

December 14, 2020

Jeremy Deuto Aggregate Industries – WCR, Inc. 1687 Cole Blvd. Golden, CO 80401

RE: Lyons Quarry, Permit No. M-1977-141, Technical Revision No. 4 (TR-04), Adequacy Review No. 2, Bond Estimate

Mr. Deuto:

The Division of Reclamation, Mining and Safety (Division) has completed its adequacy review of your response submitted on December 2, 2020 for Technical Revision No. 4 (TR-04). The Division has calculated a reclamation bond (see enclosed estimate) for the reclamation plan proposed for Reclamation Area 2 in TR-04.

Please review the enclosed estimate and submit any comments at your earliest convenience. If the Division receives no comments from you by the TR-04 decision date of **December 16, 2020**, and no extension has been requested by that time, TR-04 will be approved and a notice of surety increase will be issued to you in the amount of \$540,577.00. You will have 60 days from the date of the notice to post the additional required financial warranty.

If you have any questions, you may contact me by telephone at (303) 866-3567, ext. 8129, or by email at <u>amy.eschberger@state.co.us</u>.

Sincerely,

Uny Erchluger

Amy Eschberger Environmental Protection Specialist

Encl: Division's bond estimate

Cc: Chance Allen, Aggregate Industries - WCR, Inc. Michael Cunningham, DRMS



COST SUMMARY WORK

Task description: Co		Cost Summary					
Site: Lyons Qu	ıarry	Pe	Permit Action: <u>TR-4 2020</u> Permit/J				
PROJECT	IDENTIFIC	CATION					
Task #:	000	State:	Colorado		Abbreviation:	None	
Date:	12/11/2020	County:	Boulder		Filename:	M141-000	
User:	AME						

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Project safety plan	NA	0	8.00	\$8,316
002	Erosion control	NA	0	8.00	\$41,582
003	Site survey	NA	0	8.00	\$12,475
004	Debris removal (10 tons/load) 5 loads x \$1,600 load	NA	1	8.00	\$8,000
005	Excavate/transport material from LQRA2 to Quarry 2	TRUCK1	1	10.66	\$9,859
006	Excavate/transport material from LQRA3 to Quarry 2	TRUCK1	1	22.07	\$23,349
007	Excavate/transport material from LQRA4 to Quarry 2	TRUCK1	1	41.84	\$44,266
008	Excavate/transport material from LQRA5 to Quarry 2	TRUCK1	1	22.39	\$23,684
009	Transport soil riprap to LQRA4	LOADER	1	116.27	\$15,354
010	Backfill LQRA4 below grade with soil riprap	EXCAVATE	1	19.76	\$2,994
011	Transport soil riprap to LQRA5	LOADER	1	50.22	\$6,632
012	Backfill LQRA5 below grade with soil riprap	EXCAVATE	1	7.50	\$1,137
013	Place (Type M) riprap adjacent to creek channel	EXCAVATE	1	0.67	\$102
014	Final grading	DOZER	2	11.50	\$4,282
015	Soil test plots	NA	0	16.00	\$50,600
016	Replace topsoil on LQRA2	SCRAPER1	1	0.44	\$327
017	Replace topsoil on LQRA3	SCRAPER1	1	1.88	\$1,389
018	Replace topsoil on LQRA4	SCRAPER1	1	4.74	\$3,506
019	Replace topsoil on LQRA5	SCRAPER1	1	2.24	\$1,658
020	Import 2,260 cy topsoil	NA	1	8.00	\$41,160
021	Revegetate 5 acres (flatter slopes)	REVEGE	1	10.00	\$16,052
022	Revegetate 0.15 acres (steeper slopes)	REVEGE	1	10.00	\$482
023	Mobilization/Demobilization	MOBILIZE	1	29.68	\$96,099
		SUBTO	DTALS:	417.86	\$413,305

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02
Performance bond:	1.05
Job superintendent:	190.00
Profit:	10.00

Total =	\$8,349	
Total =	\$4,340	
Total =	\$13,214	
Total =	\$41,330	

TOTAL O & P =	\$67,233
CONTRACT AMOUNT (direct + O & P) = $($	\$480,538

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): Engineering work and/or contract/bid preparation: Reclamation management and/or administration:	\$500 7.39 5.00	Total = Total =	\$500 \$35,512 \$24,027
CONTINGENCY:	0.00	Total =	\$0
	TOTAL	INDIRECT COST =	\$127,272
TOTAL BO	\$540,577		

TRUCK/LOADER TEAM WORK

Site: Lyons Quarry		Permit	Actio	on: <u>TR-4 2020</u>		Permit/Job#:	M1977141	
PROJECT IDEN	TIFICATION							
Task #: 005	11110111101	-	Colora	ado	A۱	breviation:	None	
Date: $\frac{12/11}{12}$	/2020		Bould				M141-005	
User: AME								
Agency or	organization nar	ne: DRM	S					
HOURLY EQUI	PMENT COST	<u>ר</u>			Shift ba	sis: <u>1 per day</u>		
				Equipment Descri	ption			
Т	ruck Loader Tea	-		730				
Supp	ort Equipment -L	-Loader: oad Area:	NA	Г 966Н				
~~PP		ump Area:		D7R DS XR Serie	es II			
Road M	aintenance –Mot			T 16M	<u> </u>			
	-Wa	ter Truck:	Wat	ter Tanker, 3,500	Gal.			
Cost Breakdown:	Truck/Loa	ader Team		Support I	Equipment	Mainte	nance Equipm	ent
	Truck	Loader		Load Area	Dump Area	Motor Grad		
6Utilization-machine:	100		100	NA	100	10	00	10
Ownership cost/hour:	\$58.32	\$42	2.87	NA	\$74.64	\$55.2	79 \$	14.7
Operating cost/hour:	\$49.78	\$53	3.22	NA	\$71.55	\$60.0	08 \$.	30.5
%Utilization-riper:	NA		0	NA	NA	N	A	NA
Ripper own. cost/hour:	NA		0.00	NA	\$0.00	\$0.0		\$0.0
Ripper op. cost/hour:	NA		0.00	NA	\$0.00	\$0.0		\$0.0
Operator cost/hour:	\$24.82	\$35		NA	\$40.04	\$46.		\$0.0
Unit Subtotals:	\$132.93	\$132		NA	\$186.22	\$162.7		45.2
Number of Units:	3 Work	\$520.94	1	0 Sumporti	<u> </u>	Mair	1	
Group Subtotals:	Work:	\$530.84		Support:	\$186.22	Man	nt: \$208.03	
Total work team cos	st/hour: <u>\$925.09</u>)						
MATERIAL QU	ANTITIES							
			aav		6			
Initial volume: Loose volume:	,		CCY LCY		factor: 1.125			
	urce of estimated		TR-4					
	of estimated swe			Handbook				
	Material Purch		\$0.00					
	То	otal Cost:	\$0.00)				
HOURLY PRO	DUCTION							
<u>Truck Capacity:</u>								
Truck Payload (weig	ght) Basis:							
Material w	U			Pounds/LCY				
Descr Rated Pa	-	1	- 25%	Rock, 75% Earth Pounds	1			
rateu I a	J10 uu . 0∠,000			i Junus				

Truck Bed (volume) Basis: Struck Volume:						
	17.10 I	LCY				
Heaped Volume:	22.10	LCY				
Average Volume:	19.60 l	LCY				
Adjusted Volume:	22.10	LCY				
Final	Truck Volume	Based on Number of	f Loader Passes:	22.00	LCY	
Loading Tool Capacity						
Loading Tool Capacity			D			
			Buc	ket Size Class: <u>N</u>	A	_
Rated Capacity:	5.000	LCY (heaped)				-
Bucket Fill Factor:	1.100	Other - rock/dir	t mixtures (100	-120%) 1.100		-
Adjusted Capacity:	5.500	LCY				
Job Condition Corrections:		Si	te Altitude (ft.):	5500 feet		
	Truck	Loader	Source			
Altitude Adj:	1.000	1.000	(CAT HE			
Job Efficiency:	0.830	0.830	(CAT HE	,		
JOD Efficiency.	0.030	0.850	(CAT III)		
Net Correction:	0.830	0.830				
Loading Tool Cycle Time:	Number	of Loading Tool Pa	sses Required to	Fill Truck:	4 p	asses
Excavators and Front Shovel	ls:					
Machine Cycle Time v Selected Value v						
Track Loadors	Matarial Desari	<u> </u>				
Track Loaders –		<u> </u>				
Track Loaders – Cycle Time Elements (min.):		<u> </u>				
		<u> </u>		Dump: 0.100		
Cycle Time Elements (min.): Load: <u>NA</u>	M	ption:		1		
Cycle Time Elements (min.):	M	ption:	ne (load, dump, 1	1		ıtes
Cycle Time Elements (min.): Load: <u>NA</u>	Unadjusted Bas	ption: aneuver:NA sic Loader Cycle Tir	ne (load, dump, 1	1		ites
Cycle Time Elements (min.): Load: <u>NA</u> Wheel and Track Loaders -	Unadjusted Bas Mixed materia	ption: aneuver:NA sic Loader Cycle Tin al 0.02	me (load, dump, 1	naneuver):0. Factor (min.) 0.020	500 minu	ites
Cycle Time Elements (min.): Load: <u>NA</u> Wheel and Track Loaders - Cycle Time Factors	Unadjusted Bas	ption: aneuver:NA sic Loader Cycle Tin al 0.02	ne (load, dump, 1	naneuver): 0. Factor (min.)	500 minu Source	ites
Cycle Time Elements (min.): Load: NA Wheel and Track Loaders - Cycle Time Factors Material:	Ma Unadjusted Bas Mixed materia Dumped by tr	ption: aneuver:NA sic Loader Cycle Tin al 0.02		naneuver): 0. Factor (min.) 0.020 0.020 -0.040	500 minu Source (Cat HB)	ites
Cycle Time Elements (min.): Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation:	Ma Unadjusted Bas Mixed materia Dumped by tr Common own Constant oper	ption: aneuver:NA sic Loader Cycle Tir al 0.02 uck 0.02 uership of trucks and ation -0.04		naneuver): 0. Factor (min.) 0.020 0.020 -0.040 -0.040	500 minu Source (Cat HB) (Cat HB) (Cat HB) (Cat HB)	ites
Cycle Time Elements (min.): Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership:	M Unadjusted Bas Mixed materia Dumped by tr Common own	ption: aneuver:NA sic Loader Cycle Tir al 0.02 uck 0.02 tership of trucks and ation -0.04 et 0.00	loaders -0.04	maneuver): 0. Factor (min.) 0.020 0.020 -0.040 -0.040 0.000	500 minu Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB)	ites
Cycle Time Elements (min.): Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation:	Ma Unadjusted Bas Mixed materia Dumped by tr Common own Constant oper	ption: aneuver:NA sic Loader Cycle Tin al 0.02 uck 0.02 uck 0.02 uership of trucks and ation -0.04 et 0.00 Net Cycle Tin	loaders -0.04 ne Adjustment:	naneuver): 0. Factor (min.) 0.020 0.020 -0.040 -0.040 0.000 -0.040	500 minu Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes	ites
Cycle Time Elements (min.): Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation:	Ma Unadjusted Bas Mixed materia Dumped by tr Common own Constant oper	ption: aneuver:NA sic Loader Cycle Tin al 0.02 uck 0.02 tership of trucks and ation -0.04 et 0.00 Net Cycle Tin Adjusted Load	loaders -0.04 ne Adjustment: er Cycle Time:	naneuver): 0. Factor (min.) 0.020 0.020 -0.040 -0.040 0.000 -0.040 0.040 0.460	500 minu Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes minutes	ites
Cycle Time Elements (min.): Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation:	Ma Unadjusted Bas Mixed materia Dumped by tr Common own Constant oper	ption: aneuver:NA sic Loader Cycle Tin al 0.02 uck 0.02 tership of trucks and ation -0.04 et 0.00 Net Cycle Tin Adjusted Load	loaders -0.04 ne Adjustment:	naneuver): 0. Factor (min.) 0.020 0.020 -0.040 -0.040 0.000 -0.040	500 minu Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes	ites
Cycle Time Elements (min.): Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation: Dump Target:	Ma Unadjusted Bas Mixed materia Dumped by tr Common own Constant oper	ption: aneuver:NA sic Loader Cycle Tin al 0.02 uck 0.02 tership of trucks and ation -0.04 et 0.00 Net Cycle Tin Adjusted Load	loaders -0.04 ne Adjustment: er Cycle Time:	naneuver): 0. Factor (min.) 0.020 0.020 -0.040 -0.040 0.000 -0.040 0.040 0.460	500 minu Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes minutes	Ites
Cycle Time Elements (min.): Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation: Dump Target: Truck Cycle Time:	Mixed materia Dumped by tr Common own Constant oper Nominal targe	ption: aneuver:NA sic Loader Cycle Tin al 0.02 uck 0.02 tership of trucks and ation -0.04 et 0.00 Net Cycle Tin Adjusted Load Net Load T	loaders -0.04 ne Adjustment: er Cycle Time: ime per Truck:	naneuver): 0. Factor (min.) 0.020 0.020 -0.040 -0.040 0.000 -0.040 0.460 1.480	500minuSource(Cat HB)(Cat HB)(Cat HB)(Cat HB)(Cat HB)(Cat HB)minutesminutesminutesminutes	
Cycle Time Elements (min.): Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation: Dump Target: Truck Exchange Time	Ma Unadjusted Bas Mixed materia Dumped by tr Common own Constant oper Nominal targe	ption: aneuver:NA sic Loader Cycle Tin al 0.02 uck 0.02 tership of trucks and ation -0.04 et 0.00 Net Cycle Tin Adjusted Load	loaders -0.04 ne Adjustment: er Cycle Time: ime per Truck:	naneuver): 0. Factor (min.) 0.020 0.020 -0.040 -0.040 0.000 -0.040 0.040 0.460	500 minu Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes minutes	
Cycle Time Elements (min.): Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation: Dump Target: Truck Cycle Time:	Ma Unadjusted Bas Mixed materia Dumped by tr Common own Constant oper Nominal targe	ption: aneuver:NA sic Loader Cycle Tin al 0.02 uck 0.02 tership of trucks and ation -0.04 et 0.00 Net Cycle Tin Adjusted Load Net Load T	loaders -0.04 ne Adjustment: er Cycle Time: ime per Truck: Adjusted	naneuver): 0. Factor (min.) 0.020 0.020 -0.040 -0.040 0.000 -0.040 0.460 1.480	500minuSource(Cat HB)(Cat HB)(Cat HB)(Cat HB)(Cat HB)(Cat HB)minutesminutesminutesminutes	
Cycle Time Elements (min.): Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation: Dump Target: Truck Exchange Time Truck Load Time	Unadjusted Bas Mixed materia Dumped by tr Common own Constant oper Nominal targe	ption: aneuver:NA sic Loader Cycle Tin al 0.02 uck 0.02 uck 0.02 tership of trucks and ation -0.04 et 0.00 Net Cycle Tin Adjusted Load Net Load T Minutes	loaders -0.04 ne Adjustment: er Cycle Time: ime per Truck: Adjusted Adjusted	naneuver): 0. Factor (min.) 0.020 0.020 -0.040 -0.040 0.000 -0.040 0.040 1.480 for site altitude:	500 minu Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes minutes minutes 0.600	Minutes
Cycle Time Elements (min.): Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation: Dump Target: Truck Exchange Time	Unadjusted Bas Mixed materia Dumped by tr Common own Constant oper Nominal targe	ption: aneuver:NA sic Loader Cycle Tin al 0.02 uck 0.02 uck 0.02 tership of trucks and ation -0.04 et 0.00 Net Cycle Tin Adjusted Load Net Load T Minutes Minutes	loaders -0.04 ne Adjustment: er Cycle Time: ime per Truck: Adjusted Adjusted	naneuver): 0. Factor (min.) 0.020 0.020 -0.040 -0.040 0.000 -0.040 0.460 1.480 for site altitude: for site altitude:	500 minu Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes minutes minutes 0.600 1.480	 Minute:
Cycle Time Elements (min.): Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation: Dump Target: Truck Exchange Time Truck Load Time	Unadjusted Bas Mixed materia Dumped by tr Common own Constant oper Nominal targe	ption: aneuver:NA sic Loader Cycle Tin al 0.02 uck 0.02 uership of trucks and ation -0.04 et 0.00 Net Cycle Tin Adjusted Load Net Load T Minutes Minutes Minutes	loaders -0.04 ne Adjustment: er Cycle Time: ime per Truck: Adjusted Adjusted Adjusted	naneuver): 0. Factor (min.) 0.020 0.020 -0.040 -0.040 0.000 -0.040 0.460 1.480 for site altitude: for site altitude:	500minuSource(Cat HB)(Cat HB)(Cat HB)(Cat HB)(Cat HB)(Cat HB)(Cat HB)minutesminutesminutes0.6001.4801.000	 Minute

