

Capital Cost: High and Low Sulfur Coal Plants- 1200 MWe

Commercial Electric Power Cost Studies

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VOL. 1 of 3

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1 **Capital Cost: Pressurized Water Reactor Plant**
 NUREG-0241, COO-2477-5

2 **Capital Cost: Boiling Water Reactor Plant**
 NUREG-0242, COO-2477-6

3 Capital Cost: High and Low Sulfur Coal
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4 **Capital Cost: Low and High Sulfur Coal**
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5 **Capital Cost Addendum: Multi-Unit Coal and**
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6 **Fuel Supply Investment Cost: Coal and Nuclear**
 NUREG-0246, COO-2477-10

7 **Cooling Systems Addendum: Capital and Total**
Generating Cost Studies
 NUREG-0247, COO-2477-11

8 **Total Generating Costs: Coal and Nuclear Plants**
 NUREG-0248, COO-2477-12

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FOREWORD
by the

United States Energy Research & Development Administration
and United States Nuclear Regulatory Commission

In 1971 the Atomic Energy Commission authorized power plant investment cost studies, which culminated in the WASH-1230 reports (1000 MWe Central Station Power Plants - Investment Cost Study) published in 1972. Their purpose was to facilitate policy and economic decisions about electric generation facilities in the public and private sectors. The WASH-1230 report-series consists of five volumes: Pressurized Water Reactor, Boiling Water Reactor, Coal-Fired, Oil-Fired and High Temperature Gas-Cooled Reactor power plants. National priorities on energy, the regulatory environment and the cost of labor, equipment and material have changed significantly. These changes dictated the necessity of an update of these series of studies, and an expansion of scope to encompass consideration of the fuel cycle and the total generating cost. As a result, a program to study, reassess and produce a new set of updated reports was authorized and undertaken.

This report is one of the new series of commercial electric power cost studies that have been prepared by United Engineers & Constructors Inc. (UE&C). These studies have been completed under the cooperative direction of the Energy Research and Development Administration (ERDA), Division of Nuclear Research and Applications, and the Nuclear Regulatory Commission (NRC), Division of Site Safety and Environmental Analysis. The study effort was funded jointly by ERDA (Contract No. EY-76-C-02-2477) and NRC (Contract No. AT(49-24)-0351).

The current series includes investment cost reports for a Pressurized Water Reactor Plant, a Boiling Water Reactor Plant, High Sulfur Coal Plants, and Low Sulfur Coal Plants. The Oil Fired Power Plant Study was not updated because utilities are no longer expected to build significant numbers of these plants, and the High Temperature Gas-Cooled Reactor Plant Study was not updated because these reactors are not now being marketed. Investment cost reports on multi-unit stations and for different cooling system types are included. In addition, the series addresses fuel supply investment costs and total generating costs for both nuclear and coal fired power plants.

Following is a list of the report titles and funding agency(ies) responsible for each:

<u>Funding Agency(ies)</u>	<u>Report Titles</u>
ERDA	Capital Cost - Pressurized Water Reactor Plant (NUREG-0241, COO-2477-5)
ERDA/NRC	Capital Cost - Boiling Water Reactor Plant (NUREG-0242, COO-2477-6)
ERDA/NRC	Capital Cost - High and Low Sulfur Coal Plants - 1200 MWe (NUREG-0243, COO-2477-7)
NRC/ERDA	Capital Cost - Low and High Sulfur Coal Plants - 800 MWe (NUREG-0244, COO-2477-8)
ERDA	Capital Cost Addendum - Multi-Unit Coal and Nuclear Stations (NUREG-0245, COO-2477-9)
NRC	Fuel Supply Investment Cost - Coal and Nuclear (NUREG-0246, COO-2477-10)
NRC	Cooling Systems Addendum - Capital and Total Generating Cost Studies (NUREG-0247, COO-2477-11)
NRC	Total Generating Costs - Coal and Nuclear Plants (NUREG-0248, COO-2477-12)

The studies in these series have a uniform set of economic and technical criteria and a uniform accounting system as contained in (Guide for Economic Evaluation of Nuclear Reactor Plant Designs, NUS-531, January 1969). The investment cost estimates in these series are developed for reference plants constructed at a hypothetical site called "Middletown, USA".

The reference investment and total generating cost estimates can be used for baseline comparisons of different generating systems. However, the major use of the investment cost data is as input to the CONCEPT computer code which was developed for ERDA at the Oak Ridge National Laboratory (ORNL). The CONCEPT computer program adjusts the baseline cost estimates contained in these studies for different plant sizes, regional variations in material and craft labor rates, different construction schedule lengths, and different escalation and interest rates. These adjustments result in preliminary sets of alternative cost estimates for electric power plants constructed anywhere in the United States.

PREFACE

This Commercial Electric Power Cost Study for 1200 MWe (Nominal) high and low sulfur coal plants consists of three volumes. The high sulfur coal plant is described in Volumes I and II, while Volume III describes the low sulfur coal plant.

The design basis and cost estimate for the 1232 MWe high sulfur coal plant is presented in Volume I, and the drawings, equipment list and site description are contained in Volume II. The reference design includes a lime flue gas desulfurization system. A regenerative sulfur dioxide removal system using magnesium oxide is also presented as an alternate in Section 7 Volume II.

The design basis, drawings and summary cost estimate for a 1243 MWe low sulfur coal plant are presented in Volume III. This information was developed by redesigning the high sulfur coal plant for burning low sulfur sub-bituminous coal.

These coal plants utilize a mechanical draft (wet) cooling tower system for condenser heat removal. Costs of alternate cooling systems are provided in Report No. 7 in this series of studies of costs of commercial electrical power plants.

ACKNOWLEDGEMENTS

The information used in the preparation of this report was obtained from various sources, including United Engineers' records and files. Special recognition is given to the following organizations who contributed specific design, performance and/or cost information.

<u>Company</u>	<u>Plant System</u>
o The Babcock & Wilcox Co.	Pressurized Furnace Steam Generator
o The Babcock & Wilcox Co. Wheelabrator-Frye Inc.	Electrostatic Precipitators
o Brown Boveri Corporation	Cross-Compound Steam Turbine Generators
o Allen-Sherman-Hoff Co	Ash Handling System
o Marley Company	Cooling Towers
o David M. Spillane Co.	Condensers & Feedwater Heaters
o Delaval Turbine Inc.	Boiler Feed Pump & Turbine Drive
o John L. Klug Corp.	Lime Handling System
o American Standard	SO ₂ Booster Fans
o FMC	Sludge Handling Equipment

Background information was obtained from AEP on the 1200 MWe plants in their system.

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1232 MWe HIGH SULFUR COAL PLANT

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1232 MWe HIGH SULFUR COAL PLANT

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6509.001-HSC-2	Plot Plan
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6509.001-HSC-5	Flow Diagram-Forced Draft System
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6509.001-HSC-7	Flow Diagram-Main Steam, Hot Reheat and Cold Reheat System
6509.001-HSC-8	Flow Diagram-H.P. & I.P. Extraction Steam System
6509.001-HSC-9	Flow Diagram-L.P. Extraction Steam System
6509.001-HSC-10	Flow Diagram-Condensate and Feedwater System
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6509.001-HSC-14	Flow Diagram-Auxiliary Steam System
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6509.001-HSC-18	Block Diagram-Waste Water Treatment System
6509.001-HSC-19	Block Diagram-Lime SO ₂ Scrubber System
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6509.001-HSC-21	General Arrangement-Lime SO ₂ Scrubber Section
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COMMERCIAL ELECTRIC POWER COST STUDY
HIGH AND LOW SULFUR COAL PLANTS - 1200 MWe

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SECTION 1
SUMMARY FOR HIGH SULFUR COAL PLANT

SECTION 1

SUMMARY FOR HIGH SULFUR COAL PLANT

1.1 INTRODUCTION

This Commercial Electric Power Cost Study for the 1232 MWe High Sulfur Coal Plant is presented in two volumes. Volume I includes the Legal Notice, Foreword, Preface, Summary for High Sulfur Coal Plant, Plant Description and the Detailed Cost Estimate. Volume II contains the Drawings, Equipment List, Site Description and a description of the alternate Magnesium Oxide Sulfur Removal System.

1.2 MAJOR STUDY GROUND RULES

In addition to the "Site Description" presented in Volume II, Section 6, the major criteria used in the high sulfur coal plant study are as follows:

- o The plant design incorporates a once-through supercritical pressure single reheat type steam generator to supply steam to a cross compound eight flow turbine. The heat balance shown on drawing 6509.001-HSC-6 (Volume II, Section 4) reflects steam conditions for a 1200 MWe nominally rated plant.
- o The steam generator is designed for a high sulfur eastern coal. The coal selection criteria are discussed in Section 2.2.2. The characteristics of the design basis coal seam and the design basis coal specification are presented in Tables 2-3 and 2-4 respectively.
- o Key plant parameters for the steam supply system, and the steam and power conversion system are shown in Tables 2-1 and 2-2 respectively.
- o The plant coal handling system is designed to unload a 100 car coal unit train in five hours. The design provides indoor coal storage silos with a capacity sufficient for eight hours consumption at full load and an outdoor storage area with a capacity sufficient for 60 days consumption at full load.
- o The reference plant design includes a lime scrubber system for removal of sulfur dioxide (SO_2) from the flue gas. A discussion of an alternate SO_2 removal system utilizing magnesium oxide (MgO) is included as an alternate (Volume II, Section 7).

- o A full complement of environmental and siting criteria circa January 1, 1976 are utilized. Structural design criteria for the major structures are addressed in Section 2.2.3.
- o The main heat rejection system incorporates mechanical draft wet cooling towers.
- o The design provides a connection to the utility grid at two different voltage levels; 500 kV for the generator connection and 230 kV for the reserve auxiliary transformer connection.
- o The detailed cost estimate is developed for a single unit, with sufficient land area to accommodate an identical second unit.
- o The detailed cost estimate is developed in accordance with a Code of Accounts as expanded from that presented in the USAEC Report NUS-531.
- o Cost data is based on prices effective as of July 1, 1976.
- o Escalation and interest during construction are not included in the cost estimate.
- o The plant design life is 40 years during the first part of which it will be baseloaded.

1.3 COST SUMMARY

The estimated total base construction cost for the 1200 MWe (Nominal) High Sulfur Coal Plant reference design is \$465,498,393 or \$378/kW based on July 1, 1976 prices. Summaries of the Detailed Cost Estimate at both the two and three digit account levels are shown in Tables 1-1 and 1-2 respectively. The cost estimate does not include normal contingency costs for the equipment, material and labor components of the total base construction cost; nor does it include escalation and interest during construction. Other items not included in the cost estimate are listed in the beginning of Section 3, Detailed Cost Estimate. As noted in the Foreword, for a specific site, this baseline cost estimate must be adjusted for regional variations in material and labor rates, different construction

schedule lengths, and escalation and interest rates incurred during construction.

Table 1-3 is a summary breakdown of the direct craft labor costs and hours for this 1232 MWe reference design. The total direct craft labor cost of approximately \$108,000,000 corresponds to a weighted average hourly rate of \$12.45. Approximately 8,675,000 craft labor manhours average 7.0 manhours/kW.

1.4 COMPARISON WITH LOW SULFUR COAL PLANT

The coal summary for the high sulfur coal (HSC) plant is presented in Section 1.3, Cost Summary, while the low sulfur coal (LSC) plant cost summary is shown in Section 8.3, Volume III. Significant features of each reference plant are summarized as follows:

	<u>High Sulfur</u>	<u>Low Sulfur</u>
Design Basis Coal	Eastern Bituminous	Western Sub-Bituminous
Coal Sulfur Content	3.61 percent	0.5 percent
Net Output	1232 MWe	1243 MWe
Base Construction Cost	$\$465.5 \times 10^6$	$\$403.8 \times 10^6$
Unit Capital Cost	\$378/kW	\$324/kW

The gross output from the turbine generator is identical (1309 MWe) for both plants. The difference in net plant output between the HSC plant and the LSC plant is due to the variation in auxiliary power requirements. For the design basis coals selected, the net output of the LSC plant is 11 MWe (0.9 percent) greater than the HSC plant.

Comparing total base construction costs, the differential unit capital cost between the HSC plant and the LSC plant is \$54/kW. This differential is due primarily to the Flue Gas Desulfurization (FGD) system as determined by the coal selected for the reference designs. Much higher cost differentials for other plant designs are possible depending upon the coals selected, equipment redundancy and the items included in the plant capital cost. In the FGD system for this study, one spare module is provided to backup six operating modules. This is the only major redundancy in the system. The capital cost of an off-site sludge stabilization system is included in this study. However, the cost of disposal site land and its development are not included.

The cost of the FGD system is higher than the unit capital cost differential would indicate. This is due to higher steam generator, draft system and fuel handling costs for the LSC plant, which partially compensates for the FGD system cost and reduces the differential cost between plants. Coal composition has an important effect on the cost of a coal fired plant. In any examination of capital cost for HSC and LSC plants, the coal analyses must be identified for an understanding of the basis for comparison.

Following are examples of the differences in quantities of construction materials between plants:

	<u>HSC Plant</u>	<u>LSC Plant</u>
Concrete, cu. yds.	111,200	81,600
Reinforcing Steel, lbs.	15.2×10^6	11.8×10^6
Structural Steel, lbs.	58.4×10^6	47.0×10^6

COST BASIS
07/76

TABLE 1-1
COST ESTIMATE SUMMARY
TWO DIGIT ACCOUNT LEVEL
1232 MWe COAL FIRED PLANT
MIDDLETOWN, USA

ACCT NO	ACCOUNT DESCRIPTION	FACTORY EQUIP. COSTS	SITE LABOR HOURS	SITE LABOR COST	SITE MATERIAL COST	TOTAL COSTS
20 .	LAND AND LAND RIGHTS				2,000,000	2,000,000
21 .	STRUCTURES + IMPROVEMENTS	2,555,564	1453304 MH	17,106,859	27,524,934	47,187,357
22 .	BOILER PLANT EQUIPMENT	105,321,960	3603888 MH	45,413,075	16,772,845	167,507,880
23 .	TURBINE PLANT EQUIPMENT	81,230,723	1853747 MH	23,706,125	5,291,549	110,228,397
24 .	ELECTRIC PLANT EQUIPMENT	9,009,800	1243552 MH	10,256,320	9,256,952	33,523,072
25 .	MISCELLANEOUS PLANT EQUIPT	5,722,267	259176 MH	5,323,701	811,186	5,857,154
26 .	MAIN COND HEAT REJECT SYS	11,547,105	261506 MH	3,230,373	1,072,055	15,849,533
2 .	TOTAL DIRECT COSTS	215,387,419	8675173 MH	108,036,453	62,729,521	366,153,393
91 .	CONSTRUCTION SERVICES	23,575,000	1270000 MH	13,250,000	11,620,000	48,445,000
92 .	HOME OFFICE ENRG.&SERVICE	17,000,000				17,000,000
93 .	FIELD OFFICE ENRG&SERVICE	12,900,000			1,000,000	13,900,000
9 .	TOTAL INDIRECT COSTS	53,475,000	1270000 MH	13,250,000	12,620,000	79,345,000
	TOTAL BASE COST	268,862,419	9945173 MH	121,286,453	75,349,521	465,498,393

TABLE 1-2
COST ESTIMATE SUMMARY
THREE DIGIT ACCOUNT LEVEL
1232 MWe COAL FIRED PLANT
MIDDLETOWN, USA

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COST BASIS
07/76

ACCT NO	ACCOUNT DESCRIPTION	FACTORY EQUIP. COSTS	SITE LABOR HOURS	SITE LABOR COST	SITE MATERIAL COST	TOTAL COSTS
20 .	LAND AND LAND RIGHTS				2,000,000	2,000,000
211.	YARDWORK	115,500	222317 MH	2,287,512	2,708,294	5,111,306
212.	STEAM GENERATOR BUILDING	529,607	552764 MH	6,770,555	14,990,442	22,290,604
213.	TURBINE/HEATER/CONTROL BLD	342,469	275629 MH	3,333,970	5,612,031	9,288,470
2183.	ADMINISTRATION+SERVICE BLD	214,656	58634 MH	716,425	824,794	1,755,875
2180.	FIRE PUMPHOUSE					
2181.	ELECTRICAL SWITCHGR BLDGS	22,763	6860 MH	84,000	45,400	152,163
2184.	COAL CAR THAW SHED		2023 MH	23,330	12,435	35,765
2184.	ROTARY CAR DUMP BLDG+TUNNL	3,485	37186 MH	431,915	374,245	809,645
2180.	COAL BREAKER HOUSE	54,150	20347 MH	252,633	343,828	650,611
2185.	COAL CRUSHER HOUSE	79,945	15607 MH	194,000	198,800	472,745
2186.	BOILER HOUSE+TRANSFER TOWER	2,680	5844 MH	74,678	131,972	209,330
2188.	ROTARY PLOW MAINTNCE SHED	6,040	90639 MH	1,034,587	793,553	1,834,180
2187.	LOCOMOTIVE REPAIR GARAGE	11,570	4715 MH	58,298	64,460	134,328
2188.	MATERIAL HANDL+SERVICE BLD	17,735	10570 MH	129,195	135,343	282,273
2189.	WASTE WATER TREATMENT BLDG	4,964	11160 MH	130,568	93,565	229,097
218w.	MISC COAL HANDLING STRUCT	150,000	71548 MH	810,427	1,006,947	1,967,374
219.	STACK STRUCTURE	1,000,000	67461 MH	774,766	188,825	1,963,591
21 .	STRUCTURES + IMPROVEMENTS	2,555,564	1453304 MH	17,106,859	27,524,934	47,187,357

TABLE 1-2
COST ESTIMATE SUMMARY
THREE DIGIT ACCOUNT LEVEL
1232 MWe COAL FIRED PLANT
MIDDLETOWN, USA

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COST BASIS
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ACCT NO	ACCOUNT DESCRIPTION	FACTORY EQUIP. COSTS	SITE LABOR HOURS	SITE LABOR COST	SITE MATERIAL COST	TOTAL COSTS
220A.	FOSSIL STEAM SUPPLY SYSTEM	55,675,000	1128000 MH	13,975,920	1,397,592	71,048,512
221.	STEAM GENERATING SYSTEM	1,253,585	37651 MH	488,922	58,724	1,801,231
222.	DRAFT SYSTEM	12,670,860	411522 MH	5,380,776	1,705,821	19,757,457
223.	ASH + DUST HANDLING SYSTEM	4,619,580	123732 MH	1,594,268	212,922	6,426,770
224.	FUEL HANDLING SYSTEMS	6,862,615	144285 MH	1,890,754	620,383	9,373,752
225.	FLUE GAS DESULFUR STRUCT.	88,675	66646 MH	833,614	958,659	1,881,148
226.	DESULFURIZATION EQUIPMENT	22,106,645	1470053 MH	18,628,459	10,190,463	50,925,567
227.	INSTRUMENTATION + CONTROL	1,875,000	76534 MH	935,523	68,195	2,378,718
228.	BOILER PLANT MISC ITEMS	170,000	143465 MH	1,684,639	1,560,086	3,414,725
22 .	BOILER PLANT EQUIPMENT	105,321,960	3603888 MH	45,413,075	16,772,845	167,507,880
231.	TURBINE GENERATOR	45,288,261	339531 MH	4,179,574	1,580,551	51,048,386
233.	CONDENSING SYSTEMS	9,040,725	174229 MH	2,305,125	236,731	11,582,581
234.	FEED HEATING SYSTEM	14,310,145	313374 MH	4,071,610	407,590	18,789,545
235.	OTHER TURBINE PLANT EQUIP.	12,035,592	920579 MH	11,930,504	1,213,283	25,170,379
236.	INSTRUMENTATION + CONTROL	556,000	5383 MH	65,798	3,290	625,088
237.	TURBINE PLANT MISC ITEMS		99451 MH	1,153,314	1,850,104	3,003,418
23 .	TURBINE PLANT EQUIPMENT	81,230,723	1853747 MH	23,706,125	5,291,549	110,228,397

TABLE 1-2
COST ESTIMATE SUMMARY
THREE DIGIT ACCOUNT LEVEL
1232 MWe COAL FIRED PLANT
MIDDLETOWN, USA

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COST BASIS
07/76

08/10/77

ACCT NO	ACCOUNT DESCRIPTION	FACTORY EQUIP. COSTS	SITE LABOR HOURS	SITE LABOR COST	SITE MATERIAL COST	TOTAL COSTS
241.	SWITCHGEAR	4,626,500	69231 MH	856,431	86,520	5,569,451
242.	STATION SERVICE EQUIPMENT	3,380,200	53571 MH	716,552	146,351	4,243,103
243.	SWITCHBOARDS	518,000	10530 MH	130,167	61,419	709,586
244.	PROTECTIVE EQUIPMENT		85400 MH	1,053,419	671,000	1,724,419
245.	ELECT.STRUC +WIRING CONTNS		570551 MH	6,975,811	2,687,713	9,663,524
246.	POWER & CONTROL WIRING	485,100	449269 MH	5,523,940	5,603,949	11,612,989
24.	ELECTRIC PLANT EQUIPMENT	9,009,800	1243552 MH	15,256,320	9,256,952	33,523,072
251.	TRANSPORTATION & LIFT EQPT	1,223,000	8125 MH	104,497	90,419	1,417,916
252.	AIR, WATER+STEAM SERVICE SY	3,162,672	182730 MH	2,365,717	294,839	5,823,223
253.	COMMUNICATIONS EQUIPMENT	100,000	25000 MH	307,383	154,656	562,042
254.	FURNISHINGS + FIXTURES	653,700	6720 MH	78,761	16,094	748,555
255.	WASTE WATER TREATMENT EQPT	582,395	36551 MH	407,340	255,178	1,305,413
25.	MISCELLANEOUS PLANT EQUIPT	5,722,267	259176 MH	3,323,701	811,186	9,857,154
261.	STRUCTURES	89,971	63552 MH	740,739	674,982	1,505,692
262.	MECHANICAL EQUIPMENT	11,457,134	197954 MH	2,489,034	397,073	14,343,841
26.	MAIN COND HEAT REJECT SYS	11,547,105	261506 MH	3,230,373	1,072,055	15,649,533
2.	TOTAL DIRECT COSTS	215,387,419	8675173 MH	108,036,453	62,729,521	386 *** 393

TABLE 1-2
COST ESTIMATE SUMMARY
THREE DIGIT ACCOUNT LEVEL
1232 MW_e COAL FIRED PLANT
MIDDLETOWN, USA

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COST BASIS
07/75

ACCT NO	ACCOUNT DESCRIPTION	FACTORY EQUIP. COSTS	SITE LABOR HOURS	SITE LABOR COST	SITE MATERIAL COST	TOTAL COSTS
911.	TEMPORARY CONSTRUCTION FAC		1090000 MH	11,035,000	5,340,000	16,375,000
912.	CONSTRUCTION TOOLS & EQUIP	7,200,000	180000 MH	2,215,000	5,630,000	15,045,000
913.	PAYROLL INSURANCE & TAXES	16,375,000				16,375,000
914.	PERMITS, INS. & LOCAL TAXES				650,000	650,000
915.	TRANSPORTATION					
91.	CONSTRUCTION SERVICES	23,575,000	1270000 MH	13,250,000	11,620,000	48,445,000
921.	HOME OFFICE SERVICES	16,000,000				16,000,000
922.	HOME OFFICE QA					
923.	HOME OFFICE CONSTRCTN MGMT	1,000,000				1,000,000
92.	HOME OFFICE ENGRG.&SERVICE	17,000,000				17,000,000
931.	FIELD OFFICE EXPENSES				1,000,000	1,000,000
932.	FIELD JOB SUPERVISION	12,300,000				12,300,000
933.	FIELD QA/QC	220,000				220,000
934.	PLANT STARTUP & TEST	380,000				380,000
93.	FIELD OFFICE ENGRG&SERVICE	12,900,000			1,000,000	13,900,000
9.	TOTAL INDIRECT COSTS	53,475,000	1270000 MH	13,250,000	12,620,000	79,345,000
	TOTAL BASE COST	268,862,419	9945173 MH	121,286,453	75,349,521	465,498,393

TABLE 1-3

DIRECT CRAFT LABOR SUMMARY FOR 1232 MWe
 HIGH SULFUR COAL PLANT - MIDDLETOWN, USA
 COST BASIS - 7/76

<u>Craft Description</u>	<u>Site Labor Hours</u>	<u>% Hours</u>	<u>Site Labor Cost</u>	<u>% Cost</u>
Asbestos Worker	170,030	2.0	2,213,790	2.0
Boiler Maker	231,853	2.7	3,204,210	3.0
Bricklayer	139,973	1.6	1,597,105	1.5
Carpenter	343,552	4.0	3,985,207	3.7
Dock Builder	873	0.0	11,978	0.0
Electrician	1,517,158	17.5	18,812,757	17.4
Iron Worker	826,098	9.5	10,945,855	10.1
Laborers	557,859	6.4	5,199,243	4.8
Millwrights	164,870	1.9	2,090,544	1.9
Operating Engineers	575,560	6.6	7,182,944	6.6
Painters	241,288	2.8	2,309,127	2.1
Pipefitters	2,372,718	27.4	31,794,424	29.4
Roofers	10,455	.1	140,934	.1
Teamsters	146,514	1.7	1,254,165	1.2
Undefined Crafts	1,376,372	15.9	17,294,170	16.0
TOTAL FOR PLANT	8,675,173	100.0	\$ 108,036,453	100.0

SECTION 2
PLANT DESCRIPTION

SECTION 2

PLANT DESIGN DESCRIPTION

2.1 INTRODUCTION

Section 2 describes the High Sulfur Coal Plant design and the construction support activities covered by the cost estimate.

The material presented in this section is organized to correspond to the uniform system of accounts (USAEC Report NUS-531) used for the detailed cost estimate. This format correlates the plant design description with the detailed cost estimate (Volume I, Section 3) and the detailed equipment list (Volume II, Section 5). The two digit accounts used in this regard are as follows:

<u>Code of Accounts</u>		<u>Page</u>
21	STRUCTURES AND IMPROVEMENTS	2-10
22	BOILER PLANT EQUIPMENT	2-30
23	TURBINE PLANT EQUIPMENT	2-53
24	ELECTRIC PLANT EQUIPMENT	2-69
25	MISCELLANEOUS PLANT EQUIPMENT	2-78
26	MAIN CONDENSER HEAT REJECTION SYSTEM	2-85
91	CONSTRUCTION SERVICES	2-91
92	HOME OFFICE ENGINEERING AND SERVICES	2-92
93	FIELD OFFICE ENGINEERING AND SERVICES	2-93

A summary description is provided in Section 2 for each major account.

This is followed by detailed descriptions of each system and structure at the three digit account level.

The descriptions associated with Accounts 21 through 26 address the power plant design. This corresponds to the "direct cost" portion of the cost estimate. The descriptions associated with the Accounts 91 through 93 define the construction support activities. This corresponds to the "indirect cost" portion of the cost estimate. The sum of the "direct cost" and the "indirect cost" is the "total base construction cost".

The scope of the indirect cost accounts varies with utility and project. Therefore, an understanding of the definition of these accounts, provided later in this section, will avoid confusion when utilizing the cost estimates herein.

2.2 PLANT DESIGN CRITERIA

2.2.1 General Study Criteria

The major criteria for the High Sulfur Coal Plant study were discussed in Section 1. The key parameters are tabulated in Tables 2-1 and 2-2 in this section. The coal selection criteria is described in Section 2.2.2. Design codes for the major structures and equipment are addressed in Section 2.2.3 and in the Equipment List (Vol. II, Section 5). The design of the heat rejection system is based upon mechanical draft wet cooling towers.

2.2.2 Coal Selection Criteria

The design of a coal fired plant is influenced by the chemical characteristics and calorific value of the coal. Therefore, a coal was selected which is the basis for the plant design.

The following criteria were used in selecting the design basis coal:

- o The coal is representative of a major eastern coal field.
- o The coal field size is large enough to reasonably expect that it will be mined for steam electric power plant fuel in the future as long as the fuel is legally burnable.
- o The sulfur content is sufficiently high to require the use of sulfur dioxide removal equipment.
- o The coal field is currently providing fuel for steam electric power plants.

The description of the location and extent of the design basis coal seam selected for this study is presented in Table 2-3. The coal analysis for the coal from this location and seam is presented in Table 2-4.

TABLE 2-1

KEY PLANT PARAMETERS - STEAM SUPPLY SYSTEM

1232 MWe HIGH SULFUR COAL PLANT

Steam Generator	Supercritical pressure, single reheat with a Pressurized Furnace
Steam Flow	
Maximum Continuous Rating 10^6 lb/hr	9.775
Normal Superheater Outlet 10^6 lb/hr	9.141
Normal Reheater Outlet 10^6 lb/hr	7.486
Steam Pressure	
Superheater Outlet, psig	3,845
Reheater Outlet, psig	650
Steam Temperature	
Superheater Outlet, F	1,010
Reheater Outlet, F	1,000
Final Feedwater Temperature, F	547
Fuel Type	Eastern Bituminous Coal
Fuel Firing Rate, Ton/Hr	550
Fuel Analysis	See Table 2-4
Number of Pulverizers	6 Plus 1 Spare
Pulverizer Fuel Flow, Tons/Hr	92
Number of Forced Draft Fans	3
Total Forced Draft Fan, Capacity, scfm	2,040,000
Number of Primary Air Fans	2
Total Primary Air Fan Capacity, scfm	510,000
Number of Precipitators	3
Precipitator Efficiency, in percent	99.7

TABLE 2-2

KEY PLANT PARAMETERS - STEAM AND POWER CONVERSION SYSTEM

GUARANTEED CONDITION-1232 MWe HIGH SULFUR COAL PLANT

Turbine Configuration	Cross-Compound, 8 Flow
Steam Flow at HP Turbine Inlet, 10^6 lb/hr	9.141
Steam Pressure at HP Turbine Inlet, psia	3,515
Steam Temperature at HP Turbine Inlet, F	1,000
Turbine Back Pressure, in HgA (multi-pressure condenser)	1.7/2.5
Turbine Output, MWe	1,309
Auxiliary Power, MWe	77
Net Station Output, MWe	1,232
Number of Feedwater Heating Stages	8
Generator Rating, MVA	722
Net Station Steam Rate, lbs/kWhr	7.42
Net Station Heat Rate, Btu/kWhr	9,138
Thermal Efficiency, in percent	37.35

TABLE 2-3

LOCATION AND EXTENT OF DESIGN BASIS COAL SEAM

1232 MWe HIGH SULFUR COAL PLANT

Coal Type: Eastern High Sulfur Bituminous Coal

Location:

State: Illinois

County: St. Clair

Seam: Illinois No. 6

Extent:

Reserves (Est.): 3,000,000,000 Tons

Current Production: 8,000,000 Tons/Year (1976)

Projected Production: 10,000,000 Tons/Year (1978)

Major Coal Users: Steam Electric Power Plants:

TABLE 2-4

DESIGN BASIS COAL ANALYSIS

1232 MWe HIGH SULFUR COAL PLANT

<u>Coal Type:</u>	Bituminous Coal	Eastern High Sulfur
Moisture (% by Wt.):		11.31
Proximate Analysis (% by Wt. dry):		
Volatile Matter:		39.72
Fixed Carbon:		48.68
Ash:		11.60
<u>Ultimate Analysis (% by Wt. dry):</u>		
Carbon:		69.33
Hydrogen		4.30
Nitrogen		.86
Chlorine		.04
Sulfur		3.61
Oxygen		9.64
<u>Ash Analysis (% by Wt. dry):</u>		
P ₂ O ₅		.05
SiO ₂		45.73
Fe ₂ O ₃		18.38
Al ₂ O ₃		19.40
TiO ₂		1.30
CaO		5.50
MgO		.95
S ₀ 3		6.63
K ₂ O		1.53
Na ₂ O		.51
Undetermined		.02
<u>Calorific Value (Btu/lb.)</u>		
As Received		11,026
Dry		12,432
<u>Ash Fusion Temperature (°F Red./°F Ox.)</u>		
Initial		1950/2270
H = W		2140/2380
H = $\frac{1}{2}W$		2160/2400
Fluid		2250/2500

2.2.3 Structural Design Criteria

The structural design criteria used for the reference plant design are summarized as follows:

Structures are designed to withstand the effects of various combinations of all normal loadings to which they are subjected in accordance with ACI 318, Building Code Requirements for Reinforced Concrete, AISC Specification for the Design, Fabrication and Erection of Structural Steel for Buildings and applicable local building codes. The structures are designed for seismic effects in accordance with criteria established by the Uniform Building Code. The chimney is designed in accordance with ACI 307, Specification for the Design and Construction of Reinforced Concrete Chimneys. Coal silos are designed using 55 lbs/cu ft as the coal density for load calculations.

The loads listed below are considered in the buildings designs where applicable.

- o Dead Loads - Permanent gravity loads including concrete, structural steel, equipment, piping, cable trays and hydrostatic pressure. The ground water level is assumed at El + 10 ft - 0 in. Buoyancy from ground water is considered in building stability and base mat design.
- o Live Loads - Loads which vary with intensity and/or occurrence. During normal operation the live loads considered are a snow load of 20 psf and the lateral soil pressures. During construction live load from cranes, wet concrete and major equipment transport loads are also considered.
- o Wind Load - Wind loading is in accordance with ANSI A58.1 with a basic wind loading of 26 psf.

- o Flood Loads - The plant site lies ten ft above the 100 year maximum water level of the North River. Consequently no flooding of the site is considered.
- o Seismic - Structures are designed for seismic conditions in accordance with the requirements of the Uniform Building Code.

ACCOUNT 21

2.3 PLANT DESIGN DESCRIPTION

Following are the HSC plant design descriptions for Accounts 21 through 26.

ACCOUNT 21 STRUCTURES AND IMPROVEMENTS

The steam generator, the turbine generator and all other related equipment are housed in fully enclosed buildings. The superstructures have braced steel frames bearing on concrete footings supported on the bedrock underlying the site. Grating floors are used whenever possible to allow maximum air circulation within the building. The siding for the buildings is generally insulated metal panels with interior liner panels. Layouts of the plants are shown on the drawings in Volume II, Section 4. Design concepts are discussed in greater detail in the following design descriptions for the major accounts.

ACCOUNT 211 Yardwork

The plant location is the hypothetical site of Middletown U.S.A. This is defined in Volume II, Section 6, Site Description.

The datum plane for site and yard elevations is mean river level. Main plant finish grade is 18 ft above mean river level. Soil overburden is estimated to be eight feet thick. Lime stone rock with no underground cavities are located below the overburden and is satisfactory for supporting plant structures.

Site preparation consists of clearing, grubbing and stripping of top soil for structures, roads, railroads, parking areas, the materials handling area and the construction facilities. Rough grading quantities include

ACCOUNT 21

the general cut and fill for the main plant structures and fine grading with landscaping.

Earth excavation, rock excavation, backfill, concrete fill and dewatering for the main plant structures are included with the structure associated yardwork. This includes all excavation work for the steam generator building and turbine heater and control building areas. Excavation work for structures not included with the main excavation are included with the structural work for each of the individual buildings. The cut and fill work also includes hauling, dumping, stockpiling, placing and compacting. For those portions of the structure below rock, concrete fill is used under and adjacent to the structure. In cases where rock elevations vary, concrete fill is used to assure that building loads are carried to competent rock.

Excavated material is used on site for general fill as much as possible. Spoil areas and storage areas are utilized for excavated material not used for fill or for top soil. Erosion and sedimentation control of those areas is practiced in accordance with EPA requirements. Temporary settling basins are provided to collect all runoff during construction prior to discharge into the North River.

Transformer area, above ground oil storage tanks and other oil or chemical storage and handling areas are designed to contain spills and collect and route surface runoff to the holding pond prior to discharge to the North River. In addition, steam generator and turbine building floor drains and other plant dirty drains are routed by underground piping to the waste

process building, as required, or to the holding pond for treatment before discharge into the North River.

The yard drainage system consists of a system of interceptor ditches (paved and unpaved) and storm drains with catch basins to carry storm water from developed areas. Sedimentation basins are provided during construction as required. Water courses that are intercepted near the power plant, coal storage pile, are diverted by ditches into existing stream beds or storm drains. Culverts carry stream flow under the railroad, railroad car storage yard and roads. The yard surface water drainage is directed to the North River via the existing water courses as much as possible. Building roof drainage is directed to the yard drainage system.

Surface water runoff from portions of the coal handling, precipitator, ash handling, and oil storage areas together with the plant dirty drains is routed by underground piping to a holding pond and to the waste treatment system for treatment system for treatment in the contaminated yard and building drainage system.

A temporary sanitary sewage system is provided during construction.

Piping and toilet facilities for permanent plant requirements are provided based on permanent plant personnel requirements. All sewage receives tertiary treatment prior to discharge into the North River.

Highway access is provided to the site by five miles of secondary roads connecting to a state highway. This road is in good condition and needs no additional improvements. An onsite asphalt road is provided around

ACCOUNT 21

the main plant structures. The highway road is paved in accordance with the standard thickness required for public highways. In addition, parking areas, concrete curbs and walks are provided.

Temporary construction roads with minimum thickness paving (AASHO HS20 Loading) and unpaved roads for material handling equipment are provided. Service roads are arranged to provide access to all truck sized doors in the power plant units, to all buildings and to auxiliary structures requiring servicing or maintenance by vehicles. Paved roads for washing and refueling locomotives and mobile equipment are provided.

Railroad access to the site is provided by constructing a double track railroad spur which intersects the B&M Railroad. The spur which is five miles long from the main line to the plant site, approaches the site from the east. Anticipated railroad traffic is up to 1000 cars per week in 100 car unit coal trains plus the required number of lime trains. During construction 400 to 500 cars of construction materials are delivered including the boiler components, transformers, and generator stator. These items are the heaviest loads anticipated and require special cars. A yard locomotive is provided to handle all onsite car movements.

In addition to the coal delivery loop track there are spur tracks into the turbine hall, the transformer yard, the warehouse, the fuel tank area, and the locomotive repair shop.

A temporary spur is installed to the construction yard storage area and to the boiler area for delivery and installation of the boiler headers, boiler panels and subassemblies.

ACCOUNT 21

A ladder track area, for storage of cars with bypass tracks and switches allows engine access to either end of trains being divided. This track accommodates odd lot trains of coal, lime or equipment arriving and the making up of departing trains with waste material and empty cars.

All road bed and trackage are designed in accordance with the latest railroad standards. Railroad structures are designed for Cooper E80 wheel loading.

In addition to the above items; fencing, a gate house, and roadway and yard lighting are provided with the yardwork.

ACCOUNT 212 Steam Generator Building

The steam generator building consists of the boiler house, auxiliary boiler room, air compressor room, machine shop, diesel generator room, and forced draft fan room. The building is 184 ft wide, 330 ft long and 300 ft high at the top of the boiler, and has an overall volume of approximately 12,700,000 cu ft. A description of each of the above areas of the building is given below.

Boiler House

The boiler house is a steel framed structure 184 ft wide and 280 ft long with two main roof heights of 180 ft for the coal silos and conveyors and 300 ft at the top of the boiler. The building volume, less the forced draft fan room, is approximately 12,000,000 cu ft. It has three main floors at elevations 18 ft, 43 ft, and 73 ft. The building is supported

ACCOUNT 21

on reinforced concrete spread footings on rock. The reinforced concrete ground floor is located at grade. The roof is cast in place concrete over metal deck, covered with a roofing membrane and supported on steel framing. The exterior walls are insulated metal siding and the interior walls are either concrete or metal partitions.

The building houses the steam generator, coal silos and pulverizers, coal conveyors, the forced draft fan room and an elevator.

Ventilation for the boiler house is provided by 24-66,600 cfm each power roof ventilators and heating is provided by 80 steam unit heaters located throughout the building.

Auxiliary Boiler Room

The auxiliary boiler room, located north west of the boiler house, is a one story steel frame structure 50 ft wide, 75 ft long and 40 ft high. The building volume is approximately 150,000 cu ft. The building substructure and superstructure are identical to that described for the boiler house. The auxiliary boiler room houses the two auxiliary boilers and their accessory equipment.

Ventilation is provided by wall exhaust fans and heating is provided by steam unit heaters.

Air Compressor Room

The air compressor room, located north of the boiler house, is a one story steel frame structure 50 ft wide, 50 ft long and 40 ft high. The building volume is 100,000 cu ft. The building substructure and superstructure

ACCOUNT 21

are identical to that described for the boiler house. The air compressor room houses the soot blowing air compressors, receiver and accessories the station air compressors, receivers, air dryers and accessories.

Ventilation is provided by wall exhaust fans and heating is provided by steam unit heaters.

Machine Shop

The machine shop, located north of the boiler house, is a one story steel framed structure 50 ft wide, 63 ft long and 40 ft high. The building volume is approximately 126,000 cu ft. The building substructure and superstructure are identical to that described for the boiler house.

The machine shop houses the machines and tools necessary to perform the required in-plant maintenance and repair of plant equipment. A monorail is installed for handling equipment.

Ventilation is provided by wall exhaust fans and heating is provided by steam unit heaters.

Diesel Generator Room

The diesel generator room, located north east of the boiler house, is a one story steel framed structure 50 ft wide, 27 ft long and 40 ft high. The building volume is approximately 54,000 cu ft. The building substructure and superstructure are identical to that described for the boiler house.

ACCOUNT 21

The diesel generator room houses the two auxiliary diesel generators, air intakes for the diesel generators, and auxiliary equipment. The exhaust silencers are mounted on the roof. A monorail is installed for equipment maintenance and removal.

Ventilation is provided by wall exhaust fans and heating is provided by steam unit heaters.

Forced Draft Fan Room

The forced draft fan room, located on west side of the boiler house, is a one story steel framed structure 42 ft wide, 140 ft long and 42 ft high. The building volume is approximately 247,000 cu ft. The fan room is part of the boiler house and has a common substructure. The roof slab is cast in place concrete over acoustically treated metal deck and supported on steel framing. The exterior walls are acoustical masonry block. The walls and roof are designed to resist the differential pressure caused by the fans. Sound attenuators are installed at the air inlets in the walls, and personnel doors are pressure tight and arranged to provide an air lock. A lintel is installed in a wall to allow for equipment removal.

The fan room houses the forced draft and primary air fans, inlet silencers, combustion air steam coils and accessories. A monorail is installed for equipment maintenance and removal.

ACCOUNT 213 Turbine, Heater and Control Building

The building consists of the turbine hall, auxiliary (heater) bay, and control and switchgear building as described below.

ACCOUNT 21

Turbine Hall and Auxiliary Bay

The turbine hall and auxiliary bay are located east of the boiler house. The turbine hall is a three story (elevations 18 ft, 43 ft and 73 ft) steel framed structure 151 ft wide, 260 ft long and 125 ft high. The auxiliary bay is a four story (elevations 18 ft, 43 ft, 73 ft and 102 ft) steel framed structure 30 ft wide, 260 ft long and 125 ft high. The building volume is approximately 5,882,500 cu ft. The building is supported on reinforced concrete spread footings on rock. The reinforced concrete ground floor is located at grade. The mezzanine, operating and deaerator floors are reinforced slabs supported on metal deck on steel framing. The roof is concrete plank covered with a roofing membrane. The exterior walls are insulated metal siding, and the interior walls are either concrete block or metal partitions. The massive "high tuned" turbine pedestal is reinforced concrete and is supported on a thick concrete foundation mat bearing on rock. The turbine pedestal is isolated from the remaining building support loads. Structural quantities for the pedestal are shown in account 231 of the cost estimate.

The building houses the turbine-generator, its condensers and associated equipment, feedwater heaters, boiler feed pumps and condenser, boiler feed booster pumps, condensate pumps, condensate booster pumps, condensate polishing and demineralizing equipment, turbine lube oil equipment, deaerator, other auxiliary equipment and switchgear rooms.

ACCOUNT 21

The turbine hall and auxiliary bay are cooled by 12 - 75,000 cfm each power roof ventilators and heated by 34 steam unit heaters located throughout the building.

At the south end of the turbine hall is located a rail car bay for transport of generator and turbine parts. An overhead traveling crane located at the top of the building serves this bay as well as the full operating floor area. All floors are connected by several stairways.

Control and Switchgear Building

The control and switchgear building, located north of the turbine hall, is a four story (elevations 18 ft, 34 ft, 50 ft, and 73 ft) steel framed structure 50 ft wide, 150 ft long and 69 ft high. The building volume is approximately 517,500 cu ft. The building substructure and superstructure are identical to that described for the turbine hall and auxiliary bay.

The control and switchgear building houses the 13.8 kV and 4.16 kV switchgear, battery rooms, d-c auxiliary rooms, relay and instrumentation and control cabinet room, coal sampling and water analysis laboratories, cable spreading room, communication room, and control room.

The control and switchgear building HVAC system provides filtered and conditioned air to the control room, water analysis room, communications room, cable spreading room and switchgear area. Supply air to these rooms is provided by a multizone air handling unit and a heating and ventilating unit. A centrifugal water chiller supplies chilled water for air

ACCOUNT 21

conditioning and cooling requirements. Local exhaust fans exhaust air as required from the toilet and battery rooms.

ACCOUNT 218B Administration and Service Building

The administration and service building, located south of the turbine hall, is a four story (elevations 18 ft, 43 ft, 58 ft, and 73 ft) steel framed structure 90 ft wide, 90 ft long and 75 ft high. The building volume is approximately 607,500 cu ft. The building is supported on reinforced concrete spread footings on rock. The reinforced concrete ground floor is located at grade. The other floors are reinforced concrete supported on metal deck on steel framing. The roof is concrete plank covered with a roofing membrane. The exterior walls are insulated metal siding and the interior walls are either concrete block or metal partitions. Most areas are provided with suspended acoustical ceilings.

The building houses the service shops, storage areas, locker rooms, showers, lunch room, equipment rooms, laboratories, general offices and conference rooms.

Filtered and conditioned air is provided to the offices, conference room, laboratories, shops, storage area, lunch rooms, equipment rooms and toilet and locker rooms. Supply air to the rooms is provided by a multizone air handling unit and a heating and ventilating unit. Return air fans exhaust air to the units or to atmosphere as required. Chilled water is supplied from a centrifugal water chiller. Local fans exhaust air as required from toilets, locker rooms and fume hoods.

ACCOUNT 21

218D Fire Pump House

The fire pump house, located along the riverbank west of the main plant structures, is an integral part of the makeup water intake structure.

The two fire pumps and one jockey pump are located on the north side of the makeup water intake structure and are supported from the reinforced concrete basin roof slab. The structural description, quantities and costs are shown in account 261.

218I Electrical Switchgear Buildings

The electrical switchgear buildings consist of three separate one story steel framed structures. The coal handling system and cooling tower buildings, located south of the main plant structures, are 30 ft wide, 50 ft long, and 16 ft high. The building volumes are approximately 24,000 cu ft. each. The material handling switchgear building, located southwest of the main plant structures, is 25 ft wide, 30 ft long and 16 ft high. The building volume is approximately 12,000 cu ft. The switchgear buildings are supported on reinforced concrete spread footings on rock. The superstructure is prefabricated and has insulated metal walls and roof.

The buildings are heated by electric unit heaters. Supply air is provided by ventilating units consisting of roughing filters and supply air fans. The buildings are pressurized to protect equipment from coal dust.

ACCOUNT 218M Coal Car Thaw Shed

The coal car thaw shed, located southwest of the main plant structures, is a one story steel framed structure 20 ft wide, 159 ft long and 24 ft

ACCOUNT 21

high. The building volume is approximately 76,000 cu ft. The shed is located on the track approaching the rotary car dumper. The shed is supported on reinforced concrete spread footings on rock. The reinforced concrete ground floor is located at grade. The superstructure is metal siding and roof deck, and is furnished with the coal car thawing equipment shown in account 224.13. The shed has two heating bays and one soaking bay.

ACCOUNT 218N Rotary Car Dumper Building and Tunnel

The rotary car dumper building, located southwest of the main plant structures, is a one story steel framed structure 52 ft wide, 66 ft long and 26 ft high. The building volume is approximately 89,200 cu ft. The foundation is reinforced concrete founded on rock. The roof is either insulated or uninsulated metal roof deck supported on steel framing. The exterior walls are either insulated or uninsulated metal siding and the interior walls are masonry block. The underground conveyor tunnels are reinforced concrete founded on rock.

The building houses the rotary car dumper, traveling hammermill lump breaker, receiving hoppers, vibrating feeders, transfer chutes, dust suppression system, control house, toilet facilities, and equipment rooms.

Heating is provided by electric unit heaters. Supply air to the electrical equipment rooms is provided by a ventilating unit consisting of a roughing filter and supply air fan. Excess air is exhausted through wall louvers. The rooms are pressurized to protect equipment from coal dust. A packaged air cooled air conditioning unit maintains the control room at ambient

ACCOUNT 21

conditions. The substructure and tunnels are supplied with air through a ventilating fan.

ACCOUNT 2180 Coal Breaker House

The coal breaker house, located southwest of the main plant structures, is a steel framed structure 58 ft wide, 62 ft long and 144 ft high. The building volume is approximately 518,000 cu ft. The building is supported on reinforced concrete spread footings on rock. The reinforced concrete ground floor is located at grade. The three floors are reinforced concrete slabs supported on metal deck on steel framing. The roof is metal deck supported on metal framing. The exterior walls are either insulated or uninsulated metal siding and the interior walls are masonry block.

The building houses the head pulleys and drives for the car dumper-to-breaker house conveyor, two breakers, separators, distribution hopper, slide gates and belt feeders, tail pulleys of the breaker house-to-lowering well conveyors, sampler, and an elevator. The ground floor contains a power and motor control center.

Heating is provided for the coal breaker house by electric unit heaters. Supply air to electrical rooms is provided by a ventilating unit consisting of a roughing filter and supply air fan. Excess air is exhausted through wall louvers. The rooms are pressurized to protect equipment from coal dust.

ACCOUNT 218P Coal Crusher House

The coal crusher house, located south of the rotary car dumper building,

ACCOUNT 21

is a steel framed structure 48 ft wide, 48 ft long and 106 ft high. The building volume is approximately 244,000 cu ft. The building is supported on reinforced concrete spread footings on rock.

The reinforced concrete ground floor is located at grade. The three floors are reinforced concrete slab supported on metal deck on steel framing. The roof is metal deck supported on metal framing. The exterior walls are metal siding, and the interior walls are masonry block.

The building houses the head pulleys for the reclaim conveyors, magnetic separators, surge bin, vibrating feeders, and two crushers.

Heating is provided for the coal crusher house by electric unit heaters. Supply air to electrical rooms is provided by a ventilating unit consisting of roughing filter and supply air fan. Excess air is exhausted through wall louvers. The rooms are pressurized to protect equipment from coal dust.

ACCOUNT 2180 Boiler House Transfer Tower

The boiler house transfer tower, located at the southwest corner of the boiler house, is a steel framed structure 30 ft wide, 40 ft long and 242 ft high. The tower volume is approximately 290,000 cu ft. The tower is supported on reinforced concrete spread footings on rock. The reinforced concrete ground floor, which is integral with the boiler house ground floor, is located at grade. The two floors are reinforced concrete slabs supported on metal deck on steel framing. The roof is free standing metal deck. The exterior walls, from elevations 18 ft to 198 ft, are common

ACCOUNT 21

with the boiler house on two sides and insulated metal siding on the other two sides. From elevations 198 ft to 260 ft, the exterior walls are either insulated or uninsulated siding.

The tower houses the head pulleys of the crusher house-to-boiler house conveyors, transfer chutes-to-tripper conveyors, and as-fired sampling system.

Heating is provided to the electrical equipment room by electric unit heaters. Supply air is provided by a ventilating unit consisting of a roughing filter and supply air fan. Excess air is exhausted through wall louvers. The room is pressurized to protect equipment from coal dust.

ACCOUNT 218R Rotary Plow Maintenance Shed

The rotary plow maintenance shed, located south of the rotary car dumper, is a one story steel framed structure 32 ft wide, 88 ft long and 28 ft high. The shed volume is approximately 78,800 cu ft. The two reclaim tunnels are 430 ft long each. The rotary plow maintenance shed and reclaim tunnels are founded on rock. The tunnels are reinforced concrete. The shed has a reinforced concrete floor. The roof is metal deck. Exterior walls are metal siding except for the south wall which has a concrete retaining wall for the coal pile.

The shed houses the maintenance facilities for the rotary plows.

Heating is provided by electric unit heaters. Ventilation is provided by drawing outside air through wall louvers and exhausting through power roof ventilators.

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ACCOUNT 218T Locomotive Repair Shop and Garage Facilities

The locomotive repair shop and garage, located north of the rotary car dumper, is a one story steel framed structure 65 ft wide, 65 ft long and 30 ft high. The building volume is approximately 126,800 cu ft. The reinforced concrete ground floor is located at grade. The roof is metal deck on steel framing. The exterior walls are insulated metal siding.

The building houses a locomotive repair area and four-bay garage facility for the on-site diesel operated heavy equipment and service vehicles.

Heating is provided by electric unit heaters. The area is ventilated by drawing outside air through wall louvers and exhausting through power roof ventilators.

ACCOUNT 218U Materials Handling and Service Building

The materials handling and service building, located north of the rotary car dumper, is a one story steel framed structure 50 ft wide, 60 ft long and 20 ft high. The building volume is approximately 60,000 cu ft. The building is supported on reinforced concrete spread footings on rock. The reinforced concrete ground floor is located at grade. The roof is insulated metal deck supported on steel framing. The exterior walls are insulated metal siding and the interior walls are masonry block.

The building houses the service shops, offices, storage areas, lunch room, toilet and shower rooms.

ACCOUNT 21

The HVAC system provides filtered and conditioned air to the offices, lunch rooms, electrical and mechanical rooms, toilet and shower rooms. Supply air to the rooms is provided by a multizone air handling unit and a heating and ventilating unit. The multizone air handling unit consists of a roughing filter, heating and cooling coils, and supply air fan.

ACCOUNT 218V Waste Water Treatment Building

The waste water treatment building, located west of the main plant structures, is a one story prefabricated steel structure 25 ft wide, 80 ft long and 20 ft high. The building volume is approximately 40,000 cu ft. The building is supported on reinforced concrete spread footings on rock. The reinforced concrete ground floor is located at grade. The exterior walls and roof are insulated metal and interior walls are masonry block.

The building houses a control area, storage area, pumps, tanks and other waste water treatment equipment. Large items of the treatment equipment, such as the batch holding tank, are located adjacent to the building.

Heating is provided by electric unit heaters. The building is ventilated by drawing outside air through wall louvers and exhausting through power roof ventilators.

ACCOUNT 218W Miscellaneous Coal Handling Structures

The conveyor galleries include all overhead supporting structures and their associated foundations. The galleries are approximately 2,500 ft long and are supported on reinforced concrete spread footings on rock. The conveyor galleries

ACCOUNT 21

consist of removable dust tight sheet metal enclosures supported from structural steel members. Grating walkways provided for access are illuminated.

The rotary plow access tunnel and ventilating shed are approximately 350 ft long and is parallel to the rotary plow tunnels. The access tunnel provides ventilation and is available for emergency exit. The tunnel structure consists of six ft concrete pipe sections. At the end of the tunnel, a well structure encloses a stairway to grade, and is enclosed in a concrete block shed. The shed houses the ventilating fans.

The coal pile membrane barrier area is 750,000 ft². The impermeable membrane layer blankets all areas where coal is stored outdoors, and prevents contamination of ground water by coal pile rain water runoff. The top of the membrane is covered with suitable fill material to prevent damage by coal handling equipment. A drainage system, installed below the membrane layer throughout the active and dead storage areas, routes intercepted surface drainage to drainage channels and prevents hydrostatic pressure on the underside of the membrane layer.

The two lowering wells, located in the center of the coal pile, are reinforced concrete structures 12 ft in diameter and 100 ft high. The cylinders are supported on reinforced concrete foundations bearing on rock. The foundations are integral with the rotary plow tunnels which pass on each side at the base of the cylinders.

ACCOUNT 21

ACCOUNT 219 Stack Structure

The stack structure measures 600 ft high (618 ft elevation) with a 30 ft inside diameter and 40 ft outside diameter at the top, and 50 ft inside diameter and 60 ft outside diameter at the bottom.

The stack is a reinforced concrete structure with a separate free standing brick liner. An elevator and ladder in the stack structure provide for access to platforms for sampling ports, smoke density temperature probes, and for maintenance of aircraft warning lights. The foundation is a 100 ft octagonal reinforced concrete mat bearing on rock.

ACCOUNT 22

ACCOUNT 22 BOILER PLANT EQUIPMENT

The steam generating system supplies steam to the turbine generator which converts heat energy to electrical energy. The steam generator includes the steam generator, soot blowers, pulverizers, coal feeders and piping, fuel firing equipment, primary air and forced draft fans, primary and secondary regenerative air preheaters and associated ductwork, complete structural steel, and associated instrumentation and controls.

ACCOUNT 221 Steam Generating System

The steam generator is a supercritical pressure unit with a single reheat designed for a maximum continuous rating of 9,775,000 lb/hr of steam at 3,845 psig and 1,010 F at the superheater outlet and 1,000 F at the reheater outlet using 547 F feedwater delivered to the economizer. The furnace is designed for firing high sulfur eastern bituminous coal. Ignitors fired with No. 2 fuel oil are utilized during startup and low load operation.

The overall dimension of the steam generator are approximately 120 ft wide by 140 ft long by 300 ft above floor elevation. The single dry ash furnace is designed for pressurized draft operation and is sized for possible future sub-bituminous coal firing. The furnace cross section is approximately 120 ft long by 57 ft deep. Multiple rows of burners are located in the front and rear walls. Steam temperature is maintained at reduced load by varying firing rate of burner rows. The burners are supplied with pulverized coal from a total of six pulverizers each rated at 105 tons/hr. A seventh pulverizer is provided as a spare.

ACCOUNT 22

The steam generator is equipped with an automatic sequential soot blowing system. The system is designed to remove soot and ash from the boiler surfaces to maintain effective heat transfer. The soot blowers use compressed air with electric motors for rotating and traversing the lances. Two 10,000 scfm centrifugal air compressors supply the required soot blowing air at a pressure of 300 psig.

A superheater bypass system is provided to control flow and pressure during the transition period of attaining critical pressure operation. This is accomplished by maintaining the pressure within the waterwalls and primary superheater sections above saturation pressure until supercritical operation is attained. The bypass provides the flexibility to control the rate of pressure and temperature increase and to coordinate the startup sequence of both the turbine and steam generator.

The steam generator is equipped with a vent and drain system which provides a means of venting air, steam and accumulated water from the boiler and piping systems during startup and shutdown. The system also is used for filling and draining the steam generator during chemical cleaning and hydrostatic testing. The system drains to the waste water treatment system and is designed to drain the steam generator during normal operation in two hours and during chemical cleaning in one hour.

Valves necessary for startup and shutdown or control of the unit are arranged for remote operation.

