

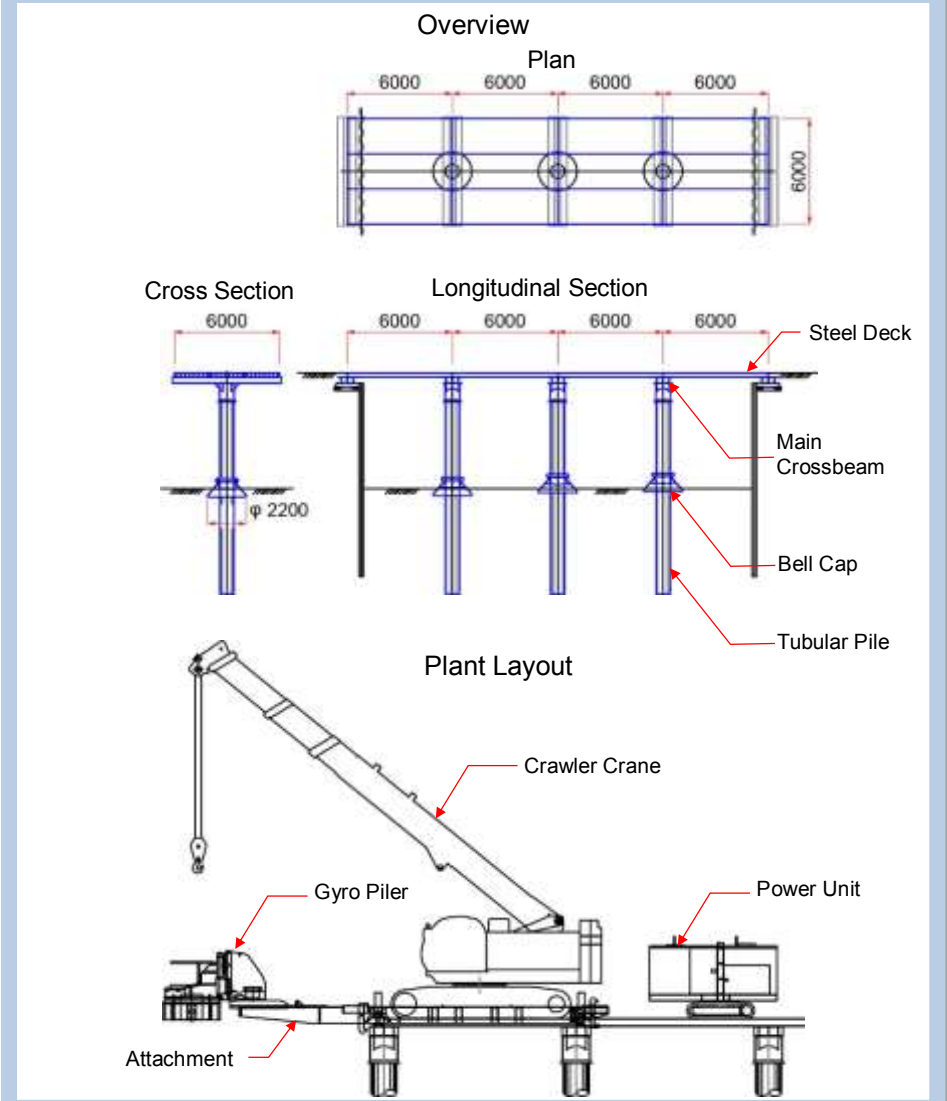
# Implant Bell Cap Bridge

Rapidly built economical structure for emergency temporary bridges, temporary platforms and permanent bridges etc.



**Category** Prefabricated Steel Single-pier Bridge

- [Specifications]**
- Span : 6m
  - Bridge Width : 6.0m
  - Live Load : Live Load Condition A (Japanese Specifications)
  - Bridge Deck : Steel Deck (2.0m x 6.0m)
  - Structural Members : Tubular Pile 800mm O.D.12mm w.t. (SKK400)  
Bell Cap 2,200mm O.D. (SS400)  
Main Crossbeam  
(3no. Universal Columns 350x350x12x19)



## Characteristics

Geotechnical information can be obtained from pile penetration resistance force during rotary jack-in installation.

