

# Shape to TTM Converter Documentation

TeleType Part #3053

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## Disclaimer

By using this converter you acknowledge that you have the rights to convert the data being used and that you have not infringed on any copyright protected material to acquire the rights.

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# I. Introduction

TeleType has developed a set of map data conversion tools to allow custom maps to be built and used in TeleType navigation solutions including the WorldNav portable GPS device product line. These tools convert ESRI Shape files (.shp, .shx, .dbf) into TeleType format maps (TTM). The TeleType product is composed of separate converters to make updates on the data side more efficient. By keeping these tools separate, one can update Points of Interest (POIs) for example, without having to re-parse all the street data. This document specifies the Shape file format of the source data to be converted to TTM format. The converters are:

Shp2ttm\_street - converts streets segments from the shapefiles. Resulting files are \_nr.ttm and \_nr.pdt

Shp2ttm\_stp1 - resulting files are road\_nametable\_stp1\_rlt\_xx.dat and xx.txt. These are intermediate files, please see step 2. Also the xx.txt file is later used with the txt2idx.exe for autocomplete.

Shp2ttm\_stp2 - finishes creating the road\_name\_tbl.dat This is used for displaying road names. A copy of this will go into the Additional folder, while another copy will be put in your country's Maps folder along with the other streets ttm's and pdt's.

Shp2ttm\_hwy - converts all levels of highway segments from the shapefiles. Resulting files are \_h1.ttm and \_h1.pdt

Shp2ttm\_POI - converts Points of Interest data using \_poiname.tbl. Resulting file is \_pi.ttm.

Shp2ttm\_poi\_stp1 - creates \_pi.nam which are copied into one file \_total.dat

Shp2ttm\_poi\_stp2 - finishes creating the \_poiname.tbl from the \_total.dat.

Shp2ttm\_polygon - converts polygons for display. Resulting file is \_pl.ttm

Shp2ttm\_place - creates one city name file for the country regardless of whether multiple provinces are used. Resulting file is \_place.ttm.

IndexMaker - this Windows XP application creates an updated version of the WorldNavigator index file which allows your maps to be displayed on TeleType devices. Resulting file is Worldnav.idx. You will only need to use this program once when you generate the data for the country for the first time. If you are already using the software on your WorldNav device you do not need to generate this file as you already have the file in the TTWorldNavigator folder.

TXT2IDX - this application creates the utility for indexing of street names. Resulting files are `xx_ct.idx` and `_xx_st.idx` where `xx` corresponds to the Province code. You will need to use these converters each time you update your street data.

Note that you may change the names of the converters for DOS command prompt ease of use. When using DOS command prompt you may prefer shorter name of converter such as "poi1" rather than "Shp2ttm\_poi\_stp1". We have named the converters with longer names to make it easier to understand for first time users.

## II. Source Data Design

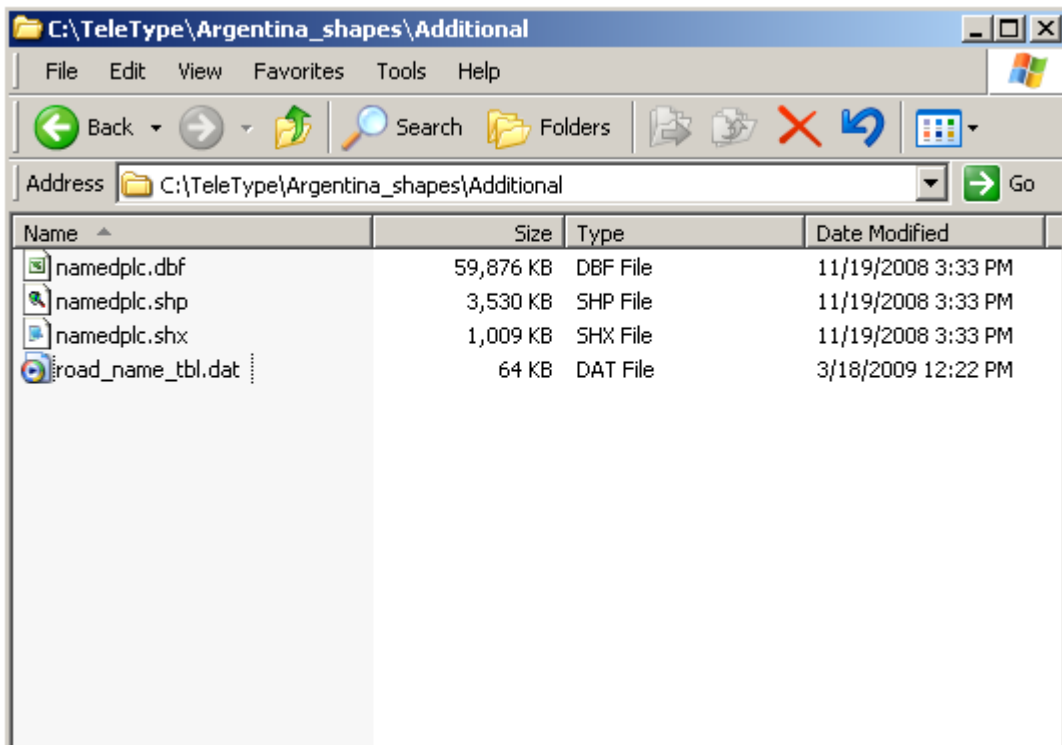
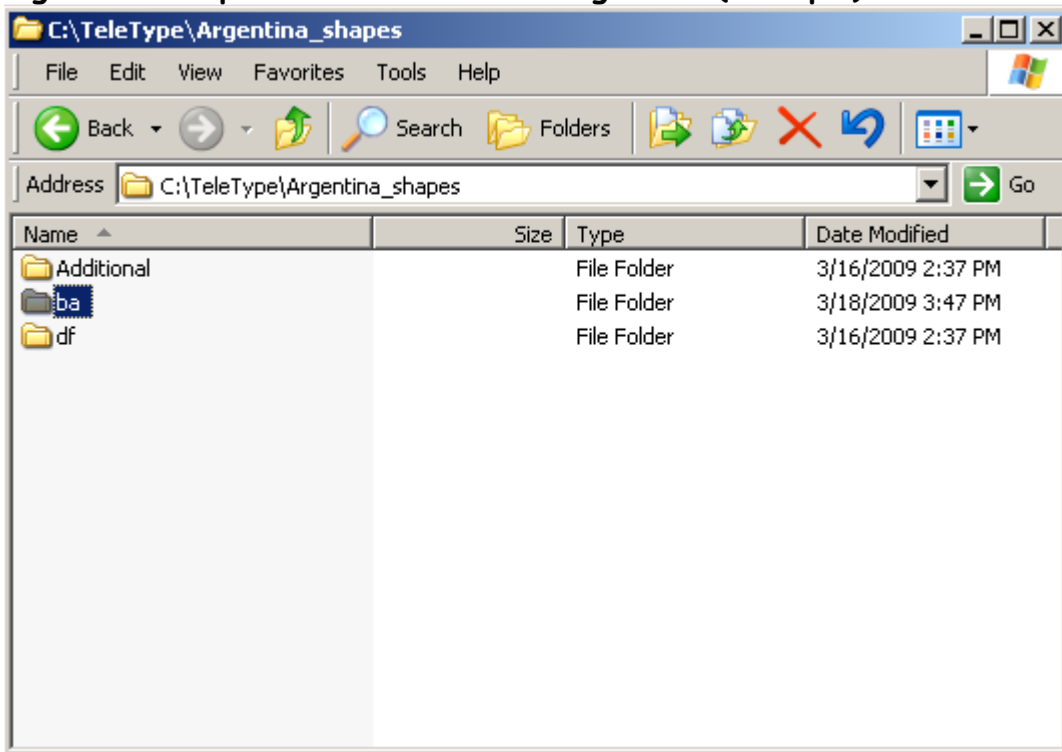
You will first need to prepare your data. Be sure to keep the field names exactly as they appear in this documentation.

