

# NATIONAL ACCELERATOR LABORATORY

FEH Hutches # 4,5 + 6

Stanford  
California

90% DESIGN STAGE  
COST ESTIMATE

February 20th, 2009



111 Pine Street  
Suite 1315  
San Francisco  
CA, 94111

DGA  
550 Ellis Street  
Mountain View  
CA, 94043

**BASIS OF ESTIMATE**

**REFERENCE DOCUMENTATION**

This Construction Cost Estimate was produced from the following documentation. This estimate revision incorporates the accepted Value Engineering items as advised by DGA.

<u>Document</u>	<u>Date</u>
DGA Title II 90% Drawings:	
Architectural	A0, A.01, A1.0, A2.0, A2.0q, A2.0r, A2.01, A2.02, A2.03, A2.4, A3.1, A3.2, A4.1, A4.2, 30-Jan-09
Structural	S10, S20, S40, S70, S71, S72 30-Jan-09
Mechanical	M2.0.02A, M2.0.2B, M2.0.3, M2.0.3A, M2.0.3B, M2.0.4, M2.0.5, M3.1, M4.1, M5.1, M5.2, M6.1 30-Jan-09
Plumbing	P0, P2.0.1, P2.0.2, P2.4.1, P2.4.2, F2.0.1, F2.0.2, F2.4.1, 30-Jan-09
Electrical	E0, E1, E2.1D, E2.1L, E2.1P, E2.1LV, E2.1G, E4.1, E5.1, E5.2, E6.1, E6.2, E6.3 30-Jan-09

**BASIS FOR PRICING**

This estimate reflects the fair construction value for this project and should not be construed as a prediction of low bid. Prices are based on local prevailing wage construction costs at the time the estimate was prepared. Pricing assumes a procurement process with competitive bidding for all sub-trades of the construction work, which is to mean a minimum of 3 bids for all subcontractors and materials/equipment suppliers. If fewer bids are solicited or received, prices can be expected to be higher.

Subcontractor's markups have been included in each line item unit price. Markups cover the cost of field overhead, home office overhead and subcontractor's profit. Subcontractor's markups typically range from 15% to 25% of the unit price depending on market conditions.

General Contractor's/Construction Manager's Site Requirement costs are calculated on a percentage basis. General Contractor's/Construction Manager's Jobsite Management costs are also calculated on a percentage basis.

General Contractor's overhead and fees are based on a percentage of the total direct costs and include general conditions, contractor's bond, insurance, site office overheads and profit.

Insurance and bond is broken down as follows:-

- General Liability Insurance - 1%
- Builders Risk Insurance - 1%
- Performance Bond - 1%

Unless identified otherwise, the cost of such items as overtime, shift premiums and construction phasing are not included in the line item unit price.

This cost estimate is based on standard industry practice, professional experience and knowledge of the local construction market costs. TBD Consultants have no control over the material and labor costs, contractors methods of establishing prices or the market and bidding conditions at the time of bid. Therefore TBD Consultants do not guarantee that the bids received will not vary from this cost estimate.

**CONTINGENCY**

Design Contingency 3%

**BASIS OF ESTIMATE**

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The Design Contingency is carried to cover scope that lacks definition and scope that is *anticipated* to be added to the Design. As the Design becomes more complete the Design Contingency will reduce.

Construction Contingency                                      0%                                      *Carried else where in owners budget*

The Construction Contingency is carried to cover the unforeseen during construction execution and Risks that do not currently have mitigation plans. As Risks are mitigated, Construction Contingency can be reduce, but should not be eliminated.

An owners contingency has not been included in this construction cost estimate, but it is advised that the owner carry additional contingency to cover scope change, bidding conditions, claims and delays.

**ESCALATION**

Escalation has been added to the estimate to reflect the anticipated increases in labor and materials up until the mid point of construction. Escalation is calculated as being compound.

Escalation Per Year	
<u>Year</u>	<u>Escalation</u>
2009	0.00%

This calculation does not account for adverse bidding conditions and a separate Bid Contingency should be carried if there are limited qualified bidders or if a market research study indicates.

**EXCLUSIONS**

- Land acquisition, feasibility studies, financing costs and all other owner costs
- All professional fees and insurance
- Site surveys, existing condition reports and soils investigation costs
- Items identified in the design as Not In Contract [NIC]
- Hazardous materials investigations and abatement
- Utility company back charges, including work required off-site and utilities rates
- Work to site, outwith FEH
- Items defined as Vendor / Owner supplied and Vendor / Owner installed
- Permits
- Owners contingency
- Overtime, 2nd shift and lost productivity premiums
- All work associated with removal and relocation of (E) services and trellis supports along North wall of FEH
- Connection of new process cooling water pipework to (E) system, stubbed 6" above hutches only
- All work associated with removing and replacing (E) process cooling water system and equipment
- All work associated with increasing size of (E) concrete pad at (E) process cooling water equipment
- Supply of electric sliding doors to hutches (3EA), Contractor to install only.
- Supply and installation of crane and crane supports at Hutch 6
- All work associated with construction of laser labs on mezzanine level
- HVAC to common area within FEH outwith Hutches 4 and 5
- All lab casework and equipment, (excluding allowance for casework within control rooms)
- Security, clocks and paging systems
- UPS systems
- Gas bottles, toxic gas exhaust systems
- Any work within existing tunnels
- Raised flooring within hutches
- VESDA fire protection system

**KEY CRITERIA**

**AREA TABULATION**

Floor	Area	Perimeter	Height	Comment
Hutch #4	3,128	258	15.00	
Hutch #5	2,376	208	15.00	
Hutch #6	1,560	166	15.00	
<b>TOTAL</b>	<b>7,064 GSF</b>	<b>502 LF</b>	<b>15.00 LF</b>	

**BUILDING CRITERIA**

Building Footprint	7,064 SF	Roof Area	N/A	SF
Total Site Area	N/A SF	Façade Area	N/A	SF
Net Site Area	N/A SF	Site Perimeter	N/A	LF
Planned Occupancy	N/A HC			

**BUILDING METRICS [un-escalated]**

Skin to Floor Ratio	N/A %	Area / Occupant	N/A	GSF / HC
Glazed Skin %	N/A %	Partition Length / GSF	N/A	LF / GSF
Building Cost / GSF	601 \$ / GSF	Building Cost / Occupant	N/A	\$ / HC
Sitework Cost / Site Area	N/A \$ / SF			

**CONSTRUCTION SCHEDULE**

Construction Start Date	Apr-09	Construction End Date	Sep-09
Mid-date of Construction	Jun-09	Construction Duration	5 months
Escalation Period	0 months		

**OVERALL SUMMARY**

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**OVERALL SUMMARY**

	<b>Area</b>	<b>Cost</b>	<b>Cost/SF</b>	<b>Comment</b>
Hutch #4 + #5	5,504 SF	\$3,483,588	\$633	
Hutch #6	1,560 SF	\$760,218	\$487	
<b>TOTAL</b>	<b>7,064 GSF</b>	<b>\$4,243,806</b>	<b>\$601</b>	