ACCOUNT 222 Draft System

A pressurized draft system provides combustion air to the furnace and forces the combustion gases thru the steam generator system. The draft system flow diagram for the unit is shown in Drawing 6509.001-HSC-5.

Three 33-1/3 percent capacity forced draft fans and two 50 percent capacity primary air fans are provided. The pressure drop thru the flue gas desulfurization system is taken care of by separate fans furnished with that system.

The forced draft fans operate the steam generator at its maximum continuous rating. One forced draft fan and one primary air fan is capable of sustaining operation at reduced load. The forced draft fans discharge through three secondary regenerative element type air heaters to the burner windboxes. The primary air fans discharge through two primary regenerative air heaters to the pulverizers inlets.

Steam coils are provided with sufficient surface to maintain a forced draft and primary air fan inlet temperature of 80 F. A control system is provided to maintain the average cold-end temperature of the regenerative air heater at 185 F (above the acid dewpoint) using the steam coils; or to maintain flue gas temperature to the precipitator at a minimum of 275 F. The inlet steam coils are protected against freezing.

Electrostatic precipitators, located at the outlets of the regenerative air heaters, are provided to reduce the particulate emissions of the flue gas to conform to applicable State and Federal Regulations (presently 0.1

ACCOUNT 22

lb per million Btu fired). Provisions are made to isolate each regenerative air heater, precipitator, and draft fan train. Each precipitator is sufficiently sectionalized to assure continued operation at guaranteed efficiency during rapping operations while isolated sections are operative.

Instrumentation for the boiler air and gas system monitors significant air and gas pressures, differential pressures flows and temperatures from the air inlet to the furnace, i.e., at the windbox, to the gas outlet.

The duct work in this account does not include the duct work required for the SO₂ scrubbing system, or that furnished with the steam generator. The added duct work and supports required for the SO₂ scrubbing system is included in Account 226.

ACCOUNT 223 Ash and Dust Handling System

The ash and dust handling system removes and transports flyash from the precipitators, economizer and gas duct hoppers to the storage silos. The system consists of two 100 percent capacity dry positive displacement pressurized systems designed to handle 45 tons of ash per hour each. The dry type system uses a mixture of flue gas and air as the transporting medium. An air lock valve is located on each economizer hopper, precipitator hopper and gas duct hopper. A pressure system conveys the flyash to the silos. The silos provide for 90 hours accumulation of flyash while operating at maximum continuous rating assuming 85 percent of the ash is flyash.

ACCOUNT 22

Each flyash hopper is furnished with a hopper heater to prevent flyash caking. System capacity allows for intermittent operation with automatic actuation of the cycle on a timed basis. Control equipment is provided for the air preheater hopper, the precipitator hoppers and the flyash silos. All primary devices are located at or near the source, transmitting to receiver type indicators and controllers located in the control panel.

A prepackaged control panel is enclosed and located near the precipitator. It contains all alarms, controllers, indicators, lights and switches, required for automatic or manual operation. A local annunciator alarms various system malfunctions and transmits a common trouble alarm to the main control room. A hopper load level control automatically activates the removal and transport system, transferring the material to the disposal storage silos.

Bottom Ash and Pyrites Handling System

The bottom ash and pyrites handling system removes the bottom ash from the boiler and pyrites from the pulverizers and transports them to the dewatering bins for removal by truck. This system is designed to handle 20 tons per hour. The system flow diagram for the bottom ash handling system is shown in Drawing 6509.001-HSC-16.

The bottom ash is transported by a hydraulic system using water as a transport medium. The bottom ash hopper provides ten hours of bottom ash accumulation while operating at maximum continuous rating, assuming 25 percent of the ash content is bottom ash. A continuous water trough around the periphery of the ash hopper seals against the full furnace

ACCOUNT 22

pressure. Bottom ash dewatering bins provide 90 hours of storage, 45 hours for each bin, at maximum continuous rating. Bottom ash is removed from the site by truck and hauled to the disposal site.

The pyrites are also transported by a hydraulic system using water as a transport medium. Pyrites rejected from the pulverizers are sequentially sluiced from the pyrites box to a holding bin located near the pulverizer area. The holding bin provides storage of 12 hours accumulation of pyrites resulting from the boiler operation at maximum continuous rating. The pyrites are sluiced from the holding bin to one of two pyrites dewatering bins. Each bin provides 45 hours of storage while operating at maximum continuous rating. Control equipment is provided for the furnace bottom ash hoppers, the economizer ash hoppers, the pulverizer reject hoppers and the dewatering bins.

ACCOUNT 224 Fuel Handling Systems

The function of the coal handling system is to receive, stack out, reclaim, crush and transport coal to the coal silos in the boiler house. The buildings and structures comprising this system are located in the yard of the power plant southwest of the boiler house and turbine hall. The flow diagram for the coal handling system is shown in Drawing 6509.001-HSC-15.

The coal handling system is sized for coal rate of 550 tons per hour. This is based on using the design basis coal for the operating condition with the turbine valves wide open, five percent overpressure (VW0, 5 percent OP).

ACCOUNT 22

A total of 792,000 tons of coal is stored at the plant site, in the form of active or dead storage. The active (short term) storage pile provides 40,000 tons, or three days coal supply. This coal pile is continuously cycled and completely turned over, in three days. The dead storage (long term) coal pile capacity is 752,000 tons, 57 days supply. This pile provides coal to the plant boiler only if normal rail delivery of coal is interrupted for extended periods of time. Since the Illinois No. 6 (seam) coal used by the plant has a relatively low moisture content (11 to 12 percent) long term storage poses no spontaneous ignition or coal property degradation problems.

The coal handling system consists of four major structures; a rotary car dumper, a breaker house, two lowering wells and an underground rotary plow gallery, and a crusher house. Coal enters the boiler house at a transfer tower at the southwest corner of the boiler house. Equipment for the coal handling system is sized to unload and transfer coal to storage at a rate of 2000 tons/hr. This allows turnaround of a 100-car a unit train (100 tons per car) in five hours. Ten unit train loads of coal are required to provide the tonnage of coal (92,400 tons) burned weekly (7-days) by the plant. Thus, two unit trains per day, unloaded during the first and second shifts, can be easily accommodated. The five hour unloading cycle does not incur increased transportation costs due to railroad demurrage penalties since it is assumed that the utility leases dedicated unit trains supplying coal to the site. The railroad crew uncouples a loaded unit train at the coal unloading loop, and picks

ACCOUNT 22

up an empty unit train at the storage ladder siding. The unit train is moved through the coal yard and switchyard by an in plant locomotive.

Coal is reclaimed from either active or dead storage at a rate of 750 tons/hr. Full 100 percent redundancy (i.e. crushers, conveyors and rotary plows) is provided. Coal is reclaimed on a nearly continuous basis.

Coal is weighed and totalized at two locations in the coal handling system; 1) at the rotary dumper-to-breaker house conveyor, and 2) for analysis at the lowering well-to-crusher house conveyors. As-fired coal is sampled in the boiler house transfer tower, prior to delivery to the coal silos; as received coal is sampled in the breaker house prior to discharge to the lowering well. Magnetic separators remove miscellaneous iron from the coal at the top of both the breaker house and crusher house.

All of the coal conveyors are equipped with wire-reinforced fabric/rubber belt material and have self aligning troughing (angled side) idlers. The conveyors, and the adjacent walkway, are enclosed above ground. A solvent/water spray dust suppression system prevents excessive dusting at the discharge of each conveyor.

Coal is delivered to the plant by a 100 car unit train, equipped with rotary car couplers. A hydraulic car positioner centers an individual car in the rotary dumper that rotates a car 180 degrees. The contents of a car discharge onto a traveling hammermill lump breaker, and subsequently into two hoppers. A vibrating feeder at the bottom of each hopper feeds coal onto the dumper-to-breaker house conveyor belt.

Coal enters the breaker house at a splitter chute that diverts coal to one of two breakers which reduce to three inch size and under.

A belt conveyor transfers coal from the breakers, to the top of either of two lowering wells. The lowering well is a hollow, cylindrical silo, with a hopper bottom. Openings in the side wall of each well allow coal to form a conical-shaped pile, as the lowering well fills with coal. The conical shaped piles account for the 40,000 ton active storage. Vibrating feeders at the center of the lowering well, allow gravity reclaim of the active storage pile.

Dead storage coal is moved by bulldozer to the vicinity of the lowering wells, when required. An underground (below grade) gallery beneath the lowering wells houses the two lowering well-to-crusher house conveyors and two rotary plows. The conveyors run in a direction parallel to a line connecting the lowering wells. The rotary plow is a small motor driven car, that travels on rails beneath the coal pile supported above each conveyor. A horizontal plow slowly rotates atop the car, sweeping coal from a concrete trough below the active coal piles to the conveyor. A rotary plow maintenance shed is located where the conveyors exit to the underground galleries and angle upwards.

Coal discharges from the lowering well-to-crusher house conveyors into a storage bin that has two outlets each of which feeds a crusher. The crushers reduce the coal to a one inch to one and one half inch size. The crushed coal is fed to one of two conveyors.

Crusher house-to-boiler house conveyor belts transport the coal to the boiler house transfer tower. Here the coal is divided between the two rows (near and far) of coal silos. Each row is serviced by a traveling tripper that can be stopped to discharge the conveyor belt flow to a specific silo. The seven silos are sized for eight hours (approximately 650 tons each) of coal storage.

Ignition and Plant Fuel Oil System

The fuel oil system supplies No. 2 fuel oil to the main boiler ignitors for startup and low-load operation. This fuel oil is also used for the auxiliary boiler and miscellaneous diesel driven equipment, the emergency diesel-driven generator, the locomotive, the diesel-driven fire pump and the coal moving equipment. The plant fuel oil systems are located in the plant yard, boiler room, auxiliary boiler room and at the circulating water intake.

An aboveground fuel oil storage tank which stores 150,000 gallons of No. 2 fuel oil provides for a 30 day supply of oil for the auxiliary boiler. A dike surrounding the tank will contain the oil in the event of a spill or tank failure. Separate pumps, which take suction directly from the fuel oil storage tank, supply the fuel oil to the main and auxiliary boilers.

Oil delivery for the aboveground tank is made by either rail or truck. An unloading pump is provided for vehicles not having unloading equipment.

ACCOUNT 22

All diesel engine driven equipment is capable of burning No. 2 fuel oil. The aboveground storage tank also supplies fuel to the diesel engine driven equipment located in the proximity of the tank.

Instrumentation for the fuel oil system monitors and controls unloading, storage and transfer of fuel oil to points of use. It also provides information both locally and to the main control room as required for controls, displays, alarms and logs.

ACCOUNT 225 Flue Gas Desulfurization Structures

Lime Slaking Building and Service Building

The lime slaking building, located southwest of the main plant structures, is a steel framed structure 56 ft wide and 98 ft, with an enclosed portion 51 ft high and an overall height of 160 ft. The enclosed building volume is approximately 280,000 cu ft. The adjacent service building is a steel framed structure 28 ft wide, 98 ft long and 16 ft high. The building volume is approximately 44,000 cu ft. The buildings are supported on reinforced concrete spread footings on rock. The reinforced concrete ground floors are located at grade. The lime slaking building has three enclosed floors and three platform floor elevations above the roof. The second and third floors are reinforced concrete slabs supported on metal deck on steel framing. The service building has one floor. The roofs of both structures are concrete channel plank covered with roofing membrane. The exterior walls are insulated metal siding.

The lime slaking building houses pumps, tanks, silos, conveyors, elevators and other associated equipment. The service building houses an electrical room, mechanical service room, control room, laboratory, toilets and office.

The lime slaking building is heated by electric unit heaters, and ventilated by drawing outside air through wall louvers and exhausting through power roof ventilators. The service building has a HVAC system which provides filtered and conditioned air to the offices, laboratory control room and service rooms.

Desulfurization Control and Switchgear Building

The desulfurization control and switchgear building, located north of the desulfurization area, is a two story steel framed structure 40 ft wide, 50 ft long and 42 ft high. The building volume is approximately 84,000 cu ft. The building is supported on reinforced concrete spread footings on rock. The reinforced concrete ground floor is located at grade. The second floor is a reinforced concrete slab supported on metal deck on steel framing. The roof is concrete channel plank covered with a roofing membrane. The exterior walls are insulated metal siding, and the interior walls are masonry block.

The building houses the control room, office, toilets and switchgear area.

The control room is heated by electric baseboard radiators and cooled by a window type air conditioner. The switchgear room is heated by electric unit heaters. Ventilation is provided by a ventilating unit consisting

ACCOUNT 22

of roughing filter and supply air fan. Air is exhausted through a wall louver.

Process and Seal Water Pump House

The process and seal water pump house, located west of the main plant structures, is a one story prefabricated steel structure 20 ft wide, 40 ft long and 16 ft high. The building volume is approximately 12,800 cu ft. The building is supported on reinforced concrete spread footings on rock. The reinforced concrete ground floor is located at grade. The exterior walls are insulated metal siding, and the roof is insulated metal standing rib.

The building houses the process and seal water pumps, tanks, filters and associated equipment.

Heating is provided by electric unit heaters. The building is ventilated by drawing outside air through wall louvers and exhausting through wall exhaust fans.

Thickener Equipment Building

The thickener equipment building, located northwest of the main plant structures, is a one story prefabricated steel structure 40 ft wide, 80 ft long and 16 ft high. The building volume is approximately 51,200 cu ft. The building substructure, superstructure and heating and ventilation is identical to that described for the process and seal water pump house.

Sludge Stabilization Building

The sludge stabilization building, located approximately six miles from the main plant structures, consists of a main building and a service building. The main building is a two story steel framed structure 60 ft wide, 75 ft long and 30 ft high. The building volume is approximately 135,000 cu ft. The adjacent service building is a one story steel framed structure 50 ft wide, 60 ft long and 18 ft high. The building volume is approximately 54,000 cu ft. The buildings are supported on reinforced concrete spread footings on rock. The reinforced concrete ground floors are at grade. The second floor of the main building is a reinforced concrete slab supported on metal deck on steel framing. The roofs are cast in place concrete over metal deck, covered with a roofing membrane and supported on steel framing. The exterior walls are insulated metal siding, and the interior walls are either masonry or metal partitions. Vinyl tile and ceramic tile floors and acoustical ceilings are provided, as appropriate, in the service building.

The main building houses the vacuum filters, pumps, sludge mixers, feeders, conveyors and associated equipment. The service building houses the offices, lunch room, control room and toilets.

The main building is heated by electric unit heaters and is ventilated by drawing outside air through wall louvers and exhausting through power roof ventilators. The service building has a HVAC system which provides filtered and conditioned air.

Sludge Pump House

The sludge pump house, located north west of the main plant structures, is a one story steel framed structure 20 ft wide, 40 ft long and 12 ft high. The building volume is approximately 9,600 cu ft. The building is supported on reinforced concrete spread footings on rock. The reinforced concrete ground floor is at grade. The roof is concrete channel plank covered with a roofing membrane. The exterior walls are insulated metal siding.

The building houses an electrical equipment room and mechanical equipment room.

Heating is provided by electric unit heaters. The building is ventilated by drawing outside air through wall louvers and exhausting through wall exhaust fans.

Lime Unloading Building

The lime unloading building, located west of the main plant structures, is a one story steel framed structure 36 ft wide, 50 ft long and 20 ft high. The building volume is approximately 36,000 cu ft. The building support is reinforced concrete founded on rock. The reinforced concrete ground floor is located at grade. The roof is steel supported on steel framing. The exterior walls are metal siding.

The building houses the grizzly hopper and conveyor, and has rail and truck access. It is large enough to accommodate one railroad car. A tunnel accommodates a conveyor to the bucket elevator at the lime silos.

ACCOUNT 22

Tunnel ventilation is provided by a supply air fan.

ACCOUNT 226 Lime Flue Gas Desulfurization System

This system is designed to remove SO₂ from flue gas exiting from the electrostatic precipitators. Lime handling and slaking facilities, stack gas scrubbing equipment and spent slurry handling facilities are provided.

Lime Handling and Feed Preparation

Lime is unloaded from railroad hopper cars in an unloading shed. The lime is dropped into a hopper and conveyed to adjacent concrete storage silos by a conveyor belt and bucket elevator. Two silos provide a 30 day supply of lime for full load operation.

Lime is conveyed by a reclaim belt conveying system to four process storage silos located above the lime slaking building. Lime is fed by volumetric belt feeders to lime slakers located below each storage silo. A combination of fresh process makeup water thickener overflow is used for lime slaking. A 15 percent slurry of slaker lime is fed by gravity to slurry surge tanks located below the slakers and subsequently pumped to lime slurry feed tanks adjacent to the SO₂ scrubbing equipment.

Sulfur Dioxide Scrubbing Equipment

This system brings flue gas into intimate contact with the SO₂ scrubbing medium. Booster fans direct flue gas from a bypass duct to SO₂ scrubbing modules, and are designed for a maximum pressure drop across the scrubbing system.

ACCOUNT 22

A bypass duct is sized to handle 100 percent of the flue gas at maximum load in case of operating problems with the scrubbers.

Seven 15 percent capacity booster fans and SO₂ modules are provided. Each module is designed to remove 90 percent of the SO₂ contained in the entering flue gas. The system is sized for a maximum gas velocity of 10.5 ft/sec through each scrubber. At full load, six modules scrubbing 88.15 percent of the flue gas are required to operate in order to comply with the SO₂ emission standard of 1.2 lb SO₂ per million Btu's. The seventh module is provided as a spare. The balance of flue gas is bypassed to provide reheat for the saturated flue gas leaving the SO₂ scrubbers.

In each SO₂ scrubber, the flue gas is initially directed to a down-flow quencher. A slurry of CaO, reaction products and water is sprayed into the hot flue gas at the quencher throat saturating the gas and providing the first stage of SO₂ removal. The slurry is pumped from a reaction tank and introduced to the quencher throat through a series of spray nozzles. Some of the recirculation slurry is also employed as wall wash on the convergent section to present a wetted wall to the incoming of hot flue gas.

The saturated gas exits downward from the diverging section and turns through a horizontal, low velocity sump. The slurry droplets exit the quencher at a relatively high velocity and are separated by inertia in the sump turn.

ACCOUNT 22

The flue gas leaving the sump flows up through the counter-current tray absorber where a slurry of recirculated lime, reaction products, and water is intimately contacted with the flue gas to remove the sulfur dioxide. The scrubber gas continues on through a moisture separator and ducts to the stack.

Sludge Handling System

A portion of the recirculating slurry in the SO₂ scrubbing system containing lime and reaction products is directed to thickeners. Clear supernatant from the thickeners is fed by gravity to an overflow surge tank. Thickened underflow is mixed with flyash and pumped to a sludge stabilization building located six miles from the station.

At the stabilization building the slurry is dewatered by vacuum filtration and conveyed to solid-solid mixers where lime is added. After mixing, the resulting material is conveyed to a point outside of the building for landfilling. The flyash and lime undergo pozzolanic reactions to produce a stabilized landfill material. Filtrate from the dewatering operation is returned to the thickener overflow storage tank at the plant site.

ACCOUNT 227 Steam Generator Plant Instrumentation and Control

The steam generator plant instrumentation and control provides the necessary instruments for the monitoring of the plant status and equipment condition. They include the required controls and indications for the startup, shutdown and normal operation of the plant. Monitors are provided for SO₂, NO_x, particulates and oxygen to insure compliance with the federal emission standards and other applicable state and local regulations.

Boiler-Turbine-Generator Control Board

The boiler-turbine-generator (BTG) board contains the necessary controllers, indicators and recorders for the plant coordinated control system, the turbine supervisory control system and the primary cycle systems. The board may be arranged in either an "L" or straight line configuration. Pneumatic instruments are not allowed on the board. The board is a walk-in type tunnel board.

Instrument items on the board are grouped according to their functions. Normally, controllers and control switches are placed on the bench portion of the board, indicators and recorders are placed on the vertical position. Control and instrumentation that require continuous operators attention are mounted in the front side and those requiring periodic attention are placed in the rear. Space is provided for inserts of the following items: Mechanical-hydraulic control insert, load frequency control equipment insert, burner control insert, computer CRT with keyboard.

Computer console, printers, and trend recorders are mounted separately from the BTG board. The coal handling and related systems are controlled from the vertical board.

Auxiliary Panels and Cabinets

These panels and cabinets provide monitoring and controls of miscellaneous operations such as soot blowing, coal handling, compressed air supply and service water supply.

Instrument Racks

The instrument racks take the form of an open rack. They are used to mount local instruments such as pressure transmitters, manifolds, pressure switches, and other pneumatic instruments that connect directly with the process pipes. The rack has a rigid structure, suitably braced, to withstand all stress incidental to shipping, installation and operation, without warping or twisting. Arrangement of instruments, conduits on racks, and electrical devices are placed out of the paths of condensation or water drains when testing or calibrating instruments. In addition, the instruments are so mounted that replacement could be accomplished without interruption of service to adjacent devices. There is provision to collect the drains when the instrument is removed. Suitable engraved, plastic nameplates are provided for each instrument.

Plant Computer System

The primary function of the plant computer system is to assist the control room operator in conducting safe and efficient operation of the power plant and to provide information on plant performance history. Normal safe operation of the plant does not require the use of the computer.

The major functions of the computer are:

- a. Monitoring of all analog, digital and calculated input points
- b. Analog input processing which includes conversion of analog inputs to engineering units, reasonability tests, limit comparisons, error checking

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- c. Digital input processing which includes status checkup
- d. Sequence of event input processing
- e. Pulse input signal processing
- f. Operation of audible and visual alarm displays
- g. Performance calculations - These include plant thermal efficiency calculations, unit heat rate calculations, condenser performance calculations, heat exchangers performance calculations, turbine performance calculations, boiler efficiency calculation and related electrical calculations
- h. Analog and digital trend recording
- i. Generation of periodic logs, on demand logs, alarm summary and post mortem review reports

The hardware of the computer system includes the following major equipment:

- a. All required analog and digital signal conditioning equipment
- b. All required signal scanning and signal multiplexing equipment
- c. All required analog to digital and digital to analog converters
- d. Termination cabinets for all incoming and outgoing cables and wires
- e. Data acquisition computer with sufficient operating speed, core storage and input/output handling capability to meet system requirements and insure complete satisfactory performance
- f. Watchdog timer for the computer
- g. Two CRT's and three printers
- h. Six point trend recorder
- i. Paper tape reader/punch
- j. Card reader
- k. Uninterruptible a-c power supply

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Coordinated Control System

The coordinated control system operates the turbine-generator and the boiler as an integrated unit. This system coordinates the regulation of feedwater flow, fuel feed, air flow, main steam temperature control, reheat steam temperature control and the turbine servo or load reference motor. The system is designed to minimize interactions between the values to be controlled; namely, unit generation, steam pressure and steam temperature, by proper adjustment of fuel, feedwater, air, turbine control valve and the steam temperature regulating equipment. The system has the flexibility of operating in one of the three modes: coordinated mode, boiler follow mode and turbine follow mode.

Burner Control System

The burner control system is designed to prevent continued operation of the steam generator where a hazardous furnace condition could exist, and to assist the operator in starting and stopping of burners and fuel equipment.

The control system consists of four major subsystems: furnace purge system, burner mill control system, boiler fuel safety system and alarm system. The furnace purge system insures that the boiler is adequately purged under the conditions and in the proper sequence prior to igniting the first fire in the boiler. The burner mill control system allows remote operation of the ignitors and burners. The subsystem is designed to follow a predetermined set program in safely placing ignitors and burners in and out of service. The boiler fuel safety system is designed

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to shut off all fuel to the furnace in the event that predetermined potentially hazardous conditions should develop during operation. Examples of these conditions are loss of flame, loss of seal air, or loss of primary air. The alarm system alerts the operator the existence of certain equipment malfunctions such as mill trip, main flame and detector failure.

ACCOUNT 23 TURBINE PLANT EQUIPMENT

The turbine plant equipment includes the turbine-generator and all auxiliary equipment necessary to assure continuous operation of the main turbine - generator. All turbine plant equipment is designed to operate at the valve wide open, five percent overpressure point (VWO, 5 percent OP).

The turbine generator is a cross compound (two shaft) eight flow machine. Normally 55 percent of the inlet steam passes through the entire turbine machinery frame and exhausts into the condenser at a vacuum condition, where waste heat is rejected. The remaining 45 percent of the inlet flow is extracted at various stages from the turbine for heating the feedwater being pumped to the boiler. A portion of the extraction steam also powers two auxiliary steam turbines that drive the main boiler feedwater pumps.

Cold reheat pipes carry 82 percent of main steam inlet flow from the high pressure turbine exhaust to the reheater section of the boiler. Hot reheat piping supplies reheated steam to interceptor valves that control steam flow to the intermediate pressure turbine.

Condensate is pumped from the condenser hot-wells by three 50 percent capacity condensate pumps through 100 percent flow deep bed polishing demineralizers, and a steam packing exhauster. Three 33-1/3 percent capacity condensate booster pumps provide the necessary head from that point for the condensate to flow through the four stages of low pressure heaters to the deaerator. The two 50 percent capacity heater drain pumps take the first stage heater drains from the heater drain tank and return it to the cycle at the suction to the condensate polishing system. Then

two 50 percent capacity steam turbine driven main feedwater pumps supply water to the high pressure feedwater heaters (6th, 7th, 8th stages) to raise the feedwater temperature to 547 F before entering the boiler economizer.

ACCOUNT 231 Turbine Generator

The turbine-generator is designed to deliver 1232 MWe net output with throttle steam conditions of 3515 psia, 1000 F superheated steam, 600 psia and 1000 F reheat, zero percent make-up, 1.7/2.5 in-HgA back pressure, eight stages of feedwater heating, and turbine driven feedwater pumps. The maximum guaranteed steam heat balance diagram is shown in Drawing 6509.001-HSC-6.

The turbine is a cross-compound two parallel shaft machine with eight flow exhaust using 30 inch last stage blades designed for 3600 rpm. One shaft consists of one high pressure turbine and two low pressure turbines driving an electrical generator. The second shaft consists of one intermediate pressure turbine and two low pressure turbines driving a second electrical generator. Both shafts rotate at 3600 rpm, and drive identical generators. The maximum guarantee throttle flow is 9,140,816 lb of steam/hr.

The cold reheat steam exhausts from the high pressure machine at 652 psia, 565 F and passes through the reheater section of the boiler. Hot reheat steam returns and passes through four interceptor valves to the intermediate pressure turbine. Exhaust from the intermediate pressure turbine passes to each of the four low pressure turbines through crossover pipes.

Generator

Each of the two turbine-driven electrical generators has a rating of 722 MVA with 0.90 PF, 26,000 V, 3 phase, 60 Hz output. Each has a totally enclosed hydrogen cooled (at 75 psig) rotor. The stator is a liquid conductor-cooled type with deionized water (at 100 F) as the liquid coolant.

The generator rotor is furnished with an internal cooling system including: hydrogen coolers, terminal bushings, instruments, grounding pads, seal housing insulation, foundation plates, shims, and special tools.

The generator stator is furnished with the following external equipment: deionized water circulating and cooling unit assembled on a skid and including storage tank, pumps, coolers, deionizer, flow meter, conductivity cells, gauges, piping, valves, filters, instruments, and regulating equipment, stator winding control cabinet assembled and combined with the hydrogen control cabinet including annunciator, generator automatic runback logic and all necessary control devices.

The generator hydrogen system includes: hydrogen coolers, one skid mounted seal oil unit, hydrogen manifold with one bottle pressure regulator with high and low pressure gauges, pressure switch for hydrogen supply pressure "low" alarm, shutoff valves and bottle connectors, generator hydrogen pressure regulator, hydrogen storage bottles, control cabinet, temperature detectors, and special tools.

The excitation switchgear is an integrated unit of standard low voltage, indoor, and metal enclosed. The function of the excitation switchgear is to connect, rectify and control excitation to the a-c alternator exciter from the alternator stator, and to provide voltage regulation by adjustment of the generator field voltage (d-c regulator) or the generator terminal voltage (a-c regulator). The excitation switchgear houses the exciter field breaker, the thyristor regulator bridge and the a-c and d-c regulator logic.

Exciter

Each of the two generators is provided with static-type excitation. It has a response ratio of 1.5.

Mechanical-Hydraulic Control

Rotational speed and load of the HP and IP turbine shafts are controlled by a mechanical-hydraulic control system. A mechanical governor varies the oil pressure of a low pressure hydraulic system that uses the bearing lubricating oil as the working fluid. This low pressure system actuates the appropriate servomotors, that control a second high pressure fluid system using a fire retardant hydraulic fluid. This high pressure fluid controls hydraulic cylinders that actuate the HP turbine stop and throttle valves or the IP turbine reheat interceptor and stop valves.

The control system directly monitors and controls the speed of both turbine shafts from 50 rpm; i.e., slightly above turning gear speed, to synchronous generator speed of 3600 rpm, and for all generator load conditions. All safety subsystems actuate the low pressure hydraulic system to shut down the unit.

During unit startup, thermal sensors in the turbine casings provide input to an analog computer model that continuously calculates critical thermal stress. Thus, high stress conditions can over-ride all other automatic control functions and provide longer turbine warming periods during startups, if necessary.

Turbine Gland Steam Sealing System

The gland steam sealing system provides sealing for all turbine shafts at the turbine shell penetrations, under all conditions of turbine loading. The shaft packings seal against leakage of air into the condenser (vacuum packings) and prevent steam from blowing out into the turbine room (pressure packings).

The steam sealing system provides the above functions automatically at all loads and consists of the following equipment: oil operated dual feed steam regulator, steam packing exhauster with two blowers, auxiliary steam feed regulator, regulator bypass unloading valve, blowdown valve, three-way diverting valves and ventilator valve. The HP turbine inner glands are relieved to heater number five. The HP, IP and LP turbine outer glands are relieved to the steam packing exhauster. The steam packing exhauster is designed with stainless steel tubes for 400 psig pressure and 125 F cooling water.

Lubricating Oil System

A main shaft driven positive displacement gear pump supplies the oil required by the high pressure hydraulic control system and the low pressure

lubrication system during normal operation, and provides high pressure and low pressure oil for the hydrogen seal oil system of the generators. A motor suction oil pump supplies low pressure lubrication oil to the main shaft pump suction during startup and shutdown.

Turbine Oil Conditioning System

The lubricating continuous bypass oil conditioning system has a capacity of 2,020 gallons per hour of 150 SSU viscosity lubricating oil at 100 F. The clean oil storage capacity in the conditioner is 1500 gallons at turbine shutdown. The system consists of the following equipment: centrifugal type lubrication oil purifier with inlet and discharge pump, necessary instruments, breakover switch, feed/stop valve, electric controller and safety interlocks, 14.2 kW heater, centrifuge driven by an open drip-proof motor including piping and wiring.

Gas Systems

The carbon dioxide system consists of a four ton liquid carbon dioxide storage unit with refrigeration system, vaporizer, relief valves and two pressure reducing valves. Carbon dioxide is used for purging hydrogen from the generator housing during shutdown, and for purging air from the housing before being filled with hydrogen during startup.

Hydrogen gas is used to cool the rotor of the generator and is circulated within the generator housing under pressure. Shell and tube type coolers at the ends of the generator are supplied with cooling water to dissipate the rotor heat and wind losses.

The hydrogen is supplied from a series of bottled containers which are individually connected to a manifold. The manifold is equipped with a relief valve and two pressure regulators with isolation valves.

ACCOUNT 233 Condensing System

Condensing Equipment

The two surface condensers are multi-pressure, single pass design with divided fabricated steel water boxes and shell. The condensers are designed to handle the total heat rejection from the main turbine. Each condenser has a condensing surface of 407,000 sq ft; 29,602-3/4 inch diameter 18 BWG 90-10 CuNi tubes, 70 ft long. Cooling water flow in each condenser is 221,750 gpm resulting in a tube velocity of 6.5 ft/sec and a total temperature rise at full load of 26 F.

Each condenser shell is floor mounted and connected to the turbine exhaust flange by means of a stainless steel expansion joint to accommodate thermal expansion.

The carbon steel shell is equipped with fabricated steel water boxes that are bolted to the condenser shells and designed for removal without disturbing the tube sheets.

Four motor driven two stage vacuum pumps are supplied for removing non-condensable gases from the two condenser shells. During startup, all four pumps are operating, hogging the condensers to minimize the time to reach the intermediate pressure at which operation begins. To provide system reliability, four 50 percent capacity pumps are selected, with two

normally operating to maintain condenser vacuum. When condenser pressure falls to 26 in-Hg vacuum, the spare ejector or vacuum pumps start automatically.

The total hotwell capacity of the two shells is 62,000 gallons at normal water level. The hotwell is designed to deaerate the condensate to maintain a maximum of five ppm of dissolved O₂ during normal steady state operation.

The condensate pumps are vertical type, suitable for the NPSH requirements of the condenser hotwell service. The pumps develop sufficient head to ensure adequate suction pressure at the condensate booster pumps after overcoming the pressure drop in the condensate piping, steam packing exhauster, and the condensate polishing demineralizers. Three half-size motor driven pumps are supplied. The third pump is redundant and is on standby or isolated for maintenance.

The steam packing exhauster consists of a shell and tube type condenser and air removal equipment in the form of two full size motor driven blowers.

One complete condensate polishing system is provided that is capable of treating 100 percent of the condensate flow. The system consists of seven individual high flow rate, deep bed type demineralizers operating in parallel.

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The condensate passes through six demineralizers with the seventh demineralizer serving as a standby. Each demineralizer is rated for a flow rate of 2,500 gpm (48 gpm per sq ft of flow area). The bed depth is three ft with two ft free board. The shells are designed for 200 psig, 130 F, and are lined with rubber with stainless steel internals. The total resin volume consists of 100 cu ft of cation resin and 50 cu ft of anion resin per shell. When the resin is expended, it is regenerated externally. A resin separation tank, cation regeneration tank, anion regeneration tank and resin storage tank are principal parts of the regeneration system. A hot water caustic dilution tank and a control panel complete with instrumentation for automatic regeneration is also provided with this system.

ACCOUNT 234 Feedheating System

Feedwater Heaters

Eight stages of feedwater heaters are utilized to heat the feedwater returning to the boiler. The heaters are placed in series and operate under increased pressure of various stages of extraction steam from the high pressure, intermediate pressure, and the low pressure turbines. All heaters have a horizontal U-tube arrangement, using stainless steel tubes. Each heater has an integral drain-cooler section with the exception of the first and fifth stage heaters.

There are four low pressure (LP) stages of feedwater heating, one deaerating stage, and three high pressure (HP) stages of feedwater heating. The LP heating system consists of eight feedwater heaters arranged in two parallel

trains of four each. A single bypass is provided to allow removing a complete train of heaters from service while still maintaining full load on the unit. The bypass is sized to pass 40 percent of the guarantee turbine throttle flow while the remaining heaters pass 60 percent. The LP heaters employ a cascade drain arrangement to heater number one, where they collect in a drain tank and are pumped forward to the inlet of the condensate polishing system.

The fifth stage heater is a horizontal tray type deaerator with storage tank. The storage tank is sized for five minutes storage at VWO, 5 percent OP.

The high pressure (HP) feedwater heating system consists of nine feedwater heaters arranged in three parallel trains of three each. Each train is designed to pass one third of the VWO, 5 percent OP flow. The HP heater drains cascade to the fifth stage deaerator drain tank.

Boiler Feedwater Pumps

Two 50 percent capacity motor driven boiler feedwater booster pumps are provided to supply the minimum net positive suction head (NPSH) at the suction of the boiler feedwater pumps. Each pump is designed for a flow rate of 13,500 gpm at 150 ft total dynamic head (TDH).

The two 50 percent capacity turbine driven boiler feedwater pumps are designed for a flow rate of 13,500 gpm each and develop a TDH of 11,500 ft when operating at a speed of 5,800 rpm. Calculated brake horsepower is 43,660. Each feed pump is driven by a dual admission, multi-stage, condensing steam turbine exhausting to a separate steam condenser which

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then drains to the main steam condenser. The dual admission inlet consists of a high and a low pressure valve, one supplied with main steam, the other supplied with steam from the high pressure turbine exhaust to the low pressure valve. For startup purposes, auxiliary boiler steam is also supplied to the low pressure valve admission inlet.

ACCOUNT 235 Other Turbine Plant Equipment

Main Vapor Piping Systems

The main vapor piping systems consist of the main steam and hot and cold reheat systems. The main steam system conveys high pressure superheated steam from the steam generator to the high pressure turbine, related auxiliary equipment, and the station auxiliary steam system.

The hot and cold reheat system conveys exhaust steam from the HP turbine to the steam generator reheat and returns it to the intermediate pressure turbine.

The main steam and hot and cold reheat system flow diagram is shown in Drawing No. 6509.001-HSC-7.

Turbine Building Closed Cooling Water System

A closed cooling water system is provided with three 50 percent capacity (6,000 gpm each) motor driven water pumps, air tank and heat exchangers, which dissipates heat to the main cooling towers. The heat exchangers are two 50 percent capacity shell and tube type, designed for a flow rate of 6,000 gpm on both the shell and tube sides. The tubes are 90-10 CuNi material, and supply 95 F water to the system based on a supply water

temperature of 85 F from the plant service water system. The system supplies cooling water to the turbine plant and miscellaneous plant equipment.

Demineralized Water Makeup System

The demineralized water makeup system consists of two independent trains, each having the following equipment: an activated charcoal prefilter, cation demineralizer, an anion demineralizer, and a mixed bed demineralizer. A common vacuum degasifier serves both trains with water from the cation demineralizers directed to the vacuum degasifier before being admitted to the anion demineralizer. Each demineralizer regenerates in place without sluicing the resins. The makeup demineralizing system supplies the plant makeup requirements, and the effluent is discharged into the two 500,000 gallon condensate storage tanks.

Chemical Treatment System

The chemical treatment system is used to maintain the water chemistry of the feedwater and consists of two hydrazine feed pumps, two ammonia feed pumps, one hydrazine storage tank and one ammonia storage tank. The hydrazine chemically removes the dissolved oxygen from the feedwater and the ammonia controls the pH.

Neutralization System

The neutralization system consists of two pumps, one blower and one tank. The neutralization tank is used to chemically neutralize the spent regenerant from the demineralization system and condensate polishing system to acceptable levels prior to discharge.

ACCOUNT 236 Turbine Plant Instrumentation and Control

Main Control Board

The main control board for the turbine plant is an integral part of the boiler-turbine-generator control (BTG) board described in the Account 227. The requirements of the BTG board also apply to the turbine plant main control board.

Turbine Supervisory Panel

The turbine supervisory panel contains recorders to be mounted on the BTG board or the turbine and unit miscellaneous panel. These are the shaft vibration recorder, the eccentricity, speed and position recorder, and the multipoint expansion and temperature recorder. An indicator is provided for turbine shaft vibration phase angle.

MHC Control Cabinet

The mechanical hydraulic control (MHC) cabinet contains the control and indicating equipment required for the startup, normal operation and testing of the turbine. This cabinet is normally mounted as a subpanel on the boiler-turbine-generator board. Typical control functions available are:

- a. Selection of starting rates: slow, medium or fast
- b. Setting of turbine speed at startup
- c. Setting of load limit, and loading rate limit
- d. Chest/shell warming
- e. Turbine trip
- f. Selection of operating mode: standby, manual or remote

g. Selection of load: increase or decrease

Typical indicating functions available are:

- a. Turbine speed
- b. Percentage of warming rate
- c. Throttle steam pressure, first stage pressure, intermediate pressure
- d. Generator output, MW
- e. Acceleration, rpm/minute
- f. Valve positions for main stop valves, control valves and intermediate valves.

Typical testing functions available are:

- a. Thrust bearing wear detector test
- b. Backup overspeed trip test
- c. Electrical trip test
- d. Mechanical overspeed and piston trip test
- e. Testing of main stop valves, control valves and intermediate valves

Turbine Accessory Panels

Turbine accessory panels contain the instrumentation and control devices for various turbine auxiliary systems. These panels may be field mounted or control room mounted. Typical auxiliary systems are hydrogen and cooling water, turning gear motor control, and excitation control. Control panels for these systems are located in the field. There are turbine panels located in the control room, such as the turbine control panels

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and turbine supervisory instrument cabinet. These control room panels contain the circuitry for the turbine control devices, turbine supervisory instruments, and turbine stress measurement, and are mounted on the main control board or other vertical panels.

Turbine Plant Heating, Ventilation and Air Conditioning Panels

These panels provide monitoring and control of the HVAC systems for buildings which house the turbine plant systems. Typical HVAC systems controlled from these panels are turbine building air handling system, intake structure ventilation system, and administration building ventilation system.

Turbine and Unit Miscellaneous Panel

The turbine plant miscellaneous panel is a vertical, walk-through control board with access doors at both ends. The panel provides the monitors and controls for auxiliary turbine systems such as turbine lube oil system and miscellaneous turbine monitoring recorders. The panel also provides the controls of the valving for the extraction steam lines, drain lines, and feedwater heater isolation. Instrumentation and controls that require constant operator attention are located in the BTG board.

Computer

The computer system described in the steam generator plant instrumentation and control section also monitors the turbine plant systems. One computer system is used for both the boiler and the turbine systems.

Turbine Plant Instrument Tubing and Fittings

The scope of supply of instrument tubing begins at the root valve and

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extends to the instrument shutoff valve. Materials and certification of instrument lines which are part of the pressure boundary are in accordance with the Instrument Society of America Standards.

ACCOUNT 24

ACCOUNT 24 ELECTRIC PLANT EQUIPMENT

The electric plant equipment conveys the electric power generated in the plant to the low voltage bushings of the generator step-up (GSU) transformers, controls and meters the electric energy, and protects the components through which the power flows. It is the source of power for the plant auxiliaries and the plant control, protection and surveillance systems during normal operation and emergency conditions.

Continuous ratings of equipment and interrupting ratings of protective and disconnecting devices are based on equipment load tabulations, fault studies and voltage regulation studies. Equipment continuous current ratings are based on the maximum continuous load plus the largest spare auxiliary, and the effects of diversity. Short time intermittent loads are not included.

The electric plant design features are as follows:

- a. The plant auxiliary distribution system design is based on a source voltage variation of ± 5 percent.
- b. The main generator, the three single phase generator step-up (GSU) transformers and the four three phase unit auxiliary transformers (UAT) are interconnected with isolated phase bus. (Note: The GSU transformers, the connections to the switchyard and the switchyard equipment and materials are not included in the equipment list or base cost estimate for this study. However, provisions have been made in the plant design for location of the GSU transformers and routing of the connection to the switchyard. The GSU transformers and switchyard are shown on the drawings for clarity and completeness).
- c. Four unit auxiliary transformers (UAT), are connected to the generator main leads. Two are two winding transformers rated at 25.5 kV to 13.8 kV and two are three winding transformers rated at 25.5 kV to 4.16 - 4.16 kV.

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- d. Two reserve auxiliary transformers (RAT), are connected to an offsite transmission system. One is a two winding transformer rated at 230 kV to 13.8 kV and the other is a three winding transformer rated at 230 kV to 4.16 - 4.16 kV.
- e. The medium voltage a-c distribution system is nominally 13.8 kV and 4.16 kV. Two separate and independent buses are provided for each voltage level. In addition, one 4.16 kV separate and independent bus is provided for the coal handling system and one for the SO₂ removal system.
- f. The low voltage a-c distribution systems are a nominal 480 volts. Twenty-three buses are provided for the plant process systems, ten buses for the precipitators and ten buses for the coal handling and SO₂ removal systems.
- g. Two separate and independent 120 volt nominal, uninterruptible power supplies fed from the 480 volt buses are provided. One supplies power to instrumentation and control and the other to the plant computer.
- h. The auxiliary d-c distribution and supply system is nominally 125/250 volts, with a center-tapped battery system. One center-tapped station battery and distribution system is provided.
- i. One 125 volt battery charger is provided for each of the two 125 volt sections of the 125/250 volt center-tapped battery.
- j. Two redundant, 100 percent, 500 kW diesel generator units are provided as the power supply for the emergency buses, and are automatically connected to their respective buses when the unit and reserve auxiliary power supplies are not available.

Motor starting voltage and frequency and allowable operational variations, at which the required starting and operating torques are developed, are as follows:

- a. Continuous Operation of a-c Motors
 - 1) Voltage: \pm 10 percent of rated
 - 2) Frequency: \pm 5 percent of rated

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- b. Starting and Short Time (Approx. 30 seconds) Operation of a-c Motors (Voltage): 80 percent of rated
- c. d-c Motors (Voltage): 210 to 280 volts

All emergency loads are furnished with a-c or d-c power from one of the following: the a-c emergency buses, the uninterruptible instrumentation and control a-c power supplies or the d-c buses.

The unit power supply for the plant electric auxiliaries is from the main generator through the unit auxiliary transformers. The reserve power supply is from the 230 kV offsite power supply via the reserve auxiliary transformers. The emergency power supply is from one of the two diesel generator units to the corresponding emergency a-c bus.

The availability design bases for the electric power system are tabulated in Table 2-5 of this section.

Table 2-6 in this section presents allowable ranges of temperature for electric equipment. Design ambient conditions for spaces housing electric equipment are based on these ranges and limits plus a minimum of 5 percent for margin.

ACCOUNT 241 Switchgear

The medium voltage metal-clad switchgear comprises two 13.8 kV buses and four 4.16 kV buses. Each bus is supplied by an independent winding of a UAT or by a shared winding of an RAT. Motors rated 2,500 hp and above are rated 13.2 kV and motors rated 250 hp to 2,250 hp are rated 4.0 kV. Transfer schemes are provided for automatically and manually transferring

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each bus between the reserve power supply and the unit power supply.

Overcurrent protection is provided for all circuits. Differential protection, overload protection and zero sequence overcurrent ground protection is provided for all medium voltage motor circuits.

480 volt motor control centers are provided for power distribution to motors 100 hp and below, lighting loads and miscellaneous loads such as motor-operated valves, resistance heaters, heat tracing and motor space heaters.

ACCOUNT 242 Station Service Equipment

Four unit auxiliary transformers (UAT) and two reserve auxiliary transformers (RAT) are provided to furnish power to the plant auxiliary power system. Each UAT winding is sized with sufficient margin to carry the plant auxiliary load of its connected bus under the heaviest load conditions. Each RAT winding is sized to cover either the startup load of its two connected buses or the plant auxiliary load of either one of its connected buses at the heaviest load conditions. Transformer impedances are based on limiting fault current availability to switchgear capability considering voltage regulation. Each transformer is protected with differential protection schemes and sudden internal overpressure devices.

Unit substations are provided to transform the medium distribution voltages to the low distribution voltage for low voltage loads. Motors rated 125 hp through 200 hp are connected to the unit substations. Unit substation transformer impedances are based on matching switchgear capability to fault current availability considering voltage regulation. Overcurrent

protection is provided for all circuits. Overload protection is provided for motor circuits. The unit substations for the cooling towers are fed from a loop feeder. The distribution buses for the precipitators are also fed from a loop feeder.

The battery systems comprise the plant batteries and battery chargers. The plant 125/250 volt d-c bus is supplied from a 125/250 volt center tapped battery and two 125 volt battery chargers, one for each 125 volt section of the 125/250 volt battery. During normal operation, d-c power is supplied from the battery chargers. During emergency operation, d-c power is supplied from the batteries. During startup and shutdown, d-c power is supplied from whichever source is available.

Two redundant diesel generator units are provided to furnish emergency a-c power to the emergency buses.

Each diesel generator unit is provided with automatic starting systems that are initiated when loss of offsite power occurs. Minimum voltage that can be experienced at the diesel generator terminals during motor starting is 85 percent.

Two dual input solid state inverters are provided to serve as uninterruptible power sources for miscellaneous a-c and plant instrumentation loads. The inverters are supplied with power from the a-c buses through regulating transformers or directly from the station battery.

ACCOUNT 24

ACCOUNT 243 Switchboards

Two a-c power distribution panels are provided to distribute a-c power from the inverters to the 120/240 volt uninterruptible loads. They are configured as one panel per inverter.

One d-c power distribution switchgear lineup is provided to distribute d-c power from the battery and its associated chargers.

Twenty feet of control benchboard is provided in the main control board lineup for control and data acquisition of the main generator and the auxiliary electric power system.

One electric system relay panel lineup is provided for protection and metering of the main generators, the generator step-up transformers and the unit and reserve auxiliary transformers. The main generator is protected by high speed differential, ground current, loss-of-field, negative sequence overcurrent, and voltage restrained overcurrent relays. The main generator, the generator step-up transformers and the unit auxiliary transformers are protected by power directional and overall differential relays. The reserve auxiliary transformers are protected by power directional and differential relays.

ACCOUNT 244 Protective Equipment

The station grounding system provides the means for maintaining an effective ground at equipment and metal structures, protecting equipment and structures from galvanic corrosion and protecting personnel from dangerous potentials. Lightning protection schemes are provided for the stack and for the boiler structure.

ACCOUNT 24

ACCOUNT 245 Electrical Structures and Wiring Containers

This equipment provides mechanical protection for wire and cable routed between various equipment and buildings. The bulk of the raceways consist of cable trays of various types. Raceways are routed in accordance with the same criteria as for cable routing. Fire stops are placed in cable trays wherever they penetrate floors or firewalls, and in other areas where their installation reduces the hazard of fire propagation.

ACCOUNT 246 Power and Control Wiring

Isolated phase bus is provided to interconnect generator terminals, GSU transformer low voltage terminals and UAT high voltage terminals. This is force-cooled with redundant active components in the cooling unit.

The plant wire and cable consists of three conductor and triplexed, single conductor power cable, multi-conductor control cable, coaxial, triaxial, shielded twisted pair and multi-shielded twisted pair and shielded quad instrument wire. Materials for insulation systems (ethylene-propylene rubber insulation with chloro-sulfonated polyethylene based jacket) are selected to provide optimum system performance in the areas of physical stability, tensile strength, flexibility, aging characteristics, resistance to abrasion, ozone (where required), water absorption, heat distortion, solvent extraction, self-extinguishing and non-propagating fire characteristics and resistance to corona effects where required. Wire and cable is separated by voltage and energy level to reduce heating and fault problems.

Wire and cable routing is governed by the following:

- a. Requirements for the power supply, control network and/or instrumentation signals.
- b. Requirements for loading.
- c. Requirements for physical separation of different voltage and energy level circuits.
- d. Avoidance of high hazard areas (e.g., areas subject to high ambient temperatures and fires).
- e. Simplicity of layout.
- f. Ease of installation.
- g. Ease of access.

ACCOUNT 24

TABLE 2-5

AVAILABILITY RELATED DESIGN BASES FOR THE ELECTRIC POWER SYSTEM

1. Availability Oriented Design:

- a. Considers interactive effects of plant operating requirements and natural phenomena to the extent that power required by the plant auxiliaries is available to fulfill the plant operating requirements.
- b. Includes provisions to minimize fire or fire damage and to detect, confine and promptly extinguish any fire which might occur.
- c. Includes provisions to allow periodic maintenance of systems and equipment.

2. Power sources, and power supplies, have sufficient backup and distribution systems have sufficient independence so that reduction of plant output will be prevented or minimized for loss of any source or bus.

ACCOUNT 24

TABLE 2-6

DESIGN AMBIENT CONDITIONS FOR ELECTRIC EQUIPMENT

Type of Equipment	Limit	Equipment	Ambient Temperature Limit (Degrees F)	Equipment Space
Battery	Max	90		N/A
Battery	Min	77		80
Cable	Max	104		100
Cable	Min	N/A		N/A
All Other**	Max	104		100
All Other**	Min	40*		50*

* Or above dewpoint temperature, whichever is higher

** Sensitive relays and other electrical devices are placed in controlled environment spaces such as the control room, computer room, or battery room, as applicable.

ACCOUNT 25

ACCOUNT 25 MISCELLANEOUS PLANT EQUIPMENT

Miscellaneous plant equipment includes systems for maintenance or provisions for plant equipment support requirements. Included are cranes and hoists, air, water and steam services, auxiliary boiler and associated equipment, and the plant fuel oil system.

ACCOUNT 251 Transportation and Lifting Equipment

Cranes and Hoists

A turbine-generator overhead traveling bridge crane located in the turbine hall has a main hoist capacity of 100 ton, and an auxiliary hoist of 30 ton capacity with a bridge span of 144 ft.

There are ten hoists provided, one of 10 ton capacity and nine of five ton capacity, which are capable of hoisting 30 ft in height.

ACCOUNT 252 Air, Water and Steam Service System

Compressed Air System

The plant compressed air system supplies service and instrument air for the entire plant. The compressed air system consists of three 50 percent (350 cfm each) reciprocating compressors, complete with intake filters, aftercoolers, air receivers and two 100 percent air dryers. Each compressor has an inlet silencer and filter.

Compressed air is supplied to the air receivers at a maximum of 150 psig and a minimum of 100 psig.

Each compressor maintains air receiver tank pressure within desired operating range. A local control switch is provided to manually start and stop each compressor. To provide for an additional source of service air, an interconnection is made with the soot blower air compressor system.

Service Water System

The service water system supplies cooling water from the main condenser heat rejection (MCHR) system to the turbine building closed cooling water system. The system has three 50 percent capacity (9,000 gpm each), vertical wet pit service water pumps which are located in the circulating water pumphouse. Makeup water to the MCHR system is discharged near the suction of these pumps to lower the average temperature of the service water.

Fire Protection System

The fire protection system is designed to minimize the probability and effect of the occurrence of a fire. The system has three vertical wet pit fire pumps (1500 gpm each), two motor driven and one diesel driven; and one 50 gpm vertical wet pit jockey pump. The pumps are located in the fire pump house adjacent to and common with the makeup water pump house.

The jockey pump normally operates to maintain system pressure. One of the motor driven pumps is used in the event that the jockey pump cannot maintain system pressure. The second motor driven pump is started if the system pressure continues to drop. If system pressure is still falling the diesel driven pump is started. A booster pump is provided in the boiler house to supply water to the top elevations.

Potable Water System

Potable water is required for drinking, sanitary, and washing purposes at the plant. This water is supplied by the local municipal water supply system.

Auxiliary Boiler System

This system consists of two auxiliary oil fired boilers located in the auxiliary boiler room. The function of the auxiliary boiler system is to provide auxiliary steam during shutdown periods and during startup. The system flow diagram for the auxiliary steam is shown on Dwg. 6509.001-HSC-14.

Two 100 percent capacity auxiliary boilers are provided. These boilers are shop assembled, pressurized type, complete with forced draft fans, including ducting between fans, windboxes and breaching to the stack. These "packaged" boilers are equipped with automatic control of feedwater and combustion, including all protective devices.

Each auxiliary boiler is sized to provide the quantity of steam required for a cold start of the main unit, under the worst expected conditions. The estimated flow is 150,000 lb/hr each. The auxiliary boilers are designed to produce steam at 165 psig and 600 F.

The auxiliary boilers are manually started. They are capable of being normally started either locally or from the control room. Each phase of the startup procedure is separately initiated. The auxiliary boiler is

ACCOUNT 25

controlled to shut down when the steam-flow falls below the minimum flow capability of the boiler during plant startup.

Fuel oil atomization utilizes steam from the auxiliary steam system.

Compressed air and/or mechanical atomizing burners are provided for startup when steam is not available. Each boiler discharges exhaust gases through separate flues. Forced draft flow control is provided by inlet dampers.

Boiler blowdown is accomplished manually without heat recovery equipment.

ACCOUNT 253 Communications System

Local Communications System

The communication system consists of an intercommunication and paging system, a telephone system, and a sound-powered telephone system. These systems are designed to provide communications between various parts of the plant for all conditions of operation.

ACCOUNT 254 Furnishings and Fixtures

Instrument Shop Apparatus

Instrument shop apparatus are provided for testing, calibration, repairing, and routine maintenance of the plant instrumentation and control devices.

A typical list of instrument shop apparatus is provided below:

- a. Dead weight tester
- b. Pneumatic calibrator equipment
- c. Decade resistance box
- d. Digital volt meter
- e. Variable voltage and current sources

- f. Potentiometer
- g. Oscilloscope
- h. Electronic counter
- i. Stop watch
- j. Resistance and impedance bridges
- k. Megger
- l. Pressure gauges
- m. Meters: d-c (MA, Amp, Volts), a-c (Amp, Volts)

Meteorological Monitoring System

The meteorological monitoring system provides all equipment essential for the monitoring and recording of the atmospheric parameters of the plant prior to, during construction, and over the life of the plant. The equipment for the system consists of a meteorological tower and various meteorological monitoring instruments.

Water Quality Monitoring System

The water quality monitoring system monitors the rates and concentrations of contaminants in the plant effluent discharge. Typical variables measured are chlorine, suspended solids, pH, oil and grease. Sampling techniques are established to yield representative batches or flows of the effluent discharge. Analytical data are recorded in proper form for immediate, as well as future interpretation and use.

Thermal Effluent Monitoring System

This system monitors the temperature of the effluent discharged from the plant. The system provides basic data to evaluate the thermal effect of the plant effluent.

Air Quality Monitoring

Air quality monitoring is performed by the stack gas monitoring system which provides for the measurement and recording of pollutants related with the stack gas. Measurements are made of particulate load, and of sulfur dioxide and nitrogen oxide concentrations. Concentration measurements are corrected for diluting air by measuring oxygen concentration in the stack gas.

Emission standards for particulates, sulfur dioxide and nitrogen oxide are in accordance with CFR 40, Protection of Environment, Part 60, Subpart D, and other applicable local and state regulations.

The detecting instruments are of the in-situ type, i.e., with sensing devices located in the stack. Withdrawal and conditioning of stack gas samples are not required. Sulfur dioxide and nitrogen oxide is reported in terms of concentration, i.e., $\mu\text{g}/\text{m}^3$ or ppm.

Particulate emission is reported in mass flow units, i.e., lbs/hr by combining measurements of particulate concentration and the mass flow rate of stack gas. Emission rate is integrated and logged daily. Sampling ports are provided for conformance testing.

ACCOUNT 255 Waste Water Treatment Equipment

The wastewater treatment equipment is designed to treat all plant wastewater. This includes water runoff from coal piles, demineralizers regenerant effluents, metal cleaning wastes, and floor drain discharges.

Two two-million gallon holding tanks are provided for retention and treatment of metal cleaning wastes and coal pile runoff. Lime is fed to the tanks to raise the wastewater pH. Iron is effectively precipitated at pHs greater than 8.0. After allowing for the sludge to settle, sludge is withdrawn from the tanks and dewatered by two vacuum filters.

Supernatant from the holding tanks is pumped to a 5,000 gallon pH adjustment tank. The wastewater subsequently passes through one of two two-million gallon earthen settling basins before discharge.

Regenerants from the demineralizers are treated in a 40,000 gallon neutralization tank. Acid and caustic feed systems are provided for neutralization. The treated wastewater is passed through the earthen settling basins prior to discharge.

Floor drains are collected in several sumps located in the plant, and pumped to a central API separator for oil and grease and suspended solids removal. Effluent from the separator is passed through the earthen settling basins prior to discharge.

