APPENDIX F
STANDARD ESTIMATING FORMS

1. General

This appendix provides a discussion of the standard estimating forms and a brief explanation of their use in preparing cost estimates where the use of the MCACES software is specifically exempted by this regulation. These forms have been designated as a guide in the development of a reasonable cost estimate.

2. Reasonable Contract Estimate, ENG Form 1738-R (Figure F-1)

This form is used to summarize the total cost estimate by tabulating the required work items and the corresponding unit prices and lump sum amounts developed on the detail summary sheets. The last page of this form, or the page that shows the estimated total cost, will include the appropriate signatures necessary to support the type of cost estimate being prepared.

3. Reasonable Contract Estimate Detail Summary Sheet, ENG Form 1739-R (Figure F-2)

This form is used to summarize the various direct cost components and to allocate distributed costs in developing the unit or lump sum prices for the various work items being estimated. It is useful for showing the equipment, labor, material, and supply costs for the whole job as general information and can be used for comparison with the records on other jobs of a similar nature. The work item and quantity data shall be entered in the first four columns. Mobilization and demobilization costs and the total equipment, labor, material, and supply costs, as determined from the supporting Worksheets (ENG Forms 1741-R, 1741a-R, 1741b-R, or 1741c-R) or from the Worksheet Summary (ENG Form 1740-R), will be entered in the appropriate columns provided. The total distributed cost, including bond costs and profit when appropriate, will be added to the subtotal direct cost for each work item on a proportional basis. The unit cost for each unit price item will then be determined by dividing the total cost by the quantity for that item. The adjusted unit cost column will be used to round off the unit cost or lump sum amounts to avoid the use of decimals. The adjusted unit costs and amounts should be transferred to ENG Form 1738-R or other similar type tabulation sheet.

4. Reasonable Contract Estimate Worksheet Summary, ENG Form 1740-R (Figure F-3)

This form is used to summarize the cost of equipment, labor, materials, and supplies for a specific construction task prior to transfer to the Detail Summary Sheet (ENG Form 1739-R) for those work items which require more than one set of worksheets.

5. Reasonable Contract Estimate Worksheets, ENG Forms 1741-R, 1741a-R, 1741b-R, and 1741c-R (Figures F-4, F-5, F-6 and F-7)

These forms are used in developing the costs of equipment, labor, materials, and supplies necessary to accomplish a specific construction task. ENG Form 1741 should define the plan of operation for performing the work for the specific construction task. It should include a clear description of the scope of the construction task and any parameters that may influence productivity. Equipment or labor output controlling the rate of production should be stated along with the calculations to show the time required to perform the work. ENG Forms 1741a-R and 1741b-R then provide a step-by-step procedure in developing the total equipment, labor, materials, and supply costs to support the construction task plan of operations described on ENG Form 1741-R. ENG Form 1741c-R combines the information described on ENG Forms 1741a-R and 1741b-R and may be used when the equipment, labor, material, and supply requirements for the work item are small.

6. Wage Rate Calculations, DA Form 5420-R (Figure F-8)

This form will be used to develop the total hourly rate for the various classifications of labor required for the job. The "Effective Period" block on the form should show the dates the wage rates are applicable. The basic hourly wage rate should be a reasonable estimate of the average wage the contractor would expect to pay during the construction period. In an estimate for a construction contract modification, the actual wage rates paid by the contractor should be used if available. Enter the number of shifts per day, hours per shift and

days per week in the "Operational Shifts" block to support the overtime factor used. For example, 2/8's 5 days, indicates two 8-hour shifts per day, 5 days per week. Details and procedures for developing the costs for each item identified in the column headings are described in Appendix D.

REASONABLE CONTRACT ESTIMATE
(ER 1110-2-1302)

SHEET 1 OF 1

PROJECT A PUMPING STATION

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1.	DEWATERING	1	JOB	LS	75,400
2.	STRUCTURE EXCAVATION	4,600	CY	3.15	14,490
3.	STRUCTURE BACKFILL	2,100	CY	4.40	9,240
4.	SUBSTRUCTURE CONCRETE	300	CY	150.00	45,000
28.	ELECTRICAL WORK	1	JOB	LS	13,800
	TOTAL				708,930

ENG FORM 1738-R, MAR 94 EDITION OF APR 67 IS OBSOLETE (Proponent: CECW-EC)

Figure F-1.

