USE OF SEISMIC VELOCITY CHARTS

The charts of ripper performance estimated by seismic wave velocities have been developed from field tests conducted in a variety of materials. Considering the extreme variations among materials and even among rocks of a specific classification, the charts must be recognized as being at best only one indicator of rippability.

Accordingly, consider the following precautions when evaluating the feasibility of ripping a given formation:

— Tooth penetration is often the key to ripping success, regardless of seismic velocity. This is particularly true in homogeneous materials such as mudstones and claystones and the fine-grained caliches. It is also true in tightly cemented formations such as conglomerates, some glacial tills and caliches containing rock fragments.

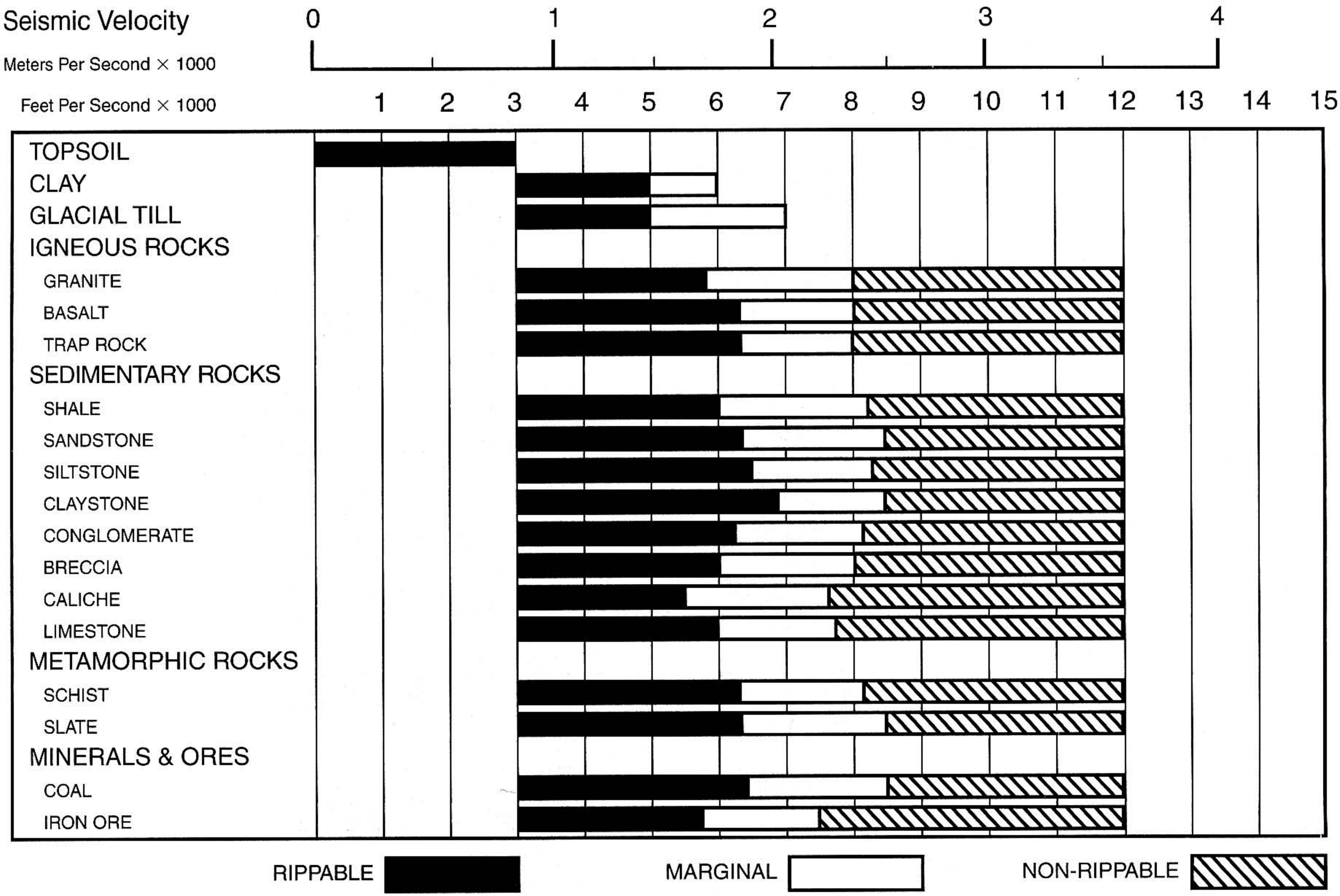
— Low seismic velocities of sedimentaries can indicate probable rippability. However, if the fractures and bedding joints do not allow tooth penetration, the material may not be ripped effectively.

— Pre-blasting or "popping" may induce sufficient fracturing to permit tooth entry, particularly in the caliches, conglomerates and some other rocks; but the economics should be checked carefully when considering popping in the higher grades of sandstones, limestones and granites.

Ripping is still more art than science, and much will depend on operator skill and experience. Ripping for scraper loading may call for different techniques than if the same material is to be dozed away. Cross-ripping requires a change in approach. The number of shanks used, length and depth of shank, tooth angle, direction, throttle position — all must be adjusted according to field conditions. Ripping success may well depend on the operator finding the proper combination for those conditions.

