

**FAC 6105 PENTAGON**

FY24 SUC: \$10.73 / SF  
Source: Calculated using R.S. Means CostWorks 2023 Qtr 4 component prices

FAC 6105 PENTAGON

SUC \$10.73

Release 2023 Qtr 4  
Zip Code Prefix 222  
Type MR

UM SF  
Design Life 55  
Average Size 6344353.0

Adjusted Occurences are the occurrences remaining after subtracting Repair/Replacement Overlaps. Overlap reduction removes a repair when it occurs the same year as a replacement.

Description	Frequency	Qty Unit	Total In-House	Total Incl OP	Design Life/Frequency	Occurrences in Design Life	Adjusted Occurrences	Life Cost	Adjusted Cost
Repair computer room air conditioner, air cooled, 10 ton	10	59.00 Ea.	\$1,591,335.89	\$1,841,555.70	5.5000	5	3	\$9,207,778.48	\$5,524,667.09
Replace computer room air conditioner, air cooled, 10 ton	20	59.00 Ea.	\$4,679,199.86	\$5,364,621.86	2.7500	2	2	\$10,729,243.72	\$10,729,243.72
Repair computer room A/C, chilled water, 20 ton	10	2,100.00 Ea.	\$43,585,192.08	\$50,512,095.76	5.5000	5	5	\$252,560,478.79	\$252,560,478.79
Replace computer room A/C, chilled water, 20 ton	20	2,100.00 Ea.	\$76,998,516.84	\$89,046,981.24	2.7500	2	2	\$178,093,962.48	\$178,093,962.48
Repair central station A.H.U., 33,500 CFM	10	500.00 Ea.	\$3,271,393.65	\$3,751,391.17	5.5000	5	4	\$18,756,955.86	\$15,005,564.69
Replace central station A.H.U., 33,500 CFM	15	500.00 Ea.	\$78,524,739.30	\$90,266,032.30	3.6667	3	3	\$270,798,096.90	\$270,798,096.90
Inspect sprinkler system	1	61.00 Ea.	\$2,206.65	\$2,762.35	55.0000	55	55	\$151,929.30	\$151,929.30
Replace sprinkler head	20	61,713.00 Ea.	\$5,409,011.64	\$6,674,377.46	2.7500	2	2	\$13,348,754.93	\$13,348,754.93
Rebuild double check 3" backflow preventer sprinkler system	1	100.00 Ea.	\$74,816.57	\$89,672.89	55.0000	55	55	\$4,932,008.82	\$4,932,008.82
Repair switchgear 1200 A mainframe	5	105.00 Ea.	\$189,373.03	\$222,153.98	11.0000	11	9	\$2,443,693.79	\$1,999,385.83
Maintenance and inspection switchgear, mainframe	1	105.00 Ea.	\$7,166.91	\$8,979.10	55.0000	55	55	\$493,850.65	\$493,850.65
Replace switchgear 1200 A mainframe	20	105.00 Ea.	\$446,347.34	\$538,366.37	2.7500	2	2	\$1,076,732.74	\$1,076,732.74
Replace fuse	25	1,217.00 Ea.	\$556,041.00	\$638,521.97	2.2000	2	2	\$1,277,043.94	\$1,277,043.94
Repair switchgear, - (5% of total C.B.), indoor, less than 600 V	10	2,588.00 Ea.	\$2,014,669.03	\$2,329,028.06	5.5000	5	5	\$11,645,140.32	\$11,645,140.32
Maintenance and inspection switchgear, indoor, less than 600 V	3	2,010.00 Ea.	\$85,111.84	\$106,632.78	18.3333	18	18	\$1,919,390.10	\$1,919,390.10
Replace switchgear, 225 A	30	2,010.00 Ea.	\$4,109,601.89	\$5,018,055.28	1.8333	1	1	\$5,018,055.28	\$5,018,055.28
Maintenance and repair - (5% of total fuses) switchgear, indoor, 600 V	10	458.00 Ea.	\$209,257.83	\$240,298.33	5.5000	5	5	\$1,201,491.63	\$1,201,491.63
Maintenance and inspection switchgear, indoor, 600 V	3	458.00 Ea.	\$19,393.64	\$24,297.42	18.3333	18	18	\$437,353.57	\$437,353.57
Replace switchgear, indoor, 600 V	30	458.00 Ea.	\$1,369,092.12	\$1,646,760.98	1.8333	1	1	\$1,646,760.98	\$1,646,760.98
Repair switchboard meter	10	1,000.00 Ea.	\$1,218,621.01	\$1,434,123.86	5.5000	5	5	\$7,170,619.30	\$7,170,619.30
Replace switchboard meter	20	1,000.00 Ea.	\$4,154,751.85	\$4,742,144.16	2.7500	2	2	\$9,484,288.33	\$9,484,288.33
Maintenance and repair rectifier, up to 600 V	2	2,178.00 Ea.	\$1,461,286.88	\$1,746,821.78	27.5000	27	25	\$47,164,188.18	\$43,670,544.61
Maintenance and inspection rectifier, up to 600 V	0.33	2,178.00 Ea.	\$297,324.55	\$372,504.49	166.6667	166	166	\$61,835,745.34	\$61,835,745.34
Replace rectifier, up to 600 V	20	2,178.00 Ea.	\$2,594,764.33	\$2,993,974.99	2.7500	2	2	\$5,987,949.98	\$5,987,949.98
Maintenance and repair secondary transformer, liquid filled	25	108.00 Ea.	\$13,916.20	\$17,261.00	2.2000	2	2	\$34,522.00	\$34,522.00
Maintenance and inspection secondary transformer, liquid filled	0.5	108.00 Ea.	\$6,143.07	\$7,696.37	110.0000	110	110	\$846,601.11	\$846,601.11
Maintenance and repair secondary transformer, dry	10	1,100.00 Ea.	\$279,513.31	\$333,987.74	5.5000	5	5	\$1,669,938.69	\$1,669,938.69
Maintenance and inspection secondary transformer, dry	0.5	1,100.00 Ea.	\$93,852.45	\$117,583.49	110.0000	110	110	\$12,934,183.68	\$12,934,183.68

