

This updated newsletter supersedes the PAX Newsletter No. 3.2.2, 4 May 2001, and updates the Appendixes A and C, and Table 1, Size Adjustment Factors, contained in TM 5-800-4, Programming Cost Estimates for Military Construction, dated May 1994. It may be used as a guide for preparation and/or review of the Army military construction cost estimates for programming and budgeting purposes for FY 2003/2004 and beyond unless otherwise noted. This newsletter is also published and maintained on the web page at <http://www.hq.usace.army.mil/cemp/e/ec/pax/paxtoc.htm>.

1. APPENDIX A - FACILITY UNIT COST TABLE

a. The tabulation is arranged numerically by category codes. Category code series descriptions are contained in DA Pamphlet 415-28, Guide to Army Real Property Category Codes, March 1998. Where unit costs span a group of subcategories, the five (5) digit category code is designated by adding XX behind the three (3) digit main category code for this group. For example, 851XX and 852XX are designated for roads, streets, parking, apron and sidewalks pavements.

b. Unit costs reflected herein are forecasted to an assumed midpoint of construction date of 1 October 2003 (MCP Index = 2209) for an area cost factor (ACF) of 1.00. These unit costs do not include allowances for construction contingencies and S&A, but do include contractor's markup cost for overhead & profit.

c. Unit costs reflected herein should be adjusted by the appropriate area cost factor, cost escalation factor as described in Appendix C, size adjustment factor in Table I, and other adjustment factors as described in the TM 5-800-4, when applicable. The ACF list is contained in Appendix B, Location Adjustment Factors in the TM 5-800-4, and updated by the latest PAX Newsletter No. 3.2.1, Area Cost Factors Indexes, which is also available on the web page as addressed above.

d. Building size identified in Part I of Appendix A is a reference size, but may not be a standard size from facility standard design criteria. This quantity may be used in conjunction with Table I, Size Adjustment Factors, to determine an appropriate size adjustment factor for the proposed facility.

e. The building unit costs, including family housing, are applied to the building gross areas.

f. Building unit cost included installed building equipment normally funded with MILCON funds as described in AR 415-15. For medical facilities, the building costs include Categories A and B equipment, but exclude Categories E and F equipment.

g. Chart C in Appendix A contains information for unit of measurement conversion factors between Metric and English Systems.

2. APPENDIX C - TRI-SERVICE MILITARY CONSTRUCTION PROGRAM (MCP) INDEX

The base cost index for the unit costs herein in Appendix A is for an assumed midpoint of construction date of 1 October 2003 (MCP Index = 2209) as described in paragraph 1.b above. For a project with an anticipated midpoint of construction date other than 1 October 2003, a cost escalation factor can be determined from this appendix as follows:

Project Anticipated Midpoint Date - 1 October 2004 (MCP Index = 2253)
Cost Escalation Factor = $2253/2209 = 1.019$

3. PROPONENT OF THIS NEWSLETTER: HQUSACE/CECW-EI, 202-761-7687 or DSN-763-7687, and FAX 202-761-0623 and Internet Address: "miguel.d.jumilla@usace.army.mil".

**APPENDIX A - FACILITY UNIT COST TABLE
PART I - BUILDINGS AND MAJOR FACILITIES**

CATEGORY				UNIT COST	
<u>CODE</u>	<u>ITEM</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>\$/UNIT</u>	<u>REMARK</u>
111XX	AIRFIELD RUNWAYS				SEE CATCODE 851XX
112XX	AIRFIELD TAXIWAYS				SEE CATCODE 851XX
113XX	AIRFIELD APRONS				SEE CATCODE 851XX
116XX	AIRFIELD MISC. PAVING				SEE CATCODE 851XX
124XX	FUEL STORAGE (OPERATING)	1,000	GA	\$4.20	UNDERGRD STG - INCLUDES
		5,000	GA	\$3.90	EXCAVATION, BACKFILL
		10,000	GA	\$3.70	& MANHOLE, EXCLUDES
		20,000	GA	\$3.60	EXTERIOR PIPING &
		30,000	GA	\$3.50	PUMPING
13120	COMMUNICATIONS CENTER	6,000	SF	\$193.00	NO SHIELDING
	SATCOM CENTER	6,000	SF	\$469.00	W/SHIELDING & GENERATOR
13131	INFORMATION PROCESS CTR	21,000	SF	\$159.00	AUTOMATIC DATA PROCESSING W/RAISED FLOOR, ADMIN & STG AREAS
13310	FLIGHT CONTROL TOWER	5,000	SF	\$246.00	
14110	AIRFIELD OPS BLDG	10,000	SF	\$159.00	WITHOUT TOWER
14112	AVIATION UNIT OPS BLDG	12,000	SF	\$153.00	SQUADRON
14113	ACCESS CONTROL FAC	280	SF	\$189.00	SENTRY STATION
14114	CIDC FIELD OPS BLDG	9,400	SF	\$141.00	
14129	TRAINING AIDS CENTER	800	SF	\$117.00	
14132	READY BUILDING	20,000	SF	\$127.00	
14162	SCIF FACILITY	25,000	SF	\$178.00	
14165	FUELING/POL SUPP. BLDG	195	SF	\$206.00	ADD PUMPS (\$4600 EA) ADD STG TANKS (SEE CATCODE 124XX) AND PAVING (SEE CATCODE 851XX)
14182	BRIGADE HQS BLDG	11,000	SF	\$147.00	
14183	BATTALION HQS BLDG	11,000	SF	\$147.00	
14185	COMPANY OPS BLDG	8,000	SF	\$140.00	
14955	WASH PLATFORM, ORG	1	EA	\$66,970.00	2 VEHICLE-LOW PRES. W/WASHWATER TREAT'MT
14960	GREASE RACK	1	EA	\$52,440.00	2 VEHICLE
14962	CENTRIZED WASH FAC	1	EA	\$6,541,670.00	16 STATIONS WITH WASHWATER RECYCLING
17112	FLIGHT SIMULATOR BLDG	32,000	SF	\$137.00	BUILDING ONLY
17119	ORGANIZATIONAL CLASSROOM	32,000	SF	\$125.00	
17120	GENERAL INSTRUCTION BLDG	25,000	SF	\$133.00	
17121	INDOOR FIRING RANGE	5,600	SF	\$110.00	
17123	RANGE SUPPORT BLDG	2,000	SF	\$107.00	
	FIELD RANGE LATRINES	600	SF	\$169.00	
17131	COMP ITEM REP INST BLDG	6,000	SF	\$118.00	
17132	GEN ITEM REP INST BLDG	25,000	SF	\$110.00	
17133	VEHICLE MAINT INST BLDG	30,000	SF	\$130.00	
17134	AIRCRAFT MAINT INST BLDG	35,000	SF	\$188.00	HIGH BAY BUILDING
17135	LABORATORY INST BLDG	9,000	SF	\$188.00	
17136	AUTO-AIDED INSTRUCTION BLDG	25,000	SF	\$159.00	