Application	Construction Sequence		Structural Advantages
<p style="text-align: center;">Emergency Temporary Bridge</p>	<p style="text-align: center;">Step1: Installation of Tubular Pile</p>	<p style="text-align: center;">Step2: Installation of Bell Cap</p>	<ul style="list-style-type: none"> <li>• Multi stress dispersion system with the bell cap drastically increasing bearing capacity and lateral resistance of the piers</li> <li>• Embedded depth of tubular piles can be reduced by the increased stress dispersion effect of the bell cap.</li> </ul>
<p style="text-align: center;">Temporary Platform for emergency restoration works</p>	<p style="text-align: center;">Step3: Completion of Pier Structure</p>	<p style="text-align: center;">Step4: Installation of Main Crossbeam</p>	<ul style="list-style-type: none"> <li>• Advantages of Construction Method</li> <li>• Gyropress Method (Rotary Jack-in Method) is applicable in any ground conditions.</li> <li>• Real-time geotechnical information can be obtained during the pile installation process, which verifies the structural stability of the bridge.</li> <li>• The bridge can easily be constructed and dismantled, therefore it can be re-used for future projects.</li> <li>• Environmentally Friendly (ultra low noise and vibration)</li> </ul>
<p style="text-align: center;">Enabling Temporary Platform</p>	<p style="text-align: center;">Step5: Installation of Steel Deck</p>	<p style="text-align: center;">Step6: Move to next piling position</p>	<p style="background-color: #f4a460; padding: 5px; text-align: center; font-weight: bold;">A Safety, Economical and Rapid Process! Implant Bell Cap Bridge</p> <p style="text-align: center; font-size: small;">Overview of Implant Bell Cap Bridge</p>



