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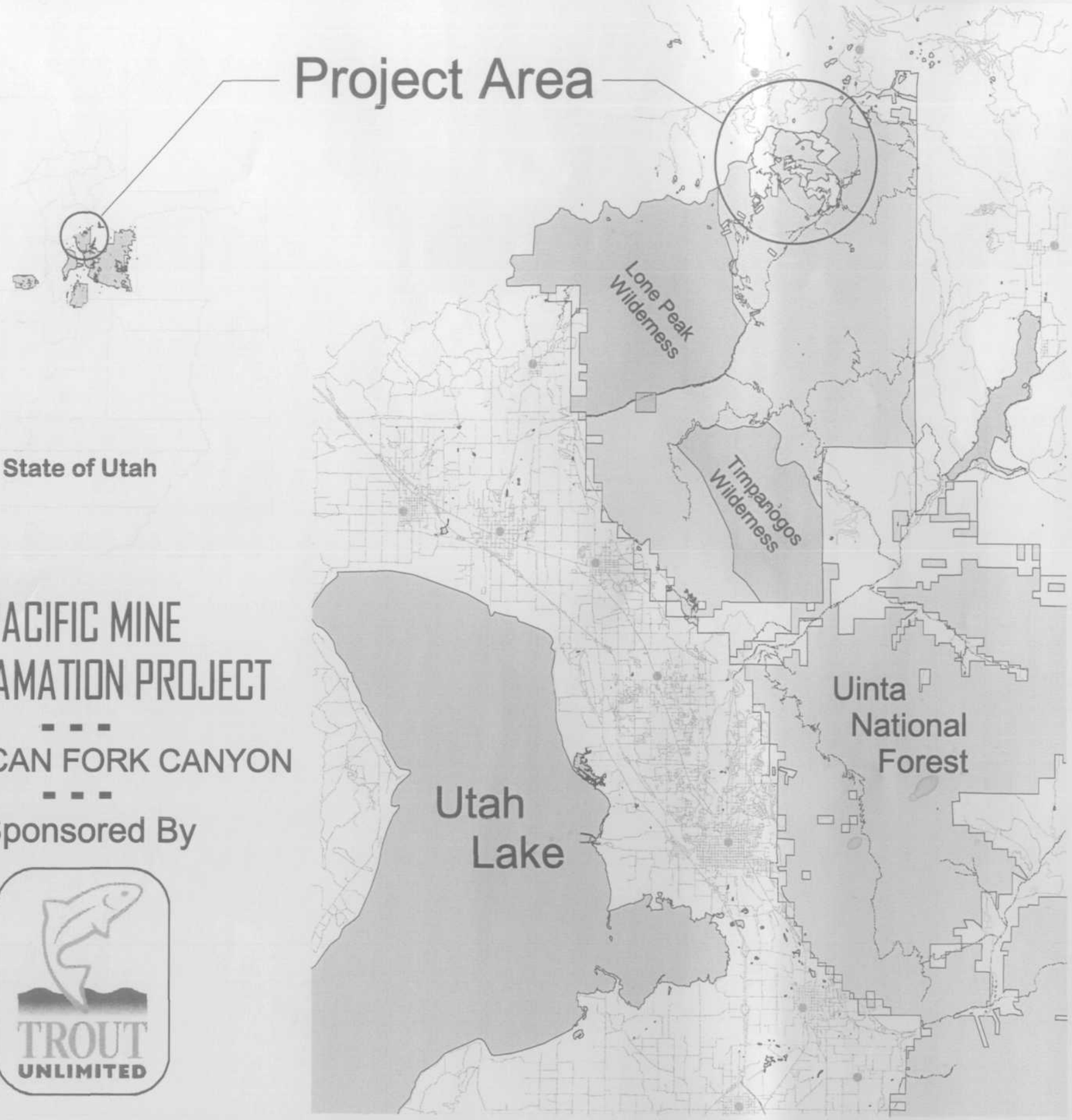

PACIFIC MINE RECLAMATION PROJECT

- - -

AMERICAN FORK CANYON

- - -

Sponsored By

TROUT UNLIMITED

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16	Scotchman #2 Removal Plan
17	Borrow Area Excavation Plan
18	Borrow Area Cross Sections
19	Miller Hill Tunnel Reclamation Plan
20	Guardrail and Signing Details

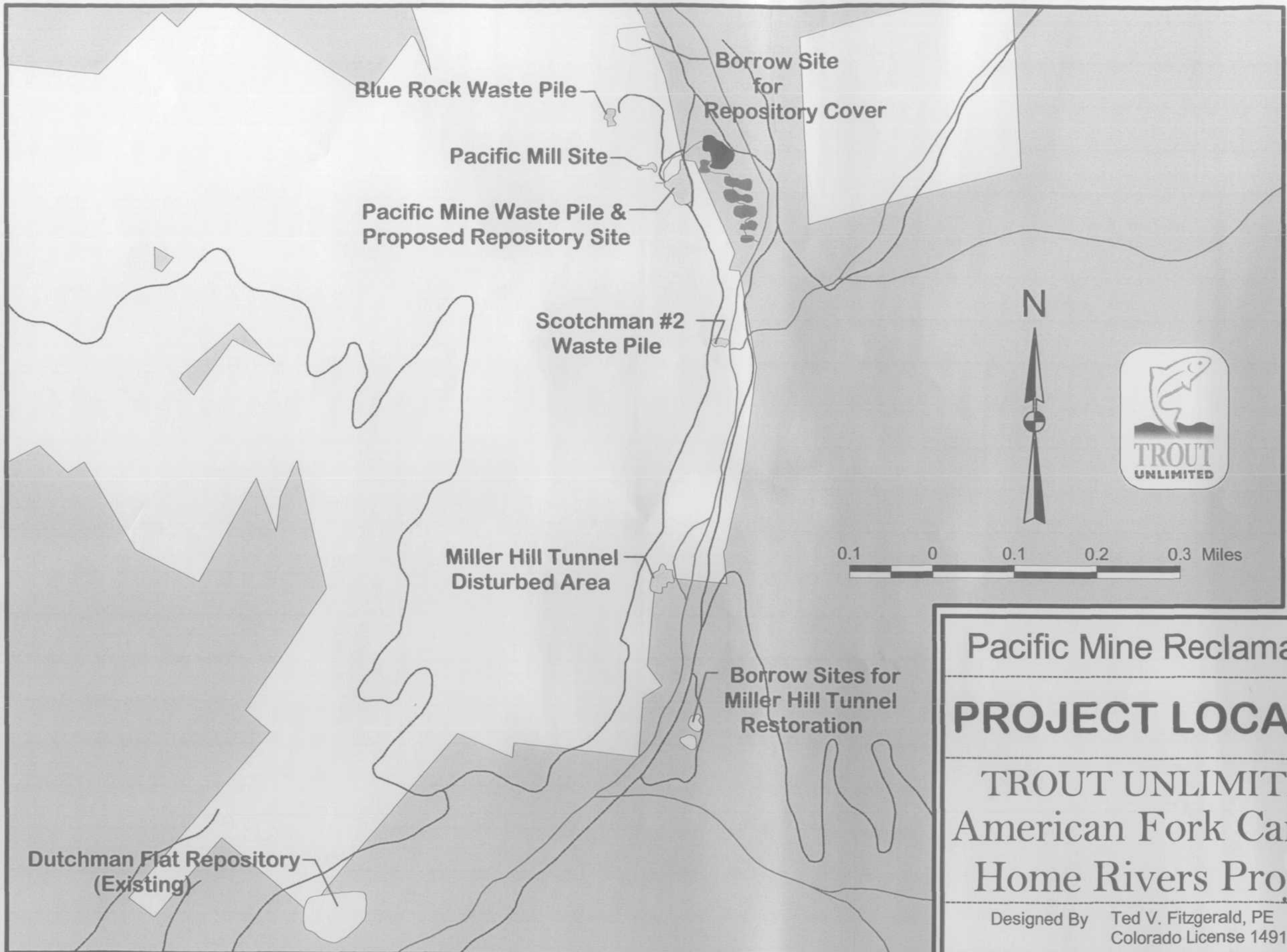
Project Preparation and Approval

Prepared By_____
Ted V. Fitzgerald, PE Colorado 14917
Trout Unlimited's Home Rivers Project Manager

Approved By_____
Bob Bonar, Snowbird Corp General Manager
Private Land Owner's Representative

Approved By_____
Pete Karp, Forest Supervisor
Uinta National Forest

Approved By_____
Pete Stevenson, On-Scene Coordinator
Environmental Protection Agency



Project Description

This project includes the excavation and disposal of mining wastes at Pacific mine and mill sites, Scotchman #2 mine, Blue Rock mine, and reclamation of the disturbed area at the Miller Hill Tunnel site.

The waste materials will be deposited in a Repository to be constructed at the Pacific mine waste rock pile location. The Repository will be capped with native soils.

Project Location

The project is located in the North Fork of American Fork Canyon. Travel Utah 92 from American Fork City thruTimpanogos Cave National Monument to an intersection with FR 085 at the North Fork. The project is 8 miles up the North Fork.

FR 085 is paved to Tibble Fork Reservoir, improved and graveled for the next two miles. The last three miles is unimproved dirt road impassable to semi truck/trailers.

Road Requirements

The access road for this project is under the jurisdiction of the Forest Service. Any work done on the road must be approved by the FS and done to meet FS standards.

The Miller Hill access road at Pacific mine (private property) is to be relocated to the toe of the Repository. Guardrails are to be installed on both sides of the new road segment to prevent vehicle access to the reclaimed lands and the Repository.

The road to the Blue Rock mine requires widening to allow use by haul trucks during removal of those wastes. After the waste pile is removed the road to Blue Rock will be obliterated and made impassable.

Pacific Mine Reclamation Project

PROJECT LOCATION MAP

TROUT UNLIMITED
American Fork Canyon
Home Rivers Project

Designed By Ted V. Fitzgerald, PE
Colorado License 14917

Sheet
2 of 20

STAGE 1 - 2005 CONSTRUCTION

Initiate Pacific Reclamation Project

Summary of Quantities

Item	Description	Unit of Measurement	Method of Measurement	Quantity
201(03)	Clearing, Borrow area	Lump Sum	Lump Sum Quantity(LSQ)	1
203(11)a	Embankment, Borrow for road	CY	Actual Quantity (AQ)	200
203(19)	Strip and stockpile 3 inches of topsoil from borrow area	CY	Design Quantity (DQ)	250
204(05)	Straw/hay bales	Each	AQ	20
204(07)	Silt Fence	Feet	AQ	250
306(05)	Reconditioning of roadbed, Blue Rock Mine Access	Feet	AQ	600
601(01)	Mobilization, 2005	LS	LSQ	1
603(03)a	18 inch culvert	Feet	AQ	22
605(05)	Special pipe connection	LS	LSQ	1
606(01)a	Remove and reinstall guardrail	Feet	AQ	300
606(01) *	Guardrail system CRT, type IV, Class A (Weathering steel)	Feet	AQ	400
606(02) *	Terminal section, Flared	Each	AQ	8
607(01)	Fence, barbed wire, 3 strand	Feet	AQ	400
633(12)a	Sign, closure	Each	AQ	3
633(12)b	Sign, interpretive	Each	AQ	3

* Purchase and stockpile for installation in 2006

STAGE 2 - 2006 CONSTRUCTION

Complete Pacific Reclamation Project

Summary of Quantities

Item	Description	Unit of Measurement	Method of Measurement	Quantity
201(03)	Clearing, Repository	Lump Sum	Lump Sum Quantity(LSQ)	1
202(05)	Remove and salvage barbed wire fence	LS	LSQ	1
203(02)a	Excavation, Pacific Mill	Cubic Yard (CY)	DQ	500
203(02)b	Excavation, Pacific Mine	CY	DQ	900
203(02)c	Excavation, Blue Rock Mine	CY	AQ	3,500
203(02)d	Excavation, Scotchman #2 Mine	CY	AQ	1,000
203(11)d	Embankment, Repository Cover	CY	AQ	4,500
203(18)a	Interceptor Ditch	Feet	AQ	350
203(23)	Reshape borrow area and borrow stockpile areas	LS	LSQ	1
204(05)	Straw/hay bales	Each	AQ	20
204(07)	Silt Fence	Feet	AQ	50
210(05)b	Obliterate road, Blue Rock Mine	Feet	AQ	350
221(02)b	Composite liner, Repository	Square Yards SY	AQ	900
231(01)	Placed Riprap, class 7, method B (Interceptor Ditch)	CY	AQ	210
306(06)	Recondition haul road (North Fork)	Feet	AQ	500
601(01)	Mobilization, 2006	LS	LSQ	1
603(03)b	Adjust ground water monitoring well, Pacific	Each	AQ	1
606(01)a	Install guardrail, Repository	Feet	AQ	400
624(04)a	Placing topsoil, Borrow area	CY	AQ	250
625(02)a	Seeding, Broadcast method, w/ mulch and fertilizer	Acre	AQ	2.38
625(03)	Fabric, Slope stabilization	SY	AQ	1300
633(12)a	Install sign	Each	AQ	6

STAGE 3 - 2006 CONSTRUCTION

Cap Miller Hill Tunnel Disturbed Area

Summary of Quantities

Item	Description	Unit of Measurement	Method of Measurement	Quantity
202(06)	Rock barrier, Remove and replace	LS	LSQ	1
203(11)d	Embankment, Miller Hill Tunnel Cap	CY	AQ	650
203(24)	Temporary stream crossing	LS	LSQ	1
204(05)	Straw/hay bales	Each	AQ	20
204(07)	Silt Fence	Feet	AQ	100
306(06)	Recondition haul roads	Feet	AQ	900
625(02)a	Seeding, Broadcast method, w/ mulch and fertilizer	Acre	AQ	0.70
633(12)a	Install sign	Each	AQ	1

Summary of Revegetation

LOCATION	ACRES
Repository	1.00
Pacific Mill	0.21
Blue Rock Mine	0.29
Scotchman #2 Mine	0.04
Blue Rock Road	0.12
Borrow Area	0.62
SUBTOTAL Stage 2	2.28
Miller Hill Tunnel	0.39
Miller Hill Tunnel Borrow Area	0.28
SUBTOTAL Stage 3	0.67
TOTAL	3.00

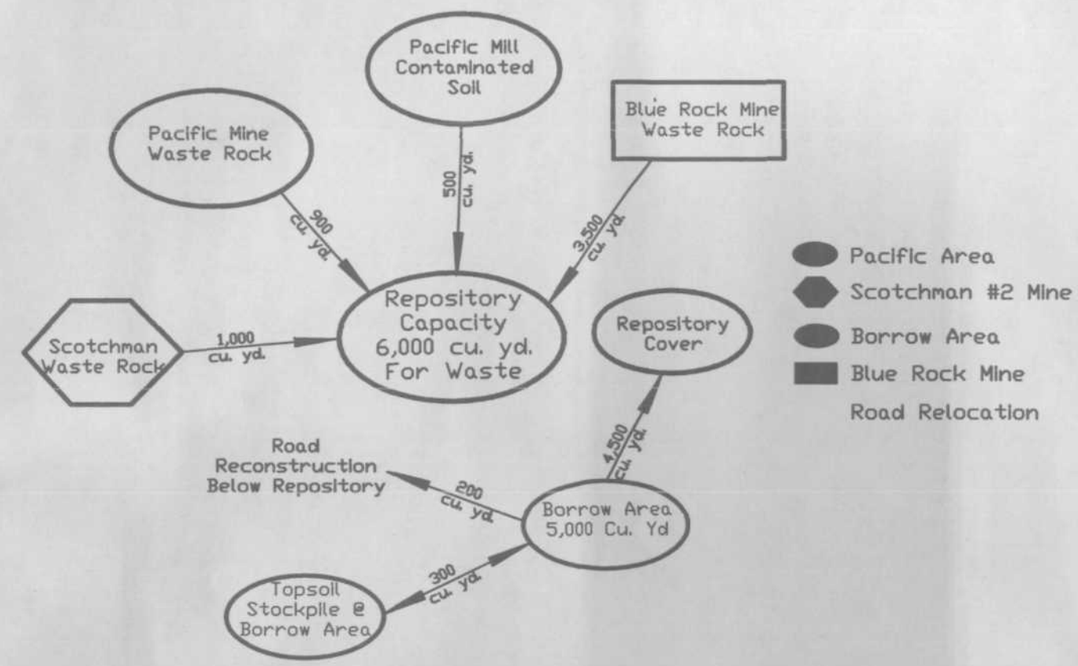
Road Reconditioning Summary

Location	Length (ft)	Ave. Width (ft)	Area (acres)
Blue Rock Mine	600	14	0.19
Borrow to Pacific	500	16	0.18
Miller Hill Borrow	900	14	0.29
TOTAL	1,620 feet		0.66

