

# Milwaukee Public Library

## Martin Luther King Jr. Library

310 W. Locust St.  
Milwaukee, WI 53212

**Schematic Design Estimate**  
June 23, 2023

For Owner Review  
June 26, 2023

Project: 2020A053

**Prepared For:**  
Moody Nolan  
209 South LaSalle Street  
Suite 820  
Chicago, IL 60604

## **NOTES REGARDING PREPARATION OF ESTIMATE**

This estimate was prepared based on the following documents provided by Moody Nolan Architects:

1. MPL-MLK Library Schematic Design Drawings issued March 31, 2023.
2. MPL-MLK Library Schematic Design Narratives issued March 31, 2023.
3. Information regarding the project was also obtained via meetings, phone conversations, and email messages that clarified the project scope.

## **BIDDING PROCESS - MARKET CONDITIONS**

This document is based on the measurement and pricing of quantities wherever information is provided and/or reasonable assumptions for other work not covered in the drawings or specifications, as stated within this document. Unit rates have been generated from current material/labor rates, historical production data, and discussions with relevant subcontractors and material suppliers. The unit rates reflect current bid costs in the area. All unit rates relevant to subcontractor work include the subcontractors overhead and profit unless otherwise stated.

Pricing reflects probable construction costs obtainable in the Milwaukee, Wisconsin area on the bid date. This estimate is a determination of fair market value for the construction of this project. It is not a prediction of low bid. Pricing assumes competitive bidding for every portion of the construction work for all subcontractors with a minimum of 3 bidders for all items of subcontracted work and a minimum of 3 bidders for a general contractor. Experience indicates that a fewer number of bidders may result in higher bids, conversely an increased number of bidders may result in more competitive bids.

Since The Concord Group has no control over the cost of labor, material, equipment, or over the contractor's method of determining prices, or over the competitive bidding or market conditions at the time of bid, this statement of probable construction cost is based on industry practice, professional experience and qualifications, and represents The Concord Group's best judgment as professional construction cost consultants familiar with the construction industry. However, The Concord Group cannot and does not guarantee that the proposals, bids, or the construction cost will not vary from opinions of probable cost prepared by them.

## **CURRENT MARKET CONDITIONS**

It should be noted that there is ongoing volatility in the construction materials market due to the effects of the pandemic on both the production and supply of materials. Due to the lack of in stock materials suppliers are struggling to fulfill orders in a timely manner, which in turn leads to much longer than normal lead times. The impact of ongoing global raw material shortages and fuel price increases adds to the overall spike in material pricing coupled with the increased demand for construction that the construction industry is now seeing. These factors should be considered when determining the bidding strategy and schedule for projects.

## **ASSUMED CONSTRUCTION PARAMETERS**

The pricing is based on the following project parameters:

1. A construction notice to proceed date of January 15, 2024.
2. A substantial completion date of December 20, 2024.
3. The contract will be competitively bid to multiple contractors.
4. All contractors will be required to pay prevailing wages.
5. There are no phasing requirements.
6. The contractors will have full access to the site during normal working hours
7. Estimate detail includes pricing as of May 2023.

## **EXCLUSIONS**

The following are excluded from the cost of this estimate:

1. Professional Design Fees
2. Testing Fees
3. Owner Contingencies/Scope Changes
4. Construction Contingency
5. Premium Time / Restrictions on Contractor Working Hours
6. Cost Escalation
7. Finance and Legal Charges
8. Environmental Abatement Costs
9. Temporary Owner Facilities
10. Moisture Mitigation
11. Stairs
12. Fire Place
13. Equipment (Owner Furnished/Installed)
14. Artwork
15. Elevator
16. Third Party Commissioning
17. Telephone / Data Equipment
18. Contaminated Soil Removal
19. Structurally Unsuitable Soil Removal
20. Future Cost Impacts Based on Supply Chain Impacts

COST SUMMARY		17,635 GSF	\$/SF	BUILDING TOTAL
<b>01000</b>	GENERAL REQUIREMENTS		\$0.00	\$0
<b>02000</b>	EXISTING CONDITIONS		\$0.00	\$0
<b>03000</b>	CONCRETE		\$0.07	\$1,217
<b>04000</b>	MASONRY		\$0.00	\$0
<b>05000</b>	METALS		\$2.56	\$45,200
<b>06000</b>	WOODS, PLASTICS & COMPOSITES		\$12.93	\$227,974
<b>07000</b>	THERMAL & MOISTURE PROTECTION SYSTEM		\$0.34	\$5,925
<b>08000</b>	OPENINGS		\$13.53	\$238,575
<b>09000</b>	FINISHES		\$50.03	\$882,266
<b>10000</b>	SPECIALTIES		\$16.64	\$293,420
<b>11000</b>	EQUIPMENT		\$4.23	\$74,576
<b>12000</b>	FURNISHINGS		\$16.57	\$292,261
<b>13000</b>	SPECIAL CONSTRUCTION		\$0.00	\$0
<b>14000</b>	CONVEYING EQUIPMENT		\$0.00	\$0
<b>21000</b>	FIRE SUPPRESSION		\$2.13	\$37,474
<b>22000</b>	PLUMBING		\$10.19	\$179,730
<b>23000</b>	HEATING, VENTILATING & AIR CONDITIONING		\$58.43	\$1,030,432
<b>26000</b>	ELECTRICAL		\$33.17	\$584,956
<b>27000</b>	COMMUNICATIONS		\$25.58	\$451,169
<b>28000</b>	ELECTRONIC SAFETY AND SECURITY		\$12.11	\$213,555
<b>31000</b>	EARTHWORK		\$0.00	\$84
<b>32000</b>	EXTERIOR IMPROVEMENTS		\$0.00	\$0
<b>33000</b>	UTILITIES		\$9.53	\$168,149
<b>SUBTOTAL</b>			<b>\$268.04</b>	<b>\$4,726,964</b>
	DESIGN CONTINGENCY	10.00%	\$26.80	\$472,696
	GENERAL CONDITIONS/BOND/INSURANCE	9.00%	\$26.54	\$467,969
	CONTRACTOR'S FEES	3.50%	\$11.25	\$198,367
	ESCALATION TO MID-POINT OF CONSTRUCTION	4.50%	\$14.97	\$263,970
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>			<b>\$347.60</b>	<b>\$6,129,967</b>
<b>ALTERNATES INCLUDING MARKUPS</b>				
	Alternate #1: MLK Letters and Bench		<b>ADD</b>	\$101,313
	Alternate #2: Underfloor Plumbing		<b>ADD</b>	\$69,569
	Alternate #3: Roofrop PV Panels and Conduits		<b>ADD</b>	\$392,933
	Alternate #4: Library Electrical Service		<b>ADD</b>	\$86,649
	Alternate #5: Geothermal Well Field		<b>ADD</b>	\$453,883
	Alternate #6: Central Boiler and Chiller Plant		<b>ADD</b>	\$650,397
	Alternate #7: Two (2) Dedicated EV Charging Stations		<b>ADD</b>	\$64,840
<b>HVAC SYSTEM OPTIONS INCLUDING MARKUPS (FOR INFORMATION ONLY)</b>				
	HVAC Option #1: Distributed Geothermal Heat Pumps			\$1,877,366
	HVAC Option #2A: 4-Pipe System Fancoils w/ Geothermal			\$2,073,247
	HVAC Option #2B: 4-Pipe System Fancoils w/ Boiler/Chiller Plant			\$1,791,573
	HVAC Option #3A: 4-Pipe System w/AHU & VAV w/ Geothermal			\$2,330,220
	HVAC Option #3B: 4-Pipe System w/AHU & VAV w/ Boiler/Chiller Plant			\$2,033,372

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
<b>BASE BID</b>				
<b>03000 CONCRETE</b>				
<b>03900 Miscellaneous Concrete</b>				
Formwork at stair landing	15	SQFT	10.33	155
Concrete slab on grade, 6" thk, with mesh reinforcement, stair landing	50	SQFT	6.34	317
Geofoam fill for stair landing	2	CUYD	125.78	252
Concrete fill at metal pan stair tread	15	LNFT	32.86	493
<b>SUBTOTAL: Miscellaneous Concrete</b>				<b>\$1,217</b>
<b>TOTAL: CONCRETE</b>				<b>\$1,217</b>
<b>05000 METALS</b>				
<b>05100 Structural Steel</b>				
Structural steel allowance at movable walls	2	TONS	5,842.37	11,685
<b>SUBTOTAL: Structural Steel</b>				<b>\$11,685</b>
<b>05300 Stairs</b>				
Metal pan stairs	15	LNFT	53.08	796
Steel railing system, painted	10	LNFT	122.50	1,225
<b>SUBTOTAL: Stairs</b>				<b>\$2,021</b>
<b>05900 Miscellaneous Metals</b>				
Miscellaneous angles, channels, lintels, etc.	17,635	SQFT	1.79	31,494
<b>SUBTOTAL: Miscellaneous Metals</b>				<b>\$31,494</b>
<b>TOTAL: METALS</b>				<b>\$45,200</b>
<b>06000 WOODS, PLASTICS &amp; COMPOSITES</b>				
<b>06200 Rough Carpentry</b>				
Miscellaneous wood blocking & rough carpentry	17,635	SQFT	1.83	32,269
<b>SUBTOTAL: Rough Carpentry</b>				<b>\$32,269</b>
<b>06300 Millwork</b>				
Built-in wall seating	10	LNFT	449.96	4,500
P-lam base cabinets and solid surface countertops	58	LNFT	644.18	37,363
P-lam wall hung cabinets	45	LNFT	387.44	17,435
Interactive wall, 6'-6" h. x 2'-0". Wood veneer/PLam	28	LNFT	559.30	15,660
Interactive wall, 5'-0" h. x 2'-0". Wood veneer/PLam	25	LNFT	385.26	9,631
Solid surface countertops	54	LNFT	233.58	12,613
Solid surface window sills	209	LNFT	131.30	27,442
Circulation desk	44	LNFT	1,615.04	71,062
<b>SUBTOTAL: Millwork</b>				<b>\$195,705</b>
<b>TOTAL: WOODS, PLASTICS &amp; COMPOSITES</b>				<b>\$227,974</b>
<b>07000 THERMAL &amp; MOISTURE PROTECTION</b>				
<b>07800 Caulking &amp; Sealants</b>				

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
Miscellaneous caulking & sealants	17,635	SQFT	0.34	5,925
<b>SUBTOTAL: Caulking &amp; Sealants</b>				<b>\$5,925</b>
<b>TOTAL: THERMAL &amp; MOISTURE PROTECTION</b>				<b>\$5,925</b>

## 08000 OPENINGS

### 08400 Interior Doors, Frames, & Hardware

HM frame, 3'-0" x 7'-0"	13	EACH	634.30	8,246
HM frame, 4'-6" x 7'-0"	1	EACH	786.45	786
HM frame, 6'-0" x 7'-0"	6	EACH	821.45	4,929
HM door, (2) 3'-0" x 7'-0"	4	EACH	1,274.30	5,097
AL/GL door, (2) 3'-0" x 7'-0"	2	EACH	8,034.30	16,069
Frameless glass door, at office fronts, 3'-0" x 10'-0". Assume pivot hinges and ladder pulls	6	EACH	8,744.45	52,467
WD door, 3'-0" x 7'-0"	13	EACH	767.15	9,973
WD door, 3'-0" x 7'-0" and 1'-6" x 7'-0"	1	EACH	1,209.30	1,209
WD door, (2) 3'-0" x 7'-0"	2	EACH	1,534.30	3,069
Hardware set, single	13	EACH	1,084.30	14,096
Hardware set, double	7	EACH	1,768.60	12,380
Fire rated, 60 minute per leaf	8	EACH	120.00	960
<b>SUBTOTAL: Interior Doors, Frames, &amp; Hardware</b>				<b>\$129,281</b>

