

COST ESTIMATES FOR PHYSICAL SECURITY ENHANCEMENTS



Department of Veterans Affairs
Medical Center



Physical Security Design Manual for VA Facilities



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FINAL DRAFT

Cost Estimates for Physical Security Enhancements

Physical Security Design Manuals for Mission Critical Facilities and Life-Safety Protected Facilities have been prepared for VA. The primary purpose of these manuals is to provide the design team with the criteria and standards for the full range of physical security strategies available for new and existing buildings. In addition to providing the strategies, the cost impact of these strategies on the facility's design and construction budget has been quantified. This cost estimate has been prepared to guide the design team in determining and developing the most cost effective physical security for each facility.

The cost estimates for physical security enhancements were accomplished by selecting a mission critical facility (currently in design development) and a life-safety protected facility (recently constructed) and applying the costs for the proposed security strategies to the construction budget for each facility. The facilities chosen as models are as follows:

Mission Critical: Veterans Administration Medical Center, Las Vegas, NV

Life-Safety Protected: Joint Ambulatory Care Center, Pensacola, FL

Architectural plans and construction cost estimates for each building were obtained. The construction documentation provided bases for types and quantities of materials needed to complete the estimates. The plans were reviewed and the strategies identified in Chapters 3 through 10 of the Physical Security Design Manual were applied to the building models. Physical security enhancement costs were obtained from RSMeans 2006 Cost Data publications.

The cost of building security enhancements for the mission critical medical center building is \$16,040,719. This represents a 7.09% increase in building construction costs or an additional \$21.78 per square foot. The cost of the physical security enhancements for life-safety

protected facility is \$1,454,196. This represents a 3.22% increase in building construction costs or an additional \$7.16 per square foot. Site security and security equipment costs are excluded from these estimates.

Note: Equipment required for security systems is furnished under another contract and therefore not included in the percentage calculations. Site security and security equipment costs are excluded from these estimates.

Unit Price Estimating Data

Unit Price estimating data was compiled to address the physical security strategies indicated for the two buildings identified above. In addition, size variations of these prices are also provided to enable estimating other buildings. The pricing provided includes the installing contractor's overhead and profit. The general contractor's overhead and profit must be added.

Conclusion

The estimates prepared for the mission critical and life-safety protected facilities provide a good indication of physical security enhancement costs for new construction. The physical security enhancements, square foot costs for new construction, can vary depending upon building architecture and site. When buildings contain large glass areas the blast resistant fenestration adds substantial dollars to the estimate. A large site has increased construction cost due to additional perimeter physical security and longer utility runs.

The unit prices provide a good basis for estimating physical security enhancement costs for new construction. Estimating physical security enhancement costs for existing structures requires the estimator to adjust the unit prices to account for building occupancy and accessibility.

Cost Estimates for Physical Security Enhancements Unit Prices

	Description	UOM	\$/UOM
Chapter 3 – Site Considerations			
3.1	Stand-off Distance – Security Vehicle Barriers, Bollards, and Planters		
	Security vehicle barriers, pipe bollards, schedule 80, concrete filled/ paint, 8' L x 4' D hole, 8" Diameter	Ea.	\$900.00
	Security vehicle barriers, concrete planter, exposed aggregate finish, round, 36" Diameter x 30" H	Ea.	\$770.00
	Security vehicle barriers, concrete planter, exposed aggregate finish, round, 48" Diameter x 36" H	Ea.	\$1,060.00
	Security vehicle barriers, concrete planter, exposed aggregate finish, round, 53" Diameter x 18" H	Ea.	\$860.00
	Security vehicle barriers, concrete planter, exposed aggregate finish, round, 84" Diameter x 36" H	Ea.	\$1,950.00
	Security vehicle barriers, concrete planter, exposed aggregate finish, square, 36" x 36" x 30" H	Ea.	\$770.00
	Security vehicle barriers, concrete planter, exposed aggregate finish, rectangle, 48" L x 24" W x 30" H	Ea.	\$690.00
	Security vehicle barriers, concrete planter, exposed aggregate finish, rectangle, 72" L x 24" W x 30" H	Ea.	\$815.00
	Security vehicle barriers, concrete planter, exposed aggregate finish, rectangle, 96" L x 24" W x 30" H	Ea.	\$1,010.00
	Security vehicle barriers, concrete barrier, jersey, 10' L x 2' by 0.5' W x 30" H	Ea.	\$435.00