MASTER FORMAT SUMMARY

GSF : 5,504

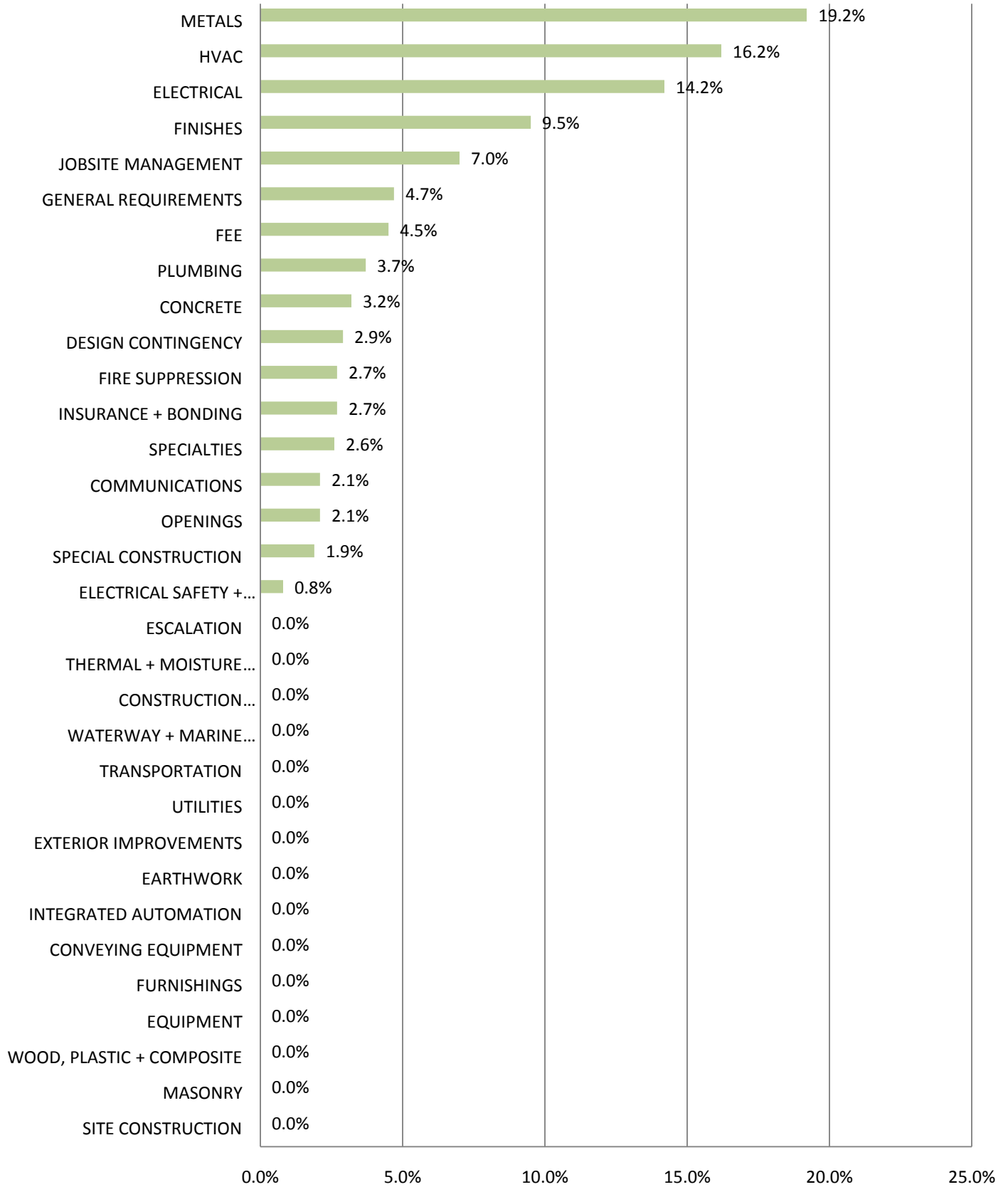
	%	TOTAL	\$/ SF	COMMENTS
01 GENERAL REQUIREMENTS	5.7%	163,388	\$29.69	\$32,678 per month
02 SITE CONSTRUCTION				
03 CONCRETE	3.8%	110,236	\$20.03	
04 MASONRY				
05 METALS	23.2%	669,899	\$121.71	
06 WOOD, PLASTIC + COMPOSITE				
07 THERMAL + MOISTURE PROTECTION				
08 OPENINGS	2.6%	74,400	\$13.52	
09 FINISHES	11.4%	329,411	\$59.85	
10 SPECIALTIES	3.2%	91,275	\$16.58	
11 EQUIPMENT				
12 FURNISHINGS				
13 SPECIAL CONSTRUCTION	2.3%	66,400	\$12.06	
14 CONVEYING EQUIPMENT				
21 FIRE SUPPRESSION	3.2%	93,568	\$17.00	
22 PLUMBING	4.5%	129,368	\$23.50	
23 HVAC	19.5%	564,088	\$102.49	
25 INTEGRATED AUTOMATION				
26 ELECTRICAL	17.1%	493,294	\$89.62	
27 COMMUNICATIONS	2.5%	71,632	\$13.01	
28 ELECTRICAL SAFETY + SECURITY	1.0%	29,556	\$5.37	
31 EARTHWORK				
32 EXTERIOR IMPROVEMENTS				
33 UTILITIES				
34 TRANSPORTATION				
35 WATERWAY + MARINE CONSTRUCTION				
<b>DIRECT COSTS</b>		<b>2,886,515</b>	<b>\$524.44</b>	
JOBSITE MANAGEMENT	9.0%	245,081	\$44.53	\$49,016 per month
<b>ESTIMATE SUB-TOTAL</b>		<b>3,131,596</b>	<b>\$568.97</b>	
INSURANCE + BONDING	3.0%	93,948	\$17.07	
FEE	5.0%	156,580	\$28.45	
<b>ESTIMATE SUB-TOTAL</b>		<b>3,382,124</b>	<b>\$614.48</b>	
DESIGN CONTINGENCY	3.0%	101,464	\$18.43	
CONSTRUCTION CONTINGENCY				
<b>ESTIMATE SUB-TOTAL</b>		<b>3,483,588</b>	<b>\$632.92</b>	
ESCALATION				Assume start date April 2009
<b>ESTIMATE TOTAL</b>		<b>3,483,588</b>	<b>\$632.92</b>	

UNIFORMAT II SUMMARY

GSF : 5,504

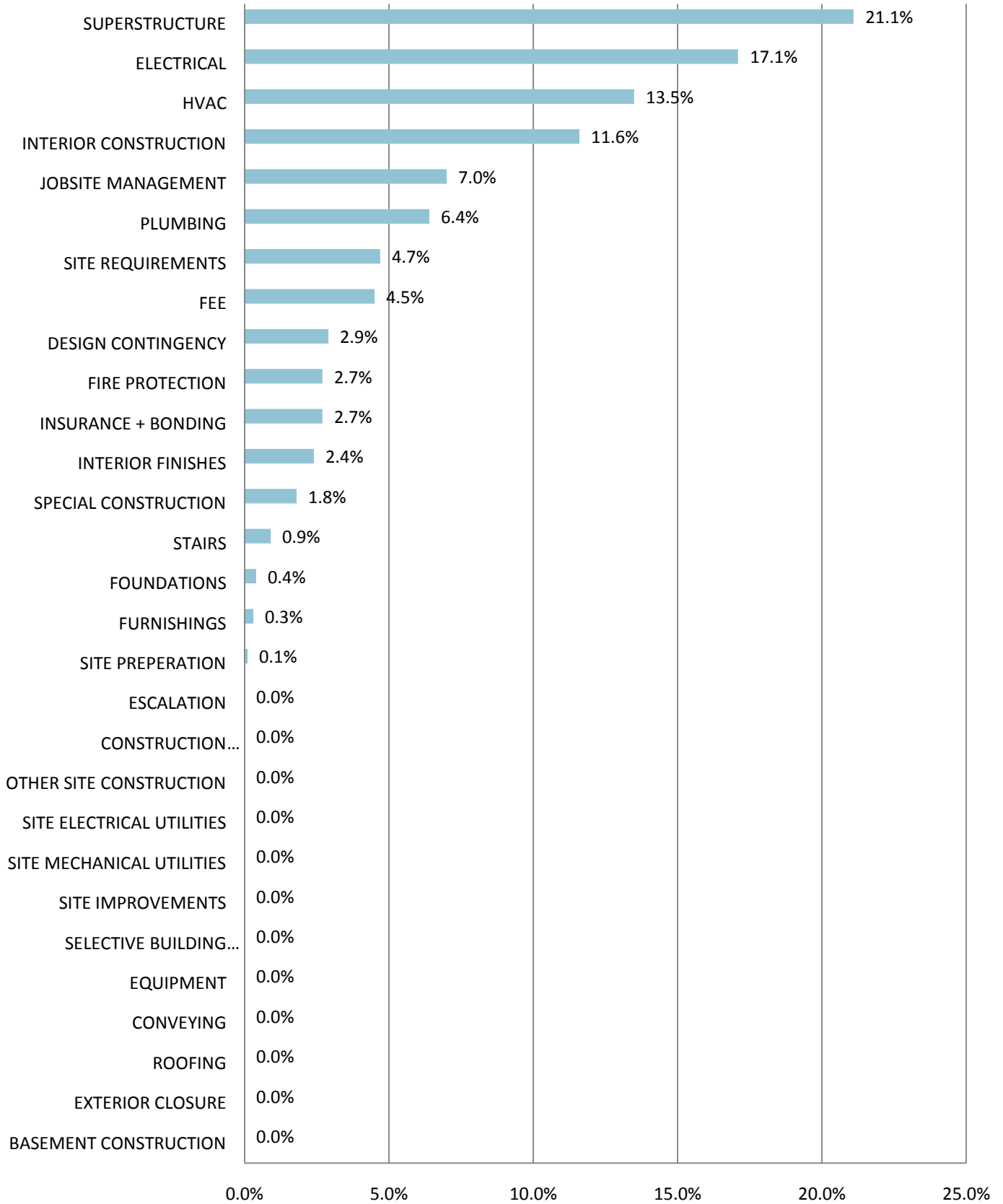
SECTION	%	TOTAL	\$ / SF	COMMENTS
10 FOUNDATIONS	0.5%	12,384	2.25	Misc. patch, repair (E) SOG
20 BASEMENT CONSTRUCTION				
<b>A SUBSTRUCTURE</b>	<b>0.5%</b>	<b>12,384</b>	<b>2.25</b>	
10 SUPERSTRUCTURE	27.0%	735,751	133.68	Incl structural VE Alt # 1
20 EXTERIOR CLOSURE				With Moment Frame at MEP platform
30 ROOFING				
<b>B SHELL</b>	<b>27.0%</b>	<b>735,751</b>	<b>133.68</b>	
10 INTERIOR CONSTRUCTION	14.8%	402,473	73.12	Level 4 partitions, doors, shielding
20 STAIRS	1.2%	32,000	5.81	1 stair
30 INTERIOR FINISHES	3.0%	82,613	15.01	
<b>C INTERIORS</b>	<b>19.0%</b>	<b>517,086</b>	<b>93.95</b>	
10 CONVEYING				
20 PLUMBING	8.2%	223,388	40.59	
30 HVAC	17.3%	470,068	85.40	
40 FIRE PROTECTION	3.4%	93,568	17.00	Sprinkler system, VESDA
50 ELECTRICAL	21.8%	594,482	108.01	
<b>D SERVICES</b>	<b>50.7%</b>	<b>1,381,506</b>	<b>251.00</b>	
10 EQUIPMENT				
20 FURNISHINGS	0.4%	10,000	1.82	Casework to control rooms
<b>E EQUIPMENT + FURNISHINGS</b>	<b>0.4%</b>	<b>10,000</b>	<b>1.82</b>	
10 SPECIAL CONSTRUCTION	2.3%	62,000	11.26	Bridge cranes
20 SELECTIVE BUILDING DEMOLITION				
<b>F SPECIAL CONSTRUCTION + DEMOLITION</b>	<b>2.3%</b>	<b>62,000</b>	<b>11.26</b>	
10 SITE PREPERATION	0.2%	4,400	0.80	
20 SITE IMPROVEMENTS				
30 SITE MECHANICAL UTILITIES				
40 SITE ELECTRICAL UTILITIES				
50 OTHER SITE CONSTRUCTION				
<b>G BUILDING SITEWORK</b>	<b>0.2%</b>	<b>4,400</b>	<b>0.80</b>	
<b>DIRECT COSTS</b>		<b>2,723,127</b>	<b>494.75</b>	
SITE REQUIREMENTS	6.0%	163,388	29.69	\$32,678 per month
JOBSITE MANAGEMENT	9.0%	245,081	44.53	\$49,016 per month
<b>ESTIMATE SUB-TOTAL</b>		<b>3,131,596</b>	<b>568.97</b>	
INSURANCE + BONDING	3.0%	93,948	17.07	
FEE	5.0%	156,580	28.45	
<b>ESTIMATE SUB-TOTAL</b>		<b>3,382,124</b>	<b>614.48</b>	
DESIGN CONTINGENCY	3.0%	101,464	18.43	
CONSTRUCTION CONTINGENCY				Excluded
<b>ESTIMATE SUB-TOTAL</b>		<b>3,483,588</b>	<b>632.92</b>	
ESCALATION				Assume start date April 2009
<b>ESTIMATE TOTAL</b>		<b>3,483,588</b>	<b>632.92</b>	total add-ons 27.93%