### Requirements and Recommendations

1. Column headings must be in English.
2. Accented characters - be sure to use Unicode font (either ANSI or OEM) in order to retain special character formatting such as accents (Ñ). TeleType currently uses Arial and Tahoma.
3. Use Zero (0) if numerical field is empty. Leave blank if alphabetic field. Notice that POSTCODE is considered a text field, therefore if there is no postcode leave it blank.
4. Create a folder on the root of your hard drive, call it "TeleType".
5. Create a folder inside the TeleType folder called `Country_shapes` (in this example we will use "Argentina\_shapes").
6. Put all the converters and batch files at the root of the TeleType folder.
7. Put all the shape files into the "\_shape" folder taking care to name the files using Province prefixes.
8. Create a folder inside the TeleType folder called "ttm".
9. You may choose to run the converters via DOS command line prompt or via DOS batch file. If you choose to use the command line prompt you will be able to pause the display using DOS commands.

Below is a sample listing of the organization required for parsing. These are two screen shots of the folder setup.

Figure 1: Shape file structure for Argentina (example)



Name	Size	Type	Date Modified
ba_airstrips_region.dbf	1 KB	DBF File	3/24/2009 2:03 PM
ba_airstrips_region.shp	2 KB	SHP File	3/24/2009 2:03 PM
ba_airstrips_region.shx	1 KB	SHX File	3/24/2009 2:03 PM
ba_mrv_region.dbf	1 KB	DBF File	3/24/2009 2:03 PM
ba_mrv_region.shp	2 KB	SHP File	3/24/2009 2:03 PM
ba_mrv_region.shx	1 KB	SHX File	3/24/2009 2:03 PM
ba_parks_region.dbf	1 KB	DBF File	3/24/2009 2:03 PM
ba_parks_region.shp	2 KB	SHP File	3/24/2009 2:03 PM
ba_parks_region.shx	1 KB	SHX File	3/24/2009 2:03 PM
ba_ste_region.dbf	1 KB	DBF File	3/24/2009 2:01 PM
ba_ste_region.shp	2 KB	SHP File	3/24/2009 2:01 PM
ba_ste_region.shx	1 KB	SHX File	3/24/2009 2:01 PM
cdms_.dbf	18 KB	DBF File	3/19/2009 3:41 PM
core.dbf	1,918 KB	DBF File	3/19/2009 3:42 PM
ex.dbf	9,221 KB	DBF File	3/19/2009 3:41 PM
majhwys.dbf	112 KB	DBF File	3/18/2009 1:28 PM
majhwys.shp	120 KB	SHP File	3/18/2009 1:28 PM
majhwys.shx	7 KB	SHX File	3/18/2009 1:28 PM
rdms_.dbf	88 KB	DBF File	3/18/2009 11:24 AM
sechwys.dbf	680 KB	DBF File	3/18/2009 1:19 PM
sechwys.shp	777 KB	SHP File	3/18/2009 1:19 PM
sechwys.shx	39 KB	SHX File	3/18/2009 1:19 PM
streets_.dbf	10,157 KB	DBF File	3/18/2009 11:16 AM
streets_.shp	3,462 KB	SHP File	3/18/2009 11:16 AM
streets_.shx	158 KB	SHX File	3/18/2009 11:16 AM
zlevels.dbf	77,923 KB	DBF File	3/18/2009 11:20 AM
zlevels.shp	4,133 KB	SHP File	3/18/2009 11:20 AM
zlevels.shx	1,181 KB	SHX File	3/18/2009 11:20 AM

## Detailed Data Descriptions

In order for the converters to produce the required TeleType files an understanding of the data structure is necessary. The converters will produce seven files to put into the maps folder. Two are for the street network (ttm & pdt), two are for the highway network (ttm & pdt), one holds the polygons (parks, lakes, etc.) (ttm), and the two are for points of interest (ttm & pdt).

Naming of the shape files is extremely important; follow the examples exactly as shown.

### Shapefiles/tables holding street information (\_nr.ttm)

File Name	Description
Street_.shp	Streets and Highways
MajHwys.shp	Major Highways
SecHwys.shp	Secondary Highways
Zlevels.shp	Road Levels (used to make road_crossingpt_tbl.dat)
AltStreets.shp	Secondary name for streets (optional)
Cdms_.dbf	Condition table (for lane assist)
Condlanetrav_.dbf	Lane Traversal table
Rdms_.dbf	Turn Restrictions & Lane trav FROM-TO segments

\*Please note that in order for the files to join and convert properly the Link\_IDs will need to be sorted in ascending order. See the file descriptions below for the files that use the Link\_ID field.