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Replace transformer 112.5 KVA	30	1,463.00 Ea.	\$10,017,234.81	\$11,789,982.85	1.8333	1	1	\$11,789,982.85	\$11,789,982.85
Maintenance and inspection lighting panel, indoor	3	6,421.00 Ea.	\$271,892.11	\$340,641.34	18.3333	18	18	\$6,131,544.20	\$6,131,544.20
Repair failed breaker, molded case, 600 V, 3 pole	10	517.00 Ea.	\$187,968.51	\$224,372.40	5.5000	5	5	\$1,121,861.99	\$1,121,861.99
Maintenance and inspection circuit breaker, molded case, 600 V, 3 pole	0.33	517.00 Ea.	\$17,644.26	\$22,105.70	166.6667	166	166	\$3,669,545.49	\$3,669,545.49
Replace circuit breaker molded case, 600 V, 3 pole circuit breaker	50	517.00 Ea.	\$2,421,925.46	\$2,775,534.33	1.1000	1	1	\$2,775,534.33	\$2,775,534.33
Maintenance and repair receptacles and plugs	20	19,130.00 Ea.	\$842,546.74	\$1,051,802.52	2.7500	2	2	\$2,103,605.05	\$2,103,605.05
Replace receptacle/plug receptacles and plugs	20	19,130.00 Ea.	\$1,431,509.28	\$1,765,076.66	2.7500	2	2	\$3,530,153.32	\$3,530,153.32
Maintenance and repair contactors and relays	3	529.00 Ea.	\$138,251.53	\$170,774.22	18.3333	18	18	\$3,073,935.92	\$3,073,935.92
Replace EMS, Mech, BTU, 3 Meters, 3 Duct Sensors, 3 Space Sensors	20	1.00 Ea.	\$15,519.60	\$18,189.23	2.7500	2	2	\$36,378.45	\$36,378.45
Replace wiring devices, switches	15	1,792.00 Ea.	\$119,492.79	\$148,748.26	3.6667	3	3	\$446,244.79	\$446,244.79
Replace fluorescent light fixture ballast, 80 W	10	110,486.00 Ea.	\$11,557,514.25	\$14,251,677.82	5.5000	5	3	\$71,258,389.12	\$42,755,033.47
Replace lamps (2 lamps), 4', 34 W energy saver	10	110,486.00 Ea.	\$2,926,299.18	\$3,664,702.37	5.5000	5	5	\$18,323,511.87	\$18,323,511.87
Replace fluorescent fixture, lay-in, recess mtd, 2' x 4', two 40 W	20	110,486.00 Ea.	\$27,359,000.11	\$33,297,906.04	2.7500	2	2	\$66,595,812.08	\$66,595,812.08
Maintenance and repair TV cable outlet	10	19,130.00 Ea.	\$1,039,202.64	\$1,297,809.60	5.5000	5	5	\$6,489,047.99	\$6,489,047.99
Replace TV cable outlet	20	19,130.00 Ea.	\$1,424,142.79	\$1,773,127.64	2.7500	2	2	\$3,546,255.28	\$3,546,255.28
Repair smoke detector	10	1,792.00 Ea.	\$103,954.23	\$128,723.94	5.5000	5	4	\$643,619.71	\$514,895.77
Check operation smoke detector	1	1,792.00 Ea.	\$30,465.58	\$38,168.95	55.0000	55	55	\$2,099,292.05	\$2,099,292.05
Replace smoke detector	15	1,792.00 Ea.	\$542,173.95	\$647,303.41	3.6667	3	3	\$1,941,910.22	\$1,941,910.22
Repair heat detector	10	1,792.00 Ea.	\$112,185.37	\$138,077.51	5.5000	5	5	\$690,387.55	\$690,387.55
Check operation heat detector	1	1,792.00 Ea.	\$30,465.58	\$38,168.95	55.0000	55	55	\$2,099,292.05	\$2,099,292.05
Replace heat detector	15	1,792.00 Ea.	\$317,374.95	\$388,551.69	3.6667	3	3	\$1,165,655.07	\$1,165,655.07
Check and repair manual pull station	10	1,194.00 Ea.	\$107,320.91	\$132,231.75	5.5000	5	4	\$661,158.73	\$528,926.98
Replace manual pull station	15	1,194.00 Ea.	\$249,257.42	\$300,604.91	3.6667	3	3	\$901,814.74	\$901,814.74
Minor repairs to fire alarm control panel	5	49.00 Ea.	\$7,321.45	\$8,947.18	11.0000	11	11	\$98,418.93	\$98,418.93
Maintenance and inspection fire alarm control panel	0.5	49.00 Ea.	\$2,229.71	\$2,793.50	110.0000	110	110	\$307,284.85	\$307,284.85
Replace fire alarm control panel	15	49.00 Ea.	\$107,609.93	\$131,098.25	3.6667	3	3	\$393,294.75	\$393,294.75
Minor repairs to annunciation panel	5	49.00 Ea.	\$7,321.45	\$8,947.18	11.0000	11	11	\$98,418.93	\$98,418.93
Maintenance and inspection annunciation panel	0.5	49.00 Ea.	\$2,229.71	\$2,793.50	110.0000	110	110	\$307,284.85	\$307,284.85
Replace annunciation panel	15	49.00 Ea.	\$55,137.24	\$66,513.47	3.6667	3	3	\$199,540.42	\$199,540.42
Replace fire alarm bell, 6"	20	8,859.00 Ea.	\$1,599,988.66	\$1,946,957.12	2.7500	2	2	\$3,893,914.23	\$3,893,914.23
Maintenance and inspection generator, diesel, 750 KW	0.08	16.00 Ea.	\$1,092.10	\$1,368.24	687.5000	687	687	\$939,983.78	\$939,983.78
Replace diesel generator component, 750 KW	25	16.00 Ea.	\$3,868,167.81	\$4,430,159.59	2.2000	2	2	\$8,860,319.18	\$8,860,319.18
Maintenance and repair transfer switch	5	3.00 Ea.	\$1,070.77	\$1,296.30	11.0000	11	11	\$14,259.25	\$14,259.25

