

Presented at the FIG Working Week 2016,
May 2-6, 2016 in Christchurch, New Zealand

Innovation from Disaster

Andrew Sinclair, B.Surv
Licensed Cadastral Surveyor

Eliot Sinclair
surveyors | engineers | planners



FIG Working Week 2016

CHRISTCHURCH, NEW ZEALAND 2-6 MAY 2016

Recovery

from disaster

Organised by



Platinum Partners



Diamond Partner



An opportunity
to innovate



Christ Church Cathedral (2011)

Kilmore St Office (2011)



Platinum Partners:



Diamond Partner



Growth at Eliot Sinclair

2006

50 Staff

6 Survey Field Staff

2016

100 Staff

21 Survey Field Staff

Scanning Team





2011 Scanners

Trimble FX
No Inclinometer



Trimble GX



Leica C10

#1 – Buy a Portable Scanner



2012 FARO
Invertable



2015 Leica P40
Survey Robust

3 Years with FARO



Platinum Partners:



Diamond Partner

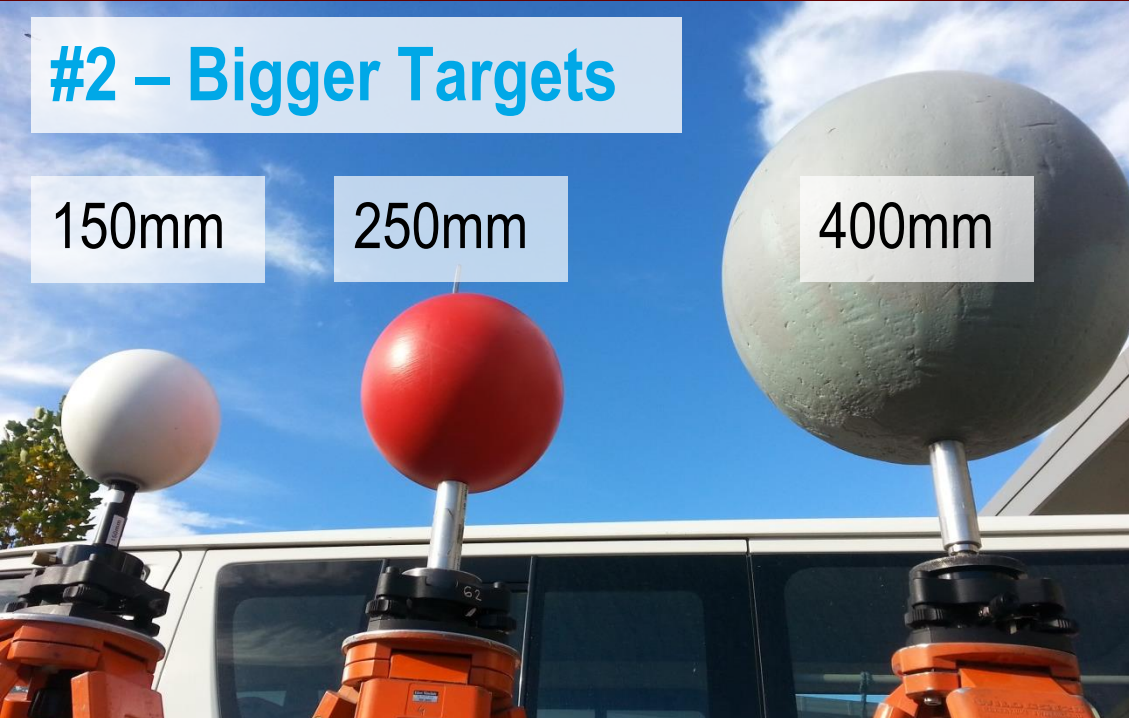


#2 – Bigger Targets

150mm

250mm

400mm



Magnetic Mounts

Christchurch Historic Arts Centre



Revit Modeling



#3 - Double-Sided Targets



Christ Church Cathedral



Leica C10



Platinum Partners:



