



Wilkes-Barre/Scranton International Airport  
 Avoca, Pennsylvania  
 Thesis Technical Assignment 2  
 Adam Weis - Construction Management Option  
 Dr. John Messner – Thesis Advisor

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## **Executive Summary**












Technical assignment two is titled “Cost and Methods Analysis”. Found within this technical assignment there is a detailed Project Schedule. The project schedule has been condensed in some areas to meet the requirements of the assignment. The site layout plan will not be found within this document and has been submitted separately for evaluation. An assemblies estimate has been calculated and will evaluate the exterior skin of the building as the assembly. The detailed estimate is an in depth take off of the structural system of the building including the steel beam, columns and deck. Slab on Deck, Slab on Grade, as well as the footings and grade beams can be found and accounted for. Finishing the assignment a general conditions estimate was developed for the project.

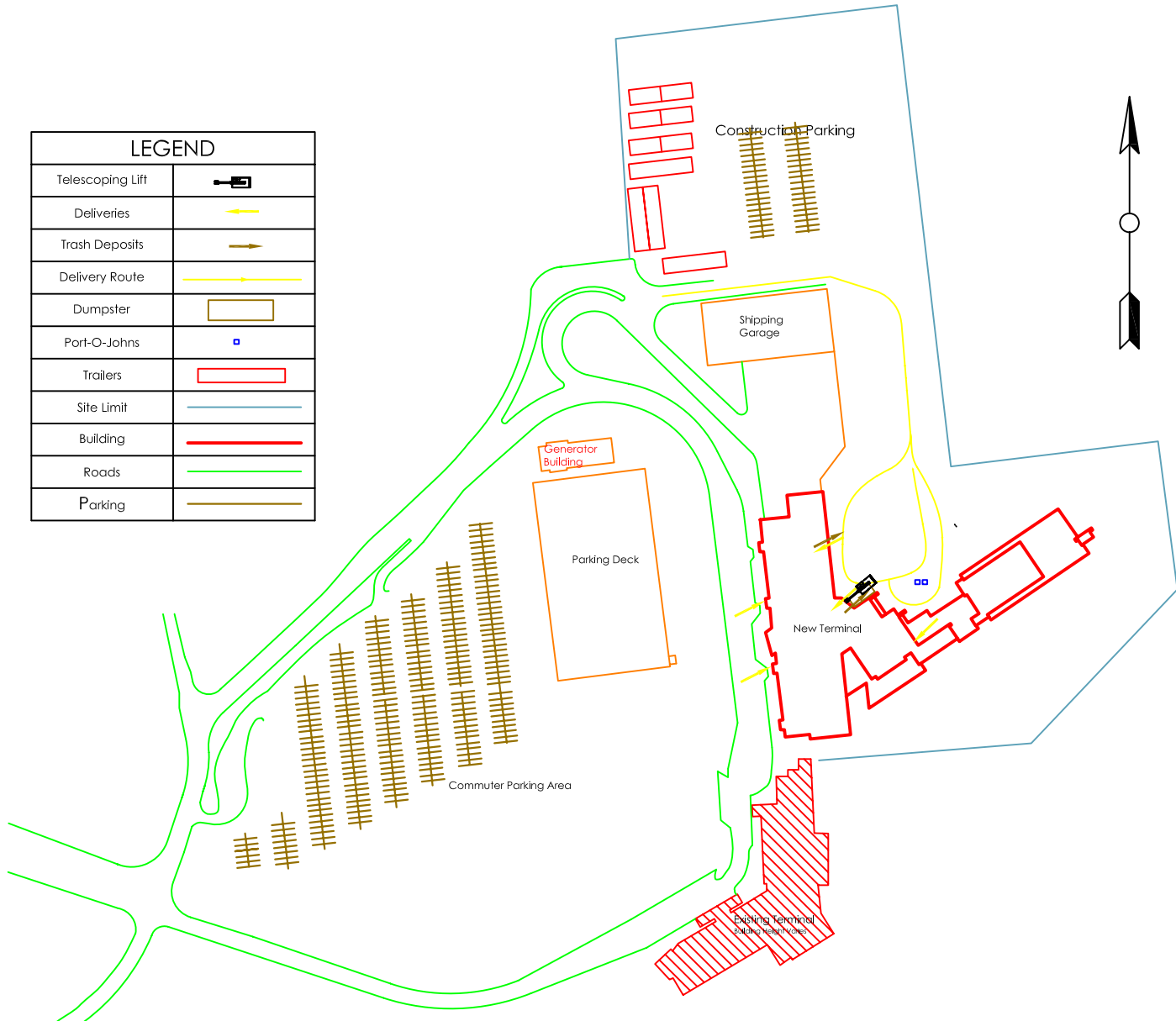
## **Site Layout Plan**

The site layout plan I chose to focus on is the Finishing stage of the project.

## **Detailed Project Schedule**

The project schedule that was evaluated was very detailed. To compensate for the 1500 item schedule some areas of the buildings had to be consolidated to stay within the requirements of this assignment. The various stages of construction are spelled out step by step for one particular area. This area that has been detailed is Area 1 of the building. Area 1 includes all of the major building elements and phases as the rest of the building. Each of the other areas of the building are described in an over all duration of each phase. Assume that each of the other area of the building follow the same steps an approximate durations as Area 1.

LEGEND	
Telescoping Lift	
Deliveries	
Trash Deposits	
Delivery Route	
Dumpster	
Part-O-Johns	
Trailers	
Site Limit	
Building	
Roads	
Parking	



