PAVEMENT CALCULATION (Continued)

ASPHALTIC CONCRETE BASE COURSE ITEM B-35

Sta. 14+50 to Sta. 26+23 = 1173 x 24.5 = 28,738.50 ÷ 9 =	3,193.17 Sq.Yds.
Sta. 28+13 to Sta. 34+47.17 = 634.17 x 24.5 = 15,537.17 ÷ 9 =	1,726.35 Sq.Yds.
Sta. 33+50 to Sta. 34+46 = 96 x 24.5 = 2352 ÷ 9 =	261.33 Sq.Yds.
Sta 34+46 to Sta. 103+06.59 = 6,860.59 x 4.5 = 30872.66 ÷ 9	3,430.29 Sq.Yds.
Extra Area	468.00 Sq.Yds.
Total	9,079.14 Sq.Yds.
City of Willoughby Total - 9,079.14 ÷ 36 x 2½	630.49 Cu.Yds.

Sta. 103+06.59 to Sta. 121+55 = 1848.41 x 4.5 = 8,317.85 ÷ 9 =	924.20 Sq.Yds.
Extra Area	137.00 Sq.Yds.
Total	1,061.20 Sq.Yds.
Mentor Twp. Total = 1061.20 ÷ 36 x 2½ =	73.69 Cu.Yds.
Grand Total	704.18 Cu.Yds.
Use	704 Cu.Yds.

CRUSHED AGGREGATE BASE COURSE ITEM B-119

Sta. 14+50 to Sta. 26+23 = 1173 x 25.5 = 29,911.50 ÷ 9 =	3,323.50 Sq.Yds.
Sta. 28+13 to Sta. 34+47.17 = 634.17 x 25.5 = 16,171.33 ÷ 9	1,796.81 Sq.Yds.
Sta. 33+50 to Sta. 34+46 = 96 x 25.5 = 2448 ÷ 9 =	272.00 Sq.Yds.
Sta. 34+46 to Sta. 103+06.59 = 6860.59 x 5.5 = 37,733.25 ÷ 9	4,192.58 Sq.Yds.
Extra Area.	602.00 Sq.Yds.
Total	10,186.89 Sq.Yds.
10,186.89 ÷ 36 x 8 =	2,263.75 Cu.Yds.

Mail Box Approaches 733 Sq.Yds. ÷ 36 x 5	101.80 Cu.Yds.
Drives 2,421 ÷ 36 x 5	336.25 Cu.Yds.
Total City of Willoughby	2,701.80 Cu.Yds.

Sta. 103+06.59 to Sta. 121+55 = 1848.41 x 5.5 = 10,166.26 ÷ 9	1,129.58 Sq.Yds.
1,129.58 Sq.Yds. ÷ 36 x 8	251.01 Cu.Yds.
Extra Area 174 ÷ 36 x 8	38.66 Cu.Yds.
Drives 358 ÷ 36 x 5	49.72 Cu.Yds.
Mail Box Approaches 226 Sq.Yds. ÷ 36 x 5	31.39 Cu.Yds.
Mentor Twp. Total	370.78 Cu.Yds.
Grand Total	3,072.58 Cu.Yds.
Use	3,073 Cu.Yds.

* Nine Manholes to be adjusted to grade are in the Storm Sewer Classification. The remaining Manhole is on a Sanitary Sewer for which participation will be 100% by the City of Willoughby.

BITUMINOUS TACK COAT (0.10 Gal. per sq. yd.) ITEM T-30

Sta. 101+82.09 to Sta. 226+13 = 12,430.91 x 24 = 298,341.84 ÷ 9 =	33,149.09 Sq.Yds.
Sta. 0+00 to Sta. 8+50 = 850 x 24 = 20,400 ÷ 9 =	2,266.67 Sq.Yds.
Sta. 34+46 to Sta. 103+06.59 = 6,860.59 x 20 = 137,211.80 ÷ 9 =	15,245.75 Sq.Yds.
Extra Area	3,094.00 Sq.Yds.
City of Willoughby Total	53,755.51 Sq.Yds.
Sta. 103+06.59 to Sta. 121+80 = 1,873.41 x 20 = 37,468.20 ÷ 9 =	4,163.13 Sq.Yds.
Mentor Twp. Total	4,163.13 Sq.Yds.
Grand Total - 57,918.64 x 0.10 =	5,791.86 Gals.
Use	5,792 Gals.