REASONABLE CONTRACT ESTIMATE DETAIL SUMMARY SHEET

SHEET 1 OF 1

PROJECT: A PUMPING STATION

BID ITEM NO.	DESIGNATION	QUANTITY	UNIT	EQUIPMENT	MOBILIZATION AND DEMOBILIZATION	LABOR	MATERIALS	SUPPLIES	SUBTOTAL	DISTRIBUTED COSTS	TOTAL COSTS	UNIT COST	ADJUSTED UNIT COST	ADJUSTED AMOUNT	NO
1.	DEWATERING	1	JOB	—	—	—	—	—	65,000	10,400	75,400	LS	LS	75,400	1
2.	STRUCTURE EXCAVATION	4,600	CY	6,900	966	4,600	—	—	12,466	1,995	14,461	3.144	3.15	14,490	2
3.	STRUCTURE BACKFILL	2,100	CY	4,380	613	2,920	—	—	7,913	1,266	9,179	4.371	4.40	9,240	3
4.	SUBSTRUCTURE CONCRETE	300	CY	3,643	510	10,944	19,876	3,470	38,443	6,151	44,594	148.65	150.00	45,000	4
28.	ELECTRICAL WORK	1	JOB	460	64	6,710	4,540	100	11,874	1,900	13,774	LS	LS	13,800	28
	TOTALS			45,755	6,450	135,643	76,458	12,662	610,400	97,664	708,064			708,930	

ENG FORM 1739-R, MAR 94 EDITION OF FEB 78 IS OBSOLETE (ER 1110-2-1302) (Preparer: CECW-EC)

Figure F-2.

REASONABLE CONTRACT ESTIMATE WORKSHEET SUMMARY SHEET 1 OF 1

PROJECT A PUMPING STATION

SUBJECT 4. SUBSTRUCTURE CONCRETE QUANTITY 300 CY

SUBITEM	EQUIPMENT	LABOR	MATERIALS	SUPPLIES	SUBTOTAL	REF. PG.
a. CONCRETE	1,943	5,694	16,176	20	23,833	
b. FORMWORK	600	2,750	700	2,700	6,750	
c. REINF. STEEL	1,100	2,500	3,000	750	7,350	
TOTALS	3,643	10,944	19,876	3,470	37,933	

ENG FORM 1740-R, MAR 94 (ER 1110-2-1302) EDITION OF AUG 69 IS OBSOLETE (Proponent: CECW-EC)

Figure F-3.

REASONABLE CONTRACT ESTIMATE WORKSHEET
(ER 1110-2-1302)

SHEET 1 OF 3

PROJECT: A PUMPING STATION

SUBJECT: 4a. SUBSTRUCTURE CONCRETE

QUANTITY: 300 CY

SHIFTS PER DAY: 1

HOURS PER SHIFT: 10

PLAN OF OPERATIONS

THIS PART OF THE ESTIMATE INCLUDES ALL DIRECT COSTS REQUIRED TO PLACE THE CONCRETE FOR THE SUBSTRUCTURE. COSTS FOR FORMWORK AND REINFORCING STEEL ARE ESTIMATED SEPARATELY. ASSUME THAT CONCRETE WILL BE TRANSIT MIX.

1. PLACE CONCRETE - USE 35 TON CRANE, 5 LABORERS, 1 CARPENTER - TO PLACE AT AVERAGE 10 CY/HR.

300 CY ÷ 10 CY/HR = 30 HOURS

2. FINISHING - TOP OF MONOLITHS ONLY -
2 CONCRETE FINISHERS - 10 HOURS

3. CURING - 2 LABORERS
4 HRS/DAY FOR 14 DAYS = 56 HOURS

ENG FORM 1741-R, MAR 94 EDITION OF NOV 81 IS OBSOLETE (Proponent: CECW-EC)

Figure F-4.

REASONABLE CONTRACT ESTIMATE WORKSHEET
(ER 1110-2-1302)

SHEET 2 OF 3

SUBJECT 4a. SUBSTRUCTURE CONCRETE

QUANTITY 300 CY

EQUIPMENT

UNIT OF EQUIPMENT	SIZE	NO.	HOURS*	RATE	AMOUNT
CRANE	35 TON	1	30	43.00	1,290
CONCRETE BUCKET	1.5 CY	2	30	0.50	30
CONCRETE VIBRATOR	2.5 IN	2	30	1.00	60
AIR COMPRESSOR W/ HOSE	250 CFM	1	30	9.25	278
*NOTE: USE WORKING HOURS				SUBTOTAL	1,658
	SMALL TOOLS	5		% OF LABOR	285
				TOTAL EQUIPMENT COST	1,943

LABOR

OPERATION	CRAFT	NO.	HOURS	RATE	AMOUNT
PLACE CONCRETE	CRANE OPERATOR	1	30	18.55	557
	CRANE OILER	1	30	14.33	430
	LABORER	5	30	12.65	1,898
	FOREMAN	1	30	13.30	399
	CARPENTER	1	30	21.20	636
FINISHING	CONCRETE FINISHER	2	10	17.85	357
CURING	LABORER	2	56	12.65	1,417
				TOTAL LABOR COST	5,694

ENG FORM 1741a-R, MAR 94 EDITION OF NOV 81 IS OBSOLETE (Proponent: CECW-EC)

Figure F-5.

