







































TYPES OF SCRAPERS

Auger scrapers can self-load in difficult conditions, laminated rock or granular materials.

The auger adds weight to the scraper during travel and it is more costly to own and operate than a conventional scraper.













Table 1						
	Bank weight		Loose weight			
Material	lb/cu yd	kg/m³	lb/cu yd	kg/m³	Percent swell	Swell factor
Clay,dry	2,700	1,600	2,000	1,185	35	0.74
Clay, wet	3,000	1,780	2,200	1,305	35	0.74
Earth, dry	2,800	1,660	2,240	1,325	25	0.80
Earth, wet	3,200	1,895	2,580	1,528	25	0.80
Earth and gravel	3,200	1,895	2,600	1,575	20	0.83
Gravel, dry	2,800	1,660	2,490	1,475	12	0.89
Gravel, wet	3,400	2,020	2,980	1,765	14	0.88
Limestone	4,400	2,610	2,750	1,630	60	0.63
Rock, well blasted	4,200	2,490	2,640	1,565	60	0.63
Sand, dry	2,600	1,542	2,260	1,340	15	0.87
Sand, wet	2,700	1,600	2,360	1,400	15	0.87











E.	CHAPTER 7. SCRAPERS		Slide No. 43
- AL	CYCLE T	IME FOR A	ENCE 420 ©Assakkaf
	SCRAPER		
	Table 2 Scraper Dump Cycl	e Times (U.S. Department of Ti	ransportation FHWA)
		Scrape	r Type
	Scraper Size	Single Engine	Tandem-powered
	(cu yd)	(min)	(min)
No=	<25	0.30	-
	25 to 34	0.37	0.26
	35 to 44	0.44	0.28

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and a state	CHAPTER 7. SCRAPER	S		Slide No. 44
. A.	Example	1		ENCE 420 ©Assakkaf
	Calculate th 31-cu-yd sc	e total time req raper to comple	uired for a sir ete a 2,000-ft l	ngle-engine naul cycle.
	$T_s = 10$	$bad_t + haul_t + dump$	$t + turn_t + return_t +$	- turn _t
	Load _t			0.85 min
1	Haul _t 2,000 ft:	accelerate @ 6 mph steady @ 12 mph decelerate @ 8 mph	300 ft 1,500 ft 200 ft	0.57 min 1.42 min 0.28 min
	Dump _t	31 cu yd (Table 2)		0.37 min
	Turn,	@	fill	0.21 min
	Return _t 2,000 ft:	accelerate @ 6 mph steady @ 18 mph decelerate @ 10 mph	200 ft 1,600 ft 200 ft	0.28 min 1.01 min 0.23 min
	Turn,	@	cut	0.30 min
Mc Graw		Тс	tal Cycle Time	5.52 min

K.	Example 2 (co	ont'd)	ENCE 420 ©As
F	igure 3 (for Example 2)		
	Engine: flywheel power	450	et
	Transmission: semiautor	natic power shift, eight speeds	
	Capacity of scraper: Stru Hea	ick – 21 cu yd aped – 31 cu yd	19 (m)
	Weight distribution: Em	pty Drive axle - 67% Rear axle - 33% ded Drive axle - 53%	
	Operating weight: Em	$\begin{array}{rcl} \text{Rear axle} & -47\%\\ \text{pty} & -96,880 \text{ lb}^{\dagger} \end{array}$	
	Rated load:	- 75,000 lb	5
	Top Speed: Loa	ded – 33 mph	
	[†] Includes coolant, lubricant operator.	s, full fuel tank, ROPS canopy, and	

Example	e 2 (co	nt'd)		EICE 420 @
Table 3. Haul and R	eturn Speeds		_	
Distance (ft)	Grade (%)	Total Resistance (%) R = rr + gr	Speed (mph)	Travel Time (mi
Haul (172,210 lb):	L			
300 acceleration	4	8	5	0.68
900	4	8	10	1.02
1,400	2	6	15	1.06
1,200	-2	2	30	0.45
200 deceleration	-2	2	12	0.19
			Total	3.40
Return (96,880 lb):				
200 acceleration	2	6	10	0.23
1,200	2	6	21	0.65
1,400	-2	2	32	0.50
1,000	-4	0	32	0.36
200 deceleration	-4	0	12	0.19
			Total	1 93