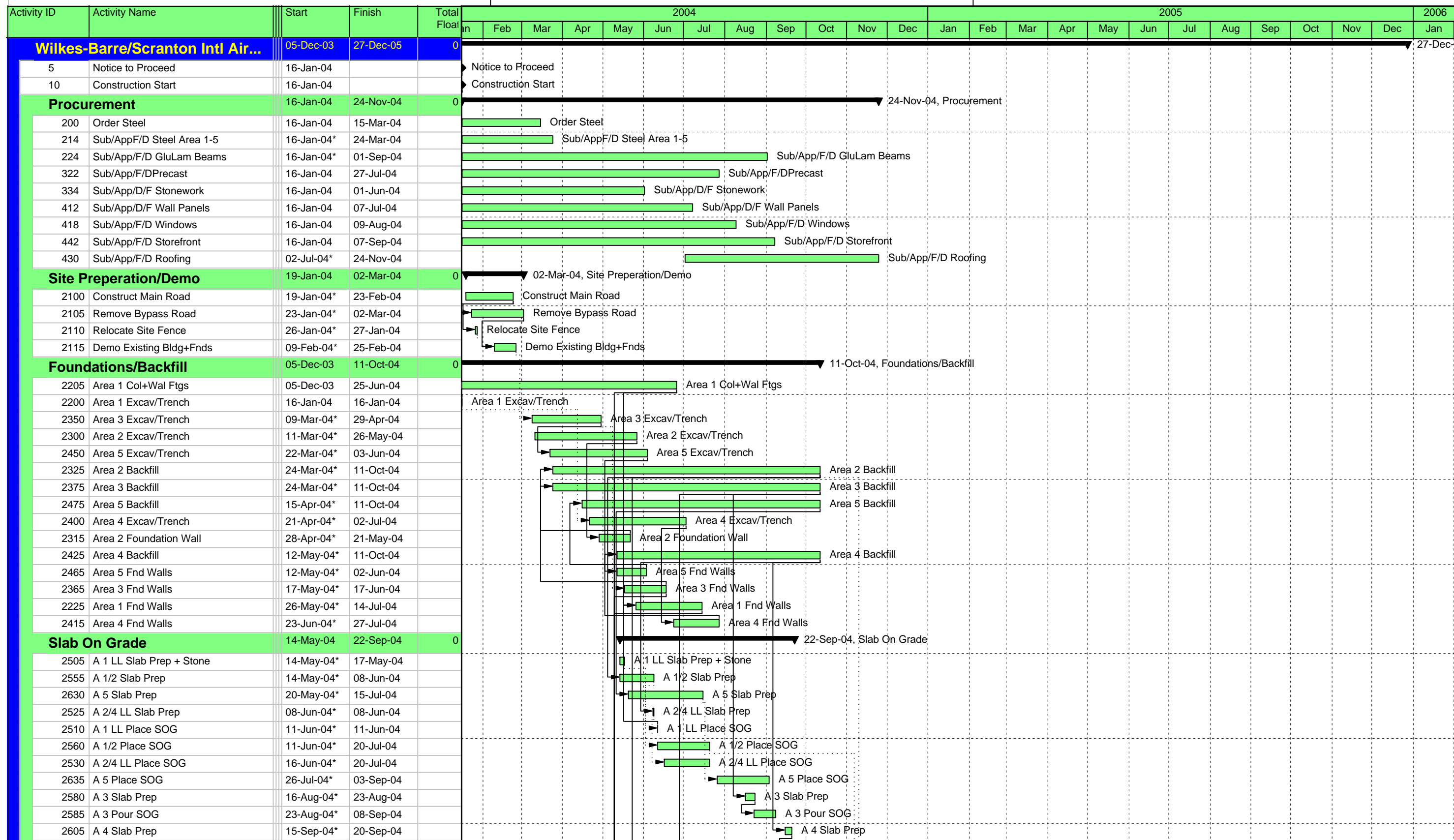
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Wilkes-Barre/Scranton  
 International Airport  
 Avoca, PA

