Attachment 3

Interface Control Document

DRAFT

Customer Service Center (CSC) / Toll Management System (TMS)

Interface Control Document

Version 1.1
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DRAFT

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1. Document Revision History

Version	Date	Summary of Revisions
1.0	10/13/2006	Created for Toll Services Agreement
1.1	11/2007	Added fields required for IH 635

2. Document Acronyms and Definitions

Table 1 Document Acronyms and Definitions

Acronym	Acronym definition
ACK	Acknowledgement
CSC	Customer Service Center
CTRMA	Central Texas Regional Mobility Authority
CTTP	Central Texas Turnpike Project
DSP	Disposition
ETC	Electronic Toll Collection
FTP	File Transfer Protocol
I-Toll	Place holder
ICD	Interface Control Document
NAK	Not Acknowledged
NTTA	North Texas Tollway Authority
OCR	Optical Character Recognition
RMA	Regional Mobility Authority
TMS	Toll Management System
TPL8	Tag / Plate Association Data File
TTA	Texas Turnpike Authority - A division of the Texas Department of Transportation
TVL	Tag Validation List
TxDOT	Texas Department of Transportation
TXN	Transaction
V-Toll	A violation transaction associated with a customer's transponder due to the transponder, which is in good standing, being misread in a toll lane. These transactions are posted to the customer's account at the ETC toll rate without any violation fees in the CSC.
VIOS	Violations
VPC	Violation Processing Center

1. Introduction – Subsystem Interface Controls

This document is the Interface Control Document (ICD) that defines the interface between a Toll Management System (TMS) Host and the Customer Service Center (CSC) system interfaces.

Note: The CSC includes the Violation Processing Center (VPC) functionality. This document does NOT cover the Interoperability file exchange.

The Developer shall provide transactions containing image quality (OCR confidence) for both the license plate and state, the image reference, license plate, the cross-referenced TollTag, HOV/SOV designation, Transponder Transaction toll amount due, Video Transaction Toll amount dues and necessary data for the NTTA to pursue Transponder Transactions and Video Toll Transactions.

This document is considered draft, but is intended to contain the data elements required for Transponder Transaction and Video Toll Transaction processing by the NTTA.

This document will be finalized by the NTTA based on the tolling scheme and final decisions made by TxDOT, NTTA and the Developer.

3.1 Purpose

This ICD documents the subsystem interface requirements for subscribing authorities and agencies developing an interface to the CSC back office systems.

The ICD describes the requirements for transactions, commands and data elements used to implement the interfaces of the data transfers between a Toll Management System (TMS) Host and the CSC.

3.2 Referenced Documents

The following documents, of the exact issue stated, form a part of these design criteria to the extent stated by reference within this document.

3.2.1 Customer Documents

None at this time.

3.2.2 Vendor Documents

None at this time.

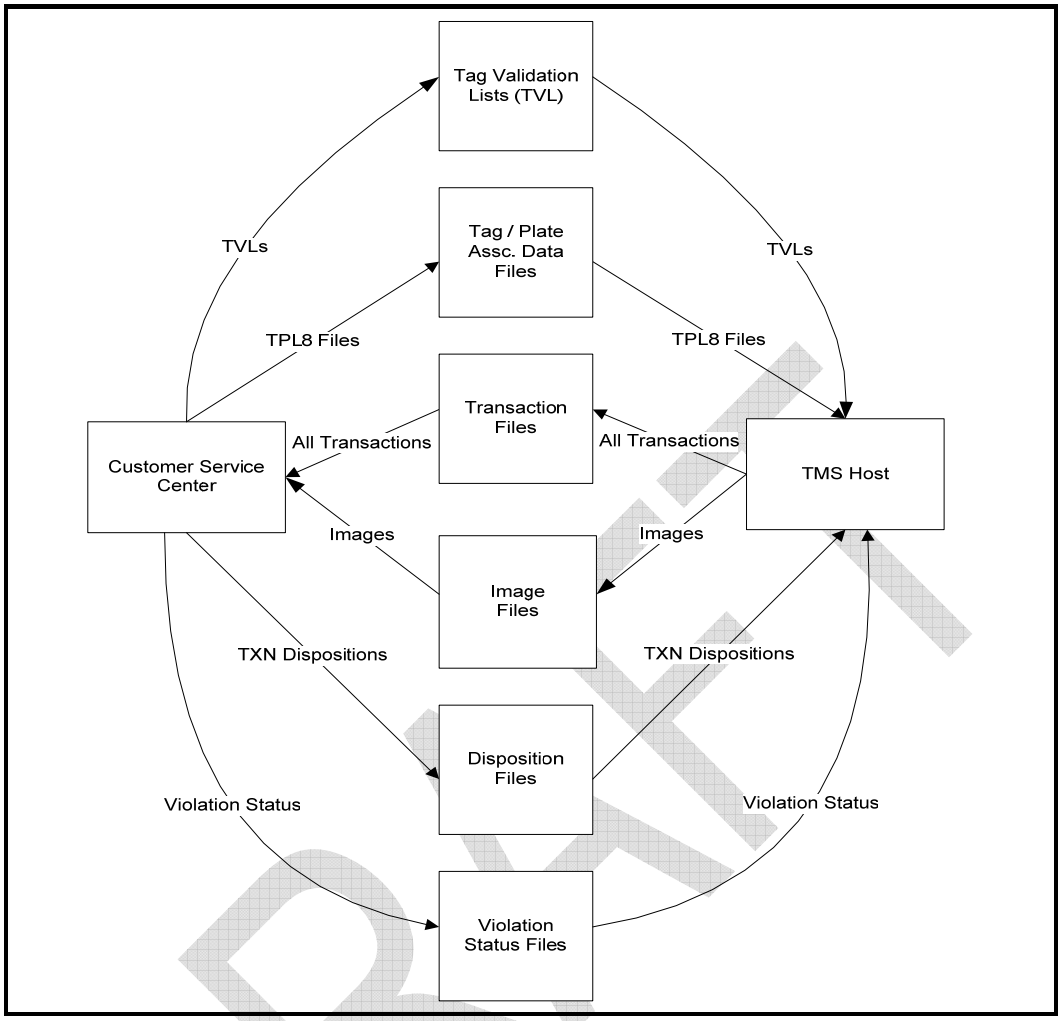
2. TMS Host – to/from - CSC Interface

The TMS Host – to/from – CSC Interface consists of the following file transfers:

Note: All files exchanged between the CSC and a TMS Host shall be accomplished using File Transfer Protocol (FTP). All FTP servers must be password protected, and usernames and passwords will be shared at a mutually agreed time between the subscriber / Developer and the CSC operator.

1. Tag Validation List (TVL) File (Pushed from CSC to the TMS Host)
2. Tag / Plate Association Data File (Pushed from the CSC to the TMS Host)
3. Transaction Files (Pushed from the TMS Host to the CSC)
4. Image Files (Pulled from the TMS Host by the CSC)

   Note: Image files shall be pulled from the TMS Host FTP Server as needed.
5. Disposition Files (Pushed from the CSC to the TMS Host)
6. Violation Status Files (Pushed from the TMS Host to the CSC)
7. Acknowledgement Files



4.1.1 CSC / TMS Host File Transfer Locations

The CSC and TMS Host shall use the following locations on their respective FTP Servers to push, pull and archive files required by the CSC / TMS Host Interface.

Note: The TMS Host should constantly monitor its FTP site for file transfers provided by the CSC. Likewise, the CSC should constantly monitor its FTP site for file transfers from the TMS Host.

4.1.1.1 Tag Validation List File Transfers – FTP Server File Location

The CSC creates Tag Validation List Files and transmits them to the TMS Host for processing.

The structure of the file system on the TMS Host FTP Server for delivery of the Tag Validation List Files shall be as follows:

```
ftp://(TMS FTP Server)/(FTP TVL dir)/(Authority)/input
ftp://(TMS FTP Server)/(FTP TVL dir)/(Authority)/input/sending
ftp://(TMS FTP Server)/(FTP TVL dir)/(Authority)/input/arch
```

Note: The (Authority) designator for the directory for TVL Files shall always be 102 (NTTA).

The CSC shall push all Tag Validation List Files (via FTP) into the proper `/input/sending` directory on the TMS Host FTP Server. The CSC then moves the file from the `/input/sending` subdirectory up into the main `/input` directory. This is done to prevent the TMS Host from picking up a file that has not completed transmission. The TMS Host shall pick up the Tag Validation List File from the `/input` directory and move the file to the `/input/arch` directory for archive purposes.

1. Tag / Plate Association Data File Transfers– FTP Server File Location

The CSC creates Tag / Plate Association Data Files and transmits them to the TMS Host for processing.

The structure of the file system on the TMS Host FTP Server for delivery of the Tag / Plate Association Data Files shall be as follows:

```
ftp://(TMS FTP Server)/(FTP TPA dir)/(Authority)/input
ftp://(TMS FTP Server)/(FTP TPA dir)/(Authority)/input/sending
ftp://(TMS FTP Server)/(FTP TPA dir)/(Authority)/input/arch
```

Note: The (Authority) designator for the directory for Tag / Plate Associated. Data Files shall always be 102 (NTTA).

The CSC shall push all Tag / Plate Association Data Files (via FTP) into the proper `/input/sending` directory on the TMS Host FTP Server. The CSC then moves the file from the `/input/sending` subdirectory up into the main `/input` directory. This is done to prevent the TMS Host from picking up a file that has not completed transmission. The TMS Host shall pick up the Tag / Plate Association Data File from the `/input` directory, and then move the file to the `/input/arch` directory for archive purposes.

Note: All times used in the file name format and in the file contents are designated in GMT (Universal Time Zone – Grand Meridian).

4.1.1.3 Transaction File Transfers – FTP Server File Location

The TMS Host creates Transaction Files and transmits them to the CSC for processing.

The structure of the file system on the CSC's FTP Server for pickup of Transaction Files shall be as follows:

For Transaction Files:

```
ftp://(CSC FTP Server)/(Project dir)/(FTP TXN dir)/(Authority)/input
ftp://(CSC FTP Server)/(Project dir)/(FTP TXN dir)/(Authority)/input/sending
ftp://(CSC FTP Server)/(Project dir)/(FTP TXN dir)/(Authority)/input/arch
```

Note: The (Authority) designator for the directory for the Transaction File shall be the Authority that sent the Transaction File to the CSC. The (Authority) designator is found in Appendix A.

The TMS Host shall push all Transaction Files (via FTP) into the proper `/input/sending` directory on the CSC FTP Server. The TMS Host then moves the file from the `/input/sending` subdirectory up into the main `/input` directory. This is done to prevent the CSC from picking up a file that has not completed transmission. The CSC shall pick up the Transaction File from the `/input` directory and move the file to the `/input/arch` directory for archive purposes.

