

FAC 4321 Cold Storage Installation

RUC: \$235.56 SF

Source: Tri-Service FAC 4321 from *Tri-Service Facility Unit Costs for Military Construction* version prepared November 13, 2009

SUC: \$2.77 SF

Source: Cost Works model, inflated to FY-09 using Green Book Table 5-6 (O&M less DHP)
In V12, values were inflated only.

Model follows:

Chart: A chart showing relative annual sustainment requirements follows:

FAC 4321-Cold Storage, Installation
CostWorks 2008 Quarter 2

Design Life= 45
Average S.F= 8,608

C.S.F=100 S.F; MSF=1000 S.F
Sq=100 S.F; M.L.F=1000 L.F

This spreadsheet was
exported from R.S Means
CostWorks

Terminal Cutoff is the removal of a single task occurrence if that task occurs
within 10% of the end of the design life and if the frequency of the task exceeds
20% of the design life. This prevents scheduling major work near the end of the
design life

Description	Frequency	Crew	Qty	Unit	Total In-House	Total Incl. O&P	Release	Occurrences in Design Life	Adjusted Occurrences	Terminal Cutoff
Repair 8" concrete block wall - 1st floor	25	1 Bric	4,127.000	S.F.	82,787.62	100,698.80	2008 Qtr 2	1	1	\$ 100,698.80
Replace 8" concrete block wall - 1st floor	60	2 Bric	41.270	C.S.F.	41,058.28	49,423.71	2008 Qtr 2	0	0	\$ -
Replace 8" concrete block wall - 2nd floor	60	2 Bric	44.550	C.S.F.	47,275.12	56,957.18	2008 Qtr 2	0	0	\$ -
Repair 2'-0" x 3'-0" aluminum window - 1st floor	20	1 Carp	6.000	Ea.	689.76	817.20	2008 Qtr 2	2	2	\$ 1,634.40
Replace 2'-0" x 3'-0" aluminum window - 1st floor	50	1 Carp	6.000	Ea.	2,631.60	3,077.94	2008 Qtr 2	0	0	\$ -
Replace glass - 1st floor (1% of glass)	1	1 Carp	0.360	S.F.	3.26	3.82	2008 Qtr 2	45	45	\$ 172.04
Repair 12' x 12' steel roll-up door	10	1 Carp	3.000	Ea.	2,497.83	2,893.62	2008 Qtr 2	4	4	\$ 11,574.48
Refinish 12' x 12' steel roll-up door	5	1 Pord	3.000	Ea.	506.49	616.62	2008 Qtr 2	9	9	\$ 5,549.58
Replace 12' x 12' steel roll-up door	35	2 Carp	3.000	Ea.	9,975.81	11,548.65	2008 Qtr 2	1	1	\$ 11,548.65
Repair steel, painted, door	14	1 Carp	1.000	Ea.	582.44	686.36	2008 Qtr 2	3	2	\$ 1,372.72
Refinish 3'-0" x 7'-0" steel, painted, door	4	1 Pord	1.000	Ea.	32.91	40.31	2008 Qtr 2	11	11	\$ 443.41
Replace 3'-0" x 7'-0" steel, painted, door	45	1 Carp	1.000	Ea.	532.08	620.04	2008 Qtr 2	1	0	\$ -
Debris removal and visual inspection built-up roofing	0.5	2 Rofc	8.608	M.S.F.	252.56	304.29	2008 Qtr 2	90	90	\$ 27,386.35
Non-destructive moisture inspection built-up roofing	5	2 Rofc	8.608	M.S.F.	781.43	945.16	2008 Qtr 2	9	9	\$ 8,506.43
Minor membrane repairs - (2% of roof area) built-up roofing	1	G5	1.722	Sq.	593.26	700.92	2008 Qtr 2	45	45	\$ 31,541.53
