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Glacier Roads Seal Extensions

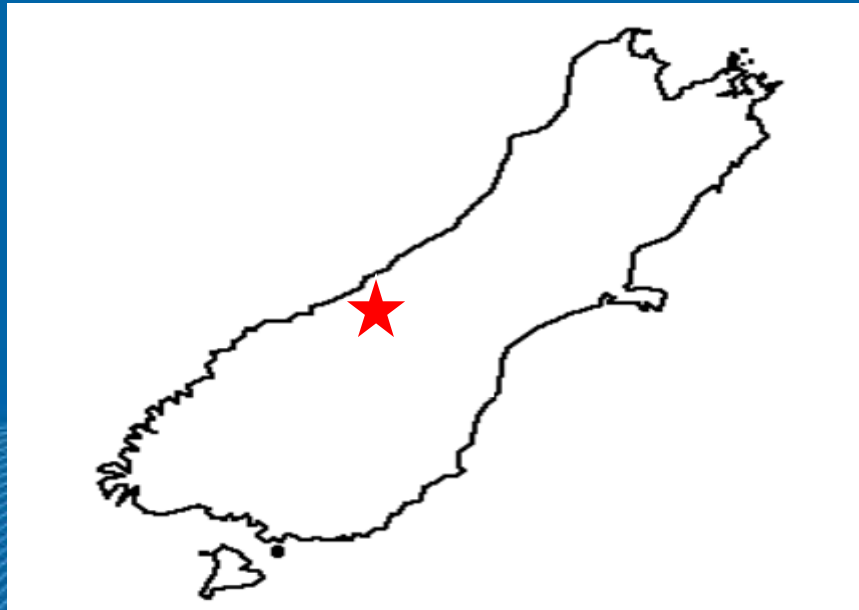
Can a 'Win Win' be achieved between conflicting philosophies of engineering & safety standards and those of a National Park

Tom Hopkins (DOC) and Jim McNeill (GHD)



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The Franz Josef & Fox Glaciers are located on the West Coast of the South Island



Within SW National Park & Heritage Area



Fox North Road



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Issues

- Growth in visitor numbers (330,000 Franz & 184,00 Fox) – ADDT's 1040 and 860 in 2004
- Tourist traffic: campervans, buses and pedestrians and cyclist (safety issues)
- Low level of service for visitors
- Dust nuisance
- Carriageway width below standard & tight horizontal curves





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Design Guidelines

Austrroads

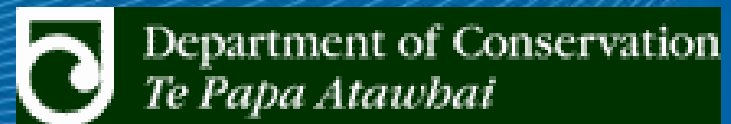


Transit



Pavement Design Standards

Department of Conservation
(guidelines within conservation
areas)





Site Constraints

- Active rivers and streams subject to intense rainfall and flash floods
- Active landslides
- Extreme topography – regular & random rockfalls
- Land Status





Design Procedure – guidelines vs environment

- Guidelines - 3.0 to 3.5m traffic lanes, 0.15m shoulders, on road shared cycleway and walkway; making formation width of 8.3 to 9.3m.
- DOC:
 - Retention existing road character
 - Retention existing corridor width (6m)
 - retention of character trees
- The existing alignment and the location of many character trees places DOC's objectives in direct conflict with the design standards and guidelines for the seal extensions.





A modified design process was taken

- Survey of existing alignment
- Draft design based on guidelines
- Assessment of design against site constraints
- Site inspection and design impact assessment
- Additional survey at critical locations
- Safety Audit
- Redesign incorporating additional survey information and agreed safety audit response
- Design review with DOC and LTNZ
- Marking of character trees
- Preliminary design
- Walk over and assessment against design
- Finalise design





Design Compromise

- Existing standard design criteria involved removal of trees and substantial modification to existing road corridor
 - = direct conflict with DOC's overall project objectives
- Acceptance from Safety Auditors and LTNZ that glacier roads unique, therefore design compromise possible



