MassGIS Data: Massachusetts Department of Transportation (MassDOT) Roads

May 2022

This layer is the official state-maintained street transportation dataset available from MassGIS. It represents all the public and many of the private roadways in Massachusetts and includes designations for Interstate, U.S. and State routes.

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Downloads

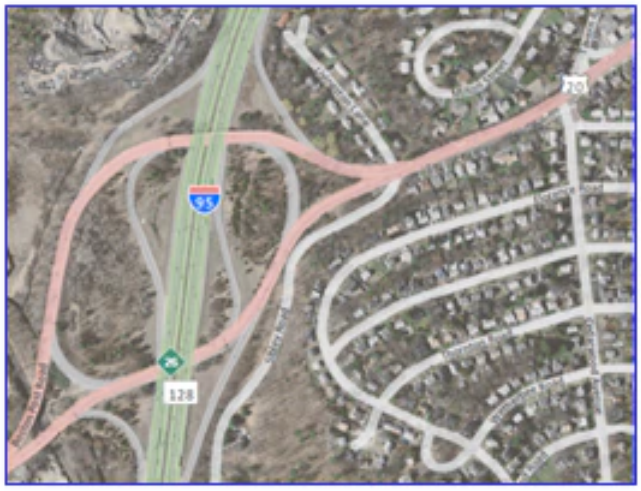
Download these layers with ArcGIS layer files:

Download Shapefiles
(https://s3.us-east-1.amazonaws.com/download.massgis.digital.mass.gov/shapefiles/state/MassDOT_Roads_SHP.zip)

Download File Geodatabase
(https://s3.us-east-1.amazonaws.com/download.massgis.digital.mass.gov/gdbs/MassDOT_Roads_GDB.zip)

Web feature service
(https://massgis.maps.arcgis.com/home/item.html?id=b06138b158694703a97d038be9a89610)

Overview



Click to open full size image
(/files/images/massgis/datalayers/massdotrds.png)

Formerly known as the Massachusetts Highway Department (MHD) Roads, then the Executive Office of Transportation - Office of Transportation Planning (EOT-OTP) Roads, the MassDOT Roads layer includes linework from the 1:5,000 road and rail centerlines data that were interpreted as part of the **1990's Aerial Imagery project** (/info-details/massgis-data-1990s-aerial-imagery). The **Massachusetts Department of Transportation - Office of Transportation Planning** (/topics/massdot-transportation-planning), which maintains the primary source for this layer, continues to add linework from municipal and other sources and update existing linework using the most recent color orthophoto imagery as a base. The attribute table includes many "road inventory" fields maintained in MassDOT's linear referencing system. See the Attributes section below for more details.

The data layer published in November 2018 is based on the MassDOT 2017 year-end Road Inventory layer and results of a 2014-15 MassDOT-**Central Transportation Planning Staff** (https://www.ctps.org/) project to conflate street names and other attributes from MassGIS' "base streets" to the MassDOT Road Inventory linework. The base streets are continually maintained by MassGIS as part of the **NextGen 911** (/service-details/massgis-and-nextgen-911) and **Master Address Database** (/info-details/massgis-data-master-address-data) projects. MassGIS staff reviewed the conflated layer and added many base street arcs digitized after the completion of the conflation work. Other edits included modifying some linework in areas of recent construction and roadway reconfiguration to align to 2017-18 Google ortho imagery, and making minor fixes to attributes and linework.

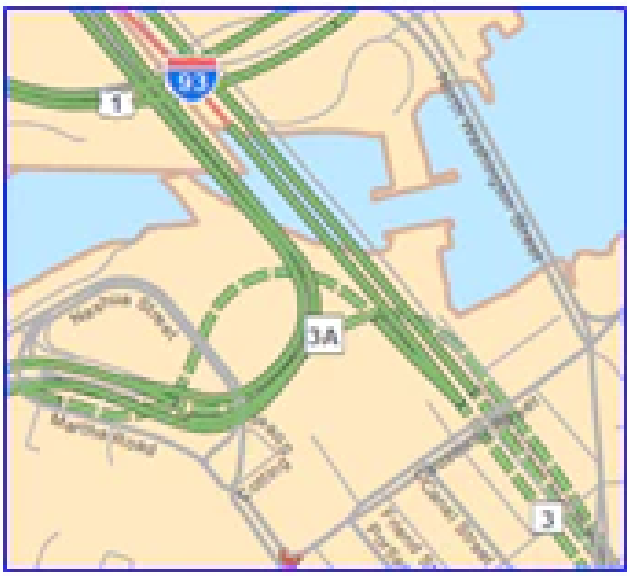
The following feature classes are available:

- **EOTROADS_ARC** (aka "All Roads") is the full statewide layer. Created from this layer are two subsets that may be useful in smaller-scale mapping:
- **EOTMAJROADS_ARC** comprises major roads (CLASS = 1 through 4).
- **EOTMAJROADS_RTE_MAJOR** is a multi-part line feature class consisting of all Interstate and U.S. routes and several major State routes.