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17137	MATERIAL HANDLING INST BLDG	40,000	SF	\$63.00
17139	COVERED TRAINING AREA	6,000	SF	\$43.00
17140	ARMY RESERVE CENTER BLDG	20,000	SF	\$123.00
17142	ARMY NATIONAL GUARD/ARMORY	20,000	SF	\$123.00
17971	OBSERVATION TOWER/BUNKER	800	SF	\$175.00 COST EXCLUDES EQUIP
21110	AIRCRAFT MAINT. HANGARS			
	MAINT GEN PURPOSE	23,000	SF	\$147.00
	HIGH BAY MAINTENANCE	35,000	SF	\$188.00
	CORROSION CONTROL	35,000	SF	\$188.00
21120	A/C COMPONENT MAINT SHOP	20,000	SF	\$125.00
21130	A/C PAINT SHOP	70,000	SF	\$231.00
21140	A/C ENGINE TEST CELL FAC	13,000	SF	\$141.00
21210	GUIDED MISSILE MAINT FAC	10,300	SF	\$158.00
21410	VEHICLE MAINT SHOP - TRACK	25,000	SF	\$137.00
	VEHICLE MAINT SHOP - WHEELED	30,000	SF	\$130.00
21470	OIL STORAGE BLDG	700	SF	\$87.00
21610	AMMO RENOVATION SHOP	6,500	SF	\$130.00
21612	AMMUNITION SURVEILLANCE	13,000	SF	\$146.00
21630	AMMUNITION DEMIL. FAC	82,500	SF	\$862.00 CHEM DEMILITARIZATION FAC
21710	ELECTRONICS MAINT. SHOP	5,500	SF	\$110.00
21740	AVIONICS MAINT SHOP	23,000	SF	\$142.00
21850	BATTERY SHOP	5,000	SF	\$110.00
21881	ABN EQUIP/PARACHUTE REPAIR	8,000	SF	\$153.00
21885	MAINT SHOP, GEN PURPOSE	26,000	SF	\$113.00
21910	ENG/HOUSING MAINT SHOP	31,000	SF	\$112.00
31010	CHEMISTRY LAB	9,000	SF	\$188.00
31410	GROUND TRANS EQUIPMENT BLDG	31,000	SF	\$143.00
411XX	LIQUID FUEL STORAGE - BULK	2,500	BL	\$70.30 ABOVE GRD STEEL TANK
		5,000	BL	\$46.70 INCLUDES FNDTN DIKE
		10,000	BL	\$33.70 AND EXTERIOR COATINGS
		25,000	BL	\$25.90 (42 US GALS/BBL)
		50,000	BL	\$18.80
		100,000	BL	\$13.40
		250,000	BL	\$11.80
		2,500	BL	\$73.90 ABOVE GRD STEEL TANK
		5,000	BL	\$46.70 W/FLOAT PANS INCLUDE
		10,000	BL	\$38.10 FNDTN DIKE, INTERIOR
		25,000	BL	\$29.60 EPOXY LINING & INTERIOR
		50,000	BL	\$23.20 COATING
		100,000	BL	\$17.80
		250,000	BL	\$15.00
42180	IGLOO STORAGE, DEPOT	5,000	SF	\$177.00 HIGH EXPLOSIVE, WITH EARTH MOUNDING
42183	G P MAGAZINE, DEPOT	10,000	SF	\$166.00
42280	IGLOO STORAGE, INST			SEE CATCODE 42180
42283	G P MAGAZINE, INST			SEE CATCODE 42183
43211	COLD STORAGE FACILITY			
	W/PROCESSING	11,000	SF	\$115.00