ACCOUNT 26

ACCOUNT 26 MAIN CONDENSER HEAT REJECTION SYSTEM

The main heat rejection system is a circulating water system consisting of structures and mechanical equipment which serve the main condensers and service water system to reject the plant heat through two mechanical draft wet cooling towers. Makeup water extracted from the North River initially passes through traveling screens. The raw water is then clarified, and chemicals are injected for pH and fouling control. Fouling within the towers is controlled by continuous blowdown to the river in order to maintain the concentration at less than ten times that of the makeup water.

ACCOUNT 261 Structures

Makeup Water Intake and Discharge Structures

The makeup water intake and discharge structures are located along the riverbank ~~west~~ of the main plant structures. The intake basin is 18 ft wide by 32 ft long by 32 ft deep and is below plant grade. The volume of the basin is approximately 18,400 cu ft. The north wall of the structure has a 5 ft wide by 9 ft long and 32 ft high extension which houses the fire pumps. The structure is reinforced concrete with foundation mat bearing on rock. There are two intake chambers and two makeup water pumps supported from the reinforced concrete basin roof slab. The intakes are protected by bar racks, trash rakes, stop logs, traveling screens and a trash pit. Fish escapes are also provided. A channel is excavated in the river bottom from the ship channel to the intake structure to ensure an adequate supply of water during low tide conditions. Interior walls are reinforced and masonry concrete. A battery and switchgear room are

located at grade adjacent to the basin and supported on spread footings. The floor, roof, exterior walls and interior walls are reinforced concrete. The blowdown discharge is provided by concrete pipes running between the circulating water pumps discharge and the river.

Circulating Water Pump House

The circulating water pump house is a reinforced concrete structure located between the turbine building and the cooling towers and supported on a three ft thick reinforced concrete foundation. The superstructure has common walls with the turbine building and administration building. The circulating water pump basin foundation is supported on rock 28 ft below grade sloping upwards to the cooling tower water basins four ft below grade. The circulating water basin is approximately 60 ft wide, 70 ft long and 27 ft high to the operating floor. Attached to the west end of the four-bay circulating water pump basin is a service water pump basin founded 12 ft below grade. The basin is 12 ft wide, 17 ft long and 16 ft high to the operating floor. The foundation also slopes upwards to the cooling tower water basins. The approximate volume of the two basins is 120,000 cu ft.

The exterior walls, base mat, operating floor slab and interior columns supporting the operating floor are reinforced concrete. Portions of the operating floor are grating. The intake areas are protected by panel screens and stop logs. A 40 ft wide, 70 ft long and 13 ft high equipment room is located on the reinforced concrete portion of the operating slab. The room houses the circulating water pumps and electrical equipment.

ACCOUNT 26

The equipment room is masonry construction with a built-up roof on metal deck.

Makeup Water Pretreatment Building

The makeup water pretreatment building, located west of the main plant structures, is a two story steel framed structure 60 ft wide, 115 ft long and 30 ft high. The building volume is approximately 207,000 cu ft. It is supported on reinforced concrete spread footings on rock. The reinforced concrete ground floor is located six ft below grade. The intermediate floor is reinforced concrete supported on metal deck on steel framing. The roof is concrete channel plank covered with a roofing membrane. The exterior walls are insulated metal siding and the interior walls are concrete block.

The building houses the sand filters, carbon filters, chemical feeds, sludge dewatering equipment and all other equipment and accessories required for a complete water pretreatment system.

The building has a heating and ventilation system which consists of four 25,000 cfm roof ventilators for cooling and four electric unit heaters for heating.

ACCOUNT 262 Mechanical Equipment

Circulating Water Pumps

There are four 25 percent capacity circulating water pumps, of the mixed flow vertical type. Each pump is designed for a flow rate of 111,000 gpm with a total dynamic head of 105 ft. Circulating water pump motors are

ACCOUNT 26

3,000 hp each, operating at a synchronous speed of 400 rpm. The pumps are located within a pump house well where the water flows from the individual cooling tower basins by gravity. The pumps discharge the water to the main condensers, where heat is absorbed. The water is then returned to the distribution system of the towers. Water flow from each individual cooling tower is controlled simply by an overflow from the tower basin.

Cooling Towers

There are two main mechanical draft wet cooling towers, each sized for one half of the requirements. Each tower is designed to cool 230,000 gpm of water from 118 F to 92 F when operating at a wet bulb temperature of 74 F. Each tower employs a reinforced concrete-filled structure combined with components for water distribution, fill splash service, support system, drift eliminators, louvers and fan deck. The fan deck provides a stable base for the 13 fan cylinders and mechanical equipment. Each fan is 33 ft in diameter and operates in an 18 ft high, glass reinforced polyester, velocity recovery fan stack. The hot water distribution system includes a circular flume distribution basin and metering orifice which uniformly distributes the hot water over the fill. The distribution basin is divided into thirds by means of concrete dividers. This design allows one third of the tower to be removed from service with the full flow distributed over the remainder of the tower.

Main Cooling Tower Make-up and Blowdown Systems

Two 100 percent mixed flow vertical type pumps are provided for the makeup system. Each pump is rated at 13,000 gpm developing a total dynamic head

ACCOUNT 26

of 35 ft and is driven by a 150 hp motor. The pumps are located at the intake structure adjacent to the river. Two six ft wide by 31 ft high traveling screens are provided, each suitable for 50 percent of the flow requirements with an approach velocity of 1/2 ft per second. Serving the traveling screens are two 100 percent capacity screen wash pumps with a flow rate of 110 gpm and a total dynamic head of 100 ft to wash the screens when they require cleaning. Two screen speeds are provided, a high and low speed, for removal of materials. Vertical trash racks with automatic rake are provided ahead of the traveling screens to remove debris.

Makeup Water Pretreatment Plant

The source of makeup water is from the North River. The purpose of this system is to precondition the raw river water which is used principally as makeup to the circulating water system. However, a small portion of the clarified water is used as makeup to the demineralizer.

The primary objective is to remove debris and suspended solids characteristically present in river water. The amount of solids and debris contained in the raw influent is subject to wide fluctuations due to seasonal changes and natural river environment.

Initially, the influent water is clarified within a rectangular vessel. Various chemicals are used to achieve optimum settling and removal of solid particulates. The clarified effluent is then used directly as makeup to the circulating water system.

ACCOUNT 26

Chlorination at approximately 8,000 lb a day is included in the clarification step to oxidize naturally occurring organic matter. Chlorination is also applied directly to the recirculating cooling water on an intermittent basis to minimize biological fouling within the condenser and throughout the piping system. Sulfuric acid is also used for pH control to minimize formation of scale on the heat exchanger surfaces.

Accordingly, any serious operation and/or maintenance problems resulting from plugging, clogging, or development of bacteriological growths throughout the plant piping and cooling systems are practically eliminated. The water used as makeup to the demineralizer is first filtered and dechlorinated. In addition, the clarified water is used for the initial filling of the fire protection system and for general use throughout the power plant.

2.4 CONSTRUCTION SUPPORT ACTIVITIES

The description associated with accounts 91 through 93 addresses the construction support activities. This portion of the cost estimate (Volume 1, Section 3) is called the "indirect cost".

ACCOUNT 91 CONSTRUCTION SERVICES

The services, functions, expenses, taxes and other indirect costs are contained in the listed code of accounts.

ACCOUNT 911 Temporary Construction Facilities

The costs for temporary construction and facilities are costs of all temporary structures, janitorial services and maintenance of temporary facilities, guards and security, roads, parking lots, laydown areas, and temporary electrical and piping, temporary heat, air, steam and water systems, general cleanup, etc.

ACCOUNT 912 Construction Tools and Equipment

The costs for construction tools and equipment are the cost of rental and/or purchase of construction equipment, small tools, consumables (fuel and lubricants) and maintenance of construction equipment.

ACCOUNT 913 Payroll Insurance and Taxes

These include insurance and taxes related to craft labor such as Social Security taxes and state unemployment taxes at 9.3 percent of the cost of total craft labor. Workmen's Compensation Insurance and Public Liability and Property Damage Insurance are included at 4.9 percent of the cost of total craft labor.

ACCOUNT 91-92

ACCOUNT 914 Permits Insurance and Local Taxes

This account includes builders all-risk insurance, local fees and permits, state and local taxes and liability insurance.

Builders all-risk insurance is an allowance based upon in-house experience for the cost of their item during the project construction phase.

ACCOUNT 92 HOME OFFICE ENGINEERING AND SERVICES

ACCOUNT 921 Home Office Services

These services are associated with home office engineering and design, procurement and expediting activities, estimating and cost control, engineering planning and scheduling, home office reproduction services as well as expenses associated with performance of the above functions (i.e., telephone, postage, computer use, travel, etc.). These costs include salaries of personnel, direct payroll-related costs (DPC), overhead loading, expenses and fee for these services consistent with contractual terms.

ACCOUNT 922 Home Office Quality Assurance

This includes the services of home office quality assurance engineers and staff personnel engaged in work on the project. Services include reviews, audits, and vendor surveillance as required for design and construction of the facility. Costs included are salaries, DPC, overhead loading and expenses (i.e., travel) of these individuals. Manhours required for these services and their costs are based upon UE&C experience in this area.

ACCOUNT 92-93

ACCOUNT 923 Home Office - Construction Management

These services include those of the construction manager and his assistants. Services of construction planning and scheduling, construction methods, labor relations, safety and security personnel are utilized as required. Costs include salaries, DPC, overhead loading, and expenses.

ACCOUNT 93 FIELD OFFICE ENGINEERING AND SERVICE

ACCOUNT 931 Field Office Expenses

These expenses include costs associated with purchase and/or rental of furniture and equipment (including reproduction), communication charges, postage, stationery, other office supplies, first aid and medical expenses.

ACCOUNT 932 Field Job Supervision

This management function includes the resident construction superintendent and his assistants, craft labor supervisors, field accounting, payroll and administrative personnel, field construction schedulers, field purchasing personnel, warehousemen, survey parties, stenographers and clerical personnel. Costs include salaries, DPC, overhead loading, relocation costs of key personnel, and fee. The estimates assume that size of supervisory forces is a function of total direct employed craft labor. The supervision requirement was calculated to be the number of manhours equal to about 10 percent of 85 percent of total craft labor.

ACCOUNT 933 Field - Quality Assurance

These services include those of personnel located at the job site engaged in inspection, required documentation of equipment and inspection of construction activities. Costs included are salaries, DPC, and overhead loading.

ACCOUNT 93

ACCOUNT 934 Test and Startup Engineering

These services are associated with preparation of startup and plant operation manuals and test procedures, direction and supervision of all testing of equipment and systems as the plant nears completion and direction of startup of the facility. Costs include salaries, DPC, overhead loading, and miscellaneous related expenses. Costs of any craft labor required for startup and testing activities are included in the appropriate Direct Cost line items.

Indirect accounts 913, 921, 922, 923, 932, 933 and 934 are included under factory costs in the cost estimate to differentiate them from site related craft labor and material costs.

SECTION 3
DETAILED COST ESTIMATE

SECTION 3

DETAILED COST ESTIMATE

3.1 INTRODUCTION

This section contains the details of the total base construction cost estimate for the high sulfur coal (HSC) plant described in Section 2. The criteria and plant description used to govern the development of the cost estimate are specified in Sections 1 and 2. The cost estimate reflects the reference plant design at the "Middletown" hypothetical site described in Section 6 entitled, "Site Description".

The total base construction cost for the 1232 MWe HSC is \$465,498,393 or \$378/kW based on July 1, 1976 prices.

The detailed cost estimate presented in this section is summarized at the two and three digit level of accounting detail in Tables 1-1 and 1-2 respectively. The cost estimate presented here is a total base construction cost that does not include contingency, interest during construction or escalation.

The total base construction cost is organized in accordance with the expanded AEC Code of Accounts (USAEC Report NUS-531). Therefore, it corresponds in structure to the Plant Description (Section 2) and the equipment list (Section 5). This is done for the reader's convenience in relating the material presented in the different sections of the report.

The total base construction cost consists of "direct" and "indirect" costs. The "direct cost" (Accounts 20 through 26) encompasses the cost of the power plant structures and systems. The "indirect cost" (Accounts 91 through 93) consists of the costs of the construction support activities.

A breakdown of the steam generation (boiler) equipment scope is shown in account number 220A, and a lump sum cost is shown in account 220A.1. The installation costs for the steam generator boiler equipment are distributed throughout the three digit level Accounts.

It should be noted that certain factory and site material quantities in the cost estimate are listed in two successive accounts rather than in one account. This situation occurs because the computer program is designed to handle material quantities that exceed six digits in this manner.

3.2 COST ESTIMATE EXCLUSIONS

The list of items excluded from the cost estimate is shown in Table 3-1. Generally, these items are sensitive to the particular policies and preferences of the individual utility and to the specific plant and site being considered.

A list of abbreviations is provided in Table 3-2 entitled, "Glossary of Significant Abbreviations".

TABLE 3-1

1232 MWe HSC COST ESTIMATE EXCLUSIONS

1. Main Transformer, Switchyard and Transmission Facility Costs
2. Owner's Costs, Including Consultants, Site Selection, etc.
3. Waste Disposal Costs
4. Fees and Permits - Federal, State, Local
5. State and Local Taxes
6. Spare Parts
7. Interest During Construction
8. Initial Coal Supply
9. Escalation
10. Contingency

TABLE 3-2
GLOSSARY OF SIGNIFICANT ABBREVIATIONS

AC	Acre	Hg	Mercury
A/C	Air Conditioning	HI	High
a-c	Alternating Current	HOP	Hopper
AUX	Auxiliary	HP	High Pressure
		HP	Horse Power
BD	Board	HSC	High Sulfur Coal
BFP	Boiler Feed Pump	HVAC	Heating Ventilation and
Btu	British Thermal Unit		Air Conditioning
BU	Built Up	HW	Hot Water
		HX	Heat Exchanger
CI	Cast Iron	Hz	Hertz
CLG	Cooling		
CLNG	Cleaning	IC	Instrument Control
CPMNT	Component	I&C	Instrumentation & Control
CS	Carbon Steel	IN	Inches
CU	Copper	INJ	Injection
CY	Cubic Yards	INS	Insurance
		INSUL	Insulation
d-c	Direct Current		
DETER	Detergent	Kg	Kilo Gram
DISPL	Displacement	kV	Kilo Volt
DV	Division	kW	Kilo Watt
DRNS	Drains		
		LB	Pounds
EA	Each	LD	Load
EL	Elevation	LF	Linear Feet
EMG	Emergency	LO	Low
EQ	Equipment	LP	Low Pressure
E/P	Electro-Pneumatic	LSB	Last Stage Blades
EPA	Environ. Protection Agency	LS/LT	Lump Sum/Lot
EVAC	Evacuating		
EVAP	Evaporative	MCC	Master Control Center
EXH	Exhaust	MCR	Main Control Room
		MCR	Maximum Continuous Rating
FDTN	Foundation	ME	Mechanical Equipment
FGD	Flue Gas Desulfurization	MER	Mechanical Equipment Room
FL	Fuel	MISC	Miscellaneous
FT	Feet	MN	Main
FWH	Feed Water Heater	MON	Monitor
FX	Fixtures	MTR	Motor
		MU	Makeup
GALV	Galvanized	MWe	Megawatt Electric
GEN	Generator	MWt	Megawatt Thermal
gph	Gallons Per Hour		
gpm	Gallons Per Minute	OA	Outside Air
GR	Gear	OP	Operating
GSKT	Gasket		
GSU	Generator Step Up		

TABLE 3-2 (Continued)

PCT	Percent	TB	Turbine Building
P&M	Pump and Motor	T/C	Thermocouple
PMP	Pump	T-G	Turbine-Generator
POS	Positive	TK	Tank
P	Pounds per Square Inch Absolute	TPH	Tons Per Hour
Psig	Pounds per Square Inch Gravity	TN	Tons
PURIF	Purification	UAT	Unit Auxiliary Transformers
PVC	Poly Vinyl Chloride	VAC	Vacuum
QA	Quality Assurance	V	Volt
QA/QC	Quality Assurance/Quality Control	VWO	Valves Wide Open
RC	Recycle	WST	Waste
RECIRC	Recirculation	WTR	Water
REGEN	Regenerating	XCHGR	Exchanger
RES	Restraint	XFER	Transfer
RM	Room	XFMR	Transformer
rpm	Revolutions Per Minute	XPORT	Transport
SCFM	Standard Cubic Feet Per Minute		
SEQ	Sequence		
SF	Square Feet		
SS	Stainless Steel		
STA	Storage		
STL	Steel		
SYS	System(s)		
SW	Switch		

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ACCT. NO.	ACCOUNT DESCRIPTION	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	COSTS
-----------	---------------------	----------	-------	----------	-----------	------------	---------------	-------

2 . TOTAL DIRECT COSTS

20. LAND AND LAND RIGHTS 500 AC 2,000,000

21 . STRUCTURES + IMPROVEMENTS

211. YARDWORK

211.11 GENERAL CUT + FILL

211.111 CUT + FILL BEYOND OPEN C

211.112 CLEARING + GREETING

211-214 LANDSCAPING

211.11 GENERAL CUT +

211.12 ROADS, WALKS+PARKING ARE

211.121 SUBGRADE PREPARATION

211.1222 PARKING AREAS - ASPHALT

211.1223 - CURES - CONCRETE

211.122 ON-SITE RCADS

211.123 WALKS - CONCRETE

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	*****	TOTAL COSTS			
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	*****
211.14	FENCING + GATES							*****
211.141	PERMANENT FENCE			17000 LF	5100 MH	47,532	110,500	
211.142	GATE HOUSE			1 LS	2800 MH	34,226	12,000	
211.14	FENCING + GATES				7900 MH	81,753	122,500	204,258
211.15	SANITARY SEWER FACILITY							*****
211.151	SEWAGE TREATMENT FACILITY	1 LT	115,500	1 LT	1541 MH	19,935	1,994	
211.152	SANITARY PIPING							*****
211.1521	2 IN + SMALLER							
211.1522	2.5 IN + LARGER							*****
211.15221	CI BELL + SPIGOT/ANS			5000 LF	2352 MH	30,139	30,000	
211.1522	2.5 IN + LARGER				2352 MH	30,139	30,000	60,139
211.152	SANITARY PIPING				2352 MH	30,139	30,000	60,139
211.153	OIL SEPERATORS							*****
211.15	SANITARY SEWER FACILITY		115,500		3893 MH	50,074	31,994	197,568
211.16	YARD DRAINAGE STORM SEWERS							*****
211.161	DRAINS			78 EA	7800 MH	99,965	78,000	
211.162	PIPING							*****
211.1621	2 IN + SMALLER							
211.16	2.5 IN + LARGER							*****

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY QUANTITY	FACTORY COSTS	SITE QUANTITY	SITE LABOR HRS	SITE LABOR COST	SITE MATERIAL COST	TOTAL COSTS
211.16221	GALVANIZED/NNS							
211.1622	2.5 IN + LARGER							
211.162	PIPING							
211.16	YARD DRAINAGE STORM SEWERS			7800 MH		99,965	78,000	177,965
211.17	ROADWAY + YARD LIGHTING			75 FX	11250 MH	138,323	112,500	
211.19	SETTLING BASINS							
211.191	EARTH EXCAVATION							
211.192	ROCK EXCAVATION							
211.193	BACKFILL							
211.194	PUMPING							
211.195	FORMWORK							
211.196	REINFORCING STEEL							
211.197	CONCRETE							
211.198	SHEET PILING							
211.199	RIP-RAP(12 IN. THICK)							
211.19	SETTLING BASINS							
211.1	GENERAL YARDWORK	115,500		72824 MH		802,087	1,219,444	2,137,031
211.4	RAILROADS							
211.41	CUT + FILL			33000 CY	1320 MH	15,431	19,800	
211.42	GRADING			72200 SY	722 MH	8,373	18,050	
211.43	TRACK(BALLAST,TIES,RAIL)			50000 LF	125000 MH	1,232,150	1,300,000	

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	TOTAL COSTS
		QUANTITY COSTS	QUANTITY LABOR HRS LABOR COST MATERIAL COST	
211.45	SWITCHES + BUMPERS			
211.451	TURNDOUTS (NO. 8)	11 EA	2200 MH 21,686	33,000
211.452	BUMPERS	2 EA	100 MH 936	2,000
211.45	SWITCHES + BUMPERS		2300 MH 22,672	35,000
211.46	RIP RAP (24 IN. THICK)			
211.4	RAILROADS		129342 MH 1,278,626	1,372,850
211.7	STRUCTURE ASSOCIATED YDWK.			
211.71	CUT + FILL			
211.711	OPEN CUT			
211.7111	DEWATERING	1 LT	1100 MH 10,252	2,500
211.7112	EARTH EXCAVATION	36500 CY	3651 MH 42,679	36,500
211.7113	ROCK EXCAVATION	1000 CY	800 MH 8,568	4,000
211.711	OPEN CUT		5551 MH 61,499	43,000
211.712	FILL + BKFILL (PLACE/COMP)			
211.7122	EARTH FILL	18250 CY	5475 MH 54,488	18,250
211.7123	SAND FILL	9125 CY	9125 MH 90,812	54,750
211.7124	CONCRETE FILL			
211.712	FILL + BKFILL (PLACE/COMP)		14600 MH 145,300	73,000
211.71	CUT + FILL		20151 MH 206,799	116,000
211.7	STRUCTURE ASSOCIATED YDWK.		20151 MH 206,799	116,000
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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
211.	YARDWORK	115,500		222317 MH	2,287,512	2,708,294	5,111,306

212. STEAM GENERATOR BUILDING

212.1 BUILDING STRUCTURE

212.11 EXCAVATION WORK

212.111 EARTH EXCAVATION

212.112 ROCK EXCAVATION

212.113 CONCRETE FILL

212.114 FILL + BACKFILL

212.115 Dewatering

212.11 EXCAVATION WORK

212.13 SUBSTRUCTURE CONCRETE

212.131 FORMWORK	70000 SF	28000 MH	309,188	70,000
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212.132 REINFORCING STEEL	600 TN	15000 MH	193,700	225,000
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212.133 CONCRETE	13200 CY	9900 MH	101,099	422,400
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212.134 EMBEDDED STEEL	60 TN	7500 MH	90,201	84,000
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212.135 FLOOR FINISH	60000 SF	600 MH	6,127	600
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212.139 WELDED WIRE FABRIC	60000 SF	1200 MH	15,496	7,200
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212.13 SUBSTRUCTURE CONCRETE

62200 MH	715,811	809,200	1,525,011
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212.14 SUPERSTRUCTURE

212.141 CONCRETE WORK

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
212.1411	FORMWORK	60000	SF	3600	MH	39,753	54,000
212.1412	REINFORCING STEEL	240	TN	8400	MH	108,472	90,000
212.1413	CONCRETE	2300	CY	4025	MH	41,104	73,600
212.1415	FLOOR FINISH	60000	SF	600	MH	6,127	600
212.1418	CONSTRUCTION JOINTS						
212.141	CONCRETE WORK			10625	MH	195,456	218,200
212.142	STRUCTURAL + MISC. STEEL						413,656
212.1421	STRUCTURAL STEEL	16300	TN	244500	MH	3,182,803	11,817,500
212.1422	MISC. FRAMES, ETC.	325	TN	16250	MH	211,536	357,500
212.1423	FLOOR GRATING(GALVANIZED)	100000	SF	17000	MH	221,299	300,000
212.1424	STAIR TREADS	1100	EA	880	MH	11,454	38,500
212.1425	HANDRAIL	6400	LF	3840	MH	49,987	64,000
212.142	STRUCTURAL + MISC. STEEL			282470	MH	3,677,079	12,577,500
212.143	EXTERIOR WALLS						16,254,579
212.1432	MASONRY WALLS						
212.1433	METAL INSULATED SIDING	217000	SF	43400	MH	564,964	868,000
212.143	EXTERIOR WALLS			43400	MH	564,964	868,000
212.144	ROOFING + FLASHING						1,432,964
212.1441	METAL ROOF DECK	60000	SF	3600	MH	46,863	60,000
212.1443	CONCRETE FILL	750	CY	1500	MH	15,318	24,000
212.14	WELDED WIRE FABRIC	60000	SF	1200	MH	15,496	7,200
212.14	B.U. ROOFING, NO INSULATIN	60000	SF	3000	MH	40,440	60,000

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
212.144	ROOFING + FLASHING			9300 MH	118,117	151,200	269,317
212.146	INTERIOR WALLS + PARTITION						
212.1462	MASONRY WALLS	13500 SF		3375 MH	38,509	37,800	
212.1463	METAL PARTITIONS	20000 SF		1200 MH	13,920	30,000	
212.146	INTERIOR WALLS + PARTITION			4575 MH	52,429	67,800	120,229
212.147	DOORS + WINDOWS						
212.1471	ROLLING STEEL DOORS	800 SF		400 MH	5,207	11,200	
212.1472	PERSONNEL DOORS	400 SF		280 MH	3,243	4,800	
212.1473	SASH + GLAZING	1200 SF		480 MH	5,563	14,400	
212.147	DOORS + WINDOWS			1160 MH	14,023	30,400	44,423
212.148	SPECIAL FINISHES						
212.1481	VINYL TILE FLOORS	200 SF		16 MH	186	300	
212.1482	COMPUTER FLOORS(RAISED)						
212.1483	CERAMIC TILE FLOOR + WALLS						
212.1484	ACOUSTICAL CEILING	200 SF		20 MH	232	100	
212.148	SPECIAL FINISHES			36 MH	418	400	818
212.149	PAINTING						
212.1492	STEELWORK	16300 TN		81500 MH	779,955	97,800	
212.1493	HANDRAILS	6400 LF		128 MH	1,225	640	
212.1494	DOORS + WALLS	27000 SF		540 MH	5,168	2,700	
212.149	PAINTING			82168 MH	786,348	101,140	887,488

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
212.14	SUPERSTRUCTURE			439734 MH	5,408,834	14,014,640	19,423,474
212.1	BUILDING STRUCTURE			501934 MH	6,124,645	14,823,840	20,948,485
212.2	BUILDING SERVICES						
212.21	PLUMBING + DRAINS						
212.211	ROOF DRAINS + PIPING	30 EA	30,000	1 LT	3300 MH	42,770	4,277
212.2111	DRAINS						
212.2115	PIPING						
212.211	ROOF DRAINS + PIPING		30,000		3300 MH	42,770	4,277
212.212	FLOOR DRAINS + PIPING	50 EA	50,000	1 LT	5500 MH	71,232	7,128
212.2121	DRAINS						
212.2125	PIPING						
212.212	FLOOR DRAINS + PIPING		50,000		5500 MH	71,262	7,128
212.213	OIL SEPERATOR	1 EA	1,700	1 LT	100 MH	1,296	130
212.21	PLUMBING + DRAINS		81,700		8900 MH	115,343	11,535
212.22	HEATING, VENT + AIR COND	1 LT	367,907	1 LT	20559 MH	265,971	39,896
212.221	BOILER ROOM						
212.2211	ROTATING MACHINERY						
212.22	BOILER RM ROOF VENT+MOTOR						

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ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
*****	*****	*****	*****	*****	*****	*****	*****	*****

212.221111 BOILER RM ROOF VENTILATOR

212.221112 BOILER RM ROOF VENT MOTOR

212.22111 BOILER RM ROOF VENT+MOTOR

212.2211 ROTATING MACHINERY

212.2212 HEAT TRANSFER EQUIPMENT

212.22121 BOILER ROOM UNIT HEATERS

212.2212 HEAT TRANSFER EQUIPMENT

212.2214 PURIFICATION + FILT EQUIP

212.22141 BOILER RM VAC CLEAN SYS+MT

212.221411 BOILER RM VAC CLEAN SYS EQ

212.221412 BOILER RM VAC CL SYS MOTOR

212.22141 BOILER RM VAC CLEAN /SYS+MT

212.22142 BUNKER VENTILATION

212.221421 CYCLONE DUST COLLECTOR

212.22142 BUNKER VENTILATION

212.2214 PURIFICATION + FILT EQUIP

212.2215 EXHAUST DUCTWORK-BUNKER

212.2216 VALVES + DAMPERS

212.22169 SPECIAL VALVES + DAMPERS

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****

212.221691 BOILER ROOM WALL LOUVERS

212.22169 SPECIAL VALVES + DAMPERS

212.2216 VALVES + DAMPERS

212.221 BOILER ROOM

212.222 LUBE OIL DRUM STORAGE

212.2221 ROTATING MACHINERY

212.22211 LUBE OIL DM ST EXHST FN+MT

212.222111 LUBE OIL DM ST EXHAUST FAN

212.222112 LUBE OIL DM ST EXHST MOTOR

212.22211 LUBE OIL DM ST EXHST FN+MT

212.2221 ROTATING MACHINERY

212.2222 HEAT TRANSFER EQUIPMENT

212.22221 LUBE OIL DM ST HEATER+MTR

212.222211 LUBE OIL DM ST UNIT HEATER

212.222212 LUBE OIL DM ST HEATR MOTOR

212.22221 LUBE OIL DM ST HEATER+MTR

212.2222 HEAT TRANSFER EQUIPMENT

212.22 VALVES + DAMPERS

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ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
*****	*****	*****	*****	*****	*****	*****	*****	*****

212.22269 SPECIAL VALVES + DAMPERS

212.222691 LUBE OIL DM ST WALL LOUVER

212.22269 SPECIAL VALVES + DAMPERS

212.2226 VALVES + DAMPERS

212.222 LUBE OIL DRUM STORAGE

212.223 ELEVATOR MACHINE ROOM

212.2232 HEAT TRANSFER EQUIPMENT

212.22321 ELEV MACH RM BASEBOARD HTR.

212.2232 HEAT TRANSFER EQUIPMENT

212.2235 VALVES + DAMPERS

212.22369 SPECIAL VALVES + DAMPERS

212.223691 ELEV MACH RM WALL LOUVERS

212.22369 SPECIAL VALVES + DAMPERS

212.2236 VALVES + DAMPERS

212.2239 FOUNDATIONS/SKIDS

212.22391 ELEV MACH RM AIR UNIT+MTR

212.223911 ELEV MACH RM AIR UNIT

212.223912 ELEV MACH RM AIR UNT MOTOR

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ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
*****	*****	*****	*****	*****	*****	*****	*****	*****

212.22391 ELEV MACH RM AIR UNIT+MTR

212.2239 FOUNDATIONS/SKIDS

212.223 ELEVATOR MACHINE ROOM

212.224 AUXILIARY BOILER ROOM

212.2241 ROTATING MACHINERY

212.22411 AUX BOILER RM EXHST FN+MTR

212.224111 AUX BOILER RM EXHAUST FAN

212.224112 AUX BOILER RM EXHST MOTOR

212.22411 AUX BOILER RM EXHST FN+MTR

212.2241 ROTATING MACHINERY

212.2242 HEAT TRANSFER EQUIPMENT

212.22421 AUX BOILER RM HEATER+MOTOR

212.224211 AUX BOILER RM UNIT HEATERS

212.224212 AUX BOILER RM HEATER MOTOR

212.22421 AUX BOILER RM HEATER+MOTOR

212.2242 HEAT TRANSFER EQUIPMENT

212.2246 VALVES + DAMPERS

212.22 SPECIAL VALVES + DAMPERS

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ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
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212.224691 AUX BOILER RM WALL LOUVER

212.22469 SPECIAL VALVES + DAMPERS

212.2246 VALVES + DAMPERS

212.224 AUXILIARY BOILER ROOM

212.225 MACHINE SHOP

212.2251 ROTATING MACHINERY

212.22511 MACHINE SHOP EXHST FAN+MTR

212.225111 MACHINE SHOP EXHAUST FAN

212.225112 MACHINE SHOP EXHAUST MOTOR

212.22511 MACHINE SHOP EXHST FAN+MTR

212.2251 ROTATING MACHINERY

212.2252 HEAT TRANSFER EQUIPMENT

212.22521 MACH SHOP UNIT HEATERS+MTR

212.225211 MACHINE SHOP UNIT HEATERS

212.225212 MACH SHOP UNIT HEATER MTR

212.22521 MACH SHOP UNIT HEATERS+MTR

212.2252 HEAT TRANSFER EQUIPMENT

212.2256 VALVES + DAMPERS

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	*****	SITE *****	*****	TOTAL
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST MATERIAL COST

212.22569 SPECIAL VALVES + DAMPERS

212.225691 MACHINE SHOP WALL LOUVERS

212.22569 SPECIAL VALVES + DAMPERS

212.2256 VALVES + DAMPERS

212.225 MACHINE SHOP

212.226 AIR COMPRESSOR ROOM

212.2261 ROTATING MACHINERY

212.22611 AIR COMP RA EXHST FAN+MTR

212.226111 AIR COMP RM EXHAUST FAN

212.226112 AIR COMP RM EXHAUST MOTOR

212.22611 AIR COMP RM EXHST FAN+MTR

212.2261 ROTATING MACHINERY

212.2262 HEAT TRANSFER EQUIPMENT

212.22621 AIR COMP RM UNIT HEATR+MTR

212.226211 AIR COMP RM UNIT HEATERS

212.226212 AIR COMP RM UNIT HEATR MTR

212.22621 AIR COMP RM UNIT HEATR+MTR

212.2262 HEAT TRANSFER EQUIPMENT

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	

212.2266 VALVES + DAMPERS

212.22669 SPECIAL VALVES + DAMPERS

212.226691 AIR COMP RM WALL LOUVERS

212.22669 SPECIAL VALVES + DAMPERS

212.2266 VALVES + DAMPERS

212.226 AIR COMPRESSOR ROOM

212.227 COAL TRIPPER GALLERY

212.2271 ROTATING MACHINERY

212.22711 COAL TRIP GAL ROOF VENT+MT

212.227111 COAL TRIP GAL ROOF VENT

212.227112 COAL TRIP GAL ROOF VENT MT

212.22711 COAL TRIP GAL ROOF VENT+MT

212.2271 ROTATING MACHINERY

212.227 COAL TRIPPER GALLERY

212.228	INSTRUMENTATION + CONTROL	1 LT	2,000	1 LT	30 MH	368	18	
212.22	HEATING, VENT + AIR COND		369,907		20589 MH	266,339	39,914	676,160
212.24	LIGHTING + SERVICE POWER			62000 SF	18600 MH	228,695	111,600	
212.25	ELEVATOR							

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY	*****	SITE	*****	TOTAL	COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST
212.251	ELEVATOR EQUIPMENT	1 EA	70,000	1 LT	2500 MH	32,343	3,234
	212.25 ELEVATOR		70,000		2500 MH	32,343	3,234
212.26	FIRE PROTECTION SYSTEM						
212.261	ROTATING MACHINERY						
212.2611	FIRE PROTECTION PUMP+MOTOR	2 EA	8,000	1 LT	241 MH	3,135	319
212.26111	FIRE PROTECTION PUMP						
212.26112	FIRE PROTECTION PUMP MOTOR						
212.2611	FIRE PROTECTION PUMP+MOTOR		8,000		241 MH	3,135	319
212.261	ROTATING MACHINERY		8,000		241 MH	3,135	319
212.262	HOSE + SPRAY EQUIPMENT						
212.2621	HOSE REELS						
212.2622	SPRAY HEADS						
212.262	HOSE + SPRAY EQUIPMENT						
212.265	PIPING						
212.2652	2.5 IN + LARGER						
212.26521	CS/NNS						
212.2652	2.5 IN + LARGER						
212.265	PIPING						
212.26	FIRE PROTECTION SYSTEM		8,000		241 MH	3,135	319

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	*****	***** SITE *****	TOTAL COSTS		
		QUANTITY	COSTS	QUANTITY		LABOR HRS	LABOR COST
212.2	BUILDING SERVICES	529,607		50830 MH	645,910	166,602	1,342,119
212.	STEAM GENERATOR BUILDING	529,607		552764 MH	6,770,555	14,990,442	22,290,604
213.	TURBINE,HEATER,CONTROL BLD						
213.1	BUILDING STRUCTURE						
213.11	EXCAVATION WORK						
213.111	EARTH EXCAVATION						
213.112	ROCK EXCAVATION						
213.113	CONCRETE FILL						
213.114	FILL + BACKFILL						
213.115	DEWATERING						
213.11	EXCAVATION WORK						
213.13	SUBSTRUCTURE CONCRETE						
213.131	FORMWORK		50000 SF	20000 MH	220,848	50,000	
213.132	REINFORCING STEEL		560 TN	14000 MH	180,787	210,000	
213.133	CONCRETE		12400 CY	9300 MH	94,972	396,800	
213.134	EMBEDDED STEEL		45 TN	5626 MH	67,663	63,000	
213.135	FLOOR FINISH		56000 SF	560 MH	5,718	560	
213.136	WATERPROOFING						
213.137	CONSTRUCTION JOINTS						
213.138	RUBBING CONCRETE SURFACE						
213.139	WIRE FABRIC		56000 SF	1120 MH	14,464	6,720	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY QUANTITY	COSTS	SITE QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
213.13	SUBSTRUCTURE CONCRETE			50606 MH	584,452	727,080	1,311,532	
213.14	SUPERSTRUCTURE							
213.141	CONCRETE WORK							
213.1411	FORMWORK							
213.14111	FORMWORK - WOOD							
213.14112	FORMWORK - METAL	100000 SF		6000 MH	66,254	90,000		
213.1411	FORMWORK			6000 MH	66,254	90,000	156,254	
213.1412	REINFORCING STEEL	400 TN		14000 MH	180,787	150,000		
213.1413	CONCRETE	3800 CY		6651 MH	67,920	121,600		
213.1414	EMBEDDED STEEL							
213.1415	FLOOR FINISH	100000 SF		1000 MH	10,212	1,000		
213.1416	WATERPROOFING							
213.1417	RUBBING CONCRETE SURFACES							
213.1418	CONSTRUCTION JOINTS							
213.141	CONCRETE WORK			27651 MH	325,173	362,600	687,773	
213.142	STRUCTURAL + MISC STEEL							
213.1421	STRUCTURAL STEEL	4800 TN		72000 MH	937,267	3,480,000		
213.1422	FLOOR + PLATFORM SUPPORTS							
213.1423	MISC FRAMES, ETC	100 TN		5000 MH	65,083	110,000		
213.1424	CHECKERED PLATE							
213.14	FLOOR GRATING(GALV)	10000 SF		1700 MH	22,130	30,000		

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
213.1426	STAIR TREADS			700 EA	560 MH	7,290	24,500
213.1427	HANDRAIL			4000 LF	2400 MH	31,242	40,000
	213.142 STRUCTURAL + MISC STEEL				81660 MH	1,063,017	3,684,500
							4,747,517
213.143	EXTERIOR WALLS						
213.1431	CONCRETE WALLS						
213.1432	MASONRY WALLS			45000 SF	11250 MH	128,363	126,000
213.1433	METAL INSULATED SIDING			41500 SF	8300 MH	108,046	166,000
	213.143 EXTERIOR WALLS				19550 MH	236,409	292,000
							528,409
213.144	ROOF DECK						
213.1441	METAL ROOF DECK			10000 SF	600 MH	7,311	10,000
213.1442	CONCRETE PLANK			60000 SF	4600 MH	62,485	78,000
213.1443	CONCRETE FILL			120 CY	240 MH	2,451	3,840
213.1444	REINFORCING STEEL			2 TN	71 MH	917	750
	213.144 ROOF DECK				5711 MH	73,664	92,590
							166,254
213.145	ROOFING + FLASHING						
213.1451	S.U. ROOF INSULATION+FLASH			60000 SF	4200 MH	56,616	75,000
213.1452	ELASTOMERIC ROOFING						
	213.145 ROOFING + FLASHING				4200 MH	56,616	75,000
							131,616
213.146	INTERIOR WALLS+PARTITIONS						
213.1461	MASONRY WALLS			23000 SF	5750 MH	65,608	64,400
213.1462	CONCRETE BLOCK WALLS						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
213.1463	METAL PARTITIONS			4750 SF	285 MH	3,306	7,125
	213.146 INTERIOR WALLS+PARTITIONS				6035 MH	68,914	71,525
213.147	DOORS + WINDOWS						140,439
213.1471	ROLLING STEEL DOORS			800 SF	400 MH	5,207	11,200
213.1472	PERSONNEL DOORS			1600 SF	1120 MH	12,992	19,200
213.1473	SASH + GLAZING			1500 SF	600 MH	6,960	18,000
	213.147 DOORS + WINDOWS				2120 MH	25,159	48,400
213.148	SPECIAL FINISHES						73,559
213.1481	VINYL TILE FLOORS			7500 SF	600 MH	6,960	11,250
213.1484	ACOUSTICAL CEILING			7500 SF	750 MH	8,700	3,750
	213.148 SPECIAL FINISHES				1350 MH	15,660	15,000
213.149	PAINTING						30,660
213.1491	CONCRETE						
213.1492	STEELWORK			4900 TN	24500 MH	234,465	29,400
213.1493	DOORS + WALLS			135000 SF	2700 MH	25,839	13,500
213.1494	HANDRAIL			4000 LF	80 MH	766	400
	213.149 PAINTING				27280 MH	261,070	43,300
213.14	SUPERSTRUCTURE				175557 MH	2,125,682	4,684,915
213.1	BUILDING STRUCTURE				226163 MH	2,710,134	5,411,995
213.2	BUILDING SERVICES						8,122,129

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	TOTAL	
		QUANTITY	COSTS	QUANTITY	LABOR HRS LABOR COST MATERIAL COST
213.21	PLUMBING + DRAINS				
213.211	ROOF DRAINS + PIPING	22 EA	22,000	1 LT	2421 MH 31,373 3,137
213.2111	DRAINS				
213.2115	PIPING				
213.21151	2 IN + SMALLER				
213.21152	2.5 IN + LARGER				
213.211521	GALV STEEL/NNS				
213.211522	2.5 IN + LARGER				
213.2115	PIPING				
213.211	ROOF DRAINS + PIPING		22,000		2421 MH 31,373 3,137 56,510
213.212	FLOOR DRAINS + PIPING	50 EA	50,000	1 LT	5500 MH 71,282 7,128
213.2121	DRAINS				
213.2125	PIPING				
213.21251	2 IN + SMALLER				
213.21252	2.5 IN + LARGER				
213.212521	CI/NNS				
213.212522	CS/NNS				
213.212523	PVC/NNS				
213.212524	2.5 IN + LARGER				

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	*****	***** SITE *****	*****	TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST MATERIAL COST
*****	*****	*****	*****	*****	*****	*****

213.2125 PIPING

213.212	FLOOR DRAINS + PIPING	50,000		5500 MH	71,282	7,128	128,410
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213.213 PUMPS

213.2131	DRAIN PUMP + MOTOR	2 EA	3,000	1 LT	100 MH	1,322	132
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213.21311 DRAIN PUMP

213.21312 DRAIN PUMP MOTOR

213.2131	DRAIN PUMP + MOTOR		3,000		100 MH	1,322	132	4,454
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213.213	PUMPS		3,000		100 MH	1,322	132	4,454
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213.214	SAVITARY DRAINS + PIPING	1 LT	16,000	1 LT	1900 MH	24,625	2,463
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213.2141 SANITARY FIXTURES

213.2145 PIPING

213.21451 2 IN + SMALLER

213.214511 CI/NNS

213.214512 COPPER/NNS

213.21451	2 IN + SMALLER	
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213.21452 2.5 IN + LARGER

213.214521 CI/NNS

213.21452	2.5 IN + LARGER	
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213.2145 PIPING

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
213.214	SANITARY DRAINS + PIPING	16,000		1900 MH	24,625	2,463	43,088
213.21	PLUMBING + DRAINS	91,000		9921 MH	128,602	12,860	232,462
213.22	HEATING, VENT + AIR COND	1 LT	251,469	1 LT	14052 MH	181,788	27,268
213.221	GENERAL BUILDING						
213.2211	ROTATING MACHINERY						
213.22111	ROOF VENTILATOR + MOTOR						
213.221111	ROOF VENTILATOR						
213.221112	ROOF VENTILATOR MOTOR						
213.22111	ROOF VENTILATOR + MOTOR						
213.2211	ROTATING MACHINERY						
213.2212	HEAT TRANSFER EQUIPMENT						
213.22121	STEAM HEATER UNIT + MOTOR						
213.221211	STEAM UNIT HEATER						
213.221212	STEAM UNIT MOTOR						
213.22121	STEAM HEATER UNIT + MOTOR						
213.2212	HEAT TRANSFER EQUIPMENT						
213.2215	PIPING						
213.22151	2 IN + SMALLER						

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ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
*****	*****	*****	*****	*****	*****	*****	*****	*****

213.221511 CS/NNS

213.22151 2 IN + SMALLER

213.22152 2.5 IN + LARGER

213.221521 CS/NNS

213.22152 2.5 IN + LARGER

213.2215 PIPING

213.2216 VALVES + DAMPERS

213.22151 GATE

213.22162 CHECK

213.22169 SPECIAL VALVES + DAMPERS

213.221691 INTAKE LOUVERS

213.22169 SPECIAL VALVES + DAMPERS

213.2216 VALVES + DAMPERS

213.2217 PIPING - MISC ITEMS

213.22171 HANGERS + SUPPORTS

213.22172 INSULATION

213.2217 PIPING - MISC ITEMS

213.221 GENERAL BUILDING

213.22 HEATER BAY

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
*****	*****	*****	*****	*****	*****	*****	*****

213.2221 ROTATING MACHINERY

213.22211 ROOF VENTILATOR + MOTOR

213.222111 ROOF VENTILATOR

213.222112 ROOF VENTILATOR MOTOR

213.22211 ROOF VENTILATOR + MOTOR

213.2221 ROTATING MACHINERY

213.222 HEATER BAY

213.223 LUBE OIL ROOM

213.2231 ROTATING MACHINERY

213.22311 LUBE OIL RM EXHST FAN+MTR

213.223111 LUBE OIL RM EXHST FAN

213.223112 LUBE OIL RM EXHST FAN MTR

213.22311 LUBE OIL RM EXHST FAN+MTR

213.2231 ROTATING MACHINERY

213.2236 VALVES

213.22369 SPECIAL VALVES + DAMPERS

213.223691 DAMPERS

213.22369 SPECIAL VALVES + DAMPERS

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY	*****	SITE	*****	TOTAL		
*****	*****	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	COSTS
*****	*****	*****	*****	*****	*****	*****	*****	*****

213.2236 VALVES

213.223 LUBE OIL ROOM

213.225 CONTROL ROOM

213.2251 ROTATING MACHINERY

213.22511 CHILLER WATER PUMP + MOTOR

213.225111 CHILLER WATER PUMP

213.225112 CHILLER WATER PUMP MOTOR

213.22511 CHILLER WATER PUMP + MOTOR

213.22512 CONTROL RM EXHST FAN+MOTOR

213.225121 CONTROL RM EXHST FAN

213.225122 CONTROL RM EXHST FAN MOTOR

213.22512 CONTROL RM EXHST FAN+MOTOR

213.2251 ROTATING MACHINERY

213.2252 HEAT TRANSFER EQUIPMENT

213.22521 CHILLER + MOTOR

213.225211 CHILLER

213.225212 CHILLER MOTOR

213.22521 CHILLER + MOTOR

213.22 MULTIZONE AIR UNIT+MOTOR

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	*****	SITE *****	*****	TOTAL
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST MATERIAL COST
*****	*****	*****	*****	*****	*****	*****

213.225221 MULTIZONE AIR HANDLING UNT

213.225222 MULTIZONE AIR UNIT MOTOR

213.22522 MULTIZONE AIR UNIT+MOTOR

213.22523 HEATING+VENT AIR UNIT+MTR

213.225231 HEATING+VENT AIR UNIT

213.225232 HEATING+VENT AIR UNIT MTR

213.22523 HEATING+VENT AIR UNIT+MTR

213.2252 HEAT TRANSFER EQUIPMENT

213.2255 PIPING + DUCTWORK

213.22551 GENERAL DUCTWORK

213.2255 PIPING + DUCTWORK

213.225 CONTROL ROOM

213.226 WATER SAMPLING ROOM

213.2261 ROTATING MACHINERY

213.22611 WATR SAMP RM EXHST FAN+MTR

213.226111 WATER SAMP RM EXHST FAN

213.226112 WATR SAMP RM EXHST FAN MTR

213.22611 WATR SAMP RM EXHST FAN+MTR

213.2261 ROTATING MACHINERY

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ACET NO.	ACCOUNT DESCRIPTION	FACTORY	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****

213.226 WATER SAMPLING ROOM

213.227 COAL SAMPLING ROOM

213.2271 ROTATING MACHINERY

213.22711 COAL SAMP RM EXHST FAN+MTR

213.227111 COAL SAMP RM EXHST FAN

213.227112 COAL SAMP RM EXHST FAN MTR

213.22711 COAL SAMP RM EXHST FAN+MTR

213.2271 ROTATING MACHINERY

213.227 COAL SAMPLING ROOM

213.228 BATTERY ROOM

213.2281 ROTATING MACHINERY

213.22811 BATTERY ROOM EXHST FAN+MTR

213.228111 BATTERY ROOM EXHST FAN

213.228112 BATTERY ROOM EXHST FAN MTR

213.22811 BATTERY ROOM EXHST FAN+MTR

213.2281 ROTATING MACHINERY

213.228 BATTERY ROOM

213. INSTRUMENTATION + CONTROL

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
213.22	HEATING, VENT + AIR COND	251,469		14052	MH	181,788	27,268	460,525

213.23 FIRE PROTECTION SYSTEM

213.232 HOSE + SPRAY EQUIPMENT

213.2321 HOSE REELS

213.2322 SPRAY HEADS

213.232 HOSE + SPRAY EQUIPMENT

213.235 PIPING

213.2352 2.5 IN + LARGER

213.23521 CS/NNS

213.2352 2.5 IN + LARGER

213.235 PIPING

213.236 VALVES

213.2369 SPECIAL VALVES

213.23691 DELUGE VALVES

213.2369 SPECIAL VALVES

213.236 VALVES

213.23 FIRE PROTECTION SYSTEM

213.24	LIGHTING + SERVICE POWER	77250 SF	25493 MH	313,446	159,908
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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
213.2	BUILDING SERVICES	342,469		49466 MH	623,836	200,036	1,166,341
213.	TURBINE,HEATER,CONTROL BLD	342,469		275629 MH	3,333,970	5,612,031	9,288,470

2183. ADMINISTRATION+SERVICE BLD

2188.1 BUILDING STRUCTURE

2183.11 EXCAVATION WORK

2183.111 EARTH EXCAVATION

2183.112 ROCK EXCAVATION

2183.113 CONCRETE FILL

2188.114 FILL + BACKFILL

2188.115 Dewatering

2183.11 EXCAVATION WORK

2188.13 SUBSTRUCTURE CONCRETE

2188.131 FORMWORK

3870 SF 1548 MH 17,095 3,870

2188.132 REINFORCING STEEL

52 TN 1300 MH 16,787 19,500

2188.133 CONCRETE

1000 CY 751 MH 7,670 32,000

2188.134 EMBEDDED STEEL

2 TN 250 MH 3,006 2,800

2188.135 FLOOR FINISH

8500 SF 85 MH 869 85

2188.136 WATERPROOFING

2188.137 CONSTRUCTION JOINTS

2188. RUBBING CONCRETE SURFACES

2188. WELDED WIRE FABRIC

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
2135.13	SUBSTRUCTURE CONCRETE			3934 MH	45,427	58,255	103,682

218B.14 SUPERSTRUCTURE

218B.141 CONCRETE WORK

218B.1411 FORMWORK

218B.14111 FORMWORK-WOOD

218B.14112 FORMWORK-METAL

218B.1411 FORMWORK

218B.1412 REINFORCING STEEL

218B.1413 CONCRETE

218B.1414 EMBEDDED STEEL

218B.1415 FLOOR FINISH

218B.1416 WATERPROOFING

218B.1417 RUBBING CONCRETE SURFACES

218B.1418 CONSTRUCTION JOINTS

2152.141 CONCRETE WORK

218B.142 STRUCTURAL + MISC. STEEL

218B.1421 STRUCTURAL STEEL

218B.1423 MISC. FRAMES, ETC.

218B.1425 FLOOR GRATING(GALV.)