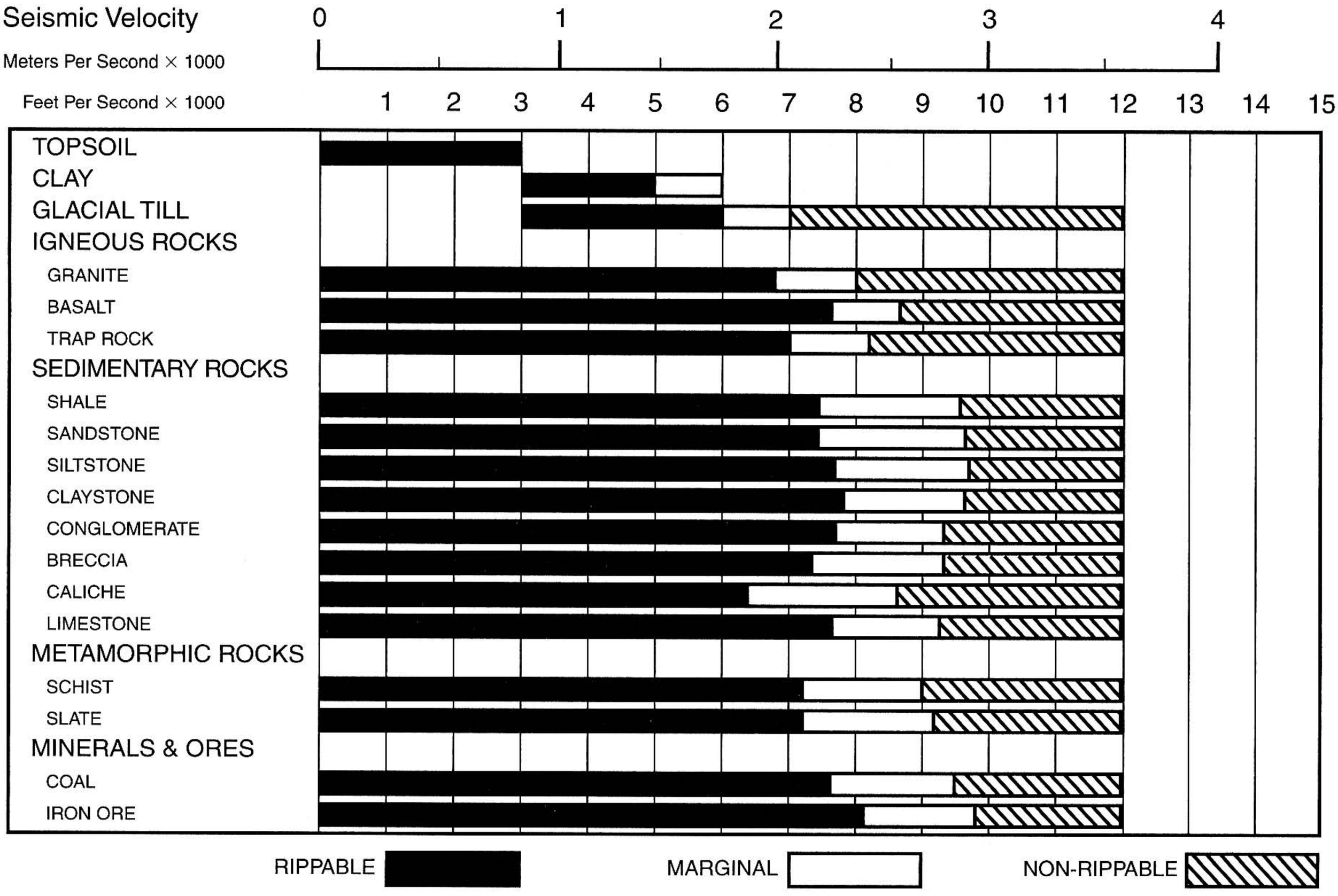
D8R/D8R Series II

- **Multi or Single Shank No. 8 Ripper**
- **Estimated by Seismic Wave Velocities**