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	COLD STORAGE WAREHOUSE	6,000	SF	\$154.00
44110	GENERAL PURPOSE WAREHOUSE			
	LOW BAY	40,000	SF	\$64.00 16 FT STACK HEIGHT
	HIGH BAY	100,000	SF	\$75.00 UP TO 26 FT STACK HEIGHT
44130	CONTROLLED HUMIDITY WHSE	40,000	SF	\$71.00
44135	HAZARDOUS MATERIAL STORAGE	21,000	SF	\$119.00
44150	FLAMMABLE MATERIAL STRHSE	8,200	SF	\$114.00
44181	VEHICLE STORAGE FACILITY	16,000	SF	\$40.00 OPEN
		16,000	SF	\$60.00 ENCLOSED
44210	AC PARTS STORAGE BLDG	16,000	SF	\$70.00
44220	G P STORAGE FACILITY, INST			SEE CATCODE 44110
44222	STORAGE SHED, COVERED	24,000	SF	\$31.00 OPEN SIDES
44224	DEPLOYMENT EQUIP STG BLDG	3,400	SF	\$71.00
44230	CONTROLLED HUMIDITY WHSE, INST			SEE CATCODE 44130
44240	FLAMMABLE MATERIAL STRHSE, INST			SEE CATCODE 44150
45110	OPEN STORAGE AREA, DEPOT			SEE CATCODE 851XX
45210	OPEN STORAGE AREA, INST			SEE CATCODE 851XX
51010	MEDICAL CENTER/HOSPITAL	180,000	SF	\$186.00 STATION HOSPITAL
				\$222.00 REGIONAL MEDICAL CTR
				\$230.00 TEACHING HOSPITAL
				\$179.00 AMBULATORY HEALTH CARE
53060	MEDICAL WAREHOUSE	44,000	SF	\$73.00
53071	AMBULANCE GARAGE	480	SF	\$64.00
54010	DENTAL CLINIC	20,000	SF	\$194.00
55010	MEDICAL/HEALTH CLINIC	50,000	SF	\$158.00
	MEDICAL/DENTAL CLINIC	60,000	SF	\$179.00
61050	ADMIN FACILITY GEN PURP	25,000	SF	\$131.00 ADP CTR, AUDITORIUM, CAFETERIA, SECURITY & PRE-WIRED WORK STA. NOT INCLUDED
	COMMAND HQS BUILDING	40,000	SF	\$175.00
	PRE-WIRED WORK STATION		EA	\$5,192.00
62010	UNDERGROUND ADMIN FAC	6,000	SF	\$174.00 HARDENED FACILITY
711XX	FAMILY HOUSING W/SPRINKLERS OR FIRE PROTECTION CONST.		SF	\$67.00 CONUS \$/GROSS SF \$69.00 OCONUS \$/GROSS SF
71410	DETACHED GARAGES	240	SF	\$43.00 SINGLE CAR/MASONRY \$28.00 SINGLE CAR/WOOD
71411	CARPORT	240	SF	\$22.00 OPEN SIDES
72111	UNACCOMPANIED PERSONNEL HOUSING, ENLISTED	99,500	SF	\$143.00 WITHOUT DINING
	SOLDIER COMMUNITY BLDG	14,620	SF	\$143.00 300 PERSONS MODULE

NOTE: ALL UNFINISHED, OR FINISHED ATTIC AREAS WITH AN AVERAGE HEIGHT OF 2100 MM (6'-11") MEASURED FROM THE UNDERSIDE OF THE STRUCTURAL SYSTEM AND WITH PERIMETER WALLS MEASURING A MINIMUM 1500 MM (4'-11"), MUST BE COUNTED AS FULL SCOPE.

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72181	BASIC TRAINEE BARRACKS	369,370	SF	\$132.00 COST APPLIES TO ENTIRE
	COMPANY/BARRACKS	313,680	SF	\$123.00 COMPLEX, BLDG ONLY.
	BATTALION HQS	22,040	SF	\$137.00 CENTRAL ENERGY PLANT
	DINING FACILITY	33,650	SF	\$218.00 NOT INCLUDED.
72210	DINING FACILITY	21,500	SF	\$231.00 INCLUDES MCA FUNDED KITCHEN EQUIPMENT & INSTALLATION COSTS
72410	UNACCOMP. OFFICERS QTRS	44,000	SF	\$144.00
72411	UNACCOMP. OFFICERS QTRS	44,000	SF	\$144.00 TRANSIENT
73010	FIRE STATION, COMMUNITY	8,000	SF	\$139.00
73016	POLICE/MP STATION	4,200	SF	\$142.00
73017	CHAPEL	15,000	SF	\$165.00
73018	RELIGIOUS EDUCATION FAC	15,000	SF	\$137.00 CHAPEL FAMILY LIFE
73046	DEPENDENT SCHOOLS			
	ELEMENTARY		SF	\$105.00
	JUNIOR HIGH SCHOOL		SF	\$108.00
	HIGH SCHOOL		SF	\$112.00
74010	AUDITORIUM G P	4,000	SF	\$131.00
74011	BOWLING CENTER	7,800	SF	\$154.00 W/EQUIP - LANES (PIN SPOTTING EQUIP & AUTO. SCORING DEVICE)
74012	CAFETERIA	5,000	SF	\$161.00
74014	CHILD DEVELOPMENT CENTER	15,000	SF	\$148.00 NOT INCLUDE PLAY AREA AND EQUIPMENT. FOR OUTDOOR PLAY AREA, SEE CATCODE 75018
74021	COMMISSARY W/OPERATIONAL EQUIPMENT	85,000	SF	\$130.00
74022	SKILL DEVELOPMENT CENTER	22,000	SF	\$112.00 GENERAL SKILL
74023	CREDIT UNION	3,000	SF	\$128.00 INCLUDES VAULT
74024	SKILL DEVELOPMENT CENTER	15,000	SF	\$114.00 AUTOMOTIVE CRAFTS
74025	EDUCATION CENTER	10,000	SF	\$134.00 ACES FACILITY
74028	PHYSICAL FITNESS TRNG CTR	30,000	SF	\$153.00 DOES NOT INCLUDE POOL
74030	SPORT PRO SHOP	28,000	SF	\$132.00 CLUB
74032	GUEST HOUSE	15,000	SF	\$134.00 TEMPORARY LODGING
74033	COMMUNITY SERVICE CENTER	34,000	SF	\$142.00
74041	MAIN LIBRARY	12,000	SF	\$134.00
74046	OPEN DINING CONSOLIDATED			SEE CATCODE 74047
74047	NCO OPEN DINING	16,000	SF	\$196.00 SERVICE CLUB
74048	OFFICER OPEN DINING			SEE CATCODE 74047
74053	MAIN EXCHANGE	80,000	SF	\$105.00 W/MALL SERVICE SHOPS
74056	EXCHANGE SERVICE OUTLET			SEE CATCODE 74053
74066	YOUTH CENTER	15,000	SF	\$128.00
74068	RECREATION CENTER	20,000	SF	\$128.00
74070	ROLLER SKATING PINK	20,000	SF	\$100.00
74072	INDOOR SWIMMING POOL	6,000	SF	\$157.00 25 METER NATATORIUM
74065	RECREATIONAL EQUIP CHECKOUT	5,000	SF	\$73.00
75018	PLAYGROUND, G P			
	CHILD DEVELOPMENT CTR OUTDOOR PLAY AREA:			
	60 CHILD CAPACITY	6,000	SF	\$30.00 COST OF PLAY AREA