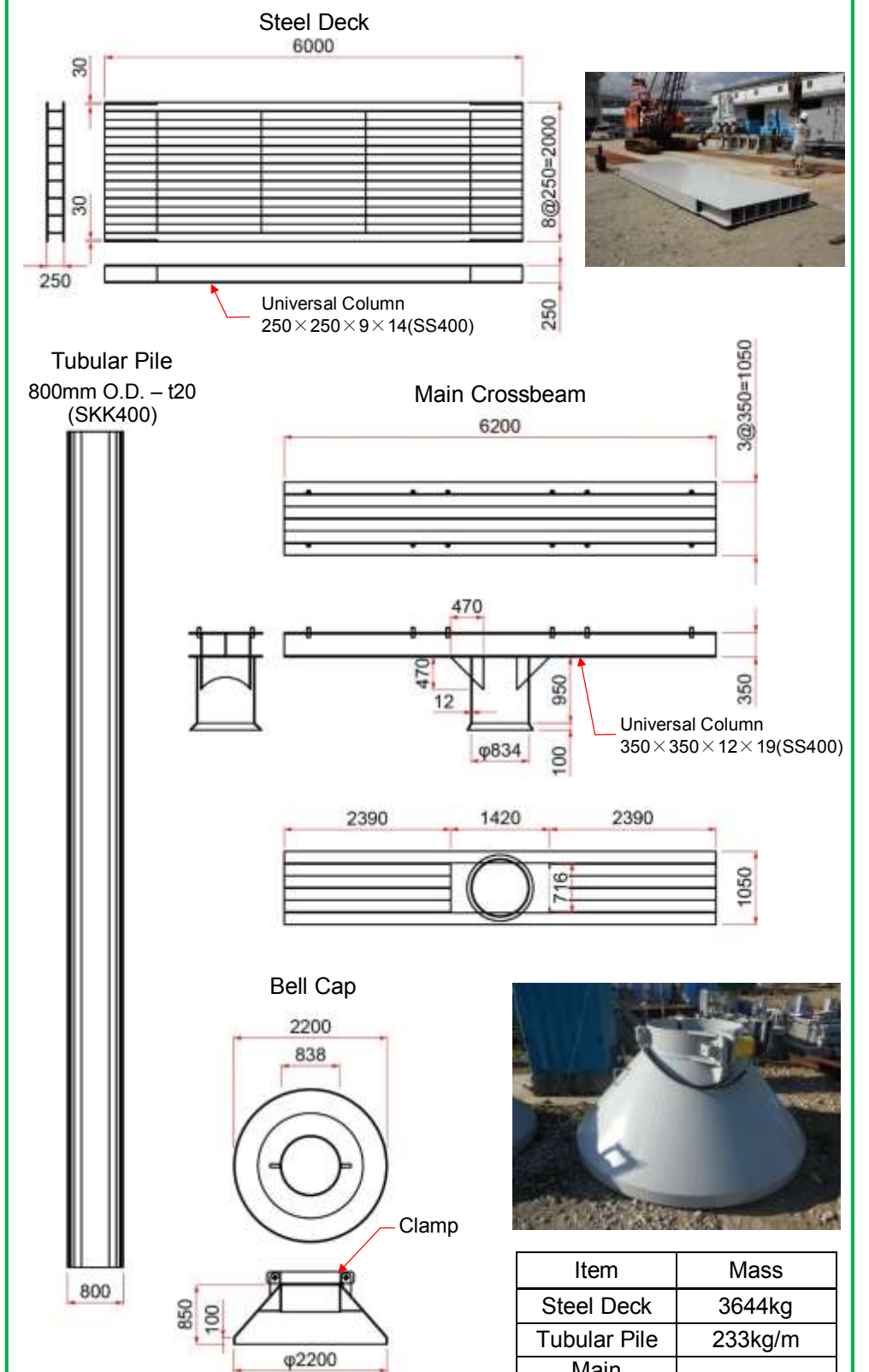
### Full-scale Field Tests



### Load Testings

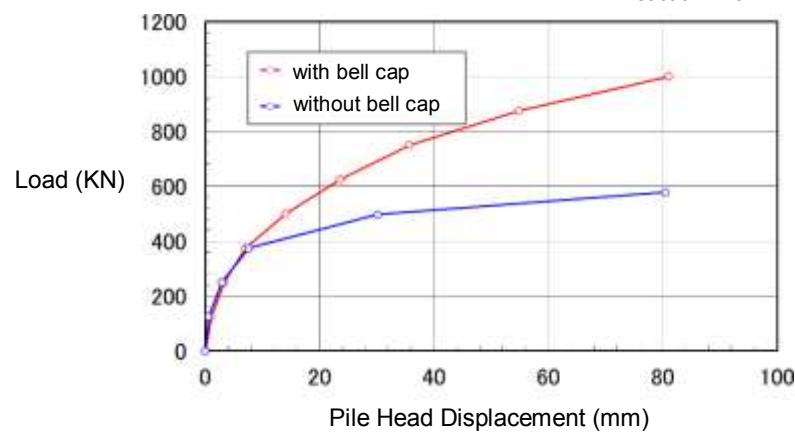
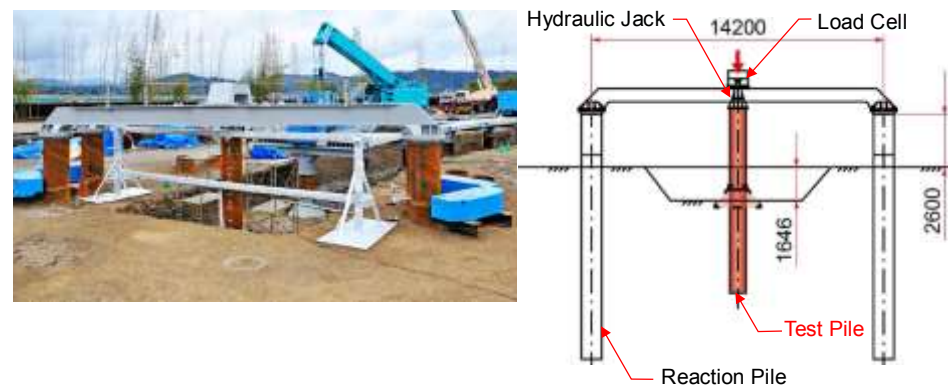
1. Date  
Thu 25/02/2016
2. Location  
GIKEN Ltd. Test Field in Konan-shi, Kochi, Japan
3. Purpose  
Verification of vertical and lateral bearing capacity of Implant Bell Cap Bridge
4. Bridge Pier Components  
Tubular Pile: 800mm O.D.  
L=9.0m (embedded depth of 4.4m)  
Bell Cap: 2,200mm O.D.