4.1.1.4 Image File Transfers – FTP Server File Location

The TMS Host creates the image file and places it for pick-up by the CSC for processing. The structure of the file system on the CSC for delivery will be as follows:

```
ftp://(TMS FTP Server)/(FTP IMAGE dir)/(Authority)/input/yyyymmddhhmn
```

Note: Subdirectories are set up by year (YYYY), month (MM), day (DD), hour (HH) and minute (MN).

Note: The (Authority) designator for the directory for Image Files is the Authority that creates the image file. The (Authority) designator is found in Appendix A.

The TMS Host shall place all image files into the main `/input/yyyymmddhhmn` directory for pickup by the CSC. The CSC will pull the image file(s) from the `/input/yyyymmddhhmn` directory and then delete the files from the `/input/yyyymmddhhmn` directory on the TMS Host.

Note: All times used in the file name format, file directory name format, and in the file contents are designated in GMT (Universal Time Zone – Grand Meridian).

4.1.1.5 Disposition File Transfers – FTP Server File Location

The CSC shall periodically create a Disposition File and transmit it to the TMS Host for processing.

The structure of the file system on the TMS Host FTP Server for pickup of disposition files shall be as follows:

Disposition Files:

```
ftp://(TMS FTP Server)/(FTP DSP dir)/(Authority)/input
ftp://(TMS FTP Server)/(FTP DSP dir)/(Authority)/input/sending
ftp://(TMS FTP Server)/(FTP DSP dir)/(Authority)/input/arch
```

Note: The (Authority) designator for the directory for Disposition Files shall be the Authority that creates the Disposition File. The (Authority) designator is found in Appendix A.

The CSC shall push all Disposition Files (via FTP) into the `/input/sending` directory on the TMS Host FTP Server. The CSC shall then move the file from the `/input/sending` subdirectory to the main `/input` directory for pick up by the TMS Host. This is done to prevent the TMS Host from picking up a file that has not completed transmission. The TMS Host shall pick up the Disposition File from the `/input` directory and move the file to the `/input/arch` directory for archive purposes.

4.1.1.6 Violation Status File Transfers– FTP Server File Location

The TMS Host creates the Violation Status Files and pushes them to the CSC for processing.

The structure of the file system on the CSC FTP Server for delivery of Violation Status Files shall be as follows:

```
ftp://(CSC FTP Server)/(Project dir)/(FTP VIOS dir)/(Authority)/input
ftp://(CSC FTP Server)/(Project dir)/(FTP VIOS dir)/(Authority)/input/sending
ftp://(CSC FTP Server)/(Project dir)/(FTP VIOS dir)/(Authority)/input/arch
```

Note: The (Authority) designator for the directory for Violation Status Files is the Authority that creates the Violation Status File. The (Authority) designator is found in Appendix A.

The TMS Host shall push all Violation Status Files (via FTP) into the CSC's `/input/sending` directory on the CSC FTP Server. The TMS Host shall then move the file from the `/input/sending` subdirectory to the main `/input` directory for pickup. This is done to prevent the CSC from picking up a file that has not completed transmission. The CSC shall pick up the Violation Status File from the `/input` directory and then move the file to the `/input/arch` directory for archive purposes.

4.1.1.7 Acknowledgement File Transfers – FTP Server File Location

The structure of the file system on the CSC and the TMS Host FTP Server for pickup of Acknowledgement Files shall be as follows:

Acknowledgement Files:

```
CSC FTP Server:
  ftp://(CSC FTP Server)/(Project dir)/(FTP ACK dir)/(Authority)/input
  ftp://(CSC FTP Server)/(Project dir)/(FTP ACK dir)/(Authority)/input/sending
  ftp://(CSC FTP Server)/(Project dir)/(FTP ACK dir)/(Authority)/input/arch
```

```
TMS FTP Server:
  ftp://(TMS FTP Server)/(FTP ACK dir)/(Authority)/input
  ftp://(TMS FTP Server)/(FTP ACK dir)/(Authority)/input/sending
  ftp://(TMS FTP Server)/(FTP ACK dir)/(Authority)/input/arch
```

Note: The (Authority) designator for the directory for Acknowledgement Files shall be the Authority that creates the Acknowledgement File. The (Authority) designators are found in Appendix A.

The sending agency shall transfer Acknowledgment Files (via FTP) into the `/input/sending` directory. The sending agency then moves the file from the `/input/sending` subdirectory to the main `/input` directory. This is done to prevent the receiving agency from picking up a file that has not completed transmission. The receiving agency shall pick up the Acknowledgement File from the `/input` directory and move the file to the `/input/arch` directory for archive purposes.

3. CSC / TMS Host Interface File Types

This section of the ICD defines the requirements for each file type required for the TMS Host to interface to the CSC. In this section, you shall find information about the following file types:

- Tag Validation List (TVL) Files – Section 5.1
- Tag / Plate Association Data Files – Section 5.2
- Transaction Files – Section 5.3
- Image Files – Section 5.4
- Disposition Files – Section 5.5
- Violation Status Files – Section 5.6
- Acknowledgement Files – Section 5.7

5.1 Tag Validation List Transfer

Tag Validation List Files are built by the CSC. The Tag Validation List is a list of CSC tags that are issued or previously issued and also lists tags from interoperable agencies. New CSC tags, just entered into inventory and with no history of having been issued, are not included in this file. The Tag Validation List can be transferred in two (2) forms: full transfers (which contains information for all tags – a full refresh of status), and incremental transfers (updates for issued tags which have occurred since the previous file was sent). The full transfer (once daily) shall send a complete list of all CSC tags issued or previously issued. The incremental transfers (once an hour) shall send any changes to the Tag Validation List since the last full transfer or update was sent. If there are no changes or updates since the last TVL File was sent, the CSC shall not send an empty (incremental) TVL File to the TMS Host; however, the full transfer will occur once daily, regardless.

Note: If a tag is not in the TVL, it is automatically considered to be a violation.

The TVL Files are transferred daily, usually overnight, and loaded into each lane that accepts ETC transactions. Updates are provided on a more frequent basis when the status of a particular tag or account changes during the day. Careful planning of these update transfers is important so that the CSC, TMS Host and Lane computers are not consumed with updates.

Note: All times used in the file name format and in the file contents are designated in GMT (Universal Time Zone – Grand Meridian).

5.1.1 File Transfer Timetable

Full Tag Validation List Files shall be created and pushed from the CSC to the TMS Host FTP Server once a day by 4AM. Subsequently, Tag Validation List Incremental (Update) Files shall be created and pushed from the CSC to the TMS Host FTP server once an hour after the CSC completes and sends the full TVL File, provided updates occur. The CSC shall stop sending

incremental TVL Files by 3:00AM everyday. The Developer's system shall acknowledge the receipt and successful installation of the full TVL in each lane on a daily basis as described later in this document using a lane message defined in Appendix C.

5.1.2 File Name Format

The file name shall have the date and creation time as the filename and the "tag" suffix extension.

"yyyymmddhhmnssaaa.tag"

where: yyyy = year
mm = month
dd = day
hh = hour
mn = minute
ss = second
aaa = 102 (NTTA)

Example: 20040815143045102.tag

5.1.3 File Format

The file format follows the standard guidelines referenced in Appendix B (File Structure - Standard Guidelines).

5.1.3.1 File Header Format – TVL File

When a Tag Validation List (TVL) File is packaged for transmission, the sender must construct the File Header so that it contains all of the required fields listed below. Once the File Header is constructed, the file contents are appended, and the entire file is transmitted to the appropriate directory location on the TMS Host FTP Server for processing.

The File Header is a fixed length ASCII record with comma-delimited fields, terminated by a carriage return-line feed. Some of the fields within the File Header are right-justified and must be zero padded. Although all fields in the File Header are fixed in length, they are still separated by commas. This is to allow processing by either of two means: (1) specifying absolute file offset position and field length; or (2) parsing the record, breaking on the comma-delimiter. This format was developed to afford developers maximum flexibility in processing this record type.

The CRC 32 standard algorithm is used to compute the checksum value. The checksum is a 32-bit value and is displayed as an ASCII hex number. The file size is a base-10 ASCII number.

Note: The java checksum referenced in this ICD is the java.util.zip.CRC32 algorithm.

Field Name	Data Type (Fixed Length)	Required Field	Format/Range	Description
Rec_type	Char (1)	Y		Record Type. Value = 'H'
File_Type_Designator	Char (4)	Y	TAGS or FULL	TAGS = incremental TVL FULL = full TVL
File_date_time	Char (14)	Y	yyyymmddhhmnss	Date and time of this file creation
TR_File_control_number	Char (8)	Y	00000000-99999999	A unique, sequential number used to identify the tag file (assigned by the CSC) **Note**: This field is right-justified and must be zero padded.
Authority	Char (3)	Y	For a list of authorities, refer to Appendix A.	Code indicating the Authority that own/operate the facility to which the tag file is being transmitted
Rec_count	Char (10)	Y	0000000000-9999999999	The number of records in the Data Record (exclusive of the Header and Trailer). **Note**: This field is right-justified and must be zero padded.
File_Size	Numeric (12)	Y	000000000000-999999999999	The size of the file in bytes. **Note**: This field is right-justified and must be zero padded.
Checksum	Char (8)	Y		A 32-bit checksum computed for the contents of the file, beginning at the character immediately following the header record and continuing to the end of the file (including the Trailer). This value is displayed as an 8-digit ASCII hex number.
Separator	Char (1)	Y		"CR/LF" Carriage Return/Line Feed

5.1.3.2 File Trailer Format – TVL File

The File Trailer is a fixed length ASCII record with comma-delimited fields, terminated by a carriage return-line feed. Some of the fields within the File Trailer are right-justified and must be zero padded.

Field Name	Data Type (Fixed Length)	Required Field	Format/Range	Description
Rec_type	Char (1)	Y		Record Type. Value = 'T'
Rec_count	Char (10)	Y	0000000000 – 9999999999	The number of records in the Data Record (exclusive of the Header and Trailer). **Note**: This field is right-justified and must be zero padded.