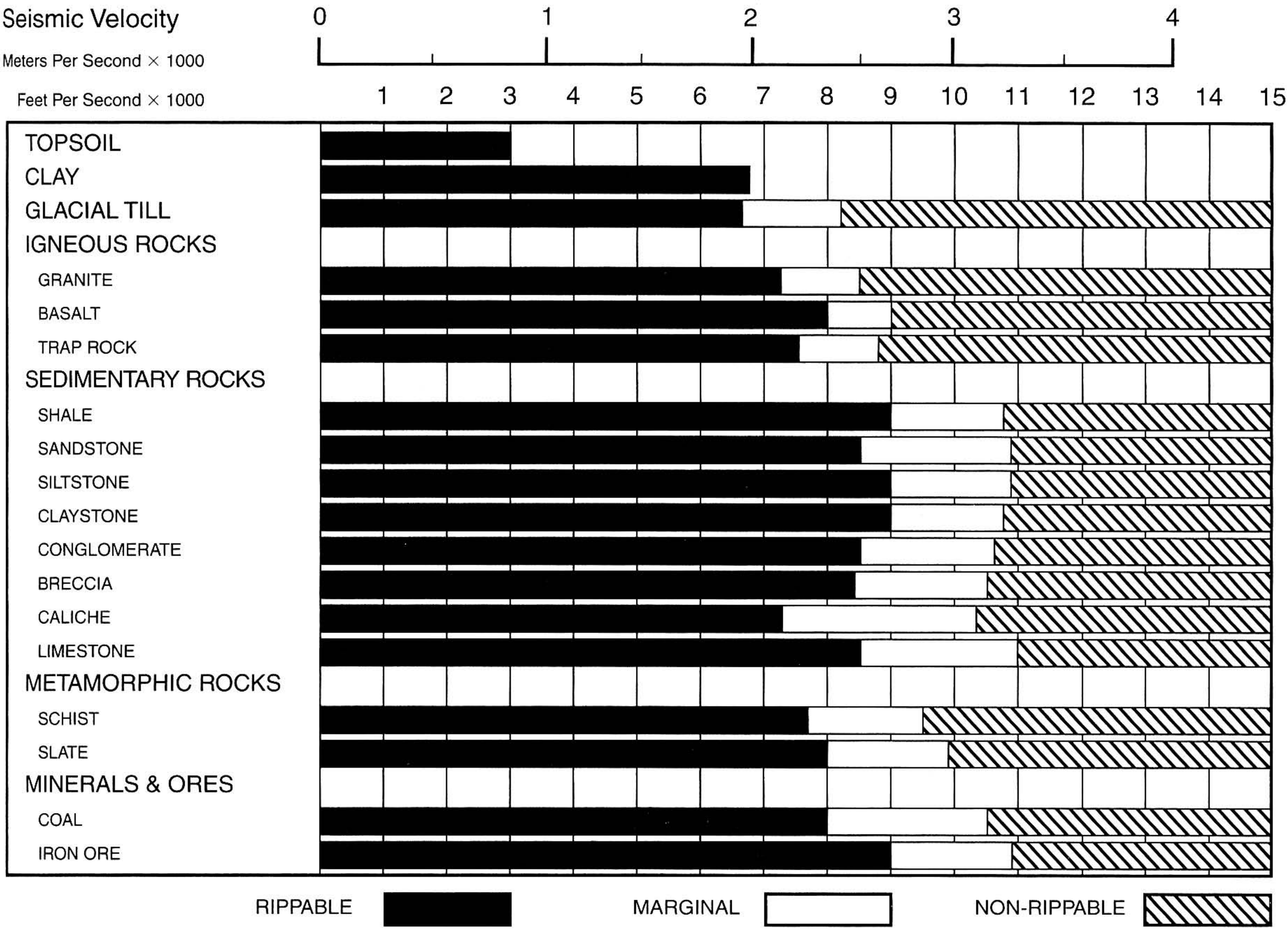
D9R

- **Multi or Single Shank No. 9 Ripper**
- **Estimated by Seismic Wave Velocities**



