

# 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 file is \_nr.ttm

Shp2ttm\_stp1 - resulting files are road\_crossingpt\_stp1\_rlt\_xx.dat & road\_nametable\_stp1\_rlt\_xx.dat. These are intermediate files, please see step 2.

Shp2ttm\_stp2 - finishes creating the road\_crossingpt\_tbl.dat & road\_name\_tbl.dat. These are used for road levels and displaying road names respectively. The road\_crossingpt\_tbl will go into the Additional folder, while the road\_name\_tbl will be put in your country's Maps folder along with the other streets ttm's.

Shp2ttm\_hwy - converts all levels of highway segments from the shapefiles. Resulting files are \_h1.ttm, \_h2.ttm, \_h3.ttm, \_h4.ttm

Shp2ttm\_POI - converts Points of Interest data. Resulting file is \_pi.ttm and it will also output a raw\_yp.idx

Shp2ttm\_YP - converts raw\_yp.idx to YP\_idx.dat and YP\_tbl.dat. Used for phone number search. The resulting files will be put in your country's Maps folder along with the other streets ttm's.

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.

TTM2TXT & TXT2IDX - these two applications form the utility for indexing of street names. Resulting file is 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 "PI" rather than "POIonly". We have named the converters with longer names to make it easier to understand for first time users.

## II. Source Data Design

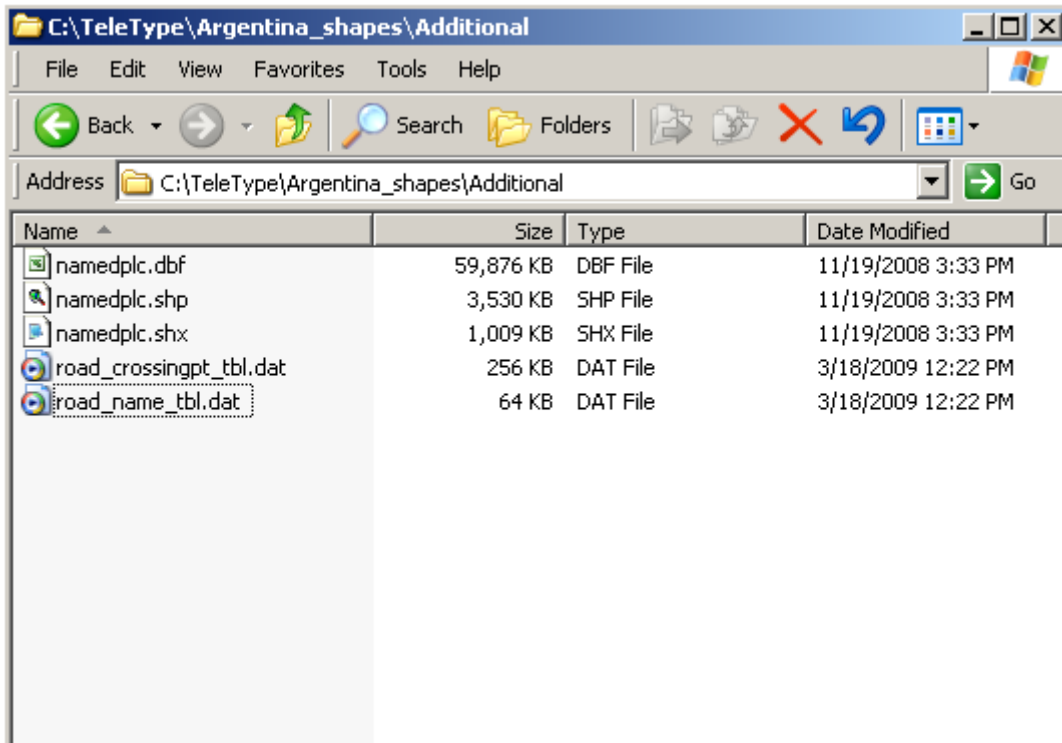
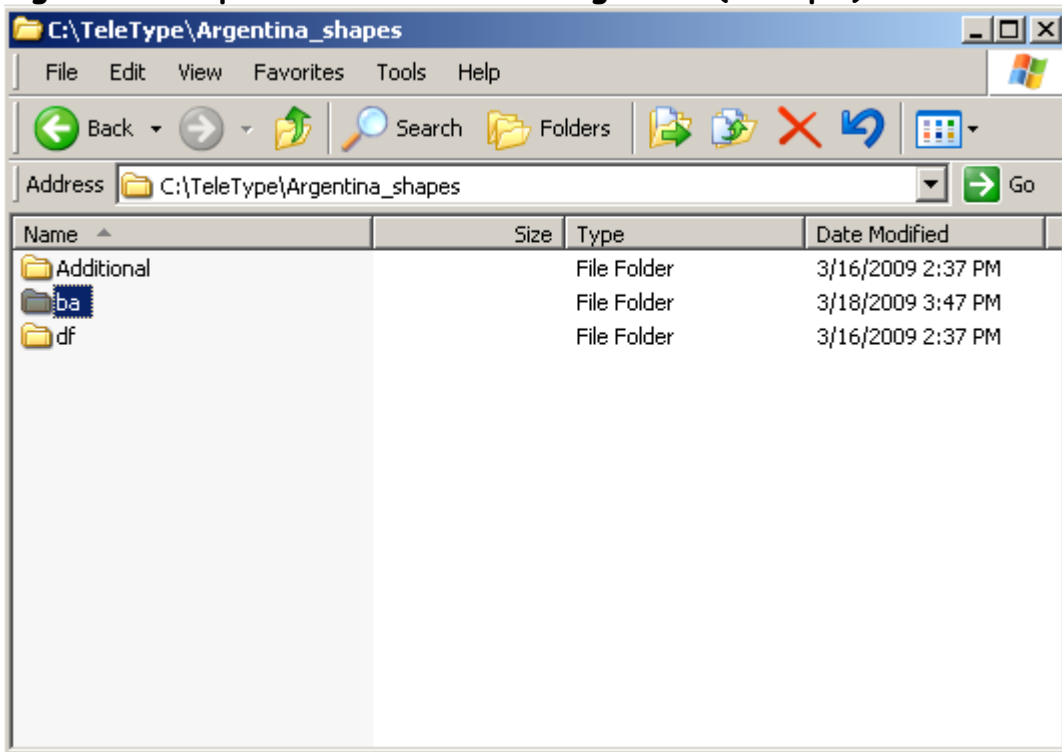
You will first need to prepare your data. Be sure to keep the field names exactly as they appear in this documentation.

