



IPENZ Transportation Conference
21 – 23 March 2018

Roman Armies to 3D Printing

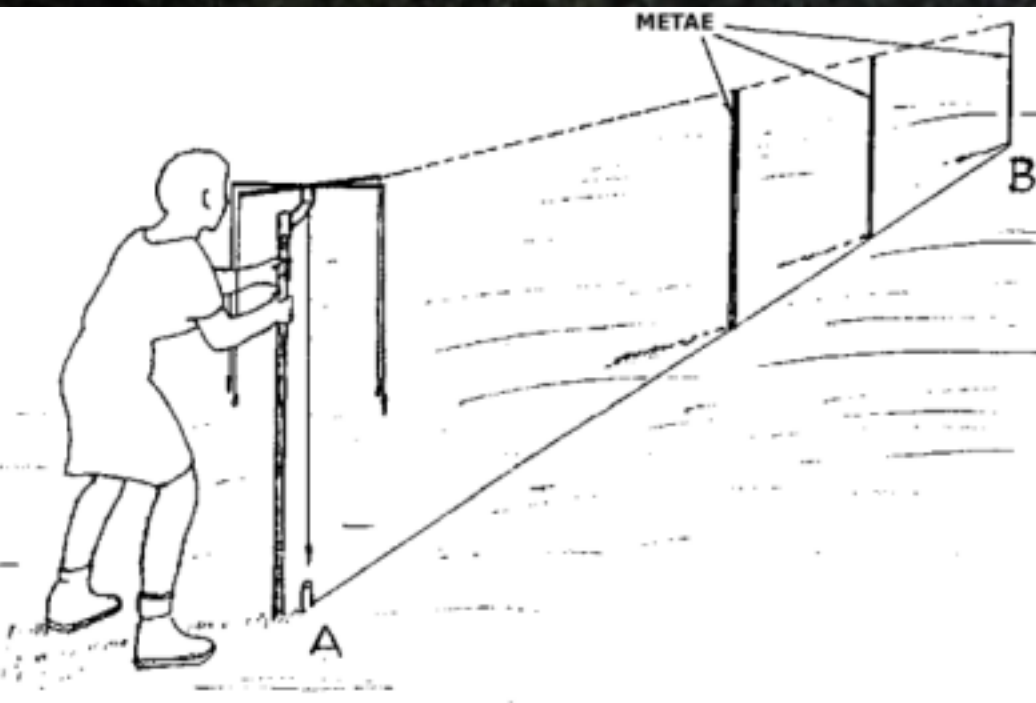




		Northing	Easting	Height
Point 1	Millennium Hotel	766546.957	336950.397	323
Point 2	Queenstown Gondola	767474.743	335531.630	777
Point 3	????	766083.064	337659.780	450