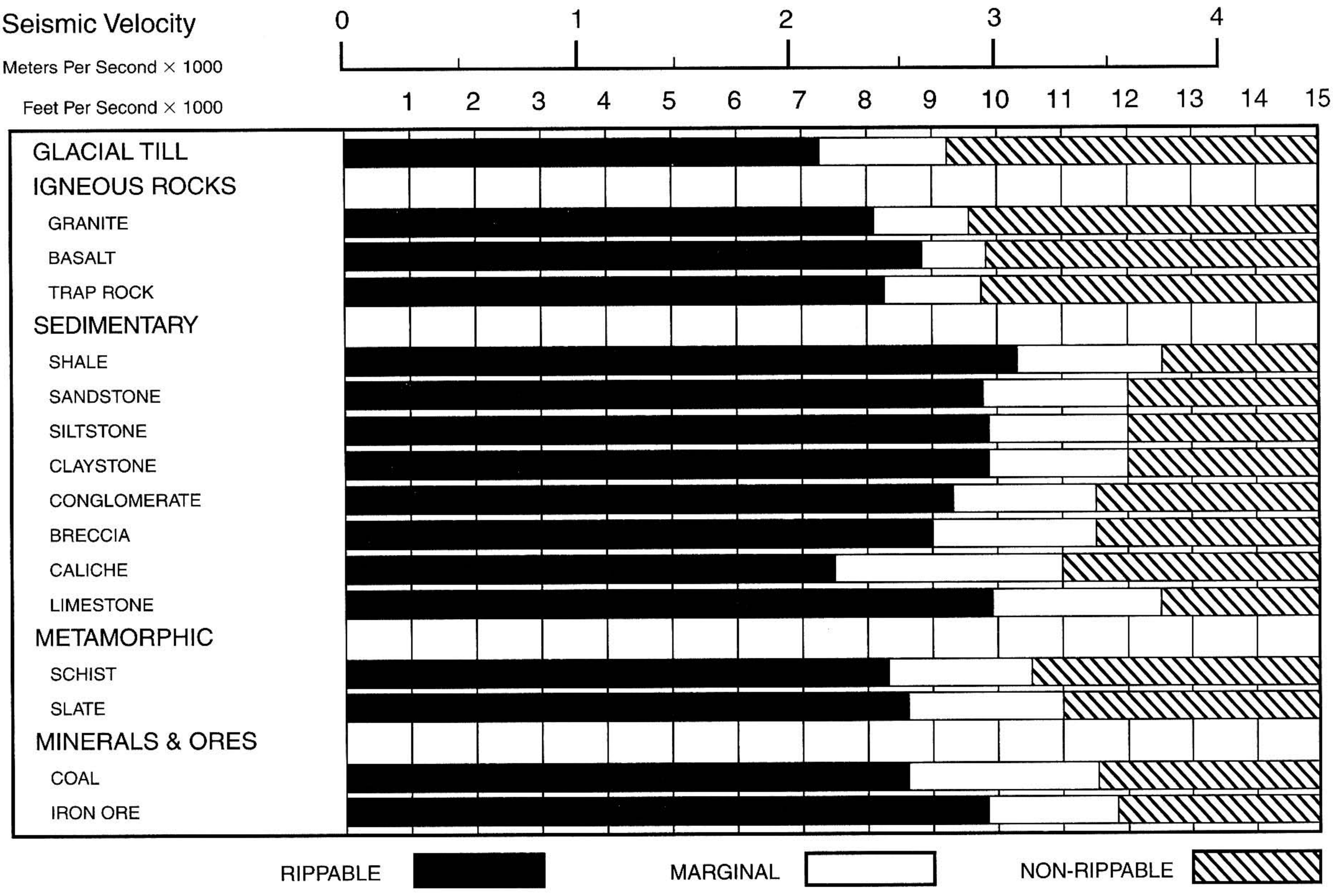
D10R

- **Multi or Single Shank No. 10 Ripper**
- **Estimated by Seismic Wave Velocities**



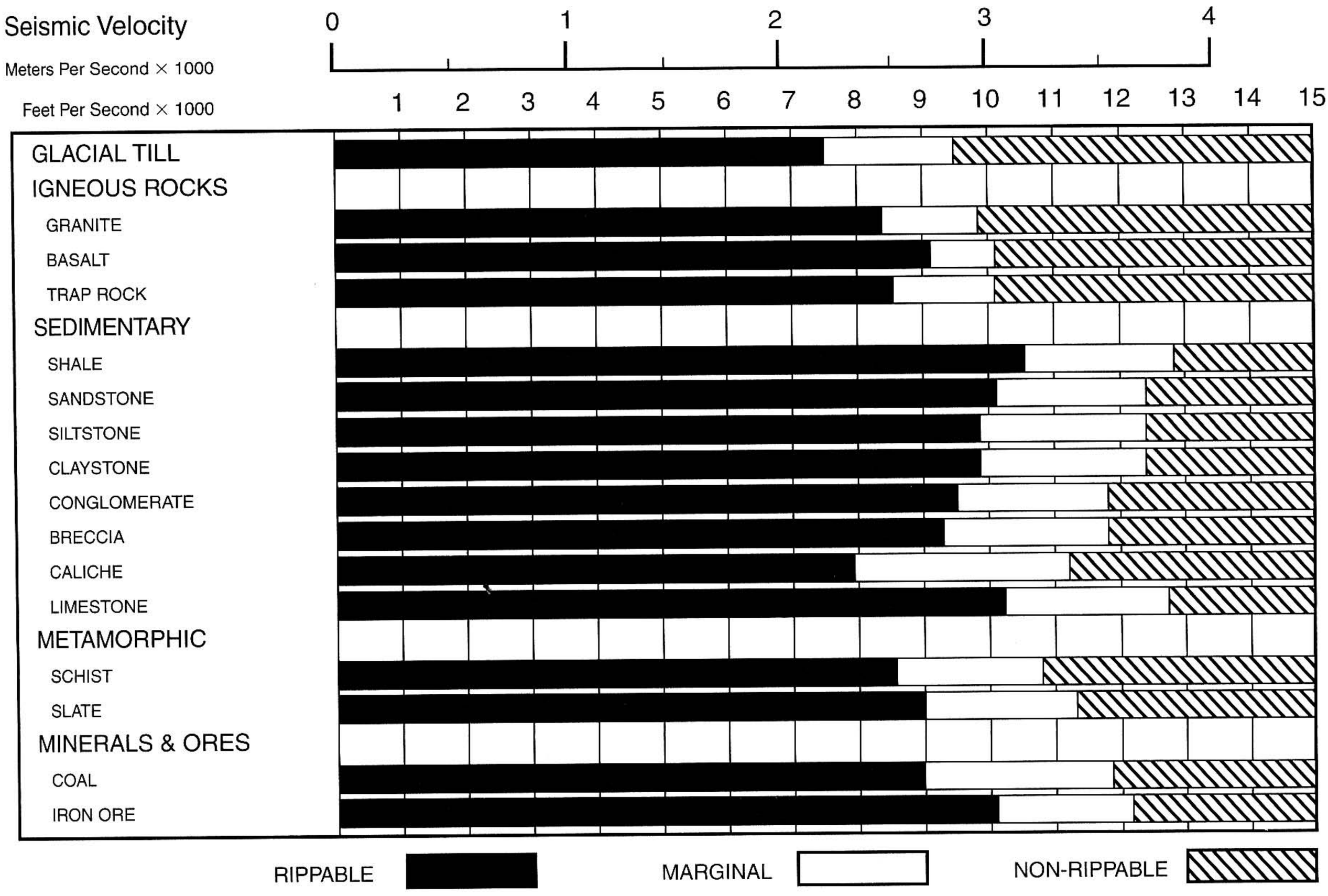
D11R

- **Multi or Single Shank No. 11 Ripper**
- **Estimated by Seismic Wave Velocities**