REASONABLE CONTRACT ESTIMATE WORKSHEET
(ER 1110-2-1302)

SHEET 3 OF 3

SUBJECT: 4a. Substructure Concrete

QUANTITY: 300 CY

MATERIALS

DESCRIPTION	UNIT	QUANTITY	PRICE	AMOUNT
Transit Mix Concrete	CY	300	50.00	15,000
Vinyl Waterstop	LF	80	2.00	160
Joint Filler	1	Job	LS	100
SUBTOTAL				15,260
SALES TAX		6%		916
			TOTAL MATERIALS COST	16,176

SUPPLIES

DESCRIPTION	UNIT	QUANTITY	PRICE	AMOUNT
Steel Scaffolding				
(Share of Rental: 1-week)	Frame	20	1.00	20
(1/4 x $4.00/fr/mo)				
			TOTAL SUPPLIES COST	20

SUMMARY FOR TRANSFER TO ENG FORM 1739-R or 1740-R

EQUIPMENT	1,943
LABOR	5,694
MATERIALS	16,176
SUPPLIES	20
TOTAL	23,833

REMARKS: **Prices on these items are based on quotations from manufacturers or suppliers*

DATE: 30 Jul 93

PREPARED BY: T&C

CHECKED BY:

ENG FORM 1741b-R, MAR 94 EDITION OF NOV 81 IS OBSOLETE (Proponent: CECW-EC)

Figure F-6.

REASONABLE CONTRACT ESTIMATE WORKSHEET — SHEET 2 OF 2

SUBJECT: 4a. Substructure Concrete — QUANTITY: 300 CY

EQUIPMENT

UNIT OF EQUIPMENT	SIZE	NO.	HOURS*	RATE	AMOUNT
Crane	35 ton	1	30	43.00	1,290
Concrete Bucket	1.5 cy	2	30	0.50	30
Concrete Vibrator	2.5 in	2	30	1.00	60
Air Compressor w/ Hose	250 cfm	1	30	9.25	278

(*NOTE: USE WORKING HOURS)

SUBTOTAL	1,658
MOBILIZATION AND DEMOBILIZATION	—
SMALL TOOLS 5% OF LABOR	285
TOTAL EQUIPMENT COST	1,943

LABOR

OPERATION	CRAFT	NO.	HOURS	RATE	AMOUNT
Place Concrete	Crane Operator	1	30	18.55	557
	Crane Oiler	1	30	14.33	430
	Laborer	5	30	12.65	1,898
	Foreman	1	30	13.30	399
	Carpenter	1	30	21.20	636
Finishing	Concrete Finisher	2	10	17.85	357
Curing	Laborer	2	56	12.65	1,417
				TOTAL LABOR COST	5,694

MATERIALS

DESCRIPTION	UNIT	QUANTITY	PRICE	AMOUNT
Transit Mix Concrete	CY	300	50.00	15,000
Vinyl Waterstop	LF	80	2.00	160
Joint Filler	1	Job	LS	100
SUBTOTAL				15,260
SALES TAX		6%		916
			TOTAL MATERIALS COST	16,176

SUPPLIES

DESCRIPTION	UNIT	QUANTITY	PRICE	AMOUNT
Steel Scaffolding				
(Share of Rental: 1-week)	Frame	20	1.00	20
(¼ x *4.00/fr/mo)				
			TOTAL SUPPLIES COST	20

TOTAL FOR TRANSFER TO ENG FORM 1739-R or 1740-R	23,833

REMARKS (Indicate by asterisk (*) prices on items which are based on quotations from manufacturers or suppliers.)

DATE: 30 Jul 93

PREPARED BY: T&C

CHECKED BY:

ENG FORM 1741c-R, MAR 94 EDITION OF NOV 81 IS OBSOLETE (ER 1110-2-1302) (Proponent: CECW-EC)

Figure F-7

WAGE RATE CALCULATIONS
For use of this form, see TM 5-800-2; the proponent agency is USACE.

EFFECTIVE PERIOD: Oct 92-Sep 93

PROJECT: A Pumping Station

OPERATIONAL SHIFTS: 1/10 - 5 Days

LOCATION:

ESTIMATOR: TGC

CHECKED BY:

LABOR COST

CRAFT DESCRIPTION	BASIC HOURLY WAGE RATE	OVERTIME % OF (b)	OVERTIME AMT.	SUB-TOTAL (b + d)	TAXES & INS % OF (e)	TAXES & INS AMT.	SUB-TOTAL (e + g)	FRINGE BENE-FITS	TRAVEL OR SUB-SIST	TOTAL HOURLY COST (h + i + j)
a	b	c	d	e	f	g	h	i	j	k
Carpenter	14.33	10	1.43	15.76	19	2.99	18.75	2.45	-	21.20
Labor. Foreman	9.20	(	0.92	10.12	(	1.92	12.04	1.26	-	13.30
Laborer	8.70		0.87	9.57		1.82	11.39	1.26	-	12.65
Crane Oper.	12.64		1.26	13.90		2.64	16.54	2.01	-	18.55
Crane Oiler	9.41	(	0.94	10.35	(	1.97	12.32	2.01	-	14.33
Conc. Finisher	12.30	10	1.23	13.53	19	2.57	16.10	1.75	-	17.85

DA FORM 5420-R, Apr 85

Figure F-8.