Flashing repairs - (2 S.F. per sq. repaired) built-up roofing	1	2 Rofc	3.443	S.F.	11.57	13.77	2008 Qtr 2	45	45	\$ 619.74
Minor membrane replacement - (25% of roof area) built-up roofing	15	G5	21.520	Sq.	12,792.13	15,259.40	2008 Qtr 2	3	2	\$ 30,518.80
Total roof replacement built-up roofing	28	G1	86.080	Sq.	49,132.74	58,185.78	2008 Qtr 2	1	1	\$ 58,185.78
Repair steel painted interior door	14	1 Carp	3.000	Ea.	503.25	594.42	2008 Qtr 2	3	2	\$ 1,188.84
Refinish 3'-0" x 7'-0" steel painted interior door	4	1 Pord	3.000	Ea.	148.20	182.46	2008 Qtr 2	11	11	\$ 2,007.06
Replace 3'-0" x 7'-0" steel painted interior door	60	1 Carp	3.000	Ea.	2,812.62	3,269.88	2008 Qtr 2	0	0	\$ -
Repair solid core wood door interior	11	1 Carp	7.000	Ea.	1,174.25	1,386.98	2008 Qtr 2	4	3	\$ 4,160.94
Refinish 3'-0" x 7'-0" solid core wood door interior	4	1 Pord	7.000	Ea.	295.54	363.86	2008 Qtr 2	11	11	\$ 4,002.46
Replace 3'-0" x 7'-0" solid core wood door interior	40	1 Carp	7.000	Ea.	2,566.90	2,975.84	2008 Qtr 2	1	1	\$ 2,975.84
Refinish drywall	4	1 Pord	2,099.000	S.F.	1,259.40	1,553.26	2008 Qtr 2	11	11	\$ 17,085.86
Replace 5/8" drywall	75	2 Carp	2,099.000	S.F.	4,680.77	5,646.31	2008 Qtr 2	0	0	\$ -
Repair 5/8" drywall - (2% of walls)	20	1 Carp	41.980	S.F.	66.75	80.18	2008 Qtr 2	2	2	\$ 160.36
Refinish concrete floor finished	25	2 Cefi	75.970	C.S.F.	26,546.96	31,959.82	2008 Qtr 2	1	1	\$ 31,959.82
Replace vinyl floor	18	1 Tilf	35.890	S.Y.	1,713.75	2,092.39	2008 Qtr 2	2	2	\$ 4,184.77
Replace acoustic tile ceiling, fire-rated	20	1 Carp	6.890	C.S.F.	2,777.70	3,300.31	2008 Qtr 2	2	2	\$ 6,600.62
Refinish sheetrock ceiling	20	1 Pord	3.230	C.S.F.	405.91	501.59	2008 Qtr 2	2	2	\$ 1,003.17
Replace sheetrock ceiling	40	2 Carp	3.230	C.S.F.	1,157.41	1,413.16	2008 Qtr 2	1	1	\$ 1,413.16
Repair sheetrock ceiling - (2% of ceilings)	20	1 Carp	0.064	C.S.F.	22.35	27.28	2008 Qtr 2	2	2	\$ 54.56
Check / minor repairs drinking fountain	1	1 Plum	2.000	Ea.	75.16	94.68	2008 Qtr 2	45	45	\$ 4,260.60
Repair internal leaks drinking fountain	4	1 Plum	2.000	Ea.	70.28	86.86	2008 Qtr 2	11	11	\$ 955.46
Correct water pressure drinking fountain	2	1 Plum	2.000	Ea.	64.42	81.00	2008 Qtr 2	22	22	\$ 1,782.00

FAC 4321-Cold Storage, Installation
CostWorks 2008 Quarter 2

Design Life= 45
Average S.F= 8,608

C.S.F=100 S.F; MSF=1000 S.F
Sq=100 S.F; M.L.F=1000 L.F

This spreadsheet was
exported from R.S Means
CostWorks

Terminal Cutoff is the removal of a single task occurrence if that task occurs
within 10% of the end of the design life and if the frequency of the task exceeds
20% of the design life. This prevents scheduling major work near the end of the
design life