Haul Route:

	Seg #	Haul (Ft)	Distance	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)	
	1	2900.	.00	20.00	3.00	23.00	320	9.067	
	Return R	outer				Haul Time:	9.067	minutes	
	Seg #		Distance	Grade (%)	Roll. Res	Total Res	Velocity	Travel	
	BCg #	(Ft)		Grade (70)	(%)	(%)	(fpm)	Time (min)	
	1	2900.	.00	-20.00	3.00	-17.00	1225	2.471	
					Total Tru	Return Time: ck Cycle Time:	2.471 14.618	minute minute	
	oading Too Prod Unit Prod	uction	634.62	LCY/Hour		Adjusted for j	ob efficiency:	526.73	LCY/Hour
			90.30	LCY/Hour		Adjusted for j	ob efficiency:	74.95	LCY/Hour
Optim	al No. of T	rucks:	7	Truck(s)		Selected Num	ber of Trucks:	3	Truck(s)
						k team producti			/Hour
						er team production			/Hour
				Adjusted multip	le truck/loade	er team production	on: 224	<u>.85</u> LCY	/Hour
	JOB TI	ME AN	ND COST						
	Fleet	size:	1	Team(s)]	Fotal job time:	10.6	6 Ho	ours
	Unit	cost: _	\$4.114	/LCY		Total job cost:	\$9,85	59	

Task # 005

TRUCK/LOADER TEAM WORK

Task description:	Excavat		terial from LQRA			
Site: Lyons Quarry		Permit Act	tion: <u>TR-4 2020</u>		Permit/Job#:	M1977141
PROJECT IDE	NTIFICATION	I				
Task #: 006		- State: Colo	rado	A۲	breviation: N	None
	1/2020	County: Boul				A141-006
User: AME		•				
Agency o	r organization nai	me: DRMS				
HOURLY EQU	IPMENT COS	<u>Γ</u>		Shift bas	sis: <u>1 per day</u>	
			Equipment Descri	ption		
	Truck Loader Tea		ut 730 AT 966H			
Sup	oort Equipment -I					
	-D	ump Area: Ca	at D7R DS XR Seri	es II		
Road M	faintenance – Mot		AT 16M	0.1		
	-Wa	ater Truck: W	ater Tanker, 3,500	Gal.		
Cost Breakdown:	Truck/Lo	ader Team	Support]	Equipment	Mainten	ance Equipment
	Truck	Loader	Load Area	Dump Area	Motor Grade	
%Utilization-machine:	100	100	NA	100	100	0 100
Ownership cost/hour:	\$58.32	\$42.87	NA	\$74.64	\$55.79	
Operating cost/hour:	\$49.78	\$53.22	NA	\$71.55	\$60.03	
%Utilization-riper:	NA	0	NA	NA	NA	
Ripper own. cost/hour:	NA	\$0.00	NA	\$0.00	\$0.0	0.00 \$0.00
Ripper op. cost/hour:	NA	\$0.00	NA	\$0.00	\$0.00	0.00
Operator cost/hour:	\$24.82	\$35.97	NA	\$40.04	\$46.8	7 \$0.00
Unit Subtotals:	\$132.93	\$132.05	NA	\$186.22	\$162.74	4 \$45.29
Number of Units:	4	1	0	1	-	1
Group Subtotals:	Work:	\$663.77	Support:	\$186.22	Maint	: \$208.03
Total work team co	ost/hour: <u>\$1,058.</u>	02				
<u>MATERIAL QU</u>	J ANTITIES					
Initial volume		CC		factor: 1.125		
Loose volume	e: 8,14	5 LC	Y			
Se	ource of estimated		-4 (9,340 cy total -	2,100 cy topsoil =	= 7,240 cy)	
Source	e of estimated swe		Handbook			
	Material Purch	ase Cost: \$0.0 otal Cost: \$0.0				
	10		50			
HOURLY PRO	DUCTION					
Truck Capacity:						
Truck Payload (we	ight) Basis:					
Material	weight: 2,650		Pounds/LCY			
		1	% Rock, 75% Earth	ı		
Rated P			Pounds			
Payload Ca	apacity: 23.40		LCY			

Struck Volume:	17.10	LCY				
Heaped Volume:		LCY				
Average Volume:		LCY				
Adjusted Volume:		LCY				
Aufusted Volume.	22.10	Lei				
Final	Truck Volume	Based on Number of I	Loader Passes:	22.00	LCY	
Loading Tool Capacity						
			Buc	ket Size Class: <u>N</u>	JA	_
Rated Capacity:	5.000	LCY (heaped)				-
Bucket Fill Factor:	1.100	Other - rock/dirt	mixtures (100)-120%) 1.100		-
Adjusted Capacity:	5.500	LCY				
Job Condition Corrections:		Site	Altitude (ft.):	<u>5500</u> feet		
	Truck	Loader	Source			
Altitude Adj:	1.000	1.000	(CAT HE			
Job Efficiency:	0.830	0.830	(CAT HE	3)		
Net Correction:	0.830	0.830				
Leading Teal Cuale Times	Normhan	n of Loo din a Tool Door	- Deminder	Eill Tree alas	4	
Loading Tool Cycle Time: Excavators and Front Shovels		r of Loading Tool Pass	ses Required to		p	asses
Machine Cycle Time vs Selected Value w						
Track Loaders – I	Material Descr	iption:				
Cycle Time Elements (min.):						
Cycle Time Elements (min.): Load: NA	N	Ianeuver: NA		Dump: 0.100	0	
Load: NA	_	Ianeuver: NA				
Load: NA Wheel and Track Loaders -	_	Ianeuver: NA	e (load, dump, 1	maneuver): 0).500 minu	ites
Load: NA Wheel and Track Loaders - Cycle Time Factors	- Unadjusted Ba	Ianeuver: <u>NA</u> asic Loader Cycle Time	e (load, dump, 1	maneuver):0 Factor (min.)	0.500 minu Source	ites
Load: NA Wheel and Track Loaders - Cycle Time Factors Material:	- Unadjusted Ba Mixed materi	Ianeuver: <u>NA</u> asic Loader Cycle Time	e (load, dump, 1	maneuver): <u>0</u> Factor (min.) 0.020	0.500 minu Source (Cat HB)	ites
Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile:	Unadjusted Ba Mixed materi Dumped by t	Ianeuver: NA asic Loader Cycle Time ial 0.02 ruck 0.02		maneuver):0 Factor (min.) 0.020 0.020	0.500 minu Source (Cat HB) (Cat HB)	ites
Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership:	Unadjusted Ba Mixed materi Dumped by tr Common own	Ianeuver: NA asic Loader Cycle Time ial 0.02 ruck 0.02 nership of trucks and le		maneuver):0 Factor (min.) 0.020 0.020 -0.040	0.500 minu Source (Cat HB) (Cat HB) (Cat HB)	ites
Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation:	Unadjusted Ba Mixed materi Dumped by t Common own Constant ope	Ianeuver: NA asic Loader Cycle Time ial 0.02 ruck 0.02 nership of trucks and le ration -0.04		maneuver):0 Factor (min.) 0.020 0.020 -0.040 -0.040	0.500 minu Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB)	ites
Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership:	Unadjusted Ba Mixed materi Dumped by tr Common own	Ianeuver: NA asic Loader Cycle Time ial 0.02 ruck 0.02 nership of trucks and le ration -0.04 et 0.00	oaders -0.04	maneuver):0 Factor (min.) 0.020 0.020 -0.040 -0.040 0.000	0.500minuSource(Cat HB)(Cat HB)(Cat HB)(Cat HB)(Cat HB)(Cat HB)(Cat HB)	ites
Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation:	Unadjusted Ba Mixed materi Dumped by t Common own Constant ope	Ianeuver: NA asic Loader Cycle Time ial 0.02 ruck 0.02 nership of trucks and le ration -0.04 et 0.00 Net Cycle Time	oaders -0.04	maneuver): 0 Factor (min.) 0.020 0.020 -0.040 -0.040 0.000 -0.040	0.500 minu Source (Cat HB) minutes	ites
Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation:	Unadjusted Ba Mixed materi Dumped by t Common own Constant ope	Ianeuver: NA asic Loader Cycle Time ial 0.02 ruck 0.02 nership of trucks and le ration -0.04 et 0.00	oaders -0.04 Adjustment: Cycle Time:	maneuver):0 Factor (min.) 0.020 0.020 -0.040 -0.040 0.000	0.500minuSource(Cat HB)(Cat HB)(Cat HB)(Cat HB)(Cat HB)(Cat HB)(Cat HB)	ites
Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation: Dump Target:	Unadjusted Ba Mixed materi Dumped by t Common own Constant ope	Ianeuver: NA asic Loader Cycle Time ial 0.02 ruck 0.02 nership of trucks and le ration -0.04 et 0.00 Net Cycle Time Adjusted Loader	oaders -0.04 Adjustment: Cycle Time:	maneuver): Factor (min.) 0.020 0.020 -0.040 -0.040 0.000 -0.040 0.000 0.040 0.460	0.500 minu Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes minutes minutes	ites
Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation: Dump Target: Truck Cycle Time:	Unadjusted Ba Mixed materi Dumped by tr Common own Constant ope Nominal targ	Ianeuver: NA asic Loader Cycle Time ial 0.02 ruck 0.02 nership of trucks and le ration -0.04 et 0.00 Net Cycle Time Adjusted Loader Net Load Tir	e Adjustment: Cycle Time: ne per Truck:	maneuver): Factor (min.) 0.020 0.020 -0.040 -0.040 0.000 -0.040 0.460 1.480	0.500 minu Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes minutes minutes minutes	-
Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation: Dump Target: Truck Exchange Time:	Unadjusted Ba Mixed materi Dumped by tr Common own Constant ope Nominal targ 0.60	Ianeuver: NA asic Loader Cycle Time ial 0.02 ruck 0.02 nership of trucks and le ration -0.04 et 0.00 Net Cycle Time Adjusted Loader Net Load Tir Minutes	oaders -0.04 • Adjustment: • Cycle Time: ne per Truck: • Adjusted	maneuver):0 Factor (min.) 0.020 0.020 -0.040 -0.040 0.000 -0.040 0.460 1.480 for site altitude:	0.500 minu Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes minutes 0.600	 Minute
Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation: Dump Target: Truck Exchange Time: Truck Load Time:	Unadjusted Ba Mixed materi Dumped by tr Common own Constant ope Nominal targ	Ianeuver: NA asic Loader Cycle Time ial 0.02 ruck 0.02 nership of trucks and le ration -0.04 et 0.00 Net Cycle Time Adjusted Loader Net Load Tir Minutes Minutes	Adjustment: Cycle Time: ne per Truck: Adjusted	maneuver): Factor (min.) 0.020 0.020 -0.040 -0.040 0.000 -0.040 0.460 1.480 for site altitude: for site altitude:	0.500 minu Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes minutes 0.600 1.480	- - - - Minute
Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation: Dump Target: Truck Exchange Time:	Unadjusted Ba Mixed materi Dumped by tr Common own Constant ope Nominal targ	Ianeuver: NA asic Loader Cycle Time ial 0.02 ruck 0.02 nership of trucks and le ration -0.04 et 0.00 Net Cycle Time Adjusted Loader Net Load Tir Minutes	Adjustment: Cycle Time: ne per Truck: Adjusted	maneuver):0 Factor (min.) 0.020 0.020 -0.040 -0.040 0.000 -0.040 0.460 1.480 for site altitude:	0.500 minu Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes minutes 0.600	 Minute
Load: NA Wheel and Track Loaders - Cycle Time Factors Material: Stockpile: Truck Ownership: Operation: Dump Target: Truck Exchange Time: Truck Load Time:	Unadjusted Ba Mixed materi Dumped by tr Common own Constant ope Nominal targ 0.60 1.480 1.00	Ianeuver: NA asic Loader Cycle Time ial 0.02 ruck 0.02 nership of trucks and le ration -0.04 et 0.00 Net Cycle Time Adjusted Loader Net Load Tir Minutes Minutes	aders -0.04 Adjustment: Cycle Time: ne per Truck: Adjusted Adjusted	maneuver):0 Factor (min.) 0.020 0.020 -0.040 -0.040 0.000 -0.040 0.460 1.480 for site altitude: for site altitude: for site altitude:	0.500 minu Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) 0.600 1.480 1.000	- - - - Minute

