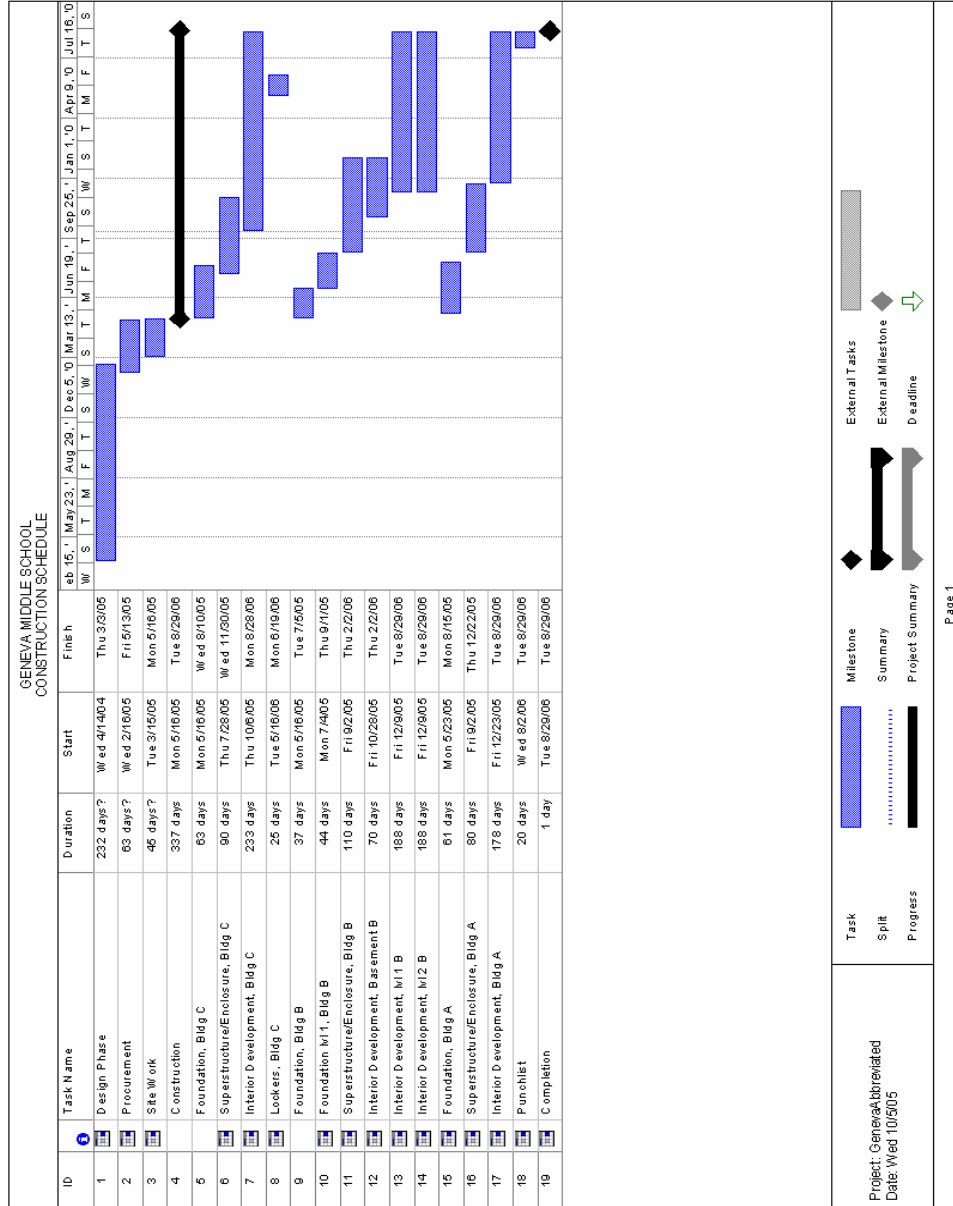
