Appendix

Infection Control Risk Assessment
Matrix of Precautions for Construction & Renovation

Step One:
Using the following table, *identify* the Type of Construction Project Activity (Type A-D)

TYPE A	**Inspection and Non-Invasive Activities.** Includes, but is not limited to: ▪ removal of ceiling tiles for visual inspection limited to 1 tile per 50 square feet ▪ painting (but not sanding) ▪ wallcovering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection.
TYPE B	**Small scale, short duration activities which create minimal dust** Includes, but is not limited to: ▪ installation of telephone and computer cabling ▪ access to chase spaces ▪ cutting of walls or ceiling where dust migration can be controlled.
TYPE C	**Work that generates a moderate to high level of dust or requires demolition or removal of any fixed building components or assemblies** Includes, but is not limited to: ▪ sanding of walls for painting or wall covering ▪ removal of floorcoverings, ceiling tiles and casework ▪ new wall construction ▪ minor duct work or electrical work above ceilings ▪ major cabling activities ▪ any activity which cannot be completed within a single workshift.
TYPE D	**Major demolition and construction projects** Includes, but is not limited to: ▪ activities which require consecutive work shifts ▪ requires heavy demolition or removal of a complete cabling system ▪ new construction.

STEP 1:_____

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Step Two:
Using the following table, ***identify*** **the Patient Risk Groups** that will be affected.
If more than one risk group will be affected, select the higher risk group:

Low Risk	Medium Risk	High Risk	Highest Risk
▪ Office areas	▪ Cardiology ▪ Echocardiography ▪ Endoscopy ▪ Nuclear Medicine ▪ Physical Therapy ▪ Radiology/MRI ▪ Respiratory Therapy	▪ CCU ▪ Emergency Room ▪ Labor & Delivery ▪ Laboratories (specimen) ▪ Newborn Nursery ▪ Outpatient Surgery ▪ Pediatrics ▪ Pharmacy ▪ Post Anesthesia Care Unit ▪ Surgical Units	▪ Any area caring for immunocompromised patients ▪ Burn Unit ▪ Cardiac Cath Lab ▪ Central Sterile Supply ▪ Intensive Care Units ▪ Medical Unit ▪ Negative pressure isolation rooms ▪ Oncology ▪ Operating rooms including C-section rooms

Step 2_____

Step Three: ***Match*** **the**

Patient Risk Group (***Low, Medium, High, Highest***) with the planned …
Construction Project Type (*A, B, C, D*) on the following matrix, to find the …
Class of Precautions (***I, II, III or IV***) or level of infection control activities required.

Class I-IV or Color-Coded Precautions are delineated on the following page.

IC Matrix - Class of Precautions: Construction Project by Patient Risk

	Construction Project Type			
Patient Risk Group	TYPE A	TYPE B	TYPE C	TYPE D
LOW Risk Group	I	II	II	III/IV
MEDIUM Risk Group	I	II	III	IV
HIGH Risk Group	I	II	III/IV	IV
HIGHEST Risk Group	II	III/IV	III/IV	IV

Note: Infection Control approval will be required when the Construction Activity and Risk Level indicate that Class III or Class IV control procedures are necessary.

Step 3_____

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Description of Required Infection Control Precautions by Class

	During Construction Project	Upon Completion of Project
CLASS I	1. Execute work by methods to minimize raising dust from construction operations. 2. Immediately replace a ceiling tile displaced for visual inspection	
CLASS II	1. Provide active means to prevent airborne dust from dispersing into atmosphere. 2. Water mist work surfaces to control dust while cutting. 3. Seal unused doors with duct tape. 4. Block off and seal air vents. 5. Place dust mat at entrance and exit of work area 6. Remove or isolate HVAC system in areas where work is being performed.	1. Wipe work surfaces with disinfectant. 2. Contain construction waste before transport in tightly covered containers. 3. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area. 4. Remove isolation of HVAC system in areas where work is being performed.
CLASS III	1. Remove or Isolate HVAC system in area where work is being done to prevent contamination of duct system. 2. Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from non work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins. 3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 4. Contain construction waste before transport in tightly covered containers. 5. Cover transport receptacles or carts. Tape covering unless solid lid.	1. Do not remove barriers from work area until completed project is inspected by the owner's Safety Department and Infection Control Department and thoroughly cleaned by the owner's Environmental Services Department. 2. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 3. Vacuum work area with HEPA filtered vacuums. 4. Wet mop area with disinfectant. 5. Remove isolation of HVAC system in areas where work is being performed.
CLASS IV	1. Isolate HVAC system in area where work is being done to prevent contamination of duct system. 2. Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from non work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins. 3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 4. Seal holes, pipes, conduits, and punctures appropriately. 5. Construct anteroom and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave the work site. 6. All personnel entering work site are required to wear shoe covers. Shoe covers must be changed each time the worker exits the work area. 7. Do not remove barriers from work area until completed project is inspected by the owner's Safety Department and Infection Control Department and thoroughly cleaned by the owner's Environmental Services Department.	1. Remove barrier material carefully to minimize spreading of dirt and debris associated with construction. 2. Contain construction waste before transport in tightly covered containers. 3. Cover transport receptacles or carts. Tape covering unless solid lid 4. Vacuum work area with HEPA filtered vacuums. 5. Wet mop area with disinfectant. 6. Remove isolation of HVAC system in areas where work is being performed.

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Step 4. **Identify the areas surrounding the project area, assessing potential impact**

Unit Below	Unit Above	Lateral	Lateral	Behind	Front
Risk Group	Risk Group	Risk Group	Risk Group	Risk Group	Risk Group

Step 5. **Identify specific site of activity eg, patient rooms, medication room, etc.**

_____

Step 6. **Identify issues related to: ventilation, plumbing, electrical in terms of the occurrence of probable outages.**

_____

Step 7. **Identify containment measures, using prior assessment. What types of barriers? (Eg, solids wall barriers); Will HEPA filtration be required?**

_____

(Note: Renovation/construction area shall be isolated from the occupied areas during construction and shall be negative with respect to surrounding areas)

Step 8. **Consider potential risk of water damage. Is there a risk due to compromising structural integrity? (eg, wall, ceiling, roof)**

Step 9. **Work hours: Can or will the work be done during non-patient care hours?**

Sep 10. **Do plans allow for adequate number of isolation/negative airflow rooms?**

Step 11. **Do the plans allow for the required number & type of handwashing sinks?**

Step 12. **Does the infection control staff agree with the minimum number of sinks for this project?**
(Verify against AIA Guidelines for types and area)

Step 13. **Does the infection control staff agree with the plans relative to clean and soiled utility rooms?**

Step 14. **Plan to discuss the following containment issues with the project team. Eg, traffic flow, housekeeping, debris removal (how and when)**

_____

_____

Appendix: Identify and communicate the responsibility for project monitoring that includes infection control concerns and risks. The ICRA may be modified throughout the project. Revisions must be communicated to the Project Manager.

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Infection Control Construction Permit

Permit No:

Location of Construction:	Project Start Date:
Project Coordinator:	Estimated Duration:
Contractor Performing Work	Permit Expiration Date:
Supervisor:	Telephone:

YES	NO	CONSTRUCTION ACTIVITY	YES	NO	INFECTION CONTROL RISK GROUP
		TYPE A: Inspection, non-invasive activity			GROUP 1: Low Risk
		TYPE B: Small scale, short duration, moderate to high levels			GROUP 2: Medium Risk
		TYPE C: Activity generates moderate to high levels of dust, requires greater 1 work shift for completion			GROUP 3: Medium/High Risk
		TYPE D: Major duration and construction activities Requiring consecutive work shifts			GROUP 4: Highest Risk

CLASS I	1. Execute work by methods to minimize raising dust from construction operations. 2. Immediately replace any ceiling tile displaced for visual inspection.	3. Minor Demolition for Remodeling
CLASS II	1. Provides active means to prevent air-borne dust from dispersing into atmosphere 2. Water mist work surfaces to control dust while cutting. 3. Seal unused doors with duct tape. 4. Block off and seal air vents. 5. Wipe surfaces with disinfectant.	6. Contain construction waste before transport in tightly covered containers. 7. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area. 8. Place dust mat at entrance and exit of work area. 9. Remove or isolate HVAC system in areas where work is being performed.
CLASS III Date Initial	1. Obtain infection control permit before construction begins. 2. Isolate HVAC system in area where work is being done to prevent contamination of the duct system. 3. Complete all critical barriers or implement control cube method before construction begins. 4. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 5. Do not remove barriers from work area until complete project is thoroughly cleaned by Env. Services Dept.	6. Vacuum work with HEPA filtered vacuums. 7. Wet mop with disinfectant 8. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 9. Contain construction waste before transport in tightly covered containers. 10. Cover transport receptacles or carts. Tape covering. 11. Remove or isolate HVAC system in areas where work is being performed/
Class IV Date Initial	1. Obtain infection control permit before construction begins. 2. Isolate HVAC system in area where work is being done to prevent contamination of duct system. 3. Complete all critical barriers or implement control cube method before construction begins. 4. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 5. Seal holes, pipes, conduits, and punctures appropriately. 6. Construct anteroom and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave the work site.	7. All personnel entering work site are required to wear shoe covers 8. Do not remove barriers from work area until completed project is thoroughly cleaned by the Environmental Service Dept. 9. Vacuum work area with HEPA filtered vacuums. 10. Wet mop with disinfectant. 11. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 12. Contain construction waste before transport in tightly covered containers. 13. Cover transport receptacles or carts. Tape covering. 14. Remove or isolate HVAC system in areas where is being done.

Additional Requirements:

Date Initials	Exceptions/Additions to this permit Date Initials are noted by attached memoranda
Permit Request By:	Permit Authorized By:
Date:	Date:

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UV Savings at 20% Fouling

AHU Info

Desig.	Space	Airflow (cfm)	Cooling Coil Leaving Air Temp (F)	Coiling Coil Pressure Drop, clean (in.w.g.)	Coiling Coil Pressure Drop, fouled (in.w.g.)	COP	Annual Hours of Cooling	Cooling Load, clean (Btu/h)	Cooling Load, fouled (Btu/h)	Capacity loss due to fouling (btu/h)
AHU-1	Laboratory	44,000	53	0.82	0.984	4.1	8760	2,600,000	3,120,000	520,000
AHU-2	Laboratory	44,000	53	0.82	0.984	4.1	8760	2,600,000	3,120,000	520,000
AHU-3	Laboratory	44,000	53	0.82	0.984	4.1	8760	2,600,000	3,120,000	520,000
AHU-4	Laboratory	44,000	53	0.82	0.984	4.1	8760	2,600,000	3,120,000	520,000
AHU-5	Clinical	44,000	48	0.97	1.164	4.1	8760	3,027,000	3,632,400	605,400
AHU-6	Redundant	44,000	48	0.97	1.164	4.1	8760	3,027,000	3,632,400	605,400
AHU-7	Office	50,000	51	1.53	1.836	4.1	8760	3,526,000	4,231,200	705,200
Totals								*19,980,000*	*23,976,000*	*3,996,000*

Fan Energy Savings

Desig.	Fan Energy, clean (kW)	Fan Energy, fouled (kW)	Fan Energy Savings (kW)	Fan Energy Cost, clean ($)	Fan Energy Cost, fouled ($)	Fan Energy Savings ($)	Cost per kWh ($)
AHU-1	7.43	8.92	1.49	$7,413	$8,895	$1,483	$0.1139
AHU-2	7.43	8.92	1.49	$7,413	$8,895	$1,483	$0.1139
AHU-3	7.43	8.92	1.49	$7,413	$8,895	$1,483	$0.1139
AHU-4	7.43	8.92	1.49	$7,413	$8,895	$1,483	$0.1139
AHU-5	8.79	10.55	1.76	$8,769	$10,523	$1,754	$0.1139
AHU-6	8.79	10.55	1.76	$8,769	$10,523	$1,754	$0.1139
AHU-7	15.75	18.90	3.15	$15,717	$18,861	$3,143	$0.1139
Totals	*63*	*76*	*13*	*$62,906*	*$75,487*	*$12,581*	

Cooling Energy Savings

Desig.	Cooling Energy, clean (kW)	Cooling Energy, fouled (kW)	Cooling Energy Savings (kW)	Cooling Energy Cost, clean ($)	Cooling Energy Cost, fouled ($)	Cooling Energy Savings ($)	Total Energy Savings ($)
AHU-1	185.86	223.03	37.17	$185,442	$222,531	$37,088	$38,571
AHU-2	185.86	223.03	37.17	$185,442	$222,531	$37,088	$38,571
AHU-3	185.86	223.03	37.17	$185,442	$222,531	$37,088	$38,571
AHU-4	185.86	223.03	37.17	$185,442	$222,531	$37,088	$38,571
AHU-5	216.38	259.66	43.28	$215,897	$259,077	$43,179	$44,933
AHU-6	216.38	259.66	43.28	$215,897	$259,077	$43,179	$44,933
AHU-7	252.05	302.46	50.41	$251,488	$301,786	$50,298	$53,441
Totals	*1,428*	*1,714*	*286*	*$1,425,051*	*$1,710,061*	*$285,010*	*$297,591*

UV Info

Desig.	UV wattage (W)	UV Lamp Fixture First Cost ($)	UV Lamp Installation Cost ($)	UV Lamp Replacement Bulb Cost ($)	UV Operating Cost ($)
AHU-1	1080	$8,250	$2,240	$540	$1,078
AHU-2	1080	$8,250	$2,240	$540	$1,078
AHU-3	1080	$8,250	$2,240	$540	$1,078
AHU-4	1080	$8,250	$2,240	$540	$1,078
AHU-5	1080	$8,250	$2,240	$540	$1,078
AHU-6	1080	$8,250	$2,240	$540	$1,078
AHU-7	1080	$8,250	$2,240	$540	$1,078
Totals	*7,560*	*$57,750*	*$15,680*	*$3,780*	*$7,543*

Maintenance Info

Desig.	Maintenance Cost before UV ($)	Maintenance Cost after UV ($)	Maintenance Cost Savings ($)
AHU-1	$1,000	$0	$1,000
AHU-2	$1,000	$0	$1,000
AHU-3	$1,000	$0	$1,000
AHU-4	$1,000	$0	$1,000
AHU-5	$1,000	$0	$1,000
AHU-6	$1,000	$0	$1,000
AHU-7	$1,000	$0	$1,000
Totals	*$7,000*	*$0*	*$7,000*

Payback Period

Total Initial Cost ($)	Total Annual Savings ($)	Payback Period (yrs)
11030	$37,953	0.29062
11030	$37,953	0.29062
11030	$37,953	0.29062
11030	$37,953	0.29062
11030	$44,316	0.2489
11030	$44,316	0.2489
11030	$52,823	0.20881
$77,210	*$293,268*	*0.263*

UV Savings at 10% Fouling

AHU Info

Desig.	Space	Airflow (cfm)	Cooling Coil Leaving Air Temp (F)	Coiling Coil Pressure Drop, clean (in.w.g.)	Coiling Coil Pressure Drop, fouled (in.w.g.)	COP	Annual Hours of Cooling	Cooling Load, clean (Btu/h)	Cooling Load, fouled (Btu/h)	Capacity loss due to fouling (btu/h)
AHU-1	Laboratory	44,000	53	0.82	0.902	4.1	8760	2,600,000	2,860,000	260,000
AHU-2	Laboratory	44,000	53	0.82	0.902	4.1	8760	2,600,000	2,860,000	260,000
AHU-3	Laboratory	44,000	53	0.82	0.902	4.1	8760	2,600,000	2,860,000	260,000
AHU-4	Laboratory	44,000	53	0.82	0.902	4.1	8760	2,600,000	2,860,000	260,000
AHU-5	Clinical	44,000	48	0.97	1.067	4.1	8760	3,027,000	3,329,700	302,700
AHU-6	Redundant	44,000	48	0.97	1.067	4.1	8760	3,027,000	3,329,700	302,700
AHU-7	Office	50,000	51	1.53	1.683	4.1	8760	3,526,000	3,878,600	352,600
Totals								*19,980,000*	*21,978,000*	*1,998,000*

