

ETI MAP DATA REQUIREMENTS

Mapping Data Overview

ETI mapping requires ESRI shape file format for map display. The shape file is an industry standard, open file format developed by ESRI. Each shape file set represents a layer on the map. Shape files consist of a *.shp, *.dbf, and *.shx file. There may be additional file extensions, but these three are required. The *.shp file is the vector (graphic) information. The *.dbf file is a Dbase (FoxPro) database file that holds the data associated to each vector element in the shape file. The *.shx is an index file that must exist for a layer to successfully open on the map. A map will usually consist of multiple shape files – in other words, it typically has multiple layers.

ETI mapping can display a user-definable set of layers. It is up to the agency to determine what layers they want to see based on what is available. Common layers used in a public safety environment may include, but are not limited to: jurisdictional boundaries (townships, city limits, county borders, etc.), hydrology (rivers, lakes, streams, etc.), street centerlines, real estate parcels, and address points.

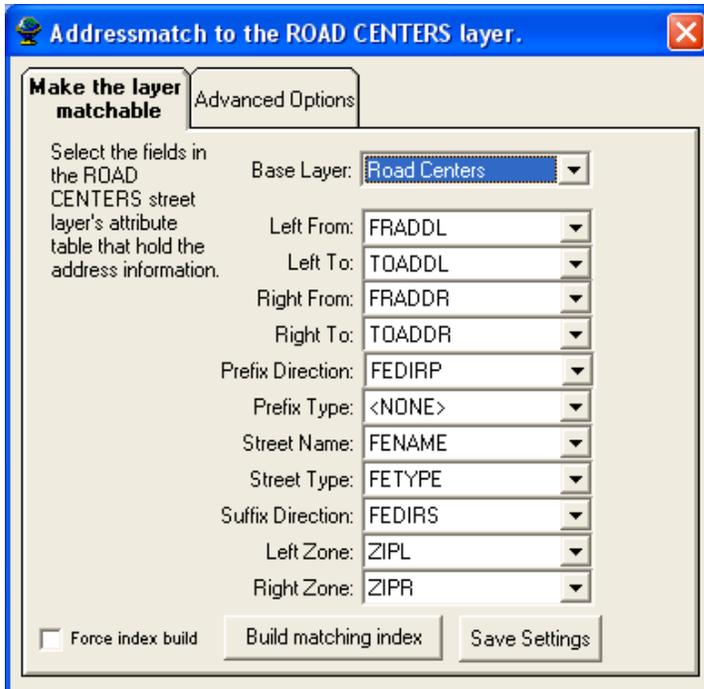
Other useful layers include: fire hydrants, railroads, and power lines. In addition, ETI map display is capable of displaying aerial photography in MrSID format.

At a minimum, street centerlines with address ranges are necessary. It is also recommended that an address point layer (points on the map with each address x, y coordinate) exists for the most accurate pinpointing of locations.

Geocoding (estimating an address location on the map)

In order to accomplish “Geocoding” in ETI map display software, a street centerline map layer with certain data attributes must exist. Geocoding is the process of locating an address on the map by estimating the distance along a street segment using a range of addresses. Each data element (or field) must be populated with relevant information in order to geocode an address.

Following is a screen shot taken from the INTERMap® configuration window:



The base layer can be named anything that suits your department or agency. The individual fields that contain the data can be named whatever you want as well. Following is a break down of the purpose for each of the street centerline layer fields:

The address range data consists of four fields: “left from”, “left to”, “right from”, and “right to”. Since streets are typically defined on the map as segments that start and stop at intersections and jurisdictional boundaries, the range information is specific to each line segment on the map that defines a street. A single street on the map usually is made up of many line segments.

The “left from” field holds the lowest address number on the left side of the street segment, while “left to” is the highest address number on the left side of the street. “Right to” and “right from” correspond to the low and high address number on the right side of the street.

The street name should be stored in separate fields made up of “prefix direction”, “street name”, “street type”, and “suffix direction”. “N MAIN ST” would be stored as follows:

prefix direction = “N”
 street name = “MAIN”
 street type = “ST”
 suffix direction = “”

In the event that there are duplicate street names in the map with overlapping ranges, a zone qualifier is used to differentiate those addresses. There should be a “left zone” and “right zone” field that qualifies the left and right side of the street. These zone fields can be a zip code, community name, or ESN number. Zone data is not required, but is definitely recommended especially if there are many duplicate street names within the map area.

The other field not mentioned is “prefix type”. This field is not required, but is useful in fine-tuning the geocoding characteristics. This field would contain standard ways of identifying

certain types of streets. Values such as “CO RD” for county road or “US HWY” for US highway would be stored in this field instead of in the street name field. Familiarity with the ESRI address standardization process is necessary in order to populate this field correctly.

Pinpointing (locating an address by X,Y)

In order to pinpoint an address location on the map with the most accuracy, a map layer with each address in the map area is necessary. This data can be collected via a GPS unit and turned into a shape file. Following are the requirements as to the data fields.

In this case, there is a single field that holds the address number since the point on the map represents a single address. Just like the street centerline data, the street name field needs to be broken into “prefix direction”, “street name”, “street type”, and “suffix direction”. There also needs to be a community name or a city name to act as a qualifier for the address. In addition two fields that contain X and Y coordinates are required. The coordinates should either be in the same system as the map data itself, or in standard latitude, longitude decimal degrees format.

Other Data Considerations

The physical name of the shape files loaded in ETI map display does not matter, as well as the field names up until the ETI map display software is installed. This is because the map display software is configured to load specific layers, and geocodes based on specific file names. Shape file names should remain the same once ETI mapping is installed. Field names used for the street centerline and address point layers should also remain the same. This ensures smooth updating of map data, without requiring changes to the map display configuration files. New fields can be added at any time, but new layers will require updating the map display configuration in order to load in the map. As long as these rules are followed, updating the map data is as simple as exiting the ETI map display software at each workstation, and copying the new shape files to the server location. In some instances, it may be necessary to delete the street centerline *.gcd file (geocode index file) and rebuild the geocoding index from the ETI map display software.

One of the biggest challenges in locating addresses is achieving uniformity between the INTERCad® geo file (tabular data with street range information) and the map street centerline data. The INTERCad® geo file is standardized according to address information received in the E911 ALLI stream. However, the map data usually is derived from a different source (such as county auditor, planning offices, etc.). Matching an E911 call with an address in the GIS data should be taken into consideration when undertaking a GIS project.