

August 18, 1992

Ralph Johnson

KINGSTON FOSSIL PLANT - BACKUP SEWAGE PUMP STATION

Attached is Fossil Engineering's manhour estimate, schedule and scope of work for phase II & III. I have already contacted Robert Bruce, project manager, to discuss with him our schedule and manhour estimate. He is coordinating with plant personnel and will let us know whether or not to proceed with design.

Ken Burnett
Manager, Site Engineering Services

PROJECT DEVELOPMENT ESTIMATE
FOSSIL ENGINEERING SERVICES

Plant: KINGSTON FOSSIL PLANT
 Project: BACKUP SEWAGE PUMP STATION
 Lead Engineer: KENNETH BURNETT

	Discipline	Man Hours	Duration
Phase I (10%):	<u>Mechanical</u>	<u> </u>	<u> </u> weeks
	<u>Electrical</u>	<u> </u>	<u> </u> weeks
	<u>Civil</u>	<u> </u>	<u> </u> weeks
	<u>Total</u>	<u> </u>	<u> </u> weeks

Phase II (20%):	<u>Mechanical</u>	<u>190</u>	<u>8</u> weeks
	<u>Electrical</u>	<u>250</u>	<u>4</u> weeks
	<u>Civil</u>	<u>80</u>	<u>2</u> weeks
	<u>Total</u>	<u>520</u>	<u>12</u> weeks

Phase III (50%):	<u>Mechanical</u>	<u>32</u>	<u> </u> weeks
	<u>Electrical</u>	<u>24</u>	<u> </u> weeks
	<u>Civil</u>	<u>20</u>	<u> </u> weeks
	<u>Total</u>	<u>76</u>	<u> </u> weeks

Schedule:	Start	Complete
Phase 1	<u>Phase 1 Approval</u>	<u> </u> Weeks
Phase 2	<u> </u>	<u> </u>
Phase 3	<u> </u>	<u> </u>

Prepared MELISSA A. HEDGECOTH Approved Date

PROJECT: BACKUP SEWAGE PUMP STATION

MECHANICAL-AUXILIARY SYSTEMS

SCOPE FOR PHASE I & II

The existing sewage sump in the Chlorinator building overflows at various times. A backup sump is to be installed that will eliminate this overflow. The mechanical scope for this project is as follows:

- o Perform a site inspection to collect all available data and verify the current installation.
- o Verify capacities of inflow into the sump and sump pump discharge.
- o Prepare calculations to verify the required pump head.
- o Size the new sump.
- o Design the system. Retrieve ,revise, and issue all affected drawings.
- o Complete and issue Bill of Material.
- o Prepare the requisition for the pump.
- o Contract Administration for the pump contract.
- o Determine the requirements and source for the permits.

This project can be started in FY 93 (Oct 5 with a duration of 8 weeks).

SUPERVISOR ESTIMATE SUMMARY

Plant: Kingston Fossil Plant _____ CER No.: _____ N/A _____

Project: Backup Sewage Pump Station _____ Date: Aug 14, 1992

Section Supervisor: R. A. Babb Discipline: Mechanical

Prepared by: D. E. BOHL _____

Activity description and estimated manhours/\$

	FY <u>92</u>	FY <u>93</u>	FY <u>94</u>	
<u>Project development</u>		MH		MH

Phase 1 - Study:

Study and Preliminary Estimate		MH		MH
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Contract Engineering:

_____ MH'S @ \$ _____ /MH	\$ _____	\$ _____	\$ _____
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Site Trips:

_____ Trips @ \$ _____ /Trip	\$ _____	\$ _____	\$ _____
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Phase 2 - Engineering Design and Long Lead Procurement:

Inspections and Design of Non-phased projects		MH		MH
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Engineering, Drawings, Bill of Materials, Coordination and Site Visits During Design	<u>150</u>	MH		MH
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Requisition, Award, Vendor Drawing Review, Source Insp., and Contract Administration	<u>40</u>	MH		MH
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Contract Engineering:

_____ MH'S @ \$ _____ /MH	\$ _____	\$ _____	\$ _____
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Construction/Contractor Site Trips:

<u>1</u> Trips @ \$ <u>0</u> /Trip	\$ <u>0</u>	\$ _____	\$ _____
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Phase 3 - Implementation:

Engineering for Implementation	<u>32</u>	MH		MH
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Contract Engineering:

_____ MH'S @ \$ _____ /MH	\$ _____	\$ _____	\$ _____
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Site Trips:

<u>2</u> Trips @ \$ <u>0</u> /Trip	\$ <u>0</u>	\$ _____	\$ _____
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KIF - BACKUP SEWAGE PUMP STATION

SITE ENGINEERING MANHOUR REQUIREMENT FOR A PHASE II & III:

TOTAL MANHOURS - 80

DURATION FROM DATE OF AUTHORIZATION - 2 WEEKS

POSSIBLE START DATE - OCTOBER 5, 1992 (FY93)

STUDY AND ESTIMATE TASKS:

1. SECURE THE APPLICABLE PLANT DRAWINGS FOR THE AFFECTED FACILITIES AND YARD FEATURES.
2. CORRESPOND WITH PLANT PERSONNEL.
3. DESIGN A CAST IN PLACE CONCRETE LIFT STATION.
4. PROVIDE A DETAILED WORKSCOPE.
5. PROVIDE COST ESTIMATE INPUTS.
6. PROVIDE A PROJECT SCHEDULE.
7. PROVIDE A BILL OF MATERIALS.
8. COORDINATE WITH THE ELECTRICALS & MECHANICALS.

August 14, 1992

K. W. Burnett, MR 3D-C

KINGSTON FOSSIL PLANT - BACKUP SEWAGE PUMPS - PHASE I ESTIMATE PACKAGE

Attached is the Electrical Engineering Section's input to the study package. There are no electrical engineering long lead procurement items.

If you have any questions or require additional information, please contact John W. Blackburn at extension 7986-C.

L. E. Durham (S)

L. E. Durham
Manager, Electrical Engineering Section
BR 2B-C

JWB
Attachments

KINGSTON FOSSIL PLANT
INSTALL BACKUP SEWAGE PUMPS
SCOPE

DURATION

The design duration will be one month from October 5th.

ASSUMPTIONS

For the purpose of this estimate it is assumed that two 20HP, 480V, submersible pumps will be installed in a new concrete lift station that will be located 10 feet south of existing chlorination building.

Complete mechanical/civil/structural information will be available before electrical start. If this is not so, schedule and manpower will be adversely impacted.

DETAILS

Power for the two pumps will be from the 480V Feeder Board "B" located on elevation 765.0 of the Coal Crusher Building. A new 100 amp circuit breaker, MCC bucket with stabs, and hinged door with operator handle will be purchased and installed in compartment 4C of 480V Feeder Board "B". Three 1C #2 AWG cables shall be run from panel 4C to existing Coal Handling Sump Pump via conduit 2I-PLC2220. A NEMA 3 or 3R weather tight junction box shall be purchased and installed at the Coal Handling Sump Pump between conduit 2I-PLC2220 from the Crusher Building and the Coal Handling Sump Pump Controls. A new 2I conduit will be installed in the junction box and run underground approximately 20 feet to the new Backup Sewage Pumps lift station controls. A ground wire will be extended from the Coal Handling Sump Pumps and run underground along side the new conduit to the Backup Sewage Pumps. The new conduit and ground wire shall be embedded in concrete. The 3-1C #2 AWG power cables from the Crusher Building will extend from the junction box through the new 2I conduit to the Backup Sewage Pumps.

Fusible disconnects shall be provided for each pump. The pumps shall have automatic on and off controls. Levels shall be set for duty pump on, standby on, high level alarm and low level off. Local annunciation (orange light for pump on and red light for high level alarm) shall be provided.