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	99 CHILD CAPACITY	9,900	SF	\$24.00 INCLUDES FENCE,
	122 CHILD CAPACITY	12,200	SF	\$21.00 EQUIPMENT & SHED
	145 CHILD CAPACITY	14,500	SF	\$18.00
	198 CHILD CAPACITY	19,800	SF	\$16.00
	244 CHILD CAPACITY	24,400	SF	\$15.00
	303 CHILD CAPACITY	30,300	SF	\$13.00
75022	MULTIPURP ATH FIELD	1	EA	\$183,270.00 TURFED AREA EXCLUDES SITES PREP & ELECTRICAL LIGHTING
75030	OUTDOOR SWIMMING POOL	13,000	SF	\$104.00 50 METER WITH CHANGE HOUSE
891XX	PLANT/UTILITIES BLDG		SF	\$159.00 NO PLANT EQUIPMENT

NO CATEGORY CODE IS AVAILABLE FOR FOLLOWING ITEMS:

FOUNDATIONS, UNUSUAL				
	PILING, TREATED WOOD, 50' L, 12" BUTT		LF	\$26.00
	PILING, CONCRETE 14" SQUARE		LF	\$38.00
	PILING, CONCRETE 16" SQUARE		LF	\$40.00
	PILING, CONCRETE 18" DIAMETER		LF	\$47.00
	PILING, STEEL H, 50' LONG, HP12X53		LF	\$31.00
	PILING, STEEL PIPE 12"D, CONC FILLED		LF	\$39.00

**APPENDIX A - FACILITY UNIT COST TABLE
PART II - SUPPORT FACILITIES AND ITEMS**

CATEGORY		UNIT COST			REMARK
CODE	ITEM	QUANTITY	UNIT	\$/UNIT	
81117	PRIME POWER PLANT		KW	\$1,007.00	EQUIPMENT ONLY - INCLUDES SWITCHGEAR
81150	UNINTER. PWR SUP (UPS)		KW	\$4,579.00	UNINTERRUPTIBLE POWER SYSTEM (UPS), COST INCLUDES STATIC SWITCHGEAR
81160	STANDBY GENERATOR				DIESEL INCL. BATTERY, CHARGE/MUFFLER/TRANSFER SWITCH & FUEL TANK
		75	KW	\$498.00	
		125	KW	\$358.00	
		200	KW	\$286.00	
		300	KW	\$244.00	
81230	POWER PLANT BUILDING		SF	\$158.00	NO EQUIPMENT AND SWITCHGEAR
81241	EXTERIOR LIGHTING		LF	\$31.00	UG DIRECT BURIAL, W/500 WATT MV LAMINAR
81241	OVERHEAD ELECTRIC LINES				
	H-FRAME		MI	\$104,150.00	15 KV UP TO 69 KV SHORT LINES, WOOD POLE, 3PH, 4 WIRE
	OVERHEAD W/POLES		LF	\$16.00	BELOW 15 KV WOOD POLE, 3PH, 4 WIRE
81242	UNDERGRD ELECTRIC LINES				
	DIRECT BURIAL:				COSTS INCL TRENCH, SAND BASE, TREATED BOARD, BACKFILL AND MARKER
	# 1/0		LF	\$15.00	3/C - 600V
	# 4/0		LF	\$21.00	3/C - 600V
	UG DUCTS:				
	1-WAY-4"		LF	\$22.00	TYPE EB, PVC, CONCRETE
	2-WAY-4"		LF	\$26.00	ENCASED 3" EACH WAY,
	4-WAY-4"		LF	\$33.00	INCLUDES EXCAVATION AND
	6-WAY-6"		LF	\$40.00	BACKFILL TO 3 FEET DEEP
81320	SUBSTATION, LOAD INTER. SW 600 AMP		KVA	\$71.00	300 KVA & BELOW W/CLF FUSES
81360	TRANSFORMERS, PRIMARY DELTA OR Y,277/480 V SECONDARY				
	150 KVA		EA	\$11,730.00	OIL-FILLED,
	500 KVA		EA	\$17,550.00	PAD-MOUNTED, 3-PHASE
	1,000 KVA		EA	\$31,670.00	
	2,000 KVA		EA	\$47,350.00	
82110	HEAT PLANT COAL-FIRED				
	STEAM:				INCLUDES FUEL & ASH HANDLING FACILITIES
	50 MBTU/H (MILLION BTU/H)		EA	\$3,876,200.00	
	100 MBTU/H		EA	\$7,023,470.00	
	150 MBTU/H		EA	\$10,008,750.00	
	200 MBTU/H		EA	\$12,822,710.00	
	HITEMP WATER:				INCLUDES FUEL & ASH HANDLING FACILITIES
	50 MBTU/H		EA	\$3,651,910.00	

