Revising Guidelines to Promote BIM/CIM in Wastewater Projects

(Research of FY 2020)

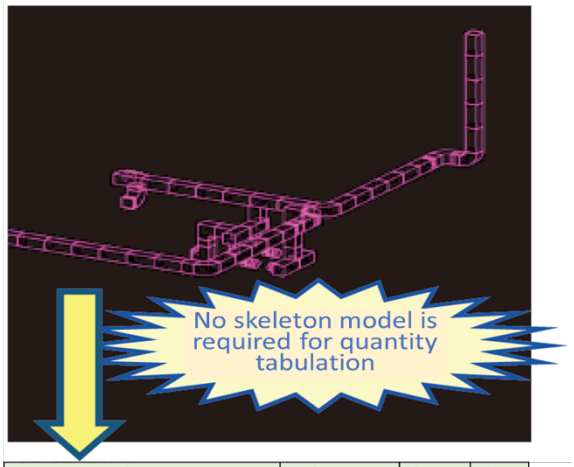
1. Purpose

This study aims to modify the "CIM Implementation Guidelines (draft) the 8th edition, sewerage version"(the Guidelines) to promote implementing BIM/CIM to wastewater projects based on the implementation practices of BIM/CIM and issues to promote implementation.

2. Outcomes of This Year

(1) Collecting BIM/CIM implementation practices and organizing issues

Figure 1 shows the implementation practice of 3D models into quantity tabulation. The 3D model enables the omission or simplification of the drawings required for quantity tabulation of piping and ducts, thereby streamlining the work. In some cases, 3D model-based quantity tabulation has had the issue of not matching the estimation system. Still, by registering information suitable for quantity tabulation in the model attribute information, now quantity tabulation can meet the estimation system.



Name	Standards	Quantity	Unit
Duct			
Ventilation			
Angle flange			
Stainless steel plate	0.5mm	2.625	m²
SUS A			
Stainless steel plate	0.5mm	49.68	m²
Vinyl chloride resin square duct (vinyl A)			
Zinc coated steel plate	5mm	242.418	m²
Vinyl chloride resin square duct (vinyl B)			
Zinc coated steel plate	5mm	38.82	m²
Aluminum flexible duct 600Φ	20L	1	
	300L	3	
PVC pipe for duct	600Φ	300	mm
Vinyl chloride resin round duct (vinyl A)	600Φ	1670	mm
Duct joint			
Exhaust			
Spiral duct joint (zinc coated steel plate)			
bayonet joint	600	2	
Duct tools			
Ventilation			
VD	600Φ×250L	2	
	600Φ×300L	2	
	750×750×250L	2	
	750×750×250L	1	

Figure 1: the 3D model used for quantity tabulation

(2) Efficient Modeling

To make 3D modeling of existing facilities efficient and labor-saving, the LOD was set according to the purpose of use.

To promote the use of BIM/CIM in sewerage projects, "Level 3-2" was newly established as the initial LOD for introduction (Table 1).

It will clarify the image of the initial model and is expected to promote the use of BIM/CIM.

Table1. BIM/CIM levels of the existing facilities

	Body (out of design)	Construction equipment (out of design)	Plant facilities: scope of design/target work type	
			Existing facility	New facility
Level 1 high	BIM/CIM	BIM/CIM	BIM/CIM	BIM/CIM
Level 3 medium	BIM/CIM	Point cloud	Point cloud	BIM/CIM
Level 3-1 low 1	Point cloud	Use point clouds only in areas close to plant facilities	Use point clouds only where connecting to existing facilities	BIM/CIM
Level 3-2 low 2	BIM/CIM only for walls, columns, and floors in the facility design scope	Not subject	BIM/CIM only where connecting to existing facilities	BIM/CIM

3. Future Schedule

This work could propose utilizing 3D models in the initial stage of BIM/CIM introduction and efficient model creation for wastewater projects.

Further promoting BIM/CIM use in the future needs sharing 3D models among multiple parties. Software compatibility and 3D model management systems must be studied using river and road construction examples.

Keywords: **BIM/CIM, 3D model, Level of Detail (LOD)**