### 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
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 ttm files. One is for the street network, four are for the highway network, one holds the polygons (parks, lakes, etc.), and the other is for points of interest.

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)
Rdms_.shp	Turn Restrictions

\*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)

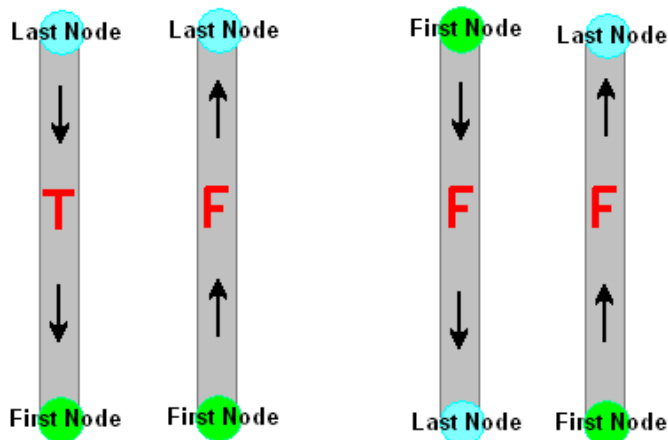
LINK_ID	Will be used to link other shapefiles such as Zlevels.dbf, Rdms_.dbf, and AltStreets.dbf; <i>Must be Sorted Ascending</i>
ST_NAME	Full name of street; used for labels and search
L_REFADDR	Address at first node (Figure 2 below) on the left side of the segment if traveling TO the first node
L_NREFADDR	Address at last node on left side if traveling to the first node
R_REFADDR	Address at first node on the right side if traveling to the first node
R_NREFADDR	Address at last node on the right side if traveling to 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
DIR_TRAVEL	Based on the order of nodes; values: "F", "T", or "B" 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 files. There will be a \_h1.ttm, which will be used for cross-country routing and must be fully connected. This file will be made from the value "1". Also \_h2.ttm, \_h3.ttm, and \_h4.ttm will be made from values "2", "3", and "4" respectively. 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 create \_h1.ttm and \_h2.ttm, if it does not find a LINK\_ID in this file it will then search for it in SecHwys.dbf, and create \_h3.ttm and \_h4.ttm. 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>
POINT_NUM	First Node (see Figure 2) = "1", each Vertex after would be an additional POINT_NUM record (for example, "2", "3", "4", etc)
NODE_ID	Not used
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.
INTRSECT	Use "Y" for intersection with more than two connecting segments; "N" for all others.
DOT_SHAPE	Not used
ALIGNED	Use "N" as a default value