Haul Route:

	Seg #		Distance	Grade (%)	Roll. Res (%) 3.00	Total Res (%) 23.00	Velocity (fpm) 320	Travel Time (min) 6.879	
l	1	2200	00	20.00	5.00	1			
	Return R	outer				Haul Time:	6.879	minutes	5
	Seg #		Distance	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time]
	1	2200.	00	-20.00	3.00	-17.00	1225	(min) 1.915	_
l	-					Return Time: ck Cycle Time:	1.915 11.874	minut	
	oading Too Produ Unit Produ	uction	634.62	LCY/Hour		Adjusted for j	ob efficiency:	526.73	LCY/Hour
			111.17	LCY/Hour		Adjusted for j	ob efficiency:	92.27	LCY/Hour
Optima	al No. of T	rucks:	6	Truck(s)		Selected Num	ber of Trucks:	4	Truck(s)
					•	k team production			Y/Hour
				Adjusted sing Adjusted multip		r team production			Y/Hour Y/Hour
				Aujusted multip		a team production	011. <u>309</u>	<u>.00</u> LC	1/11001
	JOB TI	ME AN	ND COST						
	Fleet	size:	1	Team(s)	Т	Total job time:	22.0	7 H	lours
	Unit	cost:	\$2.867	/LCY	r	Fotal job cost:	\$23,34	49	

TRUCK/LOADER TEAM WORK

Site: Lyons Quarry		Permit Acti	ion: <u>TR-4 2020</u>		Permit/Job#: <u>N</u>	M1977141
PROJECT IDEN	TIFICATION	[
Task #: 007		State: Color		Ab		one
Date: <u>12/11</u> User: AME	/2020	County: Bould	der		Filename: M	1141-007
Agency or	organization nar	ne: DRMS				
HOURLY EQUI	PMENT COST	<u>r</u>			is: <u>1 per day</u>	
	Fruck Loader Tea	m Truck: Ca	Equipment Descri t 730	ption		
1	Tuck Loader Tea		AT 966H			
Supp	ort Equipment -L					
Bood M	-Di aintenance –Mot		t D7R DS XR Seri AT 16M	es II		
Koau M			ater Tanker, 3,500	Gal.		
		I				
Cost Breakdown:		ader Team		Equipment		Water Truck
	Truck	Loader	Load Area	Dump Area	Motor Grader	water Truck
%Utilization-machine:	100	100	NA	100	100	
Ownership cost/hour:	\$58.32	\$42.87	NA	\$74.64	\$55.79	
Operating cost/hour:	\$49.78	\$53.22	NA	\$71.55	\$60.08	
%Utilization-riper: Ripper own. cost/hour:	NA NA	0	NA NA	NA \$0.00	NA \$0.00	
Ripper op. cost/hour:	NA NA	\$0.00	NA NA	\$0.00	\$0.00	
Operator cost/hour:	\$24.82	\$35.97	NA	\$40.04	\$46.87	
Unit Subtotals:	\$132.93	\$132.05	NA	\$186.22	\$162.74	
Number of Units:	4	1	0	1	1	
Group Subtotals:	Work:	\$663.77	Support:	\$186.22	Maint:	\$208.03
Total work team cos	st/hour: <u>\$1,058.</u>	02				
MATERIAL QU	ANTITIES					
Initial volume	: 13,610	CCY		factor: <u>1.165</u>		
Loose volume	: 15,85	6 LCY	ľ			
	urce of estimated					
Source	of estimated swe		Handbook			
	Material Purch	otal Cost: $\frac{$0.0}{$0.0}$				
			-			
HOURLY PRO	DUCTION					
Truck Capacity:						
Truck Payload (wei						
Material v	veight: <u>2,900</u>		Pounds/LCY			
Desor	iption: Decom	mosed rock $= 500$	% Rock, 50% Earth	า		

<u>Truck Bed (volume) Basis:</u> Struck Volume:	17.10 LO	CY				
Heaped Volume:		CY				
Average Volume:		CY				
Adjusted Volume:		CY				
Aujusted Volume.	LX	- 1				
Final 7	Fruck Volume B	ased on Number of I	oader Passes:	16.50	LCY	
Loading Tool Capacity						
			Buck	ket Size Class: N	A	
Rated Capacity:	5.000	LCY (heaped)				_
Bucket Fill Factor:	1.100	Other - rock/dirt 1	nixtures (100	-120%) 1.100		-
Adjusted Capacity:	5.500	LCY	·	· · · · ·		=
Job Condition Corrections:		Site	Altitude (ft.): 5	5500 feet		
	Truck	Loader	Source			
Altitude Adj:	1.000	1.000	(CAT HB	()		
Job Efficiency:	0.830	0.830	(CAT HB	,		
				,		
Net Correction:	0.830	0.830				
Loading Tool Cycle Time:	Number o	f Loading Tool Pass	es Required to 1	Fill Truck:	3 т	asses
Excavators and Front Shovel					I	
Machine Cycle Time vs Selected Value w						
Track Loaders – I	Material Descript	ion:				
Cycle Time Elements (min.):	Ĩ					
Load: NA	Mar	neuver: NA		Dump: 0.100)	
Wheel and Track Loaders -	- Unadjusted Desig	Londor Cuolo Timo	load dump r		.500 min	itas
	Ollaujusteu Dasto	Loader Cycle Think	(Ioad, dump, I	·	1	1105
Cycle Time Factors				Factor (min.)	Source	_
Material:		/8" diameter 0.02		0.020	(Cat HB)	_
Stockpile:	Dumped by true		1 0.04	0.020	(Cat HB)	_
Truck Ownership:		ship of trucks and lo	baders -0.04	-0.040	(Cat HB)	_
Operation:	Constant operat Nominal target			-0.040	(Cat HB)	_
Dump Target:	Nominal target	Net Cycle Time	A diustment:	-0.040	(Cat HB) minutes	_
		Adjusted Loader	· -	0.460	minutes	
		Net Load Tin		1.020	minutes	
			- per muer.	T + A MARA		
Truck Cycle Time:						
Truck Exchange Time:	0.60	Minutes	Adjusted	for site altitude:	0.600	Minute
Truck Load Time:	1.020	Minutes	Adjusted	for site altitude:	1.020	Minute
ck Maneuver and Dump Time:	1.00	Minutes	Adjusted	for site altitude:	1.000	Minute
Truck Travel (Haul & Return)	Time	Road Condition: Fin	m smooth roll	ling dirt/lt surfaces	1 watered	-
maintained 3.0	<u>, , , , , , , , , , , , , , , , , , , </u>	Road Condition. Th	in, smooth, i01	ing, unvit. suitaco	a, waterea,	

Haul Rou Seg #		Distance	Grade (%)	Roll. Res	Total Res	Velocity	Travel	
	(Ft)			(%)	(%)	(fpm)	Time (min)	
1	1500.	.00	20.00	3.00	23.00	320	4.692	
					Haul Time:	4.692	minutes	
Return Re	oute:				-			
Seg #	Haul	Distance	Grade (%)	Roll. Res	Total Res	Velocity	Travel	
	(Ft)			(%)	(%)	(fpm)	Time (min)	
1	1500	.00	-20.00	3.00	-17.00	1225	1.361	
					Return Time:	1.361	minutes	
				Total Tru	ck Cycle Time:	8.673	minutes	
Loading Too	ol unit							
	uction	611.11	LCY/Hour		Adjusted for j	ob efficiency:	507.22	LCY/Hour
Fruck Unit Produ	uction	114.15	LCY/Hour		Adjusted for j	ob efficiency:	94.74	LCY/Hour
ptimal No. of T	rucks:	5	Truck(s)		Selected Num	per of Trucks:	4	Truck(s)
			Adjuste	d hourly truc	k team production	on: 378.	.97 LCY/H	lour
					er team production			
			Adjusted multip	le truck/loade	er team production	on: 378.	.97 LCY/H	lour
JOB TI	ME AN	ND COST						
JOB TII Fleet		ND COST 1	Team(s)	7	Fotal job time:	41.84	4 Hour	'S

