ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT PROPOSAL

APA-R-82-002

HARZA-EBASCO
JOINT VENTURE

AUGUST 16, 1982

VOLUME 2
COST PROPOSAL

TRANSMITTAL LETTER

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COST PROPOSAL

PROPOSAL

HARZA-EBASCO

$1000

HARZA-EBASCO

August 12, 1982

Alaska Power Authority
334 West Fifth Avenue
Anchorage, Alaska 99501

Attention: Mr. David D. Wozniak, Executive Secretary
Selection Committee

Subject: APA-R-82-002
Susitna Hydroelectric Project Proposal

Gentlemen:

Harza-Ebasco is pleased to have the opportunity to submit this Proposal for the Susitna Hydroelectric Project. The Proposal, which is attached, is to remain in effect in its entirety (work scope and cost) for a period of 180 days following the due date of August 16, 1982.

Harza and Ebasco are both authorized to practice professional engineering in Alaska in compliance with AS 08.48.281 and other applicable statutes. Harza holds Corporate License No. C-0251, and Ebasco holds Corporate License No. C-0278. The Harza Business License is No. 008004; SIC Code 8910, and the Ebasco Business License is No. 067100; SIC Code 7392.

The organizational unit submitting this Proposal is identified as follows:

Harza-Ebasco, A Joint Venture
400 - 112th Avenue, NE
Bellevue, Washington 98004
(206-451-4500)

Harza-Ebasco acknowledges receipt of the following four amendments to the Proposal in accordance with your instructions:

Amendment Number	Date
1	June 25, 1982
2	July 2, 1982
3	July 15, 1982
4	July 30, 1982

We would like you to direct Alaska Power Authority inquiries during the evaluation of the Proposal to:

Stephen O. Simmons
Harza-Ebasco
400 - 112th Avenue, NE
Bellevue, Washington 98004
(206-451-4500)

Alaska Power Authority
Attention: David D. Wozniak
Susitna Hydroelectric Project Proposal

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Mr. Simmons will be in a position to respond to inquiries and route them to the proper individuals within the Joint Venture.

It is our pleasure to have the opportunity to provide this Proposal document to the Alaska Power Authority. We would be pleased to respond to questions as they arise.

Very truly yours,

HARZA/EBASCO, A JOINT VENTURE

Dwight L. Glasscock

Carl F. Whitehead

DLG:CFW:rz

HARZA · EBASCO

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SUMMARY OF COST PROPOSAL

The engineering services will be executed through a series of tasks. To the extent possible, these have been related to project features, and the remainder are defined as level of effort activities, such as project management. The estimated cost of the engineering services has been prepared for and correlated with each of the 38 tasks.

All costs have been estimated on a consistent basis at price levels prevailing as of June, 1982. No provision for escalation or inflation is included. The estimated cost of services has been determined from a detailed estimate of man-hours by classification and corresponding average salary rates. The rates used are for the Joint Venture but are also representative of those for both Harza and Ebasco. Other components of the costs include fringe benefits, overhead, fee, and direct costs to the Joint Venture. Examples of the direct costs include, in addition to out-of-pocket expenses, cost of the Anchorage office and subcontracts.

For each task, the estimate is presented in the format requested in the invitation. Details of individual task estimates are included in the Appendix of this volume. A summary of the overall estimate is included in the cost proposal section. In addition, manhour loading curves are included for convenience.

The estimated cost of engineering services has been distributed by fiscal years, as requested, and shown in summary form in the cost proposal section.

Subcontracts are a major element of the estimated cost. A listing of these and their respective costs are included herein. Our proposed fee is computed as a percentage of salaries, fringe benefits, and overhead. The base fee proposed is $2,965,000 (approximately 6%), and the award fee pool proposed is $4,445,000 (approximately 9%). The distribution of the fee, that is, the base to award fee is 40% and 60% respective, of the total fee.

A handling charge of 5% has been applied to subcontracts for services such as drilling or in cases where the Joint Venture must be responsible for engineering services performed by others. The nontechnical facilities design falls into this category. In instances when engineering services have been integrated into the Joint Venture operation, no handling fee is applied.

Our estimated cost of the engineering services, covered by this proposal, is distributed as follows:

Salaries Cost	$21,903,270
Fringe Benefits	8,761,300
Payroll Cost	$30,664,570
Overhead at 61%	18,705,400
Manhour Cost	$49,369,980
Handling Fee	855,900
Base Fee	2,965,000
Subtotal	$53,190,880
Direct Costs	$11,379,440
Subtotal, Engineering Services	$64,570,320
Subcontracts	35,012,480
Grand Total	$99,582,800
Award Fee	$ 4,445,000

The award fee concept provides an incentive for superior performance. We submit that the effectiveness of the incentive can be materially strengthened by making, at least, a part of the incentives objective rather than subjective as proposed by the Authority.

The draft contract provides a reasonable base for negotiation. Some inconsistencies do exist between the provisions of the contract and will require clarification. As we are in agreement with the provisions embodied in the draft contract, we are confident that the items for discussion will be resolved and result in a mutually satisfactory contract.

The personnel policies for Harza and Ebasco are in many ways most similar. For reference, we have included a copy of the Harza standard published policies, together with a proposed supplement for the Susitna Project.

HARZA-EBASCO

ENGINEERING SERVICES
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SYNOPSIS OF PROPOSED ENGINEERING SERVICES

The detailed proposal for the Engineering Services, in conjunction with the Susitna Hydroelectric Project, is contained in the Volume 1. A brief summary of the scope of the engineering services is outlined here for reference.

The proposal for Engineering Services is in response to the Alaska Power Authority's invitation APA-R-82-002 and is intended to be fully responsive to the invitation and Addenda Number One through Number Four. The engineering services to be furnished are:

- the preliminary and final design of the technical project facilities,
- management of design of nontechnical facilities (by subcontract),
- geotechnical and other field investigations in support of design activities,
- environmental investigations and studies,
- support of the FERC License Application after its submission,
- support services and logistics to carry out field investigations,
- support to the public information and participation program,
- preparation of project construction cost estimates, bid documents similar support services,
- preparation of budget forecasts, and
- assistance in start up and training of operators.

Harza/Ebasco recognizes the Authority's plan to secure Construction Management Services from another firm and under separate contract. We expect extensive liaison with the Construction Manager.

To provide the close contact with the Authority and to effectively execute the necessary work, we plan to manage and administer the program through an Anchorage office. This ar-

rangement affords full time, daily contact for coordination, liaison, and additional direction as the Authority may deem necessary. In addition to its overall management function, the Anchorage office will be responsible for direction of the field investigations, environmental studies, and the administration of all subcontracts, whether for engineering of services and logistics. Major design functions will be carried out in the Seattle office with the home offices of both Harza and Ebasco providing specialized services and a manpower pool in support of both the Anchorage and Seattle offices.

For effective management of engineering services, the work will be undertaken through a series of discrete, well-defined tasks. These tasks have been structured to define and cover specific functions or work packages. The entire management and technical program is covered by 38 tasks which are described in detail in Volume 1, the Technical Proposal. A table listing the tasks follows this section.

Harza/Ebasco will provide to the Authority information, data, and reports on progress and status of the work, including both management and technical activities. Such reports will reflect the current status as well as any work previously completed. Reports on the results of geologic and geotechnical field investigations will be compiled and issued and will serve as a basis for design. Similarly, environmental data will be collected, compiled, and assessed for use in determing the impacts and mitigating measures needed.

Technical design will be supported by criteria, design memos, computations and computer printouts, as applicable. The results of the technical design tasks will be consolidated into a series of documents for the procurement of major equipment and a series of documents for lump sum bidding of the construction. All lump sum construction contracts will go to bid with the details of the drawings complete and issued for construction. Issuance of drawings for bidding only will be avoided. Only in instances where quantities cannot be defined in advance, will we resort to unit price construction contracts. Each contract, when issued for bid, will include the supporting construction drawings, schedules, and cost estimates. Nontechnical facilities will be handled similarly through subcontracts.

The specific output of each task is detailed in the Technical Proposal and summarized as a part of respective task estimates in the Appendix of this Volume 2.

Description of Tasks

1. Project Management
2. Project Support Services
3. Review Prior Studies and Project Conceptual Design and Schedule
4. Environmental Studies
5. Geotechnical Studies
6. FERC License Support
7. Electric Power Systems Studies
8. Public Participation - Support
9. External Review Panel Meetings
10. Contract Document C-1: Diversion Tunnel and Facilities
11. Contract Document C-2: Main Dam I
12. Contract Document C-3: Main Dam II
13. Contract Document C-4: Main Spillway
14. Contract Document C-5: Outlet Facilities
15. Contract Document C-6: Power Facilities and Access Tunnels to Power Facilities
16. Contract Document C-7: Main Dam III
17. Contract Document C-8: Aggregates and Concrete Production
18. Contract Document C-9: Main Spillway, Concrete Structures including Outlet Works, Discharge Valve House
19. Contract Document C-10: Powerhouse Completion Contract
20. Contract Document C-11: Willow Control Center and Microwave Building

21. Contract Document E-1: Turbines and Governors

22. Contract Document E-2: Generator and Excitation Equipment

23. Contract Document E-3: Microwave System and Tower

24. Contract Document E-4: Willow Control Center Diesel Generator, Uninterrupted Power Supply

25. Contract Document E-5: Trashracks, Gates and Hoists - Including Structures

26. Contract Document E-6: Cranes and Hoists

27. Contract Document E-7: Outlet Works Valves-Inducing High Pressure Slide Gatees for Emergency Release

28. Contract Document E-8: Transformers

29. Contract Document E-9: Control Switchboards

30. Contract Document E-10: HV Switchgear

31. Contract Document E-11: Generator Voltage Switchgear

32. Contract Document E-12: Sta. Service Switchgear

33. Contract Document E-13: Computer Control

34. Contract Document E-14: 345 kV Power Cables - Furnish and Install

35. Contract Document E-15: Switchyard Structures - Busses and Accessories

36. Home Office Specialists Support to Field During Construction

37. Field Support

38. Design Subcontracts through Award - Non-technical Facilities

HARZA-EBASCO

APPENDIX

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Basis of Cost Estimate

The items included in the estimated cost of engineering services, together with their respective definition follows. Combined, these are the basis for the cost estimate.

The estimated cost of engineering services is intended to be in compliance with the Authority's invitation for the Susitna Proposal, both with respect to content and format. Should the Authority need any elaboration or amplification of the data submitted or require additional information, we will be pleased to comply with your request.

This cost information is understood to be an integral part of the Propsal, and, therefore, is in effect for 180 days following receipt by the Authority on August 16, 1982 or such extended date as the Authority may designate.

It is expected that the services covered by this Proposal will begin about January 2, 1983 and continue until all units are in operation, now scheduled for mid 1994. The major part of the services to be furnished will be completed prior to the award for the construction contracts. Under the work program proposed, the major construction contracts will have been awarded by early 1989.

Our estimate of costs of services reflect the same detail as the definition of services. Through the design period, the work plan is set forth in detail, and during the construction period which follows, the services required of the Engineers are not as clearly defined. The forecast for the cost of engineering services during construction is, of necessity, shown in less detail than during the design phase.

Format of Cost Estimate

In accordance with Amendment Number Three dated July 15, 1982, we are providing the estimated cost by task and in the format requested. Under some items, additional details or subitems have been included for clarity. In those circumstances, subtotals are provided to comply with the requested format items. All information and data shown in the cost estimate is for the Joint Venture and does not necessarily apply separately to either Harza or Ebasco.

Price Level and Escalation

All cost data in this estimate are based on salaries in effect or price levels of June, 1982. No adjustment for inflation or escalation is included in any cost item.

Manhour Estimate

Manhour estimates are in accordance with the definitions of the tasks and subtasks but summarized by task. Classifications of professional and support personnel conform to "Surveys of Engineering Salaries", Dietrich Associates, Inc.. Details of the classifications and designations are included in the Appendix.

Salary Rates

The hourly salary rates used in the estmate are derived by dividing the employee's actual salary by 2,080. No reduction has been made to reflect only the hours available for project work by omission of holidays, vacations, absent time, etc.. The foregoing items are later defined as components of the fringe benefits.

Professional personnel are paid for all hours worked but at straight time rates (no premium for overtime). Clerical and subprofessional personnel are paid time and one-half for hours in excess of 40 per week. No overhead is applied to the premium portion of overtime.

For personnel assigned to Alaska on a long term basis, one year or more, salaries will be adjusted. The adjustments are nine thousand dollars ($9,000.00) plus ten percent (10%) of the annual salary up to $60,000. No adjustment is made for any portion of the salary in excess of $60,000.

Overhead

Overhead is divided into two parts; one, "salary related charges" (fringe benefits) and other costs of doing business, including general management and administrative expenses. Fringe benefits are defined as:

- vacation
- sick leave
- holiday
- unemployment and payroll taxes

- social security taxes
- workmen's security taxes
- retirement benefits
- medical and other group insurance benefits

Examples of general overhead are:

- general administrative payroll
- general stenographic and clerical payroll
- rent of office and drafting room space
- utilities
- depreciation of office equipment
- cost of maintaining customary liability and property insurance, etc.

Handling Fee

Because of the integrated participation of engineering subcontractors, no handling fee is applied to those subcontracts. For subcontract for services and support held directly by the Joint Venture, a handling charge of five percent (5%) is added.

Fee

The fee is divided into two parts; a base fee and award fee pool. The suggested division of forty percent (40%) for base fee and sixty percent (60%) for the award fee pool has been used as directed by the invitation. For the purpose of this estimate, we have included a base fee of six percent (6%) of the sum of salaries, fringes and overhead and have allowed nine percent (9%) of the same for the award fee pool.

Equipment

The cost of such equipment to be furnished direectly by the Joint Venture is identified. In those instances where subcontractors may be required to furnish equipment, such cost has been included in the subcontract cost.

Travel and Related Cost

This item includes, in addition to fares for travel, the relateed cost for lodign, food, incidentals, etc.. Where applicable, the cost of relocation is included in this category.

Other

Included under this item are all other costs in conjunction with or for the benefit of the work. Where identifiation of subitems is clear, they have been designated and cover, but are not limited to, charges for use of programs and computers, reproductions of all kinds, printing, word processing equipment, communications, postage, express delivery services, model tests, etc.. Also included are the costs of establishing and maintaining the office in Anchorage. Facilities and offices at the site are being supplied through subcontractors and are included under subcontract costs.

Subcontracts

Substantial portions of the engineering support is being furnished under subcontract. Each subcontract is listed. In several instances, the support facilties subcontract apply to more than one task. In those cases, subcontract costs have been allocated to the respective task.

The major items of support service cost included in the subcontracts are

- extension of the Watana camp
- maintenance of the Watana camp
- helicopter service
- fixed wing aircraft service

Cost Data Tables

Following are a series of tabulations and summaries of cost data requested:

- Typical Task Estimate
- Summary of Manhours by Tasks
- Summary of Manhours by Fiscal Year
- Summary of Cost by Tasks
- Summary of Subcontract Cost
- Summary of Estimated Cost by Fiscal Year

Typical Task Estimate

Task Number: 16

Task: Contract Document C-7 Main Dam III
Embankment to Elevation 2210, Plus Relict Channel
Excavation and Embankment, Emergency Spillway Excavation,
Fuse Plug and Switchyard Excavation

OUTPUT

Civil Engineering Output

Coordination of Main Dam with Spillway, Intake, and
Emergency Spillway Interfaces.

Geotechnical Engineering and Geology Output

Design Memos

Relict Channels, Characteristics of Glacial Deposits
Relict Channel Treatment
Freeboard Dike
Emergency Spillway, Foundation Treatment
Fuse Plug

Contract Documents
Technical Specifications

Diversion and Care of Water
Clearing, Grubbing and Stripping
Open Excavation
Excavation Support
Drilling and Grouting
Fills
Instrumentation

Geotechnical Data Volume
Contract Drawings

Dam	Sheets 1-7
Foundation Treatment	Sheets 1-3
Instrumentation	Sheets 1-4
Relict Channel Treatment	Sheets 1-6
Emergency spillway foundation treatment and excavation	Sheets 1-3
Fuse Plug	

Construction Control Memos

Excavation and Support
Foundation Treatment
Fills
Instrumentation

Reports

Seepage through the dam and its foundation
Static stresses and deformations within the dam during construction and project operation
Seismic design parameters
Dynamic stresses and deformations during earthquake
Hydrology and potential for leakage through relict channels
Stability of relict channel slopes
Thaw of permafrost in relict channel treatment
Reservoir slides, size, effects and mitigating features

Hydraulic Engineering Output

Freeboard Design Memo
Memo and Sketches

Support Services Output

Contract Documents
Engineers Estimate

Environmental Science Output

Environmental input to Specifications

16. Contract Documents
C-7 - Main Dam III

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	1320	43.52	57450
Engineering Class. 7A	1672	30.63	51210
Engineering Class. 7	1922	23.74	47290
Engineering Class. 6	3808	20.18	76850
Engineering Class. 5	11720	17.49	204980
Engineering Class. 4	6696	15.24	102050
Engineering Class. 3	2544	13.73	34930
Engineering Class. 2	1680	11.63	19540
Engineering Technician Class. 5	224	15.76	3530
Engineering Technician Class. 4	896	13.94	12490
Engineering Technician Class. 3	2240	12.58	28180
Engineering Technician Class. 2	1120	9.68	10840
Draftsmen D	3360	12.11	40690
Draftsmen C	2240	10.18	22800
Draftsmen B	560	7.69	4310
Draftsmen A	560	6.17	3460
Word Processing	368	7.00	2580
Subtotal Salary	43000	16.82	701650
Fringe Benefits			289270
Payroll Costs			1012440
Overhead (61%)		—	617590
Manhour Cost			1630060
Profit (base fee on services) (6% of manhour costs)			97800
Subtotal			1,727,860

Task No 16

DIRECT COSTS			
	Equipment	$	0
	Travel	$	112,030
	Other	$	231,800
	Subtotal	$	343,830
SUBCONTRACTS			
	Subtotal	$	0
GRAND TOTAL		$	2,071,690

SUMMARY OF MAN-HOURS BY TASK

Task No.	Title	Man-Days	Man-Hours
1.	Project Management	9966	79728
2.	Project Support Services	20402	163216
3.	Rev. Prior Studies + Concep. Des.	2628.5	21028
4.	Environmental Studies	15455	123640
5.	Geotechnical Studies	14652.5	117220
6.	FERC License Support	3908.75	31270
7.	Electric Power Studies	377.5	3020
8.	Public Participation	1945	15560
9.	External Review Panel	2800	22400
10.	Contract C-1	1618	12944
11.	Contract C-2	1314	10512
12.	Contract C-3	1414	11312
13.	Contract C-4	682	5456
14.	Contract C-5	1378	11024
15.	Contract C-6	5280	42240
16.	Contract C-7	5375	43000
17.	Contract C-8	224	1792
18.	Contract C-9	1742	13936
19.	Contract C-10	11632	93056
20.	Contract C-11	1212	9696
21.	Contract E-1	1043.75	8350
22.	Contract E-2	808.75	6470
23.	Contract E-3	1123.75	8990
24.	Contract E-4	1086.75	8694
25.	Contract E-5	1311.75	10494
26.	Contract E-6	629.75	5038
27.	Contract E-7	282.75	2262
28.	Contract E-8	306.75	2454
29.	Contract E-9	856.75	6854
30.	Contract E-10	329.75	2638
31.	Contract E-11	414.75	3318
32.	Contract E-12	425.75	3406
33.	Contract E-13	1621.75	12974
34.	Contract E-14	490.75	3926
35.	Contract E-15	426.75	3414
36.	Home Office Specialists Support	4460	35680
37.	Field Support	13290	206320
	Total	132916.5	1063332

SUMMARY OF MANHOURS BY
FISCAL YEAR

Fiscal Year	Period Covered	Manhours
1983	January 1983 - June 1983	66,950
1984	July 1983 - June 1984	219,020
1985	July 1984 - June 1985	191,070
1986	July 1985 - June 1986	137,530
1987	July 1986 - June 1987	120,930
1988	July 1987 - June 1988	84,770
1989	July 1988 - June 1989	68,680
1990	July 1989 - June 1990	52,940
1991	July 1990 - June 1991	42,560
1992	July 1991 - June 1992	33,730
1993	July 1992 - June 1993	23,870
1994	July 1993 - June 1994	21,280
	Total	1,063,330

