J10-3-C-III - D11

FILE NO. Walker Mine CLASS

NAME: History of Walker Mine

Prepared by L. F. Bayer-Year 1938

SUBJECT:

INDEX:

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WALKER MINING CO.

PLANT FACILITIES FOR EMPLOYEES

Townsite. Townsite comprises 114 company owned houses and 45 privately owned houses.

Bunkhouses. Two 3-1/2 and one 4 story wooden buildings 36' x 110', 36' x 78', and 36' x 70', respectively, with corrugated iron roofs. Respective capacities 74, 122 and 102 beds. Total capacity 298. Each bunkhouse has a change room with toilets, showers and change facilities. No. 1 bunkhouse includes the pool hall with pool and billiard tables, card tables and bar, also a two-chair barber shop and a beauty shop.

Staff Houses. Two 2-story wooden buildings 28' x 38' and 26' x 30' respectively, with corrugated iron roofs. Each house is equipped with toilets and showers. Capacities are 10 and 10 beds, respectively.

Mess Hall. One-story building 45' x 85', wooden frame with corrugated iron roof. Mess hall is equipped with complete kitchen equipment and has a seating capacity of 176.

Commissary Employees' Dormitory. One-story, wooden building with corrugated iron roof, 25' x 65', with accomodations for 21.

Store. Two-story wooden building with corrugated roof, 45' x 105', containing necessary store equipment, butcher shop, soda fountain and refrigerating plant. Upper floor of store is divided into four living apartments.

Storage Houses. Three buildings, 20' x 40', 16' x 20' and 12' x 20'. Two of these are wooden frame with corrugated iron roofs, and one is a concrete oil storage building.

Theater. One-story wooden building with corrugated iron roof, 24' x 75', with seating capacity for 175. Equipment consists of two Western Electric system projectors and sound apparatus.

Schoolhouse. One-story wooden building with corrugated iron roof, 35' x 80'. Equipped with heating unit in basement and necessary school equipment. Contains living quarters for school principal. Present enrollment, grade school and high school is 65.

Recreation Hall. One-story wooden building with corrugated iron roof, 20' x 66', equipped with game tables, punching bag, etc.

WALKER MINING COMPANY

PLANT FACILITIES FOR EMPLOYEES (Cont'd)

Other recreational facilities include two borchet ball courts, three horse shoe courts and baseball diamond.

Public Gasoline Station. Wooden building, 15' x 12', with corrugated iron roof. Operated by the Standard Oil Co.

Post Office. Wooden one-story building with corrugated iron roof, 20' x 50', equipped with safe, office equipment, and 220 rental boxes.

Hospital

Two story wooden building 30' x 62' with corrugated iron roof.

Capacity

1 ward - 6 beds
2 private rooms, 1 bed each
2 semi-private rooms, 2 beds each
Total 12 beds

Staff

1 surgeon
2 registered nurses
1 male nurse

Equipment

12 beds complete with linen
1 kitchen complete
2 baths
Living quarters for surgeon
1 X-ray machine
1 sterilizing unit
1 small sterilizer
1 DeForest diathermy apparatus
1 Hanover ultra-violet lamp
1 1500 watt infra-red lamp
1 instrument cabinet, with assorted surgical instruments in numbers sufficient for minor and major operations
1 operating table

Blacksmith Shop

Steel frame building 36' x 30', with corrugated iron covering.

2 Coal burning forges. Anvils. Swage blocks.

1 Steam hammer 350 lb.

1 Steam hammer 50 lb.

1 Tire roller

1 Drill press 20" swing, 20" capacity.

2 men

Steel Shop

Inside dimensions 45' x 30' (continuous to blacksmith shop)

1 Power Saw:
14" belt driven through counter shaft. Motor 2 HP, 440 volt, 1800 RPM, GE.
This also drives drill press in blacksmith shop.

3 Ingersoll-Rand drill sharpeners.

2 Oil-burning Ingersoll-Rand forges

1 Lindberg furnace, 32.5 KW, 110 volt, 1500°, with rotary hearth. Brown Indicating Pyrometer, 2000°.

1 Home made oil furnace. For heating bits for hot milling.

1 #1218 Geerhart oil-fired semi-muffle furnace, with door 12" wide by 6" high, and chamber 12" wide by 18" deep, for heating bits for hot milling.

1 Toledo rod threader 1000M. Serial 34, for detachable bit rods.

1 Maasco bit grinder. 5 HP, 440 volt Westinghouse motor.

1 Ingersoll-Rand bit grinder. 2 HP, 220/440 volt, GE motor.

1 Pedestal Grinder. 2" x 12" wheel (2) - 3 HP 440 volt motor

1 Hot Miller. Ingersoll-Rand, J.S.M. No. 103

1 Quenching pot for bits.

Several sets of home made dies for forming rock drill side rods and through-bolts, mill liner bolts, etc.

7 men employed in steel shop

Machine Shop

Buildings

1 Main building 30' x 110', steel frame
1 Addition for locomotive repairs 11' x 30', wood frame
1 Acetylene generator room 6-1/2' x 6-1/2', wood frame
1 Tool room 12' x 20', wood frame
All above are covered with corrugated iron

Machines

1 Lathe:
Putnam, gap 18" and 36" swing. Will take 6' and 10' respectively between centers. Quick change gear box, taper attachment. Direct connected to GE 5-1/2 HP 440 volt variable speed motor through controller

1 Lathe:
Lodge and Shipley 18" swing, 4' bed, with patented head. Quick change gear box. Direct connected to GE 3HP, 220 volt, 1160 RPM motor

1 Planer:
Ohio Machine Tool Company. 24" x 24" x 6'. Direct connected to U.S. 5 HP 220/440 volt, 1800 RPM motor

1 Shaper:
Davis Machine Tool Company. Back geared. 10 speeds, 20" stroke. Direct connected to GE 5 HP 440 volt motor

2 Drill Presses:
Snyder 26" x 5' sliding head, back geared. Direct connected (each separate) to GE 5 HP 440 volt, 1150 RPM motor.

