

4th International FIG 3D Cadastre Workshop
9-11 November 2014 - Dubai, United Arab Emirates

Height reference for parcels and land object for the 3D cadastres structuring

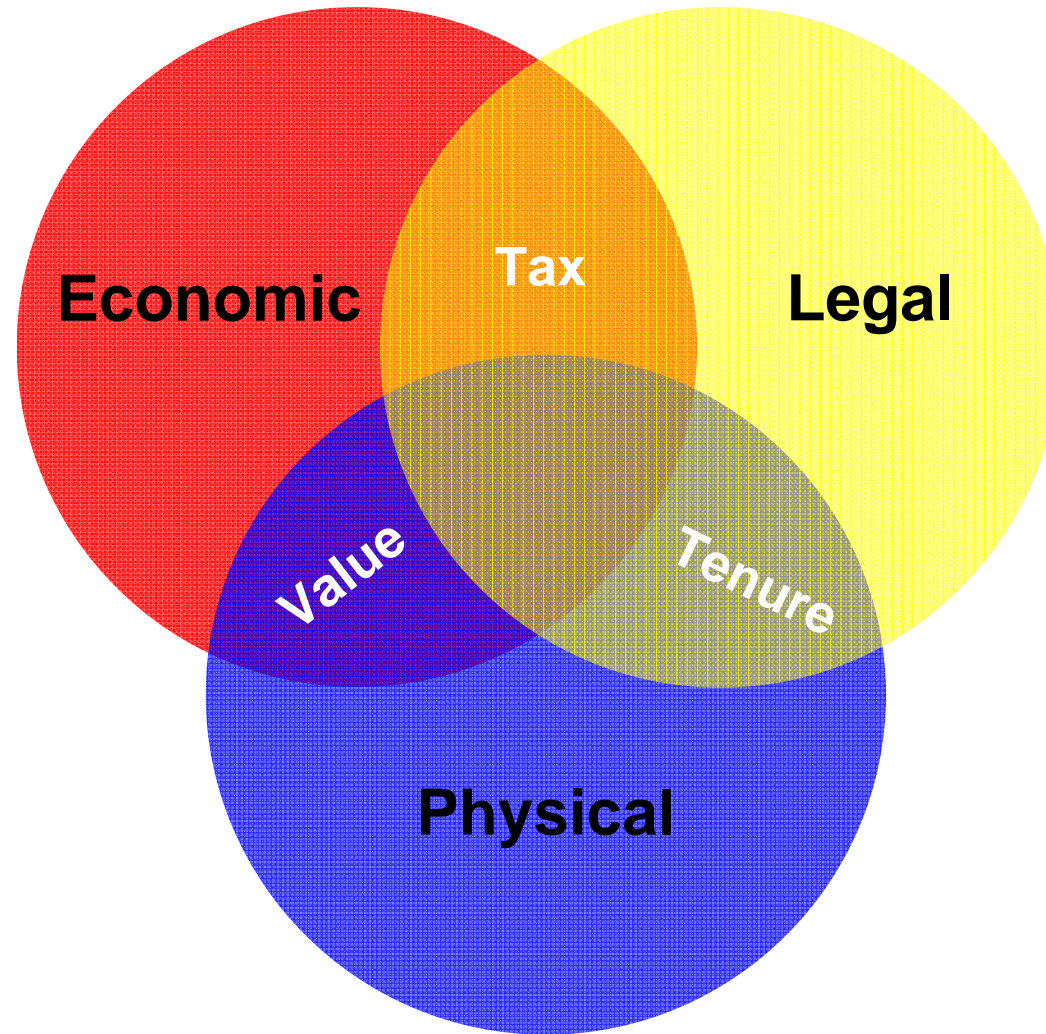
Diego Alfonso ERBA, Gustavo NOGUERA, Aldo MANGIATERRA; **Argentina**
Geovanna Alexandra Chávez Cangás, **Ecuador**

Initial considerations

- New definitions, new frustrations.
- Same obsession in 3D than in 2D \Rightarrow same mistakes.
- Different 3D cadastres for different users.

Can a 3D cadastre implementation reduce land property concentration, improve the use of natural resources and reduce informality along L.A.?

Orthodox cadastre in L.A.

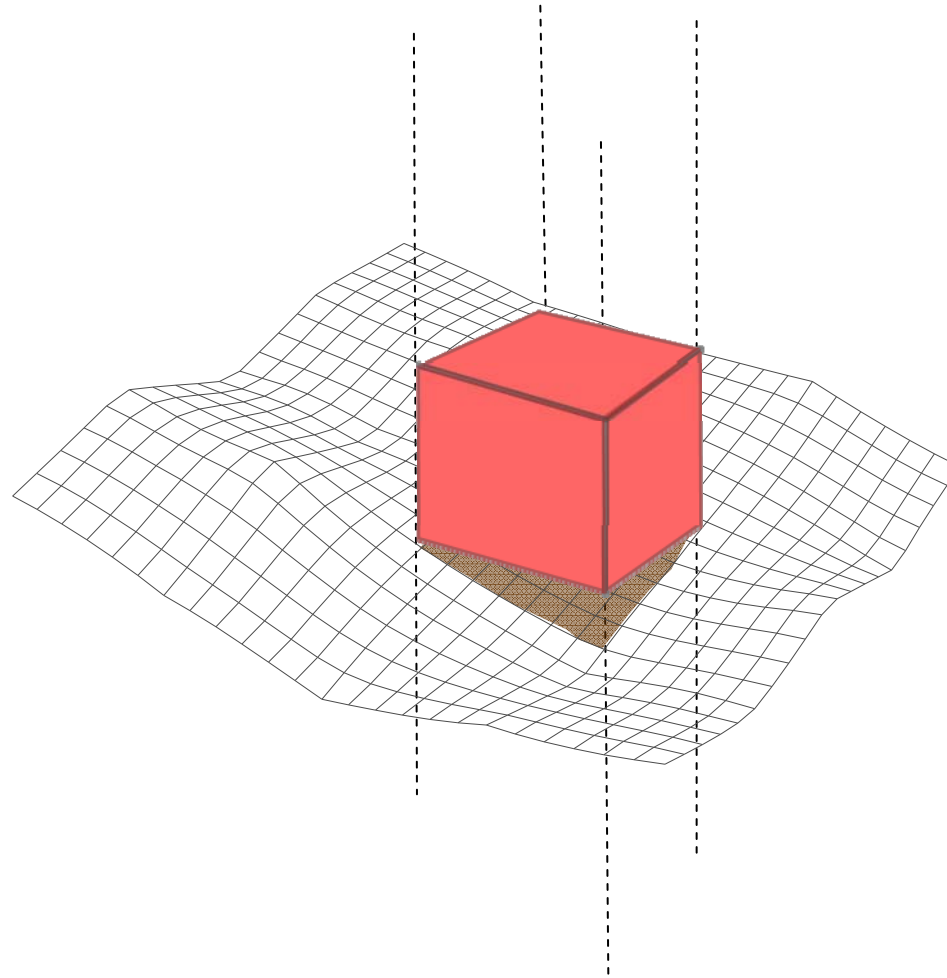


Orthodox cadastre in L.A.

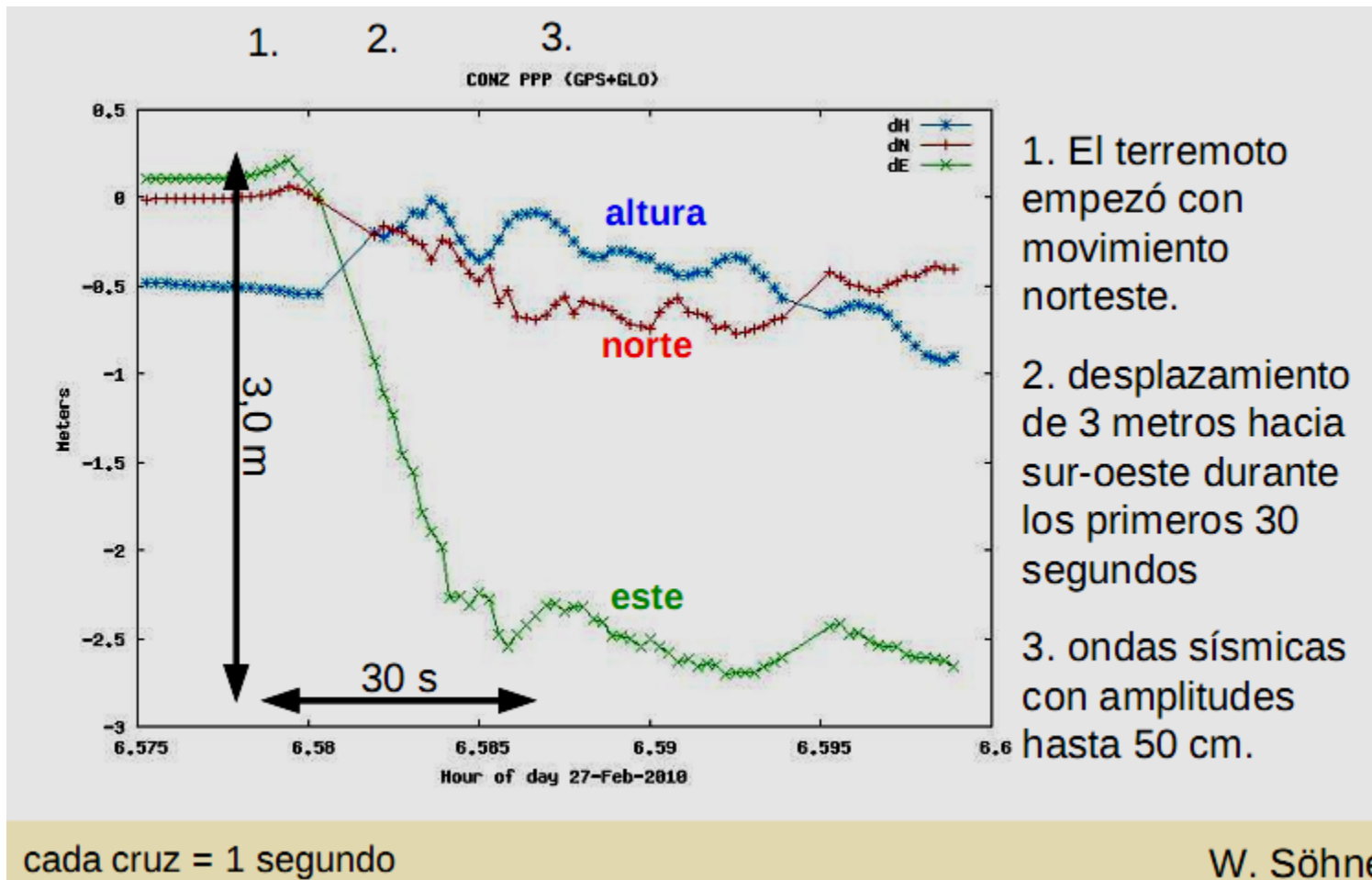
Georeferencing

Orthodox cadastre in L.A.