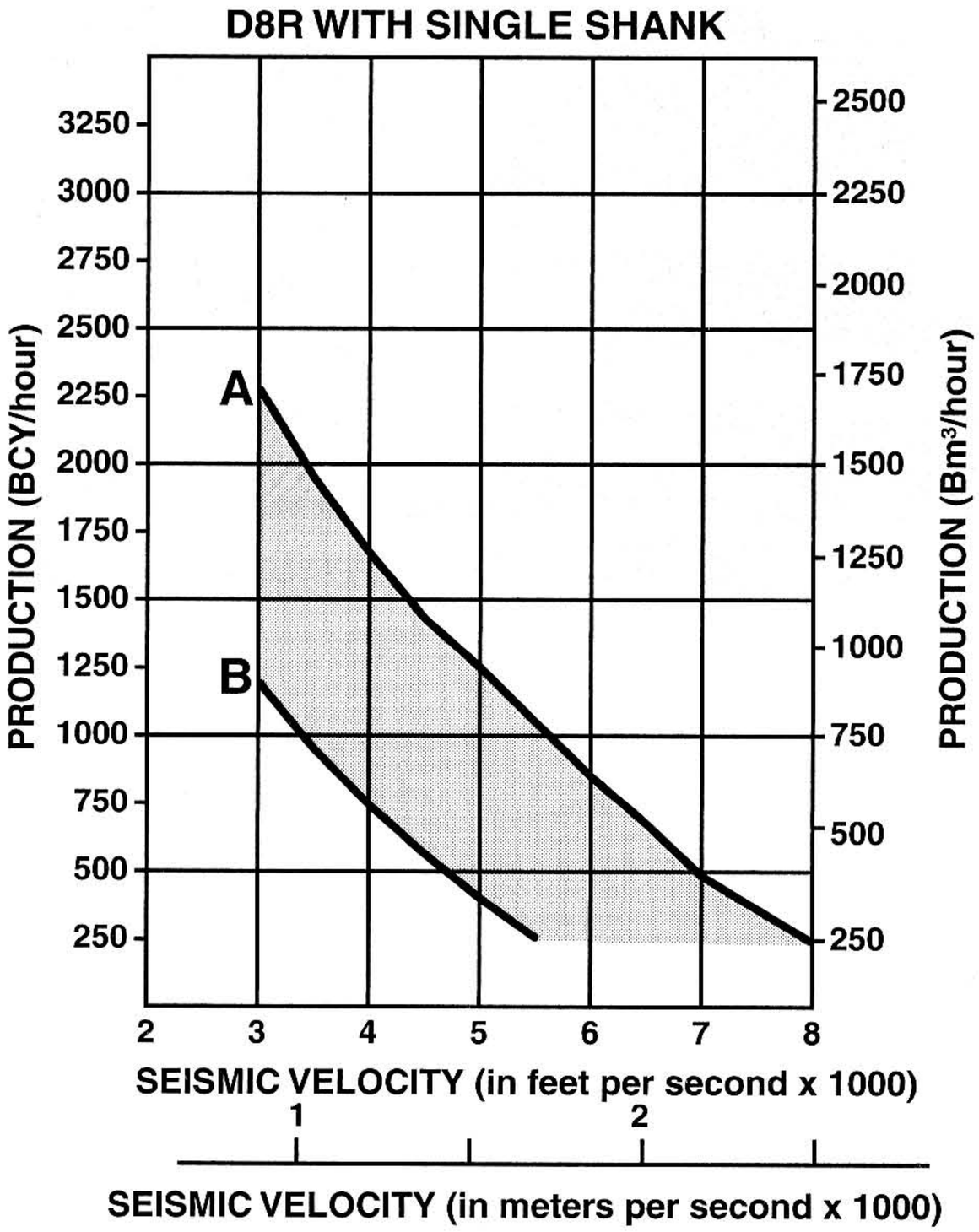
D11R CD

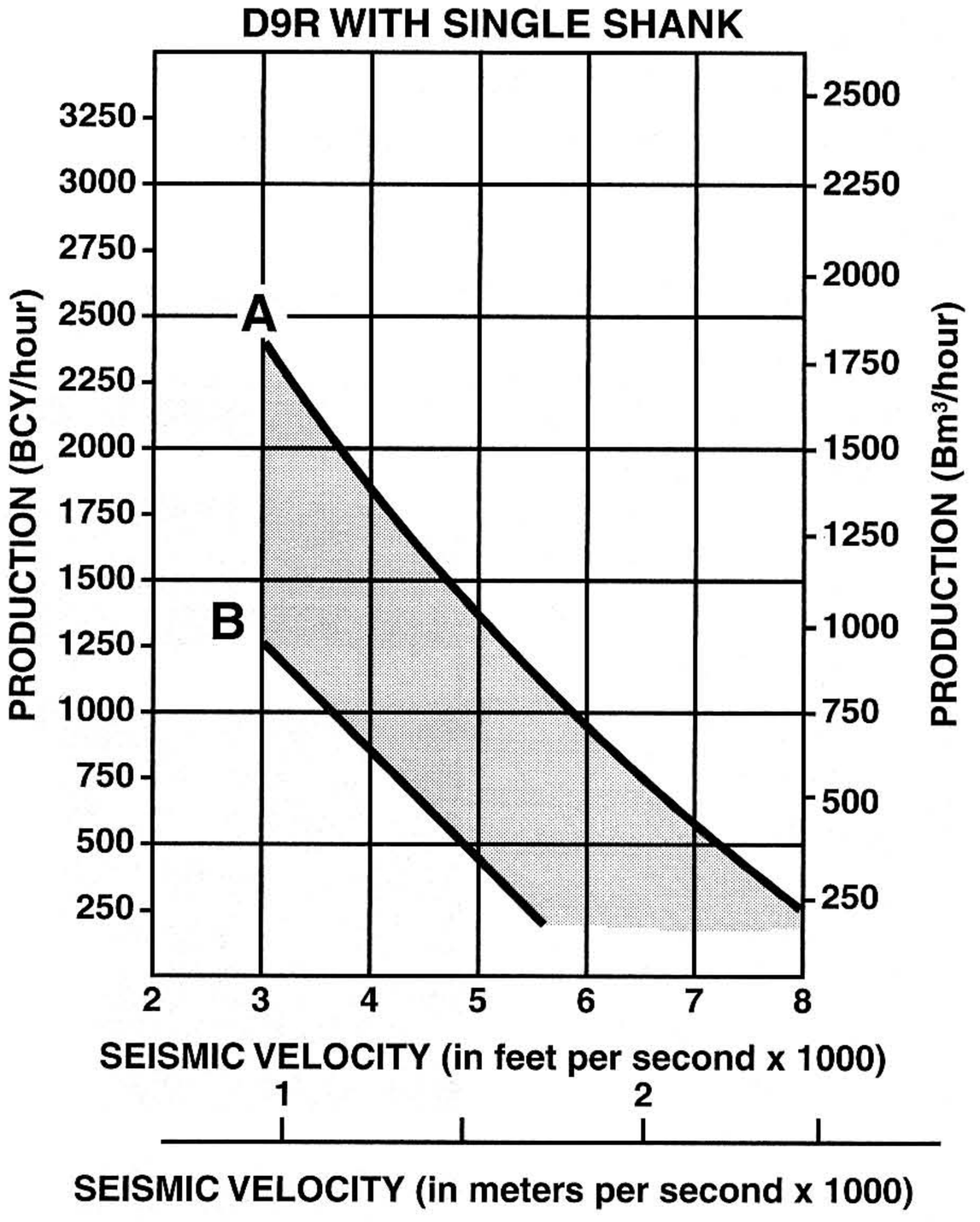
- **Single Shank No. 11 Ripper**
- **Estimated by Seismic Wave Velocities**



CONSIDERATIONS FOR USING PRODUCTION ESTIMATED GRAPHS:

- Machine rips full-time — no dozing.
- Power shift tractors with single shank rippers.
- 100% efficiency (60 min hour).
- Charts are for all classes of material.
- In igneous rock with seismic velocity of 8000 fps (2450 mps) or higher for the D11R, and 6000 fps (1830 mps) or higher for the D10R, D9R and D8R, the production figures shown should be reduced by 25%.
- Upper limit of charts reflect ripping under ideal conditions only. If conditions such as thick lamination, vertical lamination or any factor which would adversely affect production are present, the lower limit should be used.