1 Pipe Threading Machine:
Jareki No. 66. Cap. 1-1/2" to 6" pipe. Direct connected to GE 5 HP 440 volt motor.

1 Bolt Threading Machine:
Universal Machine Company. Capacity up to 1-1/2" bolt. Direct connected to GE 2 HP, 440 volt motor.

1 Power Saw:
Atkins 18", capacity 6". Direct connected to master motor 1-1/2" HP,440 volts

1 Punch and Shear Machine:
Ryerson No. 4. Direct connected to GE 5 HP, 440 volt motor

1 Pedestal Grinder:
Hisey No. 14. Capacity 14"x2" wheel (2). Motor 3HP 440 volt,1750 RPM.

1 Wheel Grinder:
Home made. Capacity 16" wheel; driven by air motor. Wheel mounted on extended shaft of Westinghouse 3 HP, 440 volt motor.

1 Pedestal Lathe Tool Grinder:
10" x 1-1/2" wheel (2) Motor 1 HP, 440 volt, 1700 RPM, made by Cincinnati Motor Co.

1 Small Grinder with flexible shaft for Arc Welder. 1 HP, 440 volt, 1700 RPM Westinghouse motor.

1 Arc Welder:
7.5 KW, 25 volt, 300 Amp., Westinghouse Electric Co.

1 Hydraulic Press:
Caldwell 9" ram, 9" stroke, 100 ton; frame takes 32" x 8' piece. Driven by GE 5 HP, 440 volt, 1150 RPM motor.

1 "Oxweld" Acetylene Generator of 60# capacity.

2 Sets of cutting and welding torches and gages, all Oxweld made

1 Travelling Crane:
Yale & Towne 5 ton block, covering entire shop. Hand operated.

1 Travelling Crane:
Moore 5 ton block, covering Loco. Repair Shop and extending to hydraulic press.

2 Forges. Coal burning, used for babbitting.

2 Anvils. Work benches and vises.

In addition to general repair work, Shop turns out water tubes, feed screws, and other parts for rock drills.

Connecting with main tunnel line, track runs through whole length of Shop, in addition to spur going to loco. repair addition.

9 to 12 men are regularly employed in the machine shop

WALKER MINING COMPANY

HEATING PLANT

Heating plant consists of two Fraser & Chalmers 6' x 18' boilers, one wood and one oil fired. These supply steam for heating the mill, shops and hospital. Boiler house is a 25' x 40' wood frame building with corrugated iron roof.

SAWMILL

Sawmill is housed in a 50' x 78' wooden frame building with a corrugated iron roof. Equipment consists of one 5' circular saws, 1 4' circular saw, and one 15" re-saw. There is also a 3' circular saw for cutting up slabs. All saws are driven by belt connected electric motors. Daily capacity is 25,000 feet log scale. Inventory of cut lumber April 1,1939 was 1,100,000 board feet.

FRAMING SHED

Framing shed is a 52' x 54' wooden frame building, with corrugated iron roof. Equipment consists of one 24' rip saw, one 42" crosscut saw, and one 18' x 7' framing machine with a 10" saw.

WALKER MINING CO.

SHOPS-

Laboratory

1 Walker made jaw type sample crusher 6" x 5"

1 Morse Bros. jaw type sample crusher 5½" x 4"

2 Braun pulverizers, Type VA

1 Pulp balance, Ainsworth

1 Pulp balance, Thompson

1 Gold balance, Keller

1 Cupel machine

1 Muffle furnace, D&F.C. oil fired #4412

2 Electric hot plates, 2000 Watt and 7200 Watt

2 Electric hot plates @ 1000 watt

1 Sample dryer, electric

1 Sample dryer, steam

1 Still for distilling water, electric

1 Annealing muffle, electric, 3000 watt

Construction

Wooden building, roof and sides covered with corrugated iron.

Staff

2 assayers

WALKER MINING COMPANY

ELECTRIC POWER

Electric power is received at 44,000 volts from the Pacific Gas and Electric Company's sub-station at Yeramont, California, over a nine mile power line. Power comes through three 1,250 Kva transformers, which reduce the power to 2,200 volts for general distribution.

Approximate monthly consumption is 1,000,000 KWH.

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Electric Shop and Equipment

Shop

17 feet wide, 29 feet 6 inches long, and 10 feet high (working space)
6 men employed

Equipment

1 Bake oven size 5' x 3' x 3' coil winding machine for making armature and stator coils, and field coils from 3" x 3" minimum to 13" x 17" maximum.

1 Dipping vat. Size 2.5' x 2.5' for dipping armatures and stators up to 50 h.p.

1 Tool grinder using a 10 inch emery wheel.

1 Motor generator 180 watt, 12 volt for charging 12 volt tractor batteries. Driven by a 5 h.p., 440 volt G. E. Motor.
2 60 Ampere, 600 volt Trumbull, Type A Safety, 3 pole, fused switches for testing motors up to 60 h.p., 600 volt.

1 General Electric CR-7006-D7 Magnetic Switch for testing motors up to 60 h.p., 600 volt.

Transformer Locations

Connected to P. G. & E. 44000 Volt Lines.

3 - Westinghouse, 1 phase, 44,000 to 2,200 volt, 1250 KVA.

734 Hoist Room

1 General Electric 1 phase, 2,200 to $\frac{220}{110}$ volt, 10 KVA.
3 General Electric 1 phase, 2,200 to 440 Volt, 75 KVA

Pump Room 874 Shaft

1 Allis Chalmers 1 phase, 2,200 to $\frac{220}{110}$ volt, 10 KVA

706 Sub-Station

3 Westinghouse, 1 phase, 2,200 to $\frac{440}{220}$ volt, 100 KVA

1 Westinghouse, 1 phase, 2,200 to $\frac{220}{110}$ volt, 10 KVA

Transformer Locations (Cont'd)

