

# Post Project Survey of Sulfate Resistant Anti-corrosion Coating Method

(Research of FY 2017-2021)

## 1. Purpose

Today, various kinds of anti-corrosion coating methods have been developed for concrete corrosion caused by sulfuric acid which results from hydrogen sulfide generated in WWTPs depending on corrosion environments. But, there is little data on the relationship between the actual corrosion environment and the deteriorating condition of the anticorrosion coating layer after its application.

In this study, researchers post-evaluate the corrosion protection methods of coating type lining, sheet lining, and sulfuric acid-resistant mortar for their applied sites. The study aims to define issues in "Corrosion Control Guidelines for Sewerage Concrete Structures" (Japan Sewage Works Agency) and develop a new anti-corrosion coating method through collaborative research with private companies.

## 2. Achievement of This Year

The researchers implemented a nationwide questionnaire survey to 1,900 WWTPs of 826 municipalities. The survey aims to know the actual conditions such as deterioration or corrosion of their concrete structures, and degradation or problems of the anti-corrosion coating. Table 1 describes questionnaire items. Values of questionnaire results are proportions divided by the number of valid responses.

Table1: Survey items

(1)

- 25% of WWTPs have applied anti-corrosion coating in the past five years.
- Less than 10% of WWTPs have repairing history of the anti-corrosion coating applied or not an applied site.
- About 20% WWTPs have deteriorations or defect of the anti-corrosion coating layer or concrete structure at site applied or not applied the anti-corrosion coating.
- 23% of WWTPs inspect/investigate their anti-corrosion coating layer.

①	Number of facilities the anti-corrosion coating applied
②	Repairing history of the anti-corrosion coating applied site
③	Occurrence situations of deterioration or defect at site applied the anti-corrosion coating
④	Repairing history of the anti-corrosion coating not applied site
⑤	Occurrence situations of deterioration or defect at site not applied the anti-corrosion coating
⑥	Checking or inspection history for concrete structure and the anti-corrosion applied site

(2) Most deterioration of anti-corrosion coating layers occurs at WWTPs of less than ten to twenty years old (③ and ⑤ on the above table.) On the other hand, the majority of WWTP which have repaired their corroded concrete structure are the facilities of twenty years old and over (② and ④ on the above table.)

(3)

- Most WWTPs adopt Sheet lining method as their first application of anti-corrosion coating layer.
- About the half of WWTPs choose sheet lining method or other methods as their re-application of anti-corrosion coating layer because of degradation.
- Nearly half of WWTPs select the same applying method with different materials or a different applying method as a re-application of anti-corrosion coating layer.

At the reapplication of anti-corrosive coating layer, the secure performance according to a corrosive environment is required and the application methods are limited in many facilities. Therefore, it is considered that many WWTPs adopt the application methods and materials other than the coating type lining method.

### 3. Future issues

This research provides an overview of concrete corrosion and anti-corrosion coating applied at WWTPs. The researchers will precede the continuous monitoring and sample analysis to define the relationship between corrosive environments and degradation after the application of anti-corrosion coating.

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