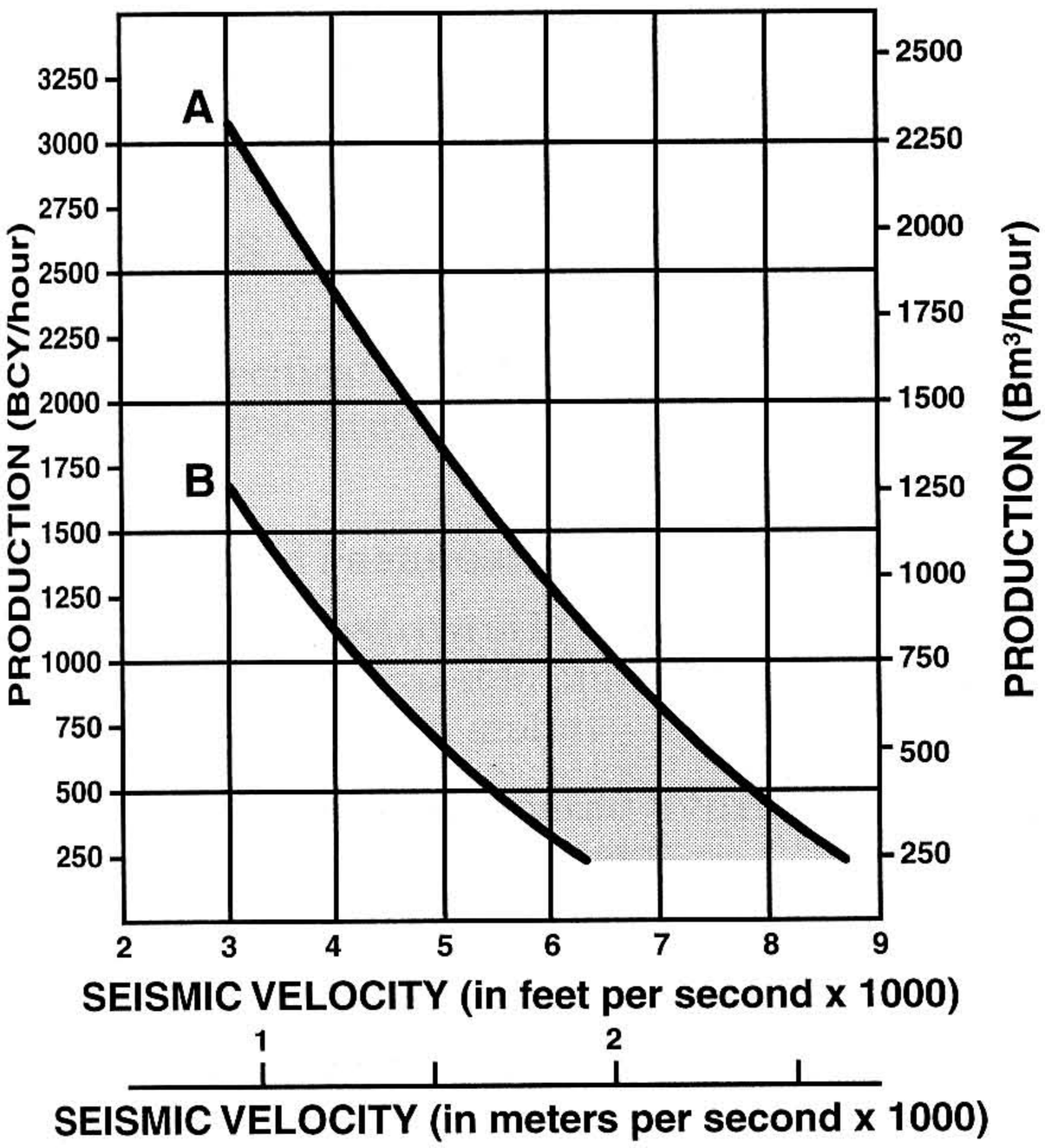
KEY

A — IDEAL
B — ADVERSE

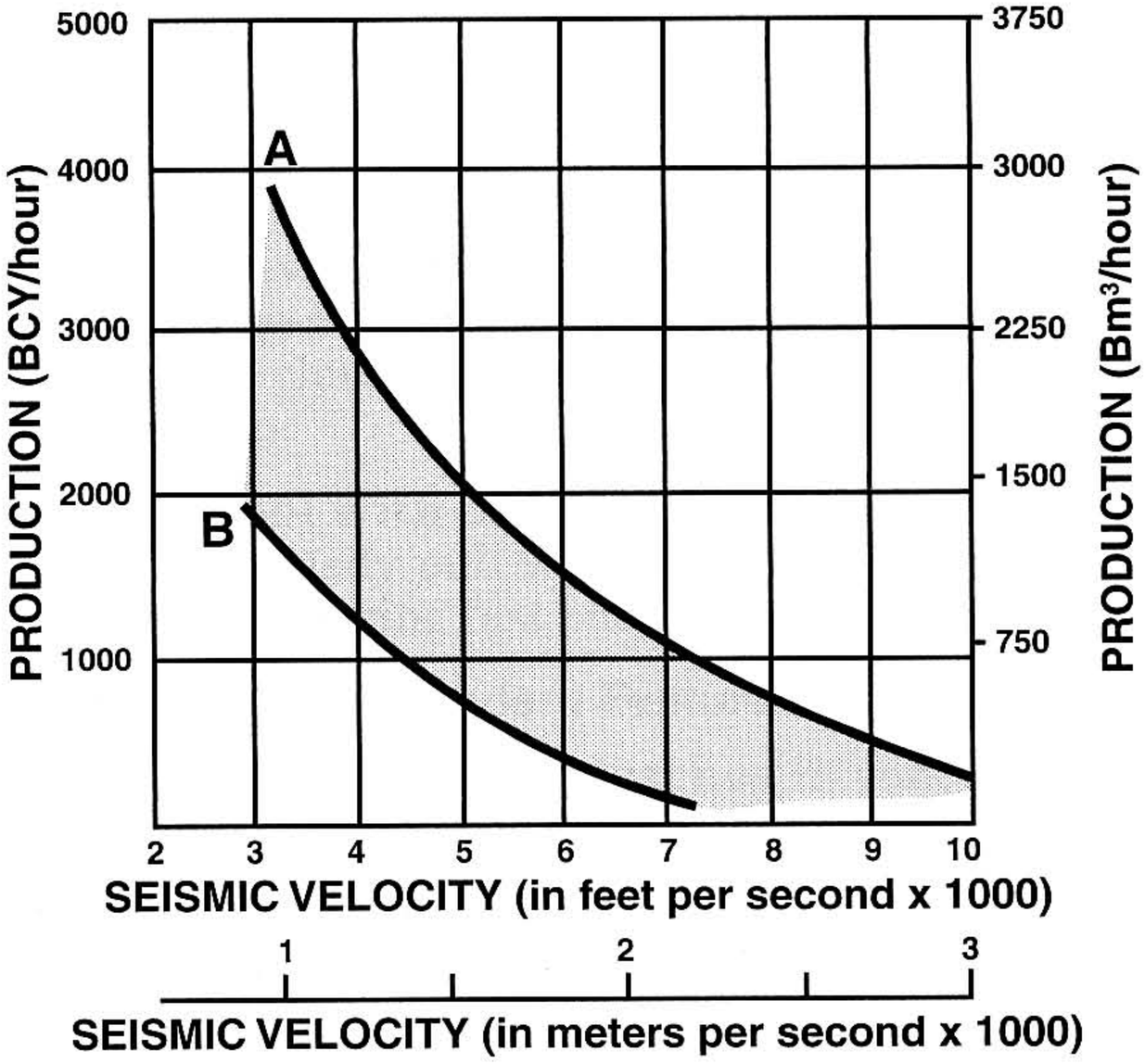
Estimated Ripper Production Graphs

● D10R ● D11R ● D11R CD