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Maintenance and inspection transfer switch	0.5	3.00 Ea.	\$127.03	\$159.15	110.0000	110	110	\$17,506.87	\$17,506.87
Replace transfer switch	18	3.00 Ea.	\$74,842.30	\$85,757.67	3.0556	3	3	\$257,273.00	\$257,273.00
Replace lamp emergency lighting fixture	2	5,500.00 Ea.	\$299,710.18	\$362,202.76	27.5000	27	27	\$9,779,474.51	\$9,779,474.51
Replace emergency lighting fixture	20	5,500.00 Ea.	\$3,161,431.94	\$3,739,305.50	2.7500	2	2	\$7,478,611.00	\$7,478,611.00
Maintenance and repair exit light	20	5,424.00 Ea.	\$208,771.93	\$258,565.05	2.7500	2	2	\$517,130.10	\$517,130.10
Replace lamp exit light	5	5,424.00 Ea.	\$88,664.31	\$105,435.05	11.0000	11	11	\$1,159,785.51	\$1,159,785.51
Replace lighting fixture exit light	20	5,424.00 Ea.	\$954,976.38	\$1,158,062.17	2.7500	2	2	\$2,316,124.34	\$2,316,124.34
Maintenance and inspection battery, wet	0.02	795.00 Ea.	\$33,663.64	\$42,175.65	2,750.0000	2750	2750	\$115,983,046.08	\$115,983,046.08
Replace battery, wet	10	795.00 Ea.	\$517,643.55	\$591,356.81	5.5000	5	5	\$2,956,784.06	\$2,956,784.06
Maintenance and inspection UPS battery	0.17	2,619.00 Ea.	\$178,763.31	\$223,964.48	323.5294	323	323	\$72,340,525.88	\$72,340,525.88
Replace motor generator UPS battery	15	2,619.00 Ea.	\$2,792,414.87	\$3,311,642.07	3.6667	3	3	\$9,934,926.21	\$9,934,926.21
Replace commercial dishwasher, 10 to 12 racks per hour	10	21.00 Ea.	\$882,820.04	\$1,005,428.57	5.5000	5	5	\$5,027,142.85	\$5,027,142.85
Repair concrete stairs	30	4,659.00 S.F.	\$152,561.04	\$176,405.76	1.8333	1	1	\$176,405.76	\$176,405.76
Replace precast concrete coping, 12" wide	50	9,566.00 L.F.	\$685,931.81	\$842,265.90	1.1000	1	1	\$842,265.90	\$842,265.90
Repair 2'-0" x 3'-0" steel frame window - 1st floor.	20	4,769.00 Ea.	\$745,457.72	\$888,328.37	2.7500	2	2	\$1,776,656.75	\$1,776,656.75
Refinish 2'-0" x 3'-0" steel frame window - 1st floor.	5	4,769.00 Ea.	\$415,908.62	\$514,890.95	11.0000	11	11	\$5,663,800.47	\$5,663,800.47
Replace steam converter, domestic hot water	20	52.00 Ea.	\$196,145.80	\$225,155.16	2.7500	2	2	\$450,310.32	\$450,310.32
Unclog floor drain, PVC	20	449.00 Ea.	\$22,652.64	\$28,357.20	2.7500	2	2	\$56,714.40	\$56,714.40
Unclog 4" - 12" diameter PVC main drain per L.F.	10	449.00 L.F.	\$1,792.93	\$2,244.44	5.5000	5	5	\$11,222.21	\$11,222.21
Repair joint pipe and fittings, PVC	10	449.00 Ea.	\$75,504.41	\$93,494.13	5.5000	5	5	\$467,470.66	\$467,470.66
Replace pipe, 4" pipe and fittings, PVC	30	7.00 L.F.	\$580.60	\$716.64	1.8333	1	1	\$716.64	\$716.64
General maintenance & repair distribution: gutters, pipe	1	100.00 M.L.F.	\$31,719.92	\$39,707.87	55.0000	55	55	\$2,183,932.94	\$2,183,932.94
Replace pipe or gutter distribution	20	99,239.00 L.F.	\$5,775,522.00	\$7,000,357.13	2.7500	2	2	\$14,000,714.26	\$14,000,714.26
Insp/chk pump/mtr oper, lub, chk align, rainwater sump pump	1	21.00 Ea.	\$263.74	\$330.16	55.0000	55	55	\$18,158.79	\$18,158.79
Replace rainwater sump pump / motor assembly	20	21.00 Ea.	\$13,437.24	\$15,903.38	2.7500	2	2	\$31,806.75	\$31,806.75
Repair fan coil unit, 1 ton	10	6,800.00 Ea.	\$3,067,358.80	\$3,669,367.96	5.5000	5	4	\$18,346,839.82	\$14,677,471.86
Replace fan coil unit, 1 ton	15	6,800.00 Ea.	\$9,135,864.25	\$10,667,377.11	3.6667	3	3	\$32,002,131.33	\$32,002,131.33
Replace fan coil, DX 5 ton, with heat	10	4,698.00 Ea.	\$15,269,699.34	\$17,910,341.22	5.5000	5	5	\$89,551,706.12	\$89,551,706.12
Repair unit ventilator, 1250 CFM, 3 ton	10	2,400.00 Ea.	\$1,511,734.45	\$1,798,343.80	5.5000	5	5	\$8,991,718.99	\$8,991,718.99
Replace unit ventilator, 1250 CFM, heat/cool coils	15	2,400.00 Ea.	\$23,375,709.98	\$27,234,085.82	3.6667	3	3	\$81,702,257.47	\$81,702,257.47
Repair fan, induced draft, 17,700 CFM	10	5,400.00 Ea.	\$1,873,466.13	\$2,285,218.40	5.5000	5	5	\$11,426,091.98	\$11,426,091.98
Replace fan, induced draft, 17,700 CFM	20	5,400.00 Ea.	\$94,453,551.79	\$108,961,355.95	2.7500	2	2	\$217,922,711.90	\$217,922,711.90
Replace roof mounted exhaust fan, 800 CFM exhaust fan	20	110.00 Ea.	\$188,308.11	\$220,738.34	2.7500	2	2	\$441,476.69	\$441,476.69