706 Hoist Panel Control

1 General Electric 1 phase, 2,200 to $\frac{220}{110}$ volt, 10 KVA

Central Hoist Room

1 General Electric 1 phase, 440 to $\frac{220}{110}$ volt, 1½ KVA

707 Hoist Room

1 General Electric 1 phase, 440 to $\frac{220}{110}$ volt, 1½ KVA

712 Hoist Room

3 General Electric 1 phase, 2200 to $\frac{440}{220}$ volt, 25 KVA

1 General Electric 1 phase, 440 to $\frac{220}{110}$ volt, 5 KVA

Piute Sub-Station

3 Westinghouse, 1 phase, 2,200 to $\frac{440}{220}$ volt, 50 KVA

Piute Sub-Level

1 General Electric 1 phase, 440 to $\frac{220}{110}$ volt, 5 KVA

Piute Surface Hoist Room

3 Westinghouse 1 phase, 2,200 to $\frac{440}{220}$ volt, 50 KVA

1 General Electric 1 phase, 2,200 to $\frac{220}{110}$ volt, 5 KVA

Compressor Room

1 General Electric 3 phase, 2,200 to 440 volt, 100 KVA
For M.G. Set and Machine Shop.

1 General Electric 1 phase, 2,200 to $\frac{220}{110}$ volt, 25 KVA
For Compressor Room and snow shed lighting.

1 General Electric 1 phase, 2,200 to $\frac{220}{110}$ Volt, 2 KVA
For Synchronous motor panel control

Steel Shop Rack

3 General Electric 1 phase 2,200 to $\frac{220}{110}$ VOLT, 10 KVA

3 Gardner Electric 1 phase, 2,200 to $\frac{220}{110}$ volt, 15 KVA

Transformer Locations (Cont'd)

Steel Shop Rack (Cont'd)

1 Surges Electric 3 Phase, 220 to 110 volt, 33 KVA
For motors and furnace.

1 General Electric 1 phase, $\frac{220}{110}$ to 220 volt 3 KVA
Steel shop and timber shed lights.

Saw Mill

1 General Electric 1 phase, 440 to $\frac{220}{110}$ volt, 1½ KVA

Distribution Tower (Electric Shop)

3 General Electric 1 phase, 2,200 to $\frac{440}{220}$ volt, 25 KVA
Crushing plant service.

2 General Electric 1 phase, 2,200 to $\frac{220}{110}$ volt, 5 KVA
Machine shop service.

1 Westinghouse 1 phase, 2,200 to $\frac{220}{110}$ volt, 10 KVA
Electric and machine shop lighting.

Mill Sub-Station

1 General Electric 3 phase, 2,200 to 440 volt, 200 KVA
Grinding, Flotation, and filtering.

1 General Electric 1 phase, 2,200 to $\frac{220}{110}$ volt, 25KVA
Mill lighting.

1 General Electric 1 phase, 440 to $\frac{220}{110}$ volt, 1½ KVA
Mill lighting.

3 General Electric 1 phase, 2,200 to $\frac{220}{110}$ volt, 3 KVA
Ball Mill Panel Control.

Blower Room

2 General Electric 1 phase, 2,200 to $\frac{440}{220}$ volt, 50 KVA
Blower motors and assay office.

Transformer Locations (Continued)

Crushing Plant

1 Westinghouse 1 phase, 2200 to 220/110 volt 1-1/2 KVA

Tram Line Terminal

1 Westinghouse 1 phase, 2200 to 220/110 volt 1-1/2 KVA

Assay Office

1 General Electric 1 phase 2200 to 220/110 volt 25 KVA

Camp Service

1 General Electric 1 phase 2200 to 220/110 volt 25 KVA Back of main office
1 General Electric 1 phase 2200 to 220/110 volt 10 KVA Picture show
1 General Electric 1 phase 2200 to 220/110 volt 15 KVA Near House #41
1 General Electric 1 phase 2200 to 220/110 volt 15 KVA Near House #64
1 General Electric 1 phase 2200 to 220/110 volt 15 KVA Near House #85
1 General Electric 1 phase 2200 to 220/110 volt 10 KVA Near House #92
1 General Electric 1 phase 2200 to 220/110 volt 10 KVA Near House #125
1 General Electric 1 phase 2200 to 220/110 volt 10 KVA Near House #130
1 General Electric 1 phase 2200 to 220/110 volt 15 KVA South of Schoolhouse
1 General Electric 1 phase 2200 to 220/110 volt 10 KVA Near House #131
1 General Electric 1 phase 2200 to 220/110 volt 10 KVA Near House #150
1 General Electric 1 phase 2200 to 220/110 volt 10 KVA Near House #103
2 General Electric 1 phase 2200 to 220/110 volt 25 KVA In front of club house

Pland-Evans

1 General Electric 1 phase 2200 to 220/110 volt 25 KVA

Transformer Locations (Cont'd)

Pland-Evans (Cont'd)

1 General Electric 1 phase 2200 to 220/110 volt 10 KVA

1 General Electric 1 phase 2200 to 220/110 volt 3 KVA

For cook house and store

1 General Electric 1 phase 2200 to 220/110 volt 35 KVA
For #1 and #2 dormitories

1 General Electric 1 phase 2200 to 220/110 volt 25 KVA
For #3 dormitory

Other Transformers

2 General Electric 1 phase 440 to 220/110 volt 5 KVA, air cooled
794 Hoist Room and sinker hoist room (in storage)

1 General Electric 1 phase 440 to 22 volt 10 KVA

Obsolete

3 General Electric 1 phase 2200 to 2200 volt 667 KVA (In compressor room)

Transformers - By Manufacturers

3	General Electric	1	phase	22000 to 2200 volt	667 KVA
1	" "	3	"	2200 to 440 volt	200 KVA
1	" "	3	"	2200 to 440 volt	100 "
3	" "	1	"	2200 to 440 volt	100 "
3	" "	1	"	2200 to 440 volt	75 "
2	" "	1	"	2200 to 440 volt	50 "
9	" "	1	"	2200 to 220/110 volt	25 "
6	" "	1	"	2200 to 440/220 volt	25 "
4	" "	1	"	2200 to 220/110 volt	15 "
1	" "	3	"	220 to 22 volt	10 "
9	" "	1	"	2200 to 220/110 volt	10 "
4	" "	1	"	2200 to 440/220 volt	10 "
3	" "	1	"	2200 to 220/110 volt	5 "
3	" "	1	"	440 to 220/110 volt	5 "
1	" "	1	"	2200 to 440/220 volt	3 "
4	" "	1	"	2200 to 220/110 volt	3 "
1	" "	1	"	2200 to 220/110 volt	2 "
5	" "	1	"	440 to 220/110 volt	1½ "