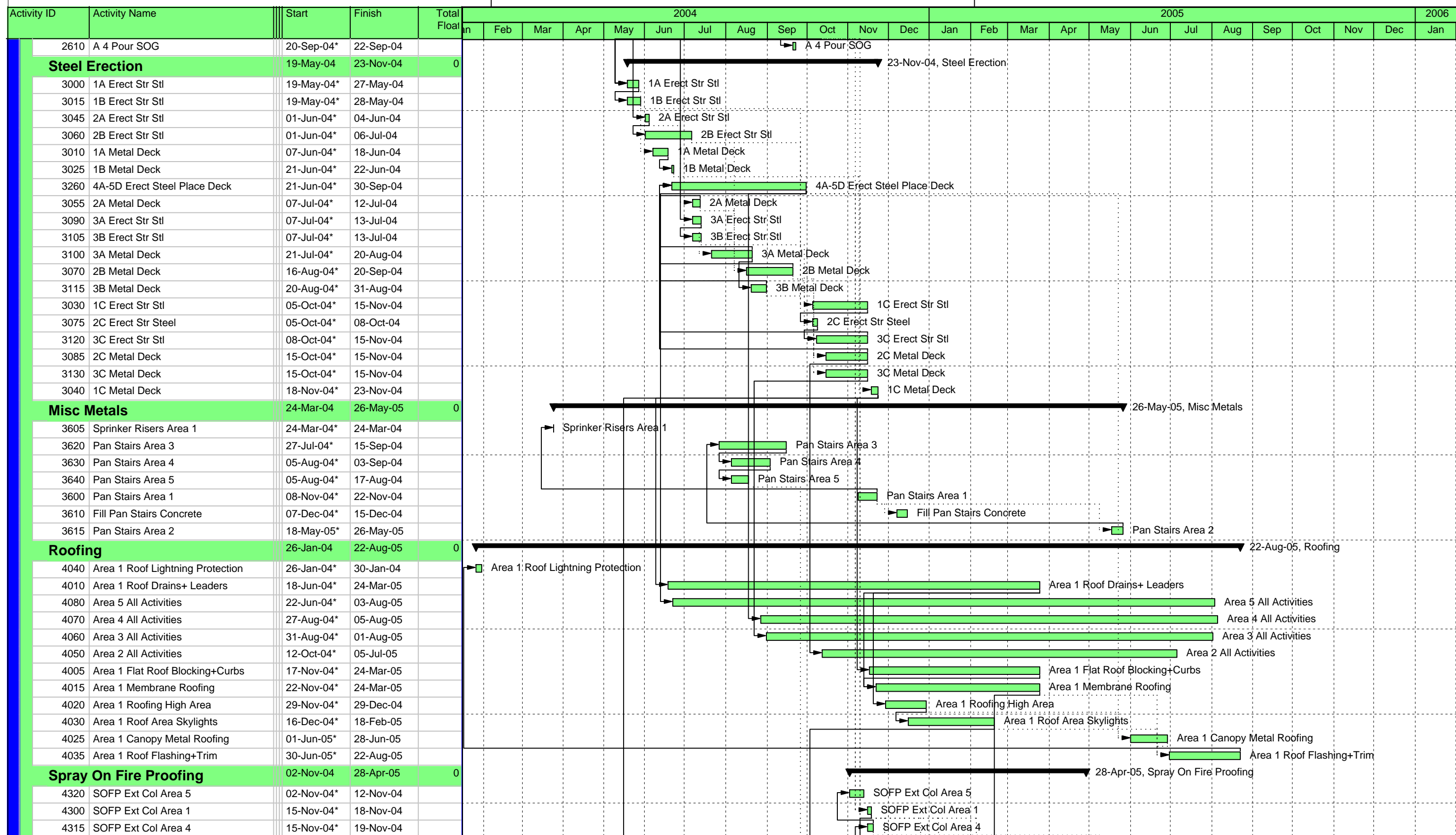
Site Layout Plan

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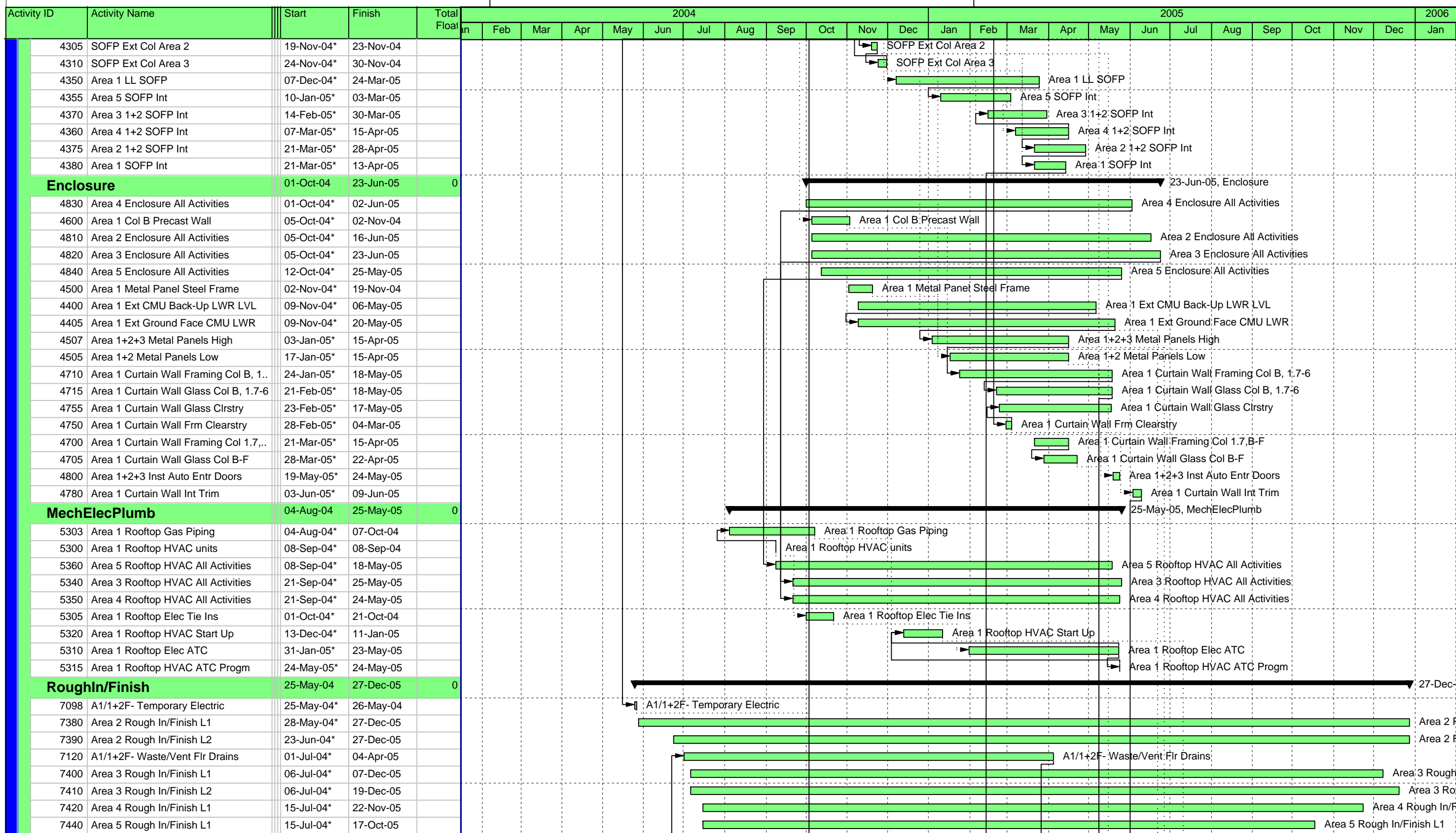
Penn State Architectural Engineering



