Sociedad Minera Cerro Verde S.A.A.

Primary Sulfide Project
Feasibility Study
Project No. 12 7606 00

Construction Access Routes

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1. INTRODUCTION

Construction of the Primary Sulfide Project will significantly increase traffic flux into the site. The safest and most efficient method of managing and controlling traffic to a construction area within an operating mine site is to provide separate and dedicate access for mine site traffic and for construction traffic.

To provide separate and dedicated construction site access several potential routes were considered. In addition, the existing main highway into the mine site will require future realignment in two locations due to the conflict with the tailing embankment expanding to the North and with the mine waste dumps expanding to the West. This evaluation also considered a new permanent access route to serve initially as the construction access route and ultimately as the permanent site access route. The following options were considered in this evaluation.

Option 1 – Use existing routes (North and South) for mine and construction traffic

Option 2 – Temporary road up Quebrada Enlozada (tailing impoundment)

Option 3 – Temporary road up Quebrada Huayrondo

Option 4 – Permanent road up Quebrada Huayrondo

2. SUMMARY AND RECOMMENDATION

All alternate site access routes require significant expenditure. The cost estimates for each to the routes considered are shown in Table 2-1. The estimated capital to realign the existing mine access highway in two locations is $5,000,000. For the purposes of this evaluation it is assumed the existing highway would be realigned in Year 4.

Table 2-1 Initial Capital Cost and NPC

Option	Route	Initial Capital	Existing Highway Realignment Required	Option NPC @15%
1	Existing Routes	$0.6	Yes	$3.0M
2	Quebrada Enlozada	$2.7M	Yes	$4.9M
3	Temp. Quebrada Huayrondo	$9.0M	Yes	$10.2M
4	Perm. quebrada Huayrondo	$12.0M	No	$10.4M

Using the existing access route for mining and construction activities is the lowest cost option for the Primary Sulfide Project. This option; however, introduces some safety issues that must be addressed and managed.

Fluor recommends that the existing mine access route be used for construction traffic. A separate site security entrance should be provided for construction traffic at both the North entrance and the South entrance. Construction traffic will be routed around the Cerro Verde and Cerro Negro pits to avoid congestion in the main traffic route between the two pits. A traffic management program and safety plan will need to be developed and implemented for the construction phase of the Project.

The impact of sharing access gates needs to be review with respect to permitting and site classification.

3. OPTION 1 – EXISTING ACCESS ROUTES

Using the existing access routes for mining and construction traffic will require modifications to the existing site security entrances. A new separate site security facility should be provided for, and dedicated to, construction traffic at both the North and South site entrances.

Construction traffic routes on site will be developed to minimize congestion and conflict with the existing operations. It is envisaged that construction traffic will be routed around the Cerro Verde and Cerro Negro pits as shown on sketch C-7000-10C-SK2.

A detailed traffic management and safety plan will need to be developed and implemented for the construction phase of the project. This plan should consider, as a minimum:

- training for all mining and construction personnel
- special training of all transport operators (busses and trucks)
- clear signage and route markings
- manned traffic control points in areas of conflict between operations and construction traffic
- pilot cars for large or special transport shipments
- radio communication procedures for traffic on site
- where possible, divided (bermed) routes dedicated for either mine operations or construction traffic

- off-set shift changes between mine operations and construction

The cost to implement this option is estimated to be $560,000 as summarized in Table 3-1.

Table 3-1 Existing Site Access Route Cost Summary

Item	Description	Unit	Unit Cost	Quantities	Item Cost
1	Mass excavation of overburden	m3	$1.50	2,000	$3,000
2	Mass excavation, rippable rock	m3	$3.00	6,000	$18,000
3	Mass excavation, drill & blast rock	m3	$5.00	2,000	$10,000
4	Mass rock dump fill	m3	$1.00	7,500	$7,500
5	Compacted engineered fill	m3	$3.50	2,500	$8,750
6	Base course, 75 mm minus, 100 mm thick	lm	$50	300	$15,000
7	Surface course, 40 mm minus, 50 mm thk.	lm	$27	300	$8,100
8	Asphalt surface, 75 mm thick	lm	$110	0	$0
9	CMP culvert, 30" diameter	lm	$150	50	$7,500
10	Guard rail, CMP w/ wooden posts	lm	$20	80	$1,600
11	Extra traffic control	lot	$480,000	1	$480,000
	Total				**$559,000**

This cost includes about $80,000 to upgrade the existing entrances and on-site roads and about $480,000 to provide additional traffic control during the construction phase of the project.