### 08500 Interior Glazing

Interior storefront	1,000	SQFT	67.36	67,363
Vinyl graphic film on glass, 10'-0" h.	1,453	SQFT	20.03	29,098
<b>SUBTOTAL: Interior Glazing</b>				<b>\$96,461</b>

### 08800 Louvers & Vents

Aluminum louvers	66	SQFT	194.43	12,833
<b>SUBTOTAL: Louvers &amp; Vents</b>				<b>\$12,833</b>

<b>TOTAL: OPENINGS</b>				<b>\$238,575</b>
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## 09000 FINISHES

### 09100 Plaster & Gypsum Board

Gypsum board ceiling, suspended, GB-1	2,182	SQFT	12.12	26,450
Gypsum board ceiling, suspended, GB-2, moisture resistant	497	SQFT	12.12	6,025
Gypsum board soffit - quantity allowance at movable partition	2,500	SQFT	19.12	47,800
Gyp board bulkhead	1,136	SQFT	13.96	15,863
Partition standard - 1-hr; 3-5/8" metal studs, 5/8" type x gypboard each side, 3" mineral fiber blanket insulation, 1-hr rated, full-height	4,529	SQFT	13.34	60,430
Partition furring - 1-hr; 3-5/8" metal studs, 5/8" type x gypboard one side, 3" mineral fiber blanket insulation, 1-hr rated, full-height	113	SQFT	10.36	1,171
Partition standard; 3-5/8" metal studs, 5/8" type x gypboard each side, 3" mineral fiber blanket insulation, full-height	12,117	SQFT	13.11	158,890
Partition plumbing; (2) 3-5/8" metal studs, 5/8" type x gypboard one side, (2) 3" mineral fiber blanket insulation, full-height	1,154	SQFT	19.69	22,724

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
Partition furring; 3-5/8" metal studs, 5/8" type x gypboard one side, 3" mineral fiber blanket insulation, full-height	2,356	SQFT	10.13	23,869
Partition column enclosure; 3-5/8" metal studs, 5/8" type x gypboard one side, full-height	2,671	SQFT	8.42	22,494
<b>SUBTOTAL: Plaster &amp; Gypsum Board</b>				<b>\$385,716</b>
<b>09200 Floor Finishes</b>				
Porcelain tile floor, PTF-1	3,768	SQFT	16.06	60,507
Porcelain tile base, PTF-2	819	LNFT	20.46	16,759
Luxury vinyl tile, LVT-1	3,462	SQFT	9.28	32,136
Rubber base, RB-1	2,060	LNFT	3.12	6,425
Rubber base, RB-2	300	LNFT	3.12	936
Carpet tile, CPT-1	879	SQFT	6.46	5,674
Carpet tile, CPT-2	1,190	SQFT	6.46	7,682
Carpet tile, CPT-1 & CPT-2	4,946	SQFT	6.46	31,927
Walk off carpet, WO-1	732	SQFT	33.28	24,364
<b>SUBTOTAL: Floor Finishes</b>				<b>\$186,410</b>
<b>09300 Wall Finishes</b>				
Wood wall, WD-1	1,359	SQFT	32.29	43,886
Porcelain wall tile, CT-1	857	SQFT	15.77	13,515
Vinyl wall covering, WC-1	2,351	SQFT	4.36	10,239
Branding wall, 10'-0" high, custom wall graphic	328	SQFT	7.61	2,495
<b>SUBTOTAL: Wall Finishes</b>				<b>\$70,135</b>
<b>09400 Ceiling Finishes</b>				
ACT system, 2'x2', AC2	3,092	SQFT	8.40	25,969
ACT, 2'x8', AC3	4,114	SQFT	12.94	53,219
ACT, 2'x8', AC4	3,610	SQFT	11.59	41,823
Specialty ceiling, SP2. Perforated metal panel	360	SQFT	57.61	20,738
Felt baffle ceiling, 8" x 108", SP1	78	EACH	424.65	33,123
Specialty ceiling, felt panel, SP3	450	SQFT	50.86	22,888
<b>SUBTOTAL: Ceiling Finishes</b>				<b>\$197,759</b>
<b>09600 Paints &amp; Coatings</b>				
Concrete sealer	2,075	SQFT	1.73	3,596
Paint walls, PT-1	21,167	SQFT	1.22	25,898
Paint gyp board ceiling/soffit, GB-1	5,367	SQFT	1.52	8,150
Paint gyp board ceiling/soffit, GB-2, moisture resistant	497	SQFT	1.52	755
Paint exposed structure, ES-1	2,198	SQFT	1.75	3,848
<b>SUBTOTAL: Paints &amp; Coatings</b>				<b>\$42,247</b>
<b>TOTAL: FINISHES</b>				<b>\$882,266</b>
<b>10000 SPECIALTIES</b>				
<b>10100 Visual Display Units</b>				
Glass markerboard	2	EACH	456.20	912
<b>SUBTOTAL: Visual Display Units</b>				<b>\$912</b>

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
<b>10200 Signage</b>				
Exterior signage allowance	1	LSUM	20,000.00	20,000
Interior signage - allowance	17,365	SQFT	4.44	77,052
			<b>SUBTOTAL: Signage</b>	<b>\$97,052</b>
<b>10300 Movable Partitions</b>				
Operable partition, solid, 10' high, approx 11' long	1	EACH	11,692.04	11,692
Operable partition, glazed, assume 10' high including one (1) door, approx 25' long	1	EACH	59,084.09	59,084
Operable partition, glazed, assume 10' high including two (2) doors, approx 44' long	1	EACH	106,168.18	106,168
			<b>SUBTOTAL: Movable Partitions</b>	<b>\$176,944</b>
<b>10400 Toilet Accessories</b>				
Toilet partition, accessible	2	EACH	1,584.30	3,169
Toilet partition, standard	3	EACH	1,237.44	3,712
Toilet paper dispenser, double roll	7	EACH	114.05	798
Paper towel dispenser	2	EACH	103.58	207
Napkin disposal, stainless steel, surface mounted	5	EACH	128.58	643
Baby diaper changing station	3	EACH	786.26	2,359
Soap dispenser	6	EACH	93.58	561
Electric hand dryer	4	EACH	567.15	2,269
Utility mop holder & shelf, stainless steel	1	EACH	194.05	194
Grab bar set, three piece	4	EACH	290.73	1,163
Mirror above sink	6	EACH	239.15	1,435
			<b>SUBTOTAL: Toilet Accessories</b>	<b>\$16,510</b>
<b>10600 Lockers &amp; Benches</b>				
Locker, two tier	6	EACH	333.58	2,001
			<b>SUBTOTAL: Lockers &amp; Benches</b>	<b>\$2,001</b>
<b>TOTAL: SPECIALTIES</b>				<b>\$293,420</b>
<b>11000 EQUIPMENT</b>				
<b>11200 Library Equipment</b>				
Theft detection gates, dual corridor	2	EACH	33,123.20	66,246
Theft detection equipment, desensitizers	1	EACH	1,268.60	1,269
Book drop, through wall	1	EACH	3,937.20	3,937
			<b>SUBTOTAL: Library Equipment</b>	<b>\$71,452</b>
<b>11900 Miscellaneous Equipment</b>				
Microwave oven, break room, assumed CFCI	1	EACH	581.48	581
Refrigerator, break room, assumed CFCI	1	EACH	972.47	972
Undercounter refrigerator, lacion room, assume CFCI	1	EACH	704.39	704
Dishwasher, break room, assumed CFCI	1	EACH	865.61	866
			<b>SUBTOTAL: Miscellaneous Equipment</b>	<b>\$3,124</b>
<b>TOTAL: EQUIPMENT</b>				<b>\$74,576</b>



DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
<b>12000 FURNISHINGS</b>				
<b>12100 Window Treatment</b>				
Manual window shades	2,510	SQFT	9.37	23,518
<b>SUBTOTAL: Window Treatment</b>				<b>\$23,518</b>
<b>12300 Loose Furniture</b>				
Loose Furniture / FFE Allowance	17,635	SQFT	15.24	268,743
<b>SUBTOTAL: Loose Furniture</b>				<b>\$268,743</b>
<b>TOTAL: FURNISHINGS</b>				<b>\$292,261</b>
<b>21000 FIRE SUPPRESSION</b>				
<b>21200 Fire Sprinkler Equipment &amp; Specialties</b>				
Wet sprinkler system - interior buildout	17,635	SQFT	2.13	37,474
<b>SUBTOTAL: Fire Sprinkler Equipment &amp; Specialties</b>				<b>\$37,474</b>
<b>TOTAL: FIRE SUPPRESSION</b>				<b>\$37,474</b>
<b>22000 PLUMBING</b>				
<b>22200 Plumbing Fixtures</b>				
Water closet, wall hung, dual-flush manual flush valve	7	EACH	1,797.72	12,584
Lavatory, wall hung, based on Bradley Omnideck	6	EACH	5,945.52	35,673
Urinal, wall hung, battery-op automatic flush valve	1	EACH	2,345.52	2,346
Sink, kitchen, stainless steel, single basin self-rimming, manual faucet	2	EACH	1,803.51	3,607
Sink, kitchen, stainless steel, double basin self-rimming, manual faucet	1	EACH	2,292.15	2,292
Electric water cooler, SS recessed ADA-bilevel, w/bottle filler	1	EACH	6,005.87	6,006
Mop basin, floor fixture	1	EACH	2,197.40	2,197
<b>SUBTOTAL: Plumbing Fixtures</b>				<b>\$64,705</b>
<b>22300 Plumbing Equipment &amp; Specialties</b>				
Domestic water heater, electric	1	EACH	10,536.47	10,536
DHW recirculating pump	1	EACH	1,678.21	1,678
Expansion tank	1	EACH	511.22	511
Thermostatic mixing valve - central	1	EACH	4,072.76	4,073
Floor drains	7	EACH	507.55	3,553
Cleanouts - wall	5	EACH	404.55	2,023
Vent thru roof	3	EACH	302.29	907
<b>SUBTOTAL: Plumbing Equipment &amp; Specialties</b>				<b>\$23,281</b>
<b>22400 Domestic Water, Waste &amp; Vent, &amp; Storm Drainage Piping</b>				
Domestic water pipe, fittings, and supports, type L copper	700	LNFT	55.37	38,759
Cold water piping to humidifier, type L copper - allowance	50	LNFT	55.37	2,768
Pipe insulation, CW piping to humidifier	50	LNFT	20.25	1,012
Pipe insulation, domestic water piping	700	LNFT	20.25	14,172
Vent pipe, fittings, and supports, sched. 40 PVC, AG, 2"	300	LNFT	38.41	11,523
Storm drainage pipe, fittings, and supports, CI no-hub, AG	160	LNFT	88.36	14,138
Incoming service, w/meter & backflow preventers	1	EACH	5,418.28	5,418

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
Pipe and valve tagging	750	LNFT	1.37	1,027
System pressure testing, water pipe chlorination, and pipe flushing - domestic plumbing	1	LSUM	2,925.60	2,926
<b>SUBTOTAL: Domestic Water, Waste &amp; Vent, &amp; Storm Drainage Piping</b>				<b>\$91,744</b>