## Trade Distribution





## Cost Distribution



ESTIMATE DETAIL

GSF : 5,504

REF	DESCRIPTION	QUANTITY	UoM	UNIT RATE	TOTAL	COMMENTS
1	<u>Standard Foundations</u>					
2						subtotal \$12,384
3						
4	<u>Special Foundations</u>					
5						
6						
7	<u>Slab On Grade</u>					
8	Patch SOG, (hutches 4 + 5)	5,504	SF	2.25	12,384	allowance
9	Increase (E) concrete pad at PCW	1	LS	2,000.00		excluded
10						
11	<b>FOUNDATIONS</b>				<b>12,384</b>	<b>\$2.25 / SF</b>
12						
13	<u>Basement Excavation</u>					
14						
15						
16	<u>Basement Walls</u>					
17						
18						
19	<b>BASEMENT CONSTRUCTION</b>					<b>\$0 / SF</b>
20						
21	<u>Floor Construction, (Over hutches 4,5 + 6)</u>					19.8 lb / sf
22	Columns	33,390	LB	3.00	100,170	
23	Beams	75,315	LB	3.00	225,945	
24	Bracing	8	EA	2,000.00	16,000	
25	Allow for bolts, plates, connections	16,306	LB	3.00	48,918	
26	Moment frame bracing 3"x3"x1/4"	155	LF	200.00	31,000	
27	Moment connections	26	EA	1,500.00	39,000	
28	Column caps	15	EA	150.00	2,250	
29	Brace frame base plates	8	EA	2,000.00	16,000	
30	Base plates	12	EA	2,000.00	24,000	
31	Crane rails	5,500	LB	4.00	22,000	
32	Hard rail connection	34	EA	250.00	8,500	
33	Slip rail connections	4	EA	250.00	1,000	
34	Metal deck	6,313	SF	7.00	44,191	
35	6 1/2" concrete fill on metal deck, reinforced	6,313	SF	15.50	97,852	LWC 61/2"
36	Perimeter bent plate	508	LF	35.00	17,780	
37	Seismic joint cover 16 GA	36	LF	70.00	2,520	
38	20 GA closer abutting tunnel wall	190	LF	50.00	9,500	
39	Forming small opening in deck	8	EA	250.00	2,000	
40	Forming medium opening in deck	3	EA	400.00	1,200	
41	Allowance for pipe penetrations through beams	1	LS	12,000.00	12,000	
42	Allow for tying (E) mechanical platform to new mezzanine structure	1	LS	8,000.00	8,000	
43	Metal grating	50	SF	30.00	1,500	
44	Allow for 4" concrete pad under AHU	177	SF	25.00	4,425	allowance
45						
46						
47	<b>SUPERSTRUCTURE</b>				<b>735,751</b>	<b>\$133.68 / SF</b>
48						
49	<u>Exterior Walls</u>					
50						
51						
52	<u>Exterior Windows</u>					
53						
54						
55	<u>Exterior Doors</u>					
56						
57						
58	<b>EXTERIOR CLOSURE</b>					<b>\$0 / SF</b>

ESTIMATE DETAIL

GSF : 5,504

REF	DESCRIPTION	QUANTITY	UoM	UNIT RATE	TOTAL	COMMENTS
59						
60	<u>Roof Coverings</u>					
61						
62						
63	<u>Roof Openings</u>					
64						
65						
<b>66</b>	<b>ROOFING</b>					<b>\$0 / SF</b>
67						
68	<u>Partitions, (hutches 4 + 5)</u>					
69	Partitions, type A1, A2 and B	359	LF	270.00	96,930	
70	Premium for lead lining 1/16" to type A1	1,455	SF	30.00	43,650	
71	Premium for lead lining 1/32" to type A2	1,965	SF	22.00	43,230	
72	Furring around columns, lead lined	390	SF	50.00	19,500	
73	premium for lead corners	210	LF	30.00	6,300	
74	Allow for demolishing and rebuilding (E) tunnel partition as necessary to allow installation of new seivces	19	LF	300.00	5,700	
75	Allow for beam and pipe penetrations through lead lined walls	1	LS	20,000.00	20,000	
76	Safing insulation and 4" metal plate at head of partitions	359	LF	20.00	7,180	
77	Caulking and sealants	1,436	LF	3.00	4,308	
78						
79	<u>Interior Doors, (hutches 4 + 5)</u>					
80	HM single door type A, 3' x 8'	1	EA	2,600.00	2,600	
81	HM double door type AA, 6' x 8'	3	EA	5,600.00	16,800	
82	HM double door type BB, 6' x 8'	2	EA	6,000.00	12,000	
83	Roll-up door type D, 10' x 8'	3	EA	12,000.00	36,000	
84	Electrical sliding doors type C, 4' x 8'	2	EA	3,500.00	7,000	Install only, Owner Supplied
85						
86	<u>Fittings, (hutches 4,5 +6)</u>					
87	Guardrails, painted	270	LF	160.00	43,200	
88	Guardrails, removeable, painted	29	LF	195.00	5,655	
89	Allow for new guardrail at (E) MAU platform	6	LF	200.00	1,200	
90	Unistrut equipment supports	46	EA			excluded - VE, backing only
91	Bracing plate backing in walls	1,436	LF	20.00	28,720	allowance
92	Allow for recessed fire extinguisher cabinets	5	EA	500.00	2,500	allowance
93						
<b>94</b>	<b>INTERIOR CONSTRUCTION</b>				<b>402,473</b>	<b>\$73.12 / SF</b>
95						
96	<u>Stair Construction</u>					
97	Steel stair and handrails	2	FLT	16,000.00	32,000	Prefab metal grating stairs - VE
98						
99	<u>Stair Finishes</u>					
100						
101						
<b>102</b>	<b>STAIRS</b>				<b>32,000</b>	<b>\$5.81 / SF</b>
103						
104	<u>Wall Finishes, (hutches 4 + 5)</u>					
105	Wall finishes to partitions	10,770	SF	1.80	19,386	
106	Wall finishes to tunnel		SF			excluded
107	Allow for touch up	1	LS	8,000.00	8,000	allowance
107						
108	<u>Floor Finishes, (hutches 4 + 5)</u>					
109	Touch up (E) epoxy flooring	5,504	SF	3.00	16,512	allowance
110	Wall base	390	LF	4.00	1,560	allowance
111						
112	<u>Ceiling Finishes, (hutches 4 + 5)</u>					
113	Painted structure	5,327	SF	3.00	15,981	
114	Ceiling finishes to tunnel		SF			excluded
115	Lead lined gypsum board ceiling with ply	164	SF	75.00	12,300	
116	2 x 4 ACT suspended ceiling system	986	SF	9.00	8,874	control rooms only
117						
<b>118</b>	<b>INTERIOR FINISHES</b>				<b>82,613</b>	<b>\$15.01 / SF</b>

ESTIMATE DETAIL

GSF : 5,504

REF	DESCRIPTION	QUANTITY	UoM	UNIT RATE	TOTAL	COMMENTS
119						
120	<u>Elevators + Lifts</u>					
121						
122						
123	<u>Escalators + Moving Walkways</u>					
124						
125						
126	<u>Other Conveying Systems</u>					
127						
128						
129	<b>CONVEYING</b>					<b>\$0 / SF</b>
130						
131	<u>Hutches 4 +5</u>					
132	<u>Plumbing Fixtures</u>					
133	Sanitary sewer and domestic service water					
134	Condensate drainage	100	LF	35.00	3,500	Common area
135	Make-up water	50	LF	25.00	1,250	Common area
136						
137	<u>Laboratory Gas Distribution</u>					
138	Gas bottles - by others					By Others
139	Compressed air distribution pipework, including valves, specialties and outlets					Hutch 4 + 5
140	Compressed air Copper "L" pipework	400	LF	90.00	36,000	Excluding Drops
141	Compressed outlets	19	EA	1,000.00	19,000	Including drops, quick connect and ball valve
142	Valves and specialties	1	LS	11,000.00	11,000	
143	Air compressor, dry, oil-free, 10csfm				Excluded	Not Required
144	Process cooling water					
145	Processed cooling water pipework					
146	2"	210	LF	70.00	14,700	
147	1 1/2"	160	LF	65.00	10,400	
148	1 1/4"	140	LF	50.00	7,000	
149	Processed cooling water outlets	42	EA	1,000.00	42,000	
150	Valves and specialties	1	LS	14,820.00	14,820	
151	Insulation	510	LF	10.00	5,100	
152	Connection to existing PCW skid				Excluded	excluded
153	Connection to specialty racks				Excluded	excluded
154						
155	<u>Other Plumbing Systems</u>					
156	Miscellaneous plumbing	5,504	SF	2.00	11,008	Testing, Sterlization, flushing
157	Firestopping/core drilling	5,504	SF	0.65	3,578	allowance
158	Project requirements (coordination, shop dwg, detailing, project management, material handling, security badging)	5,504	SF	8.00	44,032	allowance
159						
160						
161	<b>PLUMBING</b>				<b>223,388</b>	<b>\$40.59 / SF</b>
162						
163	<u>Hutches 4 +5</u>					
164	<u>Cooling Generating Systems</u>					
165	Heat exchanger					Not Required
166	Process cooling water skid					Not Required
167						
168	<u>Distribution Systems</u>					
169	Chilled water, black steel <=2", including valves, specialties, insulation					
170	Chilled water pipework	50	LF	50.00	2,500	Connection to existing cavern chilled water loop
171	Valves and specialties	1	LS	5,000.00	5,000	
172	Insulation	50	LF	10.00	500	
173	Heating hot water, black steel <=2", including valves, specialties, insulation					
174	Heated hot water pipework	450	LF	50.00	22,500	Connection to existing cavern HHW water loop
175	Valves and specialties	6	EA	600.00	3,600	
176	Insulation	450	LF	10.00	4,500	