Field Name	Data Type (Fixed Length)	Required Field	Format/Range	Description
Separator	Char (1)	Y		"CR/LF" Carriage Return/Line Feed

5.1.3.3 Data Record Format – TVL File

Field Name	Data Type (Max Length)	Required Field	Format/Range	Description
Rec_type	Char(1)	Y		Record Type. Value = 'S'
Authority	Char (3)	Y	For a list of authorities, refer to Appendix A.	Identifier for the Authority that owns the Tag
Tag_id	Char (20)	Y		Internal ID for each transponder
Tag Status	Char (1)	Y		Tag Status See Appendix H
Revenue Type	Char (1)	Y	1 – full-fare 2 – non-revenue	Revenue Type for the Tag
Axle Classification	Char (3)	Y	See Appendix D for list of vehicle classes	Classification of the vehicle assigned the transponder
LPCheckReq	Char(1)	Y	0-9,A-Z	Whether a LP image validation is required (0=No, 1=Yes, Others reserved for future use.)
Separator	Char (1)	Y		"CR/LF" Carriage Return/Line Feed

5.1.4 File Example – TVL File

```
H,TAGS,20050417220000,00000001,104,0000000001,000000000050,12345678
S,104,TEX.12345678,G,1,002,Y,12
T,0000000001
```

5.2 Tag / Plate Association Data File

The Tag / Plate Association Data Files are built by the CSC. The Tag / Plate Association Data File is a list of tags (CSC and interoperable) and their associated license plate(s). The Tag / Plate Association Data File can be transferred in two forms: full transfers (which contain the information about all tags with their associated license plate(s)), and incremental transfers (updates which have occurred since the previous file was sent). The full transfers are created and pushed from the CSC to the TMS Host once a day. The incremental transfers are created and pushed from the CSC to the TMS Host once an hour. If there are no changes or updates since the last Tag / Plate Association Data File was sent, the CSC shall not send an empty (incremental) Tag / Plate Association Data File to the TMS Host.

Note: This file does not contain tags without an associated license plate.

5.2.1 File Transfer Timetable

Full Tag / Plate Association Data Files shall be created and pushed from the CSC to the TMS Host FTP Server once a day by 4AM. Subsequently, Tag / Plate Association Data Incremental (Update) Files shall be created and pushed from the CSC to the TMS Host FTP server once an hour after the CSC completes and sends the full Tag / Plate Association Data File, provided updates occur. The CSC shall stop sending incremental Tag / Plate Association Data Files by 3:00AM everyday.

5.2.2 File Name Format

The file name shall have the date and creation time as the filename and the "tpl8" suffix extension.

"yyyymmddhhmnssaaa.tpl8"

where: yyyy = year
mm = month
dd = day
hh = hour
mn = minute
ss = second
aaa = 102 (NTTA)

Example: 20040815143045102.tpl8

5.2.3 File Format

The file format follows the standard guidelines referenced in Appendix B (File Structure - Standard Guidelines).

5.2.3.1 File Header Format – Tag / Plate Association Data File

When a Tag / Plate Association Data File is packaged for transmission, the sender must construct the File Header so that it contains all of the required fields listed below. Once the File Header is constructed, the file contents are appended; and the entire file is transmitted to the appropriate directory location on the TMS Host FTP Server for processing.

The File Header is a fixed length ASCII record with comma-delimited fields, terminated by a carriage return-line feed. Some of the fields within the File Header are right-justified and must be zero padded. Although all fields in the File Header are fixed in length, they are still separated by commas. This is to allow processing by either of two means: (1) specifying absolute file offset position and field length; or (2) parsing the record, breaking on the comma-delimiter. This format was developed to afford developers maximum flexibility in processing this record type.

The CRC 32 standard algorithm is used to compute the checksum value. The checksum is a 32-bit value and is displayed as an ASCII hex number. The file size is a base-10 ASCII number.

Field Name	Data Type (Fixed Length)	Required Field	Format/Range	Description
Rec_type	Char (1)	Y		Record Type. Value = 'H'
File_Type_Designator	Char (4)	Y	INTP or FUTP	INTP = Incremental TPL8 FUTP = Full TPL8
File_date_time	Char (14)	Y	yyyymmddhhmmss	Date and time of this file creation
TR_File_control_number	Char (8)	Y	00000000-99999999	A unique sequential number used to identify the tag / plate association data file (assigned by the CSC) **Note**: This field is right-justified and must be zero padded.
Authority	Char (3)	Y	For a list of authorities, refer to Appendix A.	Code indicating the Authority that owns / operates the facility to which the tag / plate association data file is being transmitted
Rec_count	Char (10)	Y	0000000000-9999999999	The number of records in the Data Record (exclusive of the Header and Trailer). **Note**: This field is right-justified and must be zero padded.
File_Size	Numeric (12)	Y	000000000000-999999999999	The size of the file in bytes. **Note**: This field is right-justified and must be zero padded.
Checksum	Char (8)	Y		A 32-bit checksum computed for the contents of the file, beginning at the character immediately following the header record and associated CR/LF. This value is displayed as an 8-digit ASCII hex number.
Separator	Char (1)	Y		"CR/LF" Carriage Return/Line Feed

5.2.3.2 File Trailer Format – Tag / Plate Association Data File

The File Trailer is a fixed length ASCII record with comma-delimited fields, terminated by a carriage return-line feed. Some of the fields within the File Trailer are right-justified and must be zero padded.

Field Name	Data Type (Fixed Length)	Required Field	Format/Range	Description
Rec_type	Char (1)	Y		Record Type. Value = 'T'
Rec_count	Char (10)	Y	0000000000 – 9999999999	The number of records in the Data Record (exclusive of the Header and Trailer). **Note**: This field is right-justified and must be zero padded.
Separator	Char (1)	Y		"CR/LF" Carriage Return/Line Feed

5.2.3.3 Data Record Format – Tag / Plate Association Data File

Field Name	Data Type (Max Length)	Required Field	Format/Range	Description
Rec_type	Char(1)	Y		Record Type. Value = 'P'
Authority	Char (3)	Y	For a list of authorities, refer to Appendix A.	Facility Identifier for the Authority Owning the Tag
Tag_id	Char (20)	Y		Internal ID for each transponder
License_Plate_State	Char (3)	Y		Three characters indicate the state code
License_Plate_Numb er	Char (15)	Y		License plate number associated with the tag
Alternate_License_Pl ate_State	Char (3)	N		Alternative license plate number associated with the tag (if any)
Alternate_License_Pl ate_Number	Char (15)	N		Alternative license plate number associated with the tag (if any)
Separator	Char (1)	Y		"CR/LF" Carriage Return/Line Feed

5.2.4 File Example – Tag / Plate Association Data File

```
H,FUTP,20050417220000,00000001,104,0000000002,000000000050,12345678
P,104,TEX.12345678,TX,ABC123,TX,ASD543
P,104,TEX.22345679,TX,DEF456,
T,000000002
```

5.3 Transaction Files

Transaction Files are pushed from the TMS Host FTP Server to the CSC by FTP. All transactions, including violations, are sent from the TMS Host to the CSC in Transaction Files. Once a Transaction File has been received and processed, the reconciliation information is returned to the TMS Host in a Disposition File.

Note: All times used in the file name format and in the file contents are designated in GMT (Universal Time Zone – Grand Meridian).

5.3.1 File Transfer Timetable

Transaction Files shall be pushed from the TMS Host FTP Server to the CSC every 10 minutes at a minimum. If there are no transactions to send, then no file shall be pushed.

5.3.2 File Name Format

The file name shall have the date and creation time as the filename and the "tr" suffix extension.

`"yyyymmddhhmnssaaa.tr"`

where: yyyy = year
mm = month
dd = day
hh = hour
mn = minute
ss = second
aaa = Authority where the transaction(s) originated

Example: `20040815143045104.tr`

5.3.3 File Format

The file format follows the standard guidelines referenced in Appendix B (File Structure - Standard Guidelines).

5.3.3.1 File Header Format – Transactions File

When a Transaction File is packaged for transmission, the TMS Host must construct the File Header so that it contains all of the required fields listed below. Once the File Header is constructed, the file contents are appended; and the entire file is transmitted to the appropriate directory location on the CSC FTP Server for processing.

The File Header is a fixed length ASCII record with comma-delimited fields, terminated by a carriage return-line feed. Some of the fields within the File Header are right-justified and must be zero padded. Although all fields in the File Header are fixed in length, they are still separated by commas. This is to allow processing by either of two means: (1) specifying absolute file offset

position and field length; or (2) parsing the record, breaking on the comma-delimiter. This format was developed to afford developers maximum flexibility in processing this record type.

The CRC 32 standard algorithm is used to compute the checksum value. The checksum is a 32-bit value and is displayed as an ASCII hex number. The file size is a base-10 ASCII number.

Field Name	Data Type (Fixed Length)	Required Field	Format/Range	Description
Rec_type	Char (1)	Y		Record Type. Value = 'H'
File_date_time	Char (14)	Y	yyyymmddhhmmss	Date and time of this file creation
TR_File_control_number	Char (8)	Y	00000000-99999999	A unique, sequential number created by the TMS Host that is used to identify the file **Note**: This field is right-justified and must be zero padded.
Authority	Char (3)	Y	For a list of authorities, refer to Appendix A.	Code indicating the Authority that owns/operates the facility on which the transaction occurred
Rec_count	Char (10)	Y	0000000000-9999999999	The number of records in the Data Record (exclusive of the Header and Trailer). **Note**: This field is right-justified and must be zero padded.
File_Size	Numeric (12)	Y	000000000000-999999999999	The size of the file in bytes. **Note**: This field is right-justified and must be zero padded.
Checksum	Char (8)	Y		A 32-bit checksum computed for the contents of the file, beginning at the character immediately following the header record and associated CR/LF. This value is displayed as an 8-digit ASCII hex number.
Total_revenue_amount	Char (9)	Y	0.00 - 999999.99	The total amount due based on the transactions sent within that transaction file **Note**: This field is right-justified and must be zero padded.
Separator	Char (1)	Y		"CR/LF" Carriage Return/Line Feed

5.3.3.2 File Trailer Format – Transactions File

The File Trailer is a fixed length ASCII record with comma-delimited fields, terminated by a carriage return-line feed. Some of the fields within the File Trailer are right-justified and must be zero padded.