SUMMARY OF COST BY TASK

Task No	Title	Salary + Overhead + Fee	Direct Expenses	Subcontracts	Handling Charge on Subc. @ 5%	Total Billings
1.	Project Management	8,085,170	1,858,930			9,944,100
2.	Project Support Services	7,120,550	2,722,770	356,240		10,199,560
3.	Rev. Prior Studies + Concep. Des.	1,191,290	127,290			1,318,580
4.	Environmental Studies	5,706,150	816,600	9,353,950		15,876,700
5.	Geotechnical Studies	5,112,520	983,340	23,203,920	849,650	30,149,430
6.	FERC License Support	1,645,880	259,470			1,905,350
7.	Electric Power Studies	147,190	8,510	26,000		181,700
8.	Public Participation	816,830	153,000			969,830
9.	External Review Panel	1,355,070	220,520			1,575,590
10.	Contract C-1	488,790	99,420			588,210
11.	Contract C-2	432,950	68,940			501,890
12.	Contract C-3	433,190	116,010			549,200
13.	Contract C-4	206,550	51,140			257,690
14.	Contract C-5	413,940	100,290			514,230
15.	Contract C-6	1,636,410	684,540			2,320,950
16.	Contract C-7	1,727,860	343,830			2,071,690
17.	Contract C-8	68,400	23,390			91,790
18.	Contract C-9	533,180	422,450			955,630
19.	Contract C-10	3,625,060	345,160			3,970,220
20.	Contract C-11	366,800	63,290			430,090
21.	Contract E-1	369,210	80,840	25,000	1,250	476,300
22.	Contract E-2	275,970	31,620			307,590
23.	Contract E-3	366,460	57,170			423,630
1.	Contract E-4	374,500	51,840			426,340
25.	Contract E-5	408,850	79,800	25,000	1,250	514,900
26.	Contract E-6	209,880	34,850	25,000	1,250	270,980
27.	Contract E-7	103,680	18,310	50,000	2,500	174,490
28.	Contract E-8	97,580	19,790			117,370
29.	Contract E-9	285,370	36,580			321,950
30.	Contract E-10	108,780	20,190			128,970
31.	Contract E-11	137,080	16,660			153,740
32.	Contract E-12	140,620	16,660			157,280
33.	Contract E-13	543,430	55,820			599,250
34.	Contract E-14	152,390	150,450			302,840
35.	Contract E-15	134,060	16,660			150,720
36.	Home Office Specialists Support	1,661,780	861,270			2,523,050
37.	Field Support	5,848,760	362,040			6,210,800
38.	Design Subcontracts			1,947,370		1,947,370
	Total	52,332,180	11,379,440	35,012,480	855,900	99,580,000

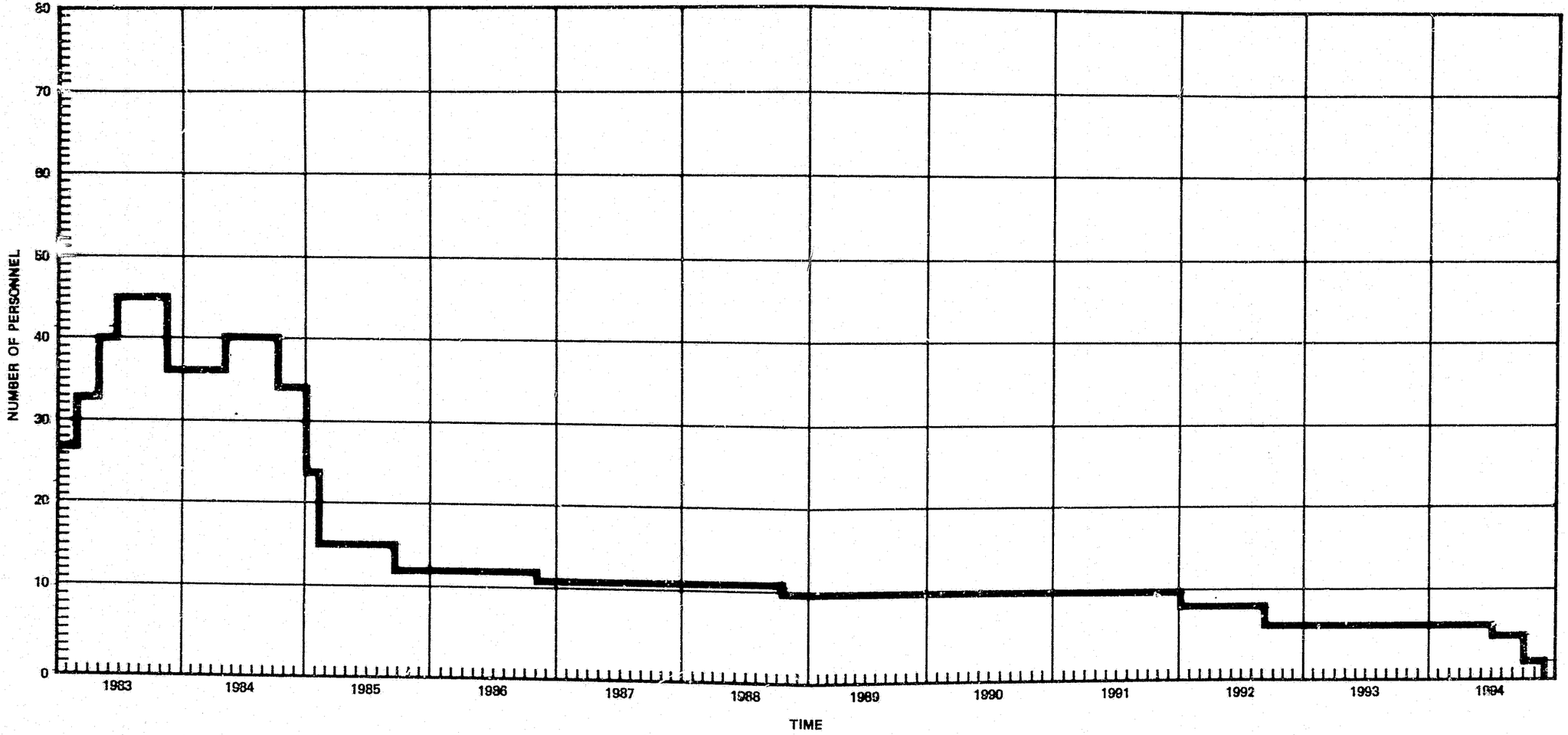
SUMMARY OF SUBCONTRACT COSTS

Task No.	Description		Cost
2	Frank Moolin	Construction Cost Estimates	$ 356,240
4	AEIDC	Data Management	$2,000,000
	R & M Consultant	Hydrology Field Data Monitoring	$ 532,200
	AEIDC	Fisheries/Aquatic	$1,071,000
	Trihey	Fisheries/Aquatic	$ 145,000
		Field Monitoring	$2,400,000
	LGL	Terrest. Ecology	$ 846,000
		Const/Invest. Monitor	$ 80,000
	Frank Orth & Assoc	Socioeconomics	$1,920,000
		Recreation Master Plan Devel.	$ 120,000
	R.F. Schelle	Aesthetics	$ 96,000
	Frank Moolin	Land Use Permits	$ 143,250
5	Frank Moolin	Mgmt. of Site Investigation	$ 730,000
	Harding-Lawson Assoc.		$4,615,000
	CIRI/H&N	Camp Operation	$7,235,000
	Foundation Sciences, Inc.		$ 200,000
	EBA Engin. Consult.		$ 480,000
	Becker Drilling (FY 84 Only)		$ 500,000
	R. Kreig		$ 185,000
	Rock Drilling		$1,350,000
	Test Grouting		$ 150,000
	Adit Excavation		$3,000,000
	Surveying		$ 870,000
	Helicopter Support		$3,236,000
	Fixed Wing Support		$ 652,000
7	TNA Studies (Electrical)		$ 26,000
21	Hunt	Shop Inspection (Mech)	$ 25,000
25	Hunt	Shop Inspection (Mech)	$ 25,000
26	Hunt	Shop Inspection (Mech)	$ 25,000
27	Hunt	Shop Inspection (Mech)	$ 50,000
38	Frank Moolin	Design Mgmt of Non-Technical Facilities	$1,947,370

SUMMARY OF ESTIMATED COSTS BY
FISCAL YEAR

Fiscal Year	Period Covered	Estimated Costs
1983	January 1983 - June 1983	$ 6,440,000
1984	July 1983 - June 1984	19,270,000
1985	July 1984 - June 1985	18,190,000
1986	July 1985 - June 1986	18,170,000
1987	July 1986 - June 1987	8,100,000
1988	July 1987 - June 1988	5,980,000
1989	July 1988 - June 1989	5,460,000
1990	July 1989 - June 1990	4,430,000
1991	July 1990 - June 1991	4,420,000
1992	July 1991 - June 1992	4,420,000
1993	July 1992 - June 1993	3,110,000
1994	July 1993 - June 1994	1,590,000
	Total	$99,580,000

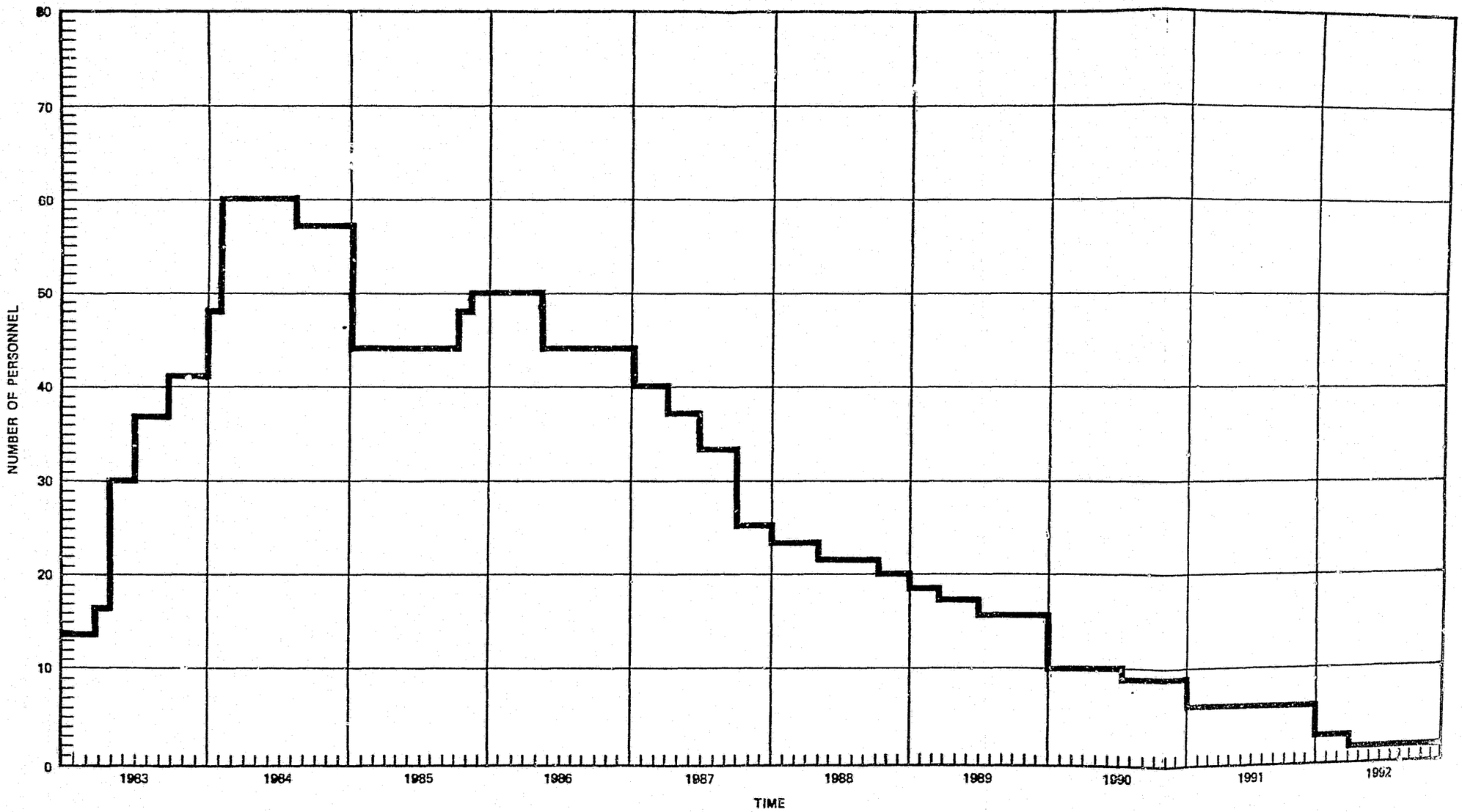
EXHIBIT B - 9



SUSITNA HYDROELECTRIC PROJECT

MAN LOADING BY MONTH
ANCHORAGE OFFICE &
FIELD INVESTIGATIONS

HARZA-EBASCO



SUSITNA HYDROELECTRIC PROJECT

MAN LOADING BY MONTH
BELLEVUE OFFICE

HARZA-EBASCO

FEE PROPOSAL

PROPOSED CONTRACT

APPENDIX

HARZA·EBASCO

FEE PROPOSAL
Compensation

For the Engineering Services in conjunction with the Susitna Hydroelectric Project, and covered by this Proposal, the Joint Venture of Harza/Ebasco shall be paid the sum of:

1. Salaries
2. Salary Fringes
3. Overhead
4. Base Fee
5. Direct Costs

In addition to the foregoing items, the Joint Venture may be paid an Award Fee up to one hundred and fifty percent (150%) of the base fee, if the Authority determines that the performance entitles the Joint Venture to additional compensation.

Definitions of Terms. Terms above used in the Fee Proposal are defined:

1. Salaries - Actual direct salary payments to all personnel, including officers, engineers, designers, supervisors, draftsmen, other technical personnel, word processors, and other personnel for a time directly engaged on the work.

2. Fringe Benefits - Payroll charges including vacation, sick leave, and holiday pay, unemployment and payroll taxes, social security contributions, workmen's compensation insurance, retirement benefits, medical insurance and group insurance benefits.

3. Overhead - Costs which cannot be allocated to specific projects. Example are Corporate Management expenses (other than officers' time spent directly on projects), general administrative payroll, general stenographic and clerical payroll, rent of office and drafting room space, depreciation of office equipment, cost of maintaining customary liability and property insurance, local telephone charges, etc..

4. Base Fee - Payment to the Joint Venture for interest on invested capital, readiness to serve, and a limited profit.

5. Award Fee - Payment to the Joint Venture of a fee in addition to the base fee as an incentive for superior performance.

6. Direct Costs - Costs which are directly applicable to the work such as transportation and subsistence expenses on travel in the interest of the work, project offices, relocation to and return from project offices, long distance telephone, telegraph and telex expenses, reproductions, special insurance, Harza/Ebasco (in-house) and outside electronic computer rental costs, usage of computer programs, model and laboratory testing, aerial and ground surveying, subsurface exploration and other expenses for the benefit of the work.

Fee Concept

Award Fee Concept. The Authority has stated its preference for and intention to use a "Cost Reimburseable Plus Fee" type contract for the performance on the engineering services. Further, the Authority has indicated its intention to use an "Award Fee" to foster an efficient engineering operation and to obtain effective prosecution of the work. Harza/Ebasco concur with the Authority and endorse the concept of an award fee as an incentive for performance. The intent of the invitation is to fix both the base fee and the award fee pool in June, 1982 dollar (the base for estimating the cost of engineering services). The total fee will be divided into two components: a "base" and an "award" fee; the distribution is 40% base fee and 60% award fee pool. The suggested distribution is reasonable and acceptable. It is presumed that this subject of fee would be open to additional discussion during contract negotiations.

Once the base fee has been established, it will be paid in installments based on progress of the work. An award fee, to be determined subjectively and by the Authority only, may be granted. Each three months, the Engineer's performance will be reviewed by the Authority who shall make a determination on the amount of an award fee, if any, to which the Engineer is entitled. Upon determination, in accordance with the procedure outlined, the award fee for the respective period is fixed. There will be no carryover of any award fee not granted in a given performance period to subsequent periods. Thus, the maximum amount of award fee is fixed on a periodic basis, and any portion not granted is forever lost. It is further understood that the intent is to establish evaluation measurable criteria

on which performance in the respective period will be based, and the Engineer will be notified of the criteria not less than 30 days prior to the period for which the criteria applies. This will require quarterly updating of the performance criteria and weighting factors to accommodate variations of the work then in progress.

The distribution of both the base fee and award fee will be prorated for each three month period. That is, the portion of the base fee and award fee will be determined as the product of the total respective fee times the estimated cost of services for completion during the period divided by the total estimated cost of engineering services for the project. This factor will be in a constant dollar base (June, 1982) and will be exclusive of any other contract modification.

Stated mathematically

$$\text{Base fee (in any period)} = \text{Project Base Fee} \times \frac{\text{Estimated Cost of Services During Period}}{\text{Total Estimated Cost of Engineering Services}}$$

$$\text{Award fee (in any period)} = \text{Project Award Fee Pool} \times \frac{\text{Estimated Cost of Services During Period}}{\text{Total Estimated Cost of Engineering Services}}$$

The proposed Base Fee and Award Fee Pool have been calculated as a percent of the sum of direct salary, fringes, and overhead costs in June, 1982 dollars. In keeping with instructions for estimating engineering costs on a constant basis, we have determined the base and award fees on a similar basis; there is no allowance included for escalation. The provisions for inflation and escalation are subjects for discussion and agreement.

For engineering services in conjunction with the proposed Susitna Hydroelectric Project, as defined by this Proposal and the Tasks delineated therein, we propose a project base fee of $2,965,000 and a project award fee pool of $4,445,000 based on June, 1982 dollars.

Observations on Award Fee

The design phase of the Susitna Project, to which the invitation has been limited, involves work over which the Engineer has a maximum of control. Because of the level of control, the Engineer has the ability to minimize his own risks through ef-

fective management. Consequently, the Engineer, should be willing to assume the maximum of responsibility for his own performance.

The Award Fee concept could be materially strengthened, in our opinion, by establishing objective performance targets and then measuring the performance against those established targets. The performance period may be greater than three months as proposed by the Power Authority. Should the measured performance be on target, a commensurate "award fee" would be granted. For superior performance, the Award Fee would increase to a maximum; failure to meet performance standard would result in a decrease in the Award Fee and reduction to zero as a minimum. Examples of such targets might be meeting or surpassing the scheduled completion date, together with maintaining the budgeted cost for a task or subtask.

Performance standards for the Award Fee should be readily definable and remain essentially constant throughout the period of performance. Such performance standards can be selected to have the maximum impact on the overall project program and cost. In that respect, the value of "on time" performance can hardly be overstated and should be given consideration.

In the early stages of the project, the "on time" availability of the Engineer's work can establish the "schedule performance standards" for the project. Also, "on time" availability of the Engineer's output may be a significant contribution in holding construction costs to the estimated amounts.

Maintaining engineering costs at the budgeted amounts is the obligation of the Engineer and also can be used as a performance standard either separately or in conjunction with the schedule.

We endorse and are willing to undertake the design engineering phase of the Susitna Hydroelectric Project under the cost reimbursable, plus base fee, plus award fee contract. Further, we believe, that there is ample opportunity to select equitable objective performance standards for measuring the Engineer's performance. Beyond that, it's our opinion the incentive of an Award Fee will significantly contribute to the Authority obtaining a superior performance.

Alternate Fee Proposal

Both Harza and Ebasco have previously provided engineering services under incentive fee contracts; the fee arrangements have varied from contract to contract. We are flexible in how the fee structure is developed and are prepared to present to the Power Authority alternative fee structures having measurable incentives which we believe will enhance the Engineer's performance.

Billing

Harza-Ebasco are mindful of the provisions in Exhibit 4, "Billings and Purchasing Instructions", of the proposed contract. We appreciate the Authority's commitment to "Special Billing" under Item (3.b) and "Progress Billing" under item (C.3c).

The Joint Venture will comply with the provisions under Exhibit 4 at a time designated and cooperate with the Authority in developing the "Form of Billing Documents" which are yet to be determined as indicated under Item (8).

PROPOSED CONTRACT

HARZA-EBASCO

COMMENTS ON DRAFT CONTRACT

Harza-Ebasco has reviewed the Draft Contract accompanying the Power Authority's RFP. The majority of the Draft Contract provisions are acceptable in their present form, although we have noted a number of inconsistencies, which will require clarification. In addition, the Power Authority has left several areas open for later finalization.

The following are examples of particular provisions which would require discussion and clarification:

1. Article I(a)(1) Scope: The scope description in this paragraph is more suggestive of a contract for performance of construction work rather than engineering services.

2. Article III(f): This paragraph, covering physical responsibility for project property, also appears to be more appropriate for a construction, rather than an engineering services, contract.

3. Article V(b)(2) Award Fee: Alternate approaches to incentive fee arragements are discussed elsewhere in this Proposal.

4. Article V(d)(1) Bonds and Insurance: We read this provision to include as an allowable cost the costs of bonds and insurance required under the Contract; however, clarification is requried regarding the reference to exclude State property in this paragraph and excluded Power Authority property in paragraph V(e)(13).

5. Article V(e)(13) Insurance, Article V(e)(16) Losses (i) and Article VI(c) Financial Settlement (iv)(D) refer to Article XVII as an insurance article. Article XVII covers only termination by the Power Authority.

6. Article X Insurance: Paragraphs 1 and 2 require the Contractor to maintain insurance covering both the Contractor and its subcontractors. It is our understanding that the subcontractor requirement has been deleted in several recent Power Authority contracts. Moreover, insurance requirements have been substan-

tially modified by the Power Authority's current Professional Services Contract Specifications. Harza-Ebasco proposes that the Power Authority consider alternative insurance arrangements as a means of affording increased coverages and reducing premium costs to the Power Authority, for example:

(a) For Professional Liability, we recommend that the Power Authority and Harza/Ebasco explore the various ways in which this insurance can be obtained. A project policy, for example, normally provides the maximum protection for the client and should therefore be considered.

(b) In the area of Comprehensive General Liability, we are aware that the Power Authority has previously investigated the use of wrap-up insurance programs. For a project as large as Susitna, Harza/Ebasco recommends that a wrap-up program be considered as we believe that such a program offers the potential for significant cost savings.

(c) Alternatives to Aircraft/Watercraft Liability should be looked into as a means of avoiding excessive premium costs.

7. Article XV Disputes: We suggest arbitration be considered as a mutually satisfactory mechanism for the resolution of disputes. Arbitration could be used for claims up to an agreed upon amount, with claims in excess of that amount being referred to an Alaska State court.

8. Article XXII Warranty: The principles embodied to this Article are generally acceptable, although we believe that some portions of the current language would be unacceptable to insurance carriers.

