**Radar OpenStreetMaps ( OSM ) GIS Street Builder for GrLevelx v2022-10-08**

Requirements:

Windows 10, version 1803 or newer

QGIS v3.26.3 or newer

Currently about 325 Gb of disk space to build all radar sites, about 235 Gb of space for a working set of files. The required amount of space will increase as the number of roads increase over time.

NOTE.. It may be possible to run these batch scripts on earlier versions of Windows IF you also install CURL.EXE and TAR.EXE but these are untested and unsupported at this time.

Please note that it takes a long time to run these scripts for all radar sites. While every computer will differ depending on it's setup... Building for all radar sites, my own build time took 20 hours on a Ryzen 7 5800x CPU with 32Gb of system memory when building on a large hard drive. While that may seem like a long time, it averages out to about 6 minutes per radar site. When I was building the same manually, it took over a week.

Extract the ZIP file with full paths. It should extract into a folder named Radar-GIS-Street-Builder, if you wish to move or rename this after extracting, that is fine it is only named that to describe the project. Once extracted with full paths, the state directory names MUST be all lower case. When the batch is downloading the original GIS files from Geofrabrik.de, the scripts use the directory names to define what state is being downloaded so must remain in lower case or it will fail. The Radar Site directory names must exist, but how they are named is not important if you wish to rename them for whatever reason.

These need to be run in the QGIS4W Shell found in your QGIS folder after you installed it. The BAT scripts relies on the environment settings that the QGIS4W Shell provides so that the QGIS utils used in the script can be found.

The following are the included batch script files and a description of what it is for. These are broken up into several BAT files to give more flexibility in what is being done. They can be done as a group if you run the 3 primary batch files, or separately if you have a need to focus on a single state or radar site more. If building separately, you will still need additional surrounding state road files to merge into something that can be clipped for each radar site being made.

**Building all Radar site GIS street maps instructions.**

1. Open the QGis **OSGeo4W Shell** ( found in your QGis folder created when you installed it ).
2. Change to the drive and folder that contains the scripts.
3. Run **1-Get-All-Roads.bat**
4. Run **2-Merge-All-Roads.bat**
5. Run **3-Clip-All-Radars.bat**
6. Optional/Recommended - Run **1c-Clean-Up.bat** to cleanup and remove unneeded files.
7. Add GIS file and style file to your radar program for the radar site(s) you want.

**Building a single Radar site street map instructions.**

1. Open the QGis **OSGeo4W Shell** ( found in your QGis folder created when you installed it ).
2. Change to the drive and folder that contains the scripts.
3. Change ( CD ) to the state folder you want to create maps for.
4. Run **1a-Set-Path.bat** to add the scripts location to the system path environment.
5. Run **a-Get-State-Roads.bat**
6. Run **b-Clip-Radars.bat**
7. If building more than one state’s radar maps, CD to each state and repeat steps 5-6
8. Optional/Recommended - Run **1c-Clean-Up.bat** to cleanup and remove unneeded files.
9. Add GIS file and style file to your radar program for the radar site(s) you want.

**Batch file script file descriptions.**

Primary BAT files to build all street files for each radar site. Run each in the following order one after the other. If you run them out of order, the required files to complete the operations won't be available. If any of them are interrupted, they should be able to be gracefully restarted and should continue where the process left off once it finds missing or incomplete files in the subdirectories.

**1-Get-All-Roads.bat**

Downloads the full state OSM GIS files from the Geofrabrik.de. State directory names must be left as lower case names or the batch files will fail. The scripts use a variable based on the directory name to determine what is being downloaded. California is an exception, it have two different downloads and there is a special BAT file found for it in the state directory itself.

**2-Merge-All-Roads.bat**

Used to merge surrounding states road maps together before being clipped for each radar site. Since most WSR-88D radar site maps use a 250 mile radius range ( except the TDWR types which have a 60 mile radius ), it requires that several surrounding state GIS road maps are merged together before being clipped down for a specific radar sites street map. In each state that has a radar site in it, there is a STATES.TXT file that lists each state that needs merged before the clippings stage. There is a separate BAT file to merge the California road files that join the two GIS files that were downloaded as well that is run before doing all of the other state file merges.

**3-Clip-All-Radars.bat**

This set of BAT files first goes into each state directory and then each radar site directory and begins clipping the merged state road maps down into the 250 mile or 60 mile radius they'll use.