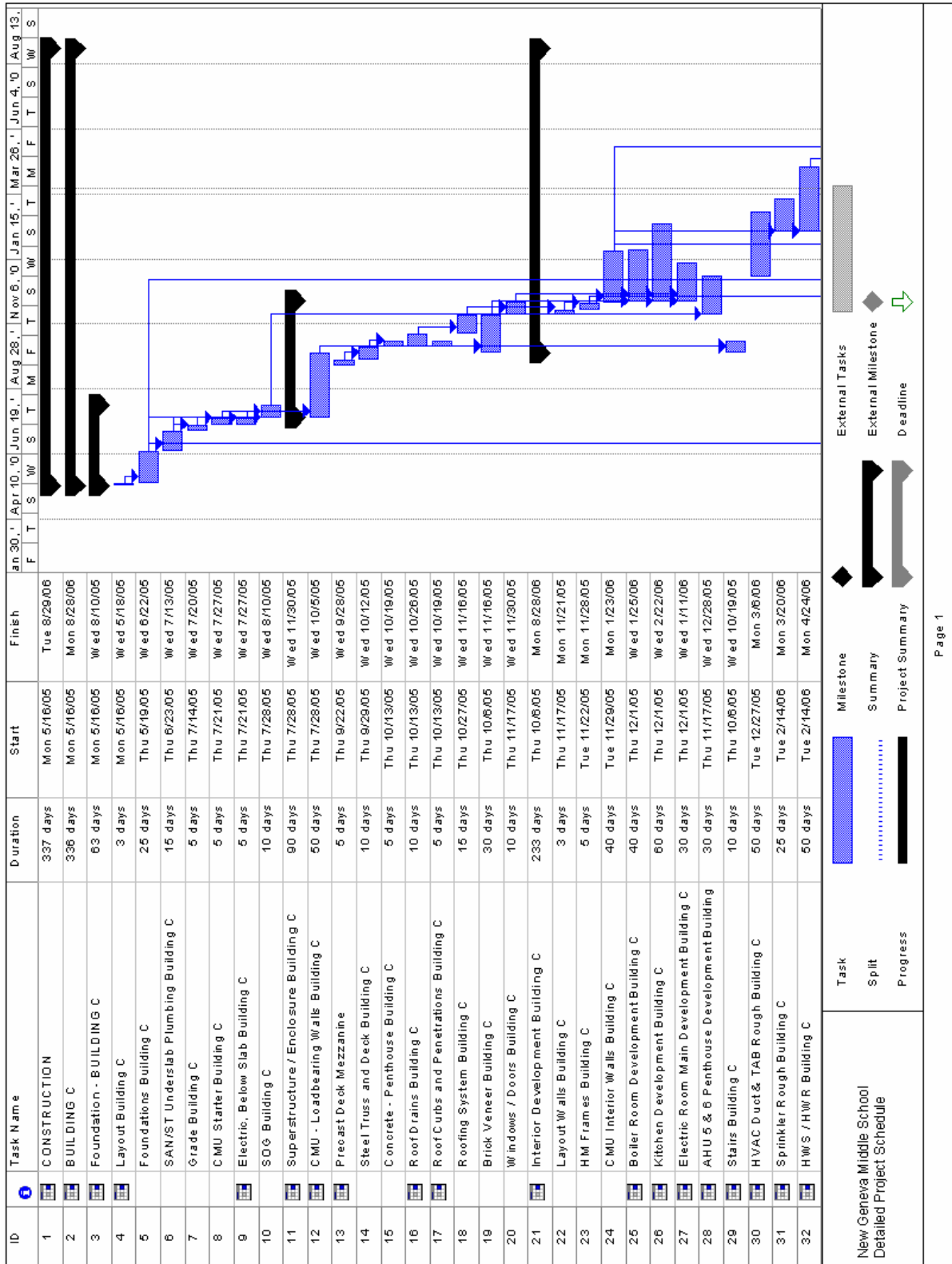