**TOTAL: PLUMBING \$179,730**

**23000 HEATING VENTILATION & AIR CONDITIONING**

**23200 Ventilation & Exhaust**

DOAS AHU, 5 tons/2,000 cfm, w/energy recovery	1	EACH	35,784.00	35,784
Humidifier, electric, 12 lbs/hr	1	EACH	3,164.00	3,164
AC split system, MDF room, 1-1/2 tons	1	EACH	5,528.00	5,528
Refrigeration tubing, AC split system	60	LNFT	21.53	1,292
Pipe insulation, refrigeration piping, AC split system	60	LNFT	11.10	666
Condensate drain piping - AC split system	30	LNFT	27.87	836
Pipe insulation, condensate drain piping - AC split system	30	LNFT	10.07	302
Condensate drain piping - water source heat pumps	400	LNFT	55.42	22,169
Pipe insulation, condensate drain piping - heat pumps	400	LNFT	12.80	5,121
Exhaust fan, rooftop, w/curb, backdraft damper	4	EACH	1,664.00	6,656
Heat pump, water-air, 2-stage, 6 ton	2	EACH	15,892.00	31,784
Heat pump, water-air, 2-stage, 5 ton	1	EACH	14,392.00	14,392
Heat pump, water-air, 2-stage, 4 ton	2	EACH	8,892.00	17,784
Heat pump, water-air, 2-stage, 2 ton	1	EACH	6,428.00	6,428
Heat pump, water-air, 2-stage, 1.5 ton	1	EACH	5,546.00	5,546
Heat pump connections - valves, fittings, and insulation	9	EACH	1,607.00	14,463
VVT zone dampers	9	EACH	741.00	6,669
Galvanized steel duct & insulation	17,635	SQFT	13.71	241,707
Registers, grilles and diffusers	150	EACH	113.20	16,980
Flexible duct, insulated	500	LNFT	23.55	11,775
Louvers, OA	2	EACH	2,482.00	4,964

**SUBTOTAL: Ventilation & Exhaust \$454,010**

**23300 Central Hydronic & Steam Equipment & Specialties**

XXXX Heat pump, water-water, 5 ton	2	EACH	14,392.00	28,784
Geothermal circulating pump, inline	3	EACH	2,343.80	7,031
HW circulating pump, primary, inline	2	EACH	743.80	1,488
HW circulating pump, secondary, inline	2	EACH	743.80	1,488
Vibration isolation, pumps	7	EACH	1,818.80	12,732
Isolation valves, pumps, butterfly, geothermal	7	EACH	542.06	3,794
Flexible pump connections, geothermal pumps	14	EACH	184.90	2,589
Triple duty valve, geothermal pumps	7	EACH	909.40	6,366
Pump strainer, Y-type, geothermal pumps	7	EACH	257.35	1,801
HW buffer tank	1	EACH	9,462.80	9,463
Air separator, geothermal pumps	1	EACH	1,625.24	1,625
Pressure fill/makeup water system	1	EACH	9,975.20	9,975

**SUBTOTAL: Central Hydronic & Steam Equipment & Specialties \$87,136**

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
<b>23400 Heating &amp; Ventilating Terminals</b>				
Cabinet unit heaters, HW hydronic	4	EACH	3,287.60	13,150
Unit heaters, HW hydronic	2	EACH	1,787.60	3,575
Fintube radiators, HW	216	LNFT	130.95	28,285
HW connections - valves, fittings, and specialties	6	EACH	593.80	3,563
<b>SUBTOTAL: Heating &amp; Ventilating Terminals</b>				<b>\$48,574</b>
<b>23500 HVAC Piping</b>				
Humidifier piping	50	LNFT	29.02	1,451
GTWS/R geothermal piping mains, std. wgt. blk. steel pipe, fittings, and supports	900	LNFT	114.92	103,431
GTWS/R geothermal condensing water runouts, type L copper, w/fittings, and supports	450	LNFT	28.08	12,635
HHWS/R runout piping to perimeter heaters, type L copper	1,000	LNFT	44.66	44,661
Pipe insulation, humidifier piping	50	LNFT	9.62	481
Pipe insulation, GTWS/R mains	900	LNFT	17.16	15,446
Pipe insulation, GTWS/R runouts to heat pumps	450	LNFT	10.07	4,534
Pipe insulation, HHWS/R runouts to perimeter heaters	1,000	LNFT	20.40	20,397
Pipe and valve tagging - interior bldg HVAC piping	2,400	LNFT	1.32	3,178
<b>SUBTOTAL: HVAC Piping</b>				<b>\$206,213</b>
<b>23600 Temperature Controls</b>				
DDC controls - DOAS AHU	1	EACH	5,000.00	5,000
DDC controls - AC split system - MDF room	1	EACH	2,500.00	2,500
DDC controls - heat pumps, water source, water-air	7	EACH	4,000.00	28,000
DDC controls - humidifier unit	1	EACH	2,000.00	2,000
DDC controls - exhaust fans	4	EACH	2,500.00	10,000
DDC controls - VVTdampers	9	EACH	1,500.00	13,500
DDC controls - heat pumps, water source, water-water	2	EACH	4,000.00	8,000
DDC controls - hydronic pumps, variable speed	7	EACH	7,500.00	52,500
Thermostats/temperature sensors	10	EACH	500.00	5,000
CO2 sensors	9	EACH	500.00	4,500
Miscellaneous points & devices	1	LSUM	15,000.00	15,000
Utility meter interfaces	1	LSUM	15,000.00	15,000
Headend/central controls	1	LSUM	15,000.00	15,000
Interface with existing building BAS-DDC system	1	LSUM	7,500.00	7,500
Programming, testing, and training	1	LSUM	10,000.00	10,000
<b>SUBTOTAL: Temperature Controls</b>				<b>\$193,500</b>
<b>23700 Testing, Balancing, &amp; Commissioning</b>				
Air testing and balancing	1	LSUM	18,000.00	18,000
Pipe system testing and balancing	1	LSUM	11,000.00	11,000
HVAC system commissioning assistance	1	LSUM	12,000.00	12,000
<b>SUBTOTAL: Testing, Balancing, &amp; Commissioning</b>				<b>\$41,000</b>
<b>TOTAL: HEATING VENTILATION &amp; AIR CONDITIONING</b>				<b>\$1,030,432</b>

## 26000 ELECTRICAL

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
<b>26200 Main Power Distribution</b>				
Panelboards MLO 84ct double tub 250A - Panel A	1	EACH	8,037.76	8,038
Panelboards MLO 42ct 225A - Panel B	1	EACH	4,960.88	4,961
Panelboards MLO 42ct 225A - Panel C	1	EACH	4,960.88	4,961
Panelboards MLO 42ct 100A - Panel U	1	EACH	4,138.88	4,139
New 20 KVA UPS unit	1	EACH	38,217.76	38,218
Feeder installation 600 V, including conduit and XHHW wire, 60A	30	LNFT	28.06	842
Feeder installation 600 V, including conduit and XHHW wire, 100A	100	LNFT	34.03	3,403
Feeder installation 600 V, including conduit and XHHW wire, 225A	200	LNFT	53.72	10,744
Feeder installation 600 V, including conduit and XHHW wire, 250A	30	LNFT	61.78	1,853
<b>SUBTOTAL: Main Power Distribution</b>				<b>\$77,158</b>
<b>26400 Grounding &amp; Lightning Protection System</b>				
Grounding System per code	1	LSUM	7,606.53	7,607
<b>SUBTOTAL: Grounding &amp; Lightning Protection System</b>				<b>\$7,607</b>
<b>26500 Lighting</b>				
Lighting System - Miscellaneous light fixtures including installation and hook up	17,635	SQFT	13.16	232,010
Lighting System - Blue Ridge Technologies lighting control system, including cabling and connections	17,635	SQFT	2.17	38,317
Lighting System - Branch wiring installation 600 V, including 3/4" EMT conduit and THWN wire, 20A	17,635	SQFT	3.66	64,486
<b>SUBTOTAL: Lighting</b>				<b>\$334,813</b>
<b>26600 Branch Power Distribution &amp; Devices</b>				
Branch Power - Miscellaneous receptacles and electrical equipment hook up	17,635	SQFT	0.82	14,522
Branch wiring installation 600 V, including 3/4" EMT conduit and THWN wire, 20A	17,635	SQFT	4.90	86,382
<b>SUBTOTAL: Branch Power Distribution &amp; Devices</b>				<b>\$100,904</b>
<b>26700 Mechanical Equipment Connections &amp; Feeders</b>				
Motors connection, disconnect switches and associated feeders - AC split system, MDF room, 1-1/2 tons	1	EACH	2,700.00	2,700
Motors connection, disconnect switches and associated feeders - DHW recirculating pump 1	1	EACH	1,200.00	1,200
Motors connection, disconnect switches and associated feeders - DOAS AHU, 5 tons/2,000 cfm	1	EACH	3,500.00	3,500
Motors connection, disconnect switches and associated feeders - Exhaust fan, rooftop	4	EACH	2,500.00	10,000
Motors connection, disconnect switches and associated feeders - HW circulating pump, primary, inline	2	EACH	2,600.00	5,200
Motors connection, disconnect switches and associated feeders - HW circulating pump, secondary, inline	2	EACH	2,200.00	4,400
Motors connection, disconnect switches and associated feeders - Heat pump, water-air, 2-stage, 6 ton	2	EACH	3,600.00	7,200
Motors connection, disconnect switches and associated feeders - Heat pump, water-air, 2-stage, 5 ton	1	EACH	3,600.00	3,600
Motors connection, disconnect switches and associated feeders - Geothermal circulating pump, inline	3	EACH	1,800.00	5,400

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
Motors connection, disconnect switches and associated feeders - Heat pump, water-air, 2-stage, 4 ton	2	EACH	3,200.00	6,400
Motors connection, disconnect switches and associated feeders - Heat pump, water-water, 2-stage, 5 ton	2	EACH	3,600.00	7,200
Motors connection, disconnect switches and associated feeders - Heat pump, water-air, 2-stage, 2 ton	1	EACH	2,750.00	2,750
Motors connection, disconnect switches and associated feeders - Heat pump, water-air, 2-stage, 1.5 ton	1	EACH	2,500.00	2,500
Motors connection, disconnect switches and associated feeders - Humidifier, electric	1	EACH	1,200.00	1,200
Motors connection, disconnect switches and associated feeders - Domestic water heater, electric	1	EACH	850.00	850
Motors connection, disconnect switches and associated feeders - Electric water cooler,	1	EACH	375.00	375
<b>SUBTOTAL: Mechanical Equipment Connections &amp; Feeders</b>				<b>\$64,475</b>
<b>TOTAL: ELECTRICAL</b>				<b>\$584,956</b>

## 27000 COMMUNICATIONS

### 27200 Tele/Data Systems

Provision for IT room, plywood, cable tray, grounding, sleeves	1	EACH	5,802.67	5,803
MDF rack assembly 3 racks, switching equipment by Owner	1	EACH	5,747.20	5,747
Telecommunication/Data & Television System, complete	17,635	SQFT	12.26	216,270

**SUBTOTAL: Tele/Data Systems \$227,820**

### 27300 Intercom & Public Address Systems

Mass notification system, complete	17,635	SQFT	3.61	63,629
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**SUBTOTAL: Intercom & Public Address Systems \$63,629**

### 27500 Clock System

Wireless clock system	17,635	SQFT	1.85	32,625
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**SUBTOTAL: Clock System \$32,625**

### 27600 Audio/Visual & Television System

Audio/visual System, complete	17,635	SQFT	7.21	127,095
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**SUBTOTAL: Audio/Visual & Television System \$127,095**

**TOTAL: COMMUNICATIONS \$451,169**

## 28000 ELECTRONIC SAFETY & SECURITY

### 28200 Fire Alarm Systems

Fire alarm system, complete	17,635	SQFT	3.83	67,583
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**SUBTOTAL: Fire Alarm Systems \$67,583**