Description	Frequency	Crew	Qty	Unit	Total In-House	Total Incl. O&P	Release	Occurrences in Design Life	Adjusted Occurrences	Terminal Cutoff
Replace refrigerant drinking fountain	2	1 Plum	2.000	Ea.	31.68	37.72	2008 Qtr 2	22	22	\$ 829.84
Repair drain leak drinking fountain	4	1 Plum	2.000	Ea.	45.26	54.06	2008 Qtr 2	11	11	\$ 594.66
Replace fountain drinking fountain	10	2 Plum	2.000	Ea.	2,011.68	2,387.14	2008 Qtr 2	4	4	\$ 9,548.56
Inspect and clean shower head emergency shower station	3	1 Plum	1.000	Ea.	37.80	47.44	2008 Qtr 2	15	15	\$ 711.60
Replace shower emergency shower station	25	2 Plum	1.000	Ea.	726.39	873.58	2008 Qtr 2	1	1	\$ 873.58
Inspect and clean spray heads, emergency eye wash	3	1 Plum	1.000	Ea.	37.80	47.44	2008 Qtr 2	15	15	\$ 711.60
Replace eye wash station, emergency eye wash	25	2 Plum	1.000	Ea.	573.92	695.88	2008 Qtr 2	1	1	\$ 695.88
Replace washer in spud connection lavatory, vitreous china	7	1 Plum	6.000	Ea.	144.06	169.98	2008 Qtr 2	6	6	\$ 1,019.88
Replace washer in faucet lavatory, vitreous china	2	1 Plum	6.000	Ea.	59.10	73.74	2008 Qtr 2	22	22	\$ 1,622.28
Replace faucets lavatory, vitreous china	10	1 Plum	6.000	Ea.	740.94	894.36	2008 Qtr 2	4	4	\$ 3,577.44
Clean out strainer and P trap lavatory, vitreous china	2	1 Plum	6.000	Ea.	162.24	201.42	2008 Qtr 2	22	22	\$ 4,431.24
Replace lavatory, vitreous china	35	2 Plum	6.000	Ea.	3,181.14	3,814.20	2008 Qtr 2	1	1	\$ 3,814.20
Replace faucet washer sink, iron enamel	2	1 Plum	1.000	Ea.	9.79	12.19	2008 Qtr 2	22	22	\$ 268.18
Clean trap sink, iron enamel	3	1 Plum	1.000	Ea.	6.60	8.25	2008 Qtr 2	15	15	\$ 123.75
Replace faucets sink, iron enamel	10	1 Plum	1.000	Ea.	123.49	149.06	2008 Qtr 2	4	4	\$ 596.24
Unstop sink sink, iron enamel	2	1 Plum	1.000	Ea.	32.21	40.50	2008 Qtr 2	22	22	\$ 891.00
Replace sink, P.E.C.I. sink, iron enamel	35	2 Plum	1.000	Ea.	552.72	657.69	2008 Qtr 2	1	1	\$ 657.69
Replace flush valve diaphragm tankless water closet	10	1 Plum	6.000	Ea.	424.44	498.36	2008 Qtr 2	4	4	\$ 1,993.44
Rebuild flush valve tankless water closet	20	1 Plum	6.000	Ea.	791.88	960.06	2008 Qtr 2	2	2	\$ 1,920.12
Unplug clogged line tankless water closet	5	1 Plum	6.000	Ea.	1,009.56	1,261.08	2008 Qtr 2	9	9	\$ 11,349.72
Replace tankless water closet	35	2 Plum	6.000	Ea.	3,288.00	3,890.16	2008 Qtr 2	1	1	\$ 3,890.16
Replace tankless flush valve	25	1 Plum	6.000	Ea.	1,257.00	1,472.22	2008 Qtr 2	1	1	\$ 1,472.22
Replace wax ring gasket tankless water closet	5	1 Plum	6.000	Ea.	657.42	823.20	2008 Qtr 2	9	9	\$ 7,408.80
Replace flush valve diaphragm urinal	7	1 Plum	2.000	Ea.	141.48	166.12	2008 Qtr 2	6	6	\$ 996.72
Rebuild flush valve urinal	20	1 Plum	2.000	Ea.	263.96	320.02	2008 Qtr 2	2	2	\$ 640.04
Unplug line urinal	5	1 Plum	2.000	Ea.	224.28	279.82	2008 Qtr 2	9	9	\$ 2,518.38
Replace wall-hung urinal	35	2 Plum	2.000	Ea.	1,683.26	2,013.14	2008 Qtr 2	1	1	\$ 2,013.14
Inspect / check pump / motor operation, lub. circulation pump, 1/12 HP	0.5	1 Plum	2.000	Ea.	12.38	15.44	2008 Qtr 2	90	90	\$ 1,389.60
Replace pump / motor assembly circulation pump, 1/12 HP	10	2 Plum	2.000	Ea.	1,472.66	1,726.58	2008 Qtr 2	4	4	\$ 6,906.32
Resolder joint pipe & fittings, copper	10	1 Plum	2.000	Ea.	65.70	80.90	2008 Qtr 2	4	4	\$ 323.60
Replace pipe and fittings, copper 3/4"	20	2 Plum	16.000	L.F.	283.52	343.68	2008 Qtr 2	2	2	\$ 687.36
Replace pipe and fittings, copper 2"	25	2 Plum	16.000	L.F.	652.96	785.76	2008 Qtr 2	1	1	\$ 785.76
Remove old insulation & replace with new, pipe 3/4", wall 1"	15	1 Plum	16.000	L.F.	112.16	136.64	2008 Qtr 2	3	2	\$ 273.28
Drain and flush water heater, electric, 120 gallon	7	1 Plum	1.000	Ea.	226.43	283.04	2008 Qtr 2	6	6	\$ 1,698.24
Check operation water heater, electric, 120 gallon	3	1 Plum	1.000	Ea.	1.98	2.48	2008 Qtr 2	15	15	\$ 37.20
Replace water heater, electric, 120 gallon	15	2 Plum	1.000	Ea.	9,192.45	10,543.79	2008 Qtr 2	3	2	\$ 21,087.58