4. OPTION 2 – QUEBRADA ENLOZADA

The use of the future fresh water and tailing pipeline corridor on the East embankment of the Quebrada Enlozada was considered a possible option for temporary construction access to the concentrator site. The initial concept was to widen the pipeline corridor to accommodate construction traffic. This is a feasible option between the concentrator site and the tailing embankment but not feasible between the tailing embankment and the mine access highway. The gradient of the pipeline corridor between the tailing embankment and the highway will be about 12%. This is too steep for construction traffic. Fluor's review of options to reduce this gradient was not successful so this route was considered technically unacceptable.

An alternate route in the Quebrada Enlozada was developed. This route is illustrated on sketch 7000-10C-SK3. A new 2.8 km long road will start at the existing Booster Pump Station No.3, climb the East side of the quebrada and travel South on the Eastern side of

the future starter dam boundary. The new road will join an existing road in the bottom of the quebrada. At the end of the valley bottom, a new 2.5 km road will begin the climb out of the quebrada up to the concentrator site. This section of road will be steep and will require several significant switchbacks to achieve the climb out of the quebrada.

The southern section of this route may conflict with the proposed starter dam material haul roads as well as alluvium removal activities for starter dam construction.

The cost of this route is estimated to be $2,676,000 as summarized in Table 4-1.

Table 4-1 Quebrada Enlozada Route Cost Summary

Item	Description	Unit	Unit Cost	Quantity	Item Cost
1	Mass excavation of overburden	m3	$1.50	107,020	$160,530
2	Mass excavation, rippable rock	m3	$3.00	321,060	$963,180
3	Mass excavation, drill & blast rock	m3	$5.00	107,020	$535,100
4	Mass rock dump fill	m3	$1.00	183,638	$183,638
5	Compacted engineered fill	m3	$3.50	61,213	$214,244
6	Base course, 75 mm minus, 100 mm thick	lm	$50	6,900	$345,000
7	Surface course, 40 mm minus, 50 mm thk.	lm	$27	6,900	$186,300
8	Asphalt surface, 75 mm thick	lm	$110	0	$0
9	CMP culvert, 30" diameter	lm	$150	280	$42,000
10	Guard rail, CMP w/ wooden posts	lm	$20	2,300	$46,000
	Total				**$2,675,991**

This route is a temporary construction access route only and will be decommissioned prior to the commencement of production of the Primary Sulfide Project. The realignment of the main highway due to conflicts with the future tailing embankment and mine waste dumps will be required.

5. OPTION 3 – TEMPORARY QUEBRADA HUAYRONDO

The Quebrada Huayrondo was considered a potential concentrate transport route to the rail line located in the North portion of the Cerro Verde mining concession. Access from the concentrator site to the highway to Arequipa is possible.

The route, shown on sketch 7000-10C-SK4, would be approximately 12.5 km from the concentrator site to the rail line near the Rio Chili and an additional 1 km from the rail line

to the existing highway to Arequipa. The route would have a maximum gradient of about 8%.

The cost of this route is estimated to be $8,960,000 as summarized in Table 5-1.

Table 5-1 Quebrada Huayrondo Temporary Route Cost Summary

Item	Description	Unit	Unit Cost	Quantities	Item Cost
1	Mass excavation of overburden	m3	$1.50	400,000	$600,000
2	Mass excavation, rippable rock	m3	$3.00	1,200,000	$3,600,000
3	Mass excavation, drill & blast rock	m3	$5.00	400,000	$2,000,000
4	Mass rock dump fill	m3	$1.00	720,000	$720,000
5	Compacted engineered fill	m3	$3.50	240,000	$840,000
6	Base course, 75 mm minus, 100 mm thick	lm	$50	13,500	$675,000
7	Surface course, 40 mm minus, 50 mm thk.	lm	$27	13,500	$364,500
8	Asphalt surface, 75 mm thick	lm	$110	0	$0
9	CMP culvert, 30" diameter	lm	$150	540	$81,000
10	Guard rail, CMP w/ wooden posts	lm	$20	4,000	$80,000
	Total				**$8,960,500**

The realignment of the main highway due to conflicts with the future tailing embankment and mine waste dumps will be required.