Road Obliteration Summary

Location	Length (ft)	Ave. Width (ft)	Area (acres)
Blue Rock Mine	350	15	0.12

Earthwork Utilization Diagram



Pacific Mine Reclamation Project

UTILIZATION OF MATERIALS
SUMMARY OF QUANTITIES

TROUT UNLIMITED
American Fork Canyon
Home Rivers Project

Prepared By
TVF
March 2005

Modified

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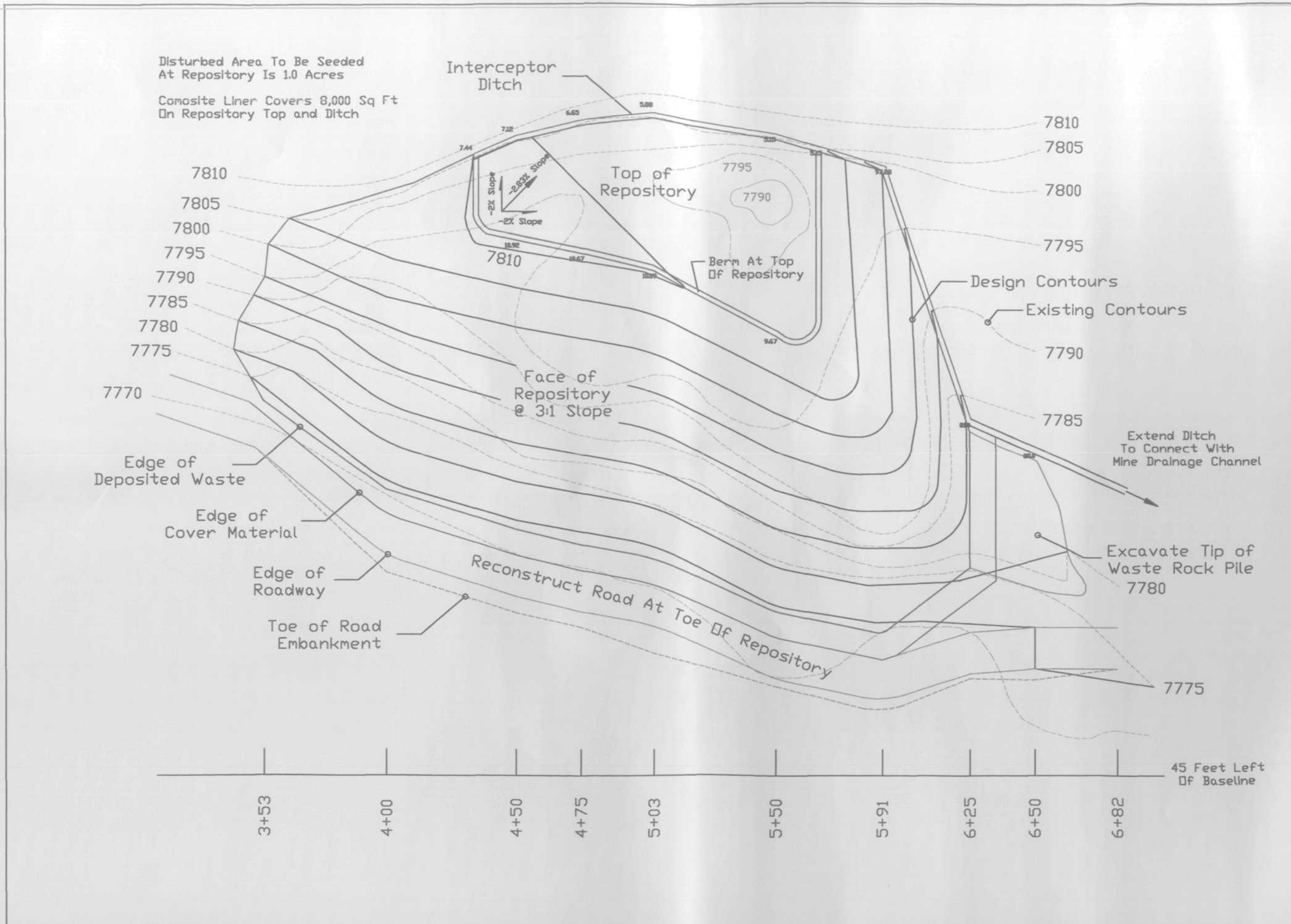


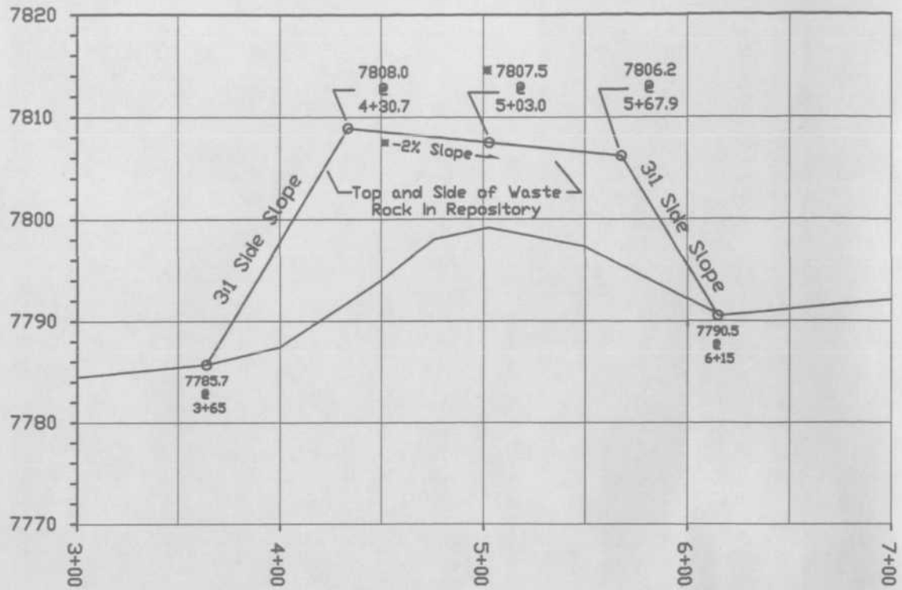
Sheet 4 of 20

Prepared By
TVF
January 2005
Modified

North Fork of American Fork Canyon

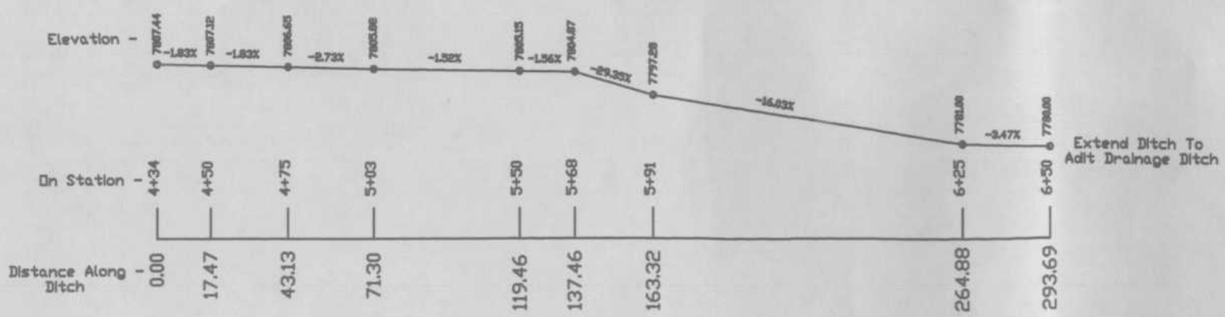
Repository Plan Contours

Pacific Mine Reclamation Project

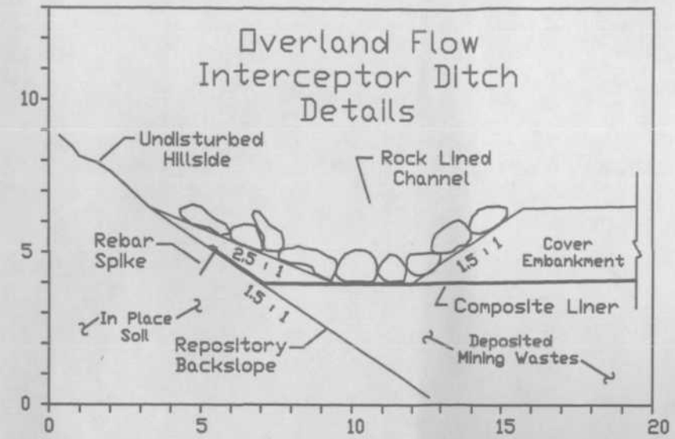


Repository Grade Control Profile *

Note: The top of the Repository is controlled by the Grade Control Profile. The Grade Control Profile is located 220 feet left of the baseline and is based on Elevation 7807.5 at Station 5+03 and a 2% slope.

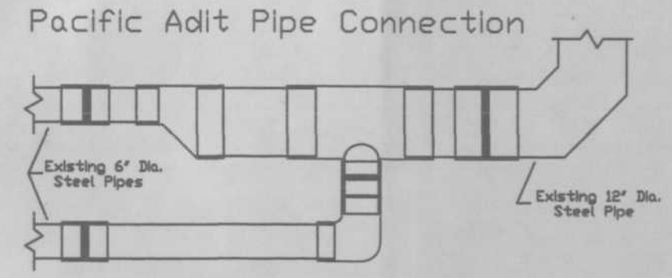


Interceptor Ditch Profile



1. Extend repository liner across 4 foot flat bottomed ditch and up the 1.5 : 1 backslope for one foot. Secure the liner to the slope with #4 rebar spikes 1 foot long at 10 foot spacing.
2. Place soil over the liner and up the slope at a 2.5 : 1 slope, burying the end of the liner with this embankment.
3. Leave 1.5 feet of the liner exposed at the bottom of the ditch.
4. Place cover embankment over the repository, separating 160 cu. yds. of rock from the borrow material for placement in the interceptor ditch.
5. Place rock in ditch in a manner that will not damage the exposed liner, leaving voids between the rocks for passage of water.

Pacific Adit Pipe Connection



1. Drainage from the plugged Pacific Adit discharges from two six inch diameter steel pipes approximatley 2 feet apart center to center.
2. Approximatley six feet from the discharge pipes the mine drainage enters a 12 inch diameter steel pipe.
3. After field verifying all dimensions and distances, fabricate a water tight connection to connect the discharge pipes to the 12 inch drainage pipe and cover with 2 feet of borrow material.

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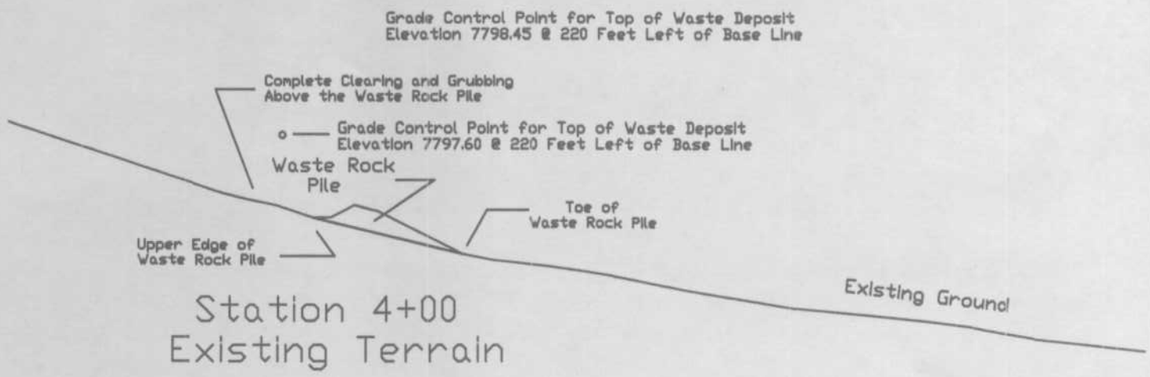
Prepared By TVF March 2005 Modified

North Fork of American Fork Canyon

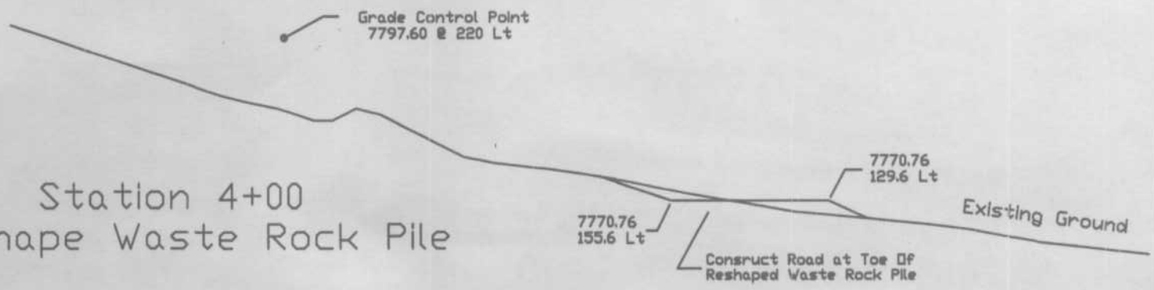
Repository Design Details

Pacific Mine Reclamation Project



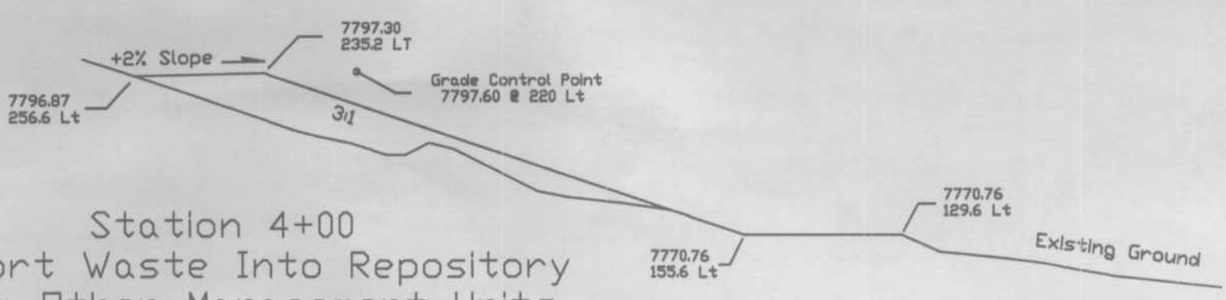
Station 4+00
Existing Terrain

Waste Excavation = 20 square feet
Borrow For Road = 27 square feet



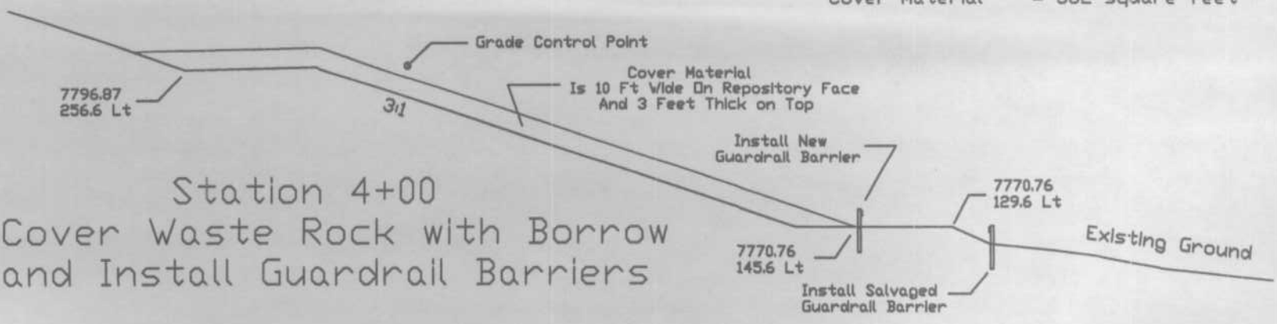
Station 4+00
Reshape Waste Rock Pile

Waste Excavation = 20 square feet
Waste Embankment = 359 square feet
Borrow For Road = 27 square feet