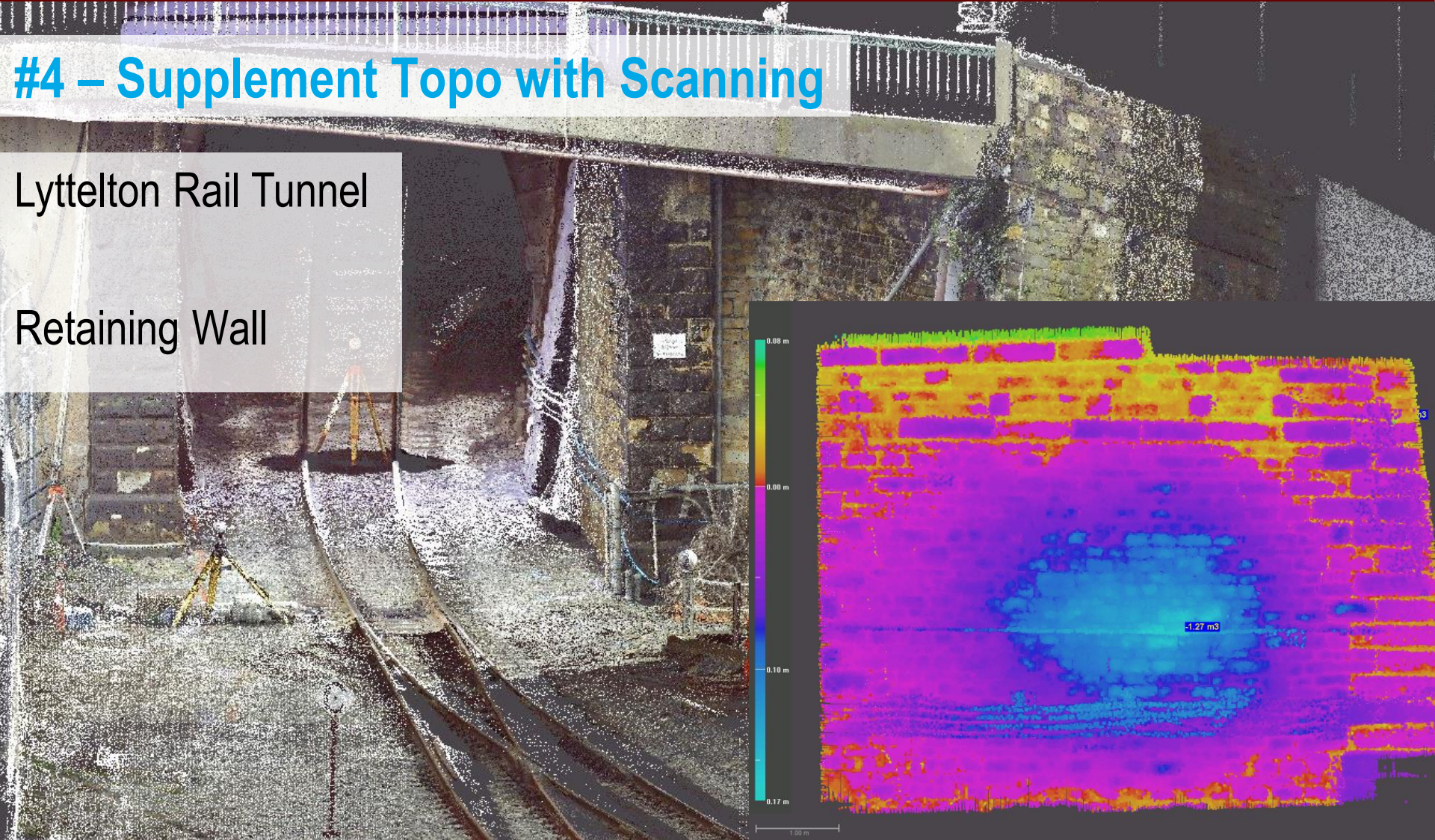
Diamond Partner



#4 – Supplement Topo with Scanning