### 28300 Intrusion Detection & Access Control Systems

Physical access control system, complete	17,635	SQFT	3.35	59,114
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**SUBTOTAL: Intrusion Detection & Access Control Systems \$59,114**

### 28400 CCTV System

Video surveillance system, complete	17,635	SQFT	4.93	86,858
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DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
			<b>SUBTOTAL: CCTV System</b>	<b>\$86,858</b>
<b>TOTAL: ELECTRONIC SAFETY &amp; SECURITY</b>				<b>\$213,555</b>
<b>31000 EARTHWORK</b>				
<b>31200 Site Grading</b>				
Fine grading at bench area	125	SQFT	0.67	84
			<b>SUBTOTAL: Site Grading</b>	<b>\$84</b>
<b>TOTAL: EARTHWORK</b>				<b>\$84</b>
<b>33000 UTILITIES</b>				
<b>33200 Site Water Service</b>				
Domestic water service provisions	1	LSUM	82,210.97	82,211
			<b>SUBTOTAL: Site Water Service</b>	<b>\$82,211</b>
<b>33300 Site Sanitary &amp; Storm Sewer</b>				
Storm and sanitary sewer provisions	1	LSUM	83,547.00	83,547
			<b>SUBTOTAL: Site Sanitary &amp; Storm Sewer</b>	<b>\$83,547</b>
<b>33400 Natural Gas Service</b>				
Coordinate gas service provision with local utility	1	LSUM	2,391.02	2,391
			<b>SUBTOTAL: Natural Gas Service</b>	<b>\$2,391</b>
<b>33800 Site Electrical</b>				
			<b>SUBTOTAL: Site Electrical</b>	<b>\$0</b>
<b>TOTAL: UTILITIES</b>				<b>\$168,149</b>
<b>TOTAL: BASE BID</b>				<b>\$4,726,964</b>
<b>ALTERNATE #1: MLK LETTERS &amp; BENCH</b>				
<b>03000 CONCRETE</b>				
<b>03600 Precast Architectural Concrete</b>				
Precast concrete seat and back, bench	1	EACH	5,385.43	5,385
			<b>SUBTOTAL: Precast Architectural Concrete</b>	<b>\$5,385</b>
<b>03900 Miscellaneous Concrete</b>				
Formwork for strip footings, bench	80	SQFT	10.17	814
Formwork for foundation walls, bench	344	SQFT	10.98	3,779
Reinforcement in strip footings, avg 65 lbs/cy, bench	130	LBS	1.63	212
Reinforcement in foundation walls, avg 115 lbs/cy, bench	460	LBS	1.73	795
Concrete in strip footings, bench	2	CUYD	238.62	477
Concrete in foundation walls, bench	4	CUYD	246.28	985
Concrete slab on grade, 4" thk, with mesh reinforcement, bench	58	SQFT	6.34	368
			<b>SUBTOTAL: Miscellaneous Concrete</b>	<b>\$7,431</b>
<b>TOTAL: CONCRETE</b>				<b>\$12,816</b>
<b>04000 MASONRY</b>				

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
<b>04100 Exterior Masonry</b>				
Brick facade, modular, 2-2/3"x8"x4" thk, bench	78	SQFT	34.12	2,661
Cast stone coping, 18" wide x 4" deep, bench	20	LNFT	173.40	3,468
CMU backup, bench	78	SQFT	19.69	1,536
<b>SUBTOTAL: Exterior Masonry</b>				<b>\$7,665</b>
<b>TOTAL: MASONRY</b>				<b>\$7,665</b>
<b>05000 METALS</b>				
<b>05100 Structural Steel</b>				
Structural steel beams, HSS Tubes, bench	374	LBS	4.10	1,534
<b>SUBTOTAL: Structural Steel</b>				<b>\$1,534</b>
<b>TOTAL: METALS</b>				<b>\$1,534</b>
<b>10000 SPECIALTIES</b>				
<b>10200 Signage</b>				
Monumental sign, "MLK" letters, 6'-0" high	1	EACH	55,000.00	55,000
<b>SUBTOTAL: Signage</b>				<b>\$55,000</b>
<b>TOTAL: SPECIALTIES</b>				<b>\$55,000</b>
<b>31000 EARTHWORK</b>				
<b>31300 Foundation Excavation &amp; Fill</b>				
Excavate for bench foundation	23	CUYD	11.94	275
Backfill with imported material	12	CUYD	48.55	583
<b>SUBTOTAL: Foundation Excavation &amp; Fill</b>				<b>\$857</b>
<b>31700 Pavement Bases</b>				
CA-6 base, 6" thk at bench	5	CUYD	50.53	253
<b>SUBTOTAL: Pavement Bases</b>				<b>\$253</b>
<b>TOTAL: EARTHWORK</b>				<b>\$1,110</b>
<b>TOTAL: ALTERNATE #1: MLK LETTERS &amp; BENCH</b>				<b>\$78,125</b>
<b>ALTERNATE #2: UNDERFLOOR PLUMBING</b>				
<b>22000 PLUMBING</b>				
<b>22400 Domestic Water, Waste &amp; Vent, &amp; Storm Drainage Piping</b>				
Sanitary/waste pipe and fittings, CI hub and spigot, UG	250	LNFT	85.02	21,255
Storm drainage pipe and fittings, CI hub and spigot, UG	200	LNFT	161.96	32,392
<b>SUBTOTAL: Domestic Water, Waste &amp; Vent, &amp; Storm Drainage Piping</b>				<b>\$53,646</b>
<b>TOTAL: PLUMBING</b>				<b>\$53,646</b>
<b>TOTAL: ALTERNATE #2: UNDERFLOOR PLUMBING</b>				<b>\$53,646</b>
<b>ALTERNATE #3: ROOFTOP PV PANELS &amp; CONDUITS</b>				
<b>26000 ELECTRICAL</b>				

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
<b>26200 Main Power Distribution</b>				
New photovoltaic system on roof, 119 KW	1	EACH	300,000.00	300,000
New photovoltaic system raceway from main panel to roof	1	EACH	3,000.00	3,000
<b>SUBTOTAL: Main Power Distribution</b>				<b>\$303,000</b>

**TOTAL: ELECTRICAL \$303,000**

**TOTAL: ALTERNATE #3: ROOFTOP PV PANELS & CONDUITS \$303,000**

**ALTERNATE #4: LIBRARY ELECTRICAL SERVICE**

**26000 ELECTRICAL**

**26200 Main Power Distribution**

Main Distribution Switchboard 480/277V 3ph 4w 800A - MDP	1	EACH	23,902.67	23,903
Transient suppressor/voltage regulator, including connection to switchboard	1	EACH	1,821.68	1,822
Feeder installation 600 V, including conduit and XHHW wire, 800A UG (assumed length)	50	LNFT	291.86	14,593
<b>SUBTOTAL: Main Power Distribution</b>				<b>\$40,317</b>

**TOTAL: ELECTRICAL \$40,317**

**33000 UTILITIES**

**33800 Site Electrical**

Utility company provisions and coordination,	1	EACH	6,500.00	6,500
Telecommunication duct bank (3) 4" PVC to existing utility manhole	1	EACH	20,000.00	20,000
<b>SUBTOTAL: Site Electrical</b>				<b>\$26,500</b>

**TOTAL: UTILITIES \$26,500**

**TOTAL: ALTERNATE #4: LIBRARY ELECTRICAL SERVICE \$66,817**

**ALTERNATE #5: GEOTHERMAL WELL FIELD**

**33000 UTILITIES**

**33500 Site HVAC**

Geothermal wellfield, including bores, vaults, and field piping - per vertical lft	14,000	VLFT	25.00	350,000
<b>SUBTOTAL: Site HVAC</b>				<b>\$350,000</b>

**TOTAL: UTILITIES \$350,000**

**TOTAL: ALTERNATE #5: GEOTHERMAL WELL FIELD \$350,000**

**ALTERNATE #6: CENTRAL BOILER & CHILLER PLANT**

**23000 HEATING VENTILATION & AIR CONDITIONING**

**23300 Central Hydronic & Steam Equipment & Specialties**

HW boilers, condensing, based on 400 mbh	2	EACH	29,876.00	59,752
CA duct, HW boilers	100	LNFT	22.43	2,243
Boiler flue/vent	100	LNFT	170.61	17,061
Chiller, 45 tons air-cooled	1	EACH	54,876.00	54,876
CHW, HW pumps, inline	4	EACH	4,460.24	17,841



DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
Variable frequency drive, pumps, (MC supply, EC install)	4	EACH	2,654.66	10,619
Vibration isolation, pumps	4	EACH	1,843.80	7,375
Isolation valves, pumps, butterfly, HW, CHW pumps	4	EACH	1,190.15	4,761
Flexible pump connections, HW, CHW pumps	8	EACH	411.80	3,294
Triple duty valve, CHW, HW pumps	4	EACH	3,759.50	15,038
Pump strainer, Y-type, CHW, HW pumps	4	EACH	1,215.35	4,861
Expansion tank	2	EACH	6,225.20	12,450
Air separator, CHW, HW pumps	2	EACH	4,198.23	8,396
Chemical pot feeder	2	EACH	2,275.20	4,550
Sidestream filters	2	EACH	2,975.20	5,950
Pressure fill/makeup water system	1	EACH	9,487.60	9,488
<b>SUBTOTAL: Central Hydronic &amp; Steam Equipment &amp; Specialties</b>				<b>\$238,556</b>
<b>23500 HVAC Piping</b>				
CHWS/R mech. room piping, std. wgt. blk. steel pipe, fittings, and supports, welded/flanged	300	LNFT	188.83	56,650
HHWS/R mech. room piping, std. wgt. blk. steel pipe, fittings, and supports, welded/flanged	300	LNFT	188.83	56,650
Natural gas piping, std. wgt. blk. steel pipe, fittings, and supports, threaded	100	LNFT	41.29	4,129
Pipe insulation, CHWS/R mains	300	LNFT	21.54	6,462
Pipe insulation, HHWS/R mains	300	LNFT	21.54	6,462
Pipe and valve tagging - interior bldg HVAC piping	700	LNFT	1.32	927
<b>SUBTOTAL: HVAC Piping</b>				<b>\$131,281</b>
<b>23600 Temperature Controls</b>				
DDC controls - HW boilers	2	EACH	3,000.00	6,000
DDC controls - chiller, air-cooled	1	EACH	4,000.00	4,000
DDC controls - hydronic pumps, variable speed	4	EACH	7,500.00	30,000
Miscellaneous points & devices	1	LSUM	15,000.00	15,000
Utility meter interfaces	1	LSUM	15,000.00	15,000
Headend/central controls	1	LSUM	15,000.00	15,000
Interface with existing building BAS-DDC system	1	LSUM	7,500.00	7,500
Programming, testing, and training	1	LSUM	10,000.00	10,000
<b>SUBTOTAL: Temperature Controls</b>				<b>\$102,500</b>
<b>TOTAL: HEATING VENTILATION &amp; AIR CONDITIONING</b>				<b>\$472,336</b>
<b>26000 ELECTRICAL</b>				
<b>26700 Mechanical Equipment Connections &amp; Feeders</b>				
Motors connection, disconnect switches and associated feeders - Chillers, air-cooled, 45 tons	1	EACH	7,800.00	7,800
Motors connection, disconnect switches and associated feeders - CHW, HW pumps, inline	4	EACH	3,200.00	12,800
Motors connection, disconnect switches and associated feeders - HW boilers, condensing, 400 mbh	2	EACH	2,600.00	5,200
Install VFD	4	EACH	850.00	3,400
<b>SUBTOTAL: Mechanical Equipment Connections &amp; Feeders</b>				<b>\$29,200</b>

