(3640) 60000062

Proposed Budget
Construction and Maintenance
Pioche Plant
1951

COMBINED METALS REDUCTION CO.

INTER-OFFICE CORRESPONDENCE

Subject Pioche Construction and Maintenance Budget - 1951

Date October 11, 1950

To E. H. Snyder, General Manager

From S. S. Arentz

Dear Mr. Snyder:

The following is a summary of a proposed construction and maintenance budget for the Pioche Plant for the year 1951 and including projects remaining to be completed on October 1, 1950. A discussion of each project and cost details are included on the attatched sheets covering the individual projects. The proposed budget covers the necessary plant construction required for the production of manganese concentrates and the development of a large housing project in addition to the major construction and maintenance jobs required to place the several operating units at maximum capacity and efficiency. The completion of all of the jobs listed will depend upon the availability of equipment, supplies, manpower, and finances. We do believe that all of the projects listed are necessary and that they should be completed as soon as possible.

Routine maintenance and repairs regularly charged to operating accounts are not included in this budget. And many of the items included in this budget proposal will be properly chargeable, in whole or part, to operating expense rather than to capital accounts.

The following are the individual items proposed:

Caselton Mine	Chargeable To Capital $	Chargeable To Expense $	Estimated Total Cost $
1. Purchase and install a hoist and auxillary equipment for service compartment of Caselton Shaft.	23,100	12,900	36,000
2. Clean out pump columns and power cables from service end of Caselton Shaft and place it in shape for hoisting.	-	13,805	13,805
3. Excavate pump station on 840 level of Caselton Shaft and install pumps.	-	7,214	7,214
4. Install aftercooler on Caselton compressor and provide clean cooling water system.	-	9,790	9,790

	Chargeable To Capital	Chargeable To Expense	Estimated Total Cost
5. Replace worn out ore bins at the collar of the Caselton Shaft.	$ -	$ 28,680	$28,680
6. Replace wornout and rotting timber in the Caselton Shaft.	-	88,550	88,550
7. Provide additional compressor capacity at Caselton Shaft.	23,900	8,627	32,527
8. Excavate a pump raise between the 1400 level and the 1200 level and install deep well pumps.	13,855	38,683	52,538
9. Place all pumps on automatic operation.		19,800.	19,800
Sub Total - Caselton Mine	$ 60,855	$228,049	$288,904
Caselton Mill			
1. Construct retaining wall on north and east sides of crushing plant.	-	5,000	5,000
2. Excavate mine waste dump to provide additional stockpile area.	-	2,508	2,508
3. Purchase tractor and carryall equipment for moving ore from stockpile to hopper	29,665	4,500	34,165
4. Construct sink-float addition to Caselton Mill	58,608	19,208	77,816
5. Construct calcination plant for treating manganese concentrate.	113,890	-	113,890
6. Excavate storage ponds for manganese concentrate	-	6,000	6,000
7. Construct tailing dams for Caselton mill tailing	-	7,500	7,500
8. Repair sulphite reagent plant.	-	1,705	1,705
9. Repair lead concentrate filter.	-	1,925	1,925
10. Construct reagent elevator	-	1,670	2,420
Sub Total - Caselton Mill	$202,913	$50,016	$252,929

COMBINED METALS REDUCTION COMPANY

SHEET 3 DATE October 11, 1950 TO E. H. Snyder, General Manager

Perlite Crushing Plant	Chargeable To Capital	Chargeable To Expense	Estimated Total Cost
1. Construct shed over feed belt.	$ -	$ 3,685	$ 3,685
2. Install spray chamber and fan for control of exhaust dust.	1,345	6,042	7,387
3. Install equipment to salvage material from multiclone catch.	2,000	1,200	3,200
4. Cover blending and loading conveyor.	-	340	340
5. Change crusher installation.	22,000	15,400	37,400
Sub Total - Perlite Crushing Plant	$25,345	$26,667	$52,012
Caselton Plant General			
1. Construct dwelling for plant supt.	18,000	6,000	24,000
2. Develop housing project.	-	100,000	100,000
3. Construct mill water supply tank	7,400	2,291	9,691
4. Construct equipment storage shed	6,000	1,500	7,500
5. Paint shaft head frame, sub-station and perlite storage bins	-	3,000	3,000
6. Replace one company car	1,200	-	1,200
7. Construct and improve roads	-	3,000	3,000
Sub Total - Caselton General	$32,600	$115,791	$148,391
Total - Pioche Plant	$321,713	$420,523	$742,236