UNIT PRICES

	Description	UOM	\$/UOM
3.1	Stand-off Distance – Security Vehicle Barriers, Bollards, and Planters (continued)		
	Security vehicle barriers, concrete barrier, jersey, 10' L x 2' by 0.5' W x 30" H, 10 or more same site	Ea.	\$380.00
	Security vehicle barriers, concrete barrier, jersey, 10' L x 2' by 0.5' W x 32" H	Ea.	\$445.00
	Security vehicle barriers, concrete barrier, jersey, 10' L x 2' by 0.5' W x 32" H, 10 or more same site	Ea.	\$390.00
	Security vehicle barriers, concrete barrier, jersey, 20' L x 2' by 0.5' W x 30" H	Ea.	\$900.00
	Security vehicle barriers, concrete barrier, jersey, 20' L x 2' by 0.5' W x 30" H, 10 or more same site	Ea.	\$825.00
	Security vehicle barriers, concrete barrier, jersey, 20' L x 2' by 0.5' W x 32" H	Ea.	\$915.00
	Security vehicle barriers, concrete barrier, jersey, 20' L x 2' by 0.5' W x 32" H, 10 or more same site	Ea.	\$840.00
	Security vehicle barriers, concrete filled GFRC decorative impaler security barrier, with site preparation on bare ground, 12' section, including concrete	Ea.	\$2,550.00
3.2	Perimeter Fences		
	Fence, security fence, 6' tall pickets, set in concrete	L.F.	\$118.00
	Fence, security fence, 8' tall pickets, set in concrete	L.F.	\$128.00
	Security Gate, 6' tall picket, motor operated 10' wide	Ea.	\$8,205.00
	Security Gate, 8' tall picket, motor operated 10' wide	Ea.	\$8,710.00
3.3	Vehicle and Pedestrian Screening		
	Guard Booth, major 24 hour with sanitary facilities	Ea.	\$100,000.00
	Guard House, prefab concrete, level III, 8' x 8', w bullet resistant doors, windows, exterior roof, lights, wiring and insulation	Ea.	\$24,400.00
	Guard House, prefab concrete, level IV, 8' x 8', w bullet resistant doors, windows, exterior roof, lights, wiring and insulation	Ea.	\$29,900.00
	Paving, asphaltic concrete, parking lots and driveways, 6" stone base, 2" binder course, 1" topping	S.F.	\$2.00
3.4	Vehicle Barriers		
	Security vehicle barriers, drop arm crash barrier 20' wide, will stop 15,000 lb vehicle traveling 50 MPH, includes all labor, material and equipment for complete installation	Ea.	\$72,500.00
	Security vehicle barriers, drop arm crash barrier 24' wide, will stop 15,000 lb vehicle traveling 50 MPH, includes all labor, material and equipment for complete installation	Ea.	\$78,500.00
	Security vehicle barriers, portable wedge crash barrier 10" wide, will stop 15,000 lb vehicle traveling 50 MPH, includes all labor, material and equipment for complete installation	Ea.	\$71,500.00

	Description	UOM	\$/UOM
3.4	Vehicle Barriers (continued)		
	Security vehicle barriers, portable wedge crash barrier 12' wide, will stop 15,000 lb vehicle traveling 50 MPH, includes all labor, material and equipment for complete installation	Ea.	\$78,500.00
	Security vehicle barriers, sliding crash barrier 12' wide, will stop 15,000 lb vehicle traveling 50 MPH, includes all labor, material and equipment for complete installation	Ea.	\$101,500.00
	Security vehicle barriers, sliding roller crash barrier, will stop 15,000 lb vehicle traveling 50 MPH, includes all labor, material and equipment for complete installation	Ea.	\$72,500.00
	Security vehicle barriers, sliding cantilever crash barrier 20' wide, will stop 15,000 lb vehicle traveling 50 MPH, includes all labor, material and equipment for complete installation	Ea.	\$78,500.00
	Security vehicle barriers, raised bollard crash barriers 10' wide, standard power, will stop 15,000 lb vehicle traveling 50 MPH, includes all labor, material and equipment for complete installation	Ea.	\$24,200.00
	Security vehicle barriers, raised bollard crash barriers 12' wide, standard power, will stop 15,000 lb vehicle traveling 50 MPH, includes all labor, material and equipment for complete installation	Ea.	\$27,800.00
	Security vehicle barriers, raised bollard crash barriers 10' wide, solar power, will stop 15,000 lb vehicle traveling 50 MPH, includes all labor, material and equipment for complete installation	Ea.	\$30,800.00
	Security vehicle barriers, raised bollard crash barriers 12' wide, solar power, will stop 15,000 lb vehicle traveling 50 MPH, includes all labor, material and equipment for complete installation	Ea.	\$34,400.00
	Security vehicle barriers, in ground tire shredder 16' wide, includes all labor, material and equipment for complete installation	Ea.	\$31,900.00
3.5	Parking		
	No additional cost		
3.6	Site Lighting		
	Site lighting, metal halide, 1000 watt, aluminum pole, 20' high, adjacent to building	Ea.	\$2,550.00
	Site lighting, metal halide, 1000 watt, aluminum pole, 30' high, adjacent to building	Ea.	\$3,625.00
	Site lighting, metal halide, 1000 watt, aluminum pole, 40' high, adjacent to building	Ea.	\$4,400.00
	Site lighting, high pressure sodium, 1000 watt, aluminum pole, 20' high, adjacent to building	Ea.	\$2,575.00
	Site lighting, high pressure sodium, 1000 watt, aluminum pole, 30' high, adjacent to building	Ea.	\$3,675.00