Fan Energy Savings

Desig.	Fan Energy, clean (kW)	Fan Energy, fouled (kW)	Fan Energy Savings (kW)	Fan Energy Cost, clean ($)	Fan Energy Cost, fouled ($)	Fan Energy Savings ($)	Cost per kWh ($)
AHU-1	7.43	8.17	0.74	$7,413	$8,154	$741	$0.1139
AHU-2	7.43	8.17	0.74	$7,413	$8,154	$741	$0.1139
AHU-3	7.43	8.17	0.74	$7,413	$8,154	$741	$0.1139
AHU-4	7.43	8.17	0.74	$7,413	$8,154	$741	$0.1139
AHU-5	8.79	9.67	0.88	$8,769	$9,646	$877	$0.1139
AHU-6	8.79	9.67	0.88	$8,769	$9,646	$877	$0.1139
AHU-7	15.75	17.33	1.58	$15,717	$17,289	$1,572	$0.1139
Totals	*63*	*69*	*6*	*$62,906*	*$69,196*	*$6,291*	

Cooling Energy Savings

Desig.	Cooling Energy, clean (kW)	Cooling Energy, fouled (kW)	Cooling Energy Savings (kW)	Cooling Energy Cost, clean ($)	Cooling Energy Cost, fouled ($)	Cooling Energy Savings ($)	Total Energy Savings ($)
AHU-1	185.86	204.44	18.59	$185,442	$203,986	$18,544	$19,285
AHU-2	185.86	204.44	18.59	$185,442	$203,986	$18,544	$19,285
AHU-3	185.86	204.44	18.59	$185,442	$203,986	$18,544	$19,285
AHU-4	185.86	204.44	18.59	$185,442	$203,986	$18,544	$19,285
AHU-5	216.38	238.02	21.64	$215,897	$237,487	$21,590	$22,467
AHU-6	216.38	238.02	21.64	$215,897	$237,487	$21,590	$22,467
AHU-7	252.05	277.26	25.21	$251,488	$276,637	$25,149	$26,721
Totals	*1,428*	*1,571*	*143*	*$1,425,051*	*$1,567,556*	*$142,505*	*$148,796*

UV Info

Desig.	UV wattage (W)	UV Lamp Fixture First Cost ($)	UV Lamp Installation Cost ($)	UV Lamp Replacement Bulb Cost ($)	UV Operating Cost ($)
AHU-1	1080	$8,250	$2,240	$540	$1,078
AHU-2	1080	$8,250	$2,240	$540	$1,078
AHU-3	1080	$8,250	$2,240	$540	$1,078
AHU-4	1080	$8,250	$2,240	$540	$1,078
AHU-5	1080	$8,250	$2,240	$540	$1,078
AHU-6	1080	$8,250	$2,240	$540	$1,078
AHU-7	1080	$8,250	$2,240	$540	$1,078
Totals	*7,560*	*$57,750*	*$15,680*	*$3,780*	*$7,543*

Maintenance Info

Desig.	Maintenance Cost before UV ($)	Maintenance Cost after UV ($)	Maintenance Cost Savings ($)
AHU-1	$1,000	$0	$1,000
AHU-2	$1,000	$0	$1,000
AHU-3	$1,000	$0	$1,000
AHU-4	$1,000	$0	$1,000
AHU-5	$1,000	$0	$1,000
AHU-6	$1,000	$0	$1,000
AHU-7	$1,000	$0	$1,000
Totals	*$7,000*	*$0*	*$7,000*

Payback Period

Total Initial Cost ($)	Total Annual Savings ($)	Payback Period (yrs)
11030	$18,668	0.590854
11030	$18,668	0.590854
11030	$18,668	0.590854
11030	$18,668	0.590854
11030	$21,849	0.504828
11030	$21,849	0.504828
11030	$26,103	0.422558
$77,210	*$144,473*	*0.5344*

UV Savings at 5% Fouling

AHU Info

Desig.	Space	Airflow (cfm)	Cooling Coil Leaving Air Temp (F)	Coiling Coil Pressure Drop, clean (in.w.g.)	Coiling Coil Pressure Drop, fouled (in.w.g.)	COP	Annual Hours of Cooling	Cooling Load, clean (Btu/h)	Cooling Load, fouled (Btu/h)	Capacity loss due to fouling (btu/h)
AHU-1	Laboratory	44,000	53	0.82	0.861	4.1	8760	2,600,000	2,730,000	130,000
AHU-2	Laboratory	44,000	53	0.82	0.861	4.1	8760	2,600,000	2,730,000	130,000
AHU-3	Laboratory	44,000	53	0.82	0.861	4.1	8760	2,600,000	2,730,000	130,000
AHU-4	Laboratory	44,000	53	0.82	0.861	4.1	8760	2,600,000	2,730,000	130,000
AHU-5	Clinical	44,000	48	0.97	1.0185	4.1	8760	3,027,000	3,178,350	151,350
AHU-6	Redundant	44,000	48	0.97	1.0185	4.1	8760	3,027,000	3,178,350	151,350
AHU-7	Office	50,000	51	1.53	1.6065	4.1	8760	3,526,000	3,702,300	176,300
Totals								*19,980,000*	*20,979,000*	*999,000*

Fan Energy Savings

Desig.	Fan Energy, clean (kW)	Fan Energy, fouled (kW)	Fan Energy Savings (kW)	Fan Energy Cost, clean ($)	Fan Energy Cost, fouled ($)	Fan Energy Savings ($)	Cost per kWh ($)
AHU-1	7.43	7.80	0.37	$7,413	$7,783	$371	$0.1139
AHU-2	7.43	7.80	0.37	$7,413	$7,783	$371	$0.1139
AHU-3	7.43	7.80	0.37	$7,413	$7,783	$371	$0.1139
AHU-4	7.43	7.80	0.37	$7,413	$7,783	$371	$0.1139
AHU-5	8.79	9.23	0.44	$8,769	$9,207	$438	$0.1139
AHU-6	8.79	9.23	0.44	$8,769	$9,207	$438	$0.1139
AHU-7	15.75	16.54	0.79	$15,717	$16,503	$786	$0.1139
Totals	*63*	*66*	*3*	*$62,906*	*$66,051*	*$3,145*	

Cooling Energy Savings

Desig.	Cooling Energy, clean (kW)	Cooling Energy, fouled (kW)	Cooling Energy Savings (kW)	Cooling Energy Cost, clean ($)	Cooling Energy Cost, fouled ($)	Cooling Energy Savings ($)	Total Energy Savings ($)
AHU-1	185.86	195.15	9.29	$185,442	$194,714	$9,272	$9,643
AHU-2	185.86	195.15	9.29	$185,442	$194,714	$9,272	$9,643
AHU-3	185.86	195.15	9.29	$185,442	$194,714	$9,272	$9,643
AHU-4	185.86	195.15	9.29	$185,442	$194,714	$9,272	$9,643
AHU-5	216.38	227.20	10.82	$215,897	$226,692	$10,795	$11,233
AHU-6	216.38	227.20	10.82	$215,897	$226,692	$10,795	$11,233
AHU-7	252.05	264.65	12.60	$251,488	$264,062	$12,574	$13,360
Totals	*1,428*	*1,500*	*71*	*$1,425,051*	*$1,496,304*	*$71,253*	*$74,398*

UV Info

Desig.	UV wattage (W)	UV Lamp Fixture First Cost ($)	UV Lamp Installation Cost ($)	UV Lamp Replacement Bulb Cost ($)	UV Operating Cost ($)
AHU-1	1080	$8,250	$2,240	$540	$1,078
AHU-2	1080	$8,250	$2,240	$540	$1,078
AHU-3	1080	$8,250	$2,240	$540	$1,078
AHU-4	1080	$8,250	$2,240	$540	$1,078
AHU-5	1080	$8,250	$2,240	$540	$1,078
AHU-6	1080	$8,250	$2,240	$540	$1,078
AHU-7	1080	$8,250	$2,240	$540	$1,078
Totals	*7,560*	*$57,750*	*$15,680*	*$3,780*	*$7,543*

Maintenance Info

Desig.	Maintenance Cost before UV ($)	Maintenance Cost after UV ($)	Maintenance Cost Savings ($)
AHU-1	$1,000	$0	$1,000
AHU-2	$1,000	$0	$1,000
AHU-3	$1,000	$0	$1,000
AHU-4	$1,000	$0	$1,000
AHU-5	$1,000	$0	$1,000
AHU-6	$1,000	$0	$1,000
AHU-7	$1,000	$0	$1,000
Totals	*$7,000*	*$0*	*$7,000*

Payback Period

Total Initial Cost ($)	Total Annual Savings ($)	Payback Period (yrs)
11030	$9,025	1.22214
11030	$9,025	1.22214
11030	$9,025	1.22214
11030	$9,025	1.22214
11030	$10,616	1.03902
11030	$10,616	1.03902
11030	$12,743	0.8656
$77,210	*$70,075*	*1.102*

UV Savings at 2% Fouling

AHU Info

Desig.	Space	Airflow (cfm)	Cooling Coil Leaving Air Temp (F)	Coiling Coil Pressure Drop, clean (in.w.g.)	Coiling Coil Pressure Drop, fouled (in.w.g.)	COP	Annual Hours of Cooling	Cooling Load, clean (Btu/h)	Cooling Load, fouled (Btu/h)	Capacity loss due to fouling (btu/h)
AHU-1	Laboratory	44,000	53	0.82	0.8364	4.1	8760	2,600,000	2,652,000	52,000
AHU-2	Laboratory	44,000	53	0.82	0.8364	4.1	8760	2,600,000	2,652,000	52,000
AHU-3	Laboratory	44,000	53	0.82	0.8364	4.1	8760	2,600,000	2,652,000	52,000
AHU-4	Laboratory	44,000	53	0.82	0.8364	4.1	8760	2,600,000	2,652,000	52,000
AHU-5	Clinical	44,000	48	0.97	0.9894	4.1	8760	3,027,000	3,087,540	60,540
AHU-6	Redundant	44,000	48	0.97	0.9894	4.1	8760	3,027,000	3,087,540	60,540
AHU-7	Office	50,000	51	1.53	1.5606	4.1	8760	3,526,000	3,596,520	70,520
Totals								*19,980,000*	*20,379,600*	*399,600*

Fan Energy Savings

Desig.	Fan Energy, clean (kW)	Fan Energy, fouled (kW)	Fan Energy Savings (kW)	Fan Energy Cost, clean ($)	Fan Energy Cost, fouled ($)	Fan Energy Savings ($)	Cost per kWh ($)
AHU-1	7.43	7.58	0.15	$7,413	$7,561	$148	$0.1139
AHU-2	7.43	7.58	0.15	$7,413	$7,561	$148	$0.1139
AHU-3	7.43	7.58	0.15	$7,413	$7,561	$148	$0.1139
AHU-4	7.43	7.58	0.15	$7,413	$7,561	$148	$0.1139
AHU-5	8.79	8.96	0.18	$8,769	$8,944	$175	$0.1139
AHU-6	8.79	8.96	0.18	$8,769	$8,944	$175	$0.1139
AHU-7	15.75	16.07	0.32	$15,717	$16,032	$314	$0.1139
Totals	*63*	*64*	*1*	*$62,906*	*$64,164*	*$1,258*	

Cooling Energy Savings

Desig.	Cooling Energy, clean (kW)	Cooling Energy, fouled (kW)	Cooling Energy Savings (kW)	Cooling Energy Cost, clean ($)	Cooling Energy Cost, fouled ($)	Cooling Energy Savings ($)	Total Energy Savings ($)
AHU-1	185.86	189.57	3.72	$185,442	$189,151	$3,709	$3,857
AHU-2	185.86	189.57	3.72	$185,442	$189,151	$3,709	$3,857
AHU-3	185.86	189.57	3.72	$185,442	$189,151	$3,709	$3,857
AHU-4	185.86	189.57	3.72	$185,442	$189,151	$3,709	$3,857
AHU-5	216.38	220.71	4.33	$215,897	$220,215	$4,318	$4,493
AHU-6	216.38	220.71	4.33	$215,897	$220,215	$4,318	$4,493
AHU-7	252.05	257.09	5.04	$251,488	$256,518	$5,030	$5,344
Totals	*1,428*	*1,457*	*29*	*$1,425,051*	*$1,453,552*	*$28,501*	*$29,759*

UV Info

Desig.	UV wattage (W)	UV Lamp Fixture First Cost ($)	UV Lamp Installation Cost ($)	UV Lamp Replacement Bulb Cost ($)	UV Operating Cost ($)
AHU-1	1080	$8,250	$2,240	$540	$1,078
AHU-2	1080	$8,250	$2,240	$540	$1,078
AHU-3	1080	$8,250	$2,240	$540	$1,078
AHU-4	1080	$8,250	$2,240	$540	$1,078
AHU-5	1080	$8,250	$2,240	$540	$1,078
AHU-6	1080	$8,250	$2,240	$540	$1,078
AHU-7	1080	$8,250	$2,240	$540	$1,078
Totals	*7,560*	*$57,750*	*$15,680*	*$3,780*	*$7,543*

Maintenance Info

Desig.	Maintenance Cost before UV ($)	Maintenance Cost after UV ($)	Maintenance Cost Savings ($)
AHU-1	$1,000	$0	$1,000
AHU-2	$1,000	$0	$1,000
AHU-3	$1,000	$0	$1,000
AHU-4	$1,000	$0	$1,000
AHU-5	$1,000	$0	$1,000
AHU-6	$1,000	$0	$1,000
AHU-7	$1,000	$0	$1,000
Totals	*$7,000*	*$0*	*$7,000*

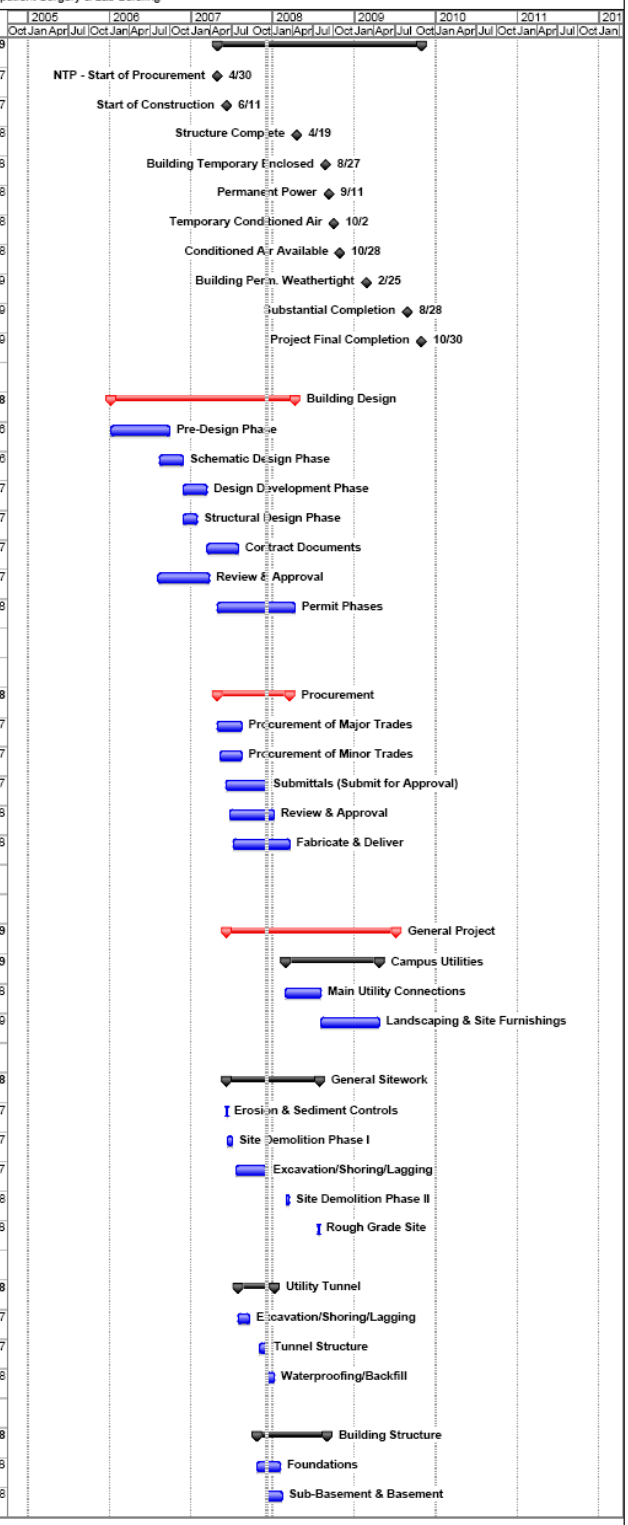
Payback Period

Total Initial Cost ($)	Total Annual Savings ($)	Payback Period (yrs)
11030	$3,240	3.40483
11030	$3,240	3.40483
11030	$3,240	3.40483
11030	$3,240	3.40483
11030	$3,876	2.84591
11030	$3,876	2.84591
11030	$4,727	2.33364
$77,210	*$25,436*	*3.035*