9. Article XXV Inspection and Correction of Defects: We would require clarification as to the interaction between this Article and Article XXII, Warranty.

10. We would recommend including an additional article placing an overall limitation on the Contractor's liability and excluding liability for consequential damages.

Both Harza and Ebasco have successfully negotiated recent contracts with the Power Authority and, based on that experience, are confident that a mutually acceptable contract can quickly be agreed to with the Power Authority. As we are in agreement with the principles embodied in the Draft Contract, the items for discussion can be resolved without difficulty.

APPENDIX

HARZA-EBASCO

Task Number: 1

Task: Project Management

OUTPUT

Project Work Plan and Schedule

Monthly Progress Reports showing design work completed, work in progress and fiscal status of the JV contracted work

Agenda for and reports on decisions made at conferences and meetings

Project Cost Estimates and Updated Estimates

Coordinated Contract Documents for the equipment supply and construction contracts of the Watana Project

Contract awards in accordance with APA directives and procedures

Coordination of Home Office support and field support to APA's Construction Manager.

1. Project Management	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	44160	43.52	1921840
Engineering Class. 7A	20976	30.63	642490
Engineering Class. 7	5472	23.74	129910
Engineering Class. 6		20.18	
Engineering Class. 5		17.49	
Engineering Class. 4	9120	15.24	138990
Engineering Class. 3		13.73	
Engineering Class. 2		11.63	
Engineering Technician Class. 5		15.76	
Engineering Technician Class. 4		13.94	
Engineering Technician Class. 3		12.58	
Engineering Technician Class. 2		9.68	
Draftsmen D		12.11	
Draftsmen C		10.18	
Draftsmen B		7.69	
Draftsmen A		6.17	
Word Processing		7.00	
Subtotal Salary	79728	35.54	2833230
Cost of living differential			550760
Salary Cost			3383990
Fringe Benefits.			1353600
Payroll Cost			4737590
Overhead (61%)			2889930
Manhour Cost			7627520
Profit (base fee on services) (6% of manhour cost)			457650
Subtotal			8,085,170

Task No 1

DIRECT COSTS

Equipment		$	647,710
Travel		$	40,000
Other		$	1,171,220
	Subtotal	$	1,858,930
SUBCONTRACTS		$	0
GRAND TOTAL		$	9,944,100

Task Number: 2

Task: Project Support Services

OUTPUT

Support Services Output

"EPICS" control system applied to JV work program

Description of Technical Services for the JV work

Project CPM

Monthly Progress Reports for Power Authority submitted to Project Manager for

Baseline Project Estimate

Study Estimates

Engineers Estimates

Preliminary Project Estimate

Definitive Project Estimate

Standard Conditions of Contract

Contract Documents, prepared, assembled and issued

Notices to Bidders

Addenda to Contract Documents issued to Bidder

Receipt and Evaluation of Contractual Terms of Bids

Letters of Recommendation of Award of Contract

Contract Negotiation Support to Power Authority

Project Construction Schedule and Updates

Vendor QA inspections

2. Project - Support Services	Hours	Rate	Total
PRIME CONTRACTOR CASTS			
Salaries			
Engineering Class. 8		43.52	
Engineering Class. 7A		30.63	
Engineering Class. 7		23.74	
Engineering Class. 6	36992	20.18	746500
Engineering Class. 5	61480	17.49	1075290
Engineering Class. 4	42328	15.24	645080
Engineering Class. 3	20816	13.73	285800
Engineering Class. 2	1600	11.63	18610
Engineering Technician Class. 5		15.76	
Engineering Technician Class. 4		13.94	
Engineering Technician Class. 3		12.58	
Engineering Technician Class. 2		9.68	
Draftsmen D		12.11	
Draftsmen C		10.18	
Draftsmen B		7.69	
Draftsmen A		6.17	
Word Processing		7.00	
Subtotal Salary	163216	16.98	2771280
Cost of living differential			208980
Salary Cost			2980260
Fringe Benefits			1192100
Payroll Costs			4172360
Overhead (61%)			2545140
Manhour Cost			6717500
Profit (base fee on services) (6% of manhour cost)			403050
Subtotal			7120550

Task No 2

DIRECT COSTS

Equipment	$	40,000
Travel	$	357,510
Other	$	2,325,260
Subtotal	$	2,722,770

SUBCONTRACTS

A	Frank Moolin Construction cost estimates	356,240
	Subtotal	$ 356,240

GRAND TOTAL $ 10,199,560

Task Number: 3

Task: Review Prior Studies, Develop Conceptual Design and Master Project Schedule

OUTPUT

Management Output

Input to Monthly Progress Report on status of Task, with respect to schedule and budget

Coordinated Project Conceptual Design Report

Civil Engineering Output

Civil/structural assistance to other disciplines as required

Sketches/layouts as required

Input to Project Conceptual Design Report in form of Drawings, quantity estimates and text or Civil/Structural aspects of Project Conceptual Design

Hydrology Output

Hydrology input to other disciplines' subtasks in form of PMF, PDF, diversion flood frequency study, sedimentation study and environmental aspects

Texts and graphs for Project Conceptual Design Report

Hydraulic Engineering Output

Hydraulics input to other disciplines' subtasks in form of preliminary surge chamber level, flood routing results etc.

Input to Project Conceptual Design Report in form of text and drawings

Geotechnical Engineering Output

Geotechnical input to other disciplines in form of criteria for location, orientation and support requirements for underground structures; cut slopes and support requirements for surface features

OUTPUT

Input to Project Conceptual Design Report in form of text, drawings of Main Dam and material quantity estimates

Mechanical Engineering Output

Mechanical input and coordination to subtasks of other disciplines

Input to Project Conceptual Design Report in form of text, drawings, and materials and equipment cost estimates

Electrical Engineering Output

Electrical input and coordination to subtasks of other disciplines

Input to Project Conceptual Design Report in form of text, drawings, and materials and equipment cost estimates

Environmental Output

Input of environmental considerations and guidance to other disciplines in accomplishing work of their subtasks

Text describing mitigation measurs in Conceptual Design Report

Support Services Output

Project Conceptual Design Layout construction schedule

Input to Project Conceptual Design Report in form of text describing considerations in developing construction schedule and procedures used in estimating costs

3. Review Prior Studies and Project Conceptual Design and Schedule	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	1292	43.52	56230
Engineering Class. 7A	5048	30.63	154520
Engineering Class. 7	2780	23.74	66000
Engineering Class. 6	4552	20.18	91860
Engineering Class. 5	4496	17.49	78640
Engineering Class. 4	1016	15.24	15490
Engineering Class. 3	64	13.73	880
Engineering Class. 2		11.63	
Engineering Technician Class. 5	264	15.76	4160
Engineering Technician Class. 4	264	13.94	3680
Engineering Technician Class. 3	176	12.58	2210
Engineering Technician Class. 2	88	9.68	850
Draftsmen D	528	12.11	6390
Draftsmen C	352	10.18	3580
Draftsmen B	88	7.69	680
Draftsmen A		6.17	
Word Processing	20	7.00	140
Subtotal Salary	21028	23.08	485410
Cost of living differential			13200
Salary Cost			498610
Fringe Benefits			199440
Payroll Costs			698050
Overhead (61%)			425810
Manhour Cost			1123860
Profit (base fee on services) (6% of manhour cost)			67430
Subtotal			1,191,290

Task No 3

DIRECT COSTS

Equipment		$	0
Travel		$	20150
Other		$	107140
	Subtotal	$	127290

SUBCONTRACTS

	Subtotal	$	0
GRAND TOTAL		$	1,318,580

Task Number: 4

Task: Environmental Studies

OUTPUT

Management Output

Input to Monthly Progress Report on status of Task with respect to schedule and budget

Coordinated effort for studies

Civil Engineering Output

Layout sketches as required

Geotechnical Engineering and Geology Output

Sections of the Environmental Report as required

Hydraulic Engineering Output

Parts of environmental report or letters answering FERC questions.

Environmental Science Output

Final Environmental Report

Hydrology Output

Periodic Data Documentation

Report on River - Reservoir Flow, Depth, and Velocity Studies

Report on River - Reservoir Temperature Studies

Report on Sedimentation Modeling Studies

Report on Water Quality Modeling Studies

Report on Ice Cover Studies

Support Services Output

Environmental Protection Provisions in contract specifications

Hydrology Subtasks

Hydrologic Studies

Review and Evaluate Previous Studies

Continue Hydrologic and Meteorological Data Monitoring

River Sedimentation Modeling Studies

River - Reservoir Water Quality

Update and/or Upgrade River - Reservoir Ice Cover Duration and Thickness Studies at Selected Locations

Support Services Subtask

Coordinate the technical and contractual portions of the specifications for construction to support the requirements of the environmental studies

Note: Management and Support Services Subtasks budgets are included with Task Number 1 Management and Task Number 2 Support Services.

4. Environmental Studies	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	1176	43.52	51180
Engineering Class. 7A	2352	30.63	72040
Engineering Class. 7	17688	23.74	419910
Engineering Class. 6	41272	20.18	832870
Engineering Class. 5	35376	17.49	618730
Engineering Class. 4	11792	15.24	179710
Engineering Class. 3	8264	13.73	113460
Engineering Class. 2			
Engineering Technician Class. 5	200	15.76	3150
Engineering Technician Class. 4	504	13.94	7030
Engineering Technician Class. 3	96	12.58	1210
Engineering Technician Class. 2			
Draftsmen D	600	12.11	7270
Draftsmen C	600	10.18	6110
Draftsmen B			
Draftsmen A			
Word Processing	3720	7.00	26040
Subtotal Salary	123640	18.92	2338710
Cost of living differential			49560
Salary Cost			2388270
Fringe Benefits			955310
Payroll Costs			3343580
Overhead (61%)			2039580
Manhour Cost			5383160
Profit (base fee on services) (6% of manhour cost)			322990
Subtotal			5706150

Task No 4

DIRECT COSTS

Equipment	$	0
Travel	$	278,700
Other	$	537,900
Subtotal	$	816,600

SUBCONTRACTS

A	AEIDC	Data Management	2,000,000
B	R & M	Hydrologic Monitoring	532,200
C	AEIDC	Fisheries/Aquatic	1,071,000
D	Trihey	Fisheries/Aquatic	145,500
E	AEIDC	Fisheries/Aquatic Habitat Studies	2,400,000
F	LGL	Terrestrial Ecology	846,000
G	(Local consultant)	Historical Archeological Surveys	80,000
H	F. Orth	Socioeconomics	1,920,000
I	(Local consultant)	Recreation Master Plan	120,000
J	R.F. Schelle	Aesthetics	96,000
K	Frank Moolin	Land Use Permits	143,250
		Subtotal	$ 9,353,950

GRAND TOTAL $ 15,876,700

Task 4 Further Detail

	Environmental Studies and Design: 1983-1985	Support During Construction: 1985-1992	Permitting
Manhours	42,038	76,657	4945
Salary, Overhead and Fee	1,940,090	3,537,810	228,250
Directs	277,640	506,290	32670
Subcontracts	3,795,700	5,415,000	143,250
Total	6,013,430	9,459,100	404,170

Task Number: 5

Task: Geotechnical and Geological Field Studies

OUTPUT

Civil Engineering Output

- Sketches of mapping and surveying areas
- Memo on geotechnical data for structures required

Geotechnical Engineering and Geology Output

- Geologic Borehole Logs
- Report of Test Grouting
- Adit Geologic Maps
- Petrographic Report
- Rock Core Tests - Report
- Aggregate Suitability - Report
- Report-Becker Drill Data and Boring Logs for
  F.Y. 83 and F.Y. 84
- Boring Logs and Drill Hole Data for
  F.Y. 83,
  F.Y. 84, and
  F.Y. 85
- Exploration Logs for
  F.Y. 83,
  F.Y. 84, and
  F.Y. 85
- Report - In-situ Soil Tests
- Soils Testing Reports
  F.Y. 83,
  F.Y. 84, and
  F.Y. 85

Main Dam Area - Geologic Maps
Borrow & Quarry Areas - Geologic Maps
Relict Channels - Geologic Maps
Reservoir - Geologic Maps

Plans of Geophysical Traverses
Report of Geophysical Exploration
including Velocity Sections along each Traverse

Report of Ground Temperature Surveys
Report of Ground Water Data

Hydrogeology Report including chapters on
- Main Site Area
- Relict Channels
- Borrow Areas
- Reservoir Area

Annual Reports of Geotechnical Investigations
- FY 83,
- FY 84, and
- FY 85

Final Geotechnical Report of Investigations for Design

Field Data Volume - Surface Geophysical Surveys
Lab Test Data Volume - Subsurface Geophysical Surveys

Contract Documents Volume - Boring Logs Rock
Boring Logs Soil
Volume - Lab Test Data Rock
Lab Test Data Soils
Volume - Logs, Test pits, Trenches
Volume - In-situ Tests, Rock, Soils
Volume - Reservoir Maps
Volume - Instrumentation Data

Drawings-Geotechnical

1. Subsurface Exploration Plan - Damsite
2. Subsurface Exploration Plan - Watana Channel
3. Subsurface Exploration Plan - Fog Lakes Channel
4. Borrow Areas - Location and Exploration

5. Geotechnical Studies	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	904	43.52	39340
Engineering Class. 7A	904	30.63	27690
Engineering Class. 7	3304	23.74	78440
Engineering Class. 6	16424	20.18	331440
Engineering Class. 5	49304	17.49	862330
Engineering Class. 4	27392	15.24	417450
Engineering Class. 3	10928	13.73	150040
Engineering Class. 2			
Engineering Technician Class. 5			
Engineering Technician Class. 4	392	13.94	5460
Engineering Technician Class. 3	392	12.58	4930
Engineering Technician Class. 2	392	9.68	3790
Draftsmen D	392	12.11	4750
Draftsmen C	3136	10.18	31920
Draftsmen B	2352	7.69	18090
Draftsmen A	784	6.17	4840
Word Processing	220	7.00	1540
Subtotal Salary	117220	16.91	1982050
Cost of living differential			157760
Salary Cost			2139810
Fringe Benefits			855920
Payroll Costs			2995730
Overhead (61%)			1827400
Manhour Cost			4823130
Handling Fee (subcontract at 5%)			849650
Profit (base fee on services) (6% of manhour cost)			289,390
Subtotal			5,962,170

Task No 5

DIRECT COSTS

	Equipment	$	0
	Travel	$	206,000
	Other	$	777,340
	Subtotal	$	983,340

SUBCONTRACTS

A	Frank Moolin Mgmt. of Site Investigation	$	730,920
B	Harding-Lawson Associates		4,615,000
C	CIRI/H&N Camp Operation		7,235,000
D	Foundation Sciences, Inc.		200,000
E	McCelland-EBA Inc.		480,000
F	Becker Drilling		500,000
G	R.A. Krieg & Assoicates Inc.		185,000
H	Rock Drilling (FY 84 Only)		1,350,000
I	Test Grouting		150,000
J	Adit Excavation		3,000,000
K	Surveying		870,000
L	Helicopter Support		3,236,000
M	Fixed Wing Support		652,000
	Subtotal	$	23,203,920
GRAND TOTAL		$	30,149,430

Task 5 Further Detail

Item	Management	Rock Exploration	Soil Exploration	Support Services	Instrumentation	Total
Man-Hours	11,560	46,870	28,050	26,740	4,000	117,220
Salary, Overhead and Fee	586,020	2,012,680	1,204,370	1,147,790	161,660	5,112,520
Directs	112,710	387,120	231,650	220,770	31,090	983,340
Subtotal	698,730	2,399,800	1,436,020	1,368,560	192,750	6,095,860
Subcontracts:						
A	-	330,000	190,000	183,000	27,920	730,920
B	-	-	4,615,000	-	-	4,615,000
C*	-	3,420,000	1,975,000	1,900,000	301,750	7,596,750
D	-	200,000	-	-	-	200,000
E	-	-	480,000	-	-	480,000
F*	-	-	525,000	-	-	525,000
G	-	-	-	185,000	-	185,000
H*	-	1,417,500	-	-	-	1,417,500
I*	-	157,500	-	-	-	157,500
J*	-	3,150,000	-	-	-	3,150,000
K*	-	-	-	913,500	-	913,500
L*	-	1,529,010	883,430	849,450	135,910	3,397,800
M*	-	308,000	178,000	171,000	27,600	684,600
Subtotal SubContracts	-0-	10,512,010	8,846,430	4,201,950	493,180	24,053,570
Total	698,730	12,911,810	10,282,450	5,570,510	685,930	30,149,430

* Includes 5% handling charge

Task Number: 6

Task: FERC License Support

OUTPUT

Management Output

Coordinate responses and support to Power Authority during FERC License Review Period

Environmental, Geotechnical and Energy Planning Output

Memos, Exhibits, and presentations as required to support Power Authority during FERC License Review

6. FERC License Support	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	272	43.52	11840
Engineering Class. 7A	544	30.63	16660
Engineering Class. 7	5984	23.74	142060
Engineering Class. 6	9520	20.18	192110
Engineering Class. 5	8160	17.49	142710
Engineering Class. 4	2720	15.24	41450
Engineering Class. 3		13.73	
Engineering Class. 2		11.63	
Engineering Technician Class. 5	160	15.76	2520
Engineering Technician Class. 4	320	13.94	4460
Engineering Technician Class. 3		12.58	
Engineering Technician Class. 2		9.68	
Draftsmen D	1120	12.11	13560
Draftsmen C	1280	10.18	13030
Draftsmen B	320	7.69	2460
Draftsmen A		6.17	
Word Processing	870	7.00	6090
Subtotal Salary	31270	18.83	588950
Cost of living differential			99920
Salary Cost			688870
Fringe Benefits			275550
Payroll Costs			964420
Overhead (61%)			588300
Manhour Cost			1552720
Profit (base fee on services) (6% of manhour cost)			93160
Subtotal			1645880

Task No 6

DIRECT COSTS

Equipment		$	0
Travel		$	24,600
Other		$	234,870
	Subtotal	$	259,470

SUBCONTRACTS

	Subtotal	$	0

GRAND TOTAL		$	1,905,350

Task Number: 7

Task: Electric Power Systems Studies

OUTPUT

Management Output

Input to Monthly Progress Report on status of Task with respect to schedule and budget

Electrical Engineering Output

A report that includes results and recommendations with respect to

Transient Network Analysis Studies (TNA)
- Set Basic Impulse Insulation Level (BIL)
- Set Basic Switching Surge Level (BSL)
- Insulation Coordination
- Determine Surge Arrester Rating
- Determine Transient and sustained voltage conditions at power plant substations
- Investigate Ferro Resonance Conditions taking into account saturation characteristics of Generator Step-up Transformers
- Verify need for resistors in high voltage circuit breakers for opening and closing operation
- Analysis of switching surge levels and transient voltage conditions for underground powerhouse high voltage cables.

Transient Stability Studies
- Determine limits of machine inertia relative to power system stability
- Verify generator and generator step-up transformer reactance limits.
- Verify application of generator excitation and speed governor characteristics
- Provide input to hydraulic studies relative to power system
- Determine circuit breaker reclosing requirements

Short Circuit Studies
- Provide equivalent impedance values for TNA studies
- Determine circuit breaker interrupting ratings
- Provide data base to calculate fault current levels required to determine relay requirements

Load Flow Studies

Determine power flow levels and plant voltage regulation requirements

Verify selection of machine power factor

Establish generator step-up transformer tap setting requirements

Provide data base for stability and TNA studies. In conjunction with reservoir operations studies, determine power system losses, and feasibility of various modes of hydro-thermal generation dispatch.

