

DEPARTMENT OF THE INTERIOR  
U.S. GEOLOGICAL SURVEY

**SURFICIAL GEOLOGIC MAP OF THE TOWNSEND QUADRANGLE,  
MIDDLESEX AND WORCESTER COUNTIES, MASSACHUSETTS,  
AND HILLSBOROUGH COUNTY, NEW HAMPSHIRE**

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Prepared in cooperation with the  
COMMONWEALTH OF MASSACHUSETTS  
DEPARTMENT OF PUBLIC WORKS and the  
STATE OF NEW HAMPSHIRE  
DEPARTMENT OF RESOURCES AND ECONOMIC DEVELOPMENT

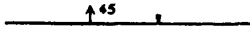
GEOLOGIC QUADRANGLE MAP  
Published by the U.S. Geological Survey, 1990


# GEOLOGIC MAP SYMBOLS


## COMMONLY USED ON MAPS OF THE UNITED STATES GEOLOGICAL SURVEY


(Special symbols are shown in explanation)

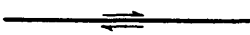
 Contact – Dashed where approximately located; short dashed where inferred; dotted where concealed

 Contact – Showing dip; well exposed at triangle

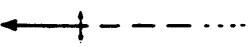
 Fault – Dashed where approximately located; short dashed where inferred; dotted where concealed


 Fault, showing dip – Ball and bar on downthrown side

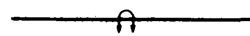
 Normal fault – Hachured on downthrown side

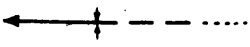
 Fault – Showing relative horizontal movement


 Thrust fault – Sawteeth on upper plate

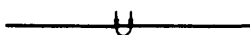
 Anticline – Showing direction of plunge; dashed where approximately located; dotted where concealed

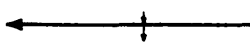
 Asymmetric anticline – Short arrow indicates steeper limb

 Overturned anticline – Showing direction of dip of limbs

 Syncline – Showing direction of plunge; dashed where approximately located; dotted where concealed

 Asymmetric syncline – Short arrow indicates steeper limb





 Overturned syncline – Showing direction of dip of limbs

 Monocline – Showing direction of plunge of axis




 Minor anticline – Showing plunge of axis

 Minor syncline – Showing plunge of axis


Strike and dip of beds – Ball indicates top of beds known from sedimentary structures

 Inclined  Horizontal  
 Vertical  Overturned




Strike and dip of foliation

 Inclined  Vertical  Horizontal




Strike and dip of cleavage

 Inclined  Vertical  Horizontal

Bearing and plunge of lineation

 Inclined  Vertical  Horizontal

Strike and dip of joints



 Inclined  Vertical  Horizontal

Note: planar symbols (strike and dip of beds, foliation or schistosity, and cleavage) may be combined with linear symbols to record data observed at same locality by superimposed symbols at point of observation. Coexisting planar symbols are shown intersecting at point of observation.

Shafts



 Vertical  Inclined

Adit, tunnel, or slope

 Accessible  Inaccessible

 Prospect








Quarry

 Active  Abandoned

Gravel pit

 Active  Abandoned

Oil well

 Drilling  Shut-in  Dry hole abandoned  
 Gas  Show of gas  
 Oil  Show of oil