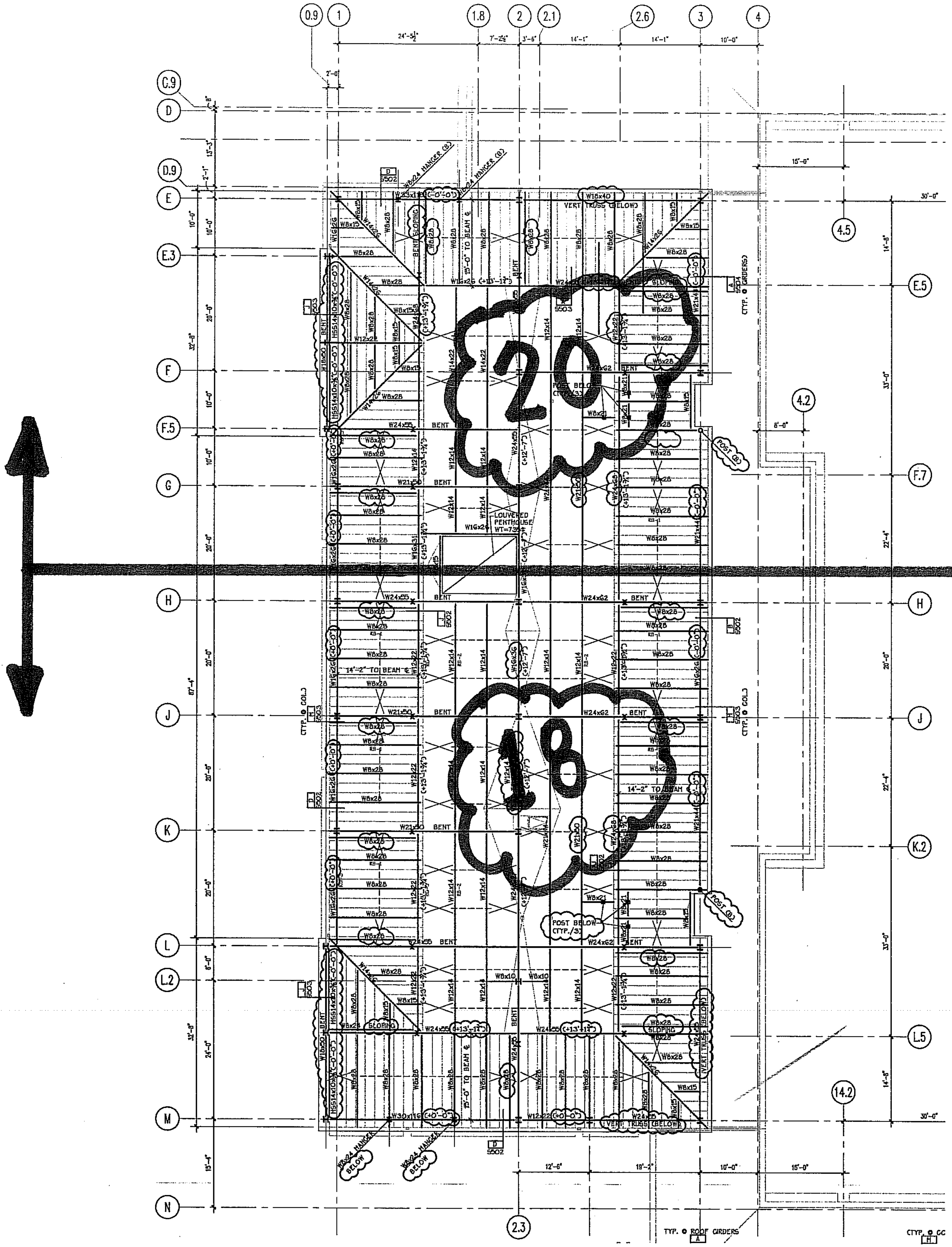
ATTIC FRAMING PLAN
PART B

Job Number 20356.00
Date 20 January 2005
Drawn By M.T.H.
Scale 1/8" = 1'-0"

Drawing No.
S242



✕	L2x2x1/4 DIAGONAL BRIDGING (TYP.) FIELD WELD TO BEAM BOTTOM + TOP FLANGE
- - - - - -	L2x2x1/4 BRIDGING (TYP.) FIELD WELD TO BEAM BOTTOM FLANGE

NORTH

ROOF FRAMING PLAN - PART B

1/8"=1'-0"

ROOF FRAMING PLAN NOTES:

1. TOP OF STEEL ELEVATION = +50'-1" AS MEASURED FROM REFERENCE DATUM ELEVATION 30'-6".
2. ELEVATION NOTED THUS (-0") IN PLAN ARE MEASURED FROM TOP OF STEEL ELEVATION. SLOPE STEEL UNIFORMLY BETWEEN HIGH AND LOW POINTS.
3. ROOF SHALL BE 1-1/2"x20 GA. GALVANIZED TYPE 'B' METAL DECK.
4. ALL STEEL SHALL BE ASTM A992, UNLESS NOTED OTHERWISE.
5. SEE ARCHITECTURAL AND/OR MECHANICAL DRAWINGS FOR:
   A. LOCATION OF FLOOR DRAINS AND SLOPE OF FINISHED FLOOR.
   B. SIZE AND LOCATION OF SLAB OPENINGS, DEPRESSIONS AND/OR MECHANICAL SLEEVES.
6. WORK THIS DRAWING WITH:
   A. GENERAL NOTES: S001
   B. SUPERSTRUCTURE SECTIONS AND DETAILS: S501, S502, S503
   C. LATERAL BRACING: S300, S301
   D. COLUMN SCHEDULE: S601, S602
   E. TRUSS DIAGRAMS: S701, S702
7. COLUMNS NOTED THUS (A) IN PLAN ARE ABOVE.
8. COLUMNS NOTED THUS (B) IN PLAN ARE BELOW.
9. VERIFY ALL DIMENSIONS WITH THE ARCHITECTURAL DRAWINGS. REPORT ANY DISCREPANCIES TO THE ARCHITECT FOR REVIEW.
10. X INDICATES BEND IN BEAM.

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

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CONSTRUCTION DOCUMENTS

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Number	Date	Revision
1	02/22/2005	Addendum No. 1

KEY PLAN

C B A North

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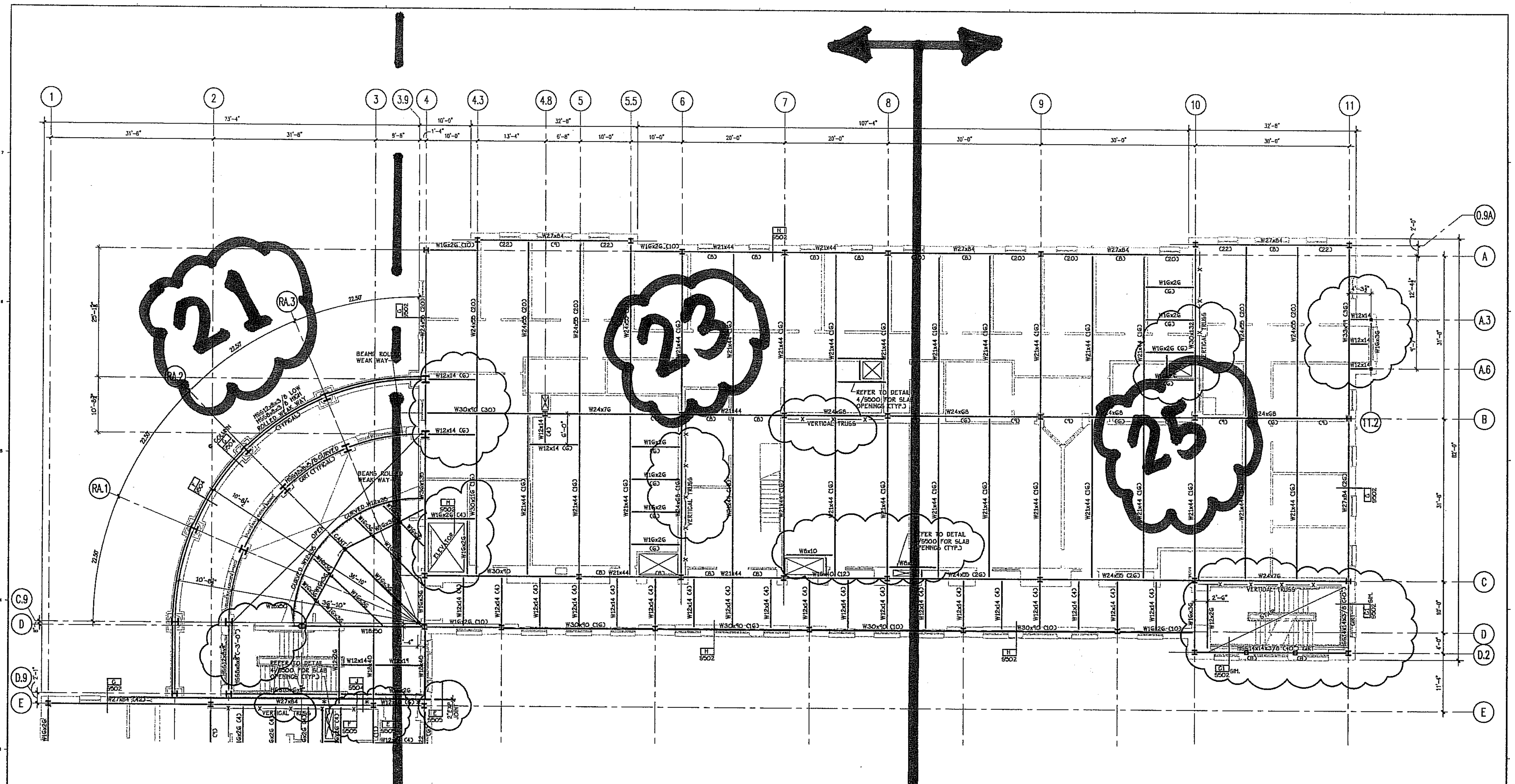
ROOF FRAMING PLAN PART B

22

Job Number 20356.00
Date 20 January 2005
Drawn By M.T.H.
Scale 1/8" = 1'-0"

Drawing No.
S252



SECOND FLOOR FRAMING – PART C
1/S223
1/8" = 1'-0"