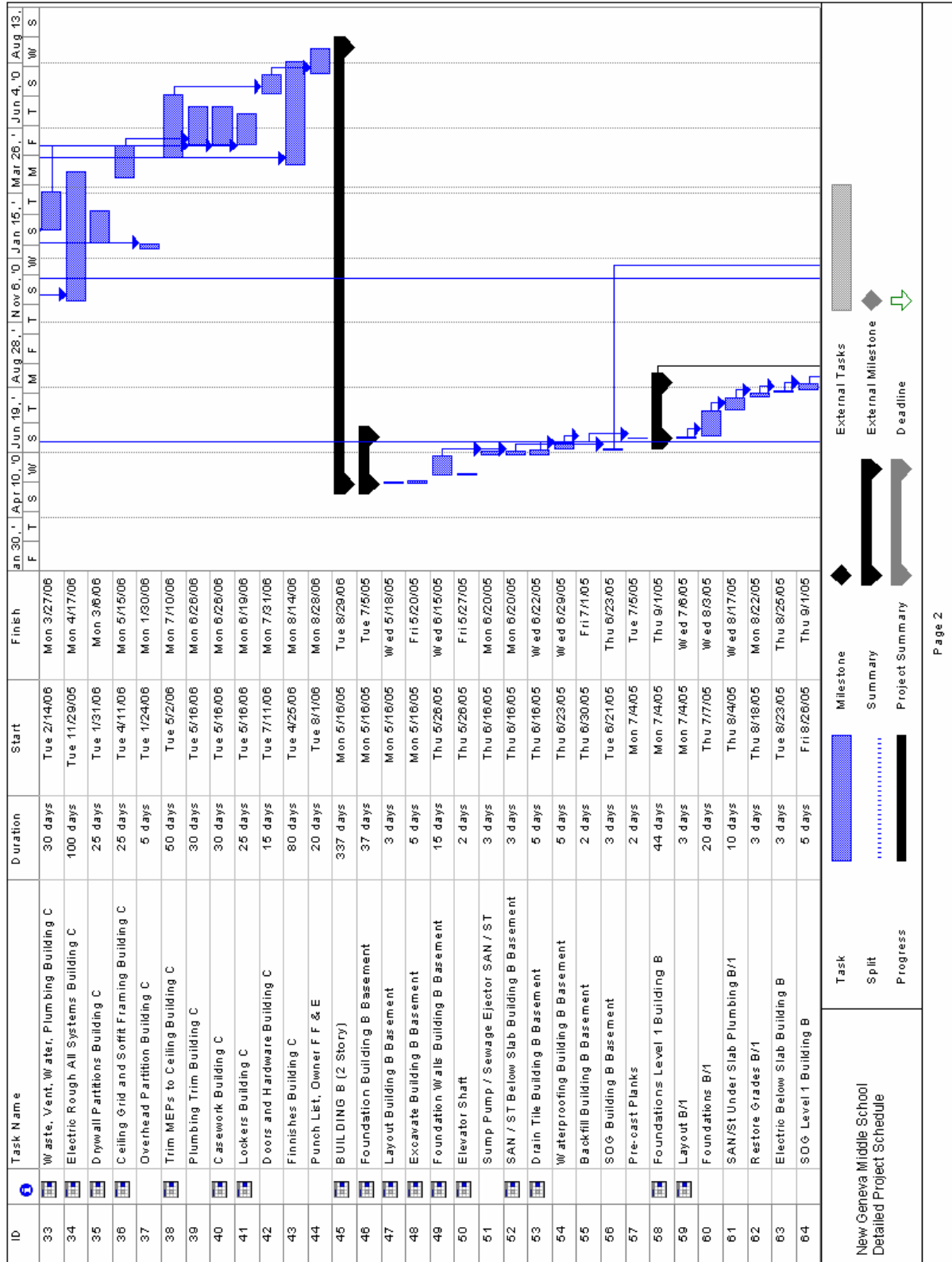
Appendix

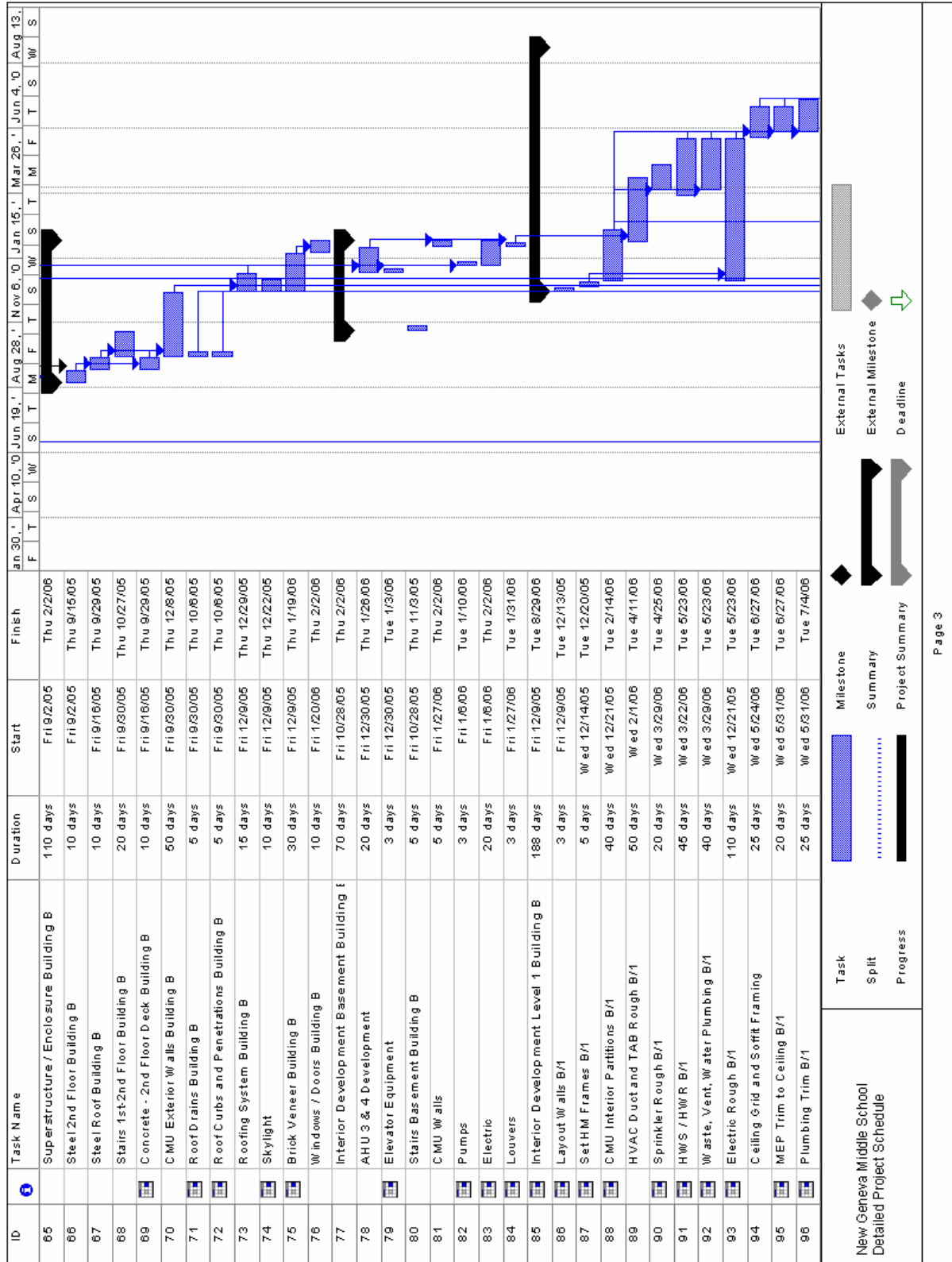
Abbreviated Schedule

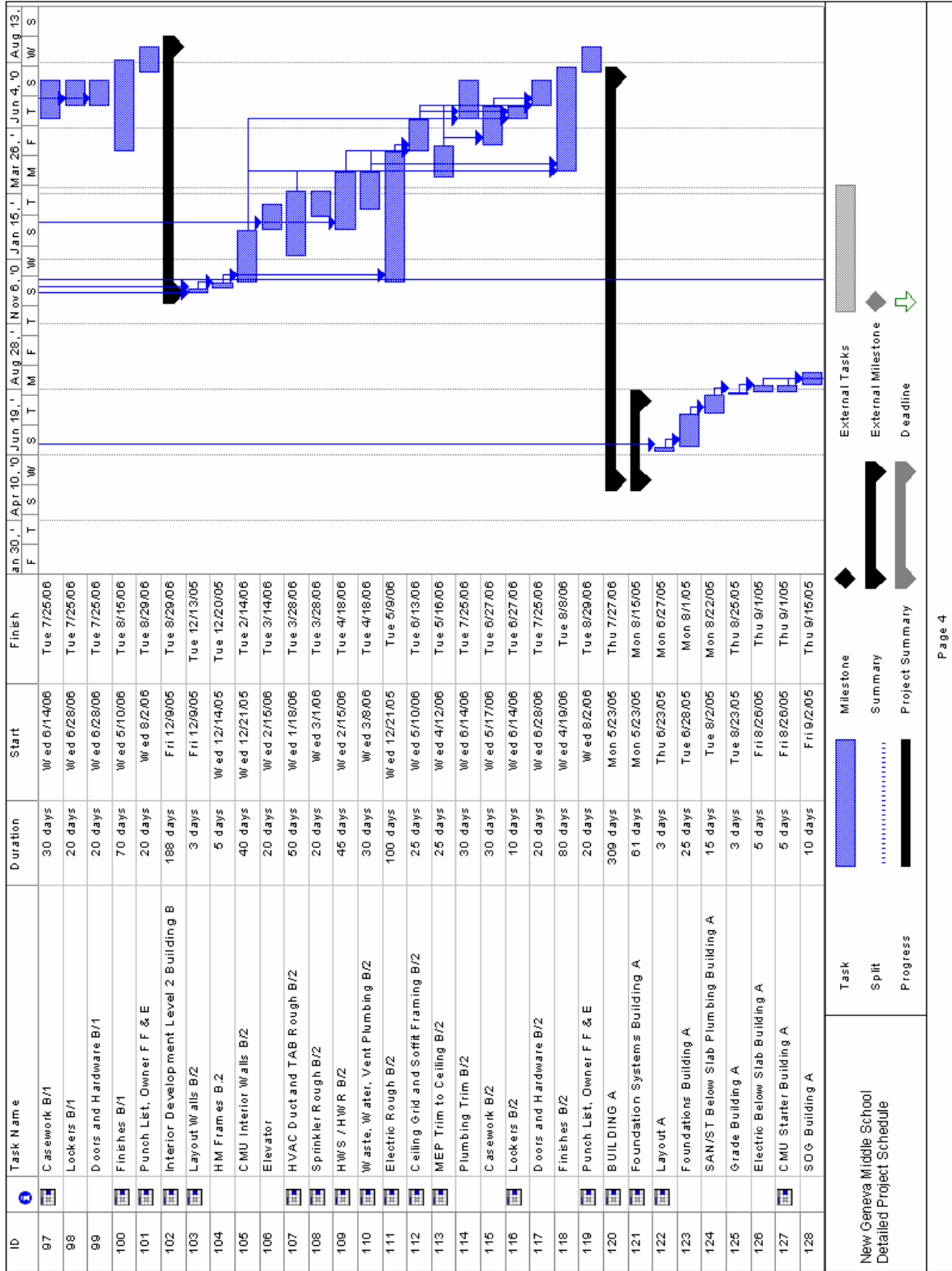


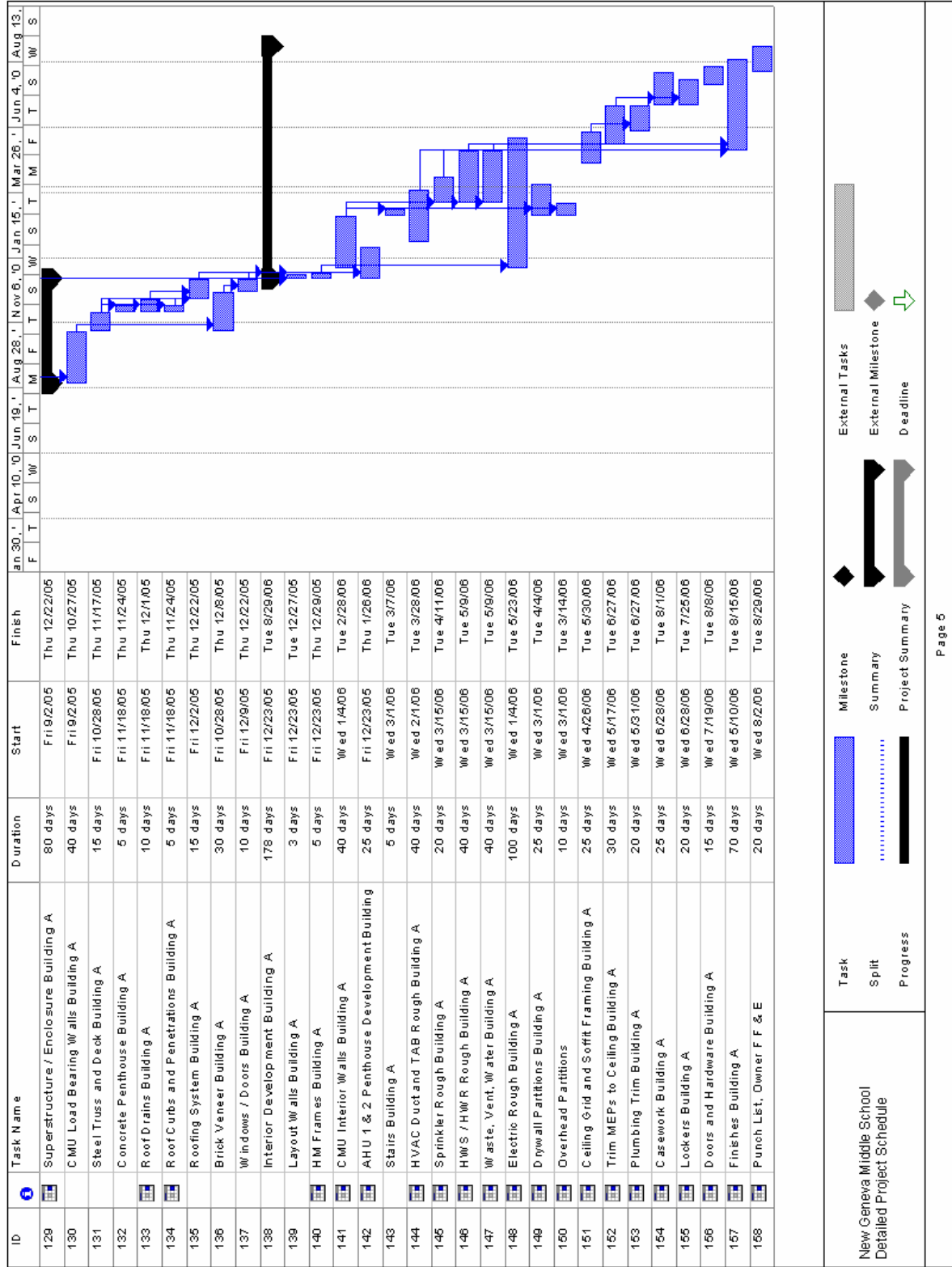
Detailed Schedule











Structural Calculations

BEAMS

Original Calculations

	PSF	X-Section	PLF	KLF
Live Load	80	6.5	520	0.52
Dead Load	113	6.5	734.5	0.7345
Length	34.66			
	M LL	M DL	M Max	
M Max	124.9368	176.4733	301.4101	
Z Req	80.37602		Beam Size = W 21 x 44 Z = 95.8	