The secondary BAT files that are called from the primary batch files or can be used to create a single states radar GIS files. To use separately from the primary BAT files, you must be within the state folder you want to create. In addition, if running separate from the primary BAT files, run the **1a-Set-Path.bat** file first from the primary directory the batch files are in so they will be found when you run the command. Once finished, run the **1b-Restore-Path.bat** file to restore your systems PATH environment setting back to normal.

**a-Get-State-Roads.bat**

Downloads the full state OSM GIS files from Geofrabrik.de for the state folder you are in and unzips just the road shapefiles from them. It then deletes the full state file that is no longer needed once the roads are extracted from it to save disk space. It then switches to the surrounding states road files and repeats the process if they don’t exist and finishes by merging all of the road files together into a merged set of files. Must be run from the state folder you are working on.

**b-Clip-Radars.bat**

If clipping every radar site for a state, use this from the state folder and it'll step through each radar sites subfolder automatically. Not needed if only clipping a single radar site, then just use the following BAT.

**Sub Batch files**

These files are called from the various batch files above and are not meant to be run by themselves in most cases.

**x1-Get-Roads.bat**

Downloads the full state OSM GIS files from Geofrabrik.de for the state folder you are in and unzips just the road shapefiles from them. It then deletes the full state file that is no longer needed once the roads are extracted from it to save disk space. Please note there is another separate and unique batch file that has the same name in the california folder that is used just for that state, see more info about this under the other various files area.

**x2-Merge-Cal-Roads.bat**

Special BAT file that is used to merge the two California road shape files ( from North and South California ) that are downloaded from Geofrabrik.de to create a single set of road shape files. The separate shape files are deleted to save space.

**x3-Merge-Roads.bat**

Combines all of the surrounding states road shape files into a single merged file that can be used to clip each radar site. The required state files are listed in a STATES.TXT file found in each state directory if they have radar sites in them. If you are using this separately to make a single or set of radar street maps for a single state, you will still need to have the surrounding states road shape files in order to complete it. Read the STATES.TXT file found in each states folder to know which ones are required before performing this step. Must be run from the state folder you are working on.

**x4-Clip-Radar-Radius.bat**

Used to actually clip each radar site’s GIS file to the radius for that site. Can be used if just clipping a single radar site's street map if a merged GIS file for the state exists already. Must be run from the radar site's folder you are working on.

**General utility BAT files**

**1a-Set-Path.bat**

Must be run prior to using the secondary BAT files, the primary BAT files already call this automatically. Deletes any old 1b-Restore-Path.bat file if found, then creates a new 1b-Restore-Path.bat, finally it sets the PATH environment to include the current directory ( %cd% ) so the various BAT files can be found and run anywhere they are called from within the subdirectories.

**1b-Restore-Path.bat**

Must be run afterwards when finished using the secondary BAT files, the primary BAT files already call this automatically when they finish. This simply resets the PATH environment back to what it was before running the 1a-Set-Path.bat file.

**1c-Clean-Up.bat**

Run after completely building as single or all radar site maps. This will remove the unneeded shapefiles to save disk space leaving just the radar site street map GIS files and included files used to rebuild with later.

**1d-Reset\_All.bat**

Run only if you wish to start a new clean and updated set of radar site street map GIS files. Removes all shapefiles that are not needed when making a new set. This does leave the required folders, radius files, various batch files, style files and street.txt files needed to make a new set from.

**Other various files included.**

**radius.\* shapefiles**

A set of shapefiles used to trim out the radius for each radar site from the merged state shape files. These are unique for each radar site location and are not interchangeable with the other radius shape files.

**OSMroadJH2019.sty**

OSM style file. Found in the primary folder along with each states folder. You only need to use one if you are using several states, they are included in each state in the event you only want one state's radar site so you won't need to hunt it down. All copies are the same.

**states.txt**

Found in the primary folder listing every state and/or territory. Also copies are found in each states folder that only list the states surrounding them in order to build a merged shapefile for that states radar sites. The ones in each state folder are unique and can't be mixed. The island sites do not require any since there are no surrounding states to be merged with.

**x1-Get-Roads.bat**

Found only in the california folder. Unique batch file to the California folder since two shape files are needed to get all roads for that state. Once it downloads both sets, it extracts each and merges them into a single set of road shapefiles.

**README.txt**

This file you are reading.