**ESTIMATE DETAIL**

GSF : 5,504

REF	DESCRIPTION	QUANTITY	UoM	UNIT RATE	TOTAL	COMMENTS
177						
178	<u>Terminal + Packaged Units</u>					
179	Existing MAU Upgrade	1	LS	7,500.00	7,500	allowance
180	Air conditioning unit, including sf, cc, filters and HEPA filters					
181	Hutch 4,5,&6 ,17,250 cfm	1	EA	107,586.68	107,587	Prorated with Hutch 6
182	<u>Terminal boxes, w/reheat</u>					
183	Hutch #4 - 4,550 cfm	1	EA	6,840.00	6,840	
184	XCS Room - 1080 cfm	1	EA	1,620.00	1,620	
185	Common areas - 1020 cfm	1	EA	1,530.00	1,530	
186	Hutch# 5 - 4,350 cfm	1	EA	6,840.00	6,840	
187	CXI Room - 1,050 cfm	1	EA	1,575.00	1,575	
188	Room 101 - 750 cfm	1	EA	1,125.00	1,125	
189						
190	<u>Air distribution and return</u>					
191	Galvanized sheet metal ductwork,	6,600	LBS	16.00	105,600	Excludes Painting of the exposed ductwork
192	Flexible ductwork	105	LF	13.00	1,365	
193	Volume dampers	21	EA	60.00	1,260	
194	Combination fire/smoke dampers - reinstall	2	EA	2,500.00	5,000	
195	Duct insulation				Excluded	Exposed ductwork
196	Acoustical lining				Excluded	Exposed ductwork
197						
198	<u>Diffusers, registers and grilles</u>					
199	<u>Ceiling diffusers</u>					
200	CD-1) 14"x14"	7	EA	420.00	2,940	
201	CD-2) 20"x20"	6	EA	450.00	2,700	
202	RG-1) 20"x20"	3	EA	320.00	960	
203	RG-2) 22"x22"	6	EA	350.00	2,100	
204	Exhaust grilles	2	EA	250.00	500	
205	Transfer grilles - reinstall	2	EA	600.00	1,200	
206						
207	<u>Control + Instrumentation</u>					
208	Direct digital controls systems					
209	Air conditioning unit	14	PTS	1,500.00	21,000	ALC BACnet Controls
210	Terminal boxes	12	PTS	1,500.00	18,000	
211	Exhaust fans	9	PTS	1,500.00	13,500	
212	Connection to existing DDC	1	LS	15,000.00	15,000	allowance
213						
214	<u>Systems Testing + Balancing</u>	5,504	SF	2.00	11,008	
215						
216	<u>Exhaust system</u>					
217	Galvanized sheet metal ductwork,	1,500	LBS	16.00	24,000	10" exhaust to tunnel entrance
218	Stack discharge	3	EA	800.00	2,400	
219	Exhaust fan EF-1, Hutch #4 - 500 cfm	1	EA	1,350.00	1,350	
220	Exhaust fan EF-2, Common - 500 cfm	1	EA	1,350.00	1,350	
221	Exhaust fan EF-3, Hutch #5 - 500 cfm	1	EA	1,350.00	1,350	
222	Add VFD control to EF-999-5	1	EA	650.00	650	
223						
224	<u>Other HVAC Systems</u>					
225	Seismic, vibration, acoustical	5,504	SF	2.00	11,008	3%
226	Firestopping/core drilling	5,504	SF	0.65	3,578	1%
227	Project requirements (coordination, shop dwg, detailing, project management, material handling, security badging)	5,504	SF	8.00	44,032	7%
228	Remove existing exhaust ducts	500	LBS	10.00	5,000	At Cavern Entrance
229						
230						
231	<b>HVAC</b>				<b>470,068</b>	<b>\$85.4 / SF</b>

ESTIMATE DETAIL

GSF : 5,504

REF	DESCRIPTION	QUANTITY	UoM	UNIT RATE	TOTAL	COMMENTS
232						
233	<u>Hutches 4 +5</u>					
234	<u>Sprinklers</u>					
235	Automatic wet sprinkler system	5,504	SF	14.00	77,056	Hutch 4&5, CXI, XCS
236	VESDA Fire Protection System for Hutches only	1	LS			excluded - VE, as per DGA
237	VESDA Fire Protection Cavern Tunnel					excluded
238						
239	<u>Standpipes</u>					
240	Excluded					excluded
241						
242	<u>Fire Protection Specialties</u>					
243	Excluded					excluded
244						
245	<u>Other Fire Protection Systems</u>					
246	Project requirements (coordination, shop dwg, detailing, project management, material handling, security badging)	5,504	SF	3.00	16,512	
247						
248						
249	<b>FIRE PROTECTION</b>				<b>93,568</b>	<b>\$17 / SF</b>
250						
251	<u>Hutches 4 +5</u>					
252	<u>Electrical Service + Distribution</u>					
253	Access existing switchboard 4DPB01-999, add (2) 300A 3p breakers	1	LS	3,605.00	3,605	
254	4"rgs, 4#350MCM, 4g to new distribution panel 4DPB02-999	160	LF	131.21	20,994	
255	Distribution panel 4DPB02-999	1	EA	5,764.00	5,764	
256	3"rgs, 3#350MCM, 4g to new distribution panel 4DPB03-999	160	LF	96.32	15,411	
257	Distribution panel 4DPB03-999	1	EA	3,771.00	3,771	
258	45kVA transformers	5	EA	5,113.00	25,565	
259	Feeders to 45kVA transformers	250	LF	46.94	11,735	
260	112-1/2kVA transformers	1	EA	10,051.00	10,051	
261	Feeder to 112-1/2kVA transformer	20	LF	106.80	2,136	
262	125A enclosed breakers	5	EA	2,502.00	12,510	
263	2", 5#1/0, 6g to 125A enclosed breakers	100	LF	52.56	5,256	
264	Distribution panel 2CPB02-999, 120/208V, breakers, feeder	1	EA	12,777.00	12,777	
265	Panel 2CBP02A-999, breakers, feeder (XCS room 102, Clean power)	1	EA	5,704.00	5,704	
266	Panel 2CBP02B-999, breakers, feeder (Common Room room 103, Clean power)	1	EA	5,995.00	5,995	
267	Panel 2CBP02C-999, breakers, feeder (CXI Room room 104, Clean power)	1	EA	8,173.00	8,173	
268	Panel 2CBP04-999, breakers, feeder (Hutch #4, Clean power)	1	EA	7,082.00	7,082	
269	Panel 2CBP05-999, breakers, feeder (Hutch #5, Clean power)	1	EA	9,508.00	9,508	
270	Panel 2DBP04-999, breakers, feeder (Hutch #4, Dirty power)	1	EA	7,141.00	7,141	
271	Panel 2DBP05-999, breakers, feeder (Hutch #5, Dirty power)	1	EA	9,607.00	9,607	
272	Access existing motor control center, add starters	1	EA	2,554.00	2,554	
273	Replace existing breakers in panel 2LBP02 with new 40A 2p	1	EA	223.00	223	
274	4.5kVA inverter, 90 minute back-up, feeder	1	EA	10,585.00	10,585	partial cost
275	Connect exhaust fans	2	EA	2,039.00	4,078	
276	1" (6)#12 to AHU for control interlocks	1,000	LF	14.10	14,100	
277	Connect bridge crane, Hutch #4	1	EA	4,349.00	4,349	
278	Connect bridge crane, Hutch #5	1	EA	2,757.00	2,757	
279	Connect air handling units	1	EA	2,370.00	2,370	partial cost
280	Connect VFD	1	EA	1,500.00	1,500	

