

COST SUMMARY WORK

Task description: Cost Summary

Site: State Pit

Permit Action: TR-02

Permit/Job#: M1990112

PROJECT IDENTIFICATION

Task #: 000

State: Colorado

Abbreviation: None

Date: 10/31/2018

County: Pueblo

Filename: M112-000

User: ERR

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Grade Highwall and Misc. Slopes	DOZER	2	15.42	\$6,904.00
002	Replace Subsoil and Topsoil	SCRAPER1	1	31.97	\$123,968.00
003	Revegetate 200 Acres	REVEGE	1	100.00	\$258,415.00
004	Mob/Demob Reclamation Equipment	MOBILIZE	1	1.96	\$11,562.00
<u>SUBTOTALS:</u>				149.35	\$400,849

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance: 2.02
Performance bond: 1.05
Job superintendent: 63.67
Profit: 10.00

Total = \$8,097.15

Total = \$4,208.92

Total = \$4,651.09

Total = \$40,084.90

TOTAL O & P = \$57,042.06

CONTRACT AMOUNT (direct + O & P) = \$457,891.06

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

\$22,894.55

CONTINGENCY: 0.00

Total = \$0.00

TOTAL INDIRECT COST = \$79,936.61

TOTAL BOND AMOUNT (direct + indirect) = \$480,785.61

BULLDOZER WORKTask description: **Grade Highwall and Misc. Slopes**Site: **State Pit**Permit Action: **TR-02**Permit/Job#: **M1990112****PROJECT IDENTIFICATION**Task #: **001**State: **Colorado**Abbreviation: **None**Date: **10/31/2018**County: **Pueblo**Filename: **M112-001**User: **ERR**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **Cat D8T - 8SU**Horsepower: **310**Blade Type: **Semi-Universal**Attachment: **3-shank ripper**Shift Basis: **1 per day**Data Source: **(CRG)****Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$93.62	NA
Operating Cost/Hour:	\$73.35	100
Ripper own.		
Cost/Hour:	\$8.93	NA
Ripper op. Cost/Hour:	\$7.78	100
Operator Cost/Hour:	\$40.23	NA

Total unit Cost/Hour: **\$223.91**Total Fleet Cost/Hour: **\$447.82****MATERIAL QUANTITIES**Initial Volume: **15,625**Swell factor: **1.250**Loose volume: **19,531 LCY**Source of estimated volume: **DRMS Observations: 25' H x 1800' L highwall**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **75 feet**Unadjusted hourly production: **1,017.1 LCY/hr**Materials consistency description: **Compacted fill or embankment 0.9**Average push gradient: **-30 %**Average site altitude: **4,800 feet**Material weight: **2,650 lbs/LCY**Weight description: **Decomposed rock - 25% Rock, 75% Earth****Job Condition Correction Factor**Operator Skill: **0.750**Source
(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:	0.800	(FND-RF)
Push gradient:	1.601	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.868	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.6228

Adjusted unit production: 633.45 LCY/hr

Adjusted fleet production: **1266.9** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.353/LCY

Total job time: **15.42** Hours

Total job cost: **\$6,904**

SCRAPER TEAM WORKTask description: **Replace Subsoil and Topsoil**Site: **State Pit**Permit Action: **TR-02**Permit/Job#: **M1990112****PROJECT IDENTIFICATION**Task #: **002**State: **Colorado**Abbreviation: **None**Date: **10/31/2018**County: **Pueblo**Filename: **M90112**User: **ERR**Agency or organization name: **DRMS****HOURLY EQUIPMENT**COSTShift basis: **1 per day**

Equipment Description	
-Scraper:	Cat 657G
-Dozer:	NA
Support Equipment -Load Area:	Cat D8T - 8SU
-Dump Area:	Cat D8T - 8SU
Road Maintenance -Motor Grader:	CAT 12M
-Water Truck:	Water Tanker, 2,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	100	100	100	50
Ownership cost/hour:	\$168.92	NA	\$93.62	\$93.62	\$30.73	\$8.51
Operating cost/hour:	\$200.27	NA	\$73.35	\$73.35	\$30.60	\$7.98
%Utilization-ripper:	NA	NA	0	0	NA	NA
Ripper own. cost/hour:	NA	NA	\$8.93	\$8.93	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$46.06	NA	\$40.23	\$40.23	\$45.64	\$0.00
Unit Subtotals:	\$415.24	NA	\$216.13	\$216.13	\$106.97	\$16.49
Number of Units:	8	0	1	1	1	1
Group Subtotals:	Work:	\$3,321.92	Support:	\$432.26	Maint:	\$123.46

Total work team cost/hour: **\$3,877.64****MATERIAL QUANTITIES**Initial volume: **161,333**

CCY

Swell factor: **1.000**Loose volume: **161,333**

LCY

Source of estimated volume: **Application: 6" subsoil. ~6"topsoil. 100 acres**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight: **2,650 lbs/LCY**
 Material description: **Decomposed rock - 25% Rock, 75% Earth**
 Rated Payload: **104,000 pounds**
 Payload Capacity: **39.25 LCY**