The Past - Ancient Roads





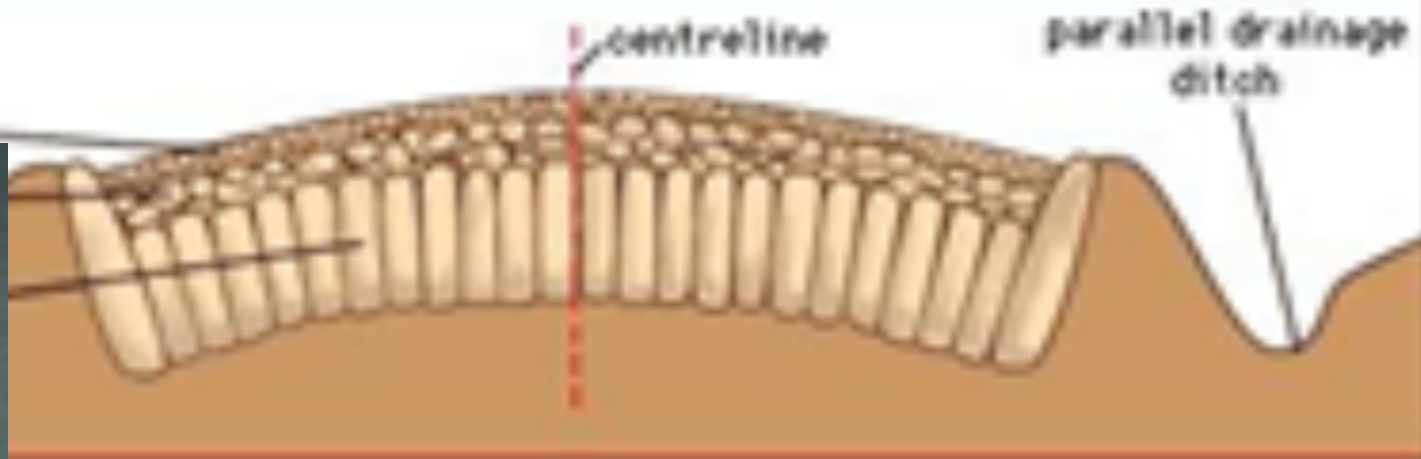
Modern Roads – 17th and 18th Century

Trésaguet

gravel or broken stone (1-inch layer)

broken

found



Telford

gravel

broken

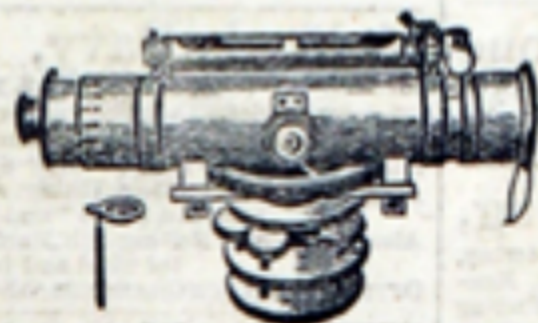
foundation layer (7 inches)

McAdam

gravel or broken stone (1-inch layer)

broken stone (8-inch layer)

J. & W. E. Archbutt, 201, West-
MINSTER BRIDGE ROAD LAMBETH, near Astley's
Theatre.



MANUFACTURERS of the ORIGINAL PATTERN GRAVATT
DUMPY.

Revised list of prices:—best 10-inch DumPy Level, with Solid
Centre, complete, £8 10s.; ditto with Compass £9 9s.; 14-inch
ditto £10 10s. and £11 11s.—THEODOLITES equally low.

An inspection will prove the instruments cannot be surpassed in
quality, accuracy, or price—Illustrated priced Catalogues for-
warded on receipt of three stamps.

N.B.—Levels and Theodolites on hire.

