

## Christchurch City Council Bridge Modifications

END USER: Christchurch City Council  
CLIENT: Christchurch City Council (CCC)  
START DATE: 2012  
COMPLETION: 2012

### CHRISTCHURCH CITY COUNCIL SCOPE:

Detailed design of the marshalling yard including track layout, drainage, utilities and allowance for maintenance facilities.

### 12d DIMENSIONS:

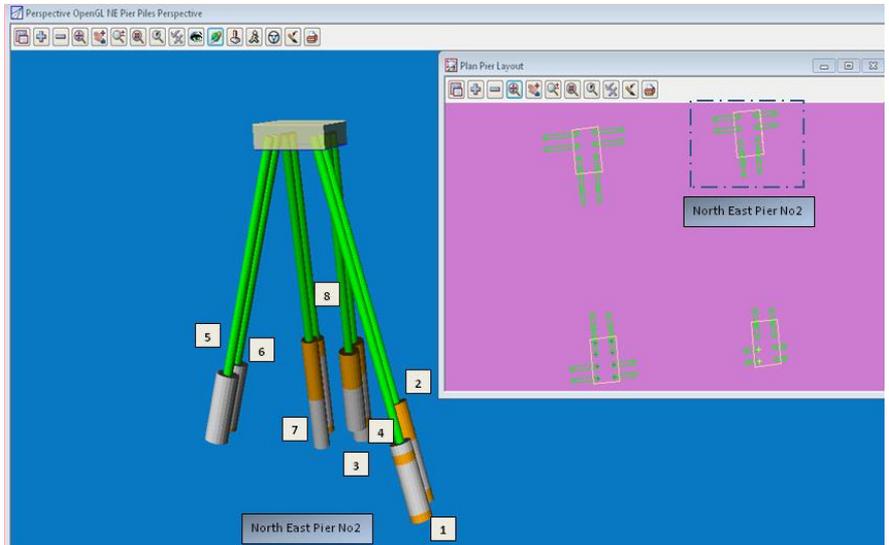
- Road
- Surveying

## Project Summary

The existing Ferrymead Bridge was to be widened to accommodate additional traffic lanes as well cycle and pedestrian facilities.

# Ferrymead Bridge, New Zealand

Existing pile modelling to support bridge upgrade



Plan and perspective views of bridge capping beam and columns modelled in 12d

## The Challenge

The design engineer and construction contractor found the analysis of geo-technical data was quite difficult, particularly in bridge columns that were raked at pre-determined angles and determining lengths. The ground information was also greatly varied.

Combined, it was difficult to develop a clear picture of how the existing geotechnical conditions interacted with the bridge columns.

## The Solution

The solution was to create 3D images of the columns and superimpose the ground data using 12d Model's pipe strings.

Geotechnical data was entered into 12d Model and TINs created for each stratum reflecting known geotechnical data and bore hole investigation results.

12d Model pipe strings were then modelled at the predetermined raked angle until they intersected the rock strata TIN. The pipe strings were modelled slightly larger than the design columns to clearly indicate the formation levels that were logged from the geotechnical reports.

## Result

Using 12d Model's pipe strings as columns enabled the accurate recreation of actual conditions and allowed 3D images to be created.

*"...(it was a) nice progression from site info to engineering scribble to practical masterpiece"*

*Lloyd Greenfield  
Structural Engineer*

The structural engineer and construction contractor were able to clearly visualise geotechnical formations from data provided by geotechnical engineers.

## For more information

To find out more about how you can create better designs faster with the 12d Model solution for civil engineering design, visit [www.12d.com](http://www.12d.com).



**Americas:** Vancouver  
E: [americas.sales@12d.com](mailto:americas.sales@12d.com)  
P: +1 206 905 1464

**Australasia:** Sydney  
P: [sales@12d.com](mailto:sales@12d.com)  
M: +61 2 9970 7117

**Europe:** London  
E: [sales@12d.co.uk](mailto:sales@12d.co.uk)  
P: +44 845 051 0372



## Roads and Highways

12d Model's design option is the smarter solution for the design, modification and maintenance of Road and Highway projects.