Detailed Project Schedule

The Wilmer Eye Institue Outpatient Surgery & Lab Buidling

ID	Task Name	Duration	Start	Finish
1	**Major Project Milestones**	**658 days**	**Mon 4/30/07**	**Fri 10/30/09**
2	NTP - Start of Procurement	0 days	Mon 4/30/07	Mon 4/30/07
3	Start of Construction	0 days	Mon 6/11/07	Mon 6/11/07
4	Structure Complete	0 days	Sat 4/19/08	Sat 4/19/08
5	Building Temporary Enclosed	0 days	Wed 8/27/08	Wed 8/27/08
6	Permanent Power	0 days	Thu 9/11/08	Thu 9/11/08
7	Temporary Conditioned Air	0 days	Thu 10/2/08	Thu 10/2/08
8	Conditioned Air Available	0 days	Tue 10/28/08	Tue 10/28/08
9	Building Perm. Weathertight	0 days	Wed 2/25/09	Wed 2/25/09
10	Substantial Completion	0 days	Fri 8/28/09	Fri 8/28/09
11	Project Final Completion	0 days	Fri 10/30/09	Fri 10/30/09
12				
13	**Building Design**	**592 days?**	**Mon 1/9/06**	**Fri 4/11/08**
14	Pre-Design Phase	190 days?	Mon 1/9/06	Fri 9/29/06
15	Schematic Design Phase	77 days?	Mon 8/14/06	Tue 11/28/06
16	Design Development Phase	78 days?	Tue 11/28/06	Thu 3/15/07
17	Structural Design Phase	46 days?	Tue 11/28/06	Tue 1/30/07
18	Contract Documents	101 days?	Thu 3/15/07	Thu 8/2/07
19	Review & Approval	165 days?	Tue 8/8/06	Mon 3/26/07
20	Permit Phases	252 days?	Mon 4/30/07	Fri 4/11/08
21				
22				
23	**Procurement**	**235 days?**	**Mon 4/30/07**	**Wed 3/19/08**
24	Procurement of Major Trades	80 days?	Mon 4/30/07	Fri 8/17/07
25	Procurement of Minor Trades	70 days?	Mon 5/14/07	Fri 8/17/07
26	Submittals (Submit for Approval)	129 days?	Fri 6/8/07	Wed 12/5/07
27	Review & Approval	144 days?	Mon 6/25/07	Wed 1/9/08
28	Fabricate & Deliver	183 days?	Wed 7/11/07	Wed 3/19/08
29				
30				
31	**General Project**	**547 days?**	**Mon 6/11/07**	**Thu 7/9/09**
32	**Campus Utilities**	**302 days?**	**Sat 3/1/08**	**Fri 4/24/09**
33	Main Utility Connections	115 days?	Sat 3/1/08	Wed 8/6/08
34	Landscaping & Site Furnishings	187 days?	Thu 8/7/08	Fri 4/24/09
35				
36	**General Sitework**	**301 days?**	**Mon 6/11/07**	**Wed 7/30/08**
37	Erosion & Sediment Controls	4 days?	Mon 6/11/07	Thu 6/14/07
38	Site Demolition Phase I	16 days?	Fri 6/15/07	Fri 7/6/07
39	Excavation/Shoring/Lagging	98 days?	Mon 7/23/07	Wed 12/5/07
40	Site Demolition Phase II	10 days?	Tue 3/4/08	Mon 3/17/08
41	Rough Grade Site	5 days?	Thu 7/24/08	Wed 7/30/08
42				
43	**Utility Tunnel**	**118 days?**	**Wed 8/1/07**	**Thu 1/10/08**
44	Excavation/Shoring/Lagging	37 days?	Wed 8/1/07	Thu 9/20/07
45	Tunnel Structure	25 days?	Tue 11/6/07	Sat 12/8/07
46	Waterproofing/Backfill	24 days?	Mon 12/10/07	Thu 1/10/08
47				
48	**Building Structure**	**227 days?**	**Thu 10/25/07**	**Tue 9/2/08**
49	Foundations	76 days?	Thu 10/25/07	Wed 2/6/08
50	Sub-Basement & Basement	54 days?	Tue 12/4/07	Thu 2/14/08



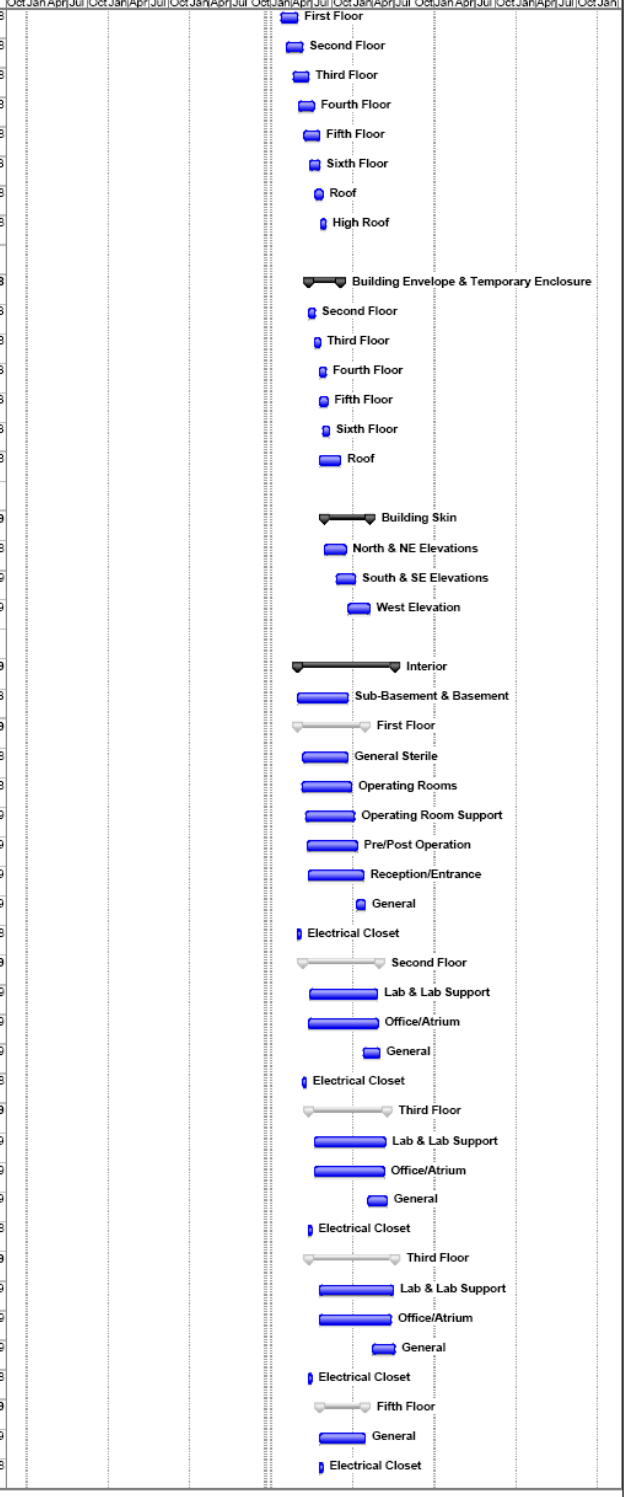
Project: Wilmer Eye Institute Detailed

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

Detailed Project Schedule

The Wilmer Eye Institue Outpatient Surgery & Lab Building

ID	Task Name	Duration	Start	Finish
51	First Floor	55 days?	Fri 2/15/08	Tue 4/29/08
52	Second Floor	54 days?	Tue 3/11/08	Thu 5/22/08
53	Third Floor	50 days?	Thu 4/10/08	Tue 6/17/08
54	Fourth Floor	50 days?	Mon 5/5/08	Fri 7/11/08
55	Fifth Floor	49 days?	Thu 5/29/08	Tue 8/5/08
56	Sixth Floor	33 days?	Mon 6/23/08	Wed 8/6/08
57	Roof	24 days?	Thu 7/17/08	Tue 8/19/08
58	High Roof	16 days?	Tue 8/12/08	Tue 9/2/08
59				
60	**Building Envelope & Temporary Enclosure**	**103 days?**	**Wed 6/18/08**	**Fri 11/7/08**
61	Second Floor	21 days?	Wed 6/18/08	Wed 7/16/08
62	Third Floor	20 days?	Mon 7/14/08	Fri 8/8/08
63	Fourth Floor	21 days?	Wed 8/6/08	Wed 9/3/08
64	Fifth Floor	25 days?	Thu 8/7/08	Wed 9/10/08
65	Sixth Floor	21 days?	Wed 8/20/08	Wed 9/17/08
66	Roof	69 days?	Tue 8/5/08	Fri 11/7/08
67				
68	**Building Skin**	**146 days?**	**Wed 8/27/08**	**Wed 3/18/09**
69	North & NE Elevations	70 days?	Wed 8/27/08	Tue 12/2/08
70	South & SE Elevations	61 days?	Mon 10/20/08	Mon 1/12/09
71	West Elevation	69 days?	Fri 12/12/08	Wed 3/18/09
72				
73	**Interior**	**312 days?**	**Wed 4/30/08**	**Thu 7/9/09**
74	Sub-Basement & Basement	161 days?	Wed 4/30/08	Wed 12/10/08
75	**First Floor**	**216 days?**	**Wed 4/30/08**	**Wed 2/25/09**
76	General Sterile	143 days?	Fri 5/23/08	Tue 12/9/08
77	Operating Rooms	160 days?	Mon 5/19/08	Fri 12/26/08
78	Operating Room Support	157 days?	Thu 6/5/08	Fri 1/9/09
79	Pre/Post Operation	160 days?	Thu 6/12/08	Wed 1/21/09
80	Reception/Entrance	177 days?	Tue 6/17/08	Wed 2/18/09
81	General	28 days?	Mon 1/19/09	Wed 2/25/09
82	Electrical Closet	9 days?	Wed 4/30/08	Mon 5/12/08
83	**Second Floor**	**246 days?**	**Fri 5/23/08**	**Fri 5/1/09**
84	Lab & Lab Support	216 days?	Tue 6/24/08	Tue 4/21/09
85	Office/Atrium	223 days?	Wed 6/18/08	Fri 4/24/09
86	General	53 days?	Wed 2/18/09	Fri 5/1/09
87	Electrical Closet	10 days?	Fri 5/23/08	Thu 6/5/08
88	**Third Floor**	**251 days?**	**Wed 6/18/08**	**Wed 6/3/09**
89	Lab & Lab Support	228 days?	Mon 7/14/08	Wed 5/27/09
90	Office/Atrium	225 days?	Mon 7/14/08	Fri 5/22/09
91	General	61 days?	Wed 3/11/09	Wed 6/3/09
92	Electrical Closet	9 days?	Wed 6/18/08	Mon 6/30/08
93	**Third Floor**	**277 days?**	**Wed 6/18/08**	**Thu 7/9/09**
94	Lab & Lab Support	236 days?	Wed 8/6/08	Wed 7/1/09
95	Office/Atrium	229 days?	Wed 8/6/08	Mon 6/22/09
96	General	72 days?	Wed 4/1/09	Thu 7/9/09
97	Electrical Closet	9 days?	Wed 6/18/08	Mon 6/30/08
98	**Fifth Floor**	**145 days?**	**Thu 8/7/08**	**Wed 2/25/09**
99	General	145 days?	Thu 8/7/08	Wed 2/25/09
100	Electrical Closet	9 days?	Thu 8/7/08	Tue 8/19/08



Project: Wilmer Eye Institute Detailed

Task — Milestone — External Tasks
Split — Summary — External Milestone
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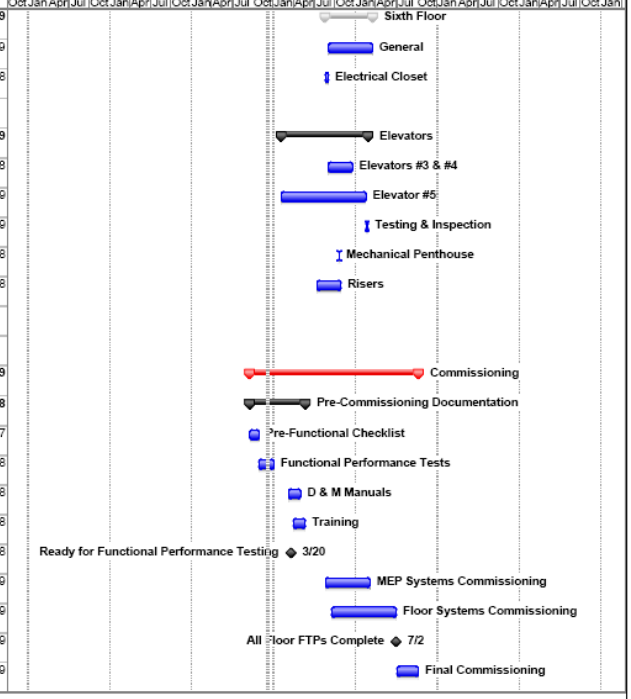
Detailed Project Schedule

The Wilmer Eye Institue Outpatient Surgery & Lab Building

ID	Task Name	Duration	Start	Finish
101	**Sixth Floor**	**151 days?**	**Wed 8/20/08**	**Wed 3/18/09**
102	General	141 days?	Wed 9/3/08	Wed 3/18/09
103	Electrical Closet	10 days?	Wed 8/20/08	Tue 9/2/08
104				
105	**Elevators**	**279 days?**	**Wed 2/6/08**	**Thu 2/26/09**
106	Elevators #3 & #4	78 days?	Wed 9/3/08	Fri 12/19/08
107	Elevator #5	272 days?	Wed 2/6/08	Tue 2/17/09
108	Testing & Inspection	7 days?	Wed 2/18/09	Thu 2/26/09
109	Mechanical Penthouse	1 day?	Tue 10/21/08	Tue 10/21/08
110	Risers	77 days?	Mon 7/14/08	Tue 10/28/08
111				
112				
113	**Commissioning**	**542 days?**	**Tue 9/18/07**	**Fri 10/9/09**
114	**Pre-Commissioning Documentation**	**181 days?**	**Tue 9/18/07**	**Thu 5/22/08**
115	Pre-Functional Checklist	30 days?	Tue 9/18/07	Mon 10/29/07
116	Functional Performance Tests	50 days?	Mon 10/29/07	Thu 1/3/08
117	D & M Manuals	40 days?	Mon 3/10/08	Thu 5/1/08
118	Training	40 days?	Mon 3/31/08	Thu 5/22/08
119	Ready for Functional Performance Testing	0 days	Thu 3/20/08	Thu 3/20/08
120	MEP Systems Commissioning	142 days?	Thu 8/21/08	Fri 3/6/09
121	Floor Systems Commissioning	207 days?	Wed 9/17/08	Thu 7/2/09
122	All Floor FTPs Complete	0 days	Thu 7/2/09	Thu 7/2/09
123	Final Commissioning	70 days?	Mon 7/6/09	Fri 10/9/09



Project: Wilmer Eye Institute Detailed

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

Exterior Building Enclosure Estimate

The Wilmer Eye Institute Outpatient Surgery and Laboratory Building

Quick Building Stats: $65M Cost of Construction
7 Storeys, 202,000 SF

Material Description	Quantity	Units	Material	Installation	Total	Material	Installation	Total
East Elevation								
Brick Face Cavity Wall Standard face brick, 8" conc. block backup Polystyrene cavity insulation	6620	S.F.	10.30	18.95	29.25	68,186	125,449	193,635
Tubular Aluminum Framing For 1/4" glass, one intermediate horizontal	9830	S.F.	13.90	13.05	26.95	136,637	128,282	264,919
Curtain Wall Panels Glazing panel, insulating, 1/2" thick, 2 lites	9830	S.F.	9.15	9.50	18.65	89,945	93,385	183,330
South Elevation								
Brick Face Cavity Wall Standard face brick, 8" conc. block backup Polystyrene cavity insulation	5790	S.F.	10.30	18.95	29.25	59,637	109,721	169,358
Tubular Aluminum Framing For 1/4" glass, one intermediate horizontal	4280	S.F.	13.90	13.05	26.95	59,492	55,854	115,346
Curtain Wall Panels Glazing panel, insulating, 1/2" thick, 2 lites	4280	S.F.	9.15	9.50	18.65	39,162	40,660	79,822
West Elevation								
Brick Face Cavity Wall Standard face brick, 8" conc. block backup Polystyrene cavity insulation	16855	S.F.	10.30	18.95	29.25	173,607	319,402	493,009
Tubular Aluminum Framing For 1/4" glass, one intermediate horizontal	3435	S.F.	13.90	13.05	26.95	47,747	44,827	92,573
Curtain Wall Panels Glazing panel, insulating, 1/2" thick, 2 lites	3435	S.F.	9.15	9.50	18.65	31,430	32,633	64,063
North Elevation								
Brick Face Cavity Wall Standard face brick, 8" conc. block backup Polystyrene cavity insulation	7570	S.F.	10.30	18.95	29.25	77,971	143,452	221,423
Tubular Aluminum Framing For 1/4" glass, one intermediate horizontal	2910	S.F.	13.90	13.05	26.95	40,449	37,976	78,425
Curtain Wall Panels Glazing panel, insulating, 1/2" thick, 2 lites	2910	S.F.	9.15	9.50	18.65	26,627	27,645	54,272
					Totals:	Material	Installation	Total
						$850,888	$1,159,284	$2,010,172