Check:	Foot Kips	Inch Kips		
M Max	307.3501	3688.201		
Phi Mn	4311		OK	

Re-Calc

	PSF	X-Section	PLF	KLF
Live Load	80	6.5	520	0.52
Dead Load	95	6.5	617.5	0.6175
Length	34.66			
	M LL	M DL	M Max	
M Max	124.9368	148.3625	273.2993	
Z Req	72.87981		Beam Size = W 18 x 40 Z = 78.4	
Check:	Foot Kips	Inch Kips		
M Max	278.6993	3344.392		
Phi Mn	3528		OK	

Original Calculations

	PSF	X-Section	PLF	KLF
Live Load	80	6.5	520	0.52
Dead Load	113	6.5	734.5	0.7345
Length	27.33			
	M LL	M DL	M Max	
M Max	77.68061	109.7239	187.4045	
Z Req	49.97452		Beam Size = W 18 x 35 Z = 66.5	
Check:	Foot Kips	Inch Kips		
M Max	193.3445	2320.134		
Phi Mn	2992.5		OK	

Re-Calc

	PSF	X-Section	PLF	KLF
Live Load	80	6.5	520	0.52
Dead Load	95	6.5	617.5	0.6175
Length	27.33			
	M LL	M DL	M Max	
M Max	77.68061	92.24572	169.9263	
Z Req	45.31369		Beam Size = W 16 x 31 Z = 54	
Check:	Foot Kips	Inch Kips		
M Max	175.3263	2103.916		
Phi Mn	2430		OK	