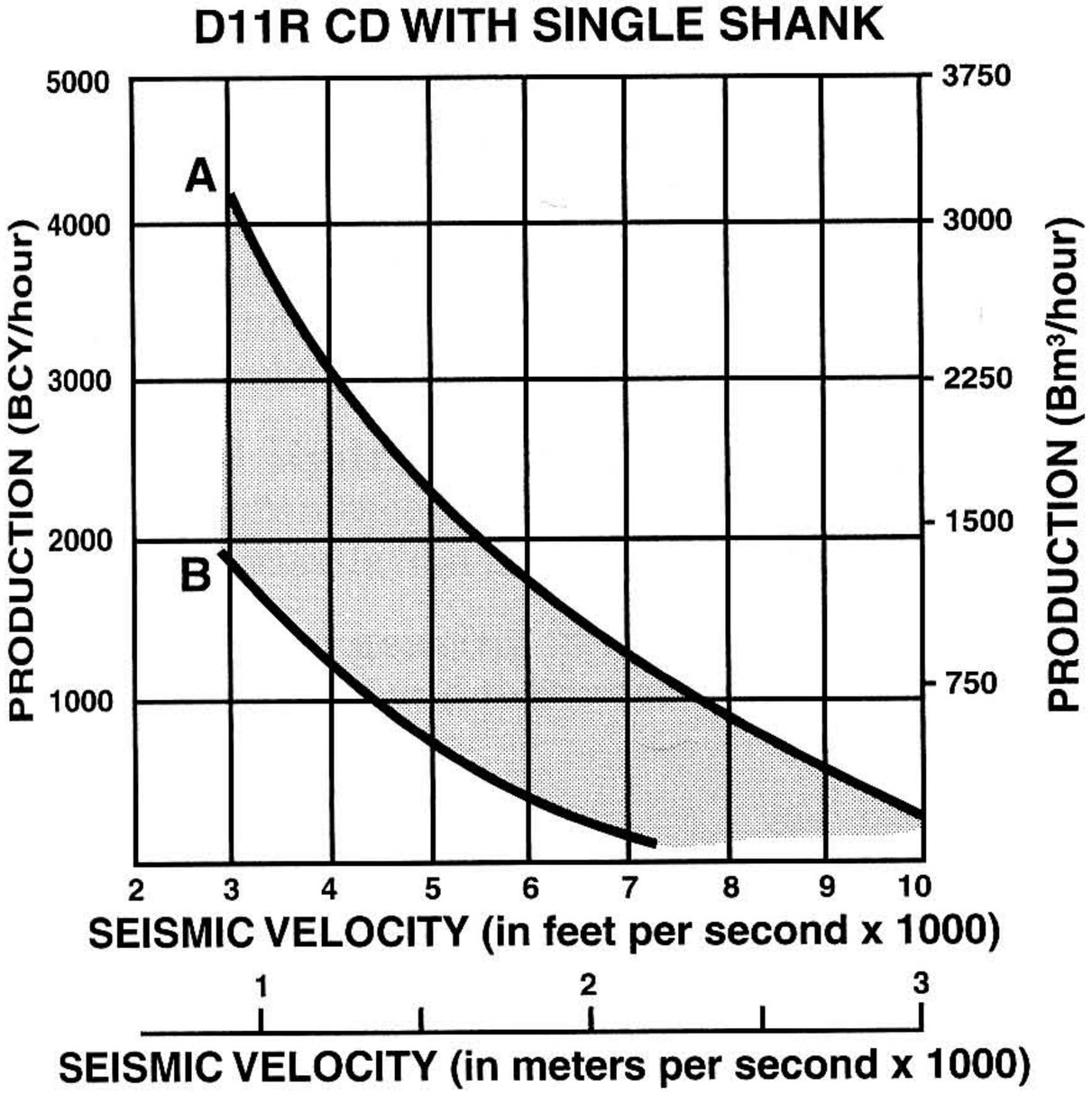
D10R WITH SINGLE SHANK



D11R WITH SINGLE SHANK



D11R CD WITH SINGLE SHANK



KEY

A — IDEAL

B — ADVERSE