Note: The "EOT" in the layer names was not changed to "DOT" because legacy applications and web services rely on the existing names.

Production

MassGIS received the 2017 year-end release of MassDOT's Road Inventory data and, in addition to the edits described above, further processed the data to facilitate display, particularly in MassMapper



Click to open full size image
(/files/images/massgis/datalayers/massdotrds2.png)

(https://maps.massgis.digital.mass.gov/MassMapper/MassMapper.html) (which includes the statewide Base Map (/service-details/massgis-base-map)) and ArcMap. Processing included:

- adding the CLASS, ADMIN_TYPE and RDTYPE fields, used for line and route marker (shields) symbolization
- adding the ALTRTNUM<1-4> and ALTRT1TYPE fields for enhanced route marker labeling
- adding the RT_NUMBER and STREET_NAME fields so that existing applications that use these fields would continue to function
- other fields described below

To produce the Major Roads layer (**EOTMAJROADS_ARC**), MassGIS selected arcs where CLASS = 1, 2, 3 and 4 from the full layer, dropped all fields included in the original layer from MassDOT, and dissolved on all the fields added by MassGIS to reduce the number of arc segments.

The Major Routes layer (**EOTMAJROADS_RTE_MAJOR**) was produced by MassGIS from the Major Roads layer by selecting all features where ADMIN_TYPE = 1 (Interstate) or 2 (U.S.), or where the RT_NUMBER or any of the alternate route numbers for state routes (ADMIN_TYPE = 3) is 2, 3, 8, 9, 18, 24, 25, 28 or 128. In ArcGIS 10.x, these roads were dissolved as multi-part features on the ADMIN_TYPE and RT_NUMBER fields. This layer was produced for fast display at small (e.g. statewide) scales rather than for true route-based analysis.

Attributes

Fields from MassGIS

Each arc in the "All Roads" **EOTROADS_ARC** feature class contains the following fields added by MassGIS:

Field Name	Type	Description
CLASS	1-I	Designates a road based on functional classification and access; used for plotting. Classes are: **1** - Limited Access Highway **2** - Multi-lane Highway, not limited access **3** - Other numbered route **4** - Major road - arterials and collectors **5** - Minor street or road (with Road Inventory information, not class 1-4) **6** - Minor street or road (with minimal Road Inventory information and no street name) In some cases, based on a visual review, values in this field were modified for consistency when symbolizing the data. Note: Tracks and Trails (formerly CLASS codes 7 and 8) have been removed from this layer and are now part of the statewide **Tracks and Trails** (/info-details/massgis-data-tracks-and-trails) datalayer. The CLASS field was first calculated to 0 for all records and then coded in Oracle SQL*Plus based on the following WHERE clauses: 1: ADMIN_TYPE = 1 or (FUNCTIONALCLASSIFICATION = 1 and ACCESSCONTROL = 1) or (FUNCTIONALCLASSIFICATION = 2 and ACCESSCONTROL = 1) 2: CLASS = 0 and ACCESSCONTROL <> 1 and NUMBEROFTRAVELLANES > 1 and OPPOSITENUMBEROFTRAVELLANES > 0 and (RT_NUMBER <> ' ' or RT_NUMBER IS NOT NULL) 3: CLASS = 0 and (RT_NUMBER <> ' ' or RT_NUMBER NOT LIKE 'N%' or RT_NUMBER IS NOT NULL) 4: CLASS = 0 and ((FUNCTIONALCLASSIFICATION IN (2,3,5)) or (FUNCTIONALCLASSIFICATION = 1 and ACCESSCONTROL = 1 and ADMIN_TYPE <> 1)) 5: (CLASS = 0 and FUNCTIONALCLASSIFICATION IN (0,6)) or (CLASS = 0 and STREET_NAME <> ' ' and STREET_NAME NOT LIKE 'RAMP-RT%' and STREET_NAME IS NOT NULL) 6: CLASS = 0
ADMIN_TYPE	1-I	Type of route in the RT_NUMBER field. Based on the ROUTESYSTEM field. Types are: **1** - Interstate **2** - U.S. Highway **3** - State Route **0** - Not a numbered route
STREET_NAME	80-C	Street name. Same as the STREETNAME field, included for legacy application

