

# Implant Bell Cap Bridge

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

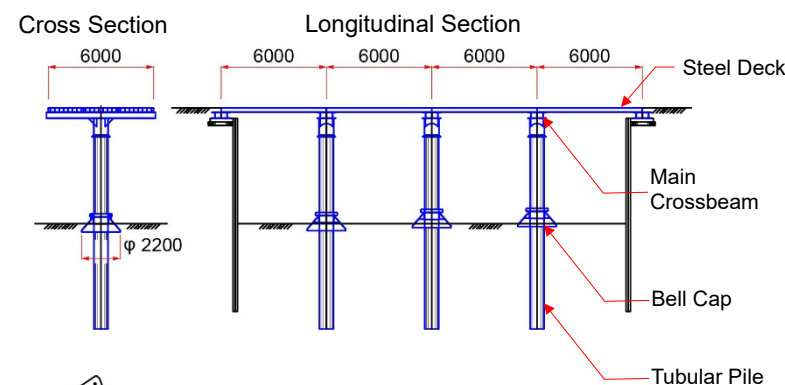
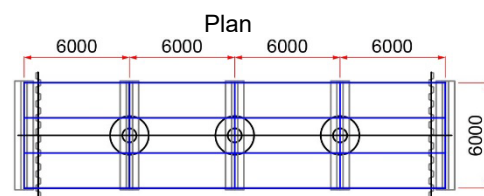


## Category Prefabricated Steel Single-pier Bridge

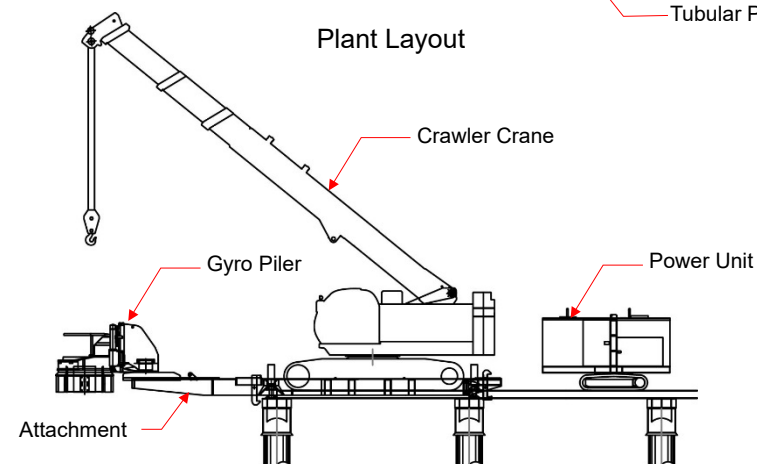
### 【Specifications】

- 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)

### Overview



### Plant Layout

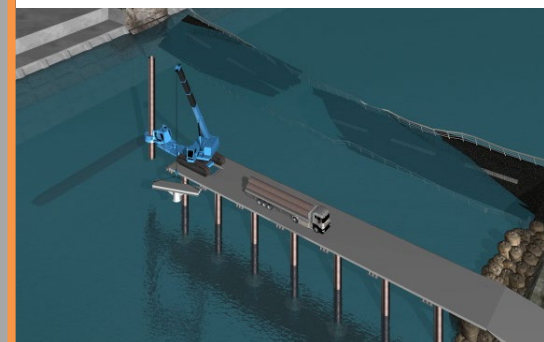


## Characteristics

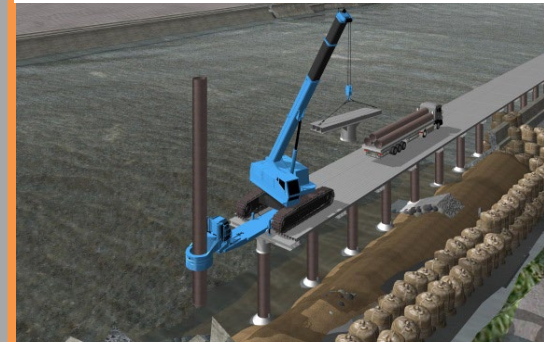
Geotechnical information can be obtained from pile penetration resistance force during rotary jack-in installation.

### Application

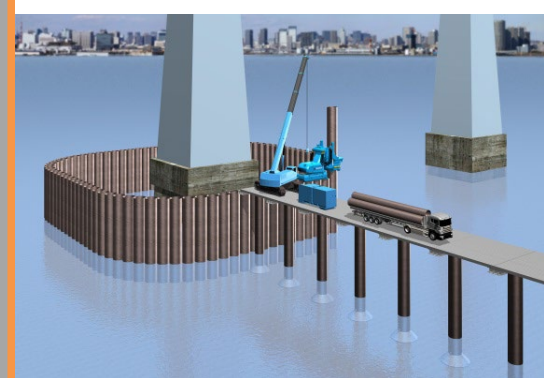
#### Emergency Temporary Bridge



#### Temporary Platform for emergency restoration works



#### Enabling Temporary Platform



### Construction Sequence

#### Step1: Installation of Tubular Pile



#### Step2: Installation of Bell Cap



#### Step3: Completion of Pier Structure



#### Step4: Installation of Main Crossbeam



#### Step5: Installation of Steel Deck



#### Step6: Move to next piling position



### Structural Advantages

- Multi stress dispersion system with the bell cap drastically increasing bearing capacity and lateral resistance of the piers
- Embedded depth of tubular piles can be reduced by the increased stress dispersion effect of the bell cap.