### Streets Attributes

#### Streets\_.dbf (fields in italics represent additional fields to Streets.dbf)

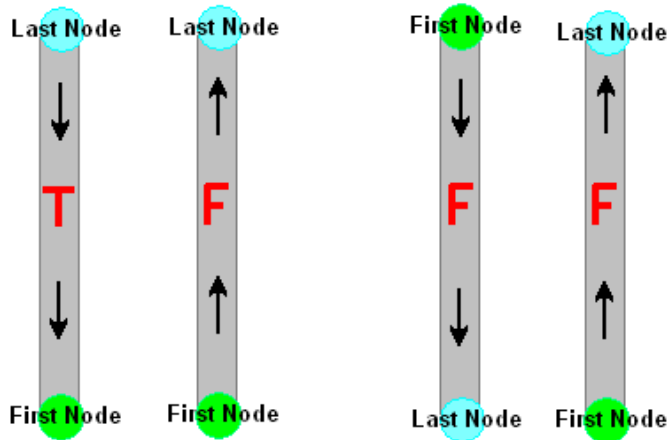
LINK_ID	Will be used to link other shapefiles such as Zlevels.dbf, Rdms_.dbf, and AltStreets.dbf; <i>Must be Sorted Ascending</i>
ST_NAME	Full name of street; used for labels and search
L_REFADDR	Address at first node (Figure 2 below) on the left side of the segment if traveling FROM the first node
L_NREFADDR	Address at last node on left side if traveling from the first node
R_REFADDR	Address at first node on the right side if traveling from the first node
R_NREFADDR	Address at last node on the right side if traveling from the first node
SPEED_CAT	Use 1 - > 130 KPH/ > 80 MPH 2 - 101-130 KPH/ 65-80 MPH 3 - 91-100 KPH/ 55-64 MPH 4 - 71-90 KPH/ 41-54 MPH 5 - 51-70 KPH/ 31-40 MPH 6 - 31-50 KPH/ 21-30 MPH 7 - 11-30 KPH/ 6-20 MPH 8 - < 11 KPH/ < 6 MPH
FR_SPD_LIM	Speed limit for "F" direction (Figure 2), 0 if no speed limit available
TO_SPD_LIM	Speed limit for "T" direction (Fig. 2), 0 if no speed limit available
DIR_TRAVEL	Based on the order of nodes; values: "F", "T", or "B" for both See Figure 2 below for description
L_POSTCODE	Used in address display only, e.g. Boston, MA 02108
R_POSTCODE	Used in address display only
AR_TRUCKS	Use "Y"

AR_TRAFF	Default as "Y"; if "N" then the street will be displayed but not routed down
PAVED	Default as "Y"; if "N" then the street will be displayed but not routed down
PRIVATE	Default as "N"; if "Y" then the street will be displayed but not routed down
RAMP	Use "Y" for ramps connecting highways and on/off ramps; "N" for normal roads
TOLLWAY	Use "Y" for toll roads; "N" for normal roads
ROUNDAABOUT	Use "Y" for rotaries/roundabouts; "N" for normal roads
FERRY_TYPE	Use "B" for ferry routes; "H" for normal roads
ROUTE_TYPE	ROUTE_TYPE = "1" for highest priority highways ROUTE_TYPE = "2" for second highest priority ROUTE_TYPE = "3" for third ... ROUTE_TYPE = "4" for fourth ... ROUTE_TYPE = "5" for local roads
DIRONSIGN	Uses one character to append to the end of highway names
EXITNAME	Use "Y" with RAMP="Y" and it will use ST_NAME as a exit name/label; "N" for normal roads
FUNC_CLASS	Follow ROUTE_TYPE field and copy the same values
L_ST_NM	2 letter abbreviation for the state or province as described here: <a href="http://www.statoids.com">http://www.statoids.com</a> . Used for search
L_PO_NM	City name. Used for search.
R_ST_NM	2 letter abbreviation for the state or province. Used for search
R_PO_NM	City name. Used for search.

ROUTE\_TYPE & FUNC\_CLASS - these values will create different highway levels. The value "1" will be used for cross-country routing and must be fully connected. The values "2", "3", and "4" will be used for the remaining highway levels. Be sure that each level is fully connected with itself or a higher level to form a continuous network. Make sure these LINK\_IDs are also in either MajHwys.dbf or SecHwys.dbf.

DIR\_TRAVEL - this will set up one-way and two-way roads based on the order of the start and end nodes. The order is determined by the way the shapefile is digitized. The point that is drawn first will be the reference node. Therefore, the value "F" would be going *from* the first node, while the value "T" would be going *to* the first node. "B" is used for two-way roads (B for both directions). An example of the one-way road setup is given below.

**Figure 2: One-Way roads**



**MajHwys.dbf & SecHwys.dbf**

LINK_ID	<i>Must be Sorted Ascending</i>
FUNC_CLASS	Please place "1" and "2" in MajHwys.dbf; "3" and "4" in SecHwys.dbf
ROUTE_TYPE	Refer to FUNC_CLASS and use the same values
FERRY_TYPE	Use "B" for ferry routes; "H" for normal roads

FUNC\_CLASS - In the MajHwys.dbf you will want to have only FUNC\_CLASS = "1" or "2". The Highway converter uses a top-down approach. It will first read the MajHwys.dbf and make the 1st and 2nd highway levels if it does not find a LINK\_ID in this file it will then search for it in SecHwys.dbf and make the 3rd and 4th. It is very important, however, to separate the LINK\_ID's into MajHwy.dbf and SecHwys.dbf, and not to have copies in both files. This will assure that the LINK\_ID's are being assigned the proper highway priority.

**Zlevels.dbf**

LINK_ID	<i>Must be Sorted Ascending</i>
Z_LEVEL	Use as a relative vertical position starting at 0 and counting up by integers. For nodes segments that share nodes but do not intersect in reality.