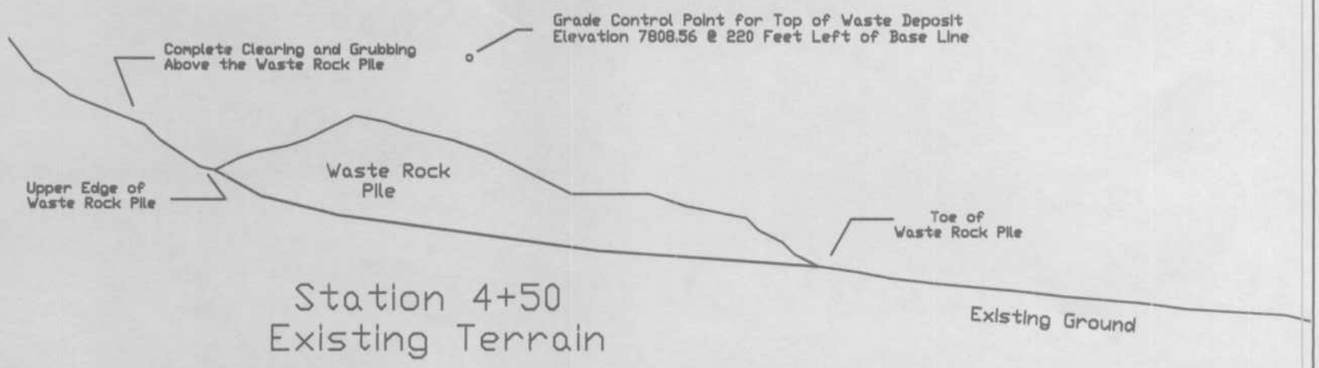
Station 4+00
Import Waste Into Repository
From Other Management Units

Waste Excavation = 20 square feet
Waste Embankment = 359 square feet
Borrow For Road = 27 square feet
Cover Material = 362 square feet



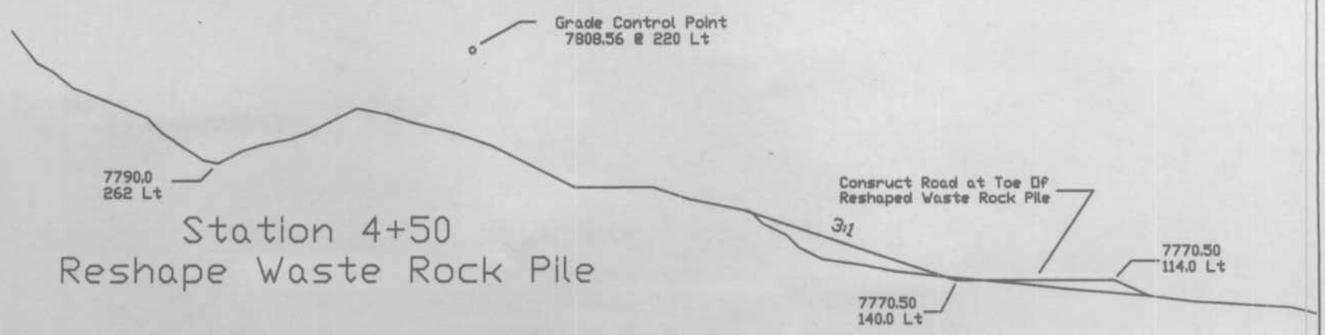
Station 4+00
Cover Waste Rock with Borrow
and Install Guardrail Barriers

Pacific Mine Reclamation Project	**Repository Construction Cross Sections Station 4+00**	North Fork of American Fork Canyon	Prepared By TVF January 2005 Modified	Sheet 6 of 20



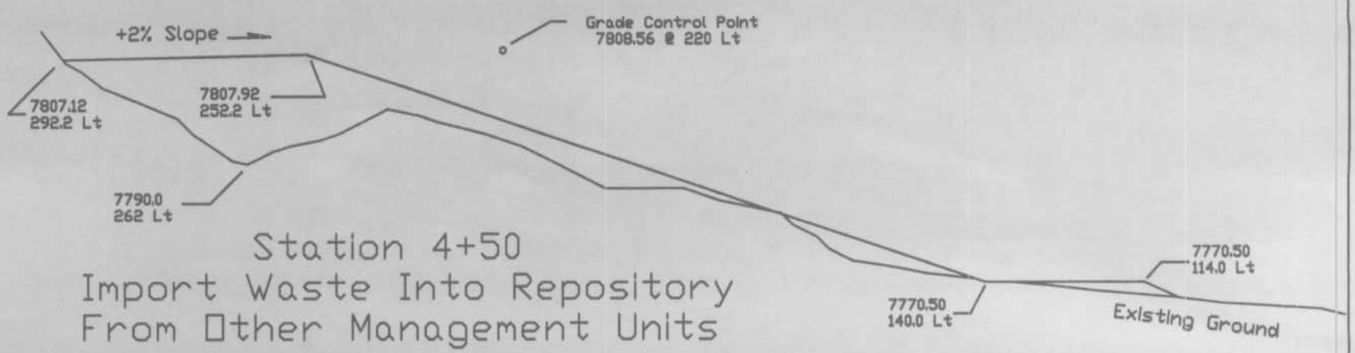
Station 4+50
Existing Terrain

Waste Excavation = 1 square feet
Borrow For Road = 27 square feet



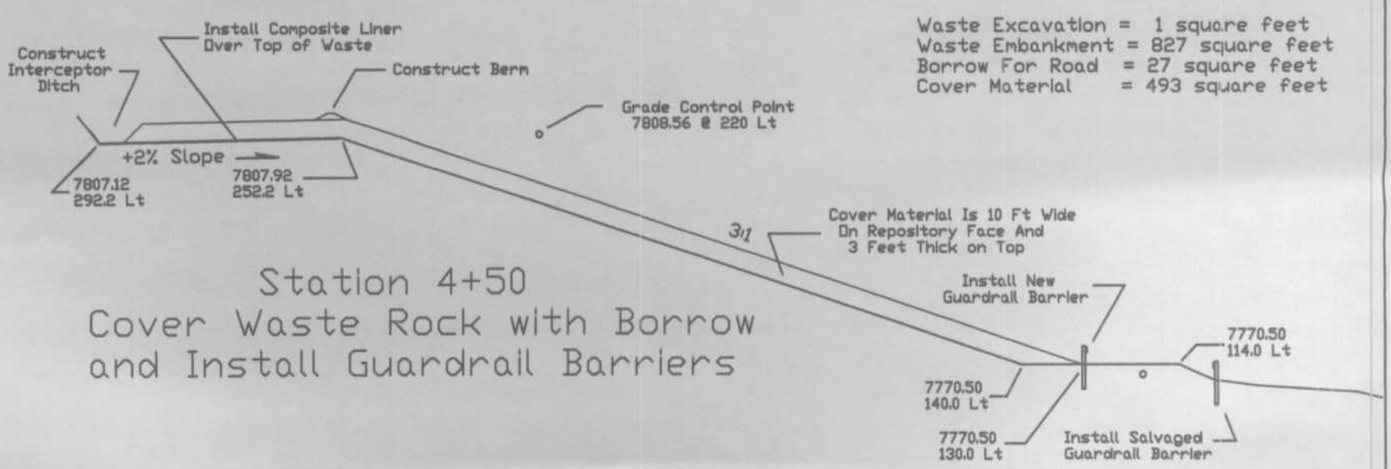
Station 4+50
Reshape Waste Rock Pile

Waste Excavation = 1 square feet
Waste Embankment = 827 square feet
Borrow For Road = 27 square feet



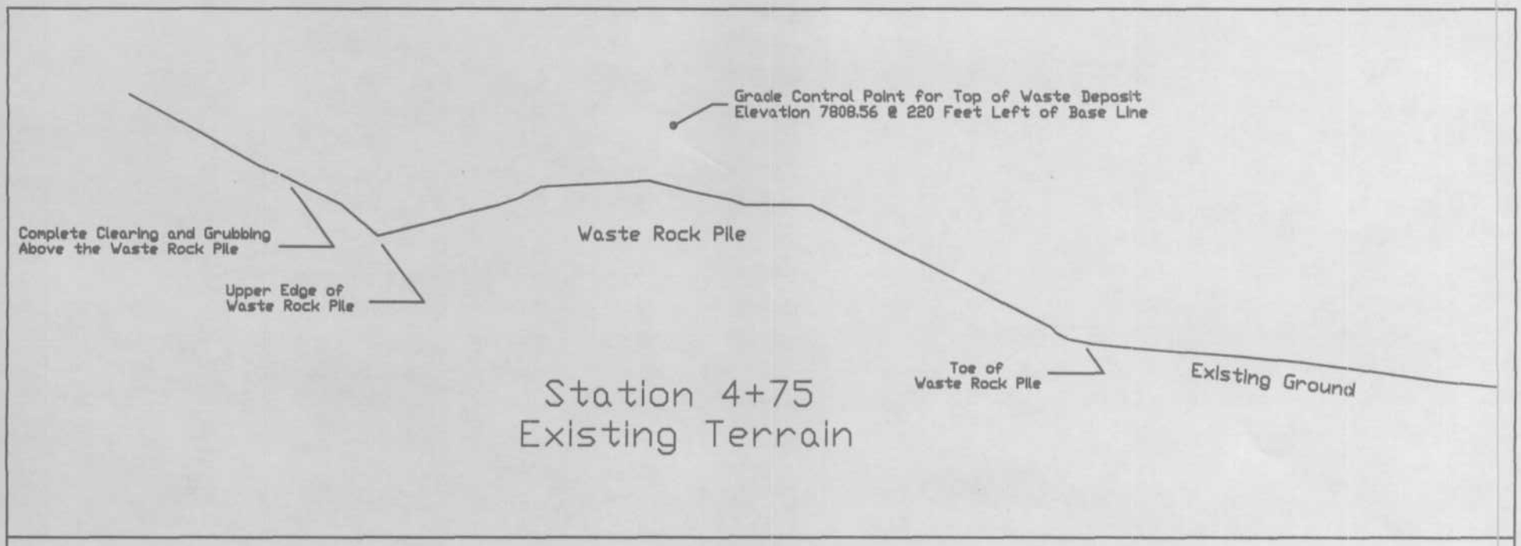
Station 4+50
Import Waste Into Repository
From Other Management Units

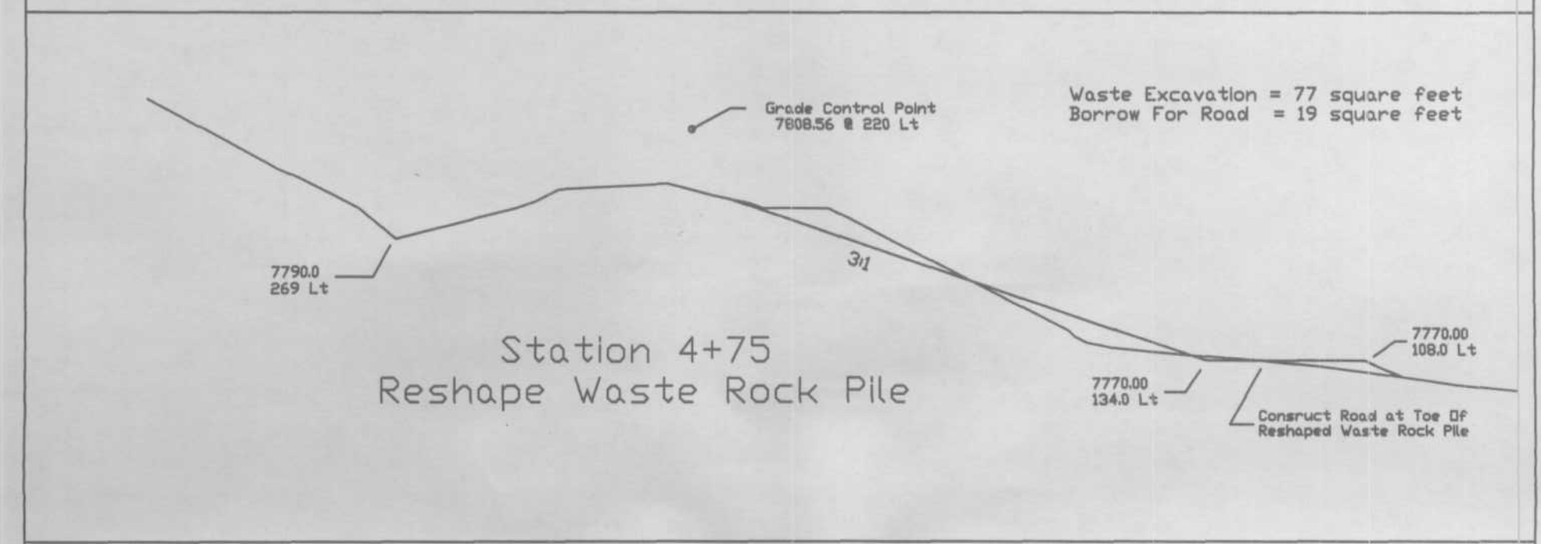
Waste Excavation = 1 square feet
Waste Embankment = 827 square feet
Borrow For Road = 27 square feet
Cover Material = 493 square feet

