

MICHIGAN STATE
U N I V E R S I T Y

INFRASTRUCTURE PLANNING AND FACILITIES
PLANNING, DESIGN AND CONSTRUCTION

January 9, 2024

TITLE OF PROJECT: Southwest Regional Chilled Water Plant

PROJECT ISSUE DATE: January 9, 2024

PROJECT NUMBER: CP23037

ADDENDUM NO: 1

GENERAL

This Addendum is issued prior to receipt of Proposals to amend the Contract Documents identified as Southwest Regional Chilled Water Plant.

Except as otherwise specifically mentioned, the general character of the work required by this Addendum shall be the same as originally specified, and all incidentals required in connection with the work hereinafter described shall be included even though not specifically mentioned. When an item is mentioned with additional specifications given, reference shall be made to the original specifications.

Drawing(s) accompanying this Addendum include: n/a

No drawings accompany this Addendum

TRADES – n/a

ITEM NO. DESCRIPTION

1. Phase 1 – Study Estimate for reference only.
2. A virtual Zoom Meeting is scheduled for Tuesday, Jan. 16, from 10 a.m. to 12 p.m.

Join Zoom Meeting: <https://msu.zoom.us/j/94749282722>

- a. Meeting ID: 947 4928 2722
- b. Passcode: 372772

ESTIMATE SUMMARY



ADVANCE THE ART OF BUILDING

PROJECT : MSU Regional Chilled Water Plant
BUILDING : Phase 1 Update
DETAILS : MSU Reg CHW Plant - Phase 1 Update 121923

DATE : 12/19/2023
GSF : 0

CONSTRUCTION COST

CODE	DESCRIPTION	TOTAL	COST/GSF	% TOTAL
01	GENERAL REQUIREMENTS	\$743,502	\$0.00	1.20 %
02	EXISTING CONDITIONS	\$309,737	\$0.00	0.50 %
03	CONCRETE	\$658,941	\$0.00	1.06 %
04	MASONRY	\$1,992,936	\$0.00	3.21 %
05	METALS	\$567,588	\$0.00	0.91 %
06	WOODS, PLASTICS, COMPOSITES	\$40,364	\$0.00	0.07 %
07	THERMAL & MOISTURE PROTECTION	\$1,858,863	\$0.00	2.99 %
08	OPENINGS	\$106,200	\$0.00	0.17 %
09	FINISHES	\$124,622	\$0.00	0.20 %
10	SPECIALTIES	\$10,000	\$0.00	0.02 %
21	FIRE SUPPRESSION	\$171,500	\$0.00	0.28 %
22	PLUMBING	\$1,076,641	\$0.00	1.73 %
23	HVAC PIPING & WET SIDE SYSTEMS	\$18,642,958	\$0.00	30.03 %
23	SHEETMETAL & AIRSIDE SYSTEMS	\$579,452	\$0.00	0.93 %
25	INSTRUMENTATION & CONTROLS	\$898,750	\$0.00	1.45 %
26	ELECTRICAL	\$6,578,388	\$0.00	10.60 %
31	EARTHWORK	\$361,638	\$0.00	0.58 %
32	EXTERIOR IMPROVEMENTS	\$1,625,451	\$0.00	2.62 %
33	UTILITIES	\$1,571,053	\$0.00	2.53 %

CONSTRUCTION COST SUBTOTAL : **\$37,918,581** **\$0.00** **61.08 %**

SOFT COST

CODE	DESCRIPTION	TOTAL	COST/GSF	% TOTAL
40	CONSTRUCTION SOFT COST	\$5,877,380	\$0.00	9.47 %
50	CM COST	\$4,635,091	\$0.00	7.47 %
60	OWNER COST	\$13,653,006	\$0.00	21.99 %