*Cavity wall assembly includes brick shelf, ties to the backups and necessary dampproofing, flashing, and control joints every 20'.
*Figures referenced from R.S. Means Assemblies Cost Data 2008

Detailed Structural Systems Estimate

The Wilmer Eye Institute Outpatient Surgery & Lab Building

Quick Building Stats: $65M Cost of Construction
7 Storeys, 202,000 SF

Description	Quantity	Units	Material	Labor	Equipment	Total	Total (O&P)	Material	Labor	Equipment	Total	Total (O&P)
Slab on Grade												
WWF 6 x 6 - W2.1 x 2.1 (8 x 8) 30 lb. per C.S.F	286	CSF	15.40	21.50		36.90	53.50	4,397	6,138	0	10,535	15,274
Normal Weight Concrete, 3,000 psi	440	CY	106.00			106.00	116.00	46,640	0	0	46,640	51,040
Concrete placement, slab on grade, pumped	440	CY		15.30	5.80	21.10	31.50	0	6,732	2,552	9,284	13,860
Slab on grade, incl. troweled finish, not incl. f	28550	SF	2.01	0.72	0.01	2.74	3.37	57,386	20,556	286	78,227	96,214
or reinforcing, over 10,000 S.F., 6" thick										Subtotal:	144,686	176,388
Mat Footings												
Normal Weight Concrete, 3,000 psi	647	CY	104.00			104.00	114.00	67,246	0	0	67,246	73,712
Concrete placement, foundation mats, over 1	647	CY		4.97	1.88	6.85	10.15	0	3,214	1,216	4,429	6,563
Reinforcing steel, footings, #4-#7	9820	lb	0.47	0.31		0.78	1.05	4,615	3,044	0	7,660	10,311
Reinforcing steel, footings, #8-#18	37260	lb	0.47	0.18		0.65	0.82	17,512	6,707	0	24,219	30,553
										Subtotal:	103,554	121,140
Pile Caps												
Normal Weight Concrete, 5,000 psi	102	CY	114.00			114.00	125.00	11,639	0	0	11,639	12,763
Concrete placement, pile caps, over 10 C.Y.,	102	CY		8.30	3.13	11.43	16.95	0	847	320	1,167	1,731
Reinforcing steel, footings, #8-#18	9960	lb	0.47	0.18		0.65	0.82	4,681	1,793	0	6,474	8,167
										Subtotal:	19,280	22,660
Column Footings												
Normal Weight Concrete, 8,000 psi	701	CY	212.00			212.00	233.00	148,612	0	0	148,612	163,333
Concrete placement, spread footings, over 5	701	CY		13.25	5.00	18.25	27.00	0	9,288	3,505	12,793	18,927
Reinforcing steel, footings, #8-#18	41300	lb	0.47	0.18		0.65	0.82	19,411	7,434	0	26,845	33,866
										Subtotal:	188,250	216,126
Wall Footings												
Normal Weight Concrete, 3,000 psi	516	CY	104.00			104.00	114.00	53,664	0	0	53,664	58,824
Concrete placement, footings, continuous, sh	516	CY		13.25	5.00	18.25	27.00	0	6,837	2,580	9,417	13,932
Reinforcing steel, footings, #4-#7	23880	lb	0.47	0.31		0.78	1.05	11,224	7,403	0	18,626	25,074
										Subtotal:	81,707	97,830
Foundation Walls												
Normal Weight Concrete, 4,000 psi	1506	CY	108.00			108.00	119.00	162,648	0	0	162,648	179,214
Concrete placement, walls, pumped	1506	CY		14.50	0.43	14.93	24.50	0	21,837	648	22,485	36,897
Reinforcing steel, walls, #3-#7	78520	lb	0.47	0.22		0.69	0.89	36,904	17,274	0	54,179	69,883
Reinforcing steel, walls, #8-#18	158460	lb	0.47	0.17		0.64	0.79	74,476	26,938	0	101,414	125,183
										Subtotal:	340,726	411,177
Interior Basement Walls												
Normal Weight Concrete, 4,000 psi	102	CY	108.00			108.00	119.00	11,016	0	0	11,016	12,138
Concrete placement, walls, pumped	102	CY		14.50	0.43	14.93	24.50	0	1,479	44	1,523	2,499
Reinforcing steel, walls, #3-#7	7400	lb	0.47	0.22		0.69	0.89	3,478	1,628	0	5,106	6,586
CMU Wall, solid, reinforced alternate course	11570	SF	3.27	3.81		7.08	9.80	37,834	44,082	0	81,916	113,386
										Subtotal:	99,560	134,609
Shear Walls												
Normal Weight Concrete, 5,000 psi	709	CY	114.00			114.00	125.00	80,826	0	0	80,826	88,625
Concrete placement, walls, pumped	709	CY		14.50	0.43	14.93	24.50	0	10,281	305	10,585	17,371
Reinforcing steel, walls, #3-#7	44000	lb	0.47	0.22		0.69	0.89	20,680	9,680	0	30,360	39,160
Reinforcing steel, walls, #8-#18	60520	lb	0.47	0.17		0.64	0.79	28,444	10,288	0	38,733	47,811
										Subtotal:	160,504	192,966
Columns												
Normal Weight Concrete, 5,000 psi	1093	CY	114.00			114.00	125.00	124,556	0	0	124,556	136,575
Concrete placement, columns, pumped	1093	CY		21.50	8.15	29.65	44.50	0	23,491	8,905	32,396	48,621
Reinforcing steel, columns, #3-#7	54422	lb	0.47	0.44		0.91	1.26	25,578	23,946	0	49,524	68,572
Reinforcing steel, columns, #8-#18	261446	lb	0.47	0.29		0.76	1.00	122,880	75,819	0	198,699	261,446
										Subtotal:	405,175	515,213
Elevated Slabs												
Normal Weight Concrete, 3,000 psi	6836	CY	104.00			104.00	114.00	710,944	0	0	710,944	779,304
Concrete placement, slabs over 10" thick, pu	6836	CY		11.05	4.17	15.22	22.50	0	75,538	28,506	104,044	153,810
Reinforcing steel, elevated slabs, #4-#7	578540	lb	0.49	0.23		0.72	0.93	283,485	133,064	0	416,549	538,042
Reinforcing steel, elevated slabs, #8-#18	149380	lb	0.47	0.29		0.76	1.00	70,209	43,320	0	113,529	149,380
										Subtotal:	1,345,066	1,620,536
								Total Material	Total Labor	Total Equip.	Total	Total (O&P)
								$2,240,986	$598,658	$48,865	**$4,431,953**	**$5,396,755**

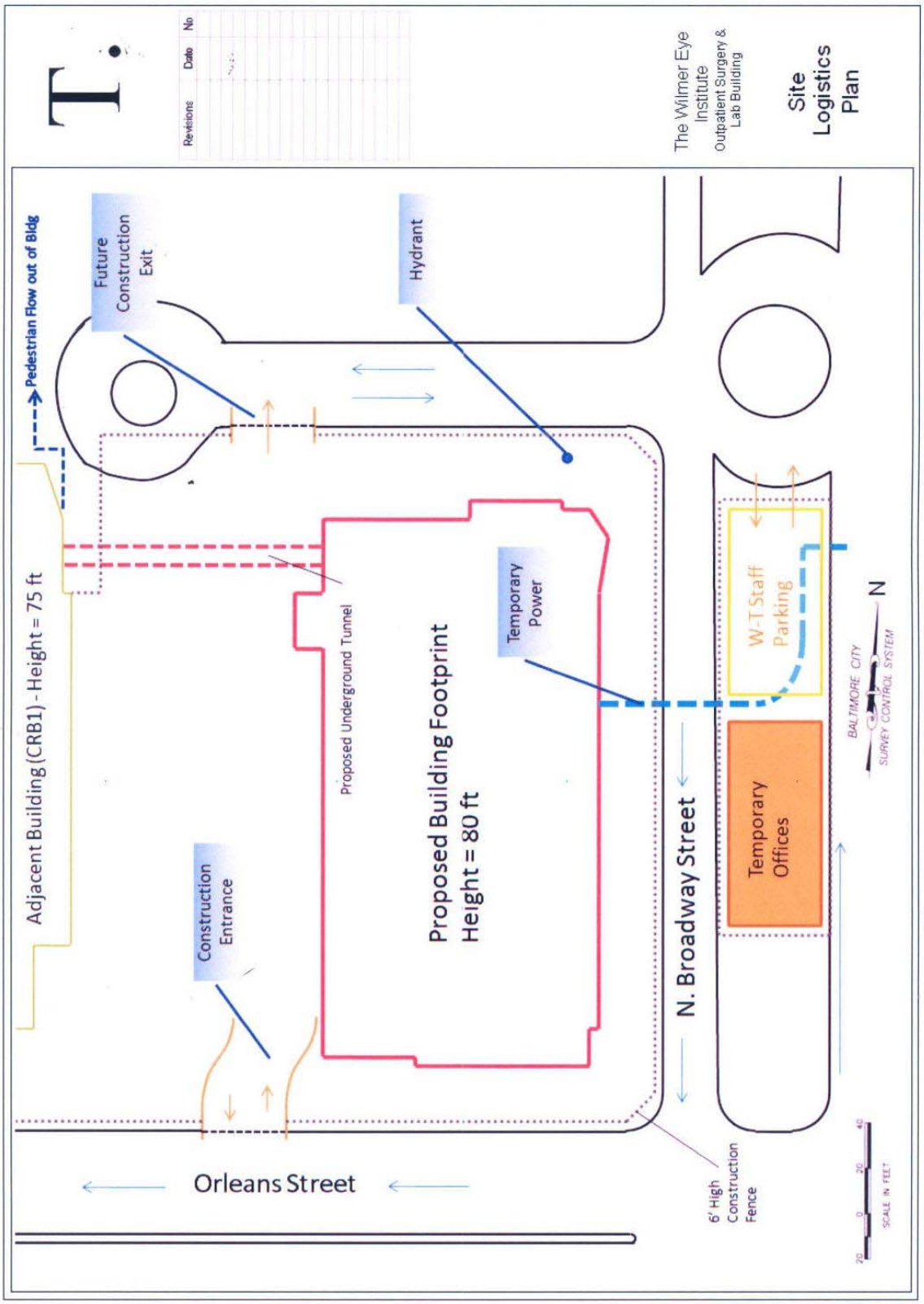
*Assuming area well wall reinforcement is similar to typical foundation wall
*Assuming all foundation walls are 34'-0" due to conflicts in structural and architectural drawings
*Assuming typical dowel length of 4'-0"
*Assuming similar elevated slabs aside from deduction for atrium space
*Assuming all concrete is pumped
*All unit-cost data referenced from R.S. Means Facilities Construction Cost Data 2007, 22nd Annual Edition