LINK\_ID - There will need to be two records for each link ID that has a zlevel. The first record will be for the first node, the second, for the last node. They will need to be consecutive in the table because it must also be sorted by the link IDs, for example:

LINK_ID	Z_LEVEL	
10001	0	(first node)
10001	1	(last node)
10002	1	(first node)
10002	0	(last node)

\*See the FAQ to set up a default Zlevels.dbf if you do not have values

**AltStreets.dbf (please refer to Streets\_.dbf for field information)**

LINK_ID	L_POSTCODE	ROUNDAABOUT	NAMEONRDSN
ST_NAME	R_POSTCODE	FERRY_TYPE	L_ST_NM
L_REFADDR	AR_TRUCKS	ROUTE_TYPE	L_PO_NM
L_NREFADDR	AR_TRAFF	DIRONSIGN	R_ST_NM
R_REFADDR	PAVED	EXITNAME	R_PO_NM
R_NREFADDR	PRIVATE	FUNC_CLASS	
SPEED_CAT	RAMP	EXITNAME	
DIR_TRAVEL	TOLLWAY	EXPLICATBL	

EXPLICATBL - Assign "Y"

NAMEONRDSN - Assign "Y"

## Turn Restrictions/Lane Traversal

**Rdms\_.dbf** (fields in *italics* represent additional fields to **Rdms.dbf**)

<i>LINK_ID</i>	<i>Must be Sorted Ascending.</i> This will be the first segments <i>LINK_ID</i> . Use the first segment for this field for each step in the turn restriction/lane traversal.
<i>COND_ID</i>	Use unique number for each complete turn restriction/lane traversal. If a turn restriction/lane traversal is three segments then all steps must have the same <i>COND_ID</i>
<i>MAN_LINKID</i>	This will be the <i>LINK_ID</i> for the next segment in the turn restriction/lane traversal
<i>SEQ_NUMBER</i>	1 will be the first part, if you need a restriction/traversal with 3 or more segments you will need to add more sequences.
<i>COND_TYPE</i>	<i>COND_TYPE</i> = 7 will read as turn restrictions <i>COND_TYPE</i> = 13 will read as lane traversal
<i>R_ST_NM</i>	Use the 2 letter abbreviation for state (as in <i>Streets_.dbf</i> )

*COND\_TYPE* - The *Rdms\_.dbf* functions as a turn restriction/lane traversal table. You will want to use *COND\_TYPE* = 7 or 13 for these driving manoeuvres. Other values are not valid.

*R\_ST\_NM* - Please use the same state abbreviation as the *Streets\_.dbf*.

Here is an example of a restriction with more than two segments. The turn from segment 13, to segment 14, to segment 15 is prohibited (similar to a prohibited U-turn) *COND\_TYPE* & *R\_ST\_NM* are omitted:

<i>LINK_ID</i>	<i>COND_ID</i>	<i>MAN_LINKID</i>	<i>SEQ_NUMBER</i>
13	50	14	1
13	50	15	2

## Lane Traversal

### Cdms\_.dbf

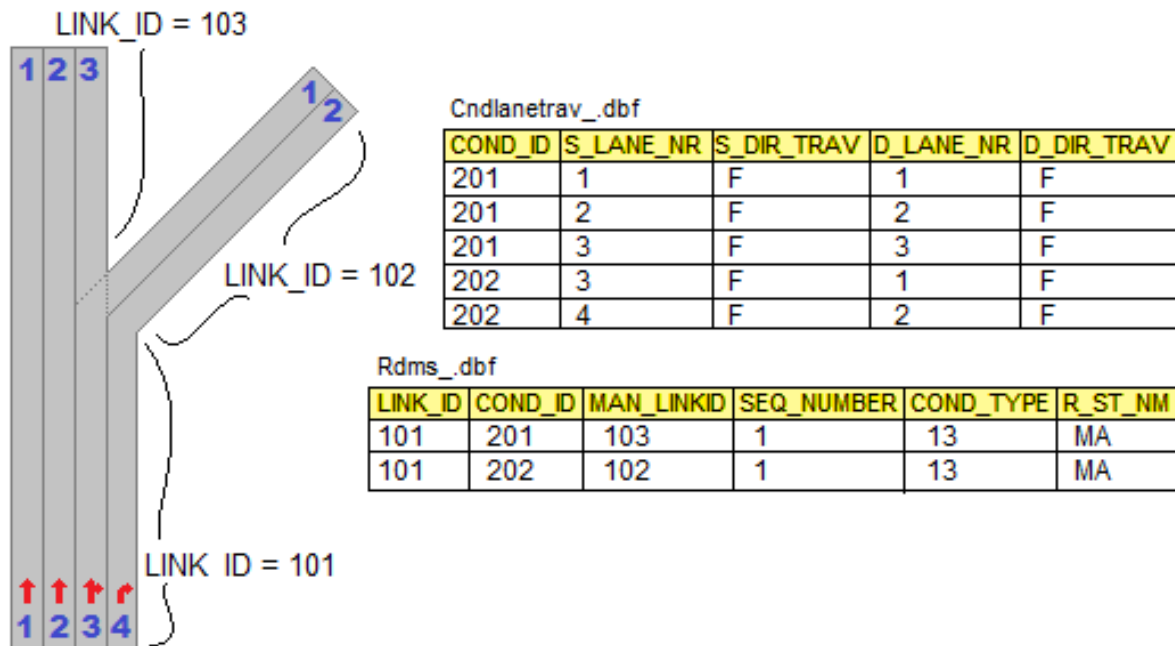
LINK_ID	<i>Must be Sorted Ascending.</i>
COND_ID	Use unique number for each segment-to-segment connection
COND_TYPE	Use 13 for lane traversal

### Cndlanetrav\_.dbf

COND_ID	Will be used to link to Rdms_.dbf; <i>Must be Sorted Ascending</i>
S_LANE_NR	Source lane number. Lane 1 starts on the left most lane
S_DIR_TRAV	Based on the order of nodes; values: "F", "T", or "B" for both See Figure 2 above for description
D_LANE_NR	Destination lane number. Lane 1 starts on the left most lane
D_DIR_TRAV	Based on the order of nodes; values: "F", "T", or "B" for both See Figure 2 above for description

COND\_ID - Links to the Rdms\_.dbf. The LINK\_ID in Rdms\_.dbf will be the segment with the source lane, and MAN\_LINKID will be the segment with the destination lane.