SOFT COST SUBTOTAL : **\$24,165,477** **\$0.00** **38.92 %**

ESTIMATE TOTAL

ESTIMATE TOTAL : **\$62,084,058** **\$0.00** **100.00 %**

ESTIMATE DETAIL

ESTIMATE DETAIL							
CODE	DESCRIPTION	QTY	UNIT	RATE	SUBTOTAL	CSI TOTAL	DIV. TOTAL
01	GENERAL REQUIREMENTS						\$743,502
	CONSTRUCTION GC'S					\$743,502	
	Construction GC's	2.00	%	\$37,175,079.74	\$743,502		
02	EXISTING CONDITIONS						\$309,737
	SITE DEMOLITION					\$259,737	
	Demo Curb & Gutter	7,474.00	/LF	\$9.00	\$67,266		
	Demo Concrete Sidewalk	23,038.00	/SF	\$2.00	\$46,076		
	Demo Asphalt Paving	22,613.00	/SY	\$5.50	\$124,372		
	Sawcutting	2,447.00	/LF	\$9.00	\$22,023		
	ABATEMENT					\$50,000	
	Abatement Allowance	1.00	/LS	\$50,000.00	\$50,000		
03	CONCRETE						\$658,941
	CONCRETE FOUNDATIONS					\$203,177	
	Shallow Foundations	20,317.67	/SF	\$10.00	\$203,177		
	SLAB ON GRADE					\$176,000	
	Slab on Grade - 6"	320.00	/CY	\$550.00	\$176,000		
	MISC CAST-IN-PLACE CONCRETE					\$279,764	
	Concrete Stair Pans	494.00	/SF	\$25.00	\$12,350		
	Concrete Stair Landings	105.00	/SF	\$25.00	\$2,625		
	Concrete Stoops/Frost Block	1.00	/EA	\$5,000.00	\$5,000		
	Sealed Concrete	19,365.00	/SF	\$2.00	\$38,730		
	Equipment Pads	3,089.64	/SF	\$45.00	\$139,034		
	Electrical Ductbank	193.00	/CY	\$425.00	\$82,025		
04	MASONRY						\$1,992,936
	CMU					\$754,900	
	8" CMU	30,196.00	/SF	\$25.00	\$754,900		
	BRICK VENEER					\$1,238,036	
	4" Brick	30,196.00	/SF	\$32.00	\$966,272		
	4" Rigid Insulation	30,196.00	/SF	\$4.00	\$120,784		
	Fluid Applied Air Barrier - Spray On	30,196.00	/SF	\$5.00	\$150,980		
05	METALS						\$567,588
	STRUCTURAL METALS					\$547,588	
	1.5" Metal Deck	20,317.67	/SF	\$5.00	\$101,588		
	Structural Steel	72.00	/TON	\$5,500.00	\$396,000		
	Cooling Tower Steel Support	1.00	/LS	\$50,000.00	\$50,000		
	METAL FABRICATIONS					\$20,000	
	Stairs	1.00	/EA	\$20,000.00	\$20,000		
06	WOODS, PLASTICS, COMPOSITES						\$40,364
	ROUGH CARPENTRY					\$40,364	
	Misc. Rough Carpentry	20,317.67	/GSF	\$1.00	\$20,318		

ESTIMATE DETAIL

CODE	DESCRIPTION	QTY	UNIT	RATE	SUBTOTAL	CSI TOTAL	DIV. TOTAL
	Roof Blocking	693.00	/LF	\$22.00	\$15,246		
	Door Installation	12.00	/EA	\$400.00	\$4,800		
07	THERMAL & MOISTURE PROTECTION						\$1,858,863
	ROOFING & SIDING PANELS					\$1,111,185	
	Louwer	472.00	/SF	\$45.00	\$21,240		
	Screenwall	24,221.00	/SF	\$45.00	\$1,089,945		
	MEMBRANE ROOFING					\$665,390	
	Roof Coping	692.01	/LF	\$22.00	\$15,224		
	IRMA Roofing	20,317.67	/SF	\$32.00	\$650,165		
	ROOF ACCESSORIES					\$67,050	
	Roof Walkway Allowance	6,705.00	/SF	\$10.00	\$67,050		
	FIRE & SMOKE PROTECTION					\$5,079	
	Fire Stopping Allowance	20,317.67	/SF	\$0.25	\$5,079		
	JOINT SEALANTS					\$10,159	
	Caulking Allowance	20,317.67	/GFA	\$0.50	\$10,159		
08	OPENINGS						\$106,200
	HM DOORS & FRAMES					\$31,200	
	Hollow Metal Door/Frame/Hardware	12.00	/EA	\$2,600.00	\$31,200		
	SPECIAL DOORS					\$75,000	
	Overhead Insulated Coiling Door - 15'-8" x 16'-0"	5.00	/EA	\$15,000.00	\$75,000		
09	FINISHES						\$124,622
	DRYWALL					\$6,040	
	Drywall Ceiling	604.00	/SF	\$10.00	\$6,040		
	TILE & TERRAZZO					\$7,992	
	Ceramic Floor Tile	228.00	/SF	\$26.00	\$5,928		
	Ceramic Tile Base	86.00	/LF	\$24.00	\$2,064		
	RESILIENT FLR & CARPET					\$6,372	
	Carpet Tile	42.00	/SY	\$60.00	\$2,520		
	Resilient Base	1,284.00	/LF	\$3.00	\$3,852		
	PAINTING & WALL COVERING					\$104,218	
	Paint Walls	41,106.00	/SF	\$1.10	\$45,217		
	Paint Exposed Ceilings - Including MEP	19,365.00	/SF	\$3.00	\$58,095		
	Paint Drywall Ceilings	604.00	/SF	\$1.50	\$906		
10	SPECIALTIES						\$10,000
	LOCKERS					\$5,000	
	Misc Lockers Allowance	1.00	/LS	\$5,000.00	\$5,000		
	TOILET & BATH ACCESSORIES					\$5,000	
	Misc Toilet & Bath Accessories Allowance	1.00	/LS	\$5,000.00	\$5,000		
21	FIRE SUPPRESSION						\$171,500
	DIRECT JOB COSTS					\$29,165	