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

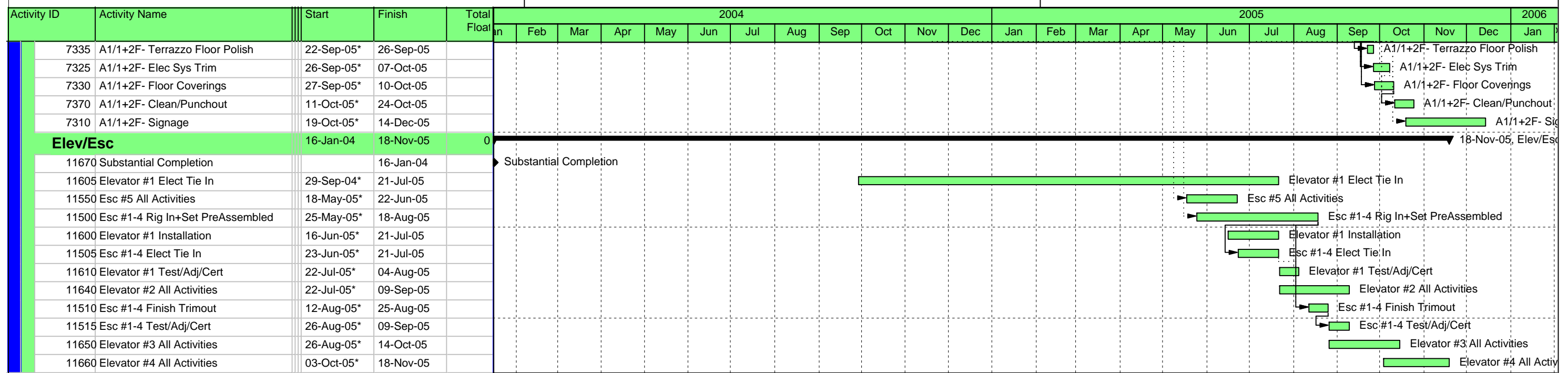


Actual Work    Critical Remaining Work    Summary  
Remaining Work    Milestone



Actual Work Critical Remaining Work Summary  
 Remaining Work Milestone





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



## Assemblies Estimate

Reviewing the requirements for the assemblies estimate for my building, the exterior skin was selected. The skin of the Wilkes-Barre/Scranton International Airport is composed of Insulated metal panels and glass panels. Each of the metal panels of the building are the same along with the size of the windows. To find the amount of surface area of the exterior skin, a sum of total metal panels and windows was found. Since all the panels and windows are the same size, the area of one of these panels was multiplied by the amount of total panels found on the building. Each panel is 7'x3'. Below is a table of the assemblies estimate determined. Doors were excluded because there were 20 doors found on the exterior of the building and were not included. Also the automatic doors and overhead doors were excluded as well for the small amount of each as well. All values were found using the RSMMeans 2005 Assemblies Manuel.

Shell	CSI ID #	SQFT	Material	Installation	Total
Metal Panel	B2010 146 4700	49820	\$7.85	\$4.60	\$620,259
Siding Support	B2010 154 5000	49820	\$2.86	\$2.49	\$266,537
Curtain Wall Windows	B2020 220 2500	22946	\$19.05	\$14.50	\$769,838
				Sub Total	\$1,656,634
				Mark Up	1.30%
				Total	\$2,153,625

## Detailed Structural System Estimate

Below is the approximate take off of the entire structural system. The system is composed of the Columns, Beams, Steel Decking, Footers, Grade Beams, Foundation Walls, Slab on grade and Slab on Deck. The values are calculated in the excel spreadsheet and totaled up as well. The estimate follows the notes taken.

Column	lbs/foot	Length	Pounds	Beam	lb/foot	Qty	Length	Pounds
8 x 24		18.00	432.00	16 x 31		1	20.333	630.323
8 x 31		18.00	558.00	14 x 22		2	20.333	894.652
12 x 65		29.08	1890.44	24 x 62		1	20.333	1260.646
12 x 65		29.08	1890.44	16 x 26		17	20.333	8987.186
8 x 24		15.51	372.13	18 x 40		2	20.333	1626.64
8 x 24		20.00	480.00	18 x 35		1	19.67	688.45
12 x 58		20.08	1164.85	12 x 16		7	19.67	2203.04
8 x 35		13.92	487.08	24 x 55		1	19.67	1081.85
14 x 145		46.33	6718.29	24 x 55		1	21.67	1191.85
14 x 90		29.42	2647.53	14 x 22		7	21.67	3337.18
14 x 120		30.00	3600.00	14 x 22		1	33.33	733.26
12 x 58		20.42	1184.19	18 x 35		1	33.33	1166.55
10 x 54		13.92	751.50	18 x 35		3	36.833	3867.465
14 x 90		46.33	4169.97	18 x 40		4	36.833	5893.28
10 x 68		13.42	912.36	30 x 116		3	30	10440
14 x 90		30.00	2700.00	24 x 68		3	30	6120
12 x 58		20.42	1184.19	24 x 62		3	30	5580
8 x 35		13.42	469.60	24 x 76		1	20	1520
14 x 159		46.33	7366.95	18 x 35		1	20	700
14 x 90		13.42	1207.53	18 x 40		1	20	800
14 x 159		30.00	4770.00	21 x 50		1	20	1000
12 x 58		20.42	1184.19	24 x 55		1	13	715
14 x 90		35.25	3172.50	12 x 14		3	13	546
14 x 90		30.00	2700.00	24 x 68		1	13	884
12 x 58		24.25	1406.50	12 x 14		1	7	98
14 x 145		33.08	4797.14	16 x 26		1	19.1667	498.3342
14 x 145		29.25	4241.25	14 x 22		1	18	396
10 x 33		29.83	984.49	12 x 19		1	17.67	335.73
12 x 58		20.92	1213.17	12 x 14		7	8.5	833
12 x 58		20.92	1213.17	12 x 14		6	7.833	657.972
10 x 45		33.08	1488.77	12 x 16		1	7.833	125.328
10 x 45		33.08	1488.77	12 x 16		3	10.67	512.16
10 x 68		30.08	2045.69	12 x 14		11	14.75	2271.5
10 x 49		29.08	1425.10	24 x 55		3	14.75	2433.75
12 pipe	65.5	30.58	2003.19	8 x 10		10	5.25	525
10 x 39		15.51	604.99	16 x 26		3	5.25	409.5
12 pipe	65.5	24.50	1604.75	16 x 26		2	33.33	1733.16
12 pipe	65.5	39.50	2587.25	24 x 55		1	33.33	1833.15
12 pipe	65.5	30.58	2003.19	14 x 22		1	21.67	476.74
10 x 54		33.08	1786.52	16 x 26		1	21.67	563.42
14 x 82		14.05	1152.27	24 x 55		1	21.67	1191.85
12 x 72		33.08	2382.03	14 x 22		1	19.67	432.74
12 pipe	65.5	22.42	1468.31	24 x 55		1	19.67	1081.85
12 pipe	65.5	24.50	1604.75	16 x 26		1	19.67	511.42
12 pipe	65.5	34.42	2254.31	30 x 108		1	36	3888
12 pipe	65.5	30.50	1997.75	24 x 55		1	30	1650
10 x 33		27.00	891.00	24 x 68		4	30	8160
10 x 54		27.50	1485.00	TS 12x6x.125	6	5	30	900
10 x 45		14.05	632.34	18 x 35		1	20.33	711.55
10 x 39		14.05	548.03	36 x 135		1	16.583	2238.705

