Memorandum

U.S. Department
Of Transportation

**Federal Highway
Administration**

6300 Georgetown Pike
McLean, Virginia 22101

Subject: <u>**ACTION**</u>: LTPP Directive IMS-120,
IMS Software Release Version 2004.10

Date: October 14, 2004

From: Eric Weaver
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 IMS-120: IMS Software Release Version 2004.08. This directive authorizes implementation of the IMS software upgrade from version 2004.08 to 2004.10. Upgrade instructions are provided in attachment 1. Please notify the FHWA and TSSC when the upgrade has been installed. Please ensure that all personnel involved with the IMS 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 202-493-3153.

Attachments (2)

LONG TERM PAVEMENT PERFORMANCE
PROGRAM DIRECTIVE

For the Technical Direction of the LTPP Program

Program Area: IMS

Directive Number: I-120

Date: October 5, 2004

Supersedes: I-119

Subject: IMS Software Release Version 2004.10

This directive authorizes implementation of the IMS software upgrade from version 2004.08 to 2004.10. Upgrade instructions are provided in attachment 1. Please notify the FHWA and TSSC when the upgrade has been installed.
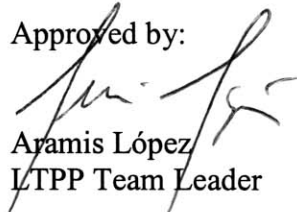
Software change notice 90, contained in the attached file, SCN_90.pdf, lists all of the changes made to the IMS software since the last software release. This notice shall be filed in the Operator's Log. This release includes an update to the RHB RI – 1 form (sheet 98) in RIMS and updates to the PG Binder tables and TST_AE08 form. Updates to the QC program and miscellaneous changes were made to the TRF module.

Version 2004.10 of the IMS software will be delivered via e-mail mail in a password protected file named PASSWORD_20041005.zip. This file contains the following Zip files:

- VR2004_10.ZIP – A zip file with the batch file (VR2004_10.BAT) and scripts needed to make miscellaneous updates to the database and to run other related administrative commands. Refer to the table included in attachment 1 for an alphabetic list and descriptions of the scripts called by this batch file.
- LTPP.ZIP - A zip file with all files to go in the LTPP area (and subdirectories) on the server.
- OracleVersions.ZIP – A zip file with listings of all Oracle files and versions loaded on the server at the central site. These are included for reference only.

Prepared by: TSSC

Approved by:

Aramis López
LTPP Team Leader

Attachment 1

Instructions to Apply VR 2004.10 Release

1. Run pre-installation queries listed in table 1, below, to make sure the data will allow new database constraints to be created. **You may proceed with the installation instructions when these scripts return no rows.**

Table 1. Pre-Installation Queries

Script and Output Filenames (.sql & .lis)	Description
SPR3306ListOrphanRows	List rows from TST_AEO8_DATA that would become orphaned once SOAK_TIME becomes a key field.
SPR3515ListTstLinkSampleDuplicates	Lists rows which will cause the unique index on TST_LINK_SAMPLE to fail. These must be corrected before running SPR3515TstLinkSAmpleIndex.sql.

2.   Shutdown ORACLE in normal mode and backup Server.

3.   Bring ORACLE up.

4.   Create the subdirectory RELEASES\VR2004_10 (the directory RELEASES should already exist).

5.   After saving and unzipping the ReleaseVR2004_10.zip file, copy and unzip the VR2004_10.ZIP file to the RELEASES\VR2004_10 subdirectory created in step 4.

6.   From a DOS prompt in the RELEASES\VR2004_10 directory, type

        VR2004_10 *dbausername/dbapassword@instance*

to begin the software update. This batch file will run the scripts listed alphabetically in table 2, below.

7.   The scripts make some table changes. Check that the scripts completed successfully by reviewing the *.lis files (refer to list, below). Ignore errors about dropping non-existent objects.