### Advantages of Construction Method

- Gyropress Method (Rotary Jack-in Method) is applicable in any ground conditions.
- Real-time geotechnical information can be obtained during the pile installation process, which verifies the structural stability of the bridge.
- The bridge can easily be constructed and dismantled, therefore it can be re-used for future projects.
- Environmentally Friendly (ultra low noise and vibration)

### A Safety, Economical and Rapid Process! Implant Bell Cap Bridge



Overview of Implant Bell Cap Bridge



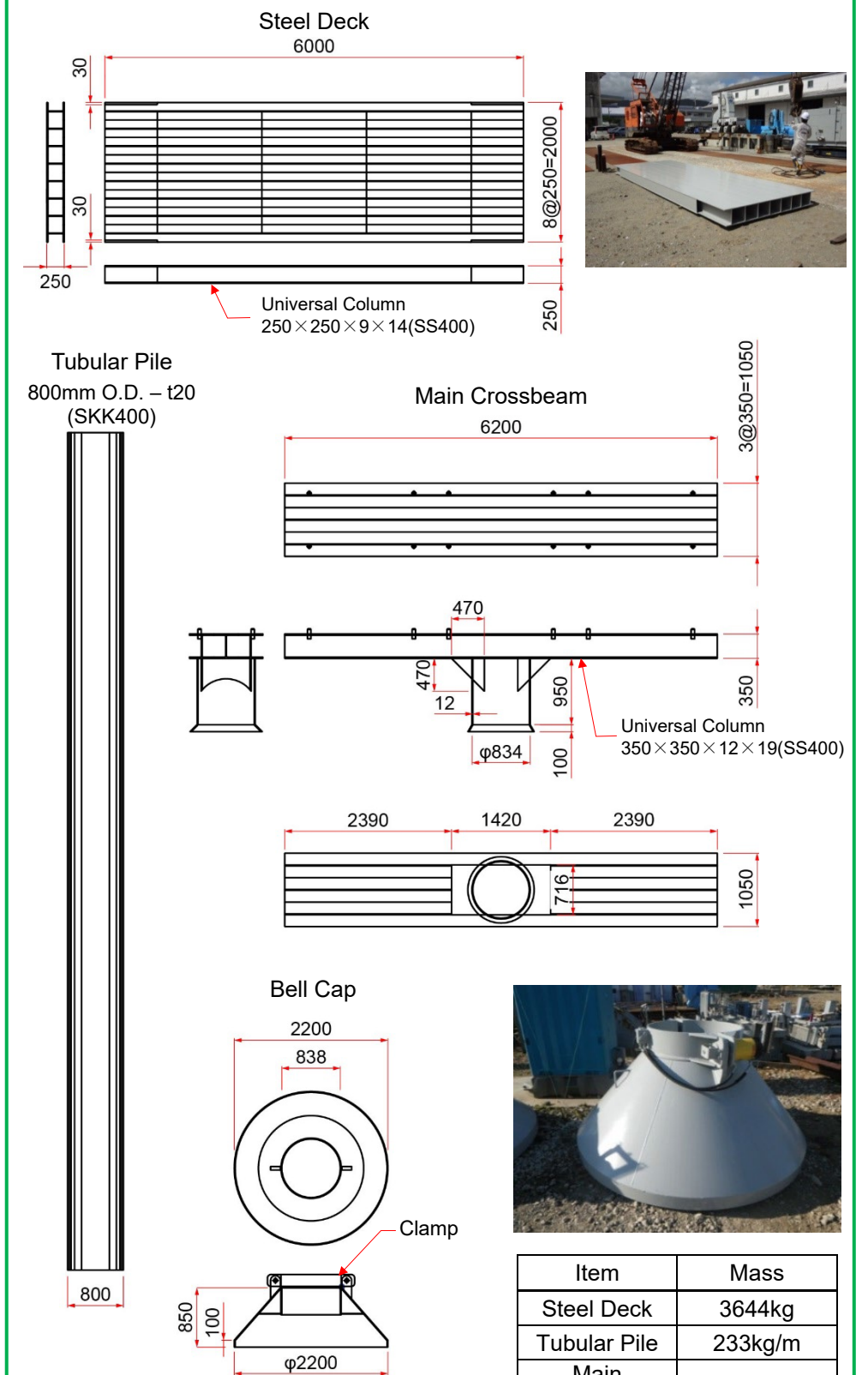
## Full-scale Field Tests



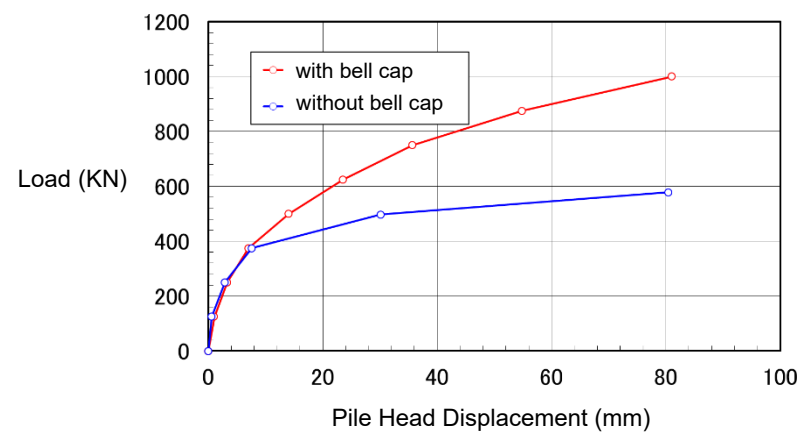
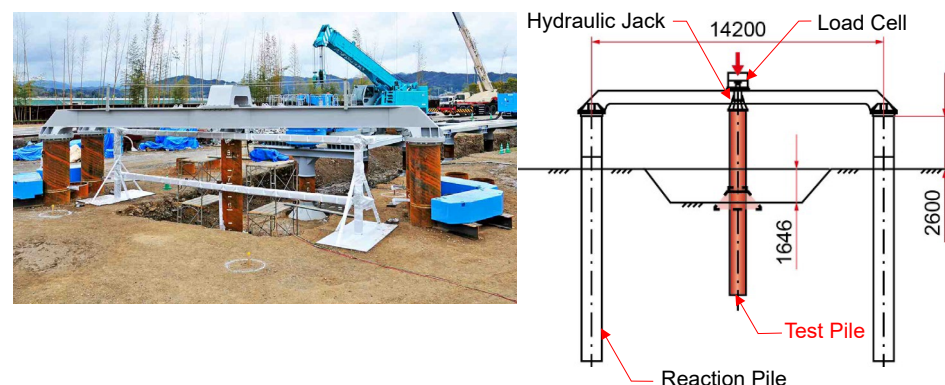
## Load Testings

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



## Vertical Static Load Testing



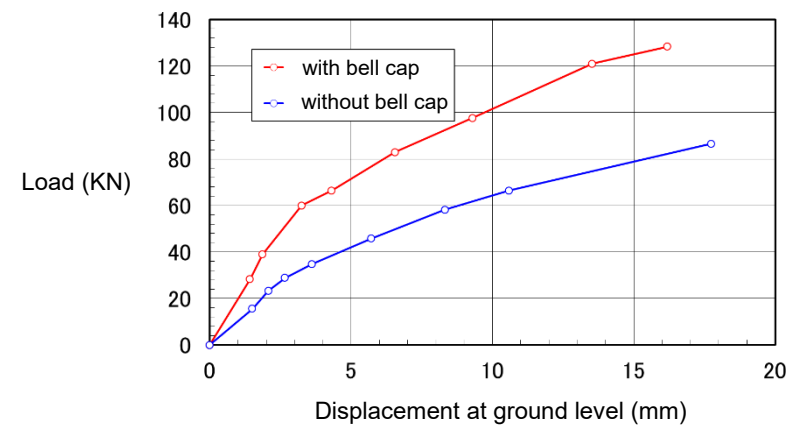
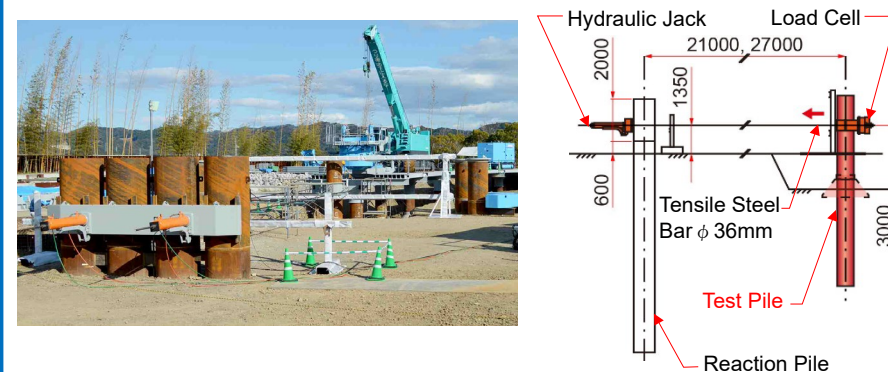
Loads at 80mm pile head displacement (i.e. 10% of the pile diameter)

○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)