Column	lbs/foot	Length	Pounds	Beam	lb/foot	Qty	Length	Pounds
14 x 90		30.00	2700.00	12 x 14		3	16.25	682.5
12 x 58		20.67	1198.86	24 x 55		1	28	1540
12 x 58		20.67	1198.86	Assumption				4000
12 x 45		32.83	1477.49	21 x 44		1	40	1760
14 x 90		32.83	2954.97	18 x 65		11	40	28600
14 x 82		27.92	2289.17	24 x 62		1	40	2480
14 x 120		31.92	3830.00	24 x 68		1	40	2720
14 x 159		27.92	4438.76	18 x 50		1	15	750
14 x 109		27.92	3042.92	12 x 19		1	15	285
10 x 33		27.92	921.25	12 x 16		11	15	2640
12 x 58		20.68	1199.27	16 x 31		1	15	465
14 x 90		32.83	2954.97	hss 12x8x.625	54.3	4	33.33	7239.276
10 x 49		27.58	1351.57	21 x 44		4	30	5280
14 x 90		27.58	2482.47	hss 12x8x.375	47.8	4	30	5736
14 x 61		27.58	1682.56	24 x 68		4	30	8160
14 x 90		27.58	2482.47	24 x 62		4	30	7440
10 x 39		27.58	1075.74	18 x 35		1	30	1050
12 x 58		20.68	1199.27	24 x 55		1	30	1650
14 x 90		32.83	2954.97	27 x 114		1	30	3420
10 x 49		27.58	1351.57	36 x 135		1	30	4050
10 x 33		27.58	910.24	16 x 31		1	30	930
14 x 90		27.58	2482.47	14 x 22		5	24	2640
12 x 58		20.67	1198.86	12 x 19		6	24	2736
14 x 90		32.83	2954.97	16 x 26		4	24	2496
10 x 54		27.58	1489.48	24 x 76		2	24	3648
14 x 90		27.58	2482.47	18 x 35		1	24	840
12 x 58		20.67	1198.69	24 x 55		2	24	2640
8 x 31		27.58	855.07	24 x 68		2	24	3264
14 x 90		32.83	2954.97	27 x 94		1	24	2256
14 x 99		27.58	2730.72	14 x 22		1	20.5	451
14 x 120		27.58	3309.96	12 x 19		11	20.5	4284.5
8 x 31		27.92	865.42	24 x 55		2	20.5	2255
8 x 31		27.58	855.07	24 x 55		7	37	14245
10 x 33		27.58	910.24	21 x 44		16	37	26048
10 x 60		31.92	1915.00	27 x 94		1	37	3478
10 x 33		31.92	1053.25	21 x 44		1	23	1012
14 x 120		32.83	3939.96	18 x 35		2	23	1610
14 x 99		32.83	3250.47	16 x 26		2	23	1196
14 x 99		31.92	3159.75	16 x 26		5	25.5	3315
14 x 43		31.50	1354.50	24 x 62		1	25.5	1581
10 x 33		31.50	1039.50	18 x 35		10	35	12250
10 x 33		31.92	1053.25	18 x 40		1	35	1400
14 x 90		31.92	2872.50	27 x 84		1	40	3360
12 x 58		31.50	1827.00	14 x 22		1	32.5	715
12 x 45		18.06	812.81	30 x 116		1	32.5	3770
14 x 53		31.50	1669.50	30 x 99		1	32.5	3217.5
10 x 33		31.50	1039.50	24 x 62		1	32.5	2015
10 x 49		31.92	1563.92	27 x 84		1	32.5	2730
14 x 145		32.83	4760.79	14 x 22		7	17	2618
14 x 109		31.83	3469.80	21 x 44		2	17	1496
14 x 68		14.42	980.36	16 x 26		1	17	442

Column	lbs/foot	Length	Pounds	Beam	lb/foot	Qty	Length	Pounds
14 x 61		31.92	1946.92	27 x 84		1	27.5	2310
14 x 61		31.92	1946.92	24 x 76		1	27.5	2090
14 x 48		33.25	1596.00	27 x 94		1	27.5	2585
14 x 61		33.25	2028.25	24 x 62		1	27.5	1705
10 x 33		33.25	1097.25	16 x 31		1	16	496
10 x 39		33.25	1296.75	16 x 45		1	16	720
10 x 49		32.83	1608.82	14 x 22		1	11.5	253
10 x 159		33.25	5286.75	16 x 26		1	21	546
14 x 109		33.25	3624.25	24 x 62		1	21	1302
14 x 145		33.25	4821.25	14 x 22		1	21	462
14 x 74		33.25	2460.50	14 x 22		1	30	660
14 x 120		33.25	3990.00	30 x 99		1	30	2970
14 x 82		33.25	2726.50	21 x 44		1	30	1320
14 x 90		33.25	2992.50	8 x 10		32	10	3200
10 x 33		32.83	1083.49	24 x 76		12	30	27360
10 x 33		27.58	910.24	24 x 55		9	30	14850
14 x 48		27.58	1323.98	24 x 68		4	30	8160
10 x 33		32.83	1083.49	14 x 22		12	30	7920
10 x 33		32.83	1083.49	27 x 84		1	30	2520
10 x 33		32.83	1083.49	21 x 44		1	30	1320
10 x 49		31.83	1559.82	30 x 99		1	30	2970
12 x 45		31.83	1432.49	16 x 50		1	23	1150
10 x 33		31.83	1050.49	16 x 67		1	23	1541
10 x 33		31.06	1025.06	24 x 60		1	23	1380
14 x 53		31.40	1663.98	18 x 35		25	23	20125
14 x 109		31.40	3422.14	16 x 26		7	23	4186
14 x 74		31.40	2323.29	21 x 50		1	23	1150
14 x 74		31.40	2323.29	16 x 26		18	25.5	11934
14 x 94		31.40	2951.21	21 x 44		1	25.5	1122
14 x 74		31.40	2323.29	21 x 50		2	25.5	2550
14 x 74		31.40	2323.29	21 x 44		3	30	3960
14 x 109		31.40	3422.14	16 x 26		17	30	13260
14 x 53		31.40	1663.98	14 x 22		9	30	5940
14 x 61		32.40	1976.14	24 x 76		1	40	3040
10 x 39		32.40	1263.44	27 x 84		2	40	6720
10 x 39		32.40	1263.44	30 x 90		1	40	3600
14 x 82		32.40	2656.46	8 x 10		12	5	600
10 x 39		32.40	1263.44	12 x 16		12	5	960
10 x 39		32.40	1263.44	16 x 26		73	30	56940
14 x 68		32.40	2202.91	C8 x 11.5		10	6.88	791.2
14 x 120		32.40	3887.50	C6 x 8.2		82	6.88	4626.112
14 x 61		32.40	1976.14	16 x 26		112	3.417	9950.304
12 x 45		32.40	1457.81	16 x 40		5	38.9367	7787.34
12 x 45		32.40	1457.81	Assumption				1000
14 x 82		32.40	2656.46	21 x 44		4	30	5280
10 x 45		32.40	1457.81	16 x 26		17	30	13260
10 x 45		32.40	1457.81	14 x 22		21	30	13860
14 x 74		31.06	2298.63	12 x 16		7	6.88	770.56
10 x 33		31.06	1025.06	12 x 16		12	12	2304
10 x 33		31.06	1025.06	8 x 10		12	10	1200
14 x 53		31.40	1663.98	16 x 26		44	30	34320
14 x 109		31.40	3422.14	C8 x 11.5		8	6.88	632.96

