

# CALCULATIONS

CALC BY: B.E.B.  
 DATE: 7-9-84  
 CHKD BY: L.R.C.  
 DATE: 8-3-84

LAK 283-4.13

OHIO  
 FHWA REGION 5

5  
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ITEM 301 - BITUMINOUS AGGREGATE BASE

1. LAKE SHORE BLVD. - STA 139+37.49 TO STA 150+15.00  
(LESS STATION EQUATION - 9.25')  
AVG. WIDTH - 9.5'  
THICKNESS - 6.5'  
  
 $1068.26' \times 9.5' \times 6.5/12 \div 27 = 203.6CY$
  2. ERIE RD - STA 4+30 TO STA 9+87  
STA 10+25 TO STA 15+50  
AVG. WIDTH - 15.25  
  
 $1080.24' \times 15.25' \times 6.5/12 \div 27 = 330.4 CY$
- 534.0CY
- TOTAL OF ITEM 301 534 CY

ITEM 304 - AGGREGATE BASE

1. LAKE SHORE BLVD. - STA 139+37.49 TO STA 143+50  
(LESS STA EQU. - 2.51') BOTH SIDES OF ROAD.  
  
 $410' \times 4.0' \times 2.0 = 3280 SF$
  2. LAKE SHORE BLVD. - STA 146+00 TO STA 150+15  
(LESS STA. EQU. - 6.74') BOTH SIDES OF ROAD  
  
 $415.0' - 6.74' \times 4.0 \times 2 = 3266.1 SF$
  3. ERIE RD. STA 4+30 TO 8+90  
(LESS STA EQU. - 1.76) BOTH SIDES OF ROAD  
  
 $458.24' \times 4.0' \times 2 = 3665.9 SF$
  4. ERIE RD. STA 11+50 TO STA 15+50 (EAST SIDE ONLY)  
  
 $400 LF \times 4.0' \times 1 = 1600 SF$
  5. ERIE RD. STA 12+25' TO STA 15+50 (WEST SIDE ONLY)  
  
 $325 LF \times 4.0' = 1300 SF$
- TOTALS - 1300 + 1600 + 3665.9 + 3266.1 + 3280 = 13,112
- $13,112 SF \times [8/12] \div 27 = 323.8 CY$
- TOTAL OF ITEM 304 324 CY

ITEM 408 - PRIME COAT AND COVER AGGREGATE

1. PRIME COAT (13112 SF PREV. CALCS.)  
  
 $[13112 SF \div 9 SF/SY] \times 0.4 GALS/SY = 583.2 GALS$   
  
 USE 583 GALS
2. COVER AGGREGATE  
  
 $[13112 SF \div 9 SF/SY] \times 0.008 CY/SF = 11.7 CY$   
  
 USE 12 CY

ITEM 409 - SEAL COAT AND COVER AGGREGATE

1. SEAL COAT  
  
 $[13112 SF \div 9 SF/SY] \times 0.3 GALS/SY = 437.1 GALS$   
  
 USE 438 GALS
2. COVER AGGREGATE  
  
 $[13112 SF \div 9 SF/SY] \times 0.008 CY/SF = 11.7 CY$   
  
 USE 12 CY

ITEM 310 - SUBBASE, TYPE 2

1. LAKE SHORE BLVD. - STA 139+37.49 TO STA 150+15.0  
(LESS STA EQU. - 9.25)  
AVG. WIDTH - 9.75'  
AVG. THICKNESS - 6"  
  
 $1068.26 \times 9.75 \times [6/12] \div 27 = 192.9 CY$
  2. ERIE RD. STA 4+30 TO 9+87  
STA 10+25 TO 15+50  
AVG. WIDTH - 15.5'  
  
 $1082.0' \times 15.5' \times [6/12] \div 27 = 310.6 CY$
  3. LAKE SHORE BLVD. & ERIE RD.  
SUB-BASE MATERIAL EXTENDED TO UNDERDRAIN  
APPROX. LENGTH - 1265 L.F.  
APPROX. WIDTH - 2.75'  
APPROX. DEPTH - 6"  
 $1265.0' \times 2.75' \times [6/12] \div 27 = 64.4 CY$
- 503.5 CY
- TOTAL OF ITEM 310 568 CY

ITEM 402 - ASPHALT CONC.

1. LAKE SHORE BLVD. - STA 139+37.49 TO STA 150+15  
  
 $35822 SF - TOTAL AREA$
  2. ERIE RD. STA 4+30 TO STA 15+50  
  
 $35963 SF - TOTAL AREA$
- TOTAL - 71785 SF
- $71885' SF \times [1.75/12] \div 27 = 387.7 CY$
- TOTAL OF ITEM 402 388 CY

ITEM 404 - ASPHALT CONC. AC-20

- $71785 SF \times 1.25/12 \div 27 = 276.9$
- TOTAL OF ITEM 404 277 CY

ITEM 407 - TACK COAT & COVER AGGREGATE

- 1.) TACK COAT  
  
 $[71785 SF \div 9 SF/SY] \times 0.1 GALS/SY = 797.6 GALS$   
  
 USE 798 GALS
- 2.) COVER AGGREGATE  
  
 $[71785, SF \div 9 SF/SY] \times 5 LBS/SY = 39,880.6 LBS (19.9 TONS)$   
  
 USE 20 TONS

ITEM 403 - ASPHALT CONC. AC-20

1. LAKE SHORE BLVD. STA 145+00 TO 150+15  
 $515.0 - 6.74' = 508.26'$   
 AVG. THICKNESS - 1.88"  
 AVG. WIDTH - 19.5'  
  
 $508.26 \times [1.88"/12] \times 19.5' \div 27 = 57.4 CY$
  2. ERIE RD. STA 4+30 TO 9+87  
STA 10+25 TO 15+50  
  
 AVG. THICKNESS - 1.52"  
 AVG. WIDTH - 16.2'  
  
 $1082.0' \times [1.52"/12] \times 16.2' \div 27 = 82.2 CY$
- 139.6 CY
- TOTAL OF ITEM 403 140 CY

ITEM 609 - CURB, STD TYPE 6 - MOD. PER PLAN

1. BEGIN STA 143+50 (L.S. BLVD.) TO STA 12+25 (ERIE RD.)  
  
 $[143+78.54 - 143+50] + 87.31' + [12+25 - 10+89.46] = 251.39'$
  2. BEGIN STA 143+50 (L.S. BLVD.) TO STA 8+90 (ERIE RD.)  
  