Example:



## Points of Interest (POI)

POI data includes all points which may be of interest to users. To prepare this data for the POI parser, two .dbf files can be created, CORE.DBF and EX.DBF. The CORE.DBF will hold one set of POI's (usually the most common POI's), and the EX.DBF will hold another set (usually the specialty POI's). All of the points of interest can be put in the CORE.DBF if only one set is needed. Splitting the POI's into these two files is for organizational purposes only.

### CORE.DBF and EX.DBF

UID	Create a unique value
NAME	Name of the POI
LATITUDE	Latitude in decimal degrees (necessary for the spatial location of the POI). Example: The format for the Boston point is 42.358650
LONGITUDE	Longitude in decimal degrees (necessary for the spatial location of the POI). Example: The format for the Boston point is -71.056654
HOUSE_NM	House number (used only as a description of the POI)
STREET_NM	Street Name (used only as a description of the POI)
PL_LEV2	2-letter State abbreviation (use like L_ST_NM & R_ST_NM)
PL_LEV4	City name (use like L_PO_NM & R_PO_NM)
ZONE_	Not currently used
NT_POST	Not currently used
NUMBER_	Phone number of the POI (will be used for search). The POI to phone number relationship is one-to-one. Only the formats 000-0000 and 000-0000000 can be searched for. If the numbers are in another format (other than blank), the converter may not make a valid output. Please also notify TeleType of the PL_LEV2 abbreviations used for the country. As these are needed for the YP converter. Otherwise the phone number search will not work. This specific POI search can be removed from the interface if needs be.
CAT_NT	Category reference number (same as TYPE field in previous document)

CAT\_NT - The category codes used will need to be taken from the list below. The codes on the left side will be the ones used in the DBF, while the codes on the right will be used in the POI-\*-.xml's. Please match the two codes up in order for the program to display the proper categories.

CAT_NT	POI-*-.xml
0001	4001
0002	4002
0003	4003
...	...
0098	4098
0099	4099

Address Display - The POI's information will be displayed as "NAME, HOUSE\_NM STREET\_NM, PL\_LEV4, PL\_LEV2, NUMBER\_".

## Polygons

Polygon files are used to describe regions. The Shp2ttm\_polygon converter produces the \_pl.ttm.

### Shapefiles holding polygons (\_pl.ttm)

File Name	Description
Prefix_STE_REGION	State region polygons - brown background
Prefix_AIRSTRIPS_REGION	Airports region polygons - grey
Prefix_PARKS_REGION	Parks region polygons - green
Prefix_MRV_REGION	Lakes/ocean/rivers region polygons - blue

Use the prefix of the state/province in the filename. The \_STE\_REGION polygons will display a grey border with a brown background. This is the base polygon. All others will be drawn on top of it.

The remaining polygons will appear/disappear when the user zooms in and out based on the total area the polygon takes up. Therefore, if the polygon is a large ocean it will appear while the user zooms out, while small lakes will disappear.

## Places

Places files are used partly for the street search. The city points that this makes can also be searched for if the user decides to leave the house number and street name blank. The Shp2ttm\_place.exe creates one city name file for the entire country such as "Argentina\_place.ttm". The input is composed of one shapefile called NamedPlc.shp. The format for its table is shown below:

### NamedPlc.dbf (fields in italics represent additional fields to Rdms.dbf)

POI_NAME	Use the name to be displayed and searched for.
CAPITAL	Use "1", "2", "3", this will convert points into several categories.
<i>STATE_NM</i>	Use as R_ST_NM in Streets_.dbf

In the countries.xml there will be a new section to be added. This will dictate which zoom level the different place categories will show up at along with the maximum zoom out levels for the different views. Please use the following as an example below:

```

<USA>
...
</USA>
<MAXZOOMLIMIT>
  <USA>
    <MAX>12</MAX>
    <MAP2D>12</MAX>
    <NAV2D>10</NAV2D>
    <MAP3D>8</MAP3D>
    <NAV3D>6</NAV3D>
    <CAPITAL2>8</CAPITAL2>
    <CAPITAL3>4</CAPITAL3>
  </USA>
</MAXZOOMLIMIT>

```

The MAX tag will be the limit that any zoom can go. MAP2D is the max zoom for 2-D map mode (when "Where To" & "Menu" are displayed), and NAV2D is the max zoom for navigation mode when the cursor follows your movement and the navigation panels appear.

For the places, category CAPITAL = "1" will be displayed at all zoom levels. Places with CAPITAL = "" will not be displayed on the maps, but can be searched for and used for routing. The <MAXZOOMLIMIT> tag should be placed after the country tag(s) for state abbreviations at the same level.

### III. Converting Shape Files

Now that your data is organized properly, you are ready to start the conversion process. Keep in mind that there are two ways to run the converters. You can use DOS Command line prompt or you can use the Convert.bat file to provide the instructions. Either way, you will use the same parameters. Using the DOS prompt will allow you to view the results on the screen for easier debugging of data. Using the Convert batch file will allow you to more easily store the information for future reference and re-use. If you are unsure about the DOS command prompt, use the Convert batch file instead. It's up to you to select which method you prefer.

Modify the batch file to run the converter called SHP2TTM. It is recommended that you make a copy of the sample batch file called "Convert" before modifying the file. Use Notepad or any other text file program to make changes. Note that you will need to select File Type = All (\*.\*) in order to view the batch file in the text editor.

### Streets & Highways Conversion

There is one file you will need to create before running the streets and highways converters. It is road\_name\_tbl.dat. This will go in the Additional folder.

In order to create this you will need to run shp2ttm\_stp1.exe, then combine the separate files for each state, and finally run shp2ttm\_stp2.exe. The first step will output the file

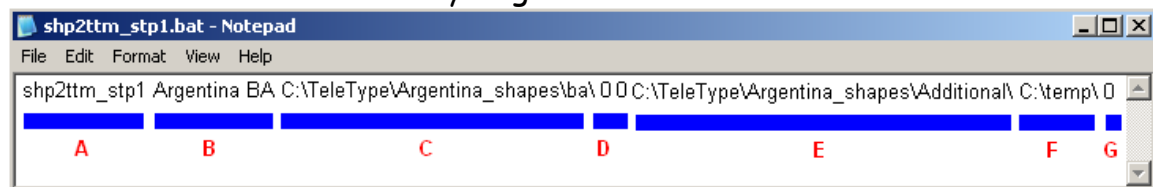
road\_nametable\_stp1\_rlt\_xx.dat (the xx is the state/province's abbreviation). This file can then be combined into road\_nametable\_stp1\_rlt.dat. The second step will use this file to create the final DAT file.