Field Name	Data Type (Fixed Length)	Required Field	Format/Range	Description
Rec_type	Char (1)	Y		T = Trailer
Rec_count	Char (10)	Y	0000000000 – 9999999999	The number of records in the Data Record (exclusive of the Header and Trailer). **Note**: This field is right-justified and must be zero padded.
Separator	Char(1)	Y		"CR/LF" Carriage Return/Line Feed

5.3.3.3 Data Record Format – Transactions File

Field Name	Data Type (Max Length)	Required Field	Format/Range	Description
Rec_type	Char (1)	Y		Record Types: • ETC Value = 'A' • Violation Value = 'V'
Sequence_no_plaza	Char (10)	Y	0000000000-9999999999	Plaza sequence number
Authority	Char (3)	Y	For a list of authorities, refer to Appendix A.	Indicates the Host authority providing the transaction (same as the Authority ID in header)
Plaza	Char (5)	Y	See Plaza ID list in Appendix J.	Indicates which Plaza the transaction originated from
Sequence_no_lane	Char (19)	Y	0000000000000000000-9999999999999999999	Lane sequence number
Lane	Char (2)	Y	Lane Number within the Plaza	Lane ID number
Revenue_date	Char (8)	Y	yyyymmdd	Revenue Date of the Transaction
Lane_mode	Char (3)	Y	See Appendix G for lane modes.	Lane Mode of Operation
Collector_id	Char (4)	N	0000-9999	Toll attendant ID
Record_type	Char (3)	Y	See Appendix C for list of all Transaction Record Types.	Record type
Tdate	Char (8)	Y	yyyymmdd	Transaction date
Ttime	Char (6)	Y	hhmmss	Transaction Time
ETC_tag_number	Char (20)	N	ETC number	ETC number

Field Name	Data Type (Max Length)	Required Field	Format/Range	Description
Class	Char (3)	Y	See Appendix D and E for list of vehicles classes.	The class of a vehicle is based on the classification methodology agreed to between the TMS and the CSC. Currently, Axle-Based and Shape-Based classifications are planned. The CSC will post the toll revenue or bill the toll revenue and any video toll premiums provided by the TMS and will only use the provided Class to determine if any additional Upclass / Downclass efforts are required for dispute resolution.
Transpnder_Toll_Amount	Char(6)	Y	000.00–999.99	Transponder Transaction Toll amount due
Video_Toll_Amount	Char(6)	Y	000.00–999.99	Video Toll amount
Total_Amount	Char(6)	Y	000.00–999.99	Expected full toll amount (Toll + Video Toll Premiums as defined by the Record Type) In the event that a Transponder Transaction is unable to be posted and is converted to a Video Toll transaction, the Total Amount will be adjusted at the CSC with the Premium Amount provided in the transaction. Likewise, if a Video Toll Transaction was sent from the TMS to the CSC and was processed as a V-Toll transaction, the Total Amount shall be adjusted down by the Premium Amount provided in the transaction.
Amount_paid	Char(6)	N	000.00–999.99	Toll amount paid (if monies received from toll attendant or coin machine) – this is used for partial payments with a tag read
Axle Class Expected	Char (3)	Y	000 – 999	Number of Axles expected based upon Pre Class or Collector **Note**: If there is no collector and pre class, this field shall be zero (i.e. 00).
Axle Class Counted	Char (3)	Y	000 – 999	Actual Axles Counted based upon Post Class **Note**: If post class is not working, this field shall be zero (i.e. 00).
Vio_code	Char (2)	Y	See Appendix F for list of violation codes	Violation code that identifies the status of the violation
PlateImage	Char(1)	Y	Y or N	Whether a License Plate Image was taken
RejectCode	Char (3)	N	000 – 999	Reason Transactions was not accepted See Appendix H

Field Name	Data Type (Max Length)	Required Field	Format/Range	Description
BaseFileName	Char(31)	N	SSAAAPPPPPLLYYYYMMDDHHMISSQQQQQ	The base file name format (a subset of the complete image file name.)
SOV/HOV Designation	Char(3)	Y	HOV or SOV	Indication of weather the vehicle was single or multiple occupancy.
License Plate State	Char(2)	N	Standard state abbreviation	State abbreviation.
License Plate	Char(8)	N	12345678	The License Plate Number.
License Plate Prefix	Char(6)	N		The prefix to the license plate (i.e., UTX – University of Texas).
Plate OCR Confidence	Char(5)	N	100.00 – 00.00	The OCR Confidence of the license plate.
State OCR Confidence	Char(5)	N	100.00 – 00.00	The OCR Confidence of the license plate's state.
TagFileControlID	Char(8)	N	00000000 – 99999999	Full Tag File used to process transaction
TagStatus	Char(1)	N	See Appendix I for tag status indicators	Tag Status (currently at the lane) of the tag read for this transaction
Separator	Char (1)	Y		"CR/LF" Carriage Return/Line Feed

5.4 Image File

The TMS Host – to – CSC (Image Processing) Interface consists of the following file transfer:

Image Files (TMS Host – to – CSC-Image Processing)

5.4.1 File Name Format – Image File

The file name for the image files shall have the following format:

```
<State_Abbrev><Authority><Plaza><Lane><Year><Month><Day><Hour><Min
><Sec><Sequence><lane_sequence_no><ImageNumber><OSR_Conf><OSR><Pla
te_Type>_<OCR_Conf><OCR>.jpg
```

Note: If OCR/OSR is not available, the **<OSR_Conf>, <OSR>, <Plate_Type>, <OCR_Conf>** and **<OCR>** fields shall not be provided.

where: <State_Abbrev> = SS = “TX” (2 Char)
<Authority> = AAA = “102” (3 Char)
<Plaza> = PPPPP = "00007" (5 Char)
<Lane> = LL = “01” (2 Char)
<Year> = YYYY (4 Char)
<Month> = MM (2 Char)
<Day> = DD (2 Char)
<Hour> = HH (2 Char)
<Min> = MI (2 Char)
<Sec> = SS (2 Char)
<Sequence> = QQQQQ = “12345” (5 Char)
<lane_sequence_no> = ‘9999999999999999999’ (19 Char)
<ImageNumber> = _1 or _A (2 char – 1 underscore and a number for front camera images, or 2 char – 1 underscore and a letter for rear images) - for Violations or LP for License Plate captures.

Note: The date and time information captured in the image file name shall match the date and time information of the associated transaction.

The following additional fields are provided only when the image has been processed by an OCR/OSR system (omitted otherwise):

<OSR_Conf> = ###	Confidence Number (3 Char – 000 to 100)
<OSR> = ST	State determined by OSR processing (2 char – if OSR is not known or No OSR system is available, then the default value shall be set to '00')
<Plate_Type> = PLT	Indication of the type of Plate for the given State (3 Char – 000 to 999, if Plate Type is unknown or not supported then the default value is '000')
<OCR_Conf> = %%%	Confidence indicator of OCR (3 Char – 000 to 100)
<OCR> = CCCCCCC	License number determined by OCR processing (variable 7 Char – if less than 7 characters, then no leading or trailing characters are specified; no spaces used)

5.4.2 File Format

All files shall be saved in a JPEG format, and shall be designated with a filename and extension, per Section 5.4.1 (above).

5.4.3 Accuracies Recommended for OCR Systems

The following accuracies are recommended for the automated plate recognition engine with properly mounted, unobstructed plates:

OCR Parameter	Recommended Accuracy
Coarse Plate Locator Accuracy	>99%
Fine Plate Locator Accuracy	>95%
Overall Plate Locator Accuracy	>(99% X 95% = 94%)
Optical State Recognition Accuracy	> 99%
Optical Character Recognition Accuracy	> 97%
Overall Accuracy	>(94% X 99% X 97% = 90%)

5.5 Disposition File

Disposition Files contains financial (reconciliation) and adjustment data in its data records. In addition to this file containing data records regarding reconciled financial data from posted transactions, the Disposition File shall also contain data records relating to adjustments and unpostable transactions. Therefore, data records returned in this file shall not have a one-to-one relationship with the data records contained within the Transaction File. Every change to the status of a transaction shall receive a separate disposition. Every transaction submitted in the transaction file shall be reconciled. If the TMS Host does not receive a disposition for a sent transaction within 3 days, the TMS Host shall repackage the transaction and resend it in the next Transaction File.

If an adjustment is made to an account, then the original toll amount is negated and the adjusted toll amount is posted. Therefore, the TMS Host shall receive two adjustment transactions for an adjustment made to a toll account.

For Example, a toll is posted to a customer account in the amount of $1.00 when in reality the proper toll amount was $.75 cents. To correct the error, the CSC shall send the TMS Host two (2) adjustments for the original transaction. The first adjustment shall be for the amount of $-1.00 to negate the original toll amount and to bring the amount posted to the customer account to $0.00 dollars. After the first adjustment is posted to the customer account, the CSC shall send the TMS Host a second adjustment in the amount of $.75 cents to reflect the proper, posted toll amount.

Note: All times used in the file name format and in the file contents are designated in GMT (Universal Time Zone – Grand Meridian).

5.5.1 File Transfer Timetable

The Disposition File is created and sent by the CSC to the TMS Host FTP Server once a day at a minimum.

5.5.2 File name format

The file name shall have the date and creation time as the filename and the “dsp” suffix extension.

`“yyyymmddhhmnssaaa.dsp”`

where: yyyy = year
mm = month
dd = day
hh = hour
mn = minute
ss = second
aaa = The Authority that receives the Disposition File from the CSC.

Example: `20040815143045102.dsp`

5.5.3 File Format

The file format follows the standard guidelines referenced in Appendix B (File Structure - Standard Guidelines).

5.5.3.1 File Header Format – Disposition File

When a Disposition File is packaged for transmission, the sender must construct the File Header so that it contains all of the required fields listed below. Once the File Header is constructed, the file contents are appended; and the entire file is transmitted to the appropriate directory location on the CSC or TMS Host FTP Server for processing.

The File Header is a fixed length ASCII record with comma-delimited fields, terminated by a carriage return-line feed. Some of the fields within the File Header are right-justified and must be zero padded. Although all fields in the File Header are fixed in length, they are still separated by commas. This is to allow processing by either of two means: (1) specifying absolute file offset position and field length; or (2) parsing the record, breaking on the comma-delimiter. This format was developed to afford developers maximum flexibility in processing this record type.

The CRC 32 standard algorithm is used to compute the checksum value. The checksum is a 32-bit value and is displayed as an ASCII hex number. The file size is a base-10 ASCII number.

Field Name	Data Type (Fixed Length)	Required Field	Format/Range	Description
Rec_type	Char (1)	Y		Record Type. Value = 'H'
File_date_time	Char (14)	Y	yyyymmddhhmmss	Date and time of this file creation
TR_File_control_number	Char (8)	Y	00000000-99999999	A unique, sequential number created by the CSC that is used to identify the file **Note**: This field is right-justified and must be zero padded.
Authority	Char (3)	Y	For a list of authorities, refer to Appendix A.	Code indicating the Authority that owns/operates the facility on which the transaction occurred
Rec_count	Char (10)	Y	0000000000-9999999999	The number of records in the Data Record (exclusive of the Header and Trailer). **Note**: This field is right-justified and must be zero padded.
File_Size	Numeric (12)	Y	000000000000-999999999999	The size of the file in bytes. **Note**: This field is right-justified and must be zero padded.
Checksum	Char (8)	Y		A 32-bit checksum computed for the contents of the file, beginning at the character immediately following the header record and associated CR/LF. This value is displayed as an 8-digit ASCII hex number.

Field Name	Data Type (Fixed Length)	Required Field	Format/Range	Description
Separator	Char (1)	Y		"CR/LF" Carriage Return/Line Feed

5.5.3.2 File Trailer Format – Disposition File

The File Trailer is a fixed length ASCII record with comma-delimited fields, terminated by a carriage return-line feed. Some of the fields within the File Trailer are right-justified and must be zero padded.