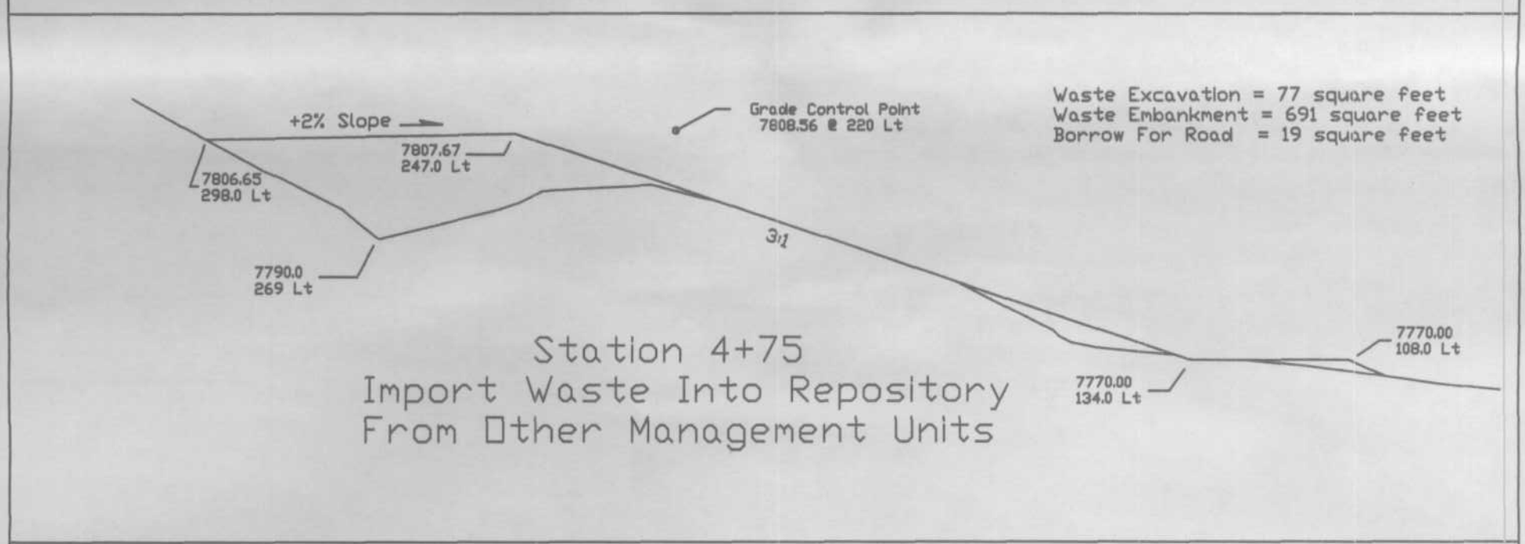


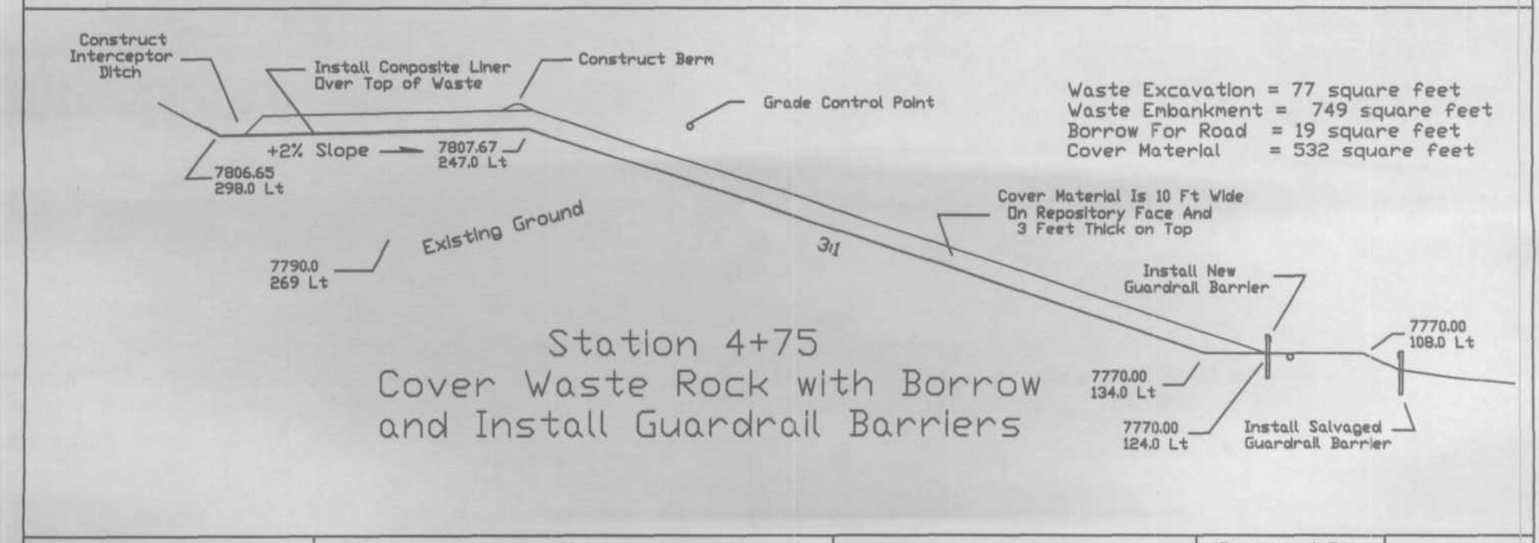
Station 4+50
Cover Waste Rock with Borrow
and Install Guardrail Barriers

Pacific Mine Reclamation Project	**Repository Construction Cross Sections Station 4+50**	North Fork of American Fork Canyon	Prepared By TVF January 2005 Modified	Sheet 7 of 20

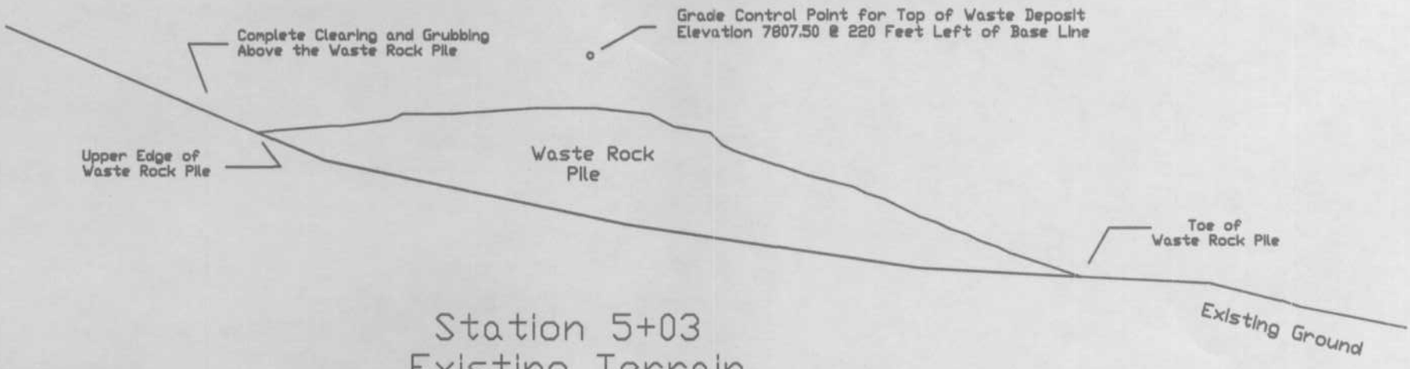




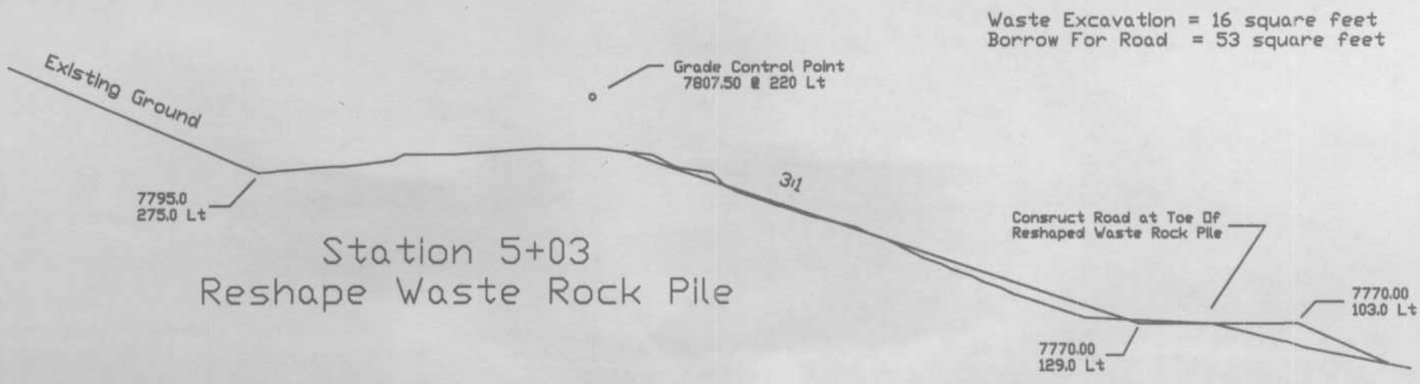




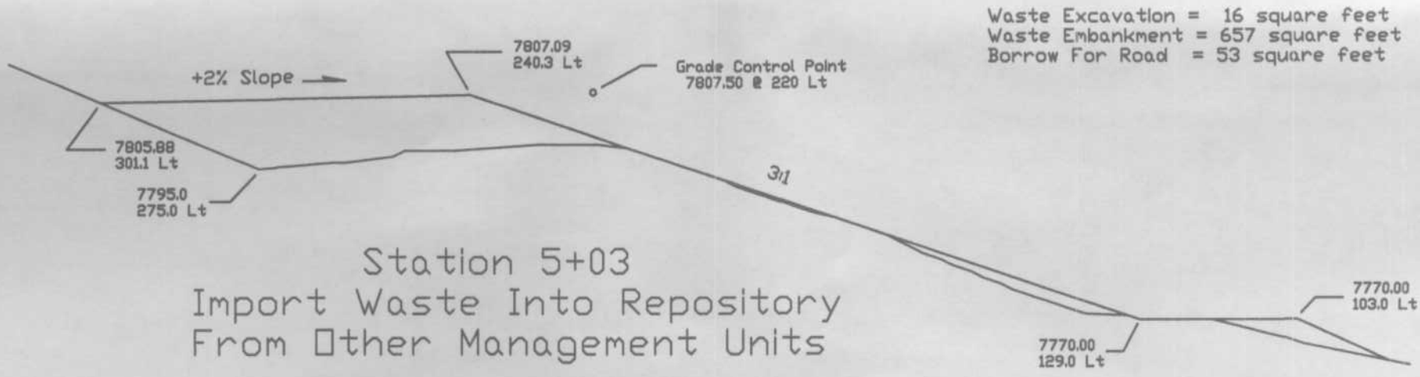
Pacific Mine Reclamation Project	**Repository Construction Cross Sections Station 4+75**	North Fork of American Fork Canyon	Prepared By TVF January 2005 Modified	Sheet 8 of 20



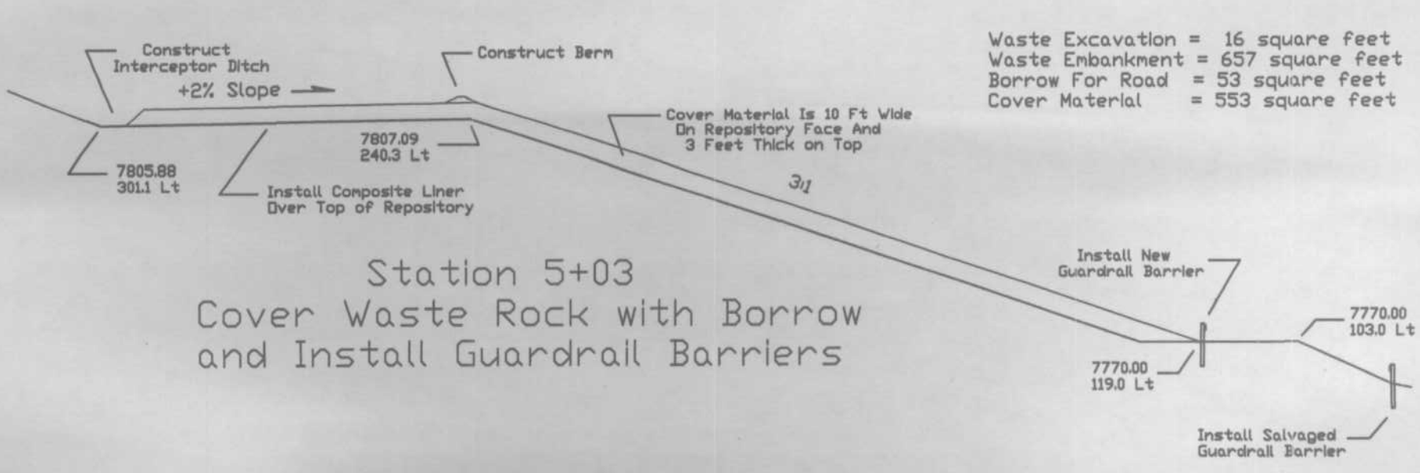
Station 5+03
Existing Terrain



Station 5+03
Reshape Waste Rock Pile

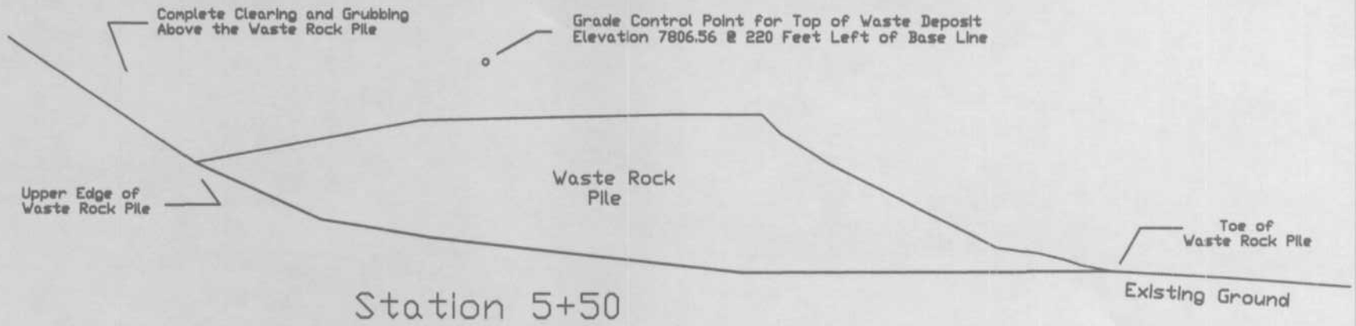


Station 5+03
Import Waste Into Repository
From Other Management Units



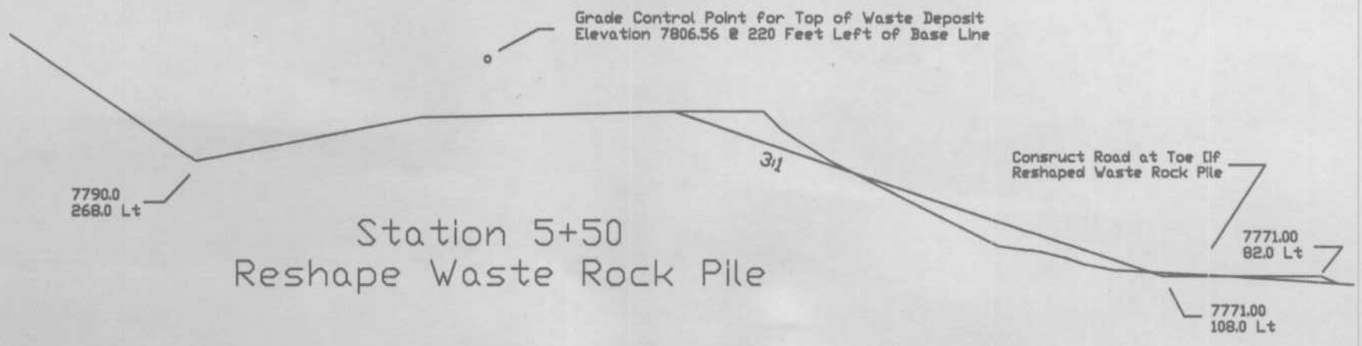
Station 5+03
Cover Waste Rock with Borrow
and Install Guardrail Barriers

Pacific Mine Reclamation Project	**Repository Construction Cross Sections Station 5+03**	North Fork of American Fork Canyon	Prepared By TVF January 2005 Modified	Sheet 9 of 20