Original Calculations

	PSF	X-Section	PLF	KLF
Live Load	80	6.5	520	0.52
Dead Load	113	6.5	734.5	0.7345
Length	27.33			
	M LL	M DL	M Max	
M Max	77.68061	109.7239	187.4045	
Z Req	49.97452		Beam Size = W 18 x 40 Z = 78.4	
Check:	Foot Kips	Inch Kips		
M Max	193.3445	2320.134		
Phi Mn	3528		OK	

Re-Calc

	PSF	X-Section	PLF	KLF
Live Load	80	6.5	520	0.52
Dead Load	95	6.5	617.5	0.6175
Length	27.33			
	M LL	M DL	M Max	
M Max	77.68061	92.24572	169.9263	
Z Req	45.31369		Beam Size = W 16 x 31 Z = 54	
Check:	Foot Kips	Inch Kips		
M Max	175.3263	2103.916		
Phi Mn	2430		OK	

Wall Cost Savings

Original						
Glazed Concrete Block	Mat.	Lab.	Equip	Total	O&P	
Double Face 8x16" - 6" Thick	\$ 11.25	\$ 4.13	\$ -	\$ 15.38	\$ 19.10	
	\$ 15,986.25	\$ 5,868.73	\$ -	\$ 21,854.98	\$ 27,141.10	
Double Face 8x16" - 8" Thick	\$ 11.75	\$ 4.40	\$ -	\$ 16.15	\$ 20.00	
	\$ 255,268.75	\$ 95,590.00	\$ -	\$ 350,858.75	\$ 434,500.00	
Total	\$ 271,255.00	\$ 101,458.73	\$ -	\$ 372,713.73	\$ 461,641.10	

New						
Metal Studs & Track	Mat.	Lab.	Equip	Total	O&P	
3 5/8" Stud - 24" OC	\$ 0.22	\$ 0.30	\$ -	\$ 0.52	\$ 0.74	
Total	\$ 5,092.12	\$ 6,943.80	\$ -	\$ 12,035.92	\$ 17,128.04	

Delta	\$ 266,162.88	\$ 94,514.93	\$ -	\$ 360,677.81	\$ 444,513.06	
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Structural Steel Cost Savings

Original Steel Members						
	Mat.	Lab.	Equip.	Total	O&P	
W 21 x 44	\$ 46.00	\$ 2.96	\$ 1.42	\$ 50.38	\$ 57.50	
	\$ 124,384.00	\$ 8,003.84	\$ 3,839.68	\$ 136,227.52	\$ 155,480.00	
W 18 x 35	\$ 36.50	\$ 3.28	\$ 1.58	\$ 41.36	\$ 47.50	
	\$ 25,951.50	\$ 2,332.08	\$ 1,123.38	\$ 29,406.96	\$ 33,772.50	
W 18 x 40	\$ 42.00	\$ 3.28	\$ 1.58	\$ 46.86	\$ 53.50	
	\$ 20,661.48	\$ 1,613.56	\$ 777.27	\$ 23,052.31	\$ 26,318.79	
Total	\$ 170,996.98	\$ 11,949.48	\$ 5,740.33	\$ 188,686.79	\$ 215,571.29	

New Steel Members						
	Mat.	Lab.	Equip.	Total	O&P	
W 18 x 40	\$ 42.00	\$ 3.28	\$ 1.58	\$ 46.86	\$ 53.50	
	\$ 113,568.00	\$ 8,869.12	\$ 4,272.32	\$ 126,709.44	\$ 144,664.00	
W 16 x 31	\$ 32.50	\$ 2.42	\$ 1.59	\$ 36.51	\$ 41.50	
	\$ 23,107.50	\$ 1,720.62	\$ 1,130.49	\$ 25,958.61	\$ 29,506.50	
W 16 x 31	\$ 32.50	\$ 2.42	\$ 1.59	\$ 36.51	\$ 41.50	
	\$ 15,988.05	\$ 1,190.49	\$ 782.18	\$ 17,960.73	\$ 20,415.51	
Total	\$ 152,663.55	\$ 11,780.23	\$ 6,184.99	\$ 170,628.78	\$ 194,586.01	

Delta	\$ 18,333.43	\$ 169.25	\$ (444.67)	\$ 18,058.01	\$ 20,985.28	
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Exterior Wall Cost, Schedule, and R-value

Existing Wall Type

	Square Footage	Daily Output	Cost / SF	Total Cost	Total Weeks	R
CMU, normal weight, 8"	23000	360	\$ 8.15	\$187,450.00	12	2.02
3" Rigid Insulation, R 13	23000	730	\$ 3.49	\$ 80,270.00	6.3	13
1" Air Space						0.91
Face Brick	23000	600	\$ 10.53	\$242,190.00	7.6	0.43
				\$509,910.00	25.9	16.36

Precast Concrete, Insulated with Face Brick

	Square Footage	Daily Output	Cost / SF	Total Cost	Total Weeks	R
4" Precast, 2" polystyrene	23000	768	\$ 23.02	\$529,460.00	6	10.4
1" Air Space						0.91
Face Brick	23000	600	\$ 10.53	\$242,190.00	7.6	0.43
				\$771,650.00	13.6	11.74

