Validate (version 4.0.17)

Revision History
18 January 2011 Created by Volpe Center

The Validate program is used to

1. Compare link delay file to link and/or turning movement counts.
2. Compare link volume and/or movement files to link and turning movement counts.
3. Generate statistical reports for volume level, facility type, area types, link group (screenline), zone group (district), and turning movements;
4. Output link volume data by time increment and time period ranges;
5. Compare transit ridership by line group and/or stop groups to ridership counts.

Validate is a console-based program that runs in a command window on either Windows or Linux. The command syntax is:

```
Validate [-flag] [control_file]
```

The control_file is the file name of an ASCII file that contains the control strings expected by the program. The control_file is optional. If a file name is not provided, the program will prompt the user to enter a file name. The flag parameters are also optional. Any combination of the following flag parameters can be included on the command line:

-Q[uiet] = execute without screen messages
-H[elp] = show program syntax and control keys
-K[eyCheck] = list unrecognized control file keys
-P[ause] = pause before exiting
-N[oPause] = never pause before exiting
-B[atch] = execute in batch processing mode

The program automatically creates a printout file based on the control_file name. If the file name includes an extension, the extension is removed and ".prn" is added. The printout file will be created in the current working directory and will overwrite an existing file with the same name.

Known Gaps in This Document

1. There is nothing on transit
2. There is nothing on zone groups, facility or area types.

Control File Examples

EXAMPLE 1 COMPARE WITH DAILY COUNTS

```
TITLE  TestBed Transims

DEFAULT_FILE_FORMAT     TAB_DELIMITED
NET_LINK_TABLE          link.txt
LINK_DELAY_FILE         Link_Delay.txt
```

```
TRAFFIC_COUNT_FILE      baseline_daily_vol.txt
OUTPUT_VOLUME_FILE      daily_vol_from_daily_cnt.txt
LINK_EQUIVALENCE_FILE   link_equiv.txt

VALIDATE_REPORT_1       LINK_GROUP_SUMMARY
VALIDATE_REPORT_2       LINK_GROUP_DETAILS
VALIDATE_REPORT_3       FACILITY_TYPE_SUMMARY
VALIDATE_REPORT_4       VOLUME_LEVEL_SUMMARY
```

EXAMPLE 2 COMPARE WITH HOURLY COUNTS, SUMMARIZE FOR THE DAY

```
TITLE  TestBed Transims

DEFAULT_FILE_FORMAT     TAB_DELIMITED
NET_LINK_TABLE          link.txt
LINK_DELAY_FILE         Link_Delay.txt
TRAFFIC_COUNT_FILE      baseline_hr_vol.txt
OUTPUT_VOLUME_FILE      daily_vol_from_hr_cnt.txt
LINK_EQUIVALENCE_FILE   link_equiv.txt

VALIDATE_REPORT_1       LINK_GROUP_SUMMARY
VALIDATE_REPORT_2       LINK_GROUP_DETAILS
VALIDATE_REPORT_3       FACILITY_TYPE_SUMMARY
VALIDATE_REPORT_4       VOLUME_LEVEL_SUMMARY
```

EXAMPLE 3 COMPARE WITH HOURLY COUNTS, LOOK AT AM PEAK ONLY

```
TITLE  TestBed Transims

DEFAULT_FILE_FORMAT     TAB_DELIMITED
NET_LINK_TABLE          link.txt
LINK_DELAY_FILE         Link_Delay.txt
TRAFFIC_COUNT_FILE      baseline_hr_vol.txt
OUTPUT_VOLUME_FILE      am_vol_from_hr_cnt.txt
LINK_EQUIVALENCE_FILE   link_equiv.txt

SUMMARY_TIME_PERIODS    7:00..9:00

VALIDATE_REPORT_1       LINK_GROUP_SUMMARY
VALIDATE_REPORT_2       LINK_GROUP_DETAILS
VALIDATE_REPORT_3       FACILITY_TYPE_SUMMARY
VALIDATE_REPORT_4       VOLUME_LEVEL_SUMMARY
```

EXAMPLE 4 COMPARE WITH 15-MINUTE COUNTS DURING AM PEAK

```
TITLE  TestBed Transims

DEFAULT_FILE_FORMAT     TAB_DELIMITED
NET_LINK_TABLE          link.txt
LINK_DELAY_FILE         Link_Delay.txt
TRAFFIC_COUNT_FILE      baseline_15min_vol.txt
OUTPUT_VOLUME_FILE      am_vol_from_15min_cnt.txt
LINK_EQUIVALENCE_FILE   link_equiv.txt
```

```
SUMMARY_TIME_PERIODS    7:00..9:00
SUMMARY_TIME_INCREMENT  15

VALIDATE_REPORT_1 LINK_GROUP_SUMMARY
VALIDATE_REPORT_2 LINK_GROUP_DETAILS
VALIDATE_REPORT_3       FACILITY_TYPE_SUMMARY
VALIDATE_REPORT_4       VOLUME_LEVEL_SUMMARY
```