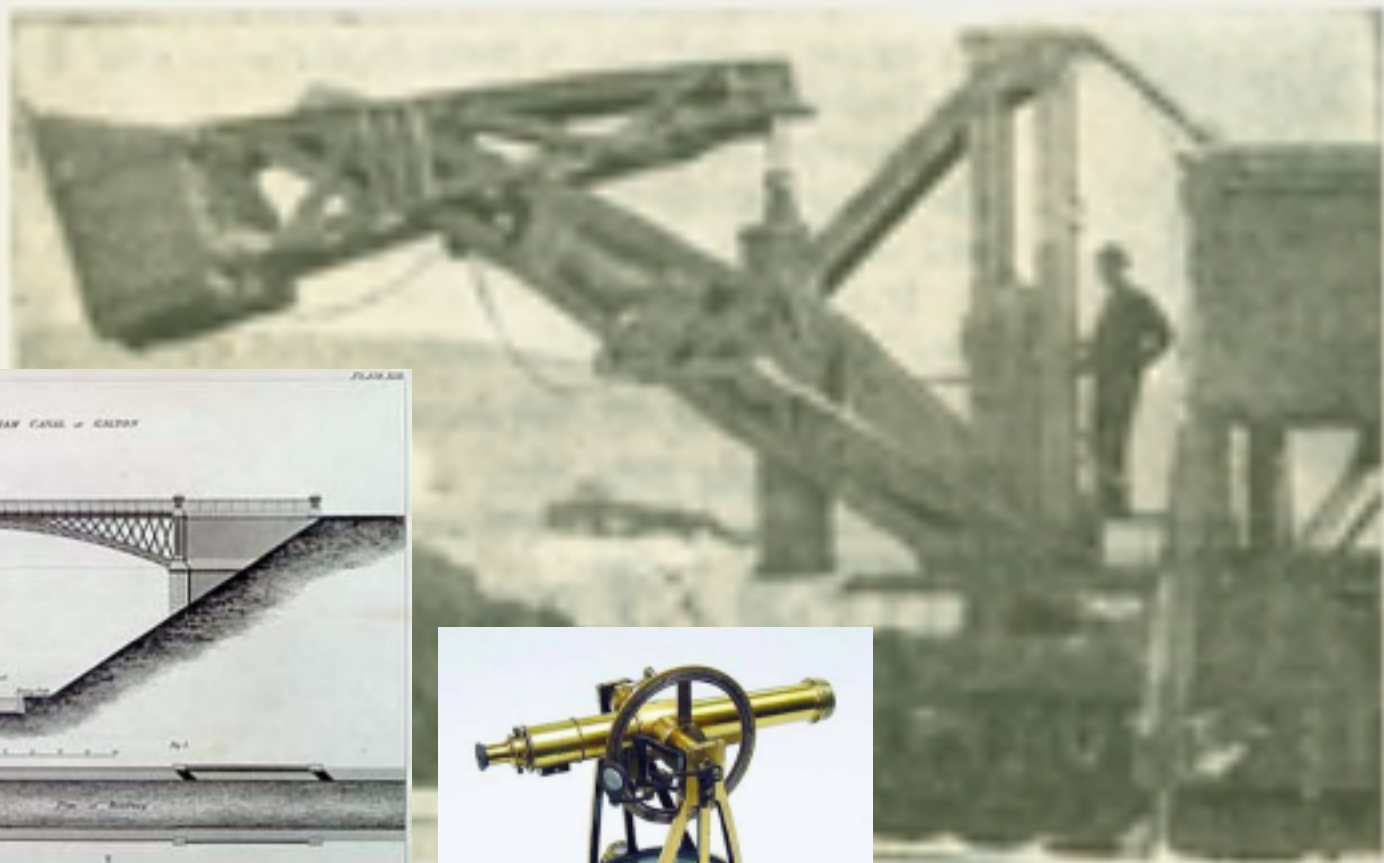
drainage
tch

drainage
tch

RAILWAY MEN—CONTRACTORS—ENGINEERS

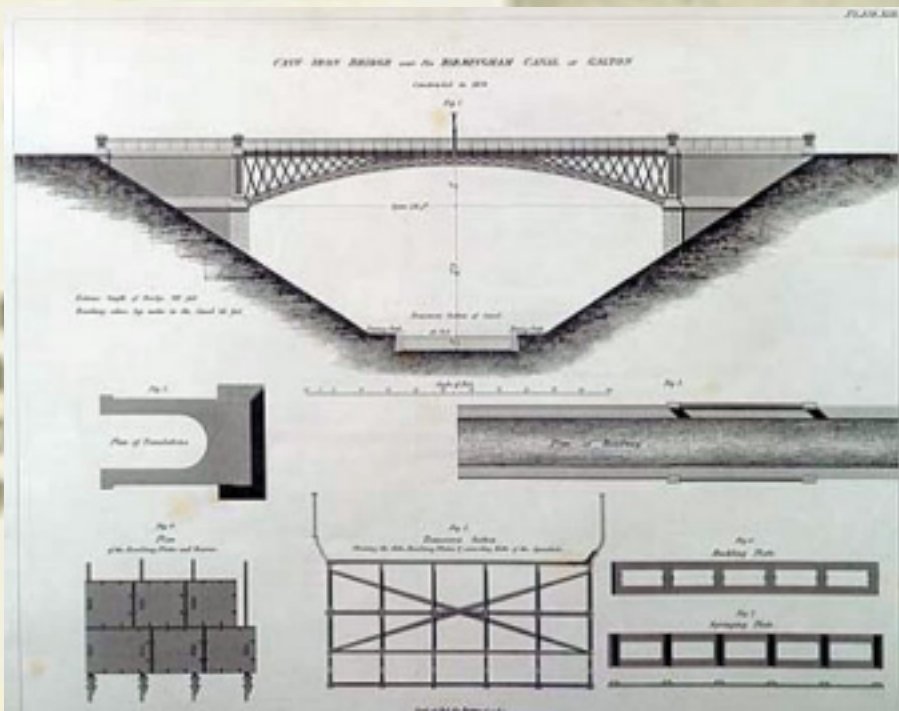
CANNOT AFFORD TO BE IN IGNORANCE OF THE REVOLUTION IN HANDLING LARGE WORKS THAT IS NOW BEING EFFECTED BY USERS OF