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	100 MBTU/H	EA	\$5,863,620.00	
	150 MBTU/H	EA	\$7,818,850.00	
	200 MBTU/H	EA	\$10,008,750.00	
82120	HEAT PLANT OIL-FIRED STEAM:			INCLUDES PLT EQUIP & OIL HANDLING FACILITY
	10 MBTU/H	EA	\$691,550.00	
	50 MBTU/H	EA	\$2,375,770.00	
	100 MBTU/H	EA	\$4,550,090.00	
	150 MBTU/H	EA	\$6,600,850.00	
	200 MBTU/H	EA	\$7,995,370.00	
	HITEMP WATER:			INCLUDES PLT EQUIP & OIL HANDLING FACILITIE
	10 MBTU/H	EA	\$625,090.00	
	50 MBTU/H	EA	\$2,206,520.00	
	100 MBTU/H	EA	\$4,117,100.00	
	150 MBTU/H	EA	\$5,863,620.00	
	200 MBTU/H	EA	\$7,625,720.00	
82182	SOLAR HEATING			SEE SOLAR ENERGY CONVERSION - CHART B
82210	STEAM CONDENSATE LINES COMMON CONDUIT:			INSUL, STEAM & CONDENS COST INCLUDES FITTINGS, ACCESSORIES, 3 FT EXCAVATION BACKFILL AND TESTING
	11-1/4"	LF	\$202.00	STM: 2", RET: 1-1/2"
	10"	LF	\$184.00	STM: 1-1/2", RET: 1-1/2"
	10"	LF	\$175.00	STM: 1-1/4", RET: 1"
	10"	LF	\$173.00	STM: 1", RET: 1"
	SINGLE CONDUIT:			STEAM OR HITEMP WATER, COST INCLUDES FITTINGS, ACCESSORIES, 3 FT EXCAVATION BACKFILL AND TESTING
	6"	LF	\$110.00	1-1/4" PIPE
	8"	LF	\$118.00	1-1/2" PIPE
	8"	LF	\$120.00	2" PIPE
	10"	LF	\$145.00	2-1/2" PIPE
	10"	LF	\$156.00	3" PIPE
	11-1/8"	LF	\$188.00	4" PIPE
	15"	LF	\$216.00	6" PIPE
82220	HOT WATER LINES COMMON CONDUIT:			INCLUDES FITTINGS, ACCESSORIES, 3 FT EXCAVATION, BACKFILL & TESTING
	12"	LF	\$158.00	HW: 1", RET: 1"
	12-7/8"	LF	\$193.00	HW: 1-1/2", RET: 1-1/2"
	15"	LF	\$238.00	HW: 2", RET: 2"
	18"	LF	\$260.00	HW: 3", RET: 3"

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	21"	LF	\$304.00	HW 4., RET: 4"
	STEAM DIST MANHOLE PREFAB STEEL 8' X 6' HT	EA	\$16,000.00	INCL LADDER, CONDUIT, VENT, MH VENT, NORMAL PIPING & INSTALLATIC
82410	GAS PIPE LINES			SEE CHART A
82610	AIR CONDITIONING/REFRIG PLANT NEW BLDG	TON	\$3,146.00	
	EXISTING BLDG	TON	\$4,403.00	
83140	INDUSTRIAL WASTE TREATMENT PLANT	EA	\$1,696,680.00	500,000 GPD
83150	SEWAGE LIFT STATION	EA	\$298,840.00	1,000 GPM
83210	SANITARY SEWER			SEE CHART A
	SANITARY SEWER MANHOLES CONCRETE, CIP UP TO 8' DEEP	VLF	\$450.00	4 FT ID, INCLUDES
	OVER 8' DEEP	VLF	\$480.00	FOOTING, EXCAVATION, 24" D COVER, & FRAME
	CONCRETE, PCST: UP TO 8' DEEP	VLF	\$300.00	
	OVER 8' DEEP	VLF	\$332.00	
	MISC: CATCH BASINS	EA	\$2,161.00	4 FT DEEP
	CATCH BASINS	EA	\$2,880.00	6 FT DEEP
	CURB INLETS	EA	\$560.00	GUTTERMOUTH
83310	INCINERATOR	EA	\$39,250.00	200 LB PER HR PER UNIT (EQUIPMENT ONLY)
84210	WATER DISTRIBUTION LINES			SEE CHART A
84472	WATER PUMP STATION, NONPOTABLE 500 GPM	EA	\$71,590.00	INCLUDES DIESEL DRIVE,
	1,000 GPM	EA	\$95,040.00	AUTO CONTROLS, FILLINGS &
	2,000 GPM	EA	\$106,870.00	ACCESSORIES, COMPLETE
	2,500 GPM	EA	\$110,040.00	W/INSTALLATION COSTS
84610	WATER STORAGE TANK ELEVATED WATER STG TANK			
	50,000 GA	EA	\$356,940.00	INCLUDES STEEL STG TANK
	100,000 GA	EA	\$447,740.00	STANDPIPE, 125 FT TOWER,
	150,000 GA	EA	\$536,460.00	VALVES AND STD
	250,000 GA	EA	\$617,770.00	FOUNDATIONS, BUT DOES NOT
	500,000 GA	EA	\$993,710.00	INCLUDES PUMPHOUSE
	750,000 GA	EA	\$1,372,710.00	
	1,000,000 GA	EA	\$1,745,480.00	