UNIT PRICES

	Description	UOM	\$/UOM
3.6	Site Lighting (continued)		
	Site lighting, high pressure sodium, 1000 watt, aluminum pole, 40' high, adjacent to building	Ea.	\$3,690.00
	Site lighting, metal halide, 1000 watt, aluminum pole, 20' high, includes conduit and conductor to site perimeter	Ea.	\$4,765.00
	Site lighting, metal halide, 1000 watt, aluminum pole, 30' high, includes conduit and conductor to site perimeter	Ea.	\$4,765.00
	Site lighting, metal halide, 1000 watt, aluminum pole, 40' high, includes conduit and conductor to site perimeter	Ea.	\$5,580.00
	Site lighting, high pressure sodium, 1000 watt, aluminum pole, 20' high, includes conduit and conductor to site perimeter	Ea.	\$3,865.00
	Site lighting, high pressure sodium, 1000 watt, aluminum pole, 30' high, includes conduit and conductor to site perimeter	Ea.	\$4,815.00
	Site lighting, high pressure sodium, 1000 watt, aluminum pole, 40' high, includes conduit and conductor to site perimeter, includes conduit and conductor to site perimeter	Ea.	\$5,565.00
Chapter 4 – Building Entrances and Exits			
4.1	Pedestrian Entrances and Lobbies		
	Entrances, Access control power, telecom and data	Ea.	\$5,000.00
	Counters, frontal only, complete with steel undercounter	Station	\$5,175.00
4.2	Patient Drop-offs		
	See Chapter 3 for Vehicle Barriers		
4.3	Building Exits and Life Safety Considerations		
	Site lighting, metal halide, 1000 watt, aluminum pole, 20' high, adjacent to building	Ea.	\$2,550.00
	Site lighting, metal halide, 1000 watt, aluminum pole, 30' high, adjacent to building	Ea.	\$3,625.00
	Site lighting, metal halide, 1000 watt, aluminum pole, 40' high, adjacent to building	Ea.	\$4,400.00
	Site lighting, high pressure sodium, 1000 watt, aluminum pole, 20' high, adjacent to building	Ea.	\$2,575.00
	Site lighting, high pressure sodium, 1000 watt, aluminum pole, 30' high, adjacent to building	Ea.	\$3,675.00
	Site lighting, high pressure sodium, 1000 watt, aluminum pole, 40' high, adjacent to building	Ea.	\$4,425.00
Chapter 5 - Functional Areas			
5.1	Agent Cashier		
	Secure Room, 12' x 16', security window, door and HVAC	Ea.	\$34,775.00

	Description	UOM	\$/UOM
5.2	Cache		
	Secure Room, 20' x 30', door and HVAC	Ea.	\$49,200.00
5.3	Childcare/Development Center		
	No additional cost - see Chapter 10 for Security System		
5.4	Computer Room		
	Secure Room, 50' x 50', door and HVAC	Ea.	\$91,800.00
5.5	C00P Site		
	20' long, 6' tall CMU screen Wall and 4 bollards	Ea.	\$6,800.00
	Bank equipment, door and frame, bullet-resistant, with vision panel, max.	Ea.	\$6,600.00
	Secure Room, 30' x 50'	Ea.	\$63,900.00
	Independent operation, water, sewerage, power	Ea.	\$200,000.00
5.6	Emergency Department		
	Counters, frontal only, complete with steel undercounter	Station	\$5,175.00
5.7	Emergency and/or Stand-by Generator Room		
	See Chapter 8 for Utilities and Building Services		
5.8	Energy Center/Boiler Plant		
	See Chapter 8 for Building Services		
	CCTV Camera on pole	Ea.	\$11,129.00
5.9	Loading Docks and Service Entrances		
	Fence, security fence, 6' tall pickets, set in concrete	L.F.	\$118.00
	Fence, security fence, 8' tall pickets, set in concrete	L.F.	\$128.00
	Security Gate, 6' Tall Picket, motor operated 10' wide	Ea.	\$8,205.00
	Security Gate, 8' Tall Picket, motor operated 10' wide	Ea.	\$8,710.00
	Secure Room, 20' x 20'	Ea.	\$42,600.00
	CCTV Camera on pole	Ea.	\$11,129.00
	Site lighting, metal halide, 1000 watt, aluminum pole, 20' high, adjacent to building	Ea.	\$2,550.00
	Site lighting, metal halide, 1000 watt, aluminum pole, 30' high, adjacent to building	Ea.	\$3,625.00
	Site lighting, metal halide, 1000 watt, aluminum pole, 40' high, adjacent to building	Ea.	\$4,400.00
	Site lighting, high pressure sodium, 1000 watt, aluminum pole, 20' high, adjacent to building	Ea.	\$2,575.00

