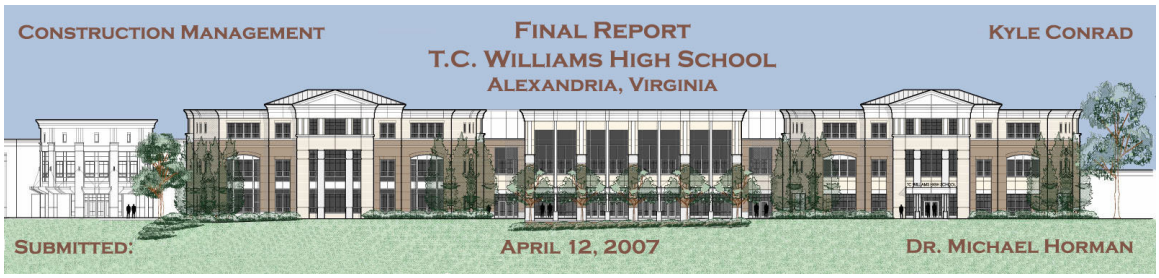


Appendix A

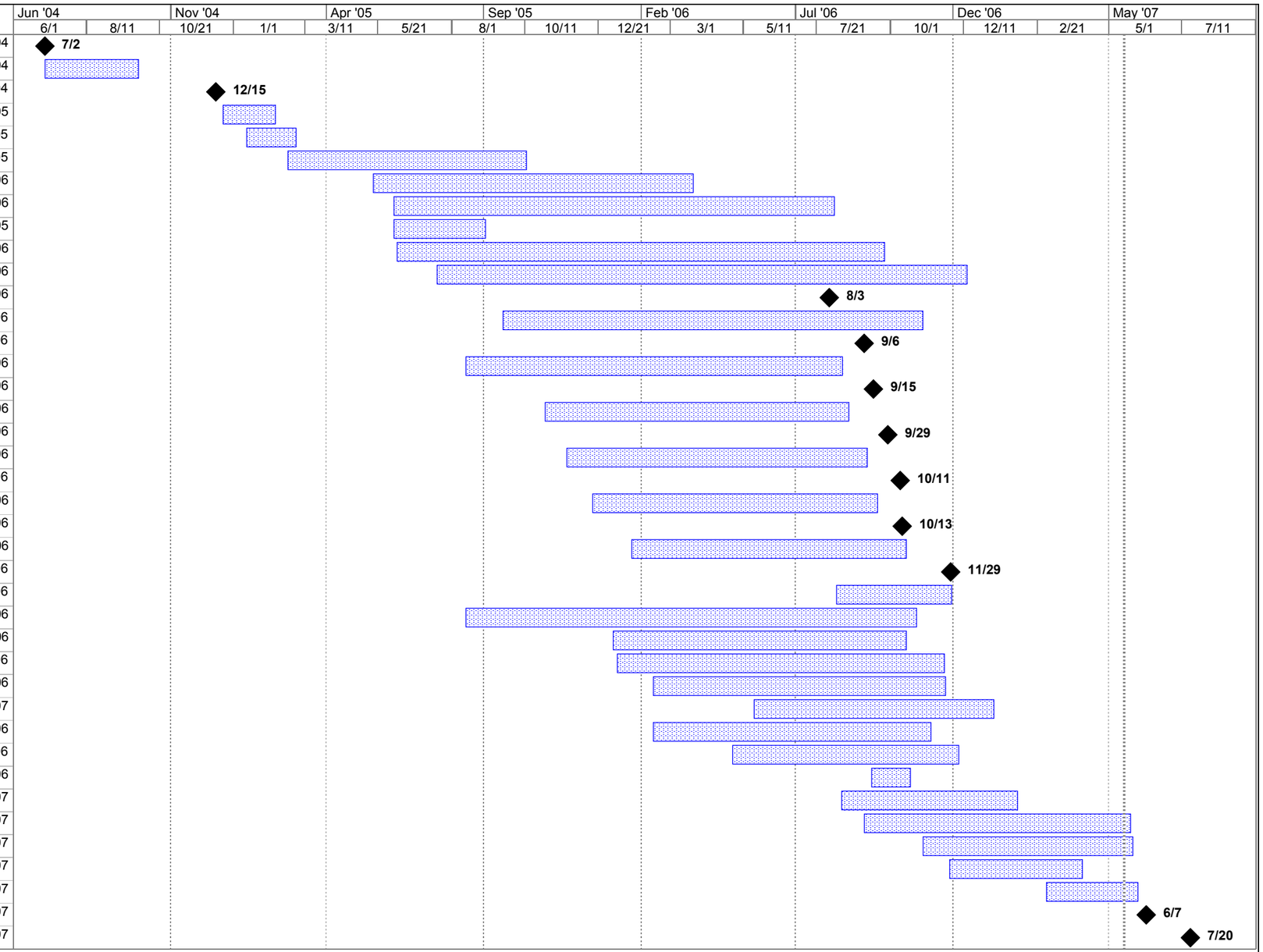
Phase A

Project Summary Schedule

T.C. Williams High School

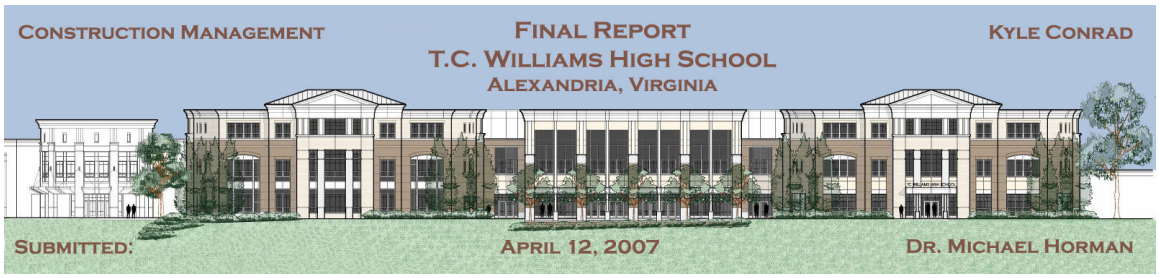
Replacement Project

ID	Task Name	Duration	Start	Finish
1	Notice of Award	1 day?	Fri 7/2/04	Fri 7/2/04
2	Value Engineering / Management Period	65 days?	Fri 7/2/04	Thu 9/30/04
3	Mobilization	1 day?	Wed 12/15/04	Wed 12/15/04
4	Phase A1 Demo Career Tech.	37 days?	Wed 12/22/04	Thu 2/10/05
5	Procure Building Permits	34 days?	Fri 1/14/05	Wed 3/2/05
6	Submittal Review/Approval	166 days?	Wed 2/23/05	Wed 10/12/05
7	Underslab Utilities	223 days?	Tue 5/17/05	Thu 3/23/06
8	Excavate Foundations	306 days?	Mon 6/6/05	Mon 8/7/06
9	Geopiers Foundation	65 days?	Mon 6/6/05	Fri 9/2/05
10	Concrete Foundations	338 days?	Thu 6/9/05	Mon 9/25/06
11	CMU Walls	369 days?	Mon 7/18/05	Thu 12/14/06
12	Area 3 - NW Tower Dry-in	1 day?	Thu 8/3/06	Thu 8/3/06
13	Exterior Brick	292 days?	Tue 9/20/05	Wed 11/1/06
14	Area 5 - GYM Wing Dry-in	1 day?	Wed 9/6/06	Wed 9/6/06
15	SOG Concrete	262 days?	Mon 8/15/05	Tue 8/15/06
16	Area 7 - Auditorium Dry-in	1 day?	Fri 9/15/06	Fri 9/15/06
17	Structural Steel Erection	211 days?	Mon 10/31/05	Mon 8/21/06
18	Area 1 - NE Tower Dry-in	1 day?	Fri 9/29/06	Fri 9/29/06
19	Metal Deck Installation	210 days?	Mon 11/21/05	Fri 9/8/06
20	Area 6 - Mech/Elec Wedge / Auto Strip Dry-in	1 day?	Wed 10/11/06	Wed 10/11/06
21	SOD Elevated Concrete	197 days?	Fri 12/16/05	Mon 9/18/06
22	Area 4 - Kitchen Wedge Dry-in	1 day?	Fri 10/13/06	Fri 10/13/06
23	Roofing	191 days?	Mon 1/23/06	Mon 10/16/06
24	Area 2 - Center Court Dry-in	1 day?	Wed 11/29/06	Wed 11/29/06
25	Windows & Curtainwalls	80 days?	Thu 8/10/06	Wed 11/29/06
26	Electrical System Rough-in	314 days?	Mon 8/15/05	Thu 10/26/06
27	Plumbing Rough-in	203 days?	Thu 1/5/06	Mon 10/16/06
28	HVAC Duct & Piping Rough-in	228 days?	Mon 1/9/06	Wed 11/22/06
29	Fire Alarm Rough-in	204 days?	Mon 2/13/06	Thu 11/23/06
30	Fire Protection Rough-in	167 days?	Mon 5/22/06	Tue 1/9/07
31	Install AHU Equipment	194 days?	Mon 2/13/06	Thu 11/9/06
32	Install Electrical Panels & Transformers	158 days?	Mon 5/1/06	Wed 12/6/06
33	Fire Alarm Trim-out	28 days?	Wed 9/13/06	Fri 10/20/06
34	Plumbing Fixtures	123 days?	Tue 8/15/06	Thu 2/1/07
35	Electrical Systems Trim-out	185 days?	Wed 9/6/06	Tue 5/22/07
36	Hang Doors & Hardware	146 days?	Thu 11/2/06	Thu 5/24/07
37	Grilles & Diffusers	93 days?	Tue 11/28/06	Thu 4/5/07
38	Testing & Balancing	63 days?	Fri 3/2/07	Tue 5/29/07
39	Phase A2 Substancial Completion	1 day?	Thu 6/7/07	Thu 6/7/07
40	Phase A2 Final Completion	1 day?	Fri 7/20/07	Fri 7/20/07



Project: T.C. Williams High School Summary Schedule
Date: April 12, 2007

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



Appendix B

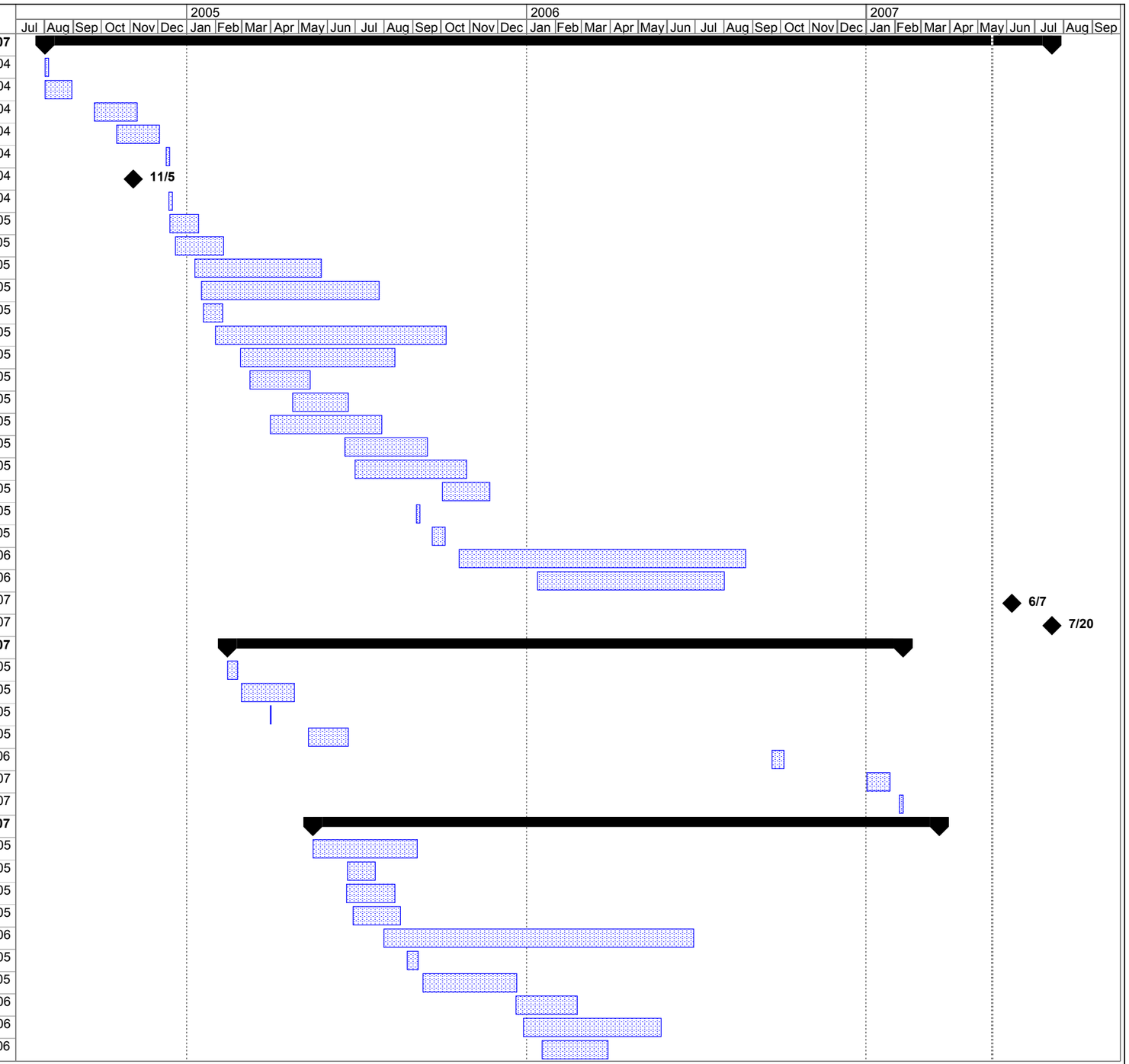
Phase A

Detailed Project Schedule

T.C. Williams High School

Replacement Project

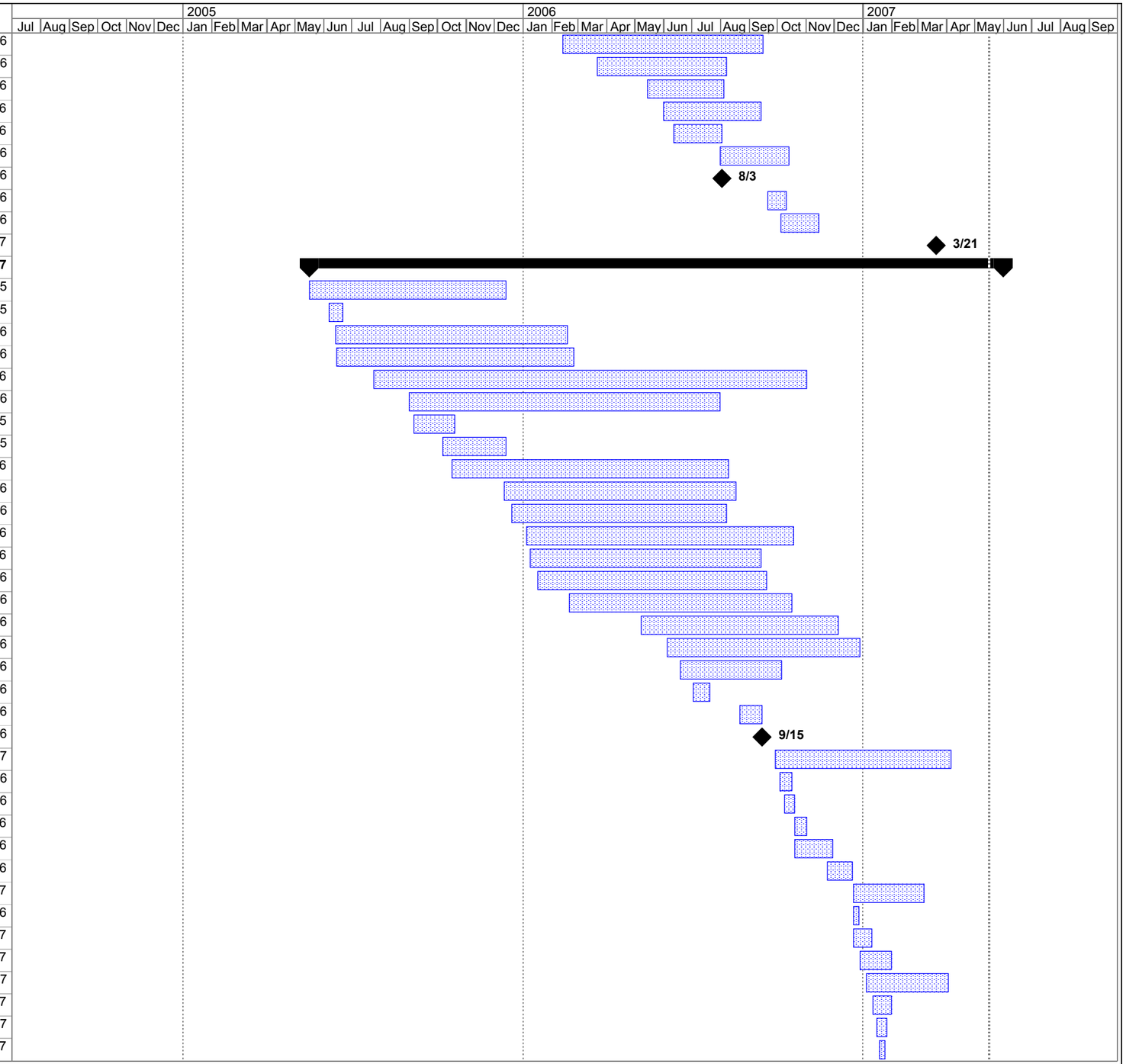
ID	Task Name	Duration	Start	Finish
1	**General Project**	**774 days?**	**Mon 8/2/04**	**Fri 7/20/07**
2	1st Mobilization (Interim Classwork)	4 days?	Mon 8/2/04	Thu 8/5/04
3	Interim Classroom Remodel @ Existing TCWHS	21 days?	Mon 8/2/04	Mon 8/30/04
4	Set-Up Temp. Classroom Trailers	32 days?	Fri 9/24/04	Mon 11/8/04
5	Install Temp. Utilities to Temp. Classrooms	34 days?	Mon 10/18/04	Thu 12/2/04
6	Temporary Power to Trailers	2 days?	Fri 12/10/04	Mon 12/13/04
7	Final Notice to Proceed	0 days	Fri 11/5/04	Fri 11/5/04
8	2nd Mobilization (Site)	4 days?	Mon 12/13/04	Thu 12/16/04
9	Install Construction Barrier Fence	23 days?	Tue 12/14/04	Thu 1/13/05
10	Demo. Classroom Trailers, Trees, Career Tech	38 days?	Mon 12/20/04	Wed 2/9/05
11	Sanitary Sewer	98 days?	Mon 1/10/05	Wed 5/25/05
12	Storm Sewer	137 days?	Mon 1/17/05	Tue 7/26/05
13	Relocate Fire Hydrant	15 days?	Wed 1/19/05	Tue 2/8/05
14	Install Temp Power Switchgear	178 days?	Tue 2/1/05	Thu 10/6/05
15	Mass Excavation	120 days?	Mon 2/28/05	Fri 8/12/05
16	Site Shoring Systems	47 days?	Thu 3/10/05	Fri 5/13/05
17	Shot Crete Retaining Wall	44 days?	Mon 4/25/05	Thu 6/23/05
18	Remove Existing U/G Utilities	86 days?	Fri 4/1/05	Fri 7/29/05
19	Ductbank	65 days?	Mon 6/20/05	Fri 9/16/05
20	Water Line	86 days?	Fri 7/1/05	Fri 10/28/05
21	Gas Service Line	37 days?	Mon 10/3/05	Tue 11/22/05
22	Install VA Power Xmfr for Temp	4 days?	Mon 9/5/05	Thu 9/8/05
23	Install Temp Power Switchgear	10 days?	Thu 9/22/05	Wed 10/5/05
24	Install Site Lighting	220 days?	Fri 10/21/05	Thu 8/24/06
25	VA Power Transformer	143 days?	Fri 1/13/06	Tue 8/1/06
26	Substantial Completion	0 days	Thu 6/7/07	Thu 6/7/07
27	Final Completion	0 days	Fri 7/20/07	Fri 7/20/07
28	**Cistern**	**520 days?**	**Mon 2/14/05**	**Fri 2/9/07**
29	Excavate Cistern	9 days?	Mon 2/14/05	Thu 2/24/05
30	FRP Cistern	41 days?	Tue 3/1/05	Tue 4/26/05
31	Install Cistern Pipe MH	1 day	Fri 4/1/05	Fri 4/1/05
32	Backfill Cistern	31 days?	Thu 5/12/05	Thu 6/23/05
33	Install Cistern Pumps	9 days?	Fri 9/22/06	Wed 10/4/06
34	Roof Drains tied to Cistern	19 days?	Tue 1/2/07	Fri 1/26/07
35	Startup Cistern pumps	4 days?	Tue 2/6/07	Fri 2/9/07
36	**Area 3 - NW Tower**	**481 days?**	**Tue 5/17/05**	**Wed 3/21/07**
37	Underslab Plumbing	80 days?	Tue 5/17/05	Mon 9/5/05
38	Geopier Foundations	22 days?	Thu 6/23/05	Fri 7/22/05
39	Excavate Foundations	38 days?	Wed 6/22/05	Fri 8/12/05
40	Concrete Foundations	37 days?	Wed 6/29/05	Thu 8/18/05
41	Block Masonry	239 days?	Mon 8/1/05	Thu 6/29/06
42	Underslab Electrical	8 days?	Fri 8/26/05	Tue 9/6/05
43	SOG Concrete	73 days?	Mon 9/12/05	Wed 12/21/05
44	Structural Steel Erection	48 days?	Wed 12/21/05	Fri 2/24/06
45	Metal Decking	106 days?	Thu 12/29/05	Thu 5/25/06
46	SOD Elevated Concrete	51 days?	Wed 1/18/06	Wed 3/29/06



Project: T.C. Williams High School
Detailed Project Schedule
Date: April 12, 2007

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

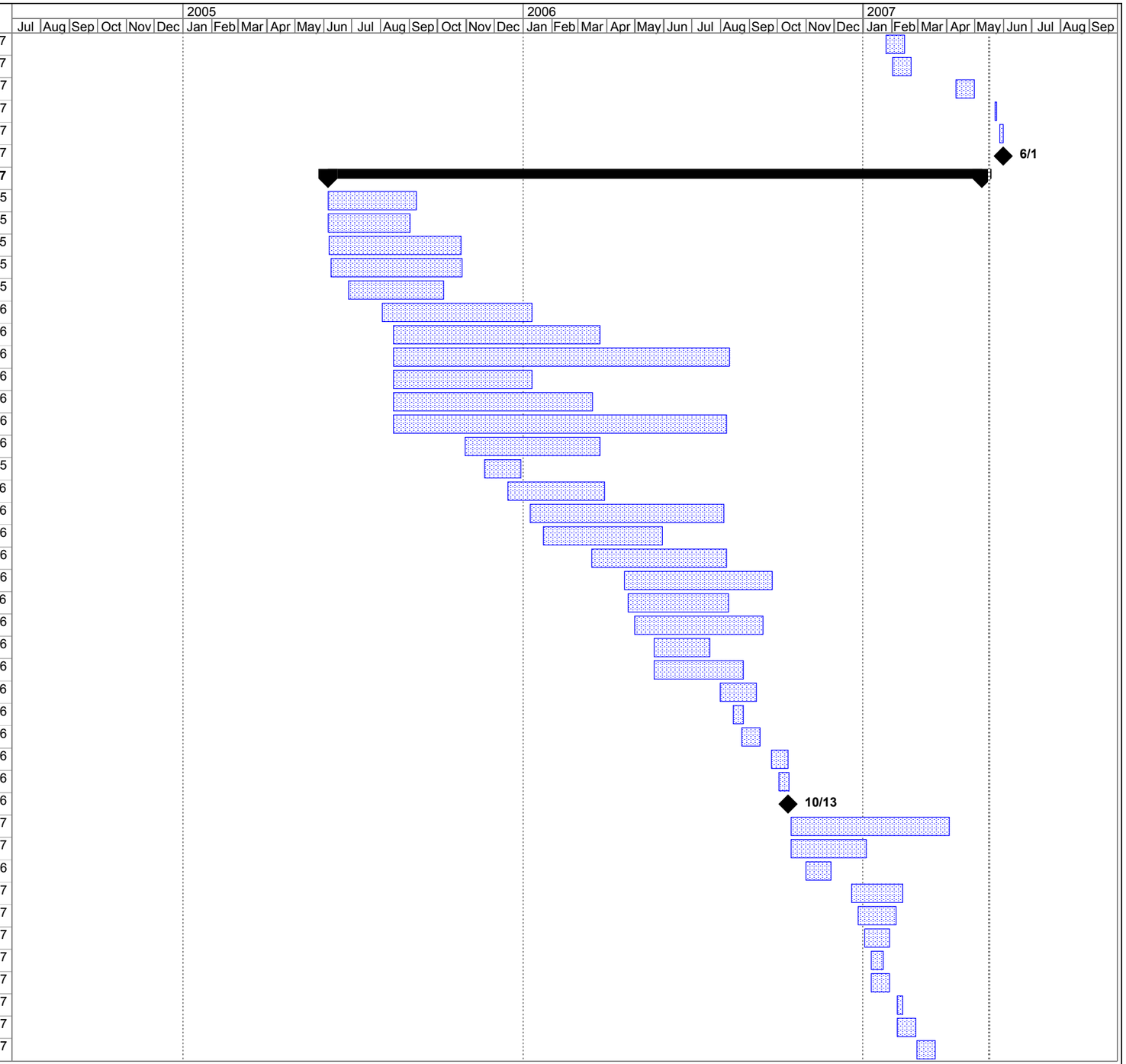
ID	Task Name	Duration	Start	Finish
47	Fire Alarm Rough-in	155 days?	Mon 2/13/06	Fri 9/15/06
48	Brick Masonry	99 days?	Wed 3/22/06	Mon 8/7/06
49	Install Transformers & Panel Boards	60 days?	Mon 5/15/06	Fri 8/4/06
50	Install Air Handling Equipment	75 days?	Thu 6/1/06	Wed 9/13/06
51	Roofing	38 days?	Mon 6/12/06	Wed 8/2/06
52	Install Security Equip.	54 days?	Tue 8/1/06	Fri 10/13/06
53	NW Tower Dry-In	0 days?	Thu 8/3/06	Thu 8/3/06
54	Install Consolidation Boxes	14 days?	Thu 9/21/06	Tue 10/10/06
55	Install AV & Communication Equip.	29 days?	Thu 10/5/06	Tue 11/14/06
56	NW Tower Complete	0 days?	Wed 3/21/07	Wed 3/21/07
57	**Area 7 - Auditorium**	**533 days?**	**Tue 5/17/05**	**Fri 6/1/07**
58	Underslab Plumbing	151 days?	Tue 5/17/05	Tue 12/13/05
59	Geopier Foundations	11 days?	Tue 6/7/05	Tue 6/21/05
60	Excavate Foundations	179 days?	Tue 6/14/05	Fri 2/17/06
61	Concrete Foundations	183 days?	Wed 6/15/05	Fri 2/24/06
62	Block Masonry	333 days?	Mon 7/25/05	Wed 11/1/06
63	SOG Concrete	238 days?	Thu 9/1/05	Mon 7/31/06
64	FRP Auditorium Seating	32 days?	Tue 9/6/05	Wed 10/19/05
65	Underslab Electrical	48 days?	Fri 10/7/05	Tue 12/13/05
66	Brick Masonry	213 days?	Mon 10/17/05	Wed 8/9/06
67	Structural Steel Erection	179 days?	Mon 12/12/05	Thu 8/17/06
68	Metal Decking	165 days?	Tue 12/20/05	Mon 8/7/06
69	Plumbing Rough-In	205 days?	Thu 1/5/06	Wed 10/18/06
70	Roofing	178 days?	Mon 1/9/06	Wed 9/13/06
71	Electrical Systems Rough-In	176 days?	Tue 1/17/06	Tue 9/19/06
72	HVAC Rough-In	171 days?	Mon 2/20/06	Mon 10/16/06
73	Install Transformers & Panel Boards	152 days?	Mon 5/8/06	Tue 12/5/06
74	Install AV & Communication Equip.	149 days?	Mon 6/5/06	Thu 12/28/06
75	Fire Alarm Rough-in	79 days?	Mon 6/19/06	Thu 10/5/06
76	Fire Protection Rough-In	14 days?	Mon 7/3/06	Thu 7/20/06
77	Windows & Curtainwalls	18 days?	Tue 8/22/06	Thu 9/14/06
78	Auditorium Dry-In	0 days	Fri 9/15/06	Fri 9/15/06
79	Install Lighting Components	135 days?	Fri 9/29/06	Thu 4/5/07
80	Install Security Equip.	9 days?	Wed 10/4/06	Mon 10/16/06
81	Trim-out Fire Alarm	9 days?	Mon 10/9/06	Thu 10/19/06
82	Install Plumbing Fixtures	9 days?	Fri 10/20/06	Wed 11/1/06
83	Install Air Handling Equipment	29 days?	Fri 10/20/06	Wed 11/29/06
84	Drywall Partitions	19 days?	Fri 11/24/06	Wed 12/20/06
85	Prime & Paint	54 days?	Fri 12/22/06	Wed 3/7/07
86	Arch. Pre-Cast	4 days?	Fri 12/22/06	Wed 12/27/06
87	Install Consolidation Boxes	14 days?	Fri 12/22/06	Wed 1/10/07
88	Install ACT Grid & Drop Tile	24 days?	Fri 12/29/06	Wed 1/31/07
89	Floor Finishes	62 days?	Fri 1/5/07	Mon 4/2/07
90	Install Grilles & Diffusers	14 days?	Fri 1/12/07	Wed 1/31/07
91	Trim-out Power	9 days?	Tue 1/16/07	Fri 1/26/07
92	Install Lockers	4 days?	Fri 1/19/07	Wed 1/24/07



Project: T.C. Williams High School
Detailed Project Schedule
Date: April 12, 2007