**ESTIMATE DETAIL**

GSF : 5,504

REF	DESCRIPTION	QUANTITY	UoM	UNIT RATE	TOTAL	COMMENTS
281	Connect VAV's	6	EA	450.00	2,700	
282	Connect heat exchanger	1	EA	2,870.00	2,870	
283	Connect dampers	6	EA	450.00	2,700	
284	Grounding:					
285	4/0 ground wire	300	LF	7.50	2,250	
286	1/0 ground wire	280	LF	4.60	1,288	
287	Exothermic welds	3	EA	134.00	402	
288	3/4" conduit	640	LF	9.65	6,176	
289	Cable tray bonding	1	LS	3,075.00	3,075	
290	Ground bus	1	EA	540.00	540	
291	Unistrut equipment supports	20	EA	528.00	10,560	
292	Rough-in for future EPO	3	EA	550.00	1,650	
293	Connections to owner's equipment					excluded
294	Central UPS					excluded
295						
296	<u>Lighting + Branch Wiring</u>					
297	Fixture type A2, 4ft	10	EA	199.00	1,990	
298	Fixture type A, 8ft	34	EA	352.00	11,968	
299	Fixture type B	17	EA	348.00	5,916	
300	Fixture type B2	5	EA	268.00	1,340	
301	Exit lights	5	EA	353.00	1,765	
302	Lighting back boxes	55	EA	47.00	2,585	
303	Fixture whips	22	EA	60.00	1,320	
304	Lighting conduit, wire	1,100	LF	14.50	15,950	#10 wire
305	Light switches, 3 way	12	EA	374.00	4,488	
306	Wall mounted dimmers	3	EA	555.00	1,665	
307	Relocate existing fixtures, provide new wiring	4	EA	474.00	1,896	
308	Connect existing fixtures to new inverter	10	EA	424.00	4,240	
309	Remove battery packs	4	EA	50.00	200	
310	Remove existing fixtures, provide bridge wiring	2	EA	175.00	350	
311	Emergency lighting controls	1	EA	1,429.00	1,429	
312						
313	<u>User Convenience Power</u>					
314	Welding outlets	1	EA	686.00	686	
315	Duplex receptacles	5	EA	462.00	2,310	
316	Support channels for receptacles	5	EA	100.00	500	
317	30A outlets	2	EA	1,125.00	2,250	
318	Surface mounted raceway, devices, feeders, power	484	LF	74.06	35,845	
319	Install roll-up door controls, connect motor	3	EA	2,329.00	6,987	
320	120V circuits for PPS panels	2	EA	350.00	700	
321	Disconnect switches for sliding doors	2	EA	485.00	970	
322	Remove existing conduit, wire	1,280	LF	3.00	3,840	
323	Remove existing outlets, conduit	3	EA	50.00	150	
324	1" conduit for 24V DC power supply	100	LF	9.60	960	
325	Shorten existing conduit supports to accommodate new duct work	24	EA	177.00	4,248	
326						
327	<u>Communications + Security</u>					
328	Telephone/data					
329	Cable tray	1,200	LF	39.00	46,800	
330	Tray elbows, offsets	70	EA	377.00	26,390	
331	4" conduit sleeves	7	EA	292.00	2,044	
332	Outlet boxes, conduit	8	EA	240.00	1,920	
333	Jacks, allow 3/drop	24	EA	18.00	432	
334	Surface mounted raceway	464	LF	54.44	25,260	
335	Jacks for outlets in surface mounted raceway (60), allow 2/drop	120	EA	18.00	2,160	
336	Horizontal cable	21,600	LF	1.35	29,160	
337	Cable termination equipment	1	LS	10,000.00	10,000	
338	Cable tagging, testing	1	LS	2,100.00	2,100	
339	Remove existing cable tray, patch openings and provide support for remaining tray	1	LS	600.00	600	

ESTIMATE DETAIL

GSF : 5,504

REF	DESCRIPTION	QUANTITY	UoM	UNIT RATE	TOTAL	COMMENTS
340						
341	<u>Fire Alarm</u>					
342	Smoke detectors	4	EA	635.00	2,540	
343	Duct smoke detectors	1	EA	881.00	881	
344	Horn strobes	2	EA	616.00	1,232	
345	Strobes	8	EA	597.00	4,776	
346	Connections to sprinkler system	4	EA	450.00	1,800	
347	Pendant mounts for strobes	3	EA	45.00	135	
348	Interface modules for Oxygen, Vesda panels	6	EA	612.00	3,672	
349	End of line resistors	6	EA	393.00	2,358	
350	Power booster	1	EA	1,413.00	1,413	
351	Connect duct detector to AHU control panel	1	EA	650.00	650	
352	System verification	1	LS	1,000.00	1,000	
353	Reprogram panel	1	EA	1,000.00	1,000	
354	Vesda panels	3	EA	5,000.00		excluded
355	Detectors	8	EA	1,000.00		excluded
356						
357	<u>Oxygen Monitoring System</u>					
358	Oxygen depletion alarm panels	1	EA	4,611.00	4,611	
359	Misc. relays	1	EA	430.00	430	
360	Audible/visual alarms	1	EA	1,298.00	1,298	
361	Sampling tubes	1	EA	660.00	660	
362	120V circuits	1	EA	450.00	450	
363	Control valve connections	1	EA	650.00	650	
364						
365	<u>Misc. Electrical</u>					
366	Seismic bracing	1	LS	12,000.00	12,000	
367	Seismic joints	1	LS	15,000.00	15,000	
368	Testing, commissioning	1	LS	5,000.00	5,000	
369	Start-up, documentation	1	LS	5,000.00	5,000	
370	Seal wall penetrations	1	LS	5,000.00	5,000	
371						
372	<u>Security</u>					excluded
373						
374	<u>Clocks</u>					excluded
375						
376	<u>Paging</u>					excluded
377						
378						
379	<b>ELECTRICAL</b>				<b>594,482</b>	<b>\$108.01 / SF</b>
380						
381						
382						
383	<b>EQUIPMENT</b>					<b>\$0 / SF</b>
384						
385	<u>Fixed Furnishings, (hutches 4 + 5)</u>					
386	Casework					excluded, Owner supplied
387	Gas distribution cabinets	2	EA	5,000.00	10,000	allowance
388	Unistrut mounted shelving to walls	153	LF	350.00		excluded - not shown
389						
390	<u>Moveable Furnishings</u>					
391						
392						
393	<b>FURNISHINGS</b>				<b>10,000</b>	<b>\$1.82 / SF</b>
394						
395	<u>Special Structures, (hutches 4 + 5)</u>					
396	Bridge cranes + motors [1TON]	2	EA	25,000.00	50,000	per LK Goodwin + Dearborn
397	Installation	2	EA	6,000.00	12,000	
398						
399	<u>Integrated Construction</u>					
400						
401						
402	<u>Special Construction Systems</u>					
403						



ESTIMATE DETAIL

GSF : 5,504

REF	DESCRIPTION	QUANTITY	UoM	UNIT RATE	TOTAL	COMMENTS
404						
405	<u>Special Facilities</u>					
406						
407						
408	<u>Special Controls + Instrumentation</u>					
409						
410						
411	<b>SPECIAL CONSTRUCTION</b>				<b>62,000</b>	<b>\$11.26 / SF</b>
412						
413	<u>Building Elements Demolition</u>					
414						
415						
416	<u>Hazardous Components Abatement</u>					
417						
418						
419	<b>SELECTIVE BUILDING DEMOLITION</b>					<b>\$0 / SF</b>
420						
421	<u>Site Clearing</u>					
422						
423						
424	<u>Site Demolition + Relocations</u>					
425	Demolish (E) cable tray and patch wall	1	LS	4,000.00	4,000	
426	Remove (E) guardrail at (E) MAU platform	4	LF	100.00	400	
426						
427	<u>Site Earthwork</u>					
428						
429						
430	<u>Hazardous Waste Remediation</u>					
431	Excluded					excluded
432						
433	<b>SITE PREPERATION</b>				<b>4,400</b>	<b>\$0.8 / SF</b>
434						
435	<u>Roadways</u>					
436						
437						
438	<u>Parking Lots</u>					
439						
440						
441	<u>Pedestrian Paving</u>					
442						
443						
444	<u>Site Development</u>					
445						
446						
447	<u>Landscaping</u>					
448						
449						
450	<b>SITE IMPROVEMENTS</b>					<b>\$0 / SF</b>
451						
452	<u>Water Supply</u>					
453						
454						
455	<u>Sanitary Sewer</u>					
456						
457						
458	<u>Storm Sewer</u>					
459						

**ESTIMATE DETAIL**

GSF : 5,504

REF	DESCRIPTION	QUANTITY	UoM	UNIT RATE	TOTAL	COMMENTS
460						
461	<u>Heating Distribution</u>					
462						
463						
464	<u>Cooling Distribution</u>					
465						
466						
467	<u>Fuel Distribution</u>					
468						
469						
470	<u>Other Site Mechanical Utilities</u>					
471						
472	<b>SITE MECHANICAL UTILITIES</b>					<b>\$0 / SF</b>
473						
474	<u>Electrical Distribution</u>					
475						
476						
477	<u>Site Lighting</u>					
478						
479						
480	<u>Site Communications + Security</u>					
481						
482						
483	<u>Other Site Electrical Utilities</u>					
484						
485	<b>SITE ELECTRICAL UTILITIES</b>					<b>\$0 / SF</b>
486						
487	<u>Service + Pedestrian Tunnels</u>					
488						
489						
490	<u>Other Site Systems + Equipment</u>					
491						
492						
493	<b>OTHER SITE CONSTRUCTION</b>					<b>\$0 / SF</b>