Georeferencing



Orthodox cadastre in L.A. Georeferencing



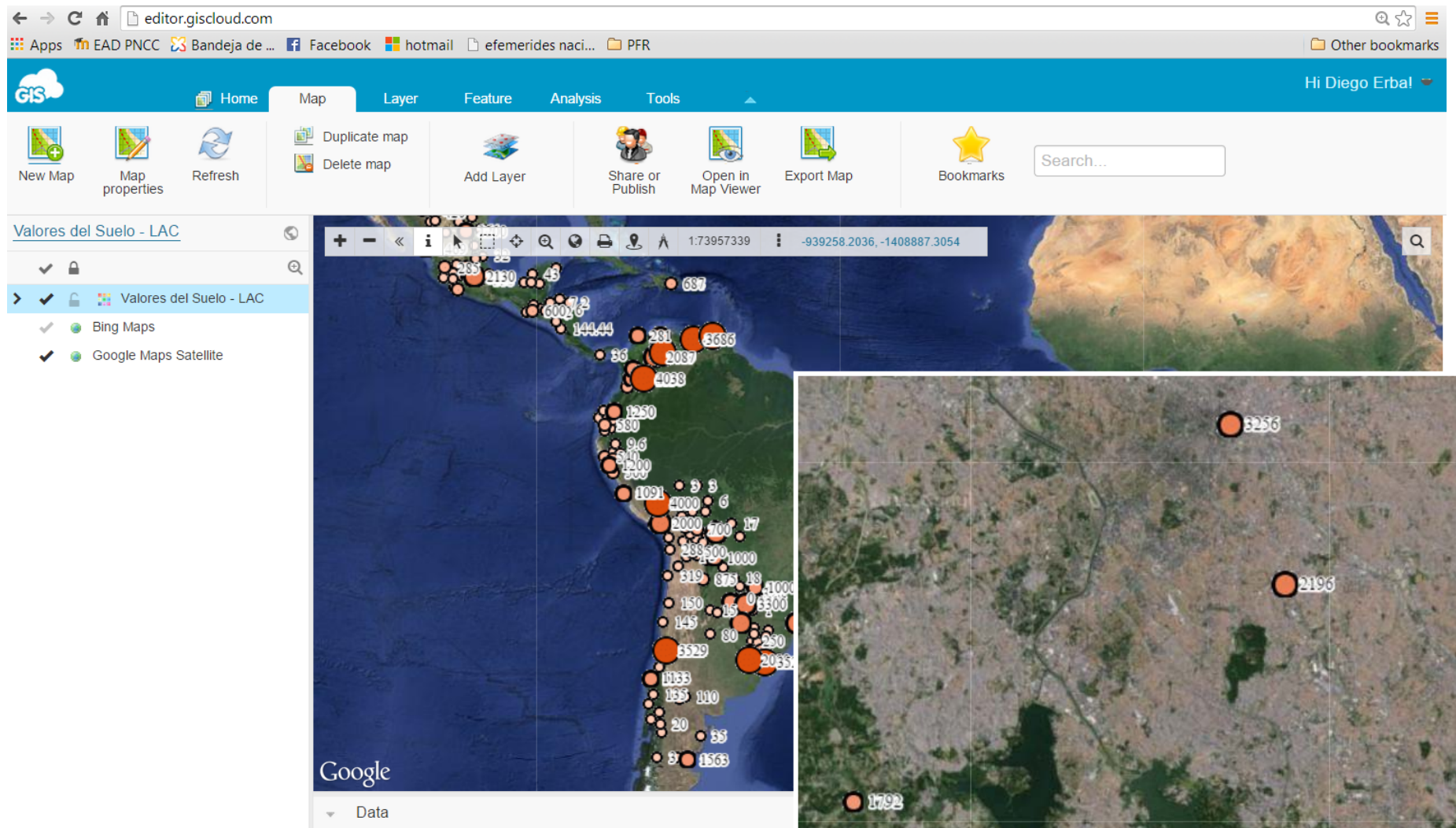
Hayo Hase

Orthodox cadastre in L.A. Georeferencing



http://www.bbc.co.uk/mundo/ciencia_tecnologia/2010/03/100309_terremoto_ciudades_men.shtml

Orthodox cadastre in L.A. Georeferencing the land market



Mario Piumetto & Diego Erba

Nov. 2014

Alternative cadastre for L.A.

Guanajuato, México



Alternative cadastre for L.A.

Carlos Paz, Córdoba, Argentina



Diego Alfonso Erba

Alternative cadastre for L.A.



Nov. 2014

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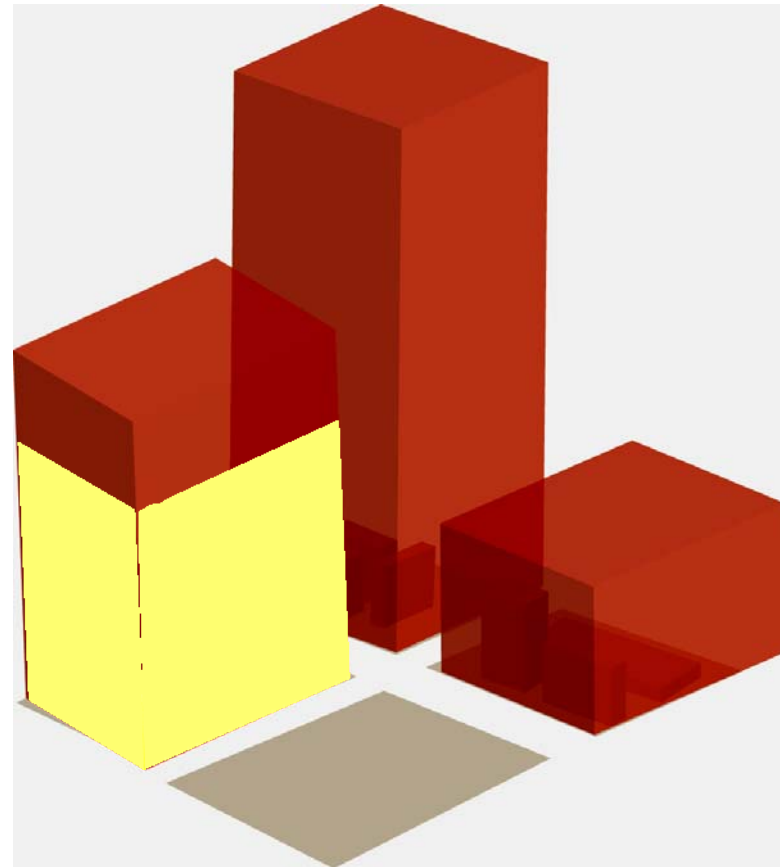
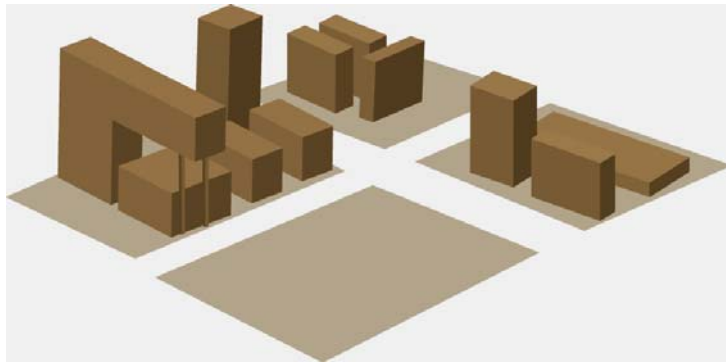
Alternative cadastre for L.A.



Alternative cadastre for L.A.



Alternative cadastre for L.A.



Alternative cadastre for L.A.