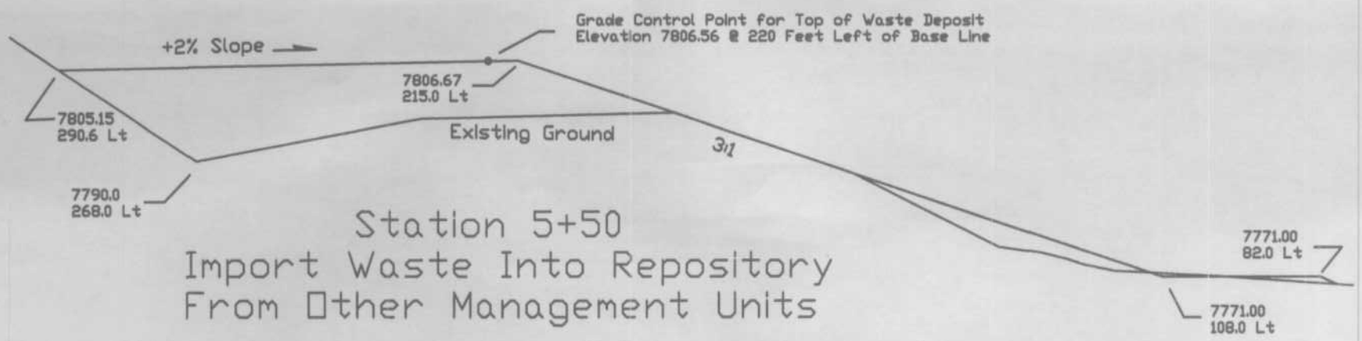
Station 5+50
Existing Terrain

Waste Excavation = 69 square feet
Borrow For Road = 10 square feet



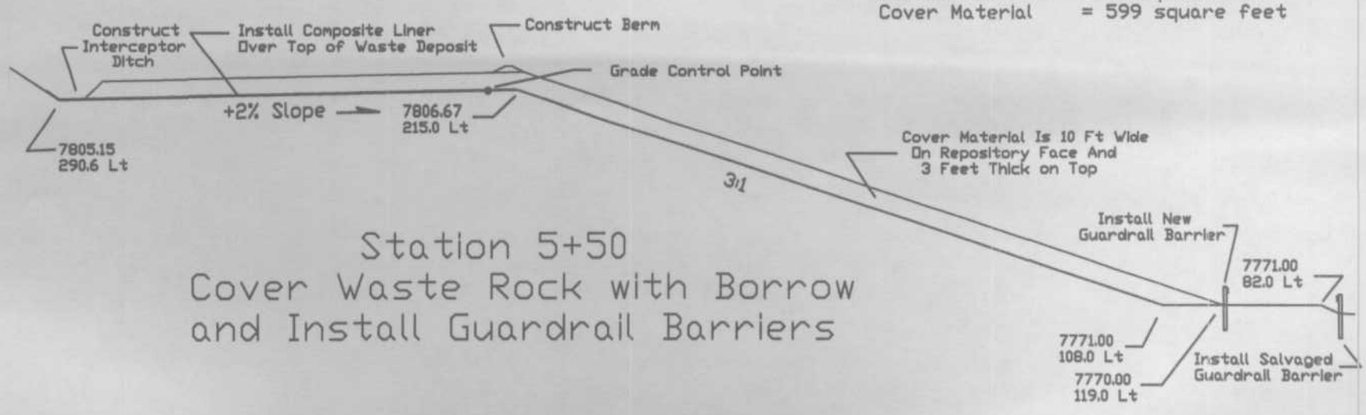
Station 5+50
Reshape Waste Rock Pile

Waste Excavation = 69 square feet
Waste Embankment = 1070 square feet
Borrow For Road = 10 square feet



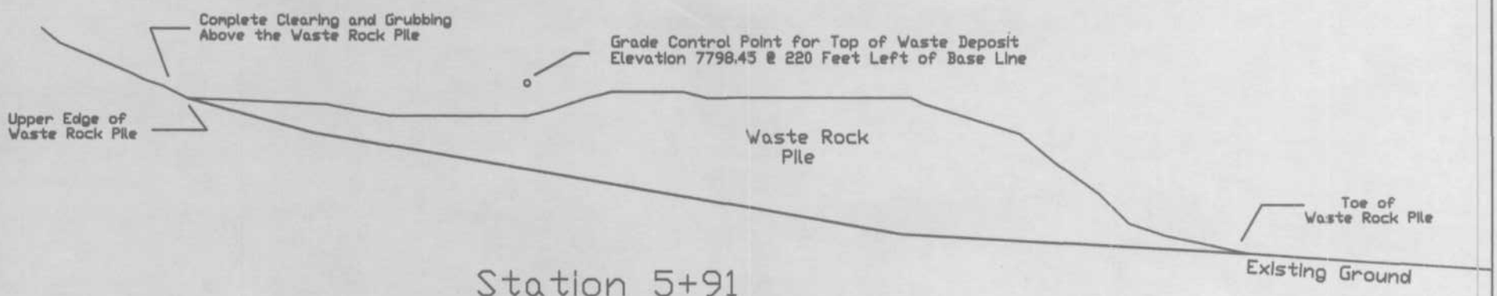
Station 5+50
Import Waste Into Repository
From Other Management Units

Waste Excavation = 69 square feet
Waste Embankment = 1070 square feet
Borrow For Road = 10 square feet
Cover Material = 599 square feet



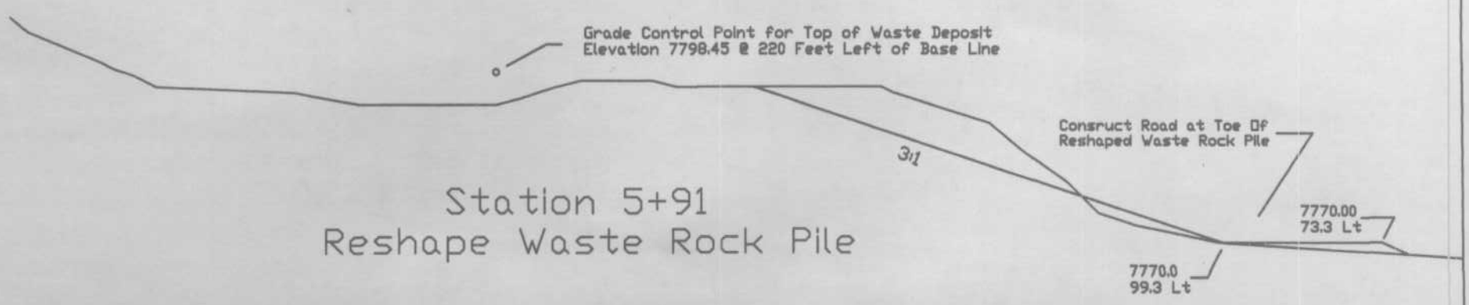
Station 5+50
Cover Waste Rock with Borrow
and Install Guardrail Barriers

Pacific Mine Reclamation Project	**Repository Construction Cross Sections Station 5+50**	North Fork of American Fork Canyon	Prepared By TVF January 2005 Modified	Sheet 10 of 20



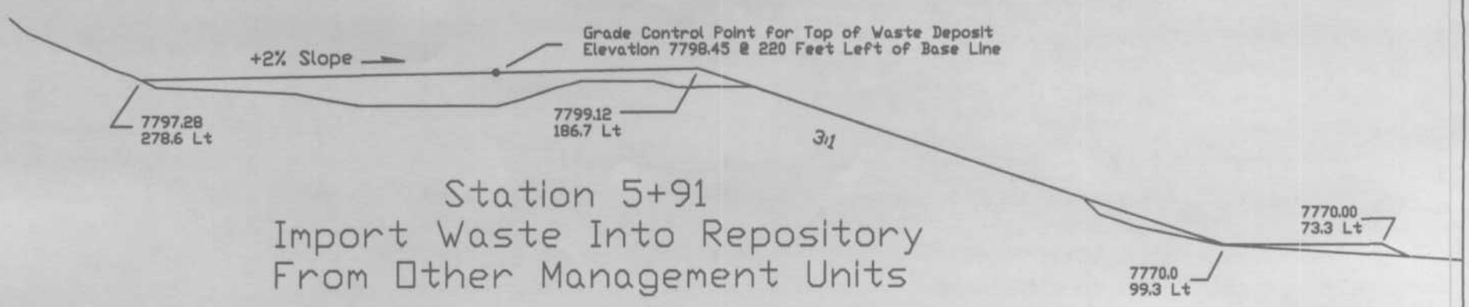
Station 5+91
Existing Terrain

Waste Excavation = 225 square feet
Borrow For Road = 26 square feet



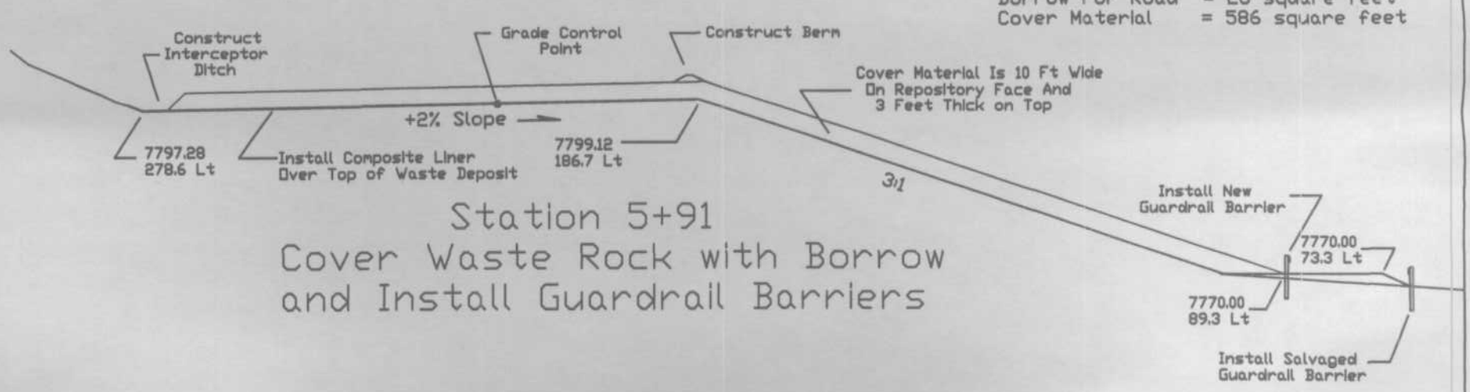
Station 5+91
Reshape Waste Rock Pile

Waste Excavation = 255 square feet
Waste Embankment = 326 square feet
Borrow For Road = 26 square feet



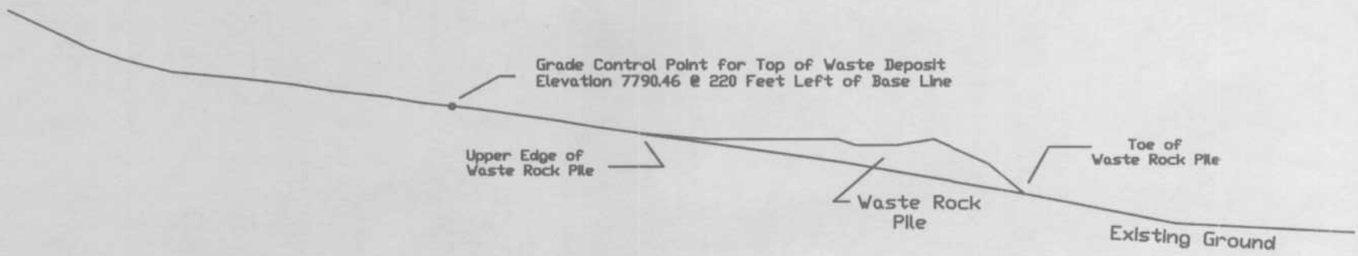
Station 5+91
Import Waste Into Repository
From Other Management Units

Waste Excavation = 255 square feet
Waste Embankment = 326 square feet
Borrow For Road = 26 square feet
Cover Material = 586 square feet



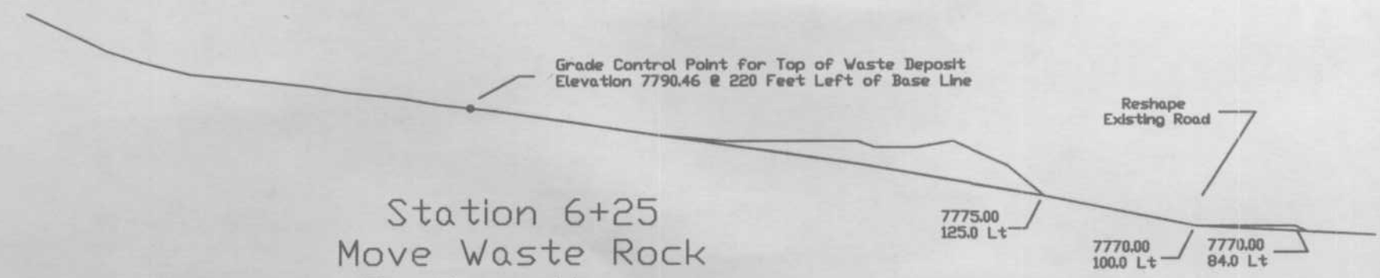
Station 5+91
Cover Waste Rock with Borrow
and Install Guardrail Barriers

Pacific Mine Reclamation Project	**Repository Construction Cross Sections Station 5+91**	North Fork of American Fork Canyon	Prepared By TVF January 2005 Modified	Sheet 11 of 20



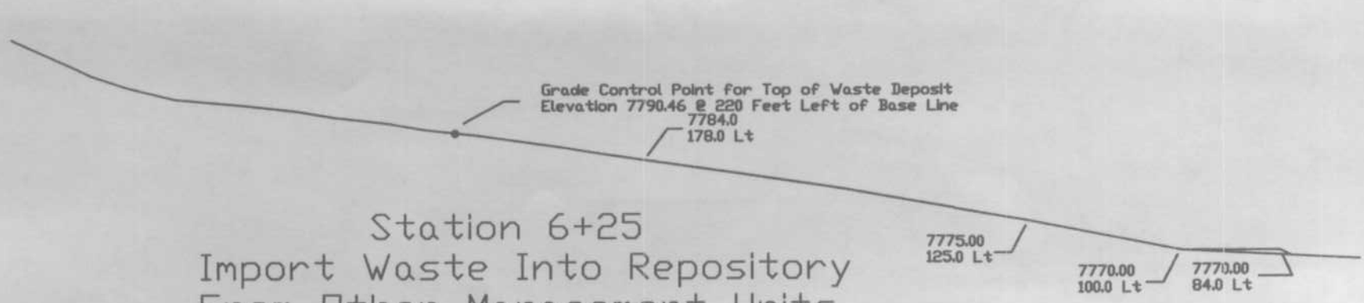
Station 6+25
Existing Terrain

Waste Excavation = 170 square feet
Borrow For Road = 7 square feet



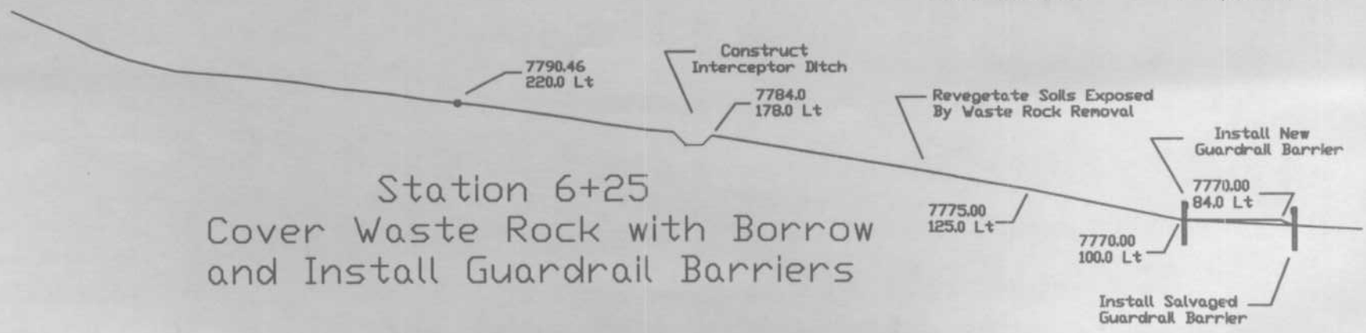
Station 6+25
Move Waste Rock
To Repository