ESTIMATE DETAIL

CODE	DESCRIPTION	QTY	UNIT	RATE	SUBTOTAL	CSI TOTAL	DIV. TOTAL
	Sub-Contractor General Conditions & Direct Job Expenses	140.00	/HRS	\$95.00	\$13,300		
	Sub-Contractor Project Management & Non-Working Supervision	140.00	/HRS	\$95.00	\$13,300		
	Permits & Inspections	1.50	%	\$171,000.00	\$2,565		
WET PIPE SPRINKLER SYSTEM						\$142,335	
	Fire Department Connections	1.00	/EA	\$1,500.00	\$1,500		
	Fire Suppression Piping Mains	168.07	/LF	\$75.00	\$12,605		
	Fire Suppression Zone Riser Assembly	1.00	/EA	\$6,500.00	\$6,500		
	Fire Water Backflow Assembly	1.00	/EA	\$7,500.00	\$7,500		
	Wet Pipe Sprinkler Heads	198.66	/EA	\$575.00	\$114,230		
22	PLUMBING						\$1,076,641

DIRECT JOB COSTS						\$185,240	
	Sub-Contractor General Conditions & Direct Job Expenses	890.00	/HRS	\$95.00	\$84,550		
	Sub-Contractor Project Management & Non-Working Supervision	890.00	/HRS	\$95.00	\$84,550		
	Permits & Inspections	1.50	%	\$1,076,000.00	\$16,140		
PLUMBING INSULATION						\$93,480	
	Domestic CW & HW Piping	1,836.00	/LF	\$30.00	\$55,080		
	Storm Piping	1,280.00	/LF	\$30.00	\$38,400		
DOMESTIC WATER PIPING						\$184,415	
	Domestic CW Piping - <3" Dia	824.00	/LF	\$65.00	\$53,560		
	Domestic CW Piping - <10" Dia	347.00	/LF	\$160.00	\$55,520		
	Domestic HW Piping - <3" Dia	299.00	/LF	\$65.00	\$19,435		
	Miscellaneous Piping, Valves & Fittings	1,470.00	/LF	\$20.00	\$29,400		
	Makeup Water Valve <4' Dia	2.00	/EA	\$2,500.00	\$5,000		
	RPZ Backflow Preventer <4" Dia	3.00	/EA	\$3,500.00	\$10,500		
	Water Meter <4" Dia	2.00	/EA	\$5,500.00	\$11,000		
SANITARY & VENT PIPING						\$158,067	
	Sanitary Piping - Belowgrade - <6" Dia	764.81	/LF	\$65.00	\$49,713		
	Vent Piping <3" Dia	13.22	/LF	\$40.00	\$529		
	Miscellaneous Piping, Valves & Fittings	778.03	/LF	\$15.00	\$11,670		
	Floor Drains	19.00	/EA	\$1,500.00	\$28,500		
	Trench Drains	20.56	/LF	\$500.00	\$10,280		
	Excavation & Backfill	765.00	/LF	\$75.00	\$57,375		
STORM PIPING						\$193,634	
	Storm Piping - Abovegrade - <10" Dia	540.00	/LF	\$105.00	\$56,700		
	Storm Piping - Belowgrade - <10" Dia	134.77	/LF	\$95.00	\$12,803		
	Storm Piping - Overflow Drains - <10" Dia	485.00	/LF	\$105.00	\$50,925		
	Miscellaneous Piping, Valves & Fittings	1,159.77	/LF	\$25.00	\$28,994		
	Overflow Wall Nozzles <8" Dia	3.00	/EA	\$1,000.00	\$3,000		
	Roof Drains & Overflow Drains <8" Dia	20.00	/EA	\$1,400.00	\$28,000		
	Foundation Drain Tile	88.19	/EA	\$35.00	\$3,087		

ESTIMATE DETAIL

CODE	DESCRIPTION	QTY	UNIT	RATE	SUBTOTAL	CSI TOTAL	DIV. TOTAL
	Excavation & Backfill	135.00	/LF	\$75.00	\$10,125		
NATURAL GAS PIPING						\$48,305	
	Natural Gas Piping - <4" Dia	219.00	/LF	\$75.00	\$16,425		
	Miscellaneous Piping, Valves & Fittings	219.00	/LF	\$20.00	\$4,380		
	NG Connection To Generator	1.00	/EA	\$2,500.00	\$2,500		
	NG Meter & Gas Regulator	1.00	/EA	\$25,000.00	\$25,000		
PLUMBING EQUIPMENT						\$170,000	
	Domestic HW Recirc Pumps	2.00	/EA	\$2,500.00	\$5,000		
	Domestic Water Expansion Tanks	2.00	/EA	\$5,000.00	\$10,000		
	Domestic Water Heaters	2.00	/EA	\$15,000.00	\$30,000		
	Water Softener Equipment	1.00	/EA	\$75,000.00	\$75,000		
	Duplex Sump Pumps	2.00	/EA	\$25,000.00	\$50,000		
PLUMBING FIXTURES						\$43,500	
	Plumbing Fixtures	13.00	/EA	\$2,000.00	\$26,000		
	Wall Hydrants	4.00	/EA	\$1,000.00	\$4,000		
	Emergency Eyewash & Shower Unit	3.00	/EA	\$4,500.00	\$13,500		