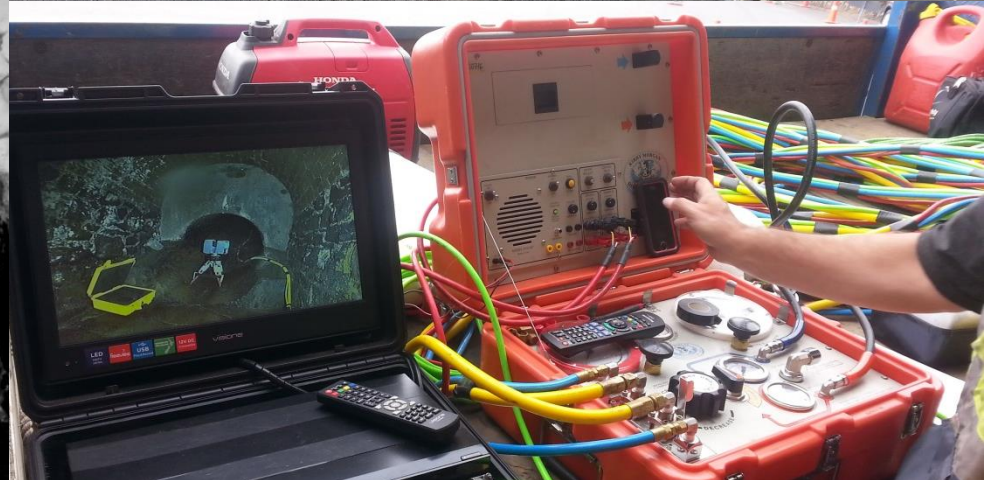
Lyttelton Rail Tunnel

Retaining Wall

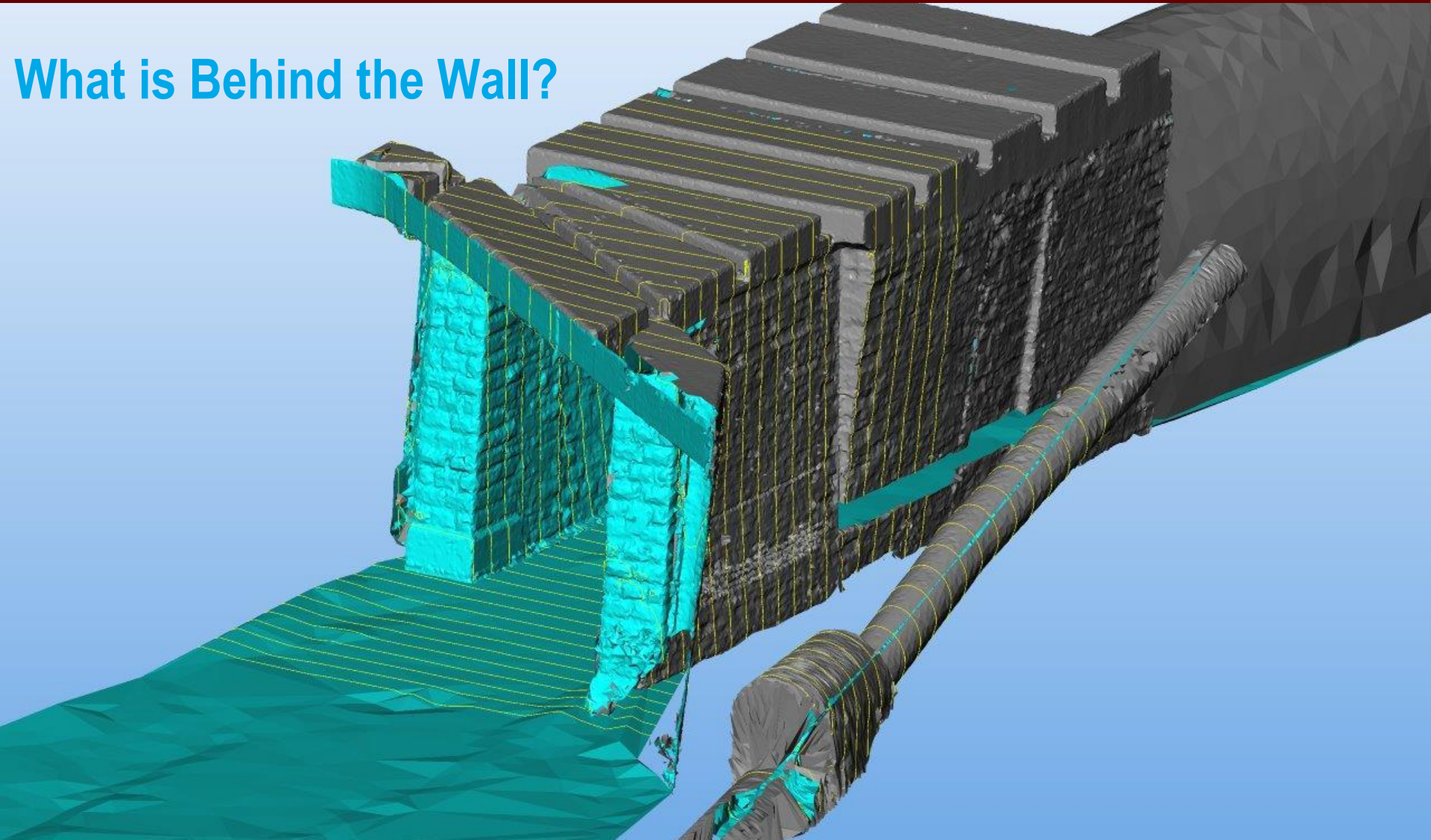