Mechanical Engineering Output

A memorandum that lists the turbine and governor characteristics of the generating plants included in the system studies

7. Electric Power Systems Studies	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	32	43.52	1390
Engineering Class. 7A	64	30.63	1960
Engineering Class. 7	848	23.74	20130
Engineering Class. 6	1192	20.18	24050
Engineering Class. 5	560	17.49	9790
Engineering Class. 4	144	15.24	2190
Engineering Class. 3			
Engineering Class. 2			
Engineering Technician Class. 5			
Engineering Technician Class. 4	40	13.94	560
Engineering Technician Class. 3	48	12.58	600
Engineering Technician Class. 2			
Draftsmen D	32	12.11	390
Draftsmen C	40	10.18	410
Draftsmen B			
Draftsmen A			
Word Processing	20	7.00	140
Salary Cost	3020	20.40	61610
Fringe Benefits			24640
Payroll Costs			86250
Overhead (61%)			52610
Manhour Cost			138860
Profit (base fee on services) (6% of manhour cost)			8330
Subtotal			147190

Task No 7

DIRECT COSTS

Equipment	$	0
Travel	$	7860
Other	$	650
Subtotal	$	8510

SUBCONTRACTS

A Transient Network Analysis	$	26,000
Subtotal	$	26,000

GRAND TOTAL	$	181,700

Task Number: 8

Task: Preparation and Participation in Power Authority's Public Information Meetings

OUTPUT

Exhibits, memos, brochures and reports to Public

8. Public Participation Support	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	1600	43.52	69630
Engineering Class. 7A		30.63	
Engineering Class. 7	800	23.74	18990
Engineering Class. 6	11560	20.18	233280
Engineering Class. 5	400	17.49	7000
Engineering Class. 4		15.24	
Engineering Class. 3		13.73	
Engineering Class. 2		11.63	
Engineering Technician Class. 5		15.76	
Engineering Technician Class. 4		13.94	
Engineering Technician Class. 3		12.58	
Engineering Technician Class. 2		9.68	
Draftsmen D	400	12.11	4840
Draftsmen C	800	10.18	8140
Draftsmen B		7.69	
Draftsmen A		6.17	
Word Processing		7.00	
Subtotal Cost	15560	21.97	341880
Fringe Benefits			136750
Payroll Costs			478630
Overhead (61%)			291960
Manhour Cost			770590
Profit (base fee on services) (6% of manhour cost)			46240
Subtotal			816830

Task No 8

DIRECT COSTS

Equipment		$	0
Travel		$	153,000
Other		$	0
	Subtotal	$	153,000

SUBCONTRACTS

	Subtotal	$	0
GRAND TOTAL		$	969,830

Task Number: 9

Task: Preparation and Participation in Power Authority's External Review Panel Meetings and Governmental Agency Review Meetings Review Panel Meetings

OUTPUT

Management Output

Exhibits, memos and reports

9. External Review Panel	Hours	Rate	Total
PRIME CONTRACTOR COST			
Salaries			
Engineering Class. 8	5600	43.52	243710
Engineering Class. 7A	4000	30.63	122520
Engineering Class. 7	3200	23.74	75790
Engineering Class. 6	1600	20.18	32290
Engineering Class. 5	1600	17.49	27980
Engineering Class. 4		15.24	
Engineering Class. 3		13.73	
Engineering Class. 2		11.63	
Engineering Technician Class. 5		15.76	
Engineering Technician Class. 4		13.94	
Engineering Technician Class. 3		12.58	
Engineering Technician Class. 2		9.68	
Draftsmen D	2400	12.11	29060
Draftsmen C	2400	10.18	24430
Draftsmen B		7.69	
Draftsmen A		6.17	
Word Processing	1600	7.00	11200
Subtotal Salary	22400	25.32	567160
Fringe Benefits			226860
Payroll Costs			794020
Overhead (61%)			484350
Manhour Cost			1278370
Profit (base fee on services) (6% of manhour cost)			76700
Subtotal			1,355,070

Task No 9

DIRECT COSTS

Equipment		$	0
Travel		$	220,520
Other		$	0
	Subtotal	$	220,520

SUBCONTRACTS

	Subtotal	$	0
GRAND TOTAL		$	1,575,590

Task Number: 10

Task: Contract Document C-1
Diversion Tunnel and Facilities

OUTPUT

Management Output

Contract Document C-1
Contract Award

Civil Engineering Output

Design memo diversion tunnel structural design
Technical specifications
Steel liner
Metalwork
Civil/structural computations
Contract/construction drawings
Quantity take off of civil items
Review of manufacturers drawings and computations for steel liner and metalwork
Drawings
Index
Project Location Map
Vicinity Plan
General Project Layout
Climatological Data
Hydrological information
Standard Details - Sheets 1-5
Diversion Tunnel - Sheets 1-4
Emergency Releases Features - Sheets 1-4
Access Tunnel and Portal - Conc. and Reinf. - Sheets 1 and 2
Intake Excavation - Sheets 1 and 2
Intake No. 1 & 2 - Geometry - Sheets 1 and 2
Intake No. 1 & 2 - Conc. & Reinf. - Sheets 1-5
Intake Hoist Structure Housing - Sheets 1 and 2
Diversion Intake Yard
Diversion Outlet Portal Excavation
Diversion Outlet Portal - Tunnel No. 1 & 2 - Conc. & Reinf. - Sheets 1-3
Diversion Portal Yard

Electrical Engineering Output

Drawings
Conduit and Grounding Sheets 1 and 2

Specification text sections
Conduit
Grounding
Miscellaneous Work

Cost estimate

Geotechnical Engineering and Geology Output

Design Memos
Diversion Tunnel Excavation and Support

Contract Documents
Technical Specifications Sections on
Diversion and Care of Water
Clearing, Grubbing and Stripping
Open Excavation
Restoration
Underground Excavation
Excavation Support
Drilling and Grouting
Instrumentation
Geotechnical Data Volume
Contract Drawings

Manual of Inspection Procedures

Mechanical Engineering Output

Two contract/construction drawings for embedded items
One general section of specification for embedded materials

Hydraulic Engineering Output

Hydraulic design memo
Memos
Hydraulic Geometry
Headwater and Tailwater Rating Curves for documents

Support Services Output

Contract Documents C-1
Engineer's estimate
Letter of recommendation for award

10. Contract Doc. C-1 - Diversion Tunnel and Facilities

	Hours	Rate	Total
PRIME CONTRACTOR COST			
Salaries			
Engineering Class. 8	248	43.52	10790
Engineering Class. 7A	88	30.63	2700
Engineering Class. 7	416	23.74	9880
Engineering Class. 6	1396	20.18	28090
Engineering Class. 5	3880	17.49	67860
Engineering Class. 4	1296	15.24	19750
Engineering Class. 3	360	13.73	4940
Engineering Class. 2	176	11.63	2050
Engineering Technician Class. 5	480	15.76	7560
Engineering Technician Class. 4	720	13.94	10040
Engineering Technician Class. 3	480	12.58	6040
Engineering Technician Class. 2	240	9.68	2320
Draftsmen D	1440	12.11	17440
Draftsmen C	960	10.18	9770
Draftsmen B	240	7.69	1850
Draftsmen A	240	6.17	1480
Word Processing	288	7.00	2020
Subtotal Salary	12944	15.81	204580
Fringe Benefits			81830
Payroll Costs			287410
Overhead (61%)			174710
Manhour Cost			461120
Profit (base fee on services) (6% of manhour cost)			27670
Subtotal			488790

Task No 10

DIRECT COSTS

Equipment		$	0
Travel		$	14,740
Other		$	84,680
	Subtotal	$	99,420

SUBCONTRACTS

	Subtotal	$	0
GRAND TOTAL		$	588,210

Task Number: 11

Task: Contract Document C-2 - Main Dam I Excavation of Abutments, Drainage and Grouting Access Tunnels; Drilling and Grouting Inside Galleries

OUTPUT

Management Output

- Contract document C-2
- Contract Award

Civil Engineering Output

- Sketches of pumping stations and portal structures

Geotechnical Engineering Output

- Report on Methods and Procedure to Thaw Ground Ice in Advance of Grouting
- Report on Reservoir Effects on the Permafrost in the Dam, Abutments and Foundation
- Design Mémo on Dam Foundation Treatment
- Contract Documents
  - Technical Specifications Sections on
    - Open Excavation
    - Underground Excavation
    - Excavation Support
    - Drilling and Grouting
    - Instrumentation
  - Geotechnical Data Volume
  - Contract Drawings
    - Index
    - Project Location Map
    - Vicinity Plan
    - General Project Layout
    - Climatological Data
    - Hydrological Information
    - Foundation Excavation Sheets 1 and 2
    - Galleries Sheets 1-4
    - Grouting and Drainage Sheets 1-4
    - Instrumentation Sheets 1-4
- Construction Control Memos on
  - Foundation Treatment
  - Instrumentation
  - Excavation and Support

Mechanical Engineering Output

Prepare Design memos covering drainage and ventilation for Main Dam grouting and drainage tunnel

Provide sketches for use in preparation of civil/geotechnical drawings.

Review civil/geotechnical drawings for mechanical equipment and specifications

Support Services Output

Contract Documents
Engineer's Estimate

11. Contract Documents
C-2 - Main Dam I

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	328	43.52	14270
Engineering Class. 7A	88	30.63	2700
Engineering Class. 7	496	23.74	11780
Engineering Class. 6	1968	20.18	39710
Engineering Class. 5	3456	17.49	60450
Engineering Class. 4	1296	15.24	19750
Engineering Class. 3	416	13.73	5710
Engineering Class. 2	176	11.63	2050
Engineering Technician Class. 5	40	15.76	630
Engineering Technician Class. 4	160	13.94	2230
Engineering Technician Class. 3	400	12.58	5030
Engineering Technician Class. 2	200	9.68	1940
Draftsmen D	600	12.11	7270
Draftsmen C	400	10.18	4070
Draftsmen B	104	7.69	1010
Draftsmen A	96	6.17	590
Word Processing	288	7.00	2020
Subtotal Salary	10512	17.24	181210
Fringe Benefits			72480
Payroll Costs			253690
Overhead (61%)			154750
Manhour Cost			408440
Profit (base fee on services) (6% of manhour cost)			24510
Subtotal			432950

Task No 11

DIRECT COSTS

Equipment		$ 0
Travel		$ 23,000
Other		$ 45,940
	Subtotal	$ 68,940

SUBCONTRACTS

	Subtotal	$ 0

GRAND TOTAL $ 501,890

Task Number: 12

Task: Contract Document C-3 - Main Dam II

OUTPUT

Management Output

- Contract Documents C-3
- Contract Award

Geotechnical Engineering and Geology Output

- Design Memos
  - Dam Excavation and Rock Surface Treatment
  - Cofferdams
  - Dam, Material Characteristics
  - Dam, Cross Section, Zoning and Details
- Contract Documents
  - Technical Specification Sections on
    - Diversion and Care of Water
    - Clearing, Grubbing and Stripping
    - Open Excavation
    - Restoration
    - Excavation Support
    - Drilling and Grouting Fills
    - Instrumentation
  - Geotechnical Data Volume
  - Contract Drawings
    - Cofferdams Sheets 1-3
    - Excavation and Foundation Treatment Sheets 1 and 2
    - Dam Sheets 1-3
    - Instrumentation Sheets 1 and 2
  - Construction Control Memos on
    - Foundation Treatment
    - Fills
    - Instrumentation

Hydraulic Engineering Output

- Memo and sketches

Support Services

- Contract Documents
- Engineer's Estimate
- Letter of Recommendation Award

12. Contract Documents
C-3 - Main Dam II

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	96	43.52	4180
Engineering Class. 7A	96	30.63	2940
Engineering Class. 7	296	23.74	7030
Engineering Class. 6	1376	20.18	27770
Engineering Class. 5	3496	17.49	61150
Engineering Class. 4	2496	15.24	38040
Engineering Class. 3	728	13.73	10000
Engineering Class. 2	504	11.63	5860
Engineering Technician Class. 5	40	15.76	630
Engineering Technician Class. 4	160	13.94	2230
Engineering Technician Class. 3	400	12.58	5030
Engineering Technician Class. 2	200	9.68	1940
Draftsmen D	600	12.11	7270
Draftsmen C	400	10.18	4070
Draftsmen B	104	7.69	1010
Draftsmen A	96	6.17	590
Word Processing	224	7.00	1570
Subtotal Salary	11312	16.03	181310
Fringe Benefits			72520
Payroll Costs			253830
Overhead (61%)			154840
Manhour Cost			408670
Profit (base fee on services) (6% of manhour cost)			24520
Subtotal			433190

Task No 12

DIRECT COSTS

Equipment		$	0
Travel		$	28,000
Other		$	88,010
	Subtotal	$	116,010

SUBCONTRACTS

	Subtotal	$	0
GRAND TOTAL		$	549,200

Task Number: 13

Task: Contract Document C-4, Main Spillway Excavation, Foundation Treatment, Drainage Gallery

OUTPUT

Management Output

Contract Document C-4
Contract Award

Civil Engineering Output

Review of excavation drawings, sketches and design computations for drainage gallery location and interface with Contract C-9

Geotechnical Engineering and Geology Output

Design Memos
Main Spillway, Excavation and Foundation Treatment

Contract Documents
Technical Specifications on
Diversion and Care of Water
Clearing Grubbing and Stripping
Open Excavation
Underground Excavation
Excavation Support
Drilling and Grouting
Instrumentation
Geotechnical Data Volume
Contract Drawings
Spillway Excavation Sheets 1-3
Spillway Foundation Treatment Sheets 1-3
Construction Control Memos on
Excavation and Support
Foundation Treatment
Instrumentation

Hydraulic Engineering Output

Hydraulic Design Memo
Model Program
Alignment and Profile for Contract Documents

13. Contract Documents
C-4 - Main Spillway

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	56	43.52	2440
Engineering Class. 7A	56	30.63	1720
Engineering Class. 7	160	23.74	3800
Engineering Class. 6	176	20.18	3550
Engineering Class. 5	2136	17.49	37360
Engineering Class. 4	1336	15.24	20360
Engineering Class. 3	264	13.73	3630
Engineering Class. 2	264	11.63	3070
Engineering Technician Class. 5		15.76	
Engineering Technician Class. 4	80	13.94	1120
Engineering Technician Class. 3	160	12.58	2010
Engineering Technician Class. 2	80	9.68	770
Draftsmen D	240	12.11	2910
Draftsmen C	160	10.18	1630
Draftsmen B	80	7.69	620
Draftsmen A		6.17	
Word Processing	208	7.00	1460
Subtotal Salary	5456	15.84	86450
Fringe Benefits			34580
Payroll Costs			121030
Overhead (61%)			73830
Manhour Cost			194860
Profit (base fee on services) (6% of manhour cost)			11690
Subtotal			206550

Task No 13

DIRECT COSTS

Equipment		$	0
Travel		$	9,000
Other		$	42,140
	Subtotal	$	51,140

SUBCONTRACTS

	Subtotal	$	0
GRAND TOTAL		$	257,690

Task Number: 14

Task: Contract Document C-5 Outlet Facilities.
Outlet Facilities: Tunnel Excavation, Concrete and Furnish and Install Steel Tunnel Liner (only up to the point where conduits enter the Discharge Valve House)

OUTPUT

Management Output

Contract Document C-5
Contract Award

Civil Engineering Output

Design Memo
Outlet Facilities structural design

Technical Specifications
Steel liner
Metalwork
Architectural

Civil/Structural computations

Quantity take-off of civil and architectural items

Review of manufacturers' drawings and computations

Contract Construction Drawings

Index
Project Location Map
Vicinity Plan
General Project Layout
Climatological Data
Hydrological Information
Standard Details Sheets 1-5
Outlet Facilities - General Layout
Outlet Facilities - Concrete and Reinforcement Sheets 1-3
Gate Structure - Excavation Sheets 1 and 2
Gate Structure Yard
Gate Structure - Conc. & Reinf. Sheets 1-7
Gate Hoist Tower Structure Sheets 1 and 2
Outlet Manifold & Valve
Chambers - General Layout

Outlet Manifold & Valve Chambers - General Layout
Details - Conc. & Reinf. Sheets 1-3
Architectural Enclosure Plan Elevation & Details

Electrical Engineering Output

Conduit and grounding drawings Sheets 1 and 2
Specification text sections on conduit, grounding and miscellaneous work
Cost estimate

Geotechnical Engineering and Geology Output

Design Memo
Outlet Facilities, Excavation and Support

Contract Documents
Technical Specifications
Clearing, Grubbing and Stripping
Open Excavation
Underground Excavation
Excavation Support
Concrete Reinforcement
Instrumentation
Geotechnical Data Volume
Contract Construction Drawings
Portal Excavation
Tunnel Excavation
Construction Control Memos on
Excavation and Support
Instrumentation

Mechanical Engineering Output

Two Contract/Construction Drawings for Embedded Components:
Drawing List - Mechanical
M1 Outlet Facilities Intake Gates Embedded Parts: Plan & Sections
M2 Outlet Facilities Intake Gates Embedded Parts: Details
One general section of specifications for embedded items

Hydraulic Engineering Output

Hydraulic Design Memo
Hydraulic Geometry

Support Services Output

Contract Documents
Engineer's Estimate
Letter of Recommendation of Award
Expedite contractor shop drawings
Expedite design department's review and approval of Contractor's submittals
Prepare regular status report of all contractors submittals

14. Contract Documents
C-5 - Outlet Facilities

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	280	43.52	12190
Engineering Class. 7A	152	30.63	4660
Engineering Class. 7	576	23.74	13670
Engineering Class. 6	904	20.18	18240
Engineering Class. 5	2240	17.49	39180
Engineering Class. 4	1496	15.24	22800
Engineering Class. 3	424	13.73	5820
Engineering Class. 2	744	11.63	8650
Engineering Technician Class. 5	400	15.76	6300
Engineering Technician Class. 4	600	13.94	8360
Engineering Technician Class. 3	400	12.58	5030
Engineering Technician Class. 2	200	9.68	1940
Draftsmen D	1200	12.11	14530
Draftsmen C	600	10.18	6110
Draftsmen B	400	7.69	3080
Draftsmen A	200	6.17	1230
Word Processing	208	7.00	1460
Subtotal Salary	11024	15.76	173250
Fringe Benefits			69300
Payroll Costs			242550
Overhead (61%)			147960
Manhour cost			390510
Profit (base fee on services) (6% of Manhour cost)			23430
Subtotal			413940

Task No 14

DIRECT COSTS

Equipment		$	0
Travel		$	14,740
Other		$	85,550
	Subtotal	$	100,290

SUBCONTRACTS

	Subtotal	$	0
GRAND TOTAL		$	514,230

Task Number: 15

Task: Contract Document C-6 - Power Facilities & Access Tunnels to Power Facilities, Excavation and Concrete Structures, Diversion Tunnel Plugs, Furnish and Install Steel Penstock Liners and Steel Conduits in Tunnel No. 1 Plugs, Mass Concrete in Powerhouse, Transformer Gallery, and Surge Chamber

OUTPUT

Management Output

Contract Document C-6

Contract Award

Civil Engineering Output

Design Memos
General Design Criteria
Powerhouse General Arrangement and Structural Design
Power Intake, Tunnel, Tailrace and Surge Chamber Structural Design
Penstock and Steel Liner
Power Facilities Architectural Design
Technical Specifications
- Penstock and Steel Liners
- Metalwork
- Architectural

Civil/Structural computations
Contract/Construction drawings (see attached drawing list)
Quantity take-off of civil and architectural items
Review of manufacturers' drawings and computations

Civil/Structural Drawings

Index
Project Location Map
Vicinity Plan
General Project Layout
Climatological Data
Hydrological Information
Standard Details, Sheets 1-5
General Layout and Power Tunnel Details, Sheets 1-4
Intake General Arrangement, Sheets 1-3
Intake - Cond. & Reinforcement, Sheets 1-9
Intake - Superstructure, Sheets 1-4
Power Facilities General Layout, Sheets 1 and 2
Powerhouse General Arrangement, Sheets 1-5

Powerhouse Excavation, Sheets 1 and 2
Powerhouse - Layout, Sheets 1-6
Powerhouse - Concrete (Plans, Sections & Details from Draft Tube to El. 1463.0), Sheets 1-20
Powerhouse - Reinforcement (Overlay to Concrete Dwg.), Sheets 1-20
Service Bay & Battery Room Gallery - Concrete & Reinforcement, Sheets 1-5
Access Shaft Conc. & Reinforcement, Sheets 1 and 2
Powerhouse Access Tunnel & Portal, Sheets 1-3
Transformer Gallery - Concrete & Reinforcement, Sheets 1-6
Tailrace Tunnels - Concrete & Reinforcement, Sheets 1-4
Surge Chamber - Concrete & Reinforcement Sheets 1-5

Architectural

Intake Enclosure, Sheets 1 and 2
Powerhouse, Sheets 1-7

Electrical Engineering Output

Electrical Drawings
Conduit and Grounding: Intake - Sheets 1 and 2
Conduit and Grounding: Powerhouse Sheets 1 and 2
Conduit and Grounding: Generator/Erection Bay Gallery
Conduit and Grounding: Transformer Gallery Sheets 1 and 2
Conduit and Grounding: Surge Chamber Sheets 1 and 2

Specification text sections: Conduit
Grounding
Miscellaneous

Summary report - SF-6 Bus Versus
Oil-Pipe-Type Cable

Geotechnical Engineering and Geology Output

Design Memo
Power Facilities and Access, Excavation and Support

Contract Documents
- Technical Specifications
- Diversion and Care of Water
- Clearing, Grubbing and Stripping
- Open Excavation
- Underground Excavation
- Restoration
- Excavation Support
- Drilling and Grouting
- Instrumentation
- Geotechnical Data Volume
- Contract Drawings
  - Powerhouse Excavation Sheets 1 and 2
  - Powerhouse Access Tunnel Excavation
  - Tailrace Tunnels
  - Surge Chamber Excavation
  - Powerhouse Excavation Support Sheets 1 and 2
  - Tunnel Excavation Support
  - Surge Chamber Excavation Support

Construction Control Memos
- Excavation and Support
- Instrumentation
- Foundation Treatment

Report on "Anticipated deformations of rock during Excavations"

Mechanical Engineering Output

Provide sketches of embedded piping for use in preparation of civil drawings
Mechanical system design memoranda & studies
List of Mechanical Drawings
- General Mechanical (Piping Standards)
- Draft Tube Depression System
- Unit Unwatering and Filling System
- Station Drainage
- Sewage Treatment
- Raw and Cooling Water Systems
- Treated Water System
- Oil Systems
- Fire Protection Systems
- Penstock Filling System
- Machine Shop Equipment
- Piezometers and Water Level Gauges
- Heating, Ventilating and Air Conditioning Systems
- Compressed Air Systems
- Powerhouse Crane

Intake Crane
Draft Tube Crane
Intake Gates and Hoists
Draft Tube Gates
Trashracks

12 contract/construction drawings for embedded items (for gate equipment)

List of Mechanical Embedded Items Drawings
Intake Gates and Hoists, Sheets 1 and 2
Intake Bulkhead
Intake Shutter Gate
Intake Trashracks
Intake Ice Boom
Power Intake Cranes
Diversion Closure Gate Hoists and Sheets 1 and 2
Emergency Release Facilities Trashrack
Emergency Release Gates & Hoists, Sheets 1 and 2

3 general sections of specifications for embedded items:
List of Specifications
Intake Gates, Bulkhead, Trashrack and Ice Boom
Diversion Closure Gate and Emergency Release Equipment
Embedded Piping

Hydraulic Engineering Output

Hydraulic Design
Model Program for emergency release
Model Report
Hydraulic Geometry

Support Services Output

Contract Documents
Engineer's Estimate
Letter of Recommendation for Award
Report of Status of Contractors Drawing Submittal

15. Contract Documents C-6 Power Facilities & Access Tunnels to Power Facilities

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	796	43.52	34640
Engineering Class. 7A	1240	30.63	37980
Engineering Class. 7	2276	23.74	54030
Engineering Class. 6	4192	20.18	84590
Engineering Class. 5	7424	17.49	129850
Engineering Class. 4	6176	15.24	94120
Engineering Class. 3	1080	13.73	14830
Engineering Class. 2	1240	11.63	14420
Engineering Technician Class. 5	2640	15.76	41610
Engineering Technician Class. 4	3520	13.94	49070
Engineering Technician Class. 3	1760	12.58	22140
Engineering Technician Class. 2	880	9.68	8520
Draftsmen D	5280	12.11	63940
Draftsmen C	2640	10.18	26880
Draftsmen B	880	7.69	6770
Draftsmen A	-		
Word Processing	216	7.00	1510
Subtotal Salary	42240	16.21	684910
Fringe Benefits			273960
Payroll Costs			958870
Overhead (61%)			584910
Manhour Cost			1543780
Profit (base fee on services) (6% of manhour cost)			92630
Subtotal			1636410

Task No 15

DIRECT COSTS			
Equipment		$	0
Travel		$	56,170
Other		$	628,370
	Subtotal	$	684,540
SUBCONTRACTS			
	Subtotal	$	0
GRAND TOTAL		$	2,320,950

Task Number: 16

Task: Contract Document C-7 Main Dam III
Embankment to Elevation 2210, Plus Relict Channel
Excavation and Embankment, Emergency Spillway Excavation,
Fuse Plug and Switchyard Excavation

OUTPUT

Civil Engineering Output

Coordination of Main Dam with Spillway, Intake, and
Emergency Spillway Interfaces.

