



COLORADO

Division of Reclamation,
Mining and Safety

Department of Natural Resources

1313 Sherman Street, Room 215
Denver, CO 80203

February 19, 2016

Jim Helmericks
Glacier Gravel Products
995 Highway 3
Durango, CO 81301

RE: J & J Pit, Permit No. M-1985-001, Reclamation Costs Update and Notice of Surety Increase (SI-2)

Dear Mr. Helmericks:

In an effort to ensure the Financial Warranty for the above referenced site adequately reflects the actual current costs of fulfilling the requirements of the approved reclamation plan, the Colorado Division of Reclamation, Mining and Safety (Division) has updated the reclamation cost estimate (copy enclosed). ***Therefore, pursuant to Section 34-32.5-117(4) of the Colorado Land Reclamation Act, adequate Financial Warranty must be submitted to the Division within 60 days of the mailing date of this letter.*** The additional amount needs to be accepted prior to **Friday, April 22, 2016**. Please review the enclosed figures as soon as possible and contact our office if any calculation errors are noted.

Staff calculations estimate the cost to reclaim the above referenced site to be \$30,089.00. This is an increase of \$21,631.42 over the \$8,457.58 currently held by the Division. This estimate is based on conditions observed during the August 10, 2015 inspection.

Please make arrangements with Barbara Coria at the Division of Reclamation, Mining and Safety Denver Office, phone no. 303.866.3567, ext. 8148 for submittal of the financial warranty. Any questions regarding completion, execution and/or submittal of financial warranty forms should also be directed to Barbara Coria. If you require additional information, have questions or concerns, please contact me at the DRMS Grand Junction Field Office.

Sincerely,

Lucas West

Environmental Protection Specialist
Division of Reclamation, Mining and Safety
1313 Sherman Street, Room 215



Addressee Name
Date
Page 2

Denver, CO 80203
Phone: (970) 243-6299
Fax: (970) 241-1516

Cc: Russ Means, Senior Environmental Protection Specialist, GJFO Supervisor
Barbra Coria, DRMS

Enc: Financial Warranty Cost Estimate



COST SUMMARY WORK

Task description: Cost summary

Site: J & J Pit

Permit Action: 2015

Permit/Job#: M1985001

PROJECT IDENTIFICATION

Task #: 000

State: Colorado

Abbreviation: None

Date: 2/18/2016

County: La Plata

Filename: M001-000

11:46:31 AM

User: LJW

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Cut and Fill East and South Highwalls to 2H:1V	DOZER	1	11.16	\$2,782.00
002	Move stockpile from above the East wall to pit floor	TRUCK1	1	8.39	\$4,956.00
003	Move remaining material from Pit Floor to North Highwall	LOADER	1	10.91	\$1,754.00
004	Spread material along north wall at 2H:1V	DOZER	1	16.93	\$4,221.00
005	Revegetate slopes with weed control and mulch	REVEGE	1	16.00	\$6,477.00
006	Demolition of Scale house and scale, on site disposal	DEMOLISH	1	8.00	\$768.63
007	Mob/Demob	MOBILIZE	1	4.26	\$4,533.00
<u>SUBTOTALS:</u>				75.65	\$25,492

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance: 2.02

Total = \$514.94

Performance bond: 1.05

Total = \$267.67

Job superintendent: 0.00

Total = \$0.00

Profit: 10.00

Total = \$2,549.20

TOTAL O & P = \$3,331.81

CONTRACT AMOUNT (direct + O & P) = \$28,823.81

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): 500.00

Total = 500.00

Engineering work and/or contract/bid preparation: 0.00

Total = \$0.00

Reclamation management and/or administration: 0.00

\$0.00

CONTINGENCY: 3.00

Total = \$764.76

TOTAL INDIRECT COST = \$4,596.57

TOTAL BOND AMOUNT (direct + indirect) = \$30,888.57

BULLDOZER WORKTask description: Cut and Fill East and South Highwalls to 2H:1VSite: J & J PitPermit Action: 2015Permit/Job#: M1985001**PROJECT IDENTIFICATION**Task #: 001State: ColoradoAbbreviation: NoneDate: 2/18/2016County: La PlataFilename: M001-0019:58:33 AMUser: LJWAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D9T - 9SUHorsepower: 405Blade Type: Semi-UniversalAttachment: NAShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$75.12	NA
Operating Cost/Hour:	\$135.36	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$38.89	NA