MASTER FORMAT SUMMARY

GSF : 1,560

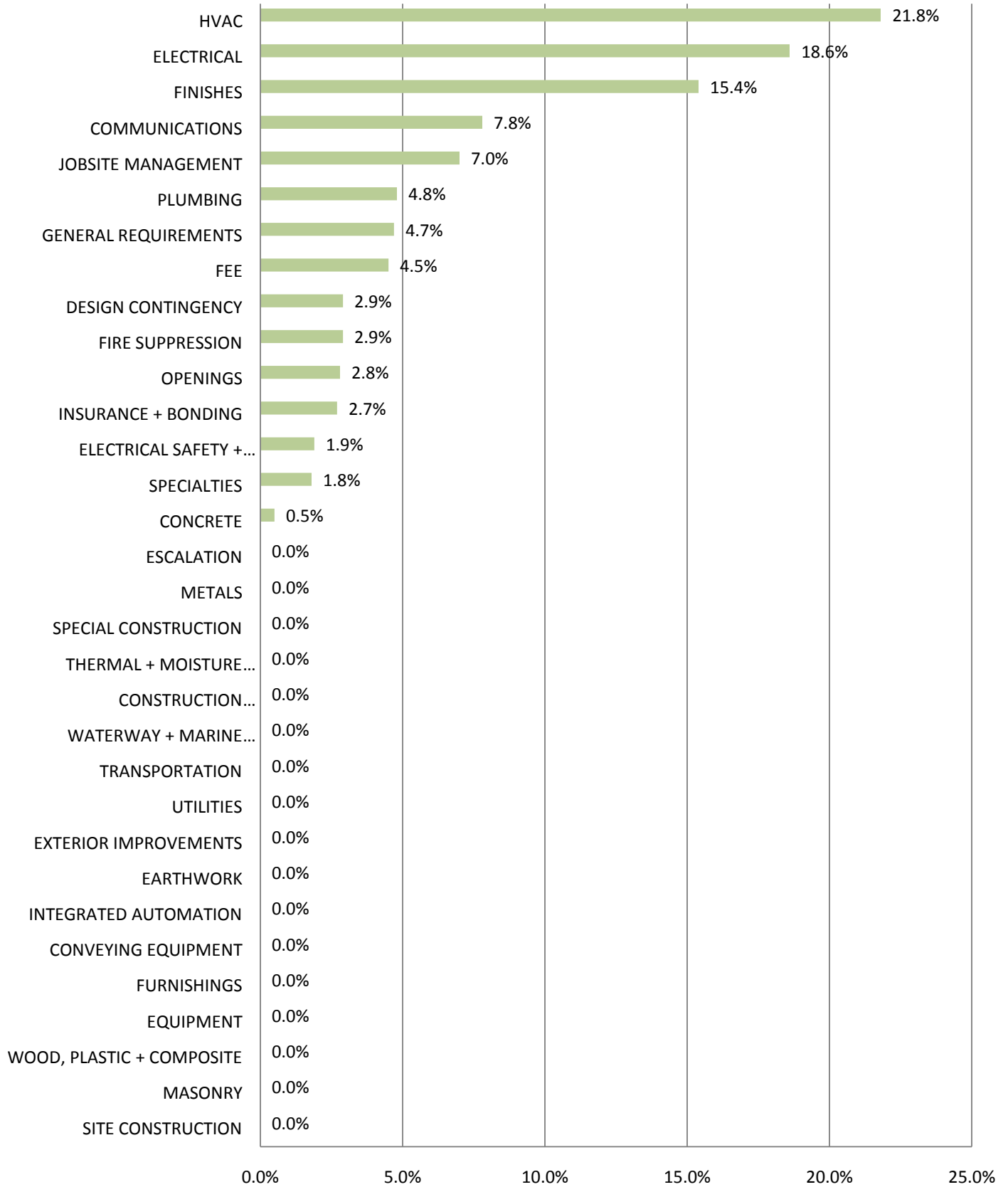
	%	TOTAL	\$ / SF	COMMENTS
01 GENERAL REQUIREMENTS	5.7%	35,656	\$22.86	\$7,131 per month
02 SITE CONSTRUCTION				
03 CONCRETE	0.6%	3,510	\$2.25	
04 MASONRY				
05 METALS				
06 WOOD, PLASTIC + COMPOSITE				
07 THERMAL + MOISTURE PROTECTION				
08 OPENINGS	3.3%	21,100	\$13.53	
09 FINISHES	18.6%	116,958	\$74.97	
10 SPECIALTIES	2.2%	13,580	\$8.71	
11 EQUIPMENT				
12 FURNISHINGS				
13 SPECIAL CONSTRUCTION				
14 CONVEYING EQUIPMENT				
21 FIRE SUPPRESSION	3.5%	21,840	\$14.00	
22 PLUMBING	5.8%	36,274	\$23.25	
23 HVAC	26.4%	166,052	\$106.44	
25 INTEGRATED AUTOMATION				
26 ELECTRICAL	22.4%	141,397	\$90.64	
27 COMMUNICATIONS	9.4%	58,950	\$37.79	
28 ELECTRICAL SAFETY + SECURITY	2.3%	14,603	\$9.36	
31 EARTHWORK				
32 EXTERIOR IMPROVEMENTS				
33 UTILITIES				
34 TRANSPORTATION				
35 WATERWAY + MARINE CONSTRUCTION				
<b>DIRECT COSTS</b>		<b>629,920</b>	<b>\$403.79</b>	
JOBSITE MANAGEMENT	9.0%	53,484	\$34.28	\$10,697 per month
<b>ESTIMATE SUB-TOTAL</b>		<b>683,404</b>	<b>\$438.08</b>	
INSURANCE + BONDING	3.0%	20,502	\$13.14	
FEE	5.0%	34,170	\$21.90	
<b>ESTIMATE SUB-TOTAL</b>		<b>738,076</b>	<b>\$473.13</b>	
DESIGN CONTINGENCY	3.0%	22,142	\$14.19	
CONSTRUCTION CONTINGENCY				
<b>ESTIMATE SUB-TOTAL</b>		<b>760,218</b>	<b>\$487.32</b>	
ESCALATION				Assume start date April 2009
<b>ESTIMATE TOTAL</b>		<b>760,218</b>	<b>\$487.32</b>	

**UNIFORMAT II SUMMARY**

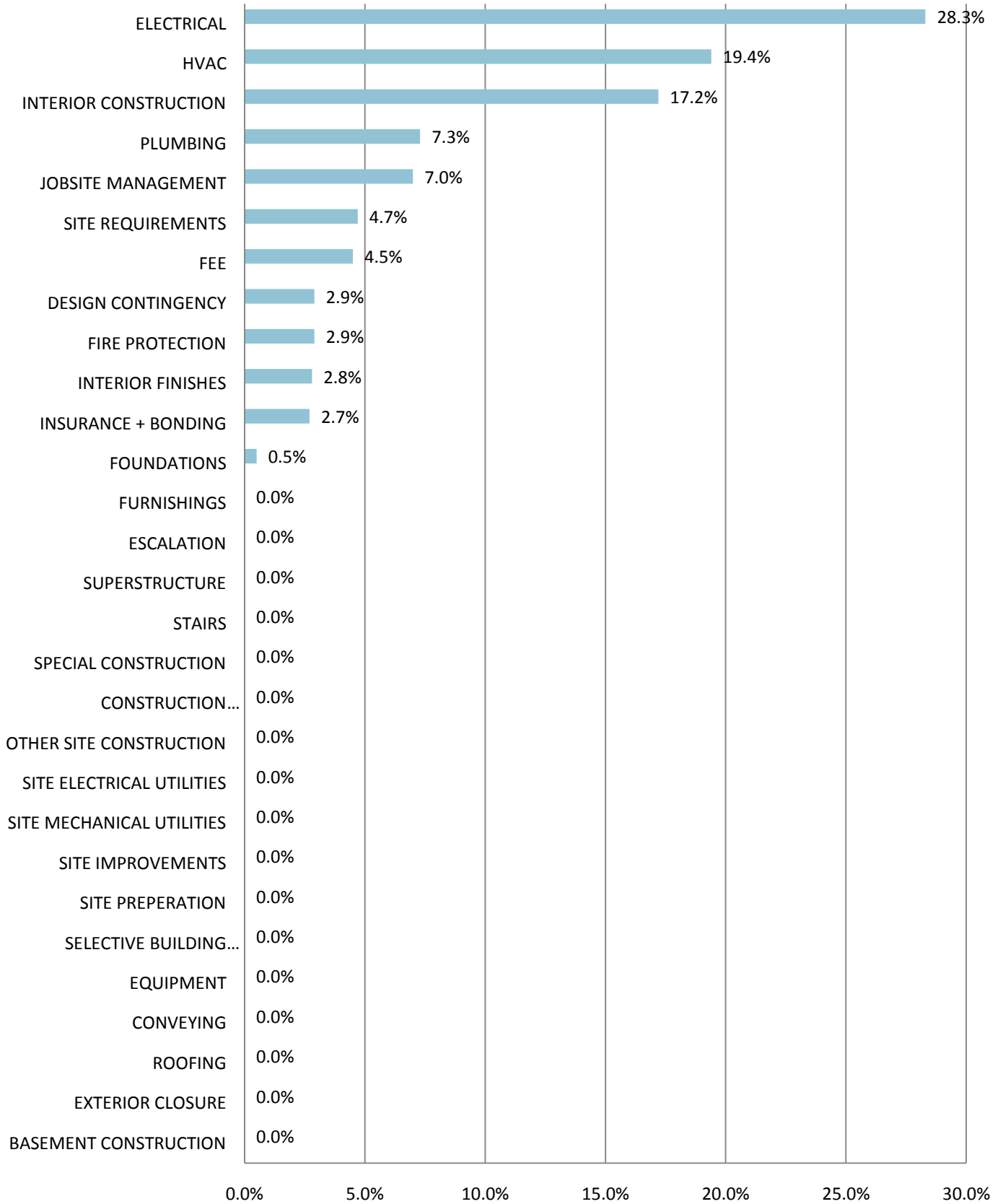
GSF : 1,560

SECTION	%	TOTAL	\$ / SF	COMMENTS
10 FOUNDATIONS	0.6%	3,510	2.25	Misc. patch, repair (E) SOG
20 BASEMENT CONSTRUCTION				
<b>A SUBSTRUCTURE</b>	<b>0.6%</b>	<b>3,510</b>	<b>2.25</b>	
10 SUPERSTRUCTURE				Incl structural VE Alt # 1
20 EXTERIOR CLOSURE				
30 ROOFING				
<b>B SHELL</b>				
10 INTERIOR CONSTRUCTION	22.0%	130,662	83.76	Level 4 partitions, doors, shielding
20 STAIRS				1 stair
30 INTERIOR FINISHES	3.5%	20,976	13.45	
<b>C INTERIORS</b>	<b>25.5%</b>	<b>151,638</b>	<b>97.20</b>	
10 CONVEYING				
20 PLUMBING	9.3%	55,174	35.37	
30 HVAC	24.8%	147,152	94.33	
40 FIRE PROTECTION	3.7%	21,840	14.00	Sprinkler system, VESDA
50 ELECTRICAL	36.2%	214,950	137.79	
<b>D SERVICES</b>	<b>73.9%</b>	<b>439,116</b>	<b>281.48</b>	
10 EQUIPMENT				
20 FURNISHINGS				Casework to control room
<b>E EQUIPMENT + FURNISHINGS</b>				
10 SPECIAL CONSTRUCTION				
20 SELECTIVE BUILDING DEMOLITION				
<b>F SPECIAL CONSTRUCTION + DEMOLITION</b>				
10 SITE PREPERATION				
20 SITE IMPROVEMENTS				
30 SITE MECHANICAL UTILITIES				
40 SITE ELECTRICAL UTILITIES				
50 OTHER SITE CONSTRUCTION				
<b>G BUILDING SITEWORK</b>				
<b>DIRECT COSTS</b>		<b>594,264</b>	<b>380.94</b>	
SITE REQUIREMENTS	6.0%	35,656	22.86	\$7,131 per month
JOBSITE MANAGEMENT	9.0%	53,484	34.28	\$10,697 per month
<b>ESTIMATE SUB-TOTAL</b>		<b>683,404</b>	<b>438.08</b>	
INSURANCE + BONDING	3.0%	20,502	13.14	
FEE	5.0%	34,170	21.90	
<b>ESTIMATE SUB-TOTAL</b>		<b>738,076</b>	<b>473.13</b>	
DESIGN CONTINGENCY	3.0%	22,142	14.19	
CONSTRUCTION CONTINGENCY				Excluded
<b>ESTIMATE SUB-TOTAL</b>		<b>760,218</b>	<b>487.32</b>	
ESCALATION				Assume start date April 2009
<b>ESTIMATE TOTAL</b>		<b>760,218</b>	<b>487.32</b>	total add-ons 27.93%

