Memorandum

U.S. Department
Of Transportation

Federal Highway Administration

6300 Georgetown Pike
McLean, Virginia 22101

Subject: **ACTION**: LTPP Directive TDP-52
Release of LTPP Traffic Analysis Software Version 1.8

Date: June 10, 2010

From: Deborah Walker
Long Term Pavement Performance Team

Reply to
Attn of: HRDI-13

To: Dr. Frank Meyer, PM - LTPP North Atlantic Regional Contract
Dr. Frank Meyer, PM - LTPP North Central Regional Contract
Mr. Mark Gardner, PM - LTPP Southern Regional Contract
Mr. Kevin Senn, PM - LTPP Western Regional Contract

Attached is the Long Term Pavement Performance (LTPP) Program Directive TDP-52. This directive discusses the executable and data updates made to the LTPP Traffic Analysis Software (LTAS) since the release of version 1.7.3. This version includes updates to LTAS to handle data loading on opposite sides of the road; manual upgrades to the STAT_QC tables; changes in the way Sheet 7 (Class Transformation) is used when data is summarized from daily to monthly; and populating hourly class tables.

The instructions for installing, reprocessing, and reloading traffic data are included in Attachment 1 of the directive. Installation of the updated software shall be completed by Friday, June 18, 2010 and full implementation of version 1.8 shall begin Monday, June 21, 2010.

Please ensure that all personnel involved with the Traffic Program are aware of this new directive. Should you have any questions or would like to discuss this directive, please do not hesitate to contact me at 202-493-3068.

Attachments (3)

FHWA:HRDI-13:DWalker:mad:493-3068:06/09/10
File: c:/mdeeney/directive/traffic/tdp52dir.doc
cc:
Jonathan Groeger
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Directive Binder
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LONG-TERM PAVEMENT PERFORMANCE PROGRAM DIRECTIVE

For the Technical Direction of the LTPP Program

Program Area:	Traffic	**Directive Number:**	TDP-52
Date:	June 9, 2010	**Supersedes:**	TDP-51
Subject:	*Release of LTPP Traffic Analysis Software Version 1.8*		

Purpose

The purpose of this directive is to authorize the release of version 1.8 of the LTPP Traffic Analysis Software (LTAS) for the LTPP Regional Support Contractors (RSCs) to begin using. Installation of the updated software shall be completed by Friday, June 18, 2010 and full implementation of version 1.8 shall begin Monday, June 21, 2010. This directive discusses the executable and data updates made to LTAS since the release of version 1.7.3.

Changes

This release addresses several Software Performance Reports (SPRs) to further enhance the functionality of LTAS (see Attachment 2). In addition, the loading of classification data was modified to permit population of an hourly data table to support diurnal curve calculations for the MEPDG and other applications. It is required for SPS-1, -2, -5 and -6 sites validated as a part of the Phase I LTPP SPS Traffic Data Collection Pooled-Fund Study.

Distribution and Installation of Updated Software

The updated software is posted on the LTPP file transfer protocol (FTP) site in the LTAS_1_8 folder for download until Friday, June 18, 2010. Copies of the software needed after this date must be requested through the LTPP Customer Support Service Center at ltppinfo@dot.gov.

Attachment 1 lists the steps for installing the new release of the traffic analysis software, along with the steps for reprocessing and reloading traffic data. The installation information is also included with the software distribution.

Manual Revisions

As a result of addressing the SPRs listed in this directive, changes were made to *Volume 1 – Users' Guide*, *Volume 3 – Overview* and its associated *Appendix A – Schema*. Revisions of Volumes 1 and 3 are posted on the LTPP FTP site until Friday, June 18, 2010. Copies needed after this date must be requested through the LTPP Customer Support Service Center at ltppinfo@dot.gov.

Questions or Issues

Questions concerning this directive should be addressed to the FHWA LTPP program office. If there are problems implementing this directive, please submit a SPR according to the guidelines in TDP-40.

Prepared by: FHWA/TSSC

Approved by:

Aramis López, Jr.
LTPP Team Leader

ATTACHMENT 1
Installation, Reprocess, and Reload Instructions

This attachment provides detailed steps for installing the latest version of LTAS. Also, two additional tables follow the one below to provide the steps to take to reprocess and reload traffic data using this version of LTAS.

The following table lists the steps for installing version 1.8 of the LTPP Traffic Analysis Software (LTAS).