6. OPTION 4 – PERMANENT QUEBRADA HUAYRONDO

This option is identical to Option 3 with the exception of this road would be constructed as a permanent Cerro Verde mine site access route.

The cost of this road is estimated to be $12,021,000 as summarized in Table 6-1.

Table 6-1 Quebrada Huayrondo Permanent Route Cost Summary

Item	Description	Unit	Unit Cost	Quantities	Item Cost
1	Mass excavation of overburden	m3	$1.50	500,000	$750,000
2	Mass excavation, rippable rock	m3	$3.00	1,500,000	$4,500,000
3	Mass excavation, drill & blast rock	m3	$5.00	500,000	$2,500,000
4	Mass rock dump fill	m3	$1.00	900,000	$900,000
5	Compacted engineered fill	m3	$3.50	300,000	$1,050,000

Table 6-1 Quebrada Huayrondo Permanent Route Cost Summary

Item	Description	Unit	Unit Cost	Quantities	Item Cost
6	Base course, 75 mm minus, 100 mm thick	lm	$50	13,500	$675,000
7	Surface course, 40 mm minus, 50 mm thk.	lm	$27	0	$0
8	Asphalt surface, 75 mm thick	lm	$110	13,500	$1,485,000
9	CMP culvert, 30" diameter	lm	$150	540	$81,000
10	Guard rail, CMP w/ wooden posts	lm	$20	4,000	$80,000
	Total				**$12,021,000**

The realignment of the main highway due to conflicts with the future tailing embankment and mine waste dumps would not be required.