**APPENDIX A - FACILITY UNIT COST TABLE
PART II - SUPPORT FACILITIES AND ITEMS**

	GROUND STG TANK (WATER)			
	100,000 GA	EA	\$247,130.00	INCLUDES CONCRETE TANK AND STD FOUNDATIONS, BUT DOES NOT INCLUDE EXTERNAL PIPING AND PUMPING
	250,000 GA	EA	\$409,740.00	
	500,000 GA	EA	\$504,750.00	
	1,000,000 GA	EA	\$677,950.00	
	2,000,000 GA	EA	\$976,790.00	
	4,000,000 GA	EA	\$1,545,080.00	
84620	RESERVOIR, POTABLE			
	250,000 GA	EA	\$399,150.00	INCLUDES 6" CONCRETE FLOOR SLAB ORDINARY EXCAVATION AND PUMPING WITHIN
	500,000 GA	EA	\$532,260.00	
	1,000,000 GA	EA	\$734,950.00	
	2,000,000 GA	EA	\$1,129,740.00	
	4,000,000 GA	EA	\$1,856,590.00	
851XX	ROADS			FOR PAVEMENT ONLY, A/C SURFACE
	NO EARTHWORK INCLUDED			
	1-1/2"	SY	\$2.80	URBAN AREA
	2"	SY	\$3.80	
	3"	SY	\$6.20	
	CONCRETE			
	6"	SY	\$28.00	12' PASS FIXED FORM,
	8"	SY	\$36.00	NO REINF. INCL JT'S,
	10"	SY	\$43.00	FINISHING, CURING
	12"	SY	\$49.00	URBAN AREA
	BASE COURSE (CRUSHED STONES):			
	4"	SY	\$5.00	INCLUDES MATERIAL,
	6"	SY	\$7.60	EQUIPMENT & COMPACTION
	8"	SY	\$10.00	NO EARTHWORK INCLUDED
	12"	SY	\$17.00	
	BASE COURSE (BANK RUN GRAVEL):			
	6"	SY	\$3.70	
	9"	SY	\$5.30	
	12"	SY	\$7.10	
851XX	ROADS			
	BASE COURSE (BITUM. CONCRETE):			
	4"	SY	\$12.00	
	6"	SY	\$17.00	
	8"	SY	\$21.00	
	10"	SY	\$26.00	
	6"X8" CURB/GUTTER	LF	\$17.00	CONCRETE
852XX	SIDEWALK & OTHER PAVEMENTS			SEE CATCODE 851XX

**APPENDIX A - FACILITY UNIT COST TABLE
PART II - SUPPORT FACILITIES AND ITEMS**

85220	SIDEWALKS & WALKWAYS				
	4" CONCRETE	SF	\$4.20	INCLUDES GRADING &	
	2-1/2" ASPHALT CONCRETE	SF	\$2.00	FORMING	
86010	RAILROAD TRACKS W/TIES AND BALLAST	LF	\$260.00	100# RAIL, COMPLETE	
87110	STORM SEWER			SEE CHART A	
87210	FENCING AND WALLS				
	CHAIN LINK:			TYPE A (9GA)	
	6 FT HIGH	LF	\$19.00	INCLUDES 3 STRAND BARRED	
	8 FT HIGH	LF	\$23.00	WIRE	
	10 FT HIGH	LF	\$27.00		
	FENCE TOPPING:				
	BARRED TAPE	LF	\$9.60	STAINLESS STEEL, MIL-B-52775 TYPE II	
87250	ENTRANCE GATES				
	CHAIN LINK			8' HIGH - 9 GA	
	4' WIDE	EA	\$306.00		
	12' SINGLE	EA	\$837.00	FOR MOTOR OPERATED (SWING) ADD \$3,150	
	24' PAIR	EA	\$1,464.00	FOR MOTOR OPERATED (SWING) ADD \$3,150	
	36' PAIR	EA	\$2,014.00	FOR MOTOR OPERATED (SLIDE) ADD \$4,410	
88110	WATER SPRINKLER SYSTEMS (2,000 SF, INCL GATE VALVE)				
	WET PIPE	SF	\$3.90	PROTECTED AREA ONLY	
	DRY PIPE	SF	\$4.50	PROTECTED AREA ONLY	
	DELUGE	SF	\$6.00	PROTECTED AREA ONLY, EXCLUDES DELUGE VALVE, PUMPING ELEVATED WATER STG, & EXTERIOR PIPING	
	DRAFT CURTAINS	SF	\$10.00	SQUARE FEET OF CURTAIN AREA SUPPORTED BY EXISTING TRUSSES (HANGERS)	
89240	FIRE HYDRANTS, 4-1/2" VALVE	EA	\$2,046.00	6' DEEP, INCL EXCAVA.	
93210	SITE CLEARING & GRADING				
	GRADING:				
	ROUGH	SY	\$4.50	OPEN AREA, AVG 2' C/F	
	FINE	SY	\$1.20	3 PASSES WITH ROLLER	
	SITE CLEARING & GRUBBING	AC	\$3,925.00	MEDIUM DENSE AREAS	
	BORROW	CY	\$14.00	UNCLASSIFIED, 5-MILE HAUL	
93220	LANDSCAPE AND PLANTING				
	TOPSOIL:				
	HAUL & SPREAD	CY	\$20.00		
	STRIP/STOCKPILE	SY	\$1.60	6" DEEP	
	MULCHING:				
	WOOD CHIPS	SY	\$2.50	2" DEEP	

**APPENDIX A - FACILITY UNIT COST TABLE
PART II - SUPPORT FACILITIES AND ITEMS**

	GRASS:			
	SEEDING	SY	\$0.70	HYD W/FERTILIZER
	SODDING	SY	\$6.50	1" DEEP BLUE GRASS
93310	DEMOLITION W/DISPOSAL			
	BUILDING: 10,000 SF, 10 FT	SF	\$4.50	CONCRETE
	CEILING HGT, 25 MILES HAUL	SF	\$3.90	STEEL FRAME
		SF	\$3.40	MASONRY OR WOOD
	BUILDING INTERIOR	SF	\$6.50	GUTTING INTERIOR
	LEAD PAINT REMOVAL/DISPOSAL	SF	\$10.00	WALL SURFACE AREA
	(ASBESTOS REMOVAL/DISPOSAL NOT INCLUDED. COST ESTIMATE FOR THIS WORK ITEM SHOULD BE BASED ON SITE SURVEY/EVALUATION AND LOCAL EXPERIENCE, AND SEPARATELY IDENTIFIED.)			
	PAVEMENT:	SY	\$14.00	6" CONCRETE
		SY	\$5.50	3" BITUMINOUS
93410	CUT AND FILL			
	EARTH:			
	CUT & FILL, 200 HP DOZER	CY	\$7.60	COMMON EARTH, 300' HAUL
	EXCAVATION, 2 MILE ROUND TRIP	CY	\$8.10	COMMON EARTH
	TRENCH-MACHINE	CY	\$5.50	4' DEEP/2' WIDE
	TRENCH-HAND	CY	\$42.00	
	BACKFILL-MACHINE	CY	\$6.50	INCLUDES COMPACTION
	BACKFILL-HAND	CY	\$32.00	INCLUDES COMPACTION
	ROCK:			
	ROCK, HARD	CY	\$83.00	DRILL BLAST & MACHINE
	SHALE, MEDIUM	CY	\$44.00	RIPPER DOZER AND LOAD
	TRENCH-HAND	CY	\$137.00	