Geotechnical Engineering and Geology Output

Design Memos

Relict Channels, Characteristics of Glacial Deposits
Relict Channel Treatment
Freeboard Dike
Emergency Spillway, Foundation Treatment
Fuse Plug

Contract Documents

Technical Specifications

Diversion and Care of Water
Clearing, Grubbing and Stripping
Open Excavation
Excavation Support
Drilling and Grouting
Fills
Instrumentation

Geotechnical Data Volume
Contract Drawings

Dam	Sheets 1-7
Foundation Treatment	Sheets 1-3
Instrumentation	Sheets 1-4
Relict Channel Treatment	Sheets 1-6
Emergency spillway foundation treatment and excavation	Sheets 1-3
Fuse Plug	

Construction Control Memos

Excavation and Support
Foundation Treatment
Fills
Instrumentation

Reports

Seepage through the dam and its foundation
Static stresses and deformations within the dam during construction and project operation
Seismic design parameters
Dynamic stresses and deformations during earthquake
Hydrology and potential for leakage through relict channels
Stability of relict channel slopes
Thaw of permafrost in relict channel treatment
Reservoir slides, size, effects and mitigating features

Hydraulic Engineering Output

Freeboard Design Memo
Memo and Sketches

Support Services Output

Contract Documents
Engineers Estimate

Environmental Science Output

Environmental input to Specifications

16. Contract Documents
C-7 - Main Dam III

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	1320	43.52	57450
Engineering Class. 7A	1672	30.63	51210
Engineering Class. 7	1922	23.74	47290
Engineering Class. 6	3808	20.18	76850
Engineering Class. 5	11720	17.49	204980
Engineering Class. 4	6696	15.24	102050
Engineering Class. 3	2544	13.73	34930
Engineering Class. 2	1680	11.63	19540
Engineering Technician Class. 5	224	15.76	3530
Engineering Technician Class. 4	896	13.94	12490
Engineering Technician Class. 3	2240	12.58	28180
Engineering Technician Class. 2	1120	9.68	10840
Draftsmen D	3360	12.11	40690
Draftsmen C	2240	10.18	22800
Draftsmen B	560	7.69	4310
Draftsmen A	560	6.17	3460
Word Processing	368	7.00	2580
Subtotal Salary	43000	16.82	701650
Fringe Benefits			289270
Payroll Costs			1012440
Overhead (61%)			617590
Manhour Cost			1630060
Profit (base fee on services) (6% of manhour costs)			97800
Subtotal			1,727,860

Task No 16

DIRECT COSTS

Equipment		$ 0
Travel		$ 112,030
Other		$ 231,800
	Subtotal	$ 343,830

SUBCONTRACTS

	Subtotal	$ 0

GRAND TOTAL $ 2,071,690

Task Number: 17

Task: Contract Document C-8 - Aggregates & Concrete Production

OUTPUT

Management Output

Contract Document E-8

Contract Award

Civil Engineering Output

Memo on concrete strength requirements

Geotechnical Engineering and Geology Output

Design Memo

Aggregates for Concrete, Filters and Drains

Contract Documents

Technical Specification on
Aggregates
Geotechnical Data Volume
Contract Drawings
Data location Plan Sheets 1-3
Construction Control Memo on
Aggregates for Concrete,
Filters and Drains

Support Services Output

Contract Documents
Engineer's Estimate
Letter of Recommendation for Award

17. Contract Documents C-8 Aggregates & Concrete Production

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	24	43.52	1040
Engineering Class. 7A	24	30.63	740
Engineering Class. 7	72	23.74	1710
Engineering Class. 6	240	20.18	4840
Engineering Class. 5	520	17.49	9090
Engineering Class. 4	464	15.24	7070
Engineering Class. 3	80	13.73	1100
Engineering Class. 2	-		
Engineering Technician Class. 5	-	15.76	
Engineering Technician Class. 4	-	13.94	
Engineering Technician Class. 3	16	12.58	200
Engineering Technician Class. 2	16	9.68	150
Draftsmen D	32	12.11	390
Draftsmen C	48	10.18	490
Draftsmen B	32	7.69	250
Draftsmen A	16	6.17	100
Word Processing	208	7.00	1460
Subtotal Salary	1792	15.98	28630
Fringe Benefits			11450
Payroll Costs			40080
Overhead (61%)			24450
Manhour Cost			64530
Profit (base fee on services) (6% of manhour costs)			3870
Subtotal			68400

Task No 17

DIRECT COSTS

Equipment		$ 0
Travel		$ 2,000
Other		$ 21,390
	Subtotal	$ 23,390

SUBCONTRACTS

	Subtotal	$ 0
GRAND TOTAL		$ 91,790

Task Number: 18

Task: Contract Document C-9
Main Spillway, Concrete
Structures including Outlet
Works Discharge Valve House

OUTPUT

Management Output

Contract Document E-9

Contract Award

Civil Engineering Output

Design Memo
Spillway Structural Design
(Including Architectural portion of the Spillway
Control Structure)

Technical Specifications
Structural Steel
Metalwork
Architectural

Civil/Structural computations

Contract/Construction drawings

Index
Project Location Map
Vicinity Plan
General Project Layout
Climatological Data
Hydrological Information
Standard Details Sheets 1-5
Main Spillway (Plan & Profile)
Approach Wall & Apron - Concrete & Reinforcement
Spillway Ogee - Concrete & Reinforcement Sheets 1-7
Spillway Chute - Concrete & Reinforcement Sheets 1-15
Flip Bucket - Concrete & Reinforcement Sheets 1-5
Aeration Details Sheets 1 and 2
Spillway Hoist Housing Sheets 1 and 2
Architectural Enclosure Plan, Elevations & Data

Quantity take-off of civil and architectural items

Review of manufacturers' drawings and computations

Electrical Engineering Output

Drawings
Conduit and Groundings - Sheets 1 and 2
Text sections on conduit, grounding and miscellaneous work
Specification
Cost estimate

Mechanical Engineering Output

Preliminary Outlet Facilities Valve House Design Memo
One Contract/Construction Drawing for Embedded mechanical equipment Components related to Valve House
One General piping section of specifications for related embedded items

Hydraulic Engineering Output

Hydraulic Design Memo on Spillway
Memos
Model Program
Model Report
Hydraulic Geometry, Hydraulic Loads

Support Services Output

Contract Documents
Engineer's Estimate
Letter of Recommendation for Award

18. Contract Documents C-9 - Main Spillway and Concrete Structures

	Hours	Rate	Total
PRIME CONTRACTORS COSTS			
Salaries			
Engineering Class. 8	432	43.52	18800
Engineering Class. 7A	288	30.63	8820
Engineering Class. 7	720	23.74	17090
Engineering Class. 6	160	20.18	3230
Engineering Class. 5	3344	17.49	58490
Engineering Class. 4	2400	15.24	36580
Engineering Class. 3	1104	13.73	15160
Engineering Class. 2	480	11.63	5580
Engineering Technician Class. 5	576	15.76	9030
Engineering Technician Class. 4	864	13.94	12040
Engineering Technician Class. 3	480	12.58	6040
Engineering Technician Class. 2	240	9.68	2320
Draftsmen D	1440	12.11	17440
Draftsmen C	720	10.18	7330
Draftsmen B	480	7.69	3690
Draftsmen A	-		
Word Processing	208	7.00	1460
Subtotal Salary	13936	16.01	223160
Fringe Benefits			89260
Payroll Costs			312420
Overhead (61%)			190580
Manhour Cost			503000
Profit (base fee on services) (6% of manhour cost)			30180
Subtotal			533180

Task No 18

DIRECT COSTS

Equipment		$ 0
Travel		$ 13,160
Other		$ 409,290
	Subtotal	$ 422,450

SUBCONTRACTS

	Subtotal	$ 0
GRAND TOTAL		$ 955,630

Task Number: 19

Task: Contract Document C-10 Completion Contract

OUTPUT

Management Output

Contract Document C-10

Contract Award

Civil Engineering Output

Design Memo
- Second Stage Concrete
- Switchyard Structures

Technical Specifications
- Metalwork
- Architectural

Civil/Structural computations

Quantity take-off of civil and architectural items

Review of manufacturers' drawings and computations

Civil/Structural Contract/Construction Drawings
- Index
- Project Location Map
- Vicinity Plan
- General Project Layout
- Climatological Data
- Standard Details, Sheets 1-5
- Second Stage Concrete - Concrete, Sheets 1-5
- Second Stage Concrete - Reinforcement, Sheets 1-5
- Switchyard - Concrete & Reinforcement, Sheets 1-4
- Control Building - Concrete & Reinforcement, Sheets 1-7
- Emergency Spillway Bridge -Concrete & Reinforcement, Sheets 1-4
- Supplementary Drawings
- Diversion Tunnels (4 estimated)
- Outlet Facilities (5 estimated)
- Powerhouse (15 estimated)
- Switchyard (4 estimated)

Architectural Output

Architictural Treatment Memo

Arthitectural Contract Construction Drawings

- Control Building - Elevations
- Control Building - Floor
- Control Building - Ceiling
- Control Building - Sections & Elevations
- Control Building - Sections & Details
- Control Building - Sections & Details
- Control Building - Framing Plan
- Elevator & Stairs - Sheets 1 and 2
- Emergency Diesel Generator

Electrical Engineering Output

- Design memos
- Lighting Design Memo
- Cable Tray Design Memo
- Grounding Design Memo
- Site Distribution Design Memo
- Plant Communication System Design Memo
- Computations
- Specification text section

General Electrical Work includes finishing and installing and testing conduit, grounding, insulated wire and cable, lighting, cable tray, etc. communication equipment; distribution equipment; miscellaneous equipment

Installation of Owner Furnished Equipment includes the installation and field testing of the equipment specified in the following contracts:

- Generator, E-2;
- Transformer, E-8;
- Control Switchboard Equipment, E-9;
- High-Voltage Switchgear, E-10;
- Generator Voltage Switchgear, E-11;
- Station Service Switchgear, E-12;
- Powerhouse Computer Control Equipment specified in E-13;
- Switchyard Structures and Buses, E-37

Drawings

9	I-L Diagrams
6	Load Tabulation and Panel Schedules
5	Abbreviations, Symbols and Designations
76	Physical Drawings (conduit, arrangement details)
10	Grounding Drawing
47	Lighting Drawing
33	Schematic Diagram
148	Interconnection Diagram
92	Conduit and Cable Schedules
5	Communication Drawings
431	

Cost estimates
Computations
Reviewed shop drawings

Geotechnical Engineering and Geology Output

Design Memo
Switchyard Foundations
Contract Documents Technical Specifications
Open Excavation
Drawings
Data Location Map
Geotechnical Data Volume

Mechanical Engineering Output

C-10 (1)

Intra office review and coordination

C-10 (2)

35 contract/construction drawings
List of Drawings - HVAC/D-E Generator
Symbols & Abbreviations
Standard Details
HVAC Diagrammatical Sheets 1 and 2 - Powerhouse
HVAC Diagrammatical Sheet 1 of 1 - Transf. Vault & Cable Ways
HVAC Diagrammatical Sheet 1 of 1 - Surge Chamb./Tunnels & Shafts
HVAC El 1406 Sheets 1 and 2 - Powerhouse
HVAC El 1422 Sheet 1 of 1 - Powerhouse
HVAC El 1433 Sheets 1 and 2 - Powerhouse
HVAC El 1444 Sheets 1-3 - Powerhouse
HVAC El 1463 Sheets 1-3 - Powerhouse
HVAC Access Shaft Sheets 1 and 2
HVAC Surge Chamber Sheet 1 of 1
HVAC Tunnels Sheet 1 of 1
HVAC Transformer Vault Sheets 1 and 2
HVAC Bus Gallery Sheets 1 and 2
HVAC Cable Way Shaft Plan
HVAC Cable Way Shaft Elevation
HVAC Cable Way Shaft Sections
HVAC Cable Way Shaft Details

HVAC Outlet Facilities
HVAC HVAC Equipment for Miscellaneous Structures Sheets 1 and 2
Diesel-Electric Generator Sheets 1 and 2
Diesel-Electric Generator Piping Schedule/Fuel Storage System/Details
Prepare 5 general sections of specifications as follows:
- General
- HVAC Equipment
- Diesel-Electric Equipment
- Installation
- Testing

Bid analysis recommendation
Review Manufacture drawings
Inspection and Testing:Reports and Trips
Prepare 51 Mechanical Piping contract/construction drawings
- Drawing List - Mechanical Piping
- Symbols & Abbreviations (Piping)
- Standard Details
- Unwatering & Sta. Drainage Diagrammatical PH
- PH Drainage Diagrammatical PH
- Raw & Cool Water Supply Diagrammatical PH
- Raw Water Dist. Diagrammatical PH
- Lub & Governor Oil System Diagrammatrical PH
- Compressed Air Systems Diagrammatical PH
- Treated Water Dist. Diagrammatical PH
- Sanitary Drainage System Diagrammatical PH
- Pumps & Control Diagrammatical PH
- Fire Protection Diagrammatical
- Water Dist./Drainage/Oil Sump/Storage/Handling Diagrammatical Transf. Vault
- Piping Diagrammatical Outlet Facilities
- Deicing & Misc. Systems for Remaining Misc. Structures Diagrammatical Sheets 1 and 2
- Piping (Schedule) Valves
- Piping (Schedule) Piping
- Piping Plan El 1406 Sheet 1 of 4 Gallery & Unit 1
- Piping Plan El 1406 Sheet 2 of 4 Unit 2 & 3
- Piping Plan El 1406 Sheet 3 of 4 Unit 4 & 5
- Piping Plan El 1406 Sheet 4 of 4 Unit 6 & Gallery
- Piping Plan El 1422 Sheets 1 and 2
- Piping Plan El 1444 Sheet 1 of 4 Access Shaft & PH Personnel Area
- Piping Plan El 1444 Sheet 2 of 4 Unit 1 & 2

Piping Plan El 1444 Sheet 3 of 4 Unit 3 & 4
Piping Plan El 1444 Sheet 4 of 4 Unit 5 & 6
Piping Plan El 1463 Sheets 1-3
Piping Plan El 1463 1 of 1 Section
Piping PH Oil Storage Sheet 1 of 2 Enlarged Plan
Piping PH Oil Storage Sheet 2 of 2 Enlarged Section
Piping Fire Protection for Oil Room Enlarge Plan/Section
Piping - Plumbing Sheets 1 and 2 Details
Piping - Supports Sheets 1-3 Details
Piping Sections/Details Sheets 1 and 2
Piping Transformer Vault Sheets 1-3
Piping Transformer Vault Section General Sheets 1 and 2
Piping Outlet Facilities Sheets 1 and 2
Piping & Mechanical Equipment Systems for Remaining Miscellaneous Structures Sheets 1-4

C-10 (3)

Prepare 15 general sections of specifications for mechanical equipment and systems

Mechanical Equipment Specification List
General
Piping
Valves
Plumbing
Sewage Treatment System
Treated Water System
Fire Protection Systems
Machine Shop Equipment
Compressed Air Systems
Elevators
Pumps and Controls
Gate operating Equipment
Gate Hoist Structures
Installation of Equipment
Testing of Equipment

Bid analysis recommendation
Review of manufacturers' prints
Inspection and testing: Reports and trips

C-10 (4)

Intra office review/coordination

C-10 (5)

Prepare 4 general sections of Installation and Testing Specifications of Owner Furnished Equipment as follows:
- General
- Details
- Installation
- Testing

Field Test Reports/Field Inspection Reports

C-10 (9)

Prepare Design Memo and 14 contract-construction drawings
Specifications for Control Building
Design Memo - Mechanical Features for the Control Building features
- HVAC (general)
- HVAC (special)
- Piping
- Plumbing
- Maintenance facilities
- Specialties as related to Building necessities

List of Drawings - Mechanical Features for Control Building
- Abbreviation/Symbols and Piping Schedule
- Piping systems - Isometric
- Piping - Plan sheets 1 and 2
- Piping - Sections
- Piping - Details
- Piping - Plumbing & Drainage Details Sheets 1 and 2
- HVAC - Abbreviation and symbols
- HVAC - Plan Sheets 1 and 2
- HVAC - Sections & Details Sheets 1 and 2
- Miscellaneous Mechanical Equipment System Details

General Sections of Specifications as follows:
- General/Piping/Plumbing/HVAC (general)/HVAC (special)/Misc. Mech. Systems/Installation/Testing

Support Services Output

Contract Documents
Engineers Estimate
Letter of Recommendation of Award
Report of Status of Contractor Equipment Drawing Submittal

19. Contract Documents C-10 -
Completion Contract

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	1704	43.52	74160
Engineering Class. 7A	1952	30.63	59790
Engineering Class. 7	3656	23.74	86790
Engineering Class. 6	9056	20.18	182750
Engineering Class. 5	22768	17.49	398210
Engineering Class. 4	12992	15.24	198000
Engineering Class. 3	9764	13.73	129940
Engineering Class. 2	3256	11.63	37870
Engineering Technician Class. 5	4200	15.76	66190
Engineering Technician Class. 4	5600	13.94	78060
Engineering Technician Class. 3	2800	12.58	35220
Engineering Technician Class. 2	1400	9.68	13550
Draftsmen D	8400	12.11	101720
Draftsmen C	4200	10.18	42760
Draftsmen B	1400	7.69	10770
Draftsmen A	-		
Word Processing	208	7.00	1460
Subtotal Salary	93056	16.30	1517240
Fringe Benefits			696900
Payroll Costs			2124140
Overhead (61%) —			1295730
Manhour Cost			3419870
Profit (base fee on services) (6% of manhour cost)			205190
Subtotal			3,625,060

Task No 19

DIRECT COSTS

Equipment		$	0
Travel		$	62,090
Other		$	283,070
	Subtotal	$	345,160

SUBCONTRACTS

	Subtotal	$	0
GRAND TOTAL		$	3,970,220

Task Number: 20

Task: Contract Document C-11 Willow Control Center & Microwave Bldg.

OUTPUT

Civil Engineering Output

Microwave Building Structural and Architectural Design
Control Center and Design Memo
Technical Specifications
- Architectural
- Metalwork

Civil/Structural computations
Contract/construction drawings - Civil/Structural Drawings
Civil/Structural Drawings
- Plan & Sections Sheets 1 and 2
- Foundations

Quantity takeoff of civil and architectural items.
Review of manufacturers' drawings and computations

Architectural
- Elevations
- Roof Plan & Details
- Floor Plan
- Reflected Ceiling - Plan & Details
- Sections & Interior Elevations
- Sections & Details Sheets 1 and 2
- Emergency Diesel/Generator House
- Door & Finish Schedule
- Roof Framing Plan and Details

Mechanical Engineering Output
- Intra-office review and coordination
- Preliminary Design Memo as related to Building Mechanical Systems

Electrical Engineering Output

Design memo sections and design drawings

Specification sections

General Electrical Work includes furnishing, installing, and testing; building service and distribution equipment; conduit, grounding; lighting; insulated wire and conductors, and miscellaneous equipment

Installation of Owner-Furnished Equipment includes installing and testing: building communication equipment; Energy Management System computer control equipment and accessories specified in Contract E-13; all microwave and related equipment specified in Contract E-3; all Willow support equipment specified in Contract E-4.