218B.1426 STAIR TREADS

218B.1427 HANDRAIL

25000 SF	1500 MH	16,564	22,500	
	1500 MH	16,564	22,500	39,064
35 TN	1225 MH	15,813	15,125	
460 CY	805 MH	8,221	14,720	
25000 SF	251 MH	2,564	250	
3761 MH	43,167	50,595	93,762	
400 TN	6000 MH	78,105	290,000	
2 TN	100 MH	1,302	2,200	
250 EA	200 MH	2,603	8,750	
600 LF	360 MH	4,687	6,000	

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	TOTAL COSTS
		QUANTITY COSTS	QUANTITY LABOR HRS LABOR COST MATERIAL COST	
2168.142	STRUCTURAL + MISC. STEEL		6660 MH 86,697	306,950 393,647
2188.143	EXTERIOR WALLS			
2188.1431	CONCRETE WALLS			
2189.1432	MASONRY WALLS			
2188.1433	METAL INSULATED SIDING	19500 SF	3900 MH 50,769	78,000
2189.1434	WINDOW WALL	1000 SF	500 MH 6,509	6,000
2188.143	EXTERIOR WALLS		4400 MH 57,278	84,000 141,278
2188.144	ROOF DECK			
2188.1442	PRECAST CONCRETE PANELS	8350 SF	667 MH 8,635	10,855
2188.144	ROOF DECK		667 MH 8,635	10,855 19,540
2188.145	ROOFING + FLASHING			
2188.1451	B.U. ROOF INSUL + FLASHING	8350 SF	585 MH 7,886	10,438
2188.145	ROOFING + FLASHING		585 MH 7,886	10,438 18,324
2188.146	INTERIOR WALLS+PARTITIONS			
2188.1462	MASONRY WALLS	15000 SF	3750 MH 42,788	42,000
2188.1463	METAL PARTITIONS	35000 SF	2100 MH 24,360	52,500
2188.146	INTERIOR WALLS+PARTITIONS		5850 MH 67,148	94,500 161,648
2188.147	DOORS + WINDOWS			
2188.1471	ROLLING STEEL DOORS	880 SF	440 MH 5,727	12,320
2188.1	PERSONNEL DOORS	1250 SF	875 MH 10,150	15,000

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
218B.1473	SASH + GLAZING	2000 SF	800 MH	9,280	24,000		
	218B.147 DOORS + WINDOWS		2115 MH	25,157	51,320	76,477	
218B.148	WALLS, FLOOR+CEILING FINISH						
218B.1431	VINYL FLOOR TILE	21000 SF	1680 MH	19,438	31,500		
218B.1432	CERAMIC TILE FLOOR	4000 SF	600 MH	6,626	10,000		
218B.1433	CARPET	200 SY	80 MH	928	3,000		
218B.1484	CERAMIC TILE WALL FINISH	2000 SF	300 MH	3,313	5,000		
218B.1435	SUSPENDED CEILING						
	218B.148 WALLS, FLOOR+CEILING FINISH		2660 MH	30,355	49,500	79,855	
218B.149	PAINTING						
218B.1491	CONCRETE						
218B.1492	STEELWORK	400 TN	2000 MH	19,140	2,400		
218B.1493	HANDRAIL	600 LF	120 MH	1,148	60		
218B.1497	DOORS + WALLS	30000 SF	600 MH	5,742	3,000		
	218B.149 PAINTING		2720 MH	26,030	5,460	31,490	
	218B.14 SUPERSTRUCTURE		29438 MH	352,403	663,618	1,016,021	
	218B.1 BUILDING STRUCTURE		33372 MH	397,830	721,873	1,119,703	
218B.2	BUILDING SERVICES						
218B.21	PLUMBING + DRAINS	1 LT	36,000	1 LT	4010 MH	51,973	5,197
218B.211	ROOF DRAINS + PIPING						

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	*****	SITE	*****	TOTAL	
		QUANTITY	COSTS	QUANTITY	LABOR HRS	MATERIAL COST	COSTS
*****	*****	*****	*****	*****	*****	*****	*****

2189.2111 DRAINS

2189.2115 PIPING

2189.21152 2.5 IN+LARGER(GALV/NNS)

2139.2115 PIPING

2139.2111 ROOF DRAINS + PIPING

2188.212 FLOOR DRAINS + PIPING

2188.2121 DRAINS

2189.2125 PIPING

2188.21251 2.5 IN+LARGER(CS/NNS)

2189.21252 2.5 IN+LARGER(C1/NNS)

2139.2125 PIPING

2188.212 FLOOR DRAINS + PIPING

2188.213 PLUMBING FIXTURES+PIPING

2189.2131 FIXTURES

2189.2132 DOMESTIC WATER HEATERS

2188.2135 PIPING

2188.21351 2 IN + SMALLER(CS/NNS)

2189.21352 2 IN + SMALLER(COPPER/NNS)

2189.21353 2.5 IN+LARGER(CS/NNS)

2188.2135 PIPING

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	TOTAL COSTS
		QUANTITY COSTS	QUANTITY LABOR HRS LABOR COST MATERIAL COST	
*****	*****	*****	*****	*****

2188.213 PLUMBING FIXTURES+PIPING

2188.21	PLUMBING + DRAINS	36,000	4010 MH	51,973	5,197	93,170
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2188.22	HEATING, VENT + AIR COND	1 LT	103,656	1 LT	5793 MH	74,942	13,490
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2188.221 AIR CONDITIONING SYSTEMS

2188.2219 FOUNDATIONS/SKIDS

2188.22191 MULTIZONE AIR UNIT + MOTOR

2188.2219 FOUNDATIONS/SKIDS

2188.221 AIR CONDITIONING SYSTEMS

2188.222 EXHAUST AIR SYSTEMS

2188.2223 ROTATING MACHINERY

2188.22231 TOILET RM EXHAUST ^FAN+MTR

2188.22232 FUME HOOD EXHAUST FAN+MTR

2188.22233 RETURN AIR FANS + MOTORS

2188.2223 ROTATING MACHINERY

2188.222 EXHAUST AIR SYSTEMS

2188.223 REFRIG CHILLED WATER SYS

2188.2231 ROTATING MACHINERY

2188.22311 CHILLER + MOTOR

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ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
*****	*****	*****	*****	*****	*****	*****	*****	*****

2138.2231 ROTATING MACHINERY

2188.2232 CHILLED WATER PUMP + MOTOR

2138.223 REFRIG CHILLED WATER SYS

2188.224 BUILDING HEATING SYSTEMS

2188.2241 HEAT TRANSFER EQUIPMENT

2188.22411 HEAT+VENT AIR UNIT + MOTOR

2188.22412 ELECTRIC BASEBOARD HEATERS

2138.2241 HEAT TRANSFER EQUIPMENT

2138.224 BUILDING HEATING SYSTEMS

2188.225 PIPING

2188.2251 2 IN+SMALLER

2188.22511 CS/NNS

2138.2251 2 IN+SMALLER

2188.2252 2.5 IN+LARGER

2188.22521 CS/NNS

2188.2252 2.5 IN+LARGER

2138.225 PIPING

2188.225 ALVES

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
*****	*****	*****	*****	*****	*****	*****	

2188.2261 GATE

2188.2262 CHECK

2188.2263 GLOBE

2188.2265 SAFETY/RELIEF

2188.2266 PLUG

2188.2269 SPECIAL VALVES

2188.226 VALVES

2188.227 PIPING-MISC. ITEMS

2188.2271 HANGERS

2188.227 PIPING-MISC. ITEMS

2188.228 DUCTWORK

2188.229 INSTRUMENTATION+CONTROL

2188.22	HEATING, VENT + AIR COND	103,656	5793 MH	74,942	13,490	192,088
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2188.23 FIRE PROTECTION

2188.231 FIRE HOSE CABINETS

2188.232 SPRINKLERS

2188.23 FIRE PROTECTION

2188.24 LIGHTING+SERVICE POWER

32400 SF	12959 MH	159,337	81,000
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2188.25 ELEVATOR

2188.251 ELEVATOR EQUIPMENT

1 EA	75,000	1 LT	2500 MH	32,343	3,234
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2188.25 ELEVATOR

75,000	2500 MH	32,343	3,234	110,577
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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
2138.2	BUILDING SERVICES	214,656		25262 MH	318,595	102,921	636,172
2138.	ADMINISTRATION+SERVICE BLD	214,656		58634 MH	716,425	824,794	1,755,875
218D.	FIRE PUMPHOUSE						
218I.	ELECTRICAL SWITCHGR BLDGS						
218I.1	BUILDING STRUCTURE						
218I.11	EXCAVATION WORK						
218I.111	EXCAVATION-EARTH		250 CY	63 MH	675	250	
218I.114	BACKFILL-EARTH		200 CY	60 MH	597	200	
218I.11	EXCAVATION WORK			123 MH	1,272	450	1,722
218I.13	SUBSTRUCTURE CONCRETE						
218I.131	FORMWORK		3400 SF	1360 MH	15,016	3,400	
218I.132	REINFORCING STEEL		3 TN	75 MH	970	1,125	
218I.133	CONCRETE		135 CY	101 MH	1,030	4,320	
218I.134	EMBEDDED STEEL		3 TN	376 MH	4,523	4,200	
218I.135	FLOOR FINISH		3750 SF	38 MH	390	38	
218I.139	WIRE FABRIC		3750 SF	75 MH	970	450	
218I.13	SUBSTRUCTURE CONCRETE			2025 MH	22,899	13,533	36,432
218I.14	SUPERSTRUCTURE						
218I.142	STRUCTURAL + MISC. STEEL						
218I.14	REFAB BUILDING	3750 SF	12,563	1 LT	1051 MH	13,570	1,357

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY QUANTITY	COSTS	SITE QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
218I.142	STRUCTURAL + MISC. STEEL	12,563		1051 MH		13,570	1,357	27,490
218I.147	DOORS + WINDOWS							
218I.1472	PERSONNEL DOORS		240 SF	168 MH		1,949	2,880	
218I.1473	SASH + GLAZING		360 SF	144 MH		1,670	4,320	
218I.147	DOORS + WINDOWS			312 MH		3,619	7,200	10,819
218I.14	SUPERSTRUCTURE	12,563		1363 MH		17,189	8,557	38,309
218I.1	BUILDING STRUCTURE	12,563		3511 MH		41,360	22,540	76,463
218I.2	BUILDING SERVICES							
218I.21	PLUMBING + DRAINS			1 LT	1651 MH	21,395	15,000	
218I.22	HEATING, VENT + AIR COND	1 LT	10,200	1 LT	572 MH	7,400	1,110	
218I.24	LIGHTING + SERVICE POWER			3750 SF	1126 MH	13,845	6,750	
218I.2	BUILDING SERVICES		10,200		3349 MH	42,640	22,860	75,700
218I.	ELECTRICAL SWITCHGR BLDGS	22,763			6860 MH	84,000	45,400	152,163
218M.	COAL CAR THAW SHED							
218M.1	BUILDING STRUCTURE							
218M.11	EXCAVATION WORK							
218M.111	EXCAVATION-EARTH		180 CY	45 MH		483	180	
218M.114	BACKFILL-EARTH		130 CY	39 MH		389	130	
218M.11	EXCAVATION WORK			84 MH		872	310	1,182

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
218M.13	SUBSTRUCTURE CONCRETE						
218M.131	FORMWORK	2500 SF		1000 MH	11,042	2,500	
218M.132	REINFORCING STEEL		3 TN	75 MH	970	1,125	
218M.133	CONCRETE		50 CY	38 MH	390	1,600	
218M.134	EMBEDDED STEEL		3 TN	376 MH	4,523	4,200	
218M.13	SUBSTRUCTURE CONCRETE			1489 MH	15,925	9,425	26,350
218M.14	SUPERSTRUCTURE						
218M.1	BUILDING STRUCTURE			1573 MH	17,797	9,735	27,532
218M.24	LIGHTING + SERVICE POWER	1500 SF		450 MH	5,533	2,700	
218M.	COAL CAR THAW SHED			2023 MH	23,330	12,435	35,765
218N.	ROTARY CAR DUMP BLDG+TUNNL						
218N.1	BUILDING STRUCTURE						
218N.11	EXCAVATION WORK						
218N.111	EXCAVATION-EARTH	1500 CY		375 MH	4,383	1,500	
218N.112	EXCAVATION-ROCK	15000 CY		12000 MH	140,280	60,000	
218N.114	BACKFILL-EARTH	3000 CY		900 MH	8,956	3,000	
218N.115	DEWATERING	1 LT		220 MH	2,050	220	
218N.11	EXCAVATION WORK			13495 MH	155,669	64,720	220,389
218N.13	SUBSTRUCTURE CONCRETE						
218N.	FORMWORK	25000 SF		10000 MH	110,424	25,000	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
218N.132	REINFORCING STEEL			200 TN	5000 MH	64,567	75,000
218N.133	CONCRETE			4300 CY	3225 MH	32,934	137,600
218N.134	EMBEDDED STEEL			6 TN	750 MH	9,020	8,400
218N.135	FLOOR FINISH			10000 SF	100 MH	1,021	100
218N.139	WIRE FABRIC			2000 SF	40 MH	515	240
218N.13	SUBSTRUCTURE CONCRETE				19115. MH	218,432	246,340
							464,822
218N.14	SUPERSTRUCTURE						
218N.141	CONCRETE WORK						
218N.142	STRUCTURAL + MISC STEEL						
218N.1421	STRUCTURAL STEEL			20 TN	300 MH	3,905	14,500
218N.1423	MISC STEEL			1 TN	50 MH	651	1,100
218N.1425	FLOOR GRATING			600 SF	102 MH	1,329	1,800
218N.1426	STAIR TREADS			65 EA	52 MH	673	2,275
218N.142	STRUCTURAL + MISC STEEL				504 MH	6,563	19,675
							26,238
218N.143	EXTERIOR WALLS						
218N.1433	METAL INSULATED SIDING			1400 SF	280 MH	3,643	5,600
218N.1434	METAL UNINSULATED SIDING			4800 SF	720 MH	9,374	7,200
218N.143	EXTERIOR WALLS				1000 MH	13,017	12,800
							25,817
218N.144	ROOF DECK						
218N.1441	METAL ROOF DECK - INSULATED			1900 SF	190 MH	2,472	4,750
218N.1442	METAL ROOF DECK-UNINSUL			3500 SF	210 MH	2,734	3,500

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST MATERIAL COST
		*****	*****	*****	*****	*****
218N.144	ROOF DECK			400 MH	5,206	8,250 13,456
218N.146	INTERIOR WALLS					
218N.1462	MASONRY	2200 SF		550 MH	6,276	6,160
218N.146	INTERIOR WALLS			550 MH	6,276	6,160 12,436
218N.147	DOORS + WINDOWS					
218N.1472	PERSONNEL DOORS	210 SF		147 MH	1,705	2,520
218N.1474	WINDOWS - INSULATED GLASS					
218N.147	DOORS + WINDOWS			147 MH	1,705	2,520 4,225
218N.14	SUPERSTRUCTURE			2601 MH	32,767	49,405 82,172
218N.1	BUILDING STRUCTURE			35211 MH	406,918	360,465 767,383
218N.2	BUILDING SERVICES					
218N.21	DRAINS + PIPING	1 LT		879 MH	11,396	8,000
218N.211	ROOF DRAINS + PIPING					
218N.212	FLOOR DRAINS + PIPING					
218N.213	PLUMBING FIXTURES+PIPING					
218N.2131	FIXTURES					
218N.2132	DOMESTIC WATER HEATERS					
218N.213	PLUMBING FIXTURES+PIPING					
218N.	PIPING					

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****		***** SITE *****				TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	
218N.21	DRAINS + PIPING			879 MH	11,396	8,000		19,396
218N.22	HEAT, VENT+AIR CONDITIONING	1 LT	3,485	1 LT	196 MH	2,534	380	
218N.23	FIRE PROTECTION							
218N.24	LIGHTING + SERVICE POWER			3000 SF	900 MH	11,067	5,400	
	218N.2 BUILDING SERVICES		3,485		1975 MH	24,997	13,780	42,262
	218N. ROTARY CAR DUMP BLDG+TUNNL		3,485		37186 MH	431,915	374,245	809,645
2180.	COAL BREAKER HOUSE							
2180.1	BUILDING STRUCTURE							
2180.11	EXCAVATION WORK							
2180.111	EXCAVATION-EARTH			400 CY	100 MH	1,169	400	
2180.114	BACKFILL-EARTH			200 CY	60 MH	597	200	
	2180.11 EXCAVATION WORK				160 MH	1,766	600	2,366
2180.13	SUBSTRUCTURE CONCRETE							
2180.131	FORMWORK			3000 SF	1200 MH	13,251	3,000	
2180.132	REINFORCING STEEL			15 TN	375 MH	4,843	5,625	
2180.133	CONCRETE			260 CY	195 MH	1,991	8,320	
2180.134	EMBEDDED STEEL			2 TN	250 MH	3,006	2,800	
2180.135	FLOOR FINISH			3600 SF	35 MH	356	36	
2180.139	WIRE FABRIC			3600 SF	72 MH	930	432	
	2180.13 SUBSTRUCTURE CONCRETE				2127 MH	24,377	20,213	44,590

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		QUANTITY COSTS	QUANTITY LABOR HRS LABOR COST MATERIAL COST	

2180.14 SUPERSTRUCTURE

2180.141 CONCRETE WORK

2180.1411 FORMWORK

2180.14111 METAL FORMWORK

6700 SF 402 MH 4,439 6,030

2180.1411 FORMWORK 402 MH 4,439 6,030 10,469

2180.1413 CONCRETE

180 CY 315 MH 3,217 5,760

2180.141 CONCRETE WORK 717 MH 7,656 11,790 19,446

2180.142 STRUCTURAL + MISC STEEL

2180.1421 STRUCTURAL STEEL

275 TN 4126 MH 53,708 199,375

2180.142 STRUCTURAL + MISC STEEL 4126 MH 53,708 199,375 253,083

2180.143 EXTERIOR WALLS

2180.1433 METAL INSULATED SIDING

2000 SF 400 MH 5,207 8,000

2180.1434 METAL UNINSULATED SIDING

31000 SF 4650 MH 60,532 46,500

2180.143 EXTERIOR WALLS 5050 MH 65,739 54,500 120,239

2180.144 ROOF DECK

2180.1441 METAL ROOF DECK

4400 SF 264 MH 3,438 4,400

2180.144 ROOF DECK 264 MH 3,438 4,400 7,838

2180.146 INTERIOR WALLS

2180.14 ASONRY WALLS

13000 SF 3250 MH 37,083 36,400

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
2180.146	INTERIOR WALLS			3250 MH	37,083	36,400	73,483
2180.147	DOORS + WINDOWS						
2180.1472	PERSONNEL DOORS	500 SF		350 MH	4,060	0,000	
2180.147	DOORS + WINDOWS			350 MH	4,050	6,000	10,060
2180.14	SUPERSTRUCTURE			13757 MH	171,634	312,465	484,149
2180.1	BUILDING STRUCTURE			16044 MH	197,827	333,278	531,105
2180.2	BUILDING SERVICES						
2180.21	DRAINS + PIPING	1 LT		221 MH	2,861	2,000	
2180.211	ROOF DRAINS + PIPING						
2180.212	FLOOR DRAINS + PIPING						
2180.21	DRAINS + PIPING			221 MH	2,861	2,000	4,861
2180.22	HEATING, VENT + AIR COND	1 LT	4,150	1 LT	232 MH	3,003	450
2180.24	LIGHTING + SERVICE POWER			4500 SF	1350 MH	16,599	8,100
2180.25	ELEVATOR						
2180.251	ELEVATOR EQUIPMENT	1 EA	50,000		2500 MH	32,343	
2180.25	ELEVATOR		50,000		2500 MH	32,343	82,343
2180.2	BUILDING SERVICES		54,150		4303 MH	54,806	10,550
2180.	COAL BREAKER HOUSE		54,150		20347 MH	252,633	343,828
218P.	COAL CRUSHER HOUSE						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
218P.1	BUILDING STRUCTURE								
218P.11	EXCAVATION WORK								
218P.111	EXCAVATION-EARTH		400 CY		100 MH		1,189		400
218P.114	BACKFILL-EARTH			300 CY		90 MH		896	300
218P.11	EXCAVATION WORK				190 MH		2,065	700	2,765
218P.13	SUBSTRUCTURE CONCRETE								
218P.131	FORMWORK			3000 SF		1200 MH		13,251	3,000
218P.132	REINFORCING STEEL				9 TN		225 MH		2,905
218P.133	CONCRETE				130 CY		93 MH		1,002
218P.134	EMBEDDED STEEL					376 MH		4,523	4,200
218P.135	FLOOR FINISH			2300 SF		23 MH		234	23
218P.139	WIRE FABRIC			2300 SF		46 MH		595	276
218P.13	SUBSTRUCTURE CONCRETE				1968 MH		22,510	15,034	37,544
218P.14	SUPERSTRUCTURE								
218P.141	CONCRETE WORK								
218P.1411	FORMWORK								
218P.14111	METAL FORMWORK			3200 SF		192 MH		2,120	2,880
218P.1411	FORMWORK				192 MH		2,120	2,880	5,000
218P.1413	CONCRETE			110 CY		193 MH		1,972	3,520
218P.141	CONCRETE WORK				385 MH		4,092	6,400	92

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
218P.142	STRUCTURAL + MISC STEEL						
218P.1421	STRUCTURAL STEEL	150 TN	2251 MH	29,066	108,750		
218P.142	STRUCTURAL + MISC STEEL		2251 MH	29,066	108,750	137,816	
218P.143	EXTERIOR WALLS						
218P.1434	METAL UNINSULATED SIDING	19000 SF	2850 MH	37,100	28,500		
218P.143	EXTERIOR WALLS		2850 MH	37,100	28,500	65,600	
218P.144	ROOF DECK						
218P.1442	METAL ROOF DECK-UNINSUL	2600 SF	156 MH	2,031	2,600		
218P.144	ROOF DECK		156 MH	2,031	2,600	4,631	
218P.145	INTERIOR WALLS						
218P.1452	MASONRY	7400 SF	1850 MH	21,109	20,720		
218P.146	INTERIOR WALLS		1850 MH	21,109	20,720	41,829	
218P.147	DOORS + WINDOWS						
218P.1472	PERSONNEL DOORS	400 SF	280 MH	3,248	4,800		
218P.147	DOORS + WINDOWS		280 MH	3,248	4,800	8,048	
218P.14	SUPERSTRUCTURE		7772 MH	96,646	171,770	268,416	
218P.1	BUILDING STRUCTURE		9930 MH	121,221	187,504	308,725	
218P.2.	BUILDING SERVICES						

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	TOTAL COSTS			
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST
218P.21	DRAINS + PIPING	1 LT	2,000	221 MH	2,861		
218P.211	ROOF DRAINS + PIPING						
218P.212	FLOOR DRAINS + PIPING						
213P.21	DRAINS + PIPING		2,000	221 MH	2,861		4,861
218P.22	HEATING, VENT + AIR COND	1 LT	46,945	1 LT	2621 MH	33,935	5,086
218P.24	LIGHTING + WIRING			3450 SF	1035 MH	12,727	6,210
218P.25	ELEVATOR						
218P.251	ELEVATOR EQUIPMENT	1 EA	31,000	1800 MH	23,286		
213P.25	ELEVATOR		31,000	1800 MH	23,286		54,286
213P.2	BUILDING SERVICES		79,945	5677 MH	72,779	11,296	164,020
213P.	COAL CRUSHER HOUSE		79,945	15607 MH	194,000	198,800	472,745
218Q.	BOILER HOUSE TRANSFER TOWER						
218Q.1	BUILDING STRUCTURE						
218Q.11	EXCAVATION WORK						
218Q.111	EXCAVATION-EARTH			90 CY	23 MH	263	90
218Q.114	BACKFILL-EARTH			70 CY	21 MH	208	70
218Q.11	EXCAVATION WORK				44 MH	476	160
218Q.13	SUBSTRUCTURE CONCRETE						636
218Q.	FORMWORK			400 SF	160 MH	1,765	400

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
218Q.132	REINFORCING STEEL			5 TN	125 MH	1,614	1,875
218Q.133	CONCRETE			90 CY	68 MH	695	2,880
218Q.134	EMBEDDED STEEL			1 TN	126 MH	1,515	1,400
	213Q.13 SUBSTRUCTURE CONCRETE				479 MH	5,589	6,555
218Q.14	SUPERSTRUCTURE						12,144
218Q.141	CONCRETE WORK						
218Q.1411	FORMWORK						
218Q.14111	METAL FORMWORK			3000 SF	180 MH	1,937	2,700
213Q.1411	FORMWORK				180 MH	1,987	2,700
218Q.1413	CONCRETE			35 CY	61 MH	622	1,120
213Q.141	CONCRETE WORK				241 MH	2,609	3,820
218Q.142	STRUCTURAL + MISC STEEL						6,429
218Q.1421	STRUCTURAL STEEL			80 TN	1200 MH	15,621	58,000
218Q.142	STRUCTURAL + MISC STEEL				1200 MH	15,621	58,000
218Q.143	EXTERIOR WALLS						73,621
218Q.1433	METAL INSULATED SIDING			12910 SF	2583 MH	33,623	51,640
218Q.1434	METAL UNINSULATED SIDING			6160 SF	923 MH	12,018	9,240
218Q.143	EXTERIOR WALLS				3506 MH	45,641	60,880
218Q.144	ROOF DECK						106,521

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		QUANTITY COSTS	QUANTITY LABOR HRS LABOR COST MATERIAL COST		
218Q.1441	METAL ROOF DECK		1200 SF	72 MH	940 1,200
	218Q.144 ROOF DECK			72 MH	940 1,200 2,140
218Q.147	DOORS + WINDOWS				
218Q.1472	PERSONNEL DOORS		21 SF	15 MH	174 252
218Q.147	DOORS + WINDOWS			15 MH	174 252 426
218Q.14	SUPERSTRUCTURE			5034 MH	64,965 124,152 189,137
218Q.1	BUILDING STRUCTURE			5557 MH	71,050 130,867 201,917
218Q.2	BUILDING SERVICES				
218Q.22	HEATING, VENT + AIR COND	1 LT	2,680	1 LT	152 MH 1,966 295
218Q.24	LIGHTING + SERVICE POWER			450 SF	135 MH 1,652 810
218Q.2	BUILDING SERVICES		2,680		287 MH 3,628 1,105 7,413
218Q.	BOILER HOUSE TRANSFR TOWER		2,680		5844 MH 74,678 131,972 209,330
218R.	ROTARY PLOW MAINTNCE SHED				
218R.1	BUILDING STRUCTURE				
218R.11	EXCAVATION WORK				
218R.111	EXCAVATION-EARTH		15000 CY	3751 MH	43,848 15,000
218R.112	EXCAVATION-ROCK		10000 CY	8000 MH	93,520 40,000
218R.114	BACKFILL-EARTH		10000 CY	3000 MH	29,856 10,000
218R.1	DEWATERING		1 LT	500 MH	4,660 500

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
218R.11	EXCAVATION WORK			15251 MH	171,884	65,500	237,384
218R.13	SUHSTRUCTURE CONCRETE						
218R.131	FORMWORK	120000 SF	48000 MH	530,036	120,000		
218R.132	REINFORCING STEEL	700 TN	17500 MH	225,983	262,500		
218R.133	CONCRETE	9700 CY	7275 MH	74,292	310,400		
218R.134	EMBEDDED STEEL	12 TN	1500 MH	18,039	16,800		
218R.13	SUBSTRUCTURE CONCRETE		74275 MH	848,350	709,700	1,558,050	
218R.14	SUPERSTRUCTURE						
218R.141	CONCRETE WORK						
218R.142	STRUCTURAL + MISC STEEL						
218R.1421	STRUCTURAL STEEL	13 TN	195 MH	2,538	9,425		
218R.142	STRUCTURAL + MISC STEEL		195 MH	2,538	9,425	11,963	
218R.143	EXTERIOR WALLS						
218R.1434	METAL UNINSULATED SIDING	1400 SF	210 MH	2,734	2,100		
218R.143	EXTERIOR WALLS		210 MH	2,734	2,100	4,834	
218R.144	ROOF DECK						
218R.1442	METAL ROOF DECK-UNINSUL	2800 SF	167 MH	2,176	2,800		
218R.144	ROOF DECK		167 MH	2,176	2,800	4,976	
218R.145	ROOFING + FLASHING						

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST		MATERIAL COST
218R.1454	FLASHING			200 SF	10 MH	135	200	
215R.145	ROOFING + FLASHING				10 MH	135	200	335
218R.147	DOORS + WINDOWS							
218R.1471	ROLLING STEEL DOORS			140 SF	70 MH	913	1,960	
218R.1472	PERSONNEL DOORS			63 SF	44 MH	510	756	
215R.147	DOORS + WINDOWS				114 MH	1,423	2,716	4,139
213R.14	SUPERSTRUCTURE				696 MH	9,006	17,241	26,247
218R.1	BUILDING STRUCTURE				90222 MH	1,029,240	792,441	1,821,681
218R.2	BUILDING SERVICES							
218R.22	HEATING, VENT + AIR COND	1 LT	6,040	1 LT	341 MH	4,411	662	
218R.24	LIGHTING + SERVICE POWER			250 SF	76 MH	936	450	
213R.2	BUILDING SERVICES		6,040		417 MH	5,347	1,112	12,499
215R.	ROTARY PLOW MAINTNCE SHED		6,040		90639 MH	1,034,587	793,553	1,834,180
218T.	LOCOMOTIVE REPAIR GARAGE							
218T.1	BUILDING STRUCTURE							
218T.11	EXCAVATION WORK							
218T.111	EXCAVATION-EARTH			150 CY	37 MH	433	150	
218T.1	BACKFILL-EARTH			100 CY	30 MH	299	100	
218T.11	EXCAVATION WORK				67 MH	732	250	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
218T.13	SUBSTRUCTURE CONCRETE						
218T.131	FORMWORK	2100 SF		840 MH		9,277	2,100
218T.132	REINFORCING STEEL		3 TN	75 MH		970	1,125
218T.133	CONCRETE		200 CY	151 MH		1,542	6,400
218T.134	EMBEDDED STEEL		1 TN	126 MH		1,515	1,400
218T.135	FLOOR FINISH	4700 SF		47 MH		479	47
218T.139	WIRE FABRIC		9400 SF	188 MH		2,423	1,128
	218T.13 SUBSTRUCTURE CONCRETE			1427 MH		16,211	12,200
							28,411
218T.14	SUPERSTRUCTURE						
218T.141	CONCRETE WORK						
218T.142	STRUCTURAL + MISC STEEL						
218T.1421	STRUCTURAL STEEL		5 TN	76 MH		987	3,625
218T.142	STRUCTURAL + MISC STEEL			76 MH		987	3,625
							4,612
218T.143	EXTERIOR WALLS						
218T.1433	METAL INSULATED SIDING	3500 SF		700 MH		9,112	14,000
218T.143	EXTERIOR WALLS			700 MH		9,112	14,000
							23,112
218T.144	ROOF DECK						
218T.1441	METAL ROOF DECK	4700 SF		283 MH		3,682	4,700
218T.144	ROOF DECK			283 MH		3,682	4,700
							8,382
218T.147	DOORS + WINDOWS						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
218T.1471	ROLLING STEEL DOORS		1700 SF	850 MH	11,065	23,800	
218T.1472	PERSONNEL DOORS		85 SF	60 MH	696	1,020	
218T.147	DOORS + WINDOWS			910 MH	11,761	24,820	36,581
218T.14	SUPERSTRUCTURE			1969 MH	25,542	47,145	72,687
218T.1	BUILDING STRUCTURE			3463 MH	42,485	59,595	102,080
218T.2	BUILDING SERVICES						
218T.22	HEATING, VENT + AIR COND	1 LT	11,570	1 LT	652 MH	8,435	1,265
218T.24	LIGHTING + SERVICE POWER			2000 SF	600 MH	7,378	3,600
218T.2	BUILDING SERVICES		11,570		1252 MH	15,813	4,865
218T.	LOCOMOTIVE REPAIR GARAGE		11,570		4715 MH	58,293	64,460
218U.	MATERIAL HANDL+SERVICE BLD						
218U.1	BUILDING STRUCTURE						
218U.11	EXCAVATION WORK						
218U.111	EXCAVATION-EARTH			150 CY	37 MH	433	150
218U.114	BACKFILL-EARTH			120 CY	36 MH	357	120
218U.11	EXCAVATION WORK				73 MH	790	270
218U.13	SUBSTRUCTURE CONCRETE						
218U.131	FORMWORK			2000 SF	800 MH	8,834	2,000
218U.11	REINFORCING STEEL			2 TN	51 MH	657	750

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
218U.133	CONCRETE		100 CY	75 MH	765	3,200	
218U.134	EMBEDDED STEEL		1 TN	126 MH	1,515	1,400	
218U.135	FLOOR FINISH		3000 SF	31 MH	316	30	
218J.139	WIRE FABRIC		3000 SF	60 MH	775	360	
	218U.13 SUBSTRUCTURE CONCRETE			1143 MH	12,862	7,740	
						20,602	
218J.14	SUPERSTRUCTURE						
218U.141	CONCRETE WORK						
218J.142	STRUCTURAL + MISC STEEL						
218U.143	EXTERIOR WALLS						
218U.1433	METAL INSULATED SIDING		5600 SF	1120 MH	14,581	22,400	
218U.1434	METAL UNINSULATED SIDING		2600 SF	390 MH	5,076	3,900	
213U.143	EXTERIOR WALLS			1510 MH	19,657	26,300	
						45,957	
218U.144	ROOF DECK						
218U.1441	METAL ROOF DECK		11200 SF	672 MH	8,750	11,200	
213U.144	ROOF DECK			672 MH	8,750	11,200	
						19,950	
218U.145	ROOFING + FLASHING						
218U.1451	B.U. ROOF, INSUL + FLASHING		11200 SF	784 MH	10,568	14,000	
218U.145	ROOFING + FLASHING			784 MH	10,568	14,000	
						24,568	
218U.146	INTERIOR WALLS						
218U.1462	MASONRY		9600 SF	2250 MH	25,673	25,200	

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY ***** QUANTITY COSTS	***** SITE ***** QUANTITY LABOR HRS LABOR COST MATERIAL COST	TOTAL COSTS
*****	*****	*****	*****	*****
218U.1463	TOILET PARTITIONS	125 SF	8 MH	93 250
218U.146	INTERIOR WALLS	2258 MH	25,766	25,450 51,216
218U.147	DOORS + WINDOWS			
218U.1471	ROLLING STEEL DOORS	1440 SF	720 MH	9,374 20,160
218U.1472	PERSONNEL DOORS	715 SF	501 MH	5,812 8,580
218U.1473	SASH + GLAZING	520 SF	208 MH	2,413 6,240
218U.147	DOORS + WINDOWS	1429 MH	17,599	34,980 52,579
218U.148	WALLS, FLOOR+CEIL FINISH			
218U.1481	VINYL FLOOR TILE	1600 SF	128 MH	1,455 2,400
218U.1482	CERAMIC FLOOR TILE	2100 SF	316 MH	3,490 5,250
218U.1485	SUSPENDED CEILING	4100 SF	410 MH	4,756 2,050
218U.1455	CEMENT PLASTER CEILING	350 SF	35 MH	405 35
218U.148	WALLS, FLOOR+CEIL FINISH	889 MH	10,137	9,735 19,872
218U.14	SUPERSTRUCTURE	7542 MH	92,477	121,665 214,142
218U.1	BUILDING STRUCTURE	8758 MH	106,129	129,675 235,804
218U.2	BUILDING SERVICES			
218U.21	DRAINS + PIPING	1 LT 4,000	1 LT 440 MH	5,702 570
218U.211	ROOF DRAINS + PIPING			
218U.212	FLOOR DRAINS + PIPING			
218U.21	DRAINS + PIPING	4,000	440 MH	5,702 570

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ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	COSTS
218U.22	HEATING, VENT + AIR COND	1 LT	13,735	1 LT	772 MH	9,986	1,498	
218U.23	FIRE PROTECTION							
218U.24	LIGHTING + SERVICE POWER			2000 SF	600 MH	7,378	3,600	
218U.2	BUILDING SERVICES		17,735		1812 MH	23,066	5,668	46,469
218U.	MATERIAL HANDL+SERVICE BLD		17,735		10570 MH	129,195	135,343	282,273
218V.	WASTE WATER TREATMENT BLDG							
218V.1	WASTE WATER EQUIPMENT BLDG							
218V.11	BUILDING STRUCTURE							
218V.111	EXCAVATION WORK							
218V.1111	EXCAVATION-EARTH			230 CY	57 MH	667	230	
218V.1114	BACKFILL-EARTH			150 CY	45 MH	448	150	
218V.111	EXCAVATION WORK				102 MH	1,115	380	1,495
218V.113	SUBSTRUCTURE CONCRETE							
218V.1131	FORMWORK			1700 SF	680 MH	7,509	1,700	
218V.1132	REINFORCING STEEL			7 TN	175 MH	2,261	2,625	
218V.1133	CONCRETE			160 CY	120 MH	1,226	5,120	
218V.1134	EMBEDDED STEEL			1 TN	126 MH	1,515	1,400	
218V.1135	FLOOR FINISH			2000 SF	20 MH	204	20	
218V.1139	WIRE FABRIC			2000 SF	40 MH	516	240	
218V.113	SUBSTRUCTURE CONCRETE				1161 MH	13,231	11,105	24,336

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		QUANTITY COSTS	QUANTITY	LABOR HRS LABOR COST MATERIAL COST	
*****	*****	*****	*****	*****	*****
218V.114	SUPERSTRUCTURE				
218V.1141	CONCRETE WORK				
218V.1142	STRUCTURAL + MISC STEEL				
218V.1143	EXTERIOR WALLS				
218V.11433	METAL INSULATED SIDING	4280 SF	856 MH	11,144 17,120	
218V.1143	EXTERIOR WALLS		856 MH	11,144 17,120	28,264
218V.1145	ROOFING + FLASHING				
218V.11455	METAL ROOF DECK	2000 SF	120 MH	1,564 2,000	
218V.1145	ROOFING + FLASHING		120 MH	1,564 2,000	3,564
218V.1147	DOORS + WINDOWS				
218V.11471	ROLLING STEEL DOORS	200 SF	100 MH	1,302 2,800	
218V.11472	PERSONNEL DOORS	80 SF	56 MH	650 960	
218V.1147	DOORS + WINDOWS		156 MH	1,952 3,760	5,712
218V.1149	PAINTING				
218V.11495	DOORS	280 SF	6 MH	57 28	
218V.1149	PAINTING		6 MH	57 28	85
218V.114	SUPERSTRUCTURE		1138 MH	14,717 22,908	37,625
218V.11	BUILDING STRUCTURE		2401 MH	29,063 34,393	63,456
218V.	BUILDING SERVICES				

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
218V.121	PLUMBING + DRAINS	1 LT	2,000		221 MH		2,861		
218V.1212	FLOOR DRAINS + PIPING								
218V.121	PLUMBING + DRAINS		2,000		221 MH		2,861		4,861
218V.122	HEATING,VENT + AIR COND	1 LT	2,964		1 LT	166 MH	2,147		322
218V.1221	ROTATING MACHINERY								
218V.12211	POWER ROOF VENTILATOR+MTR								
218V.12211	ROTATING MACHINERY								
218V.1222	HEAT TRANSFER EQUIPMENT								
218V.12221	ELECTRIC UNIT HEATERS+MTR								
218V.1222	HEAT TRANSFER EQUIPMENT								
218V.1226	VALVES + DAMPERS								
218V.12269	WALL LOUVERS								
218V.1226	VALVES + DAMPERS								
218V.122	HEATING,VENT + AIR COND		2,964		166 MH		2,147		322
218V.123	FIRE PROTECTION EQUIPMENT								5,433
218V.1231	PORTABLE FIRE EXTINGUISH								
218V.123	FIRE PROTECTION EQUIPMENT								
218V.124	LIGHTING + SERVICE POWER			1000 SF	300 MH	3,689	1,800		
218V.12	BUILDING SERVICES		4,964		687 MH	8,697	2,122		15,783

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY QUANTITY	FACTORY COSTS	SITE QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
*****	*****	*****	*****	*****	*****	*****	*****	*****
218V.1	WASTE WATER EQUIPMENT BLDG	4,964		3088 MH	37,760	36,515		79,239
218V.2	WASTE WATER SETTLING BASIN							
218V.21	EXCAVATION WORK							
218V.211	EXCAVATION-EARTH		20000 CY	5000 MH	58,450	20,000		
218V.214	BACKFILL-EARTH		2500 CY	750 MH	7,464	2,500		
218V.21	EXCAVATION WORK			5750 MH	65,914	22,500		88,414
218V.23	SUBSTRUCTURE CONCRETE							
218V.231	FORMWORK		2000 SF	800 MH	8,834	2,000		
218V.232	REINFORCING STEEL		25 TN	625 MH	8,070	9,375		
218V.233	CONCRETE		500 CY	375 MH	3,829	16,000		
218V.23	SUBSTRUCTURE CONCRETE			1800 MH	20,733	27,375		48,108
218V.2	WASTE WATER SETTLING BASIN			7550 MH	86,647	49,875		136,522
218V.3	API OIL SEPARATOR							
218V.31	BUILDING STRUCTURE							
218V.311	EXCAVATION WORK							
218V.3111	EXCAVATION-EARTH		100 CY	25 MH	293	100		
218V.3114	BACKFILL-EARTH		50 CY	15 MH	149	50		
218V.311	EXCAVATION WORK			40 MH	442	150		592
218V.3	SUBSTRUCTURE CONCRETE							

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
*****	*****	*****	*****	*****	*****	*****	
218V.3131	FORMWORK		520 CY	208 MH	2,297	520	
218V.3132	REINFORCING STEEL		3 TN	75 MH	970	1,125	
218V.3133	CONCRETE		65 CY	49 MH	499	2,080	
	218V.313 SUBSTRUCTURE CONCRETE			332 MH	3,766	3,725	
						7,491	
218V.314	SUPERSTRUCTURE						
218V.3141	CONCRETE WORK						
218V.3142	STRUCTURAL + MISC STEEL						
218V.31421	CARBON STEEL FLUME		3 TN	150 MH	1,953	3,300	
218V.3142	STRUCTURAL + MISC STEEL			150 MH	1,953	3,300	
218V.314	SUPERSTRUCTURE			150 MH	1,953	3,300	
218V.31	BUILDING STRUCTURE			522 MH	6,161	7,175	
218V.3	API OIL SEPARATOR			522 MH	6,161	7,175	
218V.	WASTE WATER TREATMENT BLDG	4,964		11160 MH	130,568	93,565	
						229,697	
218W.	MISC COAL HANDLING STRUCT						
218W.1	CONVEYOR GALLERIES						
218W.11	BUILDING STRUCTURE						
218W.111	EXCAVATION WORK						
218W.1111	EXCAVATION-EARTH		2700 CY	675 MH	7,890	2,700	
218W.1114	BACKFILL-EARTH		2300 CY	691 MH	8,077	2,300	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
218W.111	EXCAVATION WORK			1366 MH		15,967	5,000
<hr/>							
218W.113	SUBSTRUCTURE CONCRETE						
218W.1131	FORMWORK	5000 SF		2000 MH		22,084	5,000
218W.1132	REINFORCING STEEL	30 TN		751 MH		9,697	11,250
218W.1133	CONCRETE	375 CY		281 MH		2,869	12,000
218W.1134	EMBEDDED STEEL	8 TN		1000 MH		12,028	11,200
	218W.113 SUBSTRUCTURE CONCRETE			4032 MH		46,678	39,450
							86,128
218W.114	SUPERSTRUCTURE						
218W.1141	CONCRETE WORK						
218W.1142	STRUCTURAL + MISC STEEL						
218W.11421	STRUCTURAL STEEL	730 TN		10950 MH		142,543	547,500
218W.11423	MISC. FRAMES, ETC.	2 TN		100 MH		1,302	2,200
218W.11425	METAL WALKWAYS	10300 SF		2060 MH		26,817	51,500
	218W.1142 STRUCTURAL + MISC STEEL			13110 MH		170,662	601,200
							771,862
218W.1143	EXTERIOR WALLS						
218W.11433	METAL INSULATED SIDING	54000 SF		10800 MH		140,590	216,000
	218W.1143 EXTERIOR WALLS			10800 MH		140,590	216,000
							356,590
218W.1144	ROOF DECK						
218W.11	METAL ROOF DECK-INSULATED	38000 SF		2280 MH		29,679	38,000
218W.11	TRANSLUCENT PANALS						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
*****	*****	*****	*****	*****	*****	*****	
218W.1144	ROOF DECK			2280 MH	29,679	38,000	67,679
218W.114	SUPERSTRUCTURE			26190 MH	340,931	855,200	1,196,131
218W.11	BUILDING STRUCTURE			31588 MH	403,576	899,650	1,303,226
218W.1	CONVEYOR GALLERIES			31588 MH	403,576	899,650	1,303,226
218W.2	ROTARY PLOW ACCESS TUNNEL						
218W.21	BUILDING STRUCTURE						
218W.211	EXCAVATION WORK						
218W.2111	EXCAVATION-EARTH			1200 CY	900 MH	10,521	1,200
218W.2112	EXCAVATION-ROCK			600 CY	480 MH	5,611	2,400
218W.2114	BACKFILL-EARTH			300 CY	90 MH	896	300
218W.2115	DEWATERING			1 LT	100 MH	932	100
218W.211	EXCAVATION WORK				1570 MH	17,960	4,000
218W.213	SUBSTRUCTURE CONCRETE						
218W.2131	FORMWORK			12000 SF	4800 MH	53,003	12,000
218W.2132	REINFORCING STEEL			3 TN	75 MH	970	1,125
218W.2133	CONCRETE			400 CY	300 MH	3,064	12,800
218W.213	SUBSTRUCTURE CONCRETE				5175 MH	57,037	25,925
218W.214	SUPERSTRUCTURE						
218W.2141	CONCRETE WORK						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY	*****	SITE	*****	TOTAL
		QUANTITY	COSTS	QUANTITY	LABOR HRS	MATERIAL COSTS
218W.2142	STRUCTURAL + MISC STEEL					
218W.21421	STRUCTURAL STEEL	1 TN		15 MH	196	725
218W.2142	STRUCTURAL + MISC STEEL			15 MH	196	725
218W.2144	ROOF DECK					
218W.21441	METAL ROOF DECK-INSULATED	250 SF		15 MH	196	250
213W.2144	ROOF DECK			15 MH	196	250
218W.2146	INTERIOR WALLS					
218W.21462	MASONRY	800 SF		200 MH	2,282	2,240
213W.2146	INTERIOR WALLS			200 MH	2,282	2,240
218W.2147	DOORS + WINDOWS					
218W.21472	PERSONNEL DOORS	21 SF		15 MH	174	252
218W.2147	DOORS + WINDOWS			15 MH	174	252
213W.214	SUPERSTRUCTURE			245 MH	2,848	3,467
218W.21	BUILDING STRUCTURE			6990 MH	77,845	33,392
213W.2	ROTARY PLOW ACCESS TUNNEL			6990 MH	77,845	33,392
218W.3	COAL PILE MEMBRANE BARRIER					
218W.31	EARTHWORK		125000 CY	2500 MH	29,225	37,500
218W.32	MEMBRANE BARRIER	750000 SF	150,000	22500 MH	209,700	
218W.3	COAL PILE MEMBRANE BARRIER		150,000	25000 MH	238,925	37,500

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	

218W.4 LOWERING WELLS

218W.41 BUILDING STRUCTURE

218W.411 EXCAVATION WORK

218W.412 SUBSTRUCTURE+SUPERSTRUCTRE

218W.4121 FORMWORK 8000 SF 6000 MH 66,254 8,000

218W.4122 REINFORCING STEEL 40 TN 1200 MH 15,496 15,000

218W.4123 CONCRETE 320 CY 560 MH 5,718 10,240

218W.4124 STRUCTURAL + MISC. STEEL 3 TN 45 MH 586 2,175

218W.412 SUBSTRUCTURE+SUPERSTRUCTRE 7805 MH 88,054 35,415 123,469

218W.41 BUILDING STRUCTURE 7805 MH 88,054 35,415 123,469

218W.4 LOWERING WELLS 7805 MH 88,054 35,415 123,469

218W.5 BUILDING SERVICES

218W.54 LIGHTING + SERVICE POWER 550 SF 165 MH 2,027 990

218W.5 BUILDING SERVICES 165 MH 2,027 990 3,017

218W. MISC COAL HANDLING STRUCT 150,000 71543 MH 810,427 1,006,947 1,967,374

219. STACK STRUCTURE

219.1 STRUCTURE

219.11 EXCAVATION WORK

219.111 EXCAVATION-EARTH 2300 CY 575 MH 6,721 2,300

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
219.112	EXCAVATION-ROCK	600 CY	480 MH	5,611	2,400		
219.114	BACKFILL-EARTH	600 CY	180 MH	1,791	600		
219.115	DEWATERING	1 LT	150 MH	1,398	150		
	219.11 EXCAVATION WORK		1385 MH	15,521	5,450	20,971	
219.13	SUBSTRUCTURE CONCRETE						
219.131	FORMWORK	3000 SF	1200 MH	13,251	3,000		
219.132	REINFORCING STEEL	225 TN	5625 MH	72,636	84,375		
219.133	CONCRETE	3000 CY	2251 MH	22,988	96,000		
	219.13 SUBSTRUCTURE CONCRETE		9076 MH	108,875	183,375	292,250	
219.14	SUPERSTRUCTURE	1 EA	1,000,000	57000 MH	650,370		
219.141	CONCRETE WORK						
219.1412	REINFORCING STEEL						
219.1413	CONCRETE						
219.1414	BRICK LINER						
	219.141 CONCRETE WORK						
219.142	STRUCTURAL + MISC STEEL						
219.1421	STRUCTURAL STEEL						
219.1422	STRUCTURAL + MISC STEEL						
219.14	SUPERSTRUCTURE	1,000,000	57000 MH	650,370	1,650,370		
219.1	STRUCTURE	1,000,000	67461 MH	774,766	188,825	1,000,000	

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		FACTORY		SITE				
ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
219.2	CHIMNEY SERVICES							
219.24	AIRCRAFT WARNING LIGHTS							
219.25	ELEVATOR							
219.26	LIGHTNING PROTECTION							
219.2	CHIMNEY SERVICES							
219.	STACK STRUCTURE	1,000,000		67461 MH	774,766	188,825	1,963,591	
21	STRUCTURES + IMPROVEMENTS	2,555,564		1453304 MH	17,106,859	27,524,934	47,187,357	

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	*****	***** SITE *****	*****	TOTAL	
		QUANTITY	COSTS	QUANTITY	LABOR HRS	MATERIAL COST	COSTS
*****	*****	*****	*****	*****	*****	*****	*****

22 . BOILER PLANT EQUIPMENT

220A. FOSSIL STEAM SUPPLY SYSTEM

220A.1 QUOTED FSSS PRICE 1 LT 55,675,000 1 LT 1128000 MH 13,975,920 1,397,592

220A.2 DISTRIBUTED FSSS COST

220A.21 STEAM GENERATING EQUIPMENT

220A.211 SUPERCRITICAL PRESS BOILER

220A.212 ASSOCIATED BOILER SYSTEMS

220A.213 MISC BOILER SYSTEMS

220A.214 SOOTBLOWERS

220A.21 STEAM GENERATING EQUIPMENT

220A.22 DRAFT EQUIPMENT

220A.221 FORCED DRAFT FAN + MOTOR

220A.222 PRIMARY AIR FAN + MOTOR

220A.224 REGENERATIVE AIR HTR+MOTOR

220A.22 DRAFT EQUIPMENT

220A.25 FUEL HANDLING EQUIPMENT

220A.251 COAL FEEDER + MOTOR

220A.252 COAL PULVERIZER + MOTOR

220A.25 FUEL HANDLING EQUIPMENT

220A.2 DISTRIBUTED FSSS COST

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	*****	***** SITE *****	*****	TOTAL COSTS		
*****	*****	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	*****
*****	*****	*****	*****	*****	*****	*****	*****	*****
220A.	FOSSIL STEAM SUPPLY SYSTEM	55,675,000		1128000 MH	13,975,920	1,397,592	71,048,512	

221. STEAM GENERATING SYSTEM

221.1 STEAM GENERATING EQUIPMENT

221.11 SUPERCRITICAL PRESS BOILER

221.12 ASSOCIATED BOILER SYSTEMS

221.13 MISC BOILER SYSTEMS

221.1 STEAM GENERATING EQUIPMENT

221.2 STEAM GENERATING ACCESSORY

221.21 BOILER BYPASS SYSTEM

221.215 PIPING

221.2152 2.5 IN + LARGER

221.21521	CS/NNS	103480 LB	155,220	1 LT	15523 MH	201,182	20,118	
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221.2152	2.5 IN + LARGER		155,220		15523 MH	201,182	20,118	376,520
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221.215	PIPING		155,220		15523 MH	201,182	20,118	376,520
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221.216	VALVES		1 LT	70,000				
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221.2161 GATE

221.2162 CHECK

221.216	VALVES		70,000					70,000
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221.217 PIPING-MISC ITEMS

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS	
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST		MATERIAL COST
221.2171	HANGERS + SUPPORTS	20000 LB	30,000					
221.2172	INSULATION							
	221.217 PIPING-MISC ITEMS		30,000				30,000	
	221.21 BOILER BYPASS SYSTEM		255,220		15523 MH	201,182	20,118	476,520
221.22	BOILER VENTS AND DRAINS							
221.225	PIPING							
221.2251	2 IN + SMALLER							
221.22511	CS/VNS			7700 LB	2310 MH	29,941	10,010	
	221.2251 2 IN + SMALLER				2310 MH	29,941	10,010	39,951
221.2252	2.5 IN + LARGER							
221.22521	CS/NNS	74200 LB	111,300	1 LT	11130 MH	144,250	14,425	
	221.2252 2.5 IN + LARGER		111,300		11130 MH	144,250	14,425	269,975
	221.225 PIPING		111,300		13440 MH	174,191	24,435	309,926
221.226	VALVES	1 LT	13,000					
221.2265	RELIEF							
	221.226 VALVES		13,000				13,000	
221.227	PIPING-MISC ITEMS							
221.21	HANGERS + SUPPORTS	15000 LB	22,500					
	221.227 PIPING-MISC ITEMS		22,500					

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PLANT LOCN 610	COST BASIS 07/76	***** FACTORY *****	*****	***** SITE *****	*****	TOTAL COSTS	
ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST
*****	*****	*****	*****	*****	*****	*****	*****
221.22	BOILER VENTS AND DRAINS	146,800		13440 MH	174,191	24,435	345,426
221.2	STEAM GENERATING ACCESSORY	402,020		28963 MH	375,373	44,553	821,946
221.3	SOOTBLOWING SYSTEM						
221.31	ROTATING MACHINERY						
221.311	SOOTBLOWERS						
221.312	S.B. COMPRESSOR + MOTOR	2 EA	768,000	1 LT	3600 MH	47,581	4,758
221.3121	S.B. COMPRESSOR						
221.3122	S.B. COMPRESSOR MOTOR						
221.312	S.B. COMPRESSOR + MOTOR		768,000		3600 MH	47,581	4,758
221.31	ROTATING MACHINERY		768,000		3600 MH	47,581	4,758
221.33	TANKS AND PRESSURE VESSELS						
221.331	S.B. AIR RECEIVER	1 EA	8,000	1 LT	200 MH	2,616	262
221.33	TANKS AND PRESSURE VESSELS		8,000		200 MH	2,616	262
221.35	PIPING						
221.351	2 IN + SMALLER						
221.3511	CS/NNS			3090 LB	927 MH	12,015	4,017
221.351	2 IN + SMALLER				927 MH	12,015	4,017
221.352	2.5 IN + LARGER						16,032

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
221.3521	CS/NNS	26410 LB	39,615	1 LT	3961 MH	51,337	5,134
	221.352	2.5 IN + LARGER	39,615		3961 MH	51,337	5,134
	221.35	PIPING	39,615		4888 MH	63,352	9,151
221.36	VALVES	1 LT	28,000				
221.361	GATE						
221.362	CHECK						
221.363	GLOBE						
221.365	RELIEF						
	221.36	VALVES	28,000				28,000
221.37	PIPING-MISC ITEMS						
221.371	HANGERS + SUPPORTS	5300 LB	7,950				
	221.37	PIPING-MISC ITEMS	7,950				7,950
221.38	INSTRUMENTATION + CONTROL						
221.39	FOUNDATIONS/SKIDS						
221.397	COMPRESSORS + AIR RECEIVER						
221.3971	EXCAVATION WORK						
221.3973	SUPERSTRUCTURE CONCRETE						
221.39731	FORMWORK						
221.39732	REINFORCING STEEL						
221.39	CONCRETE						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL	
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	COSTS

221.39734 EMBEDDED STEEL

221.3973 SUPERSTRUCTURE CONCRETE

221.397 COMPRESSORS + AIR RECEIVER

221.39 FOUNDATIONS/SKIDS

221.3 SOOTBLOWING SYSTEM 851,565 8688 MH 113,549 14,171 979,285

221. STEAM GENERATING SYSTEM 1,253,585 37651 MH 488,922 58,724 1,801,231

222. DRAFT SYSTEM

222.1 ROTATING MACHINERY

222.11 FORCED DRAFT FAN + MOTOR

222.111 FORCED DRAFT FAN

222.112 FORCED DRAFT FAN MOTOR

222.11 FORCED DRAFT FAN + MOTOR

222.12 PRIMARY AIR FAN + MOTOR

222.121 PRIMARY AIR FAN

222.122 PRIMARY AIR FAN MOTOR

222.12 PRIMARY AIR FAN + MOTOR

222.14 AIR HEATER DRAIN PUMP+MTR 3 EA 6,000 1 LT 210 MH 2,775 278

222.141 AIR HEATER DRAIN PUMP

222.142 AIR HEATER DRAIN PUMP MTR

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY QUANTITY	FACTORY COSTS	SITE QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
222.14	AIR HEATER DRAIN PUMP+MTR	6,000		210 MH	2,775	278		9,053
222.1	ROTATING MACHINERY	6,000		210 MH	2,775	278		9,053
222.2	HEAT TRANSFER EQUIPMENT							
222.21	REGENERATIVE AIR HEATERS							
222.211	SECONDARY AIR HEATER+MOTOR							
222.2111	SECONDARY AIR HEATER							
222.2112	SECONDARY AIR HEATER MOTOR							
222.211	SECONDARY AIR HEATER+MOTOR							
222.212	PRIMARY AIR HEATER + MOTOR							
222.2121	PRIMARY AIR HEATER							
222.2122	PRIMARY AIR HEATER MOTOR							
222.212	PRIMARY AIR HEATER + MOTOR							
222.21	REGENERATIVE AIR HEATERS							
222.22	INLET COMBUST AIR STM COIL	1 LT	237,000	1 LT	1100 MH	14,388		1,439
222.23	COMBUST AIR PREHT STM COILS	1 LT	120,000	1 LT	900 MH	11,772		1,177
222.2	HEAT TRANSFER EQUIPMENT		357,000		2000 MH	26,160		385,776
222.3	TANKS AND PRESSURE VESSELS							
222.3	AIR HEATER DRAIN TANK	2 EA	3,000	1 LT	81 MH	1,060		106
222.3	TANKS AND PRESSURE VESSELS		3,000		81 MH	1,060		106

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
222.4	PURIFICATION+FILTRATION EQ						
222.41	ELECTROSTATIC PRECIPITATOR	3 EA	10,002,000	1 LT	225000 MH	2,942,933	294,293
	222.4 PURIFICATION+FILTRATION EQ		10,002,000		225000 MH	2,942,933	294,293
222.5	PIPING + DUCTWORK						
222.51	AIR PREHEAT STEAM PIPING						
222.511	2 IN + SMALLER						
222.5111	CS/NNS			300 LB	91 MH	1,176	390
	222.511 2 IN + SMALLER				9.1 MH	1,176	390
222.512	2.5 IN + LARGER						
222.5121	CS/NNS	87720 LB	131,580	1 LT	13158 MH	170,532	17,053
	222.512 2.5 IN + LARGER		131,580		13158 MH	170,532	17,053
	222.51 AIR PREHEAT STEAM PIPING		131,580		13249 MH	171,703	17,443
222.52	DUCTWORK						
222.521	AIR DUCTS						
222.5211	FD FAN TO AIR HEATER DUCTS	278 TN	311,360	1 LT	17236 MH	230,273	23,027
222.5212	PRIMARY AIR DUCTWORK	169 TN	189,280	1 LT	10478 MH	139,986	13,999
	222.521 AIR DUCTS		500,640		27714 MH	370,259	37,026
222.522	GAS DUCTS						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY QUANTITY	COSTS	SITE QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
222.5221	AIR HTR TO SO2 SUPPLY DUCT	1259 TN	1,410,080	1 LT	78058 MH	1,042,855	104,286	
222.5222	DUCT INSULATION			1 LT	32300 MH	420,545	478,400	
222.522	GAS DUCTS		1,410,080		110358 MH	1,463,401	582,686	3,456,167
222.52	DUCTWORK		1,910,720		138072 MH	1,833,660	619,712	4,364,092
222.5	PIPING + DUCTWORK		2,042,300		151321 MH	2,005,363	637,155	4,684,823
222.6	VALVES	1 LT	80,000					
222.61	GATE							
222.62	CHECK							
222.63	GLOBE							
222.6	VALVES		80,000					80,000
222.7	PIPING-MISC ITEMS							
222.72	INSULATION							
222.73	SPECIALTIES							
222.731	AIR INLET SILENCERS	3 EA	121,560	1 LT	1500 MH	19,530	1,953	
222.73	SPECIALTIES		121,560		1500 MH	19,530	1,953	143,043
222.7	PIPING-MISC ITEMS		121,560		1500 MH	19,530	1,953	143,043
222.8	INSTRUMENTATION + CONTROLS	1 LT	59,000	1 LT	671 MH	8,201	410	
222.9	FOUNDATIONS/SKIDS							
222.91	RECIPITATOR+DUCT FOUND							

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
222.911	EXCAVATION WORK						
222.9111	EXCAVATION-EARTH	200 CY	50 MH	536	200		
222.9114	BACKFILL-EARTH	100 CY	30 MH	299	100		
	222.911 EXCAVATION WORK		80 MH	835	300	1,135	
222.913	SUBSTRUCTURE CONCRETE						
222.9131	FORMWORK	5280 SF	2111 MH	23,310	5,280		
222.9132	REINFORCING STEEL	20 TN	500 MH	6,456	7,500		
222.9133	CONCRETE	200 CY	151 MH	1,542	6,400		
	222.913 SUBSTRUCTURE CONCRETE		2762 MH	31,303	19,180	50,488	
222.914	SUPERSTRUCTURE						
222.9142	STRUCTURAL + MISC STEEL						
222.91421	STRUCTURAL STEEL	500 TN	7500 MH	97,632	362,500		
222.91423	MISCELLANEOUS STEEL	30 TN	1500 MH	19,527	33,000		
222.91425	FLOOR GRATING (GALVANIZED)	10000 SF	1700 MH	22,130	30,000		
222.91426	STAIR TREADS	900 EA	720 MH	9,374	31,500		
222.91427	HANDRAIL	4000 LF	2400 MH	31,242	40,000		
	222.9142 STRUCTURAL + MISC STEEL		13820 MH	179,905	497,000	676,905	
222.9149	PAINTING						
222.91492	STRUCTURAL STEEL	530 TN	2650 MH	25,361	3,180		
222.91494	HANDRAIL	4000 LF	800 MH	7,656	400		
	222.9149 PAINTING		3450 MH	33,017	3,580	36,597	

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	TOTAL COSTS	
		QUANTITY COSTS	QUANTITY LABOR HRS	LABOR COST	MATERIAL COST
222.914	SUPERSTRUCTURE		17270 MH	212,922	500,580
222.91	PRECIPITATOR+DUCT FOUND		20112 MH	245,065	520,060
222.92	PRIMARY AIR+FD FAN FOUND				
222.921	EXCAVATION WORK				
222.9211	EXCAVATION-EARTH	400 CY	100 MH	1,071	400
222.9214	BACKFILL-EARTH	40 CY	12 MH	118	40
222.921	EXCAVATION WORK		112 MH	1,189	440
222.923	SUBSTRUCTURE CONCRETE				
222.9231	FORMWORK	3000 SF	1200 MH	13,251	3,000
222.9232	REINFORCING STEEL	30 TN	751 MH	9,697	11,250
222.9233	CONCRETE	400 CY	300 MH	3,064	12,800
222.923	SUBSTRUCTURE CONCRETE		2251 MH	26,012	27,050
222.924	SUPERSTRUCTURE				
222.92	PRIMARY AIR+FD FAN FOUND		2363 MH	27,201	27,490
222.93	AIR HEATER FOUNDATIONS				
222.931	EXCAVATION WORK				
222.9311	EXCAVATION-EARTH	130 CY	32 MH	343	130
222.931	BACKFILL-EARTH	80 CY	24 MH	239	80
222.931	EXCAVATION WORK		56 MH	582	210

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
222.933	SUBSTRUCTURE CONCRETE						
222.9331	FORMWORK	1500 SF		600 MH	6,626	1,500	
222.9332	REINFORCING STEEL		4 TN	100 MH	1,291	1,500	
222.9333	CONCRETE		50 CY	38 MH	390	1,600	
222.9334	EMBEDDED STEEL		3 TN	376 MH	4,523	4,200	
	222.933 SUBSTRUCTURE CONCRETE			1114 MH	12,830	8,800	21,630
222.934	SUPERSTRUCTURE						
222.9342	STRUCTURAL + MISC STEEL						
222.93421	STRUCTURAL STEEL	150 TN		2250 MH	29,289	108,750	
222.93423	MISCELLANEOUS STEEL		15 TN	750 MH	9,763	16,500	
222.93425	FLOOR GRATING/CHECKER PLT	12000 SF		2400 MH	31,242	60,000	
222.93426	STAIR TREADS		180 EA	144 MH	1,874	6,300	
222.93427	HANDRAIL		1000 LF	600 MH	7,811	10,000	
	222.9342 STRUCTURAL + MISC STEEL			6144 MH	79,979	201,550	281,529
222.9349	PAINTING						
222.93492	STRUCTURAL STEEL	150 TN		750 MH	7,178	900	
222.93494	HANDRAIL		1000 LF	200 MH	1,914	10,000	
	222.9349 PAINTING			950 MH	9,092	10,900	19,992
222.934	SUPERSTRUCTURE			7094 MH	89,071	212,450	301,521
222.93	AIR HEATER FOUNDATIONS			8264 MH	102,483	221,460	323,943

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	TOTAL COSTS	
		QUANTITY COSTS	QUANTITY LABOR HRS LABOR COST MATERIAL COST		
222.9	FOUNDATIONS/SKIDS		30739 MH	374,749	769,010
222.	DRAFT SYSTEM	12,670,860	411,522 MH	5,380,776	1,705,821
223.	ASH + DUST HANDLING SYSTEM				
223.1	ASH + DUST HANDLING EQUIP	1 LT 4,500,000	1 LT 110000 MH	1,423,059	142,306
223.11	FLY ASH EQUIPMENT				
223.11914	BACKFILL-EARTH				
223.11	FLY ASH EQUIPMENT				
223.12	BOTTOM ASH + PYRITES EQUIP				
223.18	INSTRUMENTATION + CONTROL				
223.19	FOUNDATIONS/SKIDS				
223.191	DEWATERING BIN FOUNDATIONS				
223.1911	EXCAVATION WORK				
223.19111	EXCAVATION-EARTH		300 CY 75 MH	803	300
223.19114	BACKFILL-EARTH		200 CY 60 MH	597	200
223.1911	EXCAVATION WORK		135 MH	1,400	500
223.1913	SUBSTRUCTURE CONCRETE				
223.19131	FORMWORK		900 SF 360 MH	3,974	900
223.1	REINFORCING STEEL		4 TN 100 MH	1,291	1,500
223.19133	CONCRETE		50 CY 38 MH	390	1,600

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ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST
223.19134	EMBEDDED STEEL			2 TN	250 MH	3,006	2,800
	223.1913 SUBSTRUCTURE CONCRETE				748 MH	8,661	6,800
	223.1914						15,461
	223.191 DEWATERING BIN FOUNDATIONS				883 MH	10,061	7,300
	223.192 FLY ASH SILO FOUNDATIONS						17,361
	223.1921 EXCAVATION WORK						
	223.19211 EXCAVATION-EARTH			125 CY	32 MH	343	125
	223.19214 BACKFILL-EARTH			100 CY	30 MH	299	100
	223.1921 EXCAVATION WORK				62 MH	642	225
	223.1923 SUBSTRUCTURE CONCRETE						867
	223.19231 FORMWORK			900 SF	360 MH	3,974	900
	223.19232 REINFORCING STEEL			2 TN	51 MH	657	750
	223.19233 CONCRETE			30 CY	23 MH	234	960
	223.19234 EMBEDDED STEEL			2 TN	250 MH	3,006	2,800
	223.1923 SUBSTRUCTURE CONCRETE				684 MH	7,871	5,410
	223.192 FLY ASH SILO FOUNDATIONS				746 MH	8,513	5,635
	223.193 PYRITES HOLDING BIN FOUND						14,148
	223.1931 EXCAVATION WORK						
	223.1933 SUBSTRUCTURE CONCRETE						
	223.19331 FORMWORK			300 SF	120 MH	1,325	300

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
223.19332	REINFORCING STEEL			1 TN	25 MH	322	375
223.19333	CONCRETE			10 CY	8 MH	82	320
223.19334	EMBEDDED STEEL			1 TN	126 MH	1,515	1,400
	223.1933 SUBSTRUCTURE CONCRETE				279 MH	3,244	2,395
	223.193 PYRITES HOLDING BIN FOUND				279 MH	3,244	2,395
223.194	SETTLING TANK FOUNDATION						
223.1941	EXCAVATION WORK						
223.19411	EXCAVATION-EARTH			200 CY	50 MH	536	200
223.19414	BACKFILL-EARTH			175 CY	53 MH	528	175
	223.1941 EXCAVATION WORK				103 MH	1,064	375
223.1943	SUBSTRUCTURE CONCRETE						
223.19431	FORMWORK			1000 SF	400 MH	4,417	1,000
223.19432	REINFORCING STEEL			3 TN	75 MH	970	1,125
223.19433	CONCRETE			35 CY	26 MH	265	1,120
223.19434	EMBEDDED STEEL			2 TN	250 MH	3,006	2,800
	223.1943 SUBSTRUCTURE CONCRETE				751 MH	8,658	6,045
	223.194 SETTLING TANK FOUNDATION				854 MH	9,722	16,142
223.195	RECIRCULATING TANK FOUND						
223.1951	EXCAVATION WORK						
223.19	EXCAVATION-EARTH			600 CY	150 MH	1,607	600

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
223.19514	BACKFILL-EARTH		75 CY	23 MH	230	75	
	223.1951 EXCAVATION WORK			173 MH	1,837	675	2,512
223.1953	SUBSTRUCTURE CONCRETE						
223.19531	FORMWORK		1100 SF	440 MH	4,860	1,100	
223.19532	REINFORCING STEEL		29 TN	725 MH	9,361	10,875	
223.19533	CONCRETE		570 CY	428 MH	4,371	18,240	
223.19534	EMBEDDED STEEL		1 TN	126 MH	1,515	1,400	
	223.1953 SUBSTRUCTURE CONCRETE			1719 MH	20,107	31,615	51,722
	223.195 RECIRCULATING TANK FOUND			1892 MH	21,944	32,290	54,234
	223.19 FOUNDATIONS/SKIDS			4654 MH	53,484	54,040	107,524
	223.1 ASH + DUST HANDLING EQUIP	4,500,000		114654 MH	1,476,543	196,346	6,172,889
223.2	MISC ASH+DUST HANDLING EQ						
223.21	ROTATING MACHINERY						
223.211	ASH HOPPER SEAL PUMP+MOTOR	2 EA	36,400	1 LT	280 MH	3,700	370
223.2111	ASH HOPPER SEAL PUMP						
223.2112	ASH HOPPER SEAL PUMP MOTOR						
223.211	ASH HOPPER SEAL PUMP+MOTOR	36,400		280 MH	3,700	370	40,470
223.21	ROTATING MACHINERY	36,400		280 MH	3,700	370	40,470
223.25	PIPING.						