Tilt Up Construction w/ Face Brick

	Square Footage	Daily Output	Cost / SF	Total Cost	Total Weeks	R
Tilt-up conc. panels, 5.5" thick	23000	840	\$ 8.38	\$192,740.00	5.5	0.67
3" Rigid Insulation, R 13	23000	730	\$ 3.49	\$ 80,270.00	6.3	13
1" Air Space						0.91
Face Brick	23000	600	\$ 10.53	\$242,190.00	7.6	0.43
				\$515,200.00	19.4	15.01

Smith Midland Slenderwall

	Square Footage	Daily Output	Cost / SF	Total Cost	Total Weeks	R
Slenderwall	23000	6500	\$ 27.00	\$621,000.00	0.8	0.2
R13 Batt Insulation	23000	1600	\$ 0.67	\$ 80,270.00	2.9	13
5/8" Gypsum Board	23000	965	\$ 1.18	\$ 27,140.00	4.8	0.56
				\$728,410.00	8.5	13.76

U-Value Calculations

	U-Values		% Area		Reaultant U-Value
	Wall	Window	Wall	Window	
Existing Wall	0.061	0.64	0.97	0.03	0.07837
Tilt-up	0.067	0.64	0.97	0.03	0.08419
Slenderwall	0.073	0.64	0.97	0.03	0.09001
Precast	0.085	0.64	0.97	0.03	0.10165

Existing Wall BTU/Year

BIN	DB Temp.	BTU/hr	Total BTU
13	85.8	107132.07	1392716.932
38	87.9	123434.78	4690521.573
62	84.6	97816.239	6064606.84
97	82.5	81513.533	7906812.682
199	79.5	58223.952	11586566.45
245	76.8	37263.329	9129515.674
323	75.8	29500.136	9528543.825
426	73	7763.1936	3307120.474
372	70.5	-11644.79	-4331862.029
433	68.6	-26394.86	-11428973.62
334	67.1	-38039.65	-12705242.65
328	64	-62105.55	-20370620.01
291	60.9	-86171.45	-25075891.65
280	58.6	-104026.8	-29127502.39
251	57.8	-110237.3	-27669574.63
247	55.8	-125763.7	-31063642.87
239	52.9	-148277	-35438202.46
273	50.1	-170013.9	-46413805.58
299	48.2	-184764	-55244438.3
271	46.3	-199514.1	-54068314.47
269	43.8	-218922.1	-58890034.01
312	41	-240659	-75085608.5
344	38.3	-261619.6	-89997150.77
375	36	-279475	-104803113.6
364	34.2	-293448.7	-106815333.4
311	32.1	-309751.4	-96332693.06
347	29.8	-327606.8	-113679549.2
278	27.6	-344685.8	-95822651.24
218	25.2	-363317.5	-79203206.38
165	23.2	-378843.8	-62509234.87
151	20.8	-397475.5	-60018802.36
151	18.8	-413001.9	-62363286.83
99	16.7	-429304.6	-42501156
65	14.7	-444831	-28914014.56
54	12.9	-458804.7	-24775456.06
43	10.8	-475107.4	-20429620.28
37	8.2	-495291.8	-18325794.81
33	6.4	-509265.5	-16805761.51
19	4.3	-525568.2	-9985795.928
22	2.4	-540318.3	-11887002.04
23	0.6	-554292	-12748716.53
17	-1.5	-570594.7	-9700110.403
14	-3.7	-587673.8	-8227432.577
21	-6.2	-607081.7	-12748716.53
7	-8	-621055.5	-4347388.416
Total BTU per year:			1,633,462,104.89

sum cool

53,606,404.45

sum heat

1,579,855,700.44

Precast With Face Brick BTU/Year

BIN	DB Temp.	BTU/hr	Total BTU
13	85.8	117715.7	1530303.887
38	87.9	135628.9	5153899.712
62	84.6	107479.5	6663731.306
97	82.5	89566.28	8687929.257
199	79.5	63975.92	12731207.09
245	76.8	40944.59	10031423.47
323	75.8	32414.46	10469871.74
426	73	8530.122	3633831.972
372	70.5	-12795.2	-4759808.076
433	68.6	-29002.4	-12558045.61
334	67.1	-41797.6	-13960397.67
328	64	-68241	-22383040.13
291	60.9	-94684.4	-27553147.07
280	58.6	-114304	-32005017.74
251	57.8	-121128	-30403060.83
247	55.8	-138188	-34132430.17
239	52.9	-162925	-38939153.92
273	50.1	-186810	-50999040.4
299	48.2	-203017	-60702054.18
271	46.3	-219224	-59409740.69
269	43.8	-240549	-64707799.47
312	41	-264434	-82503339.98
344	38.3	-287465	-98887998.32
375	36	-307084	-115156647
364	34.2	-322439	-117367654.6
311	32.1	-340352	-105849430.9
347	29.8	-359971	-124909988.5
278	27.6	-378737	-105289001.9
218	25.2	-399210	-87027716.69
165	23.2	-416270	-68684542.34
151	20.8	-436742	-65948079.21
151	18.8	-453802	-68524176.05
99	16.7	-471716	-46699858.91
65	14.7	-488776	-31770439.39
54	12.9	-504130	-27223031.35
43	10.8	-522043	-22447869.06
37	8.2	-544222	-20136205.99
33	6.4	-559576	-18466008.11
19	4.3	-577489	-10972295.93
22	2.4	-593696	-13061322.81
23	0.6	-609051	-14008166.35
17	-1.5	-626964	-10658387.44
14	-3.7	-645730	-9040223.296
21	-6.2	-667056	-14008166.35
7	-8	-682410	-4776868.32
Total BTU per year			1,794,832,353.15