Review Shop Drawings
Contract/Construction Drawings
- 1 - I-L Diagram
- 1 - Panel Tabulations
- 1 - Symbols and Designations
- 2 - Lighting
- 2 - Conduit and Cable Schedules
- 1 - Grounding
- 5 - Physical drawings (Arrangement)
- 5 - Schematic diagrams and Details
- 5 - Interconnection diagrams

Cost Estimates
Computations

Mechanical Engineering Output

Intra-office review/coordination

Support Services Output

Contract Documents
Engineer's Estimate
Letter of Recommendation for Award
Report of Status of Contractors Submittals

20. Contract Documents C-11 - Willow Control Center & Microwave Bldg.

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	80	43.52	3480
Engineering Class. 7A	80	30.63	2450
Engineering Class. 7	248	23.74	5890
Engineering Class. 6	1056	20.18	21310
Engineering Class. 5	2936	17.49	51350
Engineering Class. 4	2096	15.24	31940
Engineering Class. 3	576	13.73	7910
Engineering Class. 2	424	11.63	4930
Engineering Technician Class. 5	104	15.76	1640
Engineering Technician Class. 4	200	13.94	2790
Engineering Technician Class. 3	400	12.58	5030
Engineering Technician Class. 2	200	9.68	1940
Draftsmen D	496	12.11	6010
Draftsmen C	400	10.18	4070
Draftsmen B	96	7.69	740
Draftsmen A	104	6.17	640
Word Processing	200	7.0	1400
Subtotal Salary	9696	15.83	153520
Fringe Benefits			61410
Payroll Costs			214930
Overhead (61%)			131110
Manhour Cost			346040
Profit (base fee on services) (6% of manhour cost)			20760
Subtotal			366800

Task No 20

DIRECT COSTS

Equipment		$ 0
Travel		$ 7,000
Other		$ 56,290
	Subtotal	$ 63,290

SUBCONTRACTS

	Subtotal	$ 0

GRAND TOTAL $ 430,090

Task Number: 21

Task: Contract Document E-1 Turbines & Governors

OUTPUT

Management Output

Contract Document E-1

Contract Award

Civil Engineering Output

Powerhouse outline "base" drawings from Task No. 15

Review comments

Electrical Engineering Output

Reviewed design memo and specification
Reviewed shop drawings
Shop inspection reports, Governor

Mechanical Engineering Output

Prepare Turbine Design Memo & separate supply specification for Turbine & Governor
Prepare Turbine Bid Recommendation
Assist During Negotiations for Bid Award
Review Mfr. Prints
Conduct Shop Inspection/Testing: Prepare associated Reports

Support Services Output

Contract Documents
Engineers Estimate
Letter for Recommendation of Award
Report of Status of Equipment Contract Submittals

21. Contract Documents E-1 Turbines & Governors

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	220	43.52	9570
Engineering Class. 7A	240	30.63	7350
Engineering Class. 7	860	23.74	20420
Engineering Class. 6	2104	20.18	42460
Engineering Class. 5	2400	17.49	41980
Engineering Class. 4	1200	15.24	18290
Engineering Class. 3	96	13.73	1320
Engineering Class. 2	-		
Engineering Technician Class. 5	64	15.76	1010
Engineering Technician Class. 4	112	13.94	1560
Engineering Technician Class. 3	112	12.58	1410
Engineering Technician Class. 2	-		
Draftsmen D	272	12.11	3290
Draftsmen C	320	10.18	3260
Draftsmen B	200	7.69	1540
Draftsmen A	-		
Word Processing	150	7.00	1050
Subtotal Salary	8350	18.51	154530
Fringe Benefits			61810
Payroll Costs			216340
Overhead (61%)			131970
Manhour Cost			348310
Handling Fee			1250
Profit (base fee on services) (6% of manhour cost)			20900
Subtotal			370460

Task No 21

DIRECT COSTS

Equipment		$	0
Travel		$	49,740
Other		$	31,100
	Subtotal	$	80,840

SUBCONTRACTS

A	Hunt	Mechanical shop inspection	25,000
		Subtotal	$ 25,000

GRAND TOTAL $ 476,300

Task Number: 22

Task: Contract Document E-2 Generators and Excitation Equipment

OUTPUT

Civil Engineering Output

Powerhouse outline "base" drawings from Task No. 15 Review comments

Electrical Engineering Output

Design Memorandum (Generator)
Specification and Bid Form
Cost Estimate Assistance
Bid Evaluation
Review Shop Drawing
Review Insp. Reports
Participation in Shop Inspection Reports

Mechanical Engineering Output

Intra-office review/coordinate

Support Services Output

Contract Documents
Engineer's Estimate
Letter of Recommendation for Award
Input to Report of Status of Equipment Contract Submittals

22. Contract Documents E-2 Generator & Excitation Equipment

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	188	43.52	8180
Engineering Class. 7A	192	30.63	5880
Engineering Class. 7	380	23.74	9020
Engineering Class. 6	904	20.18	18240
Engineering Class. 5	2560	17.49	44770
Engineering Class. 4	1280	15.24	19510
Engineering Class. 3	16	13.73	220
Engineering Class. 2	-		
Engineering Technician Class. 5	40	15.76	630
Engineering Technician Class. 4	40	13.94	560
Engineering Technician Class. 3	80	12,58	1010
Engineering Technician Class. 2	-		
Draftsmen D	160	12.11	1940
Draftsmen C	320	10.18	3260
Draftsmen B	160	7.69	1230
Draftsmen A	-		
Word Processing	150	7.0	1050
Subtotal Salary	6470	17.85	115510
Fringe Benefits			46200
Payroll Costs			161710
Overhead (6%)			98640
Manhour Cost			260350
Profit (base fee on services) (6% of manhour cost)			15620
Subtotal			275970

Task No 22

DIRECT COSTS

Equipment		$ 0
Travel		$ 6,240
Other		$ 25,380
	Subtotal	$ 31,620

SUBCONTRACTS

	Subtotal	$ 0
GRAND TOTAL		$ 307,590

Task Number: 23

Task: Contract Document E-3 - Microwave System & Towers

OUTPUT

Management Output

Contract Document E-3

Award & Contract

Electrical Engineering Output

Design Memorandum
Contract document technical specifications section
Drawings:
10 - physical
17 - path profile
5 - schematic
5 - interface
Bid Evaluation
O&M manual
Inspection reports
Reviewed shop drawings

Support Services Output

Contract Documents
Engineer's Estimate
Letter Of Recommendation For Award
Input to Report of Status of Equipment Contract Submittals

23. Contract Documents E-3 - Microwave System & Tower

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	88	43.52	3830
Engineering Class. 7A	256	30.63	7840
Engineering Class. 7	512	23.74	12150
Engineering Class. 6	1016	20.18	20500
Engineering Class. 5	3424	17.49	59890
Engineering Class. 4	2144	15.24	32670
Engineering Class. 3	120	13.73	1650
Engineering Class. 2	-		
Engineering Technician Class. 5	64	15.76	1010
Engineering Technician Class. 4	64	13.94	810
Engineering Technician Class. 3	128	12.58	1610
Engineering Technician Class. 2	-		
Draftsmen D	256	12.11	3100
Draftsmen C	512	10.18	5210
Draftsmen B	256	7.69	1970
Draftsmen A	-		
Word Processing	150	7.00	1050
Subtotal Salary	8990	17.06	153380
Finge Benefits			61350
Payroll Cost			214730
Overhead (61%)			130990
Manhour Cost			345720
Profit (base fee on services) (6% of manhour cost)			20740
Subtotal			366460

Task No 23

DIRECT COSTS

Equipment		$ 0
Travel		$ 18,530
Other		$ 38,640
	Subtotal	$ 57,170

SUBCONTRACTS

	Subtotal	$ 0
GRAND TOTAL		$ 423,630

Task Number: 24

Task: Contract Document E-4 - Willow Support Equipment

OUTPUT

Management Output

Contract Document E-4

Contract Award

Civil Engineering Output

Review comments and prepare layout drawing for building

Electrical Engineering Output

Design Memorandum
Contract document technical specification section
Drawings:
3 - physical
3 - schematic
3 - interface
Bid Evaluation Input
Inspection reports
Reviewed shop drawings

Mechanical Engineering Output

Prepare Design Memo/16 contract-construction drawings/specifications

Design Memo - Mechanical Features for Willow Control Building HVAC (general)/ HVAC (special)/ Piping/ Plumbing maintenance facilities/ specialties as related to Building necessities

Drawing List - Mechanical Features for Willow Control Building
Abbreviations/symbols and piping schedule
Piping systems - Isometric
Piping - Plan Sheets 1 and 2
Piping - Section
Piping - Details
Piping - Plumbing & Drainage Details Sheets 1 and 2
HVAC - Abbreviations and symbols

HVAC - Plan Sheets 1 and 2
HVAC - Sections & Details Sheets 1 and 2
Diesel - Electric Generator Plan
Diesel - Electric Generator Section & Details
Miscellaneous Mechanical Equipment System Details

List of General Sections of Specification - Mechanical Features for Willow Control Building:
General/ Piping/ Plumbing/ HVAC (general)/ HVAC (special)/ Miscellaneous Mechanical Systems/ Diesel-Electric Generator/ Installation/ Testing

Assist in bid analysis recommendation
Review manufacturers' prints
Inspection & Testing: Reports and Trips

Support Services Output

Contract Preparation Phase Services

Revise standard conditions to fit specific contract

Prepare contract documents from design department's drafts: review copies, final reproduction

Review and process engineer's estimate

Assist with bidding and award: Prequalification, Document Issue and Follow-up, Receipt and Recording of bids, Edit Technical Evaluation of Bids by Design Departments, Commercial Evaluation of Bids, Prepare Letter of Recommendation for Award, Contract/Purchase Order Negotiation.

Construction Phase Services

Expedite submittals of manufacturers' drawings, catalog cuts, instructions

Expedite design department's review and approval of manufacturers' submittals

Prepare regular status report of all equipment contract submittals

24. Contract Documents E-4 - Willow Control Center Diesel Generator, Uninterrupted Power Supply, Security System, Fire Protection System

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	152	43.52	6620
Engineering Class. 7A	368	30.63	11270
Engineering Class. 7	1112	23.74	26400
Engineering Class. 6	1264	20.18	25510
Engineering Class. 5	2968	17.49	51910
Engineering Class. 4	968	15.24	14750
Engineering Class. 3	272	13.73	3730
Engineering Class. 2	-		
Engineering Technician Class. 5	72	15.76	1130
Engineering Technician Class. 4	72	13.94	1000
Engineering Technician Class. 3	144	12.58	1810
Engineering Technician Class. 2	-		
Draftsmen D	288	12.11	3490
Draftsmen C	576	10.18	5860
Draftsmen B	288	7.69	2210
Draftsmen A	-		
Word Processing	150	7.00	1050
Subtotal Salary	8694	18.03	156740
Finge Benefits			62700
Payroll Cost			219440
Overhead (61%)			133860
Manhour Cost			353300
Profit (base fee on services) (6% of manhour cost)			21200
Subtotal			374500

Task No 24

DIRECT COSTS

Equipment		$ 0
Travel		$ 21,440
Other		$ 30,400
	Subtotal	$ 51,840

SUBCONTRACTS

	Subtotal	$ 0
GRAND TOTAL		$ 426,340

Task Number: 25

Task: Contract Document E-5 Trashracks, Gates & Hoists - Including Structures

OUTPUT

Management Output

Contract Document E-5

Contract Award

Civil Engineering Output

Review comments

Electrical Engineering Output

Reviewed design memo and specification
Reviewed elec. shop drawings
Reviewed elec. inspection reports

Mechanical Engineering Output

Prepare Design Memos/ 17 Contract-Construction drawings/specifications

Design Memos - Mechanical Features
- Diversion Gate & Equipment
- Spillway Gate & Equipment
- Outlet Intake Gate & Equipment
- Power Intake Gates & Equipment
- Draft Tube Gates & Tailrace Bulkhead Equipment

Drawing List - Mechnical Features
Diversion Closure Gate & Hoist Sheet 1 of 2
Diversion Closure Gate & Hoist Sheet 2 of 2
Spillway Gate & Hoist Sheet 1 of 2
Spillway Gate & Hoist Sheet 2 of 2
Spillway Stoplogs
Outlet Intake Gate & Hoist Sheet 1 of 2
Outlet Intake Gate & Hoist Sheet 2 of 2
Outlet Intake Bulkhead
Outlet Intake Trashracks
Power Intake Gates & Hoist Sheet 1 of 2
Power Intake Gates & Hoist Sheet 2 of 2
Power Intake Bulkhead
Power Intake Shutter Gate

Power Intake Trashracks
Power Intake Ice Boom
Draft Tube Gate
Tailrace Bulkhead

General sections of specification - Mechanical Features General/ Details/ Design Standards/ Diversion Gate & Equipment/ Spillway Gate & Equipment/ Outlet Intake Gate & Equipment/ Power Intake Gate & Equipment/ Draft Tube Gate & Tailrace Bulkhead

Prepare Bid Analysis Recommendation
Review Manufacturers' Prints
Inspect & Test: reports and trips
Prepare O&M manual

Support Services Output

Contract Documents
Engineer's Estimate
Letter of Recommendation for Award
Report of Status of Equipment Contract Submittals

25. Contract Documents E-5 Trashracks, Gates & Hoists - Including Structures

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	88	43.52	3830
Engineering Class. 7A	176	30.63	5390
Engineering Class. 7	600	23.74	14240
Engineering Class. 6	1064	20.18	21470
Engineering Class. 5	3008	17.49	52610
Engineering Class. 4	2144	15.24	32670
Engineering Class. 3	760	13.73	10430
Engineering Class. 2	424	11.63	4930
Engineering Technician Class. 5	208	15.76	3280
Engineering Technician Class. 4	312	13.94	4350
Engineering Technician Class. 3	208	12.58	2620
Engineering Technician Class. 2	-		
Draftsmen D	520	12.11	6300
Draftsmen C	624	10.18	6350
Draftsmen B	208	7.69	1600
Draftsmen A	-		
Word Processing	150	7.00	1050
Subtotal Salary	10494	16.31	171120
Fringe Benefits			68450
Payroll Costs			239570
Overhead (61%)			146140
Manhour Cost			385710
Handling fee			1250
Profit (base fee on services) (6% of manhour cost)			23140
Subtotal			410100

Task No 25

DIRECT COSTS

Equipment		$	0
Travel		$	43,500
Other		$	36,300
	Subtotal	$	79,800

SUBCONTRACTS

A	Hunt	Mechanical shop inspection	25,000
		Subtotal	$ 25,000

GRAND TOTAL $ 514,900

Task Number: 26

Task: Contract Document E-6 - Cranes & Hoists

OUTPUT

Management Output

Contract Document E-6

Contract Award

Civil Engineering Output

Powerhouse outline "base" drawings from Task No. 15 Review Comments

Electrical Engineering Output

Reviewed design memo and specification
Reviewed elec. shop drawings
Reviewed elec. inspection reports and O/M manuals

Mechanical Engineering Output

Prepare Design Memo/5 Contract-Construction drawings/specifications (see Memo/Drawing/Specification List)

Design Memos - Mechanical Features
- Valve House Crane & Hoist Equipment
- Power Intake Crane
- Surge Chamber Bridge Crane
- Powerhouse Crane

Drawing List - Mechanical Features
- Valve House Service Crane
- Valve House Monorail Hoist & Trolley
- Power Intake Crane
- Surge Chamber Bridge Crane
- Powerhouse Crane

General Sections of Specifications - Mechanical Features
General
Details
Design Standards
Valve House Monorail Hoist
Valve House Service Crane

Power Intake Crane
Surge Chamber Bridge Crane
Powerhouse Crane

Prepare Bid Analysis Recommendation
Review Manufacturers' Prints
Inspection & Test: Reports and Trips
Prepare O&M manual

Support Services Output

Contract Preparation Phase Services

Revise standard conditions to fit specific contract

Prepare contract documents from design department's drafts: review copies, final reproduction

Review and process engineer's estimate

Assist with bidding and award: Prequalification, Document Issue and Follow-up, Receipt and Recording of bids, Edit Technical Evaluation of Bids by Design Departments, Commercial Evaluation of Bids, Prepare Letter of Recommendation for Award, Contract/Purchase Order Negotiation.

Construction Phase Services

Expedite submittals of manufacturers' drawings, catalog cuts, instructions

Expedite design department's review and approval of manufacturers' submittals

Prepare regular status report of all equipment contract submittals

26. Contract Documents
E-6 - Cranes & Hoists

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	88	43.52	3830
Engineering Class. 7A	128	30.63	3920
Engineering Class. 7	640	23.74	15190
Engineering Class. 6	624	20.18	17110
Engineering Class. 5	1488	17.49	26030
Engineering Class. 4	848	15.24	12920
Engineering Class. 3	112	13.73	2860
Engineering Class. 2	-		
Engineering Technician Class. 5	48	15.76	760
Engineering Technician Class. 4	96	13.94	1340
Engineering Technician Class. 3	192	12.58	2420
Engineering Technician Class. 2	-		
Draftsmen D	192	12.11	2330
Draftsmen C	240	10.18	2440
Draftsmen B	192	7.69	1480
Draftsmen A	-		
Word Processing	150	7.00	1050
Subtotal Salary	5038	17.44	87840
Fringe Benefits			35140
Payroll Costs			122980
Overhead (61%)			75020
Manhour Cost			198000
Handling Cost			1250
Profit (base fee on services) (6% of manhour cost)			11880
Subtotal			211130

Task No 26

DIRECT COSTS

Equipment		$	0
Travel		$	12,300
Other		$	22,550
	Subtotal	$	34,850

SUBCONTRACTS

A Hunt	Mechanical shop inspection	$	25,000
	Subtotal	$	25,000

GRAND TOTAL	$	270,980

Task Number: 27

Task: Contract Document E-7 Outlet Works Valves Including High Pressure Slide Gates for Emergency Release

OUTPUT

Management Subtasks

Contract Documents
Contract Award

Civil Engineering Output

Outlet Works concrete outline drawings prepared under Task No. 14

Review comments

Electrical Engineering Output

Reviewed design memo and specification
Reviewed elec. shop drawings
Reviewed elec. inspection reports and O/M manuals.

Mechanical Engineering Output

Prepare Design Memo/4 Contract-Construction drawings/specifications (see Memo/Drawing/Specification List)

Design Memos - Mechanical Features
Emergency Release Gate Equipment
Outlet Facilities Gates & Valves
Drawing List - Mechnical
Emergency Release Trashracks
Emergency Release Gate & Hoist Sheet 1 of 2
Emergency Release Gate & Hoist Sheet 2 of 2
Ring follower Gate & Outlet Facilities Discharge Valve

General Sections of Specifications - Mechanical Features
General
Details
Design Standards
High Pressure Emergency Gate & Equipment
Low Pressure Emergency Gate & Equipment

Outlet Facilities Ring Follower Guard Gate & Equipment
Outlet Facilities Free Discharge Valve & Equipment

Prepare Bid Analysis Recommendation
Review Manufacture Prints
Inspection & Test: Reports and Trips
Prepare O&M manual

Support Services Output

Contract Documents
Engineer's Estimate
Letter of Recommendation for Award
Report of Status of Equipment Contract Submittals

27. Contract Documents E-7 Outlet Works
Valves Including High Pressure
Slide Gates for Emergency Release

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	192	43.52	8360
Engineering Class. 7A	48	30.63	1470
Engineering Class. 7	416	23.74	9880
Engineering Class. 6	112	20.18	2260
Engineering Class. 5	600	17.49	10490
Engineering Class. 4	344	15.24	5240
Engineering Class. 3			
Engineering Class. 2	-		
Engineering Technician Class. 5	-		
Engineering Technician Class. 4	40	13.94	560
Engineering Technician Class. 3	80	12.58	1010
Engineering Technician Class. 2	-		
Draftsmen D	120	12.11	1450
Draftsmen C	160	10.18	1630
Draftsmen B	-		
Draftsmen A	-		
Word Processing	150	7.00	1050
Subtotal Salary	2262	19.18	43390
Fringe Benefits			17360
Payroll Costs			60750
Overhead (61%)			37060
Manhour Cost			97810
Handling			2500
Profit (base fee on services) (6% of manhour cost)			5870
Subtotal			106180

Task No 27

DIRECT COSTS

Equipment		$	0
Travel		$	5,580
Other		$	12,730
	Subtotal	$	18,310

SUBCONTRACTS

A	Hunt	Mechanical shop inspection	$ 50,000
		Subtotal	$ 50,000

GRAND TOTAL $ 174,490

Task Number: 28

Task: Contract Document E-8 Transformers

OUTPUT

Management Subtasks

Issue and control manpower budgets and schedule or task and subtasks

Initiate work

Civil Engineering Output

Powerhouse outline "base" drawings from Task No. 15

Review comments

Electrical Engineering Output

Design memorandum Transformers
Specification and Bid Form
Cost Estimate
Bid Evaluation
Reviewed Shop Drawing
Inspection Reports
O/M Manuals

Support Services Output

Contract Preparation Phase Services

Revise standard conditions to fit specific contract

Prepare contract documents from design department's drafts: review copies, final reproduction

Review and process engineer's estimate

Assist with bidding and award: Prequalification, Document Issue and Follow-up, Receipt and Recording of bids, Edit Technical Evaluation of Bids by Design Departments, Commercial Evaluation of Bids, Prepare Letter of Recommendation for Award, Contract/Purchase Order Negotiation.