Column	lbs/foot	Length	Pounds	Beam	lb/foot	Qty	Length	Pounds
14 x 74		31.40	2323.29	C6 x 8.2		54	6.88	3046.464
14 x 74		31.40	2323.29	16 x 26		72	3.417	6396.624
14 x 74		31.40	2323.29	14 x 22		23	27.33	13828.98
14 x 74		31.40	2323.29	12 x 16		20	17	5440
14 x 74		31.40	2323.29	16 x 26		15	32.5	12675
14 x 99		31.40	3108.18	24 x 55		1	32.5	1787.5
14 x 120		31.40	3767.50	18 x 35		1	32.5	1137.5
		Tons 163.36		12 x 16		12	24	4608
				16 x 25		1	24	600
				16 x 31		1	24	744
				33 x 118		1	54.67	6451.06
				14 x 22		21	27.5	12705
				24 x 55		1	27.5	1512.5
				18 x 35		1	27.5	962.5
				12 x 16		5	16	1280
				12 x 14		1	11.5	161
				12 x 16		9	21	3024
				18 x 40		1	21	840
				14 x 22		1	21	462
				14 x 22		11	30	7260
				18 x 40		1	30	1200
				14 x 22		2	10.5	462
				14 x 22		2	23	1012
				18 x 35		2	23	1610
				24 x 55		2	43	4730
				24 x 62		2	43	5332
				TS 12x8x5/16	8	2	25.5	408
				18 x 35		1	37	1295
				24 x 76		3	37	8436
				24 x 68		2	37	5032
				14 x 22		1	20.5	451
				18 x 35		1	20.5	717.5
				16 x 31		1	20.5	635.5
				18 x 40		1	20.5	820
				16 x 26		1	20.5	533
				18 x 35		2	24	1680
				21 x 44		1	24	1056
				16 x 26		1	24	624
				16 x 31		1	24	744
				14 x 22		88	30	58080
				18 x 35		17	30	17850
				18 x 40		50	30	60000
				16 x 26		6	30	4680
				14 x 22		2	12.5	550
				18 x 35		1	35.5	1242.5
				18 x 50		4	35.5	7100
				18 x 40		1	35.5	1420
				14 x 22		1	25.5	561
				16 x 31		1	25.5	790.5
				TS 12x8x5/16	8	7	25.5	1428
				18 x 40		7	36	10080
				12 x 16		36	6.25	3600
				12 x 16		1	23	368
				12 x 19		1	23	437
				16 x 26		1	23	598
				14 x 22		1	23	506
				Pieces		1405	Tons 456.94	

Grade Beam	Length	Quantity	Cross area	Rebar ft^3	Reb CY	Concrete CY	Rebar
GB-6	20.33	8	6	0.11	0.0042	36.11	9092.57
GB-6	19.67	4	6	0.11	0.0042	17.47	4398.69
GB-6	21.67	4	6	0.11	0.0042	19.25	4845.94
GB-6	29.83	4	6	0.11	0.0042	26.50	6670.72
GB-6	20	2	6	0.11	0.0042	8.88	2236.24
GB-6	30	7	6	0.11	0.0042	46.64	11740.28
GB-7	30	3	12.25	0.26	0.0097	40.80	11545.35
GB-7	30	1	12.25	0.26	0.0097	13.60	3848.45
GB-7	45	1	12.25	0.26	0.0097	20.41	5772.68
GB-7	12	1	12.25	0.26	0.0097	5.43	1539.38
GB-7	40	1	12.25	0.26	0.0097	18.14	5131.27
GB-7	38.9167	1	12.25	0.26	0.0097	17.65	4992.30
GB-7	28.582	1	12.25	0.26	0.0097	12.96	3666.55
GB-7	30	1	12.25	0.26	0.0097	13.60	3848.45
GB-1	55	1	6	0.09	0.0032	12.22	2330.70
GB-1	30	1	6	0.09	0.0032	6.66	1271.29
GB-8	30	1	9	0.19	0.0071	9.99	2826.21
GB-8	55	1	9	0.19	0.0071	18.33	5181.38
GB-8	26.5	1	9	0.19	0.0071	8.83	2496.48
GB-4	45	4	6	0.11	0.0042	39.98	10063.10
GB-4	15	4	6	0.11	0.0042	13.32	3354.37
GB-4	55	45	6	0.11	0.0042	549.81	138367.60
GB-1	15	1	6	0.09	0.0032	3.33	635.65
GB-1	55	1	6	0.09	0.0032	12.22	2330.70
GB-7	55	1	12.25	0.26	0.0097	24.94	7055.49
GB-7	15	1	12.25	0.26	0.0097	6.80	1924.23
GB-7	45	1	12.25	0.26	0.0097	20.41	5772.68
GB-7	30	4	12.25	0.26	0.0097	54.41	15393.80
GB-2	12	1	9	0.18	0.0065	3.99	1030.26
GB-2	30	5	9	0.18	0.0065	49.97	12878.28
GB-2	40	1	9	0.18	0.0065	13.33	3434.21
GB-2	18	1	9	0.18	0.0065	5.99	1545.39
GB-2	46	1	9	0.18	0.0065	15.33	3949.34
GB-2	17	1	9	0.18	0.0065	5.66	1459.54
GB-2	27.33	1	9	0.18	0.0065	9.10	2346.42
GB-2	24	5	9	0.18	0.0065	39.97	10302.62
GB-2	11.67	1	9	0.18	0.0065	3.88	1001.93
GB-2	12.33	1	9	0.18	0.0065	4.10	1058.59
GB-2	27.5	2	9	0.18	0.0065	18.32	4722.04
GB-2	21	2	9	0.18	0.0065	13.99	3605.92
GB-2	20.5	2	9	0.18	0.0065	13.65	3520.06
GB-2	37	1	9	0.18	0.0065	12.33	3176.64
GB-2	25.5	2	9	0.18	0.0065	16.99	4378.62
GB-2	35	2	9	0.18	0.0065	23.32	6009.86
GB-7	30	3	12.25	0.26	0.0097	40.80	11545.35
GB-7	38.93	1	12.25	0.26	0.0097	17.65	4994.01
GB-7	28.583	1	12.25	0.26	0.0097	12.96	3666.68
GB-4	17	2	6	0.11	0.0042	7.55	1900.81
GB-4	27.33	2	6	0.11	0.0042	12.14	3055.83
GB-4	24	2	6	0.11	0.0042	10.66	2683.49