Very truly yours,

S. S. Arentz
General Superintendent

SSA:mh

Caselton Mine

1. Purcahse and Install a Hoist and Auxiliary Equipment for Service Compartment of Caselton Shaft.

The Caselton Shaft has produced an average of over twenty thousand tons of rock per month during the first eight months of 1950. This tonnage represents the capacity of the shaft under present conditions, in fact, between hoisting rock and lowering men, supplies, and equipment, there has not been sufficient time to properly maintain the shaft. During the past year a new 15" diameter pump column has been installed in the manway compartment of the shaft and power cables have been hung in a drill hole near the shaft, preliminary to clearing out the service compartment for its intended use. With the installation of the proposed equipment it is estimated that the rock capacity of the shaft can be increased by 50% or to a total of over thirty thousand rock tons per month. This increased tonnage can later be substantially increased by the installation of a larger rock hoist, should it be required.

The increased capacity is essential at this time to meet our scheduled manganese production and to allow time for the completion of necessary shaft repairs without halting mine production.

The job includes the following items with costs estimated as shown:

Purcahse of hoist, motor and controls	$23,100-
Additions to present hoist house	3,500-
Installation of hoist, including foundation, electrical connections, signal system	3,700-
Construction of cage and hoisting rope	2,400-
Estimated direct cost	32,700-
Plus 10% Contingency	3,300-
Total Estimated Cost	$36,000-

New Hoist $12000

$15000

Alternate - Install Larger Drum Hoist.

Install Hendrie Bolthoff - 200 H.P. Gas Burner

Caselton Mine

2. Cleanout pump columns and power cable from service compartment and place compartment in shape for hoisting.

The service compartment, or third hoisting compartment, of the Caselton Shaft was filled with pump columns, air lines, and power cables when the Shaft was sunk and has never been available for its intended use. We have recently completed the installation of a large capacity pump column in the manway end of the shaft and hung power cables in a churn drill hole near the shaft. To complete the job we must remove three eight inch pipe columns and three six inch pipe columns from the service compartment; remove four power cables; replace one eight inch air column in the manway compartment; rehang one power cable in the drill hole; replace dividers; install guides; and line a partition between the service compartment and the hoisting compartment. In addition to the above, there is considerable cleanup and repair work required in the shaft.

Costs are estimated as follows:

Remove pipe columns from shaft	$3600-
Remove power cables from shaft	560-
Replace air column	640-
Replace power cable	250-
Install guides	2500-
Install partition	2500-
Cleanup and repair	2500-
Estimated direct cost	12,550-
Plus 10% Contingency	1,255-
Total Estimated Cost	$13,805-

The above estimated cost is all properly chargeable to operating maintenance.

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Caselton Mine

3. Excavate pump station on 840 level of Caselton Shaft and install pumps.

The 840 level pump station of the Caselton Shaft grew like Topsy. The pumps are strung out along a narrow drift making it impossible to properly service, maintain or repair the pumps. The proposal contemplates the excavation of a pump station in line with, and southwest of the shaft. The proposed location will place the pumps adjacent to the power lines in the churn drill hole and with ready access to the 840 sump andto the pump column in the manway of the shaft. The pumps will be in excellent position for conversion to automatic operation by the addition of starters and control equipment. Proposed mining operations on the 840 level will require the relocation of the pumps within the next thirty months and completion of the job at this time will facilitate completion of the shaft improvement program.

Cost estimates are as follows:

Excavation	$2000-
Concrete pump base	400-
Move and set pumps	1296-
Intake and discharge manifolds	712-
Check valves	550-
Pipe fittings, cooling circuit valve, etc.	400-
Electrical connections, switch base, etc.	600-
Sump for cooling water and return pump	600-
Estimated direct costs	$6,558-
Plus 10% Contingency	656-
Total Estimated Cost	$7,214-

All of the above costs can properly be charged to operating maintainance.

Caselton Mine

4. Install aftercooler on Caselton Compressor and clean cooling water system.

The Caselton compressors discharge high temperature air in to their receivers. This has the following disadvantages:

Chance for an explosion if receivers are not kept properly drained.

Unpleasant oil vapors adversely affect mine ventilation.

Heavy condensation of water in mine distribution air lines.

The proposal contemplates the installation of a heat exchanger to cool the air going to the receivers and eliminate the above listed disadvantages. The proposal also contemplates the use of the heat removed from the compressed air to heat water for the mine change house. The present mine change house hot water system is expensive to operate and to maintain.