23 HVAC PIPING & WET SIDE SYSTEMS **\$18,642,958**

DIRECT JOB COSTS					\$3,179,630
	Sub-Contractor General Conditions & Direct Job Expenses	15,000.00	/HRS	\$95.00	\$1,425,000
	Sub-Contractor Project Management & Non-Working Supervision	15,000.00	/HRS	\$95.00	\$1,425,000
	Permits & Inspections	1.50	%	\$18,642,000.00	\$279,630
	Crane Rental	1.00	/LS	\$50,000.00	\$50,000
WATER TESTING & BALANCING					\$7,000
	1000 Ton Electric Chiller	1.00	/EA	\$400.00	\$400
	2800 Ton Steam Turbine Chiller	1.00	/EA	\$400.00	\$400
	CHW Circulating Pumps	6.00	/EA	\$200.00	\$1,200
	CHW Circulating Pump VFC's	6.00	/EA	\$200.00	\$1,200
	1000 Ton Cooling Tower - Two Cells	1.00	/EA	\$800.00	\$800
	2800 Ton Cooling Tower - 5 Cells	1.00	/EA	\$800.00	\$800
	Condenser Water Circulating Pumps	4.00	/EA	\$200.00	\$800
	Condenser Water Circulating Pump VFC's	4.00	/EA	\$200.00	\$800
	Condenser Water Treatment System	1.00	/EA	\$200.00	\$200
	Steam Condensate Return Unit	2.00	/EA	\$200.00	\$400
HVAC PIPING INSULATION					\$363,660
	CHWS & R Piping	1,945.00	/LF	\$70.00	\$136,150
	CWS & R Piping	496.00	/LF	\$70.00	\$34,720
	Steam & Steam Condensate Piping	1,718.00	/LF	\$105.00	\$180,390
	Heat Tracing - Outdoor CWS & R Piping	496.00	/LF	\$25.00	\$12,400
STEAM & CONDENSATE PIPING					\$688,875
	HP STM Piping - 10" Dia	101.00	/LF	\$200.00	\$20,200
	HP STM Piping - 20" Dia	290.00	/LF	\$450.00	\$130,500

ESTIMATE DETAIL

CODE	DESCRIPTION	QTY	UNIT	RATE	SUBTOTAL	CSI TOTAL	DIV. TOTAL
	LP Cond - <6" Dia	126.00	/LF	\$150.00	\$18,900		
	LP STM - <3" Dia	495.00	/LF	\$65.00	\$32,175		
	PC Return Piping - 6" Dia	75.00	/LF	\$150.00	\$11,250		
	PC Return Piping - 10" Dia	290.00	/LF	\$300.00	\$87,000		
	Miscellaneous Piping, Valves & Fittings	1,377.00	/LF	\$50.00	\$68,850		
	Safety Relief Valve For PRV Station, Valves & Piping Assembly	2.00	/EA	\$25,000.00	\$50,000		
	Flash Tank At CRU	2.00	/EA	\$10,000.00	\$20,000		
	Steam PRV For Building Heating	1.00	/EA	\$25,000.00	\$25,000		
	Stem PRV Station For Chiller Building, Valves & Piping Assembly	1.00	/EA	\$125,000.00	\$125,000		
	Steam Vault Miscellaneous Piping	1.00	/EA	\$100,000.00	\$100,000		
CHILLED WATER PIPING						\$1,202,725	
	CHWS & R Piping - 10" Dia	273.00	/LF	\$200.00	\$54,600		
	CHWS & R Piping - 12" Dia	162.00	/LF	\$250.00	\$40,500		
	CHWS & R Piping - 16" Dia	597.00	/LF	\$375.00	\$223,875		
	CHWS & R Piping - 24" Dia	58.00	/LF	\$550.00	\$31,900		
	CHWS & R Piping - 30" Dia	59.00	/LF	\$750.00	\$44,250		
	CHWS & R Piping - 36" Dia	349.00	/LF	\$950.00	\$331,550		
	CHWS & R Piping - 42" Dia	61.00	/LF	\$1,150.00	\$70,150		
	Miscellaneous Piping, Valves & Fittings	1,559.00	/LF	\$100.00	\$155,900		
	Chilled Water Air Separators - 30" Dia	2.00	/EA	\$100,000.00	\$200,000		
	Expansion Tanks	1.00	/EA	\$50,000.00	\$50,000		
CONDENSER WATER PIPING						\$1,485,425	
	CWS & R Piping - 12" Dia	216.00	/LF	\$250.00	\$54,000		
	CWS & R Piping - 16" Dia	167.00	/LF	\$375.00	\$62,625		
	CWS & R Piping - 20" Dia	610.00	/LF	\$450.00	\$274,500		
	Miscellaneous Piping, Valves & Accessories	993.00	/LF	\$100.00	\$99,300		
	Bulk Chem Storage Tanks - 1500 gal	2.00	/EA	\$10,000.00	\$20,000		
	Condenser Water Basket Strainers	3.00	/EA	\$75,000.00	\$225,000		
	Condenser Water Heat Exchangers	2.00	/EA	\$375,000.00	\$750,000		
SITE CHILLED WATER PIPING						\$4,660,643	
	CHWS & R Piping - Belowgrade - 10" Dia	603.65	/LF	\$125.00	\$75,456		
	CHWS & R Piping - Belowgrade - 24" Dia	3,074.83	/LF	\$260.00	\$799,456		
	CHWS & R Piping - Belowgrade - 30" Dia	4,582.26	/LF	\$400.00	\$1,832,904		
	CHWS & R Piping - Belowgrade - 36" Dia	3,004.44	/LF	\$500.00	\$1,502,220		
	Miscellaneous Piping, Valves & Fittings	11,265.18	/LF	\$40.00	\$450,607		
MECHANICAL EQUIPMENT						\$7,055,000	
	1000 Ton Electric Chiller	1.00	/EA	\$855,000.00	\$855,000		
	2800 Ton Steam Turbine Chiller	1.00	/EA	\$3,800,000.00	\$3,800,000		
	CHW Circulating Pumps	6.00	/EA	\$50,000.00	\$300,000		
	CHW Circulating Pump VFC's (Install By Div 26)	6.00	/EA	\$35,000.00	\$210,000		
	1000 Ton Cooling Tower - Two Cells	1.00	/EA	\$235,000.00	\$235,000		
	2800 Ton Cooling Tower - 5 Cells	1.00	/EA	\$800,000.00	\$800,000		