Waste Excavation = 170 square feet
Waste Embankment = 0 square feet
Borrow For Road = 7 square feet



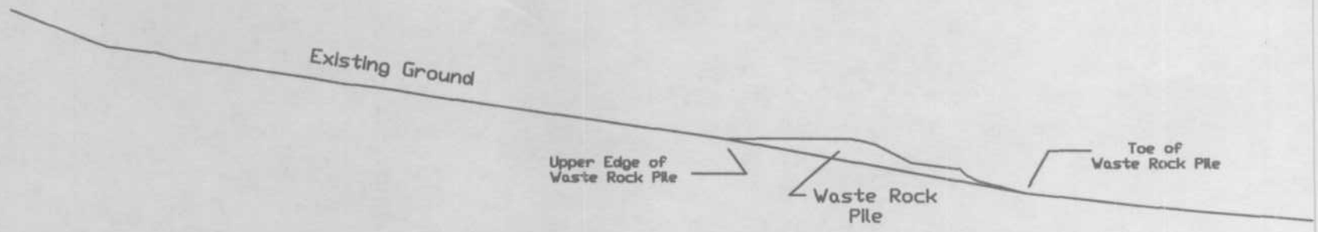
Station 6+25
Import Waste Into Repository
From Other Management Units

Waste Excavation = 170 square feet
Waste Embankment = 0 square feet
Borrow For Road = 7 square feet
Cover Material = 0 square feet



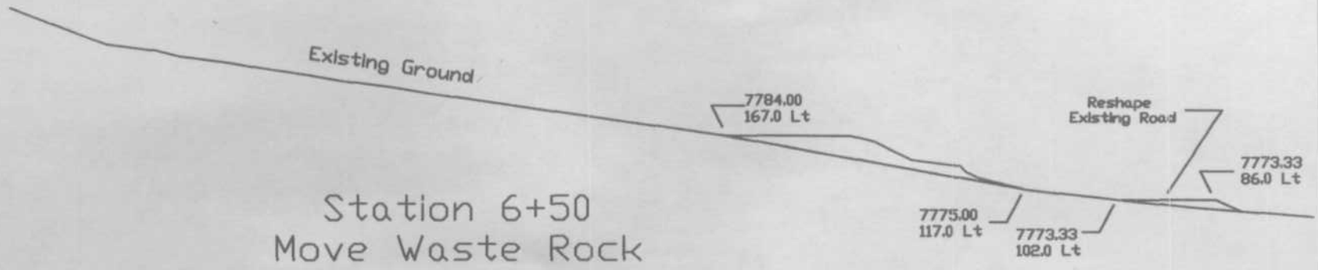
Station 6+25
Cover Waste Rock with Borrow
and Install Guardrail Barriers

Pacific Mine Reclamation Project	**Repository Construction Cross Sections Station 6+25**	North Fork of American Fork Canyon	Prepared By TVF January 2005 Modified	Sheet 12 of 20



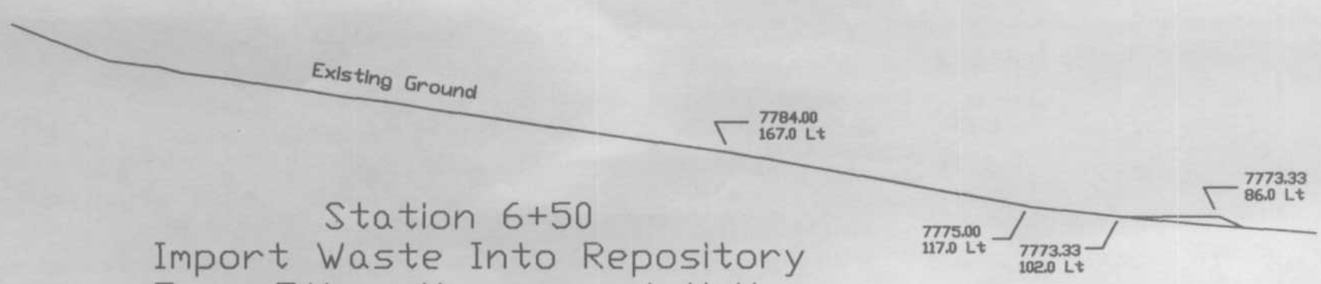
Station 6+50
Existing Terrain

Waste Excavation = 89 square feet
Borrow For Road = 16 square feet



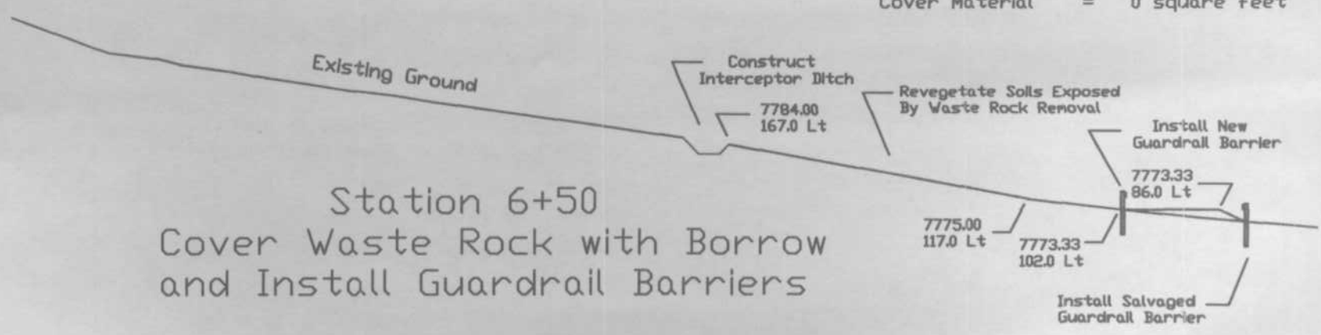
Station 6+50
Move Waste Rock
To Repository

Waste Excavation = 89 square feet
Waste Embankment = 0 square feet
Borrow For Road = 16 square feet



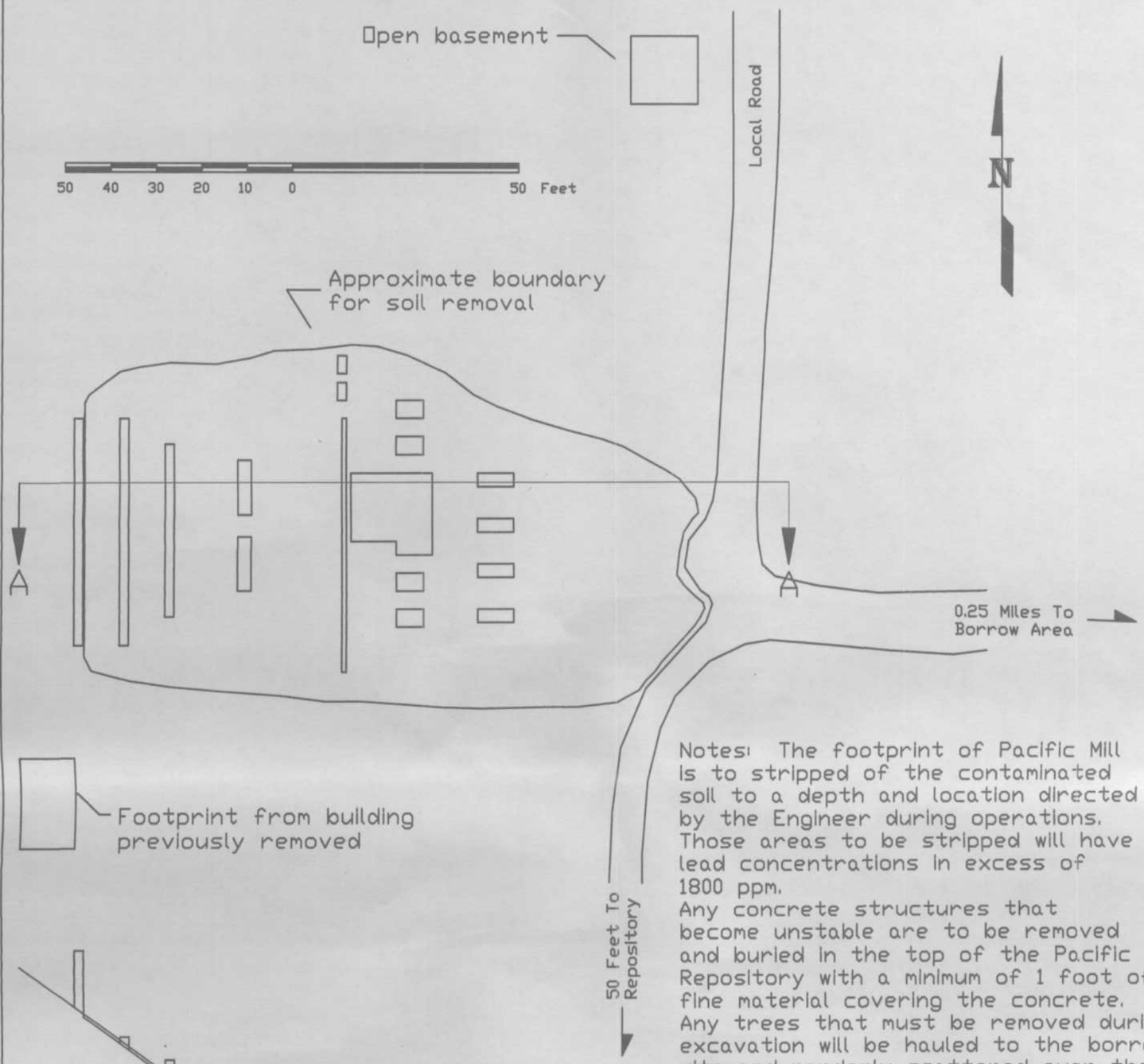
Station 6+50
Import Waste Into Repository
From Other Management Units

Waste Excavation = 89 square feet
Waste Embankment = 0 square feet
Borrow For Road = 16 square feet
Cover Material = 0 square feet

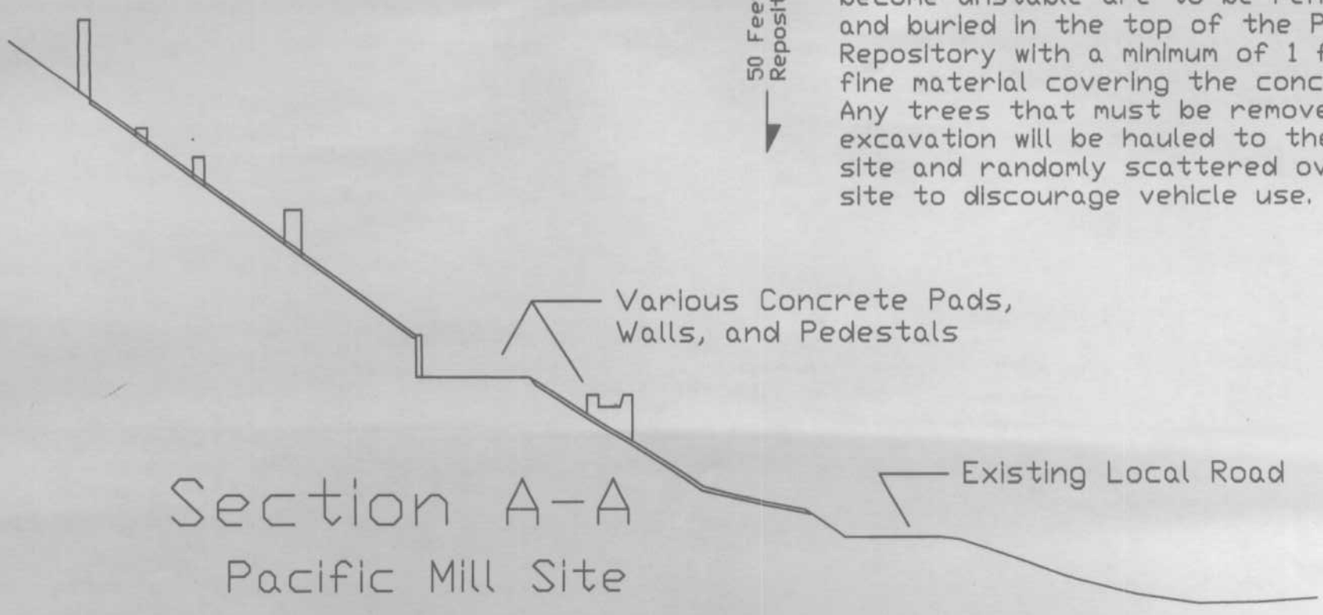


Station 6+50
Cover Waste Rock with Borrow
and Install Guardrail Barriers

Pacific Mine Reclamation Project	**Repository Construction Cross Sections Station 6+50**	North Fork of American Fork Canyon	Prepared By TVF January 2005 Modified	Sheet 13 of 20



Notes: The footprint of Pacific Mill is to stripped of the contaminated soil to a depth and location directed by the Engineer during operations. Those areas to be stripped will have lead concentrations in excess of 1800 ppm.
Any concrete structures that become unstable are to be removed and buried in the top of the Pacific Repository with a minimum of 1 foot of fine material covering the concrete.
Any trees that must be removed during excavation will be hauled to the borrow site and randomly scattered over that site to discourage vehicle use.