POINT\_NUM - This is used to identify which part of the segment is getting the Z\_LEVEL. Because we are not using NODE\_ID, this needs to be used.

\*See the FAQ to set up a default Zlevels.dbf

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

LINK_ID	L_POSTCODE	ROUNDBABOUT	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

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

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

*COND\_TYPE* - Currently the Rdms\_.dbf functions as a turn restriction table. You will want to use COND\_TYPE = 7 for Restricted Driving Manoeuvre. 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:

LINK_ID	COND_ID	MAN_LINKID	SEQ_NUMBER
13	50	14	1
13	50	15	2

## 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 PlacesGenerator.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:

```
<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 are two files you will need to create before running the streets and highways converters. They are road\_name\_tbl.dat and road\_crossing\_tbl.dat. These will go in the Additional folder.

In order to create these 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 files road\_nametable\_stp1\_rlt\_xx.dat and road\_crossingpt\_stp1\_rlt\_xx.dat (the xx is the state/province's abbreviation). These files can then be combined into road\_crossingpt\_stp1\_rlt.dat and road\_nametable\_stp1\_rlt.dat. The second step will use these two files to create the final DAT files.

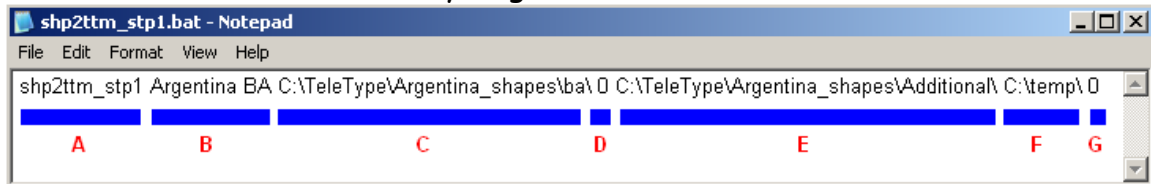
Shp2ttm\_stp1.exe is a command line utility. It takes several parameters shown in Figure 3.

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" (for additional input files)
- 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.

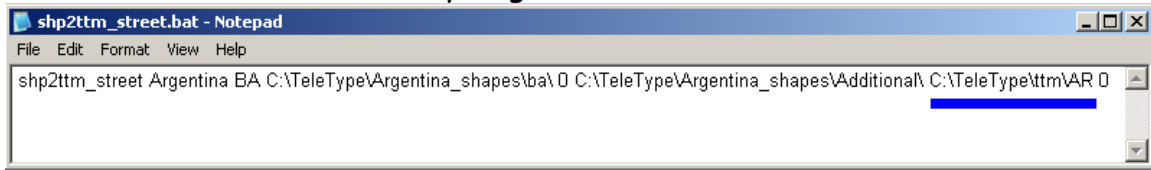
After this first step is completed and the `stp1_rlt_xx.dat` files are created in `C:\temp\`, run a batch file to combine each state/province. The batch file can be placed in `C:\temp\` and will have the following:

```
copy/b road_crossingpt_stp1_rlt_*.dat road_crossingpt_stp1_rlt.dat
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 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.