FAC 4321-Cold Storage, Installation
CostWorks 2008 Quarter 2

Design Life= 45
Average S.F= 8,608

C.S.F=100 S.F; MSF=1000 S.F
Sq=100 S.F; M.L.F=1000 L.F

This spreadsheet was
exported from R.S Means
CostWorks

Terminal Cutoff is the removal of a single task occurrence if that task occurs
within 10% of the end of the design life and if the frequency of the task exceeds
20% of the design life. This prevents scheduling major work near the end of the
design life

Description	Frequency	Crew	Qty	Unit	Total In-House	Total Incl. O&P	Release	Occurrences in Design Life	Adjusted Occurrences	Terminal Cutoff
Unclog main drain pipe & fittings, cast iron	10	1 Plum	1.000	Ea.	35.62	44.41	2008 Qtr 2	4	4	\$ 177.64
Replace pipe & fittings, cast iron	40	2 Plum	16.000	L.F.	670.40	811.20	2008 Qtr 2	1	1	\$ 811.20
Unclog floor drain, PVC	20	1 Plum	1.000	Ea.	37.09	45.87	2008 Qtr 2	2	2	\$ 91.74
Repair joint pipe and fittings, PVC	10	1 Plum	1.000	Ea.	115.94	144.14	2008 Qtr 2	4	4	\$ 576.56
Replace pipe, 4" pipe and fittings, PVC	30	2 Plum	16.000	L.F.	947.20	1,171.04	2008 Qtr 2	1	1	\$ 1,171.04
General maintenance & repair drain: roof, scupper, area	1	1 Plum	2.000	Ea.	56.70	71.34	2008 Qtr 2	45	45	\$ 3,210.30
Replace drain: roof, scupper, area	40	1 Plum	2.000	Ea.	796.68	936.28	2008 Qtr 2	1	1	\$ 936.28
Repair single zone rt. unit, 5 ton	10	2 Stpi	1.000	Ea.	1,929.71	2,314.56	2008 Qtr 2	4	4	\$ 9,258.24
Replace single zone rt. unit, 5 ton	15	Q5	1.000	Ea.	7,276.88	8,588.60	2008 Qtr 2	3	2	\$ 17,177.20
Repair single zone rooftop unit, 25 ton	10	Q6	1.000	Ea.	25,821.09	29,922.89	2008 Qtr 2	4	4	\$ 119,691.56
Replace single zone rooftop unit, 25 ton	15	Q7	1.000	Ea.	34,098.40	39,677.60	2008 Qtr 2	3	2	\$ 79,355.20
Replace sprinkler head	20	1 Plum	90.000	Ea.	5,731.20	7,061.40	2008 Qtr 2	2	2	\$ 14,122.80
Inspect sprinkler system	1	1 Plum	1.000	Ea.	26.55	32.89	2008 Qtr 2	45	45	\$ 1,480.05
Rebuild double check 3" backflow preventer sprinkler system	1	1 Plum	1.000	Ea.	598.06	715.83	2008 Qtr 2	45	45	\$ 32,212.35
Replace fire alarm bell, 6"	20	1 Elec	4.000	Ea.	569.12	686.04	2008 Qtr 2	2	2	\$ 1,372.08
Repair failed breaker, 3 pole circuit breaker	10	1 Elec	1.000	Ea.	342.23	400.69	2008 Qtr 2	4	4	\$ 1,602.76