Field Name	Data Type (Fixed Length)	Required Field	Format/Range	Description
Rec_type	Char (1)	Y		T = Trailer
Rec_count	Char (10)	Y	0000000000 – 9999999999	The number of records in the Data Record (exclusive of the Header and Trailer). **Note**: This field is right-justified and must be zero padded.
Separator	Char (1)	Y		"CR/LF" Carriage Return/Line Feed

5.5.3.3 Data Record Format – Disposition File

Field Name	Data Type (Max Length)	Required Field	Format/Range	Description
Rec_type	Char (1)	Y		Record Type. Value = 'R' Adjustment. Value = 'J'
Unique_id	Char (10)	Y	0000000000 – 9999999999	Unique ID for each record assigned by the CSC (CSC Transaction #)
Recordtype	Char (3)	Y	The record type in the original transaction	Record Type (from original transaction)
Sequence_no_plaza	Char (10)	Y	0000000000 – 9999999999	Plaza sequence number (from original transaction)
Authority	Char (3)	Y	For a list of authorities, refer to Appendix A.	This is the Facility ID from the original transaction file.
Plaza	Char (5)	Y	Plaza ID	Plaza ID (from original transaction)
Sequence_no_lane	Char (19)	Y	0000000000000000000- 9999999999999999999	Lane sequence number (from original transaction)
Lane	Char (2)	Y	Lane ID	Lane ID (from original transaction)
revdate	Char (8)	Y	yyyymmdd	Revenue date (from original transaction)
Toll Amount Expected	Char (6)	Y	000.00 – 999.99	Toll amount expected from the original transaction

Field Name	Data Type (Max Length)	Required Field	Format/Range	Description
Premium_Amount	Char(6)	Y	000.00–999.99	Video Toll Premium amount
Total_Amount Expected	Char(6)	Y	000.00–999.99	Expected full toll amount (Toll + Video Toll Premiums as defined by the Record Type) In the event that a Transponder Transaction is unable to be posted and is converted to a Video Toll transaction, the Total Amount will be adjusted at the CSC with the Premium Amount provided in the transaction. Likewise, if a Video Toll Transaction was sent from the TMS to the CSC and was processed as a V-Toll transaction, the Total Amount shall be adjusted down by the Premium Amount provided in the transaction.
Amount posted	Char (6)	Y	000.00 – 999.99	Toll amount paid (based on processed transaction) **Note**: If an adjustment is made to an account, then the original toll amount posted is negated and the adjusted toll amount is posted. Therefore, the TMS Host shall receive two adjustment transactions for an adjustment made to a toll account.
Nonrevflag	Char (1)	Y	Y, N	Non revenue flag (Y/N) Y – processed to a Non-Revenue account (Amount Paid = 0) N – processed to a Revenue account
Testflag	Char (1)	Y	Y, N	Test flag (Y/N) Y – processed to a Test Account N – processed to a Revenue/Non-Revenue account
Paymenttype	Char (1)	Y	A, V, E	Payment type (A/V/E) A – Accepted and Paid V – Not Paid, Was Indicated as Violation, and errnum contains reason for non-payment, amount paid = 0 E – Not Paid, errnum contains reason for non-payment, amount paid = 0
errnum	Char (2)	Y	00 – 99	Error number – See Appendix H for the list of error codes
Posted_date	Char (8)	Y	yyyymmdd	Date the transaction was posted by the CSC
Vio_status_code	Char (2)	Y	Refer to Appendix M for a list of violation codes.	Violation code that identifies the status of the violation.
License_plate_num	Char (15)	N		License plate number associated with the tag

Field Name	Data Type (Max Length)	Required Field	Format/Range	Description
License_plate_state	Char (3)	N		Three characters indicate the state code
VTR_owner name_one	Char (30)	N		Registered owner of the vehicle listed in VTR **Note**: A backslash (\) shall be inserted before any embedded commas to retain the integrity of the fields within the data record. Backslashes are not included in the maximum data length count.
VTR_owner name_two	Char (30)	N		Registered co-owner of the vehicle listed in VTR **Note**: A backslash (\) shall be inserted before any embedded commas to retain the integrity of the fields within the data record. Backslashes are not included in the maximum data length count.
VTR_owner address_one	Char (30)	N		Address of the registered owner of the vehicle **Note**: A backslash (\) shall be inserted before any embedded commas to retain the integrity of the fields within the data record. Backslashes are not included in the maximum data length count.
VTR_owner address_two	Char (30)	N		Address of the registered co-owner of the vehicle **Note**: A backslash (\) shall be inserted before any embedded commas to retain the integrity of the fields within the data record. Backslashes are not included in the maximum data length count.
VTR_owner_city	Char (19)	N		Name of the city in which the owner of the vehicle can be contacted
VTR_owner_state	Char (2)	N		2-letter abbreviation of the state in which the owner of the vehicle can be contacted
VTR_owner_zip	Char (5)	N		5-digit number assigned by the U.S. Post Office to the geographical area where the entity listed in the OWNER-NAME-LINE1 field can be contacted

Field Name	Data Type (Max Length)	Required Field	Format/Range	Description
Tag_id	Char (20)	N		Internal ID for each transponder
Tag_agency	Char (3)	N	For a list of authorities, refer to Appendix A.	Agency who owns the tag
Separator	Char (1)	Y		"CR/LF" Carriage Return/Line Feed

5.5.4 File Example – Disposition File

```
H,20050417220000,00000001,104,0000000003,000000000050,12345678
R,1,10,1,104,202,2,3,20050417,1.00,0.45,1.45,0.00,0.00,1.45,N,N,A,00,20050417,10,ABC123,
TX,John Doe,,123 Address St,,Austin,TX,78704,TEX.12345678,104
R,2,10,2,104,202,2,3,20050417,1.00,0.45,1.45,0.00,0.00,1.45,N,N,A,00,20050417,10,ABC123,
TX,John Doe,,123 Address St,,Austin,TX,78746,TEX.23456543,104
R,3,10,3,104,202,2,3,20050417,1.00,0.45,1.45,0.00,0.00,1.45,N,N,A,00,20050417,10,ABC123,
TX,Jane Doe,,123 Address St,,Austin,TX,78756,TEX.98765432,104
T,0000000003
```

5.6 Violation Status File

The Violation Status File transmitted from the CSC to the TMS Host and contains the disposition status of the violation. The Violation Status File consists of the following file transfer:

Violation Status File (Pushed from the CSC to the TMS Host)

5.6.1 File Transfer Timetable

Violation Status Files shall be pushed from the CSC to the TMS Host FTP Server as needed.

The TMS Host should constantly monitor its FTP site for file transfers from the CSC.

Note: All times used in the file name format and in the file contents are designated in GMT (Universal Time Zone – Grand Meridian).

5.6.2 File Name Format

The file name shall have the date and creation time as the filename and the "vsf" suffix extension.

"yyyymmddhhmnssaaa.vsf"

where: yyyy = year
mm = month
dd = day
hh = hour
mn = minute
ss = second
aaa = The Authority that creates the Violation Status File.

Example: 20040815143045102.vsf

5.6.3 File Format

The file format follows the standard guidelines referenced in Appendix B (File Structure - Standard Guidelines).

5.6.3.1 File Header Format – Violation Status File

When a Violation Status File is packaged for transmission, the sender must construct the File Header so that it contains all of the required fields listed below. Once the File Header is constructed, the file contents are appended, and the entire file is transmitted to the appropriate directory location on the TMS Host FTP Server for processing.

The File Header is a fixed length ASCII record with comma-delimited fields, terminated by a carriage return-line feed. Some of the fields within the File Header are right-justified and must be zero padded. Although all fields in the File Header are fixed in length, they are still separated by commas. This is to allow processing by either of two means: (1) specifying absolute file offset position and field length; or (2) parsing the record, breaking on the comma-delimiter. This format was developed to afford developers maximum flexibility in processing this record type.

The CRC 32 standard algorithm is used to compute the checksum value. The checksum is a 32-bit value and is displayed as an ASCII hex number. The file size is a base-10 ASCII number.

Field Name	Data Type (Fixed Length)	Required Field	Format/Range	Description
Rec_type	Char (1)	Y		Record Type. Value = 'H'
File_date_time	Char (14)	Y	yyyymmddhhmmss	Date and time of this file creation
TR_File_control_number	Char (8)	Y	00000000-99999999	A unique, sequential number used to identify the file **Note**: This field is right-justified and must be zero padded.
Authority	Char (3)	Y	For a list of authorities, refer to Appendix A.	Code indicating the Authority that own/operate the facility on which the transaction occurred
Rec_count	Char (10)	Y	0000000000-9999999999	The number of records in the Data Record (exclusive of the Header and Trailer). **Note**: This field is right-justified and must be zero padded.
File_Size	Numeric (12)	Y	000000000000-999999999999	The size of the file in bytes. **Note**: This field is right-justified and must be zero padded.
Checksum	Char (8)	Y		A 32-bit checksum computed for the contents of the file, beginning at the character immediately following the header record and associated CR/LF. This value is displayed as an 8-digit ASCII hex number.
Separator	Char (1)	Y		"CR/LF" Carriage Return/Line Feed

5.6.3.2 File Trailer Format – Violation Status File

The File Trailer is a fixed length ASCII record with comma-delimited fields, terminated by a carriage return-line feed. Some of the fields within the File Trailer are right-justified and must be zero padded.