TRUCK/LOADER TEAM WORK

Site: Lyons Quarry		Permit A	ction: <u>TR-4 2020</u>]	Permit/Job#:	M1977141
PROJECT IDEN	TIFICATION	[
Task #: 008		State: Col	orado	Ab	breviation: N	Vone
		County: Bou	ılder		Filename: N	A141-008
User: <u>AME</u>						
Agency or	organization nar	me: DRMS				
HOURLY EQUI	PMENT COST	<u>Γ</u>		Shift bas	is: <u>1 per day</u>	
			Equipment Descri	ption		
]	Fruck Loader Tea		Cat 730 CAT 966H			
Supp	ort Equipment -L		IA 900H			
	1 1	ump Area: C	Cat D7R DS XR Seri	es II		
Road M	aintenance – Mot		CAT 16M	<u>C 1</u>		
	-W2	ter Truck: V	Vater Tanker, 3,500	Gal.		<u> </u>
Cost Breakdown:	Truck/Los	ader Team	Support]	Equipment	Mainten	ance Equipment
	Truck	Loader	Load Area	Dump Area	Motor Grader	
%Utilization-machine:	100	10	0 NA	100	100) 10
Ownership cost/hour:	\$58.32	\$42.8		\$74.64	\$55.79	
Operating cost/hour:	\$49.78	\$53.2		\$71.55	\$60.08	
%Utilization-riper:	NA		0 NA	NA	NA	
Ripper own. cost/hour:	NA	\$0.0	0 NA	\$0.00	\$0.00	\$0.0
Ripper op. cost/hour:	NA	\$0.0	0 NA	\$0.00	\$0.00) \$0.0
Operator cost/hour:	\$24.82	\$35.9	7 NA	\$40.04	\$46.87	7 \$0.0
Unit Subtotals:	\$132.93	\$132.0	5 NA	\$186.22	\$162.74	4 \$45.2
Number of Units:	4		1 0	1	1	1
Group Subtotals:	Work:	\$663.77	Support:	\$186.22	Maint	: \$208.03
Total work team co MATERIAL QU	<u></u>	02				
Initial volume Loose volume	: 5,730	CC 5 LC		factor: <u>1.165</u>		
	urce of estimated of estimated swe Material Purch To	ell factor:Caase Cost:\$0	R-4 tt Handbook .00 .00			
HOURLY PRO	DUCTION					
<u>Truck Capacity:</u> Truck Payload (wei	oht) Basis.					
Material v			Pounds/LCY			
	· .	posed rock - 50	0% Rock, 50% Earth			
Rated Pa		*	Pounds	•		

	17.10 L	CY				
Struck Volume:		CY				
Average Volume:		CY				
Adjusted Volume:	21.38 L	CY				
Final	Truck Volume E	Based on Number of	Loader Passes:	16.50	LCY	
Loading Tool Capacity						
			Buc	ket Size Class: N	A	
Rated Capacity:	5.000	LCY (heaped)				
Bucket Fill Factor:	1.100	Other - rock/dirt	mixtures (100	-120%) 1.100		
Adjusted Capacity:	5.500	LCY				
Job Condition Corrections:	-	Sit	e Altitude (ft.):	5 <u>500</u> feet		
	Truck	Loader	Source			
Altitude Adj:	1.000	1.000	(CAT HE	3)		
Job Efficiency:	0.830	0.830	(CAT HE	3)		
Net Correction:	0.830	0.830				
Loading Tool Cycle Time:		of Loading Tool Pas	ses Required to	Fill Truck:	<u>3</u> pa	isses
Excavators and Front Shovel	<u>.s:</u>					
Machine Cycle Time vs	s. Job Condition	Rating: NA				
Selected Value v	vithin this Basic	Rating: NA				
Track Loaders –	Material Descrip	otion:				
Cycle Time Elements (min.):						
Load: NA	Ma	neuver: NA		Dump: 0.100)	
	-					
Wheel and Track Loaders -	Unadjusted Basi	ic Loader Cycle Tim	ie (load, dump, i		. <u>500</u> minut	es
Cycle Time Factors				Factor (min.)	Source	
Material:	Material up to					
		1/8" diameter 0.02		0.020	(Cat HB)	
Stockpile:	Dumped by tru	ck 0.02	1 0.04	0.020 0.020	(Cat HB) (Cat HB)	
Stockpile: Truck Ownership:	Dumped by tru Common owne	ck 0.02 ership of trucks and 1	loaders -0.04	0.020 0.020 -0.040	(Cat HB) (Cat HB) (Cat HB)	
Stockpile: Truck Ownership: Operation:	Dumped by tru Common owne Constant opera	ck 0.02 ership of trucks and 1 tion -0.04	loaders -0.04	0.020 0.020 -0.040 -0.040	(Cat HB) (Cat HB) (Cat HB) (Cat HB)	
Stockpile: Truck Ownership:	Dumped by tru Common owne	ck 0.02 ership of trucks and 1 tion -0.04 0.00		0.020 0.020 -0.040 -0.040 0.000	(Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB)	
Stockpile: Truck Ownership: Operation:	Dumped by tru Common owne Constant opera	ck 0.02 ership of trucks and 1 tion -0.04 0.00 Net Cycle Tim	e Adjustment:	0.020 0.020 -0.040 -0.040 0.000 -0.040	(Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes	
Stockpile: Truck Ownership: Operation:	Dumped by tru Common owne Constant opera	ck 0.02 ership of trucks and 1 tion -0.04 0.00 Net Cycle Tim Adjusted Loade	e Adjustment: r Cycle Time:	0.020 0.020 -0.040 -0.040 0.000 -0.040 0.460	(Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes minutes	
Stockpile: Truck Ownership: Operation:	Dumped by tru Common owne Constant opera	ck 0.02 ership of trucks and 1 tion -0.04 0.00 Net Cycle Tim Adjusted Loade	e Adjustment:	0.020 0.020 -0.040 -0.040 0.000 -0.040	(Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes	
Stockpile: Truck Ownership: Operation:	Dumped by tru Common owne Constant opera	ck 0.02 ership of trucks and 1 tion -0.04 0.00 Net Cycle Tim Adjusted Loade	e Adjustment: r Cycle Time:	0.020 0.020 -0.040 -0.040 0.000 -0.040 0.460	(Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes minutes	
Stockpile: Truck Ownership: Operation: Dump Target:	Dumped by tru Common owne Constant opera Nominal target	ck 0.02 ership of trucks and 1 tion -0.04 0.00 Net Cycle Tim Adjusted Loade	e Adjustment: r Cycle Time: me per Truck:	0.020 0.020 -0.040 -0.040 0.000 -0.040 0.460	(Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes minutes	Minute
Stockpile: Truck Ownership: Operation: Dump Target: Truck Cycle Time:	Dumped by tru Common owne Constant opera Nominal target	ck 0.02 ership of trucks and 1 tion -0.04 0.00 Net Cycle Tim Adjusted Loade Net Load Ti	e Adjustment: r Cycle Time: me per Truck: Adjusted	0.020 0.020 -0.040 -0.040 0.000 -0.040 0.460 1.020	(Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes minutes minutes	
Stockpile: Truck Ownership: Operation: Dump Target: <u>Truck Cycle Time:</u> Truck Exchange Time:	Dumped by tru Common owne Constant opera Nominal target	ck 0.02 ership of trucks and 1 tion -0.04 0.00 Net Cycle Tim Adjusted Loade Net Load Ti Minutes	e Adjustment: r Cycle Time: me per Truck: Adjusted Adjusted	0.020 0.020 -0.040 0.000 -0.040 0.460 1.020	(Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes minutes minutes 0.600	Minutes Minutes Minutes
Stockpile: Truck Ownership: Operation: Dump Target: Truck Cycle Time: Truck Exchange Time: Truck Load Time:	Dumped by tru Common owne Constant opera Nominal target : 0.60 : 1.020 : 1.00	ck 0.02 ership of trucks and 1 tion -0.04 0.00 Net Cycle Tim Adjusted Loade Net Load Ti Minutes Minutes Minutes	e Adjustment: r Cycle Time: me per Truck: Adjusted Adjusted Adjusted	0.020 0.020 -0.040 -0.040 0.000 -0.040 0.460 1.020 for site altitude:	(Cat HB)(Cat HB)(Cat HB)(Cat HB)(Cat HB)(Cat HB)minutesminutesminutes0.6001.0201.000	Minute

Seg #	Haul D	Distance	Grade (%)	Roll. Res	Total Res	Velocity	Travel	
505 "	(Ft)			(%)	(%)	(fpm)	Time (min)	
1	2100.0	0	20.00	3.00	23.00	320	6.567	
					Haul Time:	6.567	minutes	
Return R					1			
Seg #		Distance	Grade (%)	Roll. Res	Total Res	Velocity	Travel	
	(Ft)			(%)	(%)	(fpm)	Time (min)	
1	2100.0	0	-20.00	3.00	-17.00	1225	1.835	
					Return Time:	1.835	minutes	
				Total Tru	ck Cycle Time:	11.022	minutes	
Loading To	ol unit							
	uction	611.11	LCY/Hour		Adjusted for j	ob efficiency:	507.22	LCY/Hour
ck Unit Prod	uction	89.82	LCV/II					
					A directed for i	ab affinianary	7155	I CV/II our
	_	09.02	LCY/Hour		Adjusted for j	ob efficiency:	74.55	LCY/Hour
nal No. of T	rucks:	7	Truck(s)		Adjusted for j			LCY/Hour Truck(s)
nal No. of T	rucks:		Truck(s)	d hourly true	0 0	per of Trucks:	4	Truck(s)
nal No. of T	rucks:		Truck(s) Adjuste Adjusted sing	le truck/loade	Selected Numl k team productio er team productio	oer of Trucks: on: 298 on: 298	4 .20LCY/	Truck(s)
mal No. of T	rucks:		Truck(s) Adjuste	le truck/loade	Selected Numl k team productio er team productio	oer of Trucks: on: 298 on: 298	4 20 LCY/ 20 LCY/	Truck(s) /Hour /Hour
	_	7	Truck(s) Adjuste Adjusted sing	le truck/loade	Selected Numl k team productio er team productio	oer of Trucks: on: 298 on: 298	4 20 LCY/ 20 LCY/	Truck(s) /Hour /Hour
	_		Truck(s) Adjuste Adjusted sing	le truck/loade	Selected Numl k team productio er team productio	oer of Trucks: on: 298 on: 298	4 20 LCY/ 20 LCY/	Truck(s) /Hour /Hour
<u>JOB TI</u>	_	7	Truck(s) Adjuste Adjusted sing	le truck/loade le truck/loade	Selected Numl k team productio er team productio	oer of Trucks: on: 298 on: 298	4 20 LCY/ 20 LCY/ 20 LCY/ 20 LCY/	Truck(s) 'Hour 'Hour 'Hour