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
<b>TOTAL: ELECTRICAL</b>				<b>\$29,200</b>
<b>TOTAL: ALTERNATE #6: CENTRAL BOILER &amp; CHILLER PLANT</b>				<b>\$501,536</b>
<b>ALTERNATE #7: TWO (2) DEDICATED EV CHARGING STATIONS</b>				
<b>26000 ELECTRICAL</b>				
<b>26200 Main Power Distribution</b>				
Dual EV charging station and associated feeder	1	EACH	50,000.00	50,000
			<b>SUBTOTAL: Main Power Distribution</b>	<b>\$50,000</b>
<b>TOTAL: ELECTRICAL</b>				<b>\$50,000</b>
<b>TOTAL: ALTERNATE #7: TWO (2) DEDICATED EV CHARGING STATIONS</b>				<b>\$50,000</b>
<b>HVAC OPTION #1: DISTRIBUTED GEOTHERMAL HEAT PUMPS</b>				
<b>23000 HEATING VENTILATION &amp; AIR CONDITIONING</b>				
<b>23200 Ventilation &amp; Exhaust</b>				
DOAS AHU, 5 tons/2,000 cfm, w/energy recovery	1	EACH	35,784.00	35,784
Humidifier, electric, 12 lbs/hr	1	EACH	3,164.00	3,164
AC split system, MDF room, 1-1/2 tons	1	EACH	5,528.00	5,528
Refrigeration tubing, AC split system	60	LNFT	21.53	1,292
Pipe insulation, refrigeration piping, AC split system	60	LNFT	11.10	666
Condensate drain piping - AC split system	30	LNFT	27.87	836
Pipe insulation, condensate drain piping - AC split system	30	LNFT	10.07	302
Condensate drain piping - water source heat pumps	400	LNFT	55.42	22,169
Pipe insulation, condensate drain piping - heat pumps	400	LNFT	12.80	5,121
Exhaust fan, rooftop, w/curb, backdraft damper	4	EACH	1,664.00	6,656
Heat pump, water-air, 2-stage, 6 ton	2	EACH	15,892.00	31,784
Heat pump, water-air, 2-stage, 5 ton	1	EACH	14,392.00	14,392
Heat pump, water-air, 2-stage, 4 ton	2	EACH	8,892.00	17,784
Heat pump, water-air, 2-stage, 2 ton	1	EACH	6,428.00	6,428
Heat pump, water-air, 2-stage, 1.5 ton	1	EACH	5,546.00	5,546
Heat pump connections - valves, fittings, and insulation	9	EACH	1,607.00	14,463
VVT zone dampers	9	EACH	741.00	6,669
Galvanized steel duct & insulation	17,635	SQFT	13.71	241,707
Registers, grilles and diffusers	150	EACH	113.20	16,980
Flexible duct, insulated	500	LNFT	23.55	11,775
Louvers, OA	2	EACH	2,482.00	4,964
			<b>SUBTOTAL: Ventilation &amp; Exhaust</b>	<b>\$454,010</b>
<b>23300 Central Hydronic &amp; Steam Equipment &amp; Specialties</b>				
XXXX Heat pump, water-water, 5 ton	2	EACH	14,392.00	28,784
Geothermal circulating pump, inline	3	EACH	2,343.80	7,031
HW circulating pump, primary, inline	2	EACH	743.80	1,488

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
HW circulating pump, secondary, inline	2	EACH	743.80	1,488
Vibration isolation, pumps	7	EACH	1,818.80	12,732
Isolation valves, pumps, butterfly, geothermal	7	EACH	542.06	3,794
Flexible pump connections, geothermal pumps	14	EACH	184.90	2,589
Triple duty valve, geothermal pumps	7	EACH	909.40	6,366
Pump strainer, Y-type, geothermal pumps	7	EACH	257.35	1,801
HW buffer tank	1	EACH	9,462.80	9,463
Air separator, geothermal pumps	1	EACH	1,625.24	1,625
Pressure fill/makeup water system	1	EACH	9,975.20	9,975
<b>SUBTOTAL: Central Hydronic &amp; Steam Equipment &amp; Specialties</b>				<b>\$87,136</b>
<b>23400 Heating &amp; Ventilating Terminals</b>				
Cabinet unit heaters, HW hydronic	4	EACH	3,287.60	13,150
Unit heaters, HW hydronic	2	EACH	1,787.60	3,575
Fintube radiators, HW	216	LNFT	130.95	28,285
HW connections - valves, fittings, and specialties	6	EACH	593.80	3,563
<b>SUBTOTAL: Heating &amp; Ventilating Terminals</b>				<b>\$48,574</b>
<b>23500 HVAC Piping</b>				
Humidifier piping	50	LNFT	29.02	1,451
GTWS/R geothermal piping mains, std. wgt. blk. steel pipe, fittings, and supports	900	LNFT	114.92	103,431
GTWS/R geothermal condensing water runouts, type L copper, w/fittings, and supports	450	LNFT	28.08	12,635
HHWS/R runout piping to perimeter heaters, type L copper	1,000	LNFT	44.66	44,661
Pipe insulation, humidifier piping	50	LNFT	9.62	481
Pipe insulation, GTWS/R mains	900	LNFT	17.16	15,446
Pipe insulation, GTWS/R runouts to heat pumps	450	LNFT	10.07	4,534
Pipe insulation, HHWS/R runouts to perimeter heaters	1,000	LNFT	20.40	20,397
Pipe and valve tagging - interior bldg HVAC piping	2,400	LNFT	1.32	3,178
<b>SUBTOTAL: HVAC Piping</b>				<b>\$206,213</b>
<b>23600 Temperature Controls</b>				
DDC controls - DOAS AHU	1	EACH	5,000.00	5,000
DDC controls - AC split system - MDF room	1	EACH	2,500.00	2,500
DDC controls - heat pumps, water source, water-air	7	EACH	4,000.00	28,000
DDC controls - humidifier unit	1	EACH	2,000.00	2,000
DDC controls - exhaust fans	4	EACH	2,500.00	10,000
DDC controls - VVTdampers	9	EACH	1,500.00	13,500
DDC controls - heat pumps, water source, water-water	2	EACH	4,000.00	8,000
DDC controls - hydronic pumps, variable speed	7	EACH	7,500.00	52,500
Thermostats/temperature sensors	10	EACH	500.00	5,000
CO2 sensors	9	EACH	500.00	4,500
Miscellaneous points & devices	1	LSUM	15,000.00	15,000
Utility meter interfaces	1	LSUM	15,000.00	15,000
Headend/central controls	1	LSUM	15,000.00	15,000
Interface with existing building BAS-DDC system	1	LSUM	7,500.00	7,500
Programming, testing, and training	1	LSUM	10,000.00	10,000

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
			<b>SUBTOTAL: Temperature Controls</b>	<b>\$193,500</b>
<b>23700 Testing, Balancing, &amp; Commissioning</b>				
Air testing and balancing	1	LSUM	18,000.00	18,000
Pipe system testing and balancing	1	LSUM	11,000.00	11,000
HVAC system commissioning assistance	1	LSUM	12,000.00	12,000
			<b>SUBTOTAL: Testing, Balancing, &amp; Commissioning</b>	<b>\$41,000</b>
<b>TOTAL: HEATING VENTILATION &amp; AIR CONDITIONING</b>				<b>\$1,030,432</b>
<b>26000 ELECTRICAL</b>				
<b>26700 Mechanical Equipment Connections &amp; Feeders</b>				
Motors connection, disconnect switches and associated feeders - DOAS AHU, 5 tons/2,000 cfm	1	EACH	3,500.00	3,500
Motors connection, disconnect switches and associated feeders - AC split system, MDF room, 1-1/2 tons	1	EACH	2,700.00	2,700
Motors connection, disconnect switches and associated feeders - HW circulating pump, primary, inline	2	EACH	2,600.00	5,200
Motors connection, disconnect switches and associated feeders - Exhaust fan, rooftop	4	EACH	2,500.00	10,000
Motors connection, disconnect switches and associated feeders - HW system pump	2	EACH	2,200.00	4,400
Motors connection, disconnect switches and associated feeders - Geothermal circulating pump, inline	3	EACH	1,800.00	5,400
Motors connection, disconnect switches and associated feeders - Heat pump, water-air, 2-stage, 1.5 ton	1	EACH	2,500.00	2,500
Motors connection, disconnect switches and associated feeders - Heat pump, water-air, 2-stage, 2 ton	1	EACH	2,750.00	2,750
Motors connection, disconnect switches and associated feeders - Heat pump, water-air, 2-stage, 4 ton	2	EACH	3,200.00	6,400
Motors connection, disconnect switches and associated feeders - Heat pump, water-air, 2-stage, 5 ton	1	EACH	3,600.00	3,600
Motors connection, disconnect switches and associated feeders - Heat pump, water-air, 2-stage, 6 ton	2	EACH	3,600.00	7,200
Motors connection, disconnect switches and associated feeders - Heat pump, water-water, 2-stage, 5 ton	2	EACH	3,600.00	7,200
Motors connection, disconnect switches and associated feeders - Humidifier, electric,	1	EACH	1,200.00	1,200
Motors connection, disconnect switches and associated feeders - HW circulating pump, secondary, inline	2	EACH	2,600.00	5,200
			<b>SUBTOTAL: Mechanical Equipment Connections &amp; Feeders</b>	<b>\$67,250</b>
<b>TOTAL: ELECTRICAL</b>				<b>\$67,250</b>
<b>33000 UTILITIES</b>				
<b>33500 Site HVAC</b>				
Geothermal wellfield, including bores, vaults, and field piping - per vertical lft	14,000	VLFT	25.00	350,000
			<b>SUBTOTAL: Site HVAC</b>	<b>\$350,000</b>
<b>TOTAL: UTILITIES</b>				<b>\$350,000</b>

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
<b>TOTAL: HVAC OPTION #1: DISTRIBUTED GEOTHERMAL HEAT PUMPS</b>				<b>\$1,447,682</b>
<b>HVAC OPTION #2A: 4-PIPE SYSTEM FANCOILS W/ GEOTHERMAL</b>				
<b>23000 HEATING VENTILATION &amp; AIR CONDITIONING</b>				
<b>23200 Ventilation &amp; Exhaust</b>				
DOAS AHU, 5 tons/2,000 cfm, w/energy recovery	1	EACH	35,784.00	35,784
Humidifier, electric, 12 lbs/hr	1	EACH	3,164.00	3,164
AC split system, MDF room, 1-1/2 tons	1	EACH	5,528.00	5,528
Refrigeration tubing, AC split system	60	LNFT	21.53	1,292
Pipe insulation, refrigeration piping, AC split system	60	LNFT	11.10	666
Condensate drain piping - AC split system	30	LNFT	27.87	836
Pipe insulation, condensate drain piping - AC split system	30	LNFT	10.07	302
Condensate drain piping - 4-pipe fancoils	400	LNFT	55.42	22,169
Pipe insulation, condensate drain piping - 4-pipe fancoils	400	LNFT	12.80	5,121
Exhaust fan, rooftop, w/curb, backdraft damper	4	EACH	1,664.00	6,656
Fancoil units, 4-pipe hydronic, 6 tons	2	EACH	7,602.50	15,205
Fancoil units, 4-pipe hydronic, 4 tons	1	EACH	5,602.50	5,603
Fancoil units, 4-pipe hydronic, 1.5 tons	1	EACH	3,502.50	3,503
Fancoil units, 4-pipe hydronic, 1 tons	7	EACH	3,302.50	23,118
FCU coil connections - valves, fittings, and insulation	22	EACH	1,607.00	35,354
VVT zone dampers	11	EACH	741.00	8,151
Galvanized steel duct & insulation	17,635	SQFT	13.71	241,707
Registers, grilles and diffusers	150	EACH	113.20	16,980
Flexible duct, insulated	500	LNFT	23.55	11,775
Louvers, OA	2	EACH	2,482.00	4,964
<b>SUBTOTAL: Ventilation &amp; Exhaust</b>				<b>\$447,876</b>
<b>23300 Central Hydronic &amp; Steam Equipment &amp; Specialties</b>				
Heat pump plant, 45-tons skid-mounted, (4) 15-ton modular units w/6-pipe header	1	EACH	97,801.60	97,802
CHW, HW pumps, inline	4	EACH	4,460.24	17,841
Geothermal circulating pump, inline	3	EACH	2,343.80	7,031
Variable frequency drive, pumps, (MC supply, EC install)	4	EACH	2,654.66	10,619
Vibration isolation, pumps	7	EACH	1,818.80	12,732
Isolation valves, pumps, butterfly, HW, CHW pumps	4	EACH	1,190.15	4,761
Isolation valves, pumps, butterfly, geothermal	3	EACH	542.06	1,626
Flexible pump connections, HW, CHW pumps	8	EACH	411.80	3,294
Flexible pump connections, geothermal pumps	6	EACH	184.90	1,109
Triple duty valve, CHW, HW pumps	4	EACH	3,759.50	15,038
Triple duty valve, geothermal pumps	3	EACH	909.40	2,728
Pump strainer, Y-type, CHW, HW pumps	4	EACH	1,215.35	4,861
Pump strainer, Y-type, geothermal pumps	3	EACH	257.35	772
Expansion tank	2	EACH	6,225.20	12,450
Air separator, CHW, HW pumps	2	EACH	4,198.23	8,396