Field Name	Data Type (Fixed Length)	Required Field	Format/Range	Description
Rec_type	Char (1)	Y		Record Type. Value = 'T'
Rec_count	Char (10)	Y	0000000000 – 9999999999	The number of records in the Data Record (exclusive of the Header and Trailer). **Note**: This field is right-justified and must be zero padded.
Separator	Char (1)	Y		"CR/LF" Carriage Return/Line Feed

5.6.3.3 Data Record Format – Violation Status File

Field Name	Data Type (Max Length)	Required Field	Format/Range	Description
Rec_type	Char (1)	Y		Record Type. Value = 'C'
Sequence_no_plaza	Char (10)	Y	0000000000-9999999999	Plaza sequence number
Authority	Char (3)	Y	For a list of authorities, refer to Appendix A.	Indicates the facility providing the transaction (same as the Facility ID in header)
Plaza	Char (5)	Y	See Plaza ID list in Appendix J	Plaza ID number
Sequence_no_lane	Char (19)	Y	0000000000000000000-9999999999999999999	Lane sequence number
Lane	Char (2)	Y	Lane Number within Plaza	Lane ID number
Revenue_date	Char (8)	Y	yyyymmdd	Revenue Date of the Transaction
Toll Amount_due	Char(6)	Y	000.00–999.99	Toll amount
Premium_due	Char(6)	Y	000.00–999.99	Premium amount
Total Amount_due	Char(6)	Y	000.00–999.99	Total amount
Vio_status_code	Char (2)	Y	Refer to Appendix M for a list of violation codes.	Violation code that identifies the status of the violation.
Unique_id	Char (10)	Y	0000000000 – 9999999999	Unique ID for each record assigned by the CSC (CSC Transaction #)
Sub_viol_fee_due	Char(6)	Y	000.00–999.99	Fee added to the violation by the TMS Host
Separator	Char (1)	Y		"CR/LF" Carriage Return/Line Feed

5.6.4 File Example – Violation Status File

```
H,20050417220000,00000001,104,0000000003,000000000050,12345678
C,1,104,202,1,2,20050417,1.00,0.45,1.45,12,123,0.00
C,2,104,202,1,2,20050417,1.00,0.45,1.45,12,124,0.00
C,3,104,202,1,2,20050417,1.00,0.45,1.45,12,125,0.00
T,0000000003
```

5.7 Acknowledgement File

Acknowledgement Files shall be sent from the receiving authority after every file transfer, except in regards to Image Files. Because Image Files are pulled by the CSC from the TMS Host FTP Server, acknowledgement is not necessary. Acknowledgement Files shall indicate a successful or unsuccessful file transfer based on verification of the transferred file's checksum, file size and record count.

File Transfers:

After a file is transferred (via FTP) from the `/input/sending` subdirectory into the main `/input` directory, the receiving Authority shall pick up the file and check the integrity of the data within the file using the file checksum. Once the file is checked, the TMS Host shall send an **_ack** or **_nak** file back to the sending Authority before archiving the file. Acknowledging the file is done before archiving the file to prevent the receiving Authority from archiving a bad file. Should a file prove to be invalid based on the file checksum, the receiving Authority shall delete the invalid file and the sending Authority shall be notified by the **_nak** file. Once the Authority that sent the original file receives the **_nak** file, they shall repackage the file and send it again. Should the second attempt also result in the generation of a **_nak** file, the sending Authority shall send an e-mail to the target Authority to notify them of the problem, investigate the problem and transfer the file manually to the target Authority once the problem has been resolved.

Note: All Acknowledgement Files shall be sent within five (5) minutes of the receiving authority's receipt of a file.

File Naming Conventions:

Acknowledgement Files shall use the following naming conventions based on the success or failure of the file transfer.

Successful Transmission:

If a file's checksum, file size and record count, identified in the file's header, are verified as correct by the receiving agency, the receiving agency shall send an Acknowledgement File to the sending agency. The Acknowledgement File shall use the following naming scheme:

(original file name.ext)**_(Authority)_ack**

Unsuccessful Transmission:

If a file's checksum, file size and record count cannot be verified as correct, based on the information in the file header, or if there were any inconsistencies in the data contained within the file, the receiving agency shall create an Acknowledgement File that specifies that the transmission of the file was not

successful. The receiving agency shall specify that the file transfer failed by utilizing the following file naming scheme:

(original file name.ext)**_(Authority)_nak**

5.7.1 File Transfer Timetable

The CSC and subscribing agencies shall receive acknowledgement files for the following file types:

- TVL Files
- Tag / Plate Assc. Data Files
- Transaction Files
- Disposition Files
- Violation Status Files

The party that sends a file shall receive an acknowledgement file within 5 minutes of the file being received by the target authority.

Note: All times used in the file name format and in the file contents are designated in GMT (Universal Time Zone – Grand Meridian).

5.7.2 File Name Format

As mentioned above, Acknowledgement Files shall be named based on the success or failure of the file transmission. Refer to the lists below for an example of the Acknowledgement File naming conventions used for each file type based on both success and failure.

Successful Transmission:

Successful file transmissions shall use the following naming convention:

(original file name.ext)**_(Authority)_ack**

- TVL Files – `20040815143045102.tag_`**`104_ack`**
- Tag / Plate Association Data Files – `20040815143045102.tpl8_`**`104_ack`**
- Transaction Files – `20040815143045104.tr_`**`102_ack`**
- Disposition Files – `20040815143045104.dsp_`**`104_ack`**

- Violation Status Files – 20040815143045104.vsf_**102_ack**

Unsuccessful Transmission:

Unsuccessful file transmissions shall use the following naming convention:

(original file name.ext)**_(Authority)_nak**

- TVL Files – 20040815143045102.tag_**104_nak**
- Tag / Plate Association Data Files – 20040815143045102.tpl8_**104_nak**
- Transaction Files – 20040815143045104.tr_**102_nak**
- Disposition Files – 20040815143045104.dsp_**104_nak**
- Violation Status Files – 20040815143045102.vsf_**104_nak**

5.7.3 File Format

The file format follows the standard guidelines referenced in Appendix B (File Structure - Standard Guidelines).

5.7.3.1 File Header Format – Acknowledgement File

The File Header is a fixed length ASCII record with comma-delimited fields, terminated by a carriage return-line feed. Although the fields are fixed in length, they are still separated by commas. This is to allow processing by either of two means: (1) specifying absolute file offset position and field length; or (2) parsing the record, breaking on the comma-delimiter. This format was developed to afford developers maximum flexibility in processing this record type.

Field Name	Data Type (Fixed Length)	Required Field	Format/Range	Description
Rec_type	Char (1)	Y		Record Type. Value = 'H'
File_date_time_created	Char (14)	Y	yyyymmddhhmmss	Date and time of this file creation
Original_file_date_time_received	Char (14)	Y	yyyymmddhhmmss	Date and time the original file was received

Field Name	Data Type (Fixed Length)	Required Field	Format/Range	Description
Processing_Status	Char (1)	Y		• Processing status of file received: • ▪ "V" – Checksum, file size and record count validated ▪ "C" –Checksum invalid ▪ "F" – File size invalid ▪ "D" – Record count invalid
Separator	Char (1)	Y		"CR/LF" Carriage Return/Line Feed

5.7.3.2 File Trailer Format – Acknowledgement File

Field Name	Data Type (Fixed Length)	Required Field	Format/Range	Description
Rec_type	Char (1)	Y		Record Type. Value = 'T'
Separator	Char (1)	Y		"CR/LF" Carriage Return/Line Feed

5.7.4 File Example – Acknowledgement File

H,20050417220000,20050416220000,V

Appendix A: Authority/Plaza/Lane Descriptions

The following shall be used to uniquely identify plazas and lanes:

ID	Number of Characters
Authority	3
Plaza	5
Lane	2

Authority ID Number – (AUTHORITY):

8. 101 – TxDOT
9. 102 – NTTA
10. 103 – HCTRA
11. 104 – CTRMA
12. 105 – OTA
13. 106 – CCCD (GNO2)
14. 107 – LPC

The CSC shall also need to be provided with the physical descriptions for each location that shall be placed on the customer statements.

Appendix B: File Structure - Standard Guidelines

The files involved in the file transfer that are described in this document are ASCII text files. All fields shall be comma-delimited. The various components of a file that are involved in the file transfer are as follows:

15. File Header line: The first line of the file shall be the file header record. The format of the header record may be different for different types of transfers. All file headers fields are right-justified and fixed length (zero padded if necessary).
16. Data Record line(s): All files created from the database for file transfer shall have comma-delimited records. Field sizes are maximum lengths. Field data can be less than the maximum length.
17. File Trailer line: The last line of the file shall be the file trailer record. The format of the trailer record may be different for different types of transfers. All file trailers fields are right-justified and fixed length (zero padded if necessary).

Note: The default value for required fields that are not being used shall be zero (0).

Appendix C: Transaction Record Types

Record Type ID	Record Type	Description
10	Toll Transaction	Used for ALL Transponder Toll transactions
11	Video Toll Transaction	Used for ALL Video Toll transactions
13	Unusual Occurrence	Used for maintenance messages, if implemented in the system
15	Account Transaction	Used for transactions that affect accounts, i.e. adding money or giving discounts
19	Lane TVL Installation ACK	Used for sending TVL installation acknowledgement messages from the TMS to the CSC.

Appendix D: Axle-based Vehicle Classes

Axle-Based Vehicle Class	Vehicle Class	No. of Axles
001	NOT USED	N/A
002	CLASS 2 VEHICLE	<=2 axles
003	CLASS 3 VEHICLE	3 axles
004	CLASS 4 VEHICLE	4 axles
005	CLASS 5 VEHICLE	5 axles
006	CLASS 6 VEHICLE	6 axles
007	CLASS 7 VEHICLE	7 axles
008	CLASS 8 VEHICLE	8 axles
009	CLASS 9 VEHICLE	9 axles
010	CLASS 10 VEHICLE	>=10 axles

Appendix E: Shaped-Based Vehicle Classes

Shape-based Vehicle Class ID	Vehicle Description	Distinguishing Characteristics
011	(Reserved)	N/A
012	Motorcycles, Passenger cars, Light duty vehicles, Pickups/Vans/SUVs	Height < 7 ft. Length < 20 ft.
013	Any class 012 vehicle pulling a trailer	Same as the class 12 above with a detected trailer
014	Unibody trucks, Cement trucks, Dump trucks, Buses, Motor homes, Tractors without a trailer	Not a class 12 with the following characteristics: Height 7 ft. to 12 ft. Length 20 ft. to 46 ft.
015	Tractor with on trailer	Height > 12 ft. Length > 46 ft. Including detected trailer
016	Tractor with two trailers	Same as class 15 with second trailer

Appendix F: Violation Codes

Violation Code	Meaning	Description
0	No Violation Detected	No violation occurred
1	Vehicle Run Through	Vehicle passed through the Plaza/Lane location without paying and has no transponder
2	Insufficient Funds Toll Transaction	Vehicle did not pay enough, usually occurs with ACMs
3	Invalid ETC Patron Account	Vehicle has an invalid transponder
4	Lost/Stolen Transponder	Vehicle has a lost/stolen transponder
5	Transponder Class Mismatch	The class assigned to the transponder does not match the classification at the lane
6	Misclass	The automatic classification of the lane dos not match the classification by the toll operator (manual)
7	Unsuccessful ETC Transaction	This is the catch-all code when a vehicle has a transponder but the lane does not know what to do with it. This would handle buffered tag transactions – transactions held by the tag reader with no other associated data.
8	Account/Plate Check Requested	Image taken because of a LPCheckReq
9	Speeding at *xx* mph	Image taken when vehicle exceeds a preset speed. Used only when speed check is implemented at the lane.
10	National Guard	Used at manual lane.
11	Police	Used at manual lane.
12	Fire	Used at manual lane.
13	Ambulance	Used at manual lane.
14	Handicapped	Used at manual lane.
15	Other	Used when no other code fits. This is the catch-all code.