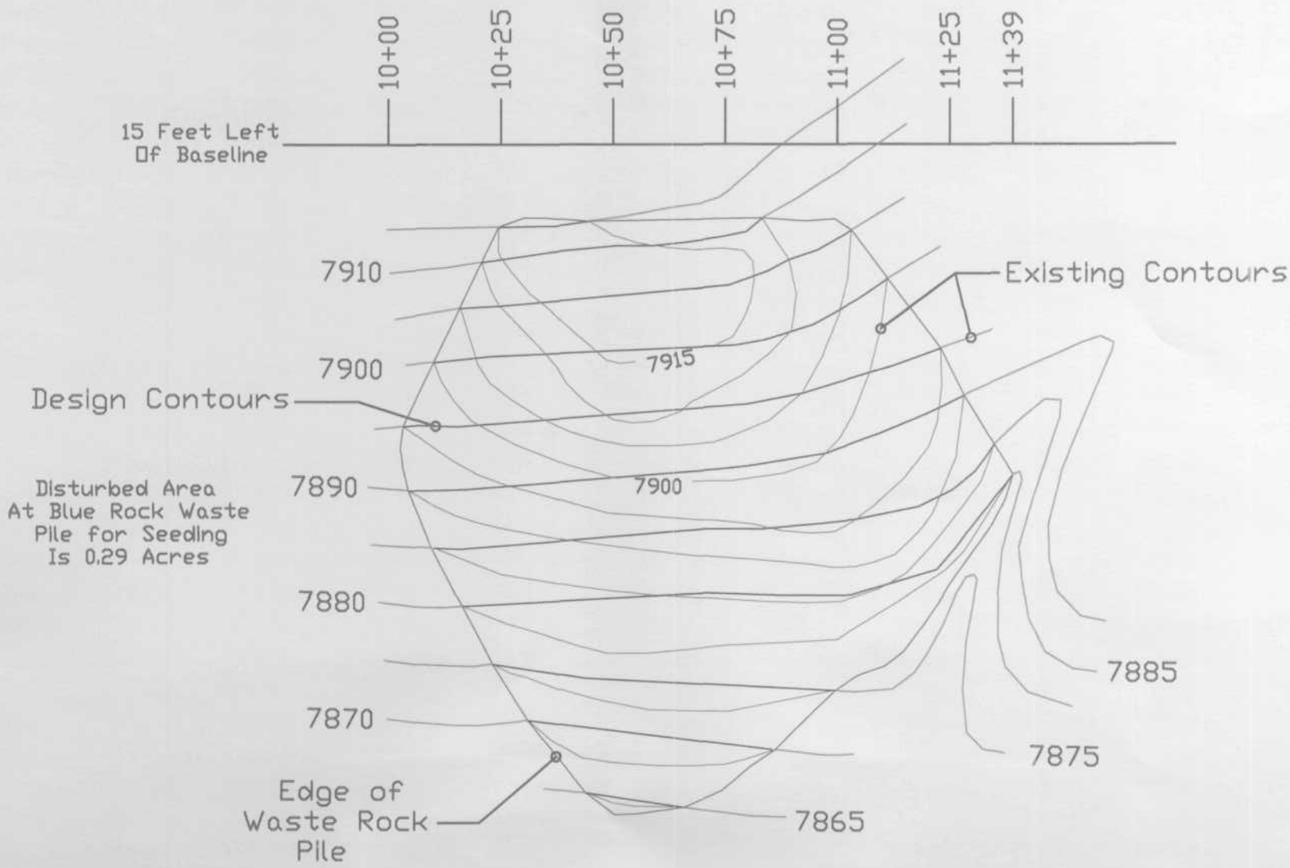


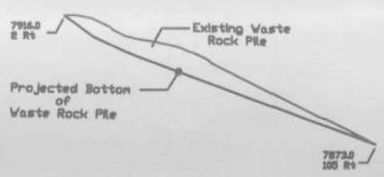
Section A-A

Pacific Mill Site

Strip soil to a depth of about 1.5 feet over an area of about 9,100 sq ft for a total of 500 cu yds of waste to go to the Pacific Repository for disposal

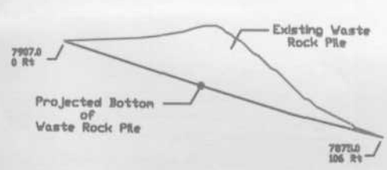
Pacific Mine Reclamation Project	**Pacific Mill Removal Plan**	North Fork of American Fork Canyon	Prepared By TVF March 2005 Modified	Sheet 14 of 20





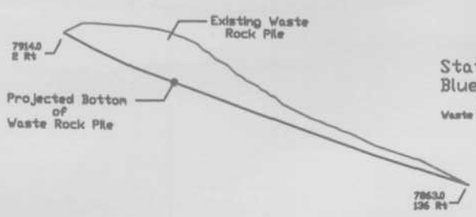
Station 10+25
Blue Rock Mine

Waste Excavation 471 Sq Ft



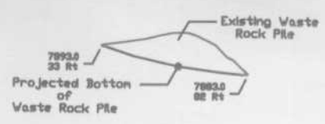
Station 11+00
Blue Rock Mine

Waste Excavation 1036 Sq Ft



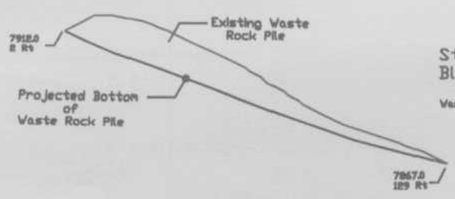
Station 10+50
Blue Rock Mine

Waste Excavation 1025 Sq Ft



Station 11+25
Blue Rock Mine

Waste Excavation 1024 Sq Ft



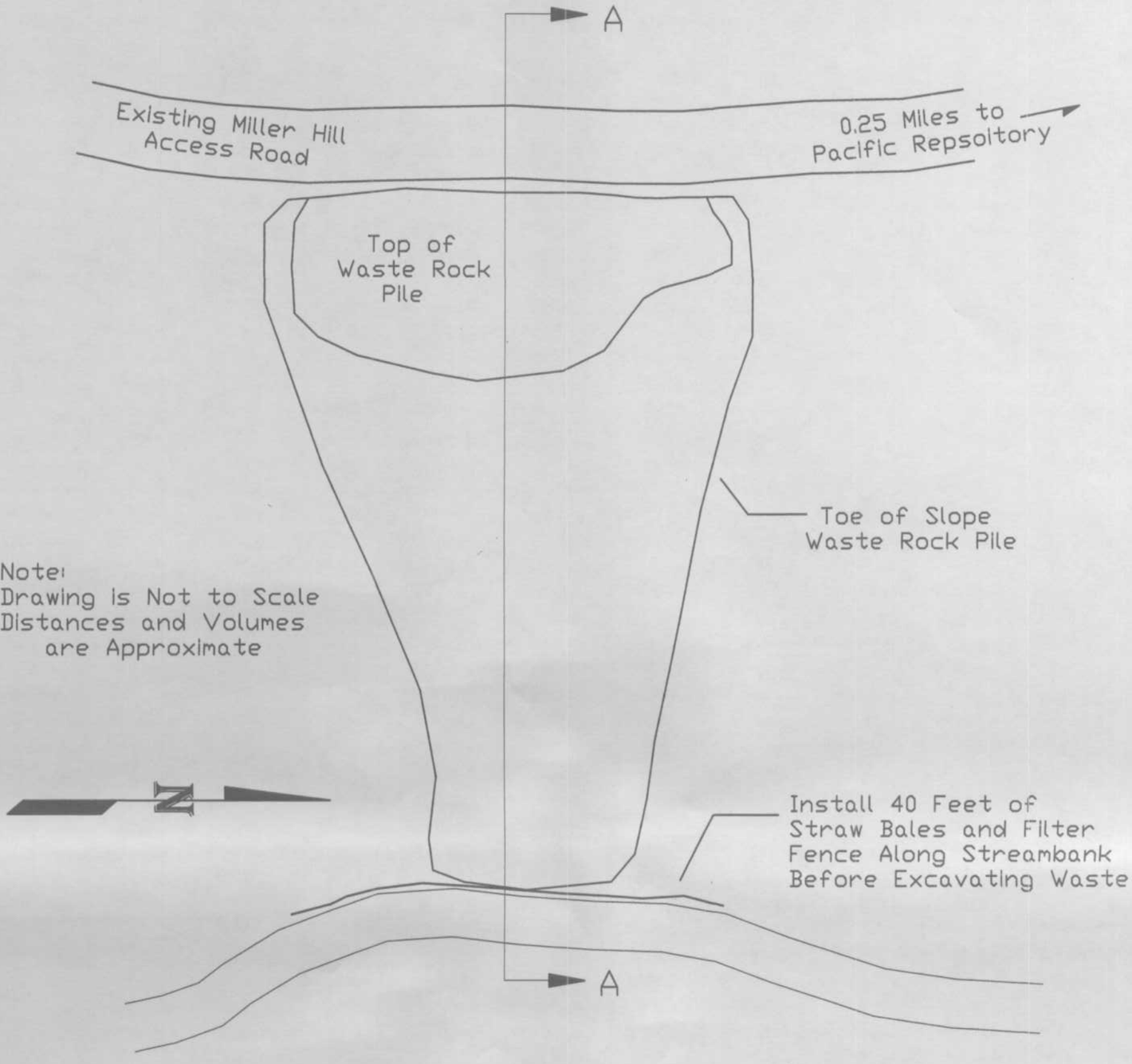
Station 10+75
Blue Rock Mine

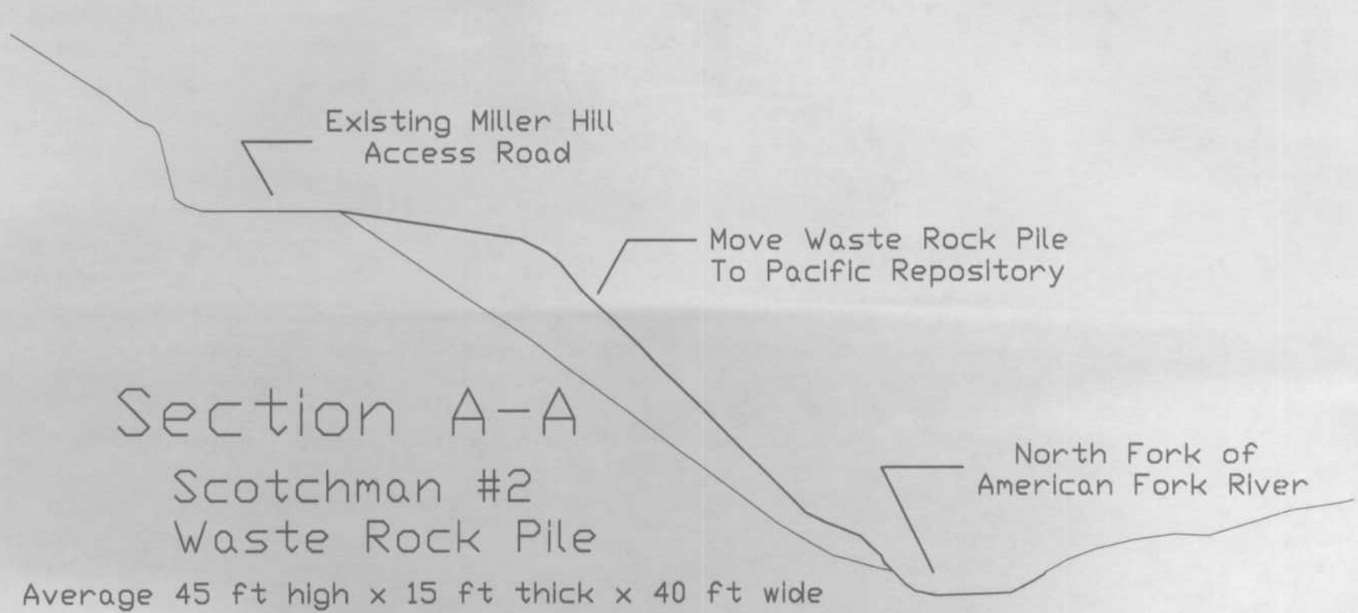
Waste Excavation 996 Sq Ft

Notes:

1. Access to the Blue Rock Mine waste rock pile requires the reconstruction of approximatley 300 feet of a primitive road.
2. The temporary road will be a single lane constructed to the minimum standard needed for the haul trucks to travel on.
3. Any trees that have to be removed during the road reconstruction shall be moved with their root wads attached. Upon completion of waste removal operations, the road shall be obliterated by scarifying the entire width and length of the haul road and the trees placed over the area to discourage use by motorized vehicles.
4. After the waste rock is removed the area shall be shaped to approximately the original ground contour with the top 6 inches free from compacted soil in preparation for application of seed, mulch, and fertilizer.

Pacific Mine Reclamation Project	**Blue Rock Mine Waste Removal Plan**	North Fork of American Fork Canyon	Prepared By TVF January 2005 Modified	Sheet 15 of 20



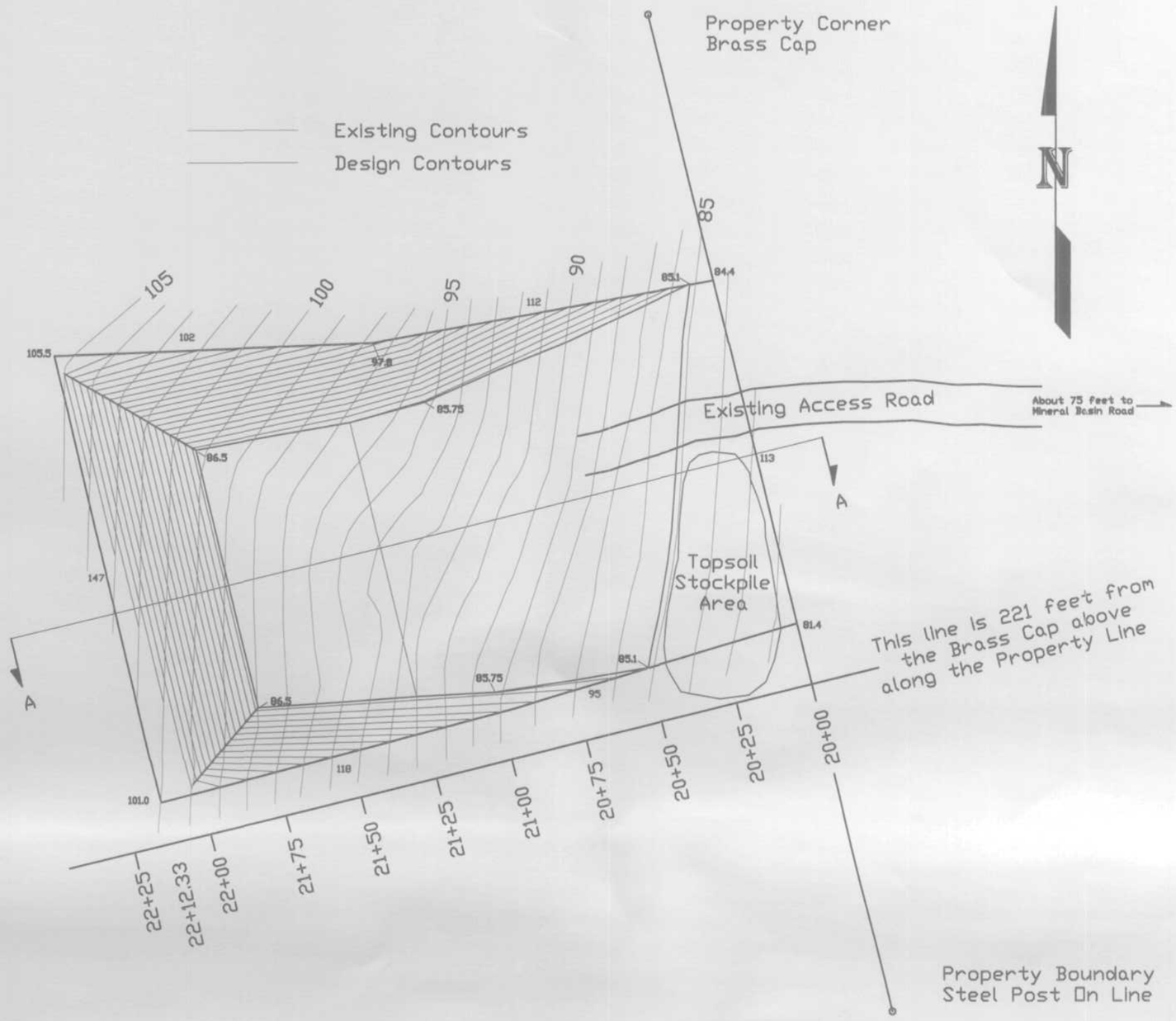


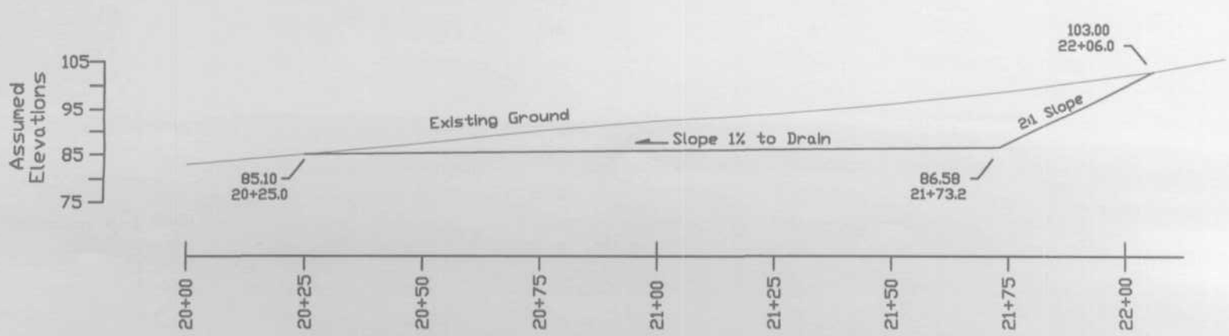
Section A-A

Scotchman #2
Waste Rock Pile

Average 45 ft high x 15 ft thick x 40 ft wide
for 1000 Cubic Yards of Waste

Pacific Mine Reclamation Project	**Scotchman #2 Removal Plan**	North Fork of American Fork Canyon	Prepared By TVF March 2005 Modified	Sheet 16 of 20