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

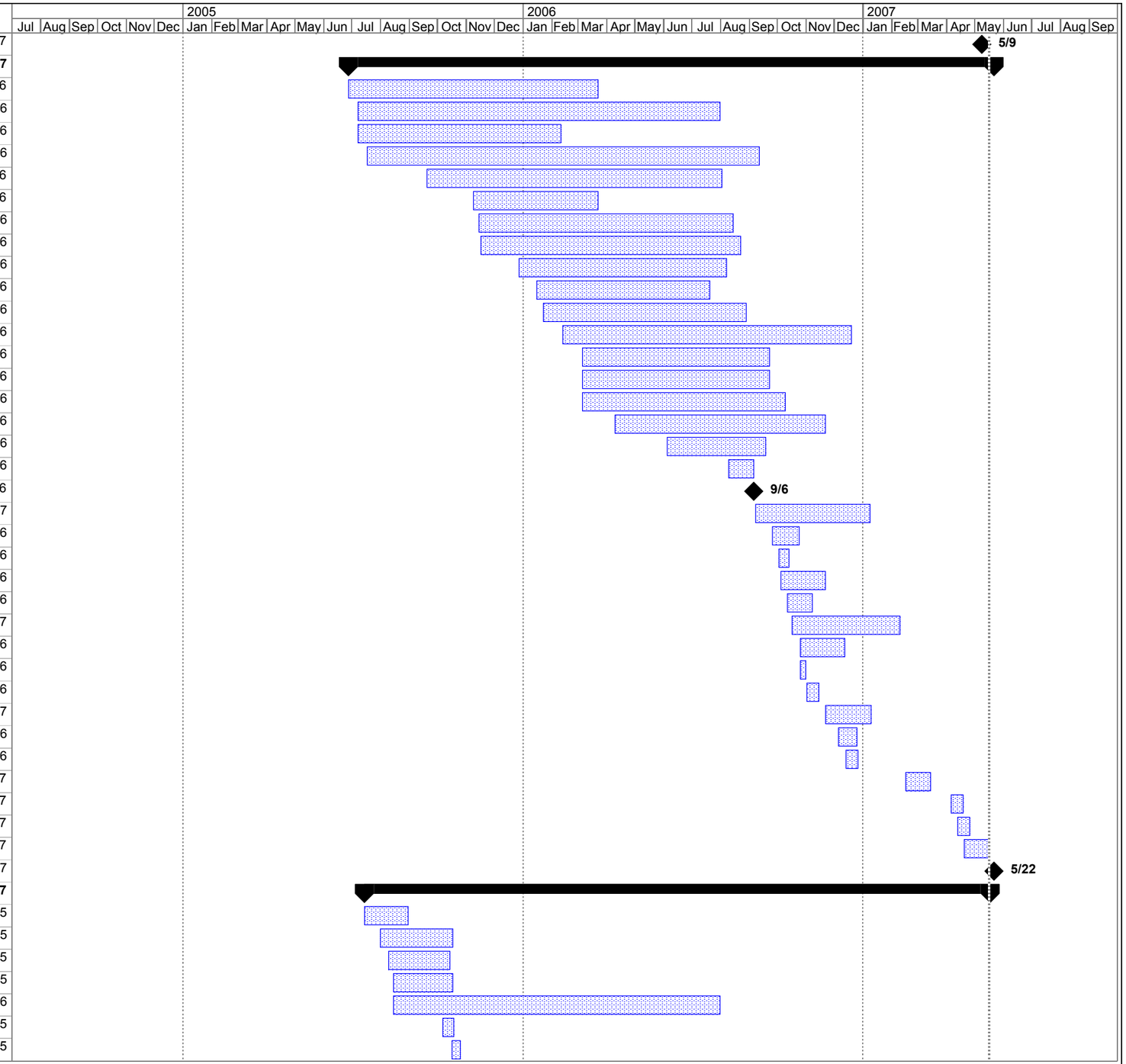
ID	Task Name	Duration	Start	Finish
93	Hang Doors & Hardware	14 days?	Fri 1/26/07	Wed 2/14/07
94	Install Millwork Components	14 days?	Fri 2/2/07	Wed 2/21/07
95	Install Stage Equip.	14 days?	Wed 4/11/07	Mon 4/30/07
96	Install Carpet	2 days?	Wed 5/23/07	Thu 5/24/07
97	Install Folding Partitions	4 days?	Mon 5/28/07	Thu 5/31/07
98	Auditorium Area Complete	0 days	Fri 6/1/07	Fri 6/1/07
99	**Area 4 - Kitchen Wedge**	**502 days?**	**Mon 6/6/05**	**Wed 5/9/07**
100	Install Elevator Shafts & FRP Pit	69 days?	Mon 6/6/05	Thu 9/8/05
101	Geopier Foundations	64 days?	Mon 6/6/05	Thu 9/1/05
102	Excavate Foundations	102 days?	Tue 6/7/05	Wed 10/26/05
103	Concrete Foundations	101 days?	Thu 6/9/05	Thu 10/27/05
104	FRP Concrete Columns	74 days?	Tue 6/28/05	Fri 10/7/05
105	Underslab Plumbing	115 days?	Wed 8/3/05	Tue 1/10/06
106	Radius Beam	160 days?	Mon 8/15/05	Fri 3/24/06
107	Block Masonry	259 days?	Mon 8/15/05	Thu 8/10/06
108	Underslab Electrical	107 days?	Mon 8/15/05	Tue 1/10/06
109	SOG Concrete	154 days?	Mon 8/15/05	Thu 3/16/06
110	Electrical Systems Rough-In	256 days?	Mon 8/15/05	Mon 8/7/06
111	Structural Steel Erection	105 days?	Mon 10/31/05	Fri 3/24/06
112	Metal Decking	29 days?	Mon 11/21/05	Thu 12/29/05
113	SOD Elevated Concrete	74 days?	Fri 12/16/05	Wed 3/29/06
114	HVAC Rough-In	150 days?	Mon 1/9/06	Fri 8/4/06
115	Plumbing Rough-In	92 days?	Mon 1/23/06	Tue 5/30/06
116	Brick Masonry	103 days?	Thu 3/16/06	Mon 8/7/06
117	Install Air Handling Equipment	113 days?	Thu 4/20/06	Mon 9/25/06
118	Roofing	78 days?	Mon 4/24/06	Wed 8/9/06
119	Install Transformers & Panel Boards	100 days?	Mon 5/1/06	Fri 9/15/06
120	Fire Protection Rough-In	44 days?	Mon 5/22/06	Thu 7/20/06
121	Fire Alarm Rough-in	70 days?	Mon 5/22/06	Fri 8/25/06
122	Install AV & Communication Equip.	29 days?	Tue 8/1/06	Fri 9/8/06
123	Install Plumbing Fixtures	9 days?	Tue 8/15/06	Fri 8/25/06
124	Install Consolidation Boxes	14 days?	Thu 8/24/06	Tue 9/12/06
125	Windows & Curtainwalls	14 days?	Mon 9/25/06	Thu 10/12/06
126	Install Security Equip.	9 days?	Tue 10/3/06	Fri 10/13/06
127	Kitchen Dry-In	0 days	Fri 10/13/06	Fri 10/13/06
128	Install Specialty Equipment	122 days?	Mon 10/16/06	Tue 4/3/07
129	Install Elevator Cabs	59 days?	Mon 10/16/06	Thu 1/4/07
130	Drywall Partitions	19 days?	Wed 11/1/06	Mon 11/27/06
131	Prime & Paint	39 days?	Wed 12/20/06	Mon 2/12/07
132	Install ACT Grid & Drop Tile	29 days?	Wed 12/27/06	Mon 2/5/07
133	Floor Finishes	19 days?	Wed 1/3/07	Mon 1/29/07
134	Install Grilles & Diffusers	9 days?	Wed 1/10/07	Mon 1/22/07
135	Install Lighting Components	14 days?	Wed 1/10/07	Mon 1/29/07
136	Install Lockers	4 days?	Wed 2/7/07	Mon 2/12/07
137	Install Millwork Components	14 days?	Wed 2/7/07	Mon 2/26/07
138	Hang Doors & Hardware	14 days?	Wed 2/28/07	Mon 3/19/07



Project: T.C. Williams High School
Detailed Project Schedule
Date: April 12, 2007

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

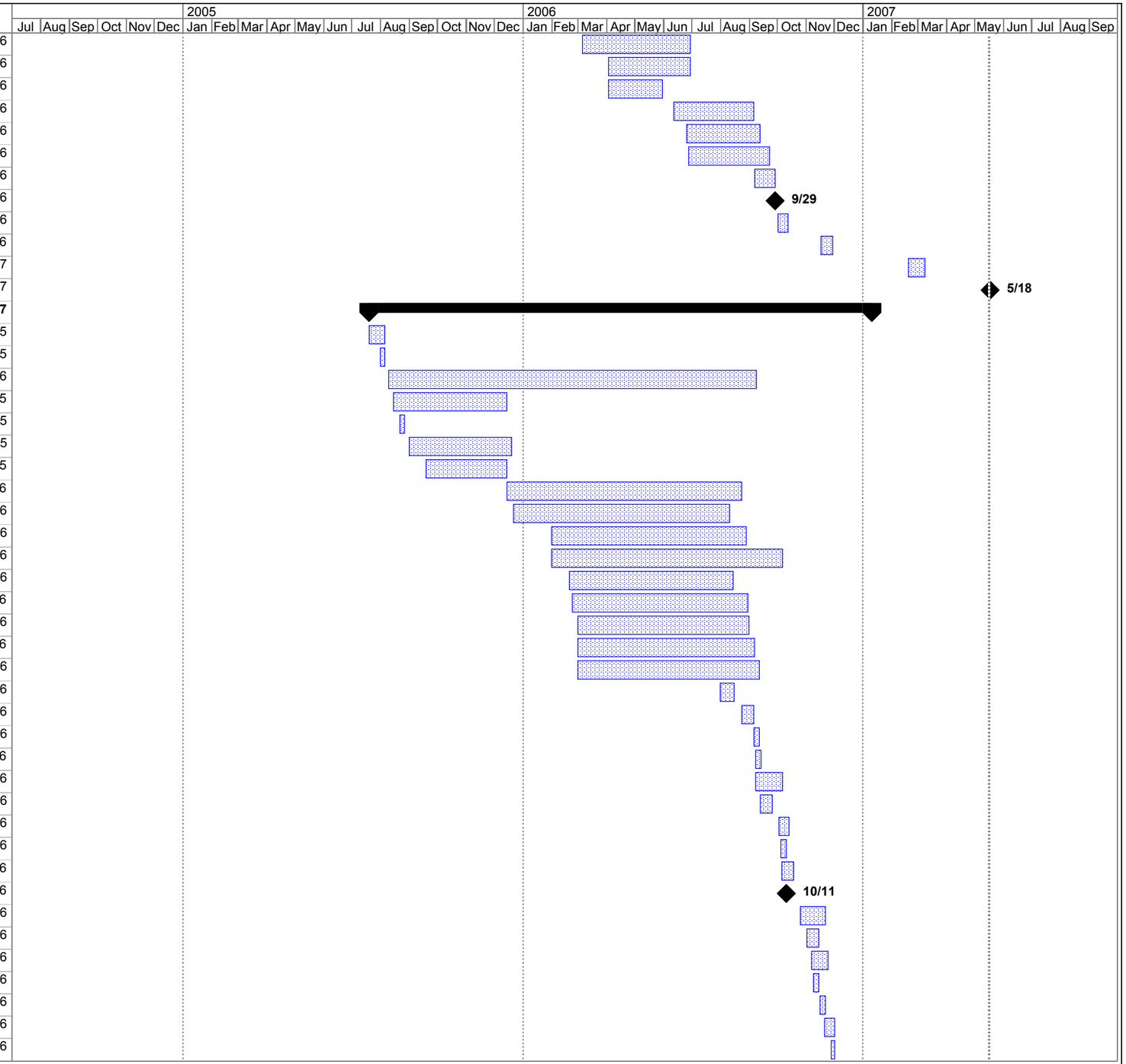
ID	Task Name	Duration	Start	Finish
139	Kitchen Complete	0 days	Wed 5/9/07	Wed 5/9/07
140	**Area 5 - Gymnasium**	**495 days?**	**Tue 6/28/05**	**Tue 5/22/07**
141	Underslab Plumbing	192 days?	Tue 6/28/05	Wed 3/22/06
142	Excavate Foundations	277 days?	Fri 7/8/05	Mon 7/31/06
143	Concrete Foundations	156 days?	Fri 7/8/05	Fri 2/10/06
144	Block Masonry	301 days?	Mon 7/18/05	Mon 9/11/06
145	Brick Masonry	227 days?	Tue 9/20/05	Wed 8/2/06
146	Underslab Electrical	96 days?	Wed 11/9/05	Wed 3/22/06
147	SOG Concrete	195 days?	Tue 11/15/05	Mon 8/14/06
148	Arch. Pre-Cast	199 days?	Thu 11/17/05	Tue 8/22/06
149	Structural Steel Erection	159 days?	Wed 12/28/05	Mon 8/7/06
150	Metal Decking	134 days?	Mon 1/16/06	Thu 7/20/06
151	Roofing	156 days?	Mon 1/23/06	Mon 8/28/06
152	Install Air Handling Equipment	222 days?	Mon 2/13/06	Tue 12/19/06
153	Electrical Systems Rough-In	145 days?	Mon 3/6/06	Fri 9/22/06
154	Plumbing Rough-In	145 days?	Mon 3/6/06	Fri 9/22/06
155	Fire Alarm Rough-in	156 days?	Mon 3/6/06	Mon 10/9/06
156	HVAC Rough-In	162 days?	Mon 4/10/06	Tue 11/21/06
157	Install Transformers & Panel Boards	76 days?	Mon 6/5/06	Mon 9/18/06
158	Windows & Curtainwalls	19 days?	Thu 8/10/06	Tue 9/5/06
159	GYM Dry-In	0 days	Wed 9/6/06	Wed 9/6/06
160	Fire Protection Rough-In	87 days?	Fri 9/8/06	Mon 1/8/07
161	Install Plumbing Fixtures	21 days?	Tue 9/26/06	Tue 10/24/06
162	Install Security Equip.	9 days?	Tue 10/3/06	Fri 10/13/06
163	Install GYM Ceiling Equip.	34 days?	Thu 10/5/06	Tue 11/21/06
164	Install Millwork Components	19 days?	Thu 10/12/06	Tue 11/7/06
165	Prime & Paint	84 days?	Tue 10/17/06	Fri 2/9/07
166	Install Lockers	34 days?	Thu 10/26/06	Tue 12/12/06
167	Install GYM Divider Curtain Track	4 days?	Thu 10/26/06	Tue 10/31/06
168	Hang Doors & Hardware	9 days?	Thu 11/2/06	Tue 11/14/06
169	GYM Ceiling Light Fixtures	35 days?	Wed 11/22/06	Tue 1/9/07
170	Install Consolidation Boxes	14 days?	Wed 12/6/06	Mon 12/25/06
171	Hang Doors & Hardware	9 days?	Thu 12/14/06	Tue 12/26/06
172	Install GYM Sub-Floor & Hardwood	19 days?	Fri 2/16/07	Wed 3/14/07
173	Floor Finishes	9 days?	Fri 4/6/07	Wed 4/18/07
174	Install Divider Curtains	9 days?	Fri 4/13/07	Wed 4/25/07
175	Install GYM Bleachers	19 days?	Fri 4/20/07	Wed 5/16/07
176	GYM Area Complete	0 days	Tue 5/22/07	Tue 5/22/07
177	**Area 1 - NE Tower**	**480 days?**	**Fri 7/15/05**	**Fri 5/18/07**
178	Geopier Foundations	33 days?	Fri 7/15/05	Tue 8/30/05
179	Underslab Plumbing	56 days?	Mon 8/1/05	Mon 10/17/05
180	Excavate Foundations	48 days?	Wed 8/10/05	Fri 10/14/05
181	Concrete Foundations	46 days?	Mon 8/15/05	Mon 10/17/05
182	Block Masonry	251 days?	Mon 8/15/05	Mon 7/31/06
183	Underslab Electrical	8 days?	Fri 10/7/05	Tue 10/18/05
184	SOG Concrete	7 days?	Mon 10/17/05	Tue 10/25/05



Project: T.C. Williams High School
Detailed Project Schedule
Date: April 12, 2007

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

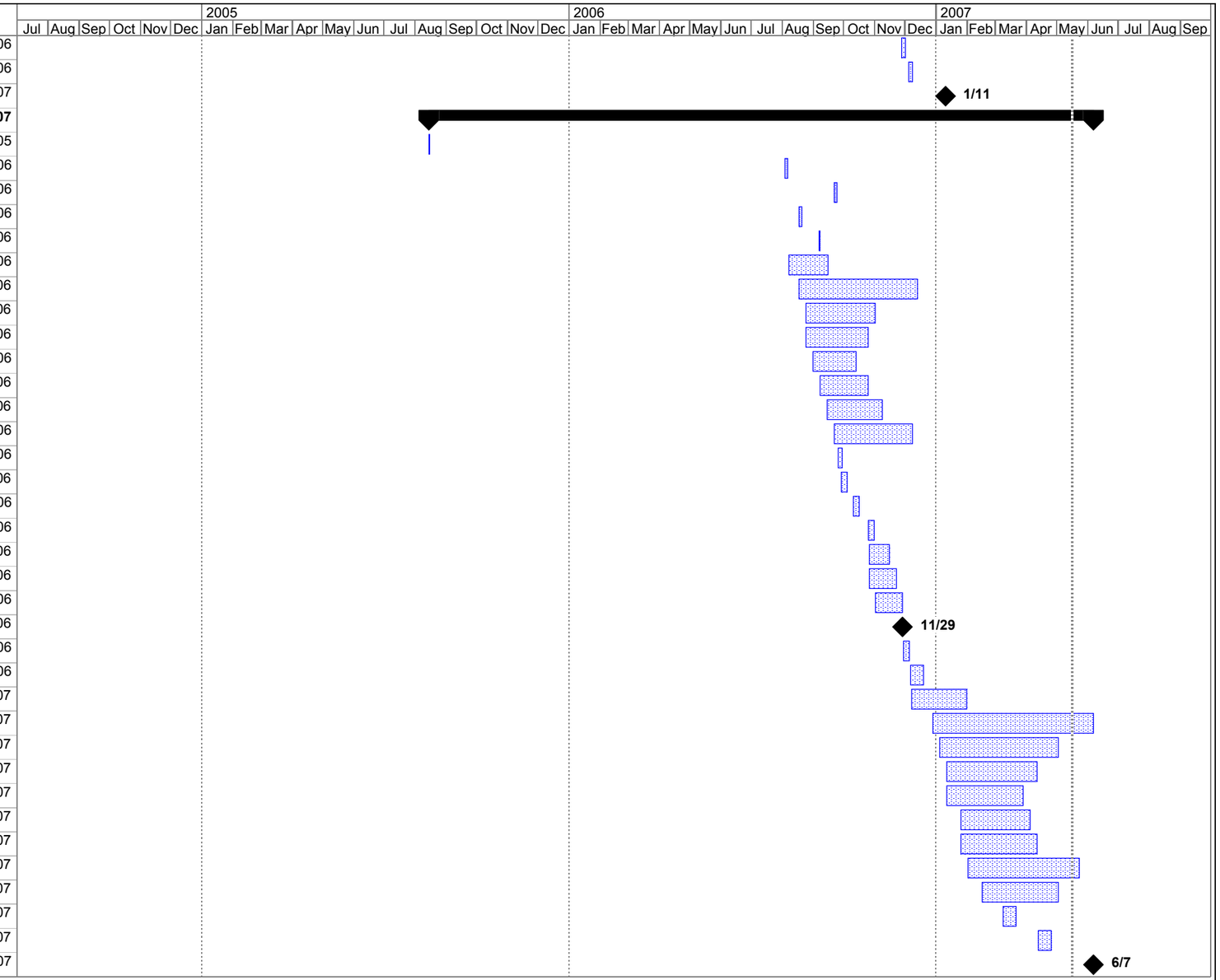
ID	Task Name	Duration	Start	Finish
185	Structural Steel Erection	84 days?	Mon 3/6/06	Thu 6/29/06
186	Metal Decking	64 days?	Mon 4/3/06	Thu 6/29/06
187	SOD Elevated Concrete	42 days?	Mon 4/3/06	Tue 5/30/06
188	Brick Masonry	62 days?	Mon 6/12/06	Tue 9/5/06
189	Fire Alarm Rough-in	57 days?	Mon 6/26/06	Tue 9/12/06
190	Install Air Handling Equipment	63 days?	Wed 6/28/06	Fri 9/22/06
191	Roofing	16 days?	Thu 9/7/06	Thu 9/28/06
192	NE Tower Dry-In	0 days	Fri 9/29/06	Fri 9/29/06
193	Install Transformers & Panel Boards	9 days?	Mon 10/2/06	Thu 10/12/06
194	Install Security Equip.	9 days?	Fri 11/17/06	Wed 11/29/06
195	Install Consolidation Boxes	14 days?	Mon 2/19/07	Thu 3/8/07
196	NE Tower Complete	0 days	Fri 5/18/07	Fri 5/18/07
197	**Area 6 - Mech/Elect Wedge - Auto Strip**	**386 days?**	**Wed 7/20/05**	**Thu 1/11/07**
198	Excavate Foundations	13 days?	Wed 7/20/05	Fri 8/5/05
199	Concrete Foundations	5 days?	Mon 8/1/05	Fri 8/5/05
200	Block Masonry	283 days?	Wed 8/10/05	Fri 9/8/06
201	Underslab Electrical	88 days?	Mon 8/15/05	Wed 12/14/05
202	Concrete Foundations	5 days?	Mon 8/22/05	Fri 8/26/05
203	SOG Concrete	78 days?	Thu 9/1/05	Mon 12/19/05
204	Underslab Plumbing	63 days?	Mon 9/19/05	Wed 12/14/05
205	Electrical Systems Rough-In	180 days?	Thu 12/15/05	Wed 8/23/06
206	Structural Steel Erection	166 days?	Thu 12/22/05	Thu 8/10/06
207	Install Transformers & Panel Boards	149 days?	Wed 2/1/06	Mon 8/28/06
208	Install Main Switchgear	178 days?	Wed 2/1/06	Fri 10/6/06
209	Metal Decking	126 days?	Mon 2/20/06	Mon 8/14/06
210	Roofing	135 days?	Thu 2/23/06	Wed 8/30/06
211	HVAC Rough-In	132 days?	Wed 3/1/06	Thu 8/31/06
212	Plumbing Rough-In	136 days?	Wed 3/1/06	Wed 9/6/06
213	Fire Alarm Rough-in	139 days?	Wed 3/1/06	Mon 9/11/06
214	Brick Masonry	11 days?	Tue 8/1/06	Tue 8/15/06
215	Fire Protection Rough-In	9 days?	Thu 8/24/06	Tue 9/5/06
216	Trim-out Power	4 days?	Wed 9/6/06	Mon 9/11/06
217	Install Plumbing Fixtures	4 days?	Fri 9/8/06	Wed 9/13/06
218	Install Air Handling Equipment	21 days?	Fri 9/8/06	Fri 10/6/06
219	Trim-out Fire Alarm	9 days?	Wed 9/13/06	Mon 9/25/06
220	Install Security Equip.	9 days?	Tue 10/3/06	Fri 10/13/06
221	Windows & Curtainwalls	4 days?	Thu 10/5/06	Tue 10/10/06
222	Trim-out Communication	9 days?	Fri 10/6/06	Wed 10/18/06
223	Mech. / Elect. Wedge Dry-In	0 days	Wed 10/11/06	Wed 10/11/06
224	Prime & Paint	19 days?	Thu 10/26/06	Tue 11/21/06
225	Floor Finishes	9 days?	Thu 11/2/06	Tue 11/14/06
226	Install Consolidation Boxes	14 days?	Tue 11/7/06	Fri 11/24/06
227	Install Lockers	4 days?	Thu 11/9/06	Tue 11/14/06
228	Hang Doors & Hardware	4 days?	Thu 11/16/06	Tue 11/21/06
229	Install ACT Grid & Drop Tile	9 days?	Tue 11/21/06	Fri 12/1/06
230	Install Grilles & Diffusers	4 days?	Tue 11/28/06	Fri 12/1/06



Project: T.C. Williams High School Detailed Project Schedule
Date: April 12, 2007

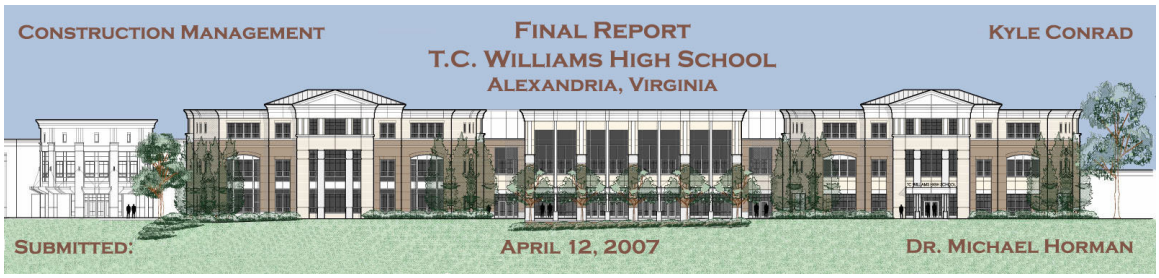
Task | Split | Progress | Milestone | Summary | Project Summary | External Tasks | External Milestone | Deadline

ID	Task Name	Duration	Start	Finish
231	Install Lighting Components	4 days?	Tue 11/28/06	Fri 12/1/06
232	Install Millwork Components	4 days?	Tue 12/5/06	Fri 12/8/06
233	Mech. / Elect. Wedge Complete	0 days	Thu 1/11/07	Thu 1/11/07
234	**Area 2 - Center Court**	**473 days?**	**Mon 8/15/05**	**Thu 6/7/07**
235	Geopier Foundations	1 day?	Mon 8/15/05	Tue 8/16/05
236	Excavate Foundations	1 day?	Fri 8/4/06	Mon 8/7/06
237	Concrete Foundations	1 day?	Fri 9/22/06	Mon 9/25/06
238	Structural Steel Erection	1 day?	Fri 8/18/06	Mon 8/21/06
239	Metal Decking	1 day?	Thu 9/7/06	Fri 9/8/06
240	SOD Elevated Concrete	29 days?	Tue 8/8/06	Fri 9/15/06
241	Block Masonry	84 days?	Fri 8/18/06	Wed 12/13/06
242	HVAC Rough-In	49 days?	Fri 8/25/06	Wed 11/1/06
243	Electrical Systems Rough-In	44 days?	Fri 8/25/06	Wed 10/25/06
244	Plumbing Rough-In	31 days?	Fri 9/1/06	Fri 10/13/06
245	Fire Protection Rough-In	34 days?	Fri 9/8/06	Wed 10/25/06
246	Install Air Handling Equipment	39 days?	Fri 9/15/06	Wed 11/8/06
247	Roofing	56 days?	Fri 9/22/06	Fri 12/8/06
248	Underslab Plumbing	4 days?	Tue 9/26/06	Fri 9/29/06
249	Underslab Electrical	4 days?	Fri 9/29/06	Wed 10/4/06
250	SOG Concrete	4 days?	Wed 10/11/06	Mon 10/16/06
251	Brick Masonry	4 days?	Thu 10/26/06	Tue 10/31/06
252	Install Consolidation Boxes	14 days?	Fri 10/27/06	Wed 11/15/06
253	Fire Alarm Rough-in	19 days?	Fri 10/27/06	Wed 11/22/06
254	Windows & Curtainwalls	19 days?	Thu 11/2/06	Tue 11/28/06
255	Center Court Dry-In	0 days	Wed 11/29/06	Wed 11/29/06
256	Install Transformers & Panel Boards	4 days?	Thu 11/30/06	Tue 12/5/06
257	Install Security Equip.	9 days?	Thu 12/7/06	Tue 12/19/06
258	Install Plumbing Fixtures	39 days?	Fri 12/8/06	Wed 1/31/07
259	Prime & Paint	114 days?	Fri 12/29/06	Wed 6/6/07
260	Trim-out Communication	84 days?	Fri 1/5/07	Wed 5/2/07
261	Install ACT Grid & Drop Tile	64 days?	Fri 1/12/07	Wed 4/11/07
262	Floor Finishes	54 days?	Fri 1/12/07	Wed 3/28/07
263	Install Grilles & Diffusers	49 days?	Fri 1/26/07	Wed 4/4/07
264	Install Lighting Components	54 days?	Fri 1/26/07	Wed 4/11/07
265	Hang Doors & Hardware	79 days?	Fri 2/2/07	Wed 5/23/07
266	Install Millwork Components	54 days?	Fri 2/16/07	Wed 5/2/07
267	Trim-out Power	9 days?	Fri 3/9/07	Wed 3/21/07
268	Trim-out Security	9 days?	Fri 4/13/07	Wed 4/25/07
269	Center Court Complete	0 days	Thu 6/7/07	Thu 6/7/07



Project: T.C. Williams High School
Detailed Project Schedule
Date: April 12, 2007

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



Appendix C

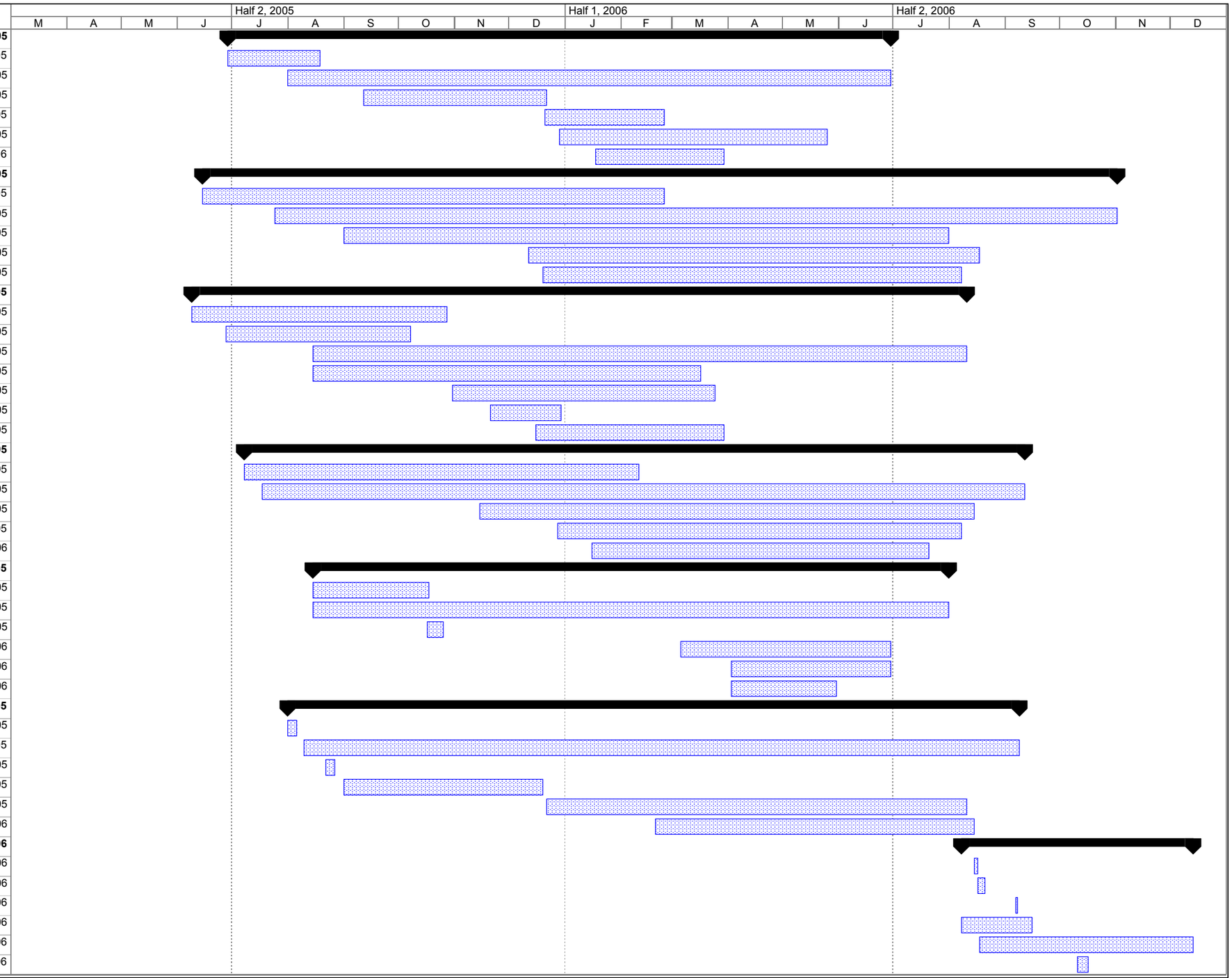
Phase A

Structural Schedule

T.C. Williams High School

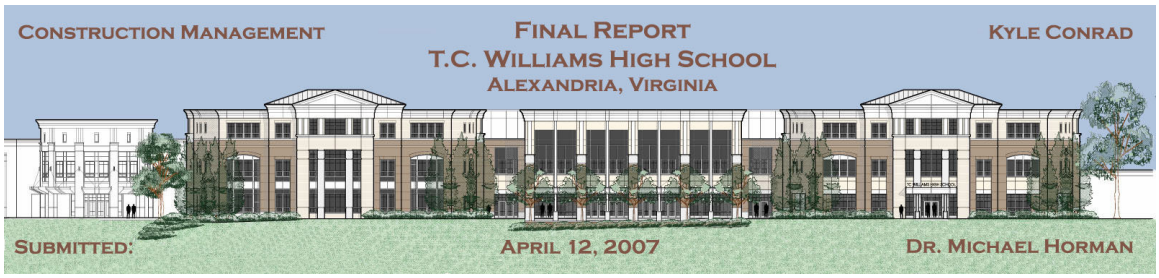
Replacement Project

ID	Task Name	Duration	Start
1	**Area 3 - NW Tower**	**262 days?**	**Wed 6/29/05**
2	(3) Concrete Foundations	37 days?	Wed 6/29/05
3	(3) Block Masonry	239 days?	Mon 8/1/05
4	(3) SOG Concrete	73 days?	Mon 9/12/05
5	(3) Structural Steel Erection	48 days?	Wed 12/21/05
6	(3) Metal Decking	106 days?	Thu 12/29/05
7	(3) SOD Elevated Concrete	51 days?	Wed 1/18/06
8	**Area 7 - Auditorium**	**361 days?**	**Wed 6/15/05**
9	(7) Concrete Foundations	183 days?	Wed 6/15/05
10	(7) Block Masonry	333 days?	Mon 7/25/05
11	(7) SOG Concrete	238 days?	Thu 9/1/05
12	(7) Structural Steel Erection	179 days?	Mon 12/12/05
13	(7) Metal Decking	165 days?	Tue 12/20/05
14	**Area 4 - Kitchen Wedge**	**306 days?**	**Thu 6/9/05**
15	(4) Concrete Foundations	101 days?	Thu 6/9/05
16	(4) FRP Concrete Columns	74 days?	Tue 6/28/05
17	(4) Block Masonry	259 days?	Mon 8/15/05
18	(4) SOG Concrete	154 days?	Mon 8/15/05
19	(4) Structural Steel Erection	105 days?	Mon 10/31/05
20	(4) Metal Decking	29 days?	Mon 11/21/05
21	(4) SOD Elevated Concrete	74 days?	Fri 12/16/05
22	**Area 5 - Gymnasium**	**307 days?**	**Fri 7/8/05**
23	(5) Concrete Foundations	156 days?	Fri 7/8/05
24	(5) Block Masonry	301 days?	Mon 7/18/05
25	(5) SOG Concrete	195 days?	Tue 11/15/05
26	(5) Structural Steel Erection	159 days?	Wed 12/28/05
27	(5) Metal Decking	134 days?	Mon 1/16/06
28	**Area 1 - NE Tower**	**251 days?**	**Mon 8/15/05**
29	(1) Concrete Foundations	46 days?	Mon 8/15/05
30	(1) Block Masonry	251 days?	Mon 8/15/05
31	(1) SOG Concrete	7 days?	Mon 10/17/05
32	(1) Structural Steel Erection	84 days?	Mon 3/6/06
33	(1) Metal Decking	64 days?	Mon 4/3/06
34	(1) SOD Elevated Concrete	42 days?	Mon 4/3/06
35	**Area 6 - Mech/Elect Wedge - Auto Strip**	**290 days?**	**Mon 8/1/05**
36	(6) Concrete Foundations	5 days?	Mon 8/1/05
37	(6) Block Masonry	283 days?	Wed 8/10/05
38	(6) Concrete Foundations	5 days?	Mon 8/22/05
39	(6) SOG Concrete	78 days?	Thu 9/1/05
40	(6) Structural Steel Erection	166 days?	Thu 12/22/05
41	(6) Metal Decking	126 days?	Mon 2/20/06
42	**Area 2 - Center Court**	**92 days?**	**Tue 8/8/06**
43	(2) Concrete Foundations	2 days	Tue 8/15/06
44	(2) Structural Steel Erection	2 days	Thu 8/17/06
45	(2) Metal Decking	1 day?	Thu 9/7/06
46	(2) SOD Elevated Concrete	29 days?	Tue 8/8/06
47	(2) Block Masonry	84 days?	Fri 8/18/06
48	(2) SOG Concrete	4 days?	Wed 10/11/06