WHEEL LOADER - LOAD AND CARRY WORK

· · · · · · · ·	Permit Action:	TR-4 2020]	Permit/Job#:	M1977141
PROJECT IDENTIFICATIO)N				
Task #: 009	State: Colorado		٨b	breviation:	None
Date: $12/11/2020$	County: Boulder		A0	Filename:	M141-009
User: <u>AME</u>	County. <u>Bounder</u>			<u>Includinc</u> .	W1141-009
Agency or organization	name: DRMS				
HOURLY EQUIPMENT CO	ST				
Basic Machine: CAT 96	56H	F	Horsepower:	·	262
Attachment 1: ROPS C	Cab		Shift Basis:		er day
		Ľ	Data Source:	(0	CRG)
Cost Breakdown:					
JOST DIEaKUOWII.		Utilization %			
Ownership Cost/Hour:	\$42.87	NA			
Operating Cost/Hour:	\$53.22	100			
Operator Cost/Hour:	\$35.97	NA			
Total Unit Cost/Hour:	\$132.05				
Total Fleet Cost/Hour:	\$132.05				
_					
MATERIAL QUANTITIES					
	ССҮ	Swell factor	:: 1.215		
Initial volume: 11,597	,090 CCY	Swell factor	:: <u>1.215</u>		
Initial volume:11,597Loose volume:14	,090 LCY				
Initial volume: <u>11,597</u> Loose volume: <u>14</u> Source of estima	,090 LCY ted volume: TR-4 (16	5,227 cy total - 4,630			
Initial volume:11,597Loose volume:14	,090 LCY ted volume: TR-4 (16	5,227 cy total - 4,630			
Loose volume: 14 Source of estimated s	,090 LCY ted volume: TR-4 (16	5,227 cy total - 4,630			
Initial volume: <u>11,597</u> Loose volume: <u>14</u> Source of estima	,090 LCY ted volume: TR-4 (16	5,227 cy total - 4,630			
Initial volume: 11,597 Loose volume: 14 Source of estima Source of estimated s	,090 LCY ted volume: TR-4 (16	5,227 cy total - 4,630 Ibook	0 LQRA5)	0.500	minutes
Initial volume: 11,597 Loose volume: 14 Source of estimated s HOURLY PRODUCTION Loader Cycle Time: Unadj	,090 LCY ted volume: TR-4 (16 swell factor: Cat Hand	5,227 cy total - 4,630 Ibook	0 LQRA5)	0.500 or (min.)	
Initial volume: 11,597 Loose volume: 14 Source of estima Source of estimated s HOURLY PRODUCTION Loader Cycle Time: Unadj Cycle Time Factors	,090 LCY ted volume: TR-4 (16 swell factor: Cat Hand	5,227 cy total - 4,630 Ibook	0 LQRA5) uver): Fact		minutes Source (Cat HB)
Initial volume: <u>11,597</u> Loose volume: <u>14</u> Source of estimated s Source of estimated s <u>HOURLY PRODUCTION</u> Loader Cycle Time: Unadj Cycle Time Factors Material: Mit	,090 LCY ted volume: <u>TR-4 (16</u> swell factor: <u>Cat Hanc</u> usted Basic Cycle Time	5,227 cy total - 4,630 lbook (load, dump, maneu	0 LQRA5) uver): Fact	or (min.)	Source
Initial volume: 11,597 Loose volume: 14 Source of estimated s Source of estimated s HOURLY PRODUCTION Loader Cycle Time: Unadj Cycle Time Factors Material: Mit Stockpile: Cor	,090 LCY ted volume: TR-4 (16 swell factor: Cat Hand usted Basic Cycle Time xed material 0.02	5,227 cy total - 4,630 lbook (load, dump, maneu ft. high or less 0.01	0 LQRA5) uver): Fact (1 (or (min.)).020	Source (Cat HB)
Initial volume: 11,597 Loose volume: 14 Source of estimated s Source of estimated s Source of estimated s IOURLY PRODUCTION Coader Cycle Time: Unadj Cycle Time Factors Material: Mit Stockpile: Con Truck Ownership: Con	,090 LCY ted volume: TR-4 (16) swell factor: Cat Hand usted Basic Cycle Time xed material 0.02 nveyor or dozer piled 10	5,227 cy total - 4,630 lbook (load, dump, maneu ft. high or less 0.01	0 LQRA5) uver): Fact 0 1 0 40	or (min.)).020).010	Source (Cat HB) (Cat HB)
Initial volume: 11,597 Loose volume: 14 Source of estimated s Source of estimated s Source of estimated s IOURLY PRODUCTION Loader Cycle Time: Unadj Cycle Time Factors Material: Mit Stockpile: Con Truck Ownership: Con Operation: Con	,090LCYted volume:TR-4 (16swell factor:Cat Handusted Basic Cycle Timexed material 0.02nveyor or dozer piled 10mmon ownership of truenstant operation -0.04minal target 0.00	5,227 cy total - 4,630 lbook (load, dump, maneu ft. high or less 0.01 ks and loaders -0.04	0 LQRA5) uver): Fact 1 (1 4	or (min.)).020).010).040	Source (Cat HB) (Cat HB) (Cat HB)
Initial volume: 11,597 Loose volume: 14 Source of estima Source of estimated s HOURLY PRODUCTION Loader Cycle Time: Unadj Cycle Time Factors Material: Mit Stockpile: Con Truck Ownership: Con Operation: Con	,090 LCY ted volume: TR-4 (16) swell factor: Cat Hand usted Basic Cycle Time xed material 0.02 nveyor or dozer piled 10 mmon ownership of truc nstant operation -0.04 minal target 0.00 Net Cycle	5,227 cy total - 4,630 Ibook (load, dump, maneu ft. high or less 0.01 ks and loaders -0.04 cle Time Adjustmer	0 LQRA5)	or (min.) 0.020 0.010 0.040 0.040 0.040 0.000 0.050	Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes
Initial volume: 11,597 Loose volume: 14 Source of estima Source of estimated s HOURLY PRODUCTION Loader Cycle Time: Unadj Cycle Time Factors Material: Mit Stockpile: Con Truck Ownership: Con Operation: Con	,090 LCY ted volume: TR-4 (16) swell factor: Cat Hand usted Basic Cycle Time xed material 0.02 nveyor or dozer piled 10 mmon ownership of truc nstant operation -0.04 minal target 0.00 Net Cycle	5,227 cy total - 4,630 lbook (load, dump, maneu ft. high or less 0.01 ks and loaders -0.04	0 LQRA5)	or (min.) 0.020 0.010 0.040 0.040 0.040	Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB)
Initial volume: 11,597 Loose volume: 14 Source of estimated s Source of estimated s Source of estimated s Source of estimated s Source of estimated s Unadj Cycle Time Factors Material: Mit Stockpile: Con Truck Ownership: Con Operation: Con Dump Target: No	,090 LCY ted volume: TR-4 (16) swell factor: Cat Hand usted Basic Cycle Time xed material 0.02 nveyor or dozer piled 10 mmon ownership of true nstant operation -0.04 minal target 0.00 Net Cya Adjust	5,227 cy total - 4,630 Ibook (load, dump, maneu ft. high or less 0.01 ks and loaders -0.04 cle Time Adjustmer	0 LQRA5)	or (min.) 0.020 0.010 0.040 0.040 0.040 0.000 0.050	Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes
Initial volume: 11,597 Loose volume: 14 Source of estimated s Source of estimated s HOURLY PRODUCTION Loader Cycle Time: Unadj Cycle Time Factors Unadj Cycle Time Factors Unadj Cycle Time Factors Con Material: Mit Stockpile: Con Truck Ownership: Con Operation: Con Dump Target: No	,090 LCY ted volume: TR-4 (16 swell factor: Cat Hand usted Basic Cycle Time xed material 0.02 nveyor or dozer piled 10 mmon ownership of true nstant operation -0.04 minal target 0.00 Net Cya Adjust	5,227 cy total - 4,630 lbook (load, dump, maneu ft. high or less 0.01 ks and loaders -0.04 cle Time Adjustmer ed Basic Cycle Tim	0 LQRA5) uver): Fact 1 (1 4 4 (0 nt: ne:(0)	or (min.) 0.020 0.010 0.040 0.040 0.000 0.050 0.450	Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes
Initial volume: 11,597 Loose volume: 14 Source of estimated s Source of estimated s IOURLY PRODUCTION Oader Cycle Time: Unadj Cycle Time Factors Unadj Cycle Time Factors Unadj Cycle Time Factors Onder Material: Mit Stockpile: Con Truck Ownership: Con Operation: Con Dump Target: No	,090 LCY ted volume: TR-4 (16) swell factor: Cat Hand usted Basic Cycle Time xed material 0.02 nveyor or dozer piled 10 mmon ownership of true nstant operation -0.04 minal target 0.00 Net Cya Adjust	5,227 cy total - 4,630 Ibook (load, dump, maneu ft. high or less 0.01 ks and loaders -0.04 cle Time Adjustmer ed Basic Cycle Tim surfaced, watered, r	0 LQRA5) uver): Fact (1 1 4 (1 (1 (1 	or (min.) 0.020 0.010 0.040 0.040 0.000 0.050 0.450 .0	Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes

	Length	Grade Res.	Rolling	Total Res.	Travel Time	Source
	(feet)	(%)	Res. (%)	(%)	(minutes)	Source
Haul Route:	1000	3.00	3.00	6.00	0.9928	(Cat HB)
Return Route:	1000	-3.00	3.00	0.00	0.6634	(Cat HB)

			Total Travel Tin Total Cycle Tin		minutes minutes
Load Bucket Capacity					
Rated Capaci		LCY (heap	,		
Bucket Fill Fact	tor: 1.025	Rock - Ear	th Mixture (100%	5-105%) 1.025	
Adjusted Capaci	ity: 5.13	LCY			
Job Condition Correction Site Altitude: <u>5500</u> feet					
		Source			
Altitude Adj:	1.00	(CAT HB))		
Job Efficiency:	0.83	(1 shift/day)		
Net Correction:	0.83	multiplier			
U	nadjusted Hourly Unit	Production:	146.00	LCY/Hour	
	Adjusted Hourly Unit	Production:	121.18	LCY/Hour	
	Adjusted Hourly Fleet	Production:	121.18	LCY/Hour	
JOB TIME AND CO Fleet size:	DST 1 Loader(s)		Total job time:	116.28	Hours
			10tal job unie.	110.20	110015

Unit cost:	\$1.090	/LCY	Total job cost:	\$15,354	_
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HYDRAULIC EXCAVATOR WORK

Task description:	Back	fill LQRA4	below grad	e with soil ripra	ıp		
Lyons Quarry		Perr	mit Action:	TR-4 2020		Permit/Job#:	M1977141
PROJECT IDEN	TIFICATI	<u>ON</u>					
Task #: 010 Date: 12/11/ User: AME	2020	State: County:	Colorado Boulder			Abbreviation: Filename:	None M141-010
Agency or	organization	name: DR	SMS				
HOURLY EQUI	PMENT CO	<u>DST</u>					
Basic Machir Attachment	-	4D L 9'-8" S Cab	tick		Horsepow Weight (M Shift Ba Data Sour	(T): 22 sis: 1 p	194 24.85 Der day CRG)
Cost Breakdown:			T				
Ownership (Operating (Operator (Total Unit (Cost/Hour: Cost/Hour:	\$50.5 \$54.0 \$46.8 \$151.)4 37	Utilization % NA 100 NA			
Total Fleet	– Cost/Hour:	\$151.	.51				
MATERIAL QUA Initial volume: Loose volume:	<u>11,597</u> 11,597 arce of estimation	ated volume:		Swell fac 5,227 cy total - 4,			
	of estimated		Cat Hand			(AJ)	
HOURLY PROD	UCTION						
Excavator Cycle Tin		et, swing loa	ded, dump b	oucket, swing em	npty):		
·	·	-	-	condition Descrip		CELLENT	
	Seco			in Basic Descrip	otion: EX	CELLENT	
Load Bucket Capaci	tv			Cycle Time V	alue: 0.1	.87	minutes
Loud Ducket Cupuel	<u>ty</u>				Bucket S	Size Class: M	edium
Rated Cap		2.26	LCY (he				
Bucket Fill F Adjusted Cap		0.975 2.20	Sand and LCY	gravel (95% - 1	00%) 0.975	5	
Job Condition Corre				Sit	e Altitude: :	5500 feet	
	etion i detois		Source		e / minude	<u>5500</u> ICCI	
Altitude A	dj: _ 1.	.00	(CAT HI				
Job Efficienc	·	.83	(1 shift/da				
Net Correctio		.83	multiplier				
		Hourly Unit Hourly Unit		707.01 586.81	LCY/H	Hour	
		Hourly Fleet	Production:	586.81	LCY/H	Hour	
JOB TIME AND	Adjusted I	Hourly Fleet	Production:	586.81	LCY/F	lour	
JOB TIME AND Fleet size:	Adjusted I	Hourly Fleet		586.81		19.76	Hours