UNIT PRICES

	Description	UOM	\$/UOM
5.9	Loading Docks and Service Entrances (continued)		
	Site lighting, high pressure sodium, 1000 watt, aluminum pole, 30' high, adjacent to building	Ea.	\$3,675.00
	Site lighting, high pressure sodium, 1000 watt, aluminum pole, 40' high, adjacent to building	Ea.	\$4,425.00
	Encase steel Columns with concrete		
	Concrete column encasement, round, average reinforcing, 12" Diameter, includes forms (4 uses), reinforcing steel, and finishing	L.F.	\$38.00
	Concrete column encasement, round, average reinforcing, 16" Diameter, includes forms (4 uses), reinforcing steel, and finishing	L.F.	\$58.00
	Concrete column encasement, round, average reinforcing, 20" Diameter, includes forms (4 uses), reinforcing steel, and finishing	L.F.	\$80.00
	Concrete column encasement, round, average reinforcing, 24" Diameter, includes forms (4 uses), reinforcing steel, and finishing	L.F.	\$108.00
	Concrete column encasement, round, average reinforcing, 36" Diameter, includes forms (4 uses), reinforcing steel, and finishing	L.F.	\$195.00
5.10	Mailroom		
	Blast Resistant Partition, 12" CMU, 14' tall with horizontal and vertical reinforcing	L.F.	\$275.00
	Encase steel Columns with concrete		
	Concrete column encasement, round, average reinforcing, 12" Diameter, includes forms (4 uses), reinforcing steel, and finishing	L.F.	\$38.00
	Concrete column encasement, round, average reinforcing, 16" Diameter, includes forms (4 uses), reinforcing steel, and finishing	L.F.	\$58.00
	Concrete column encasement, round, average reinforcing, 20" Diameter, includes forms (4 uses), reinforcing steel, and finishing	L.F.	\$80.00
	Concrete column encasement, round, average reinforcing, 24" Diameter, includes forms (4 uses), reinforcing steel, and finishing	L.F.	\$108.00
	Concrete column encasement, round, average reinforcing, 36" Diameter, includes forms (4 uses), reinforcing steel, and finishing	L.F.	\$195.00
5.11	Pharmacy		
	No additional cost - see Chapter 10 for Security System		
5.12	Police Operations Room and Holding Room		
	Bank equipment, door and frame, bullet-resistant, with vision panel, max.	Ea.	\$6,600.00
	Secure 12' x 12' Holding Room, security window	Ea.	\$38,830.00
5.13	Records Storage and Archives		
	No additional cost - see Chapter 10 for Security System		

	Description	UOM	\$/UOM
5.14	Research Laboratory and Vivarium		
	Secure Room, 20' x 30', door and HVAC	Ea.	\$49,200.00
5.15	Security Control Center (SCC)		
	Security Window, bullet resistant, 44" x 60"	Ea.	\$4,000.00
	Security Room 12' x 12', doors openings, HVAC	Ea.	\$49,700.00
	Emergency Power - Diesel		
	Generator set, diesel, 3 phase 4 wire, 277/480 V, 30 kW, including battery, charger, muffler and automatic transfer switch, excluding conduit, wiring, and concrete	Ea.	\$27,200.00
	Generator set, diesel, 3 phase 4 wire, 277/480 V, 50 kW, including battery, charger, muffler and automatic transfer switch, excluding conduit, wiring, and concrete	Ea.	\$31,850.00
	Generator set, diesel, 3 phase 4 wire, 277/480 V, 75 kW, including battery, charger, muffler and automatic transfer switch, excluding conduit, wiring, and concrete	Ea.	\$39,300.00
	Generator set, diesel, 3 phase 4 wire, 277/480 V, 100 kW, including battery, charger, muffler and automatic transfer switch, excluding conduit, wiring, and concrete	Ea.	\$42,900.00
	Generator set, diesel, 3 phase 4 wire, 277/480 V, 125 kW, including battery, charger, muffler and automatic transfer switch, excluding conduit, wiring, and concrete	Ea.	\$44,900.00
	Generator set, diesel, 3 phase 4 wire, 277/480 V, 150 kW, including battery, charger, muffler and automatic transfer switch, excluding conduit, wiring, and concrete	Ea.	\$51,200.00
	Generator set, diesel, 3 phase 4 wire, 277/480 V, 200 kW, including battery, charger, muffler and automatic transfer switch, excluding conduit, wiring, and concrete	Ea.	\$56,500.00
	Emergency Power - Gasoline		
	Generator set, gas/gasoline, 3 phase 4 wire, 277/480 V, 35 kW, including battery, charger, muffler and automatic transfer switch	Ea.	\$15,800.00
	Generator set, gas/gasoline, 3 phase 4 wire, 277/480 V, 60 kW, including battery, charger, muffler and automatic transfer switch	Ea.	\$21,000.00
	Generator set, gas/gasoline, 3 phase 4 wire, 277/480 V, 80 kW, including battery, charger, muffler and automatic transfer switch	Ea.	\$26,100.00
	Generator set, gas/gasoline, 3 phase 4 wire, 277/480 V, 100 kW, including battery, charger, muffler and automatic transfer switch	Ea.	\$29,100.00