Transformers-By Manufacturers (Cont'd)

5	Westinghouse	1	phase	44000 to 2200	volt	1250 KVA
6	"	1	"	2200 to 440	"	50 "
1	"	1	"	2200 to 220/110	volt	10 "
1	"	1	"	2200 to 220/110	"	2 "
1	"	1	"	2200 to 220/110	"	1½ "

1 Allis Chalmers 1 phase 2200 to 220/110 volt 10 KVA

3 Gardner Electric Co. 1 phase 440 to 220/110 volt 15 KVA

1 Surgeo Electric 3 phase 220 to 110 volt 33 KVA

Totals

No. of Transf.	Make	KVA
63	G. E.	3555½
12	West.	4063½
1	A. C.	10
3	C. D.	45
1	S. E.	33
80		7707

7707 KVA less obsolete 2001 = 5706 KVA
5706 KVA less primaries 3750 = 1956 KVA

Haulage Equipment

Haulage Locomotives

800 Level Flute 18" ga.
2 Baldwin-Westinghouse, bar steel frame, hand operated spread brake equipped. 250 volt service. Weight 4 tons. K-36-H Westinghouse controllers using #901-B traction motors

900 Level 704 Shaft 18" ga.
1 Baldwin-Westinghouse, bar steel frame, hand operated, spread brake equipped, weight 4 tons. 250 volt service. K-36-H Westinghouse controller using #901-B traction motors.

1000 Level 706 Shaft 24" ga.
1 Baldwin-Westinghouse, bar steel frame, hand operated spread brake equipped. Weight 4 tons. 250 volt service. K-36-H Westinghouse controllers using #901-B traction motors.

Haulage Equipment (Cont'd)

Haulage Locomotives (Cont'd)

1000 Level 706 Shaft (continued)

1 Baldwin-Westinghouse, solid frame, hand operated spread brake equipped. Weight 4 tons. 250 volt service K-86-H Westinghouse controller using #HS007 traction motors.

1 Baldwin-Westinghouse, bar steel frame, hand operated spread brake equipped. Weight 4 tons. 250 volt service. Using #HS007 traction motors.

700 Level - Main Haulage 24" ga.

5 Baldwin-Westinghouse, bar steel frame, hand operated spread brake equipped; also "dynamic braking" by using G.E. B-62-A controllers. Weight 4 tons. 250 volt service. Using #9015 Westinghouse traction motors.

All levels fed by #2/0 figure eight trolley wire
700 Level also served by a 250,000 mil cable feeder from portal to 706 shaft.
250 volts used on all trolley lines.

Motor Generators for Haulage Locomotives

Compressor Room

2 General Electric, compound wound, 250 volt, D.C. generators. Each driven by a 75 HP, 2200 volt induction motor(General Electric. 50 KW

1 General Electric, compound wound, 250 volt, D.C. generator. Driven by a 50HP, 440 volt GE induction motor. This set is also used for #4 compressor excitation 35 KW

784 Hoist Room

1 General Electric, compound wound, 250 volt, D.C. generator. Driven by a 80 HP, 2200 volt, General Electric induction motor. Used to supply 1000 Level locomotive, or can be used for 700 Level haulage, or both 700 and 1000 Level haulages at the same time 55 KW

Flute Sub-station - 700 Level

1 General Electric, compound wound, 250 volt, D.C. generator. Driven by a 80 HP, 2200 volt General Electric induction motor. Used to supply both 800 level and main haulage 205 KW

Total H.P. 250 Total KW 205

Power Lines

Haulage Level

1 Lead covered, jute filled, 2500 volt, #6, three conductor cable, in conduit. From 706 sub-station to 712 hoist room

1 Lead covered, jute filled, 600 volt, #8, three conductor cable, in conduit, from 706 sub-station to 794 hoist room

1 Lead covered, jute filled, 600 volt, #8 three conductor cable, in conduit. From 712 hoist room to pump at 712 passing track.

One section of the above two lines, approximately 300 feet long, near 794, is of 1/0 three conductor 2500 volt, lead covered, steel armored cable.

Trolley Lines

#3/0 figure eight copper wire is used throughout the mine. There is also a 250,000 mil conductor used as an auxiliary trolley feeder from compressor room to 706 shaft.

Walker Mining Company

AUTOMOTIVE EQUIPMENT

1 White 5-ton truck, stake body, for heavy trucking from Portola 1928 model

1 1954 Chevrolet 1-1/2 ton dump body for general hauling

1 1929 Ford Model A pickup body (rebuilt from sedan), used for mail and general light hauling

1 1937 Ford V-8 coupe (Manager's car)

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WALKER MINING COMPANY

PERSONNEL

OFFICES

Manager's Office

Manager
Secretary to Manager

Accounting Dept.

Chief Clerk
Asst. Chief Clerk
Timekeeper
Asst. Timekeeper

Engineering Dept.

Chief Engr. & Geologist
Asst. Geologist
2 Engineers
2 Jr. Engineers
2 Samplers

Mill

Mill Supt.
Asst. Mill Supt.
Assayer
Asst. Assayer

Mine

Mine Foreman

Tramway

Tramway Foreman

Mechanical Dept.

Master Mechanic

WALKER MINING COMPANY

PERSONNEL (Cont'd)

Hospital

Surgeon
2 registered nurses
1 male nurse

Warehouse

1 Warehouseman
1

Spring Garden Terminal

Spring Garden Agent
Spring Garden Telephone Operator

Deputy Sheriff

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WALKER MINING COMPANY

ENGINEERING AND GEOLOGICAL DEPT.