Our compressors are currently cooled by running a stream of mine water through them from the small storage tank on the hill above the mine. The water is dirty and results in a great deal of sediment being deposited in the compressor tubes which requires an expensive maintenance job to correct at regular intervals. It is proposed to install a closed circuit cooling system for the compressors with treated water and evaporative cooling.

Cost estimates are as follows:

Heat exchanger and connections to change house hot water system	$5700- x Boiler
Cooling system, including tanks, cooling tower and pumps	3200-
Estimated direct costs	$8,900-
Plus Contingnecies - 10%	890-
Total estimated cost	$9,790-

All of the above costs can properly be charged to operating maintenance.

Reestimate

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Caselton Mine

5. Replace Ore Bins at Collar of Caselton Shaft.

The present ore bins at the Caselton Shaft were constructed during shaft sinking operation twenty years ago and have served their purpose. The bins are of timber construction and require constant maintenance in addition to the following disadvantages:

The timber construction constitutes a serious fire hazard at the collar of the shaft.

The bins and dump are set too high resulting in lack of head-room between the skip and the sheave wheel which has contributed to several serious accidents.

The present dump allows an undue amount of spillage down the shaft and in winter months delays hoisting due to freezing muck preventing transfer from one bin to the other.

The proposal contemplates the construction of all steel bins set at a lower elevation and providing for the ready transfer from ore to waste or waste to ore.

Costs are estimated as follows, including engineering, contingencies, etc.:

Material	$12,490-
Labor	16,190-
TOTAL	28,680-

Restate

± $15000 ?

Caselton Mine

6. Replace wornout and rotting timber in the Caselton Shaft.

The Caselton shaft timber above water level is subjected to alternate wetting and drying and tends to become rotten over a period of years. Most of the timber in this section of the shaft was replaced during 1940 and 1941, but is again in need of replacement. The timber in the section of the shaft below water level is constantly wet and resists rot, but shaft spillage over the twenty year period since the timber was installed has resulted in the timber being worn away. It has been impossible to carry on regular shaft maintenance during the past two years due to the shaft being operated at capacity for hoisting rock and lowering supplies and equipment. With the completion of the service compartment installation early in 1951 it is proposed to start a major repair job on relining the Caselton shaft. Work will necessarily be carried on graveyard shift and scheduled so as not to interfere with production. This requirement will greatly increase the cost of the work, but no alternative is acceptable.

The following cost estimate is based on replacing the present timber lining with a similar new timber lining. Timber is by nature relatively short lived in this service and estimates and engineering details will be worked up for alternatives proposal using steel or concrete in place of timber.

This proposal also contemplates the construction of spill pockets in the shaft sump to do away with the present expensive practice of hand mucking the shaft sump at regular intervals.

Estimated costs are as follows:

Excavation and installation of spill pockets in shaft sump	$5,500-
Retimber 1500 feet of shaft including stations and loading hoppers	75,000-
Estimated direct cost	80,500-
Plus 10% for contingencies	8,050-
Total Estimated Cost	88,550-

All of the above costs can properly be charged to operating maintenance.

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Caselton Mine

7. Provide additional compressor capacity to Caselton shaft.

The present Caselton compressor plant is currently operating at or near capacity. All of our slusher equipment, with one or two exceptions, has been converted from air to electric power which removed a great part of the load formerly carried by the compressor plant, but this gain has been largely offset by the increased number of machine drills required for our increased production. With the additional productive capacity required by our expansion program, it will be necessary to add to our compressor capacity at Caselton.

The compressor at the #1 needs overhauling, but the needed parts have been on hand for several years. In its present location the compressor is a questionable value due to the difficulty of maintaining air lines in the #1 shaft because of corrosive water and due to the extended low capacity pipe line to the points of use. It will therefore be desirable to either move the #1 compressor to Caselton or to purchase a new compressor for Caselton. Mr. Kelsey informs me that it would be desirable to move the #1 compressor to Bauer and to install a larger compressor available from the Consolidate Coppermines Corporation at Kimberly, Nevada at Caselton. The following estimate is based in installing the larger compressor at Caselton.

