

COST SUMMARY WORK

Task description: Cottonwood Quarry Bond Estimate

Site: Cottonwood Quarry Permit Action: SO-02 Bond Estimate Permit/Job#: M2004061

PROJECT IDENTIFICATION

Task #: 001 State: Colorado Abbreviation: None
Date: 5/23/2018 County: Grand Filename: M061-001
User: PSH

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
002	Mob / Demob	MOBILIZE	1	0.28	\$1,629.00
003	Spread Root Zone Material	SCRAPER1	1	60.67	\$30,245.00
004	Spread Topsoil	SCRAPER1	1	35.39	\$17,643.00
005	Grade Seed Bed	GRADER	1	19.41	\$1,887.00
006	Revegetation	REVEGE	1	80.00	\$37,697.00
007	Demolish Building	DEMOLISH	1	20.00	\$1,018.46
<u>SUBTOTALS:</u>				215.75	\$90,119

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	\$1,820.40
Performance bond:	1.05	Total =	\$946.25
Job superintendent:	0.00	Total =	\$0.00
Profit:	10.00	Total =	\$9,011.90
		TOTAL O & P =	\$11,778.55
		CONTRACT AMOUNT (direct + O & P) =	\$101,897.55

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		\$5,094.88

CONTINGENCY: 0.00 Total = \$0.00

TOTAL INDIRECT COST = \$16,873.43

TOTAL BOND AMOUNT (direct + indirect) = \$106,900.00
(Rounded)

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Mob / Demob**Site: **Cottonwood Quarry**Permit Action: **SO-02 Bond Estimate**Permit/Job#: **M2004061****PROJECT IDENTIFICATION**Task #: **002**State: **Colorado**Abbreviation: **None**Date: **5/23/2018**County: **Grand**Filename: **M061-002**User: **PSH**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 627G w/push-pull	43.48	\$99.75	\$117.55	2	\$434.60	\$235.10	\$500.00
CAT 140M	16.68	\$37.07	\$88.67	1	\$125.74	\$88.67	\$250.00

Subtotals: **\$560.34** **\$323.77** **\$750.00****ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Light Duty Pickup, 4x4, 1 T. Crew	\$19.43	1	\$19.43	\$19.43

Subtotals: **\$19.43** **\$19.43**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	<u>GRANBY</u>	
Total one-way travel distance:	<u>2.50</u>	miles
Average Travel Speed:	<u>35.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$1,626.30</u>
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$2.78</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>0.00</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.00</u>	<u>NA</u>
Subtotals:	<u>0.14</u>	<u>0.14</u>

JOB TIME AND COST

Total job time:	<u>0.29</u>	Hours
-----------------	-------------	-------

Total job cost:	<u>\$1,629</u>
-----------------	----------------

SCRAPER TEAM WORKTask description: **Spread Root Zone Material**Site: **Cottonwood Quarry**Permit Action: SO-02 Bond EstimatePermit/Job#: M2004061**PROJECT IDENTIFICATION**Task #: 003State: ColoradoAbbreviation: NoneDate: 5/23/2018County: GrandFilename: M061-003User: PSHAgency 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:	NA
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	NA	NA	NA
Ownership cost/hour:	\$99.75	NA	NA	NA	NA	NA
Operating cost/hour:	\$118.23	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$31.26	NA	NA	NA	NA	NA
Unit Subtotals:	\$249.24	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work: \$498.48		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$498.48****MATERIAL QUANTITIES**Initial volume: 48,400

CCY

Swell factor: 1.000Loose volume: **48,400**

LCY

Source of estimated volume: Division of Reclamation, Mining & SafetySource 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: 52,800 pounds
 Payload Capacity: 19.92 LCY

Struck Volume: 15.70 LCY
 Heaped Volume: 22.00 LCY
 Average Volume: 18.85 LCY
 Adjusted Capacity: **18.85** LCY

Cycle Time:Scraper Loading Time: 0.90 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 8320 feet

	Scraper	Push Dozer	Source
Altitude Adj:	0.960	NA	(CAT HB)
Job Efficiency:	0.830	NA	(CAT HB)
Net Correction:	0.797	NA	

Travel Time:Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	5.00	5.00	10.00	1068	0.50

Haul Time: 0.50 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	-5.00	5.00	0.00	2921	0.26

Return Time: 0.26 minutesTotal Scraper team cycle time: 2.26 minutesAdjusted for job conditions: 797.71 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 797.71 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 797.71 LCY/HourUnadjusted unit production/hour: 1,000.88 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 60.67 HoursUnit cost: \$0.625 /LCYTotal job cost: \$30,245

SCRAPER TEAM WORKTask description: **Spread Topsoil**Site: **Cottonwood Quarry**Permit Action: **SO-02 Bond Estimate**Permit/Job#: **M2004061****PROJECT IDENTIFICATION**Task #: **004**State: **Colorado**Abbreviation: **None**Date: **5/23/2018**County: **Grand**Filename: **M061-004**User: **PSH**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:	NA
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	NA	NA	NA
Ownership cost/hour:	\$99.75	NA	NA	NA	NA	NA
Operating cost/hour:	\$118.23	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$31.26	NA	NA	NA	NA	NA
Unit Subtotals:	\$249.24	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work:	\$498.48	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$498.48****MATERIAL QUANTITIES**Initial volume: **28,233**