Cerro Verde Primary Sulfide Project

Construction Access Road Alternatives Comparison

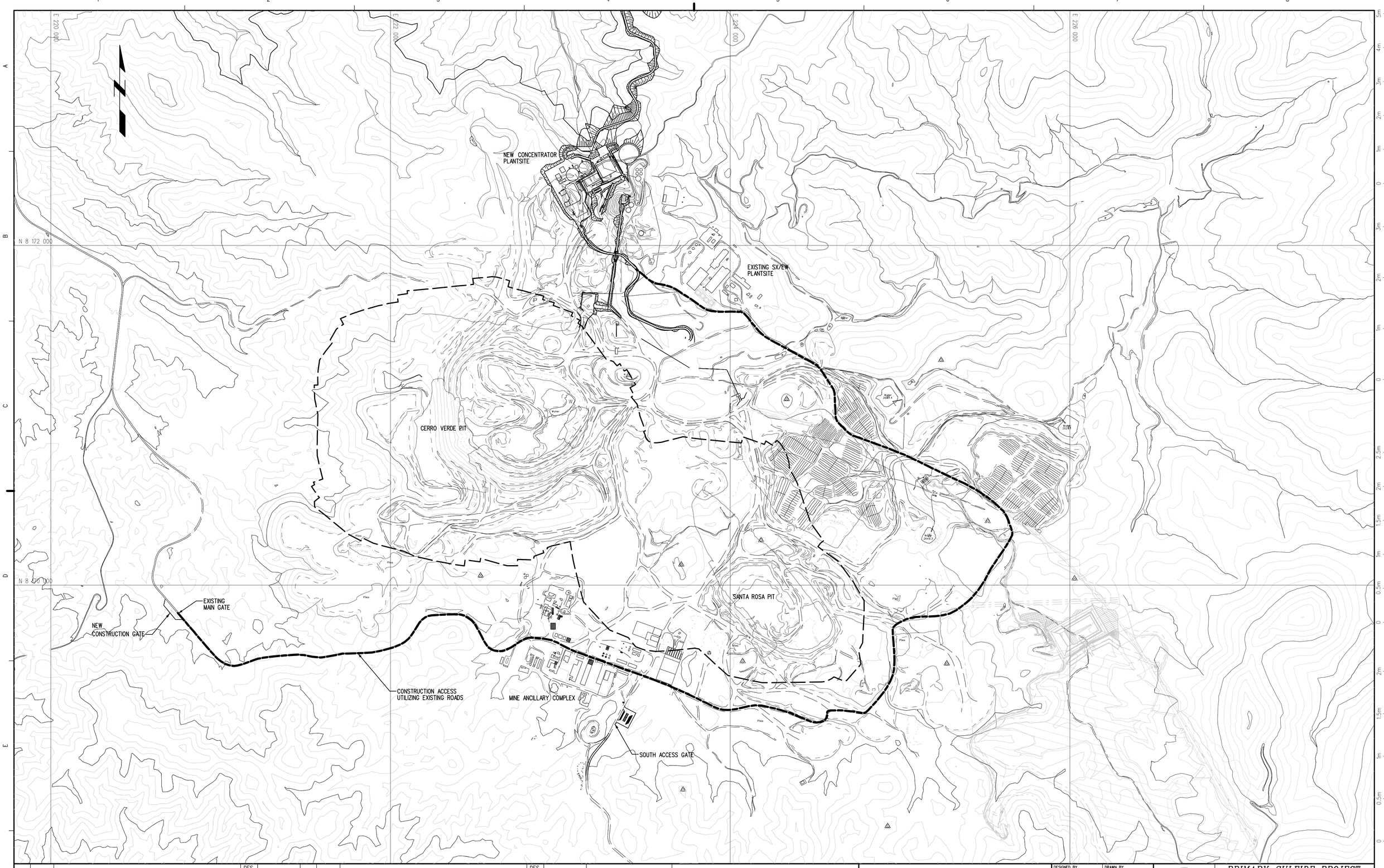
Captial Cost for Option 4 - Permanent Road up Quebrada Huayrondo

Project No. 12760600

Date: Feb. 27, 2004

Rev.: A

Item	Description	Unit	Unit Cost	Quantities	Item Cost
1	Mass excavation of overburden	m3	$1.50	500000	$750,000
2	Mass excavation, rippable rock	m3	$3.00	1500000	$4,500,000
3	Mass excavation, drill & blast rock	m3	$5.00	500000	$2,500,000
4	Mass rock dump fill	m3	$1.00	900000	$900,000
5	Compacted engineered fill	m3	$3.50	300000	$1,050,000
6	Base course, 75 mm minus, 100 mm thick	lm	$50.00	13500	$675,000
7	Surface course, 40 mm minus, 50 mm thk.	lm	$27.00	0	$0
8	Asphalt surface, 75 mm thick	lm	$110.00	13500	$1,485,000
9	CMP culvert, 30" diamter	lm	$150.00	540	$81,000
10	Guard rail, CMP w/ wooden posts	lm	$20.00	4000	$80,000
				Total:	**$12,021,000**



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DESIGNED BY	DRAWN BY
P. LO	C. HAJDU
CHECK DESIGN	CHECK DRAWING
SUPERVISOR	APPROVAL DATE
LEAD ENGINEER/SPECIALIST	ENGINEERING MANAGER
PROJECT MANAGER	APPROVAL DATE
CLIENT	APPROVAL DATE