Costs on estimates as follows:

Purchase of compressor, including moving it to Caselton	$13,000-
Addition of two bays on present building, including moving small building	8,800-
Installing compressor	2,750-
Electrical installation including transformers and wiring	5,020-
Estimated direct cost	$29,570-
Plus 10% for contingency	2,957-
Total Estimated Cost	$32,527-

To actions

Caselton Mine

8. Excavate a pump raise between the 1400 and 1200 levels and install deep well pumps.

The present 1400 level pump station is located adjacent to the shaft with pumps mounted over a small sump. The sump storage is inadequate, the pumps are in the way of materials handling when large scale production is resumed on the 1400 level and it is impossible to adopt the present station to automatic operation. The present pump supporting structure over the sump is rotten and will have to be replaced in any event.

The proposal contemplates the excavation of a raise from the 1400 level to the 1200 level and the installation of deep well turbine pumps in the raise. The motors will be mounted on the 1200 level above any danger of flooding and the pump bowls will be mounted in a sump excavated below the 1400 level. The pumps will discharge to the 840 level sump through the column installed in the shaft manway between the 1200 and the 840 levels.

The proposed raise will serve as an emergency manway or escape way from the 1400 level and will also afford passage for power cables from the drill hole to the 1200 level to the 1400 level. The drift connecting the bottom of the raise with the 1400 station will be equipped with a steel bulkhead and water will be contained in heavy duty pipes from the present water bulkheads to the raise sump. This will permit flooding the level without flooding the shaft stations and its facilities.

Estimated cost of the proposal is as follows:

300' of 4 x 16' raise	$6,000-
Excavation of top and bottom raise stations	2,500-
Installation of steel and concrete bulkhead	5,000-
New motor, column, shafting and raised bowls for present Kate Pump	7,407-
Kate Pump #2 complete	13,855-
Column and shafting for Bertha Pump	5,500-
Installation of three pumps with supporting structure, manifolds, etc.	7,500-
Estimated direct cost	47,762-
Plus 10% contingencies	4,776-
Total Estimated Cost	$52,538-

Saving $15000 per year

Caselton Mine

9. Place all pumps on automatic operation.

The Caselton pumps are operated by a crew of seven men, working six days per week at an annual cost, on present wage rates, in excess of thirty thousand dollars. The pumpmen merely act as attendants, as virtually all maintenance work is done by the mechanical crew.

The proposal contemplates placing all pumps on fully automatic operation as rapidly as possible. This will require the completion of proposed projects covering the 840 level and 1200-1400 level pump stations and the additional purchase and installation of starter and control equipment. The proposal would result in a saving of approximately thirty thousand dollars per year as the present maintenance crew could service the pumps to the exclusion of regular pump attendants.

Estimated cost is as follows:

Purchase of 5 automatic starting compensators	$15,000-
Purchase and installation of control equipment	3,000-
Estimated direct cost	$18,000-
Contingencies @ 10%	1,800-
Total Estimated Cost	$19,800-

All of the above costs can be charged to operating replacement and maintenance.

CASELTON MILL

1. Construct a retaining wall on north and east sides of crushing plant.

The proposed retaining wall will substantially increase the stock pile area surrounding the mill hopper by allowing the fill to be extended toward the crushing plant while maintaining access around the building.

The wall is now under construction on an approved work order account and is entered in this budget only because delayed delivery of steel and cement may postpone completion past the first of the year.

The increased stock pile area is essential to handle the increased tonnage resulting from the expanded operating program.

Estimated Total Cost $5,000

All of the above cost is properly chargeable to plant operating maintenance.

2. Excavate mine waste dump to provide additional stock pile area.

This proposal is a companion to the proposal covering a retaining wall. It contemplates moving part of the present waste dump to fill behind the retaining wall and along the southwest end of the stock pile area and to make available for stock piling space now covered by the waste dump.

It is proposed to have the work done by rental of the contractors road construction equipment now in the area. This will effect a substantial saving over use of bulldozers alone.

Estimated Total Cost $2,508

All of the above cost is properly chargeable to operating maintenance.

Caselton Mill

3. Purchase tractor and carryall equipment for moving ore from stockpile to hopper.

We currently move ore from the stockpiles to the hopper with a tractor bulldozer. This method is excellent for short hauls and when it is possible to cleanup piles adjacent to the hopper before moving piles removed from the hopper.

With the increased production required by the expanded program, it will be necessary to stockpile ore at some distance from the hopper and to move piles as required without regard to piles adjacent to the hopper. Under these circumstances a bulldozer would no longer be adequate for the job, and the purchase of the proposed equipment or the construction of another hopper becomes essential.

The proposed equipment will also be used to recover material from storage ponds, to construct tailings dams, and on other excavation as required.