Installing LTAS Version 1.8	
Step	**Action**
1	Create a temporary directory. a. Unzip the Analysis_1_8.zip file into this directory b. Copy the CreateHHCL_DD table script into this directory c. Copy the CreateSPSWIM_Table script into this directory d. Unzip HH_CL_CT_REGN.zip file into this directory where N is the number of your region
2	Edit CreateSPSWIM_Table.sql by REMOVING lines for all States not in your region by commenting them out or erasing them.
3	Run CreateHHCL_DD and CreateSPSWIM_Table as the Traffic DBA from the DOS command prompt in the temporary directory. a. sqlplus trfdba/dbaPWD@trfprod @createHHCL_DD b. sqlplus trfdba/dbaPWD@trfprod @createSPSWIM_Table
4	Import the existing content of HH_CL_CT as the Traffic DBA from the DOS command prompt using the following command: imp DBAname/DBApwd@TRFPROD file=HHCLCT_RegN.dmp full=y ignore=y log=imp_hh_cl_ct_regN.log
5	Replace the analysis.exe on the server using the updated analysis.exe located in the zip file Analysis_1_8.zip.

The change in monthly processing affects all sites with weight data where the number of SHA classes (NO_SHA_CLASSES) is not 99. The value, 99, is the default which says that the number of SHA classes is 13 and there is a one-to-one correspondence between the SHA class and the FHWA TMG class. When this is the case, there is a simple summation of axles by vehicle class and axle group. This data does not need to be recomputed.

The following table lists the steps to redo monthly processing for all sites affected by the change in the software code for Monthly Summaries.

Reprocessing Monthly Data Using LTAS Version 1.8

Step	Action
1	Determine the installation date of LTAS 1.8. **Note:** This value is needed to identify computed site-years.
2	Run a query against TRAFFIC_CLASS_CONVERT_MASTER as shown below to determine what sites and periods are affected. *--* *-- find all weight data that will be affected by the monthly summaries change* *--* *select * from traffic_class_convert_master* *where no_sha_classes != 99* *and trf_data_type = 7* *order by state_code, shrp_id, class_applies_from* *;* *The example list shown here is for the Western region.* *STATE_CODE SHRP CLASS_APP TRF_DATA_TYPE R CLASS_APP NO_SHA_CLASSES DATE_REVI* *---------- ---- --------- ------------- - --------- -------------- ---------* *4 0100 01-JAN-90 7 E 31-DEC-06 15 06-JUL-07* *4 0100 01-JAN-07 7 E 31-DEC-10 15 06-JUL-07* *4 0200 01-JAN-90 7 E 31-DEC-06 15 06-JUL-07* *4 0200 01-JAN-07 7 E 31-DEC-10 15 06-JUL-07* *4 9999 01-JAN-90 7 E 31-DEC-10 15 06-JUL-07* *6 9999 01-JAN-90 7 E 31-DEC-10 15 15-DEC-04* *8 0200 01-JAN-90 7 E 31-DEC-05 14 06-JUL-07* *8 0200 01-JAN-06 7 E 31-DEC-10 15 06-JUL-07* *8 9999 01-JAN-90 7 E 31-DEC-10 14 06-JUL-07* *15 9999 01-JAN-90 7 E 31-DEC-10 14* *16 9999 01-JAN-90 7 E 31-DEC-90 17* *16 9999 01-JAN-91 7 E 31-DEC-10 19* *30 9999 01-JAN-90 7 E 31-DEC-98 14 01-MAY-03* *30 9999 01-JAN-99 7 E 31-DEC-10 15 01-MAY-03* *53 1801 01-JAN-91 7 E 31-DEC-91 20 01-JAN-90* *53 1801 01-JAN-92 7 E 31-DEC-50 14 01-JAN-90* *53 9999 01-JAN-90 7 E 31-DEC-10 14 01-JAN-90* *17 rows selected.*

Reprocessing Monthly Data Using LTAS Version 1.8	
Step	**Action**
3	Compute monthly summaries from the list generated in Step 2 using batch mode (ALL) where possible. **Note:** Before starting the computations for a given State, freeze running daily QC and applying purges for the State. However, you can still load data for the State. The list will have two types of SHRP IDs, real values and 9999. Real values such as 0200 in the list from Step 2 indicate a specific site. The value 9999 is all sites in a State. **Caution:** Running the computation for ALL States is NOT recommended. The speed of the computer and the amount of memory may make it more reasonable to compute at the site-level rather than the State-level.