Osasco, SP, Brasil

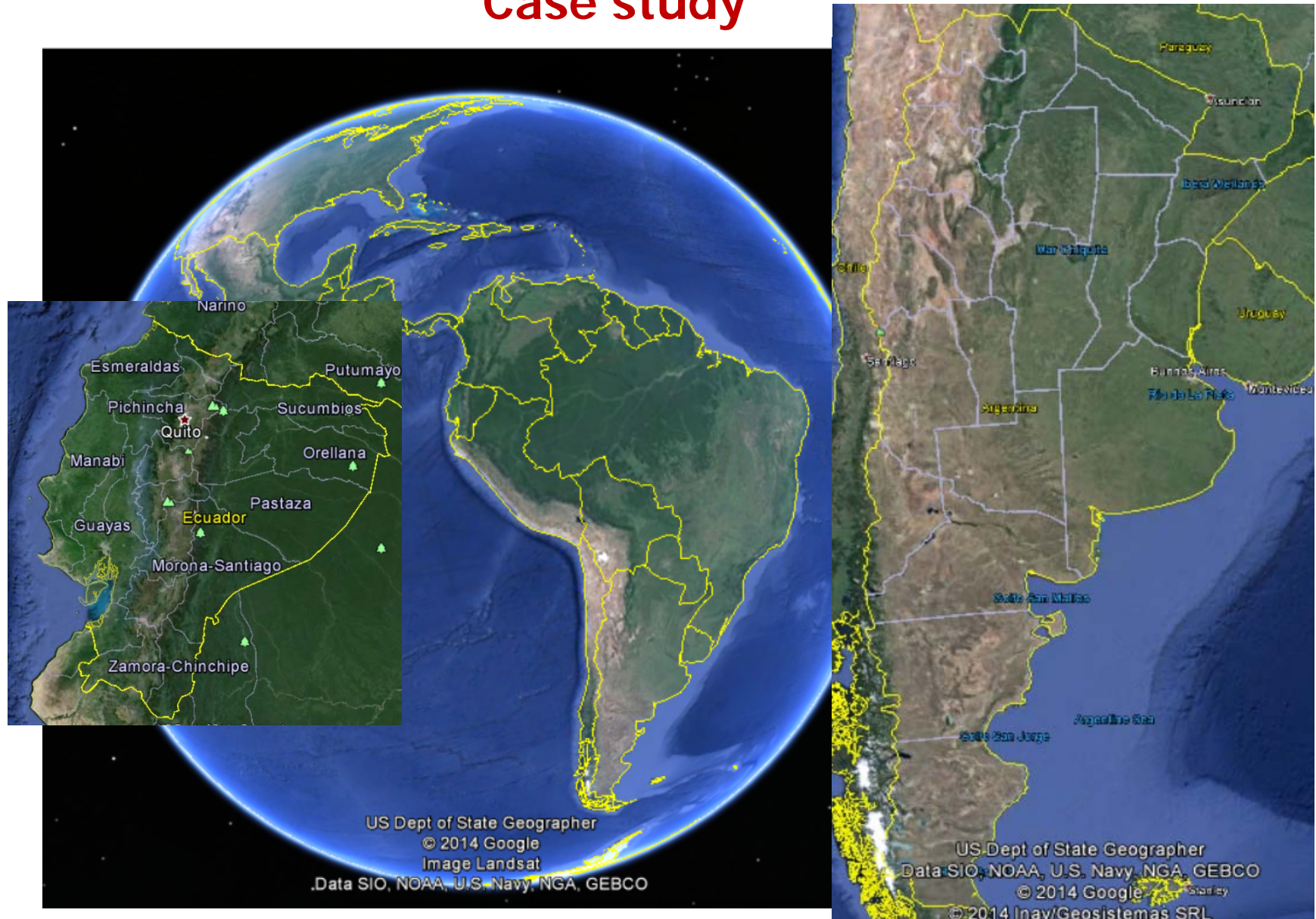


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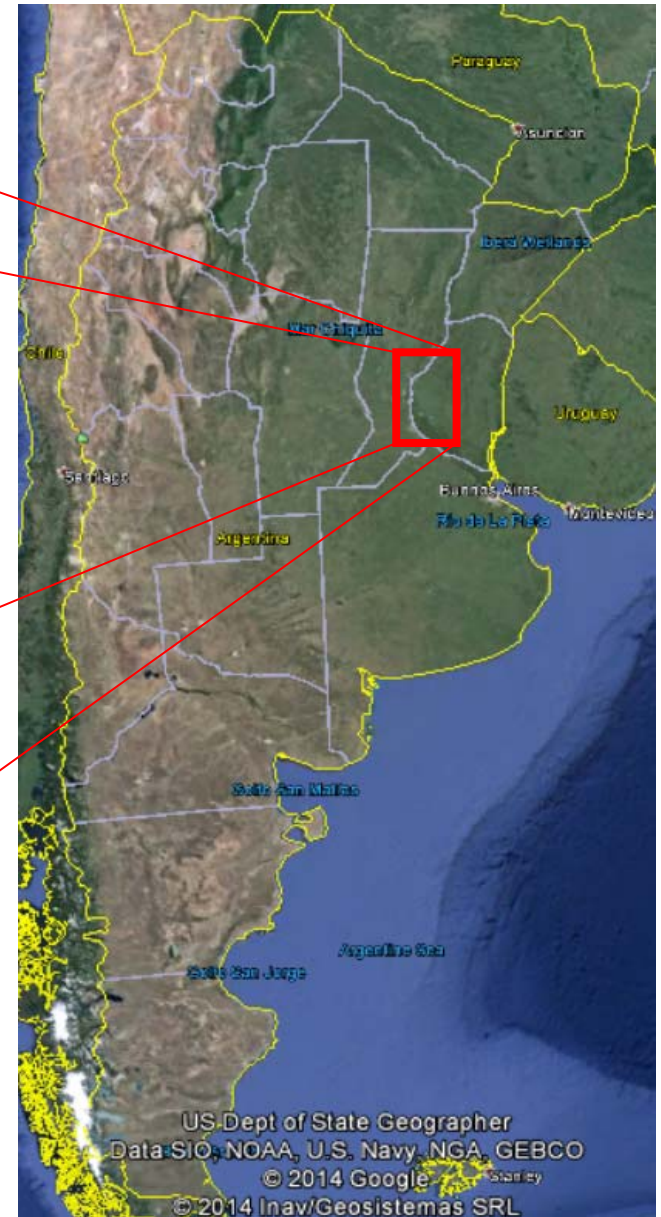
Height reference for parcels and land object

Case study



Height reference for parcels and land object

Case study



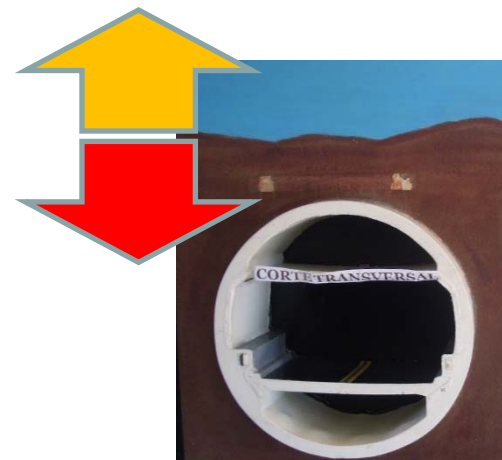
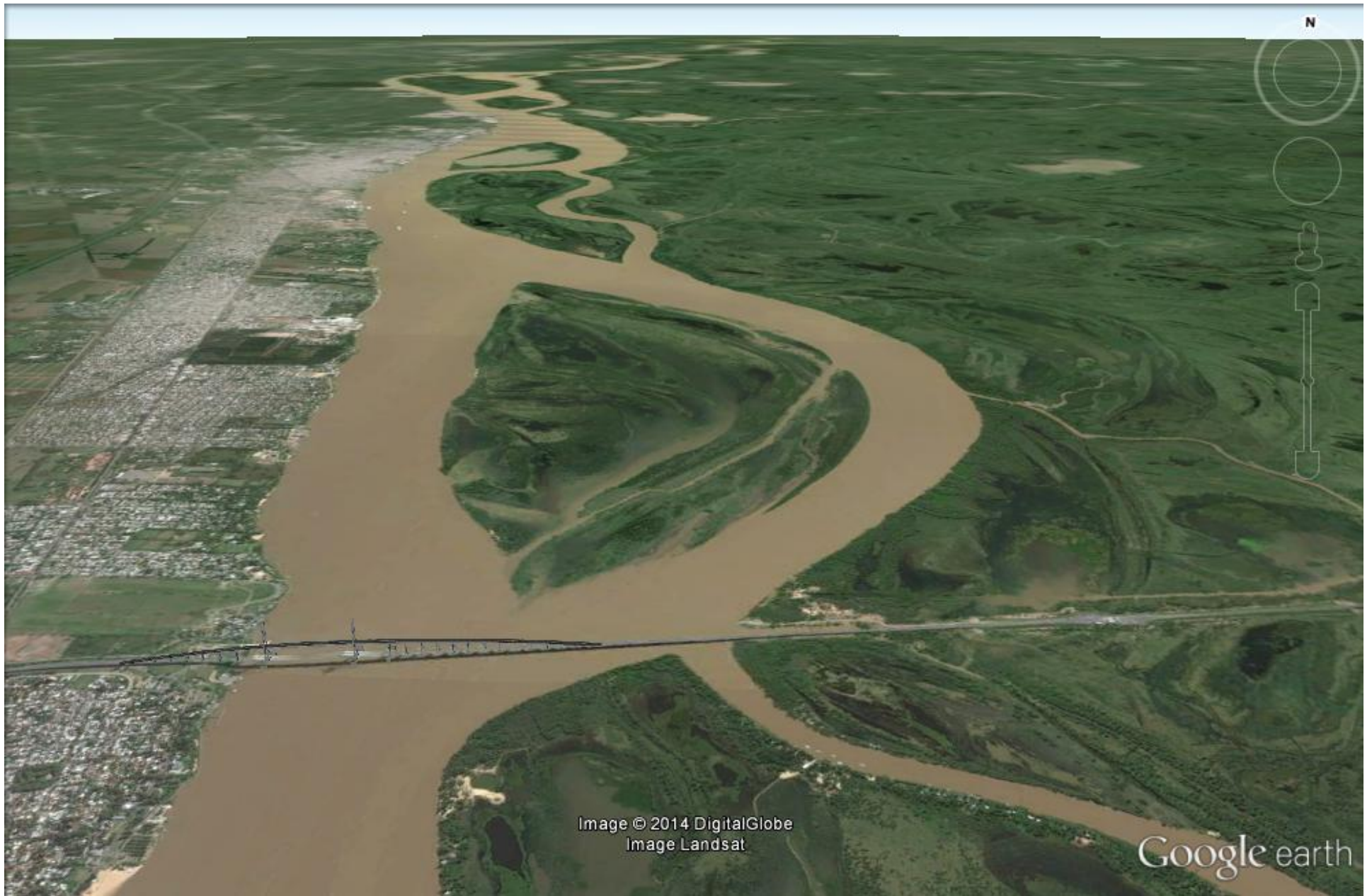






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Image Landsat

Google earth



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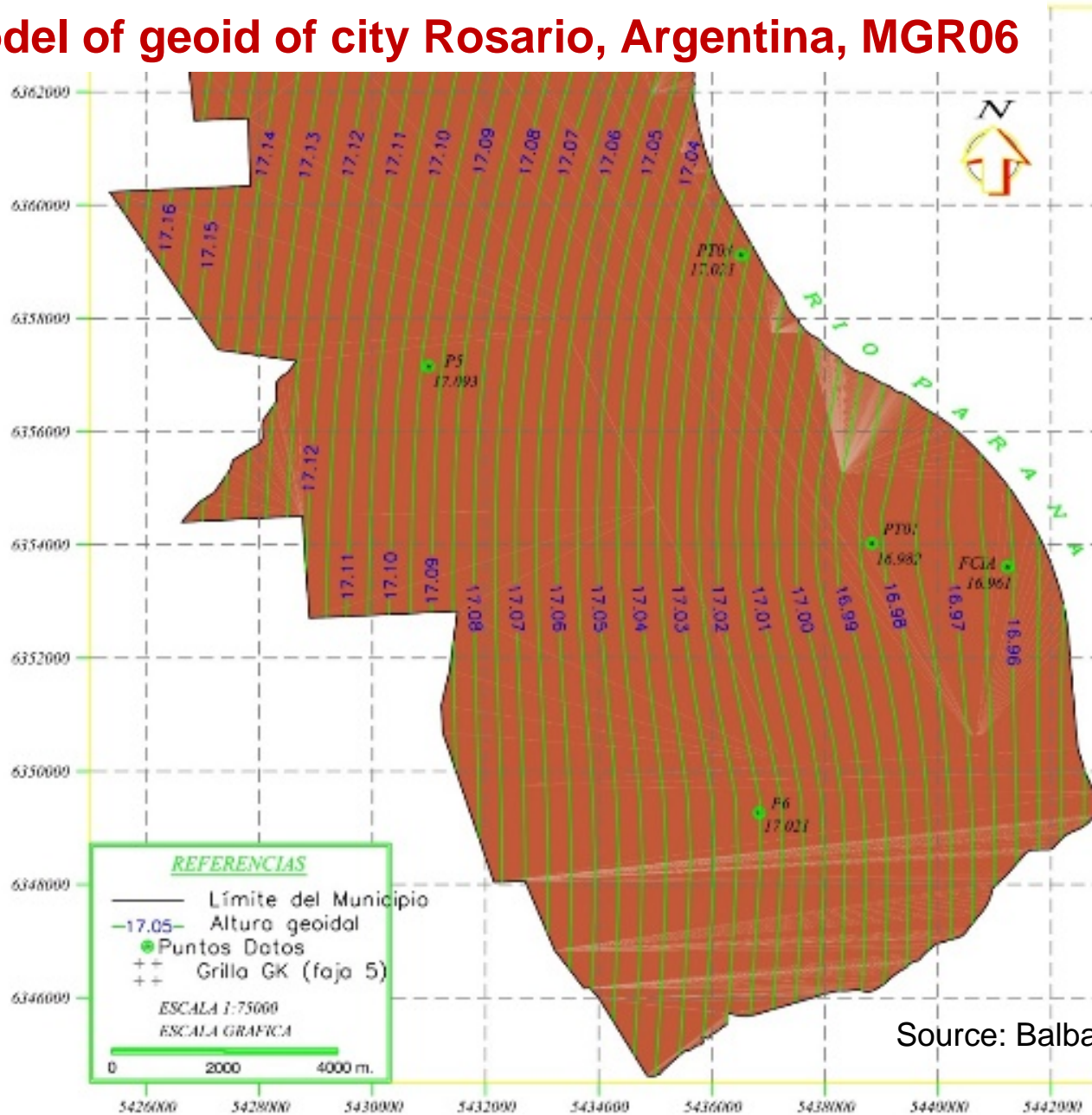
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Model of geoid of city Rosario, Argentina, MGR06