Staff. The engineering and geological departments are combined, and work under one head called the Chief Engineer and Geologist. He and an assistant geologist do all necessary geological work. In the engineering department are the assistant chief engineer and an engineer, who are responsible for all surveying, stope measurements, keeping up of all maps, etc. An office engineer compiles all report data, keeps daily records posted, and does odd drafting work. Two samplers spend part of each working day underground, and the other part in the office posting the records of their samples and keeping assay maps up to date. An efficiency engineer does cost work. Four times a month all members go underground to measure period advance in headings and stopes, and twice a month contracts are calculated.

Quarters & Equipment. The engineering office is 17' x 25', with a vault and print room adjoining. The geological office is a 15' x 20' room above the engineering office. Both are equipped with drafting tables, desks, files, and equipment ample to maintain a modern, up-to-date department.

The engineering department maintains a complete set of 50 scale base maps and longitudinal vertical projections for each of the separate orebodies. Stoping records are kept on 10 scale vertical cross sections and vertical longitudinal projections with individual records for each stope.

The geological department maintains 50 scale geological base maps with vertical cross sections numerous enough to keep geological structures correlated from level to level. Geologic cross sections through stopes are posted four times a month to keep a clear picture of stope operations with regards to ore limits and faulting.

50 scale composite maps of the entire mine are kept for general study and for development assay records. All samples are run for copper, gold and silver.

Numerous maps, plans and records, incidental to maintaining a technical department for a property of this size, are kept on file and are available for use.

List of Equipment

1 Y level - Gurley - 24" telescope, with tripod
1 Gurley mine type transit 8" telescope with tripod
1 Berger mine type transit 10" telescope with tripod
1 Lietz mine type transit 8" telescope with tripod
Assorted tapes from 50 to 500 feet and stadia and level rods

WALKER MINING COMPANY

ENGINEERING AND GEOLOGICAL DEPT. (Cont'd)

List of Equipment (Cont'd)

1	Keuffel & Esser large suspended type, invar steel, precision pantograph No. 1131, Serial 5542
1	Eugene Dietzgen 3-1/2'x6' tilting swivel sun printing table and ammonia developer
1	2-1/2' x 2' light table
1	3' x 2' " "
1	4' x 8' drafting table
1	4' x10' " "
1	4' x12' " "
1	Monroe hand operated adding calculator
1	small two-drawer fire proof filing cabinet
1	1-1/2'x4' 4-drawer filing cabinet
6	2-1/2'x4' flat top desks
1	large cabinet for drawings and books
1	small stationery cabinet
1	vault (shared with Accounting Dept.)
1	Monroe high speed adding calculator

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ACCOUNTING DEPARTMENT

Accounting Department occupies a room 16' x 27' in the main office building, and is staffed by one Chief Clerk and an assistant.

Equipment

1	Lightning check writer Series FC 700 (old)
1	Diebold Safe & Lock Co. safe
1	Burroughs adding machine with stand
1	Monroe electric calculator - 2nd hand
1	Monroe hand operated calculator No. 99416
1	18" Underwood typewriter No.47255805
1	18" " " No. 5587478
1	roll top desk
1	glass covered flat top desk
1	6' plain table
2	6' tables
3	swivel chairs
5	straight back chairs
1	typewriter table - home made
1	parcel post scale
1	National postal scale
4	4-drawer filing cabinets
2	desk lamps
1	pencil sharpener - Dexter #5
2	waste baskets
2	time clocks
1	wood heater stove - box type

Time office occupies a wooden building with corrugated iron roof, 10' x 30', and is staffed by two timekeepers.

Equipment

1	large table
1	small table
1	typewriter table
2	straight back chairs
1	swivel chair
20	Macey steel files
4	Art Metal files
1	Burroughs calculator #5-743645
1	#3 Underwood typewriter #359684
1	#5 " " #787822-12
1	Elliott addressing machine
1	Emeralite desk lamp
1	#8 L.C.Smith typewriter - bad order
1	home made steel safe
1	wood stove
1	waste basket
1	double drawer wooden file cabinet 15x15x7"

WAREHOUSE AND APPURTENANCES

Warehouse is a 30' x 95' wooden frame building with corrugated iron roof, and is located adjacent to the mill building. Warehouse staff consists of one storekeeper, one clerk, and one warehouse man. Average stock is approximately $175,000.00.

Equipment

1	4-drawer desk, flat top shop made
1	3- " " " "
1	1- " " " "
1	2- " typewriter desk "
2	swivel chairs
1	19" stool shop made
40	Remington-Rand Kardex panels for stock cards
5	4-drawer Browne-Morse filing cases, steel
1	2-drawer oak filing case for 3x5" cards
1	1- " " " " " 6x9" "
2	waste baskets
1	5000 W. 220 V. electric heater, GE
1	Underwood std. typewriter, 18", #55286
1	Monroe calculator, 8 key, hand operated #I180-142834
1	Burroughs " 9 key #5-555760
1	#200-2 Western pattern hand truck, rubber tired
1	36" paper holder and cutter
1	Columbia scale, 60# capy.
1	Fairbanks platform style scale, 1000# capy.
3	Fry Marval oil pumps, 1 qt. capy. for use in barrels.

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Air Compressor Plant

Inside dimensions of compressor building 29' x 85'. Cement stucco inside, covered with corrugated iron outside.

Comp. No. 1
I.R. Imperial Type 10 B, 2 state, cyl. 17"x14" and 10"x14", 175 RPM. Belt driven GE Motor 100 HP, 2200 volt, 690 RPM, Pulley 21"x20". Belt 16" x 31'.

Comp. No. 2
Same as No. 1. Motor 100 HP, 2200 volt, 880 RPM, Westinghouse, pulley 17"x17".

Comp. No. 3
Same as No. 2. Theoretical displacement of these machines 600 cu.ft. of air each.

Comp. No. 4
I.R. PRE-2 Type. Cyl. 24"x16" and 14"x16". 225 RPM synchronous GE motor mounted on shaft.260 HP 2200 volt separately excited. (See report on Electrical Equip.)

Comp. at Piute
Same size and speed as No. 4, but with 300 HP 2200 volt synchronous motor, Westinghouse.

Theoretical displacement of above two machines 1800 cu.ft. of air each.