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Replace roof mounted exhaust fan, 2000 CFM exhaust fan	20	80.00 Ea.	\$247,718.18	\$287,604.13	2.7500	2	2	\$575,208.25	\$575,208.25
Replace roof mounted exhaust fan, 8500 CFM exhaust fan	20	258.00 Ea.	\$1,108,641.86	\$1,286,119.09	2.7500	2	2	\$2,572,238.18	\$2,572,238.18
Replace roof mounted exhaust fan, 20,300 CFM exhaust fan	20	100.00 Ea.	\$1,231,650.95	\$1,430,293.61	2.7500	2	2	\$2,860,587.22	\$2,860,587.22
Repair steam converter, commercial	5	325.00 Ea.	\$150,012.12	\$187,789.34	11.0000	11	11	\$2,065,682.76	\$2,065,682.76
Inspect for leaks steam converter, commercial	2	325.00 Ea.	\$2,337.40	\$2,926.02	27.5000	27	27	\$79,002.54	\$79,002.54
Replace steam converter, commercial	30	325.00 Ea.	\$1,797,526.33	\$2,059,078.39	1.8333	1	1	\$2,059,078.39	\$2,059,078.39
Replace steam trap, 15 PSIG, 2" threaded	7	4,366.00 Ea.	\$5,624,493.60	\$6,493,744.46	7.8571	7	7	\$45,456,211.24	\$45,456,211.24
Repack gate valve gland, 2" - 3" valves	10	40,253.00 Ea.	\$1,566,680.75	\$1,874,861.98	5.5000	5	5	\$9,374,309.92	\$9,374,309.92
Replace gate valve, partial, 2" - 3" valves	20	32,000.00 Ea.	\$67,943,586.35	\$77,752,898.78	2.7500	2	2	\$155,505,797.57	\$155,505,797.57
Maintenance and inspection contactors and relays	0.5	529.00 Ea.	\$11,266.91	\$14,115.80	110.0000	110	110	\$1,552,737.86	\$1,552,737.86
Replace contactor and relays	18	529.00 Ea.	\$493,279.69	\$579,658.47	3.0556	3	3	\$1,738,975.40	\$1,738,975.40
Maintenance and repair wiring devices, switches	10	1,792.00 Ea.	\$78,925.44	\$98,527.45	5.5000	5	5	\$492,637.25	\$492,637.25
Replace EMS, Three Phase, 5 Meters	15	205.00 Ea.	\$2,918,289.65	\$3,406,502.36	3.6667	3	3	\$10,219,507.08	\$10,219,507.08
Replace 2'-0" x 3'-0" steel frame window - 1st floor.	45	4,769.00 Ea.	\$3,304,412.46	\$3,881,865.18	1.2222	1	1	\$3,881,865.18	\$3,881,865.18
Repair 2'-0" x 3'-0" steel frame window - 2nd floor.	20	4,769.00 Ea.	\$984,291.74	\$1,185,050.23	2.7500	2	2	\$2,370,100.46	\$2,370,100.46
Refinish 2'-0" x 3'-0" steel frame window - 2nd floor.	5	4,769.00 Ea.	\$757,581.89	\$939,833.65	11.0000	11	11	\$10,338,170.20	\$10,338,170.20
Replace 2'-0" x 3'-0" steel frame window - 2nd floor.	45	4,769.00 Ea.	\$3,543,246.48	\$4,178,587.04	1.2222	1	1	\$4,178,587.04	\$4,178,587.04
Repair 2'-0" x 3'-0" steel frame window - 3rd floor.	20	4,769.00 Ea.	\$1,223,125.76	\$1,481,772.09	2.7500	2	2	\$2,963,544.18	\$2,963,544.18
Refinish 2'-0" x 3'-0" steel frame window - 3rd floor	5	4,769.00 Ea.	\$958,566.17	\$1,189,799.95	11.0000	11	11	\$13,087,799.45	\$13,087,799.45
Replace 2'-0" x 3'-0" steel frame window - 3rd floor	45	4,769.00 Ea.	\$3,782,080.50	\$4,475,308.89	1.2222	1	1	\$4,475,308.89	\$4,475,308.89
Refinish 3'-0" x 7'-0" steel, painted, door	4	100.00 Ea.	\$4,605.47	\$5,639.62	13.7500	13	13	\$73,315.08	\$73,315.08
Replace 3'-0" x 7'-0" steel, painted, door	45	100.00 Ea.	\$91,710.93	\$106,192.60	1.2222	1	1	\$106,192.60	\$106,192.60
Debris removal by hand & visual inspection,modified bitum/thermoplstc	1	1,912.00 M.S.F.	\$77,475.34	\$94,496.85	55.0000	55	55	\$5,197,327.02	\$5,197,327.02
Non-destructive moisture inspection, modified bituminous/thermoplastic	5	1,912.00 M.S.F.	\$241,385.90	\$294,418.95	11.0000	11	11	\$3,238,608.43	\$3,238,608.43
Minor thermoplastic membrane repairs, 2% of roof area	1	382.00 Sq.	\$123,977.59	\$148,047.13	55.0000	55	55	\$8,142,592.29	\$8,142,592.29
Flashing repairs, 2 S.F. per sq. repaired, modified bitumen/thermoplastic	1	76,516.00 S.F.	\$301,812.46	\$362,332.93	55.0000	55	55	\$19,928,311.27	\$19,928,311.27
Total roof replacement, modified bituminous / thermoplastic	25	19,129.00 Sq.	\$13,045,197.23	\$15,485,308.28	2.2000	2	2	\$30,970,616.55	\$30,970,616.55