Shp2ttm\_stp1.exe is a command line utility. It takes several parameters shown in Figure 3.

You will need to use Shp2ttm\_stp1 and stp2 for the entire country (or what you have for the country at the time). These steps will make the DAT files which are used throughout the country for each province. If you add road data later on to a country, you will need to create new DAT files.

**CAUTION:** If you do not delete the current DAT's in the output folder, the converter may create DAT's with duplicate information which may or may not have negative effects on routing and name labels.

**Figure 3: Shp2ttm\_stp1 command example**  
Province name is BA in country Argentina



#### Legend

- A - Converter name
- B - Country and Province (separated by a space)
- C - Source path
- D - Use "0 0" (for additional input files - up to 2 if needed)
- E - Additional source path
- F - Destination path (for Shp2ttm\_stp1 it should be kept as C:\temp\)
- G - "0" for using the default codepage

This example only shows one province, however, there should be all available provinces for the country in one batch file.

After this first step is completed and the stp1\_rlt\_xx.dat file is created in C:\temp\, run a batch file to combine each state/province. The batch file can be placed in C:\temp\ and will have the following:

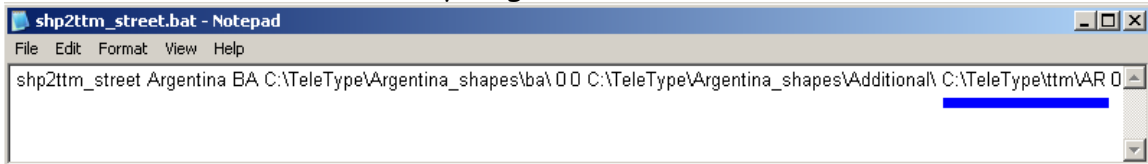
```
copy/b road_nametable_stp1_rlt_*.dat road_nametable_stp1_rlt.dat
```

The first parameter is the command to append the files together, the second parameter selects each state/province file, and the last parameter is the output. After you have run this double-click the Shp2ttm\_stp2.exe. This will automatically find the DAT files in C:\temp\ and finish the process. The finished DAT files will be placed in the same folder. They will need to be moved into the Additional folder, and a copy of the road\_name\_tbl.dat

will need to be placed in the country's map folder (\Maps\SA\Argentina\ for this example). It will be read while the program is running.

The files should now be setup as shown in Figure 1. The Shp2ttm\_street.exe can now be run for each province. This will output \_nr.ttm. Here is the sample batch for the Argentina province used earlier for the DAT files:

#### Figure 4: Shp2ttm\_street command example Province name is BA in country Argentina



The only difference between the commands for this exe and Shp2ttm\_stp1 is the output. Please specify the folder where the \_nr.ttm is to go. Also use the abbreviation for the country as a prefix. In this example it is the "AR" in C:\TeleType\ttm\AR. The program will add the state/province abbreviation. The output for this example would be AR\_ba\_nr.ttm.

The Shp2ttm\_hwy.exe uses the same commands as the Shp2ttm\_street.exe. Be sure to change the converter name in the command line.

### Points of Interest Conversion

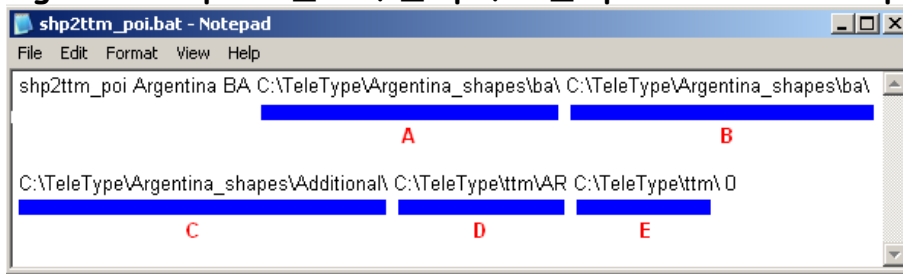
The POI conversion starts with a DBF input (the shapefile is not necessary, although it can be used). This eventual output is \_pi.ttm, \_pi.pdt, \_pi.pho, and \_pi.ztb. Run the command file for all the available states/provinces in a country at the same time using Shp2ttm\_POI\_stp1.exe (similar to shp2ttm\_stp1.exe). This will make a name table precursor for each state, AR\_xx\_pi.nam (AR being the country abbreviation, xx being the state). They will then be combined in a similar fashion to the road\_nametable\_stp1\_rlt\_xx.dat's and make AR\_total.dat. To do this use the following command:

```
copy *pi.nam AR_total.dat
```

AR\_total.dat is an intermediate file. The Shp2ttm\_POI\_stp2.exe will then use this file to make Argentina\_poiname.tbl. These will be placed in the Additional folder and used while running Shp2ttm\_POI.exe. After this is completed it should be renamed poi\_name.tbl.dat and moved to the countries Maps folder to be used in the same way as road\_name.tbl.dat.

Place the CORE.dbf and EX.dbf in the same folder as the streets (streets\_.shp, rdms\_.dbf, etc.). Do this for each state/province. For the command line, please refer to the image below. Please note that the extra empty lines are there for a clearer display. The example should be one single line in order to work.