Receivers and air line mains:

2	Receivers	5'	dia.	12'	long	at main plant
1	"	4'	"	14'	"	at Piute "
1	"	40"	"	9'	"	at Blacksmith Shop.
1	"	4'	"	9'	"	at South end.
1	"	4'	"	9'	"	at 712
1	"	4'	"	20'	"	not installed (From Montezuma-Apex)

6000 ft. of 6" air line from plant to 794
500 ft. of 6" air line from Piute to 700 level
6000 ft. of 3" air line from 794 to Piute

Mine Machinery

Pumps - Electric Centrifugal

3 Byron Jackson 4 stage 500 gal. 500 ft. head. Motor 125 HP,2200 volt,1200 RPM. horizontal type

2 Byron Jackson single stage 1200 gal. 70 ft. head. Motor 30 HP,440 volt, 1750 RPM. Angle type.

1 Byron-Jackson single stage 800 gal. 200 ft. head. Motor 20 HP,440 volt, 3475 RPM. Horizontal type.

1 Byron-Jackson 2 stage, 140 gal., 200 ft. head. Motor 10 HP, 440 volt, 1750 RPM. Horiz. type.

2 Byron-Jackson single stage sponge, 140 gal., 40 ft. head. Motor 5 HP, 220 volt, 1740 RPM. Vert. type.

1 Allis-Chalmers single stage, 250 gal., 70 ft. head. Motor 25 HP, 440 volt, 1750 RPM. Horiz. type.

1 Krough single stage, 200 gal., 100 ft. head. Motor 15 HP, 440 volt, 1800 RPM. Horiz. type.

1 Kimball-Krough 2 stage, 200 gal., 350 ft. head. Motor 30 HP, 220/440 volt, 5500 RPM. Any angle type.

1 Oliver single stage 150 gal., 60 ft. head. Motor 3 HP, 440 volt, 1260 RPM.Hor. type.

Pumps - Electric Reciprocating.

1 Aldrich 6" x 9" triplex single acting. Cap. 5 gal. per revolution. Head 250 ft. Motor 30 HP, 440 volt, 860 RPM. Double reduction gears. Speed of pump 64 RPM. Upright type.

1 Worthington 8-3/4"x5" triplex single acting, 1/3 gal. per rev. Head 800 ft. Single reduction gears enclosed in C.I. case. Ratio 4 to 1. Motor 25 HP, 440 volt, 1200 RPM. Horiz. type.

4 Gould Pyramid 2-1/4" x 2-3/4" single plunger double acting. Belt driven.

Steam or Air Pumps.

1	Cameron No. 9-A	200	gal.	250	ft.	head
1	" No. 9	150	"	250	"	"
1	" No. 6	80	"	250	"	"
1	" No. 3	40	"	250	"	"

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Mine Machinery (Continued)

Steam or Air Pumps (Continued)

2 Worthington duplex double acting outside packed, 4-1/4" x 5-1/2" x 5"

1 Worthington duplex double acting, inside packed, 4-1/8" x 2-3/4" x 4"

1 Platt Iron Works, duplex double acting inside packed, 6" x 4" x 6"

Air Sump Pumps:

1 Chicago Pneumatic-Byron Jackson, 20 gals. at 16 ft. head

4 Ingersoll-Rand Size 2S. 200 gals. at 10 ft., 140 gals. at 40 ft.

Hoists:

1 Hendrie & Boltthoff, two drum, double reduction. Size of drums 67" diameter, 29" wide, capy. 3500 ft. of 1" cable. Foot brakes hand operated. Air cyl. on clutch gear. Lilly Simplex controllers. Speed of cable 500 ft. per minute. Motor 150 HP, 2200 volt, 460 RPM. 706 shaft

1 Denver Eng. Works, two drum double red. Size of drums 5 ft. dia., 27" wide. Cap. 5000 ft. of 7/8" cable. Hand brakes and clutches. Speed of cable 580 ft. per minute. Motor 100 HP, 440 volt, 575 RPM. 784 shaft

1 Taylor Foundry & Mach. Co. Grass Valley, Calif. Two-drum double red. Size 42" dia. 24" wide. Cap. 2000 ft. of 7/8" cable. Hand brakes, jaw clutch on counter shaft for clutches. Speed of rope 528 ft. per minute. Motor 55 HP, 440 volt, 530 RPM. Piute Shaft.

1 Single drum of 4 ft. dia., 3 ft. wide, cap. 5400 ft. of 3/4" cable. Hand brakes, solid drive, double reduct. Motor 52 HP, 440 volt, 900 RPM. Speed of rope 360 ft. per minute. Piute at surface.

1 Ottumwa I.W. single drum, double red. Size of drum 3 ft. dia., 2 ft. wide. Cap. 1700 ft. of 5/4" rope. Hand brakes, solid drive. Speed of rope 350 ft. per min. Motor 60 HP, 440 volt, 855 RPM. 712 Raise

1 Joshua Hendy single drum, 18" dia., 18" wide, cap. 1000 ft. of 5/4" cable. Double reduct. Hand brakes, solid drive. Speed of rope 210 ft. per minute. Motor 20 HP 440 volt, 1160 RPM. 797 Winze

1 Single drum 24" dia., 20" wide, cap. 1200 ft. of 5/4" rope. Hand brakes, solid drive. Speed of rope 350 ft. per minute. Motor 30 HP, 440 volt, 850 RPM. 794 Raise

1 Single drum 12" dia., 32" wide, cap.1100 ft. of e/r" rope, double reduct. Hand brake, solid drive. Speed 300 ft. per minute. Motor 27 HP, 440 volt, 570 RPM. Sinking Hoist - now in Machine Shop

Mine Machinery (Continued)

Blowers - Stationary

1 Jeffrey 35,000 cu. ft. belt driven by a 50 HP 2200 volt, 870 RPM motor. Flute

1 Jeffrey 40,000 cu. ft. belt driven by a 50 HP 2200 volt, 870 RPM motor. 700 Portal

Blowers - Portable

1 Buffalo No. 6, belt driven

1 Buffalo No. 4, " "

1 Sturtevant 16" discharge, belt driven

4 Sirocco American Blower Corp. Size S.A.F.E. Series 30, direct connected to 5 HP 220/440 volt. 3450 RPM ball bearing motor.