ESTIMATE DETAIL

CODE	DESCRIPTION	QTY	UNIT	RATE	SUBTOTAL	CSI TOTAL	DIV. TOTAL
	Condenser Water Circulating Pumps	4.00	/EA	\$70,000.00	\$280,000		
	Condenser Water Circulating Pump VFC's	4.00	/EA	\$40,000.00	\$160,000		
	Condenser Water Treatment System	1.00	/EA	\$200,000.00	\$200,000		
	Steam Condensate Return Unit	2.00	/EA	\$70,000.00	\$140,000		
	Steam CRU For Building Heating	1.00	/EA	\$25,000.00	\$25,000		
	Unit Heaters - Steam	10.00	/EA	\$5,000.00	\$50,000		

23 SHEETMETAL & AIRSIDE SYSTEMS \$579,452

DIRECT JOB COSTS \$124,885

Sub-Contractor General Conditions & Direct Job Expenses	480.00	/HRS	\$95.00	\$45,600
Sub-Contractor Project Management & Non-Working Supervision	480.00	/HRS	\$95.00	\$45,600
Permits & Inspections	1.50	%	\$579,000.00	\$8,685
Crane Rental	1.00	/LS	\$25,000.00	\$25,000

AIR TESTING & BALANCING \$6,300

Exhaust Fan - General	4.00	/EA	\$200.00	\$800
Exhaust Fan - Plant	3.00	/EA	\$200.00	\$600
Fan Coil DX VRF Unit	3.00	/EA	\$400.00	\$1,200
Office & Shop Area DOAS HVAC	1.00	/EA	\$800.00	\$800
Supply Ventilation Fan - Plant	3.00	/EA	\$200.00	\$600
Ventilation Wall Louvers	5.00	/EA	\$100.00	\$500
GRDs - Return & Exhaust	18.00	/EA	\$50.00	\$900
GRDs - Supply	18.00	/EA	\$50.00	\$900

SHEETMETAL INSULATION \$78,435

Ductwork - Supply	19,608.79	/SF	\$4.00	\$78,435
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TERMINAL UNITS & DUCT ACCESSORIES \$7,200

GRDs - Return & Exhaust	18.00	/EA	\$200.00	\$3,600
GRDs - Supply	18.00	/EA	\$200.00	\$3,600

SHEETMETAL DUCTWORK \$294,132

Ductwork - Return & Exhaust	9,804.40	/LBS	\$12.00	\$117,653
Ductwork - Supply	9,804.40	/LBS	\$12.00	\$117,653
Miscellaneous Ductwork & Fittings	19,608.80	/LBS	\$3.00	\$58,826

AIRSIDE EQUIPMENT \$68,500

Exhaust Fan - General	4.00	/EA	\$2,500.00	\$10,000
Exhaust Fan - Plant	3.00	/EA	\$3,500.00	\$10,500
Fan Coil DX VRF Unit	3.00	/EA	\$5,000.00	\$15,000
Office & Shop Area DOAS HVAC	1.00	/EA	\$10,000.00	\$10,000
Supply Ventilation Fan - Plant	3.00	/EA	\$3,500.00	\$10,500
Ventilation Wall Louvers	5.00	/EA	\$2,500.00	\$12,500