Total unit Cost/Hour: \$249.37Total Fleet Cost/Hour: \$249.37**MATERIAL QUANTITIES**Initial Volume: 7,326Swell factor: 1.115Loose volume: 8,168 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 100 feetUnadjusted hourly production: 1,243.2 LCY/hrMaterials consistency description: Compacted fill or embankment 0.9Average push gradient: 0 %Average site altitude: 6,850 feetMaterial weight: 2,100 lbs/LCYWeight description: Earth - Loam**Job Condition Correction Factor**Operator Skill: 0.750Source(AVG.)

Material consistency:	0.900	(CAT HB))
Dozing method:	1.200	(SLOT)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(SSD-AC)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.095	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5889

Adjusted unit
production: 732.12 LCY/hr

Adjusted fleet
production: 732.12 LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: \$0.341/LCY

Total job time: 11.16 Hours
Total job cost: \$2,782

TRUCK/LOADER TEAM WORKTask description: Move stockpile from above the East wall to pit floorSite: J & J PitPermit Action: 2015Permit/Job#: M1985001PROJECT IDENTIFICATIONTask #: 002State: ColoradoAbbreviation: NoneDate: 2/18/2016County: La PlataFilename: M001-002User: LJWAgency or organization name: DRMSHOURLY EQUIPMENT COSTShift basis: 1 per day

Equipment Description	
Truck Loader Team -Truck:	Generic 15-18 cy, 6x4
-Loader:	Cat 365C L 13'-7" Stick
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

<u>Cost Breakdown:</u>	<u>Truck/Loader Team</u>		<u>Support Equipment</u>		<u>Maintenance Equipment</u>	
	Truck	Excavator	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	\$19.20	\$94.13	NA	NA	NA	NA
Operating cost/hour:	\$65.35	\$141.12	NA	NA	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Operator cost/hour:	\$22.10	\$35.36	NA	NA	NA	NA
Unit Subtotals:	\$106.65	\$270.61	NA	NA	NA	NA
Number of Units:	3	1	0	0	0	0
Group Subtotals:	Work: \$590.56		Support: \$0.00		Maint: \$0.00	

Total work team cost/hour: \$590.56MATERIAL QUANTITIESInitial volume: 6,000

CCY

Swell factor: 1.000Loose volume: 6,000

LCY

Source of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat HandbookMaterial Purchase Cost: \$0.00Total Cost: \$0.00HOURLY PRODUCTIONTruck Capacity:Truck Payload (weight) Basis:Material weight: 2,100

Pounds/LCY

Description: Earth - LoamRated Payload: 63,980

Pounds

Payload Capacity: 30.47

LCY

Truck Bed (volume) Basis:

Struck Volume:	15.00	LCY
Heaped Volume:	18.00	LCY
Average Volume:	16.50	LCY
Adjusted Volume:	18.00	LCY

Final Truck Volume Based on Number of Loader Passes: 15.18 LCY**Loading Tool Capacity**Bucket Size Class: Large

Rated Capacity:	6.900	LCY (heaped)
Bucket Fill Factor:	1.100	Other - rock/dirt mixtures (100-120%) 1.100
Adjusted Capacity:	7.590	LCY

Job Condition Corrections:Site Altitude (ft.): 6850 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	0.830	0.830	

Loading Tool Cycle Time:Number of Loading Tool Passes Required to Fill
Truck: 2 passes**Excavators and Front Shovels:**Machine Cycle Time vs. Job Condition Rating: AVERAGESelected Value within this Basic Rating: AVERAGE

Track Loaders – Material Description: _____

Cycle Time Elements (min.):Load: NA Maneuver: NA Dump: 0.100Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): NA minutes