1 Coppus Vane blower, type S, F, 250. Air turbine.

Mechanical Loaders

1 Finlay No. 20

1 Finlay No. 11

Ore Cars

30 C. S. Card Co. Walker special gable bottom. 14" wheels mounted on Timken roller bearings. Cap. 157 cu. ft. Gage 24"

10 Home made cars of 70 cu. ft. cap., 16" manganese steel wheels, Timken bearings, gable bottom, toggle operated doors. Gage 24".

20 Home made cars of 60 cu. ft. cap., 16" manganese steel wheels, Timken bearings, gable bottom, toggle operated doors. Gage 24"

6 Phoenix Iron Works, side dump, 56 cu. ft. cap., Hyatt roller bearings, 14" C.I. wheels. Gage 24"

30 Rock-a-Dump 12" wheel, Hyatt bearings, cap. 18 cu. ft. Gage 18".

18 10-man capacity transportation buggies, 14" wheel, Hyatt roller bearings. 24" gs.

10 Timber trucks mounted on 16" Timken mounted C.I. wheels. 24" gs.

1 Totally enclosed, insulated, Powder Car of 50 cases capacity. 24" gs.

Mine Machinery (Continued)

Tuggers - Air

2 I. R. K.A. type double drum

6 I. R. K.U. type single drum

1 I. R. C.U. type single drum

4 I. R. 11-H type single drum

1 I. R. 9-H type single drum

1 Sullivan turbinair single drum

1 " " double drum

1 Chicago Pneumatic M.H.1 type

5 Anaconda type

1 Locomotive type, reversible valve gear

1 Sullivan Electric M.D.2.2 Motor 15 HP, 440 volt, cap. of hoist 2100# at a speed of 250 ft. per min. (Now in mill fine ore bin)

Rock Drills, Column Bars

51 I. R. N-75 Leyners

7 I. R. S-70 Leyners

6 I. R. D.A. 35 Leyners

2 I. R. R-51 stopers

4 I. R. S.A.R. stopers

10 Gardner-Denver R-1113 stopers

4 I. R. 450 Jackhammers

5 I. R. Ha12 "

10 I. R. R-39 "

10 I. R. L-59 "

Mine Machinery (Continued)

Rock Drills, Column Bars (Cont'd)

80 4" outside dia. column bars, ranging in length from 3-1/2ft. to 10 ft.

60 arms of 3 different lengths

50 Clamps
Safety clamps, wrenches, oilers, etc.

90 Jackbit carriers of 35 bit capacity.

50 Tons of drills of various types and dimensions

Skips, Ore & Passenger

3 33" ga. of 54 cu. ft. cap. for 705 shaft

3 33" ga. of 40 cu. ft. cap. for Piute shaft

2 27" ga. of 30 cu. ft. cap. for 784 shaft

2 27" ga. of 20 cu. ft. cap. for shaft sinking

1 27" ga. of 8-man cap. for 794 Raise

1 27" ga. of 8-man cap. for 712 Raise

1 24" ga. of 6-man cap. for Piute Raise

1 33" ga. skip cage of 8-man cap. for 915 Raise

1 27" or 33" gage skip built for mounting pumps when dewatering shafts.

All skips mounted on cast iron axle housing, bronze bushed. Wheels 10" dia., C.I. with chilled tread.

WALKER MINING COMPANY

MINE

MINE RESCUE STATION

Mine rescue equipment is housed in a 8' x 16', wooden frame building with a corrugated iron roof.

Equipment

5 Gibbs self-contained, two-hour, breathing apparatus complete

Complete set of parts sufficient to assemble one additional apparatus

Extra parts for servicing all apparatus

1 Draeger oxygen pump

1 Wolf flame safety lamp

1 MH carbogen inhalator

1 MSA carbon monoxide detector

Tools, gauges, etc., for servicing and testing equipment

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Concentrator

Coarse Crushing Division

1 Mine ore storage bin 30' dia. x 55' deep. Capacity 1250 tons. Steel plate on concrete base

1 Anaconda type steel pan ore feeder, 3'-6" wide x 16'-6" center to center of pulleys. Driven by a 5 HP 440 volt back geared motor, belt and gear connection

1 Bar grizzly with 3-1/2" spaces

1 Primary crusher, 24" x 15" Traylor jaw type, driven by a 150 HP, 2200 volt motor, belt connected

1 Coarse ore conveyor 257'-3" center to center of pulleys, equipped with 30" 6-ply rubber belt. Driven by 30 HP, 440 volt motor, belt connected.

1 Cutler-Hammer electromagnet, size 39, for removing tramp iron from ore

Secondary Crushing Division

1 5-1/2 ft. Symons standard head cone crusher, equipped with fine bowl. Driven by 200 HP, 2200 volt motor, Texrope connected

1 Symons crusher product conveyor 24'-9" center to center of pulleys, equipped with 20" 6-ply rubber belt. Driven by 3 HP, 440 volt, motorized speed reducer, direct connected

1 Symons crusher product elevator 70'-0" high, equipped with 12" 10-ply rubber belt and 8"x16" buckets spaced 14". Driven by 20 HP, 440 volt motor, belt and gear connected

1 Allis-Chalmers 4' x 8' Style B centrifugal vibrating screen, covered with 3/4" x 1-1/4" opening woven wire screen. Driven by 3 HP, 440 motor, Texrope connected. Oversize of screen returned to Symons crusher.

1 Fine ore conveyor 163'-0" center to center of pulleys, equipped with 18" 6-ply rubber belt and Anaconda type ore tripper. Driven by 10 HP, 440 volt motor, belt and gear connected

Fine Grinding Division

1 Fine ore storage bin 135' long x 14'-6" wide x 21'-4" deep. Capacity 2200 tons.

4 Belt type ore feeders, 8'-0" center to center of pulleys, equipped with 24" 6-ply rubber belt. Each driven by 5 HP, 440 volt, back geared motor direct connected through a Foote speed reducer

Concentrator (Continued)

Fine Grinding Division (Continued)

1 No. 86 Marcy ball mill, driven by a 250 HP, 2200 volt synchronous motor direct connected to ball mill pinion shaft through a Stearns Hi-duty magnetic clutch

1 Dorr classifier Type DSFA, 8' x 27', in closed circuit with above mill. Driven by 15 HP, 440 volt motor, Texrope connected.