GENERAL SUMMARY

Item Nº	City Of Willoughby	Mentor Township	Total	Unit	Description
					ROADWAY
E-101	10,945	480	11,425	CU.YDS.	ROADWAY EXCAVATION, AS PER PLAN.
E-101	11,880		11,880	SQ. YDS.	COMPACTED SUBGRADE
E-4	3,720		3,720	CU.YDS.	BORROW
E-8	11,079		11,079	SQ.YDS.	REMOVAL & DISPOSAL OF EXISTING RIGID PAVEMENT
E-8	96		96	SQ. FT	REMOVAL & DISPOSAL OF EXISTING SIDEWALK
E-8	507		507	SQ.YDS.	REMOVAL & DISPOSAL OF EXISTING BITUMINOUS WEARING COURSE
E-11	105	4	109	M. GALS.	WATER
I-8	30		30	EACH	MONUMENT ASSEMBLIES, STANDARD.
I-8	9		9	EACH	MONUMENT BOXES ADJUSTED TO GRADE
I-13	80		80	SQ. FT.	4" SIDEWALKS, CONCRETE.
I-15	7,650		7,650	LIN.FT.	GUARD RAIL, STEEL BEAM TYPE (DEEP)
I-15	7,583	30	7,613	LIN.FT.	GUARD RAIL, REMOVED & DISPOSED OF
I-15	51	9	60	EACH	WOOD GUARD RAIL POSTS WITHOUT RAIL
I-18	11		11	CU.YDS.	STABILIZED CRUSHED AGGREGATE SHOULDERS AND APPROACHES
I-17	3627		3627	Sq. Ft.	GALV. METAL CELLULAR RETAINING WALL, AS PER PLAN
L-9	79,696	2,259	81,955	SQ.YDS.	SEEDING & PROTECTING
L-9	7.17	.21	7.38	TONS	COMMERCIAL FERTILIZER (10-6-4)
T-10	100	100	200	CU.YDS	TRAFFIC COMPACTED SURFACE COURSE FOR MAINTAINING TRAFFIC
M-10	2	2	4	TONS	CALCIUM CHLORIDE or CALCIUM MAGNESIUM CHLORIDE FURNISHED AND APPLIED FOR MAINTAINING TRAFFIC
					PAVEMENT
I-22	2681		2681	CU.YDS	SUBBASE, GRADING "C" or "D"
T-30	1971		1971	GALS.	BITUMINOUS PRIME COAT, Sec. M-5.7, RT-2 or RT-3, or Sec. M-5.2, RC-1 or RC-2.
S-3	507		507	SQ.YDS.	WATERPROOFING TYPE "C"
I-12	3150		3150	LIN.FT.	CONCRETE CURB, TYPE 6 STANDARD
I-12	5174		5174	LIN.FT.	CONCRETE CURB, TYPE 3-B, STANDARD (7" HIGH)
I-12	17,412		17,412	LIN.FT.	CONCRETE CURB, TYPE 3-B, STANDARD (5½" HIGH)
B-35	3,986	340	4,326	CU.YDS.	ASPHALTIC CONCRETE LEVELING COURSE, (70-85)
B-70	12,885		12,885	SQ. YDS.	PORTLAND CEMENT CONCRETE BASE COURSE, 8"
B-119	2,702	371	3,073	CU.YDS.	CRUSHED AGGREGATE BASE COURSE
B-35	630	74	704	CU.YDS.	ASPHALTIC CONCRETE BASE COURSE, (70-85)
T-30	5,376	416	5,792	GALS.	BITUMINOUS TACK COAT, Sec. M-5.5, MS-2 or RS-1; or Sec. M-5.2, RC-1 or RC-2 as per Sec. T-30.02
T-35	3,074	293	3,367	CU.YDS.	ASPHALTIC CONCRETE SURFACE COURSE, TYPE "C" (70-85)
T-70	198		198	SQ.YDS.	PORTLAND CEMENT CONCRETE PAVEMENT, 7"
					DRAINAGE
S-22	Lump sum		Lump sum		REMOVAL OF PORTIONS OF EXISTING STRUCTURES
I 4	165		165	LIN.FT.	6" PERFORATED BIT. COATED CORR. METAL PIPE M 6.4(h)(c) for Underdrains.
I-5	1		1	EACH	6" PIPE SPECIAL, M-6.4 (h) without perforations, FOR OUTLET FOR UNDERDRAINS.
I-3	50	50	100	LIN.FT.	6" ROADWAY DRAINAGE
I-3	25	25	50	LIN.FT.	8" ROADWAY DRAINAGE
I-3	25	25	50	LIN.FT.	10" ROADWAY DRAINAGE
E-2	2193		2193	CU.YDS.	EXCAVATION FOR STRUCTURES
E-3	12		12	CU.YDS.	CHANNEL EXCAVATION
E-2	Lump sum		Lump sum		COFFERDAMS, CRIBS AND SHEETING
E-12	1,255		1,255	LIN.FT.	PIPE REMOVED (12")
S-1	9.1		9.1	CU.YDS.	CONCRETE FOR STRUCTURES, CLASS "C"
S-4	281		281	LBS.	REINFORCING STEEL
I-1	78		78	LIN.FT.	15" PIPE FOR DRIVEWAYS, Sec. M-6.4 (a).
I-2	1,264		1,264	LIN.FT.	12" STORM SEWERS, CLASS "B"
I-4	377		377	LIN.FT.	6" OUTLETS FOR UNDERDRAINS, Sec. 6.4 (h) without perforations.
I-4	1,751		1,751	LIN.FT.	6" UNDERDRAINS (DEEP)
I-8	1		1	EACH	CATCH BASIN ADJUSTED TO GRADE, INCLUDING FURNISHING AND PLACING OF NEW STANDARD Nº 1 MANHOLE, HEAVY FRAME & COVER, AS PER PLAN
I-8	7		7	EACH	CATCH BASINS ADJUSTED TO GRADE
I-8	42		42	EACH	CATCH BASINS ADJUSTED TO GRADE (SEE DETAIL), AS PER PLAN
I-8	4		4	EACH	STANDARD CATCH BASINS Nº 6
I-8	*10		10	EACH	MANHOLES ADJUSTED TO GRADE
I-8	7		7	EACH	STANDARD CATCH BASINS Nº 3
I-8	7		7	EACH	STANDARD MANHOLES Nº 1
I-14	2,055		2,055	LIN.FT.	PAVED GUTTER, TYPE 3 STANDARD, MODIFIED AS PER PLAN
I-16	9		9	EACH	CATCH BASINS ABANDONED
I-2	24		24	LIN.FT.	12" CLASS "B" STORM SEWERS UNDER PAVEMENT OR APPROACHES.
I-9	1,064		1,064	LIN.FT.	STONE UNDERDRAINS, No. 2.
I-4	3,150		3,150	LIN.FT.	6" UNDERDRAINS (CURB)
I-2	256		256	LIN.FT.	12" STORM SEWERS M-6.4 (c)
					WATER MAINS (100% Willoughby Participation).
I-8	39		39	EACH	ADJUST VALVE BOXES TO GRADE
I-8	26		26	EACH	ADJUST WATER MANHOLE CASTINGS TO GRADE
I-124.06	26		26	EACH	RESET 4" HYDRANTS & HYDRANT VALVES, AS PER PLAN.
	LUMP	LUMP	LUMP	LUMP	CONSTRUCTION LAYOUT STAKES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