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
223.251	RECIRCULATION+SEAL WATER						
223.2511	2 IN + SMALLER						
223.25111	CS/NNS	5270 LB	1580 MH	20,480	6,851		
	223.2511 2 IN + SMALLER		1580 MH	20,480	6,851	27,331	
223.2512	2.5 IN + LARGER						
223.25121	CS/NNS	48120 LB	72,180	1 LT	7218 MH	93,545	9,355
	223.2512 2.5 IN + LARGER		72,180		7218 MH	93,545	9,355
	223.251 RECIRCULATION+SEAL WATER		72,180		8798 MH	114,025	16,206
	223.25 PIPING		72,180		8798 MH	114,025	16,206
223.26	VALVES	1 LT	11,000				
223.261	GATE						
223.262	CHECK						
223.263	GLOBE						
223.26	VALVES		11,000				11,000
223.2	MISC ASH+DUST HANDLING EQ		119,580		9078 MH	117,725	16,576
223.	ASH + DUST HANDLING SYSTEM		4,619,580		123732 MH	1,594,268	212,922
224.	FUEL HANDLING SYSTEMS	1 LT	6,500,000	1 LT	106000 MH	1,371,311	137,131
224.1	COAL UNLOADING EQUIPMENT						

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	TOTAL COSTS
		QUANTITY COSTS	QUANTITY LABOR HRS LABOR COST MATERIAL COST	

224.41 COAL FEEDER + MOTOR

224.411 COAL FEEDER

224.412 COAL FEEDER MOTOR

224.41 COAL FEEDER + MOTOR

224.42 PULVERIZER + MOTOR

224.421 PULVERIZER

224.422 PULVERIZER MOTOR

224.42 PULVERIZER + MOTOR

224.45 PIPING + DUCTWORK

224.49 FOUNDATIONS/SKIDS

224.491 PULVERIZER FOUNDATIONS

224.4911 FORMWORK

224.4912 REINFORCING STEEL

224.4913 CONCRETE

224.4914 EMBEDDED STEEL

224.491 PULVERIZER FOUNDATIONS

224.49 FOUNDATIONS/SKIDS

224.4 PULVERIZING SYSTEMS

224.5 STORAGE EQUIPMENT

224.51 LOWERING WELL EQUIP+ MOTOR

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
224.511	LOWERING WELL EQUIPMENT						
224.512	LOWERING WELL EQUIP MOTOR						
224.51	LOWERING WELL EQUIP+ MOTOR						
224.52	COAL SILO						
224.521	COAL SILO A283,3/8IN PLATE	185	TN	18500	MH	255,670	240,500
224.522	COAL SILO A304,3/8IN PLATE	50	TN	7500	MH	103,650	200,000
224.523	COAL SILO A 36 STIFFENERS	30	TN	900	MH	12,438	27,000
224.52	COAL SILO			26900	MH	371,758	467,500
224.5	STORAGE EQUIPMENT			26900	MH	371,758	467,500
224.6	OTHER COAL HANDLING EQUIP						
224.61	SLIDEGATE + MOTOR						
224.611	SLIDEGATE						
224.612	SLIDEGATE MOTOR						
224.61	SLIDEGATE+ MOTOR						
224.62	WEIGHT SCALES						
224.63	MISC VIBRATING FEEDERS+MTR						
224.631	MISC VIBRATING FEEDERS						
224.632	MISC VIBRATING FEEDER MTR						
224.63	MISC VIBRATING FEEDERS+MTR						
224.64	COAL SAMPLING SYSTEMS						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
224.65	DUST SUPPRESSION SYSTEMS	1 LT	110,000	1 LT	2000 MH	25,874	2,587
224.66	FIRE PROTECTION SYSTEM	1 LT	130,000	1 LT	2700 MH	34,993	3,499
224.67	SUMP DRAIN SYSTEM						
224.671	ROTATING MACHINERY						
224.6711	SUMP PUMPS + MOTORS	1 LT	50,000	1 LT	559 MH	7,388	739
224.67111	SUMP PUMPS						
224.67112	SUMP PUMP MOTORS						
224.6711	SUMP PUMPS + MOTORS		50,000		559 MH	7,388	739
224.671	ROTATING MACHINERY		50,000		559 MH	7,388	739
224.675	PIPING	1 LT	50,000	1 LT	5000 MH	64,802	6,480
224.67	SUMP DRAIN SYSTEM		100,000		5559 MH	72,190	7,219
224.6	OTHER COAL HANDLING EQUIP		340,000		10259 MH	133,057	13,305
224.7	IGNITION OIL SYSTEM						
224.71	ROTATING MACHINERY						
224.711	IGNITION OIL PUMP + MOTOR	2 EA	8,000	1 LT	141 MH	1,863	186
224.7111	IGNITION OIL PUMP						
224.7112	IGNITION OIL PUMP MOTOR						
224.711	IGNITION OIL PUMP + MOTOR		8,000		141 MH	1,863	186
224.71	ROTATING MACHINERY		8,000		141 MH	1,863	186

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
*****	*****	*****	*****	*****	*****	*****	
224.75	PIPING						
224.751	2 IN + SMALLER						
224.7511	CS/NNS		1080 LB	324 MH	4,197	1,404	
	224.751 2 IN + SMALLER			324 MH	4,197	1,404	
224.752	2.5 IN + LARGER						
224.7521	CS/NVS	4410 LB	6,615	1 LT	661 MH	8,568	
	224.752 2.5 IN + LARGER		6,615		661 MH	8,563	
	224.75 PIPING		6,615		985 MH	12,755	
224.76	VALVES	1 LT	8,000				
224.762	CHECK						
224.768	PLUG						
224.76	VALVES		8,000			8,000	
224.7	IGNITION OIL SYSTEM		22,615		1126 MH	14,628	
224.	FUEL HANDLING SYSTEMS		6,862,615		144285 MH	1,890,754	
225.	FLUE GAS DESULFUR STRUCT					620,383	
225.1	LIME SLAKING BUILDING						
225.11	BUILDING STRUCTURE						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
225.111	EXCAVATION WORK						
225.1111	EXCAVATION-EARTH	1500 CY	375 MH	4,383	1,500		
225.1114	BACKFILL-EARTH	1300 CY	390 MH	3,881	1,300		
	225.111 EXCAVATION WORK		765 MH	8,264	2,800	11,064	
225.113	SUBSTRUCTURE CONCRETE						
225.1131	FORMWORK	7000 SF	2800 MH	30,919	7,000		
225.1132	REINFORCING STEEL	24 TN	600 MH	7,748	9,000		
225.1133	CONCRETE	320 CY	240 MH	2,451	10,240		
225.1134	EMBEDDED STEEL	4 TN	500 MH	6,014	5,000		
225.1135	FLOOR FINISH	5300 SF	53 MH	543	53		
	225.113 SUBSTRUCTURE CONCRETE		4193 MH	47,675	31,893	79,568	
225.114	SUPERSTRUCTURE						
225.1141	CONCRETE WORK						
225.11411	FORMWORK						
225.114111	FORMWORK-WOOD	1000 SF	750 MH	8,281	1,000		
225.114112	FORMWORK-METAL	10800 SF	648 MH	7,156	9,720		
	225.11411 FORMWORK		1398 MH	15,437	10,720	26,157	
225.11412	REINFORCING STEEL	6 TN	180 MH	2,323	2,250		
225.11413	CONCRETE	220 CY	385 MH	3,933	7,040		
	225.1141 CONCRETE WORK		1963 MH	21,693	20,010	41,703	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
225.1149	PAINTING						
225.11492	STEELWORK	300	TN	1500	MH	14,355	1,800
225.11493	DOORS	460	SF	9	MH	86	46
225.11494	HANDRAIL	1120	LF	224	MH	2,144	112
225.1149	PAINTING			1733	MH	16,585	1,958
225.114	SUPERSTRUCTURE			14347	MH	177,076	363,753
225.11	BUILDING STRUCTURE			19305	MH	233,015	398,446
225.12	BUILDING SERVICES						
225.121	PLUMBING + DRAINS	1	LT	8,000	MH	11,396	1,140
225.122	HEATING, VENT + AIR COND	1	LT	11,116	MH	8,032	1,205
225.1221	ROTATING MACHINERY						
225.12211	ROOF VENTILATOR + MOTOR						
225.122111	ROOF VENTILATOR						
225.122112	ROOF VENTILATOR MOTOR						
225.12211	ROOF VENTILATOR + MOTOR						
225.12212	WALL EXHAUST FAN + MOTOR						
225.122121	WALL EXHAUST FAN						
225.1	WALL EXHAUST FAN MOTOR						
225.12212	WALL EXHAUST FAN + MOTOR						

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ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
*****	*****	*****	*****	*****	*****	*****	*****	*****

225.1221 ROTATING MACHINERY

225.1222 HEAT TRANSFER EQUIPMENT

225.12221 ELECTRIC UNIT HEATER+MOTOR

225.122211 ELECTRIC UNIT HEATERS

225.122212 ELECTRIC UNIT HEATER MOTOR

225.122211 ELECTRIC UNIT HEATER+MOTOR

225.12222 ELECTRIC BASEBOARD HEATERS

225.12223 AIR CONDITIONING UNIT+MTR

225.122231 AIR CONDITIONING UNIT

225.122232 AIR CONDITIONING UNIT MTR

225.12223 AIR CONDITIONING UNIT+MTR

225.12224 HEATING+VENT AIR UNIT+MTR

225.122241 HEATING+VENT AIR UNIT

225.122242 HEATING+VENT AIR UNIT MTR

225.12224 HEATING+VENT AIR UNIT+MTR

225.12225 AIR COOLED COMPRESSOR COND

225.1222 HEAT TRANSFER EQUIPMENT

225.1226 VALVES + DAMPERS

225.12269 SPECIAL VALVES + DAMPERS

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*****	*****	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	COSTS
*****	*****	*****	*****	*****	*****	*****	*****	*****

225.122691 WALL LOUVERS

225.12269 SPECIAL VALVES + DAMPERS

225.1226 VALVES + DAMPERS

225.122	HEATING, VENT + AIR COND	11,116		621 MH	8,032	1,205	20,353
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225.124	LIGHTING + SERVICE POWER		12800 SF	3841 MH	47,225	23,040	
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225.12	BUILDING SERVICES	19,116		5341 MH	66,653	25,385	111,154
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225.1	LIME SLAKING BUILDING	19,116		24646 MH	299,663	423,831	742,615
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225.2 LIME SLAKING SERVICE BLDG

225.21 BUILDING STRUCTURE

225.211 EXCAVATION WORK

225.2111	EXCAVATION-EARTH		70 CY	17 MH	199	70
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225.2114	BACKFILL-EARTH		50 CY	15 MH	149	50
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225.211	EXCAVATION WORK			32 MH	348	120	468
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225.213 SUBSTRUCTURE CONCRETE

225.2131	FORMWORK		1230 SF	492 MH	5,433	1,230
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225.2132	REINFORCING STEEL		4 TN	100 MH	1,291	1,500
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225.2133	CONCRETE		75 CY	56 MH	571	2,400
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225.2134	EMBEDDED STEEL		2 TN	250 MH	3,006	2,800
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225.21	FLOOR FINISH		2750 SF	28 MH	286	28
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225.215	WIRE FABRIC		2750 SF	55 MH	710	330
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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
225.213	SUBSTRUCTURE CONCRETE			981 MH	11,297	8,288	19,585
225.214	SUPERSTRUCTURE						
225.2141	CONCRETE WORK						
225.2142	STRUCTURAL + MISC STEEL						
225.21421	STRUCTURAL STEEL	22 TN	330 MH	4,294	15,950		
225.21423	MISC. FRAMES, ETC.	2 TN	100 MH	1,302	2,200		
225.2142	STRUCTURAL + MISC STEEL		430 MH	5,596	18,150	23,746	
225.2143	EXTERIOR WALLS						
225.21433	METAL INSULATED SIDING	870 SF	173 MH	2,255	3,480		
225.2143	EXTERIOR WALLS		173 MH	2,255	3,480	5,735	
225.2144	ROOF DECK						
225.21442	PRECAST CONCRETE PANELS	2750 SF	220 MH	2,865	3,575		
225.2144	ROOF DECK		220 MH	2,865	3,575	6,440	
225.2145	ROOFING + FLASHING						
225.21451	B.J. ROOF INSUL. + FLASH	2750 SF	193 MH	2,602	3,438		
225.2145	ROOFING + FLASHING		193 MH	2,602	3,438	6,040	
225.2147	DOORS + WINDOWS						
225.21472	PERSONNEL DOORS	315 SF	221 MH	2,564	3,780		
225.2147	DOORS + WINDOWS		221 MH	2,564	3,780	6,344	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY QUANTITY	FACTORY COSTS	SITE QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
225.2149	PAINTING							
225.21492	STEELWORK			22 TN	110 MH	1,053	132	
225.21493	DOORS			315 SF	6 MH	57	32	
225.2149	PAINTING				116 MH	1,110	164	1,274
225.214	SUPERSTRUCTURE				1353 MH	16,992	32,587	49,579
225.21	BUILDING STRUCTURE				2366 MH	28,637	40,995	69,632
225.22	BUILDING SERVICES							
225.2	LIME SLAKING SERVICE BLDG				2366 MH	28,637	40,995	69,632
225.3	DESULFUR CTRL+SWTCHGR BLDG							
225.31	BUILDING STRUCTURE							
225.311	EXCAVATION WORK							
225.3111	EXCAVATION-EARTH			250 CY	63 MH	736	250	
225.3114	BACKFILL-EARTH			220 CY	66 MH	656	220	
225.311	EXCAVATION WORK				129 MH	1,392	470	1,862
225.313	SUBSTRUCTURE CONCRETE							
225.3131	FORMWORK			1400 SF	560 MH	6,183	1,400	
225.3132	REINFORCING STEEL			5 TN	125 MH	1,614	1,875	
225.3133	CONCRETE			60 CY	45 MH	460	1,920	
225.3134	EMBEDDED STEEL			1 TN	126 MH	1,515	1,400	
225.3135	DOOR FINISH			2000 SF	20 MH	204	20	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
225.3139	WIRE FABRIC		2000 SF	40 MH	516	240	
	225.313 SUBSTRUCTURE CONCRETE			916 MH	10,492	6,855	17,347
225.314	SUPERSTRUCTURE						
225.3141	CONCRETE WORK						
225.31411	FORMWORK						
225.314112	FORMWORK-METAL		4000 SF	240 MH	2,652	3,600	
	225.31411 FORMWORK			240 MH	2,652	3,600	6,252
225.31412	REINFORCING STEEL		4 TN	120 MH	1,552	1,500	
225.31413	CONCRETE		50 CY	88 MH	898	1,600	
225.31415	FLOOR FINISH		2000 SF	20 MH	204	20	
	225.3141 CONCRETE WORK			468 MH	5,306	6,720	12,026
225.3142	STRUCTURAL + MISC STEEL						
225.31421	STRUCTURAL STEEL		76 TN	1140 MH	14,839	55,100	
225.31423	MISC. FRAMES, ETC.		4 TN	200 MH	2,603	4,400	
225.31426	STAIR TREADS		70 EA	56 MH	730	2,450	
225.31427	HANDRAIL		180 LF	107 MH	1,394	1,800	
	225.3142 STRUCTURAL + MISC STEEL			1503 MH	19,566	63,750	83,316
225.3143	EXTERIOR WALLS						
225.31432	MASONRY		200 SF	50 MH	571	560	
225.31433	METAL INSULATED SIDING		7600 SF	1520 MH	19,789	30,400	

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	TOTAL COSTS
		QUANTITY COSTS	QUANTITY LABOR HRS LABOR COST MATERIAL COST	
*****	*****	*****	*****	*****
225.3143	EXTERIOR WALLS		1570 MH	20,360 30,960 51,320
225.3144	ROOF DECK			
225.31442	PRECAST CONCRETE PANALS			
225.3144	ROOF DECK			
225.3145	ROOFING + FLASHING			
225.31451	B.U. ROOF INSUL. + FLASH	2000 SF	140 MH	1,887 2,500
225.3145	ROOFING + FLASHING		140 MH	1,887 2,500 4,387
225.3147	DOORS + WINDOWS			
225.31472	PERSONNEL DOORS	220 SF	154 MH	1,786 2,640
225.3147	DOORS + WINDOWS		154 MH	1,786 2,640 4,426
225.3148	WALLS, FLOOR + CEIL FINISHES			
225.31481	VINYL FLOOR TILE	1500 SF	120 MH	1,392 2,250
225.31486	ACOUSTICAL CEILING	1500 SF	150 MH	1,740 750
225.3148	WALLS, FLOOR + CEIL FINISHES		270 MH	3,132 3,000 6,132
225.3149	PAINTING			
225.31492	STEELWORK	80 TN	400 MH	3,828 480
225.31494	HANDRAIL	180 LF	4 MH	38 18
225.31495	ETAL DECK	1000 SF	20 MH	191 100
225.3149	PAINTING		424 MH	4,057 598

UNITED ENGINEERS & CONSTRUCTORS INC.

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
225.314	SUPERSTRUCTURE			4529 MH	56,094	110,168	166,262
225.31	BUILDING STRUCTURE			5574 MH	67,978	117,493	185,471
225.32	BUILDING SERVICES						
225.321	PLUMBING + DRAINS	1 LT	8,000	1 LT	879 MH	11,396	1,140
225.322	HEATING,VENT + AIR COND	1 LT	5,440	1 LT	304 MH	3,933	590
225.3222	HEAT TRANSFER EQUIPMENT						
225.32221	ELECTRIC UNIT HEATER+MOTOR						
225.322211	ELECTRIC UNIT HEATERS						
225.322212	ELECTRIC UNIT HEATER MOTOR						
225.322211	ELECTRIC UNIT HEATER+MOTOR						
225.32222	ELECTRIC BASEBOARD HEATER						
225.32223	HEATING+VENT AIR UNIT+MTR						
225.322231	HEATING+VENT AIR UNIT						
225.322232	HEATING+VENT AIR UNIT MTR						
225.32223	HEATING+VENT AIR UNIT+MTR						
225.32224	AIR CONDITIONING UNIT+MTR						
225.322241	AIR CONDITIONING UNIT						
225.322242	AIR CONDITIONING UNIT MTR						
225.32224	AIR CONDITIONING UNIT+MTR						

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ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	FACTORY COSTS	QUANTITY	LABOR HRS	SITE LABOR COST	MATERIAL COST	TOTAL COSTS
*****	*****	*****	*****	*****	*****	*****	*****	*****

225.3222 HEAT TRANSFER EQUIPMENT

225.3226 VALVES + DAMPERS

225.32269 SPECIAL VALVES + DAMPERS

225.322691 WALL LOUVERS

225.32269 SPECIAL VALVES + DAMPERS

225.3226 VALVES + DAMPERS

225.322	HEATING, VENT + AIR COND	5,440		304 MH	3,933	590	9,963
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225.324 LIGHTING + SERVICE POWER

		2000 SF	600 MH	7,378	3,600	
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225.32 BUILDING SERVICES

		13,440	1783 MH	22,707	5,330	41,477
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225.3 DESULFUR CTRL+SWTCHGR BLDG

		13,440	7357 MH	90,685	122,823	226,948
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225.5 PROCESS+SEAL WATER PUMPHSE

225.51 BUILDING STRUCTURE

225.511 EXCAVATION WORK

225.5111 EXCAVATION-EARTH

		100 CY	25 MH	293	100	
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225.5114 BACKFILL-EARTH

		70 CY	21 MH	208	70	
--	--	-------	-------	-----	----	--

225.511 EXCAVATION WORK

		46 MH	501	170	671	
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225.513 SUBSTRUCTURE CONCRETE

225.5131 RMWORK

		1000 SF	400 MH	4,417	1,000	
--	--	---------	--------	-------	-------	--

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
225.5132	REINFORCING STEEL		2 TN	51 MH	657	750	
225.5133	CONCRETE		40 CY	31 MH	315	1,280	
225.5134	EMBEDDED STEEL		1 TN	126 MH	1,515	1,400	
225.5135	FLOOR FINISH		800 SF	8 MH	82	8	
225.5139	WIRE FABRIC		800 SF	16 MH	207	96	
225.513	SUBSTRUCTURE CONCRETE			632 MH	7,194	4,534	11,728
225.514	SUPERSTRUCTURE		800 SF	223 MH	2,905	2,680	
225.5141	CONCRETE WORK						
225.5142	STRUCTURAL + MISC STEEL						
225.5143	EXTERIOR WALLS						
225.51433	PREFAB METAL INSUL. SIDING						
225.5143	EXTERIOR WALLS						
225.5145	ROOFING + FLASHING						
225.51455	PREFAB STANDING RIB & INSL						
225.5145	ROOFING + FLASHING						
225.5147	DOORS + WINDOWS						
225.51472	PERSONNEL DOORS						
225.5147	DOORS + WINDOWS						
225.514	SUPERSTRUCTURE			223 MH	2,905	2,680	5,585
225.51	BUILDING STRUCTURE			901 MH	10,600	7,384	17,984

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	

225.52 BUILDING SERVICES

225.521 PLUMBING + DRAINS 1 LT 4,000 1 LT 440 MH 5,702 570

225.522 HEATING, VENT + AIR COND 1 LT 641 1 LT 34 MH 442 66

225.5221 ROTATING MACHINERY

225.52211 WALL EXHAUST FAN + MOTOR

225.522111 WALL EXHAUST FAN

225.522112 WALL EXHAUST FAN MOTOR

225.52211 WALL EXHAUST FAN + MOTOR

225.5221 ROTATING MACHINERY

225.5222 HEAT TRANSFER EQUIPMENT

225.52221 ELECTRIC UNIT HEATER+MOTOR

225.522211 ELECTRIC UNIT HEATERS

225.522212 ELECTRIC UNIT HEATER MOTOR

225.52221 ELECTRIC UNIT HEATER+MOTOR

225.5222 HEAT TRANSFER EQUIPMENT

225.5226 VALVES

225.52269 SPECIAL VALVES + DAMPERS

225.522 ALL LOUVERS

225.52269 SPECIAL VALVES + DAMPERS

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	

225.5226 VALVES							
225.522	HEATING, VENT + AIR COND	641		34 MH	442	66	1,149
225.524	LIGHTING + SERVICE POWER		400 SF	119 MH	1,463	720	
225.52	BUILDING SERVICES	4,641		593 MH	7,607	1,356	13,604
225.5	PROCESS+SEAL WATER PUMPHSE	4,641		1494 MH	18,207	8,740	31,588
225.6 THICKENER EQUIPMENT BLDG							

225.61	BUILDING STRUCTURE						

225.611	EXCAVATION WORK						

225.6111	EXCAVATION-EARTH		200 CY	51 MH	595	200	
225.6114	BACKFILL-EARTH		100 CY	30 MH	299	100	
225.611	EXCAVATION WORK			81 MH	894	300	1,194
225.613 SUBSTRUCTURE CONCRETE							

225.6131	FORMWORK		2000 SF	800 MH	8,834	2,000	
225.6132	REINFORCING STEEL		5 TN	125 MH	1,614	1,875	
225.6133	CONCRETE		110 CY	83 MH	847	3,520	
225.6134	EMBEDDED STEEL		1 TN	126 MH	1,515	1,400	
225.6135	FLOOR FINISH		3200 SF	32 MH	326	32	
225.6139	WIRE FABRIC		3200 SF	63 MH	815	384	
225.613	SUBSTRUCTURE CONCRETE			1229 MH	13,951	9,211	23,162
225.614	SUPERSTRUCTURE		3200 SF	896 MH	11,663	10,720	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
225.6141	CONCRETE WORK								
225.6142	STRUCTURAL + MISC STEEL								
225.6143	EXTERIOR WALLS								
225.61433	METAL INSULATED SIDING								
225.6143	EXTERIOR WALLS								
225.6145	ROOFING + FLASHING								
225.61455	STANDING RIB + INSUL								
225.6145	ROOFING + FLASHING								
225.6146	INTERIOR WALLS + PARTITION								
225.61462	MASONRY								
225.6146	INTERIOR WALLS + PARTITION								
225.6147	DOORS + WINDOWS								
225.61471	ROLLING STEEL DOORS								
225.61472	PERSONNEL DOORS								
225.6147	DOORS + WINDOWS								
225.614	SUPERSTRUCTURE				896 MH	11,663	10,720	22,383	
225.61	BUILDING STRUCTURE				2206 MH	26,508	20,231	46,739	
225.62	BUILDING SERVICES								
225.6	PLUMBING + DRAINS		1 LT	4,000	1 LT	440 MH	5,702	570	

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	*****	SITE *****	*****	TOTAL
		QUANTITY	COSTS	QUANTITY	LABOR HRS	COSTS
*****	*****	*****	*****	*****	*****	*****

225.622	HEATING, VENT + AIR COND	/ 1 LT	1,887	1 LT	104 MH	1,345	202
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225.6221 ROTATING MACHINERY

225.62211 WALL EXHAUST FAN + MOTOR

225.622111 WALL EXHAUST FAN

225.622112 WALL EXHAUST FAN MOTOR

225.622111 WALL EXHAUST FAN + MOTOR

225.6221 ROTATING MACHINERY

225.6222 HEAT TRANSFER EQUIPMENT

225.62221 ELECTRIC UNIT HEATER+MOTOR

225.622211 ELECTRIC UNIT HEATERS

225.622212 ELECTRIC UNIT HEATER MOTOR

225.622211 ELECTRIC UNIT HEATER+MOTOR

225.6222 HEAT TRANSFER EQUIPMENT

225.6226 VALVES

225.62269 SPECIAL VALVES + DAMPERS

225.622691 WALL LOUVERS

225.62269 SPECIAL VALVES + DAMPERS

225.6226 VALVES

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****			TOTAL COSTS	
		QUANTITY	COSTS	QUANTITY	LABOR HRS		LABOR COST MATERIAL COST
225.622	HEATING, VENT + AIR COND	1,887		104 MH	1,345	202	3,434
225.624	LIGHTING + SERVICE POWER		1600 SF	481 MH	5,916	2,880	
225.62	BUILDING SERVICES	5,887		1025 MH	12,963	3,652	22,502
225.6	THICKENER EQUIPMENT BLDG	5,887		3231 MH	39,471	23,883	69,241
225.7	SLUDGE STABILIZATION BLDG						
225.71	HANGERS AND SUPPORTS						
225.711	EXCAVATION WORK						
225.7111	EXCAVATION-EARTH		600 CY	151 MH	1,704	600	
225.7114	BACKFILL-EARTH		500 CY	150 MH	1,492	500	
225.711	EXCAVATION WORK			301 MH	3,256	1,100	4,356
225.713	SUBSTRUCTURE CONCRETE						
225.7131	FORMWORK		5300 SF	2120 MH	23,410	5,300	
225.7132	REINFORCING STEEL		20 TN	500 MH	6,456	7,500	
225.7133	CONCRETE		270 CY	203 MH	2,072	8,640	
225.7134	EMBEDDED STEEL		3 TN	376 MH	4,523	4,200	
225.7135	FLOOR FINISH		7500 SF	75 MH	765	75	
225.7139	WIRE FABRIC		7500 SF	151 MH	1,949	900	
225.713	SUBSTRUCTURE CONCRETE			3425 MH	39,175	26,615	65,790
225.714	SUPERSTRUCTURE						
225.71	CONCRETE WORK						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
225.7142	STRUCTURAL + MISC STEEL						
225.71421	STRUCTURAL STEEL	70 TN		1050 MH	13,669	50,750	
225.71423	MISC. FRAMES, ETC.			2 TN	100 MH	1,302	2,200
225.71426	STAIR TREADS			45 EA	36 MH	468	1,575
225.71427	HANDRAIL			100 LF	60 MH	782	1,000
	225.7142 STRUCTURAL + MISC STEEL			1246 MH	16,221	55,525	71,746
225.7143	EXTERIOR WALLS						
225.71433	METAL INSULATED SIDING		9500 SF	1900 MH	24,733	38,000	
	225.7143 EXTERIOR WALLS			1900 MH	24,733	38,000	62,733
225.7144	ROOF DECK						
225.71441	METAL ROOF DECK		11700 SF	702 MH	9,139	14,625	
225.71443	CONCRETE FILL		130 CY	360 MH	4,687	5,760	
225.71444	REINFORCING STEEL		4 TN	140 MH	1,807	1,500	
	225.7144 ROOF DECK			1202 MH	15,633	21,885	37,518
225.7145	ROOFING + FLASHING						
225.71451	B.U. ROOF INSUL + FLASH		7200 SF	504 MH	6,794	9,000	
	225.7145 ROOFING + FLASHING			504 MH	6,794	9,000	15,794
225.7146	INTERIOR WALLS + PARTITION						
225.71462	MASONRY		2100 SF	525 MH	5,990	5,880	
225.71463	METAL PARTITIONS		1700 SF	102 MH	1,329	2,550	

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	*****	***** SITE *****	*****	TOTAL COSTS		
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST MATERIAL COST		
225.7146	INTERICR WALLS + PARTITION			627 MH	7,319	8,430	15,749	
225.7147	DOORS + WINDOWS							
225.71471	ROLLING STEEL DOORS			170 SF	85 MH	1,105	2,380	
225.71472	PERSONNEL DOORS			420 SF	294 MH	3,410	5,040	
225.71473	SASH + GLAZING			200 SF	80 MH	925	2,400	
225.7147	DOORS + WINDOWS				459 MH	5,443	9,820	15,263
225.7148	WALLS, FLOOR+CEIL FINISHS							
225.71481	VINYL FLOOR TILE			1500 SF	120 MH	1,392	2,250	
225.71486	ACOUSTICAL CEILING			1500 SF	150 MH	1,740	750	
225.7148	WALLS, FLOOR+CEIL FINISHS				270 MH	3,132	3,000	6,132
225.7149	PAINTING							
225.71492	STEELWORK			70 TN	350 MH	3,350	420	
225.71493	DOORS+WALLS			4200 SF	84 MH	804	420	
225.71494	HANDRAIL			100 LF	20 MH	191	10	
225.7149	PAINTING				454 MH	4,345	850	5,195
225.714	SUPERSTRUCTURE				6662 MH	83,620	146,510	230,130
225.71	HANGERS AND SUPPORTS				10388 MH	126,051	174,225	300,276
225.72	BUILDING SERVICES							
225.721	PLUMBING + DRAINS	1 LT	20,000	1 LT	2200 MH	28,512	2,851	

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PLANT 61	COST BASIS 07/76	***** FACTORY *****	***** SITE *****	TOTAL				
ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	COSTS
*****		*****	*****	*****	*****	*****	*****	*****
225.7211	ROOF DRAINS + PIPING							
225.7212	FLOOR DRAINS + PIPING							
225.7213	PLUMBING FIXTURES + PIPING							
225.72131	FIXTURES							
225.72135	PIPING							
225.7213	PLUMBING FIXTURES + PIPING							
225.721	PLUMBING + DRAINS	20,000		2200 MH	28,512	2,851	51,363	
225.722	HEATING,VENT + AIR COND	1 LT	16,750	1 LT	941 MH	12,173	1,826	
225.7221	ROTATING MACHINERY							
225.72211	POWER ROOF VENTILATORS+MTR							
225.722111	POWER ROOF VENTILATORS.							
225.722112	POWER ROOF VENT MOTORS							
225.72211	POWER ROOF VENTILATORS+MTR							
225.72212	WALL EXHAUST FANS+MOTORS							
225.722121	WALL EXHAUST FANS							
225.722122	WALL EXHAUST FAN MOTORS							
225.72212	WALL EXHAUST FANS+MOTORS							
225.72213	RETURN AIR FANS + MOTORS							
225.722131	RETURN AIR FANS							
225.722132	RETURN AIR FAN MOTORS							

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	TOTAL
		QUANTITY	QUANTITY LABOR HRS LABOR COST MATERIAL COST	COSTS
*****	*****	*****	*****	*****

225.72213 RETURN AIR FANS + MOTORS

225.7221 ROTATING MACHINERY

225.7222 HEAT TRANSFER EQUIPMENT

225.72221 ELECTRIC UNIT HEATER+MOTOR

225.722211 ELECTRIC UNIT HEATERS

225.722212 ELECTRIC UNIT HEATER MOTOR

225.72221 ELECTRIC UNIT HEATER+MOTOR

225.72222 HEATING+VENT AIR UNIT+MTR

225.722221 HEATING+VENT AIR UNIT

225.722222 HEATING+VENT AIR UNIT MTR

225.72222 HEATING+VENT AIR UNIT+MTR

225.72223 AIR CONDITIONING UNIT+MTR

225.722231 AIR CONDITIONING UNIT

225.722232 AIR CONDITIONING UNIT MTR

225.72223 AIR CONDITIONING UNIT+MTR

225.7222 HEAT TRANSFER EQUIPMENT

225.7226 VALVES

225.72269 SPECIAL VALVES + DAMPERS

225.722 FALL LOUVERS

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PLANT 610	COST BASIS 07/76	***** FACTORY *****	***** SITE *****			TOTAL COSTS	
ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST
***** *****				***** *****			***** *****
225.72269 SPECIAL VALVES + DAMPERS							
225.7226 VALVES							
225.722	HEATING, VENT + AIR COND	16,750		941 MH	12,173	1,826	30,749
225.724	LIGHTING + SERVICE POWER		6000 SF	1800 MH	22,131	10,800	
225.72	BUILDING SERVICES	36,750		4941 MH	62,816	15,477	115,043
225.7	SLUDGE STABILIZATION BLDG	36,750		15329 MH	188,867	189,702	415,319
225.3	SLUDGE PUMP HOUSE						
225.31	BUILDING STRUCTURE						
225.811	EXCAVATION WORK						
225.8111	EXCAVATION-EARTH		70 CY	17 MH	199	70	
225.8114	BACKFILL-EARTH		50 CY	15 MH	149	50	
225.811	EXCAVATION WORK			32 MH	348	120	468
225.813	SUBSTRUCTURE CONCRETE						
225.8131	FORMWORK		1000 SF	400 MH	4,417	1,000	
225.8132	REINFORCING STEEL		2 TN	51 MH	657	750	
225.8133	CONCRETE		30 CY	23 MH	234	960	
225.8134	EMBEDDED STEEL						
225.8135	FLOOR FINISH		800 SF	8 MH	82	8	
225.8139	WIRE FABRIC		800 SF	16 MH	207	96	
225.813	SUBSTRUCTURE CONCRETE			498 MH	5,597	2,814	8,411

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	*****	TOTAL COSTS
		QUANTITY	COSTS	QUANTITY LABOR HRS LABOR COST MATERIAL COST	
*****	*****	*****	*****	*****	*****
225.814	SUPERSTRUCTURE				
225.8141	CONCRETE WORK				
225.8142	STRUCTURAL + MISC STEEL				
225.81421	STRUCTURAL STEEL		5 TN	76 MH	987 3,625
	225.8142 STRUCTURAL + MISC STEEL			76 MH	987 3,625
225.8143	EXTERIOR WALLS				
225.81433	METAL INSULATED SIDING		1500 SF	300 MH	3,905 6,000
	225.8143 EXTERIOR WALLS			300 MH	3,905 6,000
225.8144	ROOF DECK				
225.81442	PRECAST CONCRETE PANALS		800 SF	64 MH	835 1,040
	225.8144 ROOF DECK			64 MH	835 1,040
225.8145	ROOFING + FLASHING				
225.81451	B.U. ROOF INSUL + FLASH		800 SF	56 MH	755 1,000
	225.8145 ROOFING + FLASHING			56 MH	755 1,000
225.8147	DOORS + WINDOWS				
225.81471	ROLLING STEEL DOORS		80 SF	40 MH	520 1,120
225.81472	PERSONNEL DOORS		42 SF	29 MH	336 504
225.81473	SASH + GLAZING		240 SF	96 MH	1,114 2,880
	225.8147 DOORS + WINDOWS			165 MH	1,970 4,504

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
225.8149	PAINTING						
225.81492	STEELWORK		5 TN	25 MH	239	30	
225.8149	PAINTING			25 MH	239	30	269
225.814	SUPERSTRUCTURE			686 MH	8,691	16,199	24,890
225.81	BUILDING STRUCTURE			1216 MH	14,636	19,133	33,769
225.82	BUILDING SERVICES						
225.821	PLUMBING + DRAINS	1 LT	6,600	1 LT	660 MH	8,554	855
225.822	HEATING, VENT + AIR COND	1 LT	841	1 LT	52 MH	671	101
225.8221	ROTATING MACHINERY						
225.82211	WALL EXHAUST FAN + MOTOR						
225.822111	WALL EXHAUST FAN						
225.822112	WALL EXHAUST FAN MOTOR						
225.8221	WALL EXHAUST FAN + MOTOR						
225.8221	ROTATING MACHINERY						
225.8222	HEAT TRANSFER EQUIPMENT						
225.82221	ELECTRIC UNIT HEATER+MOTOR						
225.822211	ELECTRIC UNIT HEATER						
225.822212	ELECTRIC UNIT HEATER MOTOR						
225.82221	ELECTRIC UNIT HEATER+MOTOR						

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	TOTAL COSTS
		QUANTITY COSTS	QUANTITY LABOR HRS LABOR COST MATERIAL COST	
*****	*****	*****	*****	*****

225.8222 HEAT TRANSFER EQUIPMENT

225.8226 VALVES

225.82269 SPECIAL VALVES + DAMPERS

225.822691 INTAKE LOUVERS

225.82269 SPECIAL VALVES + DAMPERS

225.8226 VALVES

225.822	HEATING, VENT + AIR COND	841	52 MH	671	101	1,613
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225.824 LIGHTING + SERVICE POWER

400 SF	119 MH	1,463	720
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225.82 BUILDING SERVICES

6,641	831 MH	10,688	1,676	19,205
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225.3 SLUDGE PUMP HOUSE

6,641	2047 MH	25,324	20,809	52,974
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225.9 LIME UNLOADING BLDG+TUNNEL

225.91 BUILDING STRUCTURE

225.911 EXCAVATION WORK

225.9111 EXCAVATION-EARTH

750 CY	188 MH	2,198	750
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225.9112 EXCAVATION-ROCK

1500 CY	1200 MH	14,028	6,000
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225.9114 BACKFILL-EARTH

200 CY	60 MH	597	200
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225.9115 DEWATERING

1 LT	100 MH	932	100
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225.911 EXCAVATION WORK

	1548 MH	17,755	7,050	24,805
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225.913 USTRUCTURE CONCRETE

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
225.9131	FORMWORK		12000 SF	4800 MH	53,003	12,000	
225.9132	REINFORCING STEEL		50 TN	1251 MH	16,153	18,750	
225.9133	CONCRETE		700 CY	525 MH	5,362	22,400	
225.9134	EMBEDDED STEEL		10 TN	1250 MH	15,034	14,000	
	225.913 SUBSTRUCTURE CONCRETE			7826 MH	89,552	67,150	
225.914	SUPERSTRUCTURE					156,702	
225.9141	CONCRETE WORK						
225.9142	STRUCTURAL + MISC STEEL						
225.91421	STRUCTURAL STEEL		18 TN	270 MH	3,517	13,050	
225.91423	MISC. FRAMES, ETC.		2 TN	100 MH	1,302	2,200	
225.91425	FLOOR GRATING (GALV)		300 SF	51 MH	664	900	
225.91426	STAIR TREADS		120 EA	96 MH	1,249	4,200	
225.91427	RAIL		400 LF	240 MH	3,124	4,000	
	225.9142 STRUCTURAL + MISC STEEL			757 MH	9,856	24,350	
225.9143	EXTERIOR WALLS					34,206	
225.91434	METAL UNINSULATED SIDING		3500 SF	700 MH	9,112	14,000	
	225.9143 EXTERIOR WALLS			700 MH	9,112	14,000	
225.9144	ROOF DECK						
225.91441	METAL ROOF DECK		1800 SF	107 MH	1,394	1,800	
	225.9144 ROOF DECK			107 MH	1,394	1,800	
225.9147	DOORS + WINDOWS					3,194	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
225.91471	ROLLING STEEL DOORS			640 SF	320 MH	4,167	8,960
225.91472	PERSONNEL DOORS			80 SF	56 MH	650	960
	225.9147 DOORS + WINDOWS				376 MH	4,817	9,920
							14,737
225.9149	PAINTING						
225.91492	STEELWORK			20 TN	100 MH	957	120
	225.9149 PAINTING				100 MH	957	120
							1,077
225.914	SUPERSTRUCTURE				2040 MH	26,136	50,190
225.91	BUILDING STRUCTURE				11414 MH	133,443	124,390
							257,833
225.92	BUILDING SERVICES						
225.921	FLOOR DRAINS	1 LT	2,000	1 LT	221 MH	2,861	286
225.924	LIGHTING + SERVICE POWER			1 LT	541 MH	6,651	3,200
	225.92 BUILDING SERVICES		2,000		762 MH	9,512	3,486
							14,998
225.9	LIME UNLOADING BLDG+TUNNEL		2,000		12176 MH	142,955	127,876
225.	FLUE GAS DESULFUR STRUCT		88,675		68646 MH	833,814	958,659
							1,881,148
226.	DESULFURIZATION EQUIPMENT						
226.1	LIME HANDLING SYSTEM	1 LT	900,000	1 LT	16000 MH	206,990	20,699
226.11	ROTATING MACHINERY						
226.11	SILO VIBRATORY FEEDER+MTR						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
226.1111	SILO VIBRATORY FEEDER						
226.1112	SILO VIBRATORY FEED MOTOR						
226.111	SILO VIBRATORY FEEDER+MTR						
226.112	SILO LOAD/BYPASS CONVY+MTR						
226.1121	SILO LOAD/BYPASS CONVEYOR						
226.1122	SILO LOAD/BYPASS CONVY MTR						
226.112	SILO LOAD/BYPASS CONVY+MTR						
226.113	RECLAIM CONVEYOR + MOTOR						
226.1131	RECLAIM CONVEYOR						
226.1132	RECLAIM CONVEYOR MOTOR						
226.113	RECLAIM CONVEYOR + MOTOR						
226.114	FD SILO DIST BELT CONV+MTR						
226.1141	FEED SILO DIST BELT CONVYR						
226.1142	FD SILO DIST BELT CONV MTR						
226.114	FD SILO DIST BELT CONV+MTR						
226.115	HOP TRANS+SILO UNLD CON+MR						
226.1151	HOP TRANS+SILO UNLOAD CONV						
226.1152	HOP TRANS+SILO UNLD CON MTR						
226.115	HOP TRANS+SILO UNLD CON+MR						
226.116	FEED BIN BUCKET ELEVTR+MTR						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****

226.1161 FEED BIN BUCKET ELEVATOR

226.1162 FEED BIN BUCKET ELEVTR MTR

226.116 FEED BIN BUCKET ELEVTR+MTR

226.117 SILO BUCKET ELEVATOR+MOTOR

226.1171 SILO BUCKET ELEVATOR

226.1172 SILO BUCKET ELEVATOR MOTOR

226.117 SILO BUCKET ELEVATOR+MOTOR

226.118 RL UNLD HOP VIB FEEDER+MTR

226.1181 RAIL UNLD HOP VIB FEEDER

226.1182 RL UNLD HOP VIB FEEDER MTR

226.118 RL UNLD HOP VIB FEEDER+MTR

226.11 ROTATING MACHINERY

226.13 TANKS AND PRESSURE VESSELS

226.131 SILO WITHDRAWAL HOPPER

226.132 RAIL UNLOADING HOPPER

226.13 TANKS AND PRESSURE VESSELS

226.14 PURIFICATION+FILTRATION EQ

226.141 FEED+RECLM DUST COLLECT+MTR

226.14 FEED+RECLM DUST COLLECTOR

226.14 FEED+RECLM DUST COLLECT MTR

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****		***** SITE *****				TOTL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	
226.141	FEED+RECLM DUST COLLECT+MTR							
226.142	RAIL UNLOAD DUST COLCT+MTR							
226.1421	RAIL UNLOAD DUST COLLECTOR							
226.1422	RAIL UNLOAD DUST COLCT MTR							
226.142	RAIL UNLOAD DUST COLCT+MTR							
226.14	PURIFICATION+FILTRATION EQ							
226.15	CHUTES + SKIRTS							
226.151	FEEDER CHUTES + SKIRTS							
226.152	ELEV CHRG+DISCHRG CHUTES							
226.153	CONVEYOR CHUTES							
226.154	BIN CHUTES							
226.15	CHUTES + SKIRTS							
226.16	GATES + DIVERTERS							
226.161	SLIDE GATES							
226.162	DIVERTERS							
226.1621	TWO WAY DIVERTER							
226.1622	THREE WAY DIVERTER							
226.162	DIVERTERS							
226.16	GATES + DIVERTERS							
226.19	FOUNDATIONS/SKIDS							

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
226.191	LIME STORAGE SILO						
226.1911	EXCAVATION WORK						
226.19111	EXCAVATION-EARTH	2500 CY	625 MH	6,694	2,500		
226.19112	EXCAVATION-ROCK	1260 CY	1008 MH	10,797	5,040		
226.19114	BACKFILL-EARTH	800 CY	240 MH	2,383	800		
226.19115	DEWATERING	1 LT	100 MH	932	100		
	226.1911 EXCAVATION WORK		1973 MH	20,811	8,440		29,251
226.1913	SUBSTRUCTURE CONCRETE						
226.19131	FORMWORK	14000 SF	5600 MH	61,838	14,000		
226.19132	REINFORCING STEEL	85 TN	2125 MH	27,441	31,875		
226.19133	CONCRETE	1700 CY	1275 MH	13,020	54,400		
226.19134	EMBEDDED STEEL	2 TN	250 MH	3,006	2,800		
226.19135	FLOOR FINISH	7000 SF	71 MH	726	70		
	226.1913 SUBSTRUCTURE CONCRETE		9321 MH	106,031	103,145		209,176
226.1914	SUPERSTRUCTURE						
226.19141	CONCRETE WORK						
226.191411	FORMWORK	100000 SF	75000 MH	828,180	100,000		
226.191412	REINFORCING STEEL	100 TN	3000 MH	38,740	37,500		
226.191413	CONCRETE	2000 CY	3500 MH	35,742	64,000		
	226.19141 CONCRETE WORK		81500 MH	902,662	201,500		1,104,162
226.191	FLOOR FINISH	7000 SF	71 MH	726	70		

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE				TOTAL COSTS			
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST				
226.1914	SUPERSTRUCTURE			81571	MH	903,383	201,570	1,104,958			
226.1915	STRUCTURAL + MISC STEEL										
226.19153	MISCELLANEOUS STEEL			20	TN	1000	MH	13,017	22,000		
226.1915	STRUCTURAL + MISC STEEL					1000	MH	13,017	22,000		
226.191	LIME STORAGE SILO					93865	MH	1,043,247	335,155		
226.19	FOUNDATIONS/SKIDS					93865	MH	1,043,247	335,155		
226.1	LIME HANDLING SYSTEM	900,000				109865	MH	1,250,237	355,854		
226.2	FEED- PREPARATION SYSTEM										
226.21	ROTATING MACHINERY										
226.211	LIME SLRY TNK AGITATOR+MTR	2	EA	60,000		1	LT	220	MH	2,909	291
226.2111	LIME SLURRY TANK AGITATOR										
226.2112	LIME SLRY TNK AGITATOR MTR										
226.211	LIME SLRY TNK AGITATOR+MTR	60,000				220	MH	2,909		291	63,200
226.212	LIME SLURRY TRANS PUMP+MTR	3	EA	42,000		1	LT	1500	MH	19,825	1,983
226.2121	LIME SLURRY TRANSFER PUMP										
226.2122	LIME SLURRY TRANS PUMP MTR										
226.212	LIME SLURRY TRANS PUMP+MTR	42,000				1500	MH	19,825		1,983	63,808
226.213	VOLUMETRIC BELT FEEDER+MTR	4	EA	14,800		1	LT	241	MH	3,118	312

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
226.2131	VOLUMETRIC BELT FEEDER						
226.2132	VOLUMETRIC BELT FEEDER MTR						
	226.213 VOLUMETRIC BELT FEEDER+MTR	14,800		241 MH	3,118	312	18,230
226.214	LIME SLAKER AND MOTOR	4 EA	160,000	1 LT	2000 MH	25,874	2,587
226.2141	LIME SLAKER						
226.2142	LIME MIXER MOTOR						
226.2143	LIME DEGRITTER MOTOR						
	226.214 LIME SLAKER AND MOTOR	160,000		2000 MH	25,874	2,587	188,461
	226.21 ROTATING MACHINERY	276,800		3961 MH	51,726	5,173	333,699
226.22	TANKS AND PRESSURE VESSELS						
226.221	GRIT BIN			2 EA	1800 MH	23,544	16,000
226.222	LIME SLURRY SURGE TANK			2 EA	3200 MH	41,855	28,000
226.223	LIME FEED SILO/HOPPER			4 EA	5400 MH	70,631	150,000
	226.22 TANKS AND PRESSURE VESSELS			10400 MH	136,030	194,000	330,030
226.25	PIPING						
226.252	2.5 IN + LARGER						
226.2521	CS/NNS	106030 LB	159,045	1 LT	15904 MH	206,125	20,613
226.252	2.5 IN + LARGER		159,045		15904 MH	206,125	20,613
	226.25 PIPING		159,045		15904 MH	206,125	20,613
226.26	VALVES	1 LT	24,200				

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
*****	*****	*****	*****	*****	*****	*****	*****

226.261 GATE

226.26 VALVES 24,200 24,200

226.27 PIPING-MISC ITEMS

226.271 HANGERS + SUPPORTS 21000 LB 31,500

226.27 PIPING-MISC ITEMS 31,500 31,500

226.29 FOUNDATIONS/SKIDS

226.291 LIME SLRY TRANS PUMP FOUND

226.2911 EXCAVATION WORK

226.2913 SUBSTRUCTURE CONCRETE

226.29131 FORMWORK 300 SF 120 MH 1,325 300

226.29132 REINFORCING STEEL 1 TN 25 MH 322 375

226.29133 CONCRETE 20 CY 15 MH 152 640

226.29134 EMBEDDED STEEL 2 TN 250 MH 3,006 2,800

226.29135 FLOOR FINISH 200 SF 1 MH 9 2

226.2913 SUBSTRUCTURE CONCRETE 411 MH 4,814 4,117 8,931

226.291 LIME SLRY TRANS PUMP FOUND 411 MH 4,814 4,117 8,931

226.292 LIME SLURRY TANK FOUND

226.2921 EXCAVATION WORK

226.29214 BACKFILL-SAND 300 CY 300 MH 2,986 1,800

226.2921 EXCAVATION WORK 300 MH 2,986 1,800 4,786

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
226.2923	SUBSTRUCTURE CONCRETE						
226.29231	FORMWORK	2000 SF	800 MH	8,834	2,000		
226.29232	REINFORCING STEEL	4 TN	100 MH	1,291	1,500		
226.29233	CONCRETE	75 CY	56 MH	571	2,400		
226.2923	SUBSTRUCTURE CONCRETE		956 MH	10,696	5,900	16,596	
226.292	LIME SLURRY TANK FOUND		1256 MH	13,682	7,700	21,382	
226.29	FOUNDATIONS/SKIDS		1667 MH	18,496	11,817	30,313	
226.2	FEED PREPARATION SYSTEM	491,545	31932 MH	412,377	231,603	1,135,525	
226.3	SUL DIOXIDE SCRUBBING SYS	1 LT	9,500,000	1 LT	270000 MH	3,492,963	349,296
226.31	ROTATING MACHINERY						
226.311	QUENCH RECIRCULAT PUMP+MTR						
226.3111	QUENCH RECIRCULATION PUMP						
226.3112	QUENCH RECIRCULAT PUMP MTR						
226.311	QUENCH RECIRCULAT PUMP+MTR						
226.312	ABSORB RECIRCULAT PUMP+MTR						
226.3121	ABSORB RECIRCULATION PUMP						
226.3122	ABSORB RECIRCULAT PUMP MTR						
226.312	ABSORB RECIRCULAT PUMP+MTR						
226.31	FEED SLURRY PUMP + MOTOR						

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*****	*****	*****	*****	*****	*****	*****	*****	*****	*****