Project: T.C. Williams High School Structural Schedule
Date: April 12, 2007

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



Appendix D

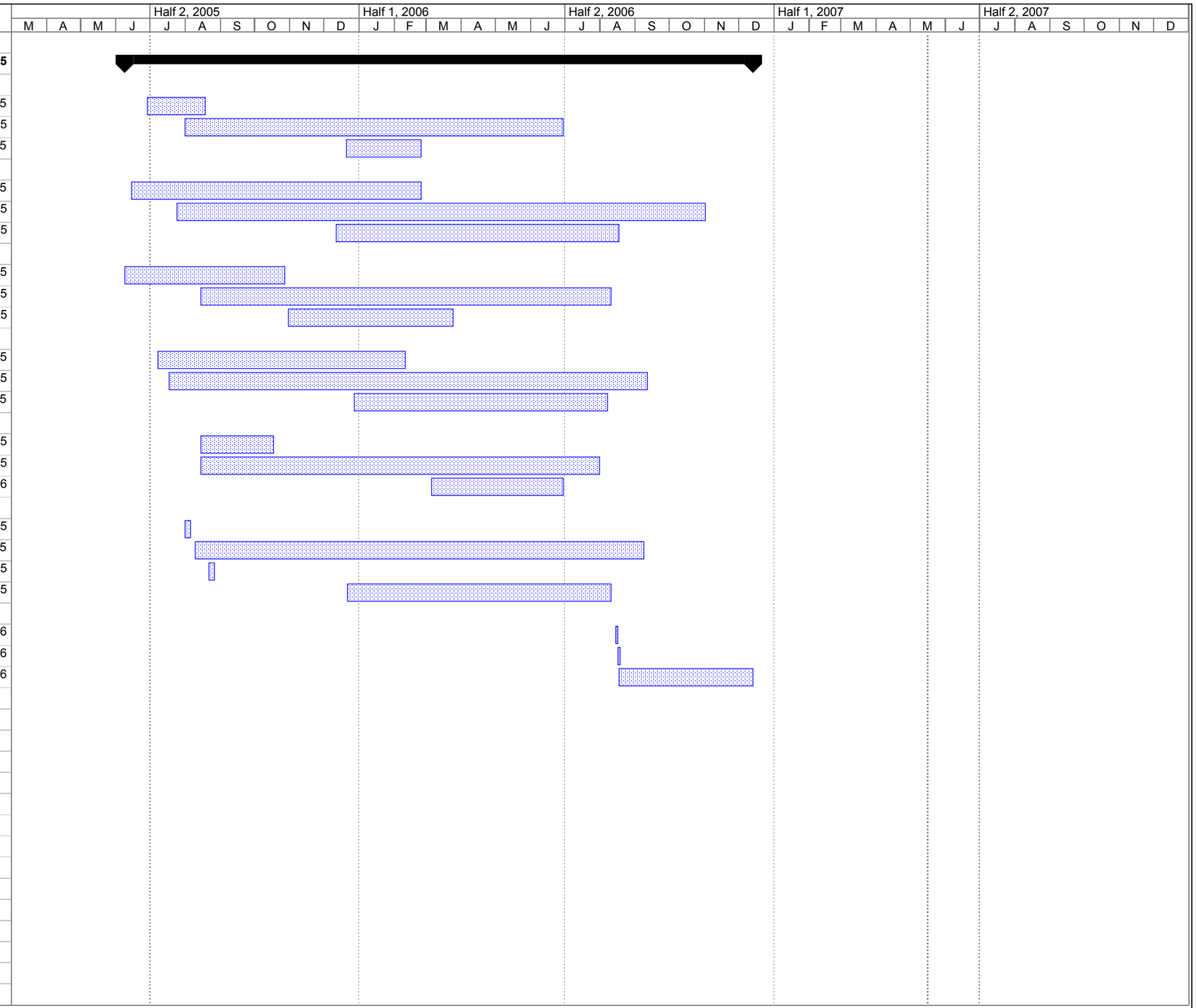
Phase A

Structural Redesign Schedule

T.C. Williams High School

Replacement Project

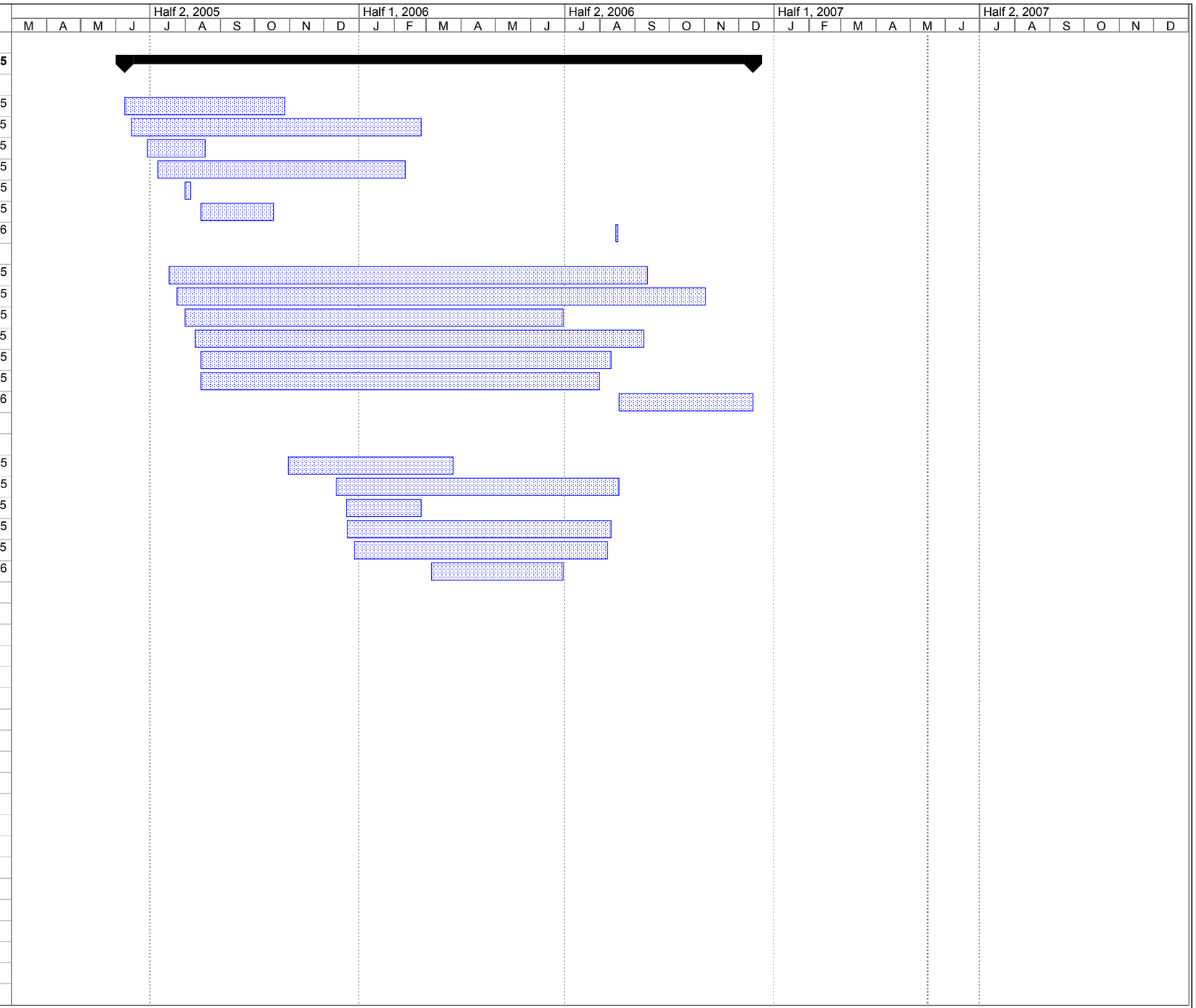
ID	Task Name	Duration	Start
1			
2	**Current Schedule**	**395 days?**	**Thu 6/9/05**
3			
4	(3) Concrete Foundations	37 days?	Wed 6/29/05
5	(3) Block Masonry	239 days?	Mon 8/1/05
6	(3) Structural Steel Erection	48 days?	Wed 12/21/05
7			
8	(7) Concrete Foundations	183 days?	Wed 6/15/05
9	(7) Block Masonry	333 days?	Mon 7/25/05
10	(7) Structural Steel Erection	179 days?	Mon 12/12/05
11			
12	(4) Concrete Foundations	101 days?	Thu 6/9/05
13	(4) Block Masonry	259 days?	Mon 8/15/05
14	(4) Structural Steel Erection	105 days?	Mon 10/31/05
15			
16	(5) Concrete Foundations	156 days?	Fri 7/8/05
17	(5) Block Masonry	301 days?	Mon 7/18/05
18	(5) Structural Steel Erection	159 days?	Wed 12/28/05
19			
20	(1) Concrete Foundations	46 days?	Mon 8/15/05
21	(1) Block Masonry	251 days?	Mon 8/15/05
22	(1) Structural Steel Erection	84 days?	Mon 3/6/06
23			
24	(6) Concrete Foundations	5 days?	Mon 8/1/05
25	(6) Block Masonry	283 days?	Wed 8/10/05
26	(6) Concrete Foundations	5 days?	Mon 8/22/05
27	(6) Structural Steel Erection	166 days?	Thu 12/22/05
28			
29	(2) Concrete Foundations	2 days	Tue 8/15/06
30	(2) Structural Steel Erection	2 days	Thu 8/17/06
31	(2) Block Masonry	84 days?	Fri 8/18/06
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			



Project: T.C. Williams High School Structural Resequence Scl
Date: April 12, 2007

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

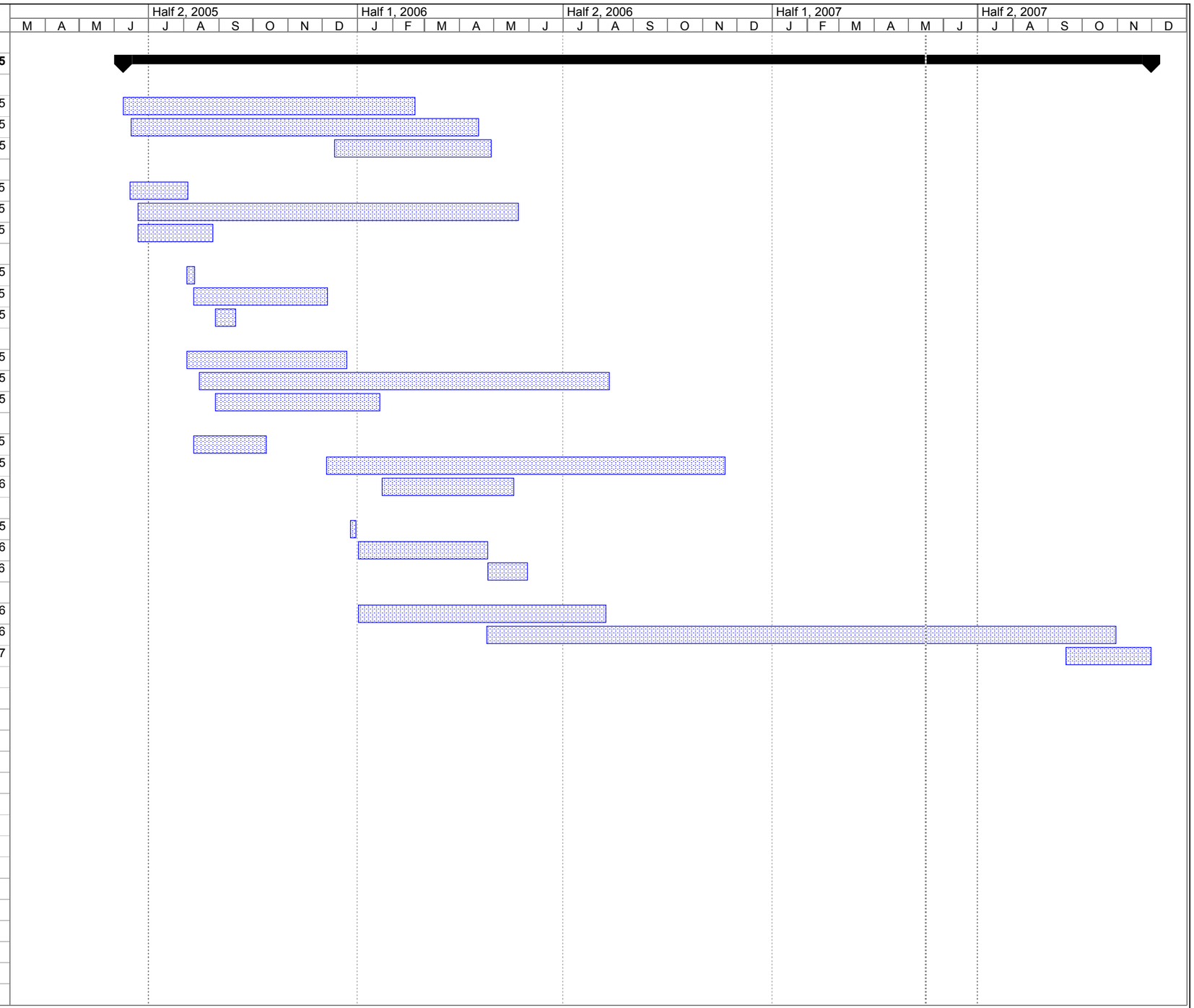
ID	Task Name	Duration	Start
47			
48	**Current Sequence**	**395 days?**	**Thu 6/9/05**
49			
50	(4) Concrete Foundations	101 days?	Thu 6/9/05
51	(7) Concrete Foundations	183 days?	Wed 6/15/05
52	(3) Concrete Foundations	37 days?	Wed 6/29/05
53	(5) Concrete Foundations	156 days?	Fri 7/8/05
54	(6) Concrete Foundations	5 days?	Mon 8/1/05
55	(1) Concrete Foundations	46 days?	Mon 8/15/05
56	(2) Concrete Foundations	2 days	Tue 8/15/06
57			
58	(5) Block Masonry	301 days?	Mon 7/18/05
59	(7) Block Masonry	333 days?	Mon 7/25/05
60	(3) Block Masonry	239 days?	Mon 8/1/05
61	(6) Block Masonry	283 days?	Wed 8/10/05
62	(4) Block Masonry	259 days?	Mon 8/15/05
63	(1) Block Masonry	251 days?	Mon 8/15/05
64	(2) Block Masonry	84 days?	Fri 8/18/06
65			
66			
67	(4) Structural Steel Erection	105 days?	Mon 10/31/05
68	(7) Structural Steel Erection	179 days?	Mon 12/12/05
69	(3) Structural Steel Erection	48 days?	Wed 12/21/05
70	(6) Structural Steel Erection	166 days?	Thu 12/22/05
71	(5) Structural Steel Erection	159 days?	Wed 12/28/05
72	(1) Structural Steel Erection	84 days?	Mon 3/6/06
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			
86			
87			
88			
89			
90			
91			
92			



Project: T.C. Williams High School Structural Resequence Scl
Date: April 12, 2007

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

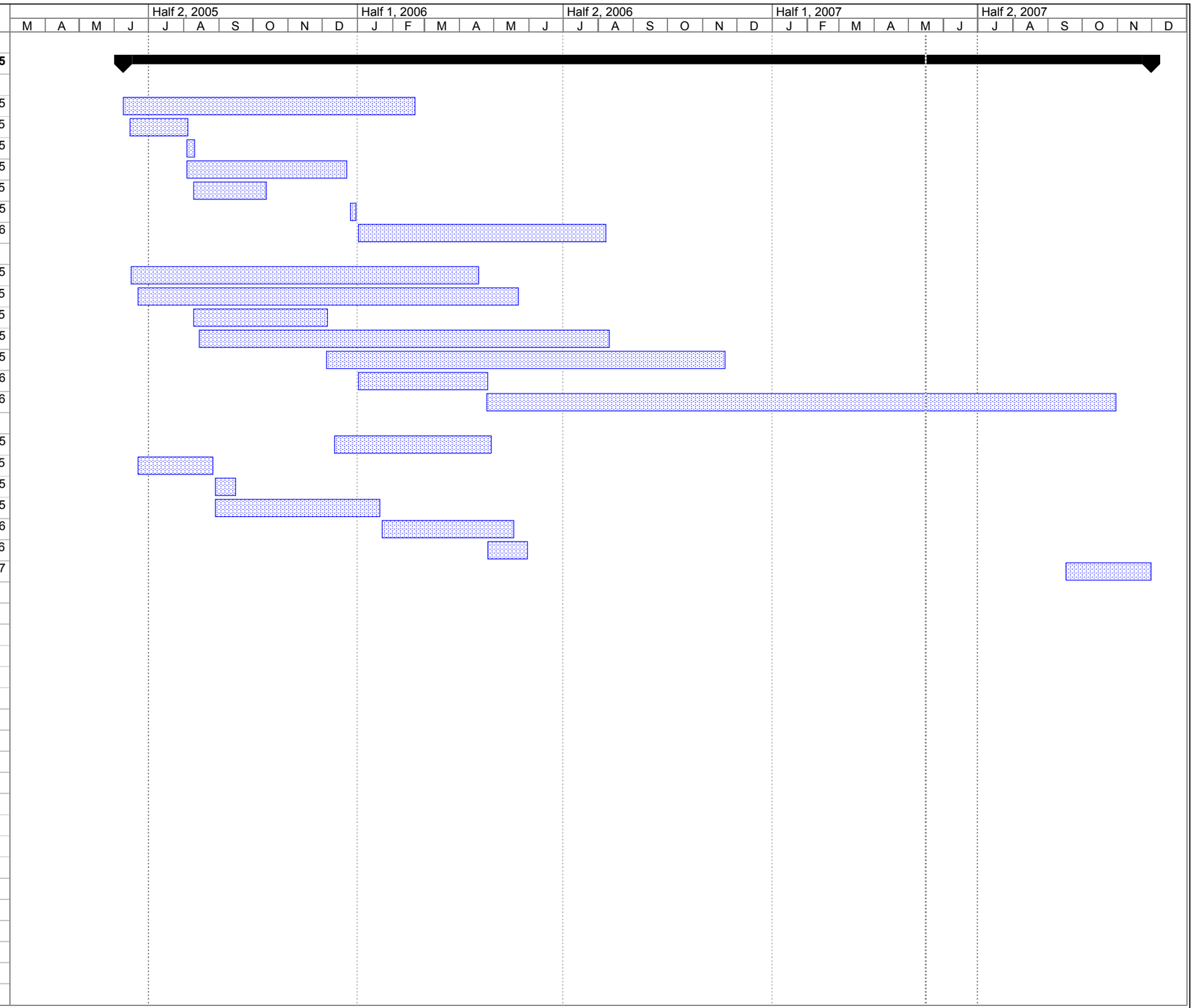
ID	Task Name	Duration	Start
93			
94	**Proposed - CMU Schedule**	**647 days?**	**Thu 6/9/05**
95			
96	(7) Concrete Foundations	183 days	Thu 6/9/05
97	(7) Block Masonry	218 days	Thu 6/16/05
98	(7) Structural Steel Erection	100 days?	Mon 12/12/05
99			
100	(3) Concrete Foundations	37 days	Wed 6/15/05
101	(3) Block Masonry	239 days	Wed 6/22/05
102	(3) Structural Steel Erection	48 days	Wed 6/22/05
103			
104	(2) Concrete Foundations	5 days	Thu 8/4/05
105	(2) Block Masonry	84 days	Wed 8/10/05
106	(2) Structural Steel Erection	14 days	Mon 8/29/05
107			
108	(4) Concrete Foundations	101 days	Thu 8/4/05
109	(4) Block Masonry	259 days?	Mon 8/15/05
110	(4) Structural Steel Erection	105 days	Mon 8/29/05
111			
112	(1) Concrete Foundations	46 days	Wed 8/10/05
113	(1) Block Masonry	251 days	Mon 12/5/05
114	(1) Structural Steel Erection	84 days	Mon 1/23/06
115			
116	(6) Concrete Foundations	5 days?	Mon 12/26/05
117	(6) Block Masonry	82 days	Mon 1/2/06
118	(6) Structural Steel Erection	25 days	Wed 4/26/06
119			
120	(5) Concrete Foundations	156 days	Mon 1/2/06
121	(5) Block Masonry	396 days	Tue 4/25/06
122	(5) Structural Steel Erection	55 days	Mon 9/17/07
123			
124			
125			
126			
127			
128			
129			
130			
131			
132			
133			
134			
135			
136			
137			
138			



Project: T.C. Williams High School Structural Resequence Scl
Date: April 12, 2007

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

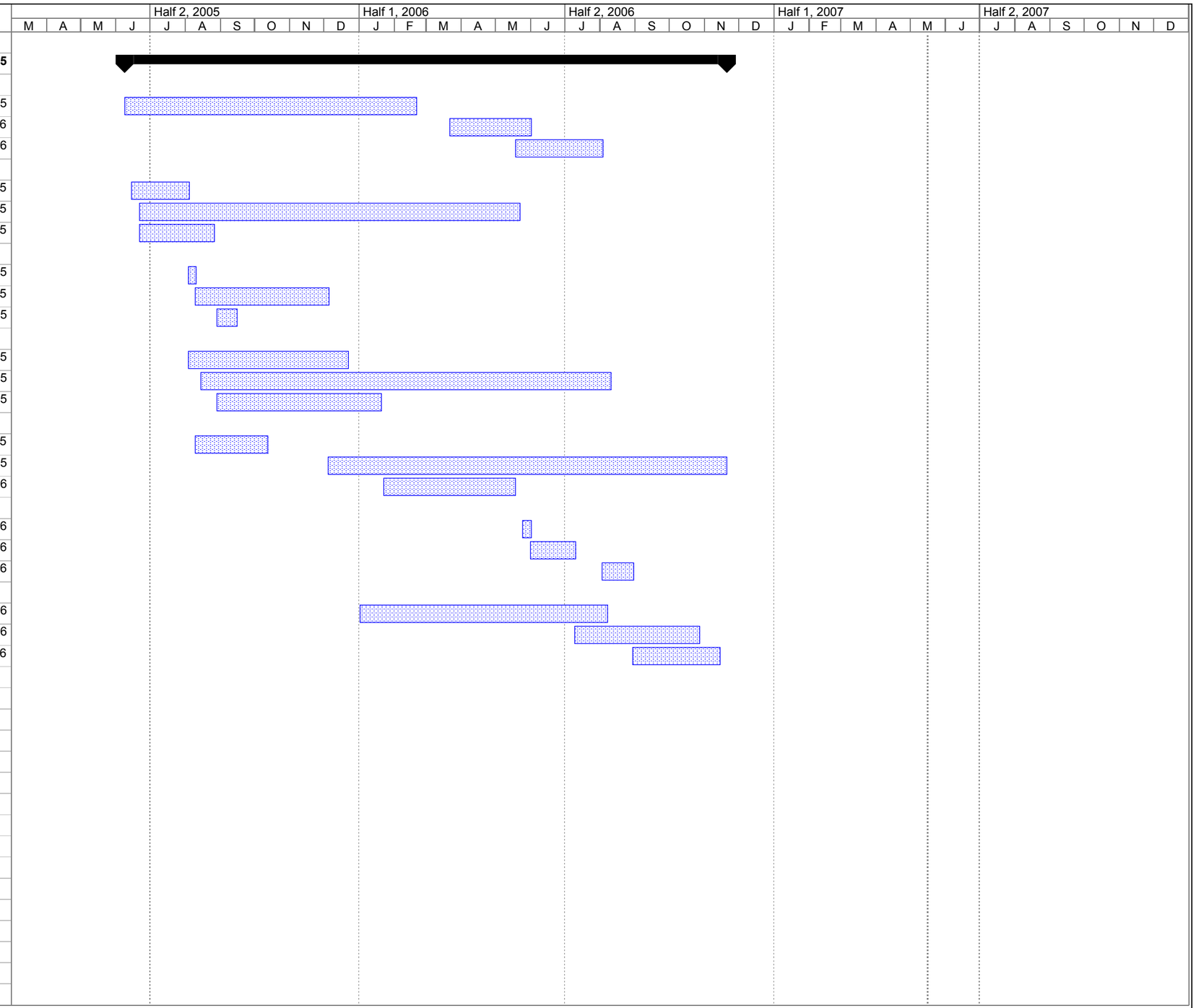
ID	Task Name	Duration	Start
139			
140	**Proposed - CMU Sequence**	**647 days?**	**Thu 6/9/05**
141			
142	(7) Concrete Foundations	183 days	Thu 6/9/05
143	(3) Concrete Foundations	37 days	Wed 6/15/05
144	(2) Concrete Foundations	5 days	Thu 8/4/05
145	(4) Concrete Foundations	101 days	Thu 8/4/05
146	(1) Concrete Foundations	46 days	Wed 8/10/05
147	(6) Concrete Foundations	5 days?	Mon 12/26/05
148	(5) Concrete Foundations	156 days	Mon 1/2/06
149			
150	(7) Block Masonry	218 days	Thu 6/16/05
151	(3) Block Masonry	239 days	Wed 6/22/05
152	(2) Block Masonry	84 days	Wed 8/10/05
153	(4) Block Masonry	259 days?	Mon 8/15/05
154	(1) Block Masonry	251 days	Mon 12/5/05
155	(6) Block Masonry	82 days	Mon 1/2/06
156	(5) Block Masonry	396 days	Tue 4/25/06
157			
158	(7) Structural Steel Erection	100 days?	Mon 12/12/05
159	(3) Structural Steel Erection	48 days	Wed 6/22/05
160	(2) Structural Steel Erection	14 days	Mon 8/29/05
161	(4) Structural Steel Erection	105 days	Mon 8/29/05
162	(1) Structural Steel Erection	84 days	Mon 1/23/06
163	(6) Structural Steel Erection	25 days	Wed 4/26/06
164	(5) Structural Steel Erection	55 days	Mon 9/17/07
165			
166			
167			
168			
169			
170			
171			
172			
173			
174			
175			
176			
177			
178			
179			
180			
181			
182			
183			
184			



Project: T.C. Williams High School Structural Resequence Scl
Date: April 12, 2007