Estimated cost is as follows:

Purchase of tractor carryall with full equipment	$29,665-
Changes to track hopper to allow use of proposed equipment	2,000-
Freight and contingency	2,500-
Total Estimated Cost	$34,165-

Tractor carryall equipment would be chargeable to new equipment. The changes to the trackhopper would be chargeable to plant operating maintenance.

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Subject Work Order

Caselton Mill

4. Construct Sink-Float addition to Caselton Mill

The proposed plant addition is for the purpose of treating ores containing low grade lead and zinc sulphide mineralization and manganese carbonate mineralization ahead of flotation for the purpose of rejecting a low grade lime-silica tailing and making relatively high grade feed for the flotation circuit. This will result in a commercial manganese product and will substantially increase the capacity and recoveries of the flotation circuit. It is anticipated that the plant will aid in the treatment of other ores in addition to the type for which it is primarily designed.

The proposed plant will be located adjacent to the grinding section of the Caselton Mill and will be designed to fit in with present operating circuits.

The Caselton mine has large tonnages of sub-commercial material developed which will become ore through the installation of this plant and its related facilities.

Estimated costs are as follows:

Excavation & Fill 400 cu. yds	$ 300-
Concrete - Reinforced 60 cu. yds	3,000-
Gathering Conveyor 45' long	1,500-
Feed Conveyor 20' long	900-
Extension of 3 Feed Belts	500-
4' x 8' Ty-Rock Screen - On Hand	600-
Wilfley Sand Pump and Piping	750-
Building - 3 Sides & Roof 25' x 50'	7,500-
Sink Elevator 30' high	1,435-
Middling Elevator 30' high	1,435-
Sink Conveyor to Belt 15' long	600-
Mids Conveyor to Belt 25' long	1,250-
Float Conveyor to Stock 60'	1,950-
Mids Conveyor to Stock 60'	1,950-
Sink Conveyor to Stock 60'	1,950-
Sampling Equipment	500-
Erection of Factory Built Plant	3,000-
Water Piping	200-

Electric Wiring		$ 700-
Sub-Total		30,020-
Engineering & Supervision	12% & 15%	3,960-
W. C. Insurance	12%	1,434-
Contingencies	10% & 10%	3,002-
Sub-Total		38,416-
Southwestern 50T Sink-Float Plant		39,400-
GRAND TOTAL		$77,816-

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Caselton Mill

5. Construct Calcination Plant for Treatment of Manganese Concentrates.

The proposed plant will be for the purpose of preparing manganese concentrates from the sink-float and Caselton flotation plants for processing in the Henderson Smelter or for direct sale to manganese consumers. The plant will be for the purpose of drying and sintering the manganese concentrates and for up grading the concentrates by driving off CO_2 and residual zinc.

The proposed plant will be located below the Caselton Mill and will receive its feed from storage ponds. It will discharge its finished product into bins for shipment.

Estimated costs are as follows:

Tunnel & Feed Conv. 100' long	$ 5,000-
Pug Mill & Grizzly	2,500-
Surge Bin & Feeder	2,000-
Kiln Erection & Brick Work & Found.	14,500-
Building 25' x 100'	10,000-
Multiclone	2,000-
Baghouse - Fan & Conv. (240 Bags)	7,800-
Hot Calcine Conv.	800-
Hot Calcine Bin & Feeder	2,000-
Ducts, Piping, Etc.	2,000-
Electric Wiring	3,000-
Sub-Total	$51,600-
Engineering & Supervision 12% & 15%	6,780-
W. C. Insurance 12%	2,350-
Contingencies 10% & 10%	5,160-
Sub-Total	$65,890-
1 Rotary Kiln	48,000-
Grand Totals	$113,890-

Preliminary Estimate

+ 175,000

Caselton Mill

6. Excavate storage ponds for manganese concentrate.

It is proposed to excavate three storage ponds of about 5,000 tons capacity, each on the slope below the Caselton mill. The ponds will be for the purpose of storing and dewatering the manganese concentrates received from the Caselton mill. The stored material will be recovered for treatment in the calcination plant and for this reason three separate ponds are proposed. This will allow one pond for receiving concentrate from the mill, one for drying, and one for unloading at any given time.

Total estimated cost of excavation and overflow launders $6,000-

The above cost will be properly chargeable to operations.

9/18

Caselton Mill
7. Construct tailing dams for mill tailings.

Our current high rate of production has filled our tailings ponds faster than was anticipated and it will be necessary to construct two more retaining dams in the canyon below the present tailings ponds, and to excavate a by pass for flood waters around the impounding area.