#5 – Throw your scanner down the drain





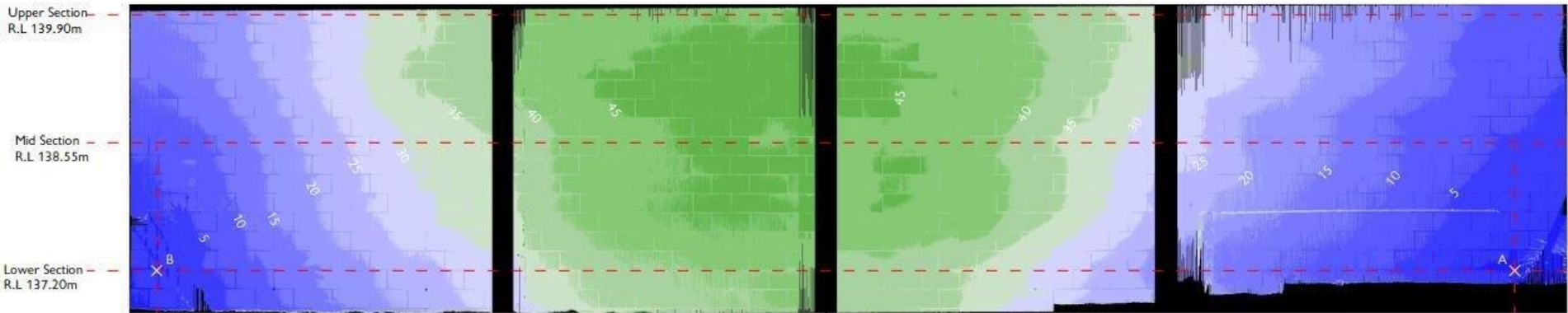
What is Behind the Wall?