Grade Beam	Length	Quantity	Cross area	Rebar ft^3	Reb CY	Concrete CY	Rebar
GB-4	27.5	4	6	0.11	0.0042	24.43	6149.67
GB-4	30	2	6	0.11	0.0042	13.32	3354.37
GB-4	20.5	3	6	0.11	0.0042	13.65	3438.23
GB-4	37	4	6	0.11	0.0042	32.87	8274.10
GB-4	25.5	5	6	0.11	0.0042	28.31	7128.03
GB-4	35	3	6	0.11	0.0042	23.32	5870.14
GB-1	23.5	5	6	0.09	0.0032	26.10	4979.23
GB-1	25.5	6	6	0.09	0.0032	33.98	6483.59
GB-1	23	6	6	0.09	0.0032	30.65	5847.94
GB-1	30	12	6	0.09	0.0032	79.96	15255.50
GB-2	23.5	1	9	0.18	0.0065	7.83	2017.60
GB-2	25.5	1	9	0.18	0.0065	8.49	2189.31
GB-2	23	1	9	0.18	0.0065	7.66	1974.67
GB-2	30	14	9	0.18	0.0065	139.91	36059.18
GB-3	23.6	1	9	0.09	0.0035	7.86	1091.93
GB-3	23	1	9	0.09	0.0035	7.66	1064.17
GB-3	14	1	9	0.09	0.0035	4.66	647.76
GB-4	30	1	6	0.11	0.0042	6.66	1677.18
Total CY						1927.69	
Total Rebar Tons							242.05

Grade Beam Schedule	Length of Rebar	Area of Rebar	Volume of Rebar	Area of Rebar	Length of Rebar	Volume of Rebar	Total Volume of Rebar
GB-1	8	0.006903	2	0.0014	9.30	0.0031	0.09
GB-2	12	0.008522	4	0.0014	22.00	0.0031	0.18
GB-3	8	0.006903	4	0.0014	11.00	0.0031	0.09
GB-4	12	0.006903	2	0.0014	9.30	0.0031	0.11
GB-5	12	0.008522	4	0.0014	22.00	0.0031	0.18
GB-6	12	0.006903	2	0.0014	9.30	0.0031	0.11
GB-7	20	0.008522	4	0.0014	28.00	0.0031	0.26
GB-8	14	0.008522	4	0.0014	22.00	0.0031	0.19

Lintel	lb/foot	Length	Pounds	Footing	Qty	CY	CY CONC
16x26	58	15	870	F40	1	0.30	0.30
16x26	58	18	1044	F46	6	0.75	4.50
16x26	58	9	522	F50	5	0.37	1.85
16x26	58	9	522	F56	6	1.21	7.28
16x26	58	13	754	F60	4	1.56	6.24
16x26	58	24	1392	F66	11	2.09	22.95
16x26	58	12	696	F70	6	2.57	15.43
16x26	58	18	1044	F76	7	3.13	21.88
16x26	58	18	1044	F80	23	3.75	86.30
16x26	58	27	1566	F86	16	4.46	71.38
16x26	58	12	696	F90	12	5.25	63.00
16x26	58	18	1044	F96	7	6.13	42.88
16x26	58	16	928	F100	4	7.41	29.64
16x26	58	9	522	F106	6	8.51	51.06
16x26	58	9	522	F110	5	9.71	48.55
16x26	58	6	348	F116	3	11.02	33.06
16x26	58	9	522	F120	2	12.44	24.89
16x26	58	3.896	225.968	F90136	12	7.88	94.50
16x40	80	24	1920	F50150	2	5.56	11.11
16x40	80	24	1920	F50166	1	5.35	5.35
16x40	80	30	2400	F50120	1	3.33	3.33
16x40	80	33	2640	F6686	1	2.73	2.73
16x40	80	24	1920			<b>TOTAL</b>	<b>648.19</b>
16x40	80	27	2160				
16x40	80	24	1920				
16x40	80	27	2160				
16x40	80	27	2160				
16x40	80	2.0625	165				
		<b>Tons</b>	<b>16.813484</b>				

Metal Deck and Slab area found from drawings			
2nd floor	69234	69234	
roof	57761	57761	
roof	21170	21170	
Roof Total		78931	
<b>Concrete</b>			<b>CY</b>
S.O.D.	62940	0.521	1214.50889
S.O.G.	63360	0.417	978.56

Foundation walls done by LF			
Linear Feet	Tons of Rebar	CY Concrete	
1059	9	157	
866	7	108	
100	2	25	
40	1	18	
240	8	296	
629	15	496	
120	4	118	
<b>3054</b>	<b>92000</b>	<b>1218</b>	