Appendix G: Lane Modes

Lane Mode ID	Meaning
1	Closed
2	Manned
3	Manned Preclass
4	Manned Exact Change
5	Manned Exact Change – Preclass
6	ACM
7	Dedicated ETC
8	ACM – ETC
9	Maintenance
10	Event Mode
11	Standby Mode
12	Open Road ETC
13	Manned ETC Lane
14	Emergency Mode

Appendix H: Reconciliation/Error Codes

Table 1 includes the error codes that are used by the lane and included in the 'RejectCode' field of the ETC Transaction data record.

Error Code ID	Meaning
0	Not an Unusual Occurrence
1	No Payment Received
2	Toll Misclass by Operator

Error Codes

Table 2 includes the reconciliation codes that are used by the CSC and included in the 'errnum' field of the ETC Reconciliation data record.

Reconciliation Code ID	Meaning
17	Invalid Tag
20	Paid More Than Due
21	Unknown record type
22	Operational Error
23	Forcing Patron Balance Negative
24	Patron Balance Less Than or Equal to Zero
25	Cannot find Tag / No Tag read
26	Cannot find Patron
31	Activity Record Not Saved
34	Bad Record on Import
36	Duplicate Violation Time
37	Non-Vehicle Collection
38	Class Difference on Toll
39	Bad Paytype on Import
40	Duplicate Transaction
99	Miscellaneous

Reconciliation Codes

Appendix I: Tag Statuses

Tag Status ID	Meaning	Interoperability Code	Violation (Y/N)
G	Good	G	N
B	Low Balance	B	N
I	Invalid	I	Y
L	Lost	L	Y
N	Negative Balance	N	Y
R	Returned	R	Y
S	Stolen	S	Y
X	Non-Revenue Tag	Status based on account type (i.e., a Non-Revenue tag on an account with funds would be reported as G (Good) to the Interoperability agencies	N

Note: Tag Statuses are consistent with Interoperability Tag Status Values.

Appendix J: Plaza ID List (Needs Completion by Developer)

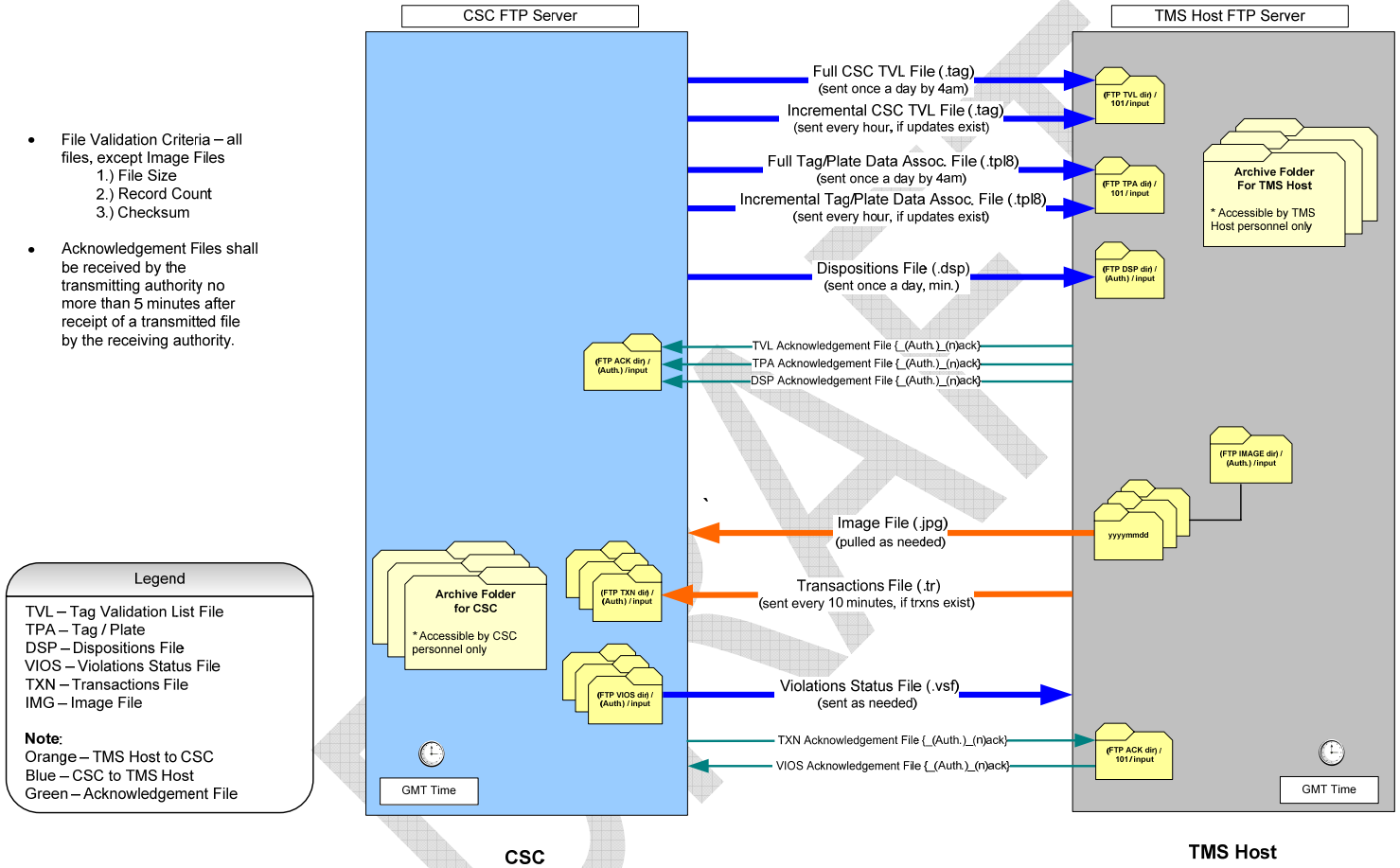
Plaza ID	Definition

Appendix K: File Record Types

Record Type Value	Definition
H	File header
T	File trailer
S	TVL data record
P	Tag / Plate Assc. Data File data record
A	Transaction File ETC data record
V	Transaction File Violation data record
R	Disposition File data record
J	Disposition file Adjustment data record
C	Violation Status File data record

Appendix L: CSC / TMS Host File Transfer Locations

- File Validation Criteria – all files, except Image Files
  1.) File Size
  2.) Record Count
  3.) Checksum
- Acknowledgement Files shall be received by the transmitting authority no more than 5 minutes after receipt of a transmitted file by the receiving authority.



Legend

TVL – Tag Validation List File
TPA – Tag / Plate
DSP – Dispositions File
VIOS – Violations Status File
TXN – Transactions File
IMG – Image File

Note:
Orange – TMS Host to CSC
Blue – CSC to TMS Host
Green – Acknowledgement File

Appendix M: Violation Status Codes

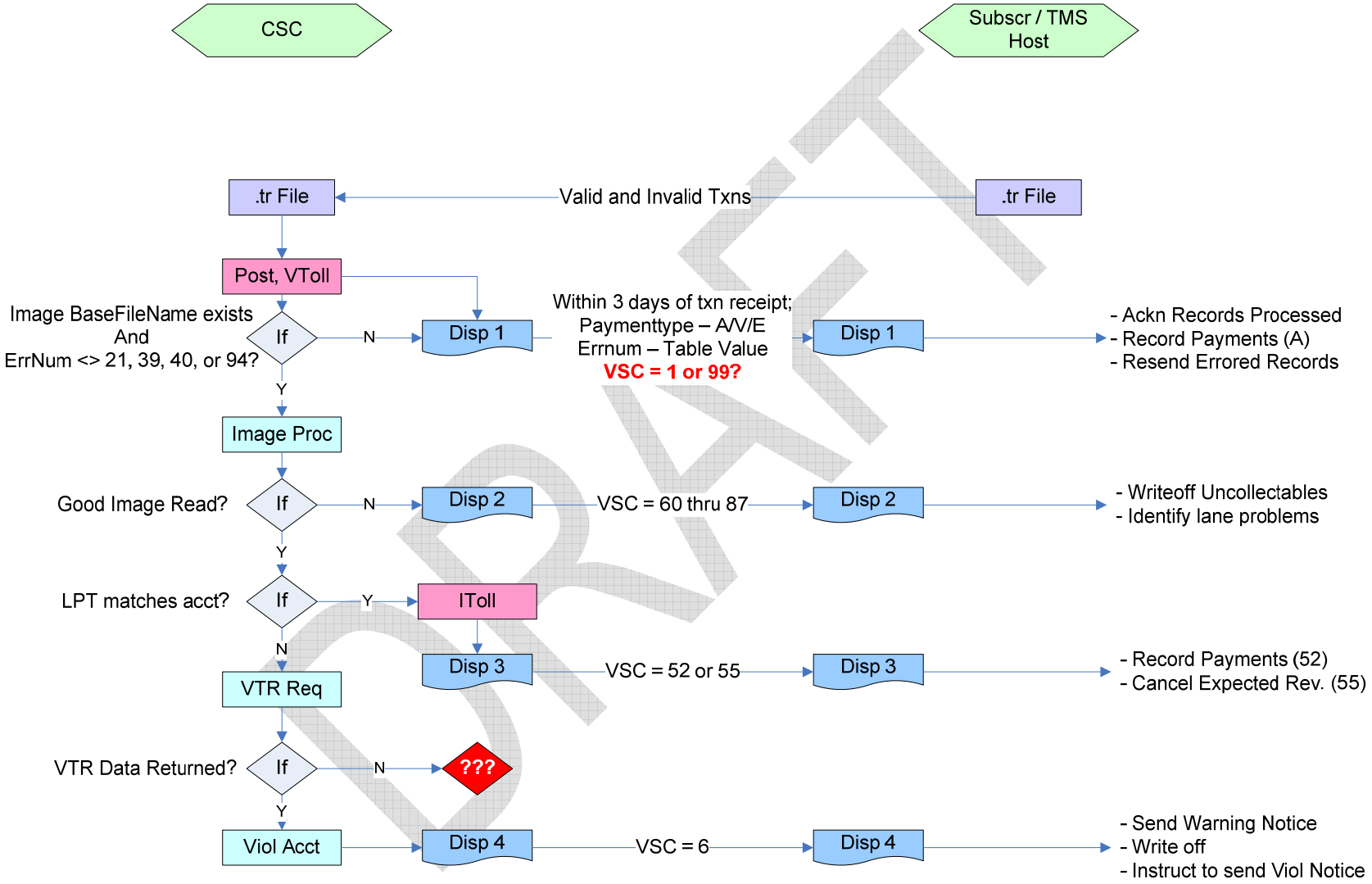
Code	Status	Definition
1	VIOL LANE	Violation transaction was recorded.
2	VIOL AUDIT	Violation has been audited by Finance and determined to be a true violation.
3	SUPV REVIEW	Request image review by Image Processing Supervisor.
4	SC PENDING	First pass to Service Center to determine if it is a customer match.
5	RQST VTR	Submit first request to VTR for registered owner name and address.
6	VIO ACCT OPEN	Violation account has been opened with data from VTR, and the CSC is pending direction from TMS Host.
7	NOTICE VIOLATOR	Violation has been attached to a violation account with the name and address from VTR, and a notice shall be sent to the registered owner of the vehicle.
8	CANCELLED PRE NOTICE	CSC has cancelled the violation for the associated transaction before a notice was sent.
9	CANCEL VIOLATION	Cancel the violation for the associated transaction.
10	RENTAL ACCOUNT MATCH	Plate number matched a current plate listed in a Rental type account.
11	RENTAL MATCH RETURN	Participating car rental agency sends a file back with renter information
12	RENTAL RETURN	An account is created from the renter information returned from the rental agency.
13		
14		
15		
16		
17		
18		
19		
20	NOTICE 1	Violator shall be mailed a violation Notice 1 (Toll + Administrative Fee Due).
21	NOTICE 2	Violator shall be mailed a violation Notice 2 (Toll + Administrative Fee + Delinquent Penalty Due).
22	MANUAL FEE	A manual fee adjustment has been made to the balance on the violation.
23		
24	RESERVED	RESERVED
25	VIOL TO COURT	CSC to forward the violation(s) to the county court where the violation occurred for final collection.
26	VIOL SENT TO COURT	The CSC has forwarded the violation(s) to the appropriate county court.
27	COURT PAID	Court rules against the violator and collects the debt owed for the violation.

