

Cone type anchor plate

Product overview and features

■Background of the development

Conventional anchor plate has been used as the prestressed concrete anchorage hardware, but it was simply developed by processing a plane iron plate.

But when you use iron plate to put a prestress, especially with PC steel strand wire, the plate receive axial rotating force together with bearing force, so that it will unable to set the plate horizontally but end up to set diagonally. When the placement of PC steel set close to the edge of concrete, the square shaped anchor plate set diagonally, it would cause a rust.

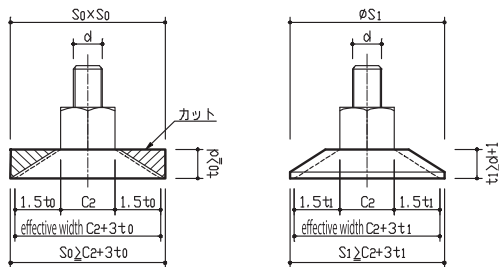
And when the plate receive axial rotating force, if the concrete surface has unevenness, the stress at four corners would break the concrete.

When putting prestress through hydraulic jack directly to anchor plate, in order to send the equivalent surface stress, we have developed this cone type anchor plate. By calculations and analyzed the data from the scanned surface pressure, it reduced the cost and improved the workability.

■Product features

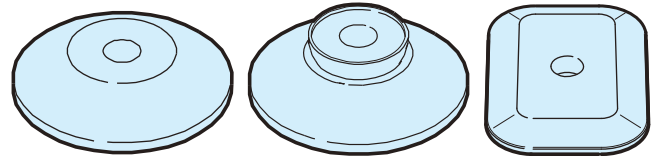
- Pressure from hydraulic jack when sending prestress directly to anchor plate, the product enables to send them equivalently.
- The cone type anchor plate does not have four corners that receive axial rotating force, so it would prevent breaking concrete by the stress created by unevenness of concrete surface.
- By limiting the cross section area by calculations and analysing scanned data of surface pressures, we have made cost down and improvement of workability.
- When using PC steel strand wire, it is no need to worry about a location of anchor plate that receive bearing force and axial rotating force.
- When the location of PC steel close to the edge of concrete, the cone type anchor plate is no need to consider the angle of setting the plate, and will not leave square type iron within the covering depth of jointing concrete.
- Material: SS 400

■Comparison of shape



conventional anchor plate

cone type anchor plate



Standard type

w/Spherical seat for diagonal load

Special type

■Specifications

PC steel strand wire	PC steel	Diameter (S1)	Thickness (t)	Hole diameter (d)	(Unit : mm) diameter of top end
φ17.8	φ23(M24)	φ136	30	φ27	φ70
φ21.8	φ26(M27)	φ155	34	φ30	φ70
φ28.6	φ32(M33)	φ190	40	φ36	φ85

■Confirmation of the surface stress

Below surface stress scanner shows the analysing result of surface stress for post-tension type anchor plate. The anchor plate supposed to have a hole to input grout.

◎Conventional anchor plate
28 x 135 x 135
(maximum load: 60tonf)



◎Cone type circle anchor plate
34xφ155
(maximum load:60tonf)



◎Cone type circle anchor plate (w/spherical seat for diagonal load) 34xφ155(maximum load:60tonf)



Based on the results of above, it shows that the conventional anchor plate creat bending moment from the hole to input grout which is fulcrum that lead to creat reaction force. It caused invisible deformation at the edge that lead bad influence to disperse the surface pressure.

The result from cone type circle anchor plate showing that the surface pressure dispersed evenly than the conventional anchor plate. As for the anchor plate w/ spherical seat for diagonal load(maximum15°), surface pressure widely dispersed not depending on the diagonal angle. As a result, cone type circle anchor plate shows better than conventional anchor plate.

Reference for a working drawing

