

ANALYSIS OF DAMAGE TO EXISTING STEEL PARAPET

Osaka Metropolitan University Graduate School of Engineering Bridge Engineering Lab Ken Tokumasu

Establishment of design and construction method for steel parapet replacement reduced burden on-site



BACKGROUND

- Damage to steel parapet has become more severe.
- The sealed structure makes it difficult to inspect the inside.
- Although anti-corrosion repairs have been made, the damage has reoccurred
- Damage and inspection results of inside steel parapet have not been adequately compiled.



Based on the results of steel parapet internal inspections, we analyzed the relationship between the structural conditions of the steel parapet, such as the structural type or service year, and the damage status.



Fig.1 Steel parapet



Fig. 2 Damage of steel parapet

METHOD

The damage analysis is carried out on the inside of the steel parapet.

- The structural classification of the the all-steel parapets (625 lanes) currently in service on the Hanshin Expressway
- The results of internal inspections of steel parapets from previous years is analyzed.

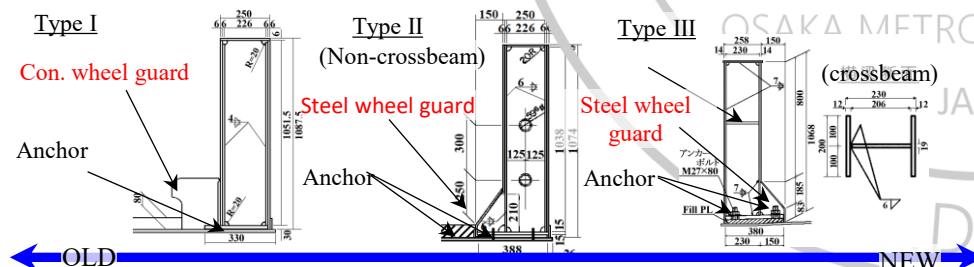


Fig. 3 The structure types of steel parapets

KEYWORDS

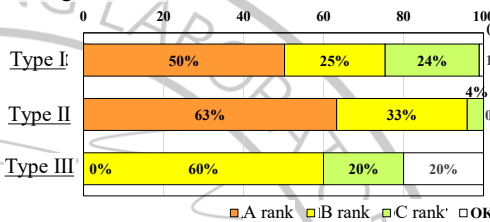
Steel parapet .Labor-saving, Damage analysis

RESULTS

【Influence of the structure types】

- Types 2,3 which have steel wheel guard, tend to have higher damage to curved sections.

Straight section



Curved section

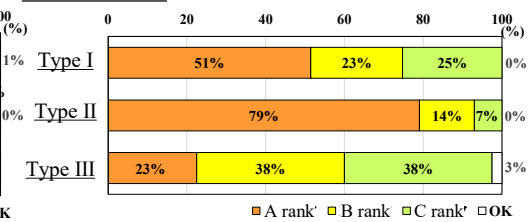


Fig. 4 Differences in damage due to line shape

【Influence of attachment methods for accessories】

- Steel parapets with soundproof wall attached are more damaged than those without.
- Comparison of soundproof wall attachment methods, “the side attachment of steel parapet” has higher damage occurrence rate than “the top attachment of steel parapet”.

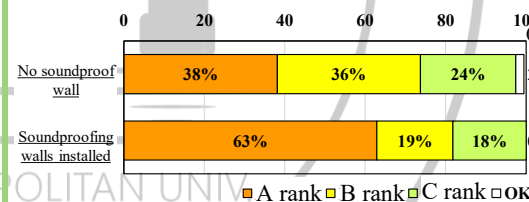


Fig. 5 Influence of soundproof wall

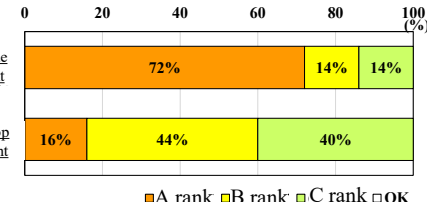


Fig. 6 Comparison of soundproof wall attachment methods,

SUMMARY

- In order to used continuously for a long period of time, it is effective to prioritize the following inspections of the steel parapets:

- ① Steel parapet with steel wheel guard and soundproof wall attachment on curved section
- ② Steel parapet with through bolts installed on the side panels