BIM/CIM Generating Method for Existing Port Facilities for Efficient Maintenance

(Study period: FY2022–)

Port Construction Systems and Management Division

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1. Introduction

In order to improve productivity in the port sector, the introduction of Building/Construction Information Modeling, Management (BIM/CIM) is being promoted in port design and construction works. However, studies to date have mainly focused on new structures, and studies on BIM/CIM of existing port facilities have not yet been sufficiently conducted. This study is intended to develop a BIM/CIM generating method for existing port facilities with the goal of efficient maintenance.

2. Development of BIM/CIM Requirements for Existing Port Facilities

The effects of introducing BIM/CIM in maintenance include the visualization of inspection and diagnosis records, centralized management of maintenance-related data, and information platform functions linked to measurement equipment. On the other hand, it is very difficult in an existing port facility to create a BIM/CIM model with the same level of accuracy as that of a newly constructed structure.

In this fiscal year, we focused on the effects of introducing BIM/CIM in maintenance, and narrowed matters down to the minimum BIM/CIM requirements for existing port facilities to reduce the burden of creating BIM/CIM models. Then, according to the narrowed-down requirements, we created BIM/CIM models from two-dimensional drawings of the maintenance management plan, and provided the models with inspection and diagnosis records as attribute information (Fig. 1).

Currently, we use the created BIM/CIM models to hold interviews with facility managers and maintenance operators. In the future, we will review the BIM/CIM requirements for existing port facilities and develop an efficient generating method.

3. BIM/CIM Generic Object Example

One of the efficient BIM/CIM generating methods is to provide generic objects. A generic object is a three-dimensional part model constituting BIM/CIM, and is characterized by having a shape independent of a specific manufacturer.

Therefore, we extracted parts that are in high demand as constituent parts of BIM/CIM for port facilities and are expected to shorten the creation time of three-dimensional models, created generic objects, and began publishing and providing the objects on the website of the Ministry of Land, Infrastructure, Transport and Tourism in October 2022 (Fig. 2).

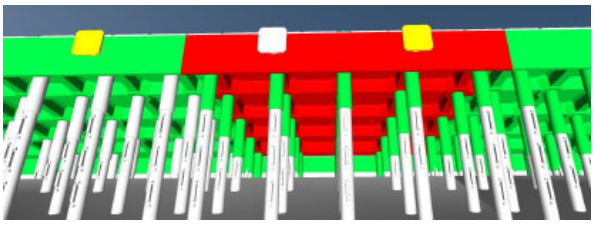

Figure 1: BIM/CIM of existing port facilities
(Example of a pier—the color represents the degree of degradation of each part)

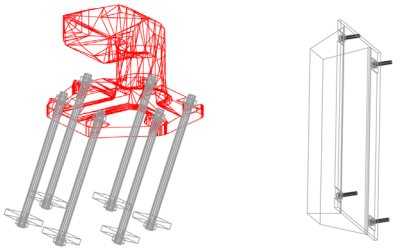

Figure 2: BIM/CIM generic objects
(Left: mooring post, right: fender beam)

✓ Click here for more information.

1) Examples of BIM/CIM generic objects in the port sector
https://www.mlit.go.jp/kowan/kowan_fr5_000084.html