EXAMPLE 5 TURNING MOVEMENT COUNTS

```
TITLE  TestBed Transims

DEFAULT_FILE_FORMAT     TAB_DELIMITED
NET_LINK_TABLE          link.txt
NET_LANE_CONNECTIVITY_TABLE         Lane_Connectivity.txt

LINK_DELAY_FILE         Link_Delay.txt
TURN_COUNT_FILE         turnmove.txt

SUMMARY_TIME_PERIODS    7:00..9:00

VALIDATE_REPORT_1 TURN_MOVEMENT_SUMMARY
```

Control File Parameters

Control parameters are defined using a control key followed by a string or number. The control parameters can be specified in any order. If a given key is defined more than once, the last instance of the key is used. The default value for each key is 0 or "Null". Null parameters do not need to be included in the file. Note that comment lines or extraneous keys can be included in the file. They will be ignored by the program.

The keys recognized by the **Validate** program are listed below. These keys can be defined in a variety of different ways to perform different tasks. The first 2 keys specify the input and new plan files. They are required; other keys are optional.

Required Keys

NET_LINK_TABLE

The link table key specifies the name of the TRANSIMS link file within the network directory. The full path and file name for the link table is constructed by appending the value of this key to the value of the NET_DIRECTORY key.

Optional Keys

TITLE

Any text string can be used on this line. This text is printed on the top of each output page.

REPORT_FILE

The report file name is optional. If a file name is not provided, the program automatically creates a report file name based on the input control file name. The report file will overwrite an existing file with the same name if the Report Flag key is False or not specified.

REPORT_FLAG

The report flag key is optional. Its default is FALSE. If it is specified as Yes or True, the report file or default printout file will be opened in "Append" mode rather than "Create" mode. This permits the user to consolidate the output of several programs into a single report file.

MAX_WARNING_MESSAGES

When the program generates a warning message, a counter is incremented and the total number of warning messages is reported and a warning return coded (2) is set at the end of the execution. By default the program prints up to 100,000 warning messages to the print-out file. If more than 100,000 warning messages are sent, the program stops printing additional messages to the file or terminates the program with an error message based on the MAX_WARNING_EXIT_FLAG. This parameter enables the user to modify the default warning limit.

MAX_WARNING_EXIT_FLAG

If the maximum number of warning messages is exceeded, this flag directs the program in what to do. If the flag is TRUE (the default), the program is terminated with an error message about the warning messages. If the flag is FALSE, the program continues execution, but no additional warning messages are sent to the screen or written to the printout file. The warning message counter continues to count the messages and reports the total at the end of the execution.

PROJECT_DIRECTORY

The project directory key is not required. If it is specified, it is added to all non-network file names required by the program. If it is not specified, all non-network file names should fully specify the file path.

DEFAULT_FILE_FORMAT

Default format for files other than network files. Default is VERSION3. Other possible values include BINARY, FIXED_COLUMN, COMMA_DELIMITED, SPACE_DELIMITED, TAB_DELIMITED, CSV_DELIMITED, DBASE, LANL and SQLITE3.

NET_DIRECTORY

The network directory key is not required. If it is specified, it is added to all network table names. If it is not specified, the network table names should fully specify the file path.

NET_NODE_TABLE

The node table key specifies the name of the TRANSIMS node file within the network directory. The full path and file name for the node table is constructed by appending the value of this key to the value of the NET_DIRECTORY key.

NET_ZONE_TABLE

The zone table key specifies the name of the TRANSIMS zone file within the network directory. The full path and file name for the zone table is constructed by appending the value of this key to

the value of the NET_DIRECTORY key.

NET_LANE_CONNECTIVITY_TABLE

The network lane connectivity table key is required if a turning movement report is being produced. It specifies the name of the TRANSIMS lane connectivity file within the network directory. The full path and file name for the lane

NET_TRANSIT_STOP_TABLE

The transit stop table key is optional. It specifies the name of the TRANSIMS transit stop file within the network directory. The full path and file name for the transit stop table is constructed by appending the value of this key to the value of the NET_DIRECTORY key.

NET_TRANSIT_ROUTE_TABLE

The transit route table key is optional. It specifies the name of the TRANSIMS transit route file within the network directory. The full path and file name for the transit route table is constructed by appending the value of this key to the value of the NET_DIRECTORY key. If the key is provided, a NET_TRANSIT_STOP_TABLE is required.

NET_TRANSIT_SCHEDULE_TABLE

The transit schedule table key is optional. It specifies the name of the TRANSIMS transit schedule file within the network directory. The full path and file name for the transit schedule table is constructed by appending the value of this key to the value of the NET_DIRECTORY key. A NET_TRANSIT_STOP_TABLE and a NET_TRANSIT_ROUTE_TABLE are required to display this information.

NET_TRANSIT_DRIVER_TABLE

The transit driver table key is optional. It specifies the name of the TRANSIMS transit driver file within the network directory. The full path and file name for the transit driver table is constructed by appending the value of this key to the value of the NET_DIRECTORY key. If a NET_TRANSIT_ROUTE_TABLE is provided, this information will be used to draw the routes with link shapes.