8.   Copy the LTPP.ZIP file into the LTPP subdirectory. Right-click on the filename and choose "Extract to Here" to unzip the file into the LTPP subdirectory. Answer "Yes to all" to overwrite existing files. Delete the LTPP.ZIP file.

9.   The OracleVersions.zip file is included for reference only. Extract these files into the OracleVersions directory. It will create an OracleVersions\VR200410 subdirectory.

Table 2. Scripts run from the VR2004_10.bat file

Script and Output Filenames (.sql & .lis)	Description
SPR3306FixPrimaryKey	Correct primary key to contain SOAK_TIME in TST_AE08_MASTER and TST_AE08_DATA.
SPR3498AddProfTableComments	Add comments to the MON_T_PROF% tables that lost them while being recreated by SPR 3377. The lack of a semicolon caused the COMMENT statement not to execute.
SPR3499UpdateLTPPDD	Add units of ft. to STATION_NO fields where units column is null.
SPR3508SetPKFlagsInLTPPDD	Set missing PK flags in LTPPDD.
SPR3513LTPPLNUpdate	Adds fields ct_days_received & wt_days_received to the TRF_MONITOR_LTPP_LN table.
SPR3515TstLinkSampleIndex	Create a unique index on TST_LINK_SAMPLE STATE_CODE, SHRP_ID, LAYER_NO, FIELD_SET, and SAMPLE_NO to prevent duplicate records with different TST_IDs.
SPR3517AddClmOwsToDeTables	Add the OWS tables to DE_TABLES.
SPR3518FixTempDescription	Fix the description for MON_PROFILE_MASTER.TEMPERATURE.
SPR3519ReplaceRhbTriggers	Replace all RHB database triggers that enforce codes to allow null.
SPR3520SelectOnlyPrivs	Grant privs to the SELECT_ONLY role.
SPR3521UpdateCodes	Update the codes table.
SPR3524AddRI1Sheet	Add RHB sheet 98 (RI1) to RIMS.
SPR3526AddCascadeDeleteToTProf	Add cascade delete option to foreign key constraints in the T_PROF tables.
SPR3533AddCode	Adds new county code for Alberta (#1).

Attachment 2

Software Change Notice 90

REG #	SAIC #	Program Name	Referred To	Date Rec	Date Comp

Administrative

3-3520　　**3520**　　　**LTPPDD**　　　　　　　　　　　　　　　　　　　　　　　　　　**9/9/2004**　　**10/1/2004**

Description

Privileges on the LTPPDD table should be defined as SELECT in the SELECT_ONLY role. The POWER_USER role inherits the SELECT privilege, and that is all that is required on this administrative table.

Resolution

Created SPR3520SelectOnlyPrivs.sql to grant select on LTPPDD to SELECT_ONLY.

M-3521　　**3521**　　　**CODES tables**　　　　　　　　　　　　　　　　　　　　　　　　**8/13/2004**　　**10/1/2004**

Description

I have come up with a list of CODES that can be deleted. The following codes can be deleted:

DISTRESS_SEVERITY
FINISH_METHOD_B
MEGADAC_EVENTS
MIX_DESIGN_TYPE (same as HMA_MIX_DESIGN_METHOD)
SELECTION_TYPE
SIDEWALL_CLEAN_SPS
VEHICLE_TYPE (same as VEHICLE_CLASS)

I also found a few other problems that need to be taken care of.

For SPS9_PCC_FULL_DEPTH, all entries with DATASHEET = 'SPS-9 Construction Data Sheet 37' should have it changed to 'SPS-9 Construction Data Sheet 35'

Both SPS9_PMA_AGGREGATE_PROP.MINERAL_FILLER and SPS9_SP_PMA_AGGREGATE_PROP.MINERAL_FILLER need to have CODETYPE changed from 'MINERAL_FILLER' to

Resolution

Created SPR3521UpdateCodes.sql to change CODES, CODETYPES, and LTPPDD.

'SPS9_MINERAL_FILLER'.