Struck Volume: **32.00** LCY
 Heaped Volume: **44.00** LCY
 Average Volume: **38.00** LCY
 Adjusted Capacity: **38.00** LCY

Cycle Time:Scraper Loading Time: 1.00 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 4800 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: Hard, smooth, stabilized, surfaced, watered, maintained 2.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1500.00	-1.00	2.00	1.00	3004	0.73

Haul Time: 0.73 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1500.00	1.00	2.00	3.00	2958	0.67

Return Time: 0.67 minutesTotal Scraper team cycle time: 3.00 minutesAdjusted for job conditions: 630.80 LCY/HourSelected Number of Scrapers: 8 Scraper(s)Adjusted single scraper team (unit) hourly production: 5,046.40 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 5,046.40 LCY/HourUnadjusted unit production/hour: 760.00 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 31.97 HoursUnit cost: \$0.768 /LCYTotal job cost: \$123,968

REVEGETATION WORKTask description: Revegetate 200 AcresSite: State PitPermit Action: TR-02Permit/Job#: M1990112**PROJECT IDENTIFICATION**Task #: 003State: ColoradoAbbreviation: NoneDate: 10/31/2018County: PuebloFilename: M112-003User: ERRAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Ammonium nitrate, 33-0-0	121.20	pound	\$0.34	\$41.21
Triple superphosphate, 0-46-0	87.00	pound	\$0.44	\$38.28
			Total Fertilizer Materials Cost/Acre	\$79.49

Application

Description	Cost /Acre
Truck whirlwind spreader (MEANS 32 01 90.13 0140)	\$111.94
Total Fertilizer Application Cost/Acre	\$111.94

TILLING

Description	Cost /Acre
Chisel plowing {DMG}	\$92.77
Weed control spraying (MEANS 31 31 16.13 3100)	\$193.60
Total Tilling Cost/Acre	\$286.37

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	0.40	6.53	\$6.66
Crested Wheatgrass - Hy-Crest	2.00	9.18	\$9.06
Sideoats Grama - El Reno	1.50	4.92	\$14.85
Intermediate Wheatgrass - Oahe	2.50	5.34	\$9.83
Pubescent Wheatgrass - Luna	2.50	5.17	\$10.43
White Sweet Clover	0.25	1.49	\$1.06
Western Wheatgrass - Arriba	3.00	7.58	\$24.84
Totals Seed Mix	12.15	40.21	\$76.72

Application

Description	Cost /Acre
Drill Seeding (DRMS Survey Cost)	\$232.00
Total Seed Application Cost/Acre	\$232.00

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	1.00	TON	\$288.00	\$288.00
Total Mulch Materials Cost/Acre				\$288.00

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$68.78
Total Mulch Application Cost/Acre	\$68.78

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:	<u>200</u>	Cost /Acre:	<u>\$1,143.30</u>
Estimated Failure Rate:	<u>25%</u>	Cost /Acre*:	<u>\$595.09</u>
*Selected Replanting Work Items:	<u>TILLING,SEEDING</u>		
Initial Job Cost:	<u>\$228,660.00</u>		
Reseeding Job Cost:	<u>\$29,754.50</u>		
Total Job Cost:	<u>\$258,415</u>		
Job Hours:	<u>100.00</u>		

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Mob/Demob Reclamation Equipment**Site: **State Pit**Permit Action: **TR-02**Permit/Job#: **M1990112****PROJECT IDENTIFICATION**Task #: **004**State: **Colorado**Abbreviation: **None**Date: **10/31/2018**County: **Pueblo**Filename: **M112-004**User: **ERR**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 D8T - 8SU	53.08	\$102.55	\$125.45	2	\$456.00	\$250.90	\$500.00
Cat 657G	78.88	\$168.92	\$125.45	8	\$2,354.96	\$1,003.60	\$2,000.00
CAT 12M	16.01	\$32.90	\$88.67	1	\$121.57	\$88.67	\$250.00
Drill/Broadcast Seeder with Tractor	25.00	\$15.54	\$88.67	1	\$104.21	\$88.67	\$250.00
Power Mulcher (Bowie LD-90)	6.00	\$8.33	\$88.67	1	\$97.00	\$88.67	\$250.00

Subtotals: **\$3,133.74** **\$1,520.51** **\$3,250.00****ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 2,500 Gal.	\$24.48	1	\$24.48	\$24.48

Subtotals: **\$24.48** **\$24.48**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	<u>PUEBLO</u>	
Total one-way travel distance:	<u>17.00</u>	miles
Average Travel Speed:	<u>50.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$11,545.13</u>
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$16.65</u>
** one round trip, no haul rig:	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>0.34</u>	<u>0.34</u>
Return Time (Hours):	<u>0.34</u>	<u>0.34</u>
Loading Time (Hours):	<u>0.15</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.15</u>	<u>NA</u>
Subtotals:	<u>0.98</u>	<u>0.68</u>

JOB TIME AND COST

Total job time:	<u>1.96</u>	Hours
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Total job cost:	<u>\$11,562</u>
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