CCY

Swell factor: **1.000**Loose volume: **28,233**

LCY

Source of estimated volume: **Division of Reclamation, Mining & Safety**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 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 8320 feet

	Scraper	Push Dozer	Source
Altitude Adj:	0.960	NA	(CAT HB)
Job Efficiency:	0.830	NA	(CAT HB)
Net Correction:	0.797	NA	

Travel Time:Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	5.00	5.00	10.00	1068	0.49

Haul Time: 0.49 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	-5.00	5.00	0.00	2921	0.26

Return Time: 0.26 minutesTotal Scraper team cycle time: 2.25 minutesAdjusted for job conditions: 801.25 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 801.25 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 801.25 LCY/HourUnadjusted unit production/hour: 1,005.33 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 35.24 HoursUnit cost: \$0.622 /LCYTotal job cost: \$17,565

MOTOR GRADER WORK

Task description: Grade Seed Bed

Site: Cottonwood Quarry Permit Action: SO-02 Bond Estimate Permit/Job#: M2004061

PROJECT IDENTIFICATION

Task #: 005 State: Colorado Abbreviation: None
Date: 5/23/2018 County: Grand Filename: M061-005
User: PSH

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 140M Horsepower: 183
Ripper Attachment: Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$35.08</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$33.24</u>	<u>100</u>
Ripper Ownership Cost/Hour:	<u>\$0.00</u>	<u>NA</u>
Ripper Operating Cost/Hour:	<u>\$0.00</u>	
Operator Cost/Hour:	<u>\$28.90</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$97.22</u>	
Total Fleet Cost/Hour:	<u>\$97.22</u>	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 30.00 acres

Source of estimated acreage: Permit Application

HOURLY PRODUCTION

Average Grader Speed: 1.50 mph
Selected Application: Finish grading (0-2.5 mph) - 1.5
Selected Blade Angle: 0 degrees
Effective Blade Length: 12.00 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 10.00 feet
Unadjusted Hourly Unit Production: 1.8182 acres/hour

Job Condition Correction Factors

Site Altitude: 8320 feet

		Source
Altitude Adj:	<u>1.00</u>	<u>(CAT HB)</u>
Job Efficiency:	<u>0.85</u>	<u>(1sh/d, mod.)</u>
Net Correction:	<u>0.8500</u>	<u>multiplier</u>

Adjusted Hourly Unit Production: 1.5455 acres/Hour
Adjusted Hourly Fleet Production: 1.5455 acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: 19.41 Hours

Unit cost: \$62.91 per acre Total job cost: \$1,887

REVEGETATION WORKTask description: **Revegetation**Site: **Cottonwood Quarry**Permit Action: **SO-02 Bond Estimate**Permit/Job#: **M2004061****PROJECT IDENTIFICATION**Task #: **006**State: **Colorado**Abbreviation: **None**Date: **5/23/2018**County: **Grand**Filename: **M061-006**User: **PSH**Agency or organization name: **DRMS****FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
6-24-24, 10-20-10, 15-15-15	2.00	pound	\$0.27	\$0.54
			Total Fertilizer Materials Cost/Acre	\$0.54

Application

Description	Cost /Acre
Truck whirlwind spreader (MEANS 32 01 90.13 0140)	\$111.08
Total Fertilizer Application Cost/Acre	\$111.08

TILLING

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

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Arizona Fescue - Redondo	0.60	6.89	\$7.10
Indian Ricegrass - Native	2.40	7.77	\$16.80
Smooth Brome - Manchar	4.20	13.98	\$17.85
Pubescent Wheatgrass - Luna	3.50	7.23	\$14.25
Yellow Sweet Clover - Madrid	0.60	3.58	\$1.70
Slender Wheatgrass - Pryor	1.00	3.65	\$3.02
Totals Seed Mix	12.30	43.10	\$60.72

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}	2.00	TON	\$261.00	\$522.00
Total Mulch Materials Cost/Acre				\$522.00

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: 30 Cost /Acre: \$992.36
 Estimated Failure Rate: 30% Cost /Acre*: \$880.74
 *Selected Replanting Work Items: SEEDING,MULCHING

Initial Job Cost: **\$29,770.80**
 Reseeding Job Cost: **\$7,926.66**
 Total Job Cost: **\$37,697**
 Job Hours: **80.00**

DEMOLITION WORK

Task description: Demolish Building

Site: Cottonwood Quarry

Permit Action: SO-02 Bond Estimate

Permit/Job#: M2004061

PROJECT IDENTIFICATION

Task #: 007

State: Colorado

Abbreviation: None

Date: 5/23/2018

County: Grand

Filename: M061-007

User: PSH

Agency or organization name: DRMS

UNIT COSTS

Location adjustment: 95.90 %

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Service Building	50x50x12	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	3,000.00	CF	\$0.35	\$1,062.00

Job Hours: 20.00

Subtotal
(unadjusted): \$1,062.00

Total Cost
(adjusted for location): \$1,018.46