SECOND FLOOR FRAMING PLAN - PART C

NORTH

SECOND FLOOR FRAMING PLAN NOTES: 1/8"=1'-0"

1. TOP OF SLAB ELEVATION = +15'-4" AS MEASURED FROM REFERENCE DATUM ELEVATION 30'-6".
2. ELEVATIONS NOTED THUS (-0") IN PLAN ARE MEASURED FROM TOP OF SLAB ELEVATION.
3. TOP OF STEEL ELEVATION = (-6-1/4"), UNLESS NOTED OTHERWISE IN PLAN.
4. SECOND FLOOR SLAB SHALL BE 3-1/4" L.W. CONCRETE TOPPING ON 3"x20 GAUGE GALV. COMPOSITE METAL DECK (6-1/4" TOTAL THICK). REINFORCE SLAB WITH 6x6-W1.4xW1.4 W.W.F. DRAPE PER TYPICAL DETAILS.
5. (XX) IN PLAN INDICATES NUMBER EQUALLY SPACED 3/4"DIAM. x 5" LONG HEADED SHEAR STUDS.
6. ALL STEEL SHALL BE ASTM A992, UNLESS NOTED OTHERWISE.
7. PROVIDE AVERAGE OF 3/4" ADDITIONAL CONCRETE TO ACCOUNT FOR DEAD LOAD DEFLECTION.
8. SEE ARCHITECTURAL AND/OR MECHANICAL DRAWINGS FOR:
   A. LOCATION OF FLOOR DRAINS AND SLOPE OF FINISHED FLOOR.
   B. SIZE AND LOCATION OF SLAB OPENINGS, DEPRESSIONS AND/OR MECHANICAL SLEEVES. PROVIDE ADDITIONAL FRAMING IN ACCORDANCE WITH TYPICAL DETAILS. REINFORCE DEPRESSIONS PER OPENING DETAILS.
   C. EQUIPMENT PADS AND/OR SUPPORTS.
9. WORK THIS DRAWING WITH:
   A. GENERAL NOTES: S001
   B. SUPERSTRUCTURE SECTIONS AND DETAILS: S500 SERIES
   C. COLUMN SCHEDULE: S601 + S602
10. COLUMNS NOTED THUS (A) IN PLAN ARE ABOVE.
11. COLUMNS NOTED THUS (B) IN PLAN ARE BELOW.
12. VERIFY ALL DIMENSIONS WITH THE ARCHITECTURAL DRAWINGS. REPORT ANY DISCREPANCIES TO THE ARCHITECT FOR REVIEW.

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

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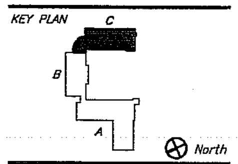
CONSTRUCTION DOCUMENTS

Seal

Number	Date	Revision
1	02/22/2006	Addendum No. 1

KEY PLAN



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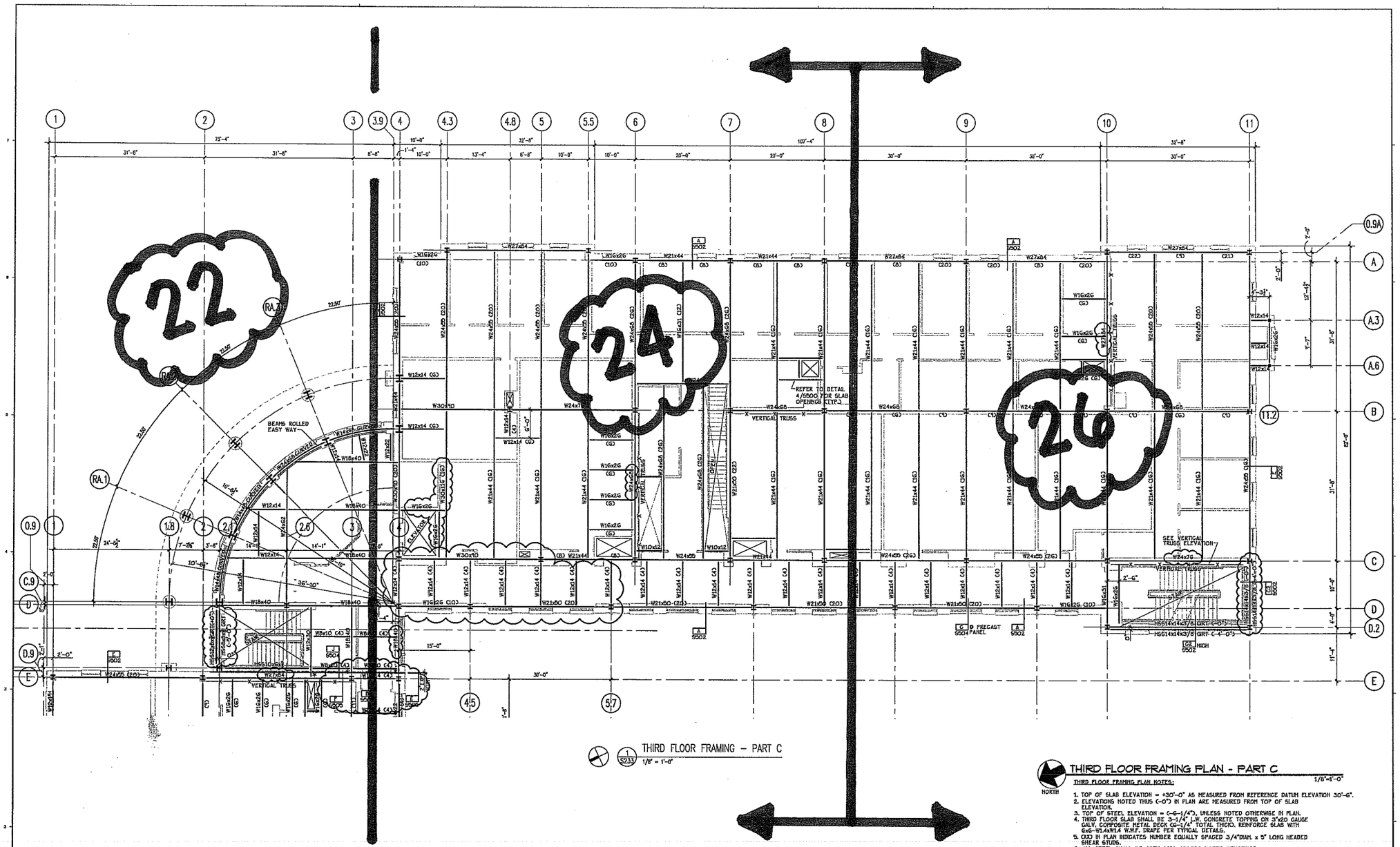
SECOND FLOOR FRAMING PLAN PART C