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

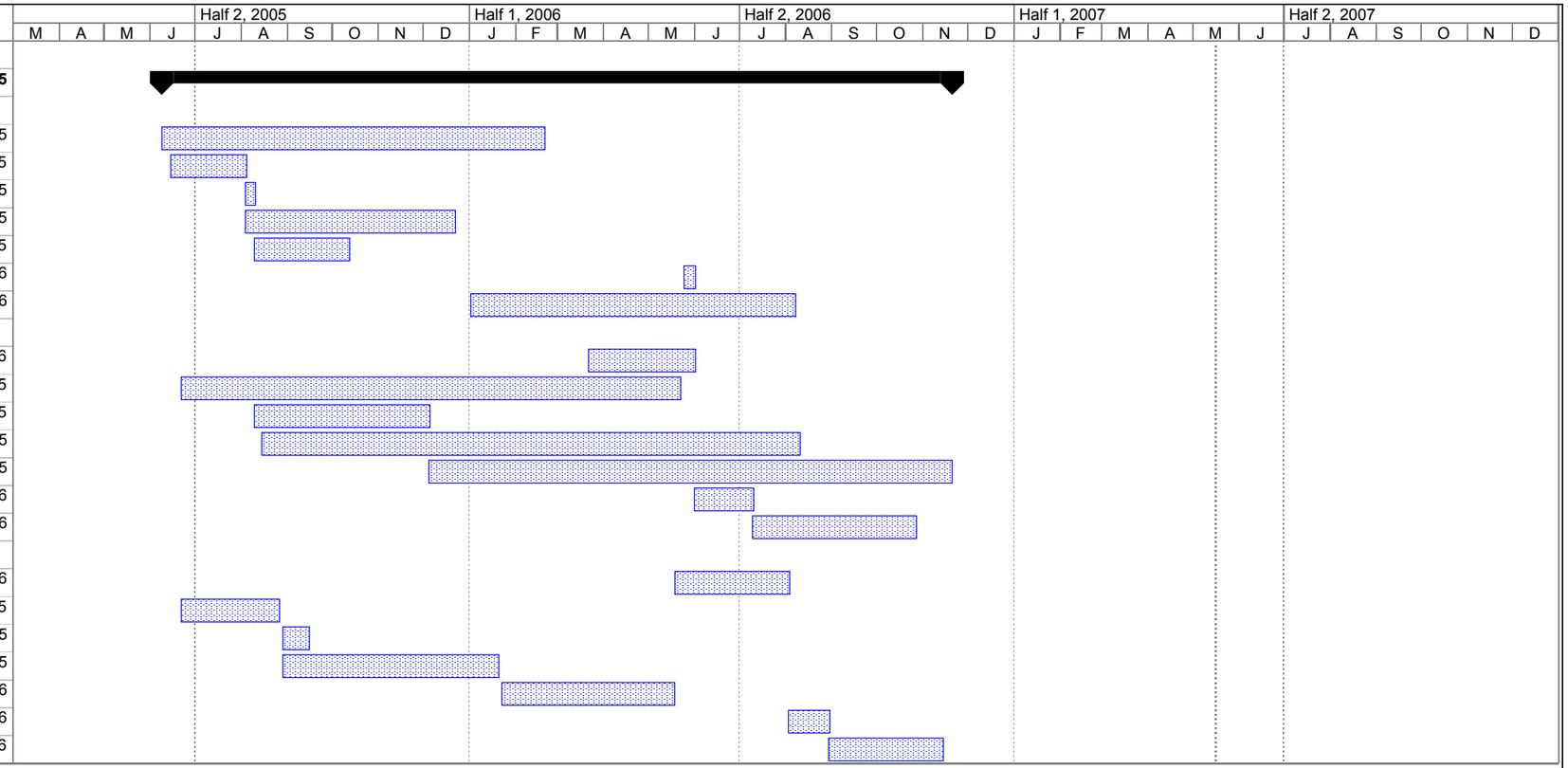
ID	Task Name	Duration	Start
185			
186	**Proposed - Solarcrete System Schedule**	**378 days?**	**Thu 6/9/05**
187			
188	(7) Concrete Foundations	183 days	Thu 6/9/05
189	(7) Solarcrete Panels	52 days	Wed 3/22/06
190	(7) Structural Steel Erection	55 days	Fri 5/19/06
191			
192	(3) Concrete Foundations	37 days	Wed 6/15/05
193	(3) Block Masonry	239 days	Wed 6/22/05
194	(3) Structural Steel Erection	48 days	Wed 6/22/05
195			
196	(2) Concrete Foundations	5 days	Thu 8/4/05
197	(2) Block Masonry	84 days	Wed 8/10/05
198	(2) Structural Steel Erection	14 days	Mon 8/29/05
199			
200	(4) Concrete Foundations	101 days	Thu 8/4/05
201	(4) Block Masonry	259 days?	Mon 8/15/05
202	(4) Structural Steel Erection	105 days	Mon 8/29/05
203			
204	(1) Concrete Foundations	46 days	Wed 8/10/05
205	(1) Block Masonry	251 days	Mon 12/5/05
206	(1) Structural Steel Erection	84 days	Mon 1/23/06
207			
208	(6) Concrete Foundations	6 days	Thu 5/25/06
209	(6) Solarcrete Panels	28 days	Thu 6/1/06
210	(6) Structural Steel Erection	20 days	Thu 8/3/06
211			
212	(5) Concrete Foundations	156 days	Mon 1/2/06
213	(5) Solarcrete Panels	80 days	Mon 7/10/06
214	(5) Structural Steel Erection	55 days	Wed 8/30/06
215			
216			
217			
218			
219			
220			
221			
222			
223			
224			
225			
226			
227			
228			
229			
230			



Project: T.C. Williams High School Structural Resequence Scl
Date: April 12, 2007

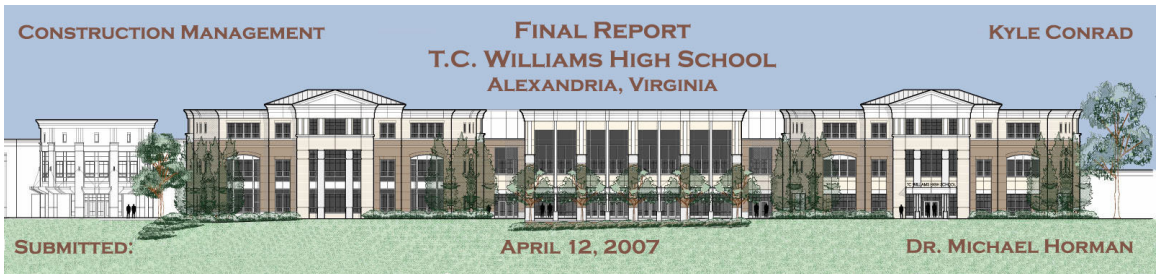
Task | Progress | Summary | External Tasks | Deadline
Split | Milestone | Project Summary | External Milestone

ID	Task Name	Duration	Start
231			
232	**Proposed - Solarcrete Sequence**	**378 days?**	**Thu 6/9/05**
233			
234	(7) Concrete Foundations	183 days	Thu 6/9/05
235	(3) Concrete Foundations	37 days	Wed 6/15/05
236	(2) Concrete Foundations	5 days	Thu 8/4/05
237	(4) Concrete Foundations	101 days	Thu 8/4/05
238	(1) Concrete Foundations	46 days	Wed 8/10/05
239	(6) Concrete Foundations	6 days	Thu 5/25/06
240	(5) Concrete Foundations	156 days	Mon 1/2/06
241			
242	(7) Solarcrete Panels	52 days	Wed 3/22/06
243	(3) Block Masonry	239 days	Wed 6/22/05
244	(2) Block Masonry	84 days	Wed 8/10/05
245	(4) Block Masonry	259 days?	Mon 8/15/05
246	(1) Block Masonry	251 days	Mon 12/5/05
247	(6) Solarcrete Panels	28 days	Thu 6/1/06
248	(5) Solarcrete Panels	80 days	Mon 7/10/06
249			
250	(7) Structural Steel Erection	55 days	Fri 5/19/06
251	(3) Structural Steel Erection	48 days	Wed 6/22/05
252	(2) Structural Steel Erection	14 days	Mon 8/29/05
253	(4) Structural Steel Erection	105 days	Mon 8/29/05
254	(1) Structural Steel Erection	84 days	Mon 1/23/06
255	(6) Structural Steel Erection	20 days	Thu 8/3/06
256	(5) Structural Steel Erection	55 days	Wed 8/30/06



Project: T.C. Williams High School Structural Resequence Scl
Date: April 12, 2007

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



Appendix E

Existing Conditions

Site Plan

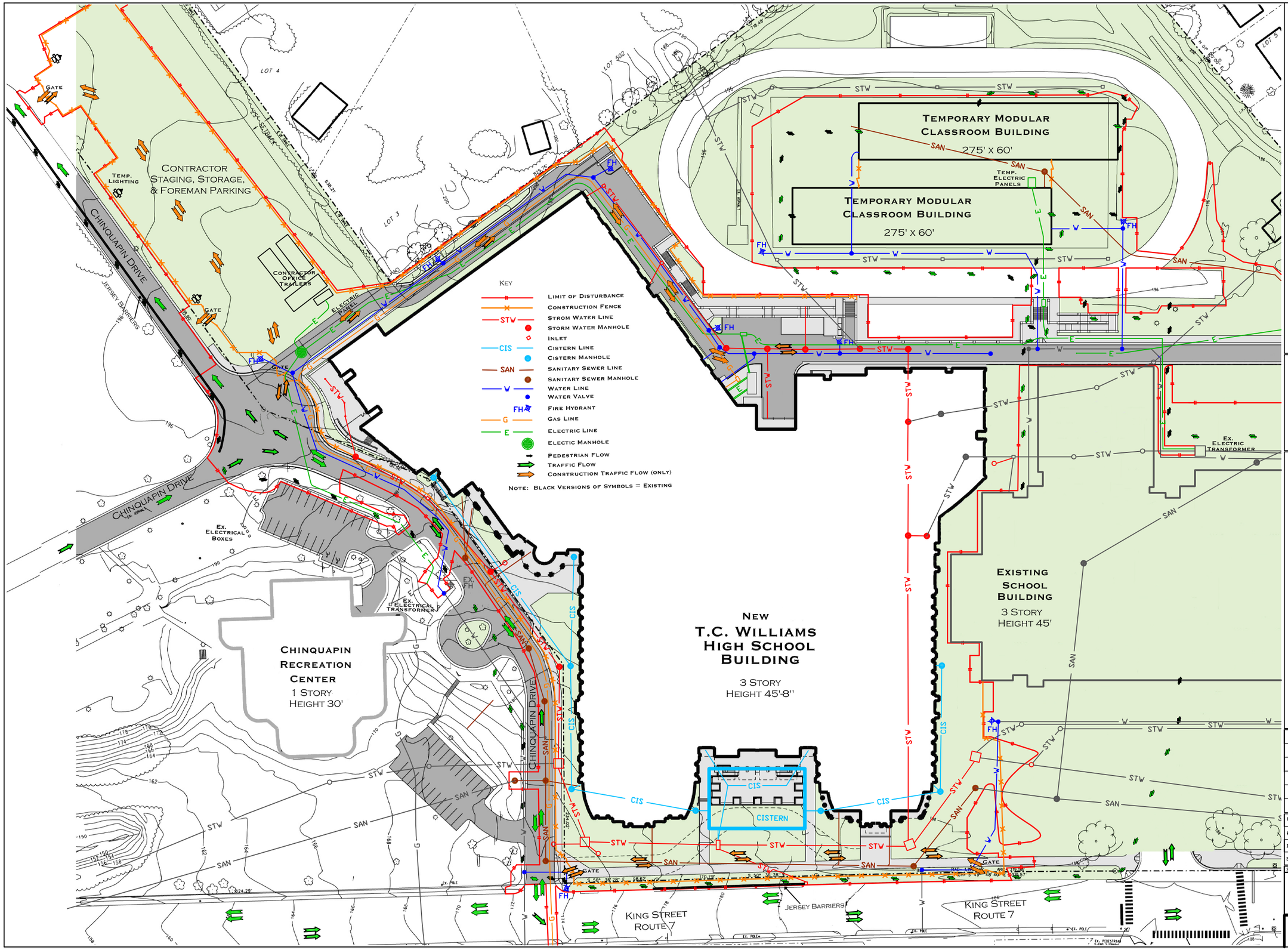
T.C. Williams High School

Replacement Project

T.C. WILLIAMS HIGH SCHOOL REPLACEMENT PROJECT

OWNER:
ALEXANDRIA CITY PUBLIC SCHOOLS

LOCATION:
3330 KING STREET
ALEXANDRIA, VA 22302



MARK	DATE	DESCRIPTION
1	04/12/07	FINAL REPORT

PROJECT NO:

REVIEWED BY:

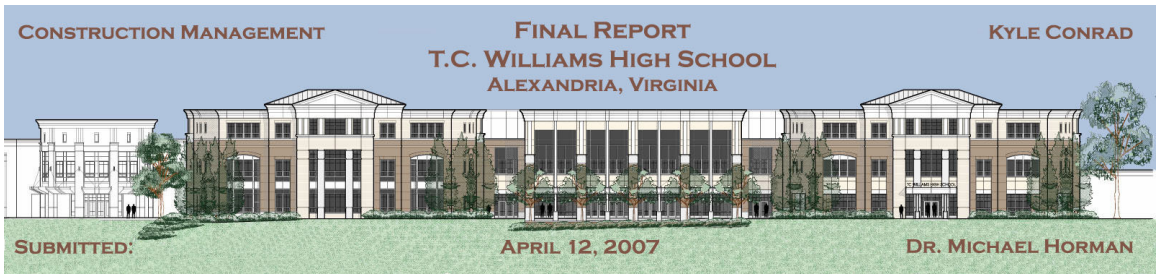
DRAWN BY: KYLE CONRAD

SCALE: 1/96" = 1'

SHEET TITLE:

EXISTING CONDITIONS SITE PLAN

C-100



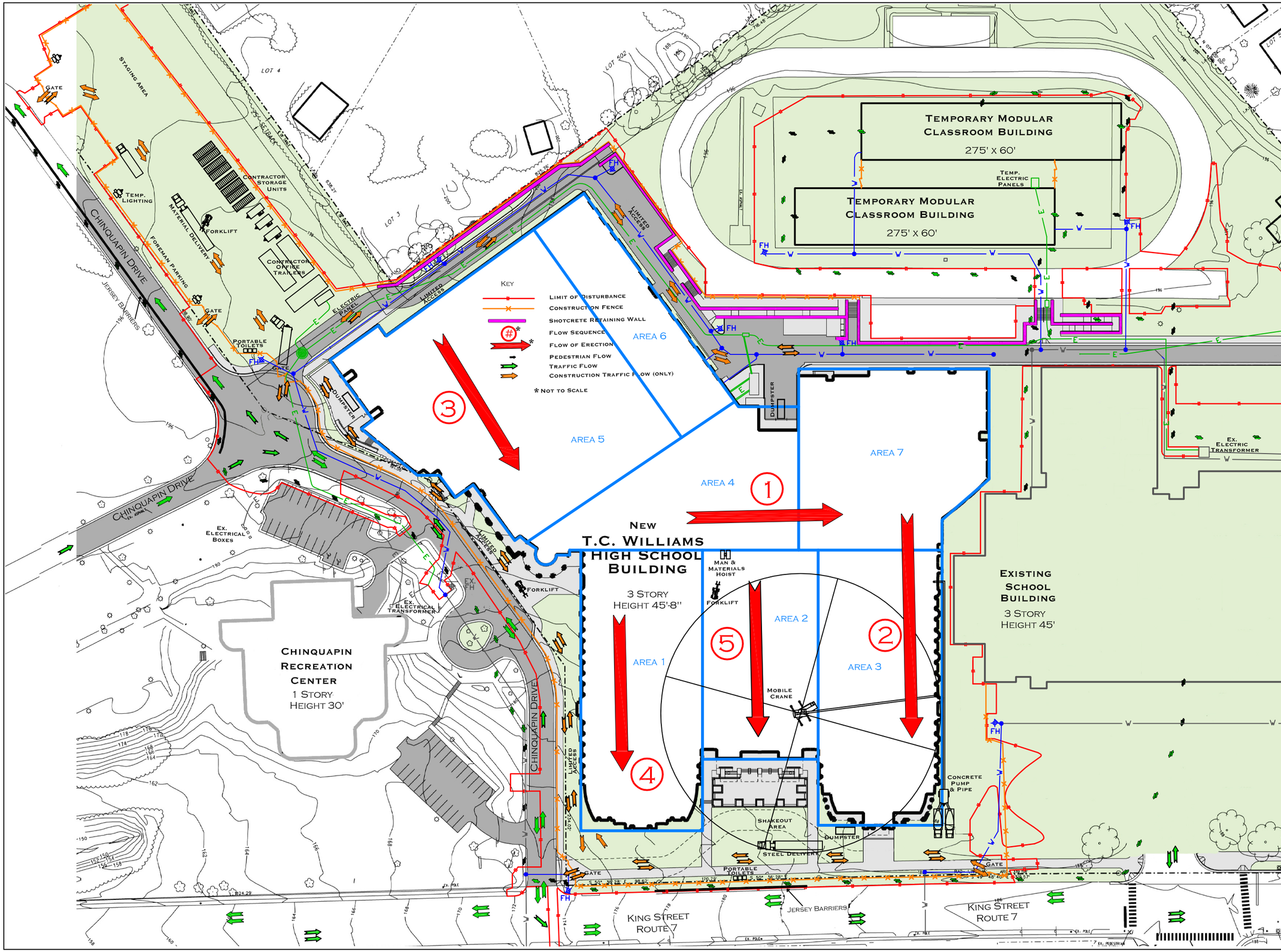
Appendix F

Superstructure

Site Logistics Plan

T.C. Williams High School

Replacement Project



T.C. WILLIAMS HIGH SCHOOL REPLACEMENT PROJECT

OWNER:
ALEXANDRIA CITY PUBLIC SCHOOLS

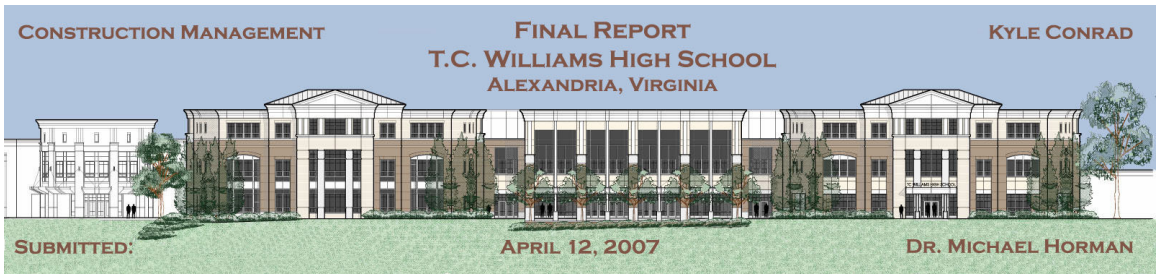
LOCATION:
3330 KING STREET
ALEXANDRIA, VA 22302

MARK	DATE	DESCRIPTION
3	04/12/07	FINAL REPORT
2	10/20/06	TECH ASSIGN. #2
1	10/06/06	TECH ASSIGN. #1

PROJECT NO.:
REVIEWED BY:
DRAWN BY: KYLE CONRAD
SCALE: 1/96' = 1'
SHEET TITLE:

SUPERSTRUCTURE SITE PLAN

C-101



Appendix G

Re-Sequenced Superstructure

Site Logistics Plan

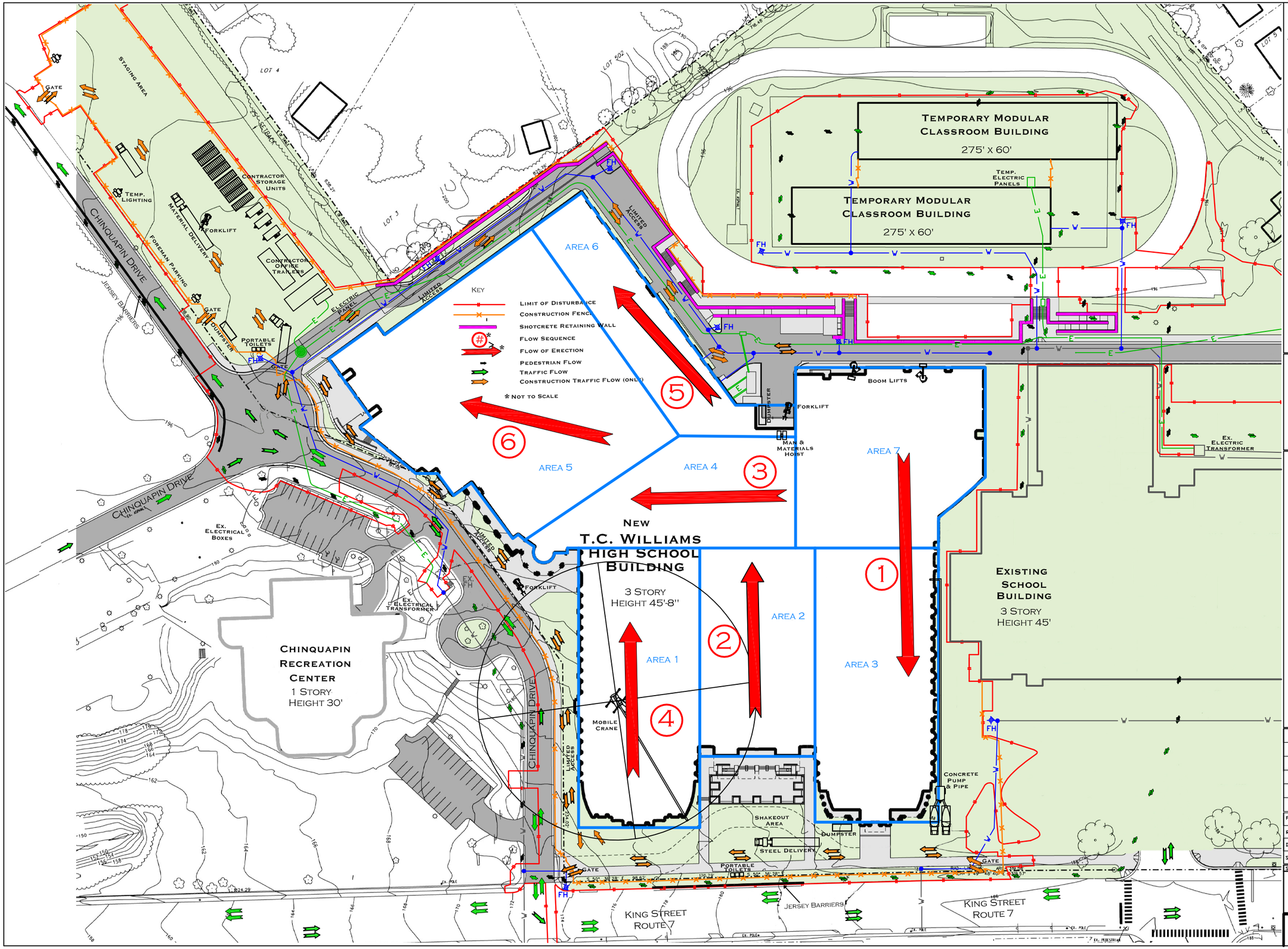
T.C. Williams High School

Replacement Project

T.C. WILLIAMS HIGH SCHOOL REPLACEMENT PROJECT

OWNER:
ALEXANDRIA CITY PUBLIC SCHOOLS

LOCATION:
3330 KING STREET
ALEXANDRIA, VA 22302

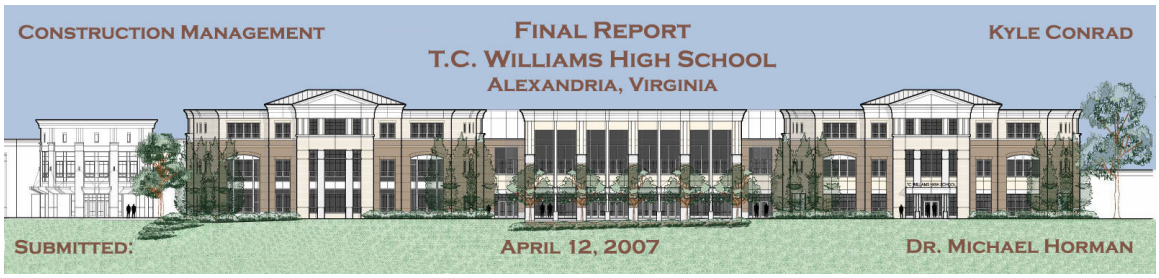


MARK	DATE	DESCRIPTION
3	04/12/07	FINAL REPORT
2	10/20/06	TECH ASSIGN. #2
1	10/06/06	TECH ASSIGN. #1

PROJECT NO:
REVIEWED BY:
DRAWN BY: KYLE CONRAD
SCALE: 1/96' = 1'
SHEET TITLE:

RESEQUENCED SUPERSTRUCTURE SITE PLAN

C-102



Appendix H

Area 5

Gymnasium Reverberation Calculations

T.C. Williams High School

Replacement Project

Reverberation Time Calculator

$T_{60} = .05(V/a) = .05(V/\sum S\alpha)$

Reverberation Time Calculation for : **T.C. Williams High School Main Gymnasium**
Open Gym - Bleachers Retracted
CMU Walls **King Street - Alexandria, VA**

Surface	Material	Area (ft^2)	Absorption Coefficient 500 Hz	Absorption Coefficient 1000 Hz	Sα 500 Hz	Sα 1000 Hz
Floor	Athletic Wood Flooring	24,563.00	0.07	0.06	1719.41	1473.78
Ceiling	3" Deep Acoustical Roof Deck	24,563.00	0.89	0.95	21861.07	23334.85
North Wall	Ground Face CMU - Painted	1,365.33	0.06	0.07	81.9198	95.5731
North Wall	Wood Bleachers	2,626.00	0.22	0.39	577.72	1024.14
North Wall	Metal Doors	42.00	0.10	0.10	4.2	4.2
South Wall	Ground Face CMU - Painted	1,323.33	0.06	0.07	79.3998	92.6331
South Wall	Wood Bleachers	2,626.00	0.22	0.39	577.72	1024.14
South Wall	Metal Doors	84.00	0.10	0.10	8.4	8.4
West Wall	Ground Face CMU - Painted	4,315.78	0.06	0.07	258.9468	302.1046
West Wall	Acoustical CMU	1,872.66	0.97	0.80	1816.48	1498.128
West Wall	Metal Doors	168.00	0.10	0.10	16.8	16.8
West Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
West Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
East Wall	Ground Face CMU - Painted	4,105.78	0.06	0.07	246.3468	287.4046
East Wall	Acoustical CMU	1,872.66	0.97	0.80	1816.48	1498.128
East Wall	Metal Doors	378.00	0.10	0.10	37.8	37.8
East Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
East Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
					0	0
					0	0
					0	0
					0	0
					0	0
					0	0
					0	0
Room Length (ft) :	203.00	ft	**a = ∑Sα**		29492.29	31084.53
Room Width (ft) :	121.00	ft				
Room Height (ft) :	33.33	ft	**T_{60} = .05(V/∑Sα)**		**1.39**	**1.32**
Volume (ft^3) :	**818,685**	ft^3				

Target Reverberation Time: Gymnasium for Teaching*	1.5 to 1.8	1.5 to 1.8

* Target Reverberation Time obtained from the Mc Squared System Design Group, Inc.

Reverberation Time Calculator

$T_{60} = .05(V/a) = .05(V/\sum S\alpha)$

Reverberation Time Calculation for : **T.C. Williams High School Main Gymnasium**
Open Gym - 3/4 Occupancy
CMU Walls **King Street - Alexandria, VA**

Surface	Material	Area (ft^2)	Absorption Coefficient 500 Hz	Absorption Coefficient 1000 Hz	Sα 500 Hz	Sα 1000 Hz
Floor	Athletic Wood Flooring	11,979.00	0.07	0.06	838.53	718.74
Floor	3/4 Students, On Bleachers	9,438.00	0.49	0.84	4624.62	7927.92
Floor	1/4 Wood Bleachers	3,146.00	0.22	0.39	692.12	1226.94
Ceiling	3" Deep Acoustical Roof Deck	24,563.00	0.89	0.95	21861.07	23334.85
North Wall	Ground Face CMU - Painted	1,365.33	0.06	0.07	81.9198	95.5731
North Wall	3/4 Students, On Bleachers	1,969.50	0.49	0.84	965.055	1654.38
North Wall	1/4 Wood Bleachers	656.50	0.22	0.39	144.43	256.035
North Wall	Metal Doors	42.00	0.10	0.10	4.2	4.2
South Wall	Ground Face CMU - Painted	1,323.33	0.06	0.07	79.3998	92.6331
South Wall	3/4 Students, On Bleachers	1,969.50	0.49	0.84	965.055	1654.38
South Wall	1/4 Wood Bleachers	656.50	0.22	0.39	144.43	256.035
South Wall	Metal Doors	84.00	0.10	0.10	8.4	8.4
West Wall	Ground Face CMU - Painted	4,315.78	0.06	0.07	258.9468	302.1046
West Wall	Acoustical CMU	1,872.66	1.02	0.72	1910.113	1348.315
West Wall	Metal Doors	168.00	0.10	0.10	16.8	16.8
West Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
West Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
East Wall	Ground Face CMU - Painted	4,105.78	0.06	0.07	246.3468	287.4046
East Wall	Acoustical CMU	1,872.66	1.02	0.72	1910.113	1348.315
East Wall	Metal Doors	378.00	0.10	0.10	37.8	37.8
East Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
East Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
					0	0
					0	0
					0	0
Room Length (ft) :	203.00	ft	**a = ∑Sα**		35178.95	40957.28
Room Width (ft) :	121.00	ft				
Room Height (ft) :	33.33	ft	**$T_{60} = .05(V/\sum S\alpha)$**		**1.16**	**1.00**
Volume (ft^3) :	**818,685**	ft^3				

Target Reverberation Time: Gymnasium for Teaching*	1.5 to 1.8	1.5 to 1.8

* Target Reverberation Time obtained from the Mc Squared System Design Group, Inc.

Reverberation Time Calculator

$T_{60} = .05(V/a) = .05(V/\sum S\alpha)$

Reverberation Time Calculation for : **T.C. Williams High School Main Gymnasium**
Open Gym - Full Occupancy
CMU Walls **King Street - Alexandria, VA**

Surface	Material	Area (ft^2)	Absorption Coefficient 500 Hz	Absorption Coefficient 1000 Hz	Sα 500 Hz	Sα 1000 Hz
Floor	Athletic Wood Flooring	11,979.00	0.07	0.06	838.53	718.74
Floor	Students, On Bleachers	12,584.00	0.49	0.84	6166.16	10570.56
Ceiling	3" Deep Acoustical Roof Deck	24,563.00	0.89	0.95	21861.07	23334.85
North Wall	Ground Face CMU - Painted	1,365.33	0.06	0.07	81.9198	95.5731
North Wall	Students, On Bleachers	2,626.00	0.49	0.84	1286.74	2205.84
North Wall	Metal Doors	42.00	0.10	0.10	4.2	4.2
South Wall	Ground Face CMU - Painted	1,323.33	0.06	0.07	79.3998	92.6331
South Wall	Students, On Bleachers	2,626.00	0.49	0.84	1286.74	2205.84
South Wall	Metal Doors	84.00	0.10	0.10	8.4	8.4
West Wall	Ground Face CMU - Painted	4,315.78	0.06	0.07	258.9468	302.1046
West Wall	Acoustical CMU	1,872.66	1.02	0.72	1910.113	1348.315
West Wall	Metal Doors	168.00	0.10	0.10	16.8	16.8
West Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
West Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
East Wall	Ground Face CMU - Painted	4,105.78	0.06	0.07	246.3468	287.4046
East Wall	Acoustical CMU	1,872.66	1.02	0.72	1910.113	1348.315
East Wall	Metal Doors	378.00	0.10	0.10	37.8	37.8
East Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
East Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
					0	0
					0	0
					0	0
					0	0
					0	0
					0	0
Room Length (ft) :	203.00	ft	**a = ∑Sα**		36382.88	42963.83
Room Width (ft) :	121.00	ft				
Room Height (ft) :	33.33	ft	**$T_{60} = .05(V/\sum S\alpha)$**		**1.13**	**0.95**
Volume (ft^3) :	**818,685**	ft^3				

Target Reverberation Time: Gymnasium for Teaching*	1.5 to 1.8	1.5 to 1.8

* Target Reverberation Time obtained from the Mc Squared System Design Group, Inc.