25 INSTRUMENTATION & CONTROLS \$898,750

BEMS PROGRAMMING, GRAPHICS & PROJECT MANAGEMENT \$156,250

BEMS Programming & Graphics	800.00	/HRS	\$125.00	\$100,000
Controls Start-Up Verification, Commissioning Assist & Owner Training	400.00	/HRS	\$125.00	\$50,000

ESTIMATE DETAIL

CODE	DESCRIPTION	QTY	UNIT	RATE	SUBTOTAL	CSI TOTAL	DIV. TOTAL
	Owner Training	50.00	/HRS	\$125.00	\$6,250		
FLOW METERS, UTILITY METERS, MONITORING & ACCESSORIES						\$25,000	
	Refrigerant Monitoring System	1.00	/EA	\$25,000.00	\$25,000		
PLUMBING EQUIPMENT						\$57,500	
	Domestic HW Recirc Pumps	6.00	/PTS	\$2,500.00	\$15,000		
	Domestic Water Heaters	6.00	/PTS	\$2,500.00	\$15,000		
	Water Softener Equipment	5.00	/PTS	\$2,500.00	\$12,500		
	Duplex Sump Pumps	6.00	/PTS	\$2,500.00	\$15,000		
STEAM EQUIPMENT						\$75,000	
	Steam Condensate Return Unit	10.00	/PTS	\$2,500.00	\$25,000		
	Unit Heaters - Steam	20.00	/PTS	\$2,500.00	\$50,000		
CHILLED WATER EQUIPMENT						\$212,500	
	Electric Chiller	25.00	/PTS	\$2,500.00	\$62,500		
	Steam Turbine Chiller	30.00	/PTS	\$2,500.00	\$75,000		
	CHW Circulating Pumps & VFCs	30.00	/PTS	\$2,500.00	\$75,000		
CONDENSER WATER EQUIPMENT						\$137,500	
	Cooling Towers	30.00	/PTS	\$2,500.00	\$75,000		
	Condenser Water Circulating Pumps & VFCs	20.00	/PTS	\$2,500.00	\$50,000		
	Condenser Water Treatment System	5.00	/PTS	\$2,500.00	\$12,500		
AIRSIDE EQUIPMENT						\$235,000	
	Exhaust Fans	35.00	/PTS	\$2,500.00	\$87,500		
	Fan Coil DX VRF Units	9.00	/PTS	\$2,500.00	\$22,500		
	Office & Shop Area DOAS HVACs	25.00	/PTS	\$2,500.00	\$62,500		
	Supply Ventilation Fans	15.00	/PTS	\$2,500.00	\$37,500		
	Ventilation Wall Louvers	10.00	/PTS	\$2,500.00	\$25,000		

26 ELECTRICAL

\$6,578,388

DIRECT JOB EXPENSES						\$299,547	
	Direct Job Expenses for Electrical Phase 1	19,969.78	/SF	\$15.00	\$299,547		
BRANCH WIRING AND DEVICES						\$99,849	
	Branch Wiring and Devices / Sq Ft	19,969.78	/SF	\$5.00	\$99,849		
ELECTRICAL DISTRIBUTION EQUIPMENT						\$5,465,239	
	DP-1 - 1200A 2-Section Distribution Board	1.00	/EA	\$35,000.00	\$35,000		
	DP-2 - 1200A 2-Section Distribution Board	1.00	/EA	\$35,000.00	\$35,000		
	Install 12-Section 13.2KV Main Switchgear (Owner Provided)	1.00	/EA	\$3,657,000.00	\$3,657,000		
	LP-1 - 100A 42-Ckt Panelboard	1.00	/EA	\$2,655.48	\$2,655		
	LP-EM-1 - 100A 30-Ckt Panelboard	1.00	/EA	\$2,655.48	\$2,655		
	RP-1 - 200A 42-Ckt Panelboard	1.00	/EA	\$2,655.48	\$2,655		
	RP-OSB-1 - 100A 42-Ckt Panelboard	1.00	/EA	\$2,655.48	\$2,655		
	Sub 1A - 4000A Double Ended Substatio/(2)2500KVA Trans/5-LV Sections - Installation	1.00	/EA	\$1,693,180.00	\$1,693,180		
	Provide 30A 3P Fused Disconnect Switch	1.00	/EA	\$442.88	\$443		
	Field Install 25 - 50 HP VFD	8.00	/EA	\$1,010.17	\$8,081		