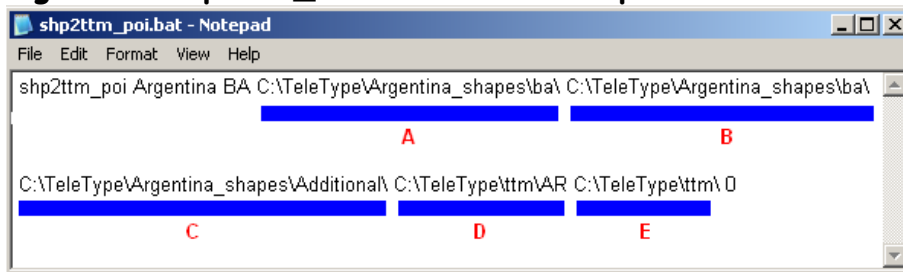
The Shp2ttm\_hwy.exe uses the same commands as the Shp2ttm\_street.exe. Be sure to change the converter name in the command line.

## Points of Interest Conversion

The POI conversion starts with a DBF input (the shapefile is not necessary, although it can be used). This outputs \_pi.ttm. Run the command file for all the available states/provinces in a country at the same time (similar to shp2ttm\_stp1.exe). This will make an additional file called raw\_yp.idx. This is an intermediate file. The Shp2ttm\_YP.exe will then use this file to make YP\_tbl.dat and YP\_idx.dat. These will be used for the phone number search and should be placed in the \Maps\Your\_country\ folder along with street ttm's, the \_pi.ttm's and the 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 command example**

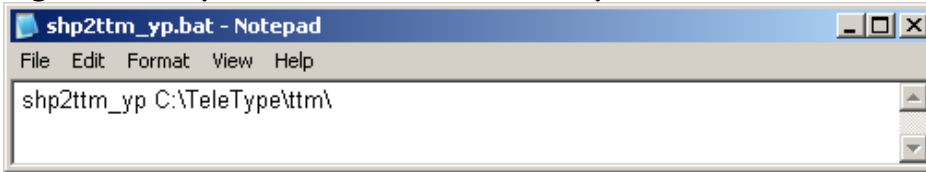


### Legend

- A - Location of Core.dbf
- B - Location of Ex.dbf (use "0" if there is no Ex.dbf)
- C - Additional source path
- D - Location for output pi.ttm
- E - Location for output raw\_yp.idx

After running the Shp2ttm\_POI for all the current states/provinces that you have, use the following command for the shp2ttm\_YP.exe:

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



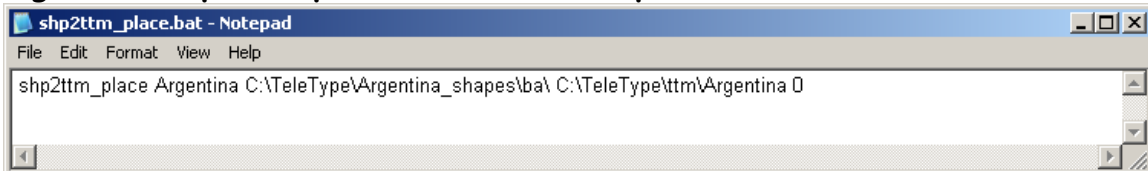
This example shows that the raw\_yp.idx is in the C:\TeleType\ttm\ folder. The outputs will also be placed here.

**Figure 7: 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 8: 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.

## TTM2TXT & TXT2IDX

These two applications form the utility 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.

The input files for the TTM2TXT will be the `_nr.ttm` as well as the `road_name_tbl.dat`. The batch file will accept the `_nr.ttm` as an input (see below). The `road_name_tbl.dat` must be in the same folder as this file. This will allow the TTM2TXT to read from this file as well.