Reverberation Time Calculator

$T_{60} = .05(V/a) = .05(V/\sum S\alpha)$

Reverberation Time Calculation for : **T.C. Williams High School Main Gymnasium**
Open Gym - Bleachers Retracted
Solarcrete System - w/o Acoustic Wall Panels **King Street - Alexandria, VA**

Surface	Material	Area (ft^2)	Absorption Coefficient 500 Hz	Absorption Coefficient 1000 Hz	Sα 500 Hz	Sα 1000 Hz
Floor	Athletic Wood Flooring	24,563.00	0.07	0.06	1719.41	1473.78
Ceiling	3" Deep Acoustical Roof Deck	24,563.00	0.89	0.95	21861.07	23334.85
North Wall	Concrete, Troweled	1,365.33	0.02	0.02	27.3066	27.3066
North Wall	Wood Bleachers	2,626.00	0.22	0.39	577.72	1024.14
North Wall	Metal Doors	42.00	0.10	0.10	4.2	4.2
South Wall	Concrete, Troweled	1,323.33	0.02	0.02	26.4666	26.4666
South Wall	Wood Bleachers	2,626.00	0.22	0.39	577.72	1024.14
South Wall	Metal Doors	84.00	0.10	0.10	8.4	8.4
West Wall	Concrete, Troweled	6,188.44	0.02	0.02	123.7688	123.7688
West Wall	Metal Doors	168.00	0.10	0.10	16.8	16.8
West Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
West Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
East Wall	Concrete, Troweled	5,978.44	0.02	0.02	119.5688	119.5688
East Wall	Metal Doors	378.00	0.10	0.10	37.8	37.8
East Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
East Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
					0	0
					0	0
					0	0
					0	0
					0	0
					0	0
					0	0
					0	0
					0	0
Room Length (ft) :	203.00	ft		$a = \sum S\alpha$	25489.83	27607.67
Room Width (ft) :	121.00	ft				
Room Height (ft) :	33.33	ft		$T_{60} = .05(V/\sum S\alpha)$	**1.61**	**1.48**
Volume (ft^3) :	**818,685**	ft^3				

Target Reverberation Time: Gymnasium for Teaching*	1.5 to 1.8	1.5 to 1.8

* Target Reverberation Time obtained from the M[c] Squared System Design Group, Inc.

Reverberation Time Calculator

$T_{60} = .05(V/a) = .05(V/\sum S\alpha)$

Reverberation Time Calculation for :	T.C. Williams High School Main Gymnasium Open Gym - 3/4 Occupancy					
Solarcrete System - w/o Acoustic Wall Panels	King Street - Alexandria, VA					
			Absorption Coefficient		Sα	
Surface	Material	Area (ft^2)	500 Hz	1000 Hz	500 Hz	1000 Hz
Floor	Athletic Wood Flooring	11,979.00	0.07	0.06	838.53	718.74
Floor	3/4 Students, On Bleachers	9,438.00	0.49	0.84	4624.62	7927.92
Floor	1/4 Wood Bleachers	3,146.00	0.22	0.39	692.12	1226.94
Ceiling	3" Deep Acoustical Roof Deck	24,563.00	0.89	0.95	21861.07	23334.85
North Wall	Concrete, Troweled	1,365.33	0.02	0.02	27.3066	27.3066
North Wall	3/4 Students, On Bleachers	1,969.50	0.49	0.84	965.055	1654.38
North Wall	1/4 Wood Bleachers	656.50	0.22	0.39	144.43	256.035
North Wall	Metal Doors	42.00	0.10	0.10	4.2	4.2
South Wall	Concrete, Troweled	1,323.33	0.02	0.02	26.4666	26.4666
South Wall	3/4 Students, On Bleachers	1,969.50	0.49	0.84	965.055	1654.38
South Wall	1/4 Wood Bleachers	656.50	0.22	0.39	144.43	256.035
South Wall	Metal Doors	84.00	0.10	0.10	8.4	8.4
West Wall	Concrete, Troweled	6,188.44	0.02	0.02	123.7688	123.7688
West Wall	Metal Doors	168.00	0.10	0.10	16.8	16.8
West Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
West Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
East Wall	Concrete, Troweled	5,978.44	0.02	0.02	119.5688	119.5688
East Wall	Metal Doors	378.00	0.10	0.10	37.8	37.8
East Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
East Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
					0	0
					0	0
					0	0
					0	0
					0	0
Room Length (ft) :	203.00	ft	a = ∑Sα		30989.22	37780.04
Room Width (ft) :	121.00	ft				
Room Height (ft) :	33.33	ft	$T_{60} = .05(V/\sum S\alpha)$		1.32	1.08
Volume (ft^3) :	818,685	ft^3				

Target Reverberation Time: Gymnasium for Teaching*	1.5 to 1.8	1.5 to 1.8

* Target Reverberation Time obtained from the M[c] Squared System Design Group, Inc.

Reverberation Time Calculator

$T_{60} = .05(V/a) = .05(V/\sum S\alpha)$

Reverberation Time Calculation for :	T.C. Williams High School Main Gymnasium Open Gym - Full Occupancy					
Solarcrete System - w/o Acoustic Wall Panels	King Street - Alexandria, VA					
			Absorption Coefficient		Sα	
Surface	Material	Area (ft^2)	500 Hz	1000 Hz	500 Hz	1000 Hz
Floor	Athletic Wood Flooring	11,979.00	0.07	0.06	838.53	718.74
Floor	Students, On Bleachers	12,584.00	0.49	0.84	6166.16	10570.56
Ceiling	3" Deep Acoustical Roof Deck	24,563.00	0.89	0.95	21861.07	23334.85
North Wall	Concrete, Troweled	1,365.33	0.02	0.02	27.3066	27.3066
North Wall	Students, On Bleachers	2,626.00	0.49	0.84	1286.74	2205.84
North Wall	Metal Doors	42.00	0.10	0.10	4.2	4.2
South Wall	Concrete, Troweled	1,323.33	0.02	0.02	26.4666	26.4666
South Wall	Students, On Bleachers	2,626.00	0.49	0.84	1286.74	2205.84
South Wall	Metal Doors	84.00	0.10	0.10	8.4	8.4
West Wall	Concrete, Troweled	6,188.44	0.02	0.02	123.7688	123.7688
West Wall	Metal Doors	168.00	0.10	0.10	16.8	16.8
West Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
West Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
East Wall	Concrete, Troweled	5,978.44	0.02	0.02	119.5688	119.5688
East Wall	Metal Doors	378.00	0.10	0.10	37.8	37.8
East Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
East Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
					0	0
					0	0
					0	0
					0	0
					0	0
					0	0
					0	0
					0	0
Room Length (ft) :	203.00	ft	a = ∑Sα		32193.15	39786.59
Room Width (ft) :	121.00	ft				
Room Height (ft) :	33.33	ft	$T_{60} = .05(V/\sum S\alpha)$		1.27	1.03
Volume (ft^3) :	818,685	ft^3				

Target Reverberation Time: Gymnasium for Teaching*	1.5 to 1.8	1.5 to 1.8

* Target Reverberation Time obtained from the M[c] Squared System Design Group, Inc.

Reverberation Time Calculator

$T_{60} = .05(V/a) = .05(V/\sum S\alpha)$

Reverberation Time Calculation for : **T.C. Williams High School Main Gymnasium**
Open Gym - Bleachers Retracted
Solarcrete System - w/ Soft Sound™ Acoustic Wall Panels **King Street - Alexandria, VA**

Surface	Material	Area (ft^2)	Absorption Coefficient 500 Hz	Absorption Coefficient 1000 Hz	Sα 500 Hz	Sα 1000 Hz
Floor	Athletic Wood Flooring	24,563.00	0.07	0.06	1719.41	1473.78
Ceiling	3" Deep Acoustical Roof Deck	24,563.00	0.89	0.95	21861.07	23334.85
North Wall	Concrete, Troweled	1,365.33	0.02	0.02	27.3066	27.3066
North Wall	Wood Bleachers	2,626.00	0.22	0.39	577.72	1024.14
North Wall	Metal Doors	42.00	0.10	0.10	4.2	4.2
South Wall	Concrete, Troweled	1,323.33	0.02	0.02	26.4666	26.4666
South Wall	Wood Bleachers	2,626.00	0.22	0.39	577.72	1024.14
South Wall	Metal Doors	84.00	0.10	0.10	8.4	8.4
West Wall	Concrete, Troweled	6,188.44	0.02	0.02	123.7688	123.7688
West Wall	Metal Doors	168.00	0.10	0.10	16.8	16.8
West Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
West Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
East Wall	Concrete, Troweled	5,978.44	0.02	0.02	119.5688	119.5688
East Wall	Metal Doors	378.00	0.10	0.10	37.8	37.8
East Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
East Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
					0	0
West Wall	1" Fabric Impact Resistant Acoustic Panels	2,400.00	0.89	1.07	2136	2568
East Wall	1" Fabric Impact Resistant Acoustic Panels	2,400.00	0.89	1.07	2136	2568
					0	0
					0	0
					0	0
					0	0
					0	0
					0	0

Room Length (ft) :	203.00	ft	$a = \sum S\alpha$	29761.83	32743.67
Room Width (ft) :	121.00	ft			
Room Height (ft) :	33.33	ft	$T_{60} = .05(V/\sum S\alpha)$	**1.38**	**1.25**
Volume (ft^3) :	**818,685**	ft^3	CMU Reverberation Time	**1.39**	**1.32**

Target Reverberation Time: Gymnasium for Teaching*	1.5 to 1.8	1.5 to 1.8

* Target Reverberation Time obtained from the M[c] Squared System Design Group, Inc.

Reverberation Time Calculator

$T_{60} = .05(V/a) = .05(V/\sum S\alpha)$

Reverberation Time Calculation for :	T.C. Williams High School Main Gymnasium Open Gym - 3/4 Occupancy King Street - Alexandria, VA
Solarcrete System - w/ Soft Sound™ Acoustic Wall Panels	

Surface	Material	Area (ft^2)	Absorption Coefficient 500 Hz	Absorption Coefficient 1000 Hz	Sα 500 Hz	Sα 1000 Hz
Floor	Athletic Wood Flooring	11,979.00	0.07	0.06	838.53	718.74
Floor	3/4 Students, On Bleachers	9,438.00	0.49	0.84	4624.62	7927.92
Floor	1/4 Wood Bleachers	3,146.00	0.22	0.39	692.12	1226.94
Ceiling	3" Deep Acoustical Roof Deck	24,563.00	0.89	0.95	21861.07	23334.85
North Wall	Concrete, Troweled	1,365.33	0.02	0.02	27.3066	27.3066
North Wall	3/4 Students, On Bleachers	1,969.50	0.49	0.84	965.055	1654.38
North Wall	1/4 Wood Bleachers	656.50	0.22	0.39	144.43	256.035
North Wall	Metal Doors	42.00	0.10	0.10	4.2	4.2
South Wall	Concrete, Troweled	1,323.33	0.02	0.02	26.4666	26.4666
South Wall	3/4 Students, On Bleachers	1,969.50	0.49	0.84	965.055	1654.38
South Wall	1/4 Wood Bleachers	656.50	0.22	0.39	144.43	256.035
South Wall	Metal Doors	84.00	0.10	0.10	8.4	8.4
West Wall	Concrete, Troweled	6,188.44	0.02	0.02	123.7688	123.7688
West Wall	Metal Doors	168.00	0.10	0.10	16.8	16.8
West Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
West Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
East Wall	Concrete, Troweled	5,978.44	0.02	0.02	119.5688	119.5688
East Wall	Metal Doors	378.00	0.10	0.10	37.8	37.8
East Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
East Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
					0	0
West Wall	1" Fabric Impact Resistant Acoustic Panels	2,400.00	0.89	1.07	2136	2568
East Wall	1" Fabric Impact Resistant Acoustic Panels	2,400.00	0.89	1.07	2136	2568
					0	0
					0	0
Room Length (ft) :	203.00	ft	$a = \sum S\alpha$		35261.22	42916.04
Room Width (ft) :	121.00	ft				
Room Height (ft) :	33.33	ft	$T_{60} = .05(V/\sum S\alpha)$		**1.16**	**0.95**
Volume (ft^3) :	**818,685**	ft^3	CMU Reverberation Time		**1.16**	**1.00**

Target Reverberation Time: Gymnasium for Teaching*	1.5 to 1.8	1.5 to 1.8

* Target Reverberation Time obtained from the Mc Squared System Design Group, Inc.

Reverberation Time Calculator

$T_{60} = .05(V/a) = .05(V/\sum S\alpha)$

Reverberation Time Calculation for : **T.C. Williams High School Main Gymnasium**
Open Gym - Full Occupancy
Solarcrete System - w/ Soft Sound™ Acoustic Wall Panels **King Street - Alexandria, VA**

Surface	Material	Area (ft^2)	Absorption Coefficient 500 Hz	Absorption Coefficient 1000 Hz	Sα 500 Hz	Sα 1000 Hz
Floor	Athletic Wood Flooring	11,979.00	0.07	0.06	838.53	718.74
Floor	Students, On Bleachers	12,584.00	0.49	0.84	6166.16	10570.56
Ceiling	3" Deep Acoustical Roof Deck	24,563.00	0.89	0.95	21861.07	23334.85
North Wall	Concrete, Troweled	1,365.33	0.02	0.02	27.3066	27.3066
North Wall	Students, On Bleachers	2,626.00	0.49	0.84	1286.74	2205.84
North Wall	Metal Doors	42.00	0.10	0.10	4.2	4.2
South Wall	Concrete, Troweled	1,323.33	0.02	0.02	26.4666	26.4666
South Wall	Students, On Bleachers	2,626.00	0.49	0.84	1286.74	2205.84
South Wall	Metal Doors	84.00	0.10	0.10	8.4	8.4
West Wall	Concrete, Troweled	6,188.44	0.02	0.02	123.7688	123.7688
West Wall	Metal Doors	168.00	0.10	0.10	16.8	16.8
West Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
West Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
East Wall	Concrete, Troweled	5,978.44	0.02	0.02	119.5688	119.5688
East Wall	Metal Doors	378.00	0.10	0.10	37.8	37.8
East Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
East Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
					0	0
West Wall	1" Fabric Impact Resistant Acoustic Panels	2,400.00	0.89	1.07	2136	2568
East Wall	1" Fabric Impact Resistant Acoustic Panels	2,400.00	0.89	1.07	2136	2568
					0	0
					0	0
					0	0
					0	0
					0	0

Room Length (ft) :	203.00	ft	$a = \sum S\alpha$	36465.15	44922.59
Room Width (ft) :	121.00	ft			
Room Height (ft) :	33.33	ft	$T_{60} = .05(V/\sum S\alpha)$	**1.12**	**0.91**
Volume (ft^3) :	**818,685**	ft^3	CMU Reverberation Time	**1.13**	**0.95**

Target Reverberation Time: Gymnasium for Teaching*	1.5 to 1.8	1.5 to 1.8

* Target Reverberation Time obtained from the M[c] Squared System Design Group, Inc.

Reverberation Time Calculator

$T_{60} = .05(V/a) = .05(V/\sum S\alpha)$

Reverberation Time Calculation for : **T.C. Williams High School Main Gymnasium**
Open Gym - Bleachers Retracted
Solarcrete System - w/ Fabrisorb™ Acoustic Wall Panels **King Street - Alexandria, VA**

Surface	Material	Area (ft^2)	Absorption Coefficient 500 Hz	Absorption Coefficient 1000 Hz	Sα 500 Hz	Sα 1000 Hz
Floor	Athletic Wood Flooring	24,563.00	0.07	0.06	1719.41	1473.78
Ceiling	3" Deep Acoustical Roof Deck	24,563.00	0.89	0.95	21861.07	23334.85
North Wall	Concrete, Troweled	1,365.33	0.02	0.02	27.3066	27.3066
North Wall	Wood Bleachers	2,626.00	0.22	0.39	577.72	1024.14
North Wall	Metal Doors	42.00	0.10	0.10	4.2	4.2
South Wall	Concrete, Troweled	1,323.33	0.02	0.02	26.4666	26.4666
South Wall	Wood Bleachers	2,626.00	0.22	0.39	577.72	1024.14
South Wall	Metal Doors	84.00	0.10	0.10	8.4	8.4
West Wall	Concrete, Troweled	6,188.44	0.02	0.02	123.7688	123.7688
West Wall	Metal Doors	168.00	0.10	0.10	16.8	16.8
West Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
West Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
East Wall	Concrete, Troweled	5,978.44	0.02	0.02	119.5688	119.5688
East Wall	Metal Doors	378.00	0.10	0.10	37.8	37.8
East Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
East Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
					0	0
West Wall	1-5/8" Vinyl Impact Resistant Acoustic Panels	1,800.00	1.16	1.16	2088	2088
East Wall	1-5/8" Vinyl Impact Resistant Acoustic Panels	1,800.00	1.16	1.16	2088	2088
					0	0
					0	0
					0	0
					0	0
					0	0
					0	0
Room Length (ft) :	203.00	ft	**a = ∑Sα**		29665.83	31783.67
Room Width (ft) :	121.00	ft				
Room Height (ft) :	33.33	ft	**$T_{60} = .05(V/\sum S\alpha)$**		**1.38**	**1.29**
Volume (ft^3) :	**818,685**	ft^3	CMU Reverberation Time		**1.39**	**1.32**

Target Reverberation Time: Gymnasium for Teaching*	1.5 to 1.8	1.5 to 1.8

* Target Reverberation Time obtained from the M[c] Squared System Design Group, Inc.

Reverberation Time Calculator

$T_{60} = .05(V/a) = .05(V/\sum S\alpha)$

Reverberation Time Calculation for : **T.C. Williams High School Main Gymnasium**
Open Gym - 3/4 Occupancy
Solarcrete System - w/ Fabrisorb™ Acoustic Wall Panels **King Street - Alexandria, VA**

Surface	Material	Area (ft^2)	Absorption Coefficient 500 Hz	Absorption Coefficient 1000 Hz	Sα 500 Hz	Sα 1000 Hz
Floor	Athletic Wood Flooring	11,979.00	0.07	0.06	838.53	718.74
Floor	3/4 Students, On Bleachers	9,438.00	0.49	0.84	4624.62	7927.92
Floor	1/4 Wood Bleachers	3,146.00	0.22	0.39	692.12	1226.94
Ceiling	3" Deep Acoustical Roof Deck	24,563.00	0.89	0.95	21861.07	23334.85
North Wall	Concrete, Troweled	1,365.33	0.02	0.02	27.3066	27.3066
North Wall	3/4 Students, On Bleachers	1,969.50	0.49	0.84	965.055	1654.38
North Wall	1/4 Wood Bleachers	656.50	0.22	0.39	144.43	256.035
North Wall	Metal Doors	42.00	0.10	0.10	4.2	4.2
South Wall	Concrete, Troweled	1,323.33	0.02	0.02	26.4666	26.4666
South Wall	3/4 Students, On Bleachers	1,969.50	0.49	0.84	965.055	1654.38
South Wall	1/4 Wood Bleachers	656.50	0.22	0.39	144.43	256.035
South Wall	Metal Doors	84.00	0.10	0.10	8.4	8.4
West Wall	Concrete, Troweled	6,188.44	0.02	0.02	123.7688	123.7688
West Wall	Metal Doors	168.00	0.10	0.10	16.8	16.8
West Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
West Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
East Wall	Concrete, Troweled	5,978.44	0.02	0.02	119.5688	119.5688
East Wall	Metal Doors	378.00	0.10	0.10	37.8	37.8
East Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
East Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
					0	0
West Wall	1-5/8" Vinyl Impact Resistant Acoustic Panels	1,800.00	1.16	1.16	2088	2088
East Wall	1-5/8" Vinyl Impact Resistant Acoustic Panels	1,800.00	1.16	1.16	2088	2088
					0	0
					0	0
Room Length (ft) :	203.00	ft	$a = \sum S\alpha$		35165.22	41956.04
Room Width (ft) :	121.00	ft				
Room Height (ft) :	33.33	ft	$T_{60} = .05(V/\sum S\alpha)$		**1.16**	**0.98**
Volume (ft^3) :	**818,685**	ft^3	CMU Reverberation Time		**1.16**	**1.00**

Target Reverberation Time: Gymnasium for Teaching*	1.5 to 1.8	1.5 to 1.8

* Target Reverberation Time obtained from the Mc Squared System Design Group, Inc.

Reverberation Time Calculator

$T_{60} = .05(V/a) = .05(V/\sum S\alpha)$

Reverberation Time Calculation for :		T.C. Williams High School Main Gymnasium Open Gym - Full Occupancy King Street - Alexandria, VA				
Solarcrete System - w/ Fabrisorb™ Acoustic Wall Panels						
			Absorption Coefficient		Sα	
Surface	Material	Area (ft^2)	500 Hz	1000 Hz	500 Hz	1000 Hz
Floor	Athletic Wood Flooring	11,979.00	0.07	0.06	838.53	718.74
Floor	Students, On Bleachers	12,584.00	0.49	0.84	6166.16	10570.56
Ceiling	3" Deep Acoustical Roof Deck	24,563.00	0.89	0.95	21861.07	23334.85
North Wall	Concrete, Troweled	1,365.33	0.02	0.02	27.3066	27.3066
North Wall	Students, On Bleachers	2,626.00	0.49	0.84	1286.74	2205.84
North Wall	Metal Doors	42.00	0.10	0.10	4.2	4.2
South Wall	Concrete, Troweled	1,323.33	0.02	0.02	26.4666	26.4666
South Wall	Students, On Bleachers	2,626.00	0.49	0.84	1286.74	2205.84
South Wall	Metal Doors	84.00	0.10	0.10	8.4	8.4
West Wall	Concrete, Troweled	6,188.44	0.02	0.02	123.7688	123.7688
West Wall	Metal Doors	168.00	0.10	0.10	16.8	16.8
West Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
West Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
East Wall	Concrete, Troweled	5,978.44	0.02	0.02	119.5688	119.5688
East Wall	Metal Doors	378.00	0.10	0.10	37.8	37.8
East Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
East Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
					0	0
West Wall	1-5/8" Vinyl Impact Resistant Acoustic Panels	1,800.00	1.16	1.16	2088	2088
East Wall	1-5/8" Vinyl Impact Resistant Acoustic Panels	1,800.00	1.16	1.16	2088	2088
					0	0
					0	0
					0	0
					0	0
					0	0
Room Length (ft) :	203.00	ft	$a = \sum S\alpha$		36369.15	43962.59
Room Width (ft) :	121.00	ft				
Room Height (ft) :	33.33	ft	$T_{60} = .05(V/\sum S\alpha)$		**1.13**	**0.93**
Volume (ft^3) :	**818,685**	ft^3	CMU Reverberation Time		**1.13**	**0.95**
Target Reverberation Time: Gymnasium for Teaching*					1.5 to 1.8	1.5 to 1.8

* Target Reverberation Time obtained from the Mc Squared System Design Group, Inc.

Reverberation Time Calculator

$T_{60} = .05(V/a) = .05(V/\sum S\alpha)$

Reverberation Time Calculation for : **T.C. Williams High School Main Gymnasium**
Open Gym - Bleachers Retracted
Solarcrete System - w/ Fabrisorb™ Acoustic Wall Panels **King Street - Alexandria, VA**

Surface	Material	Area (ft^2)	Absorption Coefficient 500 Hz	Absorption Coefficient 1000 Hz	Sα 500 Hz	Sα 1000 Hz
Floor	Athletic Wood Flooring	24,563.00	0.07	0.06	1719.41	1473.78
Ceiling	3" Deep Acoustical Roof Deck	24,563.00	0.89	0.95	21861.07	23334.85
North Wall	Concrete, Troweled	1,365.33	0.02	0.02	27.3066	27.3066
North Wall	Wood Bleachers	2,626.00	0.22	0.39	577.72	1024.14
North Wall	Metal Doors	42.00	0.10	0.10	4.2	4.2
South Wall	Concrete, Troweled	1,323.33	0.02	0.02	26.4666	26.4666
South Wall	Wood Bleachers	2,626.00	0.22	0.39	577.72	1024.14
South Wall	Metal Doors	84.00	0.10	0.10	8.4	8.4
West Wall	Concrete, Troweled	6,188.44	0.02	0.02	123.7688	123.7688
West Wall	Metal Doors	168.00	0.10	0.10	16.8	16.8
West Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
West Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
East Wall	Concrete, Troweled	5,978.44	0.02	0.02	119.5688	119.5688
East Wall	Metal Doors	378.00	0.10	0.10	37.8	37.8
East Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
East Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
					0	0
West Wall	1-1/8" Fabric Impact Resistant Acoustic Panels	2,160.00	0.99	1.13	2138.4	2440.8
East Wall	1-1/8" Fabric Impact Resistant Acoustic Panels	2,160.00	0.99	1.13	2138.4	2440.8
					0	0
					0	0
					0	0
					0	0
					0	0
					0	0

Room Length (ft) :	203.00	ft	$a = \sum S\alpha$	29766.63	32489.27
Room Width (ft) :	121.00	ft			
Room Height (ft) :	33.33	ft	$T_{60} = .05(V/\sum S\alpha)$	**1.38**	**1.26**
Volume (ft^3) :	**818,685**	ft^3	CMU Reverberation Time	**1.39**	**1.32**

Target Reverberation Time: Gymnasium for Teaching*	1.5 to 1.8	1.5 to 1.8

* Target Reverberation Time obtained from the Mc Squared System Design Group, Inc.

Reverberation Time Calculator

$T_{60} = .05(V/a) = .05(V/\sum S\alpha)$

Reverberation Time Calculation for : **T.C. Williams High School Main Gymnasium**
Open Gym - 3/4 Occupancy
Solarcrete System - w/ Fabrisorb™ Acoustic Wall Panels **King Street - Alexandria, VA**

Surface	Material	Area (ft^2)	Absorption Coefficient 500 Hz	Absorption Coefficient 1000 Hz	Sα 500 Hz	Sα 1000 Hz
Floor	Athletic Wood Flooring	11,979.00	0.07	0.06	838.53	718.74
Floor	3/4 Students, On Bleachers	9,438.00	0.49	0.84	4624.62	7927.92
Floor	1/4 Wood Bleachers	3,146.00	0.22	0.39	692.12	1226.94
Ceiling	3" Deep Acoustical Roof Deck	24,563.00	0.89	0.95	21861.07	23334.85
North Wall	Concrete, Troweled	1,365.33	0.02	0.02	27.3066	27.3066
North Wall	3/4 Students, On Bleachers	1,969.50	0.49	0.84	965.055	1654.38
North Wall	1/4 Wood Bleachers	656.50	0.22	0.39	144.43	256.035
North Wall	Metal Doors	42.00	0.10	0.10	4.2	4.2
South Wall	Concrete, Troweled	1,323.33	0.02	0.02	26.4666	26.4666
South Wall	3/4 Students, On Bleachers	1,969.50	0.49	0.84	965.055	1654.38
South Wall	1/4 Wood Bleachers	656.50	0.22	0.39	144.43	256.035
South Wall	Metal Doors	84.00	0.10	0.10	8.4	8.4
West Wall	Concrete, Troweled	6,188.44	0.02	0.02	123.7688	123.7688
West Wall	Metal Doors	168.00	0.10	0.10	16.8	16.8
West Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
West Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
East Wall	Concrete, Troweled	5,978.44	0.02	0.02	119.5688	119.5688
East Wall	Metal Doors	378.00	0.10	0.10	37.8	37.8
East Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
East Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
					0	0
West Wall	1-1/8" Fabric Impact Resistant Acoustic Panels	2,160.00	0.99	1.13	2138.4	2440.8
East Wall	1-1/8" Fabric Impact Resistant Acoustic Panels	2,160.00	0.99	1.13	2138.4	2440.8
					0	0
					0	0
Room Length (ft) :	203.00	ft	$a = \sum S\alpha$		35266.02	42661.64
Room Width (ft) :	121.00	ft				
Room Height (ft) :	33.33	ft	$T_{60} = .05(V/\sum S\alpha)$		**1.16**	**0.96**
Volume (ft^3) :	**818,685**	ft^3	CMU Reverberation Time		**1.16**	**1.00**

Target Reverberation Time: Gymnasium for Teaching*	1.5 to 1.8	1.5 to 1.8

* Target Reverberation Time obtained from the Mc Squared System Design Group, Inc.

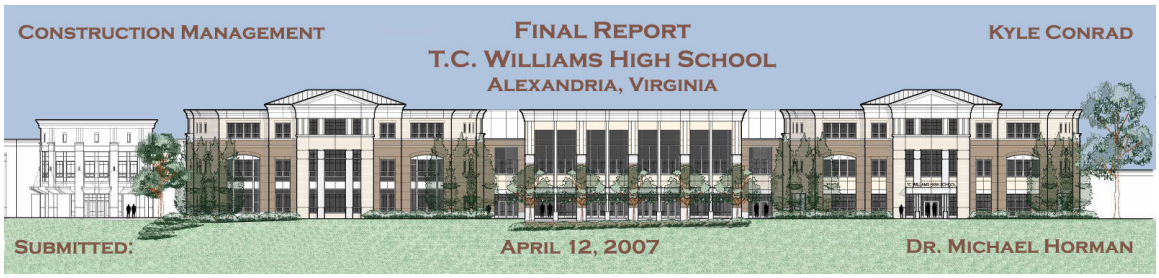
Reverberation Time Calculator

$T_{60} = .05(V/a) = .05(V/\sum S\alpha)$

Reverberation Time Calculation for :		T.C. Williams High School Main Gymnasium Open Gym - Full Occupancy King Street - Alexandria, VA				
Solarcrete System - w/ Fabrisorb™ Acoustic Wall Panels						
			Absorption Coefficient		Sα	
Surface	Material	Area (ft^2)	500 Hz	1000 Hz	500 Hz	1000 Hz
Floor	Athletic Wood Flooring	11,979.00	0.07	0.06	838.53	718.74
Floor	Students, On Bleachers	12,584.00	0.49	0.84	6166.16	10570.56
Ceiling	3" Deep Acoustical Roof Deck	24,563.00	0.89	0.95	21861.07	23334.85
North Wall	Concrete, Troweled	1,365.33	0.02	0.02	27.3066	27.3066
North Wall	Students, On Bleachers	2,626.00	0.49	0.84	1286.74	2205.84
North Wall	Metal Doors	42.00	0.10	0.10	4.2	4.2
South Wall	Concrete, Troweled	1,323.33	0.02	0.02	26.4666	26.4666
South Wall	Students, On Bleachers	2,626.00	0.49	0.84	1286.74	2205.84
South Wall	Metal Doors	84.00	0.10	0.10	8.4	8.4
West Wall	Concrete, Troweled	6,188.44	0.02	0.02	123.7688	123.7688
West Wall	Metal Doors	168.00	0.10	0.10	16.8	16.8
West Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
West Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
East Wall	Concrete, Troweled	5,978.44	0.02	0.02	119.5688	119.5688
East Wall	Metal Doors	378.00	0.10	0.10	37.8	37.8
East Wall	AT-4 Wall Padding	288.00	0.60	0.62	172.8	178.56
East Wall	Windows	122.22	0.18	0.12	21.9996	14.6664
					0	0
West Wall	1-1/8" Fabric Impact Resistant Acoustic Panels	2,160.00	0.99	1.13	2138.4	2440.8
East Wall	1-1/8" Fabric Impact Resistant Acoustic Panels	2,160.00	0.99	1.13	2138.4	2440.8
					0	0
					0	0
					0	0
					0	0
					0	0
Room Length (ft) :	203.00	ft	$a = \sum S\alpha$		36469.95	44668.19
Room Width (ft) :	121.00	ft				
Room Height (ft) :	33.33	ft	$T_{60} = .05(V/\sum S\alpha)$		**1.12**	**0.92**
Volume (ft^3) :	**818,685**	ft^3	CMU Reverberation Time		**1.13**	**0.95**

Target Reverberation Time: Gymnasium for Teaching*	1.5 to 1.8	1.5 to 1.8

* Target Reverberation Time obtained from the M[c] Squared System Design Group, Inc.