226.3131 FEED SLURRY PUMP

226.3132 FEED SLURRY PUMP MOTOR

226.313 FEED SLURRY PUMP + MOTOR

226.314 RECIRCULATION TANK MIX+MTR

226.3141 RECIRCULATION TANK MIXER

226.3142 RECIRCULATION TANK MIX MTR

226.314 RECIRCULATION TANK MIX+MTR

226.315 FEED SLURRY TANK MIXER+MTR

226.3151 FEED SLURRY TANK MIXER

226.3152 FEED SLURRY TANK MIXER MTR

226.315 FEED SLURRY TANK MIXER+MTR

226.316 MOIST WASH TANK AGITAT+MTR

226.3161 MOIST WASH TANK AGITATOR

226.3162 MOIST WASH TANK AGITAT MTR

226.316 MOIST WASH TANK AGITAT+MTR

226.31 ROTATING MACHINERY

226.33 TANKS AND PRESSURE VESSELS

226.331 LOW VELOCITY SUMP TANK

226.332 RECIRCULATION TANK

226.333 SLURRY FEED TANK

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
*****	*****	*****	*****	*****	*****	*****	

226.334 MOIST SEPARATOR WASH TANK

226.33 TANKS AND PRESSURE VESSELS

226.34 PURIFICATION+FILTRATION EG

226.341 QUENCHER

226.342 ABSORBER

226.343 MOISTURE SEPARATOR

226.344 CYCLONE SEPARATOR

226.34 PURIFICATION+FILTRATION EG

226.35 PIPING

226.351 2 IN + SMALLER

226.3511 310L SS/NNS

226.351 2 IN + SMALLER

226.352 2.5 IN + LARGER

226.3521 CS/NNS

226.352 2.5 IN + LARGER

226.35 PIPING

226.36 VALVES

226.361 GATE

226.36 VALVES

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST MATERIAL COST	
226.37	PIPING - MISC ITEMS						
226.373	SPECIALTIES						
226.3731	HEAT TRACING	1 LT	4200 MH	54,433	36,400		
226.373	SPECIALTIES		4200 MH	54,433	36,400	90,833	
226.37	PIPING - MISC ITEMS		4200 MH	54,433	36,400	90,833	
226.38	INSTRUMENTATION + CONTROL						
226.39	FOUNDATIONS/SKIDS						
226.391	FEED SLURRY PUMP FOUND						
226.3911	EXCAVATION WORK						
226.39111	EXCAVATION-EARTH	60 CY	15 MH	162	60		
226.39114	BACKFILL-EARTH	30 CY	9 MH	90	30		
226.3911	EXCAVATION WORK		24 MH	252	90	342	
226.3913	SUBSTRUCTURE CONCRETE						
226.39131	FORMWORK	500 SF	200 MH	2,209	500		
226.39132	REINFORCING STEEL	2 TN	51 MH	657	750		
226.39133	CONCRETE	30 CY	23 MH	234	960		
226.39134	EMBEDDED STEEL	1 TN	126 MH	1,515	1,400		
226.3913	SUBSTRUCTURE CONCRETE		400 MH	4,615	3,610	8,225	
226.391	FEED SLURRY PUMP FOUND		424 MH	4,867	3,700	8,567	

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		QUANTITY COSTS	QUANTITY LABOR HRS LABOR COST MATERIAL COST	
226.392	SLURRY FEED TANK FOUND			
226.3921	EXCAVATION WORK			
226.39211	EXCAVATION-EARTH	300 CY	75 MH	876 300
226.39214	BACKFILL-EARTH	360 CY	108 MH	1,077 360
	226.3921 EXCAVATION WORK		183 MH	1,953 660 2,613
226.3923	SUBSTRUCTURE CONCRETE			
226.39231	FORMWORK	2200 SF	880 MH	9,717 2,200
226.39232	REINFORCING STEEL	4 TN	100 MH	1,291 1,500
226.39233	CONCRETE	80 CY	60 MH	612 2,560
	226.3923 SUBSTRUCTURE CONCRETE		1040 MH	11,620 6,260 17,880
	226.392 SLURRY FEED TANK FOUND		1223 MH	13,573 6,920 20,493
226.393	SUL DIOXIDE SCRUBBER FOUND			
226.3931	EXCAVATION WORK			
226.39311	EXCAVATION-EARTH	10000 CY	2500 MH	29,225 10,000
226.39314	BACKFILL-EARTH	1500 CY	450 MH	4,478 1,500
	226.3931 EXCAVATION WORK		2950 MH	33,703 11,500 45,203
226.3933	SUBSTRUCTURE CONCRETE			
226.39331	FORMWORK	20000 SF	8000 MH	88,340 20,000
226.39332	REINFORCING STEEL	400 TN	10000 MH	129,133 150,000
226.39334	CONCRETE	10000 CY	7500 MH	76,590 320,000

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
226.39334	EMBEDDED STEEL	30 TN	3750 MH	45,101	42,000		
226.39335	FLOOR FINISH	27600 SF	275 MH	2,803	276		
226.3933	SUBSTRUCTURE CONCRETE		29525 MH	341,972	532,276	874,248	
226.3934	SUPERSTRUCTURE						
226.39341	CONCRETE WORK						
226.393411	FORMWORK-METAL	27600 SF	20700 MH	228,577	24,840		
226.393412	REINFORCING STEEL	26 TN	780 MH	10,072	9,750		
226.393413	CONCRETE	520 CY	911 MH	9,304	16,640		
226.393415	FLOOR FINISH	27600 SF	275 MH	2,803	276		
226.39341	CONCRETE WORK		22666 MH	250,761	51,506	302,267	
226.39342	STRUCTURAL + MISC STEEL						
226.393421	STRUCTURAL STEEL	2240 TN	33600 MH	437,391	1,624,000		
226.393423	MISC. FRAMES, ETC.	245 TN	12250 MH	159,465	269,500		
226.393425	FLOOR GRATING	80000 SF	13600 MH	177,039	320,000		
226.393426	STAIR TREADS	520 EA	416 MH	5,416	18,200		
226.393427	HANDRAIL	6000 LF	3600 MH	46,863	60,000		
226.39342	STRUCTURAL + MISC STEEL		63466 MH	826,174	2,291,700	3,117,874	
226.39349	PAINTING						
226.393492	STEELWORK	2485 TN	12425 MH	118,907	14,910		
226.393494	HANDRAIL	6000 LF	1200 MH	11,484	600		
226.39349	PAINTING		13625 MH	130,391	15,510	145,901	

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*****	*****	QUANTITY	COSTS	QUANTITY	LABOR HRS	MATERIAL COST	*****	
*****	*****	*****	*****	*****	*****	*****	*****	
226.3934	SUPERSTRUCTURE			99757 MH	1,207,326	2,358,716	3,566,042	
226.3935	SO2 STRUCTURE MISC EQUIP							
226.39354	LIGHTING + SERVICE POWER		14000 SF	4200 MH	51,641	25,200		
226.39355	ELEVATOR							
226.393551	ELEVATOR EQUIPMENT	2 EA	136,000	1 LT	8000 MH	103,495	10,350	
226.39355	ELEVATOR		136,000		8000 MH	103,495	10,350	249,845
226.3935	SO2 STRUCTURE MISC EQUIP		136,000		12200 MH	155,136	35,550	326,686
226.393	SUL DIOXIDE SCRUBBER FOUNDRY		136,000		144432 MH	1,738,137	2,938,042	4,812,179
226.39	FOUNDATIONS/SKIDS		136,000		146079 MH	1,756,577	2,948,662	4,841,239
226.3	SUL DIOXIDE SCRUBBING SYS		9,636,000		420279 MH	5,303,973	3,334,358	18,274,331
226.4	GAS HANDLING SYSTEM							
226.41	ROTATING MACHINERY							
226.411	SUL DIOXIDE BOOSTR FAN+MTR							
226.4111	SUL DIOXIDE BOOSTER FAN	7 EA	1,687,000	1 LT	18900 MH	249,797	24,980	
226.4112	SUL DIOXIDE BOOSTR FAN MTR							
226.411	SUL DIOXIDE BOOSTR FAN+MTR		1,687,000		18900 MH	249,797	24,980	1,961,777
226.412	DAMPER BLOWER AND MOTOR	14 EA	107,100	1 LT	1541 MH	20,363	2,037	
226.4	DAMPER BLOWER							

ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
226.4122	DAMPER BLOWER MOTOR						
226.412	DAMPER BLOWER AND MOTOR	107,100		1541 MH	20,368	2,037	129,505
226.41	ROTATING MACHINERY	1,794,100		20441 MH	270,165	27,017	2,091,282
226.45	PIPING, DUCTS, EXPANSION JTS						
226.451	PIPING						
226.4511	2 IN + SMALLER						
226.45111	CS/VNS		5680 LB	1703 MH	22,072	7,384	
226.4511	2 IN + SMALLER			1703 MH	22,072	7,384	29,456
226.451	PIPING			1703 MH	22,072	7,384	29,456
226.452	DUCTS AND EXPANSION JOINTS						
226.4522	SO2 SUPPLY+BYPASS DUCTS	2300 TN	2,576,000	1 LT	142600 MH	1,905,136	190,514
226.4523	DUCT INSULATION			1 LT	59000 MH	768,180	874,000
226.452	DUCTS AND EXPANSION JOINTS		2,576,000		201600 MH	2,673,316	1,064,514
226.453	HANGERS	1100 LB	1,650				
226.45	PIPING, DUCTS, EXPANSION JTS		2,577,650		203303 MH	2,695,388	1,071,898
226.46	VALVES + DAMPERS						
226.461	ISOLATION DAMPER AND MOTOR	1 LT	400,000	1 LT	3600 MH	46,658	4,666
226.4611	ISOLATION DAMPER						
226.4612	ISOLATION DAMPER MOTOR						

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
226.461	ISOLATION DAMPER AND MOTOR	400,000		3600 MH	46,658	4,666	451,324
226.46	VALVES + DAMPERS	400,000		3600 MH	46,658	4,666	451,324
226.49	FOUNDATIONS/SKIDS						
226.491	SUL DIOXID BOOST FAN FOUND						
226.4911	EXCAVATION WORK						
226.49111	EXCAVATION-EARTH		400 CY	100 MH	1,169	400	
226.49114	BACKFILL-EARTH		130 CY	39 MH	389	130	
226.4911	EXCAVATION WORK			139 MH	1,558	530	2,088
226.4913	SUBSTRUCTURE CONCRETE						
226.49131	FORMWORK		1800 SF	720 MH	7,951	1,800	
226.49132	REINFORCING STEEL		2 TN	51 MH	657	750	
226.49133	CONCRETE		260 CY	195 MH	1,991	8,320	
226.49134	EMBEDDED STEEL		2 TN	250 MH	3,006	2,800	
226.4913	SUBSTRUCTURE CONCRETE			1216 MH	13,605	13,670	27,275
226.491	SUL DIOXID BOOST FAN FOUND			1355 MH	15,163	14,200	29,363
226.492	DUCTWORK FOUND + SUPPORT						
226.4921	EXCAVATION WORK						
226.49	EXCAVATION-EARTH		200 CY	51 MH	595	200	
226.4921	EXCAVATION WORK			51 MH	595	200	25

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
226.4923	SUBSTRUCTURE CONCRETE						
226.49231	FORMWORK	5700 SF	2280 MH	25,177	5,700		
226.49232	REINFORCING STEEL	20 TN	500 MH	6,456	7,500		
226.49233	CONCRETE	200 CY	151 MH	1,542	6,400		
226.49234	EMBEDDED STEEL	5 TN	626 MH	7,529	7,000		
	226.4923 SUBSTRUCTURE CONCRETE		3557 MH	40,704	26,600		67,304
226.4924	SUPERSTRUCTURE						
226.49241	CONCRETE WORK						
226.49242	STRUCTURAL + MISC STEEL						
226.492421	STRUCTURAL STEEL	800 TN	12000 MH	156,211	580,000		
226.492423	MISC. FRAMES, ETC.	30 TN	1500 MH	19,527	33,000		
226.492425	FLOOR GRATING (GALV)	4000 SF	680 MH	8,851	12,000		
226.492426	STAIR TREADS	800 EA	640 MH	8,330	28,000		
226.492427	HANDRAIL	4000 LF	2400 MH	31,242	40,000		
	226.49242 STRUCTURAL + MISC STEEL		17220 MH	224,161	693,000		917,161
226.49249	PAINTING						
226.492492	STEELWORK	830 TN	4150 MH	39,716	4,980		
226.492493	HANDRAIL	4000 LF	800 MH	7,656	400		
	226.49249 PAINTING		4950 MH	47,372	5,380		52,752
226.4924	SUPERSTRUCTURE		22170 MH	271,533	698,380		969,913
226.492	DUCTWORK FOUND + SUPPORT		25778 MH	312,832	725,180		1,038,012

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****			TOTAL COSTS		
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST MATERIAL COST		
226.49	FOUNDATIONS/SKIDS			27133 MH	327,995	739,380	1,067,375	
226.4	GAS HANDLING SYSTEM	4,771,750		254477 MH	3,340,206	1,842,961	9,954,917	
226.5	SLUDGE HANDLING SYSTEM							
226.51	ROTATING MACHINERY							
226.511	AGITATORS + MOTORS							
226.5111	THICK SURGE TNK AGITAT+MTR	2 EA	50,000	1 LT	200 MH	2,643	264	
226.51111	THICK SURGE TANK AGITATOR							
226.51112	THICK SURGE TNK AGITAT MTR							
226.5111	THICK SURGE TNK AGITAT+MTR		50,000		200 MH	2,643	264	52,907
226.511	AGITATORS + MOTORS		50,000		200 MH	2,643	264	52,907
226.512	PUMPS + MOTORS							
226.5121	THICK UNDERFLOW PUMP+MOTOR	8 EA	252,000	1 LT	800 MH	10,574	1,057	
226.51211	THICKENER UNDERFLOW PUMP							
226.51212	THICK UNDERFLOW PUMP MOTOR							
226.5121	THICK UNDERFLOW PUMP+MOTOR		252,000		800 MH	10,574	1,057	263,631
226.5122	SLUDGE TRANSFER PUMP+MOTOR	3 EA	12,000	1 LT	300 MH	3,965	397	
226.5	SLUDGE TRANSFER PUMP							
226.5	SLUDGE TRANSFER PUMP MOTOR							
226.5122	SLUDGE TRANSFER PUMP+MOTOR		12,000		300 MH	3,965	397	16,362

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
*****	*****	*****	*****	*****	*****	*****	
226.5123	THICK OVERFLOW PUMP+MOTOR	5 EA	95,000	1 LT	2400 MH	31,720	3,172
226.51231	THICKENER OVERFLOW PUMP						
226.51232	THICK OVERFLOW PUMP MOTOR						
	226.5123 THICK OVERFLOW PUMP+MOTOR		95,000		2400 MH	31,720	3,172
226.5124	THICK OVFLOW SUMP PUMP+MTR	2 EA	9,000	1 LT	220 MH	2,909	291
226.51241	THICK OVERFLOW SUMP PUMP						
226.51242	THICK OVFLOW SUMP PUMP MTR						
	226.5124 THICK OVFLOW SUMP PUMP+MTR		9,000		220 MH	2,909	291
226.5125	SLDG DISPOS TRANS PUMP+MTR	2 EA	21,000	1 LT	241 MH	3,185	319
226.51251	SLDG DISPOSAL TRANS PUMP						
226.51252	SLUG DISPOS TRANS PUMP MTR						
	226.5125 SLDG DISPOS TRANS PUMP+MTR		21,000		241 MH	3,185	319
226.5126	FILTRATE RETURN PUMP+MOTOR	2 EA	19,000	1 LT	141 MH	1,863	186
226.51261	FILTRATE RETURN PUMP						
226.51262	FILTRATE RETURN PUMP MOTOR						
	226.5126 FILTRATE RETURN PUMP+MOTOR		19,000		141 MH	1,863	186
226.512	PUMPS + MOTORS		408,000		4102 MH	54,216	5,422
226.513	SLUDGE PROCESSING EQUIP						
226.5131	ROT DRUM VAC FILT PUMP+MTR	3 EA	360,000	1 LT	900 MH	11,895	1,190

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE				TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	
226.51311	ROTARY DRUM VACUUM PUMP							
226.51312	ROTARY DRUM MOTOR							
226.51313	VACUUM PUMP MOTOR							
226.51314	FILTRATE PUMP MOTOR							
	226.5131 ROT DRUM VAC FILT PUMP+MTR	360,000		900 MH	11,895	1,190	373,085	
226.5132	SLUDGE MIXER AND MOTOR	2 EA	280,000	1 LT	741 MH	9,794	979	
226.51321	SLUDGE MIXER							
226.51322	SLUDGE MIXER MOTOR							
	226.5132 SLUDGE MIXER AND MOTOR	280,000		741 MH	9,794	979	290,773	
	226.513 SLUDGE PROCESSING EQUIP	640,000		1641 MH	21,669	2,169	663,858	
226.514	MATERIAL HANDLING EQUIP	1 LT	180,000	1 LT	8300 MH	107,376	10,738	
226.5141	BELT FEEDER + MOTOR							
226.51411	BELT FEEDER							
226.51412	BELT FEEDER MOTOR							
	226.5141 BELT FEEDER + MOTOR							
226.5142	BELT CONVEYOR/SCALE + MTR							
226.51421	BELT CONVEYOR/SCALE							
226.51422	BELT CONVEYOR/SCALE MOTOR							
	226.5142 BELT CONVEYOR/SCALE + MTR							
226.514	BELT CONVEYOR + MOTOR							

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
*****	*****	*****	*****	*****	*****	*****	

226.51431 BELT CONVEYOR

226.51432 BELT CONVEYOR MOTOR

226.51433 BELT CONVEYOR + MOTOR

226.5144 RADIAL BELT STACKER + MTR

226.51441 RADIAL BELT STACKER

226.51442 RADIAL BELT STACKER MOTOR

226.51443 RADIAL BELT STACKER + MTR

226.5145 LIME SCREW FEEDER + MOTOR

226.51451 LIME SCREW FEEDER

226.51452 LIME SCREW FEEDER MOTOR

226.51453 LIME SCREW FEEDER + MOTOR

226.514 MATERIAL HANDLING EQUIP 180,000 8300 MH 107,376 10,738 298,114

226.51 ROTATING MACHINERY 1,278,000 14243 MH 185,924 18,593 1,482,517

226.53 TANKS AND PRESSURE VESSELS

226.531 THICKENER TANK/RAKE+MOTOR 4 EA 52000 MH 680,145 1,200,000

226.5311 THICKENER TANK/RAKE

226.5312 THICKENER TANK/RAKE MOTOR

226.5313 RAKE LIFT MOTOR

226.531 THICKENER TANK/RAKE+MOTOR 52000 MH 680,145 1,200,000 1,880,145

226.532 SLUDGE SURGE TANK 2 EA 4000 MH 52,319 38,000

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
226.533	THICKENER OVERFLOW TANK			2 EA	4000 MH	52,319	38,000
226.534	LIME SILO			1 EA	2000 MH	26,160	19,000
226.535	SLUDGE DISPOSAL SURGE TANK			1 EA	2000 MH	26,160	19,000
226.536	FILTRATE SURGE TANK			1 EA	2000 MH	26,160	19,000
	226.53 TANKS AND PRESSURE VESSELS				66000 MH	863,263	1,333,000
							2,196,263
226.55	PIPING						
226.552	2.5 IN + LARGER						
226.5521	CS/NNS						
226.55211	CS/NNS	950000 LB	1,425,000	1 LT	142500 MH	1,846,857	184,686
226.55212	CS/NNS	950000 LB	1,425,000	1 LT	142500 MH	1,846,857	184,686
226.55213	CS/NNS	915600 LB	1,373,400	1 LT	137340 MH	1,779,931	177,998
226.5521	CS/NNS		4,223,400		422340 MH	5,473,695	547,370
226.552	2.5 IN + LARGER		4,223,400		422340 MH	5,473,695	547,370
226.55	PIPING		4,223,400		422340 MH	5,473,695	547,370
226.56	VALVES		140,000				
226.561	GATE						
226.56	VALVES		140,000				140,000
226.57	PIPING-MISC ITEMS						
226.57	SLUDGE PIPE SUPPORT SYSTEM						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS	
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST		MATERIAL COST
226.5711	TREATED RR TIE SUPPORTS	2200	EA	1430	MH	13,328	24,200	
226.5712	SUPPORT BALLAST	2200	CY	2200	MH	21,894	13,200	
226.5713	CLEARING/GRUB PIPE ROUTE			7	AC	420	MH 4,139	
226.5714	STEEL FASTENERS - 55 TNS			55	TN	2750	MH 35,799	
226.571	SLUDGE PIPE SUPPORT SYSTEM					6800	MH 60,500	
226.57	PIPING-MISC ITEMS					6800	MH 75,160	
226.59	FOUNDATIONS/SKIDS					75,160	101,400	176,560
226.591	THICKENER FOUNDATION							
226.5911	EXCAVATION WORK							
226.59111	EXCAVATION-EARTH	4000	CY	1000	MH	11,690	4,000	
226.59112	EXCAVATION-ROCK	3000	CY	2400	MH	28,056	12,000	
226.59114	BACKFILL-EARTH	2000	CY	600	MH	5,972	2,000	
226.59115	DEWATERING			1	LT	175	MH 1,631	
226.5911	EXCAVATION WORK					4175	MH 47,349	
226.5911	EXCAVATION WORK						18,175	65,524
226.5913	SUBSTRUCTURE CONCRETE							
226.59131	FORMWORK	60000	SF	24000	MH	265,018	60,000	
226.59132	REINFORCING STEEL	600	TN	15000	MH	193,700	225,000	
226.59133	CONCRETE	9500	CY	7125	MH	72,761	304,000	
226.5913	SUBSTRUCTURE CONCRETE					46125	MH 531,479	
226.591	THICKENER FOUNDATION					50300	MH 578,828	
226.591	THICKENER FOUNDATION						607,175	1,186,003

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
226.592	SLUDGE SURGE TANK FOUND						
226.5921	EXCAVATION WORK						
226.59211	EXCAVATION-EARTH	330 CY	83 MH	970	330		
226.59214	BACKFILL-SAND	420 CY	420 MH	4,180	2,520		
226.5921	EXCAVATION WORK		503 MH	5,150	2,850	8,000	
226.5923	SUBSTRUCTURE CONCRETE						
226.59231	FORMWORK	2400 SF	960 MH	10,599	2,400		
226.59232	REINFORCING STEEL	5 TN	125 MH	1,614	1,875		
226.59233	CONCRETE	90 CY	68 MH	695	2,880		
226.5923	SUBSTRUCTURE CONCRETE		1153 MH	12,908	7,155	20,063	
226.592	SLUDGE SURGE TANK FOUND		1656 MH	18,058	10,005	28,063	
226.593	THICKENER PIPE BRIDGE						
226.5931	EXCAVATION WORK						
226.59311	EXCAVATION-EARTH	500 CY	125 MH	1,462	500		
226.59314	BACKFILL-EARTH	200 CY	60 MH	597	200		
226.5931	EXCAVATION WORK		185 MH	2,059	700	2,759	
226.5933	SUBSTRUCTURE CONCRETE						
226.59331	FORMWORK	10000 SF	4000 MH	44,170	10,000		
226.59332	REINFORCING STEEL	50 TN	1251 MH	16,153	18,750		
226.59	CONCRETE	100 CY	75 MH	765	3,200		

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
226.5933	SUBSTRUCTURE CONCRETE			5326 MH	61,088	31,950	93,038
226.5934	SUPERSTRUCTURE						
226.59341	STRUCTURAL + MISC STEEL						
226.593411	STRUCTURAL STEEL	2000 TN	30000 MH	390,523	1,450,000		
226.593413	MISCELLANEOUS STEEL	50 TN	2500 MH	32,544	55,000		
226.593415	FLOOR GRATING (GALV.)	40000 SF	6800 MH	88,520	120,000		
226.593416	STAIR TREADS	480 EA	384 MH	4,997	16,800		
226.593417	HANDRAIL	1000 LF	600 MH	7,811	10,000		
226.59341	STRUCTURAL + MISC STEEL		40284 MH	524,400	1,651,800	2,176,200	
226.59349	PAINTING						
226.593492	STEELWORK	2000 TN	10000 MH	95,700	12,000		
226.593494	HANDRAIL	1000 LF	200 MH	1,914	100		
226.59349	PAINTING		10200 MH	97,614	12,100	109,714	
226.5934	SUPERSTRUCTURE		50484 MH	622,014	1,663,900	2,285,914	
226.593	THICKENER PIPE BRIDGE		55995 MH	685,161	1,696,550	2,381,711	
226.594	THICK OVERFLOW TANK FOUND						
226.5941	EXCAVATION WORK						
226.59411	EXCAVATION-EARTH	1000 CY	251 MH	2,933	1,000		
226.59414	BACKFILL-SAND	1500 CY	1500 MH	14,928	9,000		
226.5941	EXCAVATION WORK		1751 MH	17,861	10,000	27,861	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	

226.5943 SUBSTRUCTURE CONCRETE

226.59431 FORMWORK	9500 SF	3800 MH	41,961	9,500	
226.59432 REINFORCING STEEL	8 TN	200 MH	2,583	3,000	
226.59433 CONCRETE	160 CY	120 MH	1,226	5,120	
226.5943 SUBSTRUCTURE CONCRETE		4120 MH	45,770	17,620	63,390
226.594 THICK OVERFLOW TANK FOUND		5871 MH	63,631	27,620	91,251

226.595 SLUDGE TRANSFER PUMP FOUND

226.5951 EXCAVATION WORK

226.59511 EXCAVATION-EARTH	100 CY	25 MH	293	100
226.59514 BACKFILL-EARTH	60 CY	18 MH	180	60
226.5951 EXCAVATION WORK		43 MH	473	160
				633

226.5953 SUBSTRUCTURE CONCRETE

226.59531 FORMWORK	2000 SF	800 MH	8,834	2,000
226.59532 REINFORCING STEEL	3 TN	75 MH	970	1,125
226.59533 CONCRETE	60 CY	45 MH	460	1,920
226.59534 EMBEDDED STEEL	2 TN	250 MH	3,006	2,800
226.5953 SUBSTRUCTURE CONCRETE		1170 MH	13,270	7,845
226.595 SLUDGE TRANSFER PUMP FOUND		1213 MH	13,743	8,005
				21,748

226.596 SLDG DISPOSAL SRG TK FOUND

226.596 EXCAVATION WORK

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
226.59611	EXCAVATION-EARTH			165 CY	41 MH	480	165
226.59614	BACKFILL-SAND			210 CY	63 MH	628	1,260
	226.5961 EXCAVATION WORK				104 MH	1,108	1,425
	226.5963 SUBSTRUCTURE CONCRETE						2,533
226.59631	FORMWORK			1200 SF	480 MH	5,300	1,200
226.59632	REINFORCING STEEL			5 TN	125 MH	1,614	1,875
226.59633	CONCRETE			45 CY	34 MH	347	1,440
226.5963	SUBSTRUCTURE CONCRETE				639 MH	7,261	4,515
226.596	SLDG DISPOSAL SRG TK FOUND				743 MH	8,369	5,940
226.597	EMERGENCY SLURRY STRG POND						11,776
226.5971	EXCAVATION WORK						14,309
226.59711	EXCAVATION-EARTH			13000 CY	3251 MH	38,003	13,000
226.59714	BACKFILL-EARTH			600 CY	180 MH	1,791	600
226.5971	EXCAVATION WORK				3431 MH	39,794	13,600
226.5973	SUBSTRUCTURE CONCRETE						53,394
226.59753	POND LINER						
226.597	EMERGENCY SLURRY STRG POND				3431 MH	39,794	13,600
226.59	FOUNDATIONS/SKIDS				119209 MH	1,407,584	2,368,895
226.5	SLUDGE HANDLING SYSTEM	5,641,400			628592 MH	8,005,626	4,369,258
226.6	MISC DESULFURIZATION EQUIP						18,016,284

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****			TOTAL COSTS	
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST
226.61	ROTATING MACHINERY						
226.611	PROCESS WATER PUMP + MOTOR	2 EA	34,000	1 LT	741 MH	9,794	979
226.6111	PROCESS WATER PUMP						
226.6112	PROCESS WATER PUMP MOTOR						
	226.611 PROCESS WATER PUMP + MOTOR		34,000		741 MH	9,794	979
226.612	SEAL WATER PUMP + MOTOR	2 EA	12,000	1 LT	400 MH	5,286	529
226.6121	SEAL WATER PUMP						
226.6122	SEAL WATER PUMP MOTOR						
	226.612 SEAL WATER PUMP + MOTOR		12,000		400 MH	5,286	529
	226.61 ROTATING MACHINERY		46,000		1141 MH	15,080	1,508
226.63	TANKS AND PRESSURE VESSELS						
226.631	PROCESS WATER SURGE TANK			1 EA	1200 MH	15,696	11,600
226.632	SEAL WATER TANK	1 EA	13,500	1 LT	140 MH	1,831	183
	226.63 TANKS AND PRESSURE VESSELS		13,500		1340 MH	17,527	11,783
							42,810
226.64	PURIFICATION+FILTRATION EQ						
226.641	SEAL WATER FILTER	1 EA	8,000	1 LT	100 MH	1,293	129
	226.64 PURIFICATION+FILTRATION EQ		8,000		100 MH	1,293	129
226.65	PIPING						
226.65	2 IN + SMALLER						

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
226.6511	CS/NNS			11200 LB	3360 MH	43,547	14,560
	226.651	2 IN + SMALLER			3360 MH	43,547	14,560
226.652	2.5 IN + LARGER						
226.6521	CS/NNS	70300 LB	105,450	1 LT	10545 MH	136,667	13,667
	226.652	2.5 IN + LARGER			10545 MH	136,667	13,667
	226.65	PIPING			13905 MH	180,214	28,227
226.66	VAVLES	1 LT	30,000				
226.663	GLOBE						
	226.66	VAVLES					30,000
226.67	PIPING - MIS C. ITEMS						
226.671	HANGERS + SUPPORTS	14000 LB	21,000				
	226.67	PIPING - MIS C. ITEMS		21,000			21,000
226.69	FOUNDATIONS/SKIPS						
226.691	PROCESS WATER PUMP FOUND						
226.6911	EXCAVATION WORK						
226.69111	EXCAVATION-EARTH			30 CY	8 MH	94	30
226.69114	BACKFILL-EARTH			15 CY	5 MH	49	15
	226.6911	EXCAVATION WORK			13 MH	143	45
226.6913	SUBSTRUCTURE CONCRETE						188

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
226.69131	FORMWORK		200 SF	80 MH	883	200	
226.69132	REINFORCING STEEL		2 TN	51 MH	657	750	
226.69133	CONCRETE		15 CY	11 MH	113	480	
226.69134	EMBEDDED STEEL		1 TN	126 MH	1,515	1,400	
226.69135	FLOOR FINISH		130 SF	1 MH	9	1	
226.6913	SUBSTRUCTURE CONCRETE			269 MH	3,177	2,831	
226.691	PROCESS WATER PUMP FOUND			282 MH	3,320	2,876	
						6,008	
226.692	SEAL WATER PUMP FOUNDATION						
226.5921	EXCAVATION WORK						
226.69211	EXCAVATION-EARTH		30 CY	8 MH	94	30	
226.69214	BACKFILL-EARTH		15 CY	5 MH	49	15	
226.6921	EXCAVATION WORK			13 MH	143	45	
						188	
226.6923	SUBSTRUCTURE CONCRETE						
226.69231	FORMWORK		250 CY	100 MH	1,104	250	
226.69232	REINFORCING STEEL		1 TN	25 MH	322	375	
226.69233	CONCRETE		15 CY	11 MH	113	480	
226.69234	EMBEDDED STEEL		1 TN	126 MH	1,515	1,400	
226.6923	SUBSTRUCTURE CONCRETE			262 MH	3,054	2,505	
						5,559	
226.692	SEAL WATER PUMP FOUNDATION			275 MH	3,197	2,550	
						5,747	
226.69	PRCS WATER SURGE TNK FOUND						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
226.6931	EXCAVATION WORK						
226.69311	EXCAVATION-EARTH	80 CY		20 MH	234	80	
226.69314	BACKFILL-SAND		100 CY	100 MH	996	600	
	226.6931 EXCAVATION WORK			120 MH	1,230	680	1,910
226.6933	SUBSTRUCTURE CONCRETE						
226.69331	FORMWORK	820 SF		328 MH	3,622	820	
226.69332	REINFORCING STEEL		2 TN	51 MH	657	750	
226.69333	CONCRETE		30 CY	23 MH	234	960	
	226.6933 SUBSTRUCTURE CONCRETE			402 MH	4,513	2,530	7,043
	226.693 PRCS WATER SURGE TNK FOUND			522 MH	5,743	3,210	8,953
226.694	SEAL WATER TANK FOUNDATION						
226.6941	EXCAVATION WORK						
226.69411	EXCAVATION-EARTH	30 CY		8 MH	94	30	
226.69414	BACKFILL-EARTH		15 CY	5 MH	49	15	
	226.6941 EXCAVATION WORK			13 MH	143	45	188
226.6943	SUBSTRUCTURE CONCRETE						
226.69431	FORMWORK	150 SF		60 MH	661	150	
226.69432	REINFORCING STEEL		2 TN	51 MH	657	750	
226.69433	CONCRETE		25 CY	19 MH	195	800	
	226.6943 SUBSTRUCTURE CONCRETE			130 MH	1,513	1,700	3,213

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ACCT. NO.	ACCOUNT DESCRIPTION	FACTORY		SITE				TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	
226.694	SEAL WATER TANK FOUNDATION			143	MH	1,656	1,745	3,401
226.69	FOUNDATIONS/SKIPS			1222	MH	13,916	10,381	24,297
226.6	MISC DESULFURIZATION EQUIP	223,950		17708	MH	228,030	52,028	504,008
226.7	INSTRUMENTATION+CONTROL	1 LT	442,000	1 LT	7200 MH	88,010	4,401	
226.82	BUILDING SERVICES							
226.	DESULFURIZATION EQUIPMENT	22,106,645		1470053	MH	18,628,459	10,190,463	50,925,567
227.	INSTRUMENTATION + CONTROL							
227.1	BENCHBOARD, PANELS + RACKS							
227.11	BOILER - TG CONTROL PANEL	1 LT	240,000	1 LT	6540 MH	79,943	3,997	
227.17	AUXILIARY PANELS+CABINETS	1 LT	113,000	1 LT	4090 MH	49,995	2,500	
227.18	INSTRUMENT RACKS	1 LT	210,000	1 LT	2860 MH	34,958	1,748	
227.1	BENCHBOARD, PANELS + RACKS	563,000		13490	MH	164,896	8,245	736,141
227.2	PLANT COMPUTER SYSTEM	1 LT	600,000	1 LT	30140 MH	368,421	36,842	
227.3	STACK GAS MONITORING SYS							
227.4	PLANT CONTROL SYSTEM							
227.41	COORDINATED CONTROL SYSTEM	1 LT	600,000	1 LT	4904 MH	59,945	5,995	
227.42	BURNER CONTROL SYSTEM							
227.4	PLANT CONTROL SYSTEM	600,000		4904	MH	59,945	5,995	665,940
227.5	INSTRUMENT TUBING+FITTINGS	1 LT	112,000	1 LT	28000 MH	342,261	17,113	
227.	INSTRUMENTATION + CONTROL	1,875,000		76534	MH	935,523	68,195	2,8

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****		***** SITE *****			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
228.	BOILER PLANT MISC ITEMS						
228.1	MISC SUSPENSE ITEMS						
228.11	FINAL ALIGNMENT + CHECKING	1 LT	50000 MH	646,845	50,000		
228.12	FIELD PAINTING	1 LT	50000 MH	478,500	200,000		
228.13	QUALIFICATION OF WELDERS	1 LT	2500 MH	33,500	10,000		
228.1	MISC SUSPENSE ITEMS		102500 MH	1,158,845	260,000	1,418,845	
228.3	BOILER PLANT INSULATION	1 LT	34460 MH	448,669	1,250,800		
228.31	PIPE INSULATION						
228.32	EQUIPMENT INSULATION						
228.3	BOILER PLANT INSULATION		34460 MH	448,669	1,250,800	1,699,469	
228.4	SAMPLING EQUIPMENT	1 LT	170,000	17,113	856		
228.7	MISC PIPE BRIDGE						
228.71	EXCAVATION WORK						
228.711	EXCAVATION-EARTH	80 CY	20 MH	234	80		
228.71	EXCAVATION WORK		20 MH	234	80	314	
228.73	SUBSTRUCTURE CONCRETE						
228.731	FORMWORK	3150 SF	1260 MH	13,912	3,150		
228.733	CONCRETE	100 CY	75 MH	765	3,200		
228.734	EMBEDDED STEEL	30 TN	3750 MH	45,101	42,000		
228.73	SUBSTRUCTURE CONCRETE		5085 MH	59,778	48,350	108,128	

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
*****	*****	*****	*****	*****	*****	*****	
228.7	MISC PIPE BRIDGE			5105 MH	60,012	48,430	108,442
228.	BOILER PLANT MISC ITEMS	170,000		143465 MH	1,684,639	1,560,086	3,414,725
22 .	BOILER PLANT EQUIPMENT	105,321,960		3603888 MH	45,413,075	16,772,845	167,507,880

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	

23. TURBINE PLANT EQUIPMENT

231. TURBINE GENERATOR

231.1 TURBINE GENERATOR +ACCSSRY

231.11 TURBINE FACTORY COST 1 LT 45,000,000

231.12 OTHER TURBINE COSTS 1 LT 190000 MH 2,415,945 240,000

231.13 EXCITER & VOLTAGE REGULTR.

231.1 TURBINE GENERATOR +ACCSSRY	45,000,000	190000 MH	2,415,945	240,000	47,655,945
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231.2 FOUNDATIONS

231.21 T-G PEDESTAL

231.211 EXCAVATION WORK

231.2111 EXCAVATION - EARTH

231.2112 EXCAVATION - ROCK

231.2114 BACKFILL - EARTH

231.2115 DEWATERING

231.211 EXCAVATION WORK

231.213 SUBSTRUCTURE CONCRETE

231.2131 FORMWORK	14100 SF	5640 MH	62,280	14,100
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231.2132 REINFORCING STEEL	280 TN	7000 MH	90,394	105,000
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231.2133 CONCRETE	4700 CY	8225 MH	83,994	150,400
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231.2134 EMBEDDED STEEL	25 TN	3126 MH	37,596	35,000
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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
231.2137	RUBBING CONCRETE SURFACE						
231.2138	EXPANSION JOINT						
	231.213 SUBSTRUCTURE CONCRETE		23991 MH	274,264	304,500	578,764	
231.214	SUPERSTRUCTURE						
231.2141	CONCRETE WORK						
231.21411	FORMWORK	75000 SF	45000 MH	496,903	150,000		
231.21412	REINFORCING STEEL	1200 TN	42000 MH	542,359	450,000		
231.21413	CONCRETE	7700 CY	13475 MH	137,606	246,400		
231.21414	EMBEDDED STEEL	60 TN	7500 MH	90,201	84,000		
231.21417	RUBBING CONCRETE SURFACES	75000 SF	2251 MH	22,988	750		
231.21418	EXPANSION JOINT	600 LF	60 MH	696	600		
	231.2141 CONCRETE WORK		110286 MH	1,290,758	931,750	2,222,508	
231.2142	STRUCTURAL + MISC STEEL						
231.21421	STRUCTURAL STEEL	5 TN	76 MH	987	3,625		
231.21425	GRATING	750 SF	128 MH	1,665	2,250		
231.2142	STRUCTURAL + MISC STEEL		204 MH	2,652	5,875	8,527	
231.214	SUPERSTRUCTURE		110490 MH	1,293,410	937,625	2,231,035	
231.21	T-G PEDESTAL		134481 MH	1,567,674	1,242,125	2,809,799	
231.2	FOUNDATIONS		134481 MH	1,567,674	1,242,125	2,809,799	
231.4	LUBRICATING OIL SYSTEM						

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	*****	TOTAL COSTS
		QUANTITY	COSTS	QUANTITY LABOR HRS LABOR COST MATERIAL COST	
*****	*****	*****	*****	*****	*****
231.43	TANKS + PRESSURE VESSELS				
231.431	LUBE OIL STORAGE TANK	1 EA	281 MH	3,676	22,897
	231.43 TANKS + PRESSURE VESSELS		281 MH	3,676	22,897
231.45	PIPING				
231.451	2IN. + SMALLER				
231.4511	CS/NNS	2400 LB	721 MH	9,341	3,120
	231.451 2IN. + SMALLER		721 MH	9,341	3,120
231.452	2.5IN + LARGER				
231.4521	CS/VNS	1920 LB	2,880	1 LT 288 MH 3,730	373
	231.452 2.5IN + LARGER		2,880	288 MH 3,730	373
	231.45 PIPING	2,880	1009 MH	13,071	3,493
231.46	VALVES	1 LT	5,000		
231.461	GATE				
	231.46 VALVES		5,000		5,000
231.47	PIPING-MISC. ITEMS				
231.471	HANGERS + SUPPORTS	864 LB	1,296		
231.472	INSULATION				
231.473	SPECIALTIES				
	231.47 PIPING-MISC. ITEMS		1,296		1,296

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
231.48	INSTRUMENTATION + CONTROL	1 LT	9,830	1 LT	75 MH	917	46
231.49	SKIDS / FOUNDATIONS						
231.491	LUBE OIL CONDTNG EQPT SKID	1 LT	108,575	1 LT	1152 MH	14,903	1,490
231.492	FIRE PROTECTION EQPT.			1 LT	3000 MH	38,881	58,050
	231.49 SKIDS / FOUNDATIONS		108,575		4152 MH	53,784	59,540
	231.4 LUBRICATING OIL SYSTEM		127,581		5517 MH	71,448	85,976
231.5	GAS SYSTEMS						
231.51	HYDROGEN STORAGE SYSTEM						
231.513	TANKS + PRESSURE VESSELS						
231.5131	HYDROGEN STORAGE BOTTLES	1 LT	88,150	1 LT	5031 MH	65,801	6,580
	231.513 TANKS + PRESSURE VESSELS		88,150		5031 MH	65,801	6,580
231.515	PIPING						
231.5151	2 IN + SMALLER						
231.5152	2.5 IN + LARGER						
231.51521	CS/NNS		4800 LB	7,200	1 LT	721 MH	9,341
	231.5152 2.5 IN + LARGER			7,200		721 MH	9,341
	231.515 PIPING			7,200		721 MH	9,341
231.516	VALVES						
231.517	GLOBE		10 EA	1,000			

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE				TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	
231.516	VALVES		1,000				1,000	

231.517 PIPING-MISC ITEMS

231.5171 HANGERS + SUPPORTS 960 LB 1,440

231.5172 INSULATION

231.5173 SPECIALTIES

231.517 PIPING-MISC ITEMS 1,440 1,440

231.51 HYDROGEN STORAGE SYSTEM 97,790 5752 MH 75,142 7,514 180,446

231.52 CARBON DIOXIDE STORAGE SYS

231.523 TANKS + PRESSURE VESSELS

231.5231 CARBON DIOXIDE TANKS 1 LT 53,750 1 LT 3060 MH 40,024 4,002

231.523 TANKS + PRESSURE VESSELS 53,750 3060 MH 40,024 4,002 97,776

231.525 PIPING

231.5251 2 IN + SMALLER

231.5252 2.5 IN + LARGER

231.52521 CS/NNS 4800 LB 7,200 1 LT 721 MH 9,341 934

231.5252 2.5 IN + LARGER 7,200 721 MH 9,341 934 17,475

231.525 PIPING 7,200 721 MH 9,341 934 17,475

231.526 VALVES

231.5263 GLOBES 10 EA 500

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
231.526	VALVES	500					500

231.527 PIPING-MISC ITEMS

231.5271	HANGER + SUPPORT	960 LB	1,440				
	231.527	PIPING-MISC ITEMS		1,440			1,440
	231.52	CARBON DIOXIDE STORAGE SYS	62,890		3781 MH	49,365	4,936
	231.5	GAS SYSTEMS	160,680		9533 MH	124,507	12,450
	231.	TURBINE GENERATOR	45,288,261		339531 MH	4,179,574	1,580,551
							51,048,386

233. CONDENSING SYSTEMS

233.1	CONDENSER EQUIPMENT						
	233.12	HEAT TRANSFER EQUIPMENT					
233.121	CONDENSERS	1 LT	6,020,000	1 LT	95353 MH	1,273,656	127,366
	233.12	HEAT TRANSFER EQUIPMENT	6,020,000		95353 MH	1,273,656	127,366
	233.1	CONDENSER EQUIPMENT	6,020,000		95353 MH	1,273,656	127,366
							7,421,022

233.2 CONDENSATE SYSTEM

233.21	ROTATING MACHINERY						
233.211	CONDENSATE PUMP + MOTOR	3 EA	216,000	1 LT	2851 MH	37,681	3,768
233.21	COND PUMP						
233.2112	COND PUMP MOTOR						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS	
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST		
233.211	CONDENSATE PUMP + MOTOR	216,000		2851 MH	37,681	3,768	257,449	
233.212	CONDENSATE BOOSTER PUMP+MT	3 EA	252,000	1 LT	2700 MH	35,685	3,569	
233.2121	CONDENSATE BOOSTER PUMP							
233.2122	CONDENSATE BOOSTER PUMP MT							
233.212	CONDENSATE BOOSTER PUMP+MT		252,000		2700 MH	35,685	3,569	291,254
233.213	TRANSFER PUMP + MOTOR	2 EA	16,000	1 LT	200 MH	2,643	264	
233.2131	TRANS PUMP							
233.2132	TRANS PUMP MOTOR							
233.213	TRANSFER PUMP + MOTOR		16,000		200 MH	2,643	264	18,907
233.21	ROTATING MACHINERY		484,000		5751 MH	76,009	7,601	567,610
233.221	COND. STORAGE TK HEATER							
233.23	TANKS & PRESSURE VESSELS							
233.231	CONDENSATE STORAGE TANK	2 EA	100,000	1 LT	6400 MH	83,710	8,371	
233.23	TANKS & PRESSURE VESSELS		100,000		6400 MH	83,710	8,371	192,081
233.25	PIPING							
233.251	2 IN. + SMALLER							
233.2511	CS/NNS			2495 LB	748 MH	9,697	3,244	
233.251	2 IN. + SMALLER				748 MH	9,697	3,244	12,941
233.252	2.5 IN. + LARGER							

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
233.2521	CS/NNS	254670 LB	382,005	1 LT	38200 MH	495,088	49,509
233.252	2.5 IN. + LARGER		382,005		38200 MH	495,088	49,509
233.25	PIPING		382,005		38948 MH	504,735	52,753
233.26	VALVES	1 LT	377,000				
233.261	GATE VALVES						
233.262	CHECK VALVES						
233.263	GLOBE VALVES						
233.266	BUTTERFLY						
233.267	BALL VALVES						
233.26	VALVES		377,000				377,000
233.27	PIPING-MISC. ITEMS						
233.271	HANGERS + SUPPORTS	40700 LB	61,050				
233.272	INSULATION						
233.273	SPECIALTIES						
233.27	PIPING-MISC. ITEMS		61,050				61,050
233.28	INSTRUMENTATION + CONTROL	1 LT	49,300	1 LT	380 MH	4,647	232
233.29	FOUNDATIONS						
233.291	CONDENSATE TANK FDTN						
233.2911	FORMWORK			1600 SF	640 MH	7,068	1,600
233.291	EINFORCING STEEL			3 TN	75 MH	970	1,125
233.2913	CONCRETE			60 CY	105 MH	1,074	1,920

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	*****	SITE *****	*****	TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST MATERIAL COST
*****	*****	*****	*****	*****	*****	*****

233.291	CONDENSATE TANK FDTN			820 MH	9,112	4,645	13,757
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233.292 CONDENSATE PUMP FDTN

233.2921 FORMWORK

233.2922 REINF. STEEL

233.2923 CONCRETE

233.2924 EMBEDDED IRON

233.2925 STRUCTURAL STEEL

233.2926 MISC. STEEL

233.292	CONDENSATE PUMP FDTN
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233.293 BOOSTER PUMP FDTN

233.2931 FORMWORK

233.2932 REINF. STEEL

233.2933 CONCRETE

233.2934 EMBEDDED IRON

233.2935 STRUCTURAL STEEL

233.2936 MISC. STEEL

233.293	BOOSTER PUMP FDTN
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233.29	FOUNDATIONS			820 MH	9,112	4,645	13,757
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233.2	CONDENSATE SYSTEM	1,453,355		52299 MH	678,263	73,602	2,205,220
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233.3 GAS REMOVAL SYSTEM

233.31 CONDENSER GAS REMOVAL SYS.

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY	*****	SITE	*****	TOTAL	
		QUANTITY	COSTS	QUANTITY	LABOR HRS	MATERIAL COST	COSTS
*****	*****	*****	*****	*****	*****	*****	*****

233.311 ROTATING MACHINERY

233.3111 MECH VACUUM PUMP & MOTOR 4 EA 301,000 1 LT 2000 MH 26,433 2,643

233.31111 MECH VAC PUMP

233.31112 MECH VAC PUMP MOTOR

233.31111 MECH VACUUM PUMP & MOTOR 301,000 2000 MH 26,433 2,643 330,076

233.311 ROTATING MACHINERY 301,000 2000 MH 26,433 2,643 330,076

233.315 PIPING

233.3151 2 IN. + SMALLER

233.31511 CS/VNS 813 LB 244 MH 3,163 1,057

233.31511 2 IN. + SMALLER 244 MH 3,163 1,057 4,220

233.3152 2.5 IN. + LARGER

233.31521 CS/NNS 30300 LB 45,450 1 LT 4545 MH 58,906 5,891

233.3152 2.5 IN. + LARGER 45,450 4545 MH 58,906 5,891 110,247

233.315 PIPING 45,450 4789 MH 62,069 6,948 114,467

233.316 VALVES 1 LT 5,500

233.3161 GATE

233.3163 GLOBE

233.316 VALVES 5,500 5,500

233.317 PIPING-MISC. ITEMS

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST		MATERIAL COST
233.3171	HANGERS + SUPPORTS	6200 LB	9,300					
233.3172	INSULATION							
233.3173	SPECIALTIES							
	233.317 PIPING-MISC. ITEMS		9,300				9,300	
233.318	INSTRUMENTATION + CONTROL	1 LT	7,600	1 LT	58 MH	709	35	
233.319	FOUNDATIONS/SKIDS							
233.3191	VACUUM PUMP FDTN.							
233.31911	FORMWORK							
233.31912	REINFORCING STEEL							
233.31913	CONCRETE							
233.31914	EMBEDDED STEEL							
	233.3191 VACUUM PUMP FDTN.							
	233.319 FOUNDATIONS/SKIDS							
233.51	CONDENSER GAS REMOVAL SYS.		368,850		6847 MH	89,211	9,626	467,687
233.3	GAS REMOVAL SYSTEM		368,850		6847 MH	89,211	9,626	467,687
233.4163								
233.5	CONDENSATE POLISHING	1 LT	1,145,000	1 LT	20000 MH	258,738	25,874	
233.51	ROTATING MACHINERY							
233.511	ACID REGEN PUMP + MOTOR							
233.5111	ACID REGEN PUMP							

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	*****	SITE	*****	TOTAL	
*****	*****	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST MATERIAL COST	COSTS
*****	*****	*****	*****	*****	*****	*****	*****

233.5112 ACID REGEN PUMP MOTOR

233.511 ACID REGEN PUMP + MOTOR

233.512 CAUSTIC REGEN PUMP + MOTOR

233.5121 CAUSTIC REGEN PUMP

233.5122 CAUSTIC REGEN PUMP MOTOR

233.512 CAUSTIC REGEN PUMP + MOTOR

233.513 AMMONIA REGEN PUMP + MOTOR

233.5131 AMMONIA REGEN PUMP

233.5132 AMMONIA REGEN PUMP MOTOR

233.513 AMMONIA REGEN PUMP + MOTOR

233.514 SLUICE WATER REGEN P+M

233.5141 SLUICE WATER REGEN PUMP

233.5142 SLUICE WATER REGEN P MOTOR

233.514 SLUICE WATER REGEN P+M

233.515 RECYCLE PUMP + MOTOR

233.5151 RECYCLE PUMP

233.5152 RECYCLE PUMP MOTOR

233.515 RECYCLE PUMP + MOTOR

233.516 AIR BLOWER + MOTOR

233.5161 AIR BLOWER

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
*****	*****	*****	*****	*****	*****	*****	*****

233.5162 AIR BLOWER MOTOR

233.516 AIR BLOWER + MOTOR

233.51 ROTATING MACHINERY

233.53 TANKS + PRESSURE VESSELS

233.531 RESIN SEPRTR+CATION RGN TK

233.532 ANION REGEN TANK

233.533 RESIN STORAGE TANK

233.534 HOT WATER HEATING TANK

233.535 BULK ACID STORAGE TANK

233.536 BULK CAUSTIC STORAGE TANK

233.537 BULK AMMONIA STORAGE TANK

233.53 TANKS + PRESSURE VESSELS

233.54 PURIFICATION EQUIPMENT

233.541 MIXED BED DEMINERALIZERS

233.54 PURIFICATION EQUIPMENT

233.58	INSTRUMENTATION + CONTROL	1 LT	53,520	1 LT	430 MH	5,257	263
233.5	CONDENSATE POLISHING		1,198,520		20430 MH	263,995	26,137
233.	CONDENSING SYSTEMS		9,040,725		174929 MH	2,305,125	236,731
							11,582,581

234. FEED HEATING SYSTEM

234.1 FEEDWATER HEATERS 1 LT 4,910,000 1 LT 10000 MH 130,797 13,080

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	TOTAL COSTS
		QUANTITY COSTS	QUANTITY LABOR HRS LABOR COST MATERIAL COST	
234.12	HEAT TRANSFER EQUIPMENT			
234.121	NO.1 LP HEATERS			
234.122	NO.2 LP HEATERS			
234.123	NO.3 LP HEATERS			
234.124	NO 4 LP HEATER			
234.125	NO 5 LP HEATER/DEAERATOR			
234.1251	DEAERATOR			
234.1252	DEAERATOR STORAGE TANK			
234.125	NO 5 LP HEATER/DEAERATOR			
234.126	NO 6 HP HEATER			
234.127	NO 7 HP HEATER			
234.128	NO 8 HP HEATER			
234.12	HEAT TRANSFER EQUIPMENT			
234.1	FEEDWATER HEATERS	4,910,000	10000 MH 130,797	13,080 5,053,877
234.2	FEEDWATER SYSTEM			
234.21	ROTATING MACHINERY			
234.211	MAIN BOILER FEED PUMP-MBFP	2 EA 1,074,000	1 LT 11541 MH 152,536	15,254
234.212	M8FP TURBINE DRIVES	2 EA 3,000,000	1 LT 18000 MH 232,864	23,286
234.216	MAIN BF BOOSTER PUMP + MTR	2 EA 92,000	1 LT 3151 MH 41,646	4,165
234.2161	MAIN BF BOOSTER PUMP			
234.21	MAIN BF BOOSTER PUMP MTR.			