Description	Frequency	Qty Unit	Total In-House	Total Incl OP	Design Life/Frequency	Occurrences in Design Life	Adjusted Occurrences	Life Cost	Adjusted Cost
Repair steel painted interior door	14	5,275.00 Ea.	\$1,471,663.52	\$1,717,973.52	3.9286	3	3	\$5,153,920.55	\$5,153,920.55
Refinish 3'-0" x 7'-0" steel painted interior door	4	5,275.00 Ea.	\$304,112.44	\$373,877.69	13.7500	13	13	\$4,860,410.02	\$4,860,410.02
Replace 3'-0" x 7'-0" steel painted interior door	60	5,275.00 Ea.	\$6,749,616.29	\$7,827,664.29	0.9167	0	0	\$0.00	\$0.00
Repair solid core wood door, interior	11	1,444.00 Ea.	\$402,859.17	\$470,285.07	5.0000	5	5	\$2,351,425.36	\$2,351,425.36
Refinish 3'-0" x 7'-0" solid core wood door, interior	4	1,444.00 Ea.	\$63,557.46	\$78,319.36	13.7500	13	12	\$1,018,151.68	\$939,832.32
Replace 3'-0" x 7'-0" solid core wood door, interior	40	1,444.00 Ea.	\$818,098.51	\$944,517.21	1.3750	1	1	\$944,517.21	\$944,517.21
Replace toilet partitions, painted metal-overhead braced, per stall	20	3,286.00 Ea.	\$2,876,679.65	\$3,358,334.50	2.7500	2	2	\$6,716,669.00	\$6,716,669.00
Repair concrete steps	15	150,000.00 S.F.	\$4,691,176.86	\$5,407,494.06	3.6667	3	3	\$16,222,482.18	\$16,222,482.18
Replace concrete steps	100	150,000.00 S.F.	\$8,578,584.00	\$10,463,731.50	0.5500	0	0	\$0.00	\$0.00
Refinish metal stair railing, interior	7	45,220.00 S.F.	\$72,028.10	\$88,649.82	7.8571	7	7	\$620,548.71	\$620,548.71
Replace metal stair railing, interior	45	45,220.00 L.F.	\$2,109,113.26	\$2,468,132.56	1.2222	1	1	\$2,468,132.56	\$2,468,132.56
Repair fabric wall finish fabric interior	9	110,000.00 S.Y.	\$3,464,494.89	\$4,164,819.06	6.1111	6	6	\$24,988,914.38	\$24,988,914.38
Replace fabric wall finish fabric interior	50	110,000.00 S.Y.	\$17,147,467.58	\$21,182,478.49	1.1000	1	1	\$21,182,478.49	\$21,182,478.49
Repair 5/8" drywall - (2% of walls)	20	204,340.00 S.F.	\$341,437.56	\$417,259.88	2.7500	2	2	\$834,519.75	\$834,519.75
Refinish drywall	4	1,580,000.00 S.F.	\$1,070,670.06	\$1,315,316.31	13.7500	13	13	\$17,099,112.09	\$17,099,112.09
Replace 5/8" drywall	75	1,580,000.50 S.F.	\$3,733,251.22	\$4,584,487.87	0.7333	0	0	\$0.00	\$0.00
Repair 4" x 4" thin set ceramic tile - (2% of walls)	10	105.00 C.S.F.	\$84,516.62	\$102,338.74	5.5000	5	5	\$511,693.72	\$511,693.72
Replace 4" x 4" thin set ceramic tile	75	5,176.00 C.S.F.	\$4,533,228.09	\$5,502,707.59	0.7333	0	0	\$0.00	\$0.00
Ceramic tile floor repairs - (2% of floors)	15	41.00 C.S.F.	\$27,634.80	\$34,458.38	3.6667	3	3	\$103,375.13	\$103,375.13
Replace 2" x 2" thin set ceramic tile floor	50	1,600.00 C.S.F.	\$2,136,879.59	\$2,575,654.21	1.1000	1	1	\$2,575,654.21	\$2,575,654.21
Terrazzo floor repairs - (2% of floors)	15	30,800.00 S.F.	\$526,707.93	\$631,329.07	3.6667	3	3	\$1,893,987.21	\$1,893,987.21
Replace terrazzo floor	75	12,600.00 C.S.F.	\$20,639,733.47	\$24,665,034.68	0.7333	0	0	\$0.00	\$0.00
Replace carpet	8	280,000.00 S.Y.	\$15,119,038.66	\$17,483,893.01	6.8750	6	6	\$104,903,358.07	\$104,903,358.07
Acoustic tile repairs - (2% of ceilings)	9	1,600.00 C.S.F.	\$1,478,058.14	\$1,719,569.40	6.1111	6	6	\$10,317,416.41	\$10,317,416.41
Replace acoustic tile ceiling, fire-rated	20	80,000.00 C.S.F.	\$41,674,234.94	\$49,255,783.10	2.7500	2	2	\$98,511,566.21	\$98,511,566.21
Replace flush valve diaphragm tankless water closet	10	3,136.00 Ea.	\$85,499.92	\$106,172.60	5.5000	5	5	\$530,863.00	\$530,863.00
Rebuild flush valve tankless water closet	20	3,136.00 Ea.	\$601,739.21	\$725,259.47	2.7500	2	2	\$1,450,518.94	\$1,450,518.94
Unplug clogged line tankless water closet	5	3,136.00 Ea.	\$721,057.77	\$902,640.14	11.0000	11	11	\$9,929,041.58	\$9,929,041.58
Replace tankless water closet	35	3,136.00 Ea.	\$4,442,314.71	\$5,137,773.95	1.5714	1	1	\$5,137,773.95	\$5,137,773.95
Replace tankless flush valve	25	3,136.00 Ea.	\$847,481.19	\$994,794.59	2.2000	2	2	\$1,989,589.18	\$1,989,589.18
Replace wax ring gasket for tankless water closet	5	3,136.00 Ea.	\$467,779.95	\$585,031.74	11.0000	11	11	\$6,435,349.11	\$6,435,349.11
Replace flush valve diaphragm for a urinal	7	747.00 Ea.	\$20,366.21	\$25,290.48	7.8571	7	7	\$177,033.33	\$177,033.33
Rebuild flush valve for a urinal	20	747.00 Ea.	\$143,335.20	\$172,757.92	2.7500	2	2	\$345,515.83	\$345,515.83
Unplug line urinal	5	747.00 Ea.	\$114,023.60	\$142,737.91	11.0000	11	11	\$1,570,116.97	\$1,570,116.97