## Trade Distribution



### Cost Distribution



ESTIMATE DETAIL

GSF : 1,560

REF	DESCRIPTION	QUANTITY	UoM	UNIT RATE	TOTAL	COMMENTS
1	<u>Standard Foundations</u>					
2						subtotal \$
3						
4	<u>Special Foundations</u>					
5						
6						
7	<u>Slab On Grade</u>					
8	Patch SOG, (hutch 6)	1,560	SF	2.25	3,510	allowance
9						
10	<b>FOUNDATIONS</b>				<b>3,510</b>	<b>\$2.25 / SF</b>
11						
12	<u>Basement Excavation</u>					
13						
14						
15	<u>Basement Walls</u>					
16						
17						
18	<b>BASEMENT CONSTRUCTION</b>					<b>\$0 / SF</b>
19						
20	<u>Floor Construction</u>					
21						
22						
23	<b>SUPERSTRUCTURE</b>					<b>\$0 / SF</b>
24						
25	<u>Exterior Walls</u>					
26						
27						
28	<u>Exterior Windows</u>					
29						
30						
31	<u>Exterior Doors</u>					
32						
33						
34	<b>EXTERIOR CLOSURE</b>					<b>\$0 / SF</b>
35						
36	<u>Roof Coverings</u>					
37						
38						
39	<u>Roof Openings</u>					
40						
41						
42	<b>ROOFING</b>					<b>\$0 / SF</b>
43						
44						
45	<u>Partitions, (hutch 6)</u>					
46	Partitions, type A1, A2 and B	151	LF	270.00	40,770	
47	Premium for lead lining 1/16" to type A1	840	SF	30.00	25,200	
48	Premium for lead lining 1/32" to type A2	690	SF	22.00	15,180	
49	Allow for beam and pipe penetrations through lead lined walls	1	LS	10,000.00	10,000	
50	Safing insulation and 4" metal plate at head of partitions	151	LF	20.00	3,020	
51	Caulking and sealants	604	LF	3.00	1,812	
52						
53	<u>Interior Doors, (hutch 6)</u>					
54	HM double door type AA, 6' x 8'	1	EA	5,600.00	5,600	
55	Roll-up door type D, 10' x 8'	1	EA	12,000.00	12,000	
56	Electrical sliding doors type C, 4' x 8'	1	EA	3,500.00	3,500	Install only, Owner Supplied
57						
58	<u>Fittings, (hutch 6)</u>					
59	Unistrut equipment supports	23	EA			excluded - VE, backing only
60	Bracing plate backing in walls	604	LF	20.00	12,080	allowance
61	Allow for recessed fire extinguisher cabinets	3	EA	500.00	1,500	allowance
62						
63	<b>INTERIOR CONSTRUCTION</b>				<b>130,662</b>	<b>\$83.76 / SF</b>

**ESTIMATE DETAIL**

GSF : 1,560

REF	DESCRIPTION	QUANTITY	UoM	UNIT RATE	TOTAL	COMMENTS
64						
65	<u>Stair Construction</u>					
66						
67	<u>Stair Finishes</u>					
68						
69						
<b>70</b>	<b>STAIRS</b>					<b>\$0 / SF</b>
71						
72	<u>Wall Finishes, (hutch 6)</u>					
73	Paint to walls	4,530	SF	1.80	8,154	
74						
75	<u>Floor Finish, (hutch 6)</u>					
76	Touch up (E) epoxy flooring	1,560	SF	3.00	4,680	allowance
77	Wall base	240	LF	4.00	960	allowance
77						
78	<u>Ceiling Finish, (hutch 6)</u>					
79	Painted structure	1,560	SF	3.00	4,680	
80	2 x 4 ACT suspended ceiling system	278	SF	9.00	2,502	control room only
81						
<b>82</b>	<b>INTERIOR FINISHES</b>				<b>20,976</b>	<b>\$13.45 / SF</b>
83						
84	<u>Elevators + Lifts</u>					
85						
86						
87	<u>Escalators + Moving Walkways</u>					
88						
89						
90	<u>Other Conveying Systems</u>					
91						
92						
<b>93</b>	<b>CONVEYING</b>					<b>\$0 / SF</b>
94						
95	<u>Hutch 6</u>					
96	<u>Laboratory Gas Distribution</u>					
97	Cold water - makeup	60	LF	25.00	1,500	By Others
98	Compressed air distribution pipework, including valves, specialties and outlets					Hutch 6
99	Compressed air pipework	120	LF	90.00	10,800	Excluding Drops
100	Compressed outlets	4	EA	1,000.00	4,000	Including drops, quick connect and ball valve
101	Valves and specialties	1	LS	2,960.00	2,960	
102	Point of connections	1	EA	400.00	400	
103	Process cooling water					
104	Process cooling water pipework					
105	2"	50	LF	70.00	3,500	
106	1 1/4"	45	LF	50.00	2,250	
107	Processed cooling water outlets	10	EA	1,000.00	10,000	Including drops, quick connect and ball valve
108	Valves and specialties	1	LS	3,150.00	3,150	
109	Connection to existing PCW skid				excluded	
110	Connection to specialty racks				excluded	
111						
112	<u>Other Plumbing Systems</u>					
113	Miscellaneous plumbing	1,560	SF	2.00	3,120	allowance
114	Firestopping/core drilling	1,560	SF	0.65	1,014	allowance
115	Project requirements (coordination, shop dwg, detailing, project management, material handling, security badging)	1,560	SF	8.00	12,480	allowance
116						
117						
<b>118</b>	<b>PLUMBING</b>				<b>55,174</b>	<b>\$35.37 / SF</b>



ESTIMATE DETAIL

GSF : 1,560

REF	DESCRIPTION	QUANTITY	UoM	UNIT RATE	TOTAL	COMMENTS
119						
120	<u>Hutch 6</u>					
121	<u>Distribution Systems</u>					
122	Heating hot water, black steel <=2", including valves, specialties, insulation					allowance
123	Heated hot water pipework	170	LF	50.00	8,500	
124	Valves and specialties	2	EA	600.00	1,200	
125	Insulation	170	LF	10.00	1,700	
126						
127	<u>Air handling equipment</u>					
128	Air conditioning unit, including sf, cc, filters and HEPA filters					
129	Hutch 6 - Prorated	1	EA	30,493.32	30,493	allowance
130	Terminal boxes, w/reheat					
131	Hutch 6, 4,150 cfm	1	EA	6,225.00	6,225	
132	Hutch#6 Room 1050cfm	1	EA	1,500.00	1,500	
133						
134	<u>Air distribution and return</u>					
135	Galvanized sheet metal ductwork,	2,700	LBS	16.00	43,200	
136	Flexible ductwork	60	LF	13.00	780	
137	Volume dampers	12	EA	60.00	720	
138	Combination fire/smoke dampers	2	EA	2,500.00	5,000	
139	Duct insulation				Excluded	Exposed Ductwork
140	Acoustical lining				Excluded	Exposed Ductwork
141						
142	<u>Diffusers, registers and grilles</u>					
143	Ceiling diffusers					
144	CD-1) 14"x14"	2	EA	420.00	840	
145	CD-2) 20"x20"	5	EA	450.00	2,250	
146	RG-1) 18"x18"	3	EA	320.00	960	
147	RG-2) 22"x22"	1	EA	350.00	350	
148	Exhaust grilles	1	EA	250.00	250	
149	Transfer grilles	2	EA	600.00	1,200	
150						
151	<u>Control + Instrumentation</u>					
152	Direct digital controls systems					
153	Terminal boxes	4	PTS	1,500.00	6,000	
154	Exhaust fans	3	PTS	1,500.00	4,500	
155						
156	<u>Systems Testing + Balancing</u>	1,560	SF	2.00	3,120	allowance
157						
158	<u>Exhaust system</u>					
159	Galvanized sheet metal ductwork,	500	LBS	16.00	8,000	10" exhaust to tunnel entrance
160	Stack discharge	3	EA	800.00	2,400	
161	Exhaust fan EF-4, Hutch #6 - 500 cfm	1	EA	1,350.00	1,350	
162						
163	<u>Other HVAC Systems</u>					
164	Seismic, vibration, acoustical	1,560	SF	2.00	3,120	3%
165	Firestopping/core drilling	1,560	SF	0.65	1,014	1%
166	Project requirements (coordination, shop dwg, detailing, project management, material handling, security badging)	1,560	SF	8.00	12,480	7%
167						
168						
169	<b>HVAC</b>				<b>147,152</b>	<b>\$94.33 / SF</b>
170						
171	<u>Hutch 6</u>					
172	Allow for Fire Protection work to Hutch 6	1,560	SF	14.00	21,840	
173	VESDA Fire Protection System for Hutch only	1	LS			excluded - VE, as per DGA
174						
175						
176	<b>FIRE PROTECTION</b>				<b>21,840</b>	<b>\$14 / SF</b>