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOT... COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
234.216	MAIN BF BOOSTER PUMP + MTR	92,000		3151 MH	41,646	4,165	137,811
234.21	ROTATING MACHINERY	4,166,000		32692 MH	427,046	42,705	4,635,751
234.22	HEAT TRANSFER EQUIPMENT						
234.221	MAIN BOILER FP CONDENSER	1 EA	490,000	1 LT	500 MH	6,678	668
234.22	HEAT TRANSFER EQUIPMENT		490,000		500 MH	6,678	668
234.22	HEAT TRANSFER EQUIPMENT						497,346
234.25	PIPING						
234.251	2 IN + SMALLER						
234.2511	CS/PC			640 LB	193 MH	2,499	832
234.2512	CS/BC			600 LB	179 MH	2,324	780
234.251	2 IN + SMALLER				372 MH	4,823	1,612
234.251	2 IN + SMALLER						6,435
234.252	2.5IN + LARGER						
234.2521	CS/PC						
234.25211	CS/PC	900000 LB	1,350,000	1 LT	135000 MH	1,749,654	174,965
234.25212	CS/PC	251315 LB	376,973	1 LT	37698 MH	488,580	48,858
234.2521	CS/PC		1,726,973		172698 MH	2,238,234	223,823
234.252	CS/BC	67200 LB	100,800	1 LT	10079 MH	130,632	13,063
234.252	2.5IN + LARGER		1,827,773		182777 MH	2,368,866	236,886
234.25	PIPING		1,827,773		183149 MH	2,373,689	238,498
234.25	PIPING						4,439,960
234.26	VALVES	1 LT	750,000				

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY QUANTITY	FACTORY COSTS	SITE QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
234.261	GATE							
234.262	CHECK							
234.263	GLOBE							
234.26	VALVES		750,000					750,000
234.27	PIPING-MISC. ITEMS							
234.271	HANGERS & SUPPORTS	284000 LB	426,000					
234.272	INSULATION							
234.273	SPECIALTIES							
234.27	PIPING-MISC. ITEMS		426,000					426,000
234.28	INSTRUMENTATION + CONTROL	1 LT	68,160	1 LT	560 MH	6,844		342
234.29	SKIDS/FOUNDATIONS							
234.291	MBFP							
234.2911	FORMWORK							
234.2912	REINFORCING STEEL							
234.2913	CONCRETE							
234.2914	EMBEDDED STEEL							
234.291	MBFP							
234.29	SKIDS/FOUNDATIONS							
234.2	FEEDWATER SYSTEM		7,727,953		216901 MH	2,814,257	282,213	10,824,403
234.3	EXTRACTION STEAM SYSTEM							

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY			SITE				TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST		
234.35	PIPING								
234.351	2 IN + SMALLER								
234.3511	CS/VNS								
	234.351 2 IN + SMALLER								
234.352	2.5IN + LARGER								
234.3521	CS/VNS	460522 LB	690,783	1 LT	69078 MH	895,280	89,528		
	234.352 2.5IN + LARGER		690,783		69078 MH	895,280	89,528	1,675,591	
	234.35 PIPING		690,783		69078 MH	895,280	89,528	1,675,591	
234.36	VALVES		1 LT	375,000					
234.361	GATE								
234.362	CHECK								
234.363	GLOBE								
	234.36 VALVES		375,000					375,000	
234.37	PIPING-MISCELLANEOUS								
234.371	HANGER + SUPPORTS	92104 LB	138,156						
234.372	INSULATION								
234.373	SPECIALTIES								
	234.37 PIPING-MISCELLANEOUS		138,156					138,156	
234.38	INSTRUMENTATION + CONTROL	1 LT	37,680	1 LT	311 MH	3,802	190		
	234.3 EXTRATION STEAM SYSTEM		1,241,619		69389 MH	899,082	89,718	2,230,419	

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	TOTAL			
		QUANTITY	COSTS	QUANTITY	LABOR HRS LABOR COST MATERIAL COST		
234.4	FWH VENT + DRAIN SYSTEM						
234.41	ROTATING MACHINERY						
234.411	HEATER DRAIN PUMP + MOTOR	2 EA	13,700	1 LT	480 MH 6,344	634	
234.4111	HEATER DRAIN PUMP						
234.4112	HEATER DRAIN PUMP MOTOR						
	234.411 HEATER DRAIN PUMP + MOTOR		13,700		480 MH 6,344	634	20,678
	234.41 ROTATING MACHINERY		13,700		480 MH 6,344	634	20,678
234.43	TANKS + PRESSURE VESSELS						
234.431	HEATER DRAIN TANK	1 EA	17,000	1 LT	59 MH 764	76	
234.43	TANKS + PRESSURE VESSELS		17,000		59 MH 764	76	17,840
234.45	PIPING						
234.451	2 IN + SMALLER						
234.4511	CS/PC			110 LB	33 MH 428	143	
	234.451 2 IN + SMALLER				33 MH 428	143	571
234.452	2.5IN + LARGER						
234.4521	CS/PC	91375 LB	137,063	1 LT	13706 MH 177,638	17,764	
234.4522	CR-MO/PC	11340 LB	28,350	1 LT	2835 MH 36,744	3,674	
234.452	2.5IN + LARGER		165,413		16541 MH 214,382	21,438	4 53
234.45	PIPING		165,413		16574 MH 214,810	21,581	401,804

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ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	*****
234.46	VALVES	1 LT	150,000					
234.461	GATE							
234.462	CHECK							
234.463	GLOBE							
234.46	VALVES		150,000					150,000
234.47	PIPING-MISC. ITEMS							
234.471	HANGERS & SUPPORTS	18300 LB	27,450					
234.472	INSULATION							
234.473	SPECIALTIES							
234.47	PIPING-MISC. ITEMS		27,450					27,450
234.48	INSTRUMENTATION + CONTROL	1 LT	57,030	1 LT	471 MH	5,756	288	
234.4	FWH VENT + DRAIN SYSTEM		430,593		17584 MH	227,674	22,579	680,846
234.	FEED HEATING SYSTEM		14,310,145		313874 MH	4,071,810	407,590	18,789,545
235.	OTHER TURBINE PLANT EQUIP.							
235.1	MAIN VAPOR PIPING SYSTEM							
235.11	MAIN STEAM SYSTEM							
235.115	PIPING							
235.1151	2 IN + SMALLER							
235.11511	CR-MO/NNS		440 LB	307 MH		3,981	1,430	

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	*****	SITE *****	*****	TOTAL	COSTS	
*****	*****	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	*****
*****	*****	*****	*****	*****	*****	*****	*****	*****
235.11512	CR-MO/PC			1320 LB	924 MH	11,975	4,290	
	235.1151 2 IN + SMALLER				1231 MH	15,956	5,720	21,676
235.1152	2.5 IN + LARGER							
235.11521	CR-MO/BC							
235.115211	CR-MO/BC	900000 LB	2,250,000	1 LT	225000 MH	2,916,090	291,609	
235.115212	CR-MO/BC	873300 LB	2,183,250	1 LT	218325 MH	2,829,578	282,958	
	235.11521 CR-MO/BC		4,433,250		443325 MH	5,745,668	574,567	10,753,485
235.11522	CR-MO/NNS	3080 LB	7,700	1 LT	771 MH	9,991	999	
	235.1152 2.5 IN + LARGER		4,440,950		444095 MH	5,755,659	575,566	10,772,175
	235.115 PIPING		4,440,950		445327 MH	5,771,615	581,286	10,793,851
235.116	VALVES	1 LT	40,000					
235.1161	GATE							
235.1162	CHECK							
235.1163	GLOBE							
235.1165	RELIEF							
	235.116 VALVES		40,000					40,000
235.117	PIPING-MISC ITEMS							
235.1171	HANGERS + SUPPORTS	355000 LB	532,500					
235.1172	INSULATION							
235.11	SPECIALTIES							

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	

235.11732 STEAM TRAPS + STRAINERS

235.1173 SPECIALTIES

235.117	PIPING-MISC ITEMS	532,500					532,500
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235.118	INSTRUMENTATION+CONTROL	1 LT	16,500	1 LT	320 MH	3,910	196
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235.11	MAIN STEAM SYSTEM		5,029,950		445647 MH	5,775,525	581,482	11,386,957
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235.12 HOT REHEAT SYSTEM

235.125 PIPING

235.1251 2 IN + SMALLER

235.12511	CR-MO/PC		755 LB	528 MH	6,843	2,454
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235.1251	2 IN + SMALLER			528 MH	6,843	2,454	9,297
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235.1252 2.5IN + LARGER

235.12521 CR-MO/PC

235.125211	CR-MO/PC	900000 LB	2,250,000	1 LT	225000 MH	2,916,090	291,609
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235.125212	CR-MO/PC	518800 LB	1,297,000	1 LT	129700 MH	1,680,963	168,096
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235.12521	CR-MO/PC		3,547,000		354700 MH	4,597,053	459,705	8,603,758
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235.1252	2.5IN + LARGER		3,547,000		354700 MH	4,597,053	459,705	8,603,758
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235.125	PIPING		3,547,000		355228 MH	4,603,896	462,159	8,613,055
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235.126	VALVES	1 LT	16,000				
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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
235.1261	GATE						
235.1263	GLOBE						
235.1265	SAFETY/RELIEF						
235.126	VALVES		16,000				16,000
235.127	PIPING-MISC. ITEMS						
235.1271	HANGERS + SUPPORTS	280000 LB		420,000			
235.1272	INSULATION						
235.1273	SPECIALTIES						
235.12732	TRAPS + STRAINERS						
235.12733	SPECIALTIES						
235.127	PIPING-MISC. ITEMS		420,000				420,000
235.128	INSTRUMENTATION + CONTROL	1 LT	9,400	1 LT	211 MH	2,579	129
235.12	HOT REHEAT SYSTEM		3,992,400		355439 MH	4,606,475	462,288
235.13	COLD REHEAT SYSTEM						
235.135	PIPING						
235.1351	2 IN + SMALLER						
235.13511	CS/PC			250 LB	75 MH	974	325
235.1351	2 IN + SMALLER				75 MH	974	325
235.1351	.5 IN + LARGER						1,299

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
235.1551	2 IN + SMALLER						
235.15511	CS/PC		1450 LB	435 MH	5,640	1,885	
	235.1551 2 IN + SMALLER			435 MH	5,640	1,885	7,525
235.1552	2.5 IN + LARGER						
235.15521	CS/PC	24120 LB	36,130	1 LT	3618 MH	46,883	4,689
	235.1552 2.5 IN + LARGER		36,130		3618 MH	46,883	4,689
	235.155 PIPING		36,130		4053 MH	52,523	6,574
235.155	VALVES	1 LT	55,000				
235.1561	GATE						
235.1562	CHECK						
	235.156 VALVES		55,000				55,000
235.157	PIPING-MISC ITEMS						
235.1571	HANGERS + SUPPORTS	5100 LB	7,650				
235.1572	INSULATION						
235.1573	SPECIALTIES						
235.15732	STEAM TRAPS + STRAINERS						
	235.1573 SPECIALTIES						
	235.157 PIPING-MISC ITEMS		7,650				7,650
235.158	INSTRUMENTATION + CONTROL						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
235.15	ATTEMPERATING SYSTEM	98,830		4053 MH	52,528	6,574	157,932
235.173	SPECIALTIES						
235.1	MAIN VAPOR PIPING SYSTEM	10,113,373		881922 MH	11,429,537	1,149,962	22,692,872
235.2	TURBINE AUXILIARIES						
235.21	MAIN STM/RHT VENTS & DRAIN						
235.215	PIPING						
235.2151	2 IN + SMALLER						
235.21511	CS/PC		3830 LB	1148 MH	14,881	4,979	
235.21512	CR-MO/PC		3300 LB	2310 MH	29,941	10,725	
	235.2151 2 IN + SMALLER			3458 MH	44,822	15,704	60,526
235.2152	2.5 IN + LARGER						
235.21521	CS/PC						
235.21522	CR-MO/PC	6710 LB	16,775	1 LT	1677 MH	21,737	2,174
	235.2152 2.5 IN + LARGER		16,775		1677 MH	21,737	2,174
	235.215 PIPING		16,775		5135 MH	66,559	17,878
235.216	VALVES		1 LT	45,000			
235.2163	GLOBE		1 LT	3,225			
	235.216 VALVES		48,225				48,225
235.217	PIPING-MISC. ITEMS						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS	
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST		
235.2171	HANGERS + SUPPORTS	10000 LB	15,000					
235.2172	INSULATION							
235.2173	SPECIALTIES							
	235.217 PIPING-MISC. ITEMS		15,000				15,000	
235.218	INSTRUMENTATION + CONTROL	1 LT	9,500	1 LT	211 MH	2,579	129	
235.21	MAIN STM/RHT VENTS & DRAIN		39,500		5346 MH	69,138	18,007	176,645
235.2	TURBINE AUXILIARIES		89,500		5346 MH	69,138	18,007	176,645
235.3	TB CLOSED CLG WATER SYS							
235.31	ROTATING MACHINERY							
235.311	TB CLOSED CLG WTR PUMP	3 EA	39,000	1 LT	1351 MH	17,856	1,786	
235.3111	TB CCW PUMP							
235.3112	TB CCW PUMP MOTOR							
235.311	TB CLOSED CLG WTR PUMP		39,000		1351 MH	17,856	1,786	58,642
235.31	ROTATING MACHINERY		39,000		1351 MH	17,856	1,786	58,642
235.32	HEAT TRANSFER EQUIPMENT							
235.321	HEAT EXCHANGERS	2 EA	356,000	1 LT	800 MH	10,464	1,046	
235.32	HEAT TRANSFER EQUIPMENT		356,000		800 MH	10,464	1,046	367,510
235.33	TANKS + PRESSURE VESSELS							
235.331	HEAD TANK	1 EA	1,400	1 LT	52 MH	678	68	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
235.33	TANKS + PRESSURE VESSELS	1,400		52 MH	678	68	2,146
235.35	PIPING						
235.351	2 IN. + SMALLER						
235.3511	CS/NNS		1650 LB	496 MH	6,426	2,145	
	235.351 2 IN. + SMALLER			496 MH	6,426	2,145	8,571
235.352	2.5 IN + LARGER						
235.3521	CS/VNS	158770 LB	238,155	1 LT	23815 MH	308,651	30,865
	235.352 2.5 IN + LARGER		238,155		23815 MH	308,651	30,865
	235.35 PIPING		238,155		24311 MH	315,077	33,010
235.36	VALVES	1 LT	165,000				
235.361	GATE						
235.362	CHECK						
235.363	GLOBE						
235.365	RELIEF						
235.366	BUTTERFLY						
235.368	PLUG						
	235.36 VALVES		165,000				165,000
235.37	PIPING-MISC. ITEMS						
235.371	HANGERS + SUPPORTS	32000 LB	48,000				
235.372	INSULATION						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
235.373	SPECIALTIES						
235.37	PIPING-MISC. ITEMS		48,000				48,000
235.38	INSTRUMENTATION + CONTROL	1 LT	25,400	1 LT	200 MH	2,445	122
235.3	TB CLOSED CLG WATER SYS		872,955		26714 MH	346,520	36,032
235.4	DEMIN. WATER MAKE-UP SYSTEM	1 LT	760,000	1 LT	4252 MH	55,612	5,561
235.45	PIPING						
235.451	2 IN + SMALLER						
235.4511	CS/NNS						
235.451	2 IN + SMALLER						
235.452	2.5 IN + LARGER						
235.4521	CS/NNS						
235.452	2.5 IN + LARGER						
235.45	PIPING						
235.46	VALVES						
235.47	PIPING-MISC ITEMS						
235.48	INSTRUMENTATION + CONTROL	1 LT	85,170	1 LT	680 MH	8,313	416
235.49	SKIDS / FOUNDATIONS						
235.491	DEMINERALIZER PACKAGE						
235.49	ROTATING MACHINERY						

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ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
*****	*****	*****	*****	*****	*****	*****	*****	*****

235.49111 ACID REGENERANT P+M

235.491111 ACID REGENERANT PUMP

235.491112 ACID REGENERANT PUMP MOTOR

235.49111 ACID REGENERANT P+M

235.49112 CAUSTIC REGENERANT P+M

235.491121 CAUSTIC REGEN PUMP

235.491122 CAUSTIC REGEN PUMP MOTOR

235.49112 CAUSTIC REGENERANT P+M

235.49113 DEGASIFIER EVACUATING P+M

235.491131 DEGASIFIER EVAC PUMP

235.491132 DEGASIFIER EVAC PUMP MOTOR

235.49113 DEGASIFIER EVACUATING P+M

235.49114 DEGASIFIER BOOSTER P+M

235.491141 DEGASIFIER BOOSTER PUMP

235.491142 DEGASIFIER BOOSTER P MOTOR

235.49114 DEGASIFIER BOOSTER P+M

235.4911 ROTATING MACHINERY

235.49121 DILUTE CAUSTIC WATER HTR.

235.4913 TANKS + PRESSURE VESSELS

235.49131 VACUUM DEGASIFIER

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ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
*****	*****	*****	*****	*****	*****	*****	*****	*****

235.49132 ACID REGENERANT DAY TANK

235.49133 CAUSTIC REGENERANT DAY TK

235.49134 HT WTR CAUSTIC DILUTION TK

235.4913 TANKS + PRESSURE VESSELS

235.4914 PURIFICATION+FILTRATION EQ

235.49141 FILTERS

235.49142 CATION ION EXCHANGE BEDS

235.49143 ANION ION EXCHANGE BEDS

235.49144 MIXED-BED ION EXCHANGE BED

235.4914 PURIFICATION+FILTRATION EG

235.491 DEMINERALIZER PACKAGE

235.49 SKIDS / FOUNDATIONS

235.4	DEMIN.WATER MAKE-UP SYSTEM	845,170		4932 MH	63,925	5,977	915,072
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235.5 CHEMICAL TREATMENT SYSTEM

1 LT	32,250	1 LT	152 MH	1,966	197
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235.51 ROTATING MACHINERY

235.511 AMMONIA FEED PUMP + MOTOR

235.5111 AMMONIA FEED PUMP

235.5112 AMMONIA FEED PUMP MOTOR

235.5111 AMMONIA FEED PUMP + MOTOR

235.512 HYDRAZINE FEED PUMP+MOTOR

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
235.5121	HYDRAZINE FEED PUMP							
235.5122	HYDRAZINE FEED PUMP MOTOR							
235.512	HYDRAZINE FEED PUMP+MOTOR							
235.51	ROTATING MACHINERY							
235.53	TANKS + PRESSURE VESSELS							
235.531	AMMONIA STORAGE TANK							
235.532	HYDRAZINE STORAGE TANK							
235.53	TANKS + PRESSURE VESSELS							
235.55	PIPING							
235.551	2 IN + SMALLER							
235.5511	SS/NNS	360 LB		288 MH		3,730		1,800
235.551	2 IN + SMALLER			288 MH		3,730		1,800
235.552	2.5 IN + LARGER							
235.55	PIPING			288 MH		3,730		1,800
235.56	VALVES							
235.563	GLOBE	10 EA		1,000				
235.56	VALVES			1,000				1,000
235.57	PIPE-MISC. ITEMS							
235.571	HANGERS + SUPPORTS	72 LB		108				

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	TOTAL COSTS
		QUANTITY COSTS	QUANTITY LABOR HRS LABOR COST MATERIAL COST	

235.572 INSULATION

235.573 SPECIALTIES

235.57 PIPE-MISC. ITEMS 108

108

235.58 INSTRUMENTATION + CONTROL 1 LT 1,960 1 LT 16 MH 196 10

235.5 CHEMICAL TREATMENT SYSTEM 35,318 456 MH 5,892 2,007 43,217

235.6 NEUTRALIZATION SYSTEM

235.61 ROTATING MACHINERY

235.611 OVERBOARD/RECIR PUMP+MOTOR 2 EA 9,000 1 LT 200 MH 2,643 264

235.611.1 OVERBOARD/RECIR PUMP

235.611.2 OVERBOARD/RECIR PUMP MOTOR

235.611 OVERBOARD/RECIR PUMP+MOTOR 9,000 200 MH 2,643 264 11,907

235.612 BLOWER + MOTOR

235.612 BLOWER + MOTOR 2 EA 6,000 1 LT 200 MH 2,643 264

235.612.1 BLOWER

235.612.2 BLOWER MOTOR

235.612 BLOWER + MOTOR 6,000 200 MH 2,643 264 8,907

235.61 ROTATING MACHINERY 15,000 400 MH 5,286 528 20,814

235.63 TANKS AND PRESSURE VESSELS

235.631 NEUTRALIZATION TANK 2 EA 40,000 1 LT 200 MH 2,616 262

235.63 TANKS AND PRESSURE VESSELS 40,000 200 MH 2,616 262 878

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
235.65	PIPING						
235.651	2IN & SMALLER						
235.6511	CS/NNS						
	235.651 2IN & SMALLER						
235.652	2.5 IN & LARGER						
235.6521	CS/NNS	1320 LB	1,930	1 LT	198 MH	2,565	257
	235.652 2.5 IN & LARGER		1,930		198 MH	2,565	257
	235.65 PIPING		1,930		198 MH	2,565	257
235.66	VALVES		1 LT	380			
235.67	PIPING - MISC ITEMS						
235.671	HANGERS + SUPPORTS	264 LB	396				
235.672	INSULATION						
235.673	SPECIALTIES						
	235.67 PIPING - MISC ITEMS		396				396
235.68	INSTRUMENTATION + CONTROL	1 LT	21,600	1 LT	411 MH	5,025	251
	235.6 NEUTRALIZATION SYSTEM		79,276		1209 MH	15,492	1,298
	235. OTHER TURBINE PLANT EQUIP.	12,035,592		920579 MH	11,930,504	1,213,283	25,179,379
236.	INSTRUMENTATION + CONTROL						
236.1	PROCESS IC EQUIPMENT						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY	*****	SITE	*****	TOTAL	
		QUANTITY	COSTS	QUANTITY	LABOR HRS	MATERIAL COST	COSTS
236.11	BENCHBOARD, PANELS + RACKS						
236.111	TURBINE PLT MAIN CONTRL BD						
236.112	TURBINE PANELS						
236.1121	TURBINE SUPERVISORY PANELS						
236.1122	MHC CONTROL CABINET						
236.1123	TURBINE ACCESSORY PANELS						
236.112	TURBINE PANELS						
236.113	TURBINE PLANT HVAC PANELS	1 LT	40,000	1 LT	333 MH	4,069	203
236.115	INSTRUMENT RACK-TURB PLANT	1 LT	456,000	1 LT	4560 MH	55,739	2,787
236.116	TURBINE + UNIT MISC PANEL	1 LT	60,000	1 LT	490 MH	5,990	300
236.11	BENCHBOARD, PANELS + RACKS	556,000		5383 MH	65,798	3,290	625,088
236.1	PROCESS IC EQUIPMENT	556,000		5383 MH	65,793	3,290	625,088
236.2	PROCESS COMPUTER						
236.3	TURB PLT I+C TUBING						
236.	INSTRUMENTATION + CONTROL	556,000		5383 MH	65,798	3,290	625,088
237.	TURBINE PLANT MISC ITEMS						
237.1	MISC SUSPENSE ITEMS						
237.11	PIPE			1 LT	7651 MH	99,158	87,612
237.12	FIELD PAINTING			1 LT	41700 MH	399,069	180,062
237.13	QUALIFICATION OF WELDERS			1 LT	7330 MH	98,222	30,100
237.1	MISC SUSPENSE ITEMS			56681 MH	596,449	297,774	81 3

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY			SITE				TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST		
237.3	TURBINE PLANT INSULATION	.	.	1 LT	42770 MH	556,865	1,552,330		
237.31	PIPE INSULATION								
237.32	EQUIPMENT INSULATION								
237.3	TURBINE PLANT INSULATION			42770 MH		556,865	1,552,330	2,109,195	
237.	TURBINE PLANT MISC ITEMS			99451 MH		1,153,314	1,850,104	3,003,418	
23.	TURBINE PLANT EQUIPMENT	81,230,723		1653747 MH	23,706,125	5,291,549	110,228,397		

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	TOTAL
		QUANTITY COSTS	QUANTITY LABOR HRS LABOR COST MATERIAL COST	COSTS
*****	*****	*****	*****	*****

24 . ELECTRIC PLANT EQUIPMENT

241. SWITCHGEAR

241.1 GEN EQPT SWITCHGEAR

241.11 GEN LOAD BREAK SWITCH

241.12 GEN NEUTRAL GROUNDING EQPT

1 LT 6000 MH 74,224 8,344

241.13 GEN CURRENT+POTENTIAL XFMR

18 EA 1080 MH 13,361 1,291

241.131 GEN CURRENT TRANSFORMERS

241.132 GEN POTENTIAL TRANSFORMERS

241.13 GEN CURRENT+POTENTIAL XFMR 1080 MH 13,361 1,291 14,652

241.14 GEN SURGE PROTECTION EQPT

241.15 GEN EXCITATION SWITCHGEAR

241.1 GEN EQPT SWITCHGEAR 7080 MH 87,585 9,635 97,220

241.2 STATION SERVICE SWITCHGEAR

241.21 MEDIUM VOLTAGE METAL CLAD

241.211 13.8 KV

2 EA 1,054,000 1 LT 12000 MH 148,448 14,845

241.212 6.9 KV

241.213 4.16 KV

4 EA 2,400,000 1 LT 20000 MH 247,412 24,741

241.21 MEDIUM VOLTAGE METAL CLAD 3,454,000 32000 MH 395,860 39,586 3,889,446

241.22 STATION MOTOR CONTROL CNTR

241.221 GENERAL PLANT

67 EA 1,172,500 1 LT 30151 MH 372,986 37,299

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
241.22	STATION MOTOR CONTROL CNTR	1,172,500		30151 MH	372,986	37,299	1,582,785
241.2	STATION SERVICE SWITCHGEAR	4,626,500		62151 MH	768,846	76,885	5,472,231
241.	SWITCHGEAR	4,626,500		69231 MH	856,431	86,520	5,569,451
242.	STATION SERVICE EQUIPMENT						
242.1	STATION SERV&STARTUP XFMR						
242.11	UNIT AUXILIARY TRANSFORMER						
242.111	13.8 KV TRANSFORMERS	2 EA	351,000	1 LT	4500 MH	55,669	5,567
242.112	4.16 KV TRANSFORMERS	2 EA	316,000	1 LT	4000 MH	49,482	4,948
242.11	UNIT AUXILIARY TRANSFORMER		667,000		8500 MH	105,151	10,515
242.11	782,666						
242.12	RESERVE AUXILIARY XFMRS						
242.121	13.8 KV TRANSFORMER	1 EA	361,000	1 LT	2700 MH	33,402	3,340
242.122	4.16 KV TRANSFORMER	1 EA	344,000	1 LT	2400 MH	29,690	2,969
242.12	RESERVE AUXILIARY XFMRS		705,000		5100 MH	63,092	6,309
242.12	774,401						
242.13	FOUNDATIONS FOR XFMRS						
242.131	EXCAVATION WORK						
242.1311	EARTH EXCAVATION						
242.1312	ROCK EXCAVATION						
242.1313	CONCRETE FILL						
242.1314	FILL + BACKFILL						

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	*****	SITE *****	*****	TOTAL COSTS
*****	*****	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST MATERIAL COST
*****	*****	*****	*****	*****	*****	*****

242.1315 Dewatering

242.131 EXCAVATION WORK

242.132 SUBSTRUCTURE CONCRETE

242.1321	FORMWORK		6300 SF	2520 MH	27,827	6,300
242.1322	REINFORCING STEEL		55 TN	1375 MH	17,757	22,000
242.1323	CONCRETE		1060 CY	795 MH	8,117	37,100
242.1324	EMBEDDED STEEL		10 TN	1250 MH	15,034	15,000
242.1325	FLOOR FINISH					
242.1326	WATERPROOFING					
242.1327	CONSTRUCTION JOINTS		2000 SF	2000 MH	22,084	2,000
242.1328	RUBBING CONCRETE SURFACES		6000 SF	180 MH	1,838	60
242.132	SUBSTRUCTURE CONCRETE			8120 MH	92,657	82,460
242.133	CRUSHED STONE FILL		300 CY	300 MH	2,936	1,800
242.13	FOUNDATIONS FOR XFMRS			8420 MH	95,643	84,260
242.1	STATION SERV&STARTUP XFMR	1,372,000		22020 MH	263,886	101,084
242.1						1,736,970

242.2 UNIT SUBSTATIONS

242.21 LOAD CENTER SWITCHGEAR

242.211 GENERAL PLANT SWITCHGEAR

242.2111	COOLING TOWER	8 EA	192,000	1 LT	2800 MH	34,638	3,464
242.2	BALANCE OF PLANT-NO CT	24 EA	864,000	1 LT	9600 MH	118,758	11,876
242.211	GENERAL PLANT SWITCHGEAR	1,056,000		12400 MH	153,396	15,340	1,36

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****		***** SITE *****			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
242.212	PRECIPITATOR SWITCHGEAR	10 EA	115,000	1 LT	3500 MH	43,298	4,330
	242.21 LOAD CENTER SWITCHGEAR		1,171,000		15900 MH	196,694	19,670
242.22	LOAD CENTER TRANSFORMERS						
242.221	GENERAL PLANT LD CTR XFMRS						
242.2211	COOLING TOWER	3 EA	76,000	1 LT	3200 MH	39,586	3,959
242.2212	BALANCE OF PLT 13800-480V	12 EA	138,000	1 LT	4800 MH	59,378	5,938
242.2213	BALANCE OF PLT 4160-480V	12 EA	132,000	1 LT	3600 MH	44,534	4,453
242.221	GENERAL PLANT LD CTR XFMRS		346,000		11600 MH	143,493	14,350
242.222	PRECIPITATOR LD CTR XFMRS	10 EA	204,000	1 LT	4000 MH	49,482	4,948
	242.22 LOAD CENTER TRANSFORMERS		550,000		15600 MH	192,980	19,298
242.23	MISCELLANEOUS XFMRS	1 LT	15,000	1 LT	800 MH	9,896	990
	242.2 UNIT SUBSTATIONS		1,736,000		32300 MH	399,570	39,958
242.3	AUXILIARY POWER SOURCES						
242.31	BATTERY SYSTEMS						
242.311	STATION BATTERIES						
242.3111	BATTERIES	2 EA	58,000	1 LT	1200 MH	14,844	1,484
	242.311 STATION BATTERIES		58,000		1200 MH	14,844	1,484
242.312	BATTERY CHARGERS						
242.3121	CHARGERS	3 EA	22,500	1 LT	451 MH	5,579	558

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ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	COSTS
*****		*****	*****	*****	*****	*****	*****	*****
	242.312 BATTERY CHARGERS	22,500		451 MH	5,579	558	28,637	
	242.31 BATTERY SYSTEMS	80,500		1651 MH	20,423	2,042	102,965	
242.32	EMERGENCY DIESEL GEN SYS							
242.321	DIESEL GENERATOR UNITS	2 EA	135,000	1 LT	1400 MH	17,319	1,732	
242.322	DIESEL GEN SUBSYSTEMS	2 EA	6,700	1 LT	600 MH	7,931	793	
	242.32 EMERGENCY DIESEL GEN SYS		141,700		2000 MH	25,250	2,525	169,475
242.34	INVERTERS							
242.341	GENERAL PLANT INVERTERS	2 EA	50,000	1 LT	600 MH	7,423	742	
	242.34 INVERTERS		50,000		600 MH	7,423	742	58,165
	242.3 AUXILIARY POWER SOURCES		272,200		4251 MH	53,096	5,309	330,605
	242. STATION SERVICE EQUIPMENT		3,380,200		58571 MH	716,552	146,351	4,243,103
243.	SWITCHBOARDS							
243.1	CONTROL PANELS							
243.11	GEN+AUX POWER SYS CTRL PNL	1 LT	250,000	1 LT	4500 MH	55,669	5,567	
243.12	CONSOLES							
243.13	VERTICAL PANELS							
243.14	GEN PROTECTIVE RELAY PANEL	1 LT	240,000	1 LT	4200 MH	51,957	5,196	
	243.1 CONTROL PANELS		490,000		8700 MH	107,626	10,763	608,389
243.2	AUX. POWER & SIGNAL BOARDS							

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS	
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST		MATERIAL COST
243.21	POWER DISTRIBUTION PANELS							
243.211	AC PANELS	2 EA	7,000	1 LT	200 MH	2,475	248	
	243.21 POWER DISTRIBUTION PANELS		7,000		200 MH	2,475	248	9,723
243.22	BATTERY CNTRL+DC DIST PNL							
243.221	DC PANELS	1 EA	21,000	1 LT	330 MH	4,082	408	
243.223	MISC. PUSHBUTTONS, PNLs + FUSE			1 LT	1300 MH	15,984	50,000	
243.224	BATTERY FUSES							
243.22	BATTERY CNTRL+DC DIST PNL	21,000		1630 MH	20,066	50,408	91,474	
243.2	AUX. POWER & SIGNAL BOARDS	28,000		1830 MH	22,541	50,656	101,197	
243.	SWITCHBOARDS	518,000		10530 MH	130,167	61,419	709,586	
244.	PROTECTIVE EQUIPMENT							
244.1	GENRL STATION GROUND SYS							
244.11	EQUIPMENT GROUNDING SYSTEM			1 LT	22000 MH	270,499	126,000	
244.12	YARD + STRUCTURE GROUNDING			1 LT	21000 MH	258,204	110,000	
244.1	GENRL STATION GROUND SYS				43000 MH	528,703	236,000	764,703
244.2	FIRE DETECTION+SUPPRESSION			1 LT	5100 MH	66,098	35,000	
244.3	LIGHTNING PROTECTION			1 LT	1300 MH	15,984	25,000	
244.4	CATHODIC PROTECTION			1 LT	19000 MH	233,612	300,000	
244.5	HEAT TRACING + FREEZE PROT			1 LT	17000 MH	209,022	75,000	
244.	PROTECTIVE EQUIPMENT				85400 MH	1,053,419	671,000	1,724,419

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	TOTAL
		QUANTITY	COSTS QUANTITY LABOR HRS LABOR COST MATERIAL COST	COSTS
245.	ELECT.STRUC +WIRING CONTNR			
245.1	UNDERGROUND DUCT RUNS			
245.11	DUCT BANKS			
245.111	PVC DUCT	125000 LF	27500 MH 338,124	200,000
245.112	STEEL CONDUIT	6250 LF	1376 MH 16,919	14,063
245.113	STRUCTURAL WORK			
245.1131	EXCAVATION WORK			
245.1132	SUBSTRUCTURE CONCRETE			
245.11321	FORMWORK	70000 SF	26000 MH 309,188	70,000
245.11322	REINFORCING STEEL	220 TN	5500 MH 71,023	82,500
245.11323	CONCRETE	4900 CY	3675 MH 37,527	156,800
245.1132	SUBSTRUCTURE CONCRETE		37175 MH 417,738	309,300 727,038
245.113	STRUCTURAL WORK		37175 MH 417,738	309,300 727,038
245.11	DUCT BANKS		66051 MH 772,781	523,363 1,296,144
245.1	UNDERGROUND DUCT RUNS		66051 MH 772,781	523,363 1,296,144
245.2	CABLE TRAY	80000 LF	200000 MH 2,459,080	1,185,600
245.3	CONDUIT	435000 LF	304500 MH 3,743,950	978,750
245.	ELECT.STRUC +WIRING CONTNR		570551 MH 6,975,811	2,687,713 9,663,524
246.	POWER & CONTROL WIRING			

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
*****	*****	*****	*****	*****	*****	*****	*****

246.1 GENERATOR CIRCUITS WIRING

246.11 MAIN GENERATOR BUS DUCT 1260 LF 485,100 1 LT 16381 MH 201,412 20,141

246.12 DG UNIT BUS DUCT

246.1 GENERATOR CIRCUITS WIRING 485,100 16381 MH 201,412 20,141 706,653

246.2 STATION SERVICE PWR WIRING

246.21 HIGH VOLTAGE BUS+CABLE

246.211 BUS DUCT

246.2111 15 KV BUS DUCT

246.2112 8 KV BUS DUCT

246.2113 5 KV BUS DUCT

246.211 BUS DUCT

246.212 CABLE

246.2121 15 KV CABLE 22800 LF 9119 MH 112,121 276,564

246.2122 8 KV CABLE

246.2123 5 KV CABLE 74200 LF 25969 MH 319,298 1,032,864

246.212 CABLE 35088 MH 431,419 1,309,428 1,740,847

246.21 HIGH VOLTAGE BUS+CABLE 35088 MH 431,419 1,309,428 1,740,847

246.22 LOW VOLTAGE BUS+CABLE

246.221 BUS DUCT

246.222 CABLE

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ACCT. NO.	ACCOUNT DESCRIPTION	FACTORY			SITE				TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST		
246.2221	LOW VOLTAGE POWER CABLE	688000	LF	68800	MH	845,923	488,480		
246.222	CABLE			68800	MH	845,923	488,480	1,334,403	
246.22	LOW VOLTAGE BUS+CABLE			68800	MH	845,923	488,480	1,334,403	
246.2	STATION SERVICE PWR WIRING			103888	MH	1,277,342	1,797,908	3,075,250	
246.3	CONTROL CABLE			2300	MF	230000	MH	2,827,942	3,065,900
246.4	INSTRUMENT WIRE			900	MF	99000	MH	1,217,244	720,000
246.	POWER & CONTROL WIRING	485,100		449269	MH	5,523,940	5,603,949	11,612,989	
24	ELECTRIC PLANT EQUIPMENT	9,009,800		1243552	MH	15,256,320	9,256,952	33,523,072	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
25	MISCELLANEOUS PLANT EQUIPT						
251.	TRANSPORTATION & LIFT EQPT						
251.1	CRANES & HOISTS						
251.11	TURBINE BUILDING CRANE						
251.111	TG OVERHEAD TRAVELING CRAN	1 EA	380,000	1 LT	4125 MH	53,364	5,336
251.112	HEATER BAY CRANE						
251.11	TURBINE BUILDING CRANE		380,000		4125 MH	53,364	5,336
251.14	INTAKE STRUCTURE CRANE						
251.15	CIRC WATER PUMPHOUSE CRANE						
251.16	MISC.CRANES,HOISTS+MONORLS			1 LT	3000 MH	38,811	83,850
251.161	10 TON CRANE						
251.162	5 TON CRANES						
251.16	MISC.CRANES,HOISTS+MONORLS				3000 MH	38,811	83,850
251.17	DIESEL BUILDING CRANES	2 EA	43,000	1 LT	800 MH	10,350	1,035
251.1	CRANES & HOISTS		423,000		7925 MH	102,525	90,221
251.2	RAILWAY EQUIPMENT						
251.21	DIESEL LOCOMOTIVE	1 EA	400,000	1 LT	100 MH	986	99
251.2	RAILWAY EQUIPMENT		400,000		100 MH	986	99
251.3	ROADWAY EQUIPMENT						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
251.34	BULLDOZERS	2 EA	400,000	1 LT	100 MH	986	99
251.3	ROADWAY EQUIPMENT		400,000		100 MH	986	99
251.	TRANSPORTATION & LIFT EQPT		1,223,000		8125 MH	104,497	90,419
251.	AIR, WATER+STEAM SERVICE SY						1,417,916
252.1	AIR SYSTEMS						
252.11	COMPRESSED AIR SYSTEM						
252.111	ROTATING MACHINERY						
252.1111	AIR COMPRESSORS + MOTORS	3 EA	70,950	1 LT	2551 MH	33,715	3,372
252.11111	AIR COMPRESSORS						
252.11112	AIR COMPRESSOR MOTOR						
252.1111	AIR COMPRESSORS + MOTORS		70,950		2551 MH	33,715	3,372
252.111	ROTATING MACHINERY		70,950		2551 MH	33,715	3,372
252.113	TANKS AND PRESSURE VESSELS						
252.1131	AIR RECEIVERS	2 EA	4,300	1 LT	200 MH	2,616	262
252.1132	AIR DRYERS	2 EA	15,050	1 LT	352 MH	4,555	456
252.113	TANKS AND PRESSURE VESSELS		19,350		552 MH	7,171	718
252.115	PIPING						
252.111	?IN + SMALLER						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE				TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	
252.11511	CS/NNS			32100 LB	9630 MH	124,810	41,730	
	252.1151	2IN + SMALLER			9630 MH	124,810	41,730	166,540
252.1152	2.5IN + LARGER							
252.11521	CS/NNS	3440 LB	5,160	1 LT	516 MH	6,688	669	
	252.1152	2.5IN + LARGER	5,160		516 MH	6,688	669	12,517
	252.115	PIPING	5,160		10146 MH	131,493	42,399	179,057
252.116	VALVES	1 LT	21,500					
252.1161	GATE							
252.1162	CHECK							
252.1163	GLOBE							
252.1165	RELIEF							
	252.116	VALVES	21,500					21,500
252.117	PIPING - MISC ITEMS							
252.1171	HANGERS + SUPPORTS	7100 LB	10,650					
252.1172	INSULATION							
252.1173	SPECIALTIES							
	252.117	PIPING - MISC ITEMS	10,650					10,650
252.118	INSTRUMENTATION+CONTROL	1 LT	18,350	1 LT	141 MH	1,725	86	
	252.11	COMPRESSED AIR SYSTEM	145,960		13390 MH	174,109	46,575	366,644
	252.1	AIR SYSTEMS	145,960		13390 MH	174,109	46,575	366,644

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
*****	*****	*****	*****	*****	*****	*****	

252.2 WATER SYSTEMS

252.21 SERVICE WATER SYSTEM

252.211 ROTATING MACHINERY

252.2111 SERVICE WATER PUMP & MOTOR

3 EA	162,000	1 LT	1441 MH	19,045	1,905
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252.21111 SERVICE WATER PUMP

252.21112 SERVICE WATER PUMP MOTOR

252.2111 SERVICE WATER PUMP & MOTOR	162,000	1441 MH	19,045	1,905	182,950
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252.211 ROTATING MACHINERY	162,000	1441 MH	19,045	1,905	182,950
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252.215 PIPING

252.2151 2IN & SMALLER

252.21511 CS/NNS

1690 LB	507 MH	6,573	2,197
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252.2151 2IN & SMALLER	507 MH	6,573	2,197	8,770
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252.2152 2.5IN & LARGER

252.21521 CS/NNS

59580 LB	89,370	1 LT	8937 MH	115,830	11,583
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252.2152 2.5IN & LARGER	89,370	8937 MH	115,830	11,583	216,783
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252.215 PIPING	89,370	9444 MH	122,403	13,780	225,553
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252.2 VALVES

1 LT	45,000
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252.2161 GATE

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
252.2162	CHECK						
252.2163	GLOBE						
252.2166	BUTTERFLY						
252.216	VALVES		45,000				45,000
252.217	PIPING-MISC ITEMS						
252.2171	HANGER AND SUPPORTS	12200 LB	18,300				
252.2172	INSULATION						
252.2173	SPECIALTIES						
252.2174	PIPE TRENCHING						
252.217	PIPING-MISC ITEMS		18,300				18,300
252.218	INSTRUMENTATION & CONTROL	1 LT	9,700	1 LT	480 MH	5,869	293
252.21	SERVICE WATER SYSTEM		324,370		11365 MH	147,317	15,978
252.21							487,665
252.22	YARD FIRE PROTECTION						
252.221	ROTATING MACHINERY						
252.2211	DIESEL ENGINE FIRE PUMPS	1 EA	20,000	1 LT	251 MH	3,317	332
252.2212	MOTOR DRIVEN FIRE PUMPS	2 EA	21,700	1 LT	400 MH	5,286	529
252.22121	FIRE PUMP						
252.22122	FIRE PUMP MOTOR						
252.2212	MOTOR DRIVEN FIRE PUMPS		21,700		400 MH	5,286	529
252.2213	JOCKEY PUMP + MOTOR	1 EA	2,150	1 LT	51 MH	673	67

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	*****	SITE *****	*****	*****	TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST MATERIAL COST	
*****	*****	*****	*****	*****	*****	*****	*****
252.22131	JOCKEY PUMP						
252.22132	JOCKEY PUMP MOTOR						
252.2213	JOCKEY PUMP + MOTOR	2,150		51 MH	673	67	2,890
252.221	ROTATING MACHINERY	43,850		702 MH	9,276	928	54,054
252.225	PIPING						
252.2252	2.5IN + LARGER						
252.22521	CS/NNS	793260 LB	1,189,890	1 LT	118989 MH	1,542,142	154,214
252.22522	CS/NNS	81480 LB	130,366	1 LT	12223 MH	158,412	15,841
252.2252	2.5IN + LARGER		1,320,258		131212 MH	1,700,554	170,055
252.225	PIPING		1,320,258		131212 MH	1,700,554	170,055
252.226	VALVES	1 LT	75,000				
252.2261	STANDARD VALVES						
252.2262	E-RATED VALVES						
252.22621	GATE						
252.22622	CHECK						
252.22625	RELIEF						
252.22629	SPECIAL VALVES						
252.22700	POST INDICATOR GATE						
252.22	DELUGE						
	252.22629 SPECIAL VALVES						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS.	LABOR COST	

252.2262 E-RATED VALVES

252.226	VALVES	75,000	75,000
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252.227 PIPING - MISC ITEMS

252.2271	HANGERS + SUPPORTS	17000 LB	25,500
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252.2272 INSULATION

252.2273 SPECIALTIES

252.22731	HOSE HOUSES	16 EA	17,415	1 LT	900 MH	11,665	1,167
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252.22732	FIRE HYDRANTS	18 EA	9,675	1 LT	900 MH	11,534	1,153
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252.2273	SPECIALTIES		27,090		1800 MH	23,199	2,320
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252.227	PIPING - MISC ITEMS		52,590		1800 MH	23,199	2,320
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252.228	INSTRUMENTATION+CONTROL	1 LT	6,820	1 LT	57 MH	690	35
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252.22	YARD FIRE PROTECTION		1,498,518		133771 MH	1,733,725	173,338
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252.24 POTABLE WATER SYSTEM

252.245 PIPING

252.2451 2IN + SMALLER

252.24511	GALV/NNS		1200 LB	360 MH	4,667	1,560
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252.24512	CU/NNS		1150 LF	265 MH	3,433	2,300
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252.2451	2IN + SMALLER			625 MH	8,100	3,860
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252.2452 2.5IN + LARGER

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE				TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	
252.24521	GALV/NNS	20880 LB	33,408	1 LT	3133 MH	40,605	4,061	
252.2452	2.5IN + LARGER		33,408		3133 MH	40,605	4,061	78,074
252.245	PIPING		33,408		3758 MH	48,705	7,921	90,034
252.246	VALVES	1 LT	2,500					
252.2461	GATE							
252.2462	CHECK							
252.2463	GLOBE							
252.2465	SAFETY/RELIEF							
252.2469	SPECIAL VALVES							
252.24691	SAFETY SHOWER							
252.24692	EYE WASH							
252.24693	HOSE BIBBS							
252.2469	SPECIAL VALVES							
252.246	VALVES		2,500					2,500
252.247	PIPING-MISC ITEMS							
252.2471	HANGERS + SUPPORTS	4400 LB	6,600					
252.2472	INSULATION							
252.2473	SPECIALTIES							
252.247	PIPING-MISC ITEMS		6,600					6,600
252.24	INSTRUMENTATION + CONTROL	1 LT	1,000	1 LT	51 MH	624	31	
252.24	POTABLE WATER SYSTEM		43,508		3809 MH	49,329	7,952	100,839

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST		MATERIAL COST
252.2	WATER SYSTEMS	1,866	396	148945	MH	1,930,371	197,268	3,994,035
252.3	AUXILIARY STEAM SYSTEM							
252.31	AUXILIARY BOILER SYSTEM							
252.312	HEAT TRANSFER EQUIPMENT							
252.3121	AUXILIARY BOILERS	2 EA	860,000	1 LT	6000 MH	77,621	7,762	
	252.312 HEAT TRANSFER EQUIPMENT		860,000		6000 MH	77,621	7,762	945,383
252.315	PIPING							
252.3151	2IN + SMALLER							
252.31511	CS/VNS			1430 LB	428 MH	5,547	1,859	
	252.3151 2IN + SMALLER				428 MH	5,547	1,859	7,406
252.3152	2.5IN + LARGER							
252.31521	CS/VNS	33860 LB	50,790	1 LT	5078 MH	65,816	6,582	
	252.3152 2.5IN + LARGER		50,790		5078 MH	65,816	6,582	123,188
	252.315 PIPING		50,790		5506 MH	71,363	8,441	130,594
252.316	VALVES	1 LT	30,000					
252.3161	GATE							
252.3162	CHECK							
252.3163	GLOBE							
	252.316 VALVES		30,000					30,000

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252.317 PIPING - MISC ITEMS

252.3171 HANGERS + SUPPORTS 7000 LB 10,500

252.3172 INSULATION

252.3173 SPECIALTIES

252.317	PIPING - MISC ITEMS	10,500	10,500
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252.31	AUXILIARY BOILER SYSTEM	951,290	11506 MH	148,984	16,203	1,116,477
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252.32 AUX BOILER FEEDWATER SYS

252.321 ROTATING MACHINERY

252.3211 AUX FW PUMPS + MOTORS

252.32111 AUX FW PUMPS

252.32112 AUX FW MOTORS

252.3211	AUX FW PUMPS + MOTORS
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252.321	ROTATING MACHINERY
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252.325 PIPING

252.3251 2 IN + SMALLER

252.32511 CS/NNS

370 LB	111 MH	1,441	481
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252.3251	'2 IN + SMALLER	111 MH	1,441	481
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1,922

252.3252 2.5 IN + LARGER

252.32521 CS/NNS

2230 LB	3,345	1 LT	335 MH	4,343
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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
252.3252	2.5 IN + LARGER	3,345		335 MH	4,343	434	8,122
252.325	PIPING	3,345		446 MH	5,784	915	10,044
252.326	VALVES	1 LT	7,000				
252.3261	GATE						
252.3262	CHECK						
252.3263	GLOBE						
252.326	VALVES		7,000				7,000
252.327	PIPING - MISC. ITEMS						
252.3271	HANGERS + SUPPORTS	500 LB	750				
252.3272	INSULATION						
252.3273	SPECIALTIES						
252.327	PIPING - MISC. ITEMS		750				750
252.32	AUX BOILER FEEDWATER SYS	11,095		446 MH	5,784	915	17,794
252.33	AUX FUEL OIL SYSTEM						
252.331	ROTATING MACHINERY						
252.3311	FUEL OIL PUMPS + MOTORS	3 EA	2,400	1 LT	151 MH	1,996	200
252.33111	FUEL OIL PUMP						
252.33112	FUEL OIL PUMP MOTOR						
252.3311	FUEL OIL PUMPS + MOTORS	2,400		151 MH	1,996	200	4,596

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ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	FACTORY COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
252.331	ROTATING MACHINERY	2,400		151 MH		1,996	200	4,596
252.335	PIPING							
252.3351	2IN + SMALLER							
252.33511	CS/NNS			870 LB	261 MH	3,385	1,131	
252.3351	2IN + SMALLER				261 MH	3,385	1,131	4,516
252.3352	2.5IN + LARGER							
252.33521	CS/NNS	4000 LB	6,000	1 LT	600 MH	7,776	778	
252.3352	2.5IN + LARGER		6,000		600 MH	7,776	778	14,554
252.335	PIPING		6,000		861 MH	11,161	1,909	19,070
252.336	VALVES	1 LT	6,500					
252.3362	CHECK							
252.3368	PLUG							
252.336	VALVES		6,500					6,500
252.337	PIPING - MISC ITEMS							
252.3371	HANGERS + SUPPORTS	1000 LB	1,500					
252.3372	INSULATION							
252.3373	SPECIALTIES							
252.337	PIPING - MISC ITEMS		1,500					1,500
252.33	AUX FUEL OIL SYSTEM	16,400		1012 MH	13,157	2,109		16

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY			SITE				TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST		
252.34	AUX DEAR + MAKEUP SYSTEM								
252.341	ROTATING MACHINERY								
252.3411	CONDENSATE RETURN PUMP+MT	3 EA	4,500	1 LT	180 MH	2,379	238		
252.34111	CONDENSATE RETURN PUMPS								
252.34112	CONDENSATE RETURN PUMP MT								
252.3411	CONDENSATE RETURN PUMP+MT		4,500		180 MH	2,379	238	7,117	
252.341	ROTATING MACHINERY		4,500		180 MH	2,379	238	7,117	
252.343	TANKS AND PRESSURE VESSELS								
252.3431	DEAERATOR								
252.343	TANKS AND PRESSURE VESSELS								
252.345	PIPING								
252.3451	2 IN + SMALLER								
252.34511	CS/NNS			54 LB	16 MH	207	70		
252.3451	2 IN + SMALLER				16 MH	207	70	277	
252.3452	2.5 IN + LARGER								
252.34521	CS/NNS	9270 LB	13,905	1 LT	1391 MH	18,024	1,802		
252.3452	2.5 IN + LARGER		13,905		1391 MH	18,024	1,802	33,731	
252.345	PIPING		13,905		1407 MH	18,231	1,872	34,008	

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ACCT. NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
252.346	VALVES	1 LT	5,000				
252.3461	GATE						
252.3462	CHECK						
252.3463	GLOBE						
	252.346 VALVES		5,000				5,000
252.347	PIPING - MISC. ITEMS						
252.3471	HANGERS + SUPPORTS	1800 LB	2,700				
252.3472	INSULATION						
252.3473	SPECIALTIES						
	252.347 PIPING - MISC. ITEMS		2,700				2,700
	252.34 AUX DEAR + MAKEUP SYSTEM	26,105		1587 MH	20,610	2,110	48,825
252.35	AUX CHEM FEED SYSTEM						
252.351	ROTATING MACHINERY						
252.3511	CHEM FEED PUMPS + MOTORS	4 EA	24,400	1 LT	200 MH	2,643	264
252.35111	CHEM FEED PUMP						
252.35112	CHEM FEED PUMP MOTOR						
	252.3511 CHEM FEED PUMPS + MOTORS		24,400		200 MH	2,643	264
	252.351 ROTATING MACHINERY		24,400		200 MH	2,643	27,307
252.3	TANKS AND PRESSURE VESSELS						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
252.3531	CHEM FEED TANKS	2 EA	3,660	1 LT	60 MH	785	79
	252.353 TANKS AND PRESSURE VESSELS		3,660		60 MH	785	79
252.355	PIPING						
252.3551	2 IN + SMALLER						
252.35511	SS/NNS			240 LB	193 MH	2,499	1,200
	252.3551 2 IN + SMALLER				193 MH	2,499	1,200
252.3552	2.5 IN + LARGER						
	252.355 PIPING				193 MH	2,499	1,200
252.356	VALVES	16 EA	2,581				
252.3561	GATE						
252.3562	CHECK						
252.3563	GLOBE						
252.3569	SPECIAL VALVES						
252.35691	NEEDLE						
	252.3569 SPECIAL VALVES						
252.356	VALVES		2,581				2,581
252.357	PIPING - MISC ITEMS						
252.3571	HANGERS + SUPPORTS	40 LB	60				
252.3572	INSULATION						
252.3573	SPECIALTIES						

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	TOTAL COSTS	
		QUANTITY	COSTS	QUANTITY	LABOR HRS LABOR COST MATERIAL COST
252.357	PIPING - MISC ITEMS	60			60
252.35	AUX CHEM FEED SYSTEM	30,701		453 MH	5,927 1,543 38,171
252.36	AUX. STEAM+CONDENSATE RETRN				
252.361	ROTATING MACHINERY				
252.3611	HEATING DRAIN TANK PUMP+MT	2 EA	4,800	1 LT 151 MH	1,996 200
252.36111	HEATING DRAIN TANK PUMP				
252.36112	HEATING DRAIN TANK PUMP MT				
252.3611	HEATING DRAIN TANK PUMP+MT		4,800	151 MH	1,996 200 6,996
252.361	ROTATING MACHINERY		4,800	151 MH	1,996 200 6,996
252.363	TANKS AND PRESSURE VESSELS				
252.3631	HEATING DRAIN TANK	1 EA	2,700	1 LT 52 MH	678 68
252.363	TANKS AND PRESSURE VESSELS		2,700	52 MH	678 68 3,446
252.365	PIPING				
252.3651	2 IN + SMALLER				
252.36511	CS/NNS			54 LB 16 MH	207 70
252.3651	2 IN + SMALLER			16 MH	207 70 277
252.3652	2.5 IN + LARGER				
252.36	CS/NNS	4970 LB	7,455	1 LT 745 MH	9,656 966

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS	
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST		
252.3652	2.5 IN + LARGER	7,455		745 MH	9,656	966	18,077	
252.365	PIPING	7,455		761 MH	9,863	1,036	18,354	
252.366	VALVES	1 LT	3,300					
252.3661	GATE							
252.3662	CHECK							
252.3663	CLOSE							
252.366	VALVES		3,300				3,300	
252.367	PIPING - MISC. ITEMS							
252.3671	HANGERS + SUPPORTS	1000 LB	1,500					
252.3672	INSULATION							
252.3673	SPECIALTIES							
252.367	PIPING - MISC. ITEMS		1,500				1,500	
252.36	AUX. STEAM+CONDENSATE RETRN	19,755		964 MH	12,537	1,304	33,596	
252.37	AUX. BOILER STACKS + DUCT							
252.38	AUX BOILER BLOWDOWN							
252.383	TANKS AND PRESSURE VESSELS							
252.3831	AUX BOILER BLOWDOWN TANK	1 EA	5,000	1 LT	100 MH	1,308	131	
252.383	TANKS AND PRESSURE VESSELS		5,000		100 MH	1,308	131	6,439
252.385	PIPING							

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
252.3851	2 IN + SMALLER								
252.38511	CS/NNS				410 LB	123 MH	1,592	533	
	252.3851 2 IN + SMALLER					123 MH	1,592	533	2,125
252.3852	2.5 IN + LARGER								
	252.385 PIPING					123 MH	1,592	533	2,125
252.386	VALVES		1 LT	200					
252.3861	GATE								
252.3862	CHECK								
252.3369	SPECIAL VALVES								
252.38691	BLOWDOWN								
	252.3869 SPECIAL VALVES								
	252.386 VALVES			200					200
252.387	PIPING - MISC ITEMS								
252.3871	HANGERS + SUPPORTS		80 LB	120					
252.3872	INSULATION								
252.3873	SPECIALTIES								
	252.387 PIPING - MISC ITEMS			120					120
252.38	AUX BOILER BLOWDOWN			5,320		223 MH	2,900	664	8,884
252.3	AUX STEAM SYS COMPLETE I+C		1 LT	85,000	1 LT	680 MH	8,313	416	
	252.3 AUXILIARY STEAM SYSTEM			1,145,666		16871 MH	218,212	25,264	1, 42

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
252.4	PLANT FUEL OIL SYSTEM						
252.41	ROTATING MACHINERY						
252.411	FUEL OIL UNLOAD PUMP+MOTOR	1 EA	1,200	1 LT	59 MH	779	78
252.4111	FUEL OIL UNLOADING PUMP						
252.4112	FUEL OIL UNLOAD PUMP MOTOR						
252.411	FUEL OIL UNLOAD PUMP+MOTOR		1,200		59 MH	779	78
252.41	ROTATING MACHINERY		1,200		59 MH	779	78
252.43	TANKS AND PRESSURE VESSELS						
252.431	PLANT FUEL OIL STORAGE TK			1 EA	1919 MH	25,100	18,300
252.43	TANKS AND PRESSURE VESSELS				1919 MH	25,100	18,300
252.43	TANKS AND PRESSURE VESSELS						43,400
252.45	PIPING						
252.451	2 IN + SMALLER						
252.4511	CS/NNS						
252.451	2 IN + SMALLER						
252.452	2.5 IN + LARGER						
252.4521	CS/NNS	920 LB	1,380	1 LT	138 MH	1,786	179
252.452	2.5 IN + LARGER		1,380		138 MH	1,786	179
252.45	PIPING		1,380		138 MH	1,786	179
252.45	PIPING						3,345

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY QUANTITY	COSTS	SITE QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
252.46	VALVES	1 LT	1,800					
252.468	PLUG							
	252.46 VALVES		1,800					1,800
252.47	PIPING-MISC ITEMS							
252.471	HANGERS + SUPPORTS	180 LB	270					
252.472	INSULATION							
252.473	SPECIALTIES							
	252.47 PIPING-MISC ITEMS		270					270
252.49	FOUNDATIONS/SKIDS							
252.491	PLANT FUEL OIL STG TK FNDT							
252.4911	EXCAVATION WORK							
252.49111	EARTH EXCAVATION		200 CY	50 MH	536	200		
252.49112	BACKFILL		250 CY	75 MH	746	250		
	252.4911 EXCAVATION WORK			125 MH	1,282	450		1,732
252.4912	CONCRETE WORK							
252.49121	FORMWORK		1300 CY	520 MH	5,742	1,300		
252.49122	REINFORCING STEEL		3 TN	75 MH	970	1,125		
252.49123	CONCRETE		50 CY	88 MH	898	1,600		
	252.4912 CONCRETE WORK			683 MH	7,610	4,025		11,635
252.4	COMPACTED SAND BED		250 CY	250 MH	2,488	1,500		

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
252.4914	DIKE		400 CY	400 MH	3,980	1,200	
252.491	PLANT FUEL OIL STG TK FNDT			1458 MH	15,360	7,175	22,535
252.49	FOUNDATIONS/SKIDS			1458 MH	15,360	7,175	22,535
252.4	PLANT FUEL OIL SYSTEM	4,650		3574 MH	43,025	25,732	73,407
252.	AIR, WATER+STEAM SERVICE SY	3,162,672		182780 MH	2,365,717	294,839	5,823,228
253.	COMMUNICATIONS EQUIPMENT						
253.1	LOCAL COMMUNICATIONS SYS						
253.11	GEN.PURPOSE TELEPHONE SYS		1 LT	3000 MH	36,886	35,475	
253.12	SOUND POW TELEPHONE SYS						
253.15	PA + INTERCOM SYS.		1 LT	12500 MH	153,693	107,500	
253.1	LOCAL COMMUNICATIONS SYS			15500 MH	190,579	142,975	333,554
253.2	SIGNAL SYSTEMS						
253.21	FIRE DETECTION SYSTEM	1 LT	100,000	1 LT	9500 MH	116,807	11,681
253.211							
253.212							
253.21	FIRE DETECTION SYSTEM	100,000		9500 MH	116,807	11,681	228,488
253.2	SIGNAL SYSTEMS	100,000		9500 MH	116,807	11,681	228,488
253.	COMMUNICATIONS EQUIPMENT	100,000		25000 MH	307,386	154,656	562,042
254.	FURNISHINGS + FIXTURES						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
254.1	SAFETY EQUIPMENT						
254.11	PORTABLE FIRE EXTINGUISHRS		100 EA	200 MH	1,864	8,600	
254.1	SAFETY EQUIPMENT			200 MH	1,864	8,600	
254.2	CHEMICAL LAB + INSTR SHOP						
254.223	INSTRUMENT SHOP APPARATUS	1 LT	50,000	152 MH	1,966		
254.23	SPEC LAB FURNITURE+FIXTURE	1 LT	99,975	1 LT	750 MH	8,700	
254.2	CHEMICAL LAB + INSTR SHOP		149,975		902 MH	10,666	
						870	
						161,511	
254.3	OFFICE EQUIP+FURNISHINGS						
254.31	OFFICE FURNITURE	1 LT	110,725				
254.3	OFFICE EQUIP+FURNISHINGS		110,725			110,725	
254.4	CHANGE ROOM EQUIPMENT						
254.41	LOCKERS+BENCHES	1 LT	18,275	1 LT	80 MH	923	
254.4	CHANGE ROOM EQUIPMENT		18,275		80 MH	928	
						93	
						19,296	
254.5	ENVIRONMENT MONIT EQUIP						
254.52	METEOROLOGICAL MONIT.EQUIP	1 LT	80,900	1 LT	700 MH	8,606	
254.53	WATER QUALITY MONITORING	1 LT	50,000	1 LT	416 MH	5,087	
254.54	THERMAL EFFLUENT MONITOR	1 LT	30,000	1 LT	251 MH	3,068	
254.56	AIR QUALITY MONITORING	1 LT	30,000	1 LT	251 MH	3,068	
254.5	ENVIRONMENT MONIT EQUIP		190,900		1618 MH	19,831	
						1,984	
254.6	MINING FACILITIES					212,715	