# Estimate Detail - Standard Construction Project

Detail - Without Taxes and Insurance

Estimator :  
Project Size : sqft

ItemCode	Description	Quantity	UM	Lab.Unit	Mat.Unit	Eqp.Unit	Sub.Unit	Eqp.Rent.Unit	Temp.Mat.Unit	Other Unit	Tot.UnitCost	TotalCost
03210.155	PIER REBAR	4,841.00	CWT	23.7333	26.750						50.483	244,389.66
03210.130	SUPPORTED SLAB REBAR	280.00	CWT	32.3636	26.750						59.114	16,551.81
03210.160	WALL REBAR	920.00	CWT	32.9629	26.750						59.713	54,935.87
03220.010	6x6 W1.4/W1.4 MESH	138,930.00	SQS	18.8640	8.200						27.064	3,760,001.52
03310.201	3000 PSI DIRECT	648.19	CUYD	11.0090	55.000						66.009	42,786.37
03310.254	3000 PSI W/PUMP	1,927.69	CUYD	12.0957	55.000	5.280					72.376	139,517.91
03310.351	3000 PSI DIRECT	978.56	CUYD	11.0090	55.000						66.009	64,593.77
03311.506	3000 PSI W/PUMP	1,214.51	CUYD	12.5997	55.000	5.280					72.880	88,513.12
03310.551	3000 PSI DIRECT	46.00	CUYD	14.6787	55.000						69.679	3,205.22
05121.061	CAT#3 - W/M/S SHAPES	326,720.00	LBS		3.500						3.500	1,143,520.00
05121.081	CAT#4 - W/M/S SHAPES	1,093,880.00	LBS		3.500						3.500	3,828,580.00
05310.017	1-1/2" METAL DECK	78,931.00	SQFT	0.4134	1.806						2.219	175,179.46
05310.019	3" METAL DECK	69,234.00	SQFT	0.3663	2.200						2.566	177,675.21
<b>Total Estimate</b>												<b>\$9,739,450</b>

## **General Conditions Estimate**

The following is the general conditions estimate of the airport. The values that are shown were found by using MC<sup>2</sup> Estimating program.

# Estimate Detail - Standard Construction Project

Detail - Without Taxes and Insurance

Estimator :  
Project Size : sqft

ItemCode	Description	Quantity	UM	Lab.Unit	Mat.Unit	Eqp.Unit	Sub.Unit	Eqp.Rent.Unit	Temp.Mat.Unit	Other Unit	Tot.UnitCost	TotalCost
01110.100	Engineering fees	1.00	LS				4,560.000				4,560.000	4,560.00
01310.100	Project manager	102.00	WEEK	1,589.6500							1,589.650	162,144.30
01310.110	Superintendent	51.00	WEEK	1,241.1500							1,241.150	63,298.65
01310.140	Intern	10.00	WEEK	560.0000							560.000	5,600.00
01310.190	Living expenses	123.00	WEEK	412.8500							412.850	50,780.55
01310.200	Permit	1.00	LS							100,000.000	100,000.000	100,000.00
01310.210	Purchase drawings	2.00	LS							1,000.000	1,000.000	2,000.00
01310.220	Travel expenses	3.00	LS							2,000.000	2,000.000	6,000.00
01320.100	Progress photographs	5.00	MO			119.000					119.000	595.00
01320.110	CPM schedule	1.00	LS			4,852.000				2,500.000	7,352.000	7,352.00
01510.100	Temporary wiring	12.00	MO			258.000					258.000	3,096.00
01510.110	Job telephone	12.00	MO			89.350					89.350	1,072.20
01510.120	Electric light bill	12.00	MO			283.000					283.000	3,396.00
01510.130	Water bill	4.00	MO			89.000					89.000	356.00
01510.140	Temporary heat	6.00	MO			1,107.850					1,107.850	6,647.10
01520.100	Office trailer	24.00	MO			374.000					374.000	8,976.00
01520.110	Job tool house	12.00	EACH			1,210.000					1,210.000	14,520.00
01520.120	Portable chemical toilet	12.00	MO			87.250					87.250	1,047.00
01520.130	Water, ice and cups	12.00	MO			138.000					138.000	1,656.00
01520.140	First aid supplies	12.00	MO			50.000					50.000	600.00
01520.150	Safety supplies	12.00	MO			150.000					150.000	1,800.00
01520.160	Office supplies	12.00	MO			275.750					275.750	3,309.00
01540.100	Crane rental	4.00	MO			191.000					191.000	764.00
01540.120	Buck hoist	6.00	MO			850.000					850.000	5,100.00
01540.140	Crawler crane	24.00	WEEK			550.000					550.000	13,200.00
01540.150	Backhoe	30.00	WEEK			62.500					62.500	1,875.00
01540.160	Front end loader	30.00	WEEK			68.000					68.000	2,040.00
01540.170	Bulldozer	10.00	WEEK			73.000					73.000	730.00
01540.180	Small tools	48.00	MO			167.750					167.750	8,052.00
01540.200	Welding machine	36.00	MO			208.000					208.000	7,488.00
01540.210	Equipment repair	1.00	LS							10,000.000	10,000.000	10,000.00
01540.220	Gasoline and lubricating oil	1,000.00	GALS			2.500					2.500	2,500.00
01540.250	Truck rental	8.00	MO			874.000					874.000	6,992.00
01540.260	Pumps	2.00	MO			115.000					115.000	230.00
01540.290	Forklift	6.00	MO			631.000					631.000	3,786.00
01540.300	Personnel hoist	6.00	MO			847.000					847.000	5,082.00
01540.310	Scaffolding	1.00	LS			1,000.000					1,000.000	1,000.00
01540.320	Jobsite communications	12.00	MO		87.500						87.500	1,050.00
01550.100	Temporary road	100.00	SQYD	1.1850	0.360	0.355					1.900	190.00
01560.120	Temporary job fence	1,390.00	LNFT	1.2800	11.280						12.560	17,458.40
01560.140	Slab barricades	900.00	LNFT	1.7500	0.410						2.160	1,944.00
01560.150	Sidewalk barricades	200.00	LNFT	30.0000	10.000						40.000	8,000.00
01580.100	Job sign	2.00	EACH	275.0000	114.000						389.000	778.00
01720.100	Layout supplies	25.00	WEEK		81.000						81.000	2,025.00
01740.100	Job clean up	127,000.00	SQFT	0.3800							0.380	48,260.00
01740.130	Rubbish removal	1,000.00	CUYD	15.1100	1.265						16.375	16,375.00
Total Estimate												\$613,725