KINGSTON FOSSIL PLANT
 INSTALL BACKUP SEWAGE PUMPS
 DRAWING LIST

<u>DRAWING</u>	<u>TITLE</u>	<u>WORK DESCRIPTION</u>
15W840-1	C&G&L NLDF EQPT	RENAME CONDUIT IN KEY PLAN
15W840-2	C&G&L NLDF EQPT	REVISE PLAN & ELEV FOR COAL HANDLING SUMP
NEW DWG	C&G MISC DETAILS	SEWAGE PUMP PLAN & DETAILS AND BM
NEW DWG	CONN & SCHEM DIAG	NEW BACKUP SEWAGE PUMPS
25N704	480V FDR BD A&B	REVISE FDR BD "B" COMPT 4C AND BM
25N717	480V FDR BD "B" CD	ADD PMP TO PNL 4 & REF TO CONN DRAWING
25N718	480V FDR BD "B" CD	RENAME CONDUIT FOR COAL SUMP PUMP
25N724	480V SINGLE LINE	ADD BACKUP SEWAGE SUMP PUMPS AND CONTROLS - REDRAW
25N740	480V AUX PWR CD	RENAME CONDUIT FOR COAL SUMP PUMP
25W800	C&G DUCT LINES & CONV	RENAME CONDUIT & ADD BKUP PMPS
25W818	C&G CRUSHER BLDG	RENAME CONDUIT FOR COAL SUMP PUMP
25W825	C&G CRUSHER BLDG DET	ADD SEWAGE AND COAL PUMP CABLES
45C800	C&CA SCH SHEET PLC-112	REVISE PLC 2220
45C800	C&CA SCH SHEET (NEW)	ADD NEW CA & CONDUITS FOR SEWAGE BACKUP SUMP PUMPS

SUPERVISOR ESTIMATE SUMMARY SHEET

PROJECT: Kingston Fossil Plant CER NO. Verbal Request

FEATURE/PHASE: Backup Sewage Pumps DATE: 14Aug92

SECTION SUPERVISOR: L. E. Durham DISCIPLINE: Electrical

PREPARED BY: ERF/JWB FILE: SEW PUMP.KIF

ACTIVITY DESCRIPTION AND ESTIMATED MANHOURS/\$ FY 92 FY 93 FY 94
(by milestone & fiscal year):

PROJECT DEVELOPMENT: MH+ MH+ MH

PHASE I - STUDY:

ST01 Study and Preliminary Estimate 24 MH+ MH+ MH

Contract Engineering MHs @ \$ /MH=\$ +\$ +\$

Constr/Contract. Site Visitation (ST01)

 trips @ \$ per trip = \$ +\$ +\$

PHASE II - ENGINEERING DESIGN & LONG LEAD PROCUREMENT:

EN01-07 Inspections & Design of Non-phased projects MH+ MH+ MH

EN10,20, Engineering, Drawings, Bills of
40 & 60 Materials, Squadcheck Review & Coord, &
Construction Site Visitation during design MH+ 250 MH+ MH

EN30, Requisition (RQ), Award (AW), Vendor
50 & 70 Drawing Review, Product Source Inspection,
& Contract Administration MH+ MH+ MH

Contract Engineering MHs @ \$ /MH= \$ +\$ +\$

Constr/Contract. Site Visitation (EN01-07, 20,
40 & 60) 1 trips @ \$ 100 per trip= \$ +\$ 100 +\$

Product Source Inspection (EN30, 50 & 70)
 trips @ \$ per trip= \$ +\$ +\$

PHASE III - IMPLEMENTATION:

IM00 Engineering for Implementation MH+ 24 MH+ MH

Contract Engineering MHs @ \$ /MH = \$ +\$ +\$

Constr/Contract. Site Visitation (IM00)
 trips @ \$ per trip = \$ +\$ +\$