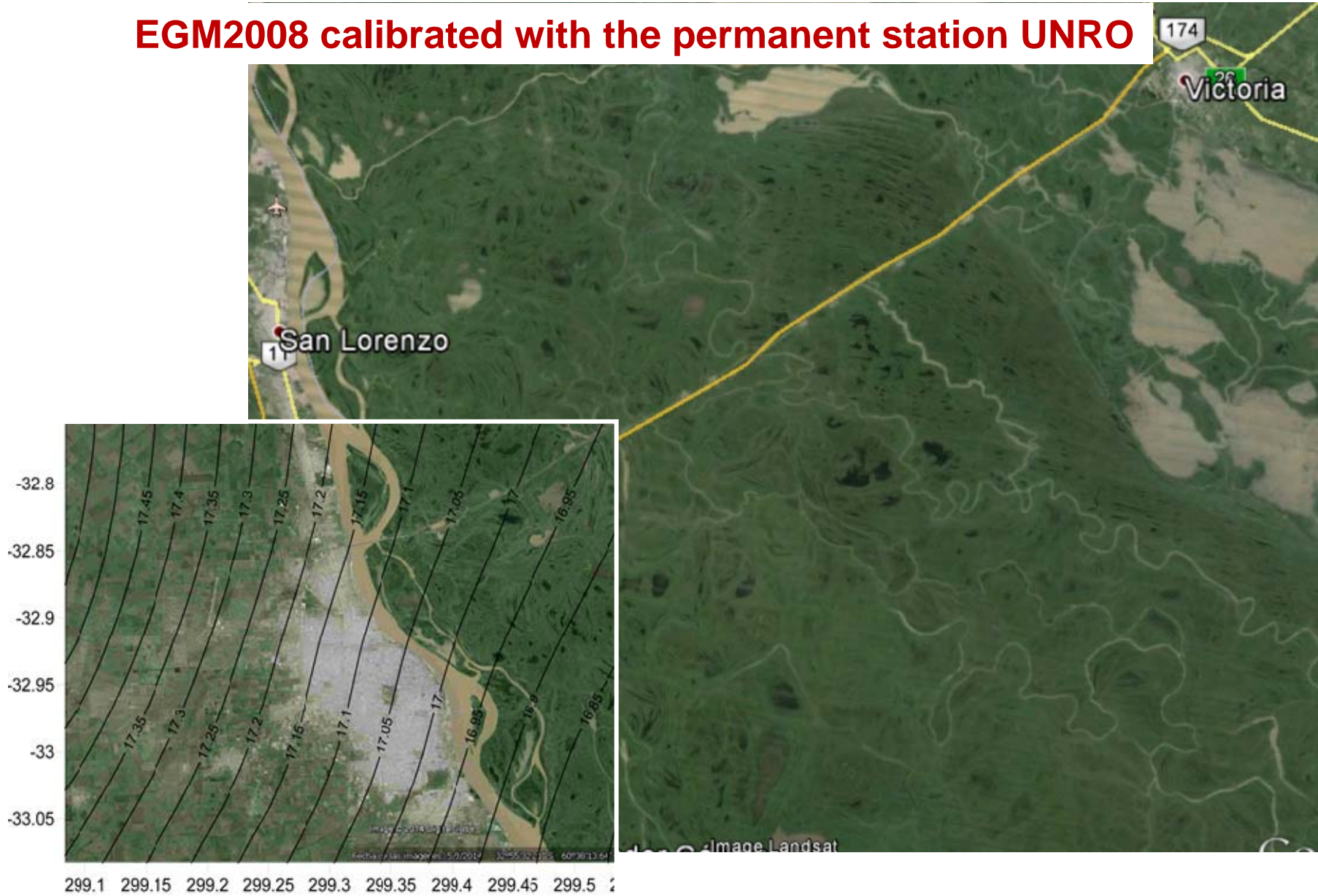
Source: Balbarani et al. (2006)

Model of geoid of city Rosario, Argentina, MGR06

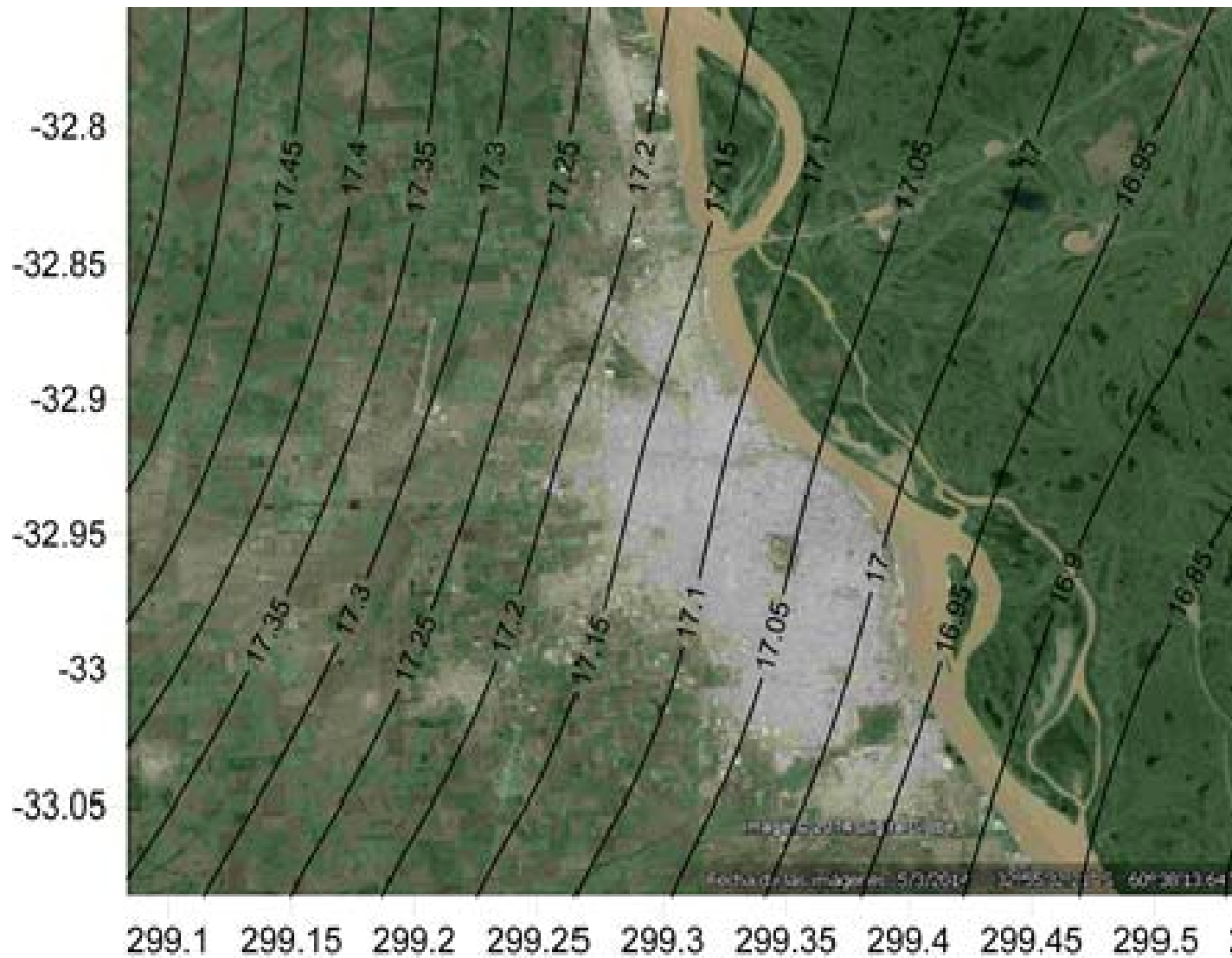


Source: Balbarani et al. (2006)