Job Number 20356.00
Date 20 January 2005
Drawn By MTH
Scale 1/8" = 1'-0"

Drawing No.
S223



THIRD FLOOR FRAMING – PART C
1/8" = 1'-0"

THIRD FLOOR FRAMING PLAN - PART C

1/8"=1'-0"

NORTH

THIRD FLOOR FRAMING PLAN NOTES:

1. TOP OF SLAB ELEVATION = +30'-0" AS MEASURED FROM REFERENCE DATUM ELEVATION 30'-0".
2. ELEVATIONS NOTED THUS (-0") IN PLAN ARE MEASURED FROM TOP OF SLAB ELEVATION.
3. TOP OF STEEL ELEVATION = C-G-1/4", UNLESS NOTED OTHERWISE IN PLAN.
4. THIRD FLOOR SLAB SHALL BE 3-1/4" L.W. CONCRETE TOPPING ON 3"x20 GAUGE GALV. COMPOSITE METAL DECK (C-1/4" TOTAL THICK). REINFORCE SLAB WITH 6x6-W1.4xW1.4 W.W.F. DRAPE PER TYPICAL DETAILS.
5. (XX) IN PLAN INDICATES NUMBER EQUALLY SPACED 3/4"DIAM. x 5" LONG HEADED SHEAR STUDS.
6. ALL STEEL SHALL BE ASTM A992, UNLESS NOTED OTHERWISE.
7. PROVIDE AVERAGE OF 3/4" ADDITIONAL CONCRETE TO ACCOUNT FOR DEAD LOAD DEFLECTION.
8. SEE ARCHITECTURAL AND/OR MECHANICAL DRAWINGS FOR:
   A. LOCATION OF FLOOR DRAINS AND SLOPE OF FINISHED FLOOR.
   B. SIZE AND LOCATION OF SLAB OPENINGS, DEPRESSIONS AND/OR MECHANICAL SLEEVES. PROVIDE ADDITIONAL FRAMING IN ACCORDANCE WITH TYPICAL DETAILS. REINFORCE DEPRESSIONS PER OPENING DETAILS.
   C. EQUIPMENT PADS AND/OR SUPPORTS.
9. WORK THIS DRAWING WITH:
   A. GENERAL NOTES: S001
   B. SUPERSTRUCTURE SECTIONS AND DETAILS: S500 SERIES
   C. COLUMN SCHEDULE: S601 + S602
10. COLUMNS NOTED THUS (A) IN PLAN ARE ABOVE.
11. COLUMNS NOTED THUS (B) IN PLAN ARE BELOW.
12. VERIFY ALL DIMENSIONS WITH THE ARCHITECTURAL DRAWINGS. REPORT ANY DISCREPANCIES TO THE ARCHITECT FOR REVIEW.

0 4' 8' 16'

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CONSTRUCTION DOCUMENTS

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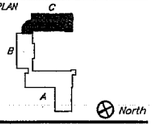
Number	Date	Revision
1	02/22/2006	Addendum No. 1