Construction Phase Services

Expedite submittals of manufacturers' drawings, catalog cuts, instructions

Expedite design department's review and approval of manufacturers' submittals

Prepare regular status report of all equipment contract submittals

28. Contract Documents E-8
Transformers

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	24	43.52	1040
Engineering Class. 7A	48	30.63	1470
Engineering Class. 7	160	23.74	3800
Engineering Class. 6	240	20.18	4840
Engineering Class. 5	920	17.49	16090
Engineering Class. 4	464	15.24	7070
Engineering Class. 3	128	13.73	1760
Engineering Class. 2	-		
Engineering Technician Class. 5	-		
Engineering Technician Class. 4	32	13.94	450
Engineering Technician Class. 3	64	12.58	810
Engineering Technician Class. 2	-		
Draftsmen D	96	12.11	1160
Draftsmen C	128	10.18	1300
Draftsmen B	-		
Draftsmen A	-		
Word Processing	150	7.00	1050
Subtotal Salary	2454	16.64	40840
Fringe Benefits			16340
Payroll Costs			57180
Overhead (61%)			34880
Manhour Cost			92060
Profit (base fee on services) (6% of manhour cost)			5520
Subtotal			97580

Task No 28

DIRECT COSTS

Equipment		$ 0
Travel		$ 5,100
Other		$ 14,690
	Subtotal	$ 19,790

SUBCONTRACTS

	Subtotal	$ 0

GRAND TOTAL $ 117,370

Task Number: 29

Task: Contract Document E-9, Control Switchboard Equipment

OUTPUT

Management Output

Contract Document E-9

Contract Award

Civil Engineering Output

Powerhouse outline "base" drawings from Task No. 15

Review comments

Electrical Engineering Output

Design Memo, Station Controls
Design Memo, Protective Relaying
Specification and Bid Form
Cost Estimate
Bid Evaluation
Reviewed shop drawing
Inspection reports
O/M Manuals

Support Services Output

Contract Documents
Engineer's Estimate
Letter of Recommendation for Award
Report of Status of Equipment Contract Submittals

29. Contract Documents E-9 Control Switchboards

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	128	43.52	5570
Engineering Class. 7A	184	30.63	5640
Engineering Class. 7	624	23.74	14810
Engineering Class. 6	1024	20.18	20660
Engineering Class. 5	1864	17.49	32600
Engineering Class. 4	1248	15.24	19020
Engineering Class. 3	528	13.73	7250
Engineering Class. 2	304	11.63	3540
Engineering Technician Class. 5	-		
Engineering Technician Class. 4	80	13.94	1120
Engineering Technician Class. 3	160	12.58	2010
Engineering Technician Class. 2	-		
Draftsmen D	240	12.11	2910
Draftsmen C	320	10.18	3260
Draftsmen B	-		
Draftsmen A	-		
Word Processing	150	7.00	1050
Subtotal Salary	6854	17.43	119440
Fringe Benefits			47780
Payroll Costs			167220
Overhead (61%)			102000
Manhour Cost			269220
Profit (base fee on services) (6% of manhour cost)			16150
Subtotal			285370

Task No 29

DIRECT COSTS

Equipment		$ 0
Travel		$ 10,100
Other		$ 26,480
	Subtotal	$ 36,580

SUBCONTRACTS

	Subtotal	$ 0
GRAND TOTAL		$ 321,950

Task Number: 30

Task: Contract Document E-10 Hv Switchgear

OUTPUTS

Management Output

Contract Document E-10

Contract Award

Civil Engineering Subtasks

Powerhouse outline "base" drawings from Task No. 15

Review comments

Electrical Engineering Output

Specification and bid form
Cost estimate
Bid evaluation
Reviewed shop drawings
Inspection reports

Support Services Output

Contract Documents
Engineer's Estimate
Letter of Recommendation for Award
Report of Status of Equipment Contract Submittals

30. Contract Documents E-10 HV Switchgear

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	48	43.52	2090
Engineering Class. 7A	80	30.63	2450
Engineering Class. 7	256	23.74	6080
Engineering Class. 6	288	20.18	5810
Engineering Class. 5	768	17.49	13430
Engineering Class. 4	512	15.24	7800
Engineering Class. 3	160	13.73	2200
Engineering Class. 2	136	11.63	1580
Engineering Technician Class. 5	-		
Engineering Technician Class. 4	64	13.94	890
Engineering Technician Class. 3	56	12.58	700
Engineering Technician Class. 2	-		
Draftsmen D	64	12.11	780
Draftsmen C	56	10.18	570
Draftsmen B	-		
Draftsmen A	-		
Word Processing	150	7.00	1050
Subtotal Salary	2638	17.26	45530
Fringe Benefits			18210
Payroll Costs			63740
Overhead (61%)			38880
Manhour Cost			102620
Profit (base fee on services) (6% of manhour cost)			6160
Subtotal			108780

Task No 30

DIRECT COSTS

Equipment		$ 0
Travel		$ 5,500
Other		$ 14,690
	Subtotal	$ 20,190

SUBCONTRACTS

	Subtotal	$ 0
GRAND TOTAL		$ 128,970

Task Number: 31

Task: Contract Document E-11 Generator Voltage Switchgear

OUTPUT

Management Output

Contract Document E-11

Contract Award

Civil Engineering Output

Powerhouse outline "base" drawings from Task No. 15

Review comments

Electrical Engineering Output

Specification and Bid Form
Cost Estimate
Bid Evaluation
Reviewed Shop Drawing
Inspection Reports

Support Services Output

Contract Documents
Engineer's Estimate
Letter of Recommendation for Award
Report of Status of Equipment Contract Submittals

31. Contract Documents E-11 Generator Voltage Switchgear

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	64	43.52	2790
Engineering Class. 7A	96	30.63	2940
Engineering Class. 7	312	23.74	7410
Engineering Class. 6	400	20.18	8070
Engineering Class. 5	936	17.49	16370
Engineering Class. 4	624	15.24	9510
Engineering Class. 3	208	13.73	2860
Engineering Class. 2	106	11.63	1860
Engineering Technician Class. 5	-		
Engineering Technician Class. 4	96	13.94	1340
Engineering Technician Class. 3	88	12.58	1110
Engineering Technician Class. 2	-		
Draftsmen D	96	12.11	1160
Draftsmen C	88	10.18	900
Draftsmen B	-		
Draftsmen A	-		
Word Processing	150	7.00	1050
Subtotal Salary	3318	17.29	57370
Fringe Benefits			22950
Payroll Costs			80320
Overhead (61%)			49000
Manhour Cost			129320
Profit (base fee on services) (6% of manhour cost)			7760
Subtotal			137080

Task No 31

DIRECT COSTS

Equipment		$	0
Travel		$	0
Other		$	16,660
	Subtotal	$	16,660

SUBCONTRACTS

	Subtotal	$	0
GRAND TOTAL		$	153,740

Task Number: 32

Task: Contract Document E-12, Station Service Switchgear

OUTPUT

Management Output

Contract Document E-12

Contract Award

Civil Engineering Output

Powerhouse outline "base" drawings from Task No. 15

Review comments

Electrical Engineering Output

Prepare Design Memo on Station Service System
Prepare Design Memo on Diesel Generator
Specification and Bid Form
Cost Estimate
Bid Evaluation
Reviewed shop drawing
Inspection reports

Support Services Output

Contract Documents
Engineer's Estimate
Letter of Recommendation for Award
Report of Status of Equipment Contract Submittals

32. Contract Documents E-12 Sta. Service Switchgear

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	64	43.52	2790
Engineering Class. 7A	96	30.63	2940
Engineering Class. 7	320	23.74	7600
Engineering Class. 6	416	20.18	12920
Engineering Class. 5	960	17.49	16790
Engineering Class. 4	640	15.24	9750
Engineering Class. 3	224	13.73	4390
Engineering Class. 2	160	11.63	1860
Engineering Technician Class. 5	-		
Engineering Technician Class. 4	96	13.94	1340
Engineering Technician Class. 3	96	12.58	1210
Engineering Technician Class. 2	-		
Draftsmen D	96	12.11	1160
Draftsmen C	88	10.18	900
Draftsmen B	-		
Draftsmen A	-		
Word Processing	150	7.00	1050
Subtotal Salary	3406	17.28	58860
Fringe Benefits			23540
Payroll Costs			82400
Overhead (61%)			50260
Manhour Cost			132660
Profit (base fee on services) (6% of manhour cost)			7960
Subtotal			140620

Task No 32

DIRECT COSTS

Equipment		$	0
Travel		$	0
Other		$	16,660
	Subtotal	$	16,660

SUBCONTRACTS

	Subtotal	$	0
GRAND TOTAL		$	157,280

Task Number: 33

Task: Contract Document E-13
Computer Control for the Susitna Powerhouse and the Willow Control Center

OUTPUT

Management Output

Contract Document E-13
Contract Award

Civil Engineering Output

Powerhouse outline "base" drawings from Contract C-6

Review comments

Electrical Engineering Output

Susitna Plant Computer Control Design Memo
Energy Maragement System Computer Control (Willow) Design Memo

Technical specifications for Susitna and Willow Computer Systems and all Accessories

Drawings
20 - Interface drawings
10 - Schematic diagrams

Cost Estimate
Bid Evaluation
Reviewed Shop drawings

Support Services Output

Contract Preparation Phase Services

Contract Documents
Engineer's Estimate
Letter of Recommendation for award

Construction Phase Services

Report of status of equipment contract submittals

33. Contract Documents E-13
Computer Control

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	232	43.52	10100
Engineering Class. 7A	352	30.63	10780
Engineering Class. 7	1168	23.74	27730
Engineering Class. 6	2128	20.18	42940
Engineering Class. 5	3512	17.49	61420
Engineering Class. 4	2344	15.24	35720
Engineering Class. 3	1064	13.73	14610
Engineering Class. 2	584	11.63	6790
Engineering Technician Class. 5	72	15.76	1130
Engineering Technician Class. 4	288	13.94	4010
Engineering Technician Class. 3	144	12.58	1810
Engineering Technician Class. 2	-		
Draftsmen D	288	12.11	3490
Draftsmen C	360	10.18	3660
Draftsmen B	288	7.69	2210
Draftsmen A	-		
Word Processing	150	7.00	1050
Subtotal Salary	12974	17.53	227450
Fringe Benefits			90980
Payroll Costs			318430
Overhead (61%)			194240
Manhour Cost			512670
Profit (base fee on services) (6% of manhour cost)			30760
Subtotal			543430

Task No 33

DIRECT COSTS

Equipment		$	
Travel		$	13,630
Other		$	42,190
	Subtotal	$	55,820

SUBCONTRACTS

	Subtotal		0
GRAND TOTAL		$	599,250

Task Number: 34

Task: Contract Document E-14 Pipe-Type Cables - Furnish and Install

OUTPUT

Management Output

Contract Document E-16
Contract Award

Civil Engineering Output

Review comments

Electrical Engineering Output

Design memorandum
Specification and bid form
Cost estimate
Bid evaluation

Reviewed shop drawings
Inspection reports
O/M Manuals

Support Services Output

Contract Preparation Phase Services

Contract Documents
Engineer's estimate
Letter of recommendation for award

Construction Phase Services

Report of status of equipment contract submittals

34. Contract Documents E-14 - 345 kV
Power Cables - Furnish & Install

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	40	43.52	1740
Engineering Class. 7A	72	30.63	2210
Engineering Class. 7	184	23.74	4370
Engineering Class. 6	208	20.18	4200
Engineering Class. 5	1264	17.49	22110
Engineering Class. 4	1088	15.24	16580
Engineering Class. 3	264	13.73	3620
Engineering Class. 2	176	11.63	2050
Engineering Technician Class. 5	-		
Engineering Technician Class. 4	120	13.94	1670
Engineering Technician Class. 3	120	12.58	1510
Engineering Technician Class. 2	-		
Draftsmen D	120	12.11	1450
Draftsmen C	120	10.18	1220
Draftsmen B	-		
Draftsmen A	-		
Word Processing	150	7.00	1050
Subtotal Salary	3926	16.25	63780
Fringe Benefits			25510
Payroll Costs			89290
Overhead (61%)			54470
Manhour Cost			143760
Profit (base fee on services) (6% of manhour cost)			8630
Subtotal			152390

Task No 34

DIRECT COSTS

Equipment		$	
Travel		$	12,130
Other		$	138,320
	Subtotal	$	150,450

SUBCONTRACTS

	Subtotal		0
GRAND TOTAL		$	302,840

Task Number: 35

Task: Contract Document E-15
Switchyard Structures - Busses & Acc.

OUTPUT

Management Subtasks

Issue and control manpower budgets and schedule for Task and subtasks

Initiate work

Civil Engineering Output

Review comments

Electrical Engineering Output

Design memorandum, Switchyard
Specification and bid form
Cost estimate
Bid evaluation

Reviewed shop drawings
Inspection reports

Support Services Output

Contract Preparation Phase Services

Contract Documents
Engineer's estimate
Letter of recommendation for award

Construction Phase Services

Report of status of equipment contract submittals

35. Contract Documents E-15 Switchyard Structures - Busses & Acc.

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	56	43.52	2440
Engineering Class. 7A	80	30.63	2450
Engineering Class. 7	280	23.74	6650
Engineering Class. 6	192	20.18	3870
Engineering Class. 5	832	17.49	14550
Engineering Class. 4	840	15.24	12800
Engineering Class. 3	184	13.73	2530
Engineering Class. 2	-		
Engineering Technician Class. 5	-		
Engineering Technician Class. 4	200	13.94	2790
Engineering Technician Class. 3	200	12.58	2520
Engineering Technician Class. 2	-		
Draftsmen D	200	12.11	2420
Draftsmen C	200	10.18	2040
Draftsmen B	-		
Draftsmen A	-		
Word Processing	150	7.00	1050
Subtotal Salary	3414	16.44	56110
Fringe Benefits			22440
Payroll Costs			78550
Overhead (61%)			47920
Manhour Cost			126470
Profit (base fee on services) (6% of manhour cost)			7590
Subtotal			134060

Task No 35

DIRECT COSTS

Equipment		$ 0
Travel		$ 0
Other		$ 16,660
	Subtotal	$ 16,660

SUBCONTRACTS

Subtotal	0

GRAND TOTAL $ 150,720

Task Number: 36

Task: Home Office Specialists Support to Field During Construction

OUTPUT

Management Outputs

Expediting response to field support requests

Civil Engineering Output

Trip memos, reports and sketches

Geotechnical Engineering and Geology Output

Trip memos, reports, sketches and construction evaluation reports as required

Mechanical Engineering Output

General correspondence, special instructions, miscellaneous memos/studies/sketches advising field as associated with mechanical equipment and systems

Support Services Output

Studies and reports

36. Home Office Specialists Support to Field During Construction

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8	648	43.52	28200
Engineering Class. 7A	2592	30.63	79390
Engineering Class. 7	4864	23.74	115470
Engineering Class. 6	9736	20.18	196470
Engineering Class. 5	8112	17.49	141880
Engineering Class. 4	6488	15.24	98880
Engineering Class. 3		13.73	
Engineering Class. 2		11.63	
Engineering Technician Class. 5		15.76	
Engineering Technician Class. 4	480	13.94	6690
Engineering Technician Class. 3	720	12.58	9060
Engineering Technician Class. 2		9.68	
Draftsmen D	720	12.11	8720
Draftsmen C	480	10.18	4890
Draftsmen B		7.69	
Draftsmen A		6.17	
Word Processing	840	7.00	5880
Subtotal Salary	35680	19.49	695530
Fringe Benefits			279210
Payroll Costs			973740
Overhead (61%)			593980
Manhour Cost			1567720
Profit (base fee on services) (6% of manhour cost)			94060
Subtotal			1661780

Task No 36

DIRECT COSTS			
	Equipment	$	0
	Travel	$	861,270
	Other	$	0
	Subtotal	$	861,270
SUBCONTRACTS			
	Subtotal		0
GRAND TOTAL		$	2,523,050

Task Number: 37

Task: Engineers Field Support

OUTPUT

Output:

- Diaries of each staff member
- Weekly reports of construction activities and significant design-related events and activities
- Reports of drawings and specifications interpretations to the Construction Manager
- Reports of drawing or specification changes to the Construction Manager
- Special reports or memoranda to project control and design production offices concerning necessary studies and design, drawings and specification changes, or claims assessment and resolution.

37. Field Support

	Hours	Rate	Total
PRIME CONTRACTOR COSTS			
Salaries			
Engineering Class. 8			
Engineering Class. 7A			
Engineering Class. 7	19760	23.74	469100
Engineering Class. 6	15200	20.18	306740
Engineering Class. 5	50560	17.49	884290
Engineering Class. 4			
Engineering Class. 3			
Engineering Class. 2			
Engineering Technician Class. 5			
Engineering Technician Class. 4			
Engineering Technician Class. 3			
Engineering Technician Class. 2			
Draftsmen D	20800	12.11	251890
Draftsmen C			
Draftsmen B			
Draftsmen A			
Word Processing			
Subtotal Salary	106320	17.98	1912020
Cost of Living Differential			535940
Salary Cost			2447960
Fringe Benefits			979180
Payroll Costs			3427140
Overhead (61%)			2090560
Manhour Cost			5517700
Profit (base fee on services) (6% of manhour cost)			331060
Subtotal			5848760

Task No 37

DIRECT COSTS

Equipment		$ 0
Travel		$ 100,040
Other		$ 262,040
	Subtotal	$ 362,040

SUBCONTRACTS

	Subtotal	0

GRAND TOTAL $ 6,210,800

Task Number: 38

Task: Design Subcontracts through Award
Access Road
Railroad Extension
Airfield
Sewage Treatment and Water Treatment Systems
Camp Facilities
Reservoir Clearing

OUTPUT

Management Output

A minimum of 6RFQ Documents (optional)
A minimum of 6 RFP documents
A minimum of 6 recommendations of award of contract
Award a minimum of six design subcontracts

Monthly Progress Reports on Non-Technical Facilities Design Subcontracts
Reports on decisions taken in meetings with Power Authority and Alaskan agencies
Coordinated and approved Contract Documents for construction of Non-Technical features of Watana project

Task No 38

PRIME CONTRACTOR COSTS

The management and administration of the design for the non-technical facilities must be integrated with the overall project management. Also, there are difinite interfaces (and/or integration) with Tasks No. 2, No. 3 and No. 4. The costs associated with the foregoing activities are included in the respective tasks.

It is understood that the Engineer will be responsible for the design subcontracts for the non-technical facilities. In accepting that responsibility we will apply a handling fee.

SUBCONTRACTS

A	Frank Moolin Management of Non-Technical Facilities	$ 1,947,370
	Subtotal	1,947,370
GRAND TOTAL		$ 1,947,370

Appendix II

SUPPLEMENTAL PERSONNEL AND RELOCATION POLICIES FOR THE SUSITNA PROJECT

The personnel and relocation policies proposed for the Susitna Hydroelectric Project will generally conform to established policies of the Joint Venturers. A copy of the Harza personnel and relocation policy is included for reference. Ebasco's personnel and relocation policies are similar to those of Harza, and therefore, the attached policies are indicative.

Specific relocation policies proposed for the Susitna Project are as follows:

TEMPORARY ASSIGNMENTS

This applies to assignments for a duration of less than 12 months. Actual reasonable expenses up to 30 days will be reimbursed and per diem rates will be established for periods from 30 days to 12 months. Costs of lodging and subsistence vary with location; hence, rates will be established for such locations for Seattle and Anchorage.

PERMANENT ASSIGNMENTS

This applies to assignments over one year in duration. Actual reasonable expenses will be paid for periods up to 30 days while permanent housing is being arranged. After 30 days, a living allowance may be granted and/or a salary adjustment made to compensate for cost of living differential. Salaries increases may also be granted to be competitive with other salaries in the area. Salary adjustments will be made for the Anchorage area. Reasonable costs of relocation at the beginning and conclusion of the assignment will be reimbursed for the employee and his eligible dependents.

SITE ASSIGNMENTS

This applies to personnel assigned to the site. These adjustments will be limited periods less than 12 months. In some instances, personnel may be assigned to Alaska who are required to spend extensive time at the site. Under these circumstances, the site assignment conditions will apply for all time spent at the site.

1. For travel to Anchorage, the normal travel conditions apply - transportation from Anchorage or other locations in Alaska to the site will be furnished.

2. Lodging and subsistence will be furnished at no cost to the employee.

3. Reimbursement for the cost of shipping a limited amount of personal effects (clothing, equipment, etc.) to the site at the time of assignment and return at the conclusion of the assignment will be allowed.

4. Work at the site may require an extended work week. Payment in excess of 40 hours per week will be on the basis of straight time for all professional employees.

Harza Engineering Company

Harza Engineering Company is a consulting engineering firm established in 1920. The principal effort of the Company is providing consulting engineering and related technical services for the development and control of water resources for electrical power, irrigation, flood control, land reclamation, water supply and pollution abatement in the United States and throughout the world. In addition, the Company is actively engaged in fields such as: agriculture, transportation, telecommunications, underground excavation, roadways, industrial and municipal solid waste disposal, services to the mining industries and a variety of specialized fields. The Company is an independent organization directed chiefly by engineers who are complemented by other professionals, specialists and technicians in related fields. The Company is entirely owned by its Officers, Associates and professional employees.

The Functional operations of the Company are under the direction of the Office of the President and are divided into the following four parts:

- Management Group Operations - Business Development and Project Management activities, under the direction of Area Group Managers, and carried out through Project Managers.
- Engineering Operations - engineering and technical operations, under the direction of the Chief Engineer, and carried out by Department Heads and Section Heads.
- Financial Services - legal, accounting, payroll, budget and cost control services.
- Administrative Services - secretarial, word processing, personnel, files and other office services.

The information provided below is a summary of information usually required when considering employment and is explained in further detail in the Harza Employment Conditions which are provided to all employees:

> Our Company policy has been, and will continue to be to treat all applicants and employees equally without regard to their race, creed, color, national origin, sex, or handicap.

Hours

In the Chicago Office, the working hours are from 8:15 A.M. to 5:00 P.M. Monday through Friday; with lunch period from 12:15 P.M. to 1:00 P.M. The working base is 40 hours per week.