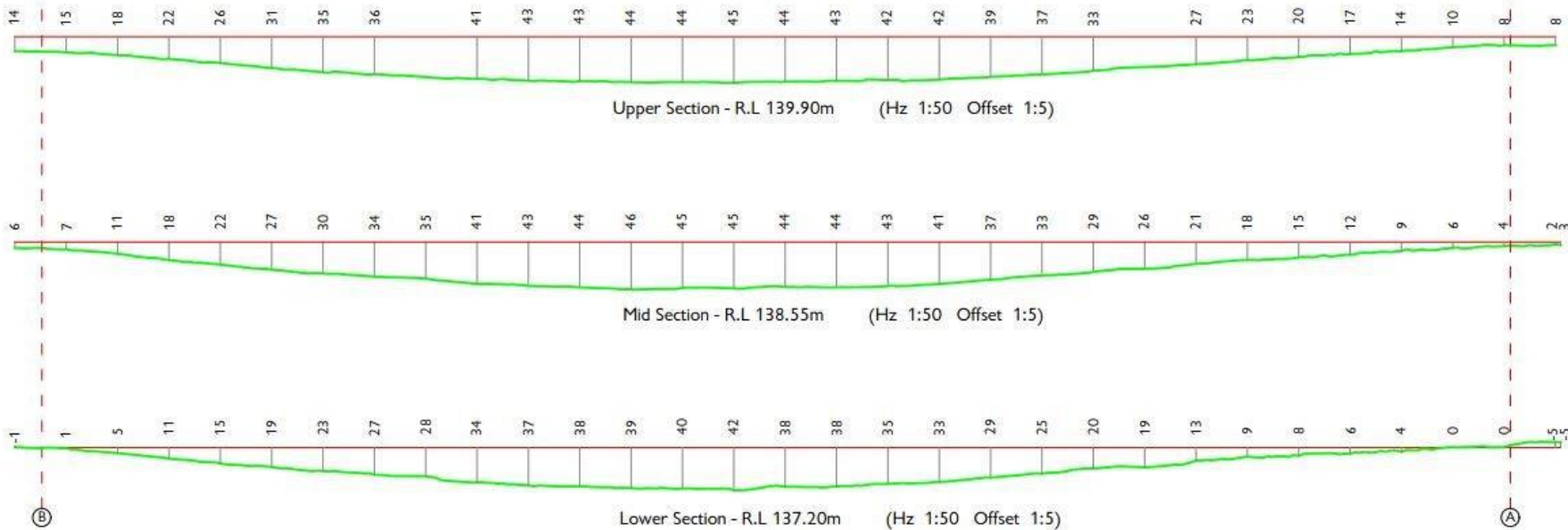


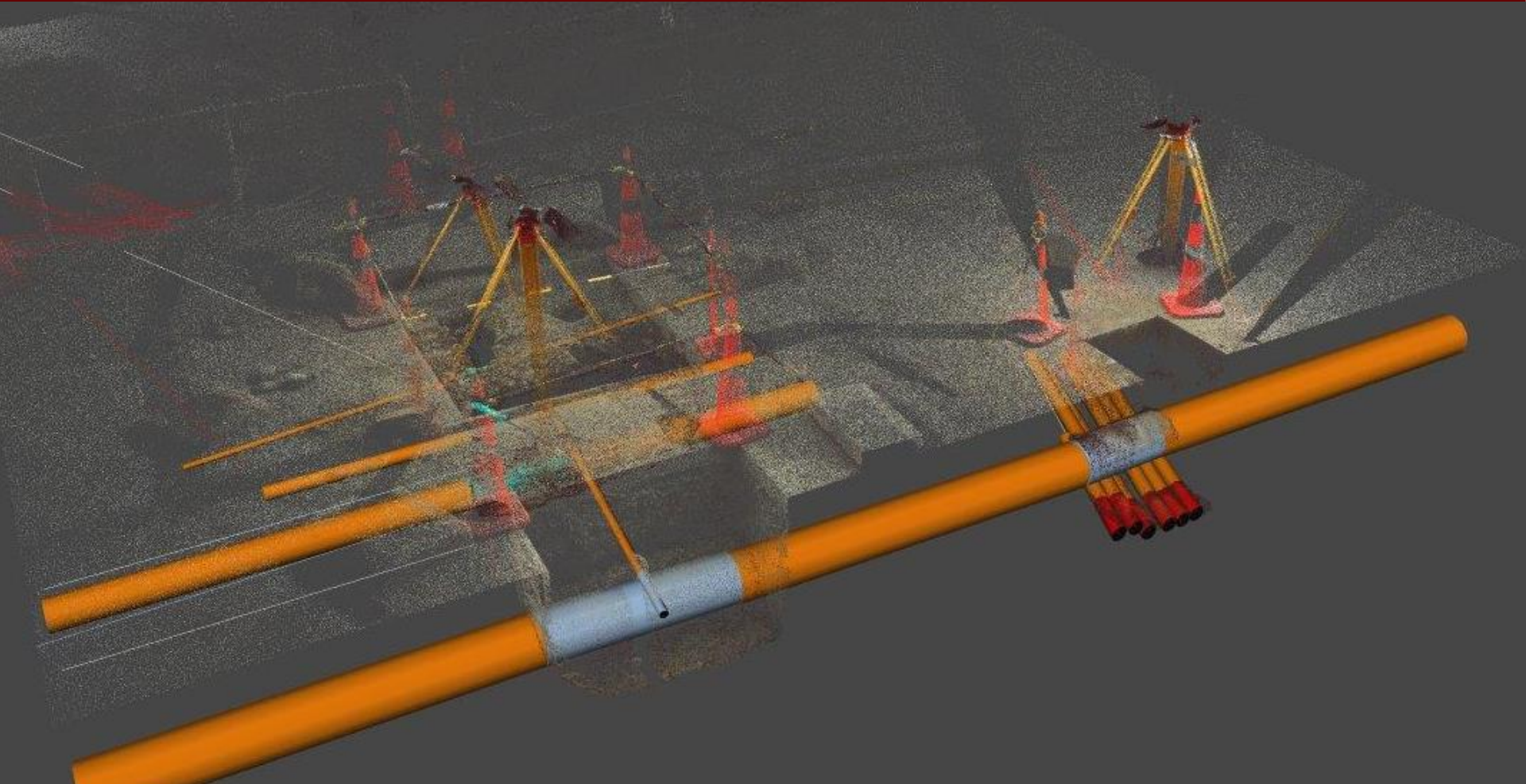
Building Damage Assessments
More Data = More Confidence