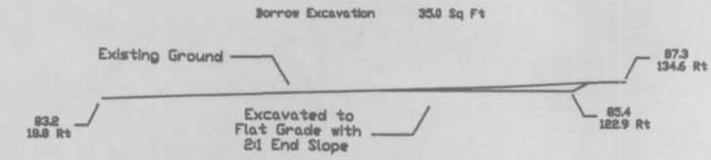


Borrow Area Profile - Section A-A

Pacific Mine Reclamation Project	**Borrow Area Excavation Plan**	North Fork of American Fork Canyon	Prepared By TVF March 2005 Modified	Sheet 17 of 20

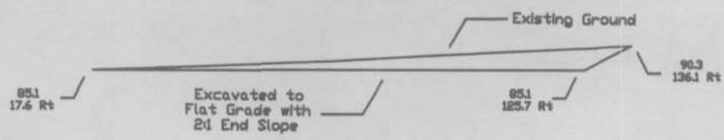
Station 20+25
Borrow Area

Borrow Excavation 35.0 Sq Ft



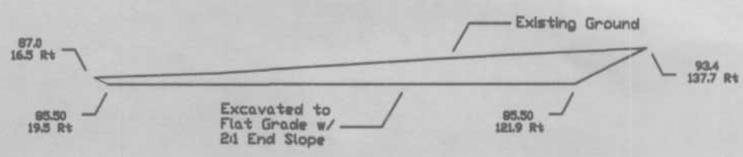
Station 20+50
Borrow Area

Borrow Excavation 262.3 Sq Ft



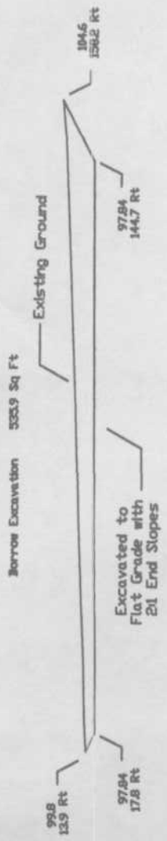
Station 20+75
Borrow Area

Borrow Excavation 500.4 Sq Ft



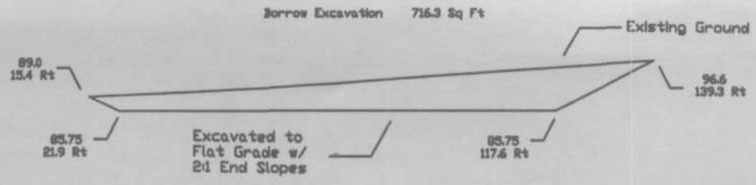
Station 22+00
Borrow Area

Borrow Excavation 535.9 Sq Ft



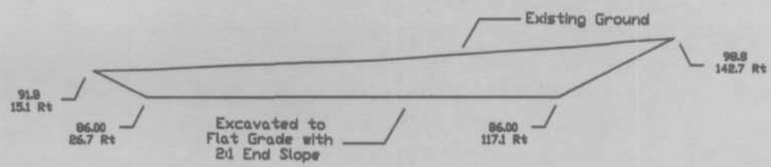
Station 21+00
Borrow Area

Borrow Excavation 716.3 Sq Ft



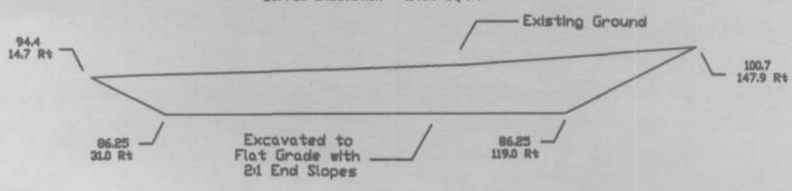
Station 21+25
Borrow Area

Borrow Excavation 912.6 Sq Ft



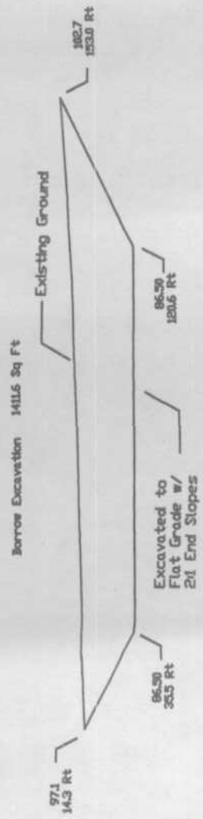
Station 21+50
Borrow Area

Borrow Excavation 1145.9 Sq Ft



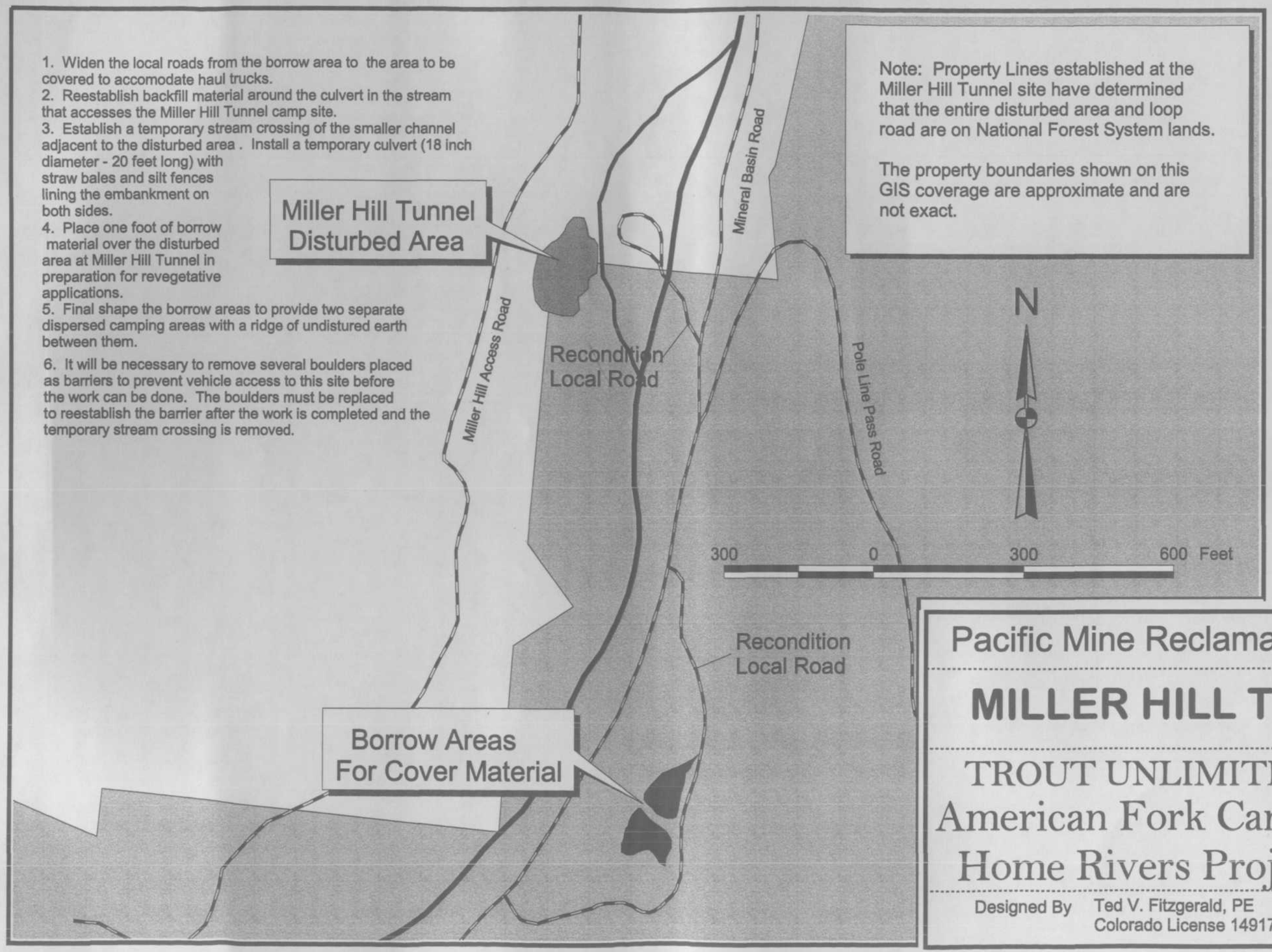
Station 21+75
Borrow Area

Borrow Excavation 1411.6 Sq Ft



Pacific Mine Reclamation Project	**Borrow Excavation Cross Sections**	North Fork of American Fork Canyon	Prepared By TVF March 2005 Modified	Sheet 18 of 20

1. Widen the local roads from the borrow area to the area to be covered to accomodate haul trucks.
2. Reestablish backfill material around the culvert in the stream that accesses the Miller Hill Tunnel camp site.
3. Establish a temporary stream crossing of the smaller channel adjacent to the disturbed area . Install a temporary culvert (18 inch diameter - 20 feet long) with straw bales and silt fences lining the embankment on both sides.
4. Place one foot of borrow material over the disturbed area at Miller Hill Tunnel in preparation for revegetative applications.
5. Final shape the borrow areas to provide two separate dispersed camping areas with a ridge of undistured earth between them.
6. It will be necessary to remove several boulders placed as barriers to prevent vehicle access to this site before the work can be done. The boulders must be replaced to reestablish the barrier after the work is completed and the temporary stream crossing is removed.



Note: Property Lines established at the Miller Hill Tunnel site have determined that the entire disturbed area and loop road are on National Forest System lands.

The property boundaries shown on this GIS coverage are approximate and are not exact.

TROUT UNLIMITED

NOTICE

The Miller Hill Tunnel site does not contain elevated levels of heavy metals and is not included for work under this project via the authorization issued by the EPA. This portion of the project was approved by the Forest Service in a Decision Memo dated August 9, 2001.

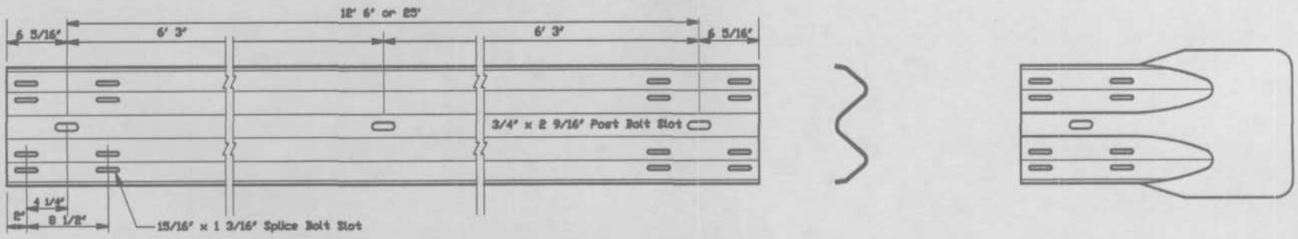
Pacific Mine Reclamation Project

MILLER HILL TUNNEL

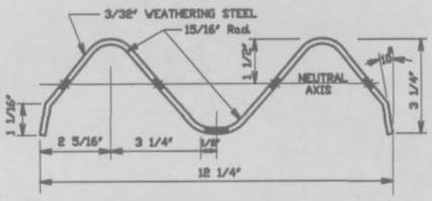
TROUT UNLIMITED
American Fork Canyon
Home Rivers Project

Sheet 19 of 20

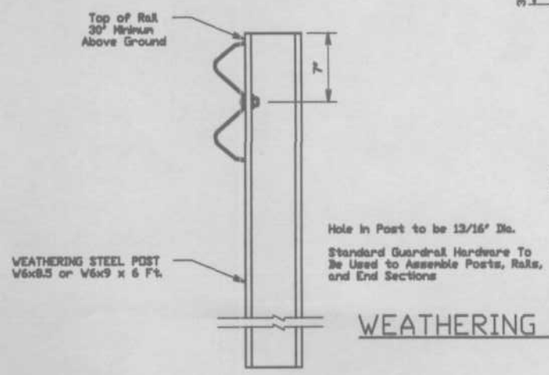
Designed By Ted V. Fitzgerald, PE
Colorado License 14917



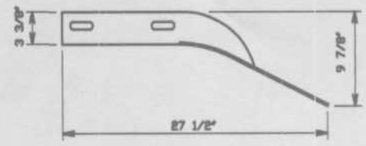
WEATHERING STEEL GUARDRAIL PANEL



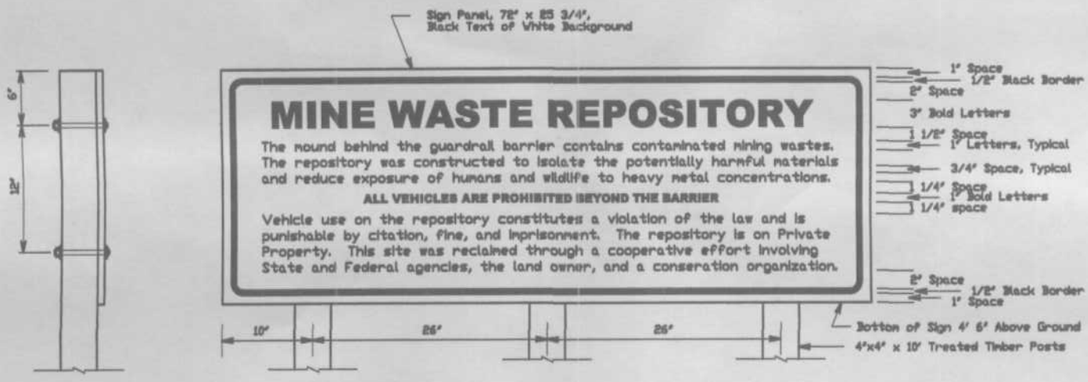
SECTION THROUGH RAIL ELEMENT



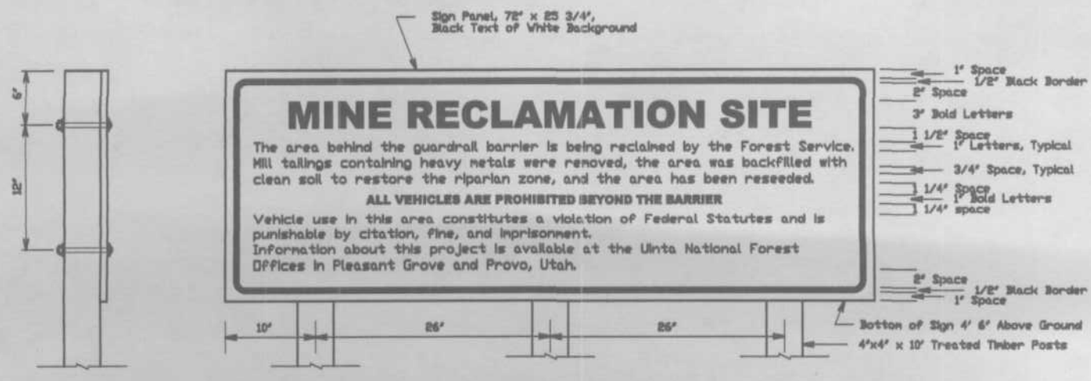
WEATHERING STEEL POST



END SECTION (FLARED)



REPOSITORY CLOSURE SIGN
(2 Each)



PACIFIC MINE CLOSURE SIGN
(2 Each)

Pacific Mine Reclamation Project	Guardrail Barrier and Closure Signing Detail Drawings	North Fork of American Fork Canyon	Prepared By TVF March 2005 Modified	Sheet 20 of 20