

COST SUMMARY WORK

Task description: Ayers Pit

Site: Ayers Pit

Permit Action: April 2017

Permit/Job#: M1981004

PROJECT IDENTIFICATION

Task #: 000

State: Colorado

Abbreviation: None

Date: 4/28/2017

County: Morgan

Filename: M004-000

3:11:12 PM

User: JLE

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
003	Spread topsoil over the affected area.	SCRAPER1	1	5.67	\$4,547.00
004	Revegetation of the Affected Area	REVEGE	1	2.50	\$8,684.00
005	Mobilization of Equipment	MOBILIZE	1	2.72	\$4,874.00
<u>SUBTOTALS:</u>				29.52	\$22,652

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance: 2.02

Total = \$457.57

Performance bond: 1.05

Total = \$237.85

Job superintendent: 14.76

Total = \$1,078.22

Profit: 10.00

Total = \$2,265.20

TOTAL O & P = \$4,038.84

CONTRACT AMOUNT (direct + O & P) = \$26,690.84

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

\$1,334.54

CONTINGENCY: 0.00

Total = \$0.00

TOTAL INDIRECT COST = \$5,373.38

TOTAL BOND AMOUNT (direct + indirect) = \$28,025.38

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: 4/28/2017

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:	\$244.02	

MATERIAL QUANTITIES

Initial Volume: 22,222

Swell factor: 1.120

Loose volume: **24,889** 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: 3,250 lbs/LCY

Weight description: Gravel - Pitrun

Job Condition Correction Factor

		<u>Source</u>
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:	0.708	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.7621

Adjusted unit
production: 1,335.81 LCY/hr
Adjusted fleet
production: **1335.81** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: \$0.183/LCY

Total job time: **18.63** Hours
Total job cost: **\$4,547**

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: 4/28/2017

County: Morgan

Filename: M004-003

3:15:31 PM

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 - Estimate of Imported Soil Needed

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 Hours

Unit 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: 4/28/2017

County: Morgan

Filename: M1981004

User: JLE

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Manure, delivery (average cost), per ton	20.00	ton	\$42.72	\$854.40
			Total Fertilizer Materials Cost/Acre	\$854.40

Application

Description	Cost /Acre
Manure, tractor spreader (MEANS 32 91 13.23 4450)	\$60.98
Total Fertilizer Application Cost/Acre	\$60.98

TILLING

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

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
Totals Seed Mix	10.40	67.31	\$56.16

Application

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

MULCHING and MISCELLANEOUS**Materials**

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

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:	5	Cost /Acre:	\$1,672.07
Estimated Failure Rate:	20%	Cost /Acre*:	\$323.38
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	\$8,360.35
Reseeding Job Cost:	\$323.38
Total Job Cost:	\$8,684
Job Hours:	2.50

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: 4/28/2017

County: Morgan

Filename: M004-005

3:18:15 PM

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: BRUSH

Total one-way travel distance: 10.40 miles

Average Travel Speed: 40.00 mph

Total Non-Roadable Mob/Demob Cost * \$4,724.44

* two round trips with haul rig:

Total Roadable Mob/Demob Cost ** \$149.82

** one round trip, no haul rig:

Transportation Cycle Time:

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

JOB TIME AND COST

Total job time: 2.72 Hours

Total job cost: \$4,874