KEY PLAN



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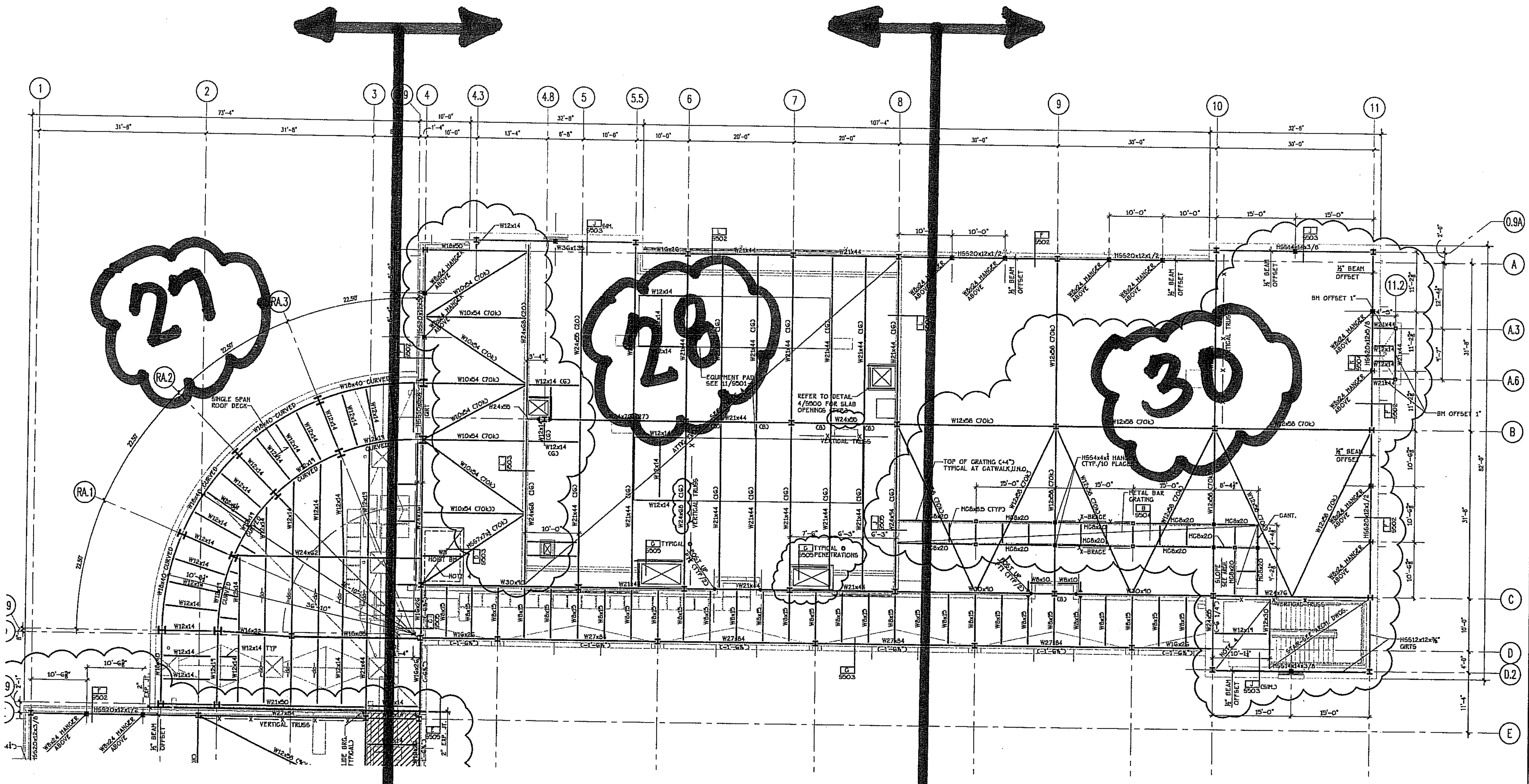
THIRD FLOOR FRAMING PLAN PART C 24

Job Number 20056.00 | Date 20 January 2005
Drawn By M.T.K. | Scale 1/8" = 1'-0"

Drawing No.
S233



ATTIC FRAMING PLAN – PART C
1/S243 1/8" = 1'-0"

ATTIC FLOOR FRAMING PLAN - PART C

NORTH

ATTIC FLOOR FRAMING PLAN NOTES: 1/8"=1'-0"