Cerro Verde

PRIMARY SULFIDE PROJECT FEASIBILITY STUDY

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AREQUIPA-PERU

CONSTRUCTION ACCESS STUDY OPTION 1

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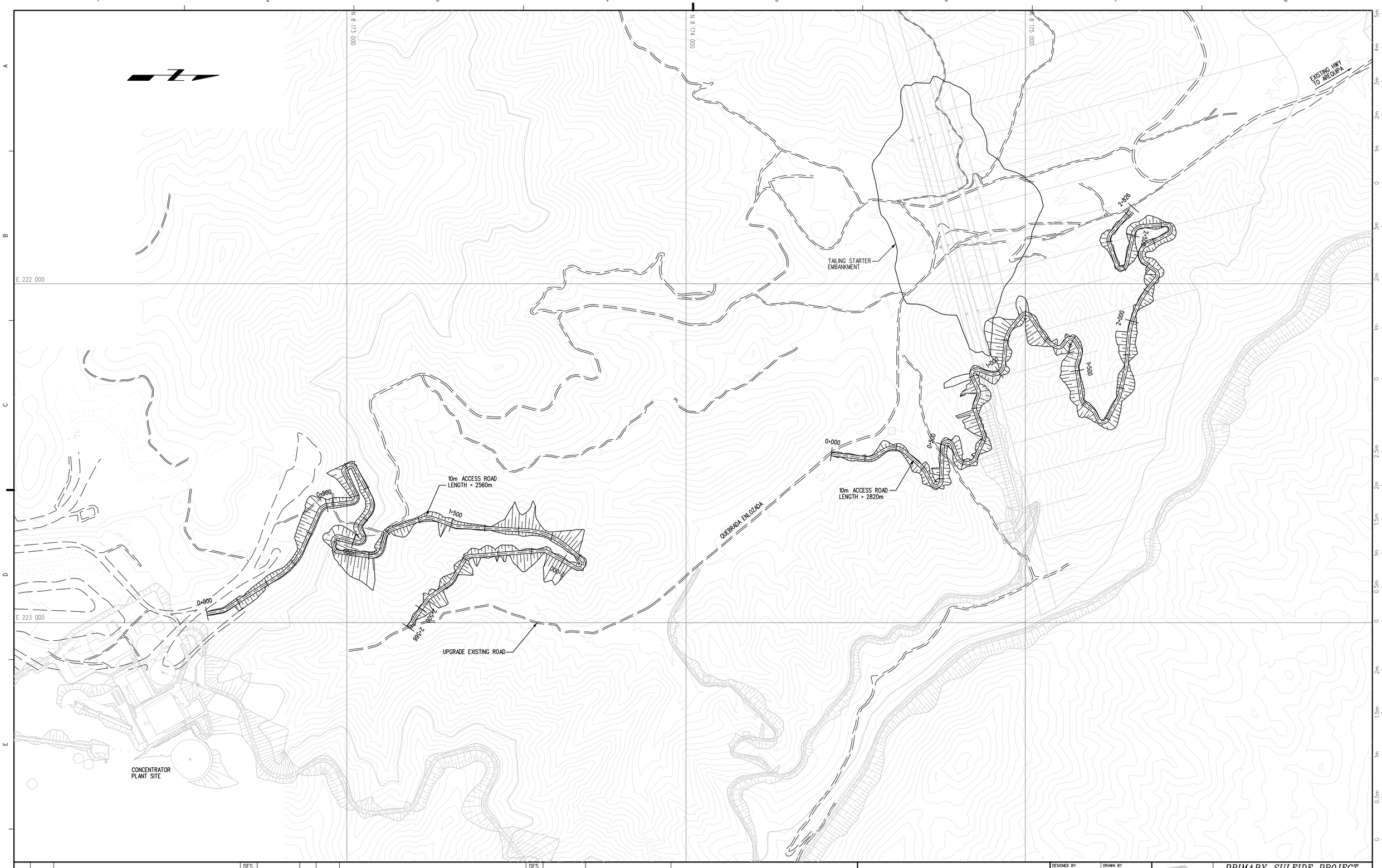

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PROJECT MANAGER	APPROVAL DATE
CLIENT	APPROVAL DATE

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PRIMARY SULFIDE PROJECT
FEASIBILITY STUDY
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AREQUIPA-PERU