I guess there is no big rush on these changes other than we should get them out with the next data release. Let me know if you have any questions about any of these.

| S-3498 | 3498 | Profile Table Comments | | 7/13/2004 | 8/30/2004 |

Description

Resolution

Fix the table comments on these tables in the regions. They have been manually applied to IMSPROD.

Created SPR3498AddTProfTableComments.sql to add/replace table comments.

| S-3499 | 3499 | Units Update | | 6/5/2004 | 8/30/2004 |

Description

Resolution

Update units for STATION_NO to feet in LTPPDD and QC Manual.

Created script SPR3499UpdateLTPPDD.sql to update LTPPDD.

| S-3508 | 3508 | PK Flags in LTPPDD | | 8/12/2004 | 8/31/2004 |

Description

Resolution

There are several tables - mostly those in transition during the LTPPDD overhaul - that do not have the Primary Key flags set in the LTPPDD table. See the attached list for the tables that need to have these added. In addition, indexes on SPS_INTERSECTIONS and CODES are not marked as unique (see e-mail, attached).

Created script SPR3508SetPKFlagsIn LTPPDD.sql to set the LTPPDD FIELD_KEY properly.

Data Extraction Application

| M-3480 | 3480 | Data Extraction Utility | | 5/11/2004 | 8/30/2004 |

Description

Resolution

The data extraction utility is no longer being supported.

Moved POWERBUILDER and LTPPDES from the IMS Project in PVCS to the "IMS Obsolete" folder in PVCS. Removed the data extraction utility from the prerelease checklist.

RSC Action: May set the DEServerIMSProd service to disabled if desired.

REG #	SAIC #	Program Name	Referred To	Date Rec	Date Comp
S-3517	3517	DE_TABLES		9/16/2004	9/16/2004

Description

Update DE_TABLES to include CLM_OWS_% tables which are now kept online.

Resolution

Created SPR3517AddClmOwsToDeTables.sql script to add the CLM_OWS tables to the DE_TABLES table.

Experiment Section

M-3479	3479	Experiment_section QC		5/17/2004	9/13/2004

Description

Modify QC to correctly determine the existence of CLM data.

Resolution

No TSSC action required. RSC's should re-run EXP_QC using the new CLM tables that are completely populated.

Longitudinal Profile

M-3518	3518	Profile table description		8/23/2004	9/30/2004

Description

Please change the description for MON_PROFILE_MASTER.TEMPERATURE to ambient air temperature. (The word air is missing from the current description.)

Resolution

Created SPR3518FixTempDescription.sql to fix the description.

Materials Testing

3-856	3510	TST_E.EXE		8/16/2004	8/30/2004

Description

Data in TST_AG02 fails check TST_AG02_E_1 (see attached report excerpt and data). It appears that the value reported for PYCNOMETER_SAMPLE_WEIGHT_CALIB is actually the value of BSG_OF_FINE_AGG.

Resolution

Printing of error message for TST_AG02-E-1 was missing PYCNOMETER_SAMPLE_WEIGHT_CALIB in two places in the sprint statement. The statement was 2 arguments short for the number of formatted fields to print.

PG Binder

3-849	3462	TST.AE08		5/3/2004	9/28/2004

Description

If SOAK_TIME in second block of form is updated, related rows in third block (TST_AE08_DATA) are not updated unless each data row is also modified in some way. Not sure why soak time needs to be in TST_AE08_DATA, but if it should be, then either updates should be prevented (the form should work the way other such forms work, requiring delete and reentry), or all rows should be updated when the master table is updated. See attached screen shots and report excerpt.

Resolution

Form modified to use cascade update database triggers to update key fields in data records when master record is updated

4-434	3306	TST.AE08	MACTEC	5/2/2003	9/2/2004

Description

As per LTPP Materials Sampling and Testing Guide for SPS-9A (see SPR4-434_01.tif file), the testing laboratory performed the Bending Beam Rheometer (BBR) test with and without a 24 hour conditioning at the two different temperatures on asphalt cement samples sampled from the hot mix plant. However, the IMS data entry sheet TST.AE08 does not have a field to enter whether the sample was conditioned or not (see SPR4-434_02.jpg file). We need directions on entry procedure or a modified sheet/table from TSSC.

