APPENDIX B

SUPPLEMENTAL INFORMATION ON THE

LONG-TERM PAVEMENT PERFORMANCE

TRAFFIC DATA STRUCTURE

Overview of Data Types in the LTPP Central Traffic Data Base (CTDB)

The LTPP-CTDB data are classified into five **levels** as summarized in Table B.1. Note that several subtypes of data (volume, classification, and weight) are available for Levels 3 and 4. Therefore, the actual record layouts will vary depending on the subtype chosen. Level 5 (Supporting Data) is independent while the remaining levels represent various levels of traffic data aggregation.

Table B.1. LTPP-CTDB Data Types Available

DATA TYPE	DESCRIPTION OF SUBTYPES AVAILABLE
Level 1	Annual axle loads, ESALs for all vehicles, and other summary statistics
Level 2	Annual axle loads, ESALs by vehicle class, and other summary statistics
Level 3	Volume (daily traffic volumes by lane)
	Vehicle class (daily traffic volumes by vehicle class)
	Weight (daily ESALs and weight ranges by vehicle class)
Level 4	Volume (hourly traffic volumes by lane; "3-card")
	Vehicle class (hourly volumes by vehicle class; "4-card")
	Weight (individual truck weight records; "7-card")
Level 5	Vehicle class data submittal forms
	Weight data submittal forms
	Historical data sheets (Sheets 1-9) plus monitoring estimates (Sheet 10)

Note: Levels 3 and 4 have three distinct data types: volume, vehicle classification, and weight. Likewise, Level 5 is composed of three different types. Record layouts will therefore vary.

Level 3: Daily Traffic Summaries

The same three basic data types (volume, classification, and weight) that exist for Level 4 are also present in Level 3. Only traffic data physically collected and submitted by the SHAs will be included in this file. **Data at this level of the data base will not have been factored, or adjusted by either the submitting SHA or FHWA**. The data are aggregated in three dimensions. First, the data are summarized to represent individual days. Second, they are summed into three categories of direction and lane combinations: (1) the test section lane only, (2) the test section direction, and (3) the opposite direction. Third, the weight data are reported as a distribution: the number of axles weighed in specified weight ranges by axle grouping (single, tandem, tridem, and four or more) and vehicle type. ESALs per vehicle are calculated for each vehicle type. Key parameters for ESAL estimation (pavement type, depth or structural number, and terminal serviceability) are also reported.

This level of the database is intended to allow detailed analysis of the traffic data used to estimate the annual totals. It is specifically designed so that researchers will be able to determine which

data are "real" and which data are "interpreted" and make their own assumptions about how limitations in the available traffic data should be overcome. This level of data will also be the starting point for research into different methods for producing annual traffic estimates from short duration count data. It will also provide estimates of seasonal loadings for LTPP researchers who need to separate loadings for particular time periods, as opposed to the annual conditions presented in database Levels 1 and 2.

In Level 3, up to 365 records for each type of data (volume, weight, or class) may appear in the database for each LTPP site for each year since the site was opened for traffic. Records will only occur in the database for days on which an SHA actually collected data, or where a record is necessary to inform a researcher that no data were collected at that site for an entire calendar year.

"Missing data" will not be inferred or entered into this level of the database. Space on the data records is available for an SHA to provide additional information pertaining to this count. Additional information includes factor(s) that a state might normally use to estimate annual totals based on that count, or comments about events that may affect how that particular count should be used by LTPP or a LTPP researcher. The database will store information for both the LTPP study lane and all other lanes for which an SHA submits information.

A formatted example of Level 3 data appears as Figure B.1.

Figure B.1. Example of Level 3 Data

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Level 3 W-4 Table - Version 1

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Region: North Central    State: Minnesota    State Id: 1019    SHRP Id:
1085
Route: ST 16    Milepost: 203.34

Location: 3.8 MI. E. OF I 90



Device Type: PERMANENT    Make: IRD    Model: 1060

SENSOR TYPE: BENDING PLATE



Software version: 530

PROCESSING DATE: January 02, 1994



DATE: January 03, 1993    ORIGIN DATE: January 03, 1993    BEGIN TIME:
00:00:00:00
LEVEL 4 SOURCE FILENAME: 7W271085.C13

GPS DIRECTION: 3  GPS LANE:    1

TOTAL CARDS READ: 19  TOTAL CARDS USED: 10  FLAGGED USED CARDS: 0

Classification By: FHWA 6 Digit

PAVEMENT TYPE: Flexible  Depth: 0  Structural Number: 4.26  Service
Index: 2.5



Actual Vehicles Weighed - 10



Mean ESALs/Vehicle Calculated From Vehicles -   0.699

Mean ESALs/Vehicle Calculated from Table    -   0.704
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          ----- VEHICLE CLASS 5 -----

Actual Vehicles Weighed - 4

Mean ESALs/Vehicle Calculated From Vehicles -  0.005
Mean ESALs/Vehicle Calculated from Table    -  0.004