**Figure 5: Shp2ttm\_POI, \_stp1, & \_stp2 command example**



**Legend**

- A - Location of Core.dbf & Ex.dbf
- B - Use "0" (for additional input file)
- C - Additional source path
- D - Location for output pi.ttm
- E - Location for output (not currently used; you may use "0" in place)

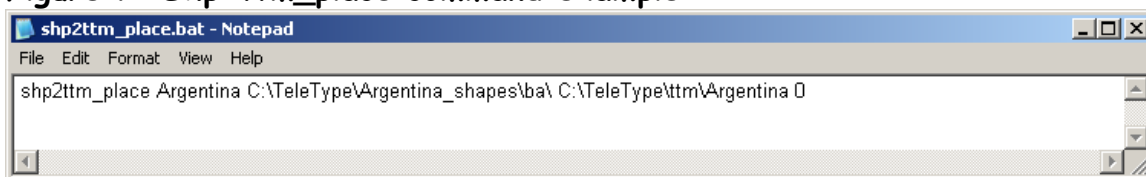
The Shp2ttm\_POI\_stp1.exe will create the \_xx\_pi.nam files in the Output folder (D). The \_total.dat should then be created in the same Output folder. Shp2ttm\_POI\_stp2.exe will take the exact same parameters though it will look in the Output folder and convert \_total.dat to \_poiname.tbl. From there the tbl file should be copied into the Additional folder as is (and another copy can be placed into the country's Maps folder and renamed to poi\_name.tbl.dat. Shp2ttm\_POI.exe can then be run.

**Figure 6: Shp2ttm\_polygon command example**



Please use the country name as the second parameter, the input with state/province prefix as the third, and the output with country and state/province prefix as the last.

**Figure 7: Shp2ttm\_place command example**



As with the other example, the second parameter is the country name. The third parameter is the location of nameplc.shp. The fourth parameter is the output with the prefix as the country name. And the last parameter is the codepage.

## IV. Indexing

### IndexMaker

Follow the instructions provided in the folder "Map Index Builder".

Remember you need to use this program the first time your data is parsed. If you are already using the software on your WorldNav device you may not need to generate this file as you already have the file in the TTWorldNavigator folder. You will only need to regenerate the WorldNav.idx file if you have a new file structure for your data. For example, if you have been parsing the entire country into one set of ttms such as Argentina\_nr.ttm, rather than by Province such as AR\_ba\_nr.ttm then you will need to regenerate the WorldNav.idx file. The logic is that the WorldNav.idx file is an index of which maps to display based on file name. If the ttm file names have changed, then a new index file must be built.

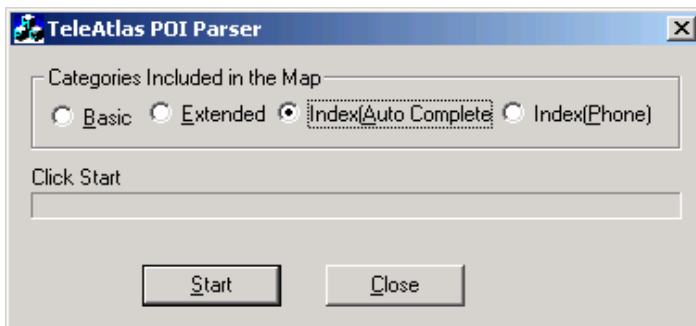
### TXT2IDX

This utility is for indexing of provinces, cities, and street names so that when a user attempts to locate a street it will automatically pop up as an option while using the navigation program. Please follow the instructions for using txt2idx.exe below:

- 1 Click txt2idx.exe (Disregard the displayed title of the parser).
- 2 Choose Index(Auto Complete)
- 3 Click start
- 4 Source files Choosing Dialog will pop up, then choose all number.txt in the folder C:\txt\, then click OPEN
- 5 Destination Path Choosing Dialog will pop up, then choose the folder you want to put the final idx files, then click OK
- 6 Wait..... until it says Done!
- 7 Click CLOSE

### Figure 8: TXT2IDX.EXE

(Disregard the name of the program displayed in the title bar).



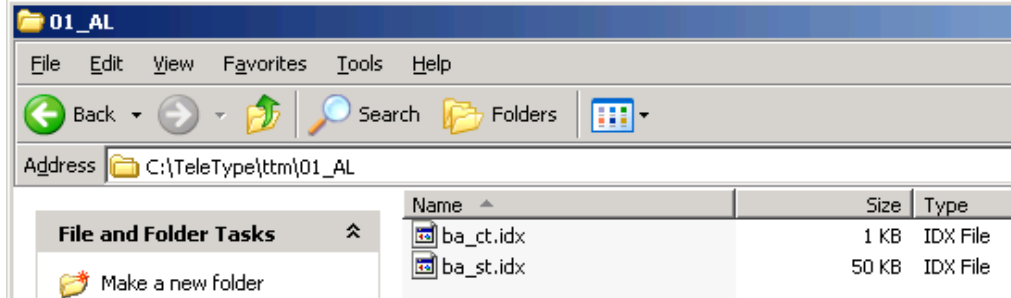
You will find several folders in Destination Path you chose. Copy all idx files into the country folder within the Maps folder.

Example:

Resulting files found here:

C:\TeleType\ttm\AL\ should be copied to Maps\SA\Argentina\

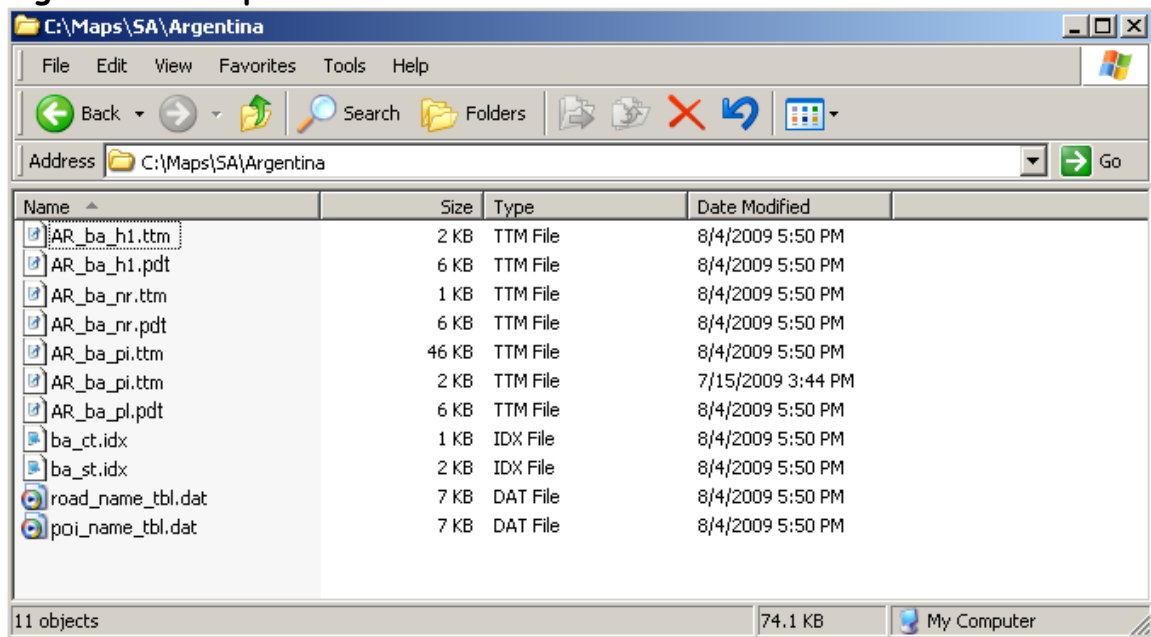
**Figure 9: Copy resulting IDX files to the "Maps" folder**