Resolution

Created SPR3306FixPrimaryKeys.sql. This script requires that all soak_times be not null. It also populates TST_AE08_DATA.SOAK_TIME with the master value. The LTPPDD entries are also updated by the script. Updated the level D QC to check the new ranges.
Originally completed 7/23/03, but subsequent release reversed this change. Re-opened 9/2/2004.
Updated TST_AE08 form to work correctly w/SOAK_TIME as a key field. Added LOVs to all key fields in the control block.

S-3515	3515	PGBinder Tables	MACTEC	8/30/2004	10/1/2004

Description

Duplicate records with different TST_IDs have been found in the TST_LINK_SAMPLE table. We have not been able to determine exactly how these duplicates are being entered.

To avoid future duplicates, we are considering adding a unique index on the TST_LINK_SAMPLE table, including fields STATE_CODE, SHRP_ID, LAYER_NO, FIELD_SET, SAMPLE_NO

Resolution

Created SPR3515ListTstLinkSampleDuplicates.sql to list records which will prevent the unique index from being created.

Created SPR3515TstLinkSampleIndex.sql to create the unique index. It will not run if duplicates exist.

Rehabilitation

3-839 3429 **RHB.SHEET.XX** **MACTEC** 3/2/2004 9/24/2004

Description

Unable to retrieve existing data with forms RHB.SHEET.03, RHB.SHEET.05, RHB.SHEET.06, (oddly not 07) RHB.SHEET.08, RHB.SHEET.11, RHB.SHEET.12, RHB.SHEET.14, RHB.SHEET.15, possibly most of the rest. Error message reads: "Incorrect work type. Should have work type of 19 or 51 for sheets 3-10.", more of the same.   If multiple improvement types (usually shoulder improvement plus overlay, etc.) exist for the same day, data can not be viewed or edited. See attached screen shot, example data, and SPR 3-825.

Resolution

Add IMP_TYPE field to entry/search criteria on forms so correct record is found. Updated RHB_03 and RHB_07 in response to SPRs 3525 and 3527. Will update other RHB forms as the need arises.

3-850 3466 **RHB.SHEET.03** 5/4/2004 9/24/2004

Description

<Ctrl><q> exit from form RHB.SHEET.03 causes exit from session instead of back to menu.

Resolution

Corrected with SPR 3-839 (3429). This SPR will be closed when RHB.SHEET.03 is complete for 3-839.

3-858 3525 **RHB.SHEET.07** **MACTEC** 9/15/2004 9/24/2004

Description

Unable to enter data. See attached screenshots.

Resolution

Updated form to work correctly when multiple IMP_TYPES occurred on the same date.

3-860 3527 **RHB.SHEET.03** 9/15/2004 9/23/2004

Description

Unable to enter data. See attached screenshots.

Resolution

Updated form to allow data entry/edit when multiple IMP_TYPES occurred on same date. Also added LOVs to key fields. Changed DATE_COMPLETE to date variable type.

3-3524 3524 **RHB_65** 7/12/2004 9/23/2004

Description

New RHB_65 sheet has replaced the previous RHB_65 which was the RI-1 sheet. Recommendation is to renumber the old RI-1 sheet to RHB_99 since it is unrelated to the other RHB sheets.

Resolution

Updated RHB_CAUSE_INFO form to resemble other forms. Changed form number from 65 to 98. Created SPR3524AddRI1Sheet.sql to add the form 98 to SHRP_DATA_SHEETS table.

REG #	SAIC #	Program Name	Referred To	Date Rec	Date Comp
4-3519	3519	**DB Trigger RHB Table**		9/3/2004	10/1/2004

Description

There is a new database trigger that was defined to make sure that the correct set of codes is used for the ASPHALT_GRADE field. The new RHB specs do not indicate that the ASPHALT_GRADE field must be populated, so the trigger should be modified to allow the ASPHALT_GRADE field to be null. Trigger name is RHB_ACO_LAB_MIX_AG_UPD.