Code	Status	Definition
28	COURT UNCOLLECTABLE	Court rules against the CSC, rendering the violation debt uncollectible.
29		
30	SUSPEND HRNG EX	System action suspended pending administrative review.
31		
32		
33		
34		
35		
36		
37	VIOLATOR TO COLLECTIONS	Collection agency to pursue the violation.
38	VIO TO COLLECTIONS	The CSC has forwarded the violation(s) to a collection agency for debt collection or skip tracing.
39		
40	REDUCTION	Violation has been reduced.
41	SOLD RETURN	Vehicle Sold
42	STOLEN RETURN	Vehicle Stolen
43	CUSTOMER ACCOUNT PENDING CLOSE	Customer Account is in PEND CLOSE status and in the process of being closed.
44	VOIDED DUE TO EVENT	Special Event write-off
45	NOTICE TIME EXPIRED	The latest date to send a Notice of Toll Violation has expired.
46	CANCEL COLLECTION ACTION	CSC to remove and cancel a violation that has been forwarded to a collection agency.
47	WRITE OFF UNCOLL	Violation is uncollectible.
48	WRITE OFF VIOLATION	TMS Host must write off violation due to court decision or violator producing evidence of innocence.
49	CANCELLED POST NOTICE	The CSC cancelled the violation during the collection process.
50	PD VIOL	Violation has been paid either in full or partial payment received.
51	RESERVED	RESERVED
52	I/P PAY BY PLT	Violation paid from an active customer account with a positive account balance.
53	RECEIVABLE PAY BY PLT	Customer received a violation notice (receivable) as their account was not current. Customer contacted agency to update account and the violation was paid by plate out of the customer account.
54	PARTIAL PAID VIOLATION	Violation occurred on a partial payment at the lane.
55	PD NON REVENUE CUSTOMER	Violation was paid by plate out of a non-revenue customer account.
56	OUT OF SYNC-NO VIOL	Lane was out of sync and caused a false violation.
57	CUSTOMER ACCT CLOSED	Violation was matched to a customer account but could not be paid, as the account was not in good standing.

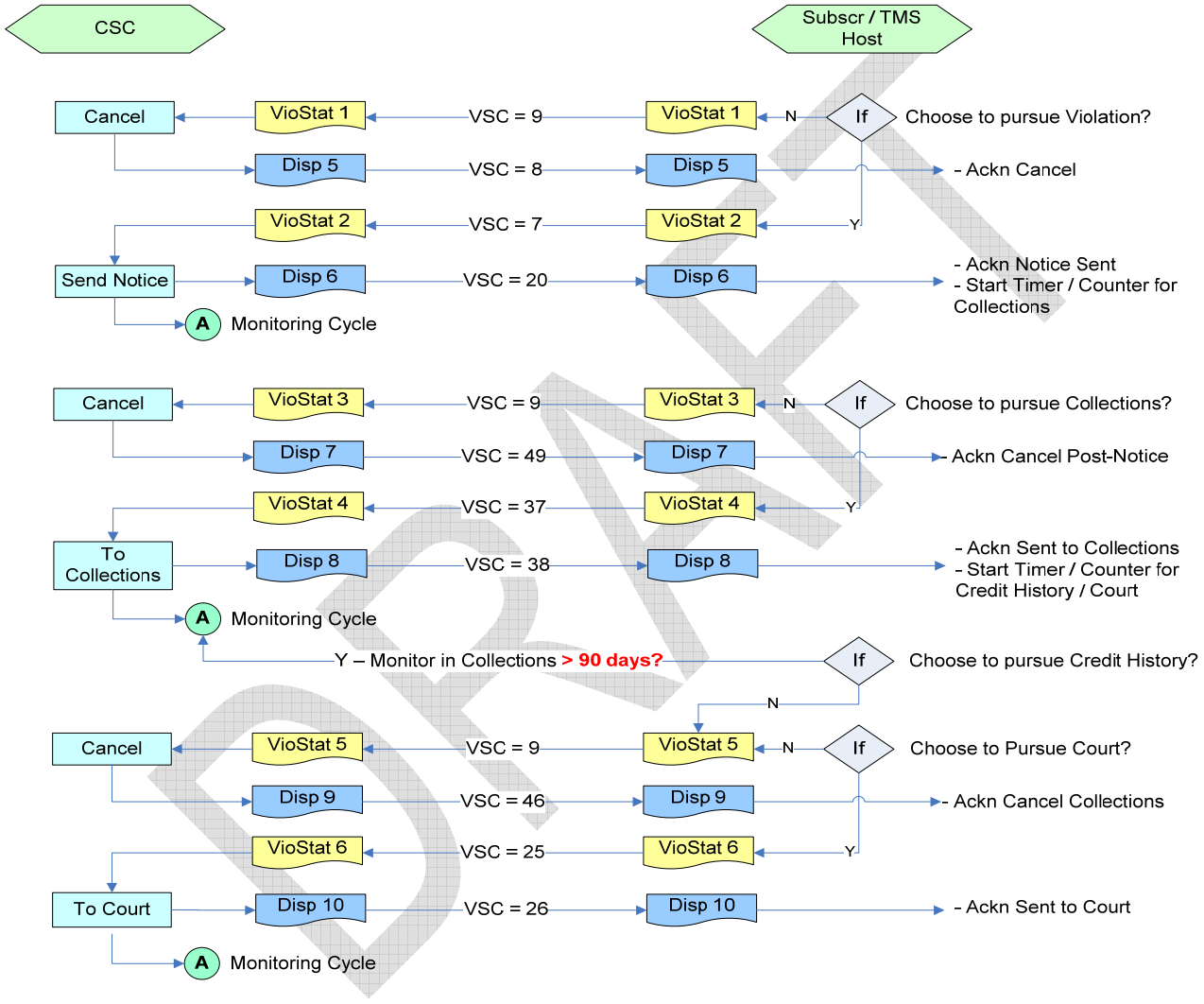
Code	Status	Definition
58	CROSS LANE DUPLICATE/ STRADDLE	Violation met criteria in system of a cross lane duplicate or straddle and is coded off by the system.
59	DUPLICATE	Request for payment by AVI or pay-by-plate to Service Center was previously submitted and resolved.
60	IMG NT CLEAR	Violation image was too fuzzy to read license plate.
61	IMG TOO LT	Violation image was too light (overexposed) to read license plate.
62	IMG TOO DK	Numbers on license plate was too dark to read clearly.
63	CAMERA TOO HGH	License plate was below the image frame.
64	CAMERA TOO LOW	License plate was above the image frame.
65	CAMERA TOO LFT	License plate was obscured by the right side of the image frame.
66	CAMERA TOO RGT	License plate was obscured by the left side of the image frame.
67	BLACK	Entire violation image was black.
68		
69		
70	HATCHED	Violation image is distorted by lines or interference pattern.
71	IMAGE NOT AVAILABLE	No image appeared for the violation.
72	NO VEHICLE IN IMAGE	Violation image did not show a vehicle.
73	FUNERAL PROCESSION	Used to code off funeral procession vehicles by agency approval.
74	PLATE GLARE OR SHADOW	Violation image was unreadable due to sunlight glare.
75	VEHICLE NOT IN LANE	Used for 2-image lanes. License plate could be read because it was obscured by left or right image frame.
76	UNREADABLE PLATE	Violating vehicle had unreadable license plate (e.g., older, non-reflective plate type)
77		
78		
79		
80		
81	OUT OF STATE PLATE	License plate is from a U.S. state other than the home state
82	US GVT PLT	Vehicle had U.S. government issue license plate or an exempt plate.
83	NON US PLT	Vehicle had a non-U.S. (foreign) license plate.
84	NO PLT	Vehicle had no license plate.
85	PLT OBSC	View of license plate image was obscured by other object in image.
86		
87	PLASTIC SHIELD	Plate is covered with a blue or white plastic shield and cannot be read.
88		
89		

Code	Status	Definition
90	TEST CAR/SYSTEM PROBLEM	False violation due to system testing or a system problem.
91	AUDITED PAID REJECT	During an ACM malfunction, toll was paid but fell into the ACM reject bin, and was not recorded as a paid transaction.
92	AUDITED PAID NVC	Toll was paid into ACM but vehicle exited the lane before the green light.
93	AUDITED AD HOC COLL	Toll payment by ad hoc collection verified.
94	AUDITED PAID OTHER	Toll payment was made, but was attached to the following vehicle in the lane.
95	MISC	Code reserved for problems in the lane that the agency needed to be coded off as a separate code.
96	AUDITED LATE COMMIT	Toll payment verified as toll attendant late commit.
97	ACM RESOLUTION	Toll payment was made, but part of the payment was attached to the following vehicle in the lane.
98	PAID AVI IMPORT	Violation was paid from a valid customer account by the system.
99	NO VIOLATION DETECTED	A violation waived due to equipment errors, special events, or customer service by agency approval.

Appendix N: *Typical* Violation Status Code Flow – Pre-Violation Notice



Appendix N: *Typical* Violation Status Code Flow (cont) – Post-Violation Notice



Appendix N: *Typical* Violation Status Code Flow (cont) – Monitoring Cycle (A)