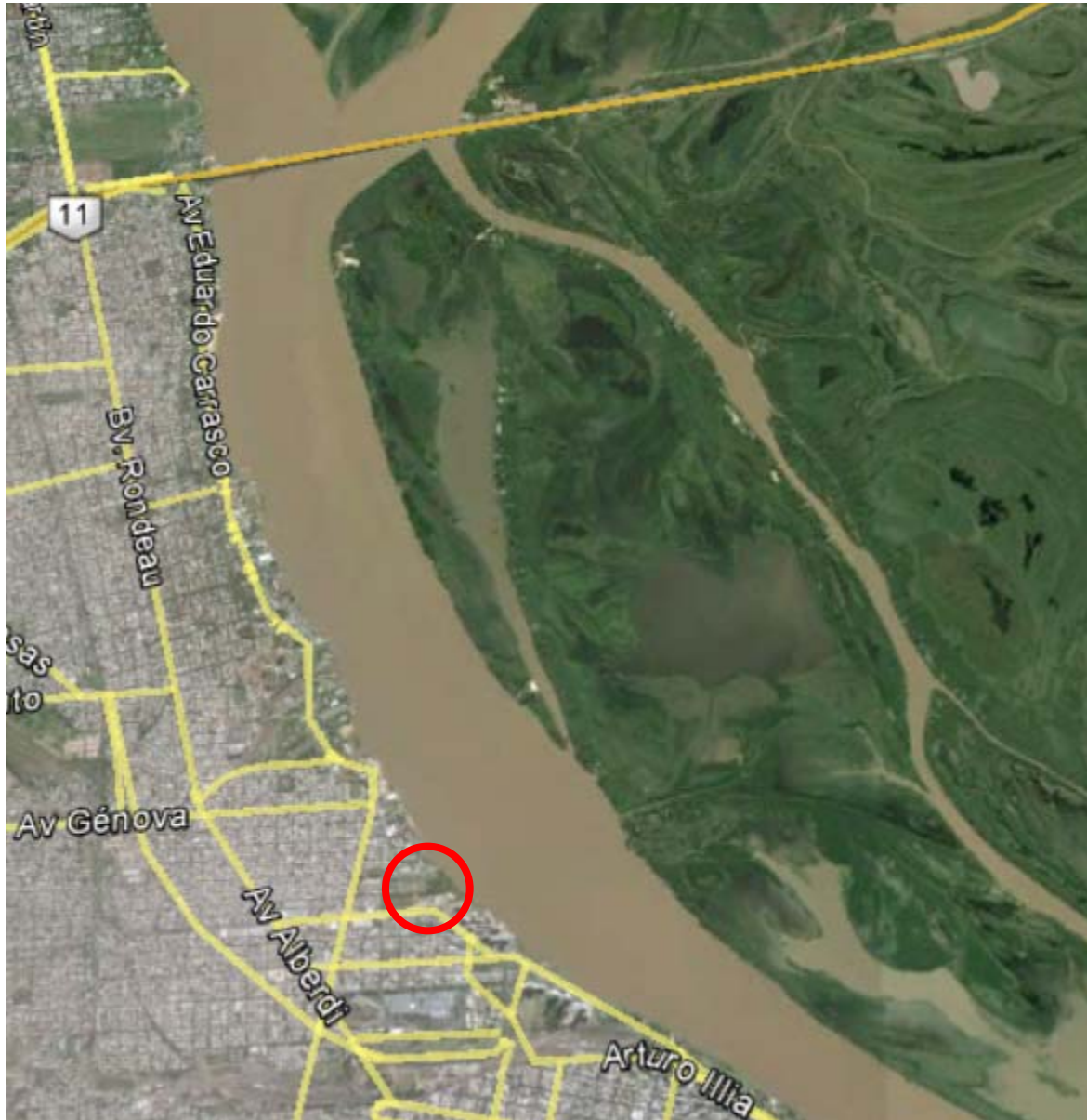
EGM2008 calibrated with the permanent station UNRO



