



CALCULATIONS

LINE ITEM	DESCRIPTION	QUANTITY	UNIT
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6	203 SUBGRADE COMPACTION		
7	BATES ROAD $[2 \times 31 \times 25 + 2856.60(\text{LINE } 17)] \times 1/9 = 490.0$ SQ. YD.		
8	RIVER ROAD $[2 \times 37 \times 25 + 5232.96(\text{LINE } 19)] \times 1/9 = 787.0$		
9	S.R. 86 $[2 \times 37 \times 25 + 3945.02(\text{LINE } 20)] \times 1/9 = 643.9$		
10	TOTAL 1920.9 SQ. YD.	1921	SQ YD
11	254 PAVEMENT PLANING, BITUMINOUS		
12	RIVER ROAD $355 \times 20 \times 1/9 = 788.9$ SQ.YD.		
13	S.R. 86 $150 \times (24 + 26) \times 1/9 = 833.3$		
14	TOTAL 1622.2 SQ.YD.	1623	SQ YD
15	301 BITUMINOUS AGGREGATE BASE, PG 64-22		
16	BATES ROAD $1/27 \times 6/12 \times [38.08 \times (26+28) \times 1/2 + 12 \times 28 + 42.72(26+28)] \times 1/2 + 12 \times 28$		
17	$= 1/27 \times 6/12 \times [2856.60] = 52.84$		
18	RIVER ROAD $1/27 \times 6/12 \times [60 \times (32+34) \times 1/2 + 35.36 \times 34 + 60 \times (32+34) \times 1/2 + 2.08 \times 34]$		
19	$= 1/27 \times 6/12 \times 5232.96 = 96.91$		
20	S.R. 86 $1/27 \times 7/12 \times [60.23 \times 34 + 55.80 \times 34] = 1/27 \times 7/12 \times [3945.02] = 85.23$		
21	TOTAL 234.98 CU.YD.	235	CU YD
22	304 AGGREGATE BASE		
23	BATES ROAD $1/27 \times 6/12 [2856.60(\text{LINE } 17) + 2 \times 25 \times 31] = 81.5$ CU.YD.		
24	RIVER ROAD $1/27 \times 6/12 [5232.96(\text{LINE } 19) + 2 \times 25 \times 37] = 131.2$ CU. YD.		
25	S.R. 86 $1/27 \times 6/12 [3945.02(\text{LINE } 20) + 2 \times 25 \times 37] = 107.6$ CU. YD.		
26	TOTAL 320.1 CU.YD.	320	CU YD
27	448 ASPHALT CONCRETE, INTERMEDIATE COURSE, TYPE 2, PG 64-22		
28	BATES ROAD $1/27 \times 1.75/12 \times 2856.60(\text{LINE } 17) = 15.43$ CU.YD.		
29	RIVER ROAD $1/27 \times 1.75/12 \times 5232.96(\text{LINE } 19) = 28.26$		
30	S.R. 86 $1/27 \times 1.75/12 \times 3945.02(\text{LINE } 20) = 21.31$		
31	TOTAL 65.00 CU.YD.	65	CU YD
32	448 ASPHALT CONCRETE, SURFACE COURSE, TYPE 1, PG 64-22		
33	BATES ROAD $1/27 \times 1.25/12 \times 2856.60(\text{LINE } 17) = 11.02$ CU.YD.		
34	RIVER ROAD $1/27 \times 1.25/12 \times 5232.96(\text{LINE } 19) +$		
35	$788.9 \text{ SY (LINE } 12) \times 1.25/12 \times 1/3 = 47.58$		
36	S.R. 86 $1/27 \times 1.25/12 \times 3945.02(\text{LINE } 20) +$		
37	$833.3 \text{ SY (LINE } 13) \times 1.25/12 \times 1/3 = 44.15$		
38	TOTAL 102.75 CU.YD.	103	CU YD
39	448 ASPHALT CONCRETE, INTERMEDIATE COURSE, TYPE 1, PG 64-22, (UNDER GUARDRAIL)		
40	BATES ROAD $0.25' \times 4' \times (125' + 125' + 75' + 75') \times 1/27 \text{ CY/CF} = 14.81$ CU.YD.		
41	RIVER ROAD $25' \times 4' \times (100' + 137.5' + 100' + 62.5') \times 1/27 \text{ CY/CF} = 14.81$		
42	S.R. 86 $0.25' \times 4' \times (137.5' + 162.5' + 150' + 100') \times 1/27 \text{ CY/CF} = 20.37$		
43	TOTAL 49.99 CU.YD.	50	CU YD
44	407 TACK COAT, 0.075 GAL./SQ.YD.		