## V. Finished Product

When you have completed the conversions you will need to put all the maps files into the "Maps" folder on the TeleType GPS secure digital card. Check with TeleType on the exact folder structure required in your case. You can submit your ttm files to TeleType for review and assistance if desired.

**Figure 10: Maps Folder**



## Figure 11: TTWorldNavigator Folder Contents

The TTWorldNavigator folder contains a few files that you should understand.

Name	Size	Type	Date Modified
config		File Folder	6/6/2007 10:58 AM
EnglishGb		File Folder	6/6/2007 10:58 AM
EnglishUs		File Folder	6/6/2007 10:58 AM
rundata		File Folder	6/6/2007 10:58 AM
Sounds		File Folder	6/6/2007 10:58 AM
SpanishEs		File Folder	6/6/2007 10:58 AM
DATA		File Folder	6/6/2007 11:41 AM
rt_err.txt	5 KB	Text Document	1/1/2003 12:07 PM
argentina_place.ttm	121 KB	TTM File	1/15/2004 4:35 PM
EnglishGb6.2.lde	1 KB	LDE File	5/1/2005 11:01 AM
EnglishUs6.2.lde	1 KB	LDE File	5/1/2005 11:01 AM
Items not shown to conserve space.			
Jorge.vde	1 KB	VDE File	3/24/2006 8:48 AM
LoqSpanish6.5.dll	166 KB	Application Extension	3/9/2007 5:45 AM
StartWN.exe	4 KB	Application	3/9/2007 12:04 PM
GPSDriver.dll	11 KB	Application Extension	3/20/2007 9:53 AM
gps.init	1 KB	INIT File	5/13/2007 3:09 PM
COUNTRY.TXT	1 KB	Text Document	5/17/2007 8:12 AM
WorldNav.idx	48 KB	IDX File	5/17/2007 1:24 PM
GPSRESOURCE.dll	2,680 KB	Application Extension	6/5/2007 2:29 PM
VERSION.TXT	1 KB	Text Document	6/5/2007 5:14 PM
WorldNavigator.exe	981 KB	Application	6/6/2007 10:17 AM

### Legend

A - Place file - in this case "Argentina\_place.ttm". Use the PlacesGenerator.exe to make this file.

B - Country.txt - text file that points the TeleType program which \_places.ttm file to load (in this case it is Argentina).

C - Version.txt - a text file indicating version number of software. The number appears on the bottom right of the "I Agree" screen when the navigation program is activated.

D - WorldNavigator.exe - the navigation program

## VI. Frequently Asked Questions (FAQ)

### 1. I do not have Zlevel information. How should the Zlevels.dbf be set up?

The Zlevels.dbf needs to be read with the streets file in order to match up nodes correctly and also route correctly. If the Streets\_.shp is already set up so that there are not any nodes connecting with segments of different street levels, then a default Zlevels.dbf can be used.

To set up the default Zlevels.dbf please do the following. Create all the fields for the Zlevels.dbf mentioned in this document. Add all the Link\_ID's that are in the Streets\_.dbf to this table. Now calculate the Z\_LEVEL field as 0.

### 2. Can I leave City and/or State information blank?

You may push the space button to leave City blank. This will affect the search, but it will still allow the street/POI to be displayed. Leaving the State information blank, however, will result in the record not being read. Please always have State information filled out.

### 3. How should I set up the highways, and do I need MajHwys.shp and SecHwys.shp?

You will need these files for long distance routing. If you do not have these files, no street information will go into the \_h1.ttm's. These are used to route between towns and cities (usually the h2, h3, and h4) and also cross-country (usually h1).

We highly recommend that you place ROUTE\_TYPE = 1 and 2 into MajHwys.dbf and ROUTE\_TYPE = 3 and 4 into SecHwys.dbf. Connecting ramps will also need to be included in these files. If you do not know which highway priority to put the ramp into, use the same ROUTE\_TYPE as the highest priority highway it connects.

### 4. My street names are not appearing correctly. What is happening?

The street names use the road\_name\_tbl.dat. If the label is incorrect in the program, you will need to add the road\_name\_tbl.dat to the folder that holds the corresponding \_nr.ttm's. If the txt files for \_ct.idx and \_st.idx are coming up with incorrect names, make sure the road\_name\_tbl.dat is in the folder with the \_nr.ttm before you run the TTM2TXT.exe. Many of these problems can be solved by organizing your files in the Maps folder beforehand, and then running the converters that create the idx files (including the WorldNav.idx).

## 5. Where can I remove the phone number search?

The ttLang\_en-US.xml and other ttLang xml's will have the text for the option to search by phone number. These will be located in the \TTWorldNavigator\Data\ folder. Search for "By Phone Number" (or whatever the translation is) and use the following as an example:

```
<POISearchOptionsDlg>
  <Title>Find Services</Title>
  <SpinBox1>
    <Option1>By Nearest</Option1>
    <Option2>By City/Town</Option2>
    <!-- <Option3>By Phone Number</Option3> -->
  </SpinBox1>
</POISearchOptionsDlg>
```

This will skip over the phone number search option and only leave the two options for POI search. Any subsequent ttLang\_en-US.xml that TeleType sends will need to be updated as well.