ESTIMATE DETAIL

GSF : 1,560

REF	DESCRIPTION	QUANTITY	UoM	UNIT RATE	TOTAL	COMMENTS
177						
178	<u>Hutch 6</u>					
179	<u>Electrical Service + Distribution</u>					
180	45kVA transformers	2	EA	5,113.00	10,226	
181	Feeders to 45kVA transformers	120	LF	46.94	5,633	
182	125A enclosed breakers	2	EA	2,502.00	5,004	
183	2", 5#1/0, 6g to 125A enclosed breakers	40	LF	52.56	2,102	
184	Panel 2CBP02D-999, breakers, feeder (Hutch #6, Clean power)	1	EA	12,147.00	12,147	
185	Panel 2CBP06-999, breakers, feeder (Hutch #6, Clean power)	1	EA	13,875.00	13,875	
186	Panel 2DBP06-999, breakers, feeder (Hutch #6, Dirty power)	1	EA	12,235.00	12,235	
187	4.5kVA inverter, 90 minute back-up, feeder	1	EA	5,455.00	5,455	partial cost
188	Connect exhaust fans	1	EA	2,039.00	2,039	
189	1" (6)#12 to AHU for control interlocks	500	LF	14.10	7,050	
190	Connect bridge crane	1	EA	2,557.00	2,557	
191	Connect air handling units	1	EA	1,190.00	1,190	partial cost
192	Connect VAV's	2	EA	450.00	900	
193	Connect dampers	2	EA	450.00	900	
194	Grounding:					
195	4/0 ground wire	150	LF	7.50	1,125	
196	1/0 ground wire	80	LF	4.60	368	
197	Exothermic welds	6	EA	134.00	804	
198	3/4" conduit	80	LF	9.65	772	
199	Cable tray bonding	1	LS	1,025.00	1,025	
200	Unistrut equipment supports	7	EA	528.00	3,696	
201	Rough-in for future EPO	1	EA	550.00	550	
202						
203	<u>Lighting + Branch Wiring</u>					
204	Fixture type A2, 4ft	3	EA	199.00	597	
205	Fixture type A, 8ft	9	EA	352.00	3,168	
206	Fixture type B	4	EA	348.00	1,392	
207	Fixture type B2	2	EA	268.00	536	
208	Exit lights	1	EA	353.00	353	
209	Lighting back boxes	17	EA	47.00	799	
210	Fixture whips	6	EA	60.00	360	
211	Lighting conduit, wire	120	LF	14.50	1,740	#10 wire
212	Light switches, 3 way	4	EA	374.00	1,496	
213	Wall mounted dimmers	1	EA	555.00	555	
214	Connect existing fixtures to new inverter	3	EA	424.00	1,272	
215	Emergency lighting controls	1	EA	1,429.00	1,429	
216						
217	<u>User Convenience Power</u>					
218	Quadplex receptacles	2	EA	506.00	1,012	
219	Support channels for receptacles	2	EA	100.00	200	
220	30A outlets	1	EA	1,125.00	1,125	
221	Surface mounted raceway, devices, feeders, power	164	LF	74.06	12,146	
222	Install roll-up door controls, connect motor	1	EA	2,329.00	2,329	
223	120V circuits for PPS panels	1	EA	350.00	350	
224	Disconnect switches for sliding doors	1	EA	485.00	485	
225	1" conduit for 24V DC power supply	50	LF	9.60	480	
226	Reroute existing circuit to underside of mezzanine deck	1	EA	1,000.00	1,000	
227	Relocate existing pullbox	1	EA	500.00	500	
228	Remove existing conduit, wire	640	LF	3.00	1,920	
229						
230	<u>Communications + Security</u>					
231	<u>Telephone/data</u>					
232	Cable tray	414	LF	39.00	16,146	
233	Tray elbows, offsets	26	EA	377.00	9,802	
234	4" conduit sleeves	4	EA	292.00	1,168	
235	Outlet boxes, conduit	5	EA	240.00	1,200	
236	Jacks, allow 3/drop	15	EA	18.00	270	

**ESTIMATE DETAIL**

GSF : 1,560

REF	DESCRIPTION	QUANTITY	UoM	UNIT RATE	TOTAL	COMMENTS
237	Surface mounted raceway	164	LF	54.44	8,928	
238	Jacks for outlets in surface mounted raceway (28), allow 2/drop	56	EA	18.00	1,008	
239	Horizontal cable	10,650	LF	1.35	14,378	
240	Cable termination equipment	1	LS	5,000.00	5,000	
241	Cable tagging, testing	1	LS	1,050.00	1,050	
242						
243	<u>Fire Alarm</u>					
244	Smoke detectors	2	EA	635.00	1,270	
245	Horn strobes	1	EA	616.00	616	
246	Strobes	2	EA	597.00	1,194	
247	Connections to sprinkler system	2	EA	450.00	900	
248	Pendant mounts for strobes	1	EA	45.00	45	
249	Interface modules	3	EA	612.00	1,836	
250	End of line resistors	1	EA	393.00	393	
251	System verification	1	LS	250.00	250	
252	Vesda panels	1	EA	5,000.00		excluded
253	Detectors	2	EA	1,000.00		excluded
254						
255	<u>Oxygen Monitoring System</u>					
256	Oxygen depletion alarm panels	1	EA	4,611.00	4,611	
257	Misc. relays	1	EA	430.00	430	
258	Audible/visual alarms	1	EA	1,298.00	1,298	
259	Sampling tubes	1	EA	660.00	660	
260	120V circuits	1	EA	450.00	450	
261	Control valve connections	1	EA	650.00	650	
262						
263	<u>Misc.</u>					
264	Seismic bracing	1	LS	5,000.00	5,000	
265	Seismic joints	1	LS	5,000.00	5,000	
266	Testing, commissioning	1	LS	2,000.00	2,000	
267	Start-up, documentation	1	LS	2,000.00	2,000	
268	Seal wall penetrations	1	LS	2,500.00	2,500	
269						
270	<u>Security</u>					excluded
271						
272	<u>Clocks</u>					excluded
273						
274	<u>Paging</u>					excluded
275						
276						
277	<b>ELECTRICAL</b>				<b>214,950</b>	<b>\$137.79 / SF</b>
278						
279						
280						
281	<b>EQUIPMENT</b>					<b>\$0 / SF</b>
282						
283	<u>Fixed Furnishings. (hutch 6)</u>					
284	Casework					excluded, Owner supplied
285	Unistrut mounted shelving to walls	72	LF	350.00		excluded - not shown
286						
287	<u>Moveable Furnishings</u>					
288						
289						
290	<b>FURNISHINGS</b>					<b>\$0 / SF</b>
291						
292	<u>Special Structures</u>					
293	Bridge crane + motor					excluded
294						
295	<u>Integrated Construction</u>					
296						
297						
298	<u>Special Construction Systems</u>					
299						

ESTIMATE DETAIL

GSF : 1,560

REF	DESCRIPTION	QUANTITY	UoM	UNIT RATE	TOTAL	COMMENTS
300						
301	<u>Special Facilities</u>					
302						
303						
304	<u>Special Controls + Instrumentation</u>					
305						
306						
307	<b>SPECIAL CONSTRUCTION</b>					<b>\$0 / SF</b>
308						
309	<u>Building Elements Demolition</u>					
310						
311						
312	<u>Hazardous Components Abatement</u>					
313						
314						
315	<b>SELECTIVE BUILDING DEMOLITION</b>					<b>\$0 / SF</b>
316						
317	<u>Site Clearing</u>					
318						
319						
320	<u>Site Demolition + Relocations</u>					
321						
322						
323	<u>Site Earthwork</u>					
324						
325						
326	<u>Hazardous Waste Remediation</u>					
327	Excluded					
328						
329	<b>SITE PREPARATION</b>					<b>\$0 / SF</b>
330						
331	<u>Roadways</u>					
332						
333						
334	<u>Parking Lots</u>					
335						
336						
337	<u>Pedestrian Paving</u>					
338						
339						
340	<u>Site Development</u>					
341						
342						
343	<u>Landscaping</u>					
344						
345						
346	<b>SITE IMPROVEMENTS</b>					<b>\$0 / SF</b>
347						
348	<u>Water Supply</u>					
349						
350						
351	<u>Sanitary Sewer</u>					
352						
353						
354	<u>Storm Sewer</u>					
355						
356						
357	<u>Heating Distribution</u>					
358						

**ESTIMATE DETAIL**

GSF : 1,560

REF	DESCRIPTION	QUANTITY	UoM	UNIT RATE	TOTAL	COMMENTS
359						
360	<u>Cooling Distribution</u>					
361						
362						
363	<u>Fuel Distribution</u>					
364						
365						
366	<u>Other Site Mechanical Utilities</u>					
367						
368	<b>SITE MECHANICAL UTILITIES</b>					<b>\$0 / SF</b>
369						
370	<u>Electrical Distribution</u>					
371						
372						
373	<u>Site Lighting</u>					
374						
375						
376	<u>Site Communications + Security</u>					
377						
378						
379	<u>Other Site Electrical Utilities</u>					
380						
381	<b>SITE ELECTRICAL UTILITIES</b>					<b>\$0 / SF</b>
382						
383	<u>Service + Pedestrian Tunnels</u>					
384						
385						
386	<u>Other Site Systems + Equipment</u>					
387						
388						
389	<b>OTHER SITE CONSTRUCTION</b>					<b>\$0 / SF</b>