EGM2008 calibrated with the permanent station UNRO



Complex of buildings “Ciudad Ribera”, Rosario, Argentina

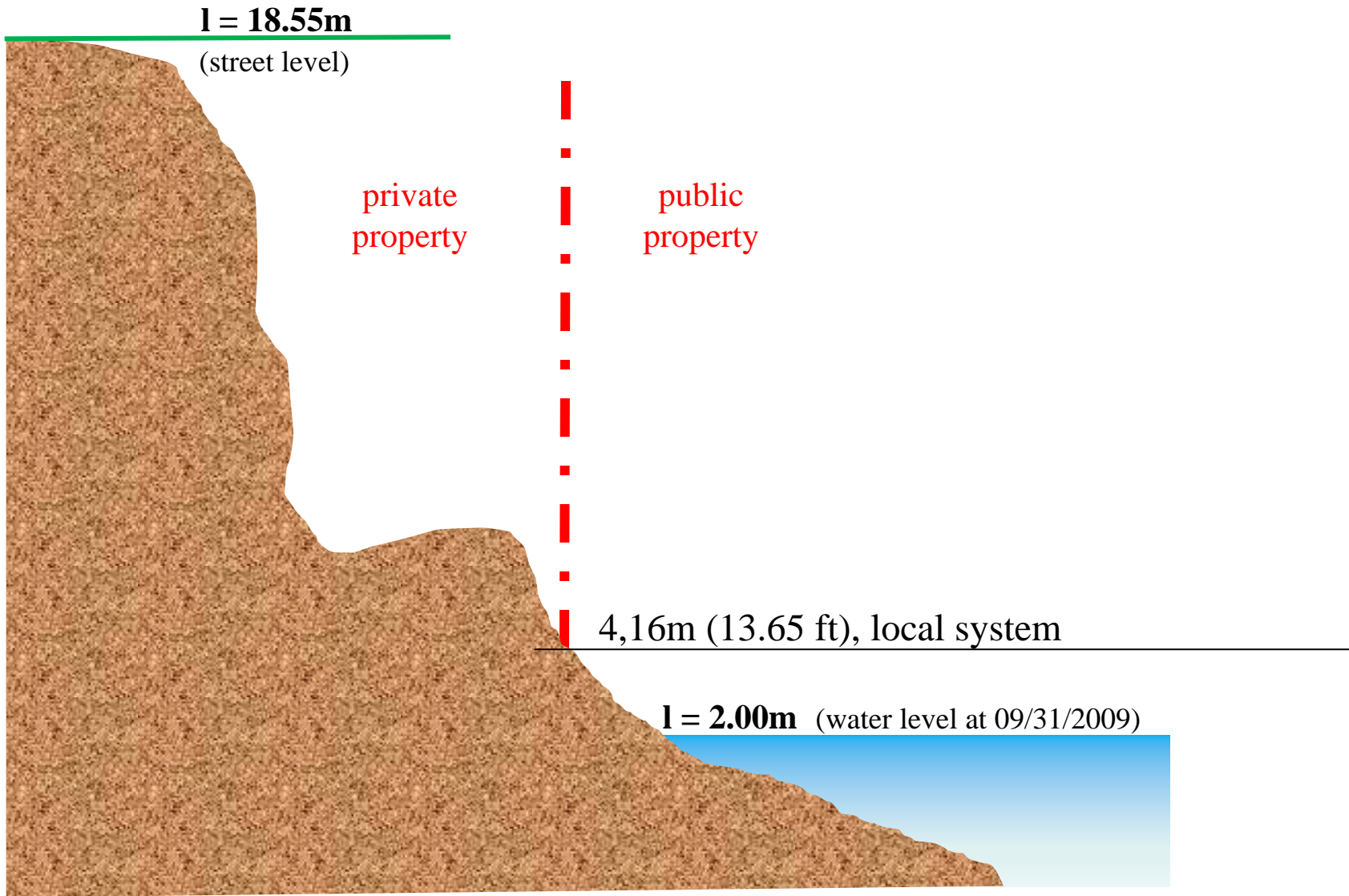


Complex of buildings “Ciudad Ribera”, Rosario, Argentina

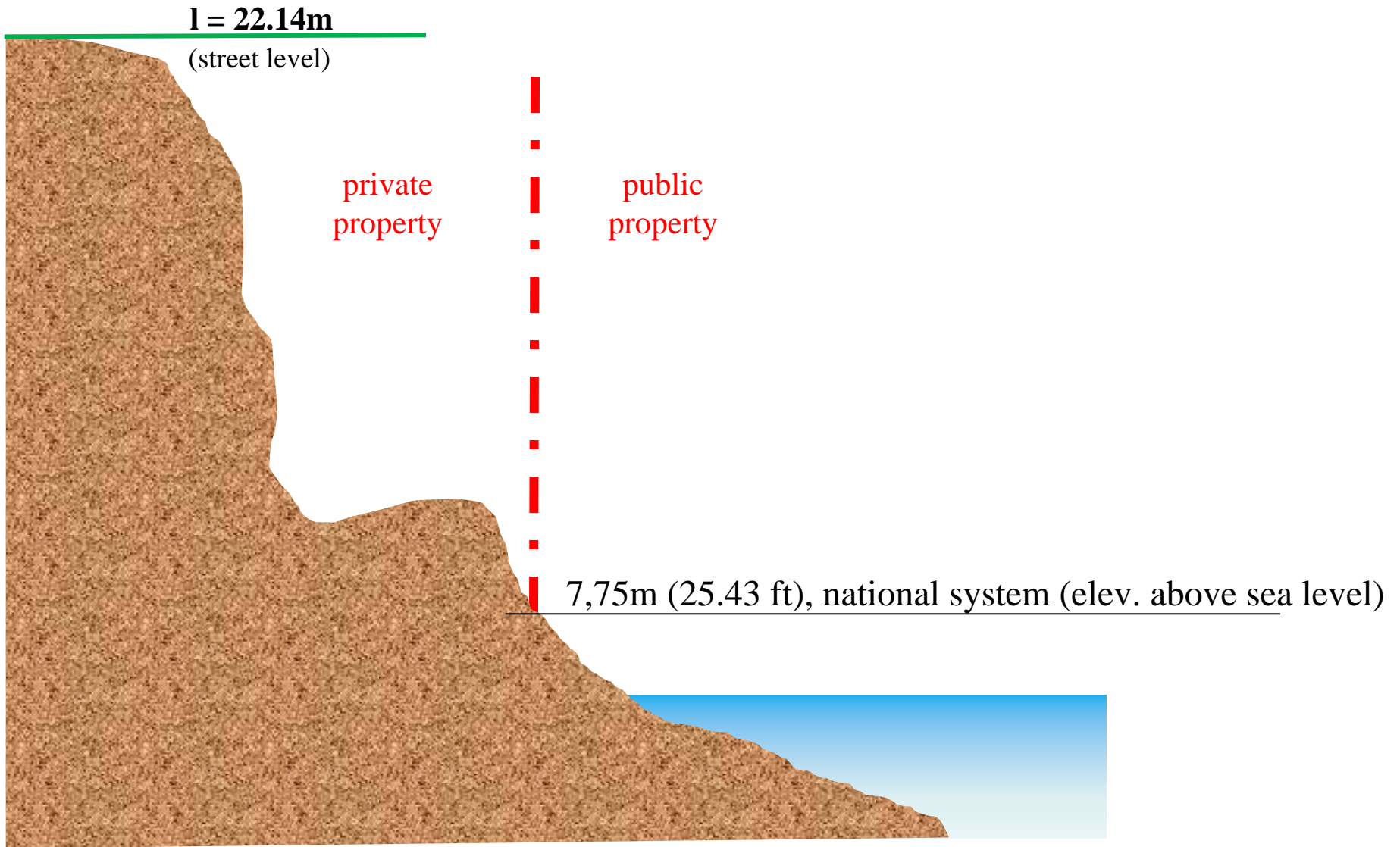


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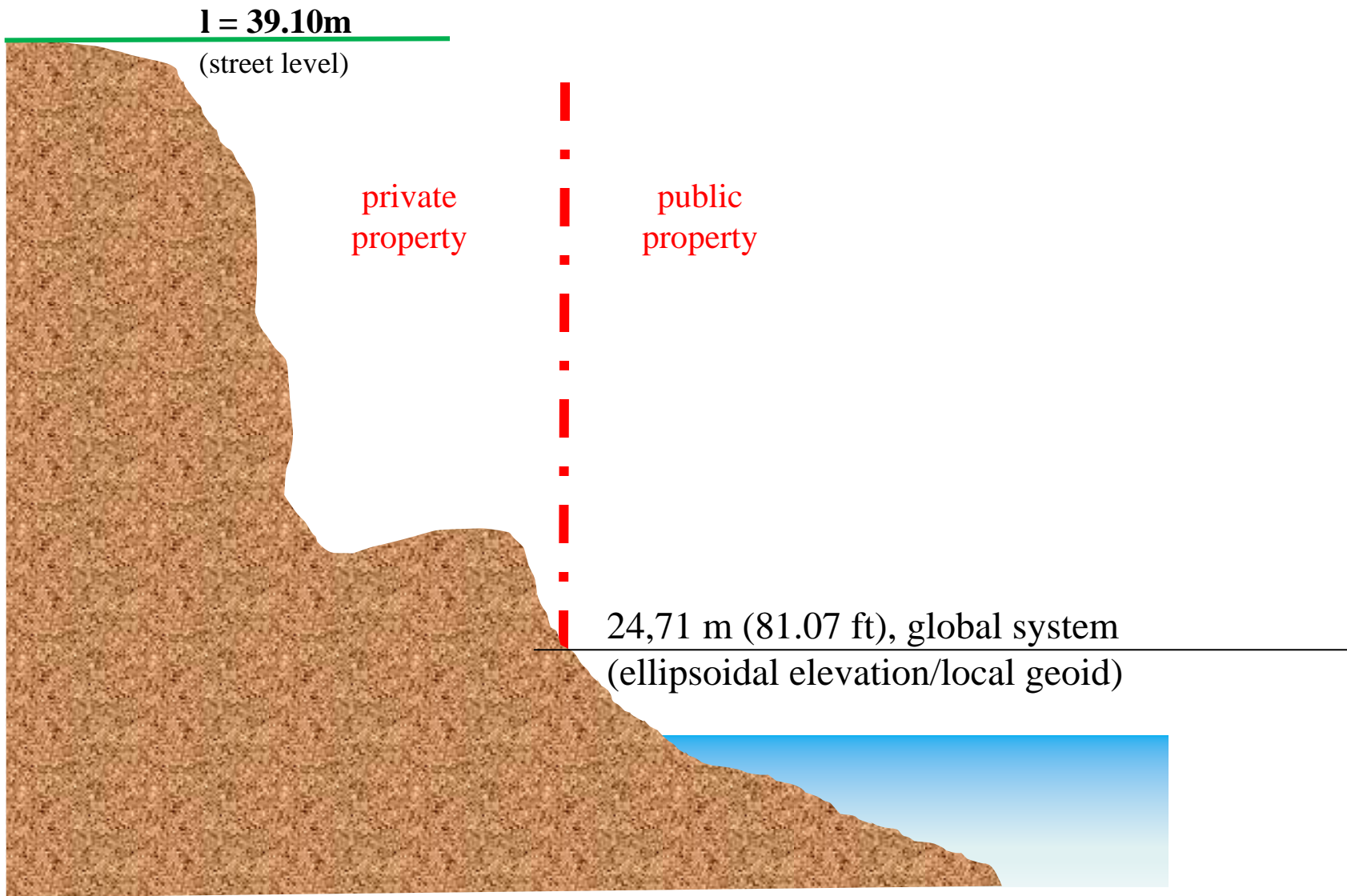
Complex of buildings “Ciudad Ribera”, Rosario, Argentina



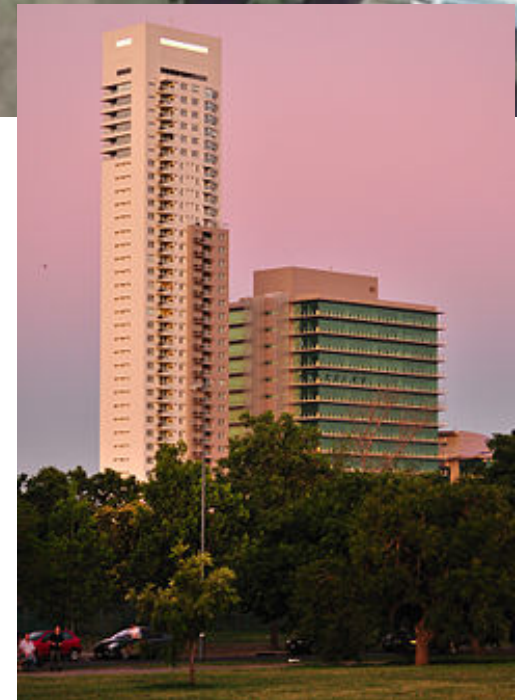
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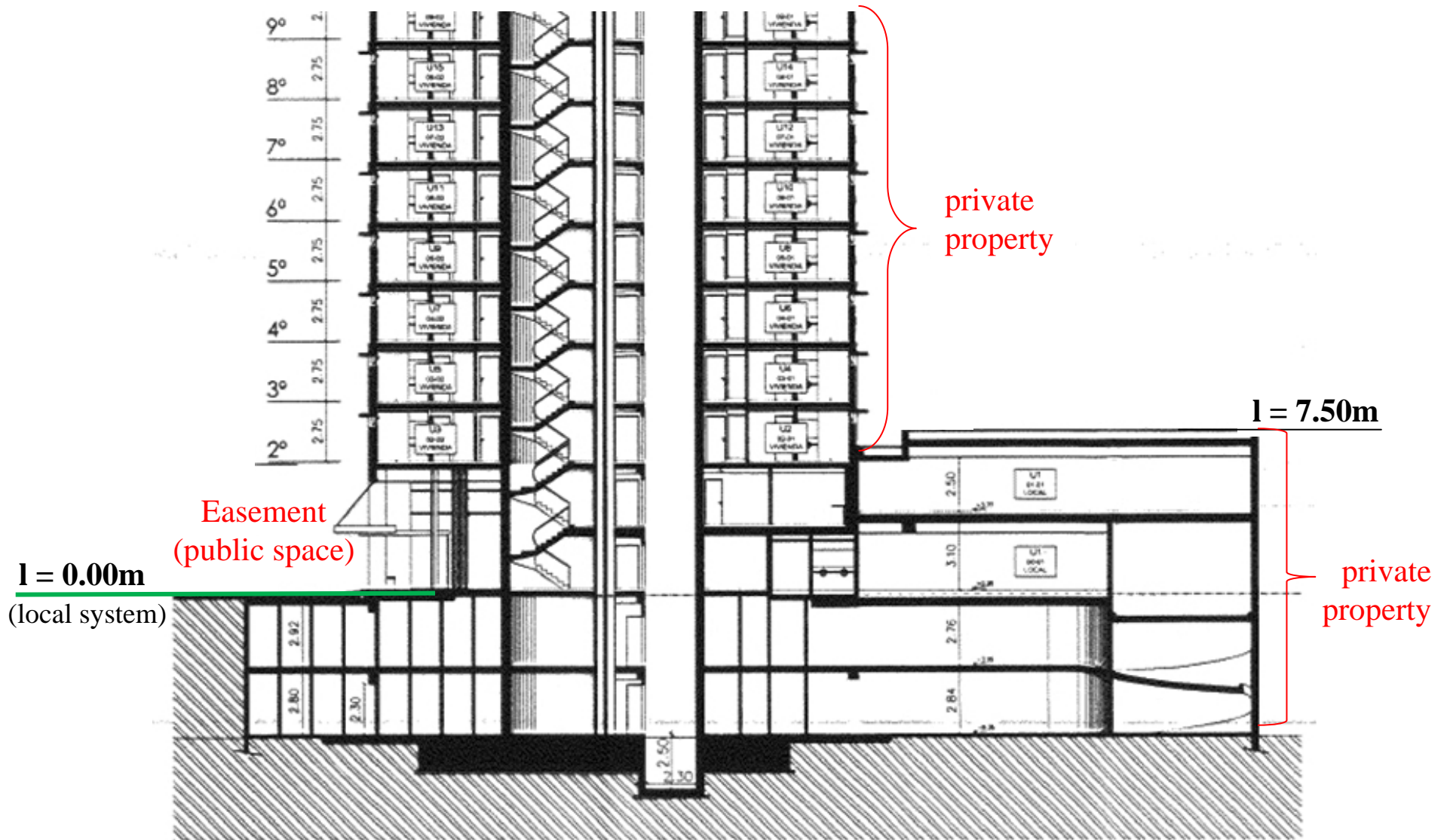
Building “Embarcadero”, Rosario, Argentina



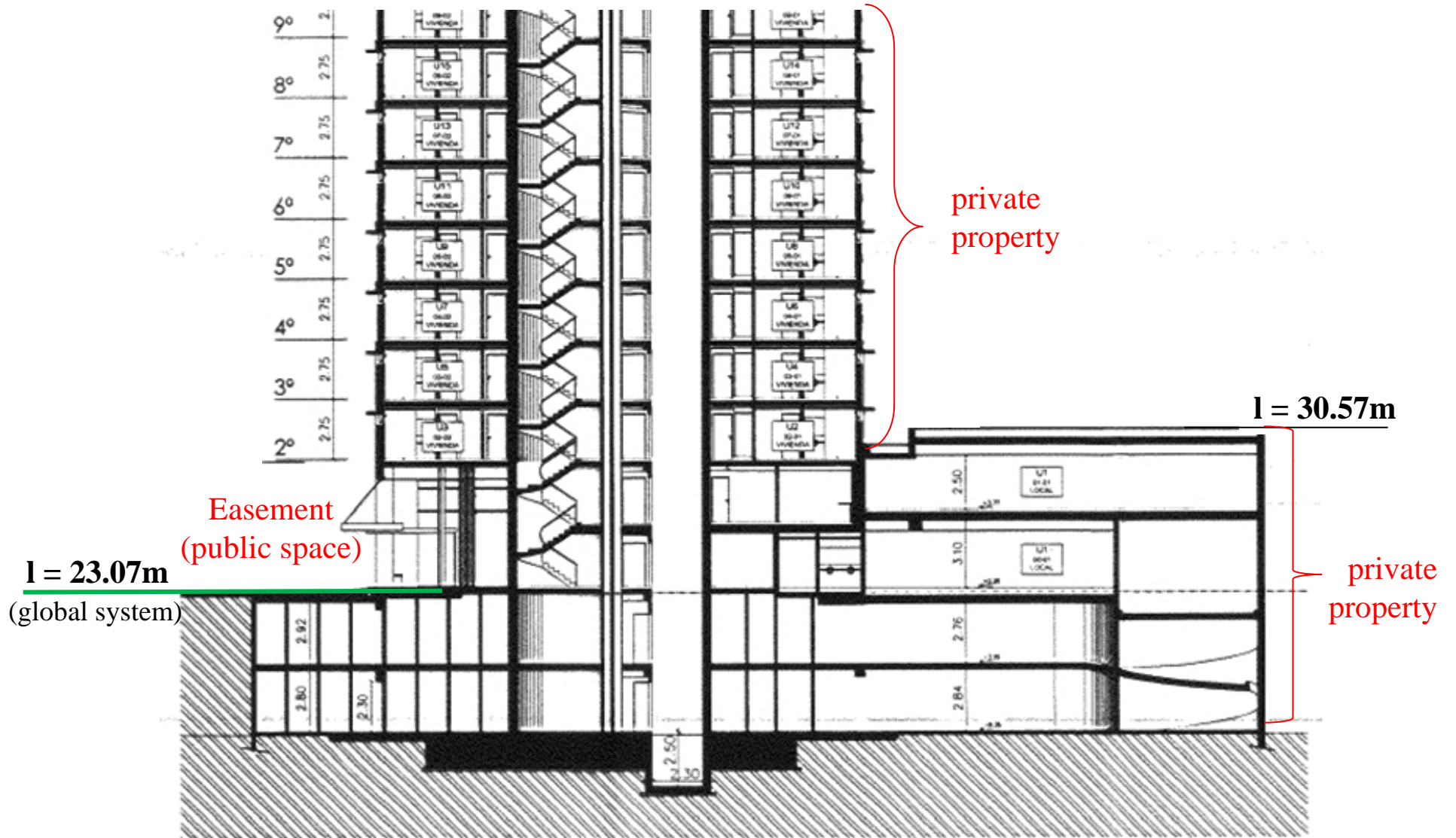
Building “Embarcadero”, Rosario, Argentina