Resolution

Created SPR3519ReplaceRHBTriggers.sql to replace all RHB database triggers which enforce codes to allow null.

RIMS

REG #	SAIC #	Program Name	Referred To	Date Rec	Date Comp
4-477	3500	**RIMS.SDS09**		7/19/2004	9/28/2004

Description

Description: The RIMS forms S05 and SDS09 are used to enter the shoulder probe log data of GPS and SPS sections respectively. Depths are recorded in the hardcopy forms and entered into RIMS in feet and these should be converted into inches by the RIMS forms when inserted into the TST_SAMPLE_LOG table. In reviewing the table, it is apparent that depths are NOT converted into inches by the SDS09 form when inserted into the TST_SAMPLE_LOG table. Therefore the values for DEPTH_TOP_STRATA and DEPTH_BOTTOM_STRATA fields in the TST_SAMPLE_LOG table are in inches for GPS sections and are in feet for SPS sections. As per table design, the units of above two fields should be in inches. Extracts of a GPS section (041036) and an SPS section (040114) from the above table and the screen captures of RIMS forms S05 and SDS09 are attached.Please fix the form SDS09 so that it will convert the depths entered in feet into inches. In addition, please provide appropriate instructions to correct the SPS depth values of the above fields in the TST_SAMPLE_LOG table, so that all SPS and GPS depth values will be in inches.

Resolution

Updated TST_SDS9.fmb to convert depth entered in feet to inches before inserting into the db. Also, added LOVs to key fields. Also updated confusing comments in the code in both TST_SDS9.fmb and TST_S05.fmb.

Traffic

3-862	3534	TRF_QC.exe, Level D		9/29/2004	9/30/2004

Description

Rows in TRF_HIST_WEIGHT_MASTER fail Level D QC (see attached report excerpt and raw data). Unable to determine why, except perhaps for section 22400. No data column prints to identify the out-of-range data. NO_CLASS_BINS is null, but according to QC documentation, NULL is allowed.

Resolution

The functional class value is a character string with a leading space. The QC does not allow the leading space. The space appears to have come from data provided by TSSC and should be removed by the regions.

3-863	3535	TRF_QC.exe	MACTEC	9/30/2004	10/1/2004

Description

A row in TRF_BASIC_INFO fails Level D QC (see attached report excerpt) on an invalid pavement type. According to the CODE table and the QC documentation, the valid range on this column is 1-4.

Resolution

Corrected range check on TRF_BASIC_INFO.PAVE_TYPE from 1-3 to 1-4.

4-480	3529	TRF_C.exe		9/27/2004	9/27/2004

Description

Traffic Level C QC's: While running the traffic QCs, we received the following error..

TrfHistClassMasterC#03: ORA-01722: invalid number

Resolution

Changed FUNC_CLASS target variable from INT to VARCHAR(3).

4-481	3531	TRF_QC.exe		9/27/2004	9/29/2004

Description

After reviewing the information in the table TRF _BASIC_INFO for IMS QC Level E check, it was observed that 20 records are failing due to Error Code 105.TRF _BASIC_INFO_E105: This section opened to traffic on two different dates (DATE_OPEN) and (TRAFFIC_OPEN_DATE).For matching STATE_CODE, SHRP_ID TRF_BASIC_INFO.DATE_OPEN= INV_AGE.TRAFFIC_OPEN_DATE The WRSC reviewed the dates. Data in the DATE_OPEN field comes from the Sheet 1 Summary Transmittal Form. The date format in this form is MM/DD/YYYY. The data in the TRAFFIC_OPEN_DATE field comes from the Sheet 4 inventory data. The date format is MM/YYYY.

Resolution

Changed to compare dates as 'yyyymm'.