 $[144+02.98 - 143+50] + 69.77' + [9+49.47 - 8+90] = 52.98'$   
 $+ 69.77' + 59.47 = 182.22'$
  3. BEGIN STA 8+90 (ERIE RD.) TO STA 146+00 (L.S. BLVD.)  
  
 $[9+38.96 - 8+90] + 67.73' + [146+00 - 145+28.09] = 188.6'$
  4. BEGIN STA 11+00 (ERIE RD.) TO STA 146+00 (L.S. BLVD.)  
  
 $[11+00 - 10+66.44] + 72.20' + [146+00 - 145+22.08] = 183.48'$
- TOTAL 805.69'
- TOTAL OF ITEM 609 806 LF

ITEM 606 - GUARDRAIL

1. LAKE SHORE BLVD. - STA 138+80 TO STA 143+05  
 TOTAL LENGTH - 425 LF  
 LESS ANCHOR ASSEMBLIES - 50 LF  
 LENGTH OF GUARDRAIL - 375 LF
  2. LAKE SHORE BLVD. - STA 139+10 TO STA 141+85  
  
 TOTAL LENGTH - 275 LF  
 LESS ANCHOR ASSEMBLIES - 50 LF  
 LENGTH OF GUARDRAIL 225 LF
  3. LAKE SHORE STA 145+90 TO STA 148+90  
  
 TOTAL LENGTH - 300 LF  
 LESS ANCHOR ASSEMBLIES - 50.0 LF  
 LENGTH OF GUARDRAIL 250 LF
  4. LAKE SHORE BLVD. STA 145+90 TO STA 147+40  
  
 TOTAL LENGTH - 150 LF  
 LESS ANCHOR ASSEMBLIES - 37.5 LF  
 LENGTH OF GUARDRAIL 112.5 LF
  5. ERIE ROAD STA 8+40 TO STA 9+52.50  
  
 TOTAL LENGTH - 112.50 LF  
 LESS ANCHOR ASSEMBLIES - 50.00 LF  
 LENGTH OF GUARDRAIL 62.50
- TOTAL OF ITEM 606: GUARDRAIL 1025  
 ANCHORS (TYPE A) 9  
 ANCHOR (TYPE T) 1

ITEM 605 - 6" UNCLASSIFIED PIPE UNDERDRAINS

1. LAKE SHORE BLVD. - STA 140+70 TO STA 142+50  
  
 TOTAL LENGTH - 180 LF
  2. BEGIN STA 142+50 (L.S. BLVD.) TO STA 14+50 (ERIE RD.)  
  
 $[143+78.54 - 142+50] + [14+50 - 10+89.46] + 87.31' = 128.54' + 360.54' + 87.31' = 576.38 LF$
  3. BEGIN STA 143+50 (L.S. BLVD.) TO STA 7+00 (ERIE RD.)  
  
 $[144+02.98 - 143+50] + [9+49.47 - 7+00] + 69.77 = 52.98' + 249.47' + 69.77' = 372.22 LF$
  4. BEGIN STA 14+50 (ERIE RD.) TO STA 146+00 (L.S. BLVD.)  
  
 $[14+50 - 10+66.64] + [146+00 - 145+22.08] + 72.20 = 383.36' + 77.92' + 72.20' = 533.48 LF$
  5. BEGIN STA 7+00 (ERIE RD.) TO STA 146+00 (L.S. BLVD.)  
  
 $[9+38.96 - 7+00] + [146+00 - 145+28.09] + 67.73 = 238.96' + 71.91' + 67.73' = 378.60 LF$
- TOTAL OF ITEM 605 2040 LF

ITEM 605 - AGGREGATE DRAIN

- LAKESHORE BLVD - STA 146+00 TO STA 149+00  
 $300'/25 = 12$  AGGREGATE DRAINS  
 12 DRAINS @ 30 FT/RAIN = 360 LF

ITEM 659 - FERTILIZING: LIMING & SEEDING

- TOTAL AREA 7171 SY X-SECTION SHTS.
- (1) LIMING  
 $7171 SY \times 100 LBS/1000 SF \times 9 SF/SY = 6453.9 LBS (3.23 TONS)$   
 SAY 3.3 TONS
  - (2) FERTILIZER  
 $7171 SY \times 20 LBS/1000 SF \times 9 SF/SY = 1290.78 LBS (0.65 TONS)$

ITEM 203 - SUBGRADE COMPACTION

1. LAKE SHORE BLVD. - STA 139+37.49 TO STA 150+15.00  
(LESS STATION EQUATION - 9.25)  
AVG. WIDTH - 13.88'  
  
 $1068.26' \times 13.88' \div 9 = 1647.5 SY$
  2. ERIE RD. - STA 4+30 TO STA 9+87  
STA 10+25 TO STA 15+50  
AVG. WIDTH - 21.73'  
  
 $1080.24 \times 21.73' \div 9 = 2608.2 SY$
- 4255.7 SY
- TOTAL OF ITEM 203 4256 SY