Maintenance and inspection C.B., 3 pole circuit breaker	0.33	1 Elec	1.000	Ea.	22.91	28.50	2008 Qtr 2	136	136	\$ 3,876.00
Replace C.B. molded case, 600 V, 3 pole circuit breaker	50	1 Elec	1.000	Ea.	3,157.74	3,611.55	2008 Qtr 2	0	0	\$ -
Maintenance and inspection lighting panel, indoor	3	1 Elec	1.000	Ea.	28.50	35.63	2008 Qtr 2	15	15	\$ 534.45
Repair switchgear 1200 A mainframe	5	1 Elec	1.000	Ea.	1,694.09	1,975.10	2008 Qtr 2	9	9	\$ 17,775.90
Maintenance and inspection switchgear, mainframe	1	1 Elec	1.000	Ea.	45.81	57.01	2008 Qtr 2	45	45	\$ 2,565.45
Replace switchgear 1200 A mainframe	20	3 Elec	1.000	Ea.	4,052.28	4,808.24	2008 Qtr 2	2	2	\$ 9,616.48
Maintenance and repair motor starter, up to 600 V	5	1 Elec	6.000	Ea.	1,024.50	1,245.00	2008 Qtr 2	9	9	\$ 11,205.00
Maintenance and inspection motor starter, up to 600 V	0.5	1 Elec	6.000	Ea.	229.02	287.10	2008 Qtr 2	90	90	\$ 25,839.00
Replace starter motor starter, up to 600 V	18	1 Elec	6.000	Ea.	3,169.08	3,782.46	2008 Qtr 2	2	2	\$ 7,564.92
Replace fluor. ballast for fluorescent lighting fixture, 80 W	10	1 Elec	65.000	Ea.	6,472.70	7,805.20	2008 Qtr 2	4	4	\$ 31,220.80
Replace lamps (2 lamps) fluorescent lighting fixture, 80 W	10	1 Elec	65.000	Ea.	1,653.60	2,026.70	2008 Qtr 2	4	4	\$ 8,106.80
Maintenance and repair receptacles and plugs	20	1 Elec	82.000	Ea.	2,549.38	3,175.86	2008 Qtr 2	2	2	\$ 6,351.72
Replace receptacle/plug receptacles and plugs	20	1 Elec	82.000	Ea.	4,326.32	5,282.44	2008 Qtr 2	2	2	\$ 10,564.88
Maintenance and repair wiring devices, switches	10	1 Elec	21.000	Ea.	652.89	813.33	2008 Qtr 2	4	4	\$ 3,253.32
Replace switch wiring devices, switches	15	1 Elec	21.000	Ea.	1,075.41	1,309.35	2008 Qtr 2	3	2	\$ 2,618.70
Check and repair manual pull station	10	1 Elec	4.000	Ea.	276.84	339.48	2008 Qtr 2	4	4	\$ 1,357.92
Replace manual pull station	15	1 Elec	4.000	Ea.	502.96	607.56	2008 Qtr 2	3	2	\$ 1,215.12
Repair smoke detector	10	1 Elec	17.000	Ea.	649.23	799.00	2008 Qtr 2	4	4	\$ 3,196.00
Check operation smoke detector	1	1 Elec	17.000	Ea.	193.80	243.10	2008 Qtr 2	45	45	\$ 10,939.50
Replace smoke detector	15	1 Elec	17.000	Ea.	3,222.35	3,858.83	2008 Qtr 2	3	2	\$ 7,717.66