UNIT PRICES

	Description	UOM	\$/UOM
Chapter 6 - Building Envelope			
6.1	Walls		
	Blast Resistant CMU Walls, 10 psi / 89 psi-msec, add for vertical reinforcement	S.F.	\$8.00
	Blast Resistant CMU Walls, 4 psi / 28 psi-msec, add for vertical reinforcement	S.F.	\$3.00
6.2	Fenestration		
	Blast Resistant Fenestration, 10 psi / 89 psi-msec, add for laminated glass and frame	S.F.	\$83.00
	Blast Resistant Fenestration, 4 psi / 28 psi-msec, add for laminated glass and frame	S.F.	\$42.00
6.3	Atria		
	Blast Resistant Fenestration, 10 psi / 89 psi-msec, add for laminated glass and frame	S.F.	\$83.00
	Blast Resistant Fenestration, 4 psi / 28 psi-msec, add for laminated glass and frame	S.F.	\$42.00
6.4	Roofs		
	Blast Resistant Roof, 10 psi / 89 psi-msec, 2-1/2" concrete fill	S.F.	\$2.00
6.5	Air Intakes and Exhausts Servicing Critical Equipment		
	Blast Resistant Baffle, 12" CMU, 14' tall with horizontal and vertical reinforcing	L.F.	\$275.00
6.6	Calculation Methods		
	Design and Detailing for Blast Resistant Walls	Ea.	\$25,000.00
Chapter 7 - Structural System			
7.1	Blast Resistance		
	See Chapter 6 for Building Envelope		
7.2	Progressive Collapse		
	Progressive Collapse Protection, increase structural steel tons and dollars	percent	\$7
7.3	Column Protection		
	Concrete column encasement, round, average reinforcing, 12" Diameter, includes forms (4 uses), reinforcing steel, and finishing	L.F.	\$38.00
	Concrete column encasement, round, average reinforcing, 16" Diameter, includes forms (4 uses), reinforcing steel, and finishing	L.F.	\$58.00
	Concrete column encasement, round, average reinforcing, 20" Diameter, includes forms (4 uses), reinforcing steel, and finishing	L.F.	\$80.00

	Description	UOM	\$/UOM
7.3	Column Protection (continued)		
	Concrete column encasement, round, average reinforcing, 24" Diameter, includes forms (4 uses), reinforcing steel, and finishing	L.F.	\$108.00
	Concrete column encasement, round, average reinforcing, 36" Diameter, includes forms (4 uses), reinforcing steel, and finishing	L.F.	\$195.00
7.4	Anti-ram Resistance		
	See Chapter 3 for Vehicle Barriers		
7.5	Calculation Methods		
	Progressive Collapse Protection, design and detailing	Ea.	\$25,000.00
Chapter 8 - Utilities and Building Services			
8.1	Utility Entrances		
	Mechanical		
	Alternate steam and chilled water input connection	Ea.	\$5,000.00
	Water Service including excavation		
	Polyvinyl chloride pipe, 4", AWWA C900, Class 150, SDR 18	L.F.	\$17.00
	Polyvinyl chloride pipe, 6", AWWA C900, Class 150, SDR 18	L.F.	\$21.00
	Polyvinyl chloride pipe, 8", AWWA C900, Class 150, SDR 18	L.F.	\$26.00
	Polyvinyl chloride pipe, 10", AWWA C900, Class 150, SDR 18	L.F.	\$32.00
	Polyvinyl chloride pipe, 12", AWWA C900, Class 150, SDR 18	L.F.	\$40.00
	Electrical including excavation		
	Power feed, 2-4" Diameter conduits in concrete duct	L.F.	\$27.00
	Underground duct banks, concrete fill, PVC, type EB, minimum of 7.5" between conduits center to center, 1 @ 4" Diameter	L.F.	\$25.00
	Underground duct banks, concrete fill, PVC, type EB, minimum of 7.5" between conduits center to center, 2 @ 4" Diameter	L.F.	\$30.00
	Underground duct banks, concrete fill, PVC, type EB, minimum of 7.5" between conduits center to center, 4 @ 4" Diameter	L.F.	\$40.00
	Underground duct banks, concrete fill, PVC, type EB, minimum of 7.5" between conduits center to center, 6 @ 4" Diameter	L.F.	\$57.00
	Underground duct banks, PVC, 4 @ 5" Diameter, includes excavation, backfill and cast in place concrete	L.F.	\$52.00
	Underground duct banks, PVC, 6 @ 5" Diameter, includes excavation, backfill and cast in place concrete	L.F.	\$67.50
	Underground duct banks, rigid galvanized steel, 4 @ 4" Diameter, includes excavation, backfill and cast in place concrete	L.F.	\$164.00
	Underground duct banks, rigid galvanized steel, 6 @ 4" Diameter, includes excavation, backfill and cast in place concrete	L.F.	\$233.00