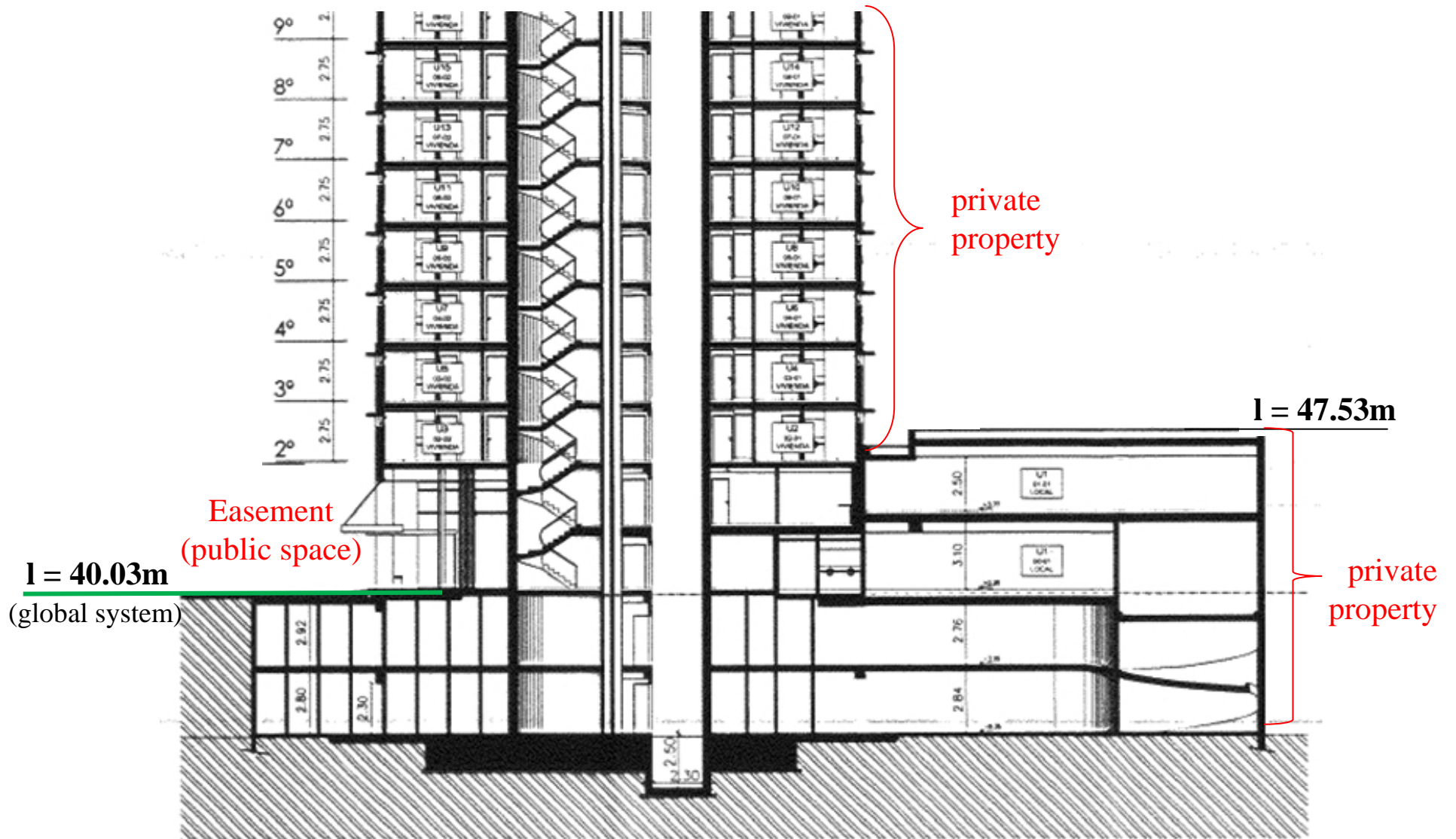
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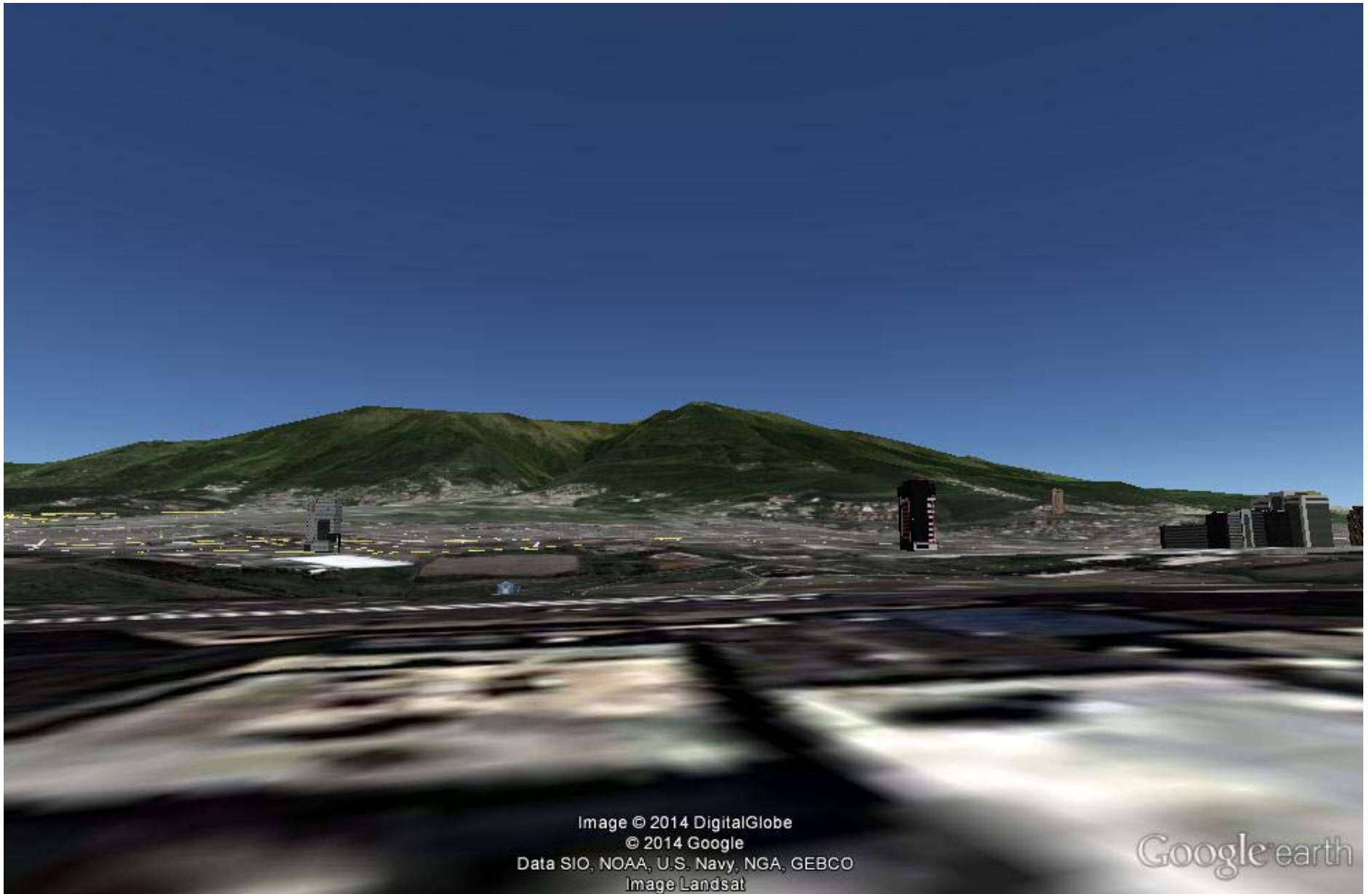
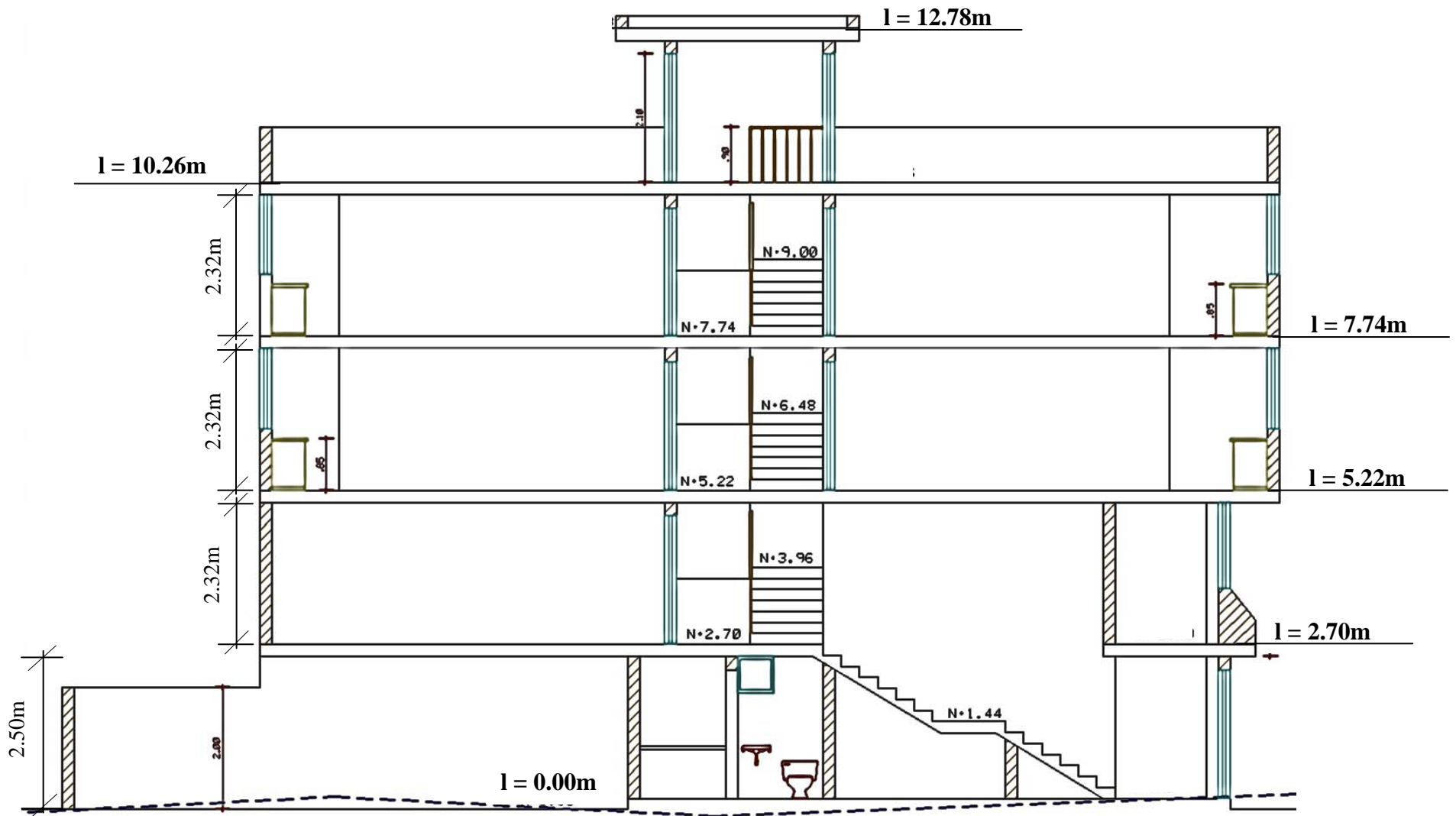