WHEEL LOADER - LOAD AND CARRY WORK

Lyons Quarry	Permit Action:	TR-4 2020	F	ermit/Job#:	M1977141
PROJECT IDENTIFICATI	<u>ON</u>				
Task #: 011	State: Colorado		Abł	reviation:	None
Date: $12/11/2020$	County: Boulder			Filename:	M141-011
User: AME	County. <u>Dounder</u>				
Agency or organization	name: DRMS				
HOURLY EQUIPMENT CO	<u>OST</u>				
Basic Machine: CAT 9	66H		Horsepower:		262
Attachment 1: ROPS			Shift Basis:	-	er day
			Data Source:		CRG)
				(- /
Cost Breakdown:					
Ownership Cont /II	\$ 40.07	Utilization %			
Ownership Cost/Hour: _ Operating Cost/Hour:	\$42.87 \$53.22	NA 100			
Operating Cost/Hour:	\$35.22 \$35.97	 NA			
Total Unit Cost/Hour:	\$132.05	11/7			
_	φ132.03				
Tatal Elect Cast/Harry					
Total Fleet Cost/Hour:	\$132.05				
-					
I otal Fleet Cost/Hour:					
MATERIAL QUANTITIES		Swell fac	tor: 1.000		
MATERIAL QUANTITIES Initial volume:4,630	CCY	Swell fact	tor: <u>1.000</u>		
MATERIAL QUANTITIES Initial volume: 4,630 Loose volume: 4	CCY ,630 LCY				
MATERIAL QUANTITIES Initial volume: <u>4,630</u> Loose volume: <u>4</u> Source of estima		5,227 cy total - 11			
MATERIAL QUANTITIES Initial volume: 4,630 Loose volume: 4	CCY .630 LCY ated volume:TR-4 (10	5,227 cy total - 11			
MATERIAL QUANTITIES Initial volume: 4,630 Loose volume: 4 Source of estima Source of estimated		5,227 cy total - 11			
MATERIAL QUANTITIES Initial volume: <u>4,630</u> Loose volume: <u>4</u> Source of estima		5,227 cy total - 11			
MATERIAL QUANTITIES Initial volume: 4,630 Loose volume: 4 Source of estima Source of estimated HOURLY PRODUCTION		5,227 cy total - 11 dbook	,597 LQRA4)	0.500	minutes
MATERIAL QUANTITIES Initial volume: 4,630 Loose volume: 4 Source of estima Source of estimated HOURLY PRODUCTION	ated volume: <u>TR-4 (16</u> Swell factor: <u>Cat Hand</u>	5,227 cy total - 11 dbook	,597 LQRA4)		
MATERIAL QUANTITIES Initial volume: 4,630 Loose volume: 4 Source of estima Source of estimated HOURLY PRODUCTION Loader Cycle Time: Unad Cycle Time Factors	CCY ,630 LCY ated volume: TR-4 (16) swell factor: Cat Hand ljusted Basic Cycle Time	5,227 cy total - 11 dbook	,597 LQRA4) neuver): Facto	or (min.)	Source
MATERIAL QUANTITIES Initial volume: 4,630 Loose volume: 4 Source of estimated Source of estimated HOURLY PRODUCTION Loader Cycle Time: Unad Cycle Time Factors Material: Mi	CCY 5,630 LCY ated volume: TR-4 (16) swell factor: Cat Hand ljusted Basic Cycle Time ixed material 0.02	5,227 cy total - 11 dbook • (load, dump, mai	,597 LQRA4) neuver): Facto 0	or (min.) .020	Source (Cat HB)
MATERIAL QUANTITIES Initial volume: 4,630 Loose volume: 4 Source of estimated Source of estimated HOURLY PRODUCTION Loader Cycle Time: Unad Cycle Time Factors Material: Mi Stockpile: Co	CCY 5,630 LCY ated volume: TR-4 (16) swell factor: Cat Hand ljusted Basic Cycle Time ixed material 0.02 onveyor or dozer piled 10	5,227 cy total - 11 dbook (load, dump, man) ft. high or less 0	,597 LQRA4) neuver): Facto 0 .01 0	or (min.) .020 .010	Source (Cat HB) (Cat HB)
MATERIAL QUANTITIES Initial volume: 4,630 Loose volume: 4,630 Source of estima Source of estimated HOURLY PRODUCTION Loader Cycle Time: Unad Cycle Time Factors Material: Mi Stockpile: Co Truck Ownership: Co	cCY 5,630 LCY ated volume: TR-4 (16) swell factor: Cat Hand ljusted Basic Cycle Time ixed material 0.02 onveyor or dozer piled 10 ommon ownership of true	5,227 cy total - 11 dbook (load, dump, man) ft. high or less 0	,597 LQRA4) neuver): Facto 0 .01 0 .04 -0	or (min.) .020	Source (Cat HB) (Cat HB) (Cat HB)
MATERIAL QUANTITIES Initial volume: 4,630 Loose volume: 4 Source of estimated Source of estimated HOURLY PRODUCTION Loader Cycle Time: Unad Cycle Time Factors Material: Mit Stockpile: Co Truck Ownership: Co Operation: Co	CCY LCY ated volume: TR-4 (16 swell factor: Cat Hand ljusted Basic Cycle Time ixed material 0.02 onveyor or dozer piled 10 onveyor or dozer piled 10 onneyor or dozer piled 10 onstant operation -0.04	5,227 cy total - 11 dbook (load, dump, man) ft. high or less 0	,597 LQRA4) neuver): Facto 0.01 0 .04 -0 	or (min.) .020 .010 .040	Source (Cat HB) (Cat HB) (Cat HB)
MATERIAL QUANTITIES Initial volume: 4,630 Loose volume: 4 Source of estimated Source of estimated HOURLY PRODUCTION Loader Cycle Time: Unad Cycle Time Factors Material: Mi Stockpile: Cc Truck Ownership: Cc Operation: Cc	CCY LCY ated volume: TR-4 (16 swell factor: Cat Hand ljusted Basic Cycle Time ixed material 0.02 onveyor or dozer piled 10 ommon ownership of true onstant operation -0.04 ominal target 0.00	5,227 cy total - 11 dbook (load, dump, man) ft. high or less 0	,597 LQRA4) neuver): Facto 0.01 0 .04 -0 0.04 -0 0 0	or (min.) .020 .010 .040 .040	(Cat HB) (Cat HB) (Cat HB) (Cat HB)
MATERIAL QUANTITIES Initial volume: 4,630 Loose volume: 4 Source of estimated Source of estimated HOURLY PRODUCTION Loader Cycle Time: Unad Cycle Time Factors Material: Mit Stockpile: Co Truck Ownership: Co Operation: Co	CCY LCY ated volume: TR-4 (10 swell factor: Cat Hand ljusted Basic Cycle Time ixed material 0.02 onveyor or dozer piled 10 ommon ownership of true onstant operation -0.04 ominal target 0.00 Net Cy	5,227 cy total - 11 dbook (load, dump, mar) ft. high or less 0 cks and loaders -0	,597 LQRA4) neuver): Facto 0 .01 0 .04 -C 0 0 nent:C	or (min.) .020 .010 .040 .040 .000	Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB)
MATERIAL QUANTITIES Initial volume: 4,630 Loose volume: 4 Source of estimated Source of estimated HOURLY PRODUCTION Loader Cycle Time: Unad Cycle Time Factors Material: Mi Stockpile: Co Operation: Co Dump Target: No	CCY LCY ated volume: TR-4 (16 swell factor: Cat Hand ljusted Basic Cycle Time ixed material 0.02 onveyor or dozer piled 10 ommon ownership of true onstant operation -0.04 ominal target 0.00 Net Cy Adjust	5,227 cy total - 11 dbook (load, dump, mar) ft. high or less 0 cks and loaders -0 rcle Time Adjustn	,597 LQRA4) neuver): Facto 0 .01 0 .04 -C 0 0 nent:C	or (min.) .020 .010 .040 .040 .000 .050	Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes
MATERIAL QUANTITIES Initial volume: 4,630 Loose volume: 4 Source of estimated Source of estimated HOURLY PRODUCTION Loader Cycle Time: Unad Cycle Time Factors Material: Mit Stockpile: Co Truck Ownership: Co Operation: Co	CCY LCY ated volume: TR-4 (16 swell factor: Cat Hand ljusted Basic Cycle Time ixed material 0.02 onveyor or dozer piled 10 ommon ownership of true onstant operation -0.04 ominal target 0.00 Net Cy Adjust	5,227 cy total - 11 dbook (load, dump, mar) ft. high or less 0 cks and loaders -0 rcle Time Adjustn	,597 LQRA4) neuver): Facto 0 .01 0 .04 -C 0 0 nent:C	or (min.) .020 .010 .040 .040 .000 .050	Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes
MATERIAL QUANTITIES Initial volume: 4,630 Loose volume: 4 Source of estimated Source of estimated HOURLY PRODUCTION Loader Cycle Time: Unad Cycle Time Factors Material: Mi Stockpile: Cc Operation: Cc Dump Target: No Rolling Resistance – Road Condi Haul: Haul: Firm	CCY LCY ated volume: TR-4 (16 swell factor: Cat Hand ljusted Basic Cycle Time ixed material 0.02 onveyor or dozer piled 10 ommon ownership of true onstant operation -0.04 ominal target 0.00 Net Cy Adjust	5,227 cy total - 11 dbook (load, dump, man) ft. high or less 0 cks and loaders -0 ccle Time Adjustn ted Basic Cycle T surfaced, watered	,597 LQRA4) neuver): Facto 0 01 0 .04 -C 0 0 1.04 -C ime: 0 1, maintained 3.	or (min.) .020 .010 .040 .040 .000 .050 .450 0	Source (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) (Cat HB) minutes

	Length	Grade Res.	Rolling	Total Res.	Travel Time	Source
	(feet)	(%)	Res. (%)	(%)	(minutes)	Source
Haul Route:	1400	3.00	3.00	6.00	1.3899	(Cat HB)
Return Route:	1400	-3.00	3.00	0.00	0.9288	(Cat HB)

			Total Travel Tin Total Cycle Tin		minutes			
Load Bucket Capacity								
Rated Capacit Bucket Fill Facto	•	LCY (heap	ped) rth Mixture (100%	(105%) 1 025				
Adjusted Capacit		LCY		0-105/07 1.025				
Job Condition Correctio Site Altitude: <u>5500</u> feet	n Factors							
		Source						
Altitude Adj:	1.00	(CAT HB))					
Job Efficiency:	0.83	(1 shift/day	/)					
Net Correction:	0.83	multiplier						
Un	adjusted Hourly Uni	t Production:	111.06	LCY/Hour				
	Adjusted Hourly Uni	t Production:	92.18	LCY/Hour				
A	Adjusted Hourly Flee	t Production:	92.18	LCY/Hour				
JOB TIME AND COST								
Fleet size:	1 Loader(s)	Total job time:	50.23	Hours			

 Unit cost:
 \$1.433
 /LCY
 Total job cost:
 \$6,632

HYDRAULIC EXCAVATOR WORK

Task description:	Back	fill LQRA5	below grad	le with soil ripra	ւթ		
Lyons Quarry		Perr	mit Action:	TR-4 2020		Permit/Job#	: M1977141
PROJECT IDE	NTIFICATIO	<u>DN</u>					
Task #: 012 Date: 12/1 User: AM	1/2020 E	State: County:	Colorado Boulder		A	bbreviation: Filename:	None M141-012
Agency	or organization r	name: DR	SMS				
HOURLY EQU	IPMENT CO	ST					
Basic Mach Attachme		DL 9'-8" S Cab	tick		Horsepower Weight (MT) Shift Basis Data Source): s:1	194 24.85 per day CRG)
Cost Breakdown:				Utilization %			
Ownership	Cost/Hour:	\$50.5	59	NA			
Operating	g Cost/Hour:	\$54.0)4	100			
-	r Cost/Hour:	\$46.8		NA			
Total Uni	t Cost/Hour:	\$151.	51				
Total Flee	et Cost/Hour:	\$151.	.51				
MATERIAL Q Initial volum Loose volum	e: 4,630		CCY LCY	Swell fac	etor: <u>1.000</u>		
HOURLY PRO Excavator Cycle 7		•	*	-			
	Secon			Condition Descrip		ELLENT ELLENT	
	Beeon	dai y 500 CO		Cycle Time V			minutes
Load Bucket Capa	<u>icity</u>			-)			-
					Bucket Siz	e Class: M	edium
Rated C		2.26	LCY (he	eaped)			
Bucket Fill		1.025		Earth Mixture (10	0%-105%) 1.0	025	
Adjusted C	· ·	2.32	LCY				
Job Condition Con	rection Factors			Sit	e Altitude: <u>55</u>	<u>00</u> feet	
A 1.*. 1	A 1		Source				
Altitude	J	00	(CAT H				
Job Efficie Net Correc			(1 shift/d multiplie				
			-				
	Unadjusted I				LCY/Ho		
		Hourly Unit			LCY/Ho LCY/Ho		
JOB TIME AN	0	ourry rieet	r rouuction:	010.91	LC I/H0	uı	
Fleet size:	1	Excavato	or T	otal job time:	7	.51	Hours
			-	3	·		=
Unit cost:	\$0.246	/LCY		Total job cost	\$1	,137	

HYDRAULIC EXCAVATOR WORK

Task description:	Place	e (Type M) riprap	adjacent to creek chan	inel	
: <u>Lyons Quarry</u>		Permit Ac	tion: TR-4 2020	Permit/	Job#: <u>M1977141</u>
PROJECT IDI	ENTIFICATI	<u>ON</u>			
Task #: 013 Date: 12/ User: AM	11/2020	State: Colo County: Boul	orado Ider	Abbreviat	
Agency	or organization	name: DRMS			
HOURLY EQ	UIPMENT CO	<u>DST</u>			
Basic Mac Attachmo		ID L 9'-8" Stick Cab	V	Horsepower: Veight (MT): Shift Basis: Data Source:	194 24.85 1 per day (CRG)
Cost Breakdown:			1		
Operatin Operato	p Cost/Hour: _ g Cost/Hour: _ or Cost/Hour: _ it Cost/Hour: _	\$50.59 \$54.04 \$46.87 \$151.51	Utilization % NA 100 NA	-	
Total Fle	et Cost/Hour:	\$151.51			
MATERIAL Q Initial volur Loose volur	ne: 405	CC			-
HOURLY PRO			Handbook	4-1).	
Excavator Cycle	Time (load buck	-	ump bucket, swing emp		r
			Job Condition Descripti n within Basic Descripti Cycle Time Val	on: EXCELLEN	
Load Bucket Cap	<u>acity</u>				
Rated (Bucket Fi Adjusted (Y (heaped) ck - Well Blasted (95%- Y	Bucket Size Class: 105%) 1.000	Medium
Job Condition Co				Altitude: <u>5500</u> feet	
Altitude Job Effici Net Correc	ency: 0 ction: 0 Unadjusted Adjusted Adjusted	.00 (CA .83 (1 sl	ource AT HB) hift/day) tiplier ction: 725.13 ction: 601.86	LCY/Hour LCY/Hour LCY/Hour	
JOB TIME AN					
Fleet size:	1	Excavator	Total job time:	0.67	Hours
Unit cost:	\$0.252	/LCY	Total job cost:	\$102	