Cycle Time Factors		Factor (min.)	Source
Material:	NA	NA	(Cat HB)
Stockpile:	NA	NA	(Cat HB)
Truck Ownership:	NA	NA	(Cat HB)
Operation:	NA	NA	(Cat HB)
Dump Target:	NA	NA	(Cat HB)
Net Cycle Time Adjustment:		NA	minutes
Adjusted Loader Cycle Time:		0.380	minutes
Net Load Time per Truck:		0.480	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	0.480	Minutes	Adjusted for site altitude:	0.480	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

Truck Travel (Haul & Return) Time:
maintained 2.0Road Condition: Hard, smooth, stabilized, surfaced, watered,

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1500.00	1.50	2.00	3.50	2394	0.754

Haul Time: 0.754 minutes**Return Route:**

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1500.00	-1.50	2.00	0.50	2972	0.538

Return Time: 0.538 minutesTotal Truck Cycle Time: 3.172 minutes

Loading Tool unit Production 929.39 LCY/Hour Adjusted for job efficiency: 771.39 LCY/Hour
 Truck Unit Production 287.14 LCY/Hour Adjusted for job efficiency: 238.32 LCY/Hour
 Optimal No. of Trucks: 3 Truck(s) Selected Number of Trucks: 3 Truck(s)

Adjusted hourly truck team production: 714.97 LCY/Hour
 Adjusted single truck/loader team production: 714.97 LCY/Hour
 Adjusted multiple truck/loader team production: 714.97 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: 8.39 Hours
 Unit cost: \$0.826 /LCY Total job cost: \$4,956

WHEEL LOADER – LOAD AND CARRY WORKTask description: Move remaining material from Pit Floor to North HighwallSite: J & J PitPermit Action: 2015Permit/Job#: M1985001**PROJECT IDENTIFICATION**Task #: 003State: ColoradoAbbreviation: NoneDate: 2/18/2016County: La PlataFilename: M001-003User: LJWAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: CAT 980HHorsepower: 315Attachment 1: ROPS CabShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$51.27	NA
Operating Cost/Hour:	\$70.82	100
Operator Cost/Hour:	\$38.60	NA
Total Unit Cost/Hour:	\$160.68	
Total Fleet Cost/Hour:	\$160.68	

MATERIAL QUANTITIESInitial volume: 6,100

CCY

Swell factor: 1.000Loose volume: 6,100

LCY

Source of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Loader Cycle Time:**Unadjusted Basic Cycle Time (load, dump, maneuver): 0.550 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 0.02	0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders - 0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		-0.040	minutes
Adjusted Basic Cycle Time:		0.510	minutes

Rolling Resistance – Road ConditionsHaul: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Return: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0**Haul and Return Time**

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
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Haul Route:	150	0.00	3.00	3.00	0.1160	(Cat HB)
Return Route:	150	0.00	3.00	3.00	0.1094	(Cat HB)

Total Travel Time: 0.2254 minutes
Total Cycle Time: 0.7354 minutes

Load Bucket Capacity

Rated Capacity: 7.50 LCY (heaped)
Bucket Fill Factor: 1.100 Other - rock/dirt mixtures (100-120%) 1.100
Adjusted Capacity: 8.25 LCY

Job Condition Correction Factors

Site Altitude: 6850 feet

Altitude Adj:	<u>1.00</u>	Source (CAT HB)
Job Efficiency:	<u>0.83</u>	(1 shift/day)
Net Correction:	<u>0.83</u>	multiplier

Unadjusted Hourly Unit Production: 673.14 LCY/Hour
Adjusted Hourly Unit Production: 558.71 LCY/Hour
Adjusted Hourly Fleet Production: 558.71 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Loader(s) Total job time: 10.92 Hours
Unit cost: \$0.288 /LCY Total job cost: \$1,754

BULLDOZER WORKTask description: Spread material along north wall at 2H:1VSite: J & J PitPermit Action: 2015Permit/Job#: M1985001**PROJECT IDENTIFICATION**Task #: 004State: ColoradoAbbreviation: NoneDate: 2/18/2016County: La PlataFilename: M001-00411:20:07 AMUser: LJWAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D9T - 9SUHorsepower: 405Blade Type: Semi-UniversalAttachment: NAShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$75.12</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$135.36</u>	<u>100</u>
Ripper op. Cost/Hour:	<u>\$0.00</u>	<u>0</u>
Operator Cost/Hour:	<u>\$38.89</u>	<u>NA</u>