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
Air separator, geothermal pumps	1	EACH	1,625.24	1,625
Chemical pot feeder	2	EACH	2,275.20	4,550
Sidestream filters	2	EACH	2,975.20	5,950
Pressure fill/makeup water system	1	EACH	9,975.20	9,975
<b>SUBTOTAL: Central Hydronic &amp; Steam Equipment &amp; Specialties</b>				<b>\$223,163</b>
<b>23400 Heating &amp; Ventilating Terminals</b>				
Cabinet unit heaters, HW hydronic	4	EACH	3,287.60	13,150
Unit heaters, HW hydronic	2	EACH	1,787.60	3,575
Fintube radiators, HW	216	LNFT	130.95	28,285
HW connections - valves, fittings, and specialties	6	EACH	593.80	3,563
<b>SUBTOTAL: Heating &amp; Ventilating Terminals</b>				<b>\$48,574</b>
<b>23500 HVAC Piping</b>				
Humidifier piping	50	LNFT	29.02	1,451
CHWS/R, HWS/R piping mains, std. wgt. blk. steel pipe, fittings, and supports	1,000	LNFT	114.92	114,923
CHWS/R, HWS/R runouts, type L copper, w/fittings, and supports	550	LNFT	28.08	15,443
HHWS/R runout piping to perimeter heaters, type L copper	1,000	LNFT	44.66	44,661
Pipe insulation, humidifier piping	50	LNFT	9.62	481
Pipe insulation, CHWS/R, HWS/R mains	1,000	LNFT	17.16	17,162
Pipe insulation, CHWS/R, HWS/R runouts to heat pumps	550	LNFT	10.07	5,541
Pipe insulation, HHWS/R runouts to perimeter heaters	1,000	LNFT	20.40	20,397
Pipe and valve tagging - interior bldg HVAC piping	2,600	LNFT	1.32	3,442
<b>SUBTOTAL: HVAC Piping</b>				<b>\$223,501</b>
<b>23600 Temperature Controls</b>				
DDC controls - DOAS AHU	1	EACH	5,000.00	5,000
DDC controls - AC split system - MDF room	1	EACH	2,500.00	2,500
DDC controls - fancoil units	11	EACH	2,500.00	27,500
DDC controls - humidifier unit	1	EACH	2,000.00	2,000
DDC controls - exhaust fans	4	EACH	2,500.00	10,000
DDC controls - VVTdampers	11	EACH	1,500.00	16,500
DDC controls - hydronic pumps, variable speed	7	EACH	7,500.00	52,500
Thermostats/temperature sensors	12	EACH	500.00	6,000
CO2 sensors	12	EACH	500.00	6,000
Miscellaneous points & devices	1	LSUM	15,000.00	15,000
Utility meter interfaces	1	LSUM	15,000.00	15,000
Headend/central controls	1	LSUM	15,000.00	15,000
Interface with existing building BAS-DDC system	1	LSUM	7,500.00	7,500
Programming, testing, and training	1	LSUM	10,000.00	10,000
<b>SUBTOTAL: Temperature Controls</b>				<b>\$190,500</b>
<b>23700 Testing, Balancing, &amp; Commissioning</b>				
Air testing and balancing	1	LSUM	18,000.00	18,000
Pipe system testing and balancing	1	LSUM	15,000.00	15,000
HVAC system commissioning assistance	1	LSUM	15,000.00	15,000
<b>SUBTOTAL: Testing, Balancing, &amp; Commissioning</b>				<b>\$48,000</b>

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
<b>TOTAL: HEATING VENTILATION &amp; AIR CONDITIONING</b>				<b>\$1,181,613</b>
<b>26000 ELECTRICAL</b>				
<b>26700 Mechanical Equipment Connections &amp; Feeders</b>				
Motors connection, disconnect switches and associated feeders - Heat pump plant, 45-tons	1	EACH	10,166.94	10,167
Motors connection, disconnect switches and associated feeders - AC split system, MDF room, 1-1/2 tons	1	EACH	2,700.00	2,700
Motors connection, disconnect switches and associated feeders - CHW, HW pumps, inline	2	EACH	2,600.00	5,200
Motors connection, disconnect switches and associated feeders - DOAS AHU, 5 tons/2,000 cfm	1	EACH	3,500.00	3,500
Motors connection, disconnect switches and associated feeders - Exhaust fan, rooftop	4	EACH	2,500.00	10,000
Motors connection, disconnect switches and associated feeders - HW system pump	2	EACH	2,200.00	4,400
Motors connection, disconnect switches and associated feeders - Fancoil units, 4-pipe hydronic, 1 tons	7	EACH	1,500.00	10,500
Motors connection, disconnect switches and associated feeders - Fancoil units, 4-pipe hydronic, 4 tons	1	EACH	2,750.00	2,750
Motors connection, disconnect switches and associated feeders - Fancoil units, 4-pipe hydronic, 1.5 tons	1	EACH	1,500.00	1,500
Motors connection, disconnect switches and associated feeders - Fancoil units, 4-pipe hydronic, 6 tons	2	EACH	3,200.00	6,400
Motors connection, disconnect switches and associated feeders - Humidifier, electric,	1	EACH	1,200.00	1,200
Motors connection, disconnect switches and associated feeders - Geothermal circulating pump, inline	3	EACH	1,800.00	5,400
Install VFD	4	EACH	850.00	3,400
<b>SUBTOTAL: Mechanical Equipment Connections &amp; Feeders</b>				<b>\$67,117</b>
<b>TOTAL: ELECTRICAL</b>				<b>\$67,117</b>
<b>33000 UTILITIES</b>				
<b>33500 Site HVAC</b>				
Geothermal wellfield, including bores, vaults, and field piping - per vertical lft	14,000	VLFT	25.00	350,000
<b>SUBTOTAL: Site HVAC</b>				<b>\$350,000</b>
<b>TOTAL: UTILITIES</b>				<b>\$350,000</b>
<b>TOTAL: HVAC OPTION #2A: 4-PIPE SYSTEM FANCOILS W/ GEOTHERMAL</b>				<b>\$1,598,730</b>
<b>HVAC OPTION #2B: 4-PIPE SYSTEM FANCOILS W/ BOILER/CHILLER PLANT</b>				
<b>23000 HEATING VENTILATION &amp; AIR CONDITIONING</b>				
<b>23200 Ventilation &amp; Exhaust</b>				
DOAS AHU, 5 tons/2,000 cfm, w/energy recovery	1	EACH	35,784.00	35,784
Humidifier, electric, 12 lbs/hr	1	EACH	3,164.00	3,164
AC split system, MDF room, 1-1/2 tons	1	EACH	5,528.00	5,528



DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
Refrigeration tubing, AC split system	60	LNFT	21.53	1,292
Pipe insulation, refrigeration piping, AC split system	60	LNFT	11.10	666
Condensate drain piping - AC split system	30	LNFT	27.87	836
Pipe insulation, condensate drain piping - AC split system	30	LNFT	10.07	302
Condensate drain piping - 4-pipe fancoils	400	LNFT	55.42	22,169
Pipe insulation, condensate drain piping - 4-pipe fancoils	400	LNFT	12.80	5,121
Exhaust fan, rooftop, w/curb, backdraft damper	4	EACH	1,664.00	6,656
Fancoil units, 4-pipe hydronic, 6 tons	2	EACH	7,602.50	15,205
Fancoil units, 4-pipe hydronic, 4 tons	1	EACH	5,602.50	5,603
Fancoil units, 4-pipe hydronic, 1.5 tons	1	EACH	3,502.50	3,503
Fancoil units, 4-pipe hydronic, 1 tons	7	EACH	3,302.50	23,118
FCU coil connections - valves, fittings, and insulation	22	EACH	1,607.00	35,354
VVT zone dampers	11	EACH	741.00	8,151
Galvanized steel duct & insulation	17,635	SQFT	13.71	241,707
Registers, grilles and diffusers	150	EACH	113.20	16,980
Flexible duct, insulated	500	LNFT	23.55	11,775
Louvers, OA	2	EACH	2,482.00	4,964
<b>SUBTOTAL: Ventilation &amp; Exhaust</b>				<b>\$447,876</b>
<b>23300 Central Hydronic &amp; Steam Equipment &amp; Specialties</b>				
HW boilers, condensing, based on 400 mbh	2	EACH	29,876.00	59,752
CA duct, HW boilers	100	LNFT	22.43	2,243
Boiler flue/vent	100	LNFT	170.61	17,061
Chiller, 45 tons air-cooled	1	EACH	54,876.00	54,876
CHW, HW pumps, inline	4	EACH	4,460.24	17,841
Variable frequency drive, pumps, (MC supply, EC install)	4	EACH	2,654.66	10,619
Vibration isolation, pumps	4	EACH	1,818.80	7,275
Isolation valves, pumps, butterfly, HW, CHW pumps	4	EACH	1,190.15	4,761
Flexible pump connections, HW, CHW pumps	8	EACH	411.80	3,294
Triple duty valve, CHW, HW pumps	4	EACH	3,759.50	15,038
Pump strainer, Y-type, CHW, HW pumps	4	EACH	1,215.35	4,861
Expansion tank	2	EACH	6,225.20	12,450
Air separator, CHW, HW pumps	2	EACH	4,198.23	8,396
Chemical pot feeder	2	EACH	2,275.20	4,550
Sidestream filters	2	EACH	2,975.20	5,950
Pressure fill/makeup water system	1	EACH	9,975.20	9,975
<b>SUBTOTAL: Central Hydronic &amp; Steam Equipment &amp; Specialties</b>				<b>\$238,944</b>
<b>23400 Heating &amp; Ventilating Terminals</b>				
Cabinet unit heaters, HW hydronic	4	EACH	3,287.60	13,150
Unit heaters, HW hydronic	2	EACH	1,787.60	3,575
Fintube radiators, HW	216	LNFT	130.95	28,285
HW connections - valves, fittings, and specialties	6	EACH	593.80	3,563
<b>SUBTOTAL: Heating &amp; Ventilating Terminals</b>				<b>\$48,574</b>
<b>23500 HVAC Piping</b>				



DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
Humidifier piping	50	LNFT	29.02	1,451
CHWS/R mech. room piping, std. wgt. blk. steel pipe, fittings, and supports, welded/flanged	300	LNFT	188.83	56,650
CHWS/R, HWS/R piping mains, std. wgt. blk. steel pipe, fittings, and supports	1,000	LNFT	114.92	114,923
CHWS/R, HWS/R runouts, type L copper, w/fittings, and supports	550	LNFT	28.08	15,443
HHWS/R mech. room piping, std. wgt. blk. steel pipe, fittings, and supports, welded/flanged	300	LNFT	188.83	56,650
HHWS/R runout piping to perimeter heaters, type L copper	1,000	LNFT	44.66	44,661
Natural gas piping, std. wgt. blk. steel pipe, fittings, and supports, threaded	100	LNFT	41.29	4,129
Pipe insulation, humidifier piping	50	LNFT	9.62	481
Pipe insulation, CHWS/R mains	300	LNFT	21.54	6,462
Pipe insulation, CHWS/R, HWS/R mains	1,000	LNFT	17.16	17,162
Pipe insulation, CHWS/R, HWS/R runouts to heat pumps	550	LNFT	10.07	5,541
Pipe insulation, HHWS/R runouts to perimeter heaters	1,000	LNFT	20.40	20,397
Pipe insulation, HHWS/R mains	300	LNFT	21.54	6,462
Pipe and valve tagging - interior bldg HVAC piping	3,300	LNFT	1.32	4,369
<b>SUBTOTAL: HVAC Piping</b>				<b>\$354,782</b>
<b>23600 Temperature Controls</b>				
DDC controls - DOAS AHU	1	EACH	5,000.00	5,000
DDC controls - AC split system - MDF room	1	EACH	2,500.00	2,500
DDC controls - fancoil units	11	EACH	2,500.00	27,500
DDC controls - humidifier unit	1	EACH	2,000.00	2,000
DDC controls - exhaust fans	4	EACH	2,500.00	10,000
DDC controls - VVTdampers	11	EACH	1,500.00	16,500
DDC controls - HW boilers	2	EACH	3,000.00	6,000
DDC controls - chiller, air-cooled	1	EACH	4,000.00	4,000
DDC controls - hydronic pumps, variable speed	4	EACH	7,500.00	30,000
Thermostats/temperature sensors	12	EACH	500.00	6,000
CO2 sensors	12	EACH	500.00	6,000
Miscellaneous points & devices	1	LSUM	15,000.00	15,000
Utility meter interfaces	1	LSUM	15,000.00	15,000
Headend/central controls	1	LSUM	15,000.00	15,000
Interface with existing building BAS-DDC system	1	LSUM	7,500.00	7,500
Programming, testing, and training	1	LSUM	10,000.00	10,000
<b>SUBTOTAL: Temperature Controls</b>				<b>\$178,000</b>
<b>23700 Testing, Balancing, &amp; Commissioning</b>				
Air testing and balancing	1	LSUM	18,000.00	18,000
Pipe system testing and balancing	1	LSUM	15,000.00	15,000
HVAC system commissioning assistance	1	LSUM	15,000.00	15,000
<b>SUBTOTAL: Testing, Balancing, &amp; Commissioning</b>				<b>\$48,000</b>
<b>TOTAL: HEATING VENTILATION &amp; AIR CONDITIONING</b>				<b>\$1,316,175</b>

## 26000 ELECTRICAL

### 26700 Mechanical Equipment Connections & Feeders

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
Motors connection, disconnect switches and associated feeders - AC split system, MDF room, 1-1/2 tons	1	EACH	2,700.00	2,700
Motors connection, disconnect switches and associated feeders - CHW, HW pumps, inline	4	EACH	2,600.00	10,400
Motors connection, disconnect switches and associated feeders - DOAS AHU, 5 tons/2,000 cfm	1	EACH	3,500.00	3,500
Motors connection, disconnect switches and associated feeders - Exhaust fan, rooftop	4	EACH	2,500.00	10,000
Motors connection, disconnect switches and associated feeders - Humidifier, electric,	1	EACH	1,200.00	1,200
Motors connection, disconnect switches and associated feeders - Fancoil units, 4-pipe hydronic, 6 tons	2	EACH	3,200.00	6,400
Motors connection, disconnect switches and associated feeders - Chillers, air-cooled, 45 tons	1	EACH	7,800.00	7,800
Motors connection, disconnect switches and associated feeders - Fancoil units, 4-pipe hydronic, 4 tons	1	EACH	2,750.00	2,750
Motors connection, disconnect switches and associated feeders - HW boilers, condensing, 400 mbh	2	EACH	2,600.00	5,200
Motors connection, disconnect switches and associated feeders - Fancoil units, 4-pipe hydronic, 1.5 tons	1	EACH	1,500.00	1,500
Motors connection, disconnect switches and associated feeders - Fancoil units, 4-pipe hydronic, 1 tons	7	EACH	1,500.00	10,500
Install VFD	4	EACH	850.00	3,400
<b>SUBTOTAL: Mechanical Equipment Connections &amp; Feeders</b>				<b>\$65,350</b>

**TOTAL: ELECTRICAL** **\$65,350**

**TOTAL: HVAC OPTION #2B: 4-PIPE SYSTEM FANCOILS W/ BOILER/CHILLER PLANT** **\$1,381,525**

**HVAC OPTION #3A: 4-PIPE SYSTEM W/AHU & VAV W/ GEOTHERMAL**

## 23000 HEATING VENTILATION & AIR CONDITIONING

### 23200 Ventilation & Exhaust

Air handling unit, based on 25,000 cfm, CHW, HW coils, humidifiers, fans, filters	1	EACH	190,670.59	190,671
CHW coil connections, AHU - valves, fittings, specialties, and pipe insulation	1	EACH	7,371.05	7,371
HW coil connections, AHU - valves, fittings, specialties, and pipe insulation	1	EACH	6,286.36	6,286
Energy recovery unit, 4500 cfm, energy wheel	1	EACH	65,415.38	65,415
Humidifier, electric, 24 lbs/hr	1	EACH	3,564.00	3,564
Return air fan	1	EACH	22,670.59	22,671
AC split system, MDF room, 1-1/2 tons	1	EACH	5,528.00	5,528
Refrigeration tubing, AC split system	60	LNFT	21.53	1,292
Pipe insulation, refrigeration piping, AC split system	60	LNFT	11.10	666
Condensate drain piping - AC split system	30	LNFT	27.87	836
Pipe insulation, condensate drain piping - AC split system	30	LNFT	10.07	302
Exhaust fan, rooftop, w/curb, backdraft damper	4	EACH	1,664.00	6,656
Variable air volume terminals w/ HW reheat coil	15	EACH	1,302.00	19,530
Reheat coil connections, VAV - valves, fittings, and insulation	15	EACH	1,082.00	16,230

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
Galvanized steel duct & insulation	17,635	SQFT	13.71	241,707
Registers, grilles and diffusers	150	EACH	113.20	16,980
Flexible duct, insulated	500	LNFT	23.55	11,775
Louvers, OA	2	EACH	2,482.00	4,964
<b>SUBTOTAL: Ventilation &amp; Exhaust</b>				<b>\$622,444</b>
<b>23300 Central Hydronic &amp; Steam Equipment &amp; Specialties</b>				
Heat pump plant, 45-tons skid-mounted, (4) 15-ton modular units w/6-pipe header	1	EACH	97,801.60	97,802
CHW, HW pumps, inline	4	EACH	4,460.24	17,841
Geothermal circulating pump, inline	3	EACH	2,343.80	7,031
Variable frequency drive, pumps, (MC supply, EC install)	7	EACH	2,654.66	18,583
Vibration isolation, pumps	7	EACH	1,818.80	12,732
Isolation valves, pumps, butterfly, HW, CHW pumps	4	EACH	1,190.15	4,761
Isolation valves, pumps, butterfly, geothermal	3	EACH	542.06	1,626
Flexible pump connections, HW, CHW pumps	8	EACH	411.80	3,294
Flexible pump connections, geothermal pumps	6	EACH	184.90	1,109
Triple duty valve, CHW, HW pumps	4	EACH	3,759.50	15,038
Triple duty valve, geothermal pumps	3	EACH	909.40	2,728
Pump strainer, Y-type, CHW, HW pumps	4	EACH	1,215.35	4,861
Pump strainer, Y-type, geothermal pumps	3	EACH	257.35	772
Expansion tank	2	EACH	6,225.20	12,450
Air separator, CHW, HW pumps	2	EACH	4,198.23	8,396
Air separator, geothermal pumps	1	EACH	1,625.24	1,625
Chemical pot feeder	2	EACH	2,275.20	4,550
Sidestream filters	2	EACH	2,975.20	5,950
Pressure fill/makeup water system	1	EACH	9,975.20	9,975
<b>SUBTOTAL: Central Hydronic &amp; Steam Equipment &amp; Specialties</b>				<b>\$231,127</b>
<b>23400 Heating &amp; Ventilating Terminals</b>				
Cabinet unit heaters, HW hydronic	4	EACH	3,287.60	13,150
Unit heaters, HW hydronic	2	EACH	1,787.60	3,575
Fintube radiators, HW	216	LNFT	130.95	28,285
HW connections - valves, fittings, and specialties	6	EACH	593.80	3,563
<b>SUBTOTAL: Heating &amp; Ventilating Terminals</b>				<b>\$48,574</b>
<b>23500 HVAC Piping</b>				
Humidifier piping	50	LNFT	29.02	1,451
CHWS/R, HWS/R piping mains, std. wgt. blk. steel pipe, fittings, and supports	1,000	LNFT	114.92	114,923
HWS/R runouts to VAV's, type L copper, w/fittings, and supports	500	LNFT	28.08	14,039
HHWS/R runout piping to perimeter heaters, type L copper	1,000	LNFT	44.66	44,661
Pipe insulation, humidifier piping	50	LNFT	9.62	481
Pipe insulation, CHWS/R, HWS/R mains	1,000	LNFT	17.16	17,162
Pipe insulation, HHWS/R runouts to VAV's	500	LNFT	10.07	5,037
Pipe insulation, HHWS/R runouts to perimeter heaters	1,000	LNFT	20.40	20,397
Pipe and valve tagging - interior bldg HVAC piping	2,550	LNFT	1.32	3,376