Description	Frequency	Qty Unit	Total In-House	Total Incl OP	Design Life/Frequency	Occurrences in Design Life	Adjusted Occurrences	Life Cost	Adjusted Cost
Replace wall-hung urinal	35	747.00 Ea.	\$812,377.81	\$977,110.72	1.5714	1	1	\$977,110.72	\$977,110.72
Replace washer in spud connection lavatory, vitreous china	7	2,289.00 Ea.	\$39,648.37	\$48,391.35	7.8571	7	7	\$338,739.42	\$338,739.42
Replace washer in faucet lavatory, vitreous china	2	2,289.00 Ea.	\$31,055.76	\$38,723.47	27.5000	27	27	\$1,045,533.66	\$1,045,533.66
Replace faucets lavatory, vitreous china	10	2,289.00 Ea.	\$447,435.43	\$538,193.02	5.5000	5	5	\$2,690,965.11	\$2,690,965.11
Clean out strainer and P trap lavatory, vitreous china	2	2,289.00 Ea.	\$84,278.04	\$105,501.60	27.5000	27	27	\$2,848,543.14	\$2,848,543.14
Replace lavatory, vitreous china	35	2,289.00 Ea.	\$1,645,156.39	\$1,976,336.48	1.5714	1	1	\$1,976,336.48	\$1,976,336.48
Replace faucet washer sink, iron enamel	2	449.00 Ea.	\$6,038.74	\$7,529.45	27.5000	27	27	\$203,295.27	\$203,295.27
Clean trap sink, iron enamel	3	449.00 Ea.	\$4,043.74	\$5,062.06	18.3333	18	18	\$91,117.11	\$91,117.11
Replace faucets sink, iron enamel	10	449.00 Ea.	\$87,766.93	\$105,569.54	5.5000	5	5	\$527,847.68	\$527,847.68
Unstop sink, iron enamel	2	449.00 Ea.	\$19,760.81	\$24,737.13	27.5000	27	27	\$667,902.53	\$667,902.53
Replace sink, P.E.C.I. sink, iron enamel kitchen	35	449.00 Ea.	\$542,585.21	\$632,765.02	1.5714	1	1	\$632,765.02	\$632,765.02
Check / minor repairs drinking fountain	1	896.00 Ea.	\$46,166.16	\$57,792.09	55.0000	55	55	\$3,178,564.73	\$3,178,564.73
Repair internal leaks drinking fountain	4	896.00 Ea.	\$42,799.88	\$53,578.08	13.7500	13	13	\$696,515.04	\$696,515.04
Correct water pressure drinking fountain	2	896.00 Ea.	\$39,433.60	\$49,364.07	27.5000	27	27	\$1,332,829.98	\$1,332,829.98
Replace refrigerant drinking fountain	2	896.00 Ea.	\$31,723.43	\$37,121.02	27.5000	27	27	\$1,002,267.47	\$1,002,267.47
Repair drain leak drinking fountain	4	896.00 Ea.	\$26,070.09	\$31,529.65	13.7500	13	11	\$409,885.51	\$346,826.20
Replace fountain drinking fountain	10	896.00 Ea.	\$1,452,249.10	\$1,706,253.70	5.5000	5	5	\$8,531,268.52	\$8,531,268.52
Replace pipe and fittings, copper 3/4"	20	4,770,000.00 L.F.	\$119,236,348.26	\$144,511,767.36	2.7500	2	2	\$289,023,534.72	\$289,023,534.72
Replace pipe and fittings, copper 1-1/2"	25	2,780,000.00 L.F.	\$107,528,954.40	\$129,944,622.60	2.2000	2	2	\$259,889,245.20	\$259,889,245.20
Replace old valve, non-drain, less than 1-1/2"	10	47,700.00 Ea.	\$37,085,312.70	\$42,653,795.44	5.5000	5	5	\$213,268,977.20	\$213,268,977.20
Replace old valve, non-drain, 2"	10	11,100.00 Ea.	\$13,416,299.65	\$15,389,562.63	5.5000	5	5	\$76,947,813.16	\$76,947,813.16
Inspect for leaks steam converter, domestic hot water	1	52.00 Ea.	\$370.63	\$463.97	55.0000	55	55	\$25,518.39	\$25,518.39
								MR Subtotal	\$3,389,615,362.56
								MR Per Year	\$61,629,370.23
								PM Total	\$6,453,745.56
								Subtotal	\$68,083,115.79
								Total Per Unit	\$10.73