Total unit Cost/Hour: \$249.37Total Fleet Cost/Hour: \$249.37**MATERIAL QUANTITIES**Initial Volume: 12,148Swell factor: 1.000Loose volume: 12,148 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 75 feetUnadjusted hourly production: 1,514.3 LCY/hrMaterials consistency description: Loose stockpile 1.2Average push gradient: 0 %Average site altitude: 6,850 feetMaterial weight: 2,900 lbs/LCYWeight description: Decomposed rock - 50% Rock, 50% Earth**Job Condition Correction Factor**Operator Skill: 0.750Source
(AVG.)

Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4739

Adjusted unit
production: 717.63 LCY/hr

Adjusted fleet
production: 717.63 LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: \$0.347/LCY

Total job time: 16.93 Hours
Total job cost: \$4,221

REVEGETATION WORKTask description: Revegetate slopes with weed control and mulchSite: J & J PitPermit Action: 2015Permit/Job#: M1985001**PROJECT IDENTIFICATION**Task #: 005State: ColoradoAbbreviation: NoneDate: 2/18/2016County: La PlataFilename: M001-005User: LJWAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			\$	\$
			Total Fertilizer Materials Cost/Acre	\$0.00

Application

Description	Cost /Acre
	\$
Total Fertilizer Application Cost/Acre	\$0.00

TILLING

Description	Cost /Acre
	\$
Total Tilling Cost/Acre	\$0.00

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Indian Ricegrass - Native	3.00	9.71	\$20.25
Bottlebrush Squirreltail	3.20	14.10	\$79.71
Needle and Thread	2.00	5.28	\$94.16
Western Wheatgrass - Native	5.00	12.63	\$15.25
Globemallow, Scarlet (or copper)	2.00	22.65	\$281.50
Basin Wildrye - Trailhead	3.00	12.19	\$19.68
Totals Seed Mix	18.20	76.56	\$510.55

Application

Description	Cost /Acre
Broadcast seeding [DMG]	\$261.80
Total Seed Application Cost/Acre	\$261.80

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Hay, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$265.00	\$530.00
Herbicide - 2,4D @ 1.0 pt/ac	2.00	ACRE	\$1.25	\$2.50
Total Mulch Materials Cost/Acre				\$532.50

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$66.02
Total Mulch Application Cost/Acre	\$66.02

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					\$
Totals Nursery Stock Cost / Acre					\$0.00

JOB TIME AND COST

No. of Acres: 3.5 Cost /Acre: \$1,370.87
 Estimated Failure Rate: 35% Cost /Acre*: \$1,370.87
 *Selected Replanting Work Items: SEEDING,MULCHING

Initial Job Cost: \$4,798.05
 Reseeding Job Cost: \$1,679.32
 Total Job Cost: \$6,477
 Job Hours: 16.00

DEMOLITION WORK

Task description: Demolition of Scale house and scale, on site disposal

Site: J & J Pit

Permit Action: 2015

Permit/Job#: M1985001

PROJECT IDENTIFICATION

Task #: 006

State: Colorado

Abbreviation: None

Date: 2/18/2016

County: La Plata

Filename: M001-006

11:33:14 AM

User: LJW

Agency or organization name: DRMS

UNIT COSTS

Location adjustment: 93.10 %

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Scale house	20 X 20 X 12	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 50 ft. push	4,800.00	CF	\$0.17	\$825.60

Job Hours: 8.00

Subtotal
(unadjusted): \$825.60

Total Cost
(adjusted for location): \$768.63

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Mob/Demob**Site: **J & J Pit**Permit Action: **2015**Permit/Job#: **M1985001****PROJECT IDENTIFICATION**Task #: **007**State: **Colorado**Abbreviation: **None**Date: **2/18/2016**County: **La Plata**Filename: **M001-007**

11:40:19 AM

User: **LJW**Agency or organization name: **DRMS****EQUIPMENT TRANSPORT RIG COST**Shift basis: **1 per day**Cost Data Source: **CRG Data**Truck Tractor Description: **GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED,
400 HP (2ND HALF, 2006)**Truck Trailer Description: **GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT
TRAILER (25T, 50T, AND 100T)****Cost Breakdown:**