THE KILGORE STEAM



THE KILGORE STEAM SHOVEL

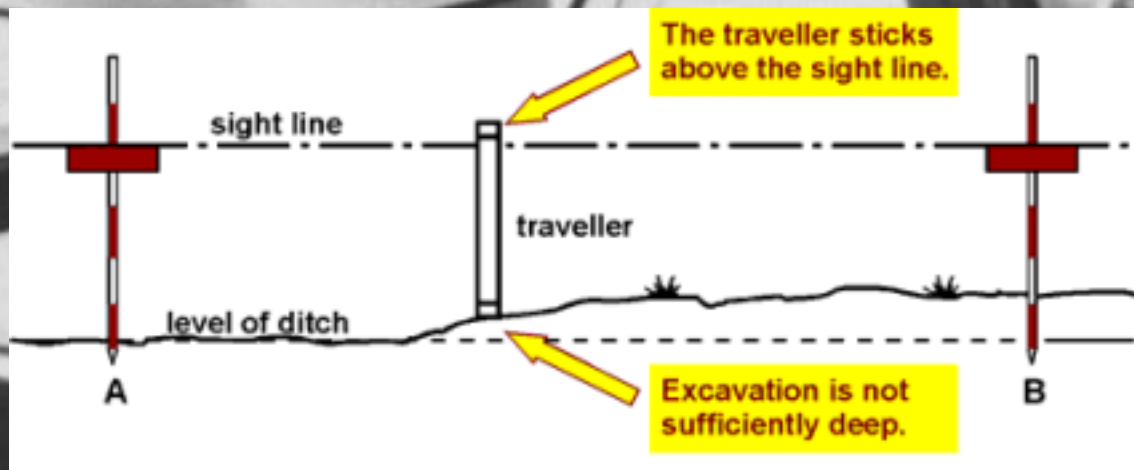
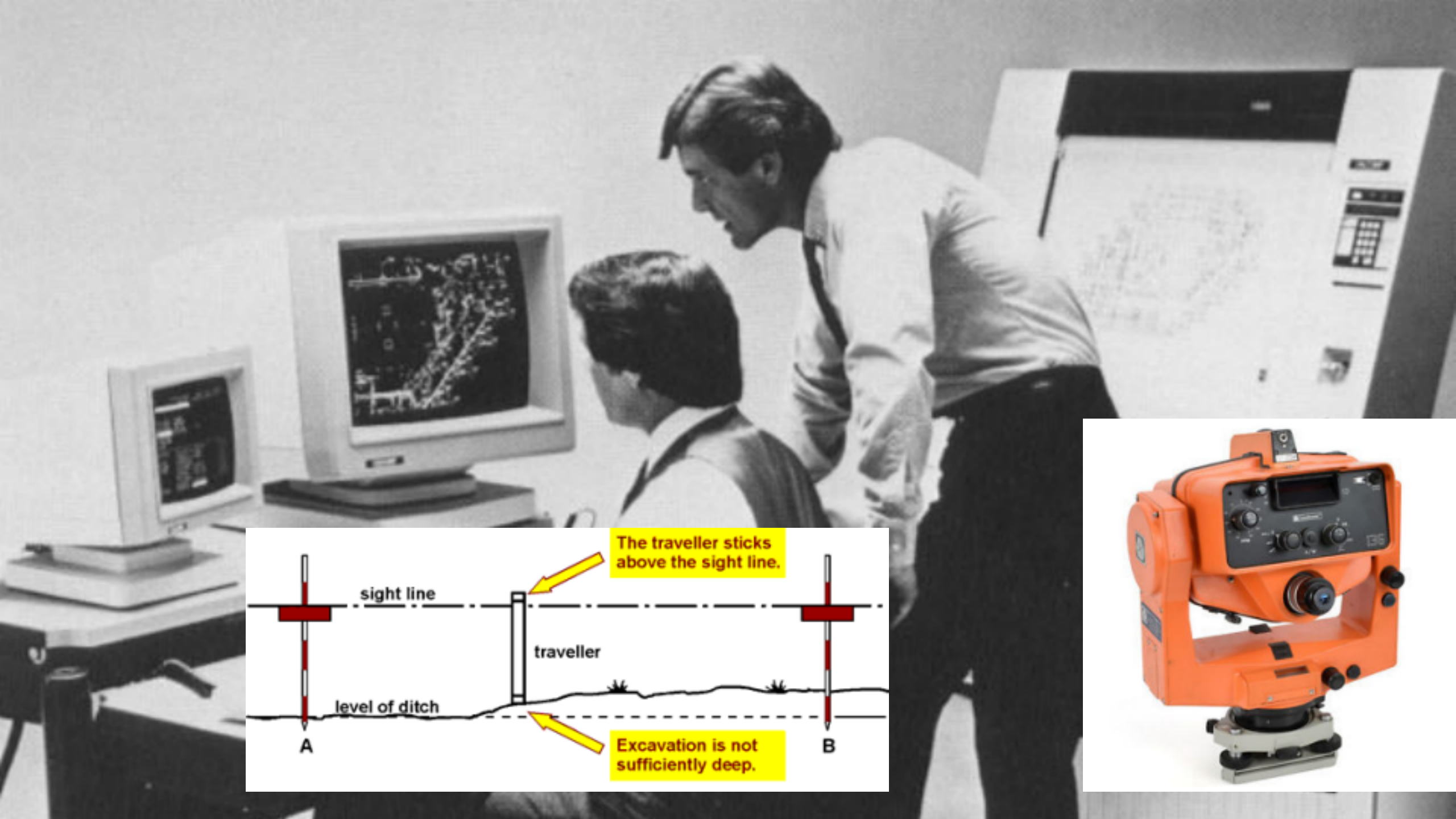
World's Best Record
on
Speed, Capacity,
Durability,
Economy.



