

## COST SUMMARY WORK

Task description: Ayers Pit

Site: Ayers Pit

Permit Action: April 2017

Permit/Job#: M1981004

### PROJECT IDENTIFICATION

Task #: 000  
Date: 4/13/2017  
User: JLE

State: Colorado  
County: Morgan

Abbreviation: None  
Filename: M004-000

Agency or organization name: DRMS

### TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Backfill and grade highwall.	DOZER	1	18.63	\$4,547.00
002	Purchase and Haul Topsoil to Site	NA	1	75.00	\$35,150.00
003	Spread topsoil over the affected area.	SCRAPER1	1	5.67	\$4,547.00
004	Revegetation of the Affected Area	REVEGE	1	2.50	\$4,188.00
005	Mobilization of Equipment	MOBILIZE	1	2.72	\$4,874.00
<b><u>SUBTOTALS:</u></b>				<b>104.52</b>	<b>\$53,306</b>

### INDIRECT COSTS

#### OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	\$1,076.78
Performance bond:	1.05	Total =	\$559.71
Job superintendent:	50.56	Total =	\$3,693.41
Profit:	10.00	Total =	\$5,330.60

TOTAL O & P = \$10,660.50

CONTRACT AMOUNT (direct + O & P) = \$63,966.50

#### LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	<u>0.00</u>	Total =	<u>0.00</u>
Engineering work and/or contract/bid preparation:	<u>0.00</u>	Total =	<u>\$0.00</u>
Reclamation management and/or administration:	<u>5.00</u>		<u>\$3,198.33</u>

CONTINGENCY: 0.00 Total = \$0.00

TOTAL INDIRECT COST = \$13,858.83

**TOTAL BOND AMOUNT (direct + indirect) = \$67,164.83**

## BULLDOZER WORK

Task description: Backfill and grade highwall.

Site: Ayers Pit

Permit Action: April 2017

Permit/Job#: M1981004

### PROJECT IDENTIFICATION

Task #: 001

State: Colorado

Abbreviation: None

Date: 4/4/2017

County: Morgan

Filename: M004-001

User: JLE

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D9T - 9SU

Horsepower: 405

Blade Type: Semi-Universal

Attachment: 3-shank ripper

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$100.59	NA
Operating Cost/Hour:	\$87.23	100
Ripper own. Cost/Hour:	\$10.94	NA
Ripper op. Cost/Hour:	\$3.41	50
Operator Cost/Hour:	\$41.85	NA
Total unit Cost/Hour:	\$244.02	
Total Fleet Cost/Hour:	<b>\$244.02</b>	

### MATERIAL QUANTITIES

Initial Volume: 25,556

Swell factor: 1.230

Loose volume: **31,434** LCY

Source of estimated volume: 1,150 Foot Highwall, 20 Feet Tall

Source of estimated swell  
factor: Cat Handbook

### HOURLY PRODUCTION

Average push distance: 65 feet

Unadjusted hourly  
production: 1,752.8 LCY/hr

Materials consistency description: Compacted fill or embankment 0.9

Average push  
gradient: -30 %

Average site altitude: 4,360 feet

Material weight: 2,100 lbs/LCY

Weight description: Earth - Loam

Job Condition Correction Factor

Source

Operator Skill:	0.750	(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:	1.000	(DOZ-OC)
Push gradient:	1.601	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.095	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 1.1786

Adjusted unit  
production: 2,065.85 LCY/hr  
Adjusted fleet  
production: **2065.85** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)  
Unit cost: \$0.118/LCY

Total job time: **15.22** Hours  
Total job cost: **\$3,713**

## **Purchase and Haul Topsoil to Site**

Task description: Load and Haul Imported Topsoil to the Site

Site: Ayers Pit

Permit Action: April 2017

Permit/Job#: M1981004

### **PROJECT IDENTIFICATION**

Task #: 002

State: Colorado

Abbreviation: None

Date: 4/4/2017

County: Morgan

Filename: M004-002

User: JLE

Agency or organization name: DRMS

- Cost to purchase topsoil per Exhibit L - \$10.00 per yard
  - Need to purchase 2,500 yards
  - Total Topsoil Cost = \$25,000.00
- Hauling Cost; RSMeans 2016 Site and Landscape Cost Data, 31 23 2320 3078
  - \$4.06 per L.C.Y
  - Total Hauling Cost = \$10,150.00
- TOTAL COST = \$35,150

## SCRAPER TEAM WORK

Task description: Spread topsoil over the affected area.

Site: Ayers Pit

Permit Action: April 2017

Permit/Job#: M1981004

### PROJECT IDENTIFICATION

Task #: 003

State: Colorado

Abbreviation: None

Date: 4/4/2017

County: Morgan

Filename: M004-003

User: JLE

Agency or organization name: DRMS

### HOURLY EQUIPMENT

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 627G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	Cat D9T - 9SU
Road Maintenance -Motor Grader:	CAT 12M
-Water Truck:	Water Tanker, 5,000 Gal.

#### Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
% Utilization-machine:	100	NA	NA	50	25	25
Ownership cost/hour:	\$99.75	NA	NA	\$100.59	\$28.02	\$24.01
Operating cost/hour:	\$118.23	NA	NA	\$43.62	\$7.07	\$8.53
% Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	NA	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$31.26	NA	NA	\$41.85	\$28.90	\$21.39
Unit Subtotals:	\$249.24	NA	NA	\$186.05	\$63.99	\$53.94
Number of Units:	2	0	0	1	1	1
Group Subtotals:	Work:	\$498.48	Support:	\$186.05	Maint:	\$117.93

Total work team cost/hour: \$802.46

### MATERIAL QUANTITIES

Initial volume: 5,400

CCY

Swell factor: 1.000

Loose volume: 5,400

LCY

Source of estimated volume: Exhibit L – CN01

Source 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:	<u>18.85</u>	LCY

**Cycle Time:**

Scraper Loading Time: 0.90 Minutes  
 Maneuver and Spread Time: 0.60 Minutes

**Job Condition Correction:**

Site Altitude: 4360 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: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0**Haul Route:**

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	250.00	0.00	3.00	3.00	2824	0.26

Haul Time: 0.26 minutes**Return Route:**

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	250.00	0.00	3.00	3.00	2874	0.21

Return Time: 0.21 minutes

Total Scraper team cycle time: 1.97 minutes  
 Adjusted for job conditions: 953.03 LCY/Hour  
 Selected Number of Scrapers: 2 Scraper(s)  
 Adjusted single scraper team (unit) hourly production: 953.03 LCY/Hour  
 Adjusted multiple scraper team (fleet) hourly production: 953.03 LCY/Hour

Unadjusted unit production/hour: 1,148.22 LCY/Hour  
 Optimal Number of Scrapers per push  
 dozer: \_\_\_\_\_

**JOB TIME AND COST**Fleet size: 1 Team(s) Total job time: 5.67 HoursUnit cost: \$0.842 /LCY Total job cost: \$4,547

## REVEGETATION WORK

Task description: Revegetation of the Affected Area

Site: Ayers Pit

Permit Action: April 2017

Permit/Job#: M1981004

### PROJECT IDENTIFICATION

Task #: 004

State: Colorado

Abbreviation: None

Date: 4/4/2017

County: Morgan

Filename: M1981004

User: JLE

Agency 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
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	\$106.29
<b>Total Tilling Cost/Acre</b>	<b>\$106.29</b>

### SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Birdsfoot Trefoil - Empire	0.25	2.40	\$2.59
Big Bluegrass - Sherman	0.50	10.33	\$3.75
Mountain Brome - Bromar	3.00	4.82	\$13.05
Red Clover - Medium	0.50	3.10	\$6.67
White Dutch Clover - Alice	0.25	4.88	\$1.68
Sheep Fescue - Covar	0.50	7.81	\$2.62
Slender Wheatgrass - Native	2.00	7.30	\$5.64
Needlegrass, Green - Lodorm	2.00	8.31	\$9.74
Prairie Junegrass	0.15	7.97	\$4.55
Timothy - Climax	0.25	7.17	\$0.39
Bluebunch Wheatgrass - Goldar	1.00	3.21	\$5.50

<b>Totals Seed Mix</b>	10.40	67.31	<b>\$56.16</b>
------------------------	-------	-------	----------------

#### **Application**

<b>Description</b>	<b>Cost /Acre</b>
Broadcast seeding [DMG]	\$267.22
<b>Total Seed Application Cost/Acre</b>	<b>\$267.22</b>

### **MULCHING and MISCELLANEOUS**

#### **Materials**

<b>Description</b>	<b>Units / Acre</b>	<b>Unit</b>	<b>Cost / Unit</b>	<b>Cost /Acre</b>
Straw, delivered {MEANS 31 25 14.16 1200}	1.00	TON	\$261.00	\$261.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$261.00</b>

#### **Application**

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

### **NURSERY STOCK PLANTING**

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

### **JOB TIME AND COST**

No. of Acres:	5	Cost /Acre:	\$756.69
Estimated Failure Rate:	25%	Cost /Acre*:	\$323.38
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$3,783.45</b>
Reseeding Job Cost:	<b>\$404.23</b>
Total Job Cost:	<b>\$4,188</b>
Job Hours:	<b>2.50</b>



## EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: Mobilization of Equipment

Site: Ayers Pit

Permit Action: April 2017

Permit/Job#: M1981004

### PROJECT IDENTIFICATION

Task #: 005

State: Colorado

Abbreviation: None

Date: 4/4/2017

County: Morgan

Filename: M004-005

User: JLE

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 D9T - 9SU	66.13	\$111.53	\$125.45	1	\$236.98	\$125.45	\$250.00
Cat 627G w/push-pull	43.48	\$99.75	\$117.55	2	\$434.60	\$235.10	\$500.00
CAT 12M	16.01	\$28.02	\$88.67	1	\$116.69	\$88.67	\$250.00
Power Mulcher (Bowie LD-90)	6.00	\$7.03	\$88.67	1	\$95.70	\$88.67	\$250.00

Subtotals: **\$883.97** **\$537.89** **\$1,250.00**

### ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 5,000 Gal.	\$79.53	1	\$79.53	\$79.53
Fuel Tanker, 6x4, 210 HP	\$56.88	2	\$113.76	\$113.76
Light Duty Pickup, 4x4, 1 T. Crew	\$47.41	2	\$94.82	\$94.82

Subtotals: **\$288.11** **\$288.11**

**EQUIPMENT HAUL DISTANCE and Time**

Nearest Major City or Town within project area region:	<u>BRUSH</u>	
Total one-way travel distance:	<u>10.40</u>	miles
Average Travel Speed:	<u>40.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$4,724.44</u>
'* two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$149.82</u>
** one round trip, no haul rig:	

**Transportation Cycle Time:**

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>0.26</u>	<u>0.26</u>
Return Time (Hours):	<u>0.26</u>	<u>0.26</u>
Loading Time (Hours):	<u>0.42</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.42</u>	<u>NA</u>
Subtotals:	<u>1.36</u>	<u>0.52</u>

**JOB TIME AND COST**

Total job time:	<u>2.72</u>	Hours
-----------------	-------------	-------

Total job cost:	<u>\$4,874</u>
-----------------	----------------