#6 – Wall Verticality



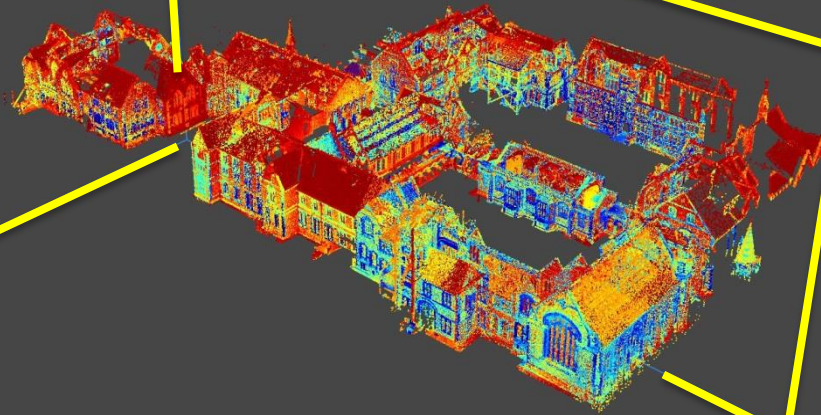
B. Cross Sections of Garage Forecourt retaining wall from vertical reference plane.





#7 – Capture 150 Years of Underground Services

#8 – Set Geospatial Framework



#9 – Ease of Use

Properties

3D View

3D View: 3d DWG an Edit Type

Graphics

View Scale	1 : 100
Scale Value 1:	100
Detail Level	Medium
Parts Visibility	Show Original
Visibility/Graphic...	Edit...
Graphic Display ...	Edit...
Discipline	Architectural
Show Hidden Lin...	By Discipline
Default Analysis ...	None
Sun Path	<input type="checkbox"/>

Extents

Crop View	<input type="checkbox"/>
Crop Region Visi...	<input type="checkbox"/>
Annotation Crop	<input type="checkbox"/>
Far Clip Active	<input type="checkbox"/>
Far Clip Offset	304800.0
Section Box	<input checked="" type="checkbox"/>

Camera

Rendering Settings Edit...