1. TOP OF SLAB ELEVATION = +44'-8" AS MEASURED FROM REFERENCE DATUM ELEVATION 30'-6".
2. ELEVATIONS NOTED THUS (-0") IN PLAN ARE MEASURED FROM TOP OF SLAB ELEVATION.
3. TOP OF STEEL ELEVATION = (-6-1/4"), UNLESS NOTED OTHERWISE IN PLAN.
4. ATTIC FLOOR SLAB SHALL BE 3-1/4" L.W. CONCRETE TOPPING ON 3"x20 GAUGE GALV. COMPOSITE METAL DECK (6-1/4" TOTAL THICK). REINFORCE SLAB WITH 6x6-W1.4xW1.4 W.W.F. DRAPE PER TYPICAL DETAILS.
5. ROOF SHALL BE 1-1/2" x 20 GAGE GALVANIZED TYPE 'B' METAL DECK.
6. (XX) IN PLAN INDICATES NUMBER EQUALLY SPACED 3/4"DIAM. x 5" LONG HEADED SHEAR STUDS.
7. ALL STEEL SHALL BE ASTM A992, UNLESS NOTED OTHERWISE.
8. PROVIDE AVERAGE OF 3/4" ADDITIONAL CONCRETE TO ACCOUNT FOR DEAD LOAD DEFLECTION.
9. SEE ARCHITECTURAL AND/OR MECHANICAL DRAWINGS FOR:
   A. LOCATION OF FLOOR DRAINS AND SLOPE OF FINISHED FLOOR.
   B. SIZE AND LOCATION OF SLAB OPENINGS, DEPRESSIONS AND/OR MECHANICAL SLEEVES. PROVIDE ADDITIONAL FRAMING IN ACCORDANCE WITH TYPICAL DETAILS. REINFORCE DEPRESSIONS PER OPENING DETAILS.
   C. EQUIPMENT PADS AND/OR SUPPORTS.
10. WORK THIS DRAWING WITH:
   A. GENERAL NOTES: S001
   B. SUPERSTRUCTURE SECTIONS AND DETAILS: S500 SERIES
   C. COLUMN SCHEDULE: S601, S602
11. COLUMNS NOTED THUS (A) IN PLAN ARE ABOVE.
12. COLUMNS NOTED THUS (B) IN PLAN ARE BELOW.
13. VERIFY ALL DIMENSIONS WITH THE ARCHITECTURAL DRAWINGS. REPORT ANY DISCREPANCIES TO THE ARCHITECT FOR REVIEW.
14. BRACING CONNECTIONS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MARYLAND FOR THE FORCES NOTED ON THE PLAN AND DETAILS. STAMPED CALCULATIONS FOR THE CONNECTION DESIGN SHALL BE SUBMITTED ALONG WITH THE SHOP DRAWINGS FOR THE REVIEW OF THE ENGINEER.
15. FORCES SHOWN IN THE PLANS AND DETAILS ARE MAXIMUM SERVICE LOADS FROM THE A.S.D. LOAD COMBINATIONS IN SECTION 1605.3.1 OF THE INTERNATIONAL BUILDING CODE. ALL APPROPRIATE LOAD COMBINATIONS HAVE BEEN ACCOUNTED FOR IN THE DETERMINATION OF THESE LOADS. STRESS INCREASES FOR LOAD COMBINATIONS INCLUDING WIND AND GRAVITY ARE STRUCTURALLY ACCEPTABLE AS PERMITTED IN APPLICABLE DESIGN CODES. ASSUME LOADS ACT IN EITHER TENSION OR COMPRESSION. CONNECTIONS OF HORIZONTAL MEMBERS MUST ALSO BE DESIGNED FOR SHEAR BASED UPON MEMBERS FULL UNIFORM LOAD CAPACITY.