CHART A. PIPING - SITEWORK UTILITIES

SIZE INCHES	UNIT	BLACK STEEL
_____	_____	\$ _____
1	LF	\$11.70
2	LF	\$18.00
3	LF	\$22.20
4	LF	\$27.50
6	LF	\$33.90
10	LF	
12	LF	
18	LF	
24	LF	
36	LF	
60	LF	

SIZE INCHES	UNIT	CORRUGATED
_____	_____	\$ _____
1	LF	
2	LF	
3	LF	
4	LF	
6	LF	
10	LF	\$16.40
12	LF	\$19.60
18	LF	\$27.50
24	LF	\$46.10
36	LF	\$71.50
60	LF	\$192.80

SIZE INCHES	UNIT	DUCT IRON
_____	_____	\$ _____
1	LF	
2	LF	
3	LF	
4	LF	\$19.60
6	LF	\$22.20
10	LF	\$39.20
12	LF	\$49.80
18	LF	\$87.40
24	LF	\$117.60
36	LF	
60	LF	

SIZE INCHES	UNIT	REINF. PLASTIC
_____	_____	\$ _____
1	LF	
2	LF	
3	LF	\$10.10
4	LF	\$11.70
6	LF	\$19.10
10	LF	
12	LF	
18	LF	
24	LF	
36	LF	
60	LF	

SIZE INCHES	UNIT	PVC \$
1	LF	
2	LF	\$5.30
3	LF	\$7.90
4	LF	\$10.60
6	LF	\$15.90
10	LF	\$20.70
12	LF	\$25.90
18	LF	
24	LF	
36	LF	
60	LF	

SIZE INCHES	UNIT	CONCRETE	
		PLAIN \$	REINF. \$
1	LF		
2	LF		
3	LF		
4	LF		
6	LF	\$12.70	
10	LF	\$14.80	
12	LF	\$16.40	\$21.20
18	LF	\$26.00	\$30.00
24	LF	\$30.00	\$39.00
36	LF		\$99.00
60	LF		\$198.10

SIZE INCHES	UNIT	VITRIFIED CLAY	
		STANDARD \$	EXTRA STRENGTH \$
1	LF		
2	LF		
3	LF		
4	LF	\$6.90	\$7.90
6	LF	\$9.50	\$10.60
10	LF	\$16.90	\$19.60
12	LF	\$20.10	\$22.20
18	LF	\$44.00	\$53.50
24	LF	\$89.50	\$107.00
36	LF	\$182.70	\$203.40
60	LF		

NOTES:

1. Black Steel, schedule 40, welded.
2. Corrugated metal piping, galvanized 16 gage up to 18", 14 gage for 24", 12 gage up to 60".
3. Ductile iron, cement lined, class 50 water pipe, 18' in length, and mechanical joint.
4. Reinforced Plastic, fiberglass reinforced, plain end pipe.
5. PVC, schedule 40, Class 150 pipe.
6. Cost includes furnishing and installing pipe only. Trenching, bedding, backfill and compaction must be added to these costs.
7. For cathodic protection (if required), add 14% of total piping cost.

CHART B

SOLAR ENERGY SYSTEM COST ESTIMATING

BUILDING AREA * (SQ. FT.)		SOLAR SYSTEM COST (\$)
-----		-----
UP TO	15000.00	\$4.70 per sq. ft. ** plus \$35,000.00
15001	50000.00	\$3.30 per sq. ft. ** plus \$51,000.00
50001	AND LARGER	\$1.70 per sq. ft. ** plus \$140,000.00

* Include only heated and/or cooled portions of facilities.

**Resulting dollar figure rounded up to next thousand dollar figure.

CHART C
METRIC/ENGLISH SYSTEMS

<u>QUANTITY FROM</u>	<u>MULTIPLY BY</u>	<u>TO OBTAIN</u>		
LENGTH	inch	25.400000	millimeter	
	foot	0.304800	meter	
	yard	0.914400	meter	
	mile (U.S. Status)	1.609344	kilometer	
	millimeter	0.039370	inch	
	meter	3.280840	foot	
	meter	1.093613	yard	
	kilometer	0.621370	mile	
	AREA	square inch	645.160300	square millimeter
		square foot	0.092903	square meter
square yard		0.836127	square meter	
square mile		2.589998	square kilometer	
acre		4046.873000	square meter	
acre		0.404687	hectare	
square millimeter		0.001550	square inch	
square meter		10.763910	square foot	
square meter		1.195990	square yard	
square kilometer		0.386101	square mile	
square meter		0.000247	acre	
hectare		2.471044	acre	
VOLUME		cubic inch	16387.060000	cubic millimeter
		cubic foot	0.028316	cubic meter
	cubic yard	0.764555	cubic meter	
	gallon (U.S. liquid)	3.785412	liter	
	quart (U.S. liquid)	0.946353	liter	
	cubic millimeter	0.000061	cubic inch	
	cubic meter	35.314662	cubic foot	
	cubic meter	1.307951	cubic yard	
	liter	0.264172	gallon	
	liter	1.056688	quart	
	MASS	ounce (avoirdupois)	28.349520	gram
		pound (avoirdupois)	0.453592	kilogram
short ton		907.185000	kilogram	
gram		0.035273	ounce	
kilogram		2.204622	pound	
kilogram		0.001102	short ton	
ENERGY, HEAT AND WORK	kilowatthour	3.600000	megajoule	
	btu	1.055056	kilojoule	
	horsepower hour	2.684520	megajoule	
	megajoule	0.277780	kilowatthour	
	kilojoule	0.947817	btu	
	megajoule	0.372506	horsepower hour	
POWER	ton (refrigeration)	3.517000	kw	