     SINGLE              TANDEM               TRIDEM              QUAD +
------------------  ------------------   ------------------  ------------------
   0- 2999    4       0- 5999    0        0-11999    0        0-11999    0
3000- 3999    2    6000- 7999    0     12000-14999   0     12000-14999   0
4000- 4999    1    8000- 9999    0     15000-17999   0     15000-17999   0
5000- 5999    1   10000-11999   0     18000-20999   0     18000-20999   0
6000- 6999    0   12000-13999   0     21000-23999   0     21000-23999   0
7000- 7999    0   14000-15999   0     24000-26999   0     24000-26999   0
8000- 8999    0   16000-17999   0     27000-29999   0     27000-29999   0
9000- 9999    0   18000-19999   0     30000-32999   0     30000-32999   0
10000-10999   0   20000-21999   0     33000-35999   0     33000-35999   0
11000-11999   0   22000-23999   0     36000-38999   0     36000-38999   0
12000-12999   0   24000-25999   0     39000-41999   0     39000-41999   0
13000-13999   0   26000-27999   0     42000-44999   0     42000-44999   0
14000-14999   0   28000-29999   0     45000-47999   0     45000-47999   0
15000-15999   0   30000-31999   0     48000-50999   0     48000-50999   0
16000-16999   0   32000-33999   0     51000-53999   0     51000-53999   0
17000-17999   0   34000-35999   0     54000-56999   0     54000-56999   0
18000-18999   0   36000-37999   0     57000-59999   0     57000-59999   0
19000-19999   0   38000-39999   0     60000-62999   0     60000-62999   0
20000-20999   0   40000-41999   0     63000-65999   0     63000-65999   0
21000-21999   0   42000-43999   0     66000-68999   0     66000-68999   0
22000-22999   0   44000-45999   0     69000-71999   0     69000-71999   0
23000-23999   0   46000-47999   0     72000-74999   0     72000-74999   0
24000-24999   0   48000-49999   0     75000-77999   0     75000-77999   0
25000-25999   0   50000-51999   0     78000-80999   0     78000-80999   0
26000-26999   0   52000-53999   0     81000-83999   0     81000-83999   0
27000-27999   0   54000-55999   0     84000-86999   0     84000-86999   0
28000-28999   0   56000-57999   0     87000-89999   0     87000-89999   0
29000-29999   0   58000-59999   0     90000-92999   0     90000-92999   0
30000-30999   0   60000-61999   0     93000-95999   0     93000-95999   0
31000-31999   0   62000-63999   0     96000-98999   0     96000-98999   0
32000-32999   0   64000-65999   0     99000-UP      0     99000-UP      0
33000-33999   0   66000-67999   0
34000-34999   0   68000-69999   0
35000-35999   0   70000-71999   0
36000-36999   0   72000-73999   0
37000-37999   0   74000-75999   0
38000-38999   0   76000-77999   0
39000-39999   0   78000-79999   0
40000-UP      0   80000-UP      0
------------------  ------------------   ------------------  ------------------
TOTAL         8   TOTAL         0     TOTAL         0     TOTAL         0
VEHICLES      4   VEHICLES      0     VEHICLES      0     VEHICLES      0
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          ----- VEHICLE CLASS 6 -----

Actual Vehicles Weighed - 1

Mean ESALs/Vehicle Calculated From Vehicles -  3.022
Mean ESALs/Vehicle Calculated from Table    -  2.834

       SINGLE              TANDEM               TRIDEM               QUAD +
-----------------   ------------------   ------------------   ------------------
    0- 2999    0       0- 5999    0     12000-14999    0     12000-14999    0
 3000- 3999    0    6000- 7999    0     12000-14999    0     12000-14999    0
 4000- 4999    0    8000- 9999    0     15000-17999    0     15000-17999    0
 5000- 5999    0   10000-11999    0     18000-20999    0     18000-20999    0
 6000- 6999    0   12000-13999    0     21000-23999    0     21000-23999    0
 7000- 7999    0   14000-15999    0     24000-26999    0     24000-26999    0
 8000- 8999    0   16000-17999    0     27000-29999    0     27000-29999    0
 9000- 9999    0   18000-19999    0     30000-32999    0     30000-32999    0
10000-10999    0   20000-21999    0     33000-35999    0     33000-35999    0
11000-11999    1   22000-23999    0     36000-38999    0     36000-38999    0
12000-12999    0   24000-25999    0     39000-41999    0     39000-41999    0
13000-13999    0   26000-27999    0     42000-44999    0     42000-44999    0
14000-14999    0   28000-29999    0     45000-47999    0     45000-47999    0
15000-15999    0   30000-31999    0     48000-50999    0     48000-50999    0
16000-16999    0   32000-33999    0     51000-53999    0     51000-53999    0
17000-17999    0   34000-35999    0     54000-56999    0     54000-56999    0
18000-18999    0   36000-37999    0     57000-59999    0     57000-59999    0
19000-19999    0   38000-39999    0     60000-62999    0     60000-62999    0
20000-20999    0   40000-41999    0     63000-65999    0     63000-65999    0
21000-21999    0   42000-43999    1     66000-68999    0     66000-68999    0
22000-22999    0   44000-45999    0     69000-71999    0     69000-71999    0
23000-23999    0   46000-47999    0     72000-74999    0     72000-74999    0
24000-24999    0   48000-49999    0     75000-77999    0     75000-77999    0
25000-25999    0   50000-51999    0     78000-80999    0     78000-80999    0
26000-26999    0   52000-53999    0     81000-83999    0     81000-83999    0
27000-27999    0   54000-55999    0     84000-86999    0     84000-86999    0
28000-28999    0   56000-57999    0     87000-89999    0     87000-89999    0
29000-29999    0   58000-59999    0     90000-92999    0     90000-92999    0
30000-30999    0   60000-61999    0     93000-95999    0     93000-95999    0
31000-31999    0   62000-63999    0     96000-98999    0     96000-98999    0
32000-32999    0   64000-65999    0     99000-UP       0     99000-UP       0
33000-33999    0   66000-67999    0
34000-34999    0   68000-69999    0
35000-35999    0   70000-71999    0
36000-36999    0   72000-73999    0
37000-37999    0   74000-75999    0
38000-38999    0   76000-77999    0
39000-39999    0   78000-79999    0
40000-UP       0   80000-UP       0
-----------------   ------------------   ------------------   ------------------
TOTAL          1   TOTAL          1     TOTAL          0     TOTAL          0
VEHICLES       1   VEHICLES       1     VEHICLES       0     VEHICLES       0
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