LINK_DELAY_FILE

A Link Delay file or Link Volume and/or Turn Volume and/or Ridership files are required.

The program extracts the link volumes and turning movements from the link delay file. The header record in the link delay file is used to determine the size of each time period. The time periods are typically 15 minutes long.

RIDERSHIP_FILE

The ridership file summarizes the boardings and alightings at each stop on each route based on the scheduled and actual departure time for each run. This key is optional, but if included, transit network files must also be supplied in order to produce ridership output file data. The fields contained in the new ridership file are listed and described in the table below.

INPUT_VOLUME_FILE

The link volume file key is appended to the PROJECT_DIRECTORY key to specify the file name for the link volume file. An example of a link volume file appears below. In the example below, the link volumes are in 15-minute increments (e.g., the trips from 8:00 – 8:15 are in the 8:15 bucket.

LINK	ANODE	BNODE	AB_000_015	…	AB_800_815	AB_815_830	AB_830_845	AB_845_900	AB_900_915	…	BA_800_815	BA_815_830	BA_830_845	BA_845_900	BA_900_915	…	BA_2345_2400
1	12	22	0	…	0	0	0	0	0	…	0	0	0	0	0	…	0
2	10	24	0	…	0	0	0	0	0	…	0	0	0	0	0	…	0
3	10	21	0	…	0	0	0	0	0	…	0	0	0	0	0	…	0
4	22	23	0	…	23	23	18	19	1	…	0	0	0	0	0	…	0
5	23	24	0	…	23	20	21	19	1	…	0	0	0	0	0	…	0

TRAFFIC_COUNT_FILE

A Traffic Count file contains link-based traffic counts. It is required for link-based reports, and has a tab-delimited format similar to the link volume file. Two examples appear below. They are formatted as tables for ease of reading, but in reality they are tab-delimited text files. The accompanying .def file appears below each example.

Table 1 Daily traffic counts used in "Example 1 Compare With Daily Counts", above

LINK	AB_000_2400	BA_000_2400	NOTES
4	9500	4750	A Street
7	9500	9500	Main Street
8	28500	0	I-90
9	23750	0	I-90
11	19000	9500	B Street
22	200	1000	DeadEnd

Table 2 .def file for daily traffic counts

```
AECOM HEADER, VERSION3, 1
LINK, INTEGER, 1, 10
AB_000_2400, INTEGER, 2, 10
BA_000_2400, INTEGER, 3, 10
NOTES, STRING, 4, 11
```

Table 3 15-Minute Traffic Counts used in "Example 4 Compare With 15-Minute Counts During AM Peak", above

LINK	AB_700_715	AB_715_730	AB_730_745	AB_745_800	AB_800_815	AB_815_830	AB_830_845	AB_845_900	BA_700_715	BA_715_730	BA_730_745	BA_745_800	BA_800_815	BA_815_830	BA_830_845	BA_845_900
8	400	500	600	750	800	800	750	500	0	0	0	0	0	0	0	0
9	300	400	525	650	700	650	575	450	0	0	0	0	0	0	0	0

Table 4 .def file for 15-minute traffic counts

```
AECOM HEADER, VERSION3,1
LINK, INTEGER,1,10
AB_700_715, INTEGER,2,10
AB_715_730, INTEGER,3,10
AB_730_745, INTEGER,4,10
AB_745_800, INTEGER,5,10
AB_800_815, INTEGER,6,10
AB_815_830, INTEGER,7,10
AB_830_845, INTEGER,8,10
AB_845_900, INTEGER,9,10
BA_700_715, INTEGER,10,10
BA_715_730, INTEGER,11,10
BA_730_745, INTEGER,12,10
BA_745_800, INTEGER,13,10
BA_800_815, INTEGER,14,10
BA_815_830, INTEGER,15,10
BA_830_845, INTEGER,16,10
BA_845_900, INTEGER,17,10
```

TURN_COUNT_FILE

A Turn Count file contains turning movements by node, from-link and to-link. It is required for the turning movement report. An example, with accompanying .def file, appears below:

Table 5 Turn Count File Used in "Example 5 Turning Movement Counts", above

NODE	IN_LINK	OUT_LINK	START	END	VOLUME
15	22	7	7:00	9:00	50
15	22	19	7:00	9:00	350

Table 6 .def file used for the turn counts

```
AECOM HEADER, VERSION3, 1
NODE, INTEGER, 1, 10
IN_LINK, INTEGER, 2, 10
OUT_LINK, INTEGER, 3, 10
START, STRING, 4, 16
END, STRING, 5, 16
VOLUME, INTEGER, 6, 10
```

LINE_GROUP_COUNT_FILE

STOP_GROUP_COUNT_FILE

OUTPUT_VOLUME_FILE

The link volume file, with volumes derived from those in the link_delay file. Its format is the same as that of the INPUT_VOLUME_FILE.