## FAC 6105 PENTAGON

SUC \$10.73

Release 2023 Qtr 4

UM SF

Zip Code Prefix 222

Design Life 55

Type PM

Average Size 6344353.0

Description	Qty	Labor Hours	Bare Mat	Bare Labor	Bare Equip	Bare Total	Total In-House	Total Incl OP
Dishwasher, electric, annualized	15.00	70.68	\$1,645.85	\$2,553.31	\$0.00	\$4,199.16	\$5,129.74	\$6,142.61
Refrigerator display, walk-in w/ external condenser case, annualized	8.00	19.01	\$3,068.36	\$687.95	\$0.00	\$3,756.31	\$4,269.53	\$4,936.17
Controls, central system, electro/pneumatic, annually	1.00	1.92	\$169.00	\$121.21	\$0.00	\$290.21	\$343.47	\$405.19
Door, emergency egress, swinging, annualized	159.00	41.34	\$2,665.43	\$1,825.84	\$0.00	\$4,491.27	\$5,305.56	\$6,253.12
Fire doors, swinging, annualized	4,220.00	1,654.24	\$66,108.41	\$65,224.32	\$0.00	\$131,332.73	\$157,510.87	\$186,994.42
Elevator, cable, electric, passenger / freight, annualized	80.00	3,831.60	\$267,996.00	\$342,250.00	\$0.00	\$610,246.00	\$739,720.60	\$882,595.00
Escalator, electric, annualized	80.00	4,280.72	\$301,010.00	\$382,950.00	\$0.00	\$683,960.00	\$828,946.00	\$988,982.50
Urinals, annualized	598.00	136.34	\$3,963.90	\$7,274.31	\$0.00	\$11,238.21	\$13,816.90	\$16,593.78
Toilet (vacuum breaker type), annualized	2,509.00	444.09	\$22,217.19	\$23,738.15	\$0.00	\$45,955.35	\$55,298.51	\$65,752.54
Lavatories, annualized	1,830.00	636.84	\$14,260.09	\$39,894.00	\$0.00	\$54,154.09	\$67,548.30	\$81,655.51
Drink fountain, annualized	717.00	444.54	\$26,847.35	\$23,758.51	\$0.00	\$50,605.86	\$60,418.15	\$71,572.80
Valve, diaphragm, above 4", annualized	5,560.00	678.32	\$23,013.28	\$36,362.40	\$0.00	\$59,375.68	\$72,585.73	\$86,946.45
Valve, motor operated, above 4", annualized	5,560.00	5,571.12	\$92,278.21	\$298,171.68	\$0.00	\$390,449.89	\$489,129.21	\$592,422.45
Valve, auto diaphragm, above 4", annualized	80.00	14.00	\$331.13	\$749.92	\$0.00	\$1,081.05	\$1,339.14	\$1,613.78
Pump, condensate return, over 1 H.P., annualized	80.00	89.92	\$5,100.48	\$5,685.44	\$0.00	\$10,785.92	\$13,001.60	\$15,472.30
Air handling unit, over 50 tons, annualized	174.00	570.02	\$46,663.32	\$30,345.60	\$0.00	\$77,008.92	\$90,778.93	\$106,882.11
Air handling unit, computer room, annualized	47.00	160.55	\$4,352.11	\$8,565.66	\$0.00	\$12,917.76	\$15,922.67	\$19,145.18
Fan coil unit, annualized	4,698.00	15,681.92	\$385,104.46	\$839,814.48	\$0.00	\$1,224,918.94	\$1,515,373.73	\$1,825,083.74
VAV Boxes, annualized	2,431.00	2,270.55	\$26,446.85	\$143,088.66	\$0.00	\$169,535.51	\$215,106.79	\$262,000.42
Centrifugal, over 1 HP, annualized	80.00	95.68	\$663.87	\$5,127.36	\$0.00	\$5,791.23	\$7,395.83	\$9,033.62
Controls, central system, electro/pneumatic, annualized	41.00	78.76	\$6,929.16	\$4,969.53	\$0.00	\$11,898.69	\$14,082.47	\$16,612.70
Extinguishing system, deluge / preaction, annualized	41.00	475.03	\$2,033.11	\$29,852.92	\$0.00	\$31,886.03	\$41,045.21	\$50,306.06
Fire pump, electric motor driven, annualized	41.00	1,957.83	\$1,535.20	\$122,450.60	\$0.00	\$123,985.80	\$160,874.50	\$197,839.97
Switchboard, with air circuit breaker and tie switch, annualized	414.00	5,530.21	\$8,178.98	\$384,150.60	\$0.00	\$392,329.58	\$508,392.66	\$624,864.69
Switch, automatic transfer, annualized	15.00	79.74	\$207.44	\$5,567.40	\$0.00	\$5,774.84	\$7,465.80	\$9,167.14
Transformer, oil pad mounted, annualized	86.00	93.05	\$72.59	\$6,472.62	\$0.00	\$6,545.21	\$8,494.26	\$10,446.93
Panelboard, 225 A and above, annualized	195.00	86.00	\$4,290.20	\$5,930.83	\$0.00	\$10,221.02	\$12,429.29	\$14,852.07
Motor control center, over 400 A, annualized	573.00	222.90	\$12,606.57	\$15,359.84	\$0.00	\$27,966.41	\$33,835.02	\$40,333.96
Fire alarm annunciator system, annualized	41.00	453.09	\$6,700.88	\$28,532.92	\$0.00	\$35,233.80	\$44,463.77	\$54,028.77
Power stablizer, annualized	14.00	8.75	\$128.23	\$555.71	\$0.00	\$683.94	\$863.48	\$1,049.43
Light, emergency, hardwired system, annualized	5,588.00	1,397.00	\$50,180.24	\$88,146.79	\$0.00	\$138,327.03	\$169,789.09	\$203,760.16
						\$4,336,946.45	\$5,360,676.81	\$6,453,745.56



# FAC 6105 PENTAGON

## Modeled Component List

### CostWorks Release 2023 Qtr 4

#### D30 HVAC

Computer Room A/C Units, Air Cooled, 10 ton	59.0 Ea.
Computer Room A/C Units, Chilled Water, 20 ton	2100.0 Ea.
Central Station Air Conditioning Air Handling Unit, 33,500 CFM	500.0 Ea.
Fan Coil, 1 ton	6800.0 Ea.
Fan Coil, DX Air Conditioner W/ Heat, 5 ton	4698.0 Ea.
Unit Ventilator, 2000 CFM	2400.0 Ea.
Draft Fan, 17,700 CFM	5400.0 Ea.
Exhaust Fan, roof mounted exhaust fan, 800 CFM exhaust	110.0 Ea.
Exhaust Fan, roof mounted exhaust fan, 2000 CFM exhaust	80.0 Ea.
Exhaust Fan, roof mounted exhaust fan, 8500 CFM exhaust	258.0 Ea.
Exhaust Fan, roof mounted exhaust fan, 20300 CFM exhaust	100.0 Ea.
Steam Converter, Commercial	325.0 Ea.
Steam Traps	4366.0 Ea.
Valves	32000.0 Ea.
VAV Box	2431.0 Each

#### D40 Fire Protection

Sprinkler System, Fire Supression, sprinkler head	61713.0 Ea.
Sprinkler System, Fire Supression , 3" backflow preventer	100.0 Ea.
Fire Pump, Electric, annualized	41.0 Each

#### D50 Electrical

Switchgear, Mainframe	105.0 Ea.
Switchgear, Indoor, Less Than 600 V	2010.0 Ea.
Switchgear, Indoor, 600 V	458.0 Ea.
Rectifier, Up To 600 V	2178.0 Ea.
Secondary Transformer, Liquid Filled	108.0 Ea.
Secondary Transformer, Dry, 112.5 KVA	1463.0 Ea.
Load Center, 100 A, maintenance & inspection	6421.0 Ea.
Circuit Breaker, molded case, 600 V, 3 pole	517.0 Ea.
Fluorescent Lighting Fixture	110486.0 Ea.
TV Cable Outlet	19130.0 Ea.
Smoke Detector	1792.0 Ea.
Heat Detector	1792.0 Ea.
Manual Pull Station	1194.0 Ea.
Fire Alarm Control Panel	49.0 Ea.
Annunciation Panel	49.0 Ea.
Fire Alarm Bell	8859.0 Ea.
Generator, Diesel, 750 KW	16.0 Ea.
Transfer Switch	3.0 Ea.
Emergency Lighting Fixture	5500.0 Ea.
Exit Light	5424.0 Ea.
UPS Battery, maintenance & inspection	2619.0 Ea.
UPS Battery, replace motor	2619.0 Ea.