UNIT PRICES

	Description	UOM	\$/UOM
8.1	Utility Entrance (continued)		
	Telecommunications		
	Underground duct banks, concrete fill, PVC, type EB, minimum of 7.5" between conduits center to center, 1 @ 4" Diameter	L.F.	\$25.00
8.2	Site Distribution		
	No additional cost		
8.3	Energy Center		
	See Section 9.2, Electrical Stand-by Power Systems		
	See Section 8.4, Water and Fuel Storage		
8.4	Water and Fuel Storage		
	Potable Water Tanks		
	Potable Water Storage Tanks, steel, ground level, height/diameter less than 1, 100,000 gallons, excluding foundation, pumps or piping	Ea.	\$150,000.00
	Potable Water Storage Tanks, steel, ground level, height/diameter less than 1, 250,000 gallons, excluding foundation, pumps or piping	Ea.	\$160,000.00
	Potable Water Storage Tanks, steel, ground level, height/diameter less than 1, 500,000 gallons, excluding foundation, pumps or piping	Ea.	\$244,000.00
	Potable Water Storage Tanks, steel, ground level, height/diameter less than 1, 750,000 gallons, excluding foundation, pumps or piping	Ea.	\$290,500.00
	Potable Water Storage Tanks, steel, ground level, height/diameter less than 1, 1,000,000 gallons, excluding foundation, pumps or piping	Ea.	\$444,500.00
	Industrial Water		
	Industrial Water Storage Tanks, steel, ground level, height/diameter less than 1, 100,000 gallons, excluding foundation, pumps or piping	Ea.	\$150,000.00
	Industrial Water Storage Tanks, steel, ground level, height/diameter less than 1, 250,000 gallons, excluding foundation, pumps or piping	Ea.	\$160,000.00
	Industrial Water Storage Tanks, steel, ground level, height/diameter less than 1, 500,000 gallons, excluding foundation, pumps or piping	Ea.	\$244,000.00
	Industrial Water Storage Tanks, steel, ground level, height/diameter less than 1, 750,000 gallons, excluding foundation, pumps or piping	Ea.	\$290,500.00
	Industrial Water Storage Tanks, steel, ground level, height/diameter less than 1, 1,000,000 gallons, excluding foundation, pumps or piping	Ea.	\$444,500.00
	Sewerage Above Ground Tank		
	Sewerage Storage Tanks, steel, ground level, height/diameter less than 1, 250,000 gallons, excluding foundation, pumps or piping	Ea.	\$160,000.00
	Sewerage Storage Tanks, steel, ground level, height/diameter less than 1, 500,000 gallons, excluding foundation, pumps or piping	Ea.	\$244,000.00