Available Rig Capacities	0-25 Tons	26-50 Tons	51+ Tons
Ownership Cost/Hour:	\$16.63	\$18.37	\$22.33
Operating Cost/Hour:	\$44.38	\$46.13	\$50.07
Operator Cost/Hour:	\$27.66	\$27.66	\$27.66
Helper Cost/Hour:	\$0.00	\$25.39	\$25.39
Total Unit Cost/Hour:	\$88.67	\$117.55	\$125.45

NON ROADABLE EQUIPMENT:

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Cat 365C L 13'-7" Stick	77.56	\$94.13	\$125.45	1	\$219.58	\$125.45	\$500.00
CAT 980H	33.12	\$51.27	\$117.55	1	\$168.82	\$117.55	\$250.00
Cat D9T - 9SU	60.01	\$75.12	\$125.45	1	\$200.57	\$125.45	\$250.00

Subtotals: **\$588.97** **\$368.45** **\$1,000.00****ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Drill/Broadcast Seeder with Tractor	\$52.78	1	\$52.78	\$52.78
Generic 15-18 cy, 6x4	\$106.65	3	\$319.95	\$319.95

Subtotals: **\$372.73** **\$372.73**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	<u>DURANGO</u>	
Total one-way travel distance:	<u>2.00</u>	miles
Average Travel Speed:	<u>30.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$4,483.54</u>
'* two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$49.70</u>
** one round trip, no haul rig:	

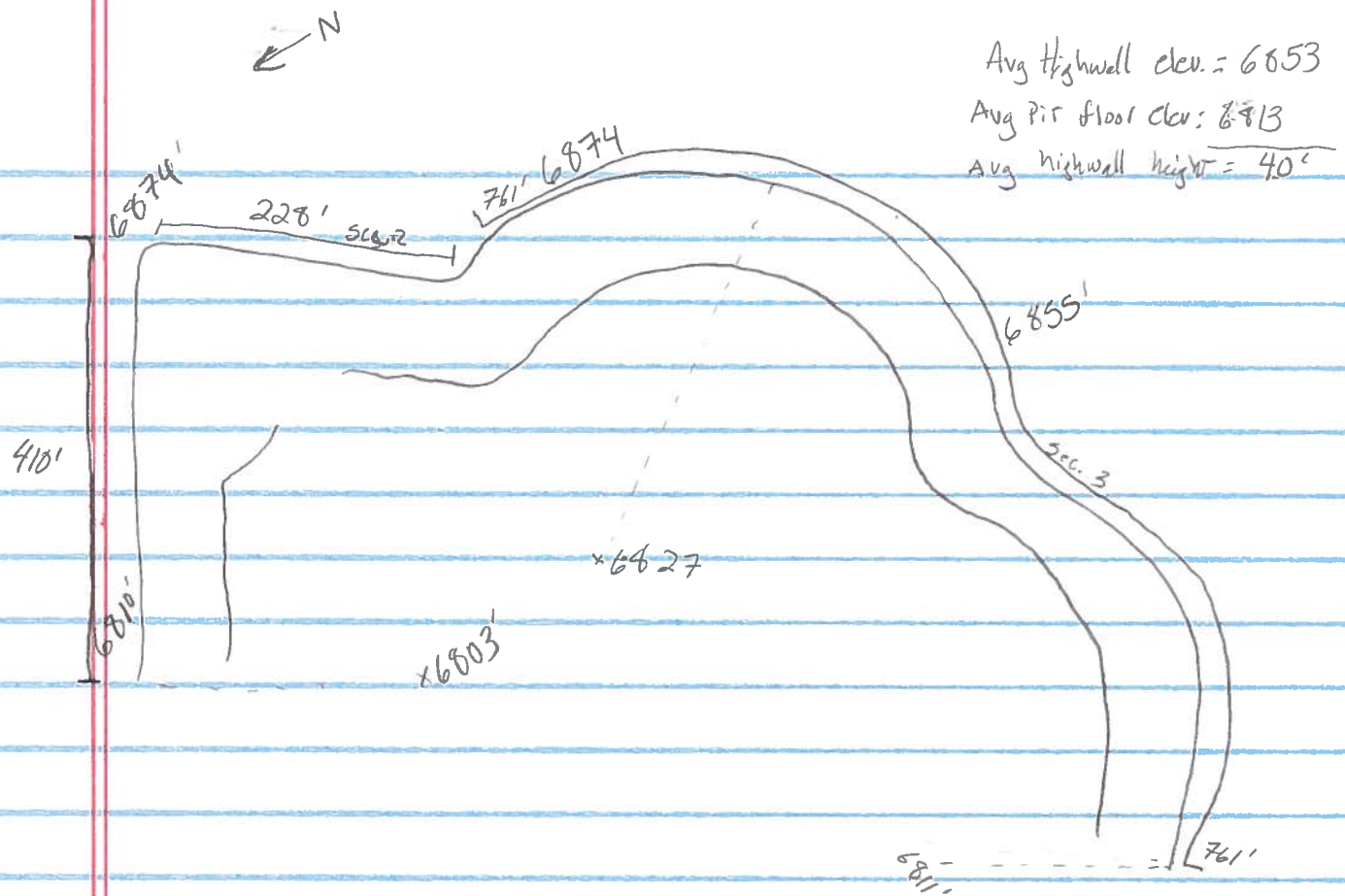
Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>0.07</u>	<u>0.07</u>
Return Time (Hours):	<u>0.07</u>	<u>0.07</u>
Loading Time (Hours):	<u>1.00</u>	<u>NA</u>
Unloading Time (Hours):	<u>1.00</u>	<u>NA</u>
Subtotals:	<u>2.13</u>	<u>0.13</u>