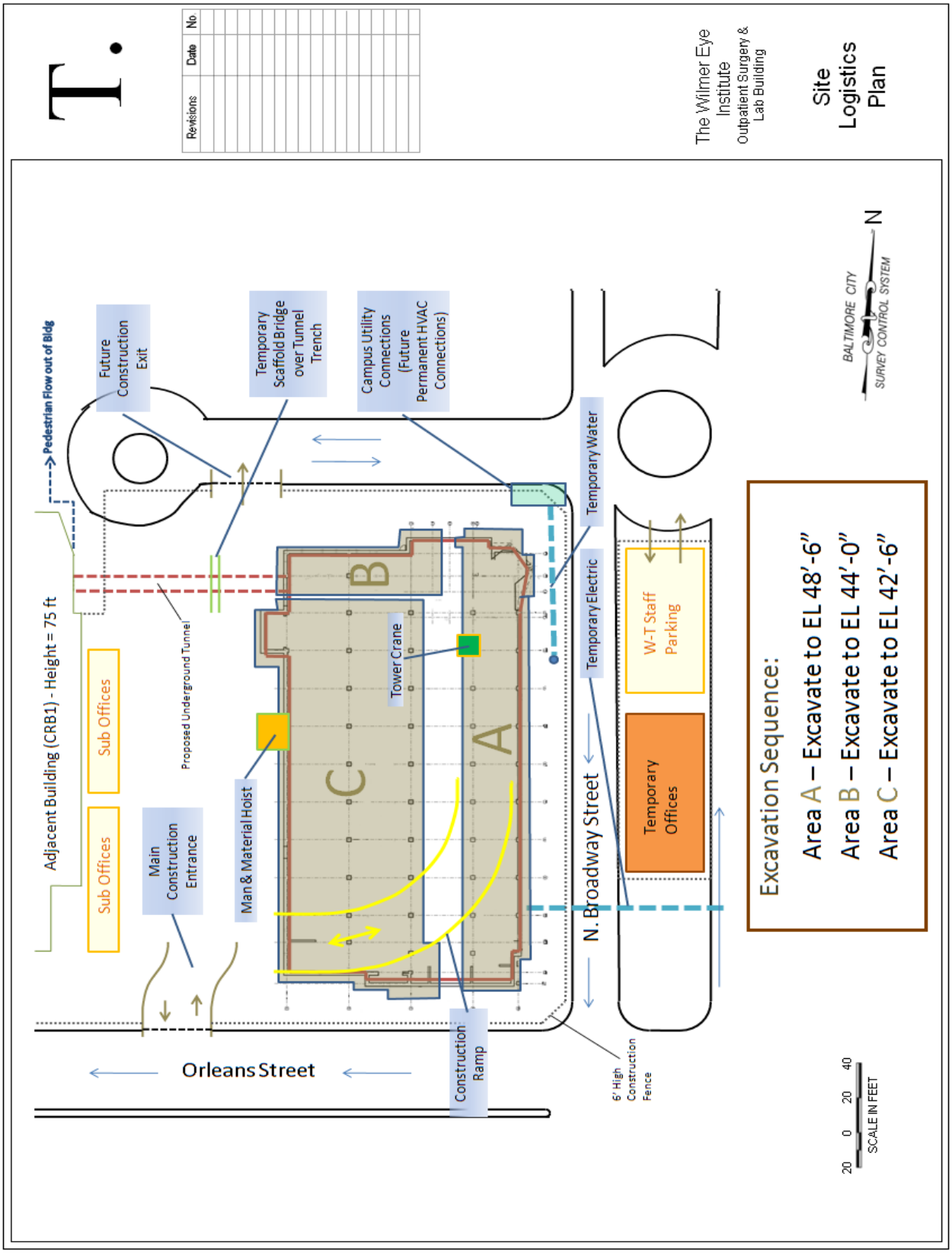
General Conditions Cost Estimate

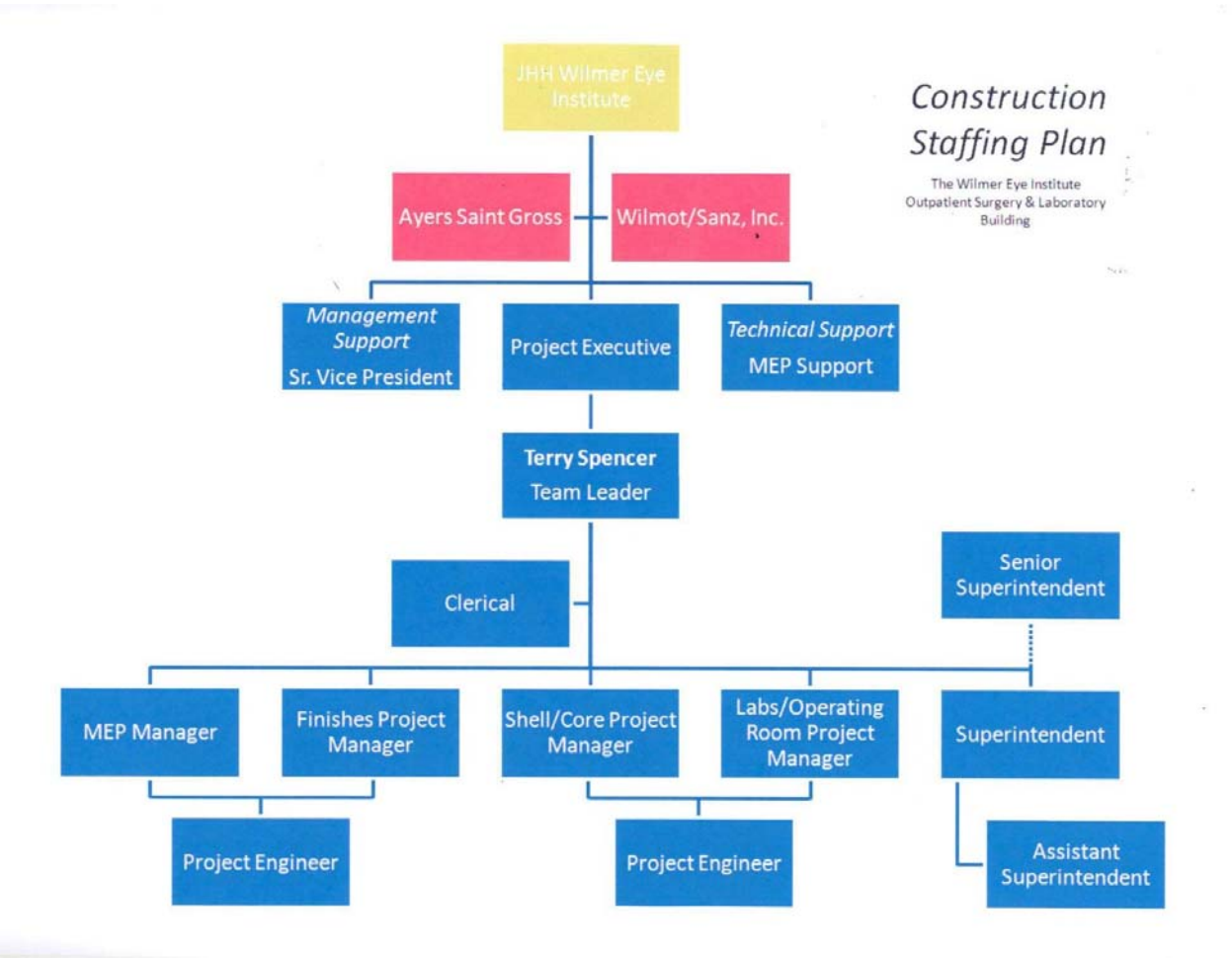
The Wilmer Eye Institute Outpatient Surgery & Laboratory Building

Quick Building Stats: $65M Cost of Construction
7 Storeys, 202,000 SF

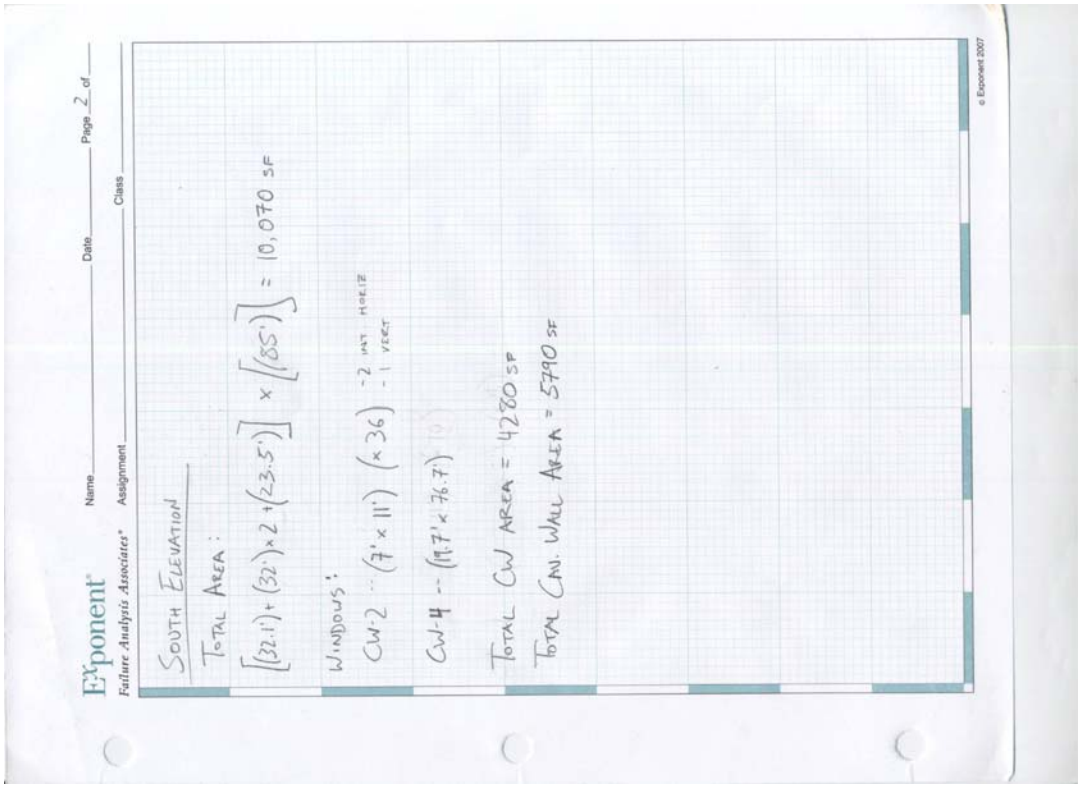
Category	Description	$/Unit	Unit	Qty.	Total
Personnel	Project Executive	10000	mo	2	$20,000
	Senior Project Manager	8333	mo	31	$258,323
	Shell/Core PM	7500	mo	17	$127,500
	Finishes PM	7500	mo	14	$105,000
	MEP Manager	7500	mo	15	$112,500
	Labs/OR Manager	7500	mo	14	$105,000
	Senior Superintendent	7500	mo	15	$112,500
	Superintendent	7100	mo	31	$220,100
	Asst. Superintendent	6250	mo	31	$193,750
	Project Engineer	5500	mo	17	$93,500
	Project Engineer	5500	mo	14	$77,000
Office Supplies	General	95	mo	31	$2,945
	Office Elec./HVAC	110	mo	31	$3,410
	Phone Bills	210	mo	31	$6,510
Temporary Offices	Trailer Rental	700	mo	31	$21,700
Temporary Utilities	Water	62	mo	31	$1,922
	Electric	75	mo	31	$2,325
	Lighting	15	CSF	202	$3,030
	Heating	390	mo	6	$2,340
Trash Disposal	Dumpsters	690	wk	140	$96,600
	Trash Chutes	55	LF	80	$4,400
Temporary Facilities	Toilet	685	mo	31	$21,235
Temporary Fencing	Chain link, 11 ga, 6' high	7.15	LF	1120	$8,008
Signage		16.55	SF	20	$331
Scaffold Bridge	Catwalk, 10' span	190	ea	1	$190
Surveying		1200	LS	1	$1,200
Temporary Building Enclosure	Framing over openings	1	SF	63240	$63,240
Photographic Documentation	Photographs	450	set	2	$900
	Cameraman/Film	1375	visit	2	$2,750
Scheduling	CPM Scheduling	15000	LS	1	$15,000
Construction Clean-up		115000	LS	1	$115,000
Man/Material Hoist		6000	LS	1	$6,000
Miscellaneous/Unforseen		6,000	LS	1	$6,000
				Total:	$1,810,209

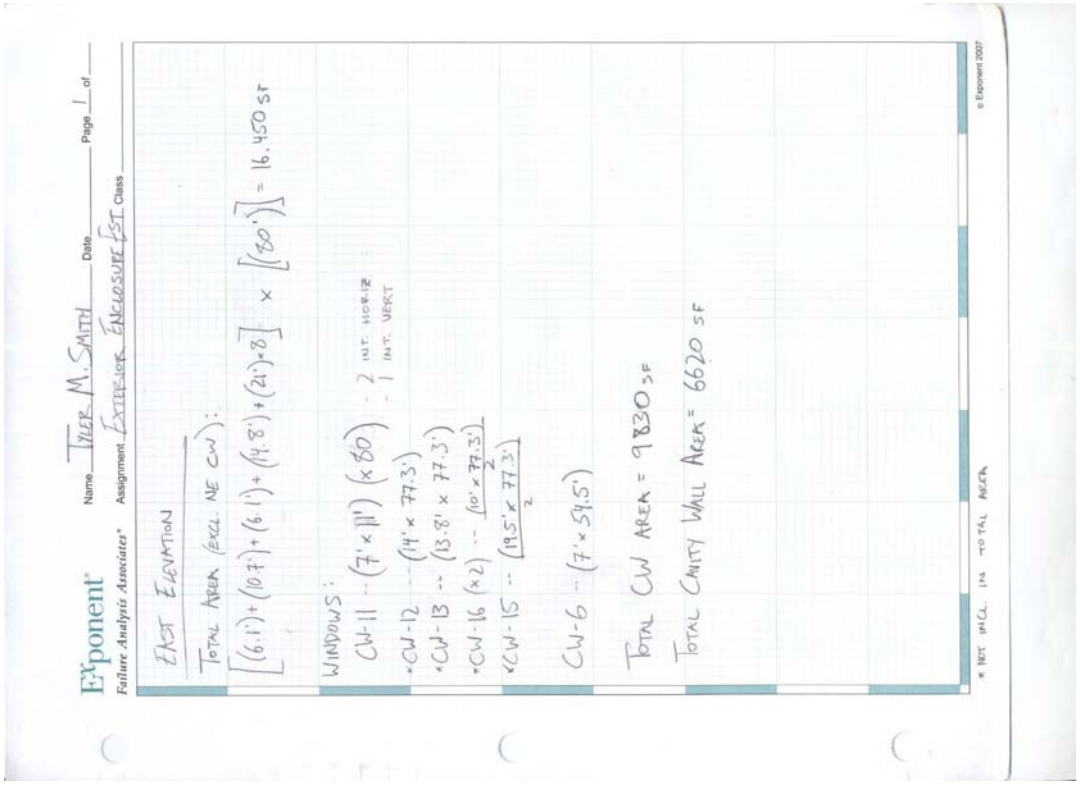

Site Logistics Plan
The Wilmer Eye Institute
Outpatient Surgery & Lab Building
Revisions
Date
No
Pedestrian Flow out of Bldg
Future Construction Exit
Hydrant
Adjacent Building (CRB1) - Height = 75 ft
Proposed Underground Tunnel
Proposed Building Footprint
Height = 80 ft
Temporary Power
W-T Staff Parking
Temporary Offices
Construction Entrance
N. Broadway Street
Orleans Street
6' High Construction Fence
BALTIMORE CITY
SURVEY CONTROL SYSTEM
N
SCALE IN FEET


Site Logistics Plan
The Wilmer Eye Institute
Outpatient Surgery & Lab Building
Revisions
Date
No.
N
BALTIMORE CITY
SURVEY CONTROL SYSTEM
Pedestrian Flow out of Bldg
Future Construction Exit
Temporary Scaffold Bridge over Tunnel Trench
Campus Utility Connections (Future Permanent HVAC Connections)
Temporary Water
Temporary Electric
W-T Staff Parking
Temporary Offices
Adjacent Building (CRB1) - Height = 75 ft
Sub Offices
Sub Offices
Proposed Underground Tunnel
Main Construction Entrance
Man & Material Hoist
Tower Crane
A
B
C
N. Broadway Street
Orleans Street
Construction Ramp
6' High Construction Fence
Excavation Sequence:
Area A – Excavate to EL 48'-6"
Area B – Excavate to EL 44'-0"
Area C – Excavate to EL 42'-6"
20 0 20 40
SCALE IN FEET

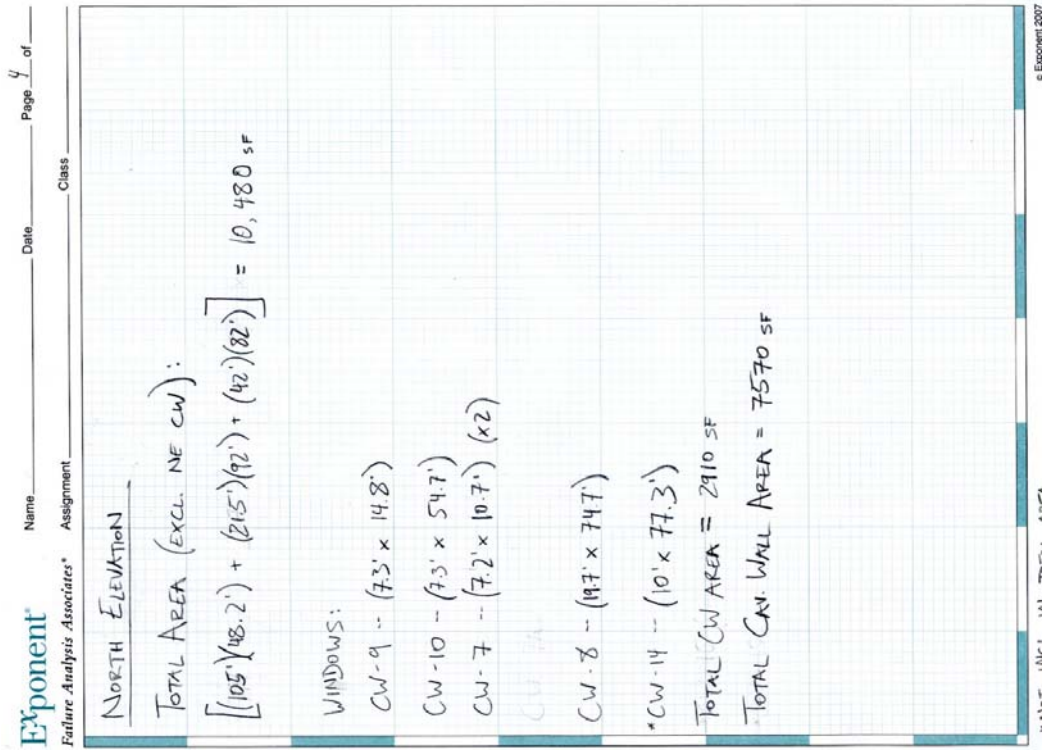

JHH Wilmer Eye Institute
Construction Staffing Plan
The Wilmer Eye Institute Outpatient Surgery & Laboratory Building
Ayers Saint Gross
Wilmot/Sanz, Inc.
Management Support
Sr. Vice President
Project Executive
Technical Support
MEP Support
Terry Spencer
Team Leader
Clerical
Senior Superintendent
MEP Manager
Finishes Project Manager
Shell/Core Project Manager
Labs/Operating Room Project Manager
Superintendent
Project Engineer
Project Engineer
Assistant Superintendent

Exterior Enclosures Estimate Calculations





Exterior Enclosures Estimate Calculations



Exponent
Failure Analysis Associates®
Name
Date
Page 4 of
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NORTH ELEVATION

TOTAL AREA (EXCL. NE CW):

$[(105')(98.2') + (215')(92') + (42')(82')] = 10,480$ SF

WINDOWS:

CW-9 -- (7.3' × 14.8')

CW-10 -- (7.3' × 54.7')

