

CALCULATIONS

LAKE COUNTY
LAK-1-216

EXCAVATION, EMBANKMENT, TOPSOIL STOCKPILED, SEEDING & AGRICULTURAL LIME QUANTITIES

Station To Station	Description	Excavation	Embankment	Embankment + 18 %	L-1 Topsoil Stockpiled	Seeding	Agricultural Liming Material
111+00	114+00	State Hwy. No. 1	5,254	51,601	60,889		
114+00	126+00	" " "	72,658	373,570	440,813	48	52,746
126+00	138+00	" " "	437,665	113,781	134,262	5,696	42,372
138+00	150+00	" " "	95,151	379,228	447,489	7,569	60,965
150+00	162+00	" " "	102,924	185,232	218,574	10,309	65,763
162+00	174+00	" " "	193,758	18,473	21,798	13,107	55,454
174+00	186+00	" " "	540,877	7,541	8,898		59,966
186+00	198+00	" " "	592,033	13,612	16,062		57,122
198+00	210+00	" " "	68,093	442,156	521,744	5,546	59,539
210+00	230+00	" " "	8,246	74,304	87,679	537	17,922
5+00	14+85	Ramp "A" S.R.#1 Interc.	18,749	40,451	47,732	13,485	
4+84	18+00	" " " " " " " "	106,616	4,385	5,174	1,727	16,482
5+70	13+69.70	" " " " " " " "	1,091	244,727	288,778	24,994	
3+69.70	10+78	" " " " " " " "	1,642	55,733	65,765	984	22,117
13+69.70	23+00	" " " " " " " "	29,032	96,823	114,251	940	21,061
5+50	19+92	Hanna Road Connect.	10,638	201	237	6,379	
9+100	20+00	Maple Grove Road	3,455	94,660	111,699	14,709	
20+100	27+75	" " " " " " " "	741	163	192	1,695	
10+70	12+00	State Rt. No. 91	350	57	67	679	
12+00	24+00	" " " " " " " "	51,056	7,028	8,293		10,466
24+00	36+00	" " " " " " " "	6,558	156,003	184,084		12,571
36+00	45+50	" " " " " " " "	14,603	1,603	1,892		11,240
Totals:			2,361,190 C.Y.	2,361,332 C.Y.	2,786,372 C.Y.	46,553 C.Y.	631,329 S.Y.

11,913 = 2.46 Ac.
9840
@ 10 Tons/Acre
= 246 Tons

BORROW CALCULATIONS

Embankment + 18 %	2,786,372 C.Y.
Less Roadway Excavation	2,361,190 C.Y.
Less E-2 Excavation For Structures From Sheet #12	3,974 C.Y.
Less E-3 Channel Excavation From Sheet #12	21,197 C.Y.
E-4 Borrow Totals	400,011 C.Y.

E-11 WATER CALCULATIONS

Embankment + 18 %	2,786,372 C.Y.
I-22 Subbase	26,713 C.Y.
I-18 Stab. Crushed Aggregate Shoulders & Approaches	6,862 C.Y.
B-19 Aggregate Base Course	2,085 C.Y.
Totals	2,822,032 C.Y.
@ 0.005 Mat. per Cu. Yd.	14,110 Tons

L-9 COMMERCIAL FERTILIZER (12-12-12)

Seeding	631,329 S.Y.
L-10 Sodding	14,491 S.Y.
L-10 Sodding For Special Berm & Slope Protection	811 S.Y.
Totals	646,631 S.Y.
Applied at the Rate of 20 lbs. per 1,000 Sq. Ft.	$\frac{646,631 \times 20}{1,000} = 5,813.1 \times 20 = 2000 = 58.19 \text{ Tons}$

L-3 PLACING STOCKPILED TOPSOIL (12" THICK)