### Details of Structure



Item	Mass
Steel Deck	3644kg
Tubular Pile	233kg/m
Main Crossbeam	2900kg
Bell Cap	1300kg

### Vertical Static Load Testing

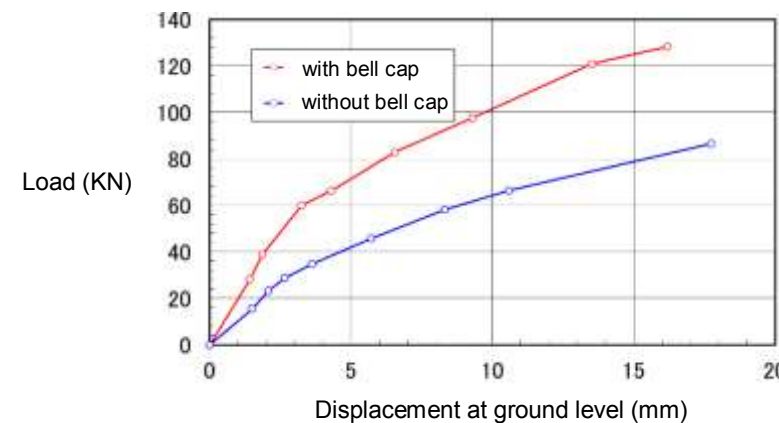
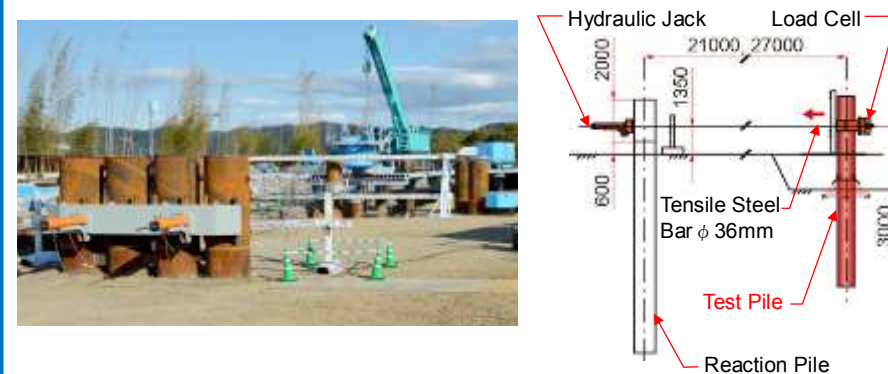


Loads at 80mm pile head displacement (i.e. 10% of the pile diameter)

- Tubular Pile without Bell Cap: 577.2kN
- Tubular Pile with Bell Cap: 993.8kN

(70% greater than that of the pile without Bell Cap)

### Lateral Static Load Testing



Load at 15mm lateral displacement at ground level

- Tubular Pile without Bell Cap: 78.7kN
- Tubular Pile with Bell Cap: 125.1kN

(60% greater than that of the pile without Bell Cap)