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Construction Drawings





Construction Drawings

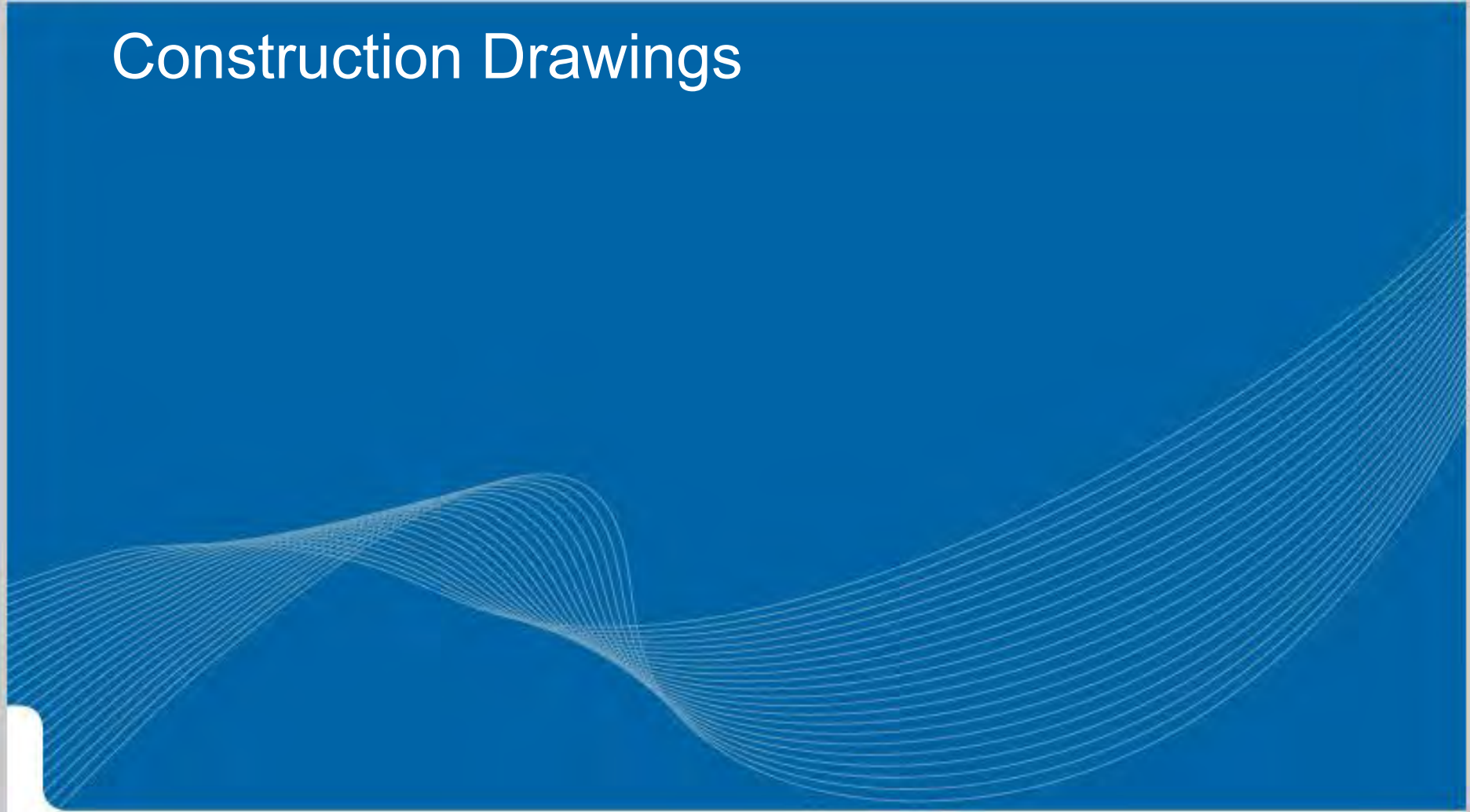
- Markedly different from the initial design
- The roads consist of sections of:
 - Two traffic lanes with on road walking and cycling facilities
 - Two traffic lanes only
 - Single traffic lane with on road walking and cycling facilities
 - Single traffic lanes
 - The creation of single lane thresholds at the road entrances
- On site constraints of active rock slips, significant drop offs to swift flowing rivers and groves of trees have necessitated these changes in cross section



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Construction Drawings

Construction Drawings





Road Environment Unsurprising for Users

- From being on the West Coast
- Their destination
- Start with a single lane threshold
- Surrounding landscape is confined
- The traffic lane width at minimum standard - clear message of need for caution
- Facilities identifies the road is used by pedestrians and cyclists



Summary

- Pressure to conform to guidelines and standards and design requirements of funding organisations

= original objectives lost

- Difficult to gain approval to depart from normal procedures
- Unique needs of the project needs to be recognised in design

QUESTIONS?