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
			<b>SUBTOTAL: HVAC Piping</b>	<b>\$221,527</b>
<b>23600 Temperature Controls</b>				
DDC controls - air handling units	1	EACH	35,000.00	35,000
DDC controls - energy recovery units	1	EACH	5,000.00	5,000
DDC controls - return air fans	1	EACH	5,000.00	5,000
DDC controls - AC split system - MDF room	1	EACH	2,500.00	2,500
DDC controls - humidifier unit	1	EACH	2,000.00	2,000
DDC controls - exhaust fans	4	EACH	2,500.00	10,000
DDC controls - VAV terminals w/reheat coil	15	EACH	1,800.00	27,000
DDC controls - hydronic pumps, variable speed	7	EACH	7,500.00	52,500
Thermostats/temperature sensors	16	EACH	500.00	8,000
CO2 sensors	15	EACH	500.00	7,500
Miscellaneous points & devices	1	LSUM	15,000.00	15,000
Utility meter interfaces	1	LSUM	15,000.00	15,000
Headend/central controls	1	LSUM	15,000.00	15,000
Interface with existing building BAS-DDC system	1	LSUM	7,500.00	7,500
Programming, testing, and training	1	LSUM	10,000.00	10,000
			<b>SUBTOTAL: Temperature Controls</b>	<b>\$217,000</b>
<b>23700 Testing, Balancing, &amp; Commissioning</b>				
Air testing and balancing	1	LSUM	18,000.00	18,000
Pipe system testing and balancing	1	LSUM	15,000.00	15,000
HVAC system commissioning assistance	1	LSUM	15,000.00	15,000
			<b>SUBTOTAL: Testing, Balancing, &amp; Commissioning</b>	<b>\$48,000</b>
<b>TOTAL: HEATING VENTILATION &amp; AIR CONDITIONING</b>				<b>\$1,388,672</b>
<b>26000 ELECTRICAL</b>				
<b>26700 Mechanical Equipment Connections &amp; Feeders</b>				
Motors connection, disconnect switches and associated feeders - Heat pump plant, 45-tons	1	EACH	10,166.94	10,167
Motors connection, disconnect switches and associated feeders - AC split system, MDF room, 1-1/2 tons	1	EACH	2,700.00	2,700
Motors connection, disconnect switches and associated feeders - CHW, HW pumps, inline	4	EACH	2,600.00	10,400
Motors connection, disconnect switches and associated feeders - Exhaust fan, rooftop	4	EACH	2,500.00	10,000
Motors connection, disconnect switches and associated feeders - Energy recovery unit, 4500 cfm	1	EACH	3,000.00	3,000
Motors connection, disconnect switches and associated feeders - Air handling unit, based on 25,000 cfm	1	EACH	6,200.00	6,200
Motors connection, disconnect switches and associated feeders - Geothermal circulating pump, inline	3	EACH	1,800.00	5,400
Motors connection, disconnect switches and associated feeders - Humidifier, electric,	1	EACH	1,200.00	1,200
Motors connection, disconnect switches and associated feeders - Return air fan	1	EACH	3,200.00	3,200
Install VFD	7	EACH	850.00	5,950

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
<b>SUBTOTAL: Mechanical Equipment Connections &amp; Feeders</b>				<b>\$58,217</b>
<b>TOTAL: ELECTRICAL</b>				<b>\$58,217</b>
<b>33000 UTILITIES</b>				
<b>33500 Site HVAC</b>				
Geothermal wellfield, including bores, vaults, and field piping - per vertical lft	14,000	VLFT	25.00	350,000
<b>SUBTOTAL: Site HVAC</b>				<b>\$350,000</b>
<b>TOTAL: UTILITIES</b>				<b>\$350,000</b>
<b>TOTAL: HVAC OPTION #3A: 4-PIPE SYSTEM W/AHU &amp; VAV W/ GEOTHERMAL</b>				<b>\$1,796,889</b>
<b>HVAC OPTION #3B: 4-PIPE SYSTEM W/AHU &amp; VAV W/ BOILER/CHILLER PLANT</b>				
<b>23000 HEATING VENTILATION &amp; AIR CONDITIONING</b>				
<b>23200 Ventilation &amp; Exhaust</b>				
Air handling unit, based on 25,000 cfm, CHW, HW coils, humidifiers, fans, filters	1	EACH	190,670.59	190,671
CHW coil connections, AHU - valves, fittings, specialties, and pipe insulation	1	EACH	7,371.05	7,371
HW coil connections, AHU - valves, fittings, specialties, and pipe insulation	1	EACH	6,286.36	6,286
Energy recovery unit, 4500 cfm, energy wheel	1	EACH	65,415.38	65,415
Humidifier, electric, 24 lbs/hr	1	EACH	3,564.00	3,564
Return air fan	1	EACH	22,670.59	22,671
AC split system, MDF room, 1-1/2 tons	1	EACH	5,528.00	5,528
Refrigeration tubing, AC split system	60	LNFT	21.53	1,292
Pipe insulation, refrigeration piping, AC split system	60	LNFT	11.10	666
Condensate drain piping - AC split system	30	LNFT	27.87	836
Pipe insulation, condensate drain piping - AC split system	30	LNFT	10.07	302
Exhaust fan, rooftop, w/curb, backdraft damper	4	EACH	1,664.00	6,656
Variable air volume terminals w/ HW reheat coil	15	EACH	1,302.00	19,530
Reheat coil connections, VAV - valves, fittings, and insulation	15	EACH	1,082.00	16,230
Galvanized steel duct & insulation	17,635	SQFT	13.71	241,707
Registers, grilles and diffusers	150	EACH	113.20	16,980
Flexible duct, insulated	500	LNFT	23.55	11,775
Louvers, OA	2	EACH	2,482.00	4,964
<b>SUBTOTAL: Ventilation &amp; Exhaust</b>				<b>\$622,444</b>
<b>23300 Central Hydronic &amp; Steam Equipment &amp; Specialties</b>				
HW boilers, condensing, based on 400 mbh	2	EACH	29,876.00	59,752
CA duct, HW boilers	100	LNFT	22.43	2,243
Boiler flue/vent	100	LNFT	170.61	17,061
Chiller, 45 tons air-cooled	1	EACH	54,876.00	54,876
CHW, HW pumps, inline	4	EACH	4,460.24	17,841
Variable frequency drive, pumps, (MC supply, EC install)	4	EACH	2,654.66	10,619
Vibration isolation, pumps	4	EACH	1,843.80	7,375
Isolation valves, pumps, butterfly, HW, CHW pumps	4	EACH	1,190.15	4,761
Flexible pump connections, HW, CHW pumps	8	EACH	411.80	3,294

DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
Triple duty valve, CHW, HW pumps	4	EACH	3,759.50	15,038
Pump strainer, Y-type, CHW, HW pumps	4	EACH	1,215.35	4,861
Expansion tank	2	EACH	6,225.20	12,450
Air separator, CHW, HW pumps	2	EACH	4,198.23	8,396
Chemical pot feeder	2	EACH	2,275.20	4,550
Sidestream filters	2	EACH	2,975.20	5,950
Pressure fill/makeup water system	1	EACH	9,487.60	9,488
<b>SUBTOTAL: Central Hydronic &amp; Steam Equipment &amp; Specialties</b>				<b>\$238,556</b>
<b>23400 Heating &amp; Ventilating Terminals</b>				
Cabinet unit heaters, HW hydronic	4	EACH	3,287.60	13,150
Unit heaters, HW hydronic	2	EACH	1,787.60	3,575
Fintube radiators, HW	216	LNFT	130.95	28,285
HW connections - valves, fittings, and specialties	6	EACH	593.80	3,563
<b>SUBTOTAL: Heating &amp; Ventilating Terminals</b>				<b>\$48,574</b>
<b>23500 HVAC Piping</b>				
Humidifier piping	50	LNFT	29.02	1,451
CHWS/R mech. room piping, std. wgt. blk. steel pipe, fittings, and supports, welded/flanged	300	LNFT	188.83	56,650
CHWS/R, HWS/R piping mains, std. wgt. blk. steel pipe, fittings, and supports	1,000	LNFT	114.92	114,923
HWS/R runouts to VAV's, type L copper, w/fittings, and supports	500	LNFT	28.08	14,039
HHWS/R mech. room piping, std. wgt. blk. steel pipe, fittings, and supports, welded/flanged	300	LNFT	188.83	56,650
HHWS/R runout piping to perimeter heaters, type L copper	1,000	LNFT	44.66	44,661
Natural gas piping, std. wgt. blk. steel pipe, fittings, and supports, threaded	100	LNFT	41.29	4,129
Pipe insulation, humidifier piping	50	LNFT	9.62	481
Pipe insulation, CHWS/R mains	300	LNFT	21.54	6,462
Pipe insulation, CHWS/R, HWS/R mains	1,000	LNFT	17.16	17,162
Pipe insulation, HHWS/R runouts to VAV's	500	LNFT	10.07	5,037
Pipe insulation, HHWS/R runouts to perimeter heaters	1,000	LNFT	20.40	20,397
Pipe insulation, HHWS/R mains	300	LNFT	21.54	6,462
Pipe and valve tagging - interior bldg HVAC piping	3,250	LNFT	1.32	4,303
<b>SUBTOTAL: HVAC Piping</b>				<b>\$352,808</b>
<b>23600 Temperature Controls</b>				
DDC controls - air handling units	1	EACH	35,000.00	35,000
DDC controls - energy recovery units	1	EACH	5,000.00	5,000
DDC controls - return air fans	1	EACH	5,000.00	5,000
DDC controls - AC split system - MDF room	1	EACH	2,500.00	2,500
DDC controls - humidifier unit	1	EACH	2,000.00	2,000
DDC controls - exhaust fans	4	EACH	2,500.00	10,000
DDC controls - VAV terminals w/reheat coil	15	EACH	1,800.00	27,000
DDC controls - HW boilers	2	EACH	3,000.00	6,000
DDC controls - chiller, air-cooled	1	EACH	4,000.00	4,000
DDC controls - hydronic pumps, variable speed	4	EACH	7,500.00	30,000
Thermostats/temperature sensors	16	EACH	500.00	8,000



DESCRIPTION	QTY	UM	UNIT COST	TOTAL COST
CO2 sensors	15	EACH	500.00	7,500
Miscellaneous points & devices	1	LSUM	15,000.00	15,000
Utility meter interfaces	1	LSUM	15,000.00	15,000
Headend/central controls	1	LSUM	15,000.00	15,000
Interface with existing building BAS-DDC system	1	LSUM	7,500.00	7,500
Programming, testing, and training	1	LSUM	10,000.00	10,000
<b>SUBTOTAL: Temperature Controls</b>				<b>\$204,500</b>
<b>23700 Testing, Balancing, &amp; Commissioning</b>				
Air testing and balancing	1	LSUM	18,000.00	18,000
Pipe system testing and balancing	1	LSUM	15,000.00	15,000
HVAC system commissioning assistance	1	LSUM	15,000.00	15,000
<b>SUBTOTAL: Testing, Balancing, &amp; Commissioning</b>				<b>\$48,000</b>
<b>TOTAL: HEATING VENTILATION &amp; AIR CONDITIONING</b>				<b>\$1,514,882</b>
<b>26000 ELECTRICAL</b>				
<b>26700 Mechanical Equipment Connections &amp; Feeders</b>				
Motors connection, disconnect switches and associated feeders - AC split system, MDF room, 1-1/2 tons	1	EACH	2,700.00	2,700
Motors connection, disconnect switches and associated feeders - Air handling unit, based on 25,000 cfm	1	EACH	6,200.00	6,200
Motors connection, disconnect switches and associated feeders - CHW, HW pumps, inline	4	EACH	2,600.00	10,400
Motors connection, disconnect switches and associated feeders - Energy recovery unit, 4500 cfm	1	EACH	3,000.00	3,000
Motors connection, disconnect switches and associated feeders - Exhaust fan, rooftop	4	EACH	2,500.00	10,000
Motors connection, disconnect switches and associated feeders - Chillers, air-cooled, 45 tons	1	EACH	7,800.00	7,800
Motors connection, disconnect switches and associated feeders - Humidifier, electric,	1	EACH	1,200.00	1,200
Motors connection, disconnect switches and associated feeders - HW boilers, condensing, 400 mbh	2	EACH	2,600.00	5,200
Motors connection, disconnect switches and associated feeders - Return air fan	1	EACH	3,200.00	3,200
Install VFD	4	EACH	850.00	3,400
<b>SUBTOTAL: Mechanical Equipment Connections &amp; Feeders</b>				<b>\$53,100</b>
<b>TOTAL: ELECTRICAL</b>				<b>\$53,100</b>
<b>TOTAL: HVAC OPTION #3B: 4-PIPE SYSTEM W/AHU &amp; VAV W/ BOILER/CHILLER PLANT</b>				<b>\$1,567,982</b>