#### E10 Equipment

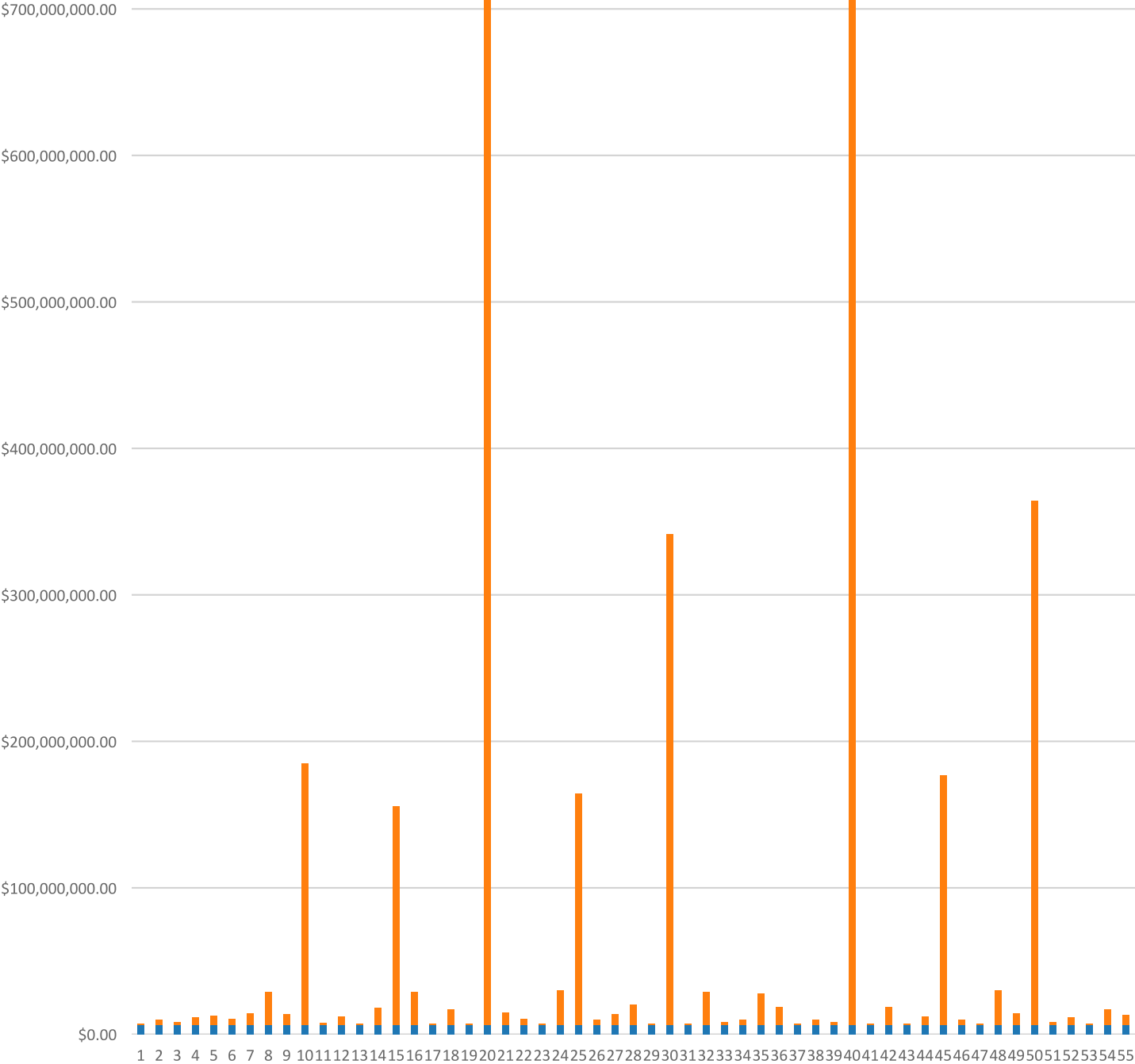
Dishwasher	21.0 Ea.
Refrigerator display, walk-in, annualized	8.0 Each

#### D20 Plumbing

Steam Converter, Domestic Hot Water	52.0 Ea.
Rainwater Sump Pump	21.0 Ea.
Tankless Water Closet	3136.0 Ea.
Urinal	747.0 Ea.
Lavatory, Vitreous China	2289.0 Ea.

Sink, Iron Enamel	449.0 Ea.
Drinking Fountain	896.0 Ea.
Valve, Non-Drain, Less Than 1-1/2", Less Than 1-1/2"	47700.0 Ea.
Valve, Non-Drain, 2"	11100.0 Ea.
B20 Exterior Enclosure	
Steel Frame, Fixed, 1st floor	4769.0 Ea.
Steel Frame, Fixed, 2nd floor	4769.0 Ea.
Steel Frame, Fixed, 3rd floor	4769.0 Ea.
Steel, Painted	100.0 Ea.
B30 Roofing	
Modified Bituminous / Thermoplastic	19129.0 Sq.
C10 Interior Construction	
Steel Painted Interior Doors	5275.0 Ea.
Solid Core Interior Doors	1444.0 Ea.
Toilet Partitions, painted metal	3286.0 Ea.
Fire Doors, Swinging, annualized	4220.0 Each
C20 Stairs	
Concrete Steps	150000.0 S.F.
Metal Interior Stair Railing	45220.0 L.F.
C30 Interior Finishes	
Fabric Interior Wall Finish	110000.0 S.Y.
Drywall	1580000.5 S.F.
Tile	5176.0 C.S.F.
Terrazzo	12600.0 C.S.F.
Carpet	280000.0 S.Y.
Acoustic Tile, fire-rated	80000.0 C.S.F.
D10 Conveying	
Elevator, cable annualized	80.0 Each
Escalator, annualized	80.0 Each

FAC 6105 PENTAGON  
Sustainment by Year  
CostWorks Release 2023 Qtr 4



PM Cost  
MR Cost