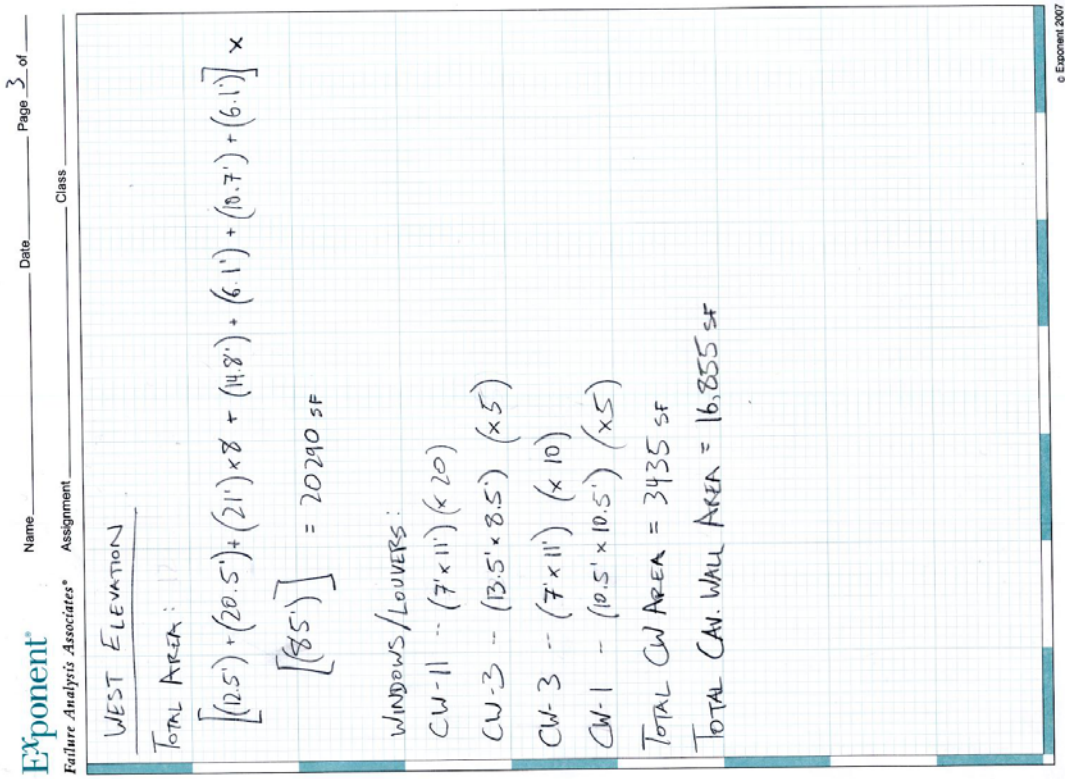
CW-7 -- (7.2' × 10.7') (×2)

CW-8 -- (19.7' × 74.7')

*CW-14 -- (10' × 77.3')

TOTAL CW AREA = 2910 SF

TOTAL CAN. WALL AREA = 7570 SF



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Name
Date
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Assignment
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WEST ELEVATION

TOTAL AREA:

$[(12.5') + (20.5') + (21')\times 8 + (14.8') + (6.1') + (10.7') + (6.1')] \times [85'] = 20290$ SF

WINDOWS/LOUVERS:

CW-11 -- (7' × 11') (× 20)

CW-3 -- (13.5' × 8.5') (×5)

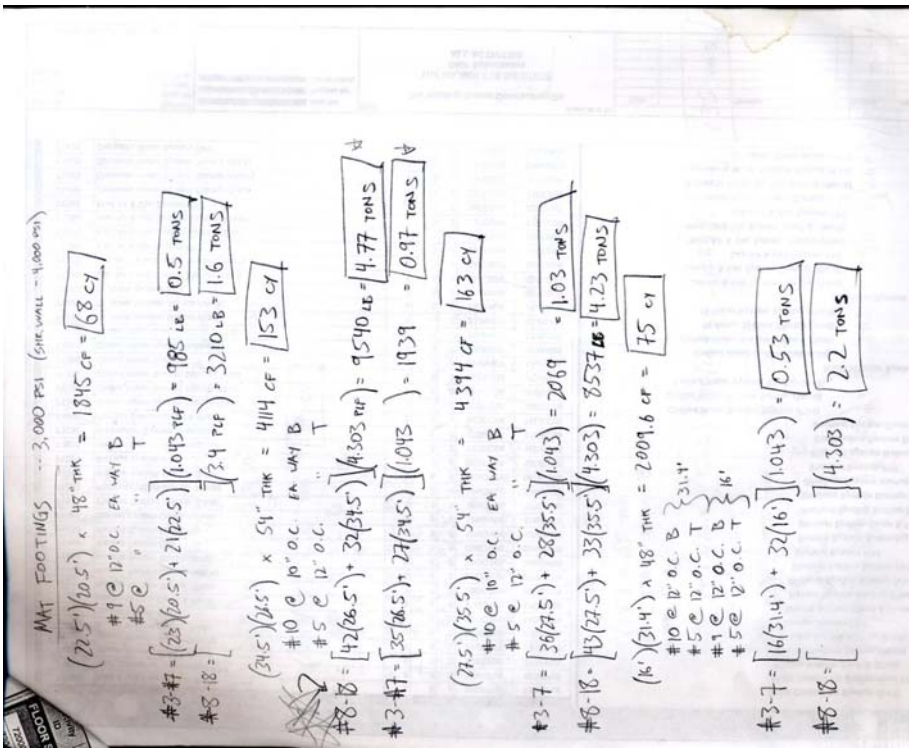
CW-3 -- (7' × 11') (× 10)

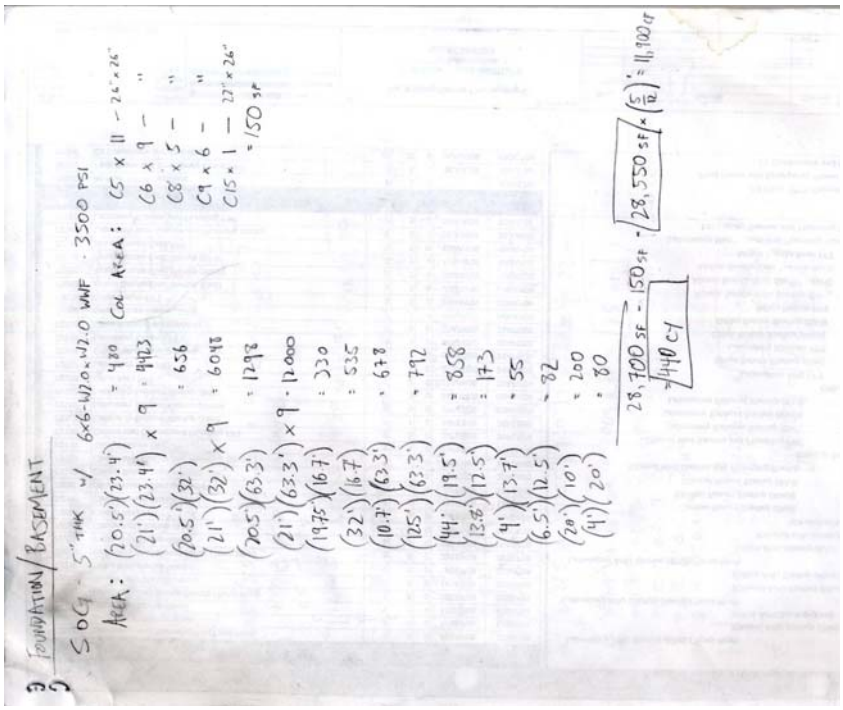
CW-1 -- (10.5' × 10.5') (×5)