sum cool
58,902,198.43
.
sum heat
1,735,930,154.72

Tilt-up With Face Brick BTU/Year

BIN DB Temp. BTU/hr Total BTU

13	85.8	113395.8	1474145.946
38	87.9	130651.7	4964765.778
62	84.6	103535.3	6419190.708
97	82.5	86279.45	8369106.165
199	79.5	61628.18	12264006.83
245	76.8	39442.03	9663297.84
323	75.8	31224.94	10085656.27
426	73	8217.09	3500480.34
372	70.5	-12325.6	-4585136.22
433	68.6	-27938.1	-12097199.9
334	67.1	-40263.7	-13448089.49
328	64	-65736.7	-21561644.16
291	60.9	-91209.7	-26542022.41
280	58.6	-110109	-30830521.68
251	57.8	-116683	-29287352.18
247	55.8	-133117	-32879863.93
239	52.9	-156946	-37510194.14
273	50.1	-179954	-49127515.98
299	48.2	-195567	-58474455.86
271	46.3	-211179	-57229566.72
269	43.8	-231722	-62333201.32
312	41	-254730	-79475694.48
344	38.3	-276916	-95259080.95
375	36	-295815	-110930715
364	34.2	-310606	-113060584.7
311	32.1	-327862	-101965048.1
347	29.8	-346761	-120326135.7
278	27.6	-364839	-101425185.3
218	25.2	-384560	-83834039.02
165	23.2	-400994	-66164008.68
151	20.8	-420715	-63527966.21
151	18.8	-437149	-66009527.39
99	16.7	-454405	-44986102.62
65	14.7	-470839	-30604551.71
54	12.9	-485630	-26224021.03
43	10.8	-502886	-21624094.04
37	8.2	-524250	-19397262.65
33	6.4	-539041	-17788356.43
19	4.3	-556297	-10569642.87
22	2.4	-571909	-12582008.21
23	0.6	-586700	-13494105.2
17	-1.5	-603956	-10267253.96
14	-3.7	-622034	-8708471.982
21	-6.2	-642576	-13494105.2
7	-8	-657367	-4601570.4

sum cool

56,740,649.87

sum heat

1,672,226,295.83

Total BTU per year: 1,728,966,945.70

Smith Midland Slenderwall (with R13 batt insulation) BTU/Year

BIN	DB Temp.	BTU/hr	Total BTU
13	85.8	118795.6	1544343.372

38	87.9	136873.2	5201183.196	sum cool
62	84.6	108465.6	6724866.456	59,442,585.58
97	82.5	90387.99	8767635.03	.
199	79.5	64562.85	12848007.15	sum heat
245	76.8	41320.22	10123454.88	1,751,856,119.44
323	75.8	32711.84	10565925.61	
426	73	8608.38	3667169.88	
372	70.5	-12912.6	-4803476.04	
433	68.6	-29268.5	-12673257.04	
334	67.1	-42181.1	-14088474.71	
328	64	-68867	-22588389.12	
291	60.9	-95553	-27805928.24	
280	58.6	-115352	-32298641.76	
251	57.8	-122239	-30681988	
247	55.8	-139456	-34445571.73	
239	52.9	-164420	-39296393.86	
273	50.1	-188524	-51466921.51	
299	48.2	-204879	-61258953.76	
271	46.3	-221235	-59954784.19	
269	43.8	-242756	-65301449	
312	41	-266860	-83260251.36	
344	38.3	-290102	-99795227.66	
375	36	-309902	-116213130	
364	34.2	-325397	-118444422.1	
311	32.1	-343474	-106820526.6	
347	29.8	-363274	-126055951.7	
278	27.6	-382212	-106254956	
218	25.2	-402872	-87826136.11	
165	23.2	-420089	-69314675.76	
151	20.8	-440749	-66553107.46	
151	18.8	-457966	-69152838.22	
99	16.7	-476043	-47128297.99	
65	14.7	-493260	-32061911.31	
54	12.9	-508755	-27472783.93	
43	10.8	-526833	-22653812.81	
37	8.2	-549215	-20320941.83	
33	6.4	-564710	-18635421.02	
19	4.3	-582787	-11072959.19	
22	2.4	-599143	-13181151.46	
23	0.6	-614638	-14136681.64	
17	-1.5	-632716	-10756170.81	
14	-3.7	-651654	-9123161.124	
21	-6.2	-673175	-14136681.64	
7	-8	-688670	-4820692.8	
Total BTU per year:			1,811,298,705.02	