CLAIMS

[Claim 1]

A bladed screwed steel pile provided with a blade at its tip and screwed into the ground by the blade excavating the soil while rotating,

in the screwed steel pile, the blade provided with an open part of 0.1 time or more and 0.9 time or less of an area of a circle having a steel pipe pile outside diameter as its diameter being welded concentrically to a tip of steel pipe pile having an asymmetrical end shape when viewed from a side surface and the blade made to bulge to an inside and outside of the steel pipe pile,

wherein the tip of steel pipe pile is cut to a spiral, a step part of a starting end and terminal end of the tip of steel pipe pile cut to a spiral is made a shape comprised of an arc, any curve, or a combination of an arc or any curve and a straight line, and, when laying out flat the spiral shape tip of steel pipe pile and viewing a right angle triangle having a circumferential length of an outer circumference of the steel pipe pile as a bottom side, having a pitch of the spiral as a height, and having the spiral shaped tip of steel pipe pile made a slanted side, an area of a triangle having the height of the right angle triangle as a bottom side and having the terminal end as the vertex is 0.25 time or less of an area of the right angle triangle, and

the step part is formed into an arc shape, and a radius R of the arc is defined by the following formula (1):

$$R=k\times P \quad \ldots (1)$$

where, in formula (1), P is the spiral pitch and "k" is a predetermined coefficient ($0.8\leq k\leq 1.5$).

[Claim 2]

The screwed steel pile according to claim 1, wherein a wall thickness of the steel pipe pile is made thicker in at least a predetermined range of greater than or equal to a distance corresponding to the steel pipe pile outside diameter from the tip of steel pipe pile in an axial direction of the steel pipe pile compared to outside of the predetermined range.

[Claim 3]

The screwed steel pile according to claim 2, wherein a ratio of the wall thickness outside of the predetermined range to the wall thickness of the predetermined range is 0.5 or more and a ratio of the wall thickness of the predetermined range to the steel pipe pile outside diameter is 0.02 or more.

[Claim 4]

The screwed steel pile according to any one of claims 1 to 3, wherein the blade is a helical blade and is welded to the tip of steel pipe pile which is cut to a spiral.

~~[Claim 5]~~

~~The screwed steel pile according to any one of claims 1 to 4, wherein the tip of steel pipe pile is cut to a spiral, a step part of a starting end and terminal end of the tip of steel pipe pile cut to a spiral is made a shape comprised of an arc, any curve, or a combination of an arc or any curve and a straight line, and, when laying out flat the spiral shape tip of steel pipe pile and viewing a right angle triangle having a circumferential length of an outer circumference of the steel pipe pile as a bottom side, having a pitch of the spiral as a height, and having the spiral shaped tip of steel pipe pile made a slanted side, an area of a triangle having the height of the right angle triangle as a bottom side and having the terminal end as the vertex is 0.25 time or less of an area of the right angle triangle.~~

~~[Claim 6]~~

~~The screwed steel pile according to any one of claims 1 to 5, wherein the tip of steel pipe pile is cut to a spiral, a step part of a starting end and terminal end of the tip of steel pipe pile cut to a spiral is formed into an arc shape, and a radius R of the arc is defined by the following formula (1):~~

~~$R=k\times P$ … (1)~~

~~where, in formula (1), P is the spiral pitch and "k" is a predetermined coefficient ($0.8\leq k\leq 1.5$).~~

[Claim 5~~7~~]

The screwed steel pile according to any one of claims 1 to 4~~6~~, wherein

at a starting end in the rotational direction in a screw piling,

a bead welding together the blade and the tip of steel pipe pile is formed so as to continue from an outer circumference of the steel pipe pile to an inner circumference.

[Claim 6~~8~~]

The screwed steel pile according to any one of claims 1 to 5~~7~~, wherein,

at a starting end in the rotational direction in a screw piling,

a cross-sectional shape along the rotational direction of a bead welding together the blade and the tip of steel pipe pile forms a slanted surface forming an acute angle with respect to a surface of the blade.

[Claim 7~~9~~]

The screwed steel pile according to any one of claims 1 to 6~~8~~, wherein in an upright state with the tip of steel pipe pile facing down, the blade is arranged so that an outside edge is lower than an inside edge or an inside edge and outside edge are positioned at equal heights.