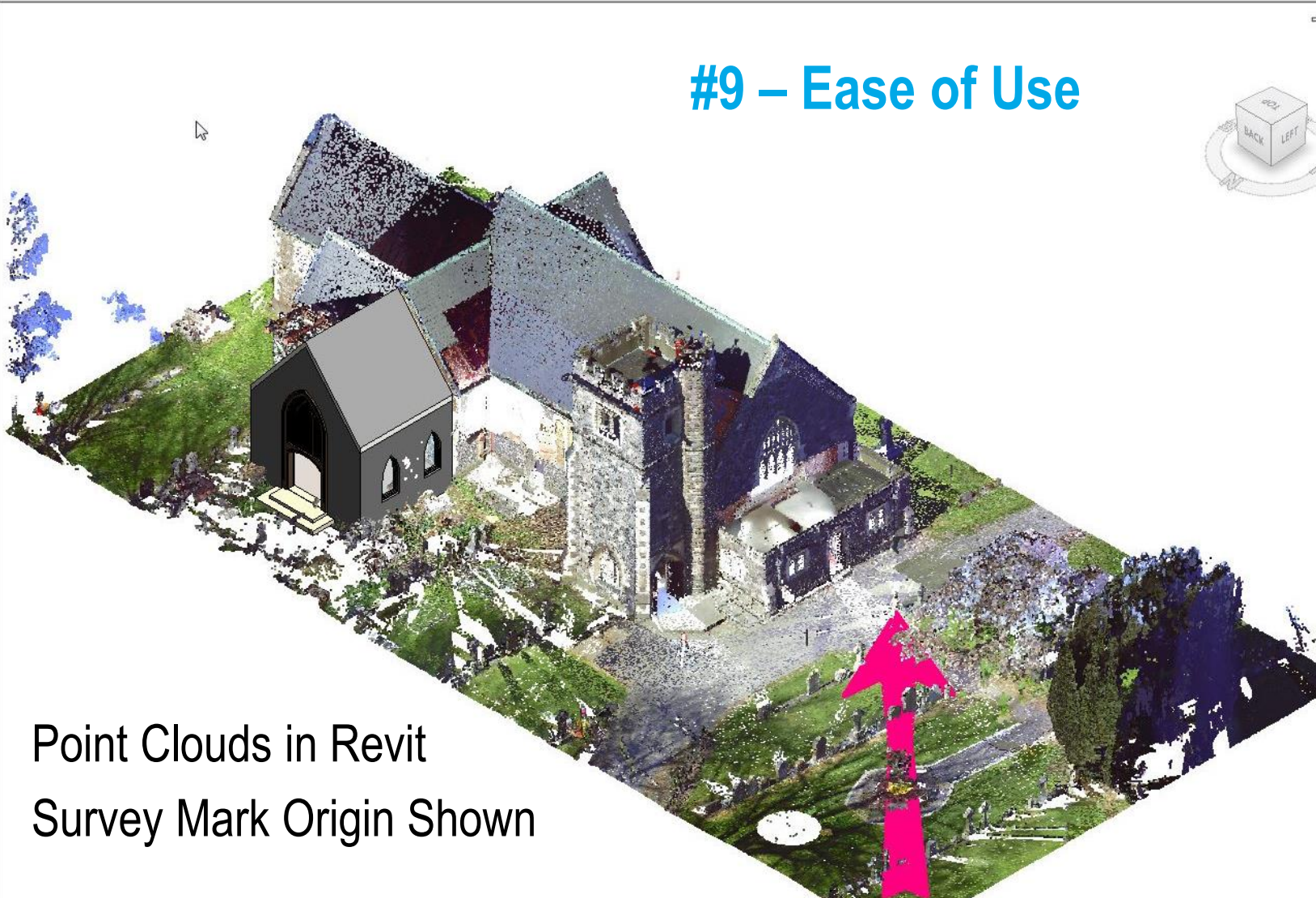
Locked Orientati...	<input type="checkbox"/>
Perspective	<input type="checkbox"/>
Eye Elevation	65694.4
Target Elevation	35554.9
Camera Position	Adjusting

Identity Data

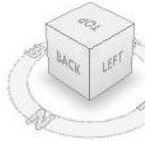
View Template	<None>
View Name	3d DWG and PC
Dependency	Independent
Title on Sheet	