TOTAL CW AREA = 3435 SF

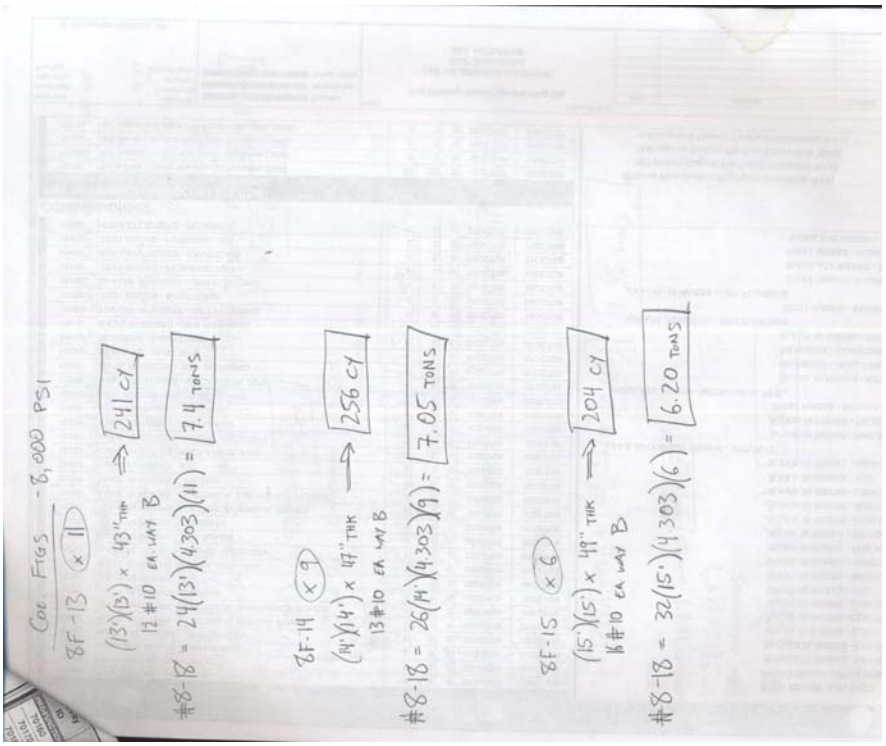
TOTAL CAN. WALL AREA = 16,855 SF

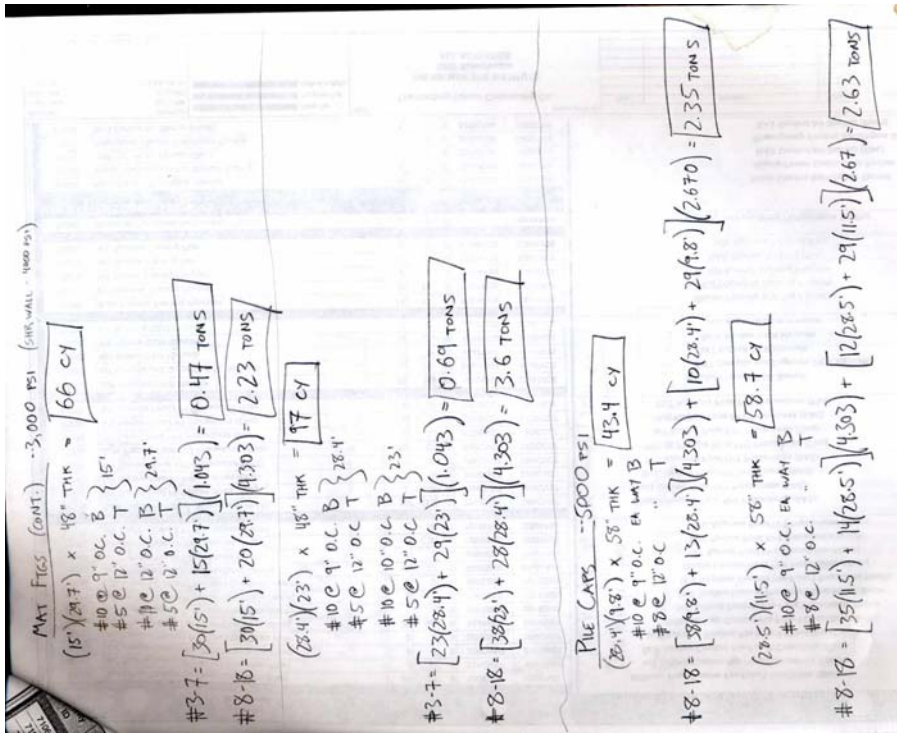
Structural Estimate Calculations



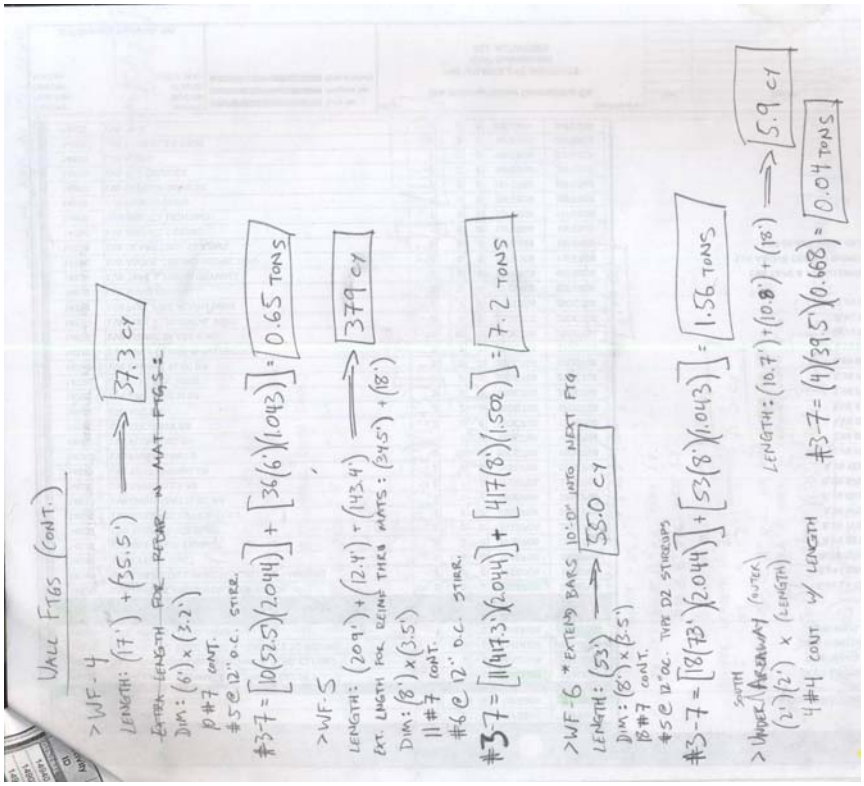


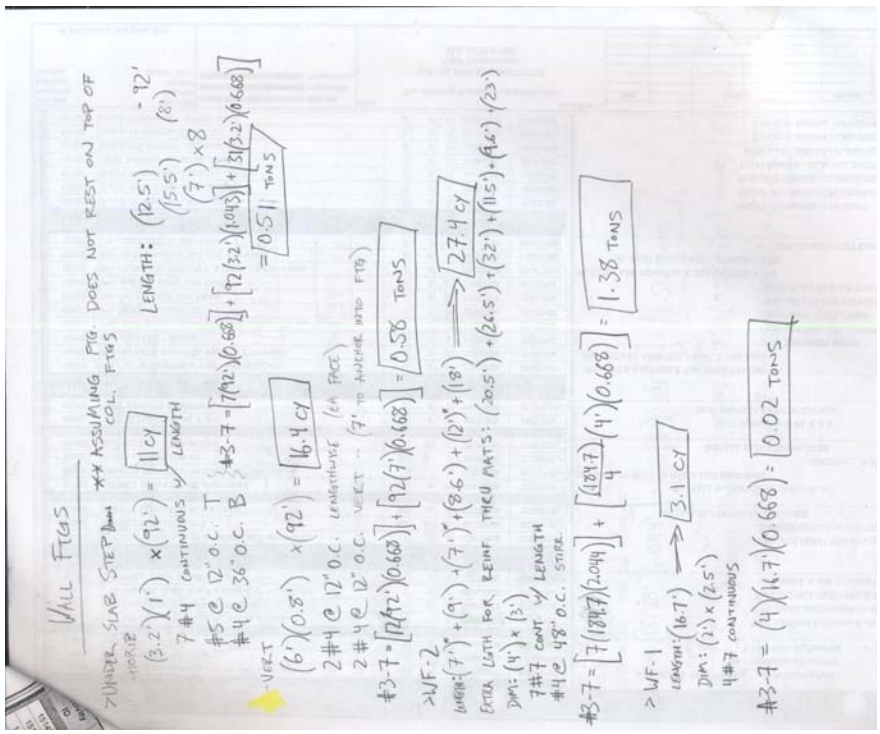
Structural Estimate Calculations



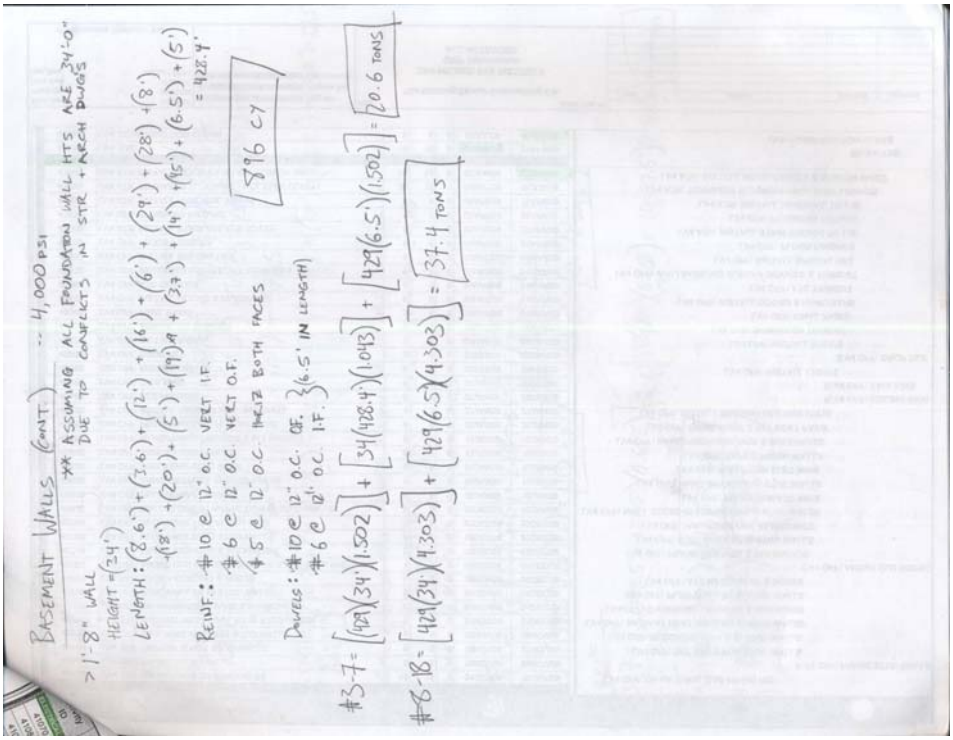


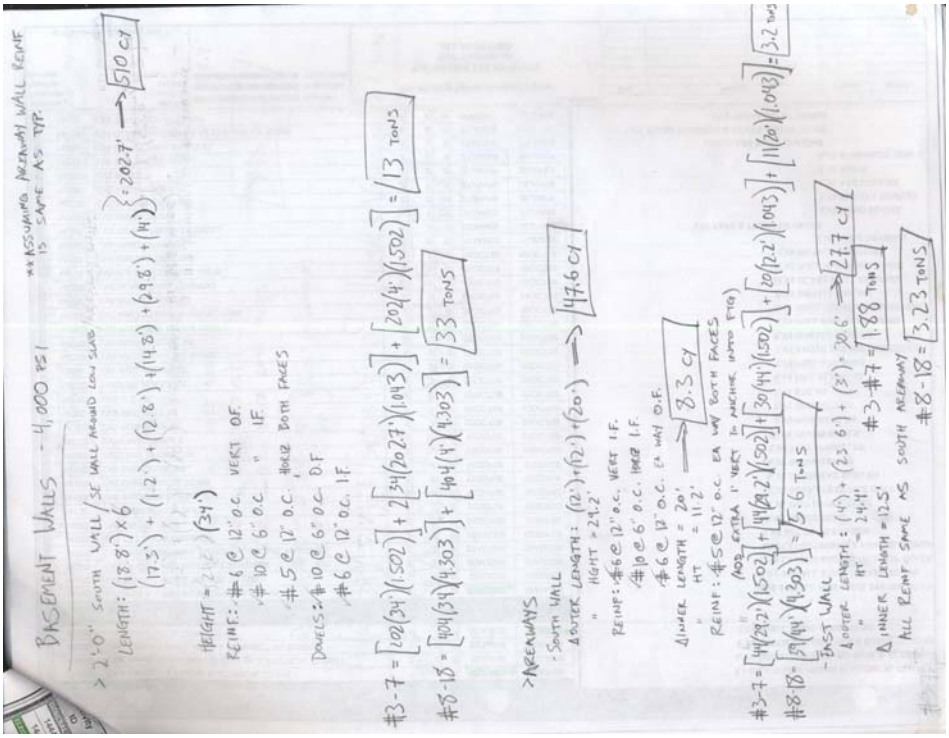
Structural Estimate Calculations



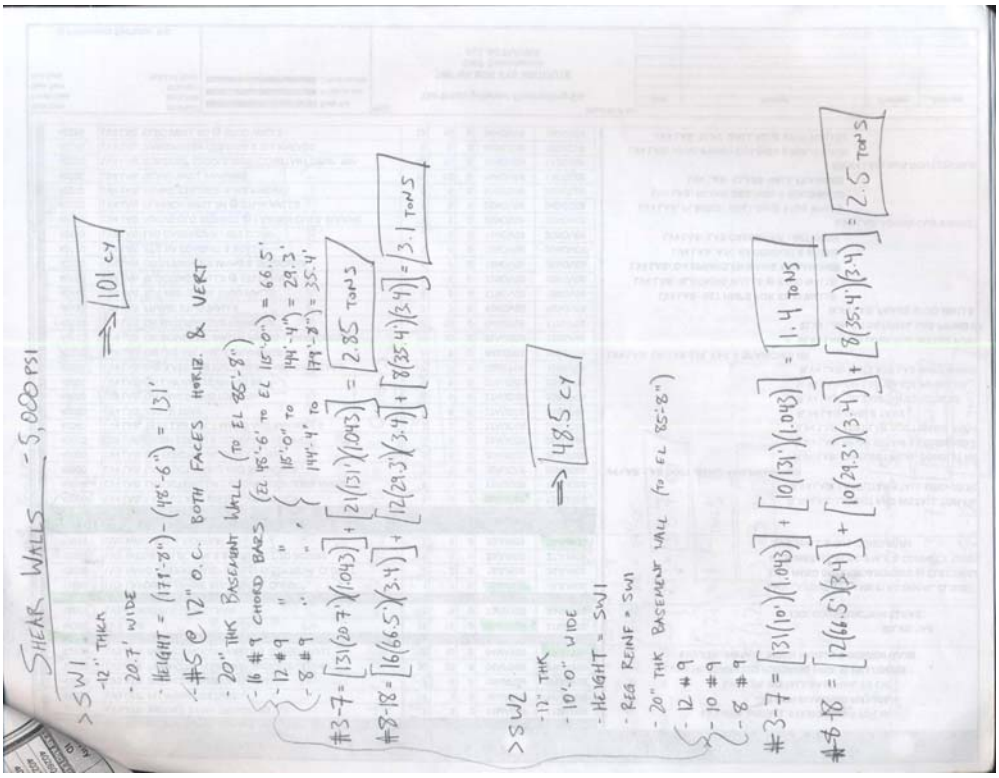


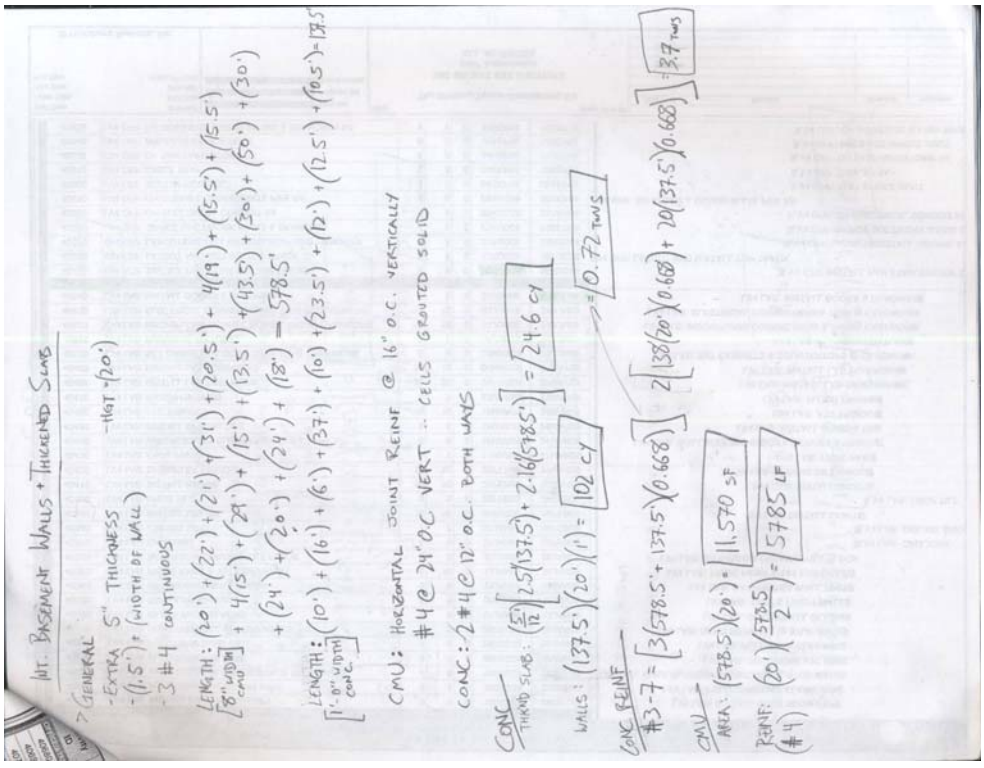
Structural Estimate Calculations



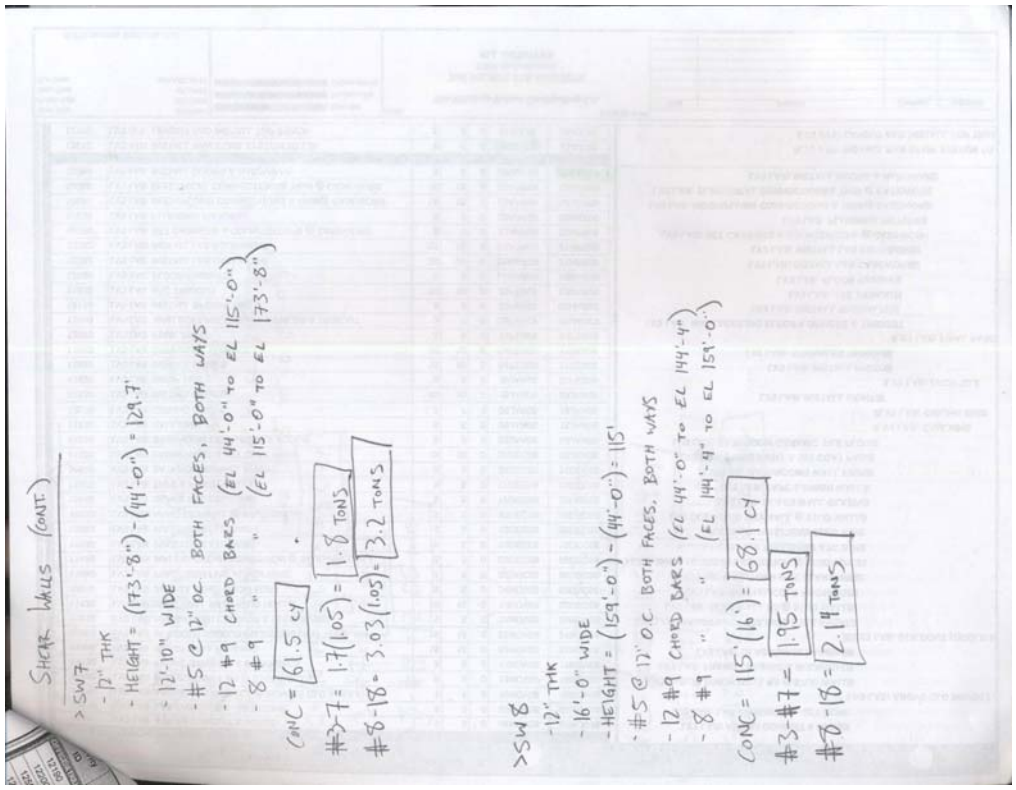


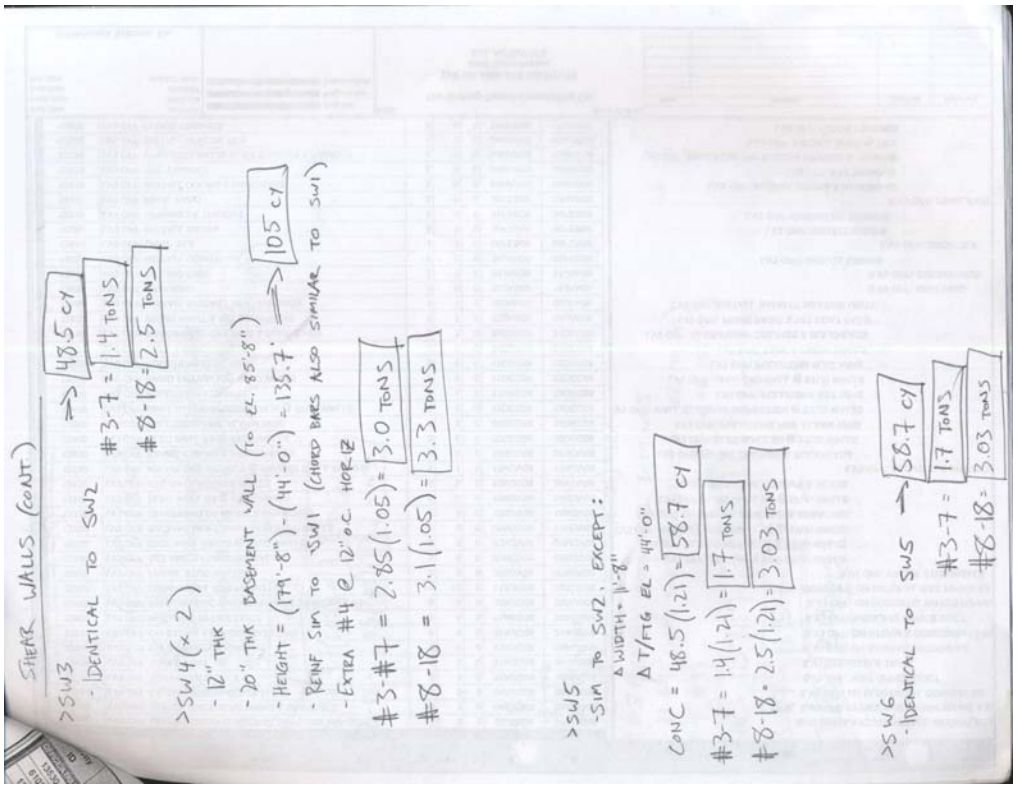