SUMMARY_TIME_PERIODS

The time periods from the Link_Delay file that will be included in the Validate reports. The default is 0:00..24:00. It is expressed as a Time Range (e.g., 0:00..6:00, 18:00..23:00).

SUMMARY_TIME_INCREMENT

The SUMMARY_TIME_INCREMENT is expressed as a multiple of 15-minutes. e.g, 0, 15, 30, …,1440. It gives the temporal level of detail for the Validate calculations. The default is 0, which means that one period is used.

To understand how SUMMARY_TIME_INCREMENT is used, consider the case of eight 15-minute counts, from 7:00 to 9:00 (Table 3). If SUMMARY_TIME_INCREMENT is omitted in the control file, these counts will be rolled up into a single two-hour count, and compared to the total link volume for those two hours. If SUMMARY_TIME_INCREMENT is set to 15 minutes, then each count will be compared to the corresponding 15-minute modeled link volume.

ANALYSIS_METHOD

VOLUME or VMT. The default is VOLUME.

ADJUSTMENT_FACTOR

(1, 0.05 to 10)

LINK_EQUIVALENCE_FILE

The new link equivalence file key is appended to the PROJECT_DIRECTORY key to specify the file name for the link equivalence file used by the program. It is used to set up the screenlines in the Validate output. A sample file, along with a sketch of the network, is shown below. Screenline 1 is the dotted horizontal line crossing links 4 and 11, while Screenline 2 is the dotted vertical line crossing links 7, 8 and 9. Each link in the diagram has a link number and A-B orientation. Links 8 and 9 are one-way links; the others are two-way:

```
1 0 Screenline 1
1 1 4, 11
1 2 -4, -11
2 0 Screenline 2
2 1 7, 8
2 2 -7, 9
```

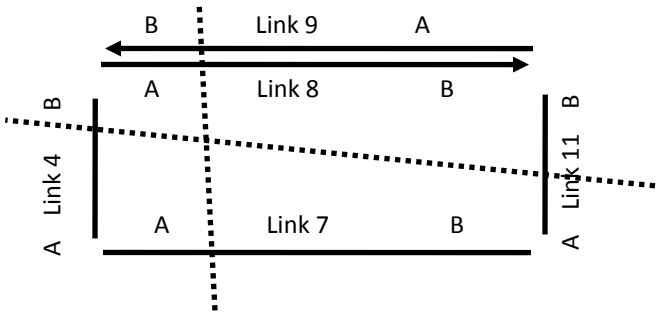

Figure 1 Link Equivalence File Used to Construct Screenlines

In the link-equivalence file:
- The first column (Screenline) is the link group identifier
- The second is an index
- The third column is either the name of the screenline or the list of links that comprise the screenline (8,9)

ZONE_EQUIVALENCE_FILE

LINE_EQUIVALENCE_FILE

A Line Group count and equivalence file are required for transit line group validation

STOP_EQUIVALENCE_FILE

A Stop Group count and equivalence file are required for transit stop group validation

FACILITY_TYPE_LABELS

AREA_TYPE_LABELS

NET_DEFAULT_FORMAT

Default format for network files.
{VERSION3, BINARY, FIXED_COLUMN, COMMA_DELIMITED, SPACE_DELIMITED, TAB_DELIMITED, CSV_DELIMITED, DBASE, LANL

NET_*_FORMAT

The link file format key can be used to specify the input file format. The default format is VERSION3; a tab delimited file compatible with the TRANSIMS Version 3.x software. Other options include BINARY, FIXED_COLUMN, COMMA_DELIMITED, SPACE_DELIMITED, TAB_DELIMITED, and DBASE

DEMAND_FILE_FORMAT

The demand file format key can be used to change the default file format. The default format is VERSION3; a tab delimited file compatible with the TRANSIMS Version 3.x software. Other options include BINARY, FIXED_COLUMN, COMMA_DELIMITED, SPACE_DELIMITED, TAB_DELIMITED, DBASE, and SQLITE3.

LINK_DELAY_FORMAT

The file format keys can be used to specify the input or output file formats. The default format is VERSION3; a tab delimited file compatible with the TRANSIMS Version 3.x software. Other options include BINARY, FIXED_COLUMN, COMMA_DELIMITED, SPACE_DELIMITED, TAB_DELIMITED, and DBASE.

RIDERSHIP_FORMAT

VALIDATE_REPORT_#

Reporting options include

VOLUME_LEVEL_SUMMARY
FACILITY_TYPE_SUMMARY
AREA_TYPE_SUMMARY
ZONE_GROUP_SUMMARY
LINK_GROUP_SUMMARY
LINK_GROUP_DETAILS
TURN_MOVEMENT_SUMMARY
TURN_LEVEL_OF_SERVICE
PRINT_ZONE_EQUIVALENCIES
PRINT_LINK_EQUIVALENCIES
LINE_GROUP_SUMMARY
STOP_GROUP_SUMMARY
BOARDING_GROUP_SUMMARY
ALIGHTING_GROUP_SUMMARY
PRINT_LINE_EQUIVALENCIES
PRINT_STOP_EQUIVALENCIES

The next section (Sample Printouts) provides examples of some of these reports.
Examples 1 through 4 show the LINK_GROUP_SUMMARY, LINK_GROUP_DETAILS, FACILITY_TYPE_SUMMARY, VOLUME_LEVEL_SUMMARY. Example 5 shows the TURN_MOVEMENT_SUMMARY report.