	Description	UOM	\$/UOM
8.4	Water and Fuel Storage (continued)		
	Sewerage Above Ground Tank (continued)		
	Sewerage Storage Tanks, steel, ground level, height/diameter less than 1, 750,000 gallons, excluding foundation, pumps or piping	Ea.	\$290,500.00
	Sewerage Storage Tanks, steel, ground level, height/diameter less than 1, 1,000,000 gallons, excluding foundation, pumps or piping	Ea.	\$444,500.00
	Underground Steel Fuel Storage Tanks (excludes excavation)		
	Underground Fuel Storage Tanks, steel, 360 degrees, double wall, U.L., with sti-P3 corrosion protection, (dielectric coating, cathodic protection, electrical isolation) 30 year warranty, 5,000 gallon cap, excluding manholes or holddowns	Ea.	\$12,400.00
	Underground Fuel Storage Tanks, steel, 360 degrees, double wall, U.L., with sti-P3 corrosion protection, (dielectric coating, cathodic protection, electrical isolation) 30 year warranty, 6,000 gallon cap, excluding manholes or holddowns	Ea.	\$14,700.00
	Underground Fuel Storage Tanks, steel, 360 degrees, double wall, U.L., with sti-P3 corrosion protection, (dielectric coating, cathodic protection, electrical isolation) 30 year warranty, 8,000 gallon cap, excluding manholes or holddowns	Ea.	\$15,500.00
	Underground Fuel Storage Tanks, steel, 360 degrees, double wall, U.L., with sti-P3 corrosion protection, (dielectric coating, cathodic protection, electrical isolation) 30 year warranty, 10,000 gallon cap, excluding manholes or holddowns	Ea.	\$17,500.00
	Underground Fuel Storage Tanks, steel, 360 degrees, double wall, U.L., with sti-P3 corrosion protection, (dielectric coating, cathodic protection, electrical isolation) 30 year warranty, 12,000 gallon cap, excluding manholes or holddowns	Ea.	\$20,900.00
	Underground Fuel Storage Tanks, steel, 360 degrees, double wall, U.L., with sti-P3 corrosion protection, (dielectric coating, cathodic protection, electrical isolation) 30 year warranty, 15,000 gallon cap, excluding manholes or holddowns	Ea.	\$23,300.00
	Underground Fuel Storage Tanks, steel, 360 degrees, double wall, U.L., with sti-P3 corrosion protection, (dielectric coating, cathodic protection, electrical isolation) 30 year warranty, 20,000 gallon cap, excluding manholes or holddowns	Ea.	\$27,800.00
	Underground Fiberglass Fuel Storage Tanks (excludes excavation)		
	Underground Fuel Storage Tanks, fiberglass, double wall, U.L. listed, 6,000 gallon cap, including manways, excluding hold-down straps	Ea.	\$16,300.00
	Underground fuel Storage Tanks, fiberglass, double wall, U.L. listed, 8,000 gallon cap, including manways, excluding hold-down straps	Ea.	\$18,700.00
	Underground Fuel Storage Tanks, fiberglass, double wall, U.L. listed, 10,000 gallon cap, including manways, excluding hold-down straps	Ea.	\$21,000.00
	Underground Fuel Storage Tanks, fiberglass, double wall, U.L. listed, 12,000 gallon cap, including manways, excluding hold-down straps	Ea.	\$25,800.00

UNIT PRICES

	Description	UOM	\$/UOM
8.4	Water and Fuel Storage (continued)		
	Underground Fiberglass Fuel Storage Tanks (continued)		
	Underground Fuel Storage Tanks, fiberglass, double wall, U.L. listed, 15,000 gallon cap, including manways, excluding hold-down straps	Ea.	\$29,800.00
	Underground Fuel Storage Tanks, fiberglass, double wall, U.L. listed, 20,000 gallon cap, including manways, excluding hold-down straps	Ea.	\$36,200.00
	Fire Protection Water Storage		
	Fire Protection Water Storage: Fire Water Storage Tanks, prestressed Concrete 180,000 gallon cap, excluding pipes or pumps	Ea.	\$213,000.00
Chapter 9 - Building Systems			
9.1	HVAC Systems		
	Emergency connections for chilled water and steam	Ea.	\$2,500.00
9.2	Electrical Systems		
	Stand-by Power Systems		
	Generator set, diesel, 3 phase 4 wire, 277/480 V, 300 kW, including battery, charger, muffler and automatic transfer switch, excluding conduit, wiring, and concrete	Ea.	\$68,700.00
	Generator set, diesel, 3 phase 4 wire, 277/480 V, 400 kW, including battery, charger, muffler and automatic transfer switch, excluding conduit, wiring, and concrete	Ea.	\$93,830.00
	Generator set, diesel, 3 phase 4 wire, 277/480 V, 500 kW, including battery, charger, muffler and automatic transfer switch, excluding conduit, wiring, and concrete	Ea.	\$113,000.00
	Generator set, diesel, 3 phase 4 wire, 277/480 V, 600 kW, including battery, charger, muffler and automatic transfer switch, excluding conduit, wiring, and concrete	Ea.	\$143,500.00
	Generator set, diesel, 3 phase 4 wire, 277/480 V, 750 kW, including battery, charger, muffler and automatic transfer switch, excluding conduit, wiring, and concrete	Ea.	174,000.00
	Generator set, diesel, 3 phase 4 wire, 277/480 V, 1000 kW, including battery, charger, muffler and automatic transfer switch, excluding conduit, wiring, and concrete	Ea.	\$216,000.00
	Generator set, diesel, 3 phase 4 wire, 277/480 V, 1750 kW, including battery, charger, muffler and automatic transfer switch, excluding conduit, wiring, and concrete	Ea.	\$880,000.00
	Uninterruptible Power Systems		
	Uninterruptible power supply, charger, inverter, and alarm 1 phase, 120 V, 1.5 kVA, including 10 minutes battery	Ea.	\$4,175.00