ESTIMATE DETAIL

CODE	DESCRIPTION	QTY	UNIT	RATE	SUBTOTAL	CSI TOTAL	DIV. TOTAL
	Field Install 60 - 100 HP VFD	2.00	/EA	\$1,325.35	\$2,651		
	Field Install 200-400 HP VFD	2.00	/EA	\$2,604.22	\$5,208		
	Field Install 2800 ton MV VFD	1.00	/EA	\$12,637.45	\$12,637		
	45 KVA Transformer - Installation incl. ground	1.00	/EA	\$2,495.03	\$2,495		
	75 KVA Transformer - Installation incl. ground	1.00	/EA	\$2,921.32	\$2,921		
EQUIPMENT & MOTOR CONNECTIONS						\$26,895	
	1000 ton CHWP (40hp@480V) 3-Phase Conn	2.00	/EA	\$500.00	\$1,000		
	1000 ton Cooling Tower (40hp@480V) 3-Phase Conn /WP	1.00	/EA	\$1,150.00	\$1,150		
	1000 ton CWP (75hp@480V) 3-Phase Conn	3.00	/EA	\$950.00	\$2,850		
	1000 ton Electric Chiller (960A @ 480V) 3-Phase Conn	1.00	/EA	\$10,725.00	\$10,725		
	2800 ton CHWP (100hp@480V) 3-Phase Conn	2.00	/EA	\$1,150.00	\$2,300		
	2800 ton Condensate Return Unit (15hp@480V) 3-Phase Conn	1.00	/EA	\$350.00	\$350		
	2800 ton Cooling Tower (50hp@480V) 3-Phase Conn	2.00	/EA	\$625.00	\$1,250		
	2800 ton CWP (200hp@480V) 3-Phase Conn	1.00	/EA	\$3,100.00	\$3,100		
	2800 ton Electric Chiller (300A@4160V) 3-Phase Conn	1.00	/EA	\$3,670.00	\$3,670		
	HX CHWP (40hp@480V) 3-Phase Conn	1.00	/EA	\$500.00	\$500		
FEEDERS - COPPER CONDUCTORS						\$121,288	
	30A 3W+Gnd - 3/4" EMT - 3#10CU + #10CU - Generic Hanger	201.89	/FT	\$13.09	\$2,642		
	60A 3W+Gnd - 3/4" EMT - 3#6CU + #10CU - Generic Hanger	479.00	/FT	\$17.00	\$8,143		
	100A 3W+Gnd - 1-1/4" EMT - 3#3CU + #8CU - Generic Hanger	680.00	/FT	\$24.85	\$16,897		
	125A 3W+Gnd - 1-1/2" EMT - 3#1CU + #6CU - Generic Hanger	384.00	/FT	\$33.36	\$12,811		
	250A 3W+Gnd - 2-1/2" EMT - 3#250CU + #4CU - Generic Hanger	316.00	/FT	\$62.96	\$19,894		
	100A 3W+Gnd - 6' x 1-1/4" Flex - 3#3CU + #8CU	1.00	/EA	\$593.94	\$594		
	1000A 3W+Gnd - (3) 3" PVC U/G - 3#400CU + #2/0CU - No Trenching	110.00	/FT	\$190.02	\$20,902		
	30A 4W+Gnd - 3/4" EMT - 4#10CU + #10CU - Generic Hanger	392.77	/FT	\$14.42	\$5,665		
	100A 4W+Gnd - 1-1/4" EMT - 4#3CU + #8CU - Generic Hanger	19.00	/FT	\$27.71	\$526		
	30A 4W+Gnd - 6' x 3/4" Flex - 4#10CU + #10CU	1.00	/EA	\$190.28	\$190		
	60A 4W+Gnd - 6' x 1" Flex - 4#6CU + #10CU	1.00	/EA	\$484.37	\$484		
	200A 4W+Gnd - 6' x 2" Flex - 4#3/0CU + #6CU	1.00	/EA	\$1,164.28	\$1,164		
	800A 4W+Gnd - (2) 4" - PVC U/G 4#600CU + #1/0CU - No Trenching	56.00	/FT	\$210.62	\$11,795		
	1200A 4W+Gnd - (3) 4"PVC U/G - 4#600CU + #3/0CU - No Trenching	62.00	/FT	\$315.79	\$19,579		
FIRE ALARM						\$69,894	
	Fire Alarm Complete / SF	19,969.78	/SF	\$3.50	\$69,894		
GENSET & TRANSFER SWITCHES						\$66,000	
	30A 4P Automatic Transfer Switch - Installation	2.00	/EA	\$20,500.00	\$41,000		
	32KW Genset Complete - WP Enclosure - Set & Connect - NO RIGGING	1.00	/EA	\$25,000.00	\$25,000		