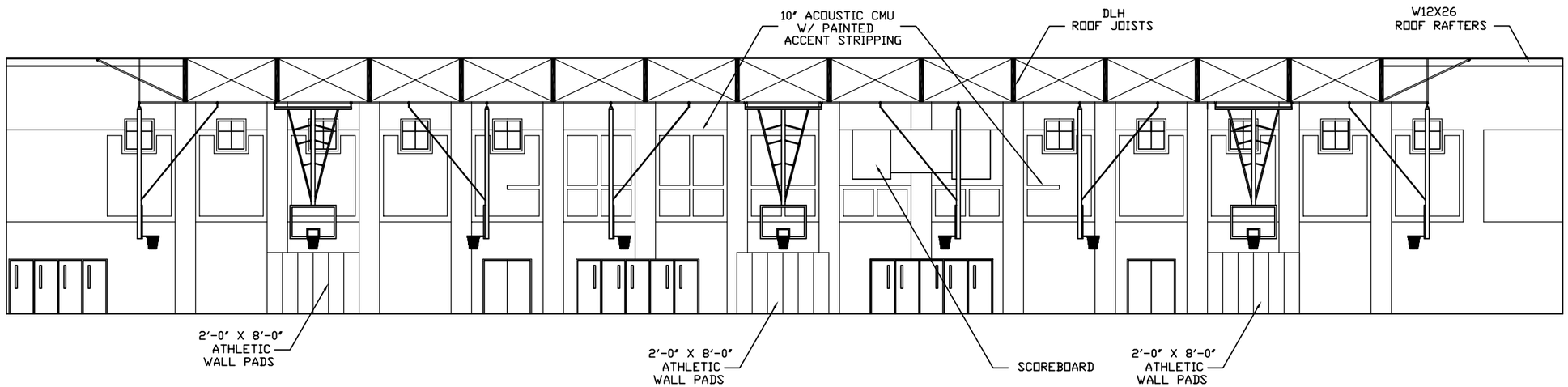
Appendix J

Area 5

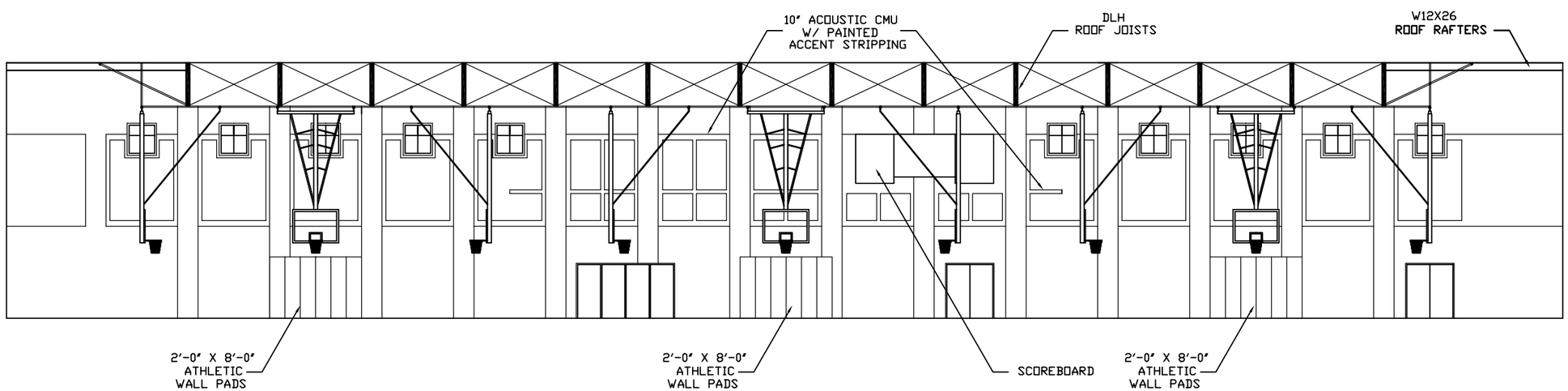
Gymnasium Elevations

T.C. Williams High School

Replacement Project



CURRENT DESIGN
MAIN GYMNASIUM
EAST ELEVATION



CURRENT DESIGN
MAIN GYMNASIUM
WEST ELEVATION

T.C. WILLIAMS
HIGH SCHOOL
REPLACEMENT
PROJECT

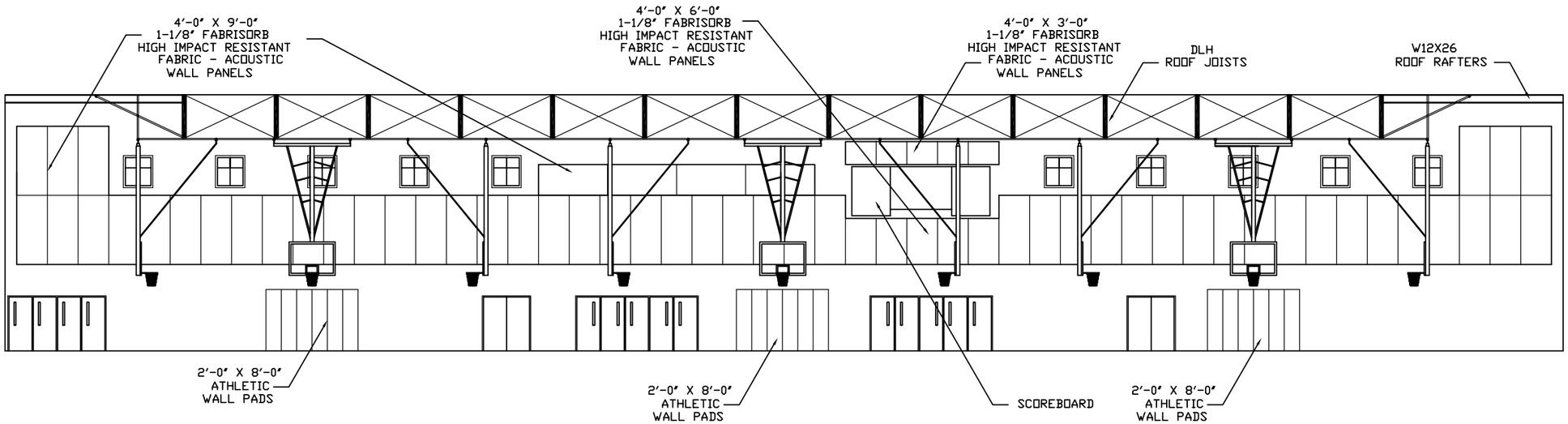
OWNER:
ALEXANDRIA CITY
PUBLIC SCHOOLS

LOCATION:
3330 KING STREET
ALEXANDRIA, VA 22302

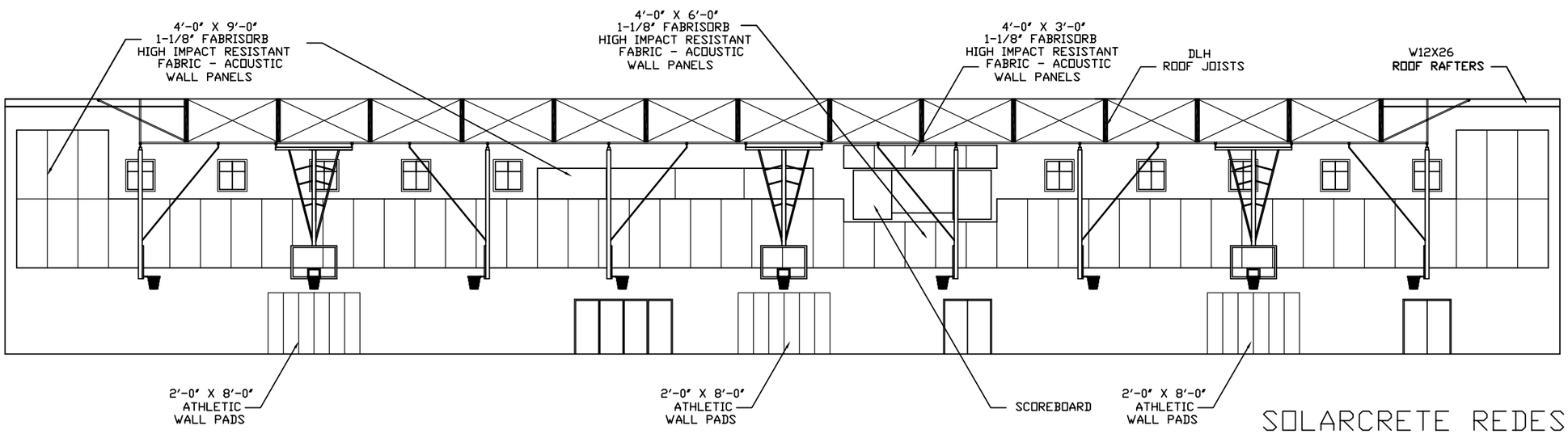
MARK	DATE	DESCRIPTION
1	04/12/2007	FINAL REPORT

PROJECT NO:
REVIEWED BY:
DRAWN BY: KYLE CONRAD
SCALE: 1/16" = 1'
SHEET TITLE:
GYMNASIUM
ELEVATIONS

A-400



SOLARCRETE REDESIGN
W/ FABRISORB ACOUSTIC
WALL PANELS
MAIN GYMNASIUM
EAST ELEVATION



SOLARCRETE REDESIGN
W/ FABRISORB ACOUSTIC
WALL PANELS
MAIN GYMNASIUM
WEST ELEVATION

T.C. WILLIAMS
HIGH SCHOOL
REPLACEMENT
PROJECT

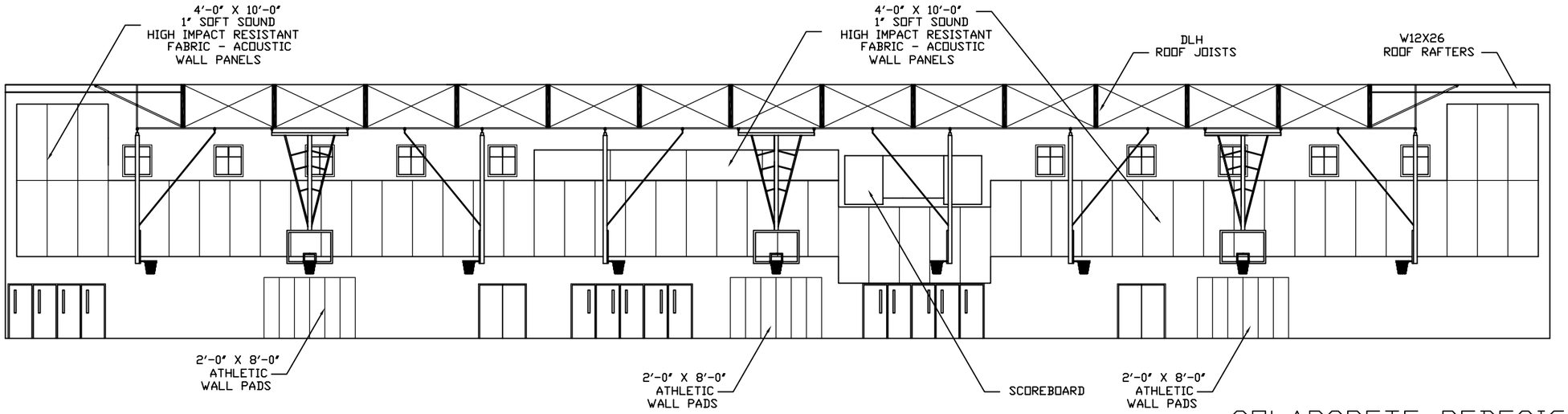
OWNER:
ALEXANDRIA CITY
PUBLIC SCHOOLS

LOCATION:
3330 KING STREET
ALEXANDRIA, VA 22302

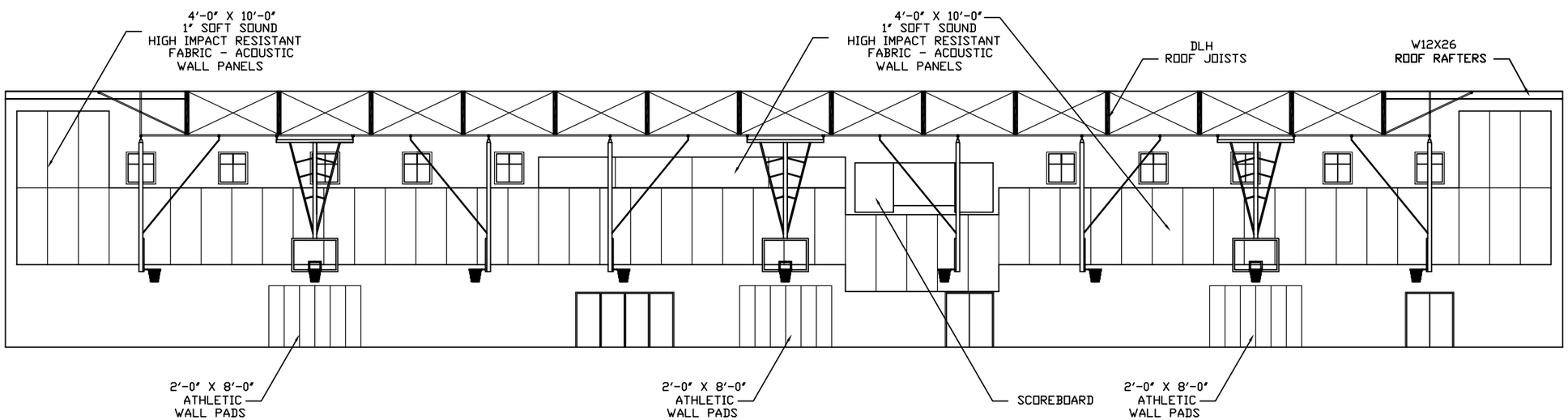
MARK	DATE	DESCRIPTION
1	04/12/2007	FINAL REPORT

PROJECT NO:
REVIEWED BY:
DRAWN BY: KYLE CONRAD
SCALE: 1/16" = 1'
SHEET TITLE:
GYMNASIUM
ELEVATIONS

A-401



SOLARCRETE REDESIGN
W/ SOFT SOUND ACOUSTIC
WALL PANELS
MAIN GYMNASIUM
EAST ELEVATION



SOLARCRETE REDESIGN
W/ SOFT SOUND ACOUSTIC
WALL PANELS
MAIN GYMNASIUM
WEST ELEVATION

T.C. WILLIAMS
HIGH SCHOOL
REPLACEMENT
PROJECT

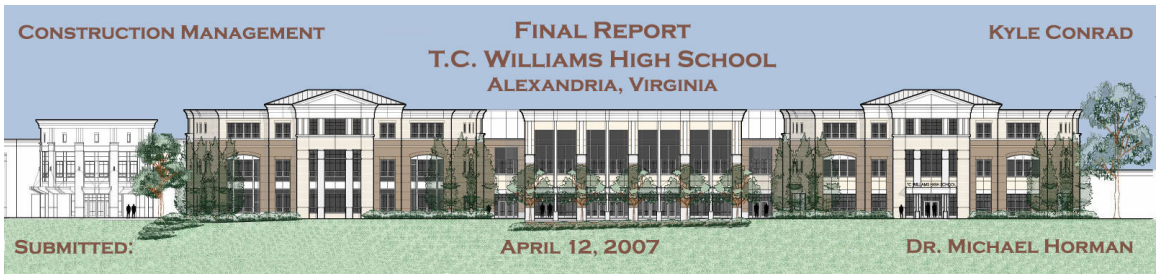
OWNER:
ALEXANDRIA CITY
PUBLIC SCHOOLS

LOCATION:
3330 KING STREET
ALEXANDRIA, VA 22302

MARK	DATE	DESCRIPTION
1	04/12/2007	FINAL REPORT

PROJECT NO:
REVIEWED BY:
DRAWN BY: KYLE CONRAD
SCALE: 1/16" = 1'
SHEET TITLE:
GYMNASIUM
ELEVATIONS

A-402



Appendix K

Acoustical Surfaces, Inc.

Fabrisorb™ Acoustic Wall Panel Data

T.C. Williams High School

Replacement Project

Acoustical Surfaces, Inc.
We identify and
S.T.O.P.
Your Noise Problems
Sound Transmission Obscuring Products
Soundproofing, Acoustics, Noise & Vibration Control Specialists
™

Acoustical Surfaces, Inc.

SOUNDPROOFING, ACOUSTICS, NOISE & VIBRATION CONTROL SPECIALISTS

123 Columbia Court North • Suite 201 • Chaska, MN 55318
(952) 448-5300 • Fax (952) 448-2613 • (800) 448-0121

Email: sales@acousticalsurfaces.com
Visit our Website: www.acousticalsurfaces.com

We Identify and S.T.O.P. Your Noise Problems

FABRIC PANEL S.T.O.P.™

Decorative Fabric Wrapped Custom Acoustical Wall Panels

- ***High Performance***
- ***Architecturally Decorative***
- ***Custom Engineered & Manufactured***
- ***Reduced Noise & Reverberation***

EDGE DETAILS

Square Radius Bevel Half Bevel

MATERIAL: 6 lb. density glass fiber with woven fabric and microperforated vinyl facings.
PATTERN: Flat faced with square or radiused corners, beveled, radiused or mitered edges.
FEATURES: Custom designed and manufactured to meet every need. Flat or curved panels. Soft or hard edges
APPLICATIONS: Offices, schools, meeting rooms, music rooms, hotels, auditoriums, recording studios, broadcasting studios. Any space where good speech privacy or speech intelligibility is important.
THICKNESS: 1", 1-1/8", 2", 2-1/8" SIZES: 2' x 4' and a wide range of custom sizes.
COLOR: A wide range of standard colors for woven fabrics and perforated vinyls.
FLAMMABILITY: ASTM E-84, Class A. Flame Spread: 15, Smoke Developed: 40.
INSTALLATION: Adhesive, hook & loop fasteners, mechanical clips, impaling clips, magnetic clips, splines.

ABSORPTIVE
High performance absorption.

HIGH IMPACT
Absorptive in high traffic areas.

REFLECTIVE
For combined use in studios for absorption and reflection.

MINERAL CORE
multi-purpose panel for absorption and sound blocking.

ABUSE RESISTANT
For gymnasiums, absorption and abuse resistance.

TACKABLE 1
For long lasting and effective tackability.

HI-TACK
High absorption and tackability.

TACKABILITY 2
Tackability where sound absorption is not necessary.

NOISE BARRIER
Barricade vinyl barrier, ideal for areas requiring high STC.

• Soundproofing Products • Sonex™ Ceiling & Wall Panels • Sound Control Curtains • Equipment Enclosures • Acoustical Baffles & Banners • Solid Wood & Veneer Acoustical Ceiling & Wall Systems • Professional Audio Acoustics • Vibration & Damping Control • Fire Retardant Acoustics • Hearing Protection • Moisture & Impact Resistant Products • Floor Impact Noise Reduction • Sound Absorbers • Noise Barriers • Fabric Wrapped Wall Panels • Acoustical Foam (Egg Crate) • Acoustical Sealants & Adhesives • Outdoor Noise Control • Assistive Listening Devices • OSHA, FDA, ADA Compliance • On-Site Acoustical Analysis • Acoustical Design & Consulting • Large Inventory • Fast Shipment • No Project too Large or Small • Major Credit Cards Accepted

Acoustical Surfaces, Inc.

SOUNDPROOFING, ACOUSTICS, NOISE & VIBRATION CONTROL SPECIALISTS

123 Columbia Court North • Suite 201 • Chaska, MN 55318
(952) 448-5300 • Fax (952) 448-2613 • (800) 448-0121

Email: sales@acousticalsurfaces.com
Visit our Website: www.acousticalsurfaces.com

We Identify and S.T.O.P. Your Noise Problems

NOISE S.T.O.P. Fabrisorb™
Decorative Fabric Wrapped, Custom Acoustical Wall Panels, 4 Edge Details

Noise S.T.O.P. Fabrisorb™. acoustical panels are generally fabricated using a decorative woven fabric or perforated vinyl over an acoustically absorptive fiberglass core material. The thickness of the absorptive core material is the overriding element that will affect the panel's acoustical performance. Since the fiberglass core is manufactured by relatively few companies such as, Owens Coming, Johns Manville, CertainTeed, Knauf and a few others the acoustical performance should not vary significantly. When comparing one manufacturer to another, it is important to ascertain that the test protocol is the same for a particular application. The densities of the fiberglass used in the manufacture of acoustical wall panels generally will be in the realm of 6 lbs per cubic foot.

Since the various acoustical wall panel manufacturers all purchase their acoustical core materials from the same sources it is highly unlikely that the acoustical performance will vary from one acoustical panel manufacturer to another on a consistent basis. Likewise the decorative fabric coverings are also procured from the same source and thus the performance should be the same or similar.

Acoustical wall panels are used principally for the purpose of reducing the Reverberation Time in a space to make speech more intelligible.

There are a number of applications that can affect the acoustical performance of the panels, using a 2" thickness will improve the overall NRC performance however the performance difference at the voice frequency rang of 500 Hz is only in the order of about 8%, therefore it makes no sense to spend 40% in order to gain an 8% improvement. 2" thick acoustical wall panels do provide better acoustical performance at the lower frequencies so if low frequency noise is the problem the thicker panels are appropriate.

Mounting the panels on furring strips will improve the acoustical performance and may be a practical and cost effective feature. In addition using soft edged panels separated by space between the applied panels will also improve the acoustical performance though the "edge effect" and "diffraction".

Most acoustical panels specified by architects employ edge hardening which is not necessary in this day and age with the improvements that have been made in the manufacture of fiberglass core materials. So when comparing acoustical test data be sure to compare the material and test application carefully to determine if you are comparing apples with apples.

The following test results are a typical compilation for various acoustical panels and where conducted at an independent acoustical test laboratory by and under the direction of the author Mike Nixon at Acoustical Surfaces Inc.

Acoustical Surfaces, Inc.

SOUNDPROOFING, ACOUSTICS, NOISE & VIBRATION CONTROL SPECIALISTS

123 Columbia Court North • Suite 201 • Chaska, MN 55318
(952) 448-5300 • Fax (952) 448-2613 • (800) 448-0121

Email: sales@acousticalsurfaces.com
Visit our Website: www.acousticalsurfaces.com

We Identify and S.T.O.P. Your Noise Problems

TECHNICAL DATA

ACOUSTICAL TESTS – NOISE S.T.O.P. FABRISORB™ WALL PANELS

Material Thickness/Core Facing	Mounting	Absorption Coefficient Octave Band Center Frequency Hz						
		125	250	500	1000	2000	4000	NRC
3/4" fiberglass-fabric	A-Mod	0.10	0.19	0.57	0.97	1.10	1.02	**0.70**
3/4" fiberglass-perf. vinyl	A-Mod	0.10	0.44	0.56	0.97	0.90	0.71	**0.70**
1" fiberglass-fabric	A	0.06	0.24	0.71	1.10	1.15	1.02	**0.80**
1" fiberglass-fabric	A-Mod	0.21	0.41	0.93	1.15	1.00	0.95	**0.85**
1" fiberglass-fabric-perforated vinyl	A	0.08	0.33	0.84	1.04	1.01	0.77	**0.80**
1" fiberglass-fabric-perforated vinyl	A-Mod	0.14	0.51	0.90	1.04	0.95	0.90	**0.85**
1-1/8" H.I.R. fiberglass-fabric	A	0.09	0.50	0.99	1.13	1.08	0.96	**0.95**
1-1/8" H.I.R. F/G-perf. vinyl	A-Mod	0.14	0.51	0.90	1.04	0.95	0.90	**0.85**
1-1/2" fiberglass-fabric	A	0.24	0.72	1.10	1.15	1.13	1.08	**1.05**
1-5/8" H.I.R. F/G-perf	A-Mod	0.23	0.64	1.16	1.16	1.14	1.02	**1.05**
2" fiberglass-fabric	A-Mod	0.33	0.71	1.23	1.29	1.22	1.24	**1.10**
2-1/8" H.I.R. F/G-fabric	A-Mod	0.45	0.91	1.09	1.14	1.02	0.98	**1.05**
2" L.F.T. fiberglass-fabric	A-Mod	0.67	0.62	0.56	0.39	0.33	0.14	**0.50**
2" ACOUSTI-SAN wall panel	A	0.27	0.68	0.97	0.95	0.85	0.69	**0.85**
1/2" Mineral Board-fabric	A	0.05	0.18	0.49	0.63	0.71	0.76	**0.50**
3/4" Mineral Board-fabric	A	0.10	0.26	0.56	0.81	0.93	0.77	**0.65**
1-1/16" S.H.I.R. F/G-fabric	A-Mod	0.12	0.39	0.91	1.03	0.99	0.99	**0.85**
2-1/16" S.H.I.R. F/G-fabric	A-Mod	0.33	0.71	1.23	1.29	1.22	1.24	**1.10**

NOTE:
1. All fiberglass (F/G) core tested was 6-7 p.c.f.
2. Fabric facing tested was 100% woven polyester.
3. Perforated vinyl facing tested was GenCorp Web Core vinyl.
4. H.I.R. refers to High Impact Resistance face, 18-20 p.c.f. fiberglass over core.
5. Mounting referred to as Mod. (modified) is a test with 3/16" air space between panel and substrate to simulate mechanical mounting.
6. All testing conducted by certified NVLAP independent testing laboratory in accordance with ASTM C-423 – "Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method".

Acoustical Surfaces, Inc.

SOUNDPROOFING, ACOUSTICS, NOISE & VIBRATION CONTROL SPECIALISTS

123 Columbia Court North • Suite 201 • Chaska, MN 55318
(952) 448-5300 • Fax (952) 448-2613 • (800) 448-0121

Email: sales@acousticalsurfaces.com
Visit our Website: www.acousticalsurfaces.com

We Identify and S.T.O.P. Your Noise Problems

TECHNICAL DATA

ACOUSTICAL TESTS – NOISE S.T.O.P. FABRISORB™ CEILING PANELS & CLOUDS

Material Thickness/Core Facing	Mounting	Absorption Coefficient Octave Band Center Frequency Hz						
		125	250	500	1000	2000	4000	**NRC**
1" ACOUSTI-SAN Ceiling Tile	E	0.65	0.83	0.91	0.98	1.02	1.74	**0.95**
1" Nubby Ceiling Tile	E	0.69	0.95	0.85	1.06	1.11	1.08	**0.95**
1-1/2" Nubby Ceiling Tile	E	0.67	0.95	0.97	1.13	1.15	1.08	**1.05**
3/4" Painted Mat-Euromat	E	0.69	0.62	0.61	0.89	1.91	0.79	**0.75**
1" Painted Mat-Euromat	E	0.56	0.93	0.96	1.01	1.12	1.20	**1.00**
2" Painted Mat-Euromat	E	0.50	0.92	0.99	1.09	1.15	1.19	**1.05**
1/2" F/G - 1/2" Min. Board-Fabric	E	0.40	0.44	0.62	0.86	0.92	1.02	**0.70**
1" F/G - 1/2" Min. Board-Fabric	E	0.48	0.65	1.00	1.05	1.10	1.15	**0.95**
1" F/G - Fabric - Ceiling Cloud	E	0.56	0.93	0.96	1.01	1.12	1.20	**1.00**
2" F/G - Fabric - Ceiling Cloud	E	0.50	0.92	0.99	1.09	1.15	1.19	**1.05**

NOTE:
1. All fiberglass (F/G) core tested was 6-7 p.c.f.
2. Fabric facing tested was 100% woven polyester.
3. Perforated vinyl facing tested was GenCorp Web Core vinyl.
4. All testing conducted by certified NVLAP independent testing laboratory in accordance with ASTM C-423 – "Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method".

Acoustical Surfaces, Inc.

SOUNDPROOFING, ACOUSTICS, NOISE & VIBRATION CONTROL SPECIALISTS

123 Columbia Court North • Suite 201 • Chaska, MN 55318
(952) 448-5300 • Fax (952) 448-2613 • (800) 448-0121

Email: sales@acousticalsurfaces.com
Visit our Website: www.acousticalsurfaces.com

We Identify and S.T.O.P. Your Noise Problems

TECHNICAL DATA

ACOUSTICAL TESTS – NOISE S.T.O.P. FABRISORB™ SUSPENDED CEILING BAFFLES

Material Thickness/Core Facing	Mounting	Absorption Coefficient Octave Band Center Frequency Hz						
		125	250	500	1000	2000	4000	NRC
2" F/G Baffle-Fabric	H	2.8	6.5	12.3	15.2	15.2	15.7	**12.3**
2" ACOUSTI-SAN Baffle	H	2.7	6.2	12.1	14.9	15.1	15.3	**12.0**
Rectangular Prism- 12"x12"x48"	H	5.6	11.0	13.8	17.5	16.1	12.2	**14.6**
Triangular Prism- 12"x12"x48"	H	4.4	10.6	15.2	17.6	15.9	12.0	**14.8**
Cylinder Prism- 9" Long x 36" Long	H	2.0	4.2	6.4	7.0	7.8	5.4	**6.3**

TECHNICAL DATA

ACOUSTICAL TESTS – DIFFUSERS-ABSORBERS

Material Thickness/Core Facing	Mounting	Absorption Coefficient Octave Band Center Frequency Hz						
		125	250	500	1000	2000	4000	NRC
Barrel Diffuser-Paint Finish	A	0.20	0.22	0.10	0.05	0.04	0.07	**0.10**
Barrel Diffuser-Fabric Finish	A	0.18	0.27	0.18	0.14	0.19	0.15	**0.20**
Pyramid Diffuser-Paint Finish	A	0.20	0.22	0.10	0.05	0.04	0.07	**0.10**
2" F/G-Absorber-Fabric Finish	A-Mold	0.33	0.71	1.23	1.29	1.22	1.24	**1.10**

NOTE:
1. All fiberglass (F/G) core tested was 6-7 p.c.f.
2. Fabric facing tested was 100% woven polyester.
3. Perforated vinyl facing tested was GenCorp Web Core vinyl.
4. All testing conducted by certified NVLAP independent testing laboratory in accordance with ASTM C-423 – "Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method".

Acoustical Surfaces, Inc.

SOUNDPROOFING, ACOUSTICS, NOISE & VIBRATION CONTROL SPECIALISTS

123 Columbia Court North • Suite 201 • Chaska, MN 55318
(952) 448-5300 • Fax (952) 448-2613 • (800) 448-0121

Email: sales@acousticalsurfaces.com
Visit our Website: www.acousticalsurfaces.com

We Identify and S.T.O.P. Your Noise Problems

QUOTATION ACKNOWLEDGEMENT

This is acknowledegment of a quotation you have requested from Acoustical Surfaces Inc. (ASI) Please verify quantities, description, price and shipping information. Notify us immediately if incorrect. All changes must be confirmed in writing. All Shipments are FOB plant and shipped freight added, collect or 3rd party billed if requested. Custom and prefinished orders require a deposit. Custom, prefinished and fire retardant products are not returnable. All orders are contingent upon approved credit and acceptance. Prices do not include taxes, duty or custom crating and cartoning. All returns are subject to as much as a 50% restocking fee.

Thank You For The Opportunity To Quote **Quote #:** 13458

Quoted to: Penn Sate University Architectural Engineers Contact: Kyle Conrad
Address: 1618 Plaza Drive, State College, PA 16801
Phone: 814-937-6332 Fax: Email: kac357@psu.edu
Job Name & Shipping Location: Penn State Arch. Engineering
When Required: 5/11/2007 Valid Through: 8/9/2007 Approx. Escalation: Varies
Comments:

BEST PRICE GUARANTEE

We appreciate your business and we will do what it takes to earn it. If you did not buy from ASI, you probably paid too much! The more you buy the more you save, volume discounts available. Our goal is to offer the highest quality materials and service at the most competitive price. If you find any competitors identical product at a lower price than ours, please contact your salesperson prior to purchase. We will review your quote and attempt to verify and beat any bona fide price. Quotation adjustments must be made prior to purchase and require written confirmation.