45	BATES ROAD $2856.6 \text{ SF (LINE } 17) \times 1/9 \times 0.075 \text{ GAL/SY} = 23.8$ GAL		
46	RIVER ROAD $[5232.96 \text{ SF (LINE } 19) \times 1/9 + 788.9 \text{ SY (LINE } 12)] \times 0.075 \text{ GAL/SY} = 102.8$		
47	S.R. 86 $[3945.02 \text{ SF (LINE } 20) \times 1/9 + 833.3 \text{ SY (LINE } 13)] \times 0.075 \text{ GAL/SY} = 95.4$		
48	TOTAL 222.0 GAL	222	GAL
49	407 TACK COAT FOR INTERMEDIATE COURSE, 0.05 GAL./SQ.YD.		
50	BATES ROAD $2856.6 \text{ SF (LINE } 17) \times 1/9 \times 0.05 \text{ GAL/SY} = 15.9$ GAL		
51	RIVER ROAD $5232.96 \text{ SF (LINE } 19) \times 1/9 \times 0.05 \text{ GAL/SY} = 29.1$ GAL		
52	S.R. 86 $3945.02 \text{ SF (LINE } 20) \times 1/9 \times 0.05 \text{ GAL/SY} = 21.9$		
53	TOTAL 66.9 GAL	67	GAL
54	408 BITUMINOUS PRIME COAT, 0.4 GAL./SQ.YD.		
55	BATES ROAD $2856.60(\text{LINE } 17) \times 1/9 \times 0.4 = 127.0$ GAL.		
56	RIVER ROAD $5232.96(\text{LINE } 19) \times 1/9 \times 0.4 = 232.6$		
57	S.R. 86 $3945.02(\text{LINE } 20) \times 1/9 \times 0.4 = 175.3$		
58	TOTAL 534.9 GAL.	535	GAL
59	611 REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN		
60	BATES ROAD $2 \times 25 \times 29 \times 1/9 = 161.11$ SQ.YD.		
61	RIVER ROAD $2 \times 25 \times 35 \times 1/9 = 194.44$		
62	S.R. 86 $2 \times 25 \times 35 \times 1/9 = 194.44$		
63	TOTAL 549.99 SQ.YD.	550	SQ YD
64	202 FENCE REMOVED		
65	BATES ROAD $25+25+25+25 = 100$ LF		
66	RIVER ROAD $40+55+50+85 = 230$		
67	S.R. 86 $80+30+60+40 = 210$		
68	TOTAL 540 LF	540	LIN FT
69	607 FENCE, TYPE CL		
70	TOTAL 540 LF (LINE 68)	540	LIN FT

LINE ITEM	DESCRIPTION	QUANTITY	UNIT
659*	SEEDING AND MULCHING (AREA OBTAINED FROM SCALING PLAN)		
	BATES ROAD 1330 SQ.YD.		
	RIVER ROAD 2186		
	S.R. 86 1689		
	TOTAL 5205 SQ.YD.	5205	SQ YD
877*	TEMPORARY SEEDING AND MULCHING		
	$0.20 \times 5205 \text{ SY} = 1041 \text{ SY}$	1041	SQ YD
659*	WATER		
	$240 \text{ GAL}/1000 \text{ SF} \times 5205 \text{ SY} \times 9 \text{ SF/SY} \times 1 \text{ MGAL}/1000 \text{ GAL} = 11.2 \text{ M GAL}$		
	$240 \text{ GAL}/1000 \text{ SF} \times 1041 \text{ SY} \times 9 \text{ SF/SY} \times 1 \text{ MGAL}/1000 \text{ GAL} = 2.2$		
	TOTAL = 13.4 M GAL	14	M GAL
659*	COMMERCIAL FERTILIZER		
	$20 \text{ LBS}/1000 \text{ SF} \times 5205 \text{ SY} \times 9 \text{ SF/SY} \times 1/2000 \text{ TON/LB} = 0.47 \text{ TON}$		
	$10 \text{ LBS}/1000 \text{ SF} \times 1041 \text{ SY} \times 9 \text{ SF/SY} \times 1/2000 \text{ TON/LB} = 0.05$		