		purposes. In the shapefile download this field is STREET_NAM.
RT_NUMBER	4-C	Primary route number. This is the route number of the road type listed in ADMIN_TYPE (where ADMIN_TYPE is 1-3). Based on the ROUTENUMBER field but not including values that begin with "N", which are codes used internally by MassDOT and not signed route numbers.
ALTRTNUM1 **ALTRTNUM2** **ALTRTNUM3** **ALTRTNUM4**	4-C	Alternate Route numbers. Type is either U.S. or State route for ALTRTNUM1, as indicated in the ALTRT1TYPE field. All other alternate routes are State routes. No road in the state has more than four alternate routes. These fields were populated using the RoadSegementToRouteList table that was included in an earlier data delivery from MassDOT.
ALTRT1TYPE	1-I	Administrative Type for the route number in the ALTRTNUM1 field (**2** = U.S. Highway, **3** = State Route)
RDTYPE	1-I	Expanded version of the CLASS field, with additional values for ramps and tunnels. Values 1 through 6 are the same as CLASS (above). Other values include: **7** - Ramp [Based on SQL query where (FACILITYTYPE in (7, 8, 9, 10) and STREET_NAME like 'RAMP%' and RT_NUMBER IS NULL and CLASS > 2) or (FACILITYTYPE = 1 and STREET_NAME like 'RAMP%' and RT_NUMBER IS NULL and CLASS > 2)]. Some segments were coded as a ramp based on visual review of the data. In places where CLASS 1 highways intersected with other CLASS 1 highways, connecting ramps were coded RDTYPE = 1. **8** - Tunnel [Based on SQL query where FACILITYTYPE in (3, 11) and CLASS > 3] **9** - Tunnel - Limited Access Highway [Based on SQL query where FACILITYTYPE in (3, 11) and CLASS = 1] **10** - Tunnel - Multi-lane Highway, not limited access [Based on SQL query where FACILITYTYPE in (3, 11) and CLASS = 2] **11** - Tunnel - Other Numbered Route [Based on SQL query where FACILITYTYPE in (3, 11) and CLASS = 3]
MGIS_TOWN	1-I	Official city or town name
LENGTH_MI	Double	Length of line in miles. From the Calculate Geometry tool in ArcGIS Desktop 10.4.1.
LENGTH_FT	Double	Length of line in feet. From the Calculate Geometry tool in ArcGIS Desktop 10.4.1.

The Major Roads layer **EOTMAJROADS_ARC** contains only the above fields added by MassGIS except MGIS_TOWN, LENGTH_MI and LENGTH_FT. The CLASS field contains values 1, 2, 3 and 4.

The Major Routes layer **EOTMAJROADS_RTE_MAJOR** contains only the ADMIN_TYPE and RT_NUMBER fields.

Fields from MassDOT

The other fields in the arc attribute table were included in the data from MassDOT. These include roadway classification, ownership, physical conditions, traffic volumes, pavement conditions, highway performance monitoring information, and more. For details see the **Road Inventory Data Dictionary**

(/doc/road-inventory-data-dictionary/download) (PDF format, 105 kb). Note that in the shapefile download, that format only allows for ten characters in field names; the longer Road Inventory File field names are truncated when converted from an ArcSDE layer to a shapefile.

Maintenance

MassDOT GIS staff regularly update this layer. MassGIS receives a version from MassDOT and after completing the processing described above makes updated data available once a year.

>> Report errors or changes to MassDOT (/service-details/submit-road-inventory-updates)

Since the MassDOT roads do not contain address ranges, they may not be used for address matching (geocoding) in GIS software. The most recent roads data publicly available from MassGIS that may be used for geocoding applications are the **TIGER roads** (/info-details/massgis-data-datalayers-from-the-2010-us-census) from the 2010 U.S. Census. For more accurate and complete address matching use the **Statewide Address Points for Geocoding** (/info-details/massgis-data-master-address-data).

In May, 2021, MassGIS edited a street name in Blandford and modified the geometry to a road in Lexington.

The May 2022 update included many edits to roads in Quincy Center, Union Point in Weymouth, Boston, Westwood, Plymouth and other areas (details are in the metadata included with the downloads).

RELATED

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MassGIS home (https://www.mass.gov/orgs/massgis-bureau-of-geographic-information)