LONG TERM PAVEMENT PERFORMANCE
PROGRAM DIRECTIVE

For the Technical Direction of the LTPP Program

Program Area: Traffic Monitoring **Directive Number**: TDP-15

Date: January 28, 1999 **Supersedes**: TDP-1

Subject: Basic Steps for Processing Monitored Traffic Data

The following steps describe the data processing that shall be performed by the Regional Coordination Office Contractors (RCOCs) and the Central Traffic Data Base (CTDB) operator.

1. The RCOCs accept traffic monitoring data submitted by the state highway agencies (SHAs) and process those data into Level 4 of the regional traffic database.

   The traffic software does not support the c-card and w-card formats. However, this format can be submitted to the regions. The Metric Conversion Software is used to convert c-card and w-card formats to 4-card and 7-card formats prior to Level 4 processing. A copy of the metric data must be stored at the regional office. The metric data shall also be submitted as auxiliary information to the CTDB operator. Because the metric and English files follow the same naming convention, the metric data sent to the CTDB operator shall be placed in a separate directory labeled METRIC.

2. After running Level 4 and checking the Level 4 log for correctable errors, the RCOC will run the Level 3 processor. This program creates daily traffic summaries (Level 3 data) for the volume, classification, and weight data given in Level 4. After Level 3 processing has been completed, the Level 4 data should be archived to an optical disk. The archiving of Level 4 data can also occur after Step 4.

3. Level 4 data are processed through the Level 4 Quality Control (QC) software. QC packets are created for each site in Level 4 data. Each packet contains graphs that illustrate the data submitted, text that summarizes the 4-card and 7-card statistics, and the results of the QC process.

4. At a minimum, the following QC software analyses will be performed: **QC, GVW, 7 vs. 4, and Class Distribution.** The GVW analysis shall be run on weight data using a monthly time period. (The option for selecting these specific time periods is under the "Parms" button of the initial Standard Analysis input screen.) The remaining analyses shall be run under the "quarterly" option under the "Parms" button. For the 7 vs. 4

analysis, as a minimum, vehicle classes 6, 8, 9 and either 11 or 13 shall be selected. (The choice of Class 11 or 13 shall depend of the vehicles that are most commonly found in that state or province.) These analyses will print out a series of graphics and summary remarks that indicate potential quality control problems (if any). Exceptions and modifications to the minimum requirements can be made based on knowledge of traffic data at the site.

5. The RCOC is responsible for reviewing the output of the QC process and for creating a "packet" for each site and each SHA. This step includes the creation of initial "flag lists". (This step can be done using a text editor or the Purge List Software.) Each "packet" shall include a copy of the proposed "flag list" and a brief explanation of the reasons that the data recommended for SHA review have been identified as "unusual." In addition, where appropriate, the RCOC shall summarize the questions raised by the QC program in a separate text message for each site. The "flag list" will indicate actions that will be taken (data that will be flagged and not used) if the RCOC does not receive additional input form the SHA. Directions for RCOC staff on identifying "unusual" traffic data are included in the SAS QC Software User's Manual. Questions on the QC results shall be referred to the Traffic TSSC.

   Regions will process the SHA data through Level 4 and provide QC review packets to the appropriate SHA within 60 days of receiving their data. If data are received more frequently than once per quarter, the packets may be prepared quarterly. However, the packets must be completed within 30 days after receiving data for the last month of the quarter.

   If the state requests that they do not wish to review all of the QC packets but are willing to review those that we have questions about then the RCOC can suspend sending all graphics to the state.

6. After updating the flag lists based on SHA input, the flagging software (QAFILT) is run on the Level 4 data. This software attaches QC flags onto records that are given in these lists. This step can occur on a quarterly basis or at the end of the year.

7. After running the QAFILT program, the RCOC will rerun the Level 3 processor and the Level 4 archival. These programs will create revised daily traffic summaries (Level 3 data) and archive the updated Level 4 data.

8. The Level 3 filter software (QAPURGE) is then run by the RCOCs. This software uses the flag lists created previously to double-check the flag process. If there are any data that should have been flagged in the previous step but that still remain, they are removed from the Level 3 daily summaries.

9. The Levels 2 and 1 processing is then completed. Level 2 processing summarizes the Level 3 data into annual axle loads, equivalent single-axle loads (ESALs) by vehicle class, and other summary statistics for each vehicle class. Level 1 further processes Level

2 by summarizing the traffic statistics for all vehicles.

10. Either the Level 3, 2, and 1 QC software is run to evaluate the summary statistics or the regional office performs a visual check on the Level 2 and Level 1 reports. Visual checks should include QC checks listed in the Level 3-1 Users Manual pertaining to Level 2 and Level 1 data. If data appear to be questionable, the RCOC shall go back to the Level 4 data for further evaluation. After reviewing Level 4 data, the RCOC may contact the SHA to confirm a questionable problem with the Level 3, Level 2, or Level 1 data.

11. The current traffic software does not perform multiple ESAL calculations for one Specific Pavement Studies (SPS) site. To remedy this problem, the Traffic TSSC developed an additional program (SPS.EXE) that performs ESAL calculations for these SPS sites. The user will create a file called SPS.DAT that links traffic sites to SPS sites. Level 2 and Level 1 estimates for each SPS segment are developed using the SPS.DAT file and the SPS program.

12. Sheet 10 data should be requested from the SHA's for each site without an ESAL estimate.

13. Data that have been through the QC processes and that have been summarized through Levels 4, 3, 2, and 1 shall be transmitted bi-annually to the CTDB operator. Other submitted information shall include: supplemental information (Level 5 data), the SHRP.DAT file, the SPS.DAT file, and the metric data.

    The traffic data upload shall be sent to the following address:

    CTDB Operator
    Chaparral Systems Corporation
    3550 Zafarano Drive #6-746
    Santa Fe, New Mexico 87505

14. The RCOCs will then perform the IMS upload of traffic data. Specific upload instructions are given in the document "*Information Management Systems Traffic Upload Instructions"*.

15. All regional offices shall have a formal data backup process in place. At minimum, traffic data shall be backed up on a monthly basis and be stored at an off-site location or in a fire-safe box.

Questions concerning the basic processing steps for traffic data should be directed to Cindy Cornell-Martinez of the LTPP Technical Support Services Contractor (TSSC) Team at:

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