Reprocessing Monthly Data Using LTAS Version 1.8	
Step	**Action**
4	Verify that all necessary monthly summaries are computed using the query below to check at the State (and site) level. **Note:** If all the identified monthly summaries have been run for the State_Code, SHRP_ID and Year combination, the result should be "No rows selected". If any site-years are listed, compute monthly summaries for the sites listed. *--* *-- find which monthly summaries have been run* */** *If the value of NO_SHA_CLASSES only covers some years, edit the line with (year between yr1 and yr2) to provide the values of yr1 and yr2. If all years are being checked, erase the phrase and the AND in the next line.* *If the computations have been done for a specific SHRP ID, edit the line with (and shrp_id = shrp) for the correct SHRP_ID. If multiple SHRP IDs have been computed and are being checked at the same time, consider using "and SHRP_ID IN (shrp1, shrp2)" instead. If the entire state is being checked,,remove the line.* *Replace the ?? with the state_code of the state being checked. If this is the first condition being applied, remove the AND which is in front of state_code.* *Replace the LTAS_1.8_install_date value with the actual date.* **/* *--* *--* *select state_code, shrp_id, year, mm_wt_date* *from traffic_analysis_tracker* *where (year between yr1 and yr2?)* *(and shrp_id = shrp)* *and state_code = ??* *and mm_wt_date <= LTAS_1.8_install_date* *and mm_wt_date > '1-jan-1990'* *order by state_code, shrp_id, year* *;* *Example --* *--* *-- find which monthly summaries have been run* *--* *select state_code, shrp_id, year, mm_wt_date* *from traffic_analysis_tracker* *where shrp_id in ('0100', '0200')* *and state_code = 4* *and mm_wt_date < '7-jun-2010'* *and mm_wt_date > '1-jan-1990'* *order by state_code, shrp_id, year* *;*

Reprocessing Monthly Data Using LTAS Version 1.8	
Step	**Action**
5	Verify that the sites not captured in SHRP_INFO notes are not missing due to changes in TRAFFIC_CLASS_CONVERT_MASTER. **Note:** This check is done by verifying that there are no axle groups in DD_AX missing vehicle types and axle groups for the same site-year, lane and direction in MM_AX. Run the scripts as the Traffic DBA so that you have permission to create views. The scripts should be run by State and made section specific by listing the affected SHRP_IDs with either an IN or an = (equal). The result should be "No rows selected" if the computations are complete. Once the monthly computations are complete, resume daily QC and purge activities. *--* *-- find which monthly summaries have been run* */** *Edit the first command by listing the sites affected in the SHRP_ID IN () clause. If the entire state is being checked, remove the line instead.* *Replace SC with the state code value for the state being checked.* *Edit the second command by making the same edits as in the first command.* *There are no edits required for the third command.* **/* *create or replace view daily_axles* *as select unique(state_code), shrp_id, year, lane_trf, dir_trf, veh_class, axle_group* *from dd_ax* *where axle_group > 1* *and record_status = 'E'* *and shrp_id in (SHRP)* *and state_code = SC* *group by state_code, shrp_id, year, lane_trf, dir_trf, veh_class, axle_group* *;* *create or replace view monthly_axles* *as select unique(state_code), shrp_id, year, lane_trf, dir_trf, vehicle_class, axle_group* *from mm_ax* *where axle_group > 1* *and shrp_id in (SHRP)* *and state_code = SC* *group by state_code, shrp_id, year, lane_trf, dir_trf, vehicle_class, axle_group* *;*

Reprocessing Monthly Data Using LTAS Version 1.8	
Step	**Action**
5	-- *-- find axle groups that didn't roll up* -- *select unique(state_code), shrp_id, year, veh_class, axle_group* *from daily_axles d* *where not exists (select 'X' from monthly_axles m* *where d.state_code = m.state_code* *and d.shrp_id = m.shrp_id* *and d.lane_trf = m.lane_trf* *and d.dir_trf = m.dir_trf* *and d.veh_class = m.vehicle_class* *and d.axle_group = m.axle_group* *and d.year = m.year)* *and exists (select 'X' from traffic_class_convert_data t* *where d.state_code = t.state_code* *and d.shrp_id = t.shrp_id* *and d.veh_class= t.veh_class* *and d.year between to_char(class_applies_from, 'YYYY') and* *to_char(class_applies_to, 'YYYY')* *and (class_pct_fhwa_1_3 != 100 and class_pct_fhwa_other != 100)* *and trf_data_type = 7* *)* *group by d.state_code, d.shrp_id, d.year, d.veh_class, d.axle_group* *order by d.state_code, d.shrp_id, d.year, d.veh_class, d.axle_group* *;*
6	Run for the affected site-years: a. Monthly QC b. Annual Summaries c. Annual QC d. Admin QC (verifies that all summaries were computed and everything is in order to run IMS Computations) e. IMS Computations (verify that all IMS Computations are done before proceeding to the next step)
7	Remove views used to reprocess data. *drop view daily_axles;* *drop view monthly_axles;*

The following table lists the steps to reload the classification data for the LTPP SPS Traffic Data Collection Pooled-Fund Study WIM sites that are missing days from the HH_CL_CT table.