Quantity	Unit	Item No.	Description	Unit Price	Extension
3600	PSF	FWP-HI-11/8	1 1/8" Thickness High Impact Fabric Wrapped Panels constructed with standard 6-7lb density fiberglass core faced with 1/8" thick, compressed fiberglass layer for impact resistance. Panels will have square resin hardened edges and Guilford FR 701 (Style 2100) Fabric Facing. Color: To Be Determined. 100 (4' wide x 9' tall) Panels Total	$7.59	$27,324.00
1000	Each	Impaling Clips	Impaling Clips for direct wall mounting - To be used with PSA-29 Acoustical Panel Adhesive.	$0.50	$500.00
120	Tube	PSA-29	PSA-29 Acoustical Panel Adhesive for direct surface mounting acoustical panels to a substrate. Approximately 32 square feet of panels per 29oz. Tube. 120 (29 Ounce) Tubes total	$9.25	$1,110.00
2	Each	Packing Fee	Packing / Plywood Crating fee for safe delivery of panels	$125.00	$250.00
		Shipping	Loading dock to non-commercial delivery location arriving on a truck with a lift gate.		

Acoustical Surfaces, Inc.

SOUNDPROOFING, ACOUSTICS, NOISE & VIBRATION CONTROL SPECIALISTS

123 Columbia Court North • Suite 201 • Chaska, MN 55318
(952) 448-5300 • Fax (952) 448-2613 • (800) 448-0121

Email: sales@acousticalsurfaces.com
Visit our Website: www.acousticalsurfaces.com

We Identify and S.T.O.P. Your Noise Problems

Quantity	Unit	Item No.	Description	Unit Price	Extension

☐ Sample ☐ Catalog ☐ Drawing ☐ Specifications

Approx Lead Time: 1 to 2 Weeks

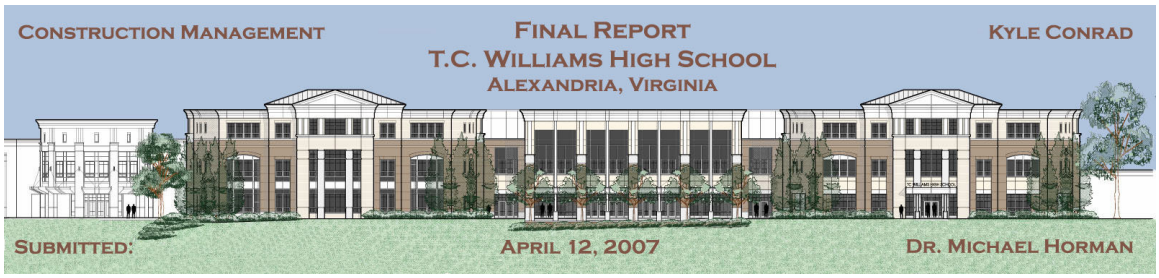
Terms: *With Approved Credit* Prepay

Deposit Required: $31,028.60

Subtotal:	$29,184.00
Shipping/Handling:	$1,844.60
Sales Tax:	
Total:	$31,028.60
Quote Date:	5/11/2007
Quoted By:	Ted Weidman

Major Credit Cards Accepted:

• Soundproofing Products • Sonex™ Ceiling & Wall Panel • Vinyl Noise Barrierer • Sound Control Curtains • Equipment Enclosures • Acoustical Baffles & Banners • Solid Wood & Veneer Acoustical Ceiling & Wall Systems • Professional Audio Acoustics • Vibration & Damping Control • Fire Retardant Acoustics • Hearing Protection • Moisture & Impact Resistant Products • Floor Impact Noise Reduction • Sound Absorbers • Noise Barriers • Fabric Wrapped Wall Panels • Acoustical Foam (Egg Crate) • Acoustical Sealants & Adhesives • Outdoor Noise Control • Assistive Listening Devices • OSHA, FDA, ADA Compliance • On-Site Acoustical Analysis • Acoustical Design & Consulting • Large Inventory • Fast Shipment • No Project too Large or Small • Major Credit Cards Accepted



Appendix L

Areas 5, 6, & 7

CMU Wall Schedule

T.C. Williams High School

Replacement Project

CMU Wall Schedule					
Type	Mark	Area (ft^2)	Length	Width	Volume (ft^3)
10" Masonry	Gymnasium	28	2' - 7 5/8"	0' - 9 5/8"	22.55
10" Masonry	Gymnasium	145	9' - 5 11/32"	0' - 9 5/8"	116.17
10" Masonry	Gymnasium	40	2' - 7 5/8"	0' - 9 5/8"	32.41
10" Masonry	Gymnasium	49	2' - 7 5/8"	0' - 9 5/8"	38.96
10" Masonry	Gymnasium	124	8' - 9 5/8"	0' - 9 5/8"	99.41
8" Masonry	Gymnasium	240	14' - 4 3/8"	0' - 7 5/8"	152.50
10" Masonry	Mech/Elec Wedge - Auto Strip	2,444	121' - 8"	0' - 9 5/8"	1,960.43
10" Masonry	Mech/Elec Wedge - Auto Strip	51	3' - 4"	0' - 9 5/8"	41.00
10" Masonry	Mech/Elec Wedge - Auto Strip	215	14' - 10 5/8"	0' - 9 5/8"	172.18
10" Masonry	Mech/Elec Wedge - Auto Strip	51	3' - 4"	0' - 9 5/8"	41.00
10" Masonry	Mech/Elec Wedge - Auto Strip	2,929	145' - 4 9/32"	0' - 9 5/8"	2,344.65
10" Masonry	Mech/Elec Wedge - Auto Strip	423	20' - 11 5/16"	0' - 9 5/8"	334.44
10" Masonry	Mech/Elec Wedge - Auto Strip	491	25' - 4 3/8"	0' - 9 5/8"	393.52
10" Masonry	Mech/Elec Wedge - Auto Strip	876	43' - 9 5/8"	0' - 9 5/8"	702.66
10" Masonry	Mech/Elec Wedge - Auto Strip	1,158	57' - 11"	0' - 9 5/8"	929.08
10" Masonry	Mech/Elec Wedge - Auto Strip	582	28' - 6 3/8"	0' - 9 5/8"	467.12
10" Masonry	Auditorium	51	4' - 0"	0' - 9 5/8"	41.04
10" Masonry	Auditorium	142	9' - 0"	0' - 9 5/8"	114.03
10" Masonry	Auditorium	64	4' - 0"	0' - 9 5/8"	51.33
10" Masonry	Auditorium	757	38' - 1"	0' - 9 5/8"	607.49
10" Masonry	Auditorium	147	7' - 4"	0' - 9 5/8"	117.64
10" Masonry	Auditorium	803	39' - 7"	0' - 9 5/8"	644.42
10" Masonry	Auditorium	48	4' - 0"	0' - 9 5/8"	38.50
10" Masonry	Auditorium	98	8' - 2 1/8"	0' - 9 5/8"	78.70
10" Masonry	Auditorium	38	4' - 0"	0' - 9 5/8"	30.78
10" Masonry	Auditorium	721	35' - 8 1/4"	0' - 9 5/8"	578.49
10" Masonry	Auditorium	65	4' - 5 3/16"	0' - 9 5/8"	51.73
10" Masonry	Auditorium	131	8' - 2 1/8"	0' - 9 5/8"	104.94
10" Masonry	Auditorium	51	4' - 0"	0' - 9 5/8"	41.04
10" Masonry	Auditorium	652	32' - 9 7/8"	0' - 9 5/8"	523.10
10" Masonry	Auditorium	96	8' - 0"	0' - 9 5/8"	77.00
10" Masonry	Auditorium	110	10' - 0 5/8"	0' - 9 5/8"	88.23
10" Masonry	Auditorium	96	8' - 0"	0' - 9 5/8"	77.00
10" Masonry	Gymnasium	148	7' - 4 5/8"	0' - 9 5/8"	118.47
10" Masonry	Gymnasium	205	10' - 1 17/32"	0' - 9 5/8"	162.67
10" Masonry	Gymnasium	193	9' - 7 15/16"	0' - 9 5/8"	155.00
10" Masonry	Gymnasium	153	8' - 5 11/16"	0' - 9 5/8"	122.62
10" Masonry	Gymnasium	1,543	76' - 4 19/32"	0' - 9 5/8"	1,237.26
10" Masonry	Gymnasium	872	26' - 8 3/8"	0' - 9 5/8"	699.52
10" Masonry	Gymnasium	449	13' - 4"	0' - 9 5/8"	360.50
10" Masonry	Gymnasium	140	8' - 8 13/16"	0' - 9 5/8"	112.35
10" Masonry	Gymnasium	339	12' - 0"	0' - 9 5/8"	271.63
10" Masonry	Gymnasium	136	9' - 9"	0' - 9 5/8"	109.02
10" Masonry	Gymnasium	43	2' - 0"	0' - 9 5/8"	34.46
10" Masonry	Gymnasium	123	8' - 9 5/8"	0' - 9 5/8"	98.39
10" Masonry	Gymnasium	43	2' - 0"	0' - 9 5/8"	34.46
10" Masonry	Gymnasium	851	55' - 6 3/8"	0' - 9 5/8"	682.96

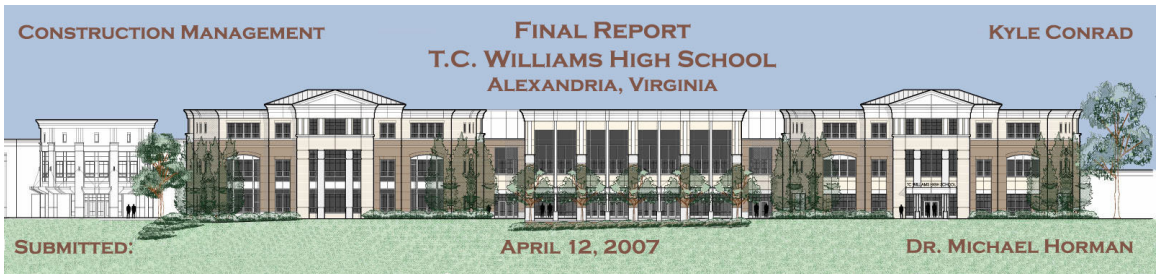
CMU Wall Schedule					
Type	Mark	Area (ft^2)	Length	Width	Volume (ft^3)
10" Masonry	Gymnasium	118	7' - 8"	0' - 9 5/8"	94.29
10" Masonry	Gymnasium	118	7' - 8"	0' - 9 5/8"	94.29
10" Masonry	Gymnasium	118	7' - 8"	0' - 9 5/8"	94.29
10" Masonry	Gymnasium	190	12' - 0 1/8"	0' - 9 5/8"	152.66
8" Masonry	Gymnasium	886	55' - 8 3/16"	0' - 7 5/8"	562.87
10" Masonry	Gymnasium	940	59' - 1"	0' - 9 5/8"	754.17
10" Masonry	Gymnasium	799	49' - 11 3/8"	0' - 9 5/8"	641.00
10" Masonry	Gymnasium	629	31' - 5 3/8"	0' - 9 5/8"	504.48
8" Masonry	Gymnasium	907	31' - 5 3/8"	0' - 7 5/8"	576.23
10" Masonry	Gymnasium	2,103	74' - 1"	0' - 9 5/8"	1,686.88
10" Masonry	Gymnasium	5,901	205' - 5 3/16"	0' - 9 5/8"	4,732.74
8" Masonry	Gymnasium	3,322	207' - 4"	0' - 7 5/8"	2,111.12
10" Masonry	Gymnasium	1,008	63' - 0"	0' - 9 5/8"	808.50
8" Masonry	Gymnasium	860	54' - 5 3/8"	0' - 7 5/8"	546.25
8" Masonry	Gymnasium	820	51' - 6 13/16"	0' - 7 5/8"	521.04
8" Masonry	Mech/Elec Wedge - Auto Strip	937	59' - 4"	0' - 7 5/8"	595.07
10" Masonry	Auditorium	579	28' - 9 9/32"	0' - 9 5/8"	460.14
12" Masonry	Gymnasium	127	3' - 11 3/16"	0' - 11 5/8"	122.65
6" Masonry	Gymnasium	128	4' - 10 3/16"	0' - 5 5/8"	59.77
6" Masonry	Gymnasium	158	10' - 9"	0' - 5 5/8"	73.98
10" Masonry	Gymnasium	420	13' - 9"	0' - 9 5/8"	337.07
8" Masonry	Gymnasium	977	61' - 9"	0' - 7 5/8"	620.48
10" Masonry	Gymnasium	305	15' - 6 19/32"	0' - 9 5/8"	242.79
10" Masonry	Gymnasium	157	9' - 6 13/16"	0' - 9 5/8"	125.79
14" Masonry	Gymnasium	7,411	205' - 10 3/8"	1' - 1 5/8"	8,414.71
10" Masonry	Gymnasium	6,686	203' - 10 3/8"	0' - 9 5/8"	5,362.55
10" Masonry	Gymnasium	3,955	121' - 10 3/8"	0' - 9 5/8"	3,172.01
14" Masonry	Gymnasium	4,459	123' - 9 3/8"	1' - 1 5/8"	5,062.96
12" Masonry	Gymnasium	7,411	205' - 10 3/8"	0' - 11 5/8"	7,179.53
10" Masonry	Gymnasium	6,660	203' - 10 3/8"	0' - 9 5/8"	5,341.54
12" Masonry	Gymnasium	2,667	92' - 11 3/8"	0' - 11 5/8"	2,583.56
12" Masonry	Gymnasium	1,664	59' - 0"	0' - 11 5/8"	1,611.58
8" Masonry	Gymnasium	49	1' - 10 3/8"	0' - 7 5/8"	30.93
8" Masonry	Gymnasium	202	7' - 10"	0' - 7 5/8"	128.08
8" Masonry	Gymnasium	49	1' - 10 3/8"	0' - 7 5/8"	30.93
8" Masonry	Gymnasium	215	8' - 3 5/8"	0' - 7 5/8"	136.61
10" Masonry	Gymnasium	63	1' - 8 5/16"	0' - 9 5/8"	48.43
10" Masonry	Gymnasium	1,726	60' - 6 29/32"	0' - 9 5/8"	1,383.25
10" Masonry	Mech/Elec Wedge - Auto Strip	4,293	268' - 4"	0' - 9 5/8"	3,443.61
8" Masonry	Mech/Elec Wedge - Auto Strip	1,004	63' - 6 3/8"	0' - 7 5/8"	637.75
8" Masonry	Mech/Elec Wedge - Auto Strip	1,239	62' - 8"	0' - 7 5/8"	787.22
10" Masonry	Mech/Elec Wedge - Auto Strip	77	4' - 9 3/4"	0' - 9 5/8"	61.77
8" Masonry	Mech/Elec Wedge - Auto Strip	990	62' - 8"	0' - 7 5/8"	628.96
6" Masonry	Mech/Elec Wedge - Auto Strip	48	3' - 2"	0' - 5 5/8"	22.50
6" Masonry	Mech/Elec Wedge - Auto Strip	118	7' - 4 3/8"	0' - 5 5/8"	55.23
6" Masonry	Mech/Elec Wedge - Auto Strip	41	3' - 2"	0' - 5 5/8"	18.98
6" Masonry	Mech/Elec Wedge - Auto Strip	27	1' - 10"	0' - 5 5/8"	12.50

CMU Wall Schedule					
Type	Mark	Area (ft^2)	Length	Width	Volume (ft^3)
6" Masonry	Mech/Elec Wedge - Auto Strip	118	7' - 4 3/8"	0' - 5 5/8"	55.23
6" Masonry	Mech/Elec Wedge - Auto Strip	19	1' - 10"	0' - 5 5/8"	8.98
8" Masonry	Gymnasium	688	43' - 3 13/16"	0' - 7 5/8"	437.17
10" Masonry	Gymnasium	670	41' - 10 1/4"	0' - 9 5/8"	537.13
8" Masonry	Gymnasium	625	39' - 0 5/8"	0' - 7 5/8"	397.03
12" Masonry	Auditorium	93	13' - 6 17/32"	0' - 11 5/8"	90.48
10" Masonry	Auditorium	437	20' - 3 3/32"	0' - 9 5/8"	350.37
6" Masonry	Auditorium	1,805	112' - 11 3/8"	0' - 5 5/8"	845.86
12" Masonry	Auditorium	3,635	111' - 3 3/8"	0' - 11 5/8"	3,521.59
14" Masonry	Auditorium	4,489	136' - 8 13/32"	1' - 1 5/8"	5,083.02
6" Masonry	Auditorium	2,147	134' - 10 7/16"	0' - 5 5/8"	1,005.45
8" Masonry	Auditorium	1,374	85' - 10 7/32"	0' - 7 5/8"	872.82
8" Masonry	Auditorium	283	17' - 10"	0' - 7 5/8"	179.61
8" Masonry	Auditorium	457	29' - 2"	0' - 7 5/8"	290.07
8" Masonry	Auditorium	457	29' - 2"	0' - 7 5/8"	290.07
8" Masonry	Auditorium	326	20' - 9 3/16"	0' - 7 5/8"	207.04
8" Masonry	Auditorium	285	17' - 8"	0' - 7 5/8"	181.31
10" Masonry	Auditorium	832	29' - 7 3/16"	0' - 9 5/8"	667.52
10" Masonry	Auditorium	971	72' - 6 13/16"	0' - 9 5/8"	775.45
14" Masonry	Auditorium	260	9' - 0 1/32"	1' - 1 5/8"	293.05
6" Masonry	Auditorium	1,295	45' - 8 3/4"	0' - 5 5/8"	606.86
14" Masonry	Auditorium	55	3' - 11"	1' - 1 5/8"	54.73
14" Masonry	Auditorium	1,872	41' - 6 7/32"	1' - 1 5/8"	2,125.96
6" Masonry	Auditorium	1,374	86' - 1 13/32"	0' - 5 5/8"	644.12
14" Masonry	Auditorium	1,130	39' - 11 23/32"	1' - 1 5/8"	1,282.71
10" Masonry	Mech/Elec Wedge - Auto Strip	1,218	76' - 6 15/32"	0' - 9 5/8"	970.18
10" Masonry	Mech/Elec Wedge - Auto Strip	259	16' - 2"	0' - 9 5/8"	207.47
10" Masonry	Mech/Elec Wedge - Auto Strip	339	21' - 2"	0' - 9 5/8"	271.64
10" Masonry	Mech/Elec Wedge - Auto Strip	141	8' - 10"	0' - 9 5/8"	113.36
10" Masonry	Mech/Elec Wedge - Auto Strip	123	7' - 8"	0' - 9 5/8"	98.39
10" Masonry	Mech/Elec Wedge - Auto Strip	848	53' - 0"	0' - 9 5/8"	680.17
12" Masonry	Auditorium	464	14' - 11 3/32"	0' - 11 5/8"	442.29
12" Masonry	Auditorium	429	28' - 8 23/32"	0' - 11 5/8"	411.80
12" Masonry	Auditorium	38	5' - 3 5/32"	0' - 11 5/8"	36.23
10" Masonry	Auditorium	129	8' - 3 3/8"	0' - 9 5/8"	103.12
8" Masonry	Auditorium	841	36' - 9 7/8"	0' - 7 5/8"	524.29
8" Masonry	Auditorium	194	8' - 4 23/32"	0' - 7 5/8"	121.21
8" Masonry	Auditorium	127	5' - 8 31/32"	0' - 7 5/8"	72.90
8" Masonry	Auditorium	227	10' - 6 3/8"	0' - 7 5/8"	142.81
8" Masonry	Auditorium	66	2' - 11"	0' - 7 5/8"	42.01
8" Masonry	Auditorium	173	8' - 3 3/8"	0' - 7 5/8"	109.65
8" Masonry	Auditorium	234	10' - 6 1/2"	0' - 7 5/8"	147.65
10" Masonry	Auditorium	82	3' - 8 3/8"	0' - 9 5/8"	66.09
10" Masonry	Auditorium	149	6' - 4 3/8"	0' - 9 5/8"	119.11
10" Masonry	Auditorium	64	3' - 8 3/8"	0' - 9 5/8"	51.08
8" Masonry	Auditorium	132	5' - 8"	0' - 7 5/8"	84.02
10" Masonry	Auditorium	702	30' - 7 9/16"	0' - 9 5/8"	562.60

CMU Wall Schedule					
Type	Mark	Area (ft^2)	Length	Width	Volume (ft^3)
8" Masonry	Auditorium	89	4' - 0 25/32"	0' - 7 5/8"	55.45
8" Masonry	Auditorium	841	36' - 9 7/8"	0' - 7 5/8"	524.29
8" Masonry	Auditorium	194	8' - 4 23/32"	0' - 7 5/8"	121.21
8" Masonry	Auditorium	127	5' - 8 31/32"	0' - 7 5/8"	72.90
8" Masonry	Auditorium	227	10' - 6 3/8"	0' - 7 5/8"	142.81
8" Masonry	Auditorium	323	14' - 5 5/8"	0' - 7 5/8"	205.10
8" Masonry	Auditorium	234	10' - 6 1/2"	0' - 7 5/8"	147.65
10" Masonry	Auditorium	82	3' - 8 3/8"	0' - 9 5/8"	66.09
10" Masonry	Auditorium	149	6' - 4 3/8"	0' - 9 5/8"	119.11
10" Masonry	Auditorium	64	3' - 8 3/8"	0' - 9 5/8"	51.08
8" Masonry	Auditorium	132	5' - 8"	0' - 7 5/8"	84.02
10" Masonry	Auditorium	273	12' - 0 7/16"	0' - 9 5/8"	215.08
6" Masonry	Auditorium	300	13' - 1 3/8"	0' - 5 5/8"	140.71
8" Masonry	Auditorium	355	15' - 2 3/8"	0' - 7 5/8"	225.33
8" Masonry	Auditorium	141	6' - 9"	0' - 7 5/8"	89.42
6" Masonry	Auditorium	285	13' - 1 3/8"	0' - 5 5/8"	133.76
6" Masonry	Auditorium	173	8' - 3 3/8"	0' - 5 5/8"	80.89
8" Masonry	Auditorium	121	5' - 3 1/4"	0' - 7 5/8"	75.41
8" Masonry	Auditorium	71	3' - 10"	0' - 7 5/8"	44.94
8" Masonry	Auditorium	121	5' - 3 1/4"	0' - 7 5/8"	75.41
8" Masonry	Auditorium	71	3' - 10"	0' - 7 5/8"	44.94
14" Masonry	Gymnasium	4,437	123' - 9 3/8"	1' - 1 5/8"	5,038.19
10" Masonry	Gymnasium	3,981	121' - 10 3/8"	0' - 9 5/8"	3,193.02
10" Masonry	Gymnasium	2,504	88' - 3"	0' - 9 5/8"	2,008.78
10" Masonry	Gymnasium	1,529	89' - 0"	0' - 9 5/8"	1,226.20
6" Masonry	Gymnasium	1,397	87' - 11"	0' - 5 5/8"	654.61
14" Masonry	Gymnasium	236	10' - 3 13/16"	1' - 1 5/8"	267.96
8" Masonry	Gymnasium	325	16' - 8 7/32"	0' - 7 5/8"	205.56
14" Masonry	Gymnasium	2,897	89' - 2"	1' - 1 5/8"	3,289.25
10" Masonry	Gymnasium	613	25' - 6 5/8"	0' - 9 5/8"	491.88
8" Masonry	Gymnasium	3,975	248' - 9 5/8"	0' - 7 5/8"	2,526.09
10" Masonry	Gymnasium	82	9' - 5 11/32"	0' - 9 5/8"	65.66
10" Masonry	Gymnasium	78	8' - 9 1/16"	0' - 9 5/8"	62.86
8" Masonry	Gymnasium	76	5' - 0 13/16"	0' - 7 5/8"	47.97
8" Masonry	Mech/Elec Wedge - Auto Strip	1,003	63' - 1"	0' - 7 5/8"	637.27
6" Masonry	Mech/Elec Wedge - Auto Strip	1,254	63' - 1"	0' - 5 5/8"	587.65
10" Masonry	Mech/Elec Wedge - Auto Strip	69	14' - 9 5/8"	0' - 9 5/8"	55.41
10" Masonry	Gymnasium	83	4' - 10 9/16"	0' - 9 5/8"	66.71
8" Masonry	Gymnasium	46	3' - 3 3/16"	0' - 7 5/8"	29.12
8" Masonry	Mech/Elec Wedge - Auto Strip	44	11' - 8"	0' - 7 5/8"	28.21
6" Masonry	Gymnasium	113	4' - 5 7/16"	0' - 5 5/8"	52.73
6" Masonry	Gymnasium	345	14' - 4 3/8"	0' - 5 5/8"	161.60
6" Masonry	Gymnasium	1,481	62' - 4"	0' - 5 5/8"	694.10
10" Masonry	Gymnasium	517	21' - 0 3/4"	0' - 9 5/8"	414.90
8" Masonry	Gymnasium	260	21' - 8 3/8"	0' - 7 5/8"	165.45
10" Masonry	Gymnasium	934	38' - 10 27/32"	0' - 9 5/8"	748.66
8" Masonry	Gymnasium	477	39' - 8 9/16"	0' - 7 5/8"	302.81

CMU Wall Schedule

Type	Mark	Area (ft^2)	Length	Width	Volume (ft^3)
12" Masonry	Gymnasium	2,959	90' - 0 3/16"	0' - 11 5/8"	2,866.59
10" Masonry	Gymnasium	811	47' - 2 13/32"	0' - 9 5/8"	643.38
10" Masonry	Gymnasium	505	15' - 5 11/32"	0' - 9 5/8"	392.11
8" Masonry	Gymnasium	930	29' - 11 1/32"	0' - 7 5/8"	566.78
10" Masonry	Auditorium	95	8' - 10 5/8"	0' - 9 5/8"	76.02
10" Masonry	Auditorium	87	8' - 2 1/8"	0' - 9 5/8"	69.96
10" Masonry	Auditorium	87	8' - 2 1/8"	0' - 9 5/8"	69.96
10" Masonry	Auditorium	1,327	65' - 8 3/8"	0' - 9 5/8"	1,063.98
8" Masonry	Auditorium	798	66' - 6"	0' - 7 5/8"	507.06
8" Masonry	Auditorium	493	41' - 1 13/32"	0' - 7 5/8"	313.52
10" Masonry	Auditorium	836	40' - 6 21/32"	0' - 9 5/8"	663.49
10" Masonry	Auditorium	86	9' - 11 5/8"	0' - 9 5/8"	69.30
10" Masonry	Auditorium	1,268	63' - 5 9/32"	0' - 9 5/8"	1,016.21
10" Masonry	Auditorium	64	3' - 7 3/16"	0' - 9 5/8"	51.30
6" Masonry	Auditorium	169	11' - 4"	0' - 5 5/8"	78.98
6" Masonry	Auditorium	521	35' - 0 3/16"	0' - 5 5/8"	240.94
12" Masonry	Auditorium	1,155	40' - 11 3/16"	0' - 11 5/8"	1,117.93
12" Masonry	Auditorium	1,151	40' - 1 1/4"	0' - 11 5/8"	1,094.96
14" Masonry	Auditorium	1,294	44' - 6 3/4"	1' - 1 5/8"	1,468.93
6" Masonry	Auditorium	295	22' - 1 5/8"	0' - 5 5/8"	138.34
10" Masonry	Auditorium	649	22' - 1 7/16"	0' - 9 5/8"	520.43
14" Masonry	Auditorium	295	22' - 1 15/32"	1' - 1 5/8"	334.90
6" Masonry	Auditorium	297	9' - 8 13/16"	0' - 5 5/8"	130.79
10" Masonry	Auditorium	2,345	52' - 6"	0' - 9 5/8"	1,880.89
10" Masonry	Auditorium	973	61' - 1 13/16"	0' - 9 5/8"	780.69
8" Masonry	Auditorium	434	22' - 1 3/16"	0' - 7 5/8"	275.74
14" Masonry	Auditorium	3,739	114' - 11 5/32"	1' - 1 5/8"	4,244.80
14" Masonry	Auditorium	847	29' - 6 3/4"	1' - 1 5/8"	962.22
10" Masonry	Auditorium	629	21' - 9 13/16"	0' - 9 5/8"	504.71
8" Masonry	Auditorium	130	14' - 4 11/32"	0' - 7 5/8"	79.84
8" Masonry	Auditorium	130	14' - 4 11/32"	0' - 7 5/8"	79.84
8" Masonry	Auditorium	109	8' - 6"	0' - 7 5/8"	69.22
8" Masonry	Auditorium	109	8' - 6"	0' - 7 5/8"	69.22
12" Masonry	Auditorium	619	26' - 7 31/32"	0' - 11 5/8"	598.83
8" Masonry	Auditorium	308	19' - 3 1/4"	0' - 7 5/8"	194.21
8" Masonry	Auditorium	123	9' - 4 15/16"	0' - 7 5/8"	76.84
Generic - 2' 0"		20	0' - 8 15/16"	2' - 0"	32.92
Generic - 2' 0"		25	1' - 5 1/4"	2' - 0"	32.81
12" Masonry	Auditorium	38	5' - 3 5/32"	0' - 11 5/8"	36.23
12" Masonry	Auditorium	619	26' - 7 31/32"	0' - 11 5/8"	598.83
10" Masonry	Auditorium	2,017	45' - 8 3/4"	0' - 9 5/8"	1,617.97
12" Masonry	Auditorium	40	13' - 2 3/4"	0' - 11 5/8"	38.31
8" Masonry	Gymnasium	3,078	192' - 4 3/16"	0' - 7 5/8"	1,955.55
6" Masonry	Gymnasium	3,847	192' - 4 3/16"	0' - 5 5/8"	1,803.27
Total:		**194,871**			**159,335**