CONSTRUCTION ACCESS STUDY OPTION 2

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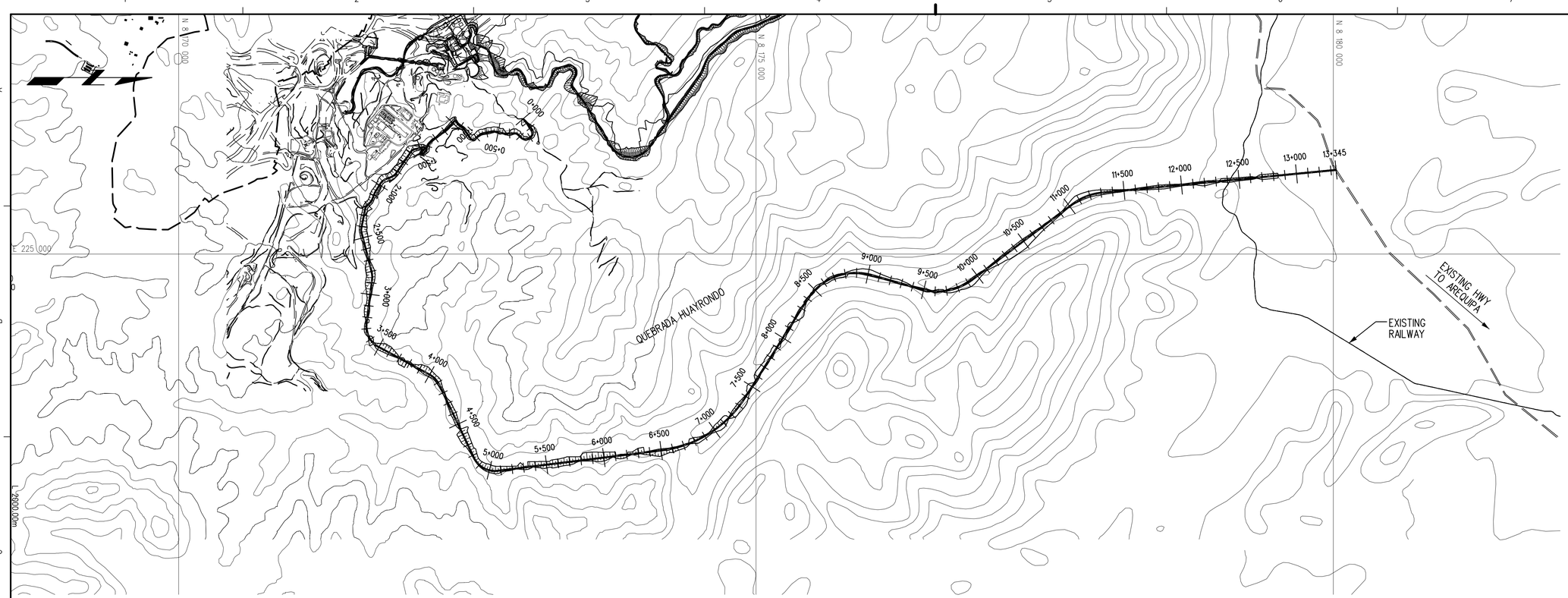

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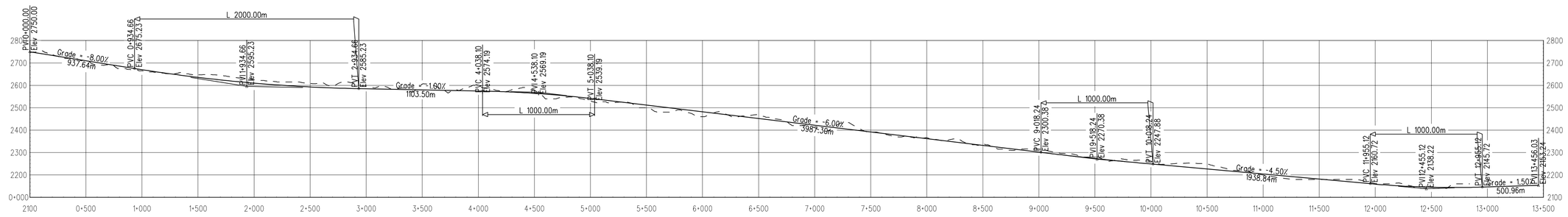

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PROJECT MANAGER	APPROVAL DATE
CLIENT	APPROVAL DATE

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PRIMARY SULFIDE PROJECT FEASIBILITY STUDY

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AREQUIPA-PERU

CONSTRUCTION ACCESS STUDY OPTIONS 3 & 4

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