ESTIMATE DETAIL

CODE	DESCRIPTION	QTY	UNIT	RATE	SUBTOTAL	CSI TOTAL	DIV. TOTAL
GROUNDING AND BONDING						\$9,985	
	Grounding and Bonding / SF	19,969.78	/SF	\$0.50	\$9,985		
LIGHT FIXTURES AND CONTROL						\$119,819	
	Lighting and Controls / SF	19,969.78	/SF	\$6.00	\$119,819		
SITE ELECTRIC						\$299,872	
	(2) 5" PVC U/G - (1) w/ 3#250 15KV + GND / (1) SPARE	111.45	/FT	\$238.16	\$26,543		
	(2) 5" PVC U/G - Empty - MV Power	111.90	/FT	\$50.46	\$5,646		
	(6) 5" PVC U/G - Empty - WRCWP Manhole=>WRCWP	370.75	/FT	\$131.96	\$48,923		
	(9) 5" PVC U/G - Empty - ELE1848=>WRCWP Manhole	897.67	/FT	\$195.31	\$175,322		
	Core & Seal Manhole	24.00	/EA	\$143.28	\$3,439		
	New Electric Manhole	2.00	/EA	\$20,000.00	\$40,000		
31	EARTHWORK						\$361,638
EARTHWORK						\$361,638	
	Strip Topsoil	1,457.00	/CY	\$12.00	\$17,484		
	Excavate/Backfill Foundations	20,317.67	/SF	\$7.00	\$142,224		
	Ductbank Excavation & Backfill	1,693.00	/CY	\$52.00	\$88,036		
	Rough Grade	1.00	/LS	\$5,000.00	\$5,000		
	Fine Grade	1.00	/LS	\$5,000.00	\$5,000		
	6" Topsoil	1,457.00	/CY	\$30.00	\$43,710		
	Export Spoils	1,457.00	/CY	\$12.00	\$17,484		
	Import Fill	1,457.00	/CY	\$25.00	\$36,425		
	Building 4" Sand Pad	251.00	/CY	\$25.00	\$6,275		
32	EXTERIOR IMPROVEMENTS						\$1,625,451
ASPHALT PAVING						\$1,197,415	
	Heavy Duty 5" Paving	22,355.00	/SY	\$32.00	\$715,360		
	Heavy Duty 12" Sand Subbase	7,452.00	/CY	\$25.00	\$186,300		
	Heavy Duty 8" 22A	4,968.00	/CY	\$50.00	\$248,400		
	Heavy Duty Fine Grade	22,355.00	/SY	\$1.00	\$22,355		
	Striping	1.00	/LS	\$25,000.00	\$25,000		
CURB & GUTTER						\$308,950	
	Curb & Gutter	8,350.00	/LF	\$35.00	\$292,250		
	Curb & Gutter Sand Subbase	8,350.00	/LF	\$1.00	\$8,350		
	Curb & Gutter Fine Grade	8,350.00	/LF	\$1.00	\$8,350		
WALKS						\$119,086	
	Concrete Walk	211.00	/CY	\$550.00	\$116,050		
	Concrete Walk 2" Sand Subbase	71.00	/CY	\$25.00	\$1,775		
	Concrete Walk Fine Grade	1,261.00	/SY	\$1.00	\$1,261		
33	UTILITIES						\$1,571,053
SITE DRAINAGE & UTILITIES						\$1,571,053	
	10" Chilled Water Excavation / Backfill	302.00	/LF	\$82.50	\$24,915		

ESTIMATE DETAIL

CODE	DESCRIPTION	QTY	UNIT	RATE	SUBTOTAL	CSI TOTAL	DIV. TOTAL
	24" Chilled Water Excavation / Backfill	1,538.00	/LF	\$130.00	\$199,940		
	30" Chilled Water Excavation / Backfill	2,291.00	/LF	\$160.00	\$366,560		
	36" Chilled Water Excavation / Backfill	1,502.00	/LF	\$185.00	\$277,870		
	1" Gas Line	30.63	/LF	\$55.00	\$1,685		
	10" Storm	128.00	/LF	\$90.00	\$11,520		
	6" Sanitary	138.10	/LF	\$80.00	\$11,048		
	Rework Steam Vault 210	1.00	/LS	\$50,000.00	\$50,000		
	Steam Mid-Anchor	1.00	/EA	\$100,000.00	\$100,000		
	Steam Tunnel	205.01	/LF	\$1,500.00	\$307,515		
	Utility Support	22.00	/EA	\$10,000.00	\$220,000		

40 CONSTRUCTION SOFT COST \$5,877,380

CONTINGENCIES					\$3,791,858
Design Development Contingency	10.00	%	\$37,918,581.33	\$3,791,858	
ESCALATION					\$2,085,522
Escalation to 2025	5.00	%	\$41,710,439.48	\$2,085,522	

50 CM COST \$4,635,091

STAFFING					\$1,313,879
Construction Staffing	1.00	/LS	\$1,313,878.85	\$1,313,879	
GENERAL CONDITIONS					\$875,919
CM General Conditions	1.00	/LS	\$875,919.23	\$875,919	
BONDS & INSURANCE					\$1,034,680
Bonds & Insurance	2.25	%	\$45,985,759.53	\$1,034,680	
FEE					\$1,410,613
CM Fee	3.00	%	\$47,020,439.11	\$1,410,613	

60 OWNER COST \$13,653,006

OWNER COST					\$13,653,006
MSU Cost	25.00	%	\$48,431,052.31	\$12,107,763	
New Circuit Pair from T.B. Simon Power Plant to New WRCWP Building	1.00	/LS	\$1,471,660.00	\$1,471,660	
Escalation to 2025	5.00	%	\$1,471,660.00	\$73,583	

ESTIMATE DETAIL END