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

UNIVERSITY OF MARYLAND
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SALISBURY UNIVERSITY APPROVAL

TITLE DATE

UNIVERSITY OF MARYLAND AEC APPROVAL

PROJECT MANAGER DATE

CONSTRUCTION DOCUMENTS

Seal

Number	Date	Revision
1	02/28/2005	Addendum No. 1

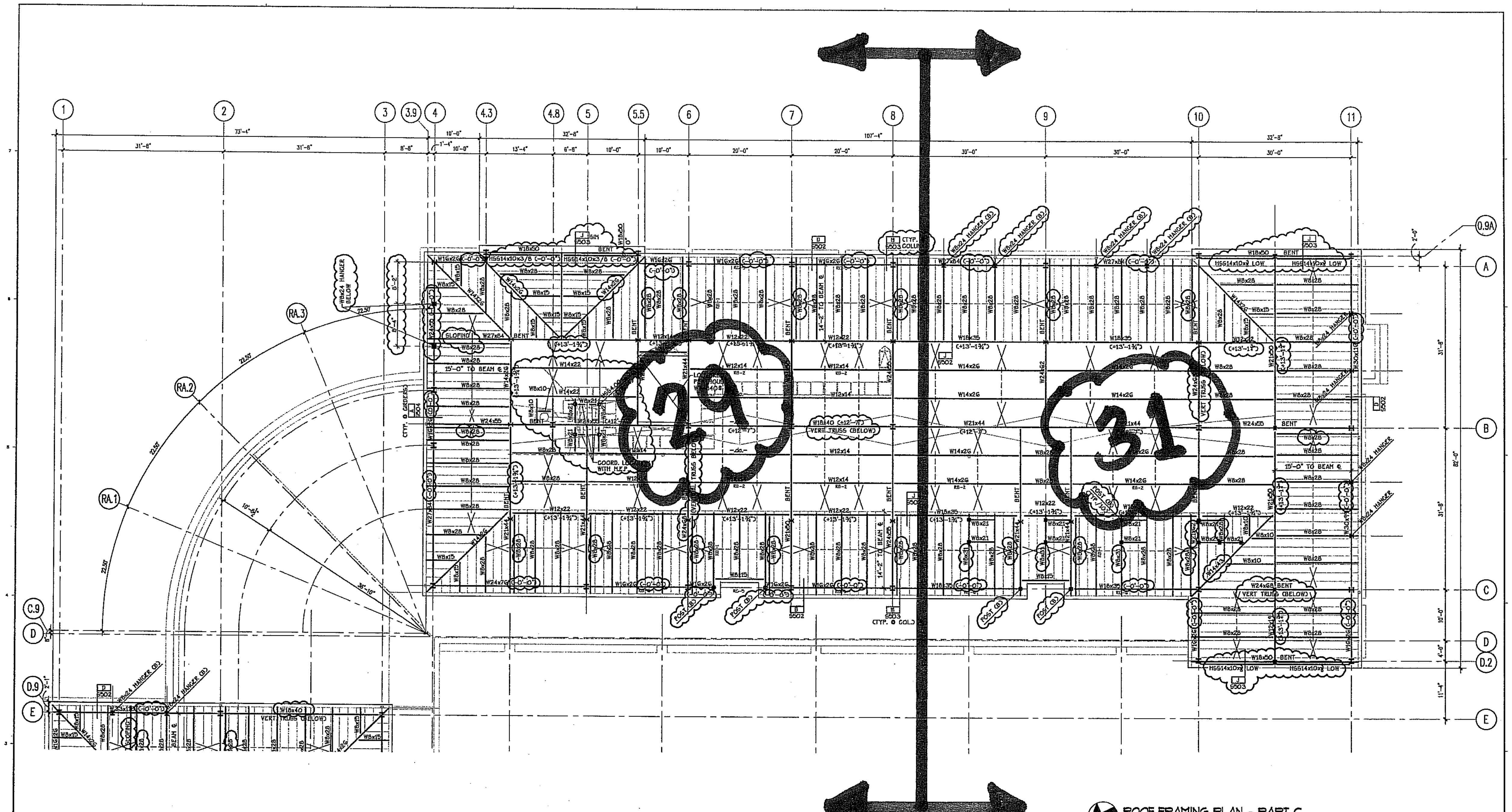
KEY PLAN
C
B
A
North

Architects and Planners
1040 Hull Street, Suite 100 Baltimore, Maryland 21230 410/347-8500
800 I Street NW, 6th Floor Washington DC 20001 202/828-1033

AYERS SAINT GROSS
ARCHITECTS + PLANNERS

ATTIC FRAMING PLAN PART C

Job Number *20356.00*
Date *20 January 2005*
Drawn By *M.T.H.*
Scale *1/8" = 1'-0"*
Drawing No.
S243



ROOF FRAMING PLAN - PART C

NORTH

1/8"=1'-0"

ROOF FRAMING PLAN NOTES:

1. TOP OF STEEL ELEVATION = +50'-1" AS MEASURED FROM REFERENCE DATUM ELEVATION 30'-6".
2. ELEVATION NOTED THUS (-0") IN PLAN ARE MEASURED FROM TOP OF STEEL ELEVATION. SLOPE STEEL UNIFORMLY BETWEEN HIGH AND LOW POINTS.
3. ROOF SHALL BE 1-1/2"x20 GA. GALVANIZED TYPE 'B' METAL DECK.
4. ALL STEEL SHALL BE ASTM A992, UNLESS NOTED OTHERWISE.
5. SEE ARCHITECTURAL AND/OR MECHANICAL DRAWINGS FOR:
   A. LOCATION OF FLOOR DRAINS AND SLOPE OF FINISHED FLOOR.
   B. SIZE AND LOCATION OF SLAB OPENINGS, DEPRESSIONS AND/OR MECHANICAL SLEEVES.
6. WORK THIS DRAWING WITH:
   A. GENERAL NOTES: S001
   B. SUPERSTRUCTURE SECTIONS AND DETAILS: S501, S502, S503
   C. LATERAL BRACING: S300, S301
   D. COLUMN SCHEDULE: S601, S602
   E. TRUSS DIAGRAMS: S701, S702
7. COLUMNS NOTED THUS (A) IN PLAN ARE ABOVE.
8. COLUMNS NOTED THUS (B) IN PLAN ARE BELOW.
9. VERIFY ALL DIMENSIONS WITH THE ARCHITECTURAL DRAWINGS. REPORT ANY DISCREPANCIES TO THE ARCHITECT FOR REVIEW.
10. X INDICATES BEND IN BEAM.

X	L2x2x1/4 DIAGONAL BRIDGING (TYP.) FIELD WELD TO BEAM BOTTOM + TOP FLANGE
-------	L2x2x1/4 BRIDGING (TYP.) FIELD WELD TO BEAM BOTTOM FLANGE

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

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CONSTRUCTION DOCUMENTS

Seal

Number	Date	Revision
1	02/28/2006	Addendum No. 1

KEY PLAN C B A North

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AYERS SAINT GROSS
ARCHITECTS + PLANNERS

ROOF FRAMING PLAN
PART C

Job Number 20356.00
Date 20 January 2005
Drawn By M.T.H.
Scale 1/8" = 1'-0"

Drawing No.
S253

Appendix B
Detailed Structural System Estimate
Teachers Education and Technology Center at Salisbury University