With the road construction equipment now in the area it will be possible to construct the proposed dams at a cost substantially less than would otherwise be possible.

Estimated total cost is as follows:

$7,500-

The above cost is properly chargeable to operations.

3/B

Caselton Mill
8. Repair Sulphite reagent plant

For several years there has been an increasing deterioration of the concrete spray chamber at our reagent plant. It will be necessary to make repairs to the concrete and at the same time it is proposed to install the new type rubber covered double roll Christensen Spray Assembly. We have the rollers on hand at Caselton for this job.

Estimated costs are as follows:

Roll assembly purchase and installation	$ 800-
Repairs to concrete tank	750-
Estimated direct cost	1,550-
Plus 10% Contingency	155-
Total Estimated Cost	$1,705-

All of the above costs will be properly chargeable to plant maintenance.

Caselton Mill
9. Repairs to lead concentrate filter

The tank on our lead concentrate filter has been in service nine years. For the past several years it has required a great deal of maintenance but it is now past further repair and will have to be replaced with a new tank.

Estimated cost is as follows:

Purchase of new tank	$ 950-
Cost of installation	800-
Estimated direct cost	1,750-
Plus 10% contingency	175-
Total Estimated Cost	$1,925-
New Tank with Accessories.	2075
	+ 4000

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9/18

Caselton Mill
10. Construct reagent elevator

Our only present means for transfering mill reagents from railroad cars to the mill reagent floor is to slide sacks of material from the cars to a point below the second floor door of the mill and then to load the sacks on a small wooden platform and hoist it with a cable pulled by a truck. The process requires a crew of five men and a truck. It is costly and unsafe and results in an appreciable handling loss as some sacks are invariably broken in the process.

The proposal contemplates the construction of a ramp and elevator to allow handling of reagents with one of our lift trucks directly from cars to the storage room. It is anticipated that with the proposed installation a crew of two men can unload a car more rapidly then our present five man crews, and can do the job safely and with a minimum of waste.

Estimated costs are as follows:

Automatic electric hoist	$ 750-
Ramp and Supporting structure	1,000-
Changes to doors and hoist cover	450-
Estimated direct cost	2,200-
Contingency 10%	220-
Total Estimated Cost	$2,420-

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9/18

PERLITE CRUSHING PLANT

1. Construct shed over feed belt.

The feed belt from the perlite stock pile to the primary crusher is set in a trench extending under the stock pile for a distance of approximately 50 feet from the north side of the plant building. The belt and stock pile are exposed to the weather and past experience has indicated that during wet weather it is impossible to operate the plant.

We have installed a grizzly at the mine to separate the plus four inch material from the fines and we are currently hauling the two products in separately. The coarse material is being stock piled for winter use and the fines are being treated during good weather. The coarse material can be crushed and screened even in wet weather, but only if the feed belt is protected from rain and snow.

The proposal contemplates the construction of a cover over the feed belt which will afford the required protection and which will allow crude ore to be slushed to the belt from the surrounding stockpiles. The proposal includes the installation of a twenty horsepower electric slusher and a large scraper and the construction of a grizzly over a section of the belt.

Estimated costs are as follows:

Construction of shed cover	$ 425
Rolled canvas side covers	170
48" slusher scraper	275
Grizzly and cover over belt	155
Sheave blocks (3 - 8" roller blocks)	120
Total Estimated Direct Cost	$3,345
Plus 10% contingency	340
Total Estimated Cost	$3,685

9/8

Total cost will be chargeable to expense.

Perlite Crushing Plant
2. Install Spray Chamber and Fan for Control of Exhaust Dust.

Our plant dust control and dedusting circuits are currently discharging into the atmosphere after passing through impax separators, multiclones and fans. The cloud of dust released into the air is a serious hazard. Some of the dust is settling on sub station equipment at the main power station and threatens a power outage due to a flash over. Some of the dust recirculates into the crushing plant where it offers a serious health hazard, to say nothing of the damage it does to electric contacts and bearings. The dust cloud also is a real nuisance to the people living at the power district and to the plant generally.

In the hope that we could develop a market for the fine dust, we have designed baghouse equipment for collecting it in useable form. The baghouse equipment is expensive and we have not as yet developed a market for the product.

Under the circumstances we recommend the construction of a spray chamber for collecting the dust in water and discharging it into our perlite tailings pond. Collected by this means, the product will not be in marketable form, but the installation cost is less than one-third of the cost of baghouse equipment and the impounded tailings could be salvaged at a later date, should the development of a market warrant such action.

