DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

BEDROCK GEOLOGIC MAP OF THE WARREN QUADRANGLE,
WORCESTER, HAMPDEN, AND HAMPSHIRE COUNTIES,
SOUTH-CENTRAL MASSACHUSETTS

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Prepared in cooperation with
THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS
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

\[\begin{array}{ll}
\text{Inclined} & \text{Horizontal} \\
\text{Inclined} & \text{Vertical} \\
\text{Inclined} & \text{Vertical} \\
\text{Horizontal} & \\
\end{array}\]

Strike and dip of foliation

\[\begin{array}{ll}
\text{Inclined} & \text{Vertical} \\
\text{Inclined} & \text{Vertical} \\
\text{Horizontal} & \\
\end{array}\]

Strike and dip of cleavage

\[\begin{array}{ll}
\text{Inclined} & \text{Vertical} \\
\text{Inclined} & \text{Vertical} \\
\text{Horizontal} & \\
\end{array}\]

Bearing and plunge of lineation

\[\begin{array}{ll}
\text{Inclined} & \text{Vertical} \\
\text{Inclined} & \text{Vertical} \\
\text{Horizontal} & \\
\end{array}\]

Strike and dip of joints

\[\begin{array}{ll}
\text{Inclined} & \text{Vertical} \\
\text{Inclined} & \text{Vertical} \\
\text{Horizontal} & \\
\end{array}\]

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

\[\begin{array}{ll}
\text{Vertical} & \text{Inclined} \\
\end{array}\]

Adit, tunnel, or slope

\[\begin{array}{ll}
\text{Accessible} & \text{Inaccessible} \\
\end{array}\]

Prospect

\[\begin{array}{ll}
\text{Active} & \text{Abandoned} \\
\end{array}\]

Quarry

\[\begin{array}{ll}
\text{Active} & \text{Abandoned} \\
\end{array}\]

Gravel pit

\[\begin{array}{ll}
\text{Active} & \text{Abandoned} \\
\end{array}\]

Oil well

\[\begin{array}{ll}
\text{Drilling} & \text{Shut-in} \\
\text{Show of gas} & \text{Dry hole} \\
\text{Oil} & \text{Show of oil} \\
\end{array}\]

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