Sample Printouts

Sample printout file generated by the **Validate** program are shown below. Each printout is an ASCII text file with a maximum of 120 characters per line and approximately 45 lines per page. The file can be viewed or printed using a variety of text editors. For best results in a word processor, use a landscape page layout, 10-point Courier font and 0.5 inch margins on all sides.

Example 1

```
*****************************************
|                                       |
|        Validate - Version 4.0.17      |
|   Copyright (c) 2009 by AECOM Consult |
|         Tue Jan 18 08:59:12 2011      |
|                                       |
*****************************************

Control File = Validate.ctl
Report_File  = Validate.prn (Create)

TestBed Transims

Default File Format = TAB_DELIMITED

Link File = link.txt

Link Delay File = Link_Delay.txt

Traffic Count File = baseline_daily_vol.txt
Traffic Count File Format = VERSION3

Output Volume File = daily_vol_from_daily_cnt.txt
Output Volume File Format = VERSION3

Summary Time Periods = 0:00..24:00

Analysis Method = VOLUME Based

Link Equivalence File = link_equiv.txt

Validate Reports:  1. LINK_GROUP_SUMMARY
                   2. LINK_GROUP_DETAILS
                   3. FACILITY_TYPE_SUMMARY
                   4. VOLUME_LEVEL_SUMMARY
```

```
Number of Link File Records = 20
Number of Directional Links = 28

Number of Link Delay File Records = 4256, Periods = 96
Percent of Link Directions with Travel Time Data = 100.0%
Percent of Link Time Periods with Travel Time Data = 99.8%

Number of Traffic Count File Records = 6

Number of Output Volume Records = 20
```

Summary Statistics by Link Group

Link Group	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.
Screenline 1	4	42054	42750	-696	-1.6	493	4.6	591	6.6	0.983	0.63	0.99
Screenline 2	4	72062	71250	812	1.1	1106	6.2	746	7.2	0.996	0.27	0.31
TOTAL	8	114116	114000	116	0.1	800	5.6	704	7.3	0.992	0.34	0.99

Detailed Statistics for Link Group: Screenline 1

Link Name	Dir	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.
Link 4 AB	NW	1	10048	9500	548	5.8	548	5.8	0	5.8	0.000	0.70	0.70
Link 11 AB	NB	1	18974	19000	-26	-0.1	26	0.1	0	0.1	0.000	0.99	0.99
Link 4 BA	SW	1	4840	4750	90	1.9	90	1.9	0	1.9	0.000	0.34	0.34
Link 11 BA	SB	1	8192	9500	-1308	-13.8	1308	13.8	0	13.8	0.000	0.43	0.43
TOTAL		4	42054	42750	-696	-1.6	493	4.6	591	6.6	0.983	0.63	0.99

Detailed Statistics for Link Group: Screenline 2

Link Name	Dir	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.
Link 7 AB	EB	1	7761	9500	-1739	-18.3	1739	18.3	0	18.3	0.000	0.20	0.20
Link 8 AB	EB	1	30038	28500	1538	5.4	1538	5.4	0	5.4	0.000	0.31	0.31
Link 7 BA	WB	1	9433	9500	-67	-0.7	67	0.7	0	0.7	0.000	0.25	0.25
Link 9 AB	WB	1	24830	23750	1080	4.5	1080	4.5	0	4.5	0.000	0.26	0.26
TOTAL		4	72062	71250	812	1.1	1106	6.2	746	7.2	0.996	0.27	0.31

Summary Statistics by Facility Type

Facility Type	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.
Freeway	2	54868	52250	2618	5.0	1309	5.0	324	5.1	1.000	0.29	0.31
Major Arterial	2	17194	19000	-1806	-9.5	903	9.5	1182	13.0	0.000	0.22	0.25
Minor Arterial	2	27166	28500	-1334	-4.7	667	4.7	907	6.5	1.000	0.71	0.99
Collector	2	14888	14250	638	4.5	319	4.5	324	5.5	1.000	0.52	0.70
Local Street	2	4750	1200	3550	295.8	1775	295.8	1769	361.9	1.000	0.16	0.28
TOTAL	10	118866	115200	3666	3.2	995	8.6	950	11.6	0.980	0.33	0.99