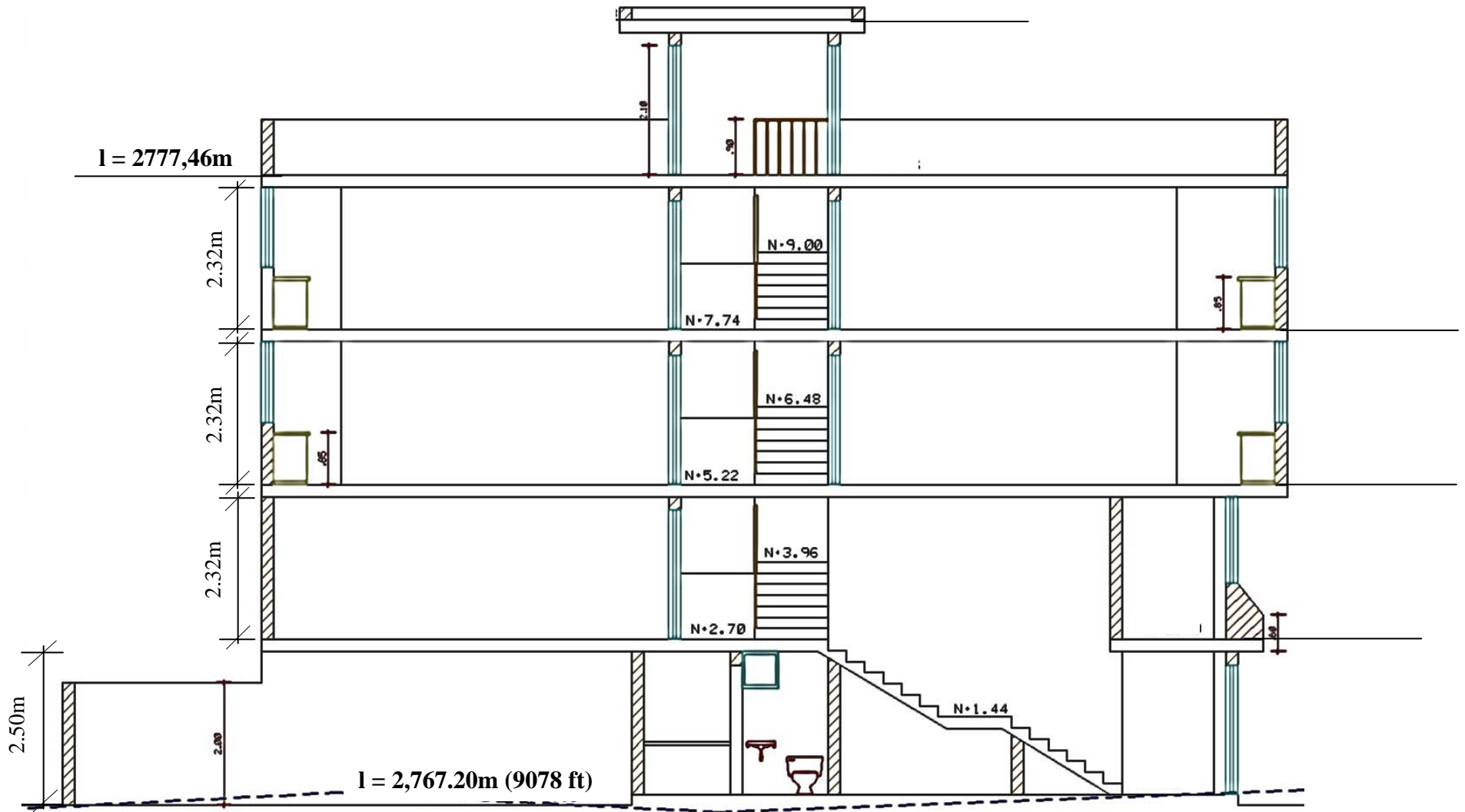
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Image Landsat

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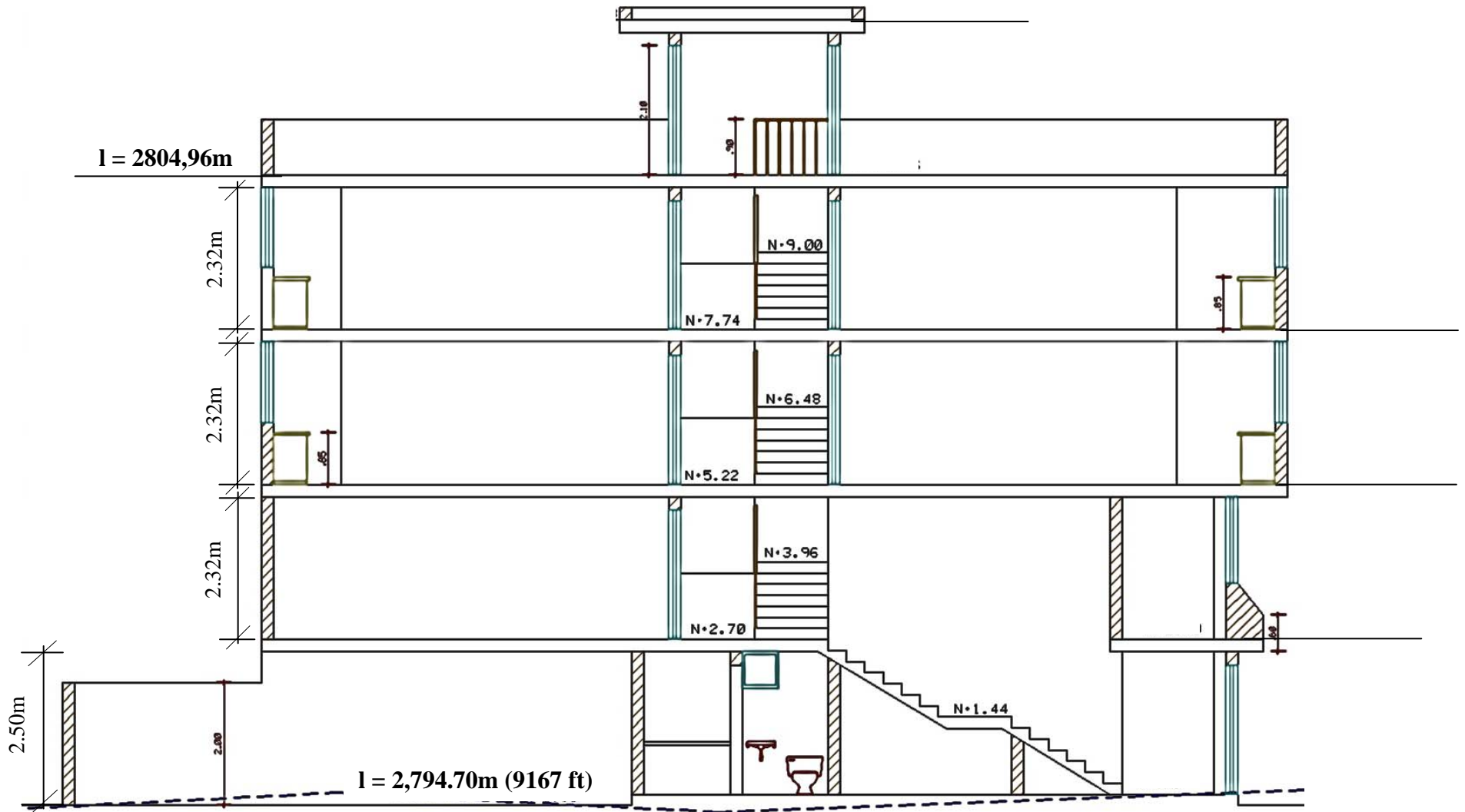
Building "Sr. Washington Calahorrano", Quito, Ecuador



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Final considerations

- A 3D cadastre is a register that contains the spatial position of objects and land parcels in the space, defined with adequate precision and at a particular time.
- It is not possible to set a single precision for the references of heights, it varies with the character of cadastral objects.
- Ellipsoidal height solves the essential need to register 3D parcels, but it is not enough. In many cases the orthometric height must be used, together with the ellipsoidal height.

Final considerations

- this work we are only referring to the spatial positioning tolerances, considering the cadastral object as a block, excluding from the analysis accuracies required in internal measures of territorial object.
- Each institution responsible for a 3D cadastre has their own tolerances.
- the tectonic movements are not a problem since, as its effects are known, it is perfectly possible to correlate the coordinates of an object in space, in two different periods.

Thanks!

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