Appendix M

Areas 5, 6, & 7

Solarcrete™ Wall Schedule

T.C. Williams High School

Replacement Project

Solarcrete Wall Schedule					
Type	Mark	Area (ft^2)	Length	Width	Volume (ft^3)
Generic - 12"	Gymnasium	28	2' - 10"	1' - 0"	28.11
Generic - 12"	Gymnasium	148	9' - 7 23/32"	1' - 0"	147.86
Generic - 12"	Gymnasium	43	2' - 10"	1' - 0"	43.44
Generic - 12"	Gymnasium	46	2' - 9 15/16"	1' - 0"	45.53
Generic - 12"	Gymnasium	152	9' - 10 21/32"	1' - 0"	151.60
Generic - 12"	Mech/Elec Wedge - Auto Strip	2,454	121' - 10"	1' - 0"	2,454.33
Generic - 12"	Mech/Elec Wedge - Auto Strip	51	3' - 4"	1' - 0"	51.11
Generic - 12"	Mech/Elec Wedge - Auto Strip	215	15' - 0"	1' - 0"	214.67
Generic - 12"	Mech/Elec Wedge - Auto Strip	51	3' - 4"	1' - 0"	51.11
Generic - 12"	Mech/Elec Wedge - Auto Strip	2,933	145' - 3 11/16"	1' - 0"	2,926.19
Generic - 12"	Mech/Elec Wedge - Auto Strip	423	20' - 10 23/32"	1' - 0"	415.52
Generic - 12"	Mech/Elec Wedge - Auto Strip	503	25' - 2"	1' - 0"	503.33
Generic - 12"	Mech/Elec Wedge - Auto Strip	860	44' - 0"	1' - 0"	860.00
Generic - 12"	Mech/Elec Wedge - Auto Strip	1,155	57' - 9"	1' - 0"	1,155.00
Generic - 12"	Mech/Elec Wedge - Auto Strip	588	28' - 5"	1' - 0"	588.44
Generic - 12"	Auditorium	119	8' - 5"	1' - 0"	118.67
Generic - 12"	Auditorium	64	4' - 0"	1' - 0"	64.00
Generic - 12"	Auditorium	756	38' - 1"	1' - 0"	756.33
Generic - 12"	Auditorium	147	7' - 4"	1' - 0"	146.67
Generic - 12"	Auditorium	802	39' - 4 5/8"	1' - 0"	802.38
Generic - 12"	Auditorium	48	4' - 0"	1' - 0"	48.00
Generic - 12"	Auditorium	101	8' - 4 1/2"	1' - 0"	100.50
Generic - 12"	Auditorium	36	4' - 0"	1' - 0"	36.00
Generic - 12"	Auditorium	719	35' - 5 7/8"	1' - 0"	719.13
Generic - 12"	Auditorium	56	4' - 0"	1' - 0"	56.00
Generic - 12"	Auditorium	134	8' - 4 1/2"	1' - 0"	134.00
Generic - 12"	Auditorium	48	4' - 0"	1' - 0"	48.00
Generic - 12"	Auditorium	647	32' - 7 1/2"	1' - 0"	647.17
Generic - 12"	Auditorium	96	8' - 0"	1' - 0"	96.00
Generic - 12"	Auditorium	110	10' - 2"	1' - 0"	110.00
Generic - 12"	Auditorium	96	8' - 0"	1' - 0"	96.00
Generic - 12"	Gymnasium	148	7' - 5"	1' - 0"	148.33
Generic - 12"	Gymnasium	206	10' - 1 25/32"	1' - 0"	203.34
Generic - 12"	Gymnasium	193	9' - 7 15/16"	1' - 0"	193.25
Generic - 12"	Gymnasium	149	8' - 5 11/16"	1' - 0"	148.78
Generic - 12"	Gymnasium	1,505	75' - 2 3/4"	1' - 0"	1,504.60
Generic - 12"	Gymnasium	871	26' - 8"	1' - 0"	871.11
Generic - 12"	Gymnasium	501	14' - 10 1/16"	1' - 0"	501.03
Generic - 12"	Gymnasium	128	8' - 10"	1' - 0"	127.78
Generic - 12"	Gymnasium	281	10' - 5 31/32"	1' - 0"	280.62
Generic - 12"	Gymnasium	146	9' - 6"	1' - 0"	145.67
Generic - 12"	Gymnasium	46	2' - 0"	1' - 0"	46.00
Generic - 12"	Gymnasium	123	9' - 0"	1' - 0"	122.67
Generic - 12"	Gymnasium	46	2' - 0"	1' - 0"	46.00
Generic - 12"	Gymnasium	848	55' - 4"	1' - 0"	848.44
Generic - 12"	Gymnasium	118	7' - 8"	1' - 0"	117.56
Generic - 12"	Gymnasium	118	7' - 8"	1' - 0"	117.56

Solarcrete Wall Schedule

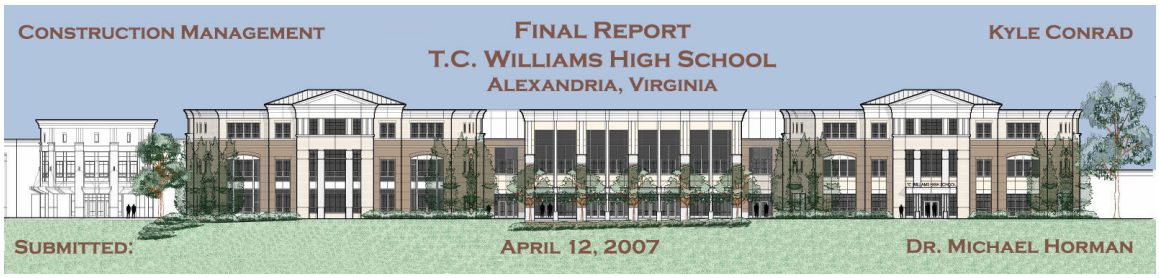
Type	Mark	Area (ft^2)	Length	Width	Volume (ft^3)
Generic - 12"	Gymnasium	118	7' - 8"	1' - 0"	117.56
Generic - 12"	Gymnasium	190	11' - 11 15/16"	1' - 0"	190.33
Generic - 12"	Gymnasium	897	56' - 6 3/8"	1' - 0"	896.50
Generic - 12"	Gymnasium	934	59' - 4 1/16"	1' - 0"	933.81
Generic - 12"	Gymnasium	799	49' - 11 3/8"	1' - 0"	799.17
Generic - 12"	Gymnasium	625	31' - 3"	1' - 0"	625.00
Generic - 12"	Gymnasium	915	31' - 3"	1' - 0"	915.13
Generic - 12"	Gymnasium	2,088	73' - 10"	1' - 0"	2,087.89
Generic - 12"	Gymnasium	995	62' - 2"	1' - 0"	994.67
Generic - 12"	Gymnasium	867	55' - 2 3/8"	1' - 0"	867.17
Generic - 12"	Gymnasium	831	52' - 5"	1' - 0"	830.67
Generic - 12"	Mech/Elec Wedge - Auto Strip	931	59' - 2"	1' - 0"	930.67
Generic - 12"	Auditorium	580	28' - 9 3/32"	1' - 0"	572.91
Generic - 12"	Gymnasium	127	4' - 5"	1' - 0"	126.61
Generic - 12"	Gymnasium	446	13' - 8"	1' - 0"	446.44
Generic - 12"	Gymnasium	335	16' - 2 17/32"	1' - 0"	332.22
Generic - 12"	Gymnasium	7,404	205' - 8"	1' - 0"	7,404.00
Generic - 12"	Gymnasium	4,452	123' - 8"	1' - 0"	4,452.00
Generic - 12"	Gymnasium	7,368	205' - 8"	1' - 0"	7,368.00
Generic - 12"	Gymnasium	2,690	93' - 10"	1' - 0"	2,689.89
Generic - 12"	Gymnasium	1,663	59' - 0"	1' - 0"	1,662.67
Generic - 12"	Gymnasium	57	2' - 0"	1' - 0"	57.33
Generic - 12"	Gymnasium	201	8' - 0"	1' - 0"	200.67
Generic - 12"	Gymnasium	57	2' - 0"	1' - 0"	57.33
Generic - 12"	Gymnasium	215	8' - 6"	1' - 0"	215.00
Generic - 12"	Gymnasium	65	1' - 7 3/8"	1' - 0"	61.13
Generic - 12"	Gymnasium	1,720	60' - 5 3/4"	1' - 0"	1,718.98
Generic - 12"	Mech/Elec Wedge - Auto Strip	4,304	269' - 0"	1' - 0"	4,304.00
Generic - 12"	Mech/Elec Wedge - Auto Strip	1,232	62' - 6"	1' - 0"	1,232.00
Generic - 12"	Mech/Elec Wedge - Auto Strip	984	62' - 6"	1' - 0"	984.00
Generic - 12"	Mech/Elec Wedge - Auto Strip	53	3' - 4"	1' - 0"	53.33
Generic - 12"	Mech/Elec Wedge - Auto Strip	125	7' - 10"	1' - 0"	125.33
Generic - 12"	Mech/Elec Wedge - Auto Strip	37	3' - 4"	1' - 0"	37.33
Generic - 12"	Mech/Elec Wedge - Auto Strip	32	2' - 0"	1' - 0"	32.00
Generic - 12"	Mech/Elec Wedge - Auto Strip	125	7' - 10"	1' - 0"	125.33
Generic - 12"	Mech/Elec Wedge - Auto Strip	16	2' - 0"	1' - 0"	16.00
Generic - 12"	Gymnasium	699	44' - 2"	1' - 0"	698.67
Generic - 12"	Gymnasium	670	41' - 10 1/4"	1' - 0"	669.67
Generic - 12"	Gymnasium	625	39' - 0 5/8"	1' - 0"	624.83
Generic - 12"	Auditorium	92	13' - 8 7/16"	1' - 0"	91.62
Generic - 12"	Auditorium	469	21' - 0 11/16"	1' - 0"	463.52
Generic - 12"	Auditorium	3,640	111' - 5"	1' - 0"	3,639.61
Generic - 12"	Auditorium	4,462	135' - 3 5/16"	1' - 0"	4,452.46
Generic - 12"	Auditorium	461	29' - 10"	1' - 0"	461.33
Generic - 12"	Auditorium	461	29' - 10"	1' - 0"	461.33
Generic - 12"	Auditorium	323	20' - 8"	1' - 0"	322.67
Generic - 12"	Auditorium	293	18' - 4"	1' - 0"	293.33

Solarcrete Wall Schedule

Type	Mark	Area (ft^2)	Length	Width	Volume (ft^3)
Generic - 12"	Auditorium	836	29' - 8"	1' - 0"	836.11
Generic - 12"	Auditorium	970	72' - 6 1/4"	1' - 0"	964.46
Generic - 12"	Auditorium	44	3' - 0 7/32"	1' - 0"	38.47
Generic - 12"	Auditorium	1,173	41' - 5 1/32"	1' - 0"	1,173.03
Generic - 12"	Mech/Elec Wedge - Auto Strip	1,236	77' - 10 11/16"	1' - 0"	1,224.64
Generic - 12"	Mech/Elec Wedge - Auto Strip	259	16' - 2"	1' - 0"	258.67
Generic - 12"	Mech/Elec Wedge - Auto Strip	339	21' - 2"	1' - 0"	338.67
Generic - 12"	Mech/Elec Wedge - Auto Strip	141	8' - 10"	1' - 0"	141.33
Generic - 12"	Mech/Elec Wedge - Auto Strip	123	7' - 8"	1' - 0"	122.67
Generic - 12"	Mech/Elec Wedge - Auto Strip	848	53' - 0"	1' - 0"	848.00
Generic - 12"	Auditorium	464	14' - 10 25/32"	1' - 0"	456.79
Generic - 12"	Auditorium	428	28' - 8 7/32"	1' - 0"	423.96
Generic - 12"	Auditorium	51	6' - 9 9/32"	1' - 0"	50.04
Generic - 12"	Auditorium	128	8' - 2"	1' - 0"	127.78
Generic - 12"	Auditorium	870	37' - 2"	1' - 0"	845.00
Generic - 12"	Auditorium	201	8' - 4 1/8"	1' - 0"	195.84
Generic - 12"	Auditorium	131	6' - 1 11/32"	1' - 0"	112.15
Generic - 12"	Auditorium	228	10' - 8 13/16"	1' - 0"	226.51
Generic - 12"	Auditorium	66	2' - 10"	1' - 0"	66.11
Generic - 12"	Auditorium	167	8' - 2"	1' - 0"	167.22
Generic - 12"	Auditorium	237	10' - 6 13/16"	1' - 0"	234.63
Generic - 12"	Auditorium	86	3' - 8"	1' - 0"	85.56
Generic - 12"	Auditorium	144	6' - 2"	1' - 0"	143.89
Generic - 12"	Auditorium	62	3' - 8"	1' - 0"	62.22
Generic - 12"	Auditorium	132	5' - 8"	1' - 0"	132.22
Generic - 12"	Auditorium	738	32' - 1 3/32"	1' - 0"	737.04
Generic - 12"	Auditorium	870	37' - 2"	1' - 0"	845.00
Generic - 12"	Auditorium	201	8' - 4 1/8"	1' - 0"	195.84
Generic - 12"	Auditorium	131	6' - 1 11/32"	1' - 0"	112.15
Generic - 12"	Auditorium	228	10' - 8 13/16"	1' - 0"	226.51
Generic - 12"	Auditorium	323	14' - 10"	1' - 0"	322.78
Generic - 12"	Auditorium	237	10' - 6 13/16"	1' - 0"	234.63
Generic - 12"	Auditorium	86	3' - 8"	1' - 0"	85.56
Generic - 12"	Auditorium	144	6' - 2"	1' - 0"	143.89
Generic - 12"	Auditorium	62	3' - 8"	1' - 0"	62.22
Generic - 12"	Auditorium	132	6' - 0 25/32"	1' - 0"	129.53
Generic - 12"	Auditorium	286	12' - 6 17/32"	1' - 0"	279.61
Generic - 12"	Auditorium	303	13' - 0"	1' - 0"	303.33
Generic - 12"	Auditorium	342	14' - 8"	1' - 0"	342.22
Generic - 12"	Auditorium	140	7' - 0"	1' - 0"	140.00
Generic - 12"	Auditorium	280	13' - 0"	1' - 0"	280.00
Generic - 12"	Auditorium	167	8' - 2"	1' - 0"	167.22
Generic - 12"	Auditorium	131	5' - 5 13/16"	1' - 0"	127.57
Generic - 12"	Auditorium	70	4' - 0"	1' - 0"	70.00
Generic - 12"	Auditorium	131	5' - 5 13/16"	1' - 0"	127.57
Generic - 12"	Auditorium	70	4' - 0"	1' - 0"	70.00
Generic - 12"	Gymnasium	4,472	123' - 8"	1' - 0"	4,471.67

Solarcrete Wall Schedule

Type	Mark	Area (ft^2)	Length	Width	Volume (ft^3)
Generic - 12"	Gymnasium	1,528	89' - 1"	1' - 0"	1,528.22
Generic - 12"	Gymnasium	2,896	89' - 2"	1' - 0"	2,896.44
Generic - 12"	Gymnasium	834	35' - 0 5/8"	1' - 0"	833.58
Generic - 12"	Gymnasium	84	9' - 7 23/32"	1' - 0"	83.58
Generic - 12"	Gymnasium	81	9' - 10 1/16"	1' - 0"	80.59
Generic - 12"	Mech/Elec Wedge - Auto Strip	1,250	63' - 0"	1' - 0"	1,250.00
Generic - 12"	Mech/Elec Wedge - Auto Strip	70	15' - 0"	1' - 0"	70.00
Generic - 12"	Mech/Elec Wedge - Auto Strip	45	11' - 10"	1' - 0"	45.33
Generic - 12"	Gymnasium	125	4' - 8 5/8"	1' - 0"	125.25
Generic - 12"	Gymnasium	332	13' - 10"	1' - 0"	332.00
Generic - 12"	Gymnasium	1,468	62' - 2"	1' - 0"	1,468.00
Generic - 12"	Gymnasium	516	20' - 8 3/8"	1' - 0"	516.42
Generic - 12"	Gymnasium	930	38' - 8 27/32"	1' - 0"	929.37
Generic - 12"	Gymnasium	2,921	89' - 5"	1' - 0"	2,920.94
Generic - 12"	Gymnasium	795	46' - 6 3/16"	1' - 0"	783.32
Generic - 10"	Gymnasium	504	15' - 7 31/32"	0' - 10"	405.40
Generic - 12"	Gymnasium	937	29' - 3 7/16"	1' - 0"	882.41
Generic - 12"	Auditorium	96	9' - 0"	1' - 0"	96.00
Generic - 12"	Auditorium	89	8' - 4 1/2"	1' - 0"	89.33
Generic - 12"	Auditorium	89	8' - 4 1/2"	1' - 0"	89.33
Generic - 12"	Auditorium	1,326	65' - 6"	1' - 0"	1,325.67
Generic - 12"	Auditorium	839	40' - 5"	1' - 0"	828.40
Generic - 12"	Auditorium	88	10' - 2"	1' - 0"	88.11
Generic - 12"	Auditorium	1,268	63' - 5 3/16"	1' - 0"	1,266.42
Generic - 12"	Auditorium	212	11' - 4"	1' - 0"	212.00
Generic - 12"	Auditorium	1,219	42' - 11 1/2"	1' - 0"	1,181.51
Generic - 12"	Auditorium	1,297	44' - 9 1/32"	1' - 0"	1,297.23
Generic - 12"	Auditorium	293	22' - 0"	1' - 0"	293.33
Generic - 12"	Auditorium	1,271	44' - 7 31/32"	1' - 0"	1,271.38
Generic - 12"	Auditorium	976	61' - 6"	1' - 0"	976.00
Generic - 12"	Auditorium	430	22' - 6"	1' - 0"	430.00
Generic - 12"	Auditorium	3,738	114' - 10 31/32"	1' - 0"	3,737.52
Generic - 12"	Auditorium	637	22' - 0"	1' - 0"	636.67
Generic - 12"	Auditorium	133	14' - 9 9/16"	1' - 0"	126.16
Generic - 12"	Auditorium	133	14' - 9 9/16"	1' - 0"	126.16
Generic - 12"	Auditorium	106	8' - 7"	1' - 0"	106.17
Generic - 12"	Auditorium	106	8' - 7"	1' - 0"	106.17
Generic - 12"	Auditorium	618	26' - 7 9/16"	1' - 0"	617.26
Generic - 12"	Auditorium	290	19' - 9 1/2"	1' - 0"	286.84
Generic - 12"	Auditorium	141	10' - 0 1/4"	1' - 0"	137.96
Generic - 12"	Auditorium	16	0' - 5 5/32"	1' - 0"	14.52
Generic - 12"	Auditorium	37	1' - 6 3/16"	1' - 0"	32.09
Generic - 12"	Auditorium	51	6' - 9 9/32"	1' - 0"	50.04
Generic - 12"	Auditorium	618	26' - 7 9/16"	1' - 0"	617.26
Generic - 12"	Gymnasium	3,847	192' - 4"	1' - 0"	3,846.67
Total:		**129,917**			**129,467**



Appendix N

Areas 5, 6, & 7

CMU Estimate

T.C. Williams High School

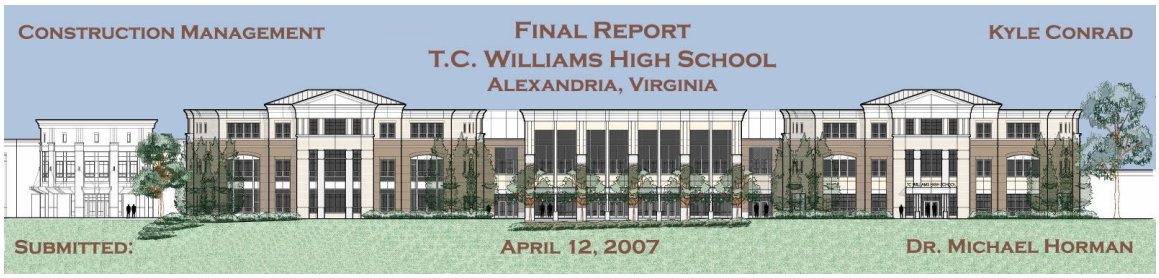
Replacement Project

T.C. Williams High School

CMU Estimate

QTO - Current Construction			Schedule Impact				Labor				Cost Impact						
	Wall Area	Units	Daily Output*	Units	Duration	Units	Rate	Units	Labor Hours	Units	Material	Units	Cost	Labor	Units	Cost	Total Cost
Gymnasium			**Gymnasium**				**Gymnasium**				**Gymnasium**						
10" CMU	49,827	sf	280	sf / day	178.0	days	0.143	hours / sf	7,125	mhrs	6.35	$ / sf	316,401	5.31	$ / sf	264,581	580,983
12" CMU	14,828	sf	265	sf / day	56.0	days	0.181	hours / sf	2,684	mhrs	6.95	$ / sf	103,055	6.05	$ / sf	89,709	192,764
14" CMU	19,440	sf	255	sf / day	76.2	days	0.188	hours / sf	3,655	mhrs	7.45	$ / sf	144,828	6.95	$ / sf	135,108	279,936
6" CMU	7,469	sf	325	sf / day	23.0	days	0.123	hours / sf	919	mhrs	4.94	$ / sf	36,897	4.22	$ / sf	31,519	68,416
8" CMU	19,007	sf	300	sf / day	63.4	days	0.133	hours / sf	2,528	mhrs	5.75	$ / sf	109,290	4.57	$ / sf	86,862	196,152
Sub-Total:	**110,571**	**sf**			**396.5**	**days**			**16,910**	**mhrs**			**$710,471**			**$607,780**	**$1,318,251**
Auditorium			**Auditorium**				**Auditorium**				**Auditorium**						
10" CMU	19,046	sf	280	sf / day	68.0	days	0.143	hours / sf	2,724	mhrs	6.35	$ / sf	120,942	5.31	$ / sf	101,134	222,076
12" CMU	8,281	sf	265	sf / day	31.2	days	0.181	hours / sf	1,499	mhrs	6.95	$ / sf	57,553	6.05	$ / sf	50,100	107,653
14" CMU	13,981	sf	255	sf / day	54.8	days	0.188	hours / sf	2,628	mhrs	7.45	$ / sf	104,158	6.95	$ / sf	97,168	201,326
6" CMU	8,661	sf	325	sf / day	26.6	days	0.123	hours / sf	1,065	mhrs	4.94	$ / sf	42,785	4.22	$ / sf	36,549	79,335
8" CMU	10,857	sf	300	sf / day	36.2	days	0.133	hours / sf	1,444	mhrs	5.75	$ / sf	62,428	4.57	$ / sf	49,616	112,044
Sub-Total:	**60,826**	**sf**			**216.9**	**days**			**9,360**	**mhrs**			**$387,867**			**$334,568**	**$722,435**
Mech/Elec Wedge - Auto Strip			**Mech/Elec Wedge - Auto Strip**				**Mech/Elec Wedge - Auto Strip**				**Mech/Elec Wedge - Auto Strip**						
10" CMU	16,587	sf	280	sf / day	59.2	days	0.143	hours / sf	2,372	mhrs	6.35	$ / sf	105,327	5.31	$ / sf	88,077	193,404
6" CMU	1,625	sf	325	sf / day	5.0	days	0.123	hours / sf	200	mhrs	4.94	$ / sf	8,028	4.22	$ / sf	6,858	14,885
8" CMU	5,217	sf	300	sf / day	17.4	days	0.133	hours / sf	694	mhrs	5.75	$ / sf	29,998	4.57	$ / sf	23,842	53,839
Sub-Total:	**23,429**	**sf**			**81.6**	**days**			**3,266**	**mhrs**			**$143,353**			**$118,776**	**$262,129**
Total:	**194,826**	**sf**			**695.0**	**days**			**29,536**	**mhrs**			**$1,241,690**			**$1,061,124**	**$2,302,815**
											City Cost Index**						
											Alexandria, Virginia		0.923			0.713	
													$1,146,080			**$756,582**	**$1,902,662**

Note:
* Based on Labor Output Displayed in Labor Column
** City Cost Index for Masonry



Appendix P

Areas 5, 6, & 7

Solarcrete™ Estimate

T.C. Williams High School

Replacement Project

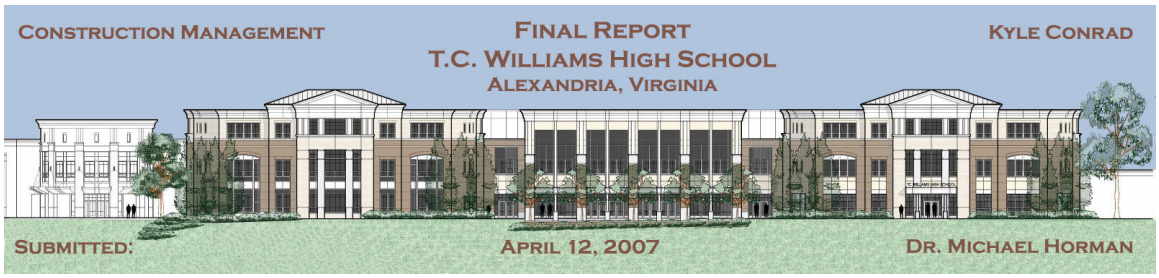
T.C. Williams High School
Solarcrete Estimate

QTO - Solarcrete System					Schedule Impact - EPS				Schedule Impact - Shotcrete				Labor - EPS				Labor - Shotcrete			
	Wall Area	Units	Wall Length	Units	Daily Output*	Units	Duration	Units	Daily Output*	Units	Duration	Units	Rate	Units	Labor Hours	Units	Rate	Units	Labor Hours	Units
Gymnasium					**Gymnasium**								**Gymnasium**							
12" Panel	66,167	sf	2,595	lf	200	lf / day	13.0	days	2000	sf / day	66.2	days	0.48	hours / lf	1,246	mhrs	0.048	hours / sf	3,176	mhrs
Sub-Total:	**66,167**	**sf**	**2,595**	**lf**			**13.0**	**days**			**66.2**	**days**			**1,246**	**mhrs**			**3,176**	**mhrs**
Auditorium					**Auditorium**								**Auditorium**							
12" Panel	42,367	sf	1,900	lf	200	lf / day	9.5	days	2000	sf / day	42.4	days	0.48	hours / lf	912	mhrs	0.048	hours / sf	2,034	mhrs
Sub-Total:	**42,367**	**sf**	**1,900**	**lf**			**9.5**	**days**			**42.4**	**days**			**912**	**mhrs**			**2,034**	**mhrs**
Mech/Elec Wedge - Auto Strip					**Mech/Elec Wedge - Auto Strip**								**Mech/Elec Wedge - Auto Strip**							
12" Panel	21,383	sf	1,220	lf	200	lf / day	6.1	days	2000	sf / day	21.4	days	0.48	hours / lf	586	mhrs	0.048	hours / sf	1,026	mhrs
Sub-Total:	**21,383**	**sf**	**1,220**	**lf**			**6.1**	**days**			**21.4**	**days**			**586**	**mhrs**			**1,026**	**mhrs**
Total:	**129,917**	**sf**	**5,715**	**lf**			**28.6**	**days**			**129.9**	**days**			**2,743**	**mhrs**			**6,236**	**mhrs**
					Total Schedule Impact:		**158.5**	**days**					**Total Labor:**		**8,979**	**mhrs**				

Note:
* Based on Labor Output Displayed in Labor Column
** City Cost Index for Concrete

T.C. Williams High School
Solarcrete Estimate

QTO - Solarcrete System					Cost Impact								
	Wall Area	Units	Wall Length	Units	Material	Units	Cost	Labor	Units	Cost	Equip.	Units	Cost	Total Cost
Gymnasium					**Gymnasium**									
12" Panel	66,167	sf	2,595	lf	9.8	$ / sf	648,437	5.23	$ / sf	346,053	1.06	$ / sf	70,137	1,064,627
Sub-Total:	**66,167**	**sf**	**2,595**	**lf**			**$648,437**			**$346,053**			**$70,137**	**$1,064,627**
Auditorium					**Auditorium**									
12" Panel	42,367	sf	1,900	lf	9.8	$ / sf	415,197	5.23	$ / sf	221,579	1.06	$ / sf	44,909	681,685
Sub-Total:	**42,367**	**sf**	**1,900**	**lf**			**$415,197**			**$221,579**			**$44,909**	**$681,685**
Mech/Elec Wedge - Auto Strip					**Mech/Elec Wedge - Auto Strip**									
12" Panel	21,383	sf	1,220	lf	9.8	$ / sf	209,553	5.23	$ / sf	111,833	1.06	$ / sf	22,666	344,052
Sub-Total:	**21,383**	**sf**	**1,220**	**lf**			**$209,553**			**$111,833**			**$22,666**	**$344,052**
Total:	**129,917**	**sf**	**5,715**	**lf**			**$1,273,187**			**$679,466**			**$137,712**	**$2,090,365**
					City Cost Index**									
Chicago, Illinois:			$15.99		Alexandria, Virginia		1.088			0.787				
City Index (Concrete)			1.064				**$1,385,227**			**$534,740**			**$137,712**	**$2,057,679**
			$15.03											



Appendix S

Area 5

Gymnasium Structural Steel Estimate

T.C. Williams High School

Replacement Project

T.C. Williams High School

Gymnasium Structural Steel Estimate

Quantity Take-Off						Schedule Impact				Labor				Cost									
Count	Member	Size	Length	Converted	Units	Daily Output*	Units	Duration	Units	Rate	Units	Labor Hours	Units	Material	Units	Cost	Labor	Units	Cost	Equip.	Units	Cost	Total Cost
18	W-Wide Flange-Column	W14X145	32' - 8"	32.667	lf	940	lf / day	0.63	days	0.059	hours / lf	34.69	mhrs	151.34	$ / lf	$88,988.83	2.32	$ / lf	$1,364.17	1.52	$ / lf	$893.77	$91,246.77
4	W-Wide Flange-Column	W10X49	32' - 8"	32.667	lf	1024	lf / day	0.13	days	0.055	hours / lf	7.19	mhrs	51.17	$ / lf	6,686.28	2.13	$ / lf	278.32	1.39	$ / lf	181.63	7,146.23
2	W-Wide Flange	W14X48	29' - 11"	29.91667	lf	805	lf / day	0.07	days	0.070	hours / lf	4.19	mhrs	50.25	$ / lf	3,006.63	2.71	$ / lf	162.15	1.77	$ / lf	105.91	3,274.68
3	W-Wide Flange	W24X68	36' - 0"	36	lf	1110	lf / day	0.10	days	0.072	hours / lf	7.78	mhrs	71.00	$ / lf	7,668.00	2.84	$ / lf	306.72	1.37	$ / lf	147.96	8,122.68
2	W-Wide Flange	W21X62	36' - 0"	36	lf	1036	lf / day	0.07	days	0.077	hours / lf	5.54	mhrs	65.00	$ / lf	4,680.00	3.04	$ / lf	218.88	1.46	$ / lf	105.12	5,004.00
1	W-Wide Flange	W24X68	36' - 5 15/16"	36.49479	lf	1110	lf / day	0.03	days	0.072	hours / lf	2.63	mhrs	71.00	$ / lf	2,591.13	2.84	$ / lf	103.65	1.37	$ / lf	50.00	2,744.77
1	W-Wide Flange	W24X68	35' - 6 1/16"	35.50521	lf	1110	lf / day	0.03	days	0.072	hours / lf	2.56	mhrs	71.00	$ / lf	2,520.87	2.84	$ / lf	100.83	1.37	$ / lf	48.64	2,670.35
2	W-Wide Flange	W12X50	29' - 11"	29.91667	lf	750	lf / day	0.08	days	0.075	hours / lf	4.49	mhrs	52.50	$ / lf	3,141.25	2.90	$ / lf	173.52	1.90	$ / lf	113.68	3,428.45
4	W-Wide Flange	W8X21	24' - 11"	24.91667	lf	600	lf / day	0.17	days	0.093	hours / lf	9.27	mhrs	22.00	$ / lf	2,192.67	3.63	$ / lf	361.79	2.38	$ / lf	237.21	2,791.66
6	W-Wide Flange	W8X18	24' - 0"	24	lf	600	lf / day	0.24	days	0.093	hours / lf	13.39	mhrs	18.85	$ / lf	2,714.40	3.63	$ / lf	522.72	2.38	$ / lf	342.72	3,579.84
1	W-Wide Flange	W24X68	35' - 6 1/16"	35.50521	lf	1110	lf / day	0.03	days	0.072	hours / lf	2.56	mhrs	71.00	$ / lf	2,520.87	2.84	$ / lf	100.83	1.37	$ / lf	48.64	2,670.35
14	DLH-Series Bar Joist	68DLH19	121' - 10"	121.833	lf	2200	lf / day	0.78	days	0.036	hours / lf	61.40	mhrs	51.20	$ / lf	87,329.89	1.43	$ / lf	2,439.10	0.73	$ / lf	1,245.13	91,014.12
30	W-Wide Flange	W12X26	23' - 11"	23.91667	lf	880	lf / day	0.82	days	0.064	hours / lf	45.92	mhrs	27.00	$ / lf	19,372.50	2.48	$ / lf	1,779.40	1.62	$ / lf	1,162.35	22,314.25
			Sub-Total:	499.34	lf	Sub-Total Schedule Impact:		3.17	days	Sub-Total Labor:		201.60	mhrs	Sub-Total Cost:		$233,413			$7,912			$4,683	$246,008
			***Total:	353.59	lf	***Total Schedule Impact:		1.58	days	***Total Labor:		94.28	mhrs	***Total Cost:		$126,711			$3,694			$2,275	$132,680
														City Cost Index**									
														Alexandria, Virginia		1.000			0.964				
																$126,711			$3,561			$2,275	$132,547

Note:

* Based on Labor Output Displayed in Labor Column

** City Cost Index for Metals

*** Grey Shaded Region is Part of the Existing Design