CASE STUDY: How road users experience safety

FACTS AT A GLANCE
Wellington City Council
ONRC best practice case study

Safety: guardrails and barriers

All traffic restraining devices are maintained in an effective operating condition.

Wellington is New Zealand’s capital city and has a population of 191,000. Wellington has a rugged topography with an extensive urban road network and a small rural road network.

Wellington CC has developed a large network of safety rails that reflects its topographical challenges. The network includes 114km of handrails and 18km of guard rails, with a total optimised replacement cost of $11.8 million.

Introduction

Wellington City Council’s topography and urban road and pedestrian network has led to the development of comprehensive practice around the management of sight rails, guardrails and barriers.

The safety rails managed by Wellington CC include hand rails, guard rails and sight rails.

There are 114.2km of handrails, whose primary purpose is to protect pedestrians against falling from paths and access ways.

There are 17.9km of sight rails and guard rails, whose purpose is to highlight hazards such as curves, bridges, culverts and intersections. Guard rails are designed to act as protective barriers to cushion vehicles impacting hazards, or prevent vehicles leaving the road over dangerous drops by deflecting them back into the carriageway.

Where safety rails are on a footpath they serve a dual function of both sight rail (for vehicles) and hand rail (for pedestrians). For management purposes WCC has classified these as hand rails.

WCC has such a large network of safety rails that it has developed a thorough and comprehensive practice to manage these assets. This includes:

- Asset Management Plan section and analysis
- Separate technical specifications for each safety rail type and fault finding activity
- Scheduled contract items with a pragmatic approach

“The large range and variety of hand rails and guard rails has created challenges.

WCC has adopted a pragmatic approach”
Key Points
There is a large variety of complex assets.

Handrails and guardrails can also include supporting structures or retaining walls. The associated high cost of retaining walls can be a restriction on rail installation.

Standard engineering management techniques have been applied:
- Asset Management Planning
- Asset register and condition inspections
- Technical specifications for work
- Integrated corridor management contracts

The pragmatic approach to service delivery has provided benefits of getting work done, and maintaining service levels
- Preapproved work
- Site inspections and fault finding
- On-site Engineer decision making
- Approved monthly work programmes
- Fault find, repair, report work cycle

The combination of WCC retaining programme decision making, and the Contractor having delegated field decision making is working well.

Integrated corridor decision making and the coordination of corridor-wide projects is adding value.

The complexity and type of assets makes maintaining up to date and accurate descriptions in RAMM an on-going challenge.

Methodology
Wellington CC has applied standard engineering management techniques to the management of their safety rails, and adopted a pragmatic approach to ensuring required work is completed.

Asset Management Planning
Safety Rails have their own section in the WCC Transport AMP Lifecycle Management. Asset description, value, service standards, and condition are described. Key issues and key risks are developed. Asset lifecycle strategies are outlined. These strategies cover operations and maintenance of existing assets; strategies for meeting growth, demand and service delivery improvement; and asset replacement strategies. The Summary of Expenditure and Forecast Expenditure predicts reasonably static expenditure over the next 20 years. Asset register, condition and work history is held in RAMM and updated by contractors as work is completed. The complexity and type of assets mean that maintaining up to date and accurate descriptions in RAMM are an on-going challenge.

Technical Specifications
Technical specifications have been developed to support the activity. There are separate specifications for Hand rails, Guard rails, Sight rails and Fault finding. The Technical Specifications reference the appropriate standards, materials, design and construction standards for each type of rail. Alternative treatments sympathetic to the urban environment are encouraged where appropriate. 6% Rural / 94% Urban have required different standards and solutions.

Contract Specification
Safety rails are included in the WCC Corridor Maintenance Contracts (2). The whole of corridor approach and planning includes safety rail maintenance, repair and renewal in conjunction with other corridor activities.

Fault Finding, Repair and On-Site Decision Making
The Contractor responds daily to requests for service, but can also find faults in inspection programmes. A programme list is developed and updated monthly as an approved work list. Faults found can be added and actioned. Programmmed condition inspections are completed six-monthly. The contract also allows for pre-approved work to be included in the programme list. This can include work promoted by the Contractor, and work that has been added as a result of other construction work programmes. On-site engineering decision making is encouraged.

Decision Making
Wellington CC retains programme decision making in order to meet wider safety and customer delivery guidelines. The Contractor has delegated operational decision making around faults, asset deterioration thresholds, and the approved work list.
A pragmatic approach has been adopted to facilitate achieving the safety and customer delivery objectives. Broadly this is a fault find, complete repair, report back cycle.

“The fault find, repair, report back cycle adopted has been a success. Reporting on fault finding has become a key measure.”
**Conclusion**

Wellington City Council has a lot of highly visible safety rail assets that provide safety to road users and pedestrians. Combined with supporting structures there is a range of complexity in the asset group. There have been challenges in accurately describing the assets and keeping the asset register up to date and accurate.

The application of standard engineering management techniques has been a success in the management of safety rails.

Including the safety rails in the corridor management contracts has enabled more integrated corridor project management, which has included replacement or upgrading of safety rails where required.

The pragmatic approach to getting work done, contractor enablement and on-site engineering decision making has been a key factor in the success of the WCC management of safety rails.

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**“Take a pragmatic approach to getting the work done - enable the contractor, and allow cost-effective on-site engineering decision making”**

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**References**

- Wellington City Council Transportation Asset Management Plan – Safety Rails Section of Lifecycle Management Plan
- Specification – Handrails
- Specification – Guardrails
- Specification – Sight Rails
- Specification – Fault Finding

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The Road Efficiency Group (REG) is a collaborative project between local government and the NZTA Transport Agency. For more information, please contact:

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