Page 1 of 2

BULLDOZER WORK

Task description:	Final grading				
e: Lyons Quarry	Perm	it Action:	ΓR-4 2020	Permit/Job#:	M1977141
PROJECT IDENTI	FICATION				
Task #: 014	State:	Colorado		Abbreviation:	None
Date: $12/11/202$		Boulder		Filename:	M141-014
User: AME	County	Douider		Thename.	WIITI 017
Agency or orga	anization name: DR	MS			
HOURLY EQUIPM	ENT COST				
Basic Machine: Ca	at D7R DS XR Series I	[_		
Horsepower: 24			_		
• •	emi-Universal		-		
Attachment: N			-		
	per day		-		
Data Source: (C	CRG)		-		
Cost Breakdown:					
<u>Cost Breakdo win</u> .		1	Utilization %		
Ownership Cost/Hour:		\$74.64	NA		
Operating Cost/Hour:		\$71.55	100		
Ripper own. Cost/Hour:		\$0.00	NA		
Ripper op. Cost/Hour:		\$0.00	0		
Operator Cost/Hour:		\$40.04	NA		
MATERIAL QUAN					
Initial Volume: 8,7					
Swell factor: 1.0		_			
Loose volume: 8,7	12 LCY				
Source of estimated volu	ume: TR-4 (5.4	acres x 1 ft)			
Source of estimated swe	ell factor: Cat Handb	ook			
HOURLY PRODUC					
Average push distance:	120 feet				
Unadjusted hourly prod	uction: 622.9 LCY/h	r			
Materials consistency de	escription: Loose st	ockpile 1.2			
Average push gradient:	0 %				
Average site altitude:	5,500 feet				
Material weight:	2,900 lbs/LCY			_	
Weight description:	Decomposed rock -	50% Rock, 5	50% Earth		
Job Condition Correctio		00	Source		
Operator Material consist			(EXCL.)		
Material consis			(CAT HB)		
Dozing m	ethod: 1.1 ibility: 1.0		(50% SL) (AVG.)		
				<u></u>	
Job effic	ciency: 0.8	30	(1 SHIFT/DAY))	

Task # 014

Spoil pile:	0.700	(FND-MF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)
Net correction:	0.6082	

Adjusted unit production:	378.85 LCY/hr
Adjusted fleet production:	757.7 LCY/hr

JOB TIME AND COST

Fleet size:	2 Dozer(s)
Unit cost:	\$0.492/LCY

Total job time:	11.50 Hours
Total job cost:	\$4,282

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SCRAPER TEAM WORK

Site: Lyons Quarry	F	Permit Act	ion:	TR-4 2020	Peri	mit/Job#: <u>M197</u>	7141
PROJECT IDEN	TIFICATION						
Task #:016	State				Abbrev	viation: None	
Date: <u>12/11/2</u> User: <u>AME</u>	2020 County	7: Bould	der		Fil	ename: M141-	016
Agency or o	organization name:	DRMS					
HOURLY EQUIP	MENT			COSTSI	nift basis: <u>1 per d</u>	ay	
				nt Description			
	-Scra		t 6310	J			
-Dozer: NA Support Equipment -Load Area: Cat D7R DS XR Series II							
	-Dump A	rea: NA	۹.		-		
Road Ma	intenance – Motor Gra		AT 16N				
	-Water Tru	ick: Wa	ater Ta	anker, 3,500 Gal	•		
Cost Breakdown:	Scraper Work T	`eam		Support Equip	oment	Maintenance	Equipment
	Scraper	Dozer		Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	N	IA	100	NA	100	10
Ownership cost/hour:	\$144.75	N	IA	\$74.64	NA	\$55.79	\$14.7
Operating cost/hour:	\$145.83	N	IA	\$71.55	NA	\$60.08	\$30.5
%Utilization-ripper:	NA	N	IA	NA	NA	50	NA
Ripper own. cost/hour:	NA	N	ΙA	\$0.00	NA	\$4.83	\$0.00
Ripper op. cost/hour:	NA	N	IA	\$0.00	NA	\$2.20	\$0.00
Operator cost/hour:	\$47.07		IA	\$40.04	NA	\$46.87	\$0.0
Unit Subtotals:	\$337.64	N	IA	\$186.22	NA	\$169.77	\$45.2
Number of Units:	1		0	1	0	1	
Group Subtotals:	Work:	\$337.64		Support:	\$186.22	Maint:	\$215.06
Total work team cost	/hour: <u>\$738.92</u>						
MATERIAL QUA	NTITIES						
Initial volume:	194	CCY	Y	Swell fact	or: 1.215		
Loose volume:	236	LCY	Y				
Sou	rce of estimated volun	ne: TR-	4 (0.24	4 ac x 6 in depth)		
Source of	of estimated swell facto	or: Cat	Handt	book			
HOURLY PROD	UCTION						
				Scraper Bo	owl (volume) Bas	<u>is:</u>	
Material weight: 1,600 lbs/LCY				Struck	Volume: 24.00	L	CY
Material description:	Top Soil			Heaped			CY
Rated Payload: Payload Capacity:	81,600 pounds 51.00 LCY			Average Adjusted C			CY CY
ravioau CadacitV:	J1.00 LC I			Aujusted C	Capacity: 29.00	L	

0.80 Minutes

<u>0.70</u> Minutes

Cycle Time:

Scraper Loading Time: Maneuver and Spread Time:

Job Condition Correction:

Site Altitude: 5500 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	800.00	3.00	3.00	6.00	1069	0.79

Haul Time: **0.79** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	-3.00	3.00	0.00	2937	0.42
				Return Time:	0.42	minutes
			Total Scrape	er team cycle time:	2.71	minutes
			Adjusted	for job conditions:	532.92	LCY/Hour
			Selected Nu	umber of Scrapers:	1	Scraper(s)
	Adjuste	d single scrap	er team (unit) l	hourly production:	532.92	LCY/Hour
	Adjusted n	ultiple scrap	er team (fleet) l	hourly production:	532.92	LCY/Hour
	Unadjusted unit pro	duction/hour: r push dozer:		LCY/Hour		

Fleet size:	1	Team(s)	Total job time:	0.44	Hours
Unit cost:	\$1.387	/LCY	Total job cost:	\$327	

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SCRAPER TEAM WORK

Site: Lyons Quarry	Per	mit Action:	TR-4 2020	Perr	mit/Job#: <u>M197</u>	7141
PROJECT IDENT	TIFICATION					
Task #: 017	State:	Colorado		Abbrev	viation: None	
Date: 12/11/2	County:	Boulder		Fil	ename: M141-0	017
User: AME						
Agency or o	rganization name: DI	RMS				
HOURLY EQUIP	MENT_		COSTSI	nift basis: <u>1 per d</u>	ay	
			ent Description			
	-Scraper		G			
Suppor	-Dozer rt Equipment -Load Area		R DS XR Series II	[
Suppor	-Dump Area		K D5 AK Series I	L		
Road Mai	ntenance – Motor Grade	r: CAT 16				
	-Water Truck	: Water	Fanker, 3,500 Gal.			
Cost Breakdown:	Scraper Work Tea	m	Support Equip	oment	Maintenance	Equipment
<u> </u>		Dozer	Load Area	Dump Area	Motor Grader	Water T
%Utilization-machine:	100	NA	100	NA	100	
Ownership cost/hour:	\$144.75	NA	\$74.64	NA	\$55.79	\$
Operating cost/hour:	\$145.83	NA	\$71.55	NA	\$60.08	\$.
%Utilization-ripper:	NA	NA	NA	NA	50	
Ripper own. cost/hour:	NA	NA	\$0.00	NA	\$4.83	
Ripper op. cost/hour:	NA	NA	\$0.00	NA	\$2.20	:
Operator cost/hour:	\$47.07	NA	\$40.04	NA	\$46.87	:
Unit Subtotals:	\$337.64	NA	\$186.22	NA	\$169.77	\$4
Number of Units:	1	0	1	0	1	
Group Subtotals:	Work: \$	337.64	Support:	\$186.22	Maint:	\$215.
Total work team cost	/hour: <u>\$738.92</u>					
MATERIAL QUA	NTITIES					
Initial volume:	1,049	CCY	Swell fact	or: 1.215		
Loose volume:	1,275	LCY				
	ce of estimated volume: f estimated swell factor:		3 ac x 6 in depth) dbook			
HOURLY PRODU						
HUUKLI I KUDU			Scraper Bo	owl (volume) Basi	is:	
Motorial waishe	1.600 lbg/J.CV		-			СҮ
Material weight: Material description:	1,600 lbs/LCY Top Soil		Heaped Y	Volume: 24.00 Volume: 34.00		CY CY
Rated Payload:	81,600 pounds		Average '			CY

<u>0.80</u> Minutes

<u>0.70</u> Minutes

Cycle Time:

Scraper Loading Time: Maneuver and Spread Time:

Job Condition Correction:

Site Altitude: 5500 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	350.00	3.00	3.00	6.00	1069	0.37

Haul Time: **0.37** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	350.00	-3.00	3.00	0.00	2937	0.26
				Return Time:	0.26	minutes
			Total Scrape	er team cycle time:	2.13	minutes
			Adjusted	for job conditions:	678.03	LCY/Hour
			Selected Nu	mber of Scrapers:	1	Scraper(s)
	Adjuste	i single scrap	oer team (unit) l	nourly production:	678.03	LCY/Hour
	Adjusted m	ultiple scrap	er team (fleet) l	nourly production:	678.03	LCY/Hour
Optima	Unadjusted unit pro- ll Number of Scrapers pe			LCY/Hour		
<u>JOB TI</u>	ME AND COST					
Fleet	t size: 1	Team(s)	Т	otal job time:	1.88	Hours

Unit cost: \$1.090 /LCY

Total job cost: ______\$1,389_____

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SCRAPER TEAM WORK

Site: Lyons Quarry		Permit Action	: TR-4 2020	Perr	mit/Job#: <u>M197</u>	7141
PROJECT IDENT	IFICATION					
Task #: 018	S	State: Colorad	0	Abbrey	viation: None	
Date: $\frac{010}{12/11/2}$		unty: Boulder			ename: M141-	018
User: AME		<u> </u>				
Agency or o	rganization name:	DRMS				
HOURLY EQUIP	MENT_		COSTS	hift basis: <u>1 per d</u>	ay	
		Equipr	nent Description			
	-S	craper: Cat 6	31G			
		Dozer: NA		-		
Suppor	t Equipment -Loa		7R DS XR Series I	1		
Road Mai	ntenance – Motor		16M			
Roud White			Tanker, 3,500 Gal	•		
Cost Breakdown:	Scraper Wor		Support Equi		Maintenance	Equipm
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Wate
%Utilization-machine:	100	NA	100	NA	100	
Ownership cost/hour:	\$144.75	NA	\$74.64	NA	\$55.79	
Operating cost/hour:	\$145.83	NA	\$71.55	NA	\$60.08	
%Utilization-ripper:	NA	NA	NA	NA	50	
Ripper own. cost/hour:	NA	NA	\$0.00	NA	\$4.83	
Ripper op. cost/hour:	NA	NA	\$0.00	NA	\$2.20	
Operator cost/hour:	\$47.07	NA	\$40.04	NA	\$46.87	
Unit Subtotals:	\$337.64	NA	\$186.22	NA	\$169.77	
Number of Units:	1	0	1	0	1	
Group Subtotals:	Work:	\$337.64	Support:	\$186.22	Maint:	\$2
Total work team cost/	hour: <u>\$738.92</u>					
MATERIAL QUA	NTITIES					
Initial volume:	2,081	CCY	Swell fac	tor: 1.215		
Loose volume:	2,528	LCY				
Sour	ce of estimated vo	olume: TR-4 (2.58 ac x 6 in depth	n)		
Source o	f estimated swell f		ndbook			
HOURLY PRODU	UCTION					
			Scraper B	owl (volume) Basi	is:	
Material weight:	1,600 lbs/LCY		Struck	Volume: 24.00	L	CY
Material description:	Top Soil			Volume: 34.00		ĊY
Rated Payload:	81,600 pounds		Average	Volume: 29.00	T	CY

<u>0.80</u> Minutes

<u>0.70</u> Minutes

Cycle Time:

Scraper Loading Time: Maneuver and Spread Time:

Job Condition Correction:

Site Altitude: 5500 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	800.00	3.00	3.00	6.00	1069	0.79