CHINERY WE USE.

— NO CHAINS

Recent Past – 1980's



Today




Tomorrow

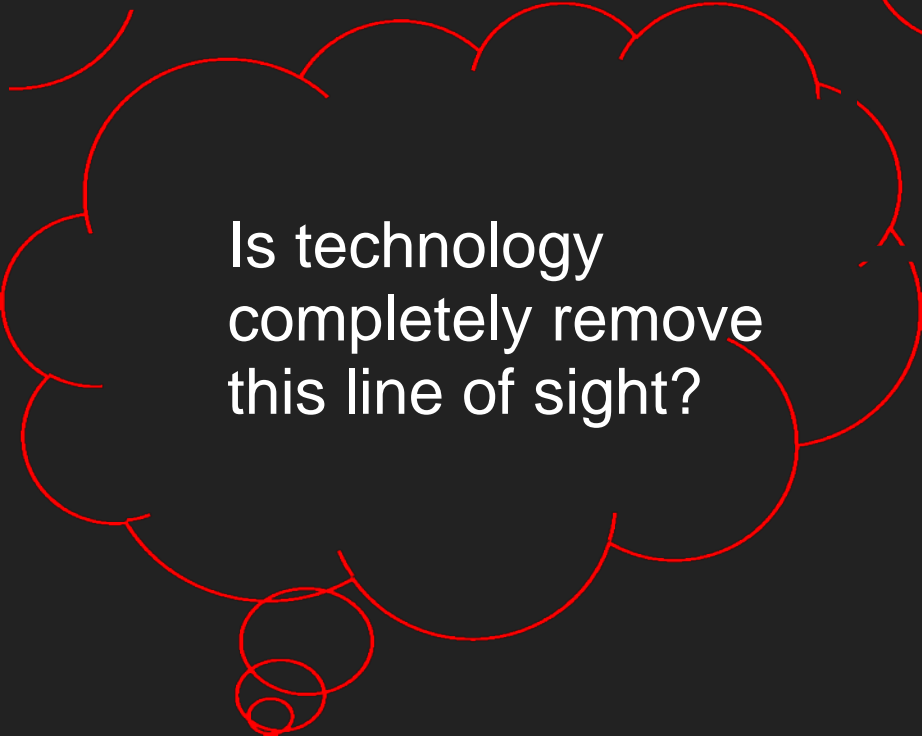


Hum3D






There has always
been the ability to
check work on site
before it is
constructed



Is technology
completely remove
this line of sight?



We appear to be
losing a vital part of
the process that
links design and
construction

The first part any solution is recognising there may be a problem.

Yes?

Maybe?

Don't care?

If the answer is yes how we are going to
address it?

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Thank You