[Document Type] CLAIMS

[Claim 1]

A combined steel wall comprising:

a wall body that includes a plurality of steel sheet piles connected to each other by joints and a plurality of recesses arranged at an interval in an extending direction; and

a plurality of steel pipes that stand on a ground surface on a side, of which a horizontal position is low, of both sides of the wall body along a longitudinal direction of the steel sheet pile while a part of each steel pipe is received in the recess,

wherein at least a part of the wall body and the steel pipes in the longitudinal direction of the steel sheet pile are connected to each other, ~~and~~

a maximum interval L (mm) as a center distance between first and second steel pipes which are adjacent to each other and between which a center distance is the maximum distance, a height H (mm) of the wall body, and a dimension D (mm) that is the sum of radii of the first and second steel pipes satisfy the following formula (1), and

the maximum interval L (mm) is set so that the maximum interval L (mm), the height H (mm) of the wall body, yield stress σ_y (N/mm^2) of the steel sheet pile, a section modulus Z_s (mm^3) of the steel sheet pile, and the maximum bending moment M_{max} (N·mm) applied to the wall body satisfy the following formula (2) and formula (3).

[Formula 1]

$$D \leqq L \leqq (1/2) \times H \quad \cdots (1)$$

[Formula 2]

$$\frac{(3H-4L)\times(2L)^2}{H^3} \times \frac{M_{max}}{Z_s} \leqq \sigma_y \quad \cdots (2)$$

[Formula 3]

$$0.3 \times \sigma_y \leqq \frac{(3H-4L)\times(2L)^2}{H^3} \times \frac{M_{max}}{Z_s} \quad \cdots (3)$$

[Claim 2]

The combined steel wall according to claim 1,

wherein the wall body and the steel pipes are connected to each other by coming into contact with each other.

[Claim 3]

The combined steel wall according to claim 1,

wherein the wall body and the steel pipes are connected to each other by connection members.

[Claim 4]

The combined steel wall according to claim 3,

wherein the connection members connect at least upper portions of the steel sheet piles and the steel pipes.

~~[Claim 5]~~

~~The combined steel wall according to any one of claims 1 to 4,~~

~~wherein the maximum interval L (mm) is set so that the maximum interval L (mm), the height H (mm) of the wall body, yield stress σ_y (N/mm^2) of the steel sheet pile, a section modulus Z_s (mm^3) of the steel sheet pile, and the maximum bending moment M_{max} (N·mm) applied to the wall body satisfy the following formula (2).~~

~~[Formula 2]~~

$$\frac{(3H-4L)\times(2L)^2}{H^3}\times\frac{M_{max}}{Z_s}\leq\sigma_y \quad \cdots (2)$$

~~[Claim 6]~~

~~The combined steel wall according to any one of claims 1 to 5,~~

~~wherein the maximum interval L (mm) is set so that the maximum interval L (mm), the height H (mm) of the wall body, the yield stress σ_y (N/mm^2) of the steel sheet pile, the section modulus Z_s (mm^3) of the steel sheet pile, and the maximum bending moment M_{max} (N·mm) applied to the wall body satisfy the following formula (3).~~

~~[Formula 3]~~

$$0.3\times\sigma_y\leq\frac{(3H-4L)\times(2L)^2}{H^3}\times\frac{M_{max}}{Z_s} \quad \cdots (3)$$

[Claim ~~7~~5]

The combined steel wall according to any one of claims 1 to ~~6~~4,

wherein the respective recesses are formed on the wall body at regular intervals when viewed in the longitudinal direction, and

the steel pipes are disposed in every other recess.

[Claim ~~8~~6]

The combined steel wall according to any one of claims 1 to ~~6~~4,

wherein the respective recesses are formed on the wall body at regular intervals when viewed in the longitudinal direction, and

the steel pipes are disposed in every third or more recess.