Summary Statistics by Volume Level

Volume Level	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.
0 to 1000	1	724	200	524	262.0	524	262.0	0	262.0	0.000	0.05	0.05
1000 to 2500	1	4026	1000	3026	302.6	3026	302.6	0	302.6	0.000	0.28	0.28
2500 to 5000	1	4840	4750	90	1.9	90	1.9	0	1.9	0.000	0.34	0.34
7500 to 10000	4	35434	38000	-2566	-6.8	916	9.6	750	11.8	0.000	0.32	0.70
10000 to 25000	2	43804	42750	1054	2.5	553	2.6	745	3.6	1.000	0.38	0.99
25000 to 50000	1	30038	28500	1538	5.4	1538	5.4	0	5.4	0.000	0.31	0.31
TOTAL	10	118866	115200	3666	3.2	995	8.6	950	11.6	0.980	0.33	0.99

Tue Jan 18 08:59:12 2011 -- Process Complete (0:00:00)

Example 2

```
*****************************************
|        Validate - Version 4.0.17         |
|   Copyright (c) 2009 by AECOM Consult    |
|         Tue Jan 18 08:41:47 2011         |
*****************************************
Control File = Validate.ctl
Report_File  = Validate.prn (Create)

TestBed Transims

Default File Format = TAB_DELIMITED

Link File = link.txt

Link Delay File = Link_Delay.txt

Traffic Count File = baseline_hr_vol.txt
Traffic Count File Format = VERSION3

Output Volume File = daily_vol_from_hr_cnt.txt
Output Volume File Format = VERSION3

Summary Time Periods = 0:00..24:00

Analysis Method = VOLUME Based

Link Equivalence File = link_equiv.txt

Validate Reports:  1. LINK_GROUP_SUMMARY
                   2. LINK_GROUP_DETAILS
                   3. FACILITY_TYPE_SUMMARY
                   4. VOLUME_LEVEL_SUMMARY

Number of Link File Records = 20
Number of Directional Links = 28

Number of Link Delay File Records = 4256, Periods = 96
Percent of Link Directions with Travel Time Data = 100.0%
```

Percent of Link Time Periods with Travel Time Data = 99.8%

Number of Traffic Count File Records = 5

Number of Output Volume Records = 20

Summary Statistics by Link Group

Link Group	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.
Screenline 1	4	42054	42750	-696	-1.6	493	4.6	591	6.6	0.983	0.63	0.99
Screenline 2	4	72062	71250	812	1.1	1106	6.2	746	7.2	0.996	0.27	0.31
TOTAL	8	114116	114000	116	0.1	800	5.6	704	7.3	0.992	0.34	0.99

Detailed Statistics for Link Group: Screenline 1

Link Name	Dir	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.
Link 4 AB	NW	1	10048	9500	548	5.8	548	5.8	0	5.8	0.000	0.70	0.70
Link 11 AB	NB	1	18974	19000	-26	-0.1	26	0.1	0	0.1	0.000	0.99	0.99
Link 4 BA	SW	1	4840	4750	90	1.9	90	1.9	0	1.9	0.000	0.34	0.34
Link 11 BA	SB	1	8192	9500	-1308	-13.8	1308	13.8	0	13.8	0.000	0.43	0.43
TOTAL		4	42054	42750	-696	-1.6	493	4.6	591	6.6	0.983	0.63	0.99

Detailed Statistics for Link Group: Screenline 2

Link Name	Dir	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.
Link 7 AB	EB	1	7761	9500	-1739	-18.3	1739	18.3	0	18.3	0.000	0.20	0.20
Link 8 AB	EB	1	30038	28500	1538	5.4	1538	5.4	0	5.4	0.000	0.31	0.31
Link 7 BA	WB	1	9433	9500	-67	-0.7	67	0.7	0	0.7	0.000	0.25	0.25
Link 9 AB	WB	1	24830	23750	1080	4.5	1080	4.5	0	4.5	0.000	0.26	0.26
TOTAL		4	72062	71250	812	1.1	1106	6.2	746	7.2	0.996	0.27	0.31

Summary Statistics by Facility Type

Facility Type	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.
Freeway	2	54868	52250	2618	5.0	1309	5.0	324	5.1	1.000	0.29	0.31
Major Arterial	2	17194	19000	-1806	-9.5	903	9.5	1182	13.0	0.000	0.22	0.25
Minor Arterial	2	27166	28500	-1334	-4.7	667	4.7	907	6.5	1.000	0.71	0.99
Collector	2	14888	14250	638	4.5	319	4.5	324	5.5	1.000	0.52	0.70
TOTAL	8	114116	114000	116	0.1	800	5.6	704	7.3	0.992	0.34	0.99

Summary Statistics by Volume Level

Volume Level	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.
2500 to 5000	1	4840	4750	90	1.9	90	1.9	0	1.9	0.000	0.34	0.34
7500 to 10000	4	35434	38000	-2566	-6.8	916	9.6	750	11.8	0.000	0.32	0.70
10000 to 25000	2	43804	42750	1054	2.5	553	2.6	745	3.6	1.000	0.38	0.99
25000 to 50000	1	30038	28500	1538	5.4	1538	5.4	0	5.4	0.000	0.31	0.31
TOTAL	8	114116	114000	116	0.1	800	5.6	704	7.3	0.992	0.34	0.99