	TOTAL = 0.52 TON	0.52	TON
659*	REPAIR SEEDING AND MULCHING		
	$.05 \times 5205 \text{ SY} = 260 \text{ SY}$	260	SQ YD
203	LINEAR GRADING $[400(\text{LINE } 40) + 400(\text{LINE } 41) + 550(\text{LINE } 42)] - 100 = 13.5$ STATIONS	14	STA.
203**	EMBANKMENT USING GRANULAR MATERIAL, AS PER PLAN (SEE DETAIL "A")		
	FIRST SET OF PARANTHESES IS (ABUT. LENGTH + WINGWALL L. + WINGWALL L.)		
	BATES ROAD		
	REAR ABUT. $(27.5' + 5.5' + 5.5') \times (1' \times 9.5' + 9.5' \times 9.5' \times 1/2) \times 1/27 \text{ CY/CF} = 78$ CU YD		
	FWD. ABUT. $(27.5' + 5.5' + 5.5') \times (1' \times 7' + 7' \times 7' \times 1/2) \times 1/27 \text{ CY/CF} = 45$		
	RIVER ROAD		
	REAR ABUT. $(46.5' + 11.5' + 11.5') \times (1' \times 9.5' + 9.5' \times 9.5' \times 1/2) \times 1/27 \text{ CY/CF} = 136$		
	FWD. ABUT. $(46.5' + 11.5' + 11.5') \times (1' \times 9' + 9' \times 9' \times 1/2) \times 1/27 \text{ CY/CF} = 123$		
	S.R. 86		
	REAR ABUT. $(51' + 4.5' + 12') \times (1' \times 9' + 9' \times 9' \times 1/2) \times 1/27 \text{ CY/CF} = 124$		
	FWD. ABUT. $(44.5' + 12.5' + 5.5') \times (1' \times 8.5' + 8.5' \times 8.5' \times 1/2) \times 1/27 \text{ CY/CF} = 103$		
	** QUANTITIES CARRIED TO PLAN AND PROFILE SHEETS		
601	SLOPE PROTECTION, MISC.:GROUT FILLED FABRIC MATS		
	BATES ROAD REAR ABUTMENT $(38' + 45') \times 1/2 \times 36' \times 1.08 \times 1/9 = 179.3$ SQ YD		
	FORWARD ABUTMENT $(38' + 45') \times 1/2 \times 34' \times 1.08 \times 1/9 = 169.3$		
	RIVER ROAD REAR ABUTMENT $.5 [(65' + 97') \times 1/2 \times (36' - 4') + (4' \times 97')] \times 1.11 \times 1/9 = 367.5$		
	FORWARD ABUTMENT $[(65' + 95') \times 1/2 \times (35' - 4') + (4' \times 95')] \times 1.08 \times 1/9 = 343.2$		
	S.R. 86 REAR ABUTMENT $[(73' + 103') \times 1/2 \times (33' - 7.5') + (7.5' \times 103')] \times 1.09 \times 1/9 = 365.3$		
	FORWARD ABUTMENT $[(61' + 93') \times 1/2 \times (39' - 3') + (3' \times 93')] \times 1.09 \times 1/9 = 369.5$		
	TOTAL = 1794.1 SQ YD	1794	SQ YD
626	BARRIER REFLECTORS, TYPE B2 (ON BRIDGE DEFLECTOR PARAPET)		
	BATES ROAD $14 + 14 = 28$ EACH		
	RIVER ROAD $18 + 18 = 36$		
	S.R. 86 $19 + 19 = 38$		
	TOTAL 102 EACH	102	EACH
	UNLESS NOTED OTHERWISE, ALL QUANTITIES CARRIED TO GENERAL SUMMARY		
	* QUANTITY CARRIED TO GENERAL NOTES, SHEET 9		