

## COST SUMMARY WORK

Site: Base Product Gravel Pit 1

Permit Action: March 2017

Permit/Job#: M1994053

### PROJECT IDENTIFICATION

Task #: 000

State: Colorado

Abbreviation: None

Date: 3/30/2017

County: Montrose

Filename: M053-000

User: DMC

Agency or organization name: DRMS

### TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
01a	Reduce highwall slope to 3H:1V	DOZER	1	16.03	\$3,075.00
02a	Rip pit floor	RIPPER	1	14.65	\$3,028.00
03a	Distribute topsoil	SCRAPER1	1	18.97	\$8,200.00
04a	Vegetate disturbed area	REVEGE	1	24.00	\$7,584.00
05a	Mobilize reclamation crew and equipment	MOBILIZE	1	2.66	\$2,848.00
<b><u>SUBTOTALS:</u></b>				<b>76.31</b>	<b>\$24,735</b>

### INDIRECT COSTS

#### OVERHEAD AND PROFIT:

Liability insurance: 2.02

Total = \$499.65

Performance bond: 1.05

Total = \$259.72

Job superintendent: 38.16

Total = \$2,787.22

Profit: 10.00

Total = \$2,473.50

TOTAL O & P = \$6,020.09

CONTRACT AMOUNT (direct + O & P) = \$30,755.09

#### LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): 0.00

Total = 0.00

Engineering work and/or contract/bid preparation: 0.00

Total = \$0.00

Reclamation management and/or administration: 5.00

\$1,537.75

CONTINGENCY: 0.00

Total = \$0.00

TOTAL INDIRECT COST = \$7,557.84

**TOTAL BOND AMOUNT (direct + indirect) = \$32,292.84**

**BULLDOZER WORK**Task description: **Reduce highwall slope to 3H:1V**Site: **Base Product Gravel Pit 1**Permit Action: March 2017Permit/Job#: M1994053**PROJECT IDENTIFICATION**Task #: 01AState: ColoradoAbbreviation: NoneDate: 3/30/2017County: MontroseFilename: M199405301aUser: DMCAgency or organization name: DRMS**HOURLY EQUIPMENT COST**

Basic Machine: Cat D8T - 8SU  
 Horsepower: 310  
 Blade Type: Semi-Universal  
 Attachment: NA  
 Shift Basis: 1 per day  
 Data Source: (CRG)

**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$83.81</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$66.17</u>	<u>100</u>
Ripper own.		
Cost/Hour:	<u>\$0.00</u>	<u>NA</u>
Ripper op. Cost/Hour:	<u>\$0.00</u>	<u>0</u>
Operator Cost/Hour:	<u>\$41.85</u>	<u>NA</u>
Total unit Cost/Hour:	<u>\$191.83</u>	
Total Fleet Cost/Hour:	<b><u>\$191.83</u></b>	

**MATERIAL QUANTITIES**

Initial Volume: 12,500  
 Swell factor: 1.060  
 Loose volume: **13,250 LCY**

Source of estimated volume: Division of Reclamation, Mining & Safety  
 Source of estimated swell factor: Cat Handbook

**HOURLY PRODUCTION**

Average push distance: 50 feet  
 Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Compacted fill or embankment 0.9

Average push gradient: -15 %  
 Average site altitude: 5,750 feet

Material weight: 2,900 lbs/LCYWeight description: Sand and gravel - DryJob Condition Correction FactorSource

Operator Skill:	0.750	(AVG.)
Material consistency:	0.900	(CAT HB))
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	1.000	(DOZ-OC)
Push gradient:	1.329	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5904



Adjusted unit  
production: 826.56 LCY/hr  
Adjusted fleet  
production: **826.56** LCY/hr

### **JOB TIME AND COST**

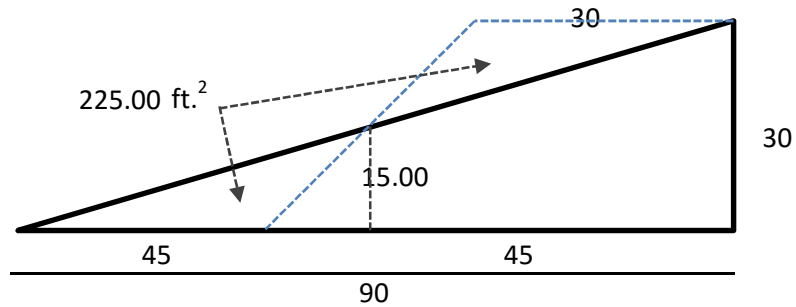
Fleet size: 1 Dozer(s)  
Unit cost: \$0.232/LCY