Haul Time: **0.79** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	-3.00	3.00	0.00	2937	0.42
				Return Time:	0.42	minutes
			Total Scrape	r team cycle time:	2.71	minutes
			Adjusted f	or job conditions:	532.92	LCY/Hour
			Selected Nu	mber of Scrapers:	1	Scraper(s)
	Adjusted	l single scrap	er team (unit) h	ourly production:	532.92	LCY/Hour
	Adjusted m	ultiple scrap	er team (fleet) h	ourly production:	532.92	LCY/Hour
Optima	Unadjusted unit proo l Number of Scrapers pe			LCY/Hour		
<u>JOB TI</u>	ME AND COST					
Fleet	size: 1	Team(s)	Te	otal job time:	4.74	Hours

Unit cost: \$1.387 /LCY

Total job cost: ______\$3,506_____

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SCRAPER TEAM WORK

Site: Lyons Quarry		Permit Action:	TR-4 2020	Perr	nit/Job#: <u>M197</u>	7141
PROJECT IDENT	TIFICATION Stat	e: Colorado		Abbrey	viation: None	
Date: $12/11/2$ User: AME					ename: M141-0)19
Agency or c	organization name:	DRMS				
HOURLY EQUIP	MENT		COSTSI	nift basis: <u>1 per d</u>	ay	
		Equipme	ent Description			
	-Scra	aper: Cat 631				
Suppo:	-Do- rt Equipment -Load A	ozer: NA Area: Cat D7I	R DS XR Series I	I		
	-Dump A	area: NA				
Road Mai	intenance –Motor Gra Water Tr-		6M Fanker, 3,500 Gal			
	- ••• atel 11		aliker, 5,500 Gai	•		
Cost Breakdown:	Scraper Work		Support Equip		Maintenance	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Tr
%Utilization-machine:	100	NA	100	NA	100	
Ownership cost/hour:	\$144.75	NA	\$74.64	NA	\$55.79	\$1
Operating cost/hour:	\$145.83	NA	\$71.55	NA	\$60.08	\$3
%Utilization-ripper:	NA	NA	NA	NA	50	
Ripper own. cost/hour:	NA	NA	\$0.00	NA	\$4.83	\$
Ripper op. cost/hour:	NA	NA	\$0.00	NA	\$2.20	\$
Operator cost/hour:	\$47.07	NA	\$40.04	NA	\$46.87	\$
Unit Subtotals:	\$337.64	NA	\$186.22	NA	\$169.77	\$4
Number of Units:	1	0	1	0	1	
Group Subtotals:	Work:	\$337.64	Support:	\$186.22	Maint:	\$215.0
Total work team cost/	/hour: <u>\$738.92</u>					
MATERIAL QUA	NTITIES					
Initial volume:	831	CCY	Swell fact	or: 1.215		
Loose volume:	1,010	LCY				
	rce of estimated volur of estimated swell fact		03 ac x 6 in depth lbook)		
HOURLY PRODU	JCTION					
			Scraper Bo	owl (volume) Basi	<u>s:</u>	
Material weight:	1,600 lbs/LCY		Struck	Volume: 24.00	L	CY
Material description:	Top Soil		Heaped	Volume: 34.00		CY
Rated Payload:	81,600 pounds		Average	Volume: 29.00	Ι	CY

<u>0.80</u> Minutes

<u>0.70</u> Minutes

Cycle Time:

Scraper Loading Time: Maneuver and Spread Time:

Job Condition Correction:

Site Altitude: 5500 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	1200.00	3.00	3.00	6.00	1069	1.16

Haul Time: **1.16** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1200.00	-3.00	3.00	0.00	2937	0.55
				Return Time:	0.55	minutes
			Total Scrape	er team cycle time:	3.21	minutes
			Adjusted	for job conditions:	449.91	LCY/Hour
			Selected Nu	umber of Scrapers:	1	Scraper(s)
	Adjusted single scraper team (unit) hourly production:				449.91	LCY/Hour
	Adjusted n	nultiple scrap	ber team (fleet)	hourly production:	449.91	LCY/Hour
Optima	Unadjusted unit pro al Number of Scrapers pe			_ LCY/Hour		
IOR T	IME AND COST					
JOD II						

Unit cost: \$1.642 /LCY

Total job cost: \$1,658

REVEGETATION WORK

Task description:		Revegetate 5 acr	es (flatter sl	opes)		
Site: Lyons Quarry		Per	mit Action:	TR-4 2020	Permit/Job	o#: <u>M1977141</u>
	IDENTIFIC	ATION				
Task #:	021	State:	Colorado		Abbreviation:	None
Date:	12/11/2020	County:	Boulder		Filename:	M141-021
User:	AME					
Age	ency or organiz	zation name: DR	RMS			

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Ammonium nitrate, 33-0-0	99.00	pound	\$0.34	\$33.17
Triple superphosphate, 0-46-0	23.00	pound	\$0.43	\$9.78
			Total Fertilizer Materials Cost/Acre	\$42.94

Application

Description		Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)		\$37.03
	Total Fertilizer Application Cost/Acre	\$37.03

TILLING

Description	Cost /Acre
Subsoil scarification, (MEANS 32 91 13.23 3100)	\$185.57
Weed control spraying (MEANS 31 31 16.13 3100)	\$193.60
Total Tilling Cost/Acre	\$379.17

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Switchgrass - Blackwell	0.81	7.23	\$9.32
Aster, Engleman's	0.20	0.95	\$38.80
Blue Grama - Native	0.59	9.63	\$8.10
Canada Wildrye	3.64	9.61	\$39.46
Beeplant, Rocky Mountain	2.12	5.45	\$57.24
Sandberg Bluegrass - VNS	0.38	8.07	\$3.19
Foxtail Barley	4.36	15.01	\$937.40
Slender Wheatgrass - San Luis	2.19	7.99	\$9.31
Thickspike Wheatgrass - Critana	2.26	7.99	\$15.54

Rabbitbrush, Rubber	0.61	9.09	\$39.22
Needlegrass, Green - Lodorm	1.54	6.40	\$18.13
Sage, Fringed	0.03	2.51	\$1.23
Totals Seed Mix	18.73	89.94	\$1,176.93

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}	2.00	TON	\$301.00	\$602.00
Total Mulch Materials Cost/Acre				\$602.00

Application

Description		Cost /Acre
Crimping, with tractor {DMG survey data}		\$70.17
	Total Mulch Application Cost/Acre	\$70.17

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					\$
	\$0.00				

JOB TIME AND COST

Estimat *Selected Replanti	No. of Acres: ed Failure Rate: ng Work Items:	30%	LCHING	Cost /Acre: Cost /Acre*:	
Initial Job Cost: Reseeding Job Cost: Total Job Cost: Job Hours:	\$3,174.48 \$16,052				

REVEGETATION WORK

Task descrip	otion:	Revegetate 0.15	acres (steepe	er slopes)			
Site: Lyons Quarry		Permit Action: TR-4 2020		TR-4 2020	Permit/Job#: M1977141		
	IDENTIFIC		~				
Task #:	022	State:	Colorado		Abbreviation:	None	
Date:	12/11/2020	County:	Boulder		Filename:	M141-022	
User:	AME						

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Ammonium nitrate, 33-0-0	99.00	pound	\$0.34	\$33.17
Triple superphosphate, 0-46-0	23.00	pound	\$0.43	\$9.78
			Total Fertilizer Materials Cost/Acre	\$42.94

Application

Description	Cost /Acre
Push rotary spreader (MEANS 32 01 90.13 0110)	\$104.98
Total Fertilizer Application Cost/Acre	\$104.98

TILLING

Description	Cost /Acre
Subsoil scarification, (MEANS 32 91 13.23 3100)	\$185.57
Weed control spraying (MEANS 31 31 16.13 3100)	\$193.60
Total Tilling Cost/Acre	\$379.17

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Switchgrass - Blackwell	0.81	7.23	\$9.32
Aster, Engleman's	0.20	0.95	\$38.80
Blue Grama - Native	0.59	9.63	\$8.10
Canada Wildrye	3.64	9.61	\$39.46
Beeplant, Rocky Mountain	2.12	5.45	\$57.24
Sandberg Bluegrass - VNS	0.38	8.07	\$3.19
Foxtail Barley	4.36	15.01	\$937.40
Slender Wheatgrass - San Luis	2.19	7.99	\$9.31
Thickspike Wheatgrass - Critana	2.26	7.99	\$15.54

Rabbitbrush, Rubber	0.61	9.09	\$39.22
Needlegrass, Green - Lodorm	1.54	6.40	\$18.13
Sage, Fringed	0.03	2.51	\$1.23
Totals Seed Mix	18.73	89.94	\$1,176.93

Application

Description		Cost /Acre
Broadcast seeding [DMG]		\$267.22
Т	otal 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}	2.00	TON	\$301.00	\$602.00
Total Mulch Materials Cost/Acre				\$602.00

Application

Description		Cost /Acre
Jute mesh #2 (MEANS 31 25 14.16 0300)		\$1,984.40
	Total Mulch Application Cost/Acre	\$1,984.40

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					\$
		Totals	Nursery Stoc	ek Cost / Acre	\$0.00

JOB TIME AND COST

Estimate *Selected Replanti	No. of Acres: ed Failure Rate: ng Work Items:	30%	CHING	Cost /Acre: Cost /Acre*:	
Initial Job Cost:	\$683.65				
Reseeding Job Cost:	\$181.37				
Total Job Cost:	\$865				
Job Hours:	10.00				

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description:	Mo	bilization/Demob	ilization				
te: Lyons Quarry		Permit Action:		2020		Permit/Job#: <u>M1977141</u>	
PROJECT IDEN	NTIFICATI	<u>ON</u>					
Task #: 023		State: Co	lorado		Abbre	eviation: None	
	1/2020		oulder			ilename: M141	-023
User: AM	Е	•					
Agency o	or organization	n name: DRMS					
EQUIPMENT T	'RANSPOR'	T RIG COST					
					Shift ba	sis: 1 per da	V
					Cost Data Sou		
Truck	Tractor Desc	ription: GENE	RIC ON-HIGH			OR, 6X4, DIESEI	POWERED,
					(2ND HALF,		
Truck	Trailer Desc	ription: Gl				ROP DECK EQU	IPMENT
			Т	RAILER	(25T, 50T, Al	ND 100T)	
Cost Breakdown:							
	F						
Available Rig Capacities		0-25 Tons	26-50 Tons		+ Tons		
	Cost/Hour:	\$17.20	\$29.63		38.69		
Operating Cost/Hour:		\$26.56	\$47.02		55.69		
Operator Cost/Hour:		\$23.63	\$23.63		23.63		
Helper Cost/Hour:		\$0.00	\$23.53		23.53		
Total Unit Cost/Hour:		\$67.39	\$123.81	\$1	41.54		
NON ROADABI	LE EQUIPN	<u>/IENT:</u>					
Machine	Weight/	Owner ship	Haul Rig	Fleet	Haul Trip	Return Trip	DOT Permit
Description	Unit	Cost/hr/ unit	Cost/hr/unit	Size	Cost/hr/	Cost/hr/ fleet	Cost/ fleet
-	(TONS)				fleet		
CAT 966H	25.80	\$42.87	\$67.39	2	\$220.52	\$134.78	\$1,000.00
Cat D7R DS XR	32.01	\$74.64	\$123.81	4	\$793.80	\$495.24	\$1,000.00
Series II							
CAT 16M	28.73	\$60.62	\$123.81	2	\$368.86	\$247.62	\$1,000.00
Cat 324D L 9'-8" Stick	27.33	\$50.59	\$123.81	2	\$348.80	\$247.62	\$500.00
Cat 631G	52.50	\$144.75	\$141.54	2	\$572.58	\$283.08	\$500.00
Drill/Broadcast Seeder with Tractor	25.00	\$6.72	\$67.39	1	\$74.11	\$67.39	\$250.00
Cat 730	25.19	\$58.32	\$67.39	4	\$502.84	\$269.56	\$2,000.00
Cat / 50	23.19	\$J0.52	\$07.39	4	\$302.84	\$209.30	\$2,000.00

Subtotals: \$2,881.51 \$1,745.29

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 3,500 Gal.	\$45.29	2	\$90.58	\$90.58
		Subtotals:	\$90.58	\$90.58

\$6,250.00

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region: Total one-way travel distance: Average Travel Speed:	FORT COLLINS 46.00 50.00	miles mph
Total Non-Roadable Mob/Demob Cost *	\$95,932.57	
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	\$166.67	

Transportation Cycle Time:

	Non-	
	Roadable	Roadable
	Equipment	Equipment
Haul Time (Hours):	0.92	0.92
Return Time (Hours):	0.92	0.92
Loading Time (Hours):	6.50	NA
Unloading Time (Hours):	6.50	NA
Subtotals:	14.84	1.84

JOB TIME AND COST

Total job time:	29.68	Hours
Total job cost:	\$96,099	