Tue Jan 18 08:41:47 2011 -- Process Complete (0:00:00)

Example 3

```
*****************************************
|                                       |
|        Validate - Version 4.0.17      |
|   Copyright (c) 2009 by AECOM Consult |
|         Tue Jan 18 09:16:25 2011      |
|                                       |
*****************************************

Control File = Validate.ctl
Report_File  = Validate.prn (Create)

TestBed Transims

Default File Format = TAB_DELIMITED

Link File = link.txt

Link Delay File = Link_Delay.txt

Traffic Count File = baseline_hr_vol.txt
Traffic Count File Format = VERSION3

Output Volume File = am_vol_from_hr_cnt.txt
Output Volume File Format = VERSION3

Summary Time Periods = 7:00..9:00

Analysis Method = VOLUME Based

Link Equivalence File = link_equiv.txt

Validate Reports:  1. LINK_GROUP_SUMMARY
                   2. LINK_GROUP_DETAILS
                   3. FACILITY_TYPE_SUMMARY
                   4. VOLUME_LEVEL_SUMMARY


Number of Link File Records = 20
Number of Directional Links = 28

Number of Link Delay File Records = 4256, Periods = 96
```

Percent of Link Directions with Travel Time Data = 100.0%
Percent of Link Time Periods with Travel Time Data = 99.8%

Number of Traffic Count File Records = 5

Number of Output Volume Records = 20

Summary Statistics by Link Group

Link Group	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.
Screenline 1	4	6047	7650	-1603	-21.0	401	21.0	265	24.1	0.977	1.08	1.69
Screenline 2	4	10355	12750	-2395	-18.8	599	18.8	198	19.5	0.994	0.46	0.54
TOTAL	8	16402	20400	-3998	-19.6	500	19.6	241	21.5	0.988	0.59	1.69

Detailed Statistics for Link Group: Screenline 1

Link Name	Dir	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.
Link 4 AB	NW	1	1467	1700	-233	-13.7	233	13.7	0	13.7	0.000	1.22	1.22
Link 11 AB	NB	1	2696	3400	-704	-20.7	704	20.7	0	20.7	0.000	1.69	1.69
Link 4 BA	SW	1	718	850	-132	-15.5	132	15.5	0	15.5	0.000	0.60	0.60
Link 11 BA	SB	1	1166	1700	-534	-31.4	534	31.4	0	31.4	0.000	0.73	0.73
TOTAL		4	6047	7650	-1603	-21.0	401	21.0	265	24.1	0.977	1.08	1.69

Detailed Statistics for Link Group: Screenline 2

Link Name	Dir	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.
Link 7 AB	EB	1	1074	1700	-626	-36.8	626	36.8	0	36.8	0.000	0.34	0.34
Link 8 AB	EB	1	4334	5100	-766	-15.0	766	15.0	0	15.0	0.000	0.54	0.54
Link 7 BA	WB	1	1386	1700	-314	-18.5	314	18.5	0	18.5	0.000	0.43	0.43
Link 9 AB	WB	1	3561	4250	-689	-16.2	689	16.2	0	16.2	0.000	0.45	0.45
TOTAL		4	10355	12750	-2395	-18.8	599	18.8	198	19.5	0.994	0.46	0.54

Summary Statistics by Facility Type

Facility Type	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.
Freeway	2	7895	9350	-1455	-15.6	728	15.6	54	15.6	1.000	0.49	0.54
Major Arterial	2	2460	3400	-940	-27.6	470	27.6	221	29.1	0.000	0.38	0.43
Minor Arterial	2	3862	5100	-1238	-24.3	619	24.3	120	24.5	1.000	1.21	1.69
Collector	2	2185	2550	-365	-14.3	183	14.3	71	14.9	1.000	0.91	1.22
TOTAL	8	16402	20400	-3998	-19.6	500	19.6	241	21.5	0.988	0.59	1.69

Summary Statistics by Volume Level

Volume Level	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.
750 to 1000	1	718	850	-132	-15.5	132	15.5	0	15.5	0.000	0.60	0.60
1000 to 2500	4	5093	6800	-1707	-25.1	427	25.1	184	26.8	0.000	0.55	1.22
2500 to 5000	2	6257	7650	-1393	-18.2	697	18.2	11	18.2	1.000	0.65	1.69
5000 to 7500	1	4334	5100	-766	-15.0	766	15.0	0	15.0	0.000	0.54	0.54
TOTAL	8	16402	20400	-3998	-19.6	500	19.6	241	21.5	0.988	0.59	1.69

Tue Jan 18 09:16:25 2011 -- Process Complete (0:00:00)