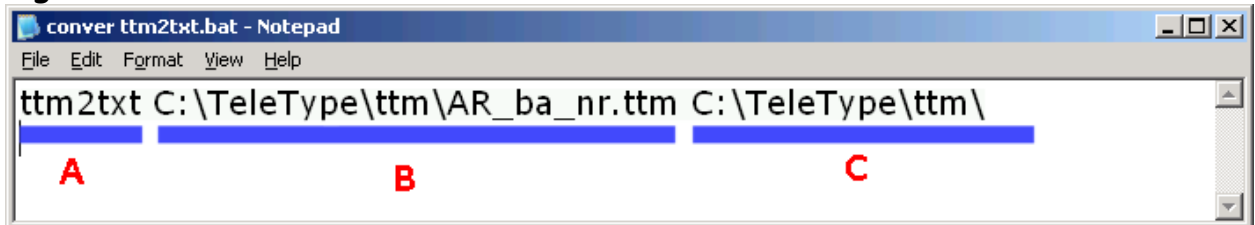
Example:

Step 1:

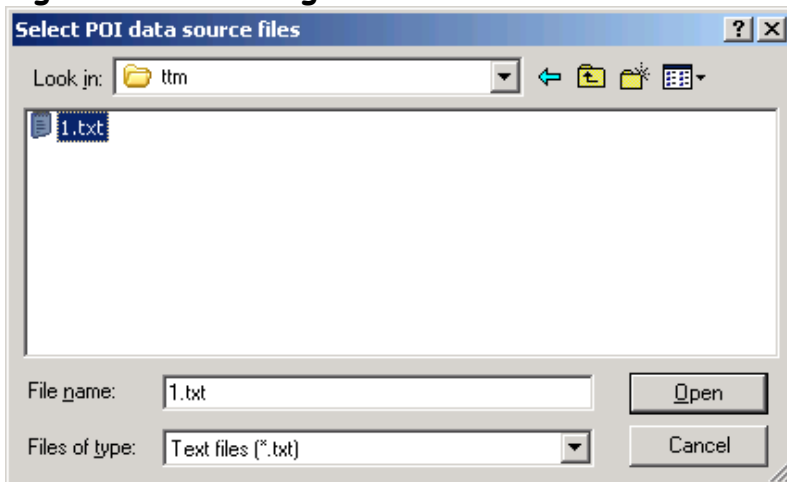
In dos cmd\* `ttm2txt C:\TeleType\ttm\AR_ba_nr.ttm C:\TeleType\ttm\`

Where `ttm2txt` is the name of the converter to use. Notice that unlike the `SHP2TTM` converter, the TTM2TXT converter does not use a country name parameter.

**Figure 9: TTM2TXT file conversion command line**



**Figure 10: Resulting text file for IDX use**



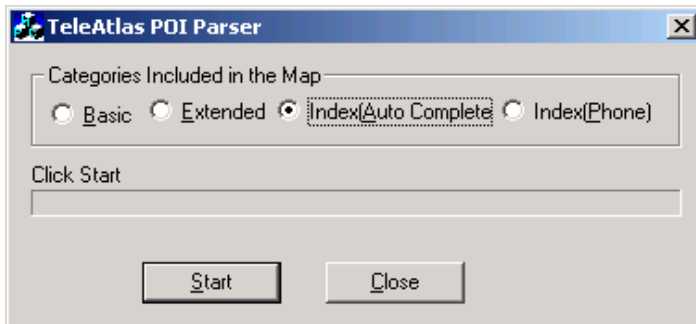
Step 2:

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 11: TXT2IDX.EXE**

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



**Step 3:**

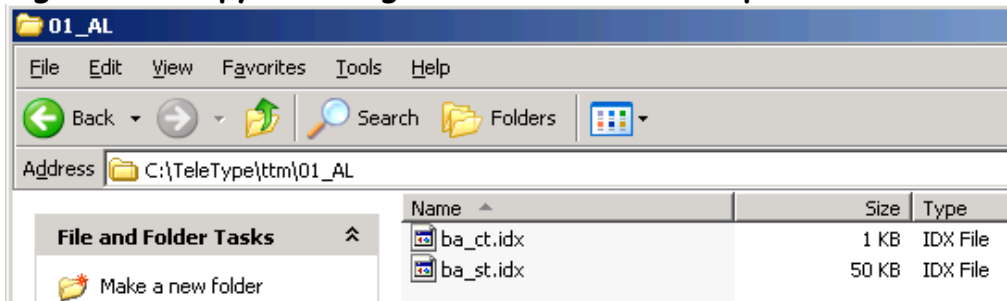
You will find several folders in Destination Path you chose. Copy all idx files into the country folder within the Maps folder.

**Example:**

Resulting files found here:

C:\TeleType\ttm\01\_AL should be copied to Maps\SA\Argentina\

**Figure 12: Copy resulting IDX files to the "Maps" folder**



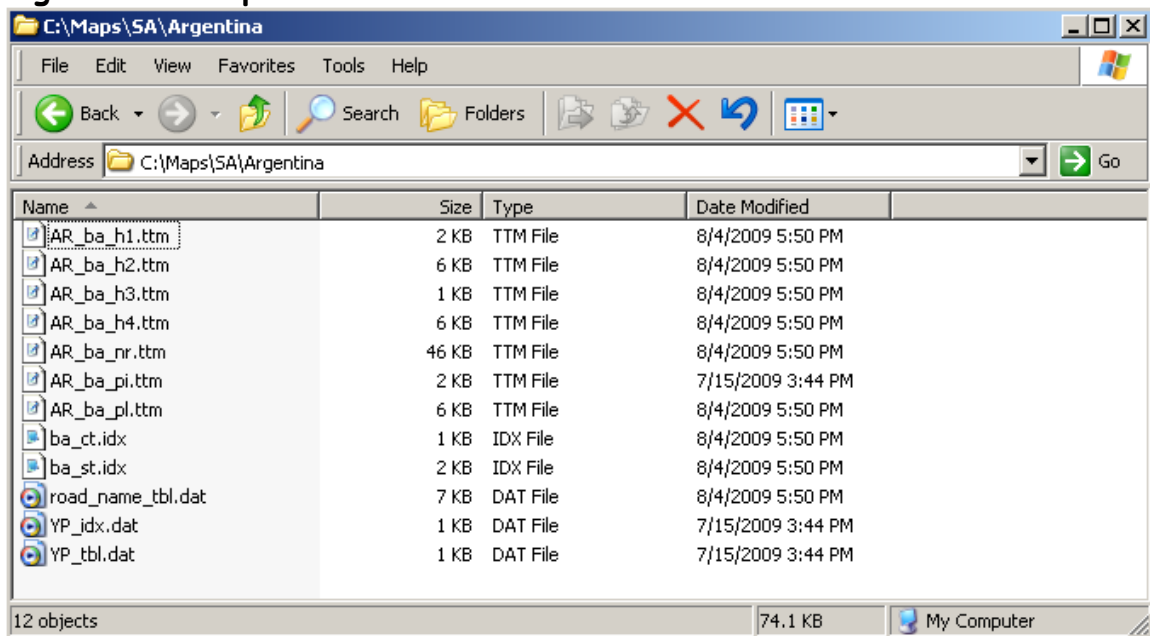
**Note:**

- 1 ttm2txt.exe is a non-windows application, all paths should already exist.
- 2 the 2<sup>nd</sup> parameter of ttm2txt should have full path information including the \_nr.ttm
- 3 the 3<sup>rd</sup> parameter of ttm2txt should be the folder name only

## 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 13: Maps Folder**



## Figure 14: 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 all records with the following values: ZLEVELS = 0, POINT\_NUM = 1, NODE\_ID = 0, INTRSECT = "Y", DOT\_SHAPE = 0, and ALIGNED = "N".

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

You may leave City information 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 \_h\*.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. This way it will avoid confusion, as MajHwys outputs h1 and h2, while SecHwys outputs h3 and h4. 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.