The proposed spray chamber would allow placing the exhaust fan on the clean air discharge and would substantially reduce our present excessively high fan maintenance expense due to passing dust laden, abrasive air through the fans.

Estimated costs are as follows:

Christensen Spray Chamber	$1,650-
Piping, Dust, Water, Discharge	550-
Spray Drums, Drive, Etc.	550-
3 Devereaux Agitators with Drives, Supporting Frames, Motors	2,220-
Fan #33 Clarage, Installed	1,445-
Electrical	300-
Estimated Direct Cost	6,715-
Plus 10% for Contingency	672-
Total Estimated Cost	$7,387-

Perlite Crushing Plant

3. Install equipment to salvage useable material from multiclone catch.

Our air separator equipment for removing fines from our finished product also removes a quantity of material in the minus 50 mesh plus 150 mesh range. Part of this coarse material is recovered in our impax separator, but a substantial quantity goes on through to the multiclones where it is dropped into #7 bin along with the multiclone fines. We estimate that fifteen percent of the total feed to the plant is recovered in bin #7. This product is currently being washed to waste because it contains too much minus 200 mesh material to allow mixing it into any of our shipping products.

It is proposed to screen the plus 150 mesh portion out of the #7 bin product and blend it into some of our shipping products. This will have the dual advantage of making a marketable product out of material currently going to waste and of increasing the minus 50 mesh portion in the product shipped which will help to meet the close specifications established by our largest customers. It is estimated that the material so salvaged will amount to 5% of our total feed, or at present production rates, approximately 150 tons per month.

Estimated costs are as follows:

Screen	$2,000-
Spare screen cloth	300-
Installation, product disposal, etc.	600-
Estimated direct cost	2,900-
Plus 10% Contingency	300-
Total Estimated Cost	$3,200-

The screen would be charged to capital accounts and the balance to operating maintenance.

WLS

PERLITE CRUSHING PLANT

4. Cover blending and loading conveyor.

The No. 18 conveyor, which receives material from the feed conveyors under the six storage bins and discharges to the loading elevator, is open to the weather. The material carried by the belt is so fine that even a light breeze will pick material off the belt and scatter it around the plant and in heavy winds or wet weather it is impossible to laod perlite.

The proposed cover will consist of a light gauge iron housing fitting closely over the conveyor belt and will permit operations under any weather conditions.

Estimated cost is as follows:

Total Estimated Cost	$340.00

Total cost will be chargeable to expense.

9/8

Perlite Crushing Plant
5. Change Crushers installation

Our experience with the Holland Crusher has been disappointing. The crusher has had limited capacity and has required excessive maintenance. Our engineering department has designed new impellor bars which have substantially reduced the maintenance costs from the original high of over one dollar per ton to a present average of about fifty cents per ton. It is possible that the completion of the new screen installation may allow crowding more feed to the crusher and this may result in greater capacity and relatively less wear, but there seems to be no prospect of getting maintenance costs below thirty or thirty five cents per ton or of getting capacity over twenty tons per hour with present equipment.

The Symons crusher in the Caselton crushing plant operates with a large capacity and with maintenance costs approaching one cent per ton.

It is proposed to replace the Holland crusher with a Symons Short Head Crusher and to use the Holland Crusher as a coarse breaker ahead of the Symons Crusher. It would be desirable to scrap the Holland Crusher and use a Jaw Crusher ahead of the Symons. It is proposed to locate the Jaw Crusher at the mine and to deliver prepared feed for the Symons Crusher at the plant. This would greatly simplify the feeding operation with a reduction in plant operating labor.

Estimated costs are as follows:

Purchase and installation of one 4' Short Head Symons Crusher	$26,000-
Purchase and installation of 16 x 24" Jaw Crusher	8,000-
Estimated direct cost	$34,000-
Plus 10% for contingency	3,400-
Total Estimated Cost	$37,400-

Pass

CASELTON PLANT GENERAL

1. Construct dwelling for Plant Superintendent.

The dwelling now occupied by the Plant Superintendent is too small for his family (2 bedrooms for a family of six), and has limited facilities for the entertaining of staff members and plant visitors which is usually associated with the job in a relatively isolated area such as Caselton.

It is proposed to construct a four bedroom house without a basement, but with additional floor space above ground for storage and utilities. The proposed plan allows adequate room for a large family with space for entertaining. The proposed location is the area between the present Arentz and Godbe residences which will fit in well with camp landscaping and fill in the area of our present circle drive. The plans include a double garage with sufficient room for a heating plant and storage.