	Description	UOM	\$/UOM
9.2	Electrical Systems (continued)		
	Uninterruptible Power Systems (continued)		
	Uninterruptible power supply, charger, inverter, and alarm 1 phase, 120 V, 2 kVA, including 10 minutes battery	Ea.	\$4,725.00
	Uninterruptible power supply, charger, inverter, and alarm 1 phase, 120 V, 3 kVA, including 10 minutes battery	Ea.	\$6,600.00
	Uninterruptible power supply, charger, inverter, and alarm 1 phase, 120 V, 5 kVA, including 10 minutes battery	Ea.	\$9,650.00
	Uninterruptible power supply, charger, inverter, and alarm 1 phase, 120 V, 7.5 kVA, including 10 minutes battery	Ea.	\$12,300.00
	Uninterruptible power supply, charger, inverter, and alarm 1 phase, 120 V, 10 kVA, including 10 minutes battery	Ea.	\$13,600.00
	Uninterruptible power supply, charger, inverter, and alarm 1 phase, 120 V, 15 kVA, including 10 minutes battery	Ea.	\$18,300.00
	Uninterruptible power supply, charger, inverter, and alarm 1 phase, 120 V, 15 kVA, including 20 minutes battery	Ea.	\$26,460.00
9.3	Telecommunications Systems		
	No Additional Cost		
9.4	Plumbing Systems		
	No Additional Cost		
9.5	Fire Protection Systems – Must Meet NFPA Standards		
	No Additional Cost		
Chapter 10 - Security Systems			
10.1	CCTV Monitoring and Surveillance		
	Camera power and wiring at perimeter fence (cameras at 240 ft. o.c. on light posts)	Ea.	\$2,600.00
	Camera Equipment Cost at perimeter fence (cameras at 240 ft. o.c. on light posts)	Ea.	\$3,000.00
	Additional CCTV Systems Components	Ea.	\$6,800.00
	CCTV Video Matrix or IP Video Switch	Ea.	\$4,200.00
	CCTV Video IP Ethernet Switch (24 Channel, Single Mode Fiber Optic Connection, Power over Ethernet)	Ea.	\$24,500.00
	CCTV Video Recorder, 24 Camera	Ea.	\$1,490.00
	Flat Screen Monitor, 21 Inch LCD	Ea.	\$850.00
	Camera, Fixed Dome Color, Interior Housing	Ea.	\$3,100.00

UNIT PRICES

	Description	UOM	\$/UOM
10.2	Intrusion Detection Systems (IDS)		
	Motion Detector, Interior Space 90 Degree	Ea.	\$280.00
	Motion Detector, Interior Space 360 Degree	Ea.	\$290.00
	Glassbreak Detector, interior Space Ultrasonic	Ea.	\$260.00
	Panic Button, Key to Reset	Ea.	\$110.00
10.3	Physical Access Control Systems (PACS)		
	Entry Control Device		
	Access Control System Server, with Operating System and Application Software	Ea.	\$42,000.00
	Access Control System Monitoring Station Client	Ea.	\$12,200.00
	Access Control System Badging Station Client and Printer	Ea.	\$28,500.00
	Flat Screen Monitor, 17 Inch LCD (1 Server, 2 Monitoring Station, 1 Badging Station)	Ea.	\$960.00
	Stand Alone Processor Panel (for IDS/PACS)	Ea.	\$8,150.00
	Panel & Security Device Power Supply (for IDS /PACS)	Ea.	\$620.00
	Card Reader w/Controller (Smart Card with PIN Pad)	Ea.	\$695.00
	Card Reader w/Controller (Smart Card with PIN Pad/ BioMetrics)	Ea.	\$1,620.00
	Electric Lock, Magnetic or Strike	Ea.	\$420.00
	Magnetic Contact, Recessed	Ea.	\$85.00
	Request to Exit Device (Push Button or Request to Exit PIR - Door Contact Shunting Device)	Ea.	\$160.00
10.4	Duress, Security Phones, and Intercom System (DSPI)		
	Master Intercom with CPU and Monitor	Ea.	\$8,300.00
	Door Intercom, Wall Mounted Slave	Ea.	\$1,180.00
10.5	Security Control System (SCC)		
	Security Console/Workstation		
	Security Report Printer, Laser Jet w/ Ethernet Card	Ea.	\$1,800.00
	Security (2) Equipment Racks/ (2) Monitoring Consoles	Lot	\$9,500.00
10.6	Detection and Screening Systems (DSS) (Optional)		
	System Elements and Features		
	Magnetometer	Ea.	\$5,800.00
	X-Ray Machine, Personnel Screening (entry portal screening only)	Ea.	\$23,000.00
	X-Ray Machine, Mail Parcel /Package Screening (entry portal screening only)	Ea.	\$32,000.00