7/83

LAK 84(3.27-7.81)
LAKE COUNTY

WATER ITEM E-11
Item I-22 3,290 Cu.Yds.
Item B-119 2,695 Cu.Yds.
Embankment 15,062 Cu.Yds.
Total 21,047 Cu.Yds. 105 M.Gals.
City of Willoughby - 21,047 x 5 ÷ 1,000 = 105.24 Use
Item I-22 213 Cu.Yds.
Item B-119 352 Cu.Yds.
Embankment 83 Cu.Yds.
Total 648 Cu.Yds. 4 M.Gals.
Mentor Twp. - 667 x 5 ÷ 1,000 = 3.34 Use

COMPACTED SUBGRADE ITEM E-101
Sta 108+00 to Sta. 118+76.42 - 1,076.42 x 26 = 27,986.92 ÷ 9 = 3,109.65 Sq.Yds.
Sta. 170+00 to Sta. 178+00 - 800 x 26 = 20,800 ÷ 9 = 2,311.11 Sq.Yds.
Sta 8+50 to Sta. 14+50 - 600 x 25 = 15,000 ÷ 9 = 1,666.67 Sq.Yds.
Sta. 14+50 to Sta. 26+13 = 1163 x 24 = 27912 ÷ 9 = 3,101.33 Sq.Yds.
Sta. 28+13 to Sta. 34+47.17 = 634.17 x 24 = 15220.08 ÷ 9 = 1,691.12 Sq.Yds.
City of Willoughby Total 11,879.88 Sq.Yds.
Use 11,880 Sq.Yds.

COMMERCIAL FERTILIZER (10-6-4) ITEM L-9
Seeding Area - 79,696 x 9 ÷ 1,000 x 20 = 14,344.92 ÷ 2,000 = 7.17 Tons
City of Willoughby Use = 7.09 Tons
Seeding Area - 2,259 x 9 ÷ 1,000 x 20 = 406.62 ÷ 2,000 = 0.21 Tons
Mentor Twp. Use .21 Tons