Appendix B

Structural System Estimate

Detailed Structural Estimate					October 30th, 2006	
Teacher Education & Technology Center at Salisbury University						
Category	**Item**	**Notes**	**Qty**	**Unit**	**$/Unit**	**Total Cost**
Foundations						
3210	Reinforicing					
	# 8 Bars (Piles)		0.21	TN	$1,350.00	$288.23
	#6 Bars (Piles)		0.21	TN	$1,800.00	$378.90
	#4 Bars (Pile Ties)		0.01	TN	$1,800.00	$22.50
	#8 Bars (Piers)		0.08	TN	$1,350.00	$102.60
	# 4 Bars (Pier Ties)		0.02	TN	$1,800.00	$33.30
	#6 Bars (Pile Caps)		0.85	TN	$1,800.00	$1,530.00
	#7 Bars (Grade Beams)		0.32	TN	$1,800.00	$583.20
	#4 Bars (Grade Beams)		0.01	TN	$1,800.00	$22.50
	6"x6"xw2.1xw2.1 WWF	SOG	14.00	CSF	$60.50	$847.00
	6"x"6x w1.4xw1.4 WWF	Elevated Slabs	41	CSF	$50.00	$2,050.00
				Subtotal		**$5,858.23**
2200	Deep Foundations					
	Auger Cast Piles		440.00	LF	$27.44	**$12,073.60**
3300	Piers/Pile Caps/SOG/ Beams					
	Column Piers		2.31	CY	$643.73	$1,487.02
	1.5" Dia. Anchor Bolts	Piers/Columns	12.00	EA	$36.75	$441.00
	0.75" Dia. Anchor Bolts	Piers/Columns	8.00	EA	$72.00	$576.00
	Slab-on-Grade (3500PSI)	Not Including WWF	1,351.00	SF	$2.71	$3,661.21
	Crushed Aggreate	SOG	17.00	CY	$30.00	$510.00
	Vapor Barrier	SOG	82.00	SQ	$12.60	$1,033.20
	6.5'x6.5' x3' Pile Cap	Material	4.70	CY	$92.50	$434.75
	6.5'x6.5' x3' Pile Cap	Labor/Equipment	4.70	CY	$23.50	$110.45
	Pile Cap Formwork		78.00	SF	$6.00	$468.00
	7.75'x7.75'x3' Pile Cap	Material	6.67	CY	$92.50	$616.98
	7.75'x7.75'x3' Pile Cap	Labor/Equipment	6.67	CY	$12.15	$81.04
	Pile Cap Formwork		93.00	SF	$6.00	$558.00
	9.5'x9.5'x3.5' Pile Cap	Material	12.80	CY	$92.50	$1,184.00
	9.5'x9.5'x3.5' Pile Cap	Labor/Equipment	12.80	CY	$9.90	$126.72

Appendix B

Structural System Estimate

Detailed Structural Estimate					October 30th, 2006	
Teacher Education & Technology Center at Salisbury University						
Category	**Item**	**Notes**	**Qty**	**Unit**	**$/Unit**	**Total Cost**
Foundations						
3300	Piers/Pile Caps/SOG/ Beams					
	Pile Cap Formwork		133.00	SF	$6.00	$798.00
	9.5'x6.75'x3.5' Pile Cap	Material	9.10	CY	$92.50	$841.75
	9.5'x6.75'x3.5' Pile Cap	Labor/Equipment	10.10	CY	$12.15	$122.72
	Pile Cap Formwork		107.00	SF	$6.00	$642.00
	Grade Beams (2'x2')	Material	127.00	CY	$92.50	$11,747.50
	Grade Beams (2'x2')	Labor/Equipment	127.00	CY	$14.15	$1,797.05
	Grade Beams Formwork		127.00	SF	$6.00	$762.00
				Subtotal		**$27,999.38**
Superstructure						
05500/03300	Elevated Slabs					
	3.25" Concrete Slab, 3500 PSI	3 Floors	4,053.00	SF	$2.30	$9,321.90
	Metal Floor Deck (3", 20 Gauge)	3 Floors	4,053.00	SF	$3.27	$13,253.31
	Metal Roof Deck (1.5", 20 Gauge)		1,351.00	SF	$2.12	$2,864.12
	0.75"x5" Shear Studs		244	EA	$32.00	$7,808.00
				Subtotal		**$33,247.33**
5500	Steel Members					
3	W10x88	Columns	3.84	TN	$2,600.00	$9,984.00
2	W12x58	Columns	0.96	TN	$2,600.00	$2,496.00
2	W12x79	Columns	2.37	TN	$2,600.00	$6,162.00
1	W10x39	Columns	0.32	TN	$2,600.00	$832.00
7	W21x44	Beams	1.64	TN	$2,600.00	$4,264.00
2	W24x68	Beams	2.9	TN	$2,600.00	$7,540.00
2	W24x55	Beams	4.43	TN	$2,600.00	$11,518.00
3	W27x84	Beams	3.99	TN	$2,600.00	$10,374.00
12	W16x26	Beams	1.39	TN	$2,600.00	$3,614.00
4	W8x10	Beams	0.15	TN	$2,600.00	$390.00
5	W12x58	Beams	5.4	TN	$2,600.00	$14,040.00

Appendix B

Structural System Estimate

Detailed Structural Estimate					October 30th, 2006	
Teacher Education & Technology Center at Salisbury University						
Category	**Item**	**Notes**	**Qty**	**Unit**	**$/Unit**	**Total Cost**
5500	Steel Members					
1	W18x50	Beams	1.1	TN	$2,600.00	$2,860.00
1	W18x40	Beams	0.63	TN	$2,600.00	$1,638.00
1	W24x62	Beams	0.98	TN	$2,600.00	$2,548.00
1	W14x26	Beams	0.3	TN	$2,600.00	$780.00
11	W8x28	Beams	2.31	TN	$2,600.00	$6,006.00
2	W8x15	Beams	0.11	TN	$2,600.00	$286.00
2	W12x14	Beams	0.2	TN	$2,600.00	$520.00
1	W12x22	Beams	0.15	TN	$2,600.00	$390.00
				Subtotal		**$86,242.00**

Total Structural System	**$165,420.53**