Reloading Classification Data for SPS WIM Sites Using LTAS 1.8	
Step	**Action**
1	Check content of HH_CL_CT. **Note:** If data is loaded, values will exist for one or more years for each SPS WIM Pooled-Fund Study site. If the response is "No rows selected", repeat Step 4 of the instructions for Installing LTAS Version 1.8. *Select count(*), state_code, shrp_id, year from hh_cl_ct* *group by state_code, shrp_id, year* *order by state_code, shrp_id, year* *;*
2	Verify SPSWIM_VALIDATION_INIT exists. *Desc SPSWIM_VALIDATION_INIT;*
3	Determine which years/months are missing hourly data. **Note:** It is expected that the result will be at a minimum June or July to December 2009 and all of 2010. The following script can be run a State or site at a time by adding conditions for State_Code and SHRP_ID before the group by statement. *select unique(state_code), shrp_id, year, month* *from dd_cl_ct dcc* *where not exists (select 'X' from hh_cl_ct hcc* *where dcc.state_code = hcc.state_code* *and dcc.shrp_id = hcc.shrp_id* *and dcc.year = hcc.year* *and dcc.month = hcc.month* *)* *and exists (select 'X' from spswim_validation_init svi* *where svi.state_code = dcc.state_code* *and svi.shrp_id = dcc.shrp_id* *and dcc.year >= first_full_year)* *group by state_code, shrp_id, year, month* *order by state_code, shrp_id, year, month* *;*

Reloading Classification Data for SPS WIM Sites Using LTAS 1.8	
Step	**Action**
4	Get a list of purges that may need to be applied. **Note:** This script may be run a State or site at a time by adding conditions for State_Code and SHRP_ID before the order by statement. *select * from traffic_purges tp* *where exists (select 'X' from dd_cl_ct dcc* *where dcc.state_code = tp.state_code* *and dcc.shrp_id = tp.shrp_id* *and dcc.lane_trf = tp.lane_trf* *and dcc.year = tp.year)* *and exists (select 'X' from spswim_validation_init svi* *where svi.state_code = tp.state_code* *and svi.shrp_id = tp.shrp_id* *and svi.first_full_year <= tp.year)* *and year >=2004* *and trf_data_type = 4* *order by state_code, shrp_id, lane_trf, dir_trf, year, start_date* *;*
5	Reload classification files for the sites, years and months indicated with the Load Hours box checked.
6	Rerun the script from Step 3 to determine which sites are still missing hourly data.
7	Apply purges. **Note:** Depending on the list from Step 4, this action may be actually applying the purges or simply entering the proposed purges.
8	Process the results to IMS Computations: a. Daily QC b. Monthly Summaries c. Monthly QC d. Annual Summaries e. Annual QC f. Admin QC g. IMS Computations h. IMS QC

ATTACHMENT 2
List of Changes

Software Functionality – Analysis.exe

SPRs Addressed:

- *SPR 3854T.* Updated the data loading process so that data loaded for sites 0909xx, 2409xx, 3709xx and 5502xx will be associated with the test section (on the opposite side of the road) rather than the project-level ID.
- *SPR 3883T and 4-512T.* Modified the manual upgrade process to upgrade the STAT_QC tables when associated DD_AX/GVW tables are upgraded. STAT_QC_A_AX_9_DD and STAT_QC_GVW_9_DD tables will only be upgraded when vehicle class = 9.
- *SPR 3885T.* Modified Sheet 7 (Class Transformation) process to include all vehicle classes for axle groups 2 and 3/4 (tandems and tridems). Some recomputations of TRF_MONITOR_LTPP_LN may be required to correct data in the database.
- *SPR 3886T.* Added an option to load hourly class data into the HH_CL_CT table:
  - A checkbox allows the user to select loading of hourly class data or not
  - Class records are loaded into the temp table in Oracle
  - In DayMaker, a new step was added at the beginning to populate HH_CL_CT with the days that have 24 hours. This will give the midnight-to-midnight times.
  - DD_CL_CT is populated
  - Remove from HH_CL_CT any records that have a match on the ERR_CL table, leaving only valid days
  - QC updates the records in HH_CL_CT to match record status of records in DD_CL_CT
  - Purge will purge records in HH_CL_CT to match purge of records in DD_CL_CT
  - Modify Record Status function will update HH_CL_CT to match record status of records in DD_CL_CT
  - Remove Data function will remove records from HH_CL_CT