Example 4 Compare With 15-Minute Counts During AM Peak

```
*****************************************
|        Validate - Version 4.0.17         |
|   Copyright (c) 2009 by AECOM Consult    |
|         Tue Jan 18 09:50:42 2011         |
*****************************************

Control File = Validate.ctl
Report_File  = Validate.prn (Create)

TestBed Transims

Default File Format = TAB_DELIMITED

Link File = link.txt

Link Delay File = Link_Delay.txt

Traffic Count File = baseline_15min_vol.txt
Traffic Count File Format = VERSION3

Output Volume File = am_vol_from_15min_cnt.txt
Output Volume File Format = VERSION3

Summary Time Periods = 7:00..9:00
Summary Time Increment = 15 (minutes)

Analysis Method = VOLUME Based

Link Equivalence File = link_equiv.txt

Validate Reports:  1. LINK_GROUP_SUMMARY
                   2. LINK_GROUP_DETAILS
                   3. FACILITY_TYPE_SUMMARY
                   4. VOLUME_LEVEL_SUMMARY


Number of Link File Records = 20
Number of Directional Links = 28

Number of Link Delay File Records = 4256, Periods = 96
```

Percent of Link Directions with Travel Time Data = 100.0%
Percent of Link Time Periods with Travel Time Data = 99.8%

Number of Traffic Count File Records = 2

Number of Output Volume Records = 20

Summary Statistics by Link Group

Link Group	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.
Screenline 2	16	7895	9350	-1455	-15.6	105	18.0	74	21.8	0.753	0.49	0.61
TOTAL	16	7895	9350	-1455	-15.6	105	18.0	74	21.8	0.753	0.49	0.61

Detailed Statistics for Link Group: Screenline 1

Link Name	Dir	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.

Detailed Statistics for Link Group: Screenline 2

Link Name	Dir	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.
Link 8 AB	EB	8	4334	5100	-766	-15.0	111	17.4	77	20.8	0.791	0.54	0.61
Link 9 AB	WB	8	3561	4250	-689	-16.2	100	18.8	76	23.0	0.745	0.45	0.50
TOTAL		16	7895	9350	-1455	-15.6	105	18.0	74	21.8	0.753	0.49	0.61

Summary Statistics by Facility Type

Facility Type	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.
Freeway	16	7895	9350	-1455	-15.6	105	18.0	74	21.8	0.753	0.49	0.61
TOTAL	16	7895	9350	-1455	-15.6	105	18.0	74	21.8	0.753	0.49	0.61

TestBed Transims
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Summary Statistics by Volume Level

Volume Level	Num. Obs.	Volume Estimate	Volume Observed	Difference Volume	Difference %	Abs.Error Avg.	Abs.Error %	Std. Dev.	% RMSE	R Sq.	V/C Avg.	V/C Max.
250 to 500	4	1587	1550	37	2.4	18	4.7	13	5.6	0.873	0.40	0.47
500 to 750	8	3926	4700	-774	-16.5	112	19.0	63	21.5	0.002	0.49	0.56
750 to 1000	4	2382	3100	-718	-23.2	180	23.2	17	23.2	0.749	0.60	0.61
TOTAL	16	7895	9350	-1455	-15.6	105	18.0	74	21.8	0.753	0.49	0.61

Tue Jan 18 09:50:42 2011 -- Process Complete (0:00:00)

Example 5 Turning Movement Counts

```
*****************************************
|        Validate - Version 4.0.17         |
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|         Tue Jan 18 10:16:06 2011         |
*****************************************

Control File = Validate.ctl
Report_File  = Validate.prn (Create)

TestBed Transims

Default File Format = TAB_DELIMITED

Link File = link.txt
Lane Connectivity File = Lane_Connectivity.txt

Link Delay File = Link_Delay.txt

Turn Count File = turnmove.txt
Turn Count File Format = VERSION3

Summary Time Periods = 7:00..9:00

Analysis Method = VOLUME Based

Validate Reports:  1. TURN_MOVEMENT_SUMMARY

Number of Link File Records = 20
Number of Directional Links = 28

Number of Lane Connectivity File Records = 63
Number of Lane Connectivity Data Records = 41

Number of Link Delay File Records = 4256, Periods = 96
Percent of Link Directions with Travel Time Data = 100.0%
Percent of Link Time Periods with Travel Time Data = 99.8%
Percent of Link Connections with Travel Time Data = 43.9%
Percent of Connection Periods with Travel Time Data = 90.7%

Number of Turn Count File Records = 2
```

TestBed Transims
Tue Jan 18 10:16:06 2011 Validate page 3

Turning Movement Validation

Street/Link	Dir	Cross Street/Link	Source	Volume Left	Volume Thru	Volume Right	Volume Uturn	Percent Left	Percent Thru	Percent Right	Percent Uturn
Link 22 BA	SB	Node 15	Estimate	508	0	24	0	95.5	0.0	4.5	0.0
			Observed	350	0	50	0	87.5	0.0	12.5	0.0
			Difference	158	0	-26	0	8.0	0.0	-8.0	0.0
			% Error	45.1	0.0	-52.0	0.0	9.1	0.0	-63.9	0.0

Tue Jan 18 10:16:06 2011 -- Process Complete (0:00:00)