btu/s
hp (electric)
btu/h

1.055056
745.700000
0.293071

kw
w
w

kw
kw
w
w

0.284333
0.947817
0.001341
3.412141

ton (refrigeration)
btu/s
hp (electric)
btu/h

APPENDIX C (TM 5-800-4)
TRI-SERVICE MILITARY CONSTRUCTION PROGRAM (MCP) INDEX
FOR FY 2001 THRU FY 2006 PROGRAMS

<u>DATE</u>	<u>INDEX</u>	<u>ESCALATION PERSENTAGE FOR FISCAL YEAR</u>
1-Oct- 1997	----- 2030	-----
1-Jan- 1998	----- 2035	FY 98
1-Apr- 1998	----- 2039	
1-Jul- 1998	----- 2044	0.9%
1-Oct- 1998	----- 2048	-----
1-Jan- 1999	----- 2054	FY 99
1-Apr- 1999	----- 2060	
1-Jul- 1999	----- 2066	1.1%
1-Oct- 1999	----- 2071	-----
1-Jan- 2000	----- 2079	FY 00
1-Apr- 2000	----- 2086	
1-Jul- 2000	----- 2093	1.4%
1-Oct- 2000	----- 2100	-----
1-Jan- 2001	----- 2109	FY 01
1-Apr- 2001	----- 2117	
1-Jul- 2001	----- 2126	1.6%
1-Oct- 2001	----- 2134	-----
1-Jan- 2002	----- 2143	FY 02
1-Apr- 2002	----- 2152	
1-Jul- 2002	----- 2161	1.7%
1-Oct- 2002	----- 2170	-----
1-Jan- 2003	----- 2180	FY 03
1-Apr- 2003	----- 2190	
1-Jul- 2003	----- 2200	1.8%
1-Oct- 2003	----- 2209	-----
1-Jan- 2004	----- 2220	FY 04
1-Apr- 2004	----- 2231	
1-Jul- 2004	----- 2242	2.0%
1-Oct- 2004	----- 2253	-----
1-Jan- 2005	----- 2265	FY 05
1-Apr- 2005	----- 2276	
1-Jul- 2005	----- 2287	2.0%
1-Oct- 2005	----- 2298	-----
1-Jan- 2006	----- 2310	FY 06
1-Apr- 2006	----- 2321	
1-Jul- 2006	----- 2333	2.0%
1-Oct- 2006	----- 2344	-----

NOTES:

1. Use 2.0% per fiscal year for projection beyond FY 2005
2. Tri - Service MCP Index (1,000) = 1 October 1979 ENR Historical Building Cost Index (1,900)
3. The MCP indexes were derived based on the Price Escalation Indices (annual Rates in Percentages) for **Budget Authority** in the memorandum dated 3 January 2000, from the Comptroller of the Under Secretary of Defense, Subject: Revised Inflation Guidance and the Department of the Army, DACS-PPBC PPBC MEMO 2000-002 of 4 January 2000, Subject Revised Inflation Indices for FY 01 President's Budget.
4. This revised index table supersedes the index table published on 10 January 2000

TABLE I - SIZE ADJUSTMENT FACTORS

PART I - BUILDING (OTHER THAN FAMILY HOUSING)

<u>SIZE RATIO</u>	<u>ADJUST FACTOR</u>						
< 0.05	1.2750	0.9000	1.0110	1.8000	0.9490	2.7000	0.9250
0.0500	1.2750	0.9500	1.0050	1.8500	0.9470	2.7500	0.9240
0.1000	1.2690	1.0000	1.0000	1.9000	0.9450	2.8000	0.9240
0.1500	1.2320	1.0500	0.9950	1.9500	0.9430	2.8500	0.9230
0.2000	1.2020	1.1000	0.9900	2.0000	0.9420	2.9000	0.9220
0.2500	1.1750	1.1500	0.9860	2.0500	0.9400	2.9500	0.9210
0.3000	1.1520	1.2000	0.9820	2.1000	0.9390	3.0000	0.9210
0.3500	1.1320	1.2500	0.9780	2.1500	0.9370	3.0500	0.9200
0.4000	1.1140	1.3000	0.9740	2.2000	0.9360	>3.05	0.9200
0.4500	1.0980	1.3500	0.9710	2.2500	0.9350		
0.5000	1.0840	1.4000	0.9680	2.3000	0.9330		
0.5500	1.0720	1.4500	0.9650	2.3500	0.9320		
0.6000	1.0600	1.5000	0.9620	2.4000	0.9310		
0.6500	1.0500	1.5500	0.9600	2.4500	0.9300		
0.7000	1.0410	1.6000	0.9570	2.5000	0.9290		
0.7500	1.0330	1.6500	0.9550	2.5500	0.9280		
0.8000	1.0250	1.7000	0.9530	2.6000	0.9270		
0.8500	1.0180	1.7500	0.9510	2.6500	0.9260		

NOTE: Size ratio is determined by dividing the proposed building size by the average size shown in Part I of Appendix A. To determine the size adjustment factor, use the closest size ratio from above table.

PART II - FAMILY HOUSING

<u>PROJECT SIZE</u>	<u>FACTOR</u>
<u>(NO. OF UNITS)</u>	
1 - 9	1.25
10 - 19	1.15
20 - 49	1.10
50 - 99	1.04
100 - 199	1.00
200 - 299	0.93
300 & Over	0.90