Station To Station	Calculation	Sq. Yds.	Station To Station	Calculation	Sq. Yds.
124+00	124+40	40 X 205 X 1/10 = 911	182+00	185+00	300 X 258 X 1/10 = 8600
124+40	125+14	74 X 185 X 1/10 = 1521	185+00	191+00	600 X 246 X 1/10 = 16,400
125+14	125+79	65 X 191 X 1/10 = 1379	191+00	192+00	100 X 220 X 1/10 = 2444
125+79	126+00	21 X 253 X 1/10 = 590	192+00	193+00	100 X 194 X 1/10 = 2156
126+00	127+00	100 X 278 X 1/10 = 3089	193+00	193+59	59 X 100 X 1/10 = 656
127+00	128+00	100 X 302 X 1/10 = 3556	193+59	193+89	30 X 95 X 1/10 = 317
128+00	129+00	100 X 306 X 1/10 = 3580	193+89	194+00	11 X 90 X 1/10 = 110
129+00	130+00	100 X 287 X 1/10 = 3189	194+00	194+08	8 X 88 X 1/10 = 78
130+00	131+00	100 X 264 X 1/10 = 2933	194+08	194+27	19 X 128 X 1/10 = 270
131+00	132+00	100 X 243 X 1/10 = 2700	194+27	194+52	25 X 148 X 1/10 = 411
132+00	133+00	100 X 234 X 1/10 = 2600	194+52	194+84	32 X 140 X 1/10 = 498
133+00	133+71	71 X 228 X 1/10 = 1799	194+84	195+00	16 X 165 X 1/10 = 293
133+71	134+12	41 X 215 X 1/10 = 979	195+00	195+52	52 X 213 X 1/10 = 1231
134+12	134+20	8 X 210 X 1/10 = 187	195+52	197+00	148 X 246 X 1/10 = 4045
134+20	134+43	23 X 201 X 1/10 = 514	197+00	198+00	100 X 233 X 1/10 = 2589
134+43	135+00	57 X 163 X 1/10 = 1032	198+00	198+54	54 X 217 X 1/10 = 1302
135+00	136+00	100 X 101 X 1/10 = 1122	198+54	199+00	46 X 188 X 1/10 = 961
143+00	144+00	100 X 55 X 1/10 = 611	199+00	199+83	83 X 98 X 1/10 = 904
144+00	145+00	100 X 110 X 1/10 = 1222	199+83	200+00	17 X 26 X 1/10 = 49
145+00	145+64	64 X 142 X 1/10 = 1010	RAMP "D"		
145+64	146+00	36 X 105 X 1/10 = 420	18+60	19+00	40 X 129 X 1/10 = 573
146+00	146+22	22 X 80 X 1/10 = 196	19+00	20+00	100 X 98 X 1/10 = 1089
146+22	146+35	13 X 81 X 1/10 = 117	20+00	21+00	100 X 56 X 1/10 = 622
146+35	147+00	65 X 83 X 1/10 = 599	21+00	22+00	100 X 32 X 1/10 = 356
147+00	148+00	100 X 80 X 1/10 = 800	22+00	23+00	100 X 16 X 1/10 = 178
148+00	149+00	100 X 72 X 1/10 = 720	RAMP "B"		
149+00	151+00	200 X 73 X 1/10 = 1622	13+50	14+00	50 X 29 X 1/10 = 161
151+00	157+00	600 X 71 X 1/10 = 4733	14+00	14+60	60 X 29 X 1/10 = 193
157+00	166+00	100 X 55 X 1/10 = 611	14+60	14+77	17 X 29 X 1/10 = 56
166+00	167+00	100 X 70 X 1/10 = 778	14+77	15+00	23 X 29 X 1/10 = 74
167+00	173+00	600 X 74 X 1/10 = 4933	15+00	15+12	12 X 28 X 1/10 = 39
173+00	174+00	100 X 105 X 1/10 = 1167	15+12	15+40	28 X 29 X 1/10 = 90
174+00	175+00	100 X 239 X 1/10 = 2656	15+40	15+75	35 X 29 X 1/10 = 113
175+00	176+00	100 X 279 X 1/10 = 3100	15+75	16+00	25 X 28 X 1/10 = 81
176+00	177+00	100 X 257 X 1/10 = 2633	16+00	16+50	50 X 29 X 1/10 = 161
177+00	178+00	100 X 253 X 1/10 = 2811	16+50	17+00	50 X 29 X 1/10 = 161
178+00	179+00	100 X 250 X 1/10 = 2778			
179+00	182+00	300 X 248 X 1/10 = 8267			
Total:					120,503 Sq.Yds.

55-18 TYPE "D" FENCE

Sheet No.	Station To Station	Lin. Ft.	
300	114+00	126+00	1099
301	118+00	131+00	1469
302	126+00	138+00	2104
303	138+00	150+00	2596
304	150+00	162+00	2538
305	162+00	174+00	2504
306	174+00	186+00	2456
307	186+00	198+00	2655
308	198+00	210+00	2433
309	210+00	212+00	400
Lt. Ramp "A"			
311	24+00	48+00	1283
Total			21,537

I-18- STABILIZED CRUSHED AGGREGATE SHOULDERS AND APPROACHES, WITH ADDITIONAL STABILIZATION WITH CALCIUM CHLORIDE- SEE NOTE IN PROPOSAL.

Estimated Quantities- Area of 6" Depth of I-18 Shoulders-Sheet 18, 2082.95 sq.Yds. Use 2083 Sq.Yds. 2.1 Pounds Calcium Chloride per Sq.Yd. Item M-10 $2.1 \times 2083 \div 2000 = 2.18 \text{ Tons}$ - Use 2.2 Tons. Mixing- 2083 Sq.Yds. Quantities to General Summary, Sheet 12.

I-127 STANDARD DELINEATORS

Southbound Lanes Station To Station	Each	Northbound Lanes Station To Station	Each		
118+40	140+21.15	12	125+00	133+06.85	5
149+40.47	211+42.89	32	152+27	158+27	4
			166+20	178+20	7
			196+84.19	210+81.99	8
Totals					68

LANE LINE STRIPING

Station To Station	Description	Lin. Ft.	Calculation
114+00	134+34	(N.B.Lanes) 2034' x 2 = 4068	Total = 23,622 Lin.Ft.
134+34	212+00	" " 7766' x 1 = 7766	x 1/40 x 1/5280
114+00	134+58	(S.B.Lanes) 2058' x 2 = 4116	= 1.683 Miles
134+58	212+00	" " 7742' x 1 = 7742	

EDGE LINE STRIPING

Station To Station	Lin. Ft.	
Left & Right Inside		
114+00	212+00	10,600.0
Left Outside		
114+00	118+63	463.0
114+63.07	142+17	2753.03
141+17	212+00	7083.0
Right Outside		
114+00	124+34	1034.0
123+34	149+45.63	2611.63
134+49	165+54.73	3105.73
164+54.73	183+50	1895.27
179+49	212+00	3251.0
Weigh Station Parking Area		
See Sheet No. 248	2690.0	
Total		44,486.66
		$44,486.66 \times 1/5280 = 8.426 \text{ Miles}$

S-25 280 Lin. Ft. Asbestos - Cement Conduit Sec. M-206.14, as per Plan See S.R.#91 Interchange Lighting Details Sheet No. 152

MICHAEL BAKER JR., CONSULTING ENGINEERS
ROCHESTER, PENNSYLVANIA

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
STATE HIGHWAY NO. 1
C-43

CALCULATIONS

Designed	Drawn	Traced	Checked	Reviewed Date	Revised
B.P.	J.M.	K.A.	REF.		