Total job time: **16.03** Hours  
Total job cost: **\$3,075**

### Highwall reduction - cut and fill

Highwall Height (ft.)	30.0	
Length of Highwall (lft.)	1500	
 Initial Slope	1.0	H:1V
 Desired Slope	3	H:1V
Volume of material to be moved (ft. <sup>3</sup> )	<b>337,500</b>	
Volume of material to be moved (yd. <sup>3</sup> )	<b>12,500</b>	

All dimensions measured in feet  
Drawing not to scale



## BULLDOZER RIPPING WORK

Task description: Rip pit floor

Site: Base Product Gravel Pit 1

Permit Action: March 2017

Permit/Job#: M1994053

### PROJECT IDENTIFICATION

Task #: 02A

State: Colorado

Abbreviation: None

Date: 3/30/2017

County: Montrose

Filename: M199405302a

User: DMC

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU

Horsepower: 310

Ripper Attachment: 3-Shank Ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$83.81	NA
Operating Cost/Hour:	\$66.17	100
Ripper Ownership Cost/Hour:	\$7.55	NA
Ripper Operating Cost/Hour:	\$7.21	100
Operator Cost/Hour:	\$41.85	NA
Total Unit Cost/Hour:	\$206.59	
Total Fleet Cost/Hour:	<b>\$206.59</b>	

### MATERIAL QUANTITIES

Selected estimating method: Area

#### Alternate Methods:

Seismic: NA

Bank Volume: NA

BCY NA

Area: 10.00 acres

Rip Depth (ft): 1.50

Volume: 24,200

BCY or CCY

Source of estimated quantity: Estimate from inspection

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: NA feet/second

#### Area:

Average Ripping Depth:	<u>2.56</u>	mph
Average Ripping Width:	<u>7.08</u>	degrees
Average Ripping Length:	<u>500.00</u>	feet
Average Dozer Speed:	<u>88.00</u>	feet
Average Maneuver Time:	<u>0.25</u>	feet
Production per unit area:	<u>0.822</u>	acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.822 Acres/hr

Site Altitude: 5,750 feet

Altitude Adj: 1.00 (CAT HB)

Job Efficiency: 0.83 (1 shift/day)

Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.68 Acres/hr

Adjusted Hourly Fleet Production: 0.68 Acres/hr

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: 14.66 Hours

Unit cost: \$302.798 Per acre Total job cost: \$3,028



**SCRAPER TEAM WORK**Task description: **Distribute topsoil**Site: **Base Product Gravel Pit 1**Permit Action: March 2017Permit/Job#: M1994053**PROJECT IDENTIFICATION**Task #: 03AState: ColoradoAbbreviation: NoneDate: 3/30/2017County: MontroseFilename: M053-03aUser: DMCAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 627G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	Cat D8T - 8SU
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

**Cost Breakdown:**

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	100	NA	NA
Ownership cost/hour:	\$93.72	NA	NA	\$83.81	NA	NA
Operating cost/hour:	\$115.38	NA	NA	\$66.17	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	\$0.00	NA	NA
Ripper op. cost/hour:	NA	NA	NA	\$0.00	NA	NA
Operator cost/hour:	\$31.26	NA	NA	\$41.85	NA	NA
Unit Subtotals:	\$240.36	NA	NA	\$191.83	NA	NA
Number of Units:	1	0	0	1	0	0
Group Subtotals:	Work:	\$240.36	Support:	\$191.83	Maint:	\$0.00

Total work team cost/hour: **\$432.19****MATERIAL QUANTITIES**Initial volume: 9,680

CCY

Swell factor: 1.000Loose volume: **9,680**

LCY

Source of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Scraper Bowl (volume) Basis:

Material weight:	<u>1,600 lbs/LCY</u>	Struck Volume:	<u>15.70</u>	LCY
Material description:	<u>Top Soil</u>	Heaped Volume:	<u>22.00</u>	LCY
Rated Payload:	<u>52,800 pounds</u>	Average Volume:	<u>18.85</u>	LCY
Payload Capacity:	<u>33.00 LCY</u>	Adjusted Capacity:	<b><u>18.85</u></b>	LCY

Cycle Time:

Scraper Loading Time: 0.70 Minutes  
 Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction:

Site Altitude: 5700 feet

	Scraper	Push Dozer	Source
Altitude Adj:	1.000	NA	(CAT HB)
Job Efficiency:	0.830	NA	(CAT HB)
Net Correction:	0.830	NA	

Travel Time:Road Condition: Loose sand or gravel 10Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	0.00	10.00	10.00	1068	0.31

Haul Time: 0.31 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	0.00	10.00	10.00	1768	0.23

Return Time: 0.23 minutes

Total Scraper team cycle time: 1.84 minutes  
 Adjusted for job conditions: 510.18 LCY/Hour  
 Selected Number of Scrapers: 1 Scraper(s)  
 Adjusted single scraper team (unit) hourly production: 510.18 LCY/Hour  
 Adjusted multiple scraper team (fleet) hourly production: 510.18 LCY/Hour

