

## ABSTRACT

Title of Invention: HAT-SHAPED STEEL SHEET PILE

A hat-shaped steel sheet pile 1 according to the invention comprises a web 3, a pair of flanges 5, a pair of arms 7, and a pair of joints 9. The pair of flanges 5 is formed at both ends of the web 3, an arm 7 constituting the pair of arms 7 is formed at an end of a flange 5 constituting the pair of flanges 5, and a joint 9 constituting the pair of joints 9 is provided at a tip of the arm 7. The hat-shaped steel sheet pile 1 is characterized by including a protrusion 11 satisfying the following expressions (1) and (2) over the entire length of the steel sheet pile 1 in the web 3.

[Mathematical Expression 1]

$$V \geq B/16 \quad \dots (1)$$

$$1.5 \leq \frac{4.1}{\left( \left( \frac{B \times (H/B)^{0.1} \times \sqrt{\varepsilon_y}}{t + \frac{W \times V^{0.85} \times n}{B \times (H/B)^{0.1}}} \right)^2 - 0.25 \right)} \leq 10 \quad \dots (2)$$

where V: protrusion height (mm); W: width (mm) between protrusion bases ( $W < 5 \times V$ ); n: number of protrusions; H: steel-sheet-pile cross-section height (mm); B: steel-sheet-pile web width (mm); t: plate thickness (mm) of steel-sheet-pile-web; and  $\varepsilon_y$ : yield strain of steel sheet pile.

(Fig. 1)