After reviewing the forms and data in the database it was found that even if the date was entered in MM/YYYY format, the table has the date in the format 01/MM/YYYY. Therefore, the dates are not matching and failing during the QC. Please see attached screen prints.

4-482   3533   TRF_QC   **MACTEC**   **9/28/2004   10/1/2004**

Description   **Resolution**

1 record (81A900) is failing due to Error code= 114 in the table TRF_BASIC_INFO during the IMS QC Level E check. E-114: FIPS code for county 999 does not match. For matching STATE_CODE, SHRP_ID, county must match between TRF_BASIC-INFO.COUNTY_NAME and SPS_ID.COUNTY. Upon review of the table CODES, it was noticed that there is no entry for "Alberta Mun Dist Willow Crk". The CODES table contains only the following for the state Alberta.CODETYPE   CODE   DETAIL
AD
ADDL_CODETYPE---
-------------------------COUNTY   4   Highway District #4   81
STATE_PROVINCECOUNTY   6   Highway District #6   81
STATE_PROVINCECOUNTY   7   Highway District #7   81
STATE_PROVINCECOUNTY   10   Highway District #10   81
STATE_PROVINCECOUNTY   14   Highway District #14   81
STATE_PROVINCE Please see the attached.

Instructions for datasheet indicate that no County Name is required for provinces. This field should be null for this record. However, for other database tables, created SPR3533AddCode.sql to add code for county "ALBERTA MUN DIST WILLOW CRK" to CODES table.

M-3530   3530   TRF_QC   **9/2/2004   9/30/2004**

Description   **Resolution**

I ran my manual versions of the same QC based on the Aug 2003 manual specifications for the 3 sheet 16 tables.
The results are as follows. The SQLs are attached along with a list of records in Master that should be at E. I think your QC has been mis-specified for the parent/child E relationship and that you have put in an AND rather than an OR as indidcated in the spec'd (trf_equipment_master e-104).

Changed TRF_EQUIPMENT_MASTER-E-104 to run after TRF_CALIBRATION_AVC and TRF_CALIBRATION_WIM as well as completely rewriting the SQL for the check.

S-3513   3513   TrafficAnalysisQC   **8/30/2004   9/27/2004**

Description   **Resolution**

With the next release of the traffic software, TRF_MONITOR_LTPP_LN will have two new fields that need to be added to the QC.

Renamed the Traffic Analysis script SPR3513LTPPLNUPDATE.sql to add the new columns. Updated TRAFFICANALYSISQC to include the new level D & E checks.

Level D:
TRF_MONITOR_LTPP_LN
CT_DAYS_RECEIVED   NULL, 1-366
WT_DAYS_RECEIVED   NULL, 1-366

Level E:
TRF_monitor_ltpp_ln
Add ct_days_received, wt_days_received to E-101 check that at least one of the data set collections must be non-null

Add: If count_days is non-null and ct_days_received is non-null than count_days < = ct_days_received
Error message: TRF_MONITOR_LTPP_LN E-107: {State_code, shrp_id, year, vehicle_class} more days of class data in estimate than were provided by agency.

Add: If weight_days is non-null and wt_days_received is non-null than weight_days < = wt_days_received
Error message: TRF_MONITOR_LTPP_LN E-107: {State_code, shrp_id, year, vehicle_class} more days of weight data in estimate than were provided by agency.

S-3516	**3516**	**TRF_QC**		**9/2/2004**	**9/30/2004**

Description

Correct column headers in level C and level D QC. Check level E QC for consistency.

Resolution

Changed the headers to be consistant with the columns being checked. Also, changed many level C checks to use the standard dNull, cNull, & fNull functions.

Transverse Profile

3-859	**3526**	**FILT.TPROF.DEL**	**MACTEC**	**9/15/2004**	**10/1/2004**

Description

Unable to delete data. See attached screenshots.

Resolution

Created SPR3526AddCascadeDeleteToTProf.sql to re-enable cascade delete option on both TPROF foreign key constraints.