2 No. 75 Marcy ball mills, each driven by a 200 HP, 2200 volt, slip ring, induction motor, connected to ball mill pinion through a Size 31/2 Falk gear reduction unit

2 Dorr classifiers, Type D, 6' x 23'-4", in closed circuit with above ball mills. Each classifier driven by 5 HP, 440 volt, back geared motor, belt connected.

1 No. 77 Marcy ball mill, driven by 200 HP, 2200 volt, synchronous motor, connected to ball mill pinion shaft through a Westinghouse No. 4, Style 17SUS speed reduction unit

1 Dorr classifier, Type D, 6' x 23'-4", in closed circuit with above ball mill. Driven by 5 HP, 440 volt motor, belt connected

Flotation Division

4 Flotation reagent feeders, disc type

4 " " " pulley type

4 Lime feeders, belt type

All above feeders belt driven from one line shaft, which is driven by a 3 HP, 440 volt motor, belt connected

1 Fagergren flotation unit, consisting of 6 - 56" rougher cells and 2 - 56" cleaner cells, each cell driven by a 7.5 HP, 440 volt, vertical motor, direct connected. Skimmer shafts driven by 2 - 1/2 HP, 440 volt motors, chain connected

6 Callow pneumatic flotation units, each consisting of 11 rougher cells 5' x 5' and 4 cleaner cells 5' x 5'

Air at 4 to 5 pounds pressure for Callow cells is furnished by the following blowers:

2 Roots blowers No.6-1/2, each driven by a 150 HP, 2200 volt motor, belt connected

1 Connersville blower, 10.7 cu. ft., driven by a 75 HP, 2200 volt motor, chain connected.

Concentrator (Continued)

Flotation Division (Continued)

1 Connersville blower, 10.7 cu. ft., driven by a 75 HP, 440 volt motor, chain connected

6 3" Krogh centrifugal middling pumps, each driven by a 15 HP, 440 volt motor, direct connected

4 Gallagher automatic samplers, on flotation feed, concentrates and tailings, each driven by a 1/2 HP, 110 volt motor

Concentrate Filtering Division

2 Dorr thickeners 25' dia. x 12' deep, each driven by a 10HP, 440 volt, back geared motor, belt connected

1 Elevator, 32'-0" high, equipped with 8" 8-ply rubber belt and 8x8 buckets spaced 12". Driven by a 5 HP, 440 volt motor, belt and gear connected.

1 Oliver continuous filter, drum type, 8'x12', driven by a 5 HP, 440 volt, gear reduction motor set, chain connected

1 Concentrate conveyor 97'-8", center to center of pulleys, equipped with 12" 6-ply rubber belt. Driven by 5 HP, 440 volt motor, belt and gear connected

1 Centrifugal filtrate pump, driven by a 3 HP, 440 volt motor, direct connected

2 Oliver vacuum pumps 14" x 8", each driven by a 10 HP, 440 volt motor, belt connected

1 Oliver air compressor, 9-1/2" x 8", driven by a 15 HP, 440 volt motor, belt connected

2 3" Krogh centrifugal water pumps, each driven by a 5 HP, 440 volt motor

1 Concentrate storage bin, sloping bottom, timber construction, 48' long, 10 ft. wide, and 5 to 15 feet deep. Total capacity 500 tons

A platform for concentrate storage under the filter floor, having a capacity of 300 tons, is available in emergencies

Auxiliary Equipment

1 Lime feeder and mixer for conditioning mine water for mill use or previous to turning into Grizzly Creek. This unit consists of belt type feeder and spiral flight agitator for producing milk of lime. All driven by 5 HP, 440 volt motor chain driven.

1 Dorr thickener 50' dia. x 12' deep, driven by 15 HP,440 volt motor,belt and gear connected. This tank used principally for recovering water from tailings for mill use.

Concentrator Data

Crushing Division

150 tons per hour, minus 11 inch feed to minus 3/4 inch product.

Fine Grinding Division

Minus 3/4 inch feed to 3% on 48 mesh product.

2	#75 Ball Mills	@	365 tons per 24 hours	730
1	#77 Ball Mill	@	520 tons per 24 hours	520
1	#86 Ball Mill	@	648 tons per 24 hours	648
		Total tons per 24 hours		1898

Flotation Division

1	Fagergren Unit		Tons per 24 hours	750
6	Cellow units	@	300 tons per 24 hours	1800
		Total tons per 24 hours		2550
2	Concentrate Thickeners		tons per 24 hours	60
1	Tailings dewaterer		Tons per 24 hours	700
1	Oliver Filter		Tons per hour	7

Assays

	Copper %	Silver %	Gold %
Feed	1.00 to 1.25	.75 to .85	.04 to .05
Concentrate	25.0	13.0 to 16.0	.61 to .90
Tailing	.10 to .15	.12 to .20	.012to .018
Recovery %	88.0 to 92.0	73.0 to 82.0	65.0 to 75.0

Construction of Mill Buildings

All mill buildings are structural steel frame covered with one inch boarding and corrugated iron or zinc, except the following:

Addition to primary crusher building.

Coarse ore conveyor building.

50 ft. Dorr Thickener building.

Oil and reagent storage.

All above exceptions are wooden frame with corrugated iron roofs.

Tailings Disposal

The mill tailing is run to the tailing pond through a 18" wooden launder 4500 ft. long.

The tailing pond is formed by a gravel dike approximately 4700 ft. long, having a maximum height of 25 ft. on two sides, and natural hillside on the other two sides. It is provided with two spillway overflows, one 22 ft. long and one 16 ft. long. The overflow water goes directly to Little Grizzly Creek.

State Conservation Department ruling prohibits the contamination of natural streams by anything that is injurious to fish, game or animal life, and in the case of soluble copper, the maximum allowance is one part per thirty million.