FAC 4321-Cold Storage, Installation
CostWorks 2008 Quarter 2

Design Life= 45
Average S.F= 8,608

C.S.F=100 S.F; MSF=1000 S.F
Sq=100 S.F; M.L.F=1000 L.F

This spreadsheet was
exported from R.S Means
CostWorks

Terminal Cutoff is the removal of a single task occurrence if that task occurs
within 10% of the end of the design life and if the frequency of the task exceeds
20% of the design life. This prevents scheduling major work near the end of the
design life

Description	Frequency	Crew	Qty	Unit	Total In-House	Total Incl. O&P	Release	Occurrences in Design Life	Adjusted Occurrences	Terminal Cutoff
					\$442,769.15	\$528,887.21				
									MR Subtotal	\$ 920,674.16
									MR Per Year	\$ 20,459.43
									PM Per Year	\$ 4,120.57
									Subtotal	\$ 24,580.00
									Total Per Unit	\$ 2.86

CostWorks 2009 Quarter 1 - FAC 4321-Cold Storage, Installation

Qty	Assembly Number	Description	Total In-House	Total Incl. O&P	Zip Code Prefix	Type	Release
3.000	B2035 410 1950	Door, overhead, electric, roll up, to 24' high x 25' w	720.48	870.36	200	FMR	2008 Qtr 2
8.000	B2035 225 1950	Door, emergency egress, swinging, annualized	396.08	460.08	200	FMR	2008 Qtr 2
3.000	C1025 110 1950	Fire doors, swinging, annualized	74.67	89.58	200	FMR	2008 Qtr 2
2.000	D2015 100 1950	Urinals, annualized	25.86	32.30	200	FMR	2008 Qtr 2
6.000	D2015 100 2950	Toilet (vacuum breaker type), annualized	77.58	96.90	200	FMR	2008 Qtr 2
6.000	D2015 100 4950	Lavatories, annualized	148.08	180.48	200	FMR	2008 Qtr 2
2.000	D2015 800 1950	Drink fountain, annualized	99.00	118.72	200	FMR	2008 Qtr 2
6.000	D3045 160 1950	VAV Boxes, annualized	367.86	456.00	200	FMR	2008 Qtr 2
2.000	D3055 210 1950	Package unit, air cooled, 3 thru 24 ton, annualized	415.42	502.06	200	FMR	2008 Qtr 2
1.000	D4015 100 1950	Backflow prevention device, up to 4", annualized	18.89	23.42	200	FMR	2008 Qtr 2
1.000	D4015 150 1950	Extinguishing system, wet pipe, annualized	806.79	983.35	200	FMR	2008 Qtr 2
1.000	D5015 220 1950	Circuit breaker, high voltage air, annualized	26.98	33.59	200	FMR	2008 Qtr 2
1.000	D5015 260 1950	Panelboard, 225 A and above, annualized	56.96	67.71	200	FMR	2008 Qtr 2
1.000	D5015 280 1950	Motor control center, over 400 A, annualized	53.91	64.15	200	FMR	2008 Qtr 2
1.000	E1095 382 1950	Refrigerator freezer, walk-in box w/external conden	118.76	141.87	200	FMR	2008 Qtr 2
			\$3,407.32	\$4,120.57			

FAC 4321 Sustainment by Year - Terminal Cutoff Applied