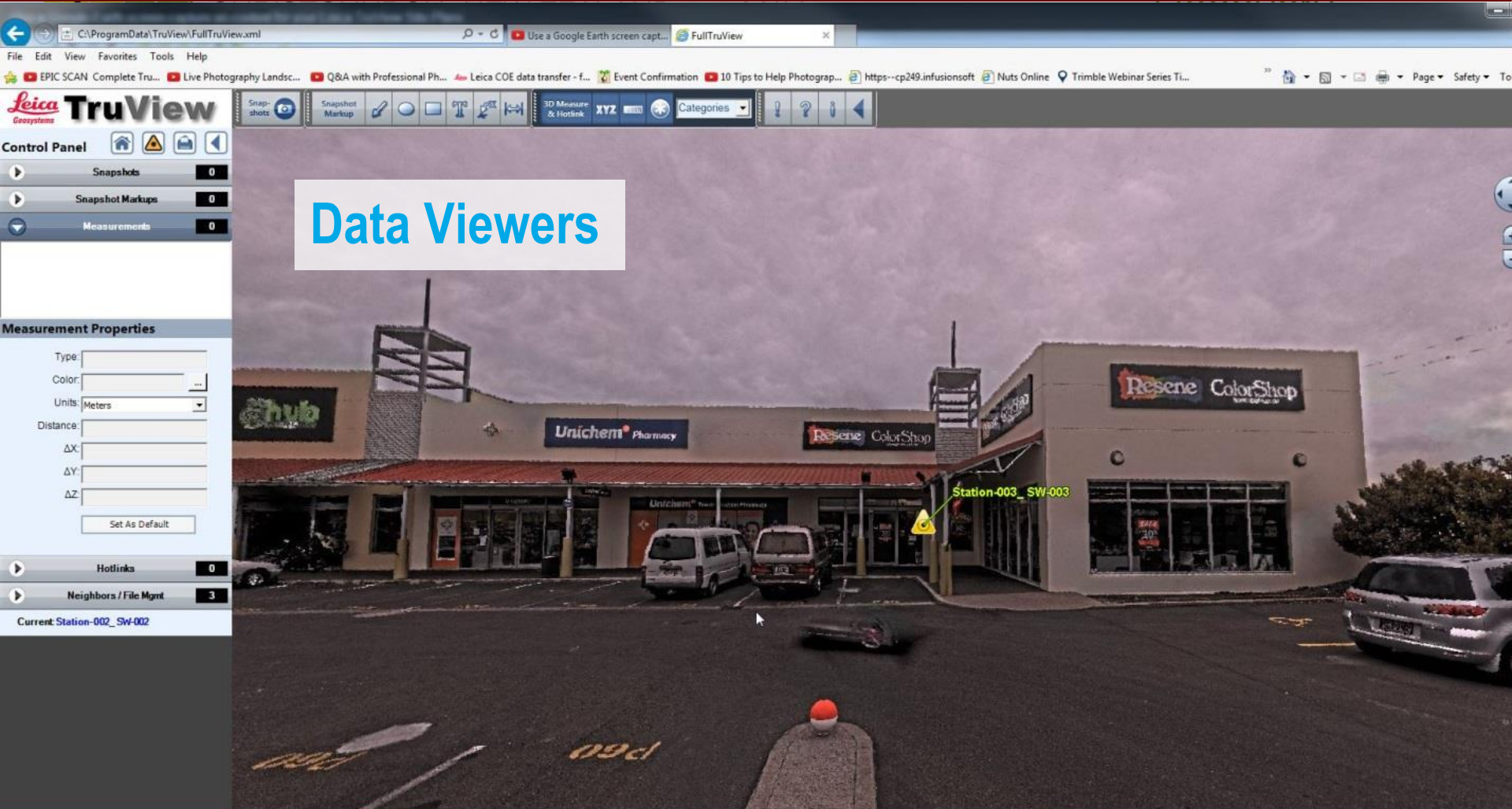
Phasing

Phase Filter	Show All
Phase	New Construct...



Point Clouds in Revit
Survey Mark Origin Shown





#10 – Integration with UAV



The Bigger Picture

- Why Pay a Surveyor?
- Data Capture with Integrity
- Innovative Solutions
- Start with the End in Mind

Questions?