At domestic field locations, hours of work will depend on the project, the site, and the local conditions, and is similarly expected to conform to a working base of 40 hours per week.

The hours of work of employees on overseas assignments will be determined by the requirements at the project site and by what is necessary to best carry out the Company work effectively and efficiently. Where possible, a schedule of forty-eight (48) hours each week has been established.

Occupational Classifications

Each Engineer, Geologist, Scientist and other technical professional is assigned an appropriate Engineer Classification: I through IX. Each Engineering Technician a Classification: I through V. Each Drafter is assigned an appropriate Drafter Classification: A, B, C, or D. The assigned occupational classification is determined at the time of hire and is based on the experience and ability of the employee at the time. Classification of Engineers, Geologists, Scientists and Engineering Technicians will generally conform to the ASCE grade definitions.

Management and Administrative employees are assigned appropriate occupational titles or classifications reflecting the nature of their work and their level of academic training and work experience.

Salary Levels

Each employee will be advised of their monthly starting salary at the time of employment. Salary levels are reviewed periodically to evaluate their comparability with local and national levels, and appropriate revisions are made if necessary.

Pay Periods

Pay periods are two weeks in length, commencing on Sunday and ending a week from the following Saturday. The gross amount of each pay check equals 1/26th of twelve times the employees' monthly salary since there are 26 pay days per year. Temporary employees are paid for the actual time worked.

Overtime Pay

U.S. Assignments

Chicago Office and U.S Field employees receive overtime pay for hours *worked* in excess of 40 hours per week. Employees in professional positions such as engineer, accountant and certain non-technical supervisors are paid at a *straight time* rate. All other employees are paid at a *time and one-half* rate.

Overseas Assignments

Overseas assignment means all areas outside of the 50 states of the United States, U.S. Possessions and Canada. Short-term generally means assignments of 30 days or less. Intermediate-term generally means assignments of more than 30 days and less than one year. Long-term generally means assignments of one year or more.

On short-term overseas assignments, in the first thirty days outside the U.S. or Canada, actual hours of work are paid at the U.S. Domestic Base Salary rate, limited to 8 hours in any day. If a short-term assignment is extended beyond thirty days, an increment is added to the U.S. Domestic Base Salary, to compensate for longer and irregular work hours normally experienced on overseas assignments, and no further overtime is paid. This increment may vary but will not exceed 20%. Salary increased by this increment, is called "Field Salary". On Intermediate and Long-Term assignments, Field Salary is paid effective from the date of departure.

After the initial thirty days, another increment called "Overseas Differential" may be paid to compensate overseas employees for possible adverse or difficult conditions. Any differential paid will be a percentage of the Field Salary and will

be established for the particular location or project. On intermediate or long-term assignments, an Overseas Differential, if applicable, will be paid effective from the date of departure.

Any special provisions in a letter of Assignment or Addendum may supersede these provisions.

Taxes - Overseas Assignments

Effective with 1982, a U.S. citizen or resident of the U.S. whose tax home is a foreign country is eligible for a foreign earned income exclusion and a housing cost exclusion if present in a foreign country or countries at least 330 days in a 12 consecutive month period, or if a U.S. citizen and has been a *bona fide* resident of a foreign country for a full calendar year. Because the amount of these exclusions is substantial, there is no withholding of U.S. income taxes for those overseas on long-term assignment.

Where an employee becomes subject to the income tax laws of foreign countries, and the Company is required to withhold such tax, such deductions are made. If the employee is not eligible for the exclusions from U.S. taxes, or income exceeds the special U.S. exclusions plus personal exemptions, the Company must thus withhold U.S. income taxes, but the U.S. income tax will be reduced by the amount of the foreign tax withheld.

Income tax information is set forth in the Letter of Assignment given to each employee before leaving on a long-term overseas assignment, or in an Addendum to the Employment Conditions which applies to the overseas office where assigned.

Employee Performance and Salary Reviews

Semi-annual performance reviews record and provide feedback to the employee on the positive and negative points of performance and establish goals. Annual performance reviews, in addition, provide information to assist supervisors in making promotion and compensation decisions.

All newly hired employees first receive their initial performance and salary review. Thereafter, all employees receive a semi-annual performance review followed by an annual performance and salary review at approximately six month intervals. When the salary review is considered, maximum consideration will be given to meritorious performance.

Holiday Policy

Seven holidays and, in some years, two half day holidays will be observed:

New Year's Eve (1/2 Day, except when New Year's Day falls on a Sat. or Sun.), New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Eve (1/2 Day, except when Christmas Day falls on a Sat. or Sun.), Christmas Day, Elective Day.

If a holiday falls on Saturday, it will be observed on Friday. If a holiday falls on Sunday, it will be observed on Monday. Newly-hired employees have a waiting period of six months before an Elective Holiday may be taken. On foreign assignments, seven holidays and, in some years, two half-day holidays will also normally be observed at the rate applicable to that project.

Part time, temporary employees and co-op students working two months or more are paid for observed holidays which occur in their work period, proportionally to full-time employees based on the ratio of the actual number of hours averaged per week compared to 40 hours per week.

Vacation Policy

Full time and co-op student employees accrue paid vacation. Vacation is accrued at the rate of one day (eight hours) for each full calendar month for which pay is received between September 1 and June 30 inclusive, for use in the June year.

Employees who have worked at least five full calendar years receive an additional day (eleven work days vacation) in their sixth full calendar year, and an additional day for each thenceforward (twelve work days in their seventh full calendar year, etc.), until a maximum of fifteen work days vacation is reached, in the tenth full calendar year. Employees who have worked at least 15 full calendar years will receive an additional day (16 work days vacation) in their sixteenth full calendar year, and an additional day for each year thenceforward (17 work days in their seventeenth full calendar year, etc.), until a maximum of 20 work days vacation is reached in the twentieth full calendar year.

Local Leave

Employees on long-term overseas assignments receive local leave in addition to the standard vacation allowance. It is earned at the rate of one work week per calendar year of overseas service, proportioned for part of a calendar year. Payment for local leave is at the U.S. Domestic Base Salary rate.

Medical Leave

Salary for time off for full time employees and co-op students, up to 80 hours per calendar year, because of illness or injury, will be paid, except that during the first 12 months of employment the following schedule applies:

First 3 mo.	24 hrs
4th thru 6th mo.	16 hrs (total 40 hrs)
7th thru 9th mo.	24 hrs (total 64 hrs)
10th thru 12th mo.	16 hrs (total 80 hrs)

On long-term overseas assignments, time off for illness or injury is increased to 120 hours per calendar year, and the limits shown above for the first twelve months of employment are increased by 50 percent.

Extended Medical Leave

In any calendar year, the unused time from previous years to a maximum of 10, will be accumulated toward time off for an extended medical leave at the rate of two hours credit for every hour of unused medical leave time, to a maximum of 6 weeks pay at full salary, plus 7 weeks pay at half salary, i.e., on the basis of 4-hour days at full salary.

Hours utilized for payment of extended medical leave cannot be utilized a second time for another extended medical leave. All payments for extended medical leave are at the U.S. Domestic Base Salary rate, except that payment at the overseas salary rate may be authorized when the medical leave was due to a work-related endemic illness and the employee remains overseas during convalescence.

Absences

A reasonable amount of paid time will be allowed for absence because of death in the employee's family, for time

actually spent on jury duty, and for up to two weeks of time annually on such training with an Organized Reserve or National Guard Unit.

Leave of Absence

A leave of absence for a specified period may be granted for completion of schooling or other valid reason such as child rearing leave after medical disability has ceased for a maximum combined period of one year.

Group Insurance

All full time employees are eligible for Life, Medical and Long-term Disability Insurance Plans sponsored by the Company. The Company pays 75% of the cost of the Plan. Deductions for the Employee's 25% is made from payroll checks. All full-time employees become eligible for Life and Medical Insurance automatically upon commencement of their employment for up to thirty-one days. Employees become eligible for Long-term Disability Insurance upon completion of thirty days of employment.

In addition to the regular volume of life insurance, the Plan includes a provision for payment of an additional amount on accidental death, commonly known as "double indemnity". Employees age 65 and over are eligible for 65% of the amount of life insurance.

Medical insurance provides comprehensive Hospital-Surgical-Medical coverage to employees up to age 65 and if elected to their dependents. When an employee or dependent becomes eligible for Medicare, benefits are reduced by the amount eligible under Medicare.

Long-Term Disability Insurance provides protection against loss of income during long periods of absence brought about by sickness or accident. This insurance pays 60% of salary subject to a maximum benefit of $4,000 per month, less any Disability Benefits Law and/or Social Security and begins on the 91st day of continuing disability.

Accident Insurance

Each employee is covered by an accidental death, dismemberment, or total disability Group Accident Insurance Policy in the amount of $200,000 while traveling anywhere in the world on the Company's business and at the Company's expense, including stopovers en route and during stay at destination. Employees on assignments at field offices and field sites are covered throughout their stay but travel from home to and from the Chicago office is not covered. The Company pays the entire cost of this insurance.

Workers' Compensation Insurance

The Company carries Workers' Compensation Insurance which provides certain statutory benefits according to worker's compensation law.

Incentive Compensation

An annual cash incentive compensation payment to all regular employees has been paid since 1947, and is distributed in December each year. An employee becomes eligible for the cash incentive compensation in the month of December following date of employment if actively employed.

Employees' Retirement Plan

All employees become participants in the Employees' Retirement Plan on June 30th or December 31st following the first 12 month period after their date of employment in which they work at least 1,000 hours. On December 31st, the Company's contribution to the Retirement Plan is made and is based on U.S. Domestic Base Salary earnings from the anniversary date of their first year of employment to the December 31st on which they became a participant. Participants continue to receive allocations annually thereafter.

Each employee becomes fully vested after being a participant for 5 years (in effect, 6 and a fraction years after employment). Vesting is proportional at the rate of 20% for each year as a participant in the Plan. Participants receive 100% if they leave the Company through circumstances beyond their control. Partcipants may make contributions to their account by payroll deductions of from 2% to 10% of their base pay. Such contributions are always fully vested.

Professional Registration

The Company pays the registration and the annual renewal fee for one Professional registration and for any additional registrations the Company requests in connection with Company work.

Technical Paper Writing

The Company encourages all qualified personnel to write papers and provides services of typing of drafts, use of library records, drafters time for drawings and charts preparation. Any payment or prize for articles accepted for publication belongs to the author. If the paper is selected for presentation in North America, travel expenses and salary are provided.

Papers published in technical or scientific journals are eligible for the annual L.F. Harza award. This award is a cash prize of $2,500, $1,500, or $1,000 based on an annual selection process.

Visits to Projects

After two full years' service, an employee may apply for one day per year leave with pay at their U.S. rate to inspect a project. After five full years' employment, this leave is increased to two days per year.

Tuition Refund Program

The tuition refund program assists employees with tuition for college credit courses in fields relating to Company activities and are made on the following basis limited to one course per semester or quarter:

A. 100% of tuition for individual courses of direct use on work assignments.

B. 75% of tuition for courses leading to a degree related to the employee's area of Company activities or another area to which an employee could normally aspire within the Company's activities.

C. 50% for courses leading to MBA degrees for personnel in supervisory positions.

Service Awards

Awards are given on the anniversary of 5, 10, 15, 20, 25, 30 and 35 years of service to the Company. Once a year an anniversary dinner is held for all employees who received an award during the previous year.

Travel Arrangements and Expenses

When traveling on Company business, the employee is furnished transportation on U.S. carriers by the most direct route, via Economy or equivalent Class on domestic flights and Business Class when available on the overseas portion of flights. Travel advances are made to cover anticipated business expenses while on Company business. On long-term assignments, an employee is normally entitled to family status where transportation is provided for the employee's spouse and minor children.

Rest Stops

To allow for sufficient rest on arrival or upon return when making long journeys, a rest stop is permitted at a suitable place en route.

Subsistence

On short-term travel assignments all actual expenses are reimbursed. Actual expenses while en route to and from intermediate or long-term assignments are also reimbursed.

Relocation

When relocations to Chicago or another city in the United States are made, the cost of moving household goods and personal effects will normally be reimbursed to the lesser of actual costs of one month's salary. Transportation costs will also be reimbursed limited to the cost of Economy or equivalent class air fare.

Letters of Assignment and Addenda

Employees on assignments away from Chicago of more than six months receive a Letter of Assignment setting forth the salary and allowances applicable to their assignment. Except where our Client's contract causes some changes in standard policies, the Harza Employment Conditions apply. When changes are required an Addendum is issued, setting forth changes from the standard Conditions

Inoculations, Examinations and Vaccinations

An examination at Company expense may be requested in connection with a foreign assignment. Expenses incident to necessary inoculations and vaccinations for the employee and family are paid by the Company.

Passports and Visas

Passports are required for all foreign travel and visas are required in certain countries. The associated costs are paid by the Company.

Special Overseas Allowances

The following allowances may be granted and, if applicable, are shown in the Letter of Assignment or Addendum.

Cost of Living Differential

On long-term assignments, living expenses are not paid, but a Cost of Living Differential may be paid. Such a differential is based on the difference between the cost of maintaining a household in the Chicago area and the cost of maintaining an equivalent household in the overseas location. If such a difference is demonstrated, a Cost of Living Differential is paid. The Cost of Living Differential is intended to cover principally excess subsistence and other living costs, but may also include an allowance for extra housing costs.

Housing Allowance

Housing at an overseas location is sometimes provided near the project site. When housing is not provided and extra housing costs are substantial, a separate Housing Allowance may be granted if not included in the Cost of Living Differential.

Schooling Costs

The Company reimburses the employee for actual costs of schooling at the overseas location up to an established maximum for the location of each dependent child under 18 years of age. Schooling costs include costs for tuition, registration, book deposit and local transportation.

Shipping Allowances

On assignments of one year or longer, shipping of household goods and personal effects are paid to certain maximums. The method of shipment may vary according to the project and location to which the employee is assigned. In many cases, the employee may exercise a choice between storage and shipment. Arrangements for such shipping and storage are the responsibility of the employee.

The usual maximums applicable to overseas shipments are:

Net weights of personal effects via surface shipment:

	Basic Household Furniture Not Supplied
Single Status	1,500 kg. or 6 m^3
Married Status	2,000 kg. or 8 m^3
Each child under age 18	500 kg. or 2 m^3

	Basic Household Furniture Supplied
Single Status	600 kg. or 2.4 m^3
Married Status	1,000 kg. or 4 m^3
Each child under age 18	200 kg. or .8 m^3

Gross weights of personal effects via unaccompanied air freight:

Married or Single Status	100 kg. each for employee, spouse and child under age 18

Where a portion or all of the household goods are supplied by the client, provisions for storage of all or part of an employee's household goods may be provided. In general, the combined allowances for shipping and storage will be equal to the total shipping cost allowance.

PERSONNEL CLASSIFICATIONS FOR ESTIMATING COST OF ENGINEERING SERVICES

Drafting/Designer Position

DRAFTING, APPRENTICE - Trainee assignment to learn the basic drafting skills and techniques.

DRAFTING, LEVEL I - Entry level with High School drafting training or other appropriate basic-level drafting experience. Copies sketches, layouts, and drawings prepared by others.

DRAFTING, LEVEL II - Entry level for individual with some specialized technology relating to drafting or engineering such as Associate Degree or experience as Level I. Copies detailed plans and drawings.

DRAFTING, LEVEL III - Experienced draftsperson able to perform nonroutine and complex drafting assignments that require the application of standardized drawing techniques. Works independently with occasional advice from supervisor and may direct the efforts of less-experienced draftspersons.

DRAFTING, LEVEL IV - Involved in planning the graphic presentation of complex items having distinctive design features that can differ significantly from established drafting precedents. May recommended minor design changes. May direct the preparation of drawings by other drafting personnel of lesser experience.

DESIGNER (1) - Involved in application of engineering fundamentals to engineering design; will select and recommend procedures in design and prepare preliminary designs for engineer's approval. Works independently on design projects in support to Design Engineer and will often coordinate drafting efforts on projects.

SENIOR DESIGNER (2) - A Designer with significant years of engineering experience and proficiency.

(1) The Designer Category includes classification ET2 and ET3 (Engineering Technician) shown in the estimated cost of engineering services for each Task.

(2) The Senior Designer Category includes classifications ET4 and ET5 (Engineering Technician) shown in the estimated cost of engineering services for each task.

Engineering Classifications

It is recognized that classifications in each company may be according to one or more fields of engineering discipline, related work experience, and qualifications.

ENGINEER I - The entry level of professional work requiring a bachelor's degree in engineering and no experience, or the equivalent (to a degree) in appropriate education and experience.

Works under close supervision; receives specific and detailed instructions as to required tasks and results expected.

Performs a variety of routine tasks, which should provide experience and familiarization with the engineering staff, methods, practices, and programs of the company. Usually assumes no responsibility for direction of others.

ENGINEER II - At this continuing developmental level, performs routine engineering work requiring application of standard techniques, procedures, and criteria in carrying out a sequence of related engineering tasks. Limited exercise of judgment is required on details of work in making preliminary selections and adaptations of alternatives.

For training and developmental purposes, assignments may include some work that is typical of a higher level. Performance at this level generally requires a minimum of 1 year Engineer I or related experience, or a M.S. degree.

Supervisor screens assignments for unusual or difficult problems and selects techniques and procedures to be applied on nonroutine work. Receives close supervision on new aspects of assignments. Using prescribed methods, performs specific and limited portions of a broader assignment of an experienced engineer.

ENGINEER III - Independently evaluates, selects, and applies standard engineering techniques, procedures, and criteria, using judgement in making minor adaptations and modifications. Assignments have clear and specified objectives and require the investigation of a limited number of variables. Performance at this level generally requires a minimum of 1 year Engineer II or related work experience or a Ph.D degree.

Receives instructions on specific assignment objectives, complex features, and possible solutions. Assistance is furnished on unusual problems and is reviewed for application of sound professional judgment. Performs work which involves conventional types of plans, investigations, surveys, structures, or equipment with relatively few complex features for which there are precedents.

May be assisted by engineers or technicians. May responsible for phases of a single revenue-producing project.

ENGINEER IV - As a fully competent engineer in all conventional aspects of the subject matter or the functional area of the assignments; plans slection, and substantial adaptation and modification of standard techniques, procedures, and criteria. Devises new approaches to problems encountered. Generally requires a minimum of 2 years' Engineer III or related experience.

Independently performs most assignments with instructions as to the general results expected. Receives technical guidance on unusual for complex problems and supervisory approval on proposed plans for projects. Supervises a few engineers or technicians on assigned work.

ENGINEER V - Applies sound and diversified knowledge of engineering principles and practices in broad areas of assignments and related fields. Makes decisions independently on engineering problems and methods. Requires the use of advanced techniques and the modification and extension of theories, precepts, and practices of his field. Registration as a licensed P.E. may be a requirement for certain positions.

Supervision and guidance relate largely to overall objectives, critical issues, new concepts, and policy matters. Consults with supervisor concerning unusual problems and developments.

Typical duties and responsibilities include one or more of the following: (1) Supervisors, coordinates, and reviews the work of a small staff of engineers and technicians; (2) As individual researcher or staff specialist, carries out complex or novel assignments requiring the development of new or improved techniques and procedures.

ENGINEER VI - Has full responsibility for interpreting, organizing, executing, and coordinating assignments. Plans and

develops engineering projects concerned with unique or controversial problems which have an important effect on major company programs. This involves exploration of subject area, definition of scope and selection of problems for investigation, and development of novel concepts and approaches. Maintains liaison with individuals and units within or outside his organization with responsibility for acting independently on technical matters pertaining to his field. Registration as a licensed P.E. is a requirement for most positions under this classification.

Supervision received is essentially administrative, with assignments given in terms of broad general objectives and limits.

Typical duties and responsibilities include one or more of the following: (1) Plans, organizes, and supervises the work of a staff of engineers and technicians (approx. 15-30); (2) As individual researcher, consultant, or staff specialist, conceives plans and conducts research in problem areas of considerable scope and complexity.

ENGINEER VII - Makes decisions and recommendations that are recognized as authoritative and have an important impact on extensive engineering activities. Initiates and maintains extensive contacts with key engineers and officials of other organizations and companies, requiring skill in persuasion and negotiation of critical issues. At this level, individual will have demonstrated creativity, foresight, and mature engineering judgment in anticipating and solving unprecedented engineering problems, determining program objectives and requirements, organizing programs and projects, and developing standards and guides for diverse engineering activities.

Registration as a licensed Professional Engineer is a requirement. Typical duties and responsibilities include one or more of the following: (1) Planning, organizing, and supervising the work of a large staff of engineers and technicians (in excess of 30); (2) As individual researcher or consultant, is a recognized leader and authority in his company in a broad area of specialization or in a narrow but intensely specialized field.

ENGINEER VIII - Makes decision and recommendations that are recognized as authoritative and have a far-reaching impact on extensive engineering and related activities of the company. Negotiates critical and controversial issues with top-level

engineers and officers of other organizations and companies. Individuals at this level demonstrate a high degree of creativity, foresight, and mature judgment in planning, organizing, and guiding extensive engineering programs and activities of outstanding novelty and/or importance.

Is responsible for one or more programs of such diversity and large scope that are of critical importance to overall company objectives. Supervises several individuals whose positions fall into Engineer VII classification.

DEPARTMENT HEAD - The objective of the Department Head is to provide technical and administrative supervision to the Department so as to assure that the technical, administrative, manhour, and schedule targets of the Department are met within the framework of established corporate policy and in accordance with applicable professional standards, design control procedures, corporate and division procedures, and engineering design guides.