Enjoy advanced 3D tools to design local and major roads, intersections, roundabouts, highways, interchanges and much more.



## Ports and Dredging

12d Model is the solution for port infrastructure and dredging, easily managing the very large datasets and complex volume calculations often required by these projects.

A complete range of flexible and customisable volume calculation tools allow teams to extract and present the information quickly and easily.



## Land Development

12d Model is the most versatile solution for the creation of sustainable land development projects, including residential, commercial and industrial developments, recreational areas, landfills, and agriculture projects.

Easily manage all aspects of your land development project from earthwork quantities, road design utilities and drainage design.



## Airport Infrastructure

12d Model provides a solution for the design, construction and analysis of new airports, as well as the upgrade and maintenance of existing runways and airport infrastructure.

Easily manage large airport infrastructure projects and share data across multi-disciplinary teams.



## Rail

12d Track has been specifically designed for the survey, design and construction of light, heavy and high speed rail projects.

Extensive railway tools in 12d Track allow the rail designer to quickly and easily design their projects. These options are built on the existing 3D modelling and design tools available in 12d Model.



## Mining Infrastructure

12d Model's powerful set of exploration, site investigation, survey and analysis tools are crucial for the initial design, construction and ongoing operation of mining projects.

Comprehensive tools for the survey, design and construction of access roads, railways, earthworks and services allow for the coordinated design and management of mining infrastructure from within 12d Model.



## Drainage, Sewer and Utilities

12d Model provides comprehensive tools for the design, analysis and optimisation of stormwater and sewer projects using rational, dynamic (hydrograph) and 2d drainage methods.

Powerful clash detection management allows for efficient 3D modelling of service networks such as gas, electricity, telecommunications and water prior to construction.



## Surveying

12d Model is a complete surveying package providing the tools to manage all facets of surveyed data including LIDAR, topographical, as-built, conformance, traversing, geodetics, data mapping, labelling and much more.

The 12d Field option runs on a ruggedized tablet and gives the user access to full 12d Model functionality, allowing you to take the entire project into the field with the most comprehensive pick-up and set-out tools.



## Oil and Gas

12d Model assists with the design, construction and mapping of oil and gas pipelines, original site exploration and the wide range of infrastructure required for oil and gas projects.

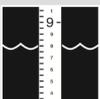
Accurate 3D modelling and the ability to share data between users allow teams to quickly and easily coordinate designs.



## Construction

12d Model is the ultimate software for construction with powerful set-out options, direct interfaces to machine control and detailed conformance reporting and auditing.

Manage 3D data and control volumes, quantities and progress claims with 12d Model. Set-out your project and undertake conformance and as-built surveys live on-site using 12d Field.



## Rivers, Dams and Hydrology

12d Model handles very large datasets and interfaces with a wide range of analysis packages, making it perfect for flood studies and the management of rivers and dams.

12d has partnered with industry leading analysis software, allowing users to apply 2D drainage analysis from within 12d Model.



## Environmental

12d Model's ability to handle very large datasets combined with flexible and comprehensive 3D analysis and modeling tools make it perfect for a wide variety of environmental projects.

Existing workflows can adopt 12d Model easily as it allows users to directly interface with GIS systems and most software packages and file formats.

## Why Choose 12d?

- **Powerful data processing & intelligent functionality.**
- **Modular, easy to update & completely customisable.**
- **Seamless integration with major industry software and hardware.**
- **Used in over 55 countries worldwide.**
- **Friendly support & training from industry experts.**

**Americas:** Vancouver  
 E: [americas.sales@12d.com](mailto:americas.sales@12d.com)  
 P: +1 206 905 1464  
**Australasia:** Sydney  
 P: [sales@12d.com](mailto:sales@12d.com)  
 M: +61 2 9970 7117  
**Europe:** London  
 E: [sales@12d.co.uk](mailto:sales@12d.co.uk)  
 P: +44 845 051 0372

12d Solutions Pty Ltd  
 PO Box 351 Narrabeen  
 NSW 2101 Australia  
 © 2013 12d Solutions Pty Ltd