Unadjusted unit production/hour: 614.67 LCY/Hour

Optimal Number of Scrapers per push dozer: \_\_\_\_\_

JOB TIME AND COSTFleet size: 1 Team(s) Total job time: 18.97 HoursUnit cost: \$0.847 /LCY Total job cost: \$8,200



**REVEGETATION WORK**Task description: Vegetate disturbed areaSite: Base Product Gravel Pit 1Permit Action: March 2017Permit/Job#: M1994053**PROJECT IDENTIFICATION**Task #: 04AState: ColoradoAbbreviation: NoneDate: 3/30/2017County: MontroseFilename: M053-04aUser: DMCAgency or organization name: DRMS**FERTILIZING****Materials**

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

**Application**

Description	Cost /Acre
	\$
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$0.00</b>

**TILLING**

Description	Cost /Acre
Chisel plowing {DMG}	\$90.60
Weed control spraying (MEANS 31 31 16.13 3100)	\$242.00
<b>Total Tilling Cost/Acre</b>	<b>\$332.60</b>

**SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Rye, Perennial Tetraploid - Elgon	1.00	5.67	\$1.52
Crested Wheatgrass - Hy-Crest	1.30	5.97	\$5.75
Crested Wheatgrass - Nordan	1.30	5.97	\$5.20
Smooth Brome - Lincoln	1.80	5.99	\$7.65
Russian Wildrye - VNS	1.50	6.03	\$8.67
Intermediate Wheatgrass - Rush	4.75	10.14	\$17.81
<b>Totals Seed Mix</b>	<b>11.65</b>	<b>39.77</b>	<b>\$46.60</b>

**Application**

Description	Cost /Acre
	\$0.00
<b>Total Seed Application Cost/Acre</b>	<b>\$0.00</b>

**MULCHING and MISCELLANEOUS****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			\$	\$
<b>Total Mulch Materials Cost/Acre</b>				<b>\$0.00</b>

**Application**

Description	Cost /Acre
	\$
<b>Total Mulch Application Cost/Acre</b>	<b>\$0.00</b>

**NURSERY STOCK PLANTING**

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

**JOB TIME AND COST**

No. of Acres:	16	Cost /Acre:	\$379.20
Estimated Failure Rate:	25%	Cost /Acre*:	\$379.20
*Selected Replanting Work Items:	TILLING,SEEDING		

Initial Job Cost:	<b>\$6,067.20</b>
Reseeding Job Cost:	<b>\$1,516.80</b>
Total Job Cost:	<b>\$7,584</b>
Job Hours:	<b>24.00</b>

**EQUIPMENT MOBILIZATION/DEMOBILIZATION**Task description: **Mobilize reclamation crew and equipment**Site: **Base Product Gravel Pit 1**Permit Action: **March 2017**Permit/Job#: **M1994053****PROJECT IDENTIFICATION**Task #: **05A**State: **Colorado**Abbreviation: **None**Date: **3/30/2017**County: **Montrose**Filename: **M053-05a**User: **DMC**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:**

<b>Available Rig Capacities</b>	<b>0-25 Tons</b>	<b>26-50 Tons</b>	<b>51+ Tons</b>
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 D8T - 8U	53.70	\$63.00	\$125.45	1	\$188.45	\$125.45	\$250.00
Drill/Broadcast Seeder with Tractor	25.00	\$39.59	\$88.67	1	\$128.26	\$88.67	\$250.00
Cat 627G	41.80	\$93.72	\$117.55	1	\$211.27	\$117.55	\$250.00
Subtotals:					<b>\$527.98</b>	<b>\$331.67</b>	<b>\$750.00</b>

**ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Light Duty Pickup, 4x4, 3/4 T.	\$15.34	1	\$15.34	\$15.34
Subtotals:			<b>\$15.34</b>	<b>\$15.34</b>

**EQUIPMENT HAUL DISTANCE and Time**

Nearest Major City or Town within project area region:	<u>MONTROSE</u>	
Total one-way travel distance:	<u>5.00</u>	miles
Average Travel Speed:	<u>30.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$2,842.51</u>
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$5.11</u>
** one round trip, no haul rig:	

**Transportation Cycle Time:**

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>0.17</u>	<u>0.17</u>
Return Time (Hours):	<u>0.17</u>	<u>0.17</u>
Loading Time (Hours):	<u>0.50</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.50</u>	<u>NA</u>
Subtotals:	<u>1.33</u>	<u>0.33</u>

**JOB TIME AND COST**

Total job time:	<u>2.67</u>	Hours
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Total job cost:	<u>\$2,848</u>
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