Estimated cost is as follows:

Dwelling	$21,000
Garage and Heating Plant	3,000
Total Estimated Cost	$24,000

An estimated $18,000 of this total would be charged to capital and the balance to expense.

2. Develop sub division for large housing project.

This proposal contemplates the development of a sub division complete with roads, water, sewage, and power lines to FHA standard for the construction of 100 homes for purchase by mine and mill employees. A serious housing shortage exists in Pioche and this shortage will become critical with planned expansion of operations in the district. Experience has shown that well housed employees with a stake in the community are stable employees. With the continuing critical international situation and the prospect of full employment for some time to come, the construction of such a project can easily repay its cost in plant operations every month.

Until a final layout is approved it is impossible to prepare detailed estimates. During the past few years we have prepared detailed estimates covering smaller projects and indications are that the overall cost of the project under consideration will average $1,000 per dwelling or a total cost of $100,000.

Total Estimated Cost	$100,000

Total cost can be chargeable to expense under the proposed plan of organization.

CASELTON PLANT GENERAL

3. Construct mill water supply tank on hill above Caselton and move present tank.

The present mill supply tank located below the mine change house is a 40' x 12' steel tank. It is of limited storage capacity considering the increased capacity of the mill and the very substantial drain on the tank due to the demand for irrigation water at the Caselton Housing Project and the Caselton and Prince camps. The present tank is poorly located for fire protection water storage and encroaches on area needed for the mill stock pile. Mr. Kelsey informs me that our fire insurance rates can be substantially reduced by the addition of greater water storage capacity where it would be available for the plant.

The proposal contemplates the construction of a 60' x 12' tank (about double the capacity of our present tank) on the ridge back of the Caselton mine change house. The proposed tank would serve as the mill water supply and for irrigation and fire protection use. The present tank would then be moved to a new location above the mine hoist house to serve as a storage reservoir for culinary water received from the springs and the mine shaft. This tank could also be used as a reserve fire protection storage, as it would be mounted so as to discharge into the lower mill water supply tank in case of emergency. The proposed project would put the mill in much better shape in case of any power failure to the mine pumps, would greatly increase our fire protection rating, and would free valuable area near the ore stock pile yard.

Estimated costs are as follows:

Construct new 60' x 12' tank with all necessary connections	$7,400
Move present tank and make necessary connections	1,410
Estimated Direct Cost	$8,810
Plus 10% for contingencies	881
Total Estimated Cost	$9,691

Total cost would be chargeable to plant maintenance expense.

CASELTON PLANT GENERAL

4. Construct equipment storage shed.

We have accumulated a great deal of expensive equipment at the Caselton plant including tractor bulldozers, cars, trucks, portable compressors, road graders, etc., but we have no place to house the equipment when it is not in use. Exposed equipment suffers rapid depreciation in effectiveness and value.

It is proposed to construct an equipment storage shed on the filled area between the machine shop, the mill and the stock pile area for housing plant equipment.

Total Estimated Cost $7,500

Total cost would be chargeable to capital accounts.

5. Paint shaft head frame, sub station, and perlite storage bins.

These major plant structures have either never been painted, or have not been painted within the past ten years. They are all in need of paint at the present time both for the protection of property and for keeping up the general appearance of the plant.

The headframe will require a major cleaning job to remove cable lubricant before it can be painted.

Estimated Cost $3,000

Total cost is chargeable to plant operating maintenance.

6. Replace one company car.

The various company vehicles are all accumulating miles and years of service. No replacement has been made for two years. It is anticipated that one car will have to be traded in on a new model during the coming year to avoid excessive maintenance expense.

Total Estimated Cost $1,200

Total estimated cost would be charged to capital.

Caselton Plant General
7. Construct and improve plant roads

With the recent completion of the new highway into the plant area we are in better shape for roads than at any time in the past. With the proposed new plant facilities it will be necessary to construct a new access road into the plant from the Caselton camp area and it is proposed to route this road below the new plant area and to come on to the new highway about opposite the present track scale house. This will bring all traffic into the plant by one entrance and will enable closer control of traffic with an anticipated substantial reduction in petty thievery.

The camp area is rapidly shaping up to an attractive landscaped area with well defined and graded roads. It is proposed to put surfacing on the two main camp roads to reduce maintenance and stop dust.

Estimated total cost $3,000-