Structural Estimate Calculations



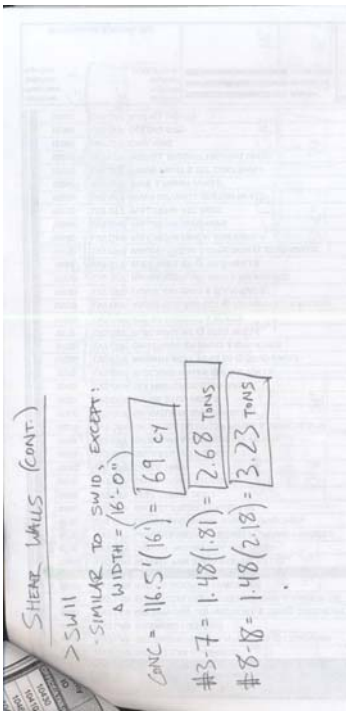


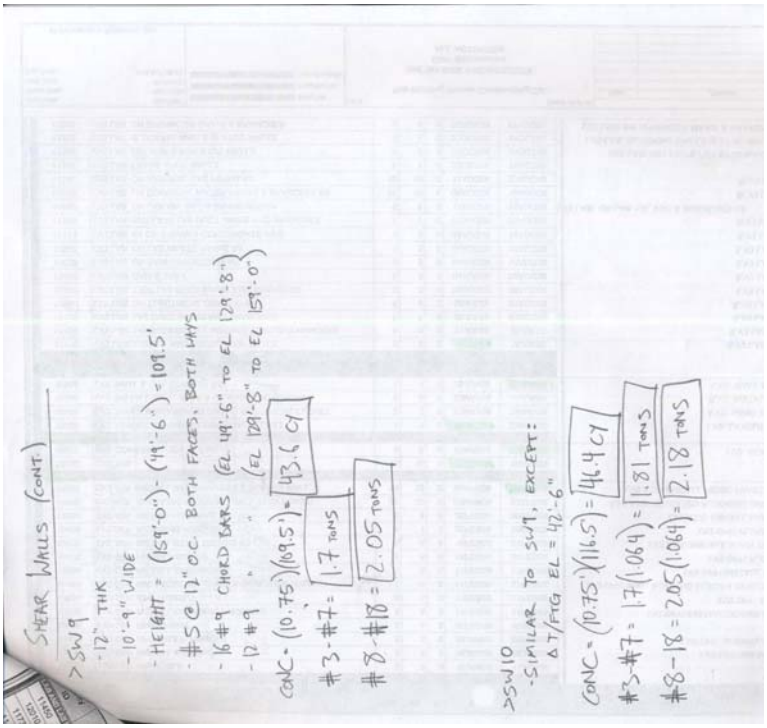
Structural Estimate Calculations



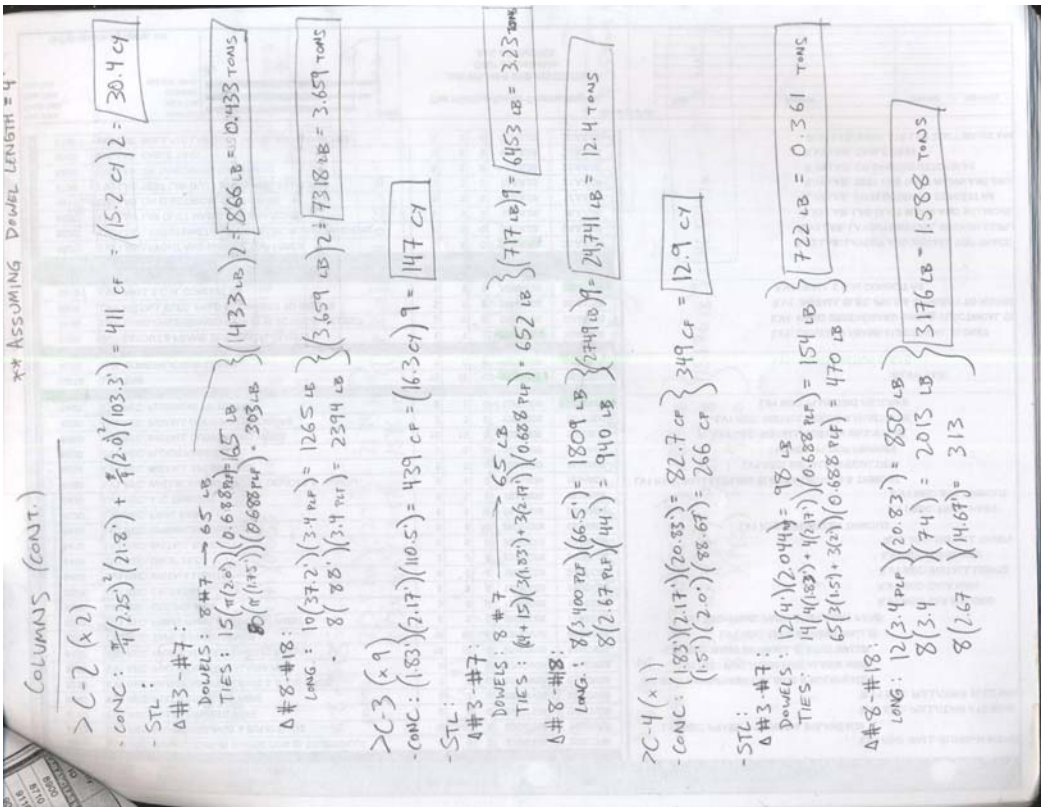


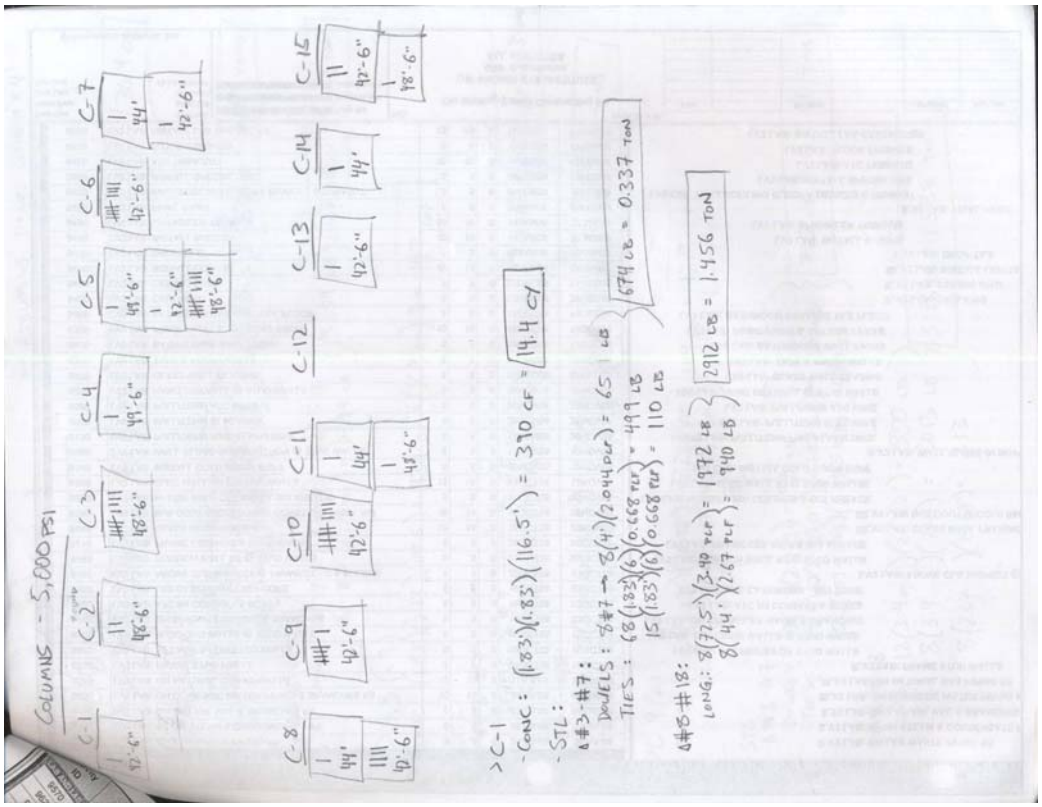
Structural Estimate Calculations



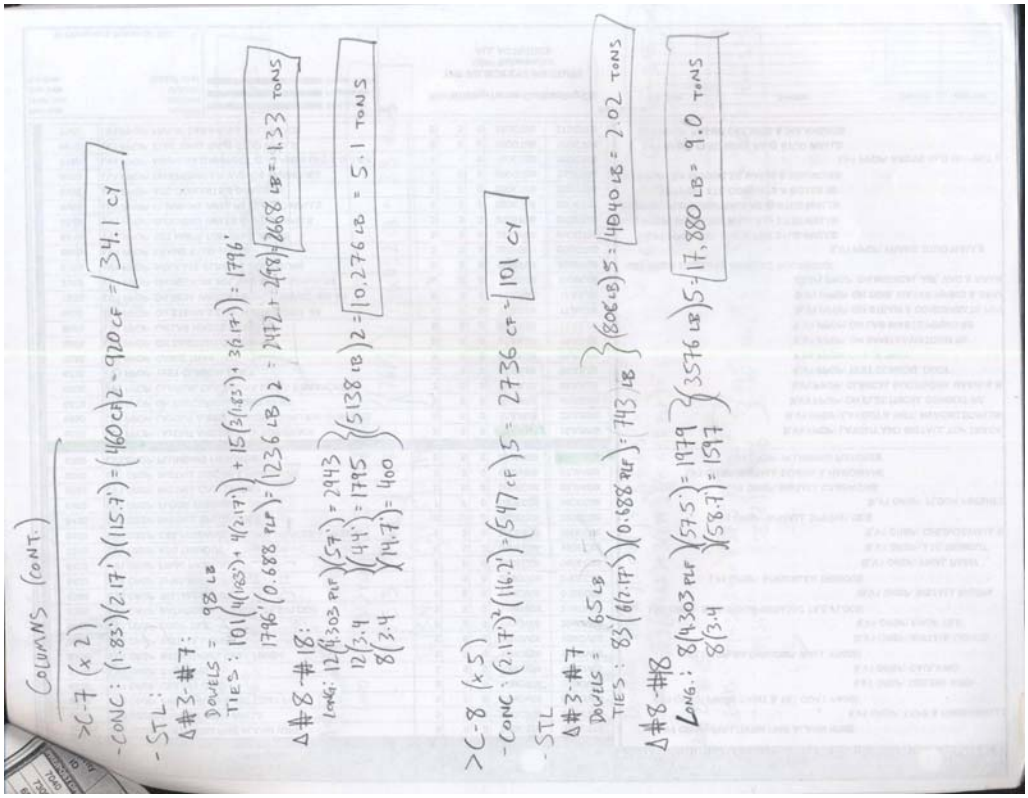


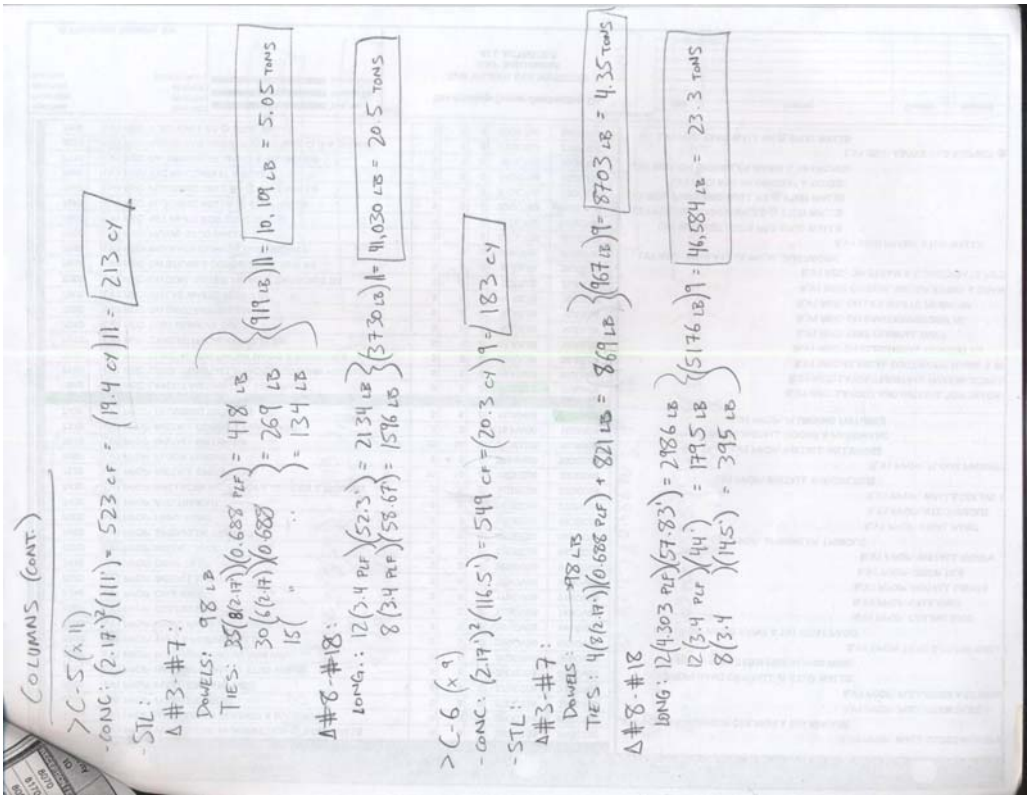
Structural Estimate Calculations



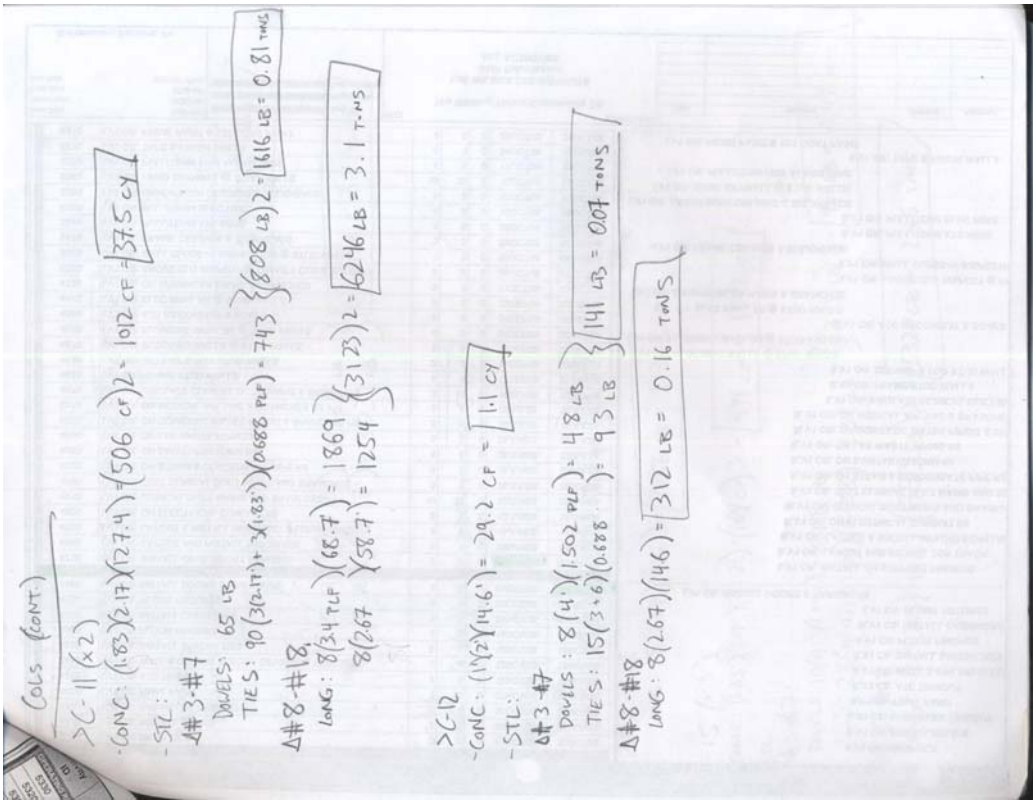


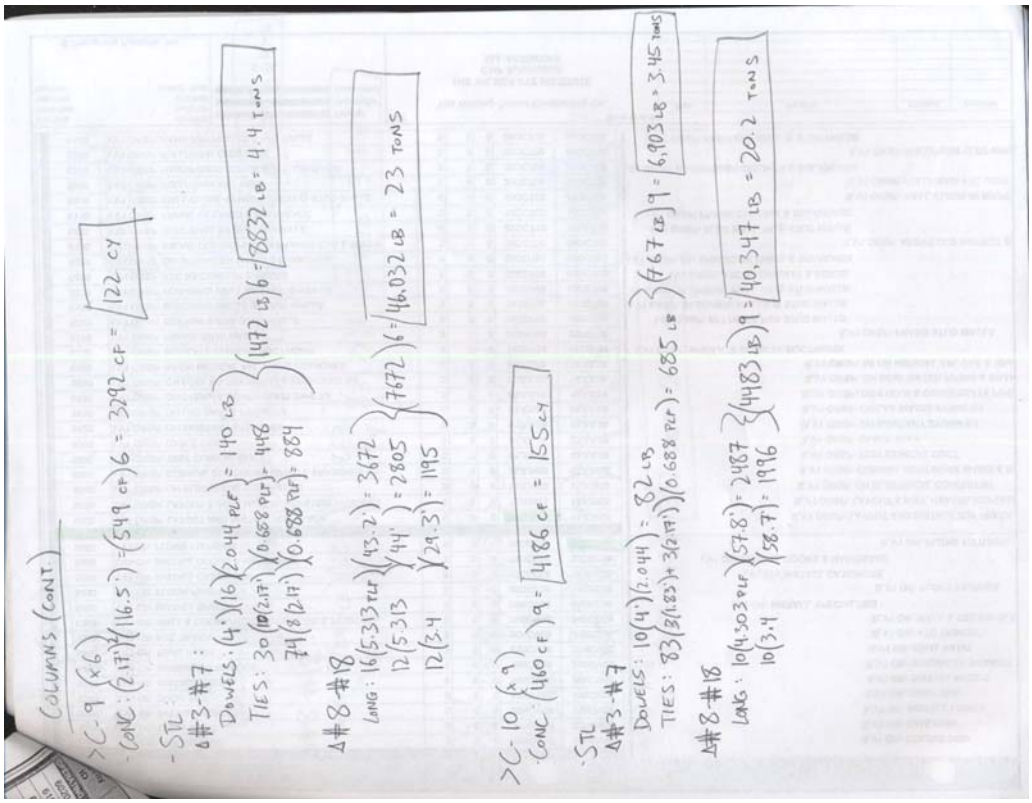
Structural Estimate Calculations





Structural Estimate Calculations





Structural Estimate Calculations