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1232 MWE COAL FIRED FOSSIL PLANT

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
254.61	CAFETERIA EQUIPMENT	1 LT	183,825	1 LT	3920 MH	45,472	4,547
254.6	DINING FACILITIES		183,825		3920 MH	45,472	4,547
254.	FURNISHINGS + FIXTURES		653,700		6720 MH	78,761	16,094
255.	WASTE WATER TREATMENT EQPT						748,555
255.1	ROTATING MACHINERY						
255.11	GROUP I -						
255.111	BATCH WASTE TRANS PUMP+MTR	2 EA	5,250	1 LT	300 MH	3,965	397
255.1111	BATCH WASTE TRANSFER PUMP						
255.1112	BATCH WASTE TRANS PUMP MTR						
255.111	BATCH WASTE TRANS PUMP+MTR		5,250		300 MH	3,965	397
255.112	SLUDGE FEED PUMP + MOTOR	2 EA	2,100	1 LT	120 MH	1,586	159
255.1121	SLUDGE FEED PUMP						
255.1122	SLUDGE FEED PUMP MOTOR						
255.112	SLUDGE FEED PUMP + MOTOR		2,100		120 MH	1,586	159
255.113	FILTRATE SUMP PUMP + MOTOR	2 EA	3,000	1 LT	100 MH	1,322	132
255.1131	FILTRATE SUMP PUMP						
255.1132	FILTRATE SUMP PUMP MOTOR						
255.113	FILTRATE SUMP PUMP + MOTOR		3,000		100 MH	1,322	132
255.114	LIME SLURRY PUMP + MOTOR	1 EA	1,250	1 LT	51 MH	673	67

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	*****	***** SITE *****	*****	*****	TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST MATERIAL COST	
255.1141	LIME SLURRY PUMP						
255.1142	LIME SLURRY PUMP MOTOR						
255.114	LIME SLURRY PUMP + MOTOR	1,250		51 MH	673	67	1,990
255.115	REGENERATION WASTE PMP+MTR	2 EA	2,500	1 LT	100 MH	1,322	132
255.1151	REGENERATION WASTE PUMP						
255.1152	REGENERATION WASTE PMP MTR						
255.115	REGENERATION WASTE PMP+MTR		2,500		100 MH	1,322	132
255.116	HOLDING TANK BLOWER +MOTOR	2 EA	130,000	1 LT	959 MH	12,674	1,267
255.1161	HOLDING TANK BLOWER						
255.1162	HOLDING TANK BLOWER MOTOR						
255.116	HOLDING TANK BLOWER +MOTOR		130,000		959 MH	12,674	1,267
255.117	ROT DRUM VAC FILT PUMP+MTR	2 EA	240,000	1 LT	280 MH	3,700	370
255.1171	ROTARY DRUM VACUUM PUMP						
255.1172	ROTARY DRUM MOTOR						
255.1173	VACUUM PUMP MOTOR						
255.117	ROT DRUM VAC FILT PUMP+MTR		240,000		280 MH	3,700	370
255.11	GROUP I -		384,100		1910 MH	25,242	2,524
255.12	GROUP II						
255.121	SULFURIC ACID FEED PMP+MTR	2 EA	1,800	1 LT	100 MH	1,322	132
255.121	SULFURIC ACID FEED PUMP						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
255.1212	SULFURIC ACID FEED PMP MTR						
255.121	SULFURIC ACID FEED PMP+MTR	1,800		100 MH	1,322	132	3,254
255.122	CAUSTIC FEED PUMP + MOTOR	2 EA	1,800	1 LT	100 MH	1,322	132
255.1221	CAUSTIC FEED PUMP						
255.1222	CAUSTIC FEED PUMP MOTOR						
255.122	CAUSTIC FEED PUMP + MOTOR	1,800		100 MH	1,322	132	3,254
255.123	LIME SLRY TNK AGITATOR+MTR	1 EA	3,600	1 LT	51 MH	673	67
255.1231	LIME SLRY TANK AGITATOR						
255.1232	LIME SLRY TNK AGITATOR MTR						
255.123	LIME SLRY TNK AGITATOR+MTR	3,600		51 MH	673	67	4,340
255.124	REGENER TANK AGITATOR+MTR	1 EA	4,500	1 LT	59 MH	764	76
255.1241	REGENERATION TANK AGITATOR						
255.1242	REGENER TANK AGITATOR MTR						
255.124	REGENER TANK AGITATOR+MTR	4,500		59 MH	764	76	5,340
255.125	PH ADJUST TNK AGITATOR+MTR	1 EA	3,500	1 LT	52 MH	671	67
255.1251	PH ADJUST TANK AGITATOR						
255.1252	PH ADJUST TNK AGITATOR MTR						
255.125	PH ADJUST TNK AGITATOR+MTR	3,500		52 MH	671	67	4,238
255.126	SLUDGE CONVEYOR + MOTOR	1 EA	5,200	1 LT	100 MH	1,293	129
255.1261	SLUDGE CONVEYOR						

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****		***** SITE *****				TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	
255.1262	SLUDGE CONVEYOR MOTOR							
	255.126	SLUDGE CONVEYOR + MOTOR	5,200		100 MH	1,293	129	6,622
	255.12	GROUP II	20,400		462 MH	6,045	603	27,048
	255.1	ROTATING MACHINERY	404,500		2372 MH	31,287	3,127	438,914
255.3	TANKS AND PRESSURE VESSELS							
255.31	BATCH HOLDING TANK			2 EA	20700 MH	270,750	193,200	
255.32	LIME SLURRY HOLDING TANK	1 EA	6,500	1 LT	100 MH	1,308	131	
255.33	API SEPARATOR TANK	1 EA	18,000	1 LT	181 MH	2,367	237	
255.34	CAUSTIC STORAGE TANK	1 EA	7,200	1 LT	71 MH	926	93	
255.35	SULFURIC ACID STORAGE TANK	1 EA	7,200	1 LT	71 MH	926	93	
255.36	REGENERANT HOLDING TANK			1 EA	1000 MH	13,080	9,800	
255.37	PH ADJUSTMENT TANK	1 EA	6,500	1 LT	85 MH	1,113	111	
	255.3 TANKS AND PRESSURE VESSELS		45,400		22203 MH	290,470	203,665	539,535
255.5	PIPING							
255.51	2 IN + SMALLER							
255.511	CS/NNS			860 LB	258 MH	3,344	1,118	
	255.51 2 IN + SMALLER				258 MH	3,344	1,118	4,462
255.52	2.5 IN + LARGER							
255.52	CS/NNS	38130 LB	57,195	1 LT	5721 MH	74,143	7,414	
	255.52 2.5 IN + LARGER		57,195		5721 MH	74,143	7,414	1 12

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
255.5	PIPING	57,195		5979 MH	77,487	8,532	143,214
255.6	VALVES	1 LT	44,000				
255.61	GATE						
255.6	VALVES		44,000				44,000
255.7	PIPING-MISC ITEMS						
255.71	HANGERS AND SUPPORTS	7800 LB	11,700				
255.7	PIPING-MISC ITEMS		11,700				11,700
255.8	WASTE WATER 1 + C	1 LT	20,100	1 LT	400 MH	4,889	244
255.91	BATCH WASTE HOLD TNK FOUND						
255.911	EXCAVATION WORK						
255.9111	EXCAVATION-EARTH		2000 CY	500 MH	5,845	2,000	
255.911	EXCAVATION WORK			500 MH	5,845	2,000	7,845
255.913	SUBSTRUCTURE CONCRETE						
255.9131	FORMWORK		6000 SF	2400 MH	26,502	6,000	
255.9132	REINFORCING STEEL		10 TN	251 MH	3,240	3,750	
255.9133	CONCRETE		200 CY	151 MH	1,542	6,400	
255.913	SUBSTRUCTURE CONCRETE			2802 MH	31,284	16,150	47,434
255.91	BATCH WASTE HOLD TNK FOUND			3302 MH	37,129	18,150	55,279
255.92	LIME SLURRY HOLD TNK FOUND						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
255.921	EXCAVATION WORK						
255.923	SUBSTRUCTURE CONCRETE						
255.9231	FORMWORK	60 SF		24 MH	265.	60	
255.9232	REINFORCING STEEL		1 TN	25 MH	322	375	
255.9233	CONCRETE		5 CY	4 MH	42	160	
	255.923 SUBSTRUCTURE CONCRETE			53 MH	629	595	1,224
	255.92 LIME SLURRY HOLD TNK FOUND			53 MH	629	595	1,224
255.93	PH ADJUSTMENT TANK FOUND						
255.931	EXCAVATION WORK						
255.933	SUBSTRUCTURE CONCRETE						
255.9331	FORMWORK	60 SF		24 MH	265	60	
255.9332	REINFORCING STEEL		1 TN	25 MH	322	375	
255.9333	CONCRETE		5 CY	4 MH	42	160	
	255.933 SUBSTRUCTURE CONCRETE			53 MH	629	595	1,224
	255.93 PH ADJUSTMENT TANK FOUND			53 MH	629	595	1,224
255.94	DEWATERING MACHINE FOUND						
255.941	EXCAVATION WORK						
255.9411	EXCAVATION-EARTH	30 CY		7 MH	74	30	
255.9411	ACKFILL-EARTH		12 CY	4 MH	40	12	
	255.941 EXCAVATION WORK			11 MH	114	42	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
255.943	SUBSTRUCTURE CONCRETE						
255.9431	FORMWORK	120 SF	48 MH	531	120		
255.9432	REINFORCING STEEL	1 TN	25 MH	322	375		
255.9433	CONCRETE	6 CY	5 MH	51	192		
255.943	SUBSTRUCTURE CONCRETE		78 MH	904	687	1,591	
255.94	DEWATERING MACHINE FOUND		89 MH	1,018	729	1,747	
255.95	CAUSTIC + ACID TANKS FOUND						
255.951	EXCAVATION WORK						
255.9511	EXCAVATION-EARTH	100 CY	25 MH	267	100		
255.9514	BACKFILL-EARTH	20 CY	6 MH	59	20		
255.951	EXCAVATION WORK		31 MH	326	120	446	
255.953	SUBSTRUCTURE CONCRETE						
255.9531	FORMWORK	1200 SF	480 MH	5,300	1,200		
255.9532	REINFORCING STEEL	5 TN	125 MH	1,614	1,875		
255.9533	CONCRETE	65 CY	49 MH	499	2,080		
255.953	SUBSTRUCTURE CONCRETE		654 MH	7,413	5,155	12,568	
255.95	CAUSTIC + ACID TANKS FOUND		685 MH	7,739	5,275	13,014	
255.96	MISC PUMP FOUNDATIONS						
255.961	EXCAVATION WORK						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
255.9611	EXCAVATION-EARTH		57 CY	14 MH	150	57	
255.9614	BACKFILL-EARTH		27 CY	8 MH	81	27	
255.961	EXCAVATION WORK			22 MH	231	84	
255.963	SUBSTRUCTURE CONCRETE					315	
255.9631	FORMWORK	650 SF	260 MH	2,870	650		
255.9632	REINFORCING STEEL	3 TN	75 MH	970	1,125		
255.9633	CONCRETE	29 CY	21 MH	213	928		
255.9634	EMBEDDED STEEL	1 TN	126 MH	1,515	1,400		
255.963	SUBSTRUCTURE CONCRETE		482 MH	5,563	4,103	9,671	
255.96	MISC PUMP FOUNDATIONS		504 MH	5,799	4,187	9,986	
255.97	BATCH WASTE TNK BLOW FOUND						
255.971	EXCAVATION WORK						
255.9711	EXCAVATION-EARTH	120 CY	30 MH	320	120		
255.9714	BACKFILL-EARTH	40 CY	12 MH	118	40		
255.971	EXCAVATION WORK		42 MH	438	160	598	
255.973	SUBSTRUCTURE CONCRETE						
255.9731	FORMWORK	525 SF	210 MH	2,318	525		
255.9732	REINFORCING STEEL	4 TN	100 MH	1,291	1,500		
255.9733	CONCRETE	75 CY	56 MH	571	2,400		
255.973	SUBSTRUCTURE CONCRETE		366 MH	4,180	4,425	05	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
255.97	BATCH WASTE TNK BLOW FOUND			408 MH	4,618	4,585	9,203
255.98	REGENERAT WASTE TANK FOUND						
255.981	EXCAVATION WORK						
255.9811	EXCAVATION-EARTH	20 CY		5 MH	53	20	
255.9814	BACKFILL-EARTH	10 CY		3 MH	31	10	
255.981	EXCAVATION WORK			8 MH	84	30	114
255.983	SUBSTRUCTURE CONCRETE						
255.9831	FORMWORK	120 SF		43 MH	531	120	
255.9832	REINFORCING STEEL	1 TN		25 MH	322	375	
255.9833	CONCRETE	12 CY		9 MH	91	384	
255.983	SUBSTRUCTURE CONCRETE			82 MH	944	879	1,823
255.98	REGENERAT WASTE TANK FOUND			90 MH	1,023	909	1,937
255.99	BATCH WST TRANS PUMP FOUND						
255.991	EXCAVATION WORK						
255.9911	EXCAVATION-EARTH	120 CY		30 MH	320	120	
255.9914	BACKFILL-EARTH	40 CY		12 MH	118	40	
255.991	EXCAVATION WORK			42 MH	438	160	598
255.993	SUBSTRUCTURE CONCRETE						
255.9931	FORMWORK	525 SF		210 MH	2,318	525	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
255.9932	REINFORCING STEEL		4 TN	100 MH	1,291	1,500	
255.9933	CONCRETE		75 CY	56 MH	571	2,400	
255.993	SUBSTRUCTURE CONCRETE			366 MH	4,180	4,425	
255.99	BATCH WST TRANS PUMP FOUND			408 MH	4,618	4,585	
255.	WASTE WATER TREATMENT EQPT	582,895		3,655.1 MH	4,67,340	255,178	
25	MISCELLANEOUS PLANT EQUIPT	5,722,267		259176 MH	3,323,701	811,186	
						9,857,154	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
26 .	MAIN COND HEAT REJECT SYS						
261.	STRUCTURES						
261.1	MAKEUP WTR INT + DISCH STR						
261.11	INTAKE STRUCTURE						
261.111	EXCAVATION WORK						
261.1111	EARTH EXCAVATION	560 CY	140 MH	1,636	560		
261.1112	ROCK EXCAVATION	790 CY	632 MH	7,389	3,160		
261.1113	SHEETING (TEMP COFFERDAM)	14 TN	280 MH	3,842	2,380		
261.1114	STRCT STL (TEMP COFFERDAM)	2 TN	30 MH	412	1,450		
261.1115	PUMPING	1 LT	1875 MH	17,475	15,000		
261.111	EXCAVATION WORK		2957 MH	30,754	22,550		53,304
261.112	BEARING PILES (STEEL)						
261.113	SUBSTRUCTURE CONCRETE						
261.1131	FORMWORK	6835 SF	2734 MH	30,189	6,835		
261.1132	REINFORCING STEEL	45 TN	1125 MH	14,526	16,875		
261.1133	CONCRETE	455 CY	341 MH	3,481	14,560		
261.1134	EMBEDDED STEEL	7 TN	876 MH	10,535	9,800		
261.1135	CONCRETE FINISH	4550 SF	46 MH	470	46		
261.1136	WATERPROOFING						
261.1137	CONSTRUCTION JOINTS						
261.1138	RUBBING CONCRETE SURFACES						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY QUANTITY	COSTS	SITE QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
261.113	SUBSTRUCTURE CONCRETE			5122 MH	59,201	48,116		107,317
261.114	SUPERSTRUCTURE							
261.1141	CONCRETE WORK							
261.1142	STRUCTURAL + MISC. STEEL							
261.11421	STRUCTURAL STEEL	6 TN		90 MH		1,171		4,350
261.11422	GRATING (GALV)	100 SF		17 MH		223		300
261.11423	HANDRAIL	60 LF		36 MH		468		600
261.1142	STRUCTURAL + MISC. STEEL			143 MH		1,862		5,250
261.1143	EXTERIOR WALLS							7,112
261.11431	CONCRETE							
261.11432	MASONRY	1375 SF		344 MH		3,925		3,850
261.1143	EXTERIOR WALLS			344 MH		3,925		3,850
261.1144	ROOF DECK							
261.11441	METAL ROOF DECK	965 SF		57 MH		744		965
261.1144	ROOF DECK			57 MH		744		965
261.1145	ROOFING + FLASHING							1,709
261.11451	S.U. ROOFG, INSULTN, + FLA	965 SF		68 MH		917		1,206
261.1145	ROOFING + FLASHING			68 MH		917		1,206
261.1	INTERIOR WALLS							2,123

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
261.11461	CONCRETE WALLS						
261.11452	MASONRY WALLS		250 SF	63 MH	719	700	
261.11463	PARTITIONS						
	261.1146 INTERIOR WALLS			63 MH	719	700	1,419
261.1147	DOORS + WINDOWS						
261.11471	ROLLING STEEL DOORS						
261.11472	PERSONNEL DOORS		150 SF	105 MH	1,218	1,800	
261.11473	SASH + GLAZING						
	261.1147 DOORS + WINDOWS			105 MH	1,218	1,800	3,018
261.1149	PAINTING						
261.11491	CONCRETE						
261.11492	STEELWORK		8 TN	40 MH	383	48	
261.11493	METAL DECK		965 SF	19 MH	182	97	
261.11494	HANDRAIL		60 LF	12 MH	115	6	
	261.1149 PAINTING			71 MH	680	151	831
	261.114 SUPERSTRUCTURE			851 MH	10,065	13,922	23,987
261.117	BULKHEAD						
261.1171	STEEL SHEETING		32 TN	320 MH	4,390	11,200	
261.1172	STRUCTURAL STEEL		2 TN	30 MH	389	1,450	
261.1173	GRAVEL FILL		265 CY	80 MH	796	1,325	
261.1174	DREDGING		11500 CY	2300 MH	28,704	23,000	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
261.1175	RIP-RAP (12 IN. THICK)		10 CY	15 MH	149	100	
261.1176	CHAIN LINK FENCE (7FT HIGH)		262 LF	79 MH	736	1,703	
261.117	BULKHEAD			2824 MH	35,164	38,778	73,942
261.118	PROTECTIVE DOLPHINS						
261.1181	WOOD PILES		675 LF	135 MH	1,852	2,700	
261.118	PROTECTIVE DOLPHINS			135 MH	1,852	2,700	4,552
261.119	BUILDING SERVICES						
261.1191	FLOOR DRAINS + PIPING		6 EA	660 MH	8,554	6,000	
261.1192	HEATING + VENTILATING						
261.11921	AXIAL WALL FANS		1 EA	1,500	1 LT	41 MH	529
261.11922	ELECTRIC UNIT HEATERS		2 EA	1,500	1 LT	100 MH	1,230
261.11928	INSTRUMENTATION + CONTROL		1 LT	1,500	1 LT	12 MH	146
261.1192	HEATING + VENTILATING			4,500		153 MH	1,905
261.119	BUILDING SERVICES		4,500		813 MH	10,459	6,183
261.11	INTAKE STRUCTURE			4,500	12702 MH	147,495	132,249
261.12	DISCHARGE STRUCTURE						284,244
261.121	EXCAVATION WORK						
261.1211	EARTH EXCAVATION			80 CY	20 MH	215	80
261.12	BACKFILL			80 CY	24 MH	239	80
261.1212	DREDGING			2000 CY	400 MH	4,992	4,000

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
261.121	EXCAVATION WORK			444 MH	5,446	4,160	9,606
261.122	BEARING PILES (STEEL)		200 LF	60 MH	823	2,400	
261.127	RIP-RAP (12 IN. THICK)		45 CY	68 MH	678	450	
261.128	MARKER PILES (WOOD)		240 LF	48 MH	659	960	
261.12	DISCHARGE STRUCTURE			620 MH	7,606	7,970	15,576
261.1	MAKEUP WTR INT + DISCH STR	4,500		13322 MH	155,101	140,219	299,820
261.2	CIRC WATER PUMP HOUSE						
261.21	BUILDING STRUCTURE						
261.211	EXCAVATION WORK						
261.2111	EARTH EXCAVATION		1190 CY	298 MH	3,191	1,190	
261.2112	ROCK EXCAVATION		3100 CY	2480 MH	26,561	12,400	
261.2113	CONCRETE FILL						
261.2114	BACKFILL		190 CY	57 MH	566	190	
261.2115	PUMPING		1 LT	375 MH	3,495	3,000	
261.211	EXCAVATION WORK			3210 MH	33,813	16,780	50,593
261.213	SUBSTRUCTURE CONCRETE						
261.2131	FORMWORK		720 SF	289 MH	3,192	720	
261.2132	REINFORCING STEEL		75 TN	1875 MH	24,214	28,125	
261.2133	CONCRETE		770 CY	578 MH	5,905	24,640	
261.2134	EMBEDDED STEEL		6 TN	750 MH	9,020	8,400	
261.2135	FLOOR FINISH		8400 SF	85 MH	869	84	

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	TOTAL COSTS
		QUANTITY COSTS	QUANTITY LABOR HRS LABOR COST MATERIAL COST	
261.2136	WATERPROOFING	7000 SF	140 MH 1,305	700
261.2137	CONSTRUCTION JOINTS	360 SF	360 MH 3,974	360
261.2138	RUBBING CONCRETE SURFACES			
261.2139	WIRE FABRIC	5000 SF	100 MH 1,291	600
261.213	SUBSTRUCTURE CONCRETE		4177 MH 49,770	63,629
261.214	SUPERSTRUCTURE			113,399
261.2141	CONCRETE WORK			
261.21411	FORMWORK			
261.214111	FORMWORK-WOOD	34500 SF	13800 MH 152,385	34,500
261.214112	FORMWORK-METAL			
261.21411	FORMWORK		13800 MH 152,385	34,500
261.21412	REINF. STEEL	130 TN	3900 MH 50,362	48,750
261.21413	CONCRETE	1300 CY	2275 MH 23,232	41,600
261.21414	EMBEDDED STEEL	7 TN	876 MH 10,535	9,800
261.21415	FLOOR FINISH	5600 SF	55 MH 562	56
261.21416	WATERPROOFING	8100 SF	162 MH 1,510	810
261.21417	RUBBING CONCRETE SURFACES	3250 SF	98 MH 913	33
261.21418	CONSTRUCTION JOINTS	840 SF	840 MH 9,277	840
261.2141	CONCRETE WORK		22006 MH 248,776	136,389
261.2142	STRUCT + MISC. STEEL			385,165
261.2142	STRUCT. STEEL	50 TN	750 MH 9,763	36,250

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
261.21423	MISC. FRAMES, ETC.		3 TN	150 MH	1,953	3,300	
261.21425	FLOOR GRATING (GALV.)		840 SF	143 MH	1,861	2,520	
261.21426	STAIR TREADS		8 EA	6 MH	78	280	
261.21427	HANDRAILS		200 LF	120 MH	1,564	2,000	
	261.2142 STRUCT + MISC. STEEL			1169 MH	15,219	44,350	
	261.2143 EXTERIOR WALLS					59,569	
261.21431	CONCRETE WALLS						
261.21432	METAL SIDING(INSULATED)		2750 SF	550 MH	6,276	11,000	
261.21433	EXTERIOR WALLS			550 MH	6,276	11,000	
	261.2144 ROOF DECK					17,276	
261.21441	METAL ROOF DECK		2800 SF	167 MH	2,176	2,800	
261.21442	ROOF DECK			167 MH	2,176	2,800	
	261.2145 ROOFING + FLASHING					4,976	
261.21451	B.U. ROOFING, FLASHING+INS		2800 SF	196 MH	2,642	3,500	
261.21452	ROOFING + FLASHING			196 MH	2,642	3,500	
	261.2146 INTERIOR WALLS + PARTIT.					6,142	
261.21461	CONCRETE WALLS						
261.21462	MASONRY WALLS		1080 SF	270 MH	3,081	3,024	
261.21463	PARTITIONS						
261.21464	INTERIOR WALLS + PARTIT.			270 MH	3,081	3,024	
						6,105	

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	MATERIAL COST	COSTS
*****	*****	*****	*****	*****	*****	*****	*****
261.2147	DOORS + WINDOWS						
261.21471	ROLLING STEEL DOORS			144 SF	72 MH	835	2,016
261.21472	PERSONNEL DOORS			140 SF	98 MH	1,137	1,680
261.21473	SASH + GLAZING			80 SF	32 MH	371	960
261.2147	DOORS + WINDOWS				202 MH	2,343	4,656
							6,999
261.2149	PAINTING						
261.21491	CONCRETE						
261.21492	STEELWORK			3 TN	15 MH	144	18
261.21493	METAL DECK			2800 SF	56 MH	536	280
261.21494	HANDRAIL			200 LF	40 MH	383	20
261.2149	PAINTING				111 MH	1,063	318
261.214	SUPERSTRUCTURE				24671 MH	281,576	206,037
261.21	BUILDING STRUCTURE				32058 MH	365,159	286,446
261.22	BUILDING SERVICE						651,605
261.221	PLUMBING + DRAINS						
261.2211	ROOF DRAINS & PIPING						
261.22111	DRAINS			8 EA	79 MH	1,028	1,600
261.22115	PIPING (ALL 2.5 IN + LGR)						
261.22	GALV STEEL/NNS	9120 LB	14,592	1 LT	1367 MH	17,716	1,772
261.22115	PIPING (ALL 2.5 IN + LGR)		14,592		1367 MH	17,716	1,772
							0

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	*****	*****	TOTAL COSTS		
*****	*****	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST MATERIAL COST		
*****	*****	*****	*****	*****	*****	*****		
	261.2211 ROOF DRAINS & PIPING	14,592		1446 MH	18,744	3,372	36,708	
261.2212 FLOOR DRAINS & PIPING								
261.22121	DRAINS		30 EA	300 MH	3,889	6,000		
261.22125	PIPING (ALL 2.5 IN + LGR)							
261.221251	CI/NNS	23440 LB	5,157	1 LT	469 MH	6,077	608	
261.221252	PVC/NNS	300 LF	3,300	1 LT	121 MH	1,565	157	
261.22125	PIPING (ALL 2.5 IN + LGR)		8,457		590 MH	7,642	765	16,864
261.2212	FLOOR DRAINS & PIPING		8,457		890 MH	11,531	6,765	26,753
261.221	PLUMBING + DRAINS		23,049		2336 MH	30,275	10,137	63,461
261.222	HEATING, VENT, + AIR COND	1 LT	30,000	1 LT	216 MH	2,793	279	
261.2221	ROTATING MACHINERY							
261.22211	PROPELLER FAN + MOTOR							
261.222111	PROPELLER FAN							
261.222112	PROPELLER FAN MOTOR							
261.22211	PROPELLER FAN + MOTOR							
261.2221	ROTATING MACHINERY							
261.2222	HEAT TRANSFER EQUIPMENT							
261.22221	ELECTRIC UNIT HEATERS+MTR							

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL	
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	COSTS

261.222211 ELECTRIC UNIT HEATERS

261.222212 ELECTRIC UNIT HTR MOTORS

261.22221 ELECTRIC UNIT HEATERS+MTR

261.2222 HEAT TRANSFER EQUIPMENT

261.2226 VALVES + DAMPERS

261.22269 SPECIAL VALVES + DAMPERS

261.222691 INTAKE LOUVERS

261.22269 SPECIAL VALVES + DAMPERS

261.2226 VALVES + DAMPERS

261.222	HEATING, VENT, + AIR COND	30,000	216 MH	2,793	279	33,072
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261.224 LIGHTING & SERVICE POWER

261.228	INSTRUMENTATION + CONTROL	1 LT	2,000	2500 SF	750 MH	9,222	4,500
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261.22	BUILDING SERVICE	55,049	16 MH	196	10	112,461
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261.2	CIRC WATER PUMP HOUSE	55,049	35376 MH	407,645	301,372	764,066
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261.3 MAKEUP WTR PRÉTREATMNT BLDG

261.31 BUILDING STRUCTURE

261.311 EXCAVATION WORK

261.31	EARTH EXCAVATION	2630 CY	657 MH	7,037	2,630
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261.3112	ROCK EXCAVATION	280 CY	224 MH	2,401	1,120
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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
261.3113	CONCRETE FILL	70 CY		71 MH	726	2,240	
261.3114	FILL + BACKFILL		2275 CY	683 MH	6,799	2,275	
261.3115	DEWATERING						
261.311	EXCAVATION WORK			1635 MH	16,963	8,265	25,228
261.313	SUBSTRUCTURE CONCRETE						
261.3131	FORMWORK	2200 SF		880 MH	9,717	2,200	
261.3132	REINFORCING STEEL		22 TN	551 MH	7,113	8,250	
261.3133	CONCRETE		430 CY	323 MH	3,298	13,760	
261.3134	EMBEDDED STEEL		560 LB	34 MH	407	392	
261.3135	FLOOR FINISH		6760 SF	68 MH	695	68	
261.3136	WATERPROOFING		6760 SF	135 MH	1,258	676	
261.3137	CONSTRUCTION JOINTS		70 SF	70 MH	773	70	
261.3138	RUBBING CONCRETE SURFACES		285 SF	9 MH	91	3	
261.313	SUBSTRUCTURE CONCRETE			2070 MH	23,352	25,419	48,771
261.314	SUPERSTRUCTURE						
261.3141	CONCRETE WORK						
261.31411	FORMWORK						
261.314111	FORMWORK-WOOD		186 SF	140 MH	1,548	186	
261.314112	FORMWORK-METAL		3550 SF	212 MH	2,761	3,195	
261.31411	FORMWORK			352 MH	4,309	3,381	7,690
261.31412	REINFORCING STEEL		8 TN	280 MH	3,615	3,000	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
261.31413	CONCRETE	79 CY		139 MH	1,420	2,528	
261.31414	EMBEDDED STEEL		560 LB	34 MH	407	392	
261.31415	FLOOR FINISH		3552 SF	35 MH	356	36	
261.31416	WATERPROOFING						
261.31417	RUBBING CONCRETE SURFACES						
261.31418	CONSTRUCTION JOINTS		23 SF	23 MH	254	23	
	261.3141 CONCRETE WORK			863 MH	10,361	9,360	
						19,721	
261.3142	STRUCTURAL + MISC STEEL						
261.31421	STRUCTURAL STEEL		152 TN	2280 MH	29,679	110,200	
261.31423	MISCELLANEOUS FRAMES, ETC.		1 TN	50 MH	651	1,100	
261.31425	FLOOR GRATING (GALV.)		170 SF	29 MH	375	510	
261.31426	STAIR TREADS		30 EA	23 MH	302	1,050	
261.31427	HANDRAIL		50 LF	30 MH	389	500	
	261.3142 STRUCTURAL + MISC STEEL			2412 MH	31,397	113,360	
						144,757	
261.3143	EXTERIOR WALLS						
261.31431	CONCRETE WALLS						
261.31432	MASONRY WALLS						
261.31433	METAL INSULATED SIDING		5175 SF	1035 MH	13,472	20,700	
261.31434	WINDOW WALL						
	261.3143 EXTERIOR WALLS			1035 MH	13,472	20,700	
						34,172	
261.3144	ROOF DECK						
261.31441	METAL ROOF DECK						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
261.31442	PRECAST CONCRETE PANELS		6820 SF	545 MH	7,094	8,866	
261.31443	CONCRETE FILL		85 CY	171 MH	1,747	2,720	
261.31444	REINFORCING STEEL		6 TN	180 MH	2,323	2,250	
261.3144	ROOF DECK			896 MH	11,164	13,836	
261.3145	ROOFING + FLASHING					25,000	
261.31451	B.J. ROOFING, INSUL.+FLASH.						
261.31452	B.J. ROOF+FLASH(NO INSUL)		6820 SF	341 MH	4,597	6,820	
261.3145	ROOFING + FLASHING			341 MH	4,597	6,820	
261.3146	INTERIOR WALLS + PARTITION					11,417	
261.31461	CONCRETE WALLS						
261.31462	CONCRETE BLOCK		560 SF	140 MH	1,597	840	
261.31463	METAL PARTITIONS						
261.31464	PLASTER BD PARTITIONS						
261.3146	INTERIOR WALLS + PARTITION			140 MH	1,597	840	
261.3147	DOORS + WINDOWS					2,437	
261.31471	ROLLING STEEL DOORS		495 SF	248 MH	3,229	6,930	
261.31472	PERSONNEL DOORS		170 SF	119 MH	1,380	2,040	
261.31473	SASH + GLAZING						
261.3147	DOORS + WINDOWS			367 MH	4,609	8,970	
261.3148	WALLS, FLOORS+CEILG FINISHES					13,579	
261.3149	PAINTING						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY QUANTITY	COSTS	SITE QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
*****	*****	*****	*****	*****	*****	*****	*****	*****
261.31491	CONCRETE			10540 SF	211 MH	2,019	1,054	
261.31492	STEELWORK			125 TN	625 MH	5,981	750	
261.31493	METAL DECK			4320 SF	85 MH	823	432	
261.31494	SPECIAL METALLIC PAINT			2420 SF	43 MH	459	1,210	
261.31495	HANDRAIL			50 LF	10 MH	96	5	
261.31496	EP JXY			10885 SF	218 MH	2,036	5,443	
261.3149	PAINTING				1198 MH	11,464	8,894	20,358
261.314	SUPERSTRUCTURE				7252 MH	88,651	182,780	271,441
261.31	BUILDING STRUCTURE				10957 MH	128,976	216,464	345,440
261.32	BUILDING SERVICES							
261.321	PLUMBING + DRAINS							
261.3211	ROOF DRAINS + PIPING							
261.32111	DRAINS				4 EA	40 MH	517	800
261.32115	PIPING (ALL 2.5 IN+LARGER)							
261.321151	GALV STEEL/NNS	5700 LB	9,120	1 LT	855 MH	11,081	1,108	
261.32115	PIPING (ALL 2.5 IN+LARGER)		9,120		855 MH	11,081	1,108	21,309
261.3211	ROOF DRAINS + PIPING		9,120		895 MH	11,598	1,908	22,626
261.3212	FLOOR DRAINS + PIPING							
261.32	DRAINS				4 EA	40 MH	517	800
261.32125	PIPING (ALL 2.5 IN+LARGER)							

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		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST		MATERIAL COST
261.321251	CS/NNS	3840 LB	5,760	1 LT	576 MH	7,466	747	
261.321252	CI/NNS	3600 LB	792	1 LT	73 MH	947	95	
261.32125	PIPING (ALL 2.5 IN+LARGER)		6,552		649 MH	8,413	842	15,807
261.3212	FLOOR DRAINS + PIPING		6,552		689 MH	8,930	1,642	17,124
261.321	PLUMBING + DRAINS		15,672		1584 MH	20,528	3,550	39,750
261.322	HEATING, VENT, + AIR COND							
261.3221	ROTATING MACHINERY							
261.32211	ROOF VENTILATORS + MOTORS	3 EA	6,000	1 LT	300 MH	3,881	388	
261.322111	ROOF VENTILATORS							
261.322112	ROOF VENTILATORS MOTORS							
261.32211	ROOF VENTILATORS + MOTORS		6,000		300 MH	3,881	388	10,269
261.3221	ROTATING MACHINERY		6,000		300 MH	3,881	388	10,269
261.3222	HEAT TRANSFER EQUIPMENT							
261.32221	ELECTRIC UNIT HEATER+MOTOR	3 EA	3,750	1 LT	91 MH	1,118	112	
261.322211	ELECTRIC UNIT HEATER							
261.322212	ELECTRIC UNIT HEATER+MOTOR							
261.32221	ELECTRIC UNIT HEATER+MOTOR		3,750		91 MH	1,118	112	4,980
261.3222	HEAT TRANSFER EQUIPMENT		3,750		91 MH	1,118	112	4,980
261.3226	VALVES + DAMPERS							

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
261.32269	SPECIAL VALVES						
261.322691	INTAKE LOUVERS	3 EA	3,000	1 LT	93 MH	1,201	120
	261.32269 SPECIAL VALVES		3,000		93 MH	1,201	120
	261.3226	VALVES + DAMPERS	3,000		93 MH	1,201	120
261.3228	INSTRUMENTATION + CONTROL	1 LT	2,000	1 LT	16 MH	196	20
	261.322 HEATING, VENT, + AIR COND		14,750		500 MH	6,396	640
261.324	LIGHTING + SERVICE POWER			5000 SF	1500 MH	18,443	9,000
	261.32 BUILDING SERVICES		30,422		3584 MH	45,367	13,190
	261.3 MAKEUP WTR PRETREATMNT BLG		30,422		14541 MH	174,343	229,654
261.4	CHLORINATION BUILDING						
261.41	BUILDING STRUCTURE						
261.411	EXCAVATION WORK						
261.4111	EARTH EXCAVATION			31 CY	7 MH	74	31
261.4114	BACKFILL			24 CY	7 MH	68	24
	261.411 EXCAVATION WORK				14 MH	142	55
261.413	SUBSTRUCTURE CONCRETE						
261.4131	FORMWORK			160 SF	65 MH	717	160
261.4132	REINF. STEEL			1 TN	25 MH	322	375
261.41	CONCRETE			7 CY	5 MH	51	224

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
261.4134	EMBEDDED STEEL						
261.4135	FLOOR FINISH		60 SF				1
261.4136	WATERPROOFING						
261.4137	CONSTRUCTION JOINTS		30 SF	30 MH	331	30	
261.4138	RUBBING CONCRETE SURFACES						
261.4139	WIRE FABRIC		60 SF	1 MH	13	7	
261.413	SUBSTRUCTURE CONCRETE			120 MH	1,434	797	2,231
261.414	SUPERSTRUCTURE						
261.4141	CONCRETE WORK						
261.4142	STRUCT. + MISC. STEEL						
261.41421	STRUCT. STEEL						
261.41423	MISC. FRAMES, ETC.		1 TN	50 MH	651	1,100	
261.4142	STRUCT. + MISC. STEEL			50 MH	651	1,100	1,751
261.4143	EXTERIOR WALLS						
261.41432	MASONRY		230 SF	58 MH	662	644	
261.4143	EXTERIOR WALLS			58 MH	662	644	1,306
261.4144	ROOF DECK						
261.41441	METAL ROOF DECK		100 SF	6 MH	78	100	
261.4144	ROOF DECK			6 MH	78	100	178
261.4145	ROOFING + FLASHING						

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ACCT. NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	*****	SITE *****	*****	TOTAL COSTS		
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	*****
261.41451	B.U. ROOFING,FLASHING+INSUL			100 SF	7 MH	94	125	
	261.4145 ROOFING + FLASHING				7 MH	94	125	219
261.4147	DOORS + WINDOWS							
261.41472	PERSONNEL DOORS			50 SF	35 MH	406	600	
261.41473	SASH + GLAZING			25 SF	10 MH	116	300	
	261.4147 DOORS + WINDOWS				45 MH	522	900	1,422
261.4149	PAINTING							
261.41492	STEELWORK			1 TN	5 MH	48	6	
261.41493	METAL DECK			100 SF	2 MH	19	10	
	261.4149 PAINTING				7 MH	67	16	83
261.414	SUPERSTRUCTURE				173 MH	2,074	2,885	4,959
261.41	BUILDING STRUCTURE				313 MH	3,650	3,737	7,387
261.424	LIGHTING + SERVICE POWER							
261.4	CHLORINATION BUILDING				313 MH	3,650	3,737	7,387
261.	STRUCTURES	89,971		63552 MH	740,739	674,982	1,505,692	
262.	MECHANICAL EQUIPMENT							
262.1	HEAT REJECTION SYSTEM							
262.11	WATER INTAKE EQUIPMENT							
262.111	ROTATING MACHINERY							

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
262.1111	SCREEN WASH PUMP+MOTOR	2 EA	2,500	1 LT	159 MH	2,101	210
262.11111	SCREEN WASH PUMP						
262.11112	SCREEN WASH PUMP MOTOR						
262.1111	SCREEN WASH PUMP+MOTOR		2,500		159 MH	2,101	210
262.111	ROTATING MACHINERY		2,500		159 MH	2,101	210
262.114	PURIFICATION+FILTRATION EQ						
262.1141	TRAVELING SCREENS	2 EA	74,000	1 LT	2900 MH	37,518	3,752
262.1142	TRASH RACK	2 EA	9,700	1 LT	360 MH	4,687	469
262.1143	TRASH RAKE	1 LT	42,000	1 LT	800 MH	10,350	1,035
262.1144	STOP LOGS			40 EA	600 MH	5,592	1,300
262.1145	SCREEN WASH STRAINER	1 EA	5,750	1 LT	79 MH	1,024	102
262.114	PURIFICATION+FILTRATION EQ		131,450		4739 MH	59,171	6,658
262.115	PIPING-SCREEN WASH						
262.1151	2 IN. + SMALLER						
262.1152	2.5 IN. + LARGER						
262.11521	CS/NNS	1820 LB	2,730	1 LT	273 MH	3,539	354
262.1152	2.5 IN. + LARGER		2,730		273 MH	3,539	354
262.115	PIPING-SCREEN WASH		2,730		273 MH	3,539	354
262.116	VALVES-SCREEN WASH	1. LT	12,900				
262.1162	CHECK						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
*****	*****	*****	*****	*****	*****	*****	

262.1166 BUTTERFLY

262.116	VALVES-SCREEN WASH	12,900	12,900
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262.117 PIPING-MISC ITEMS

262.1171	HANGERS + SUPPORTS	270 LB	405
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262.1172 INSULATION

262.1173 SPECIALTIES

262.117	PIPING-MISC ITEMS	405	405
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262.11	WATER INTAKE EQUIPMENT	149,935	5171 MH	64,811	7,222	222,018
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262.12 CIRCULATING WATER SYSTEM

262.121 ROTATING MACHINERY

262.1211	CIRCULATING WATER PUMP+MTR	4 EA	1,796,000	1 LT	10800 MH	142,742	14,274
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262.12111 CIRC WATER PUMP

262.12112 CIRC WATER PUMP MOTOR

262.1211	CIRCULATING WATER PUMP+MTR	1,796,000	10800 MH	142,742	14,274	1,953,016
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262.121	ROTATING MACHINERY	1,796,000	10800 MH	142,742	14,274	1,953,016
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262.125 PIPE

262.1251 2 IN + SMALLER

262.12 2.5 IN + LARGER

262.1252T	CONCRETE/NNS	2127 LF	679,832	1 LT	8254 MH	105,780	10,578
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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANT-ITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
262.12522	CS/NNS	106000 LB	159,000	1 LT	15900 MH	206,071	20,607
	262.1252 2.5 IN + LARGER		838,832		24154 MH	311,851	31,185
	262.125 PIPE		338,832		24154 MH	311,851	31,185
262.126	VALVES						
262.1266	BUTTERFLY	8 EA	289,600	1 LT	751 MH	9,731	973
	262.126 VALVES		289,600		751 MH	9,731	973
262.127	PIPING / MISC. ITEMS						
262.1271	HANGERS + SUPPORTS						
262.1272	INSULATION						
262.1273	SPECIALTIES						
262.1274	PIPE TRENCHING						
262.12741	EXCAVATION						
262.127411	EARTH EXCAVATION		13280 CY	3320 MH	35,559	13,280	
262.127412	ROCK EXCAVATION		10790 CY	8632 MH	92,452	43,160	
	262.12741 EXCAVATION			11952 MH	128,011	56,440	184,451
262.12742	BACKFILL		17430 CY	5229 MH	52,040	17,430	
262.12743	COMPACTED SAND BED		1630 CY	1630 MH	16,221	9,780	
262.12744	SUBSTRUCTURE CONCRETE						
262.127441	FORMWORK		3810 SF	1524 MH	16,829	3,810	
262.127442	REINF STEEL		12 TN	300 MH	3,875	4,500	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
262.127443 CONCRETE		470 CY	353 MH	3,605	15,040		
262.12744 SUBSTRUCTURE CONCRETE			2177 MH	24,309	23,350	47,659	
262.1274 PIPE TRENCHING			20988 MH	220,581	107,000	327,581	
262.127 PIPING / MISC. ITEMS			20988 MH	220,531	107,000	327,581	
262.128 INSTRUMENTATION + CONTROL	1 LT	5,350	1 LT	45 MH	548	27	
262.129 SKIDS / FOUNDATIONS							
262.1291 CHLORINATION SYSTEM	1 LT	52,675	1 LT	1300 MH	16,817	1,682	
262.1292 SULPHURIC ACID FEED SYSTEM							
262.12921 ROTATING MACHINERY							
262.129211 SULFURIC ACID FEED PUMP+MT	2 EA	1,075	1 LT	100 MH	1,322	132	
262.129212 SULF ACID FEED PUMP MOTOR							
262.12921 ROTATING MACHINERY		1,075		100 MH	1,322	132	
262.12923 TANKS AND PRESSURE VESSELS							
262.12925 PIPING							
262.129251 2 IN + SMALLER-CS/NNS			820 LB	246 MH	3,190	1,066	
262.129252 2.5 IN + LARGER							
262.12925 PIPING				246 MH	3,190	1,066	
262.12926 VALVES	1 LT	1,075					
262.1292 SULPHURIC ACID FEED SYSTEM		2,150		346 MH	4,512	1,198	
262.129 SKIDS / FOUNDATIONS		54,825		1646 MH	21,329	2,880	
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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****		***** SITE *****				TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	
*****	*****	*****	*****	*****	*****	*****	*****	
262.12	CIRCULATING WATER SYSTEM	2,984,607		58384 MH	706,782	156,339	3,847,728	
262.13	COOLING TOWERS							
262.132	HEAT XFER EQUIPMENT							
262.1321	COOLING TOWERS(CT)-MAIN	2 EA	7,094,000	1 LT	91667 MH	1,185,867	118,589	
262.132	HEAT XFER EQUIPMENT		7,094,000		91667 MH	1,185,887	118,589	
262.138	INSTRUMENTATION + CONTROL	1 LT	53,950	1 LT	451 MH	5,514	276	
262.13	COOLING TOWERS		7,147,950		92118 MH	1,191,401	118,865	
262.15	MAIN CT. MAKEUP+BLLOWDN SYS.							
262.151	MAKE-UP WATER SYSTEM							
262.1511	ROTATING MACHINERY							
262.15111	MAKE-UP PUMP + MOTOR	2 EA	242,000	1 LT	800 MH	10,574	1,057	
262.151111	MAKE-UP PUMP							
262.151112	MAKE-UP PUMP MOTOR							
262.151111	MAKE-UP PUMP + MOTOR		242,000		800 MH	10,574	1,057	
262.15111	ROTATING MACHINERY		242,000		800 MH	10,574	1,057	
262.1515	PIPING							
262.15151	2IN.+ SMALLER							
262.15152	2.5IN + LARGER							

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****		***** SITE *****				TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	
262.151521	CONCRETE/NNS	1400 LF	33,600	1 LT	1260 MH	16,148	1,615	
262.15152	2.5IN + LARGER		33,600		1260 MH	16,148	1,615	51,363
262.1515	PIPING		33,600		1260 MH	16,148	1,615	51,363
262.1516	VALVES	14 EA	107,282	1 LT	140 MH	1,794	179	
262.15162	CHECK VALVES							
262.15163	GLOBE VALVES							
262.15166	BUTTERFLY VALVES							
262.1516	VALVES		107,282		140 MH	1,794	179	109,255
262.1517	PIPING - MISC. ITEMS							
262.15171	HANGERS + SUPPORTS							
262.15172	INSULATION							
262.15173	SPECIALTIES							
262.15174	PIPE TRENCHING							
262.151741	EXCAVATION			13770 CY	3443 MH	36,876	13,770	
262.151742	BACKFILL			13320 CY	3996 MH	39,768	13,320	
262.151743	COMPACTED SAND BED			240 CY	240 MH	2,388	1,440	
262.15174	PIPE TRENCHING				7679 MH	79,032	28,530	107,562
262.1517	PIPING - MISC. ITEMS				7679 MH	79,032	28,530	107,562
262.1518	INSTRUMENTATION + CONTROL	1 LT	6,760	1 LT	51 MH	624	31	
62.151	MAKE-UP WATER SYSTEM		389,642		9930 MH	108,172	31,412	51,412

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY			SITE				TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST		
262.152	BLOWDN SYSTEM								
262.1525	PIPING								
262.15251	2 IN. + SMALLER								
262.15252	2.5 IN. + LARGER								
262.152521	CONCRETE/NNS	1470 LF	14,700	1 LT	295 MH	3,778	378		
	262.15252 2.5 IN. + LARGER		14,700		295 MH	3,778	378	18,856	
	262.1525 PIPING		14,700		295 MH	3,778	378	18,856	
262.1526	VALVES	2 EA	32,250	1 LT	40 MH	513	51		
262.15266	BUTTERFLY								
	262.1526 VALVES		32,250		40 MH	513	51	32,814	
262.1527	PIPING-MISC ITEMS								
262.15271	HANGERS + SUPPORTS								
262.15272	INSULATION								
262.15273	SPECIALTIES								
262.15274	PIPE TRENCHING								
	262.1527 PIPING-MISC ITEMS								
262.1528	INSTRUMENTATION & CONTROL	1 LT	2,000	1 LT	16 MH	196	10		
	262.152 BLOWDN SYSTEM		48,950		351 MH	4,487	439	53,876	
262.153	MAKEUP WTR PRETREATMNT SYS	1 LT	736,000	1 LT	32000 MH	413,981	82,796		
	262.15 MAIN CT.MAKEUP+BLOWDN SYS.		1,174,592		42281 MH	526,640	114,647	1,815,879	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
262.1	HEAT REJECTION SYSTEM	11,457,134		197954 MH	2,489,634	397,073	14,343,841
262.	MECHANICAL EQUIPMENT	11,457,134		197954 MH	2,489,634	397,073	14,343,841
26 .	MAIN COND HEAT REJECT SYS	11,547,105		261506 MH	3,230,373	1,072,055	15,849,533

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
2	TOTAL DIRECT COSTS	215,387,419		8675173 MH	108,036,453	62,729,521	386,153,393

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
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9 . TOTAL INDIRECT COSTS

91 . CONSTRUCTION SERVICES

911. TEMPORARY CONSTRUCTION FAC

911.1 TEMPORARY BUILDINGS

911.11	FIELD OFFICE, SHOPS, WHSE.		1 LT	65000 MH	767,000	850,000
911.12	JANITOR SERVICES		1 LT	95000 MH	868,000	100,000
911.13	GUARDS - SECURITY		1 LT	195000 MH	1,365,000	100,000
911.1	TEMPORARY BUILDINGS			355000 MH	3,020,000	1,050,000
						4,070,000

911.2 TEMPORARY FACILITIES

911.21	ROADS, PARKING, LAYDOWN AREA		1 LT	100000 MH	1,025,000	500,000
911.22	TEMPORARY ELECTRICAL SUCE		1 LT	170000 MH	2,091,000	2,245,000
911.23	TEMPORARY MECH. & PIPING		1 LT	135000 MH	1,748,000	1,010,000
911.24	TEMPORARY HEAT		1 LT	40000 MH	440,000	400,000
911.25	BARGE UNLOAD. FAC. - NONE					
911.26	GENERAL CLEANUP		1 LT	290000 MH	2,711,000	135,000
911.27	SNOW REMOVAL - INCL. IN 911.21					
911.2	TEMPORARY FACILITIES			735000 MH	8,015,000	4,290,000
911.	TEMPORARY CONSTRUCTION FAC			1090000 MH	11,035,000	5,340,000
						16,375,000

912. CONSTRUCTION TOOLS & EQUIP

912.1 MAJOR EQUIPMENT

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****		***** SITE *****			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
912.11	PURCHASE MAJOR EQUIPMENT	1 LT	7,200,000				
912.12	RENTAL INCL. IN 912.11						
912.13	EQUIPMENT MAINTENANCE			1 LT	180000 MH	2,215,000	1,225,000
912.14	FUEL + LUBRICANTS			1 LT			285,000
912.1	MAJOR EQUIPMENT		7,200,000		180000 MH	2,215,000	1,510,000
912.2	MISCELLANEOUS VEHICLES						10,925,000
912.21	PURCHASE INCL. IN 912.11						
912.22	RENTAL-INCL. IN 912.12						
912.23	MAINTENANCE-INCL. IN 912.13						
912.24	FUEL&LUB.-INCL. IN 912.14						
912.2	MISCELLANEOUS VEHICLES						
912.3	PURCHASE OF SMALL TOOLS			1 LT			2,060,000
912.4	EXPENDABLE SUPPLIES			1 LT			2,060,000
912.	CONSTRUCTION TOOLS & EQUIP		7,200,000		180000 MH	2,215,000	5,630,000
913.	PAYROLL INSURANCE & TAXES						15,045,000
913.1	SOCIAL SECUR. TAX .055 X L	1 LT	6,671,000				
913.2	STATE+FED.UNEMPLOY.035 X L	1 LT	4,246,000				
913.3	WORKMENS COMP.INS .040 X L	1 LT	4,852,000				
913.4	P.L.+P.D. INS. .005 X L	1 LT	606,000				
913.	PAYROLL INSURANCE & TAXES		16,375,000				16,375,000
914.	PERMITS,INS. & LOCAL TAXES						

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
*****	*****	*****	*****	*****	*****	*****	
914.1	BUILDERS ALL RISK INS			1 LT		650,000	
914.2	FEES & PERMITS						
914.3	STATE & LOCAL SALES TAXES						
914.	PERMITS, INS. & LOCAL TAXES					650,000	650,000
915.	TRANSPORTATION						
91	CONSTRUCTION SERVICES	23,575,000		1270000 MH	13,250,000	11,620,000	48,445,000

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	

92. HOME OFFICE ENGRG.&SERVICE

921. HOME OFFICE SERVICES

921.1 SALARIES 740000 MH 7,015,000

921.11 ENGINEERING AND DESIGN

921.13 PURCHASING & EXPEDITING

921.14 ESTIMATING & COST CONTROL

921.16 PLANNING AND SCHEDULING

921.17 REPRODUCTION

921.1	SALARIES	7,015,000	7,015,000
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921.2 EXPENSES 1 LT 1,060,000

921.3 DIRECT PAYROLL COST 1 LT 1,755,000

921.4 OVERHEAD LOADING 1 LT 4,820,000

921.5 OUTSIDE CONSULTANTS SVCS.

921.6 FEE FOR H/O SERVICES 1 LT 1,350,000

921.	HOME OFFICE SERVICES	16,000,000	16,000,000
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922. HOME OFFICE Q/A

923. HOME OFFICE CONSTRCTN MGMT

923.1 SALARIES 40000 MH 480,000

923.2 DIRECT PAYROLL COST 1 LT 120,000

923.3 OVERHEAD LOADING 1 LT 330,000

923.4 EXPENSES 1 LT 70,000

923.	HOME OFFICE CONSTRCTN MGMT	1,000,000	1,000,000
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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE				TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	
92 .	HOME OFFICE ENGRG.&SERVICE	17,000,000					17,000,000	

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
93.	FIELD OFFICE ENGRG&SERVICE						
931.	FIELD OFFICE EXPENSES						
931.1	OFFICE FURNITURE & EQUIP.		1 LT			70,000	
931.2	TELEPHONE & COMMUNICATIONS		1 LT			210,000	
931.3	OFFICE SUPPLIES		1 LT			670,000	
931.4	FIRST AID & MEDICAL EXP.		1 LT			50,000	
931.	FIELD OFFICE EXPENSES					1,000,000	1,000,000
932.	FIELD JOB SUPERVISION						
932.1	SALARIES	875000 MH	7,438,000				
932.3	DIRECT PAYROLL COST	1 LT	1,859,000				
932.4	OVERHEAD LOADING	1 LT	1,395,000				
932.5	RELOCATION EXPENSE-ALLWNCE	1 LT	538,000				
932.6	FEES FOR CONSTR SRVCS	1 LT	1,070,000				
932.61	HOME OFFICE						
932.62	FIELD						
932.6	FEES FOR CONSTR SRVCS		1,070,000				1,070,000
932.	FIELD JOB SUPERVISION		12,300,000				12,300,000
933.	FIELD QA/QC						
933.1	SALARIES	19000 MH	146,000				
933.2	DIRECT PAYROLL COST	1 LT	37,000				
933.3	OVERHEAD LOADING	1 LT	27,000				

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ACCT NO.	ACCOUNT DESCRIPTION	FACTORY		SITE			TOTAL COSTS
		QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	
933.4	EXPENSES	1 LT	10,000				
	933.	FIELD QA/QC		220,000			220,000
934.	PLANT STARTUP & TEST						
934.1	SALARIES	23000 MH	242,000				
934.2	DIRECT PAYROLL COST	1 LT	60,000				
934.3	OVERHEAD LOADING	1 LT	45,000				
934.4	EXPENSES	1 LT	33,000				
	934.	PLANT STARTUP & TEST		380,000			380,000
93.	FIELD OFFICE ENGRG&SERVICE		12,900,000			1,000,000	13,900,000

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ACCT NO.	ACCOUNT DESCRIPTION	QUANTITY	COSTS	QUANTITY	LABOR HRS	LABOR COST	MATERIAL COST	TOTAL COSTS
***** FACTORY ***** ***** SITE ***** *****								
9	TOTAL INDIRECT COSTS	53,475,000		1270000	MH	13,250,000	12,620,000	79,345,000

PLANT CODE COST BASIS
610 07/76

UNITED ENGINEERS & CONSTRUCTORS INC.
2.5/1.7 IN HG AV - MIDDLETON, USA
1232 MWE COAL FIRED FOSSIL PLANT

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ACCT NO.	ACCOUNT DESCRIPTION	***** FACTORY *****	***** SITE *****	TOTAL
		QUANTITY COSTS	QUANTITY LABOR HRS LABOR COST MATERIAL COST	COSTS
*****	*****	*****	*****	*****
	TOTAL BASE COST		9945173 MH	465,498,393