Beyond Soils

The unsung (science and) art

of below ground design in urban projects

Anne Jaluzot, Sue James and Keith Sacre


The successful delivery of above-ground aspirations is largely determined by **below-ground design**

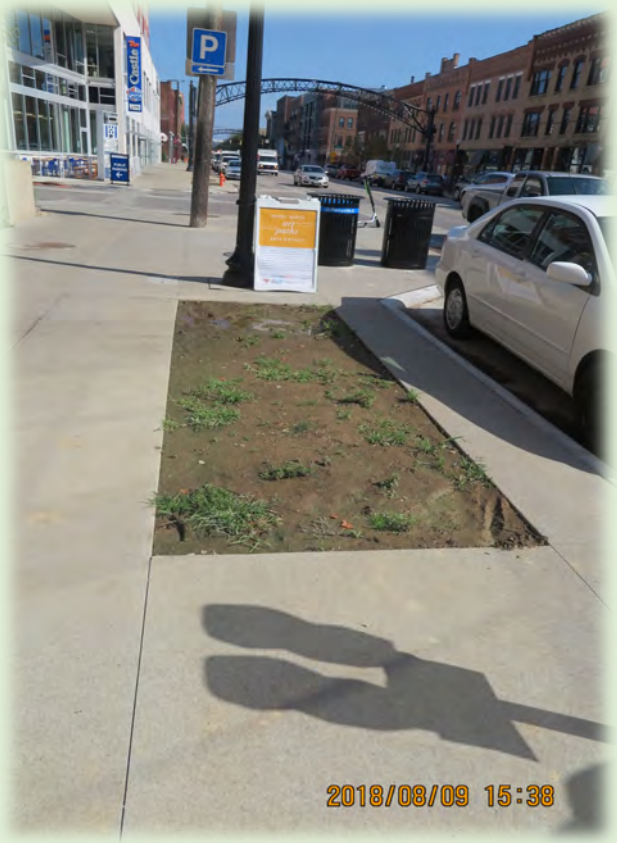
Most planting schemes in the urban environment start with ambitious targets and good intentions

A case study from the USA

Heavy investment in underground infrastructure for tree planting and development but all installations are dependent on the quality of the actual installation and tightness of specification