JOB TIME AND COST

Total job time: 4.27 Hours

Total job cost: \$4,533

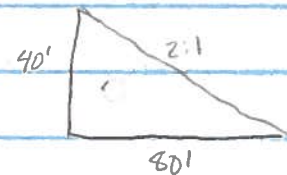


* See Spread
Sheet 1

Cut & Fill Sections 2+3 to 2:1

$$228' + 761' = 989' = \boxed{7,326 \text{ cu. yds}}$$

Avg. Highwall height = 40'



* See Spread
Sheet 2

Backfill Section 1 to 2:1

$$\text{Length of highwall} : 410' = \boxed{12,148}$$

Avg height of highwall = 40'

Equipment needed

Cat 740 TRUCK 3 \Rightarrow Check on Roadable Trucks

CAT 365C L Exc. 2

CAT 980H Loader 1

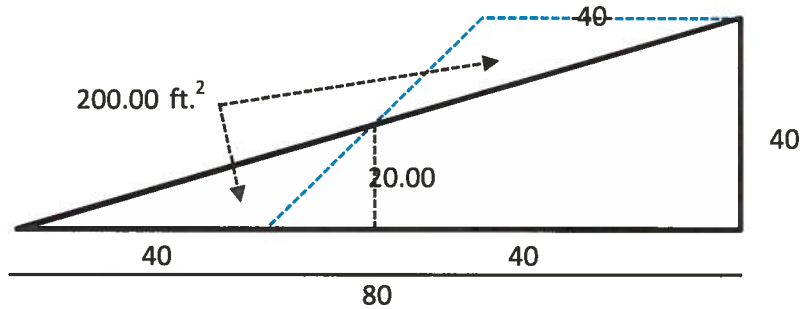
CAT D9T-95H 1

2/16/2016

Highwall reduction - cut and fill

Highwall Height (ft.)	40
Length of Highwall (lft.)	989
Initial Slope	1 H:1V
Desired Slope	2 H:1V
Volume of material to be moved (ft. ³)	197,800
Volume of material to be moved (yd. ³)	7,326

All dimensions measured in feet
Drawing not to scale



Highwall reduction - backfill

Highwall Height (ft.)	40	
Length of Highwall (lft.)	410	
- - - - Initial Slope	1	H:1V
———— Desired Slope	2	H:1V
Volume of material to be moved (ft. ³)	328,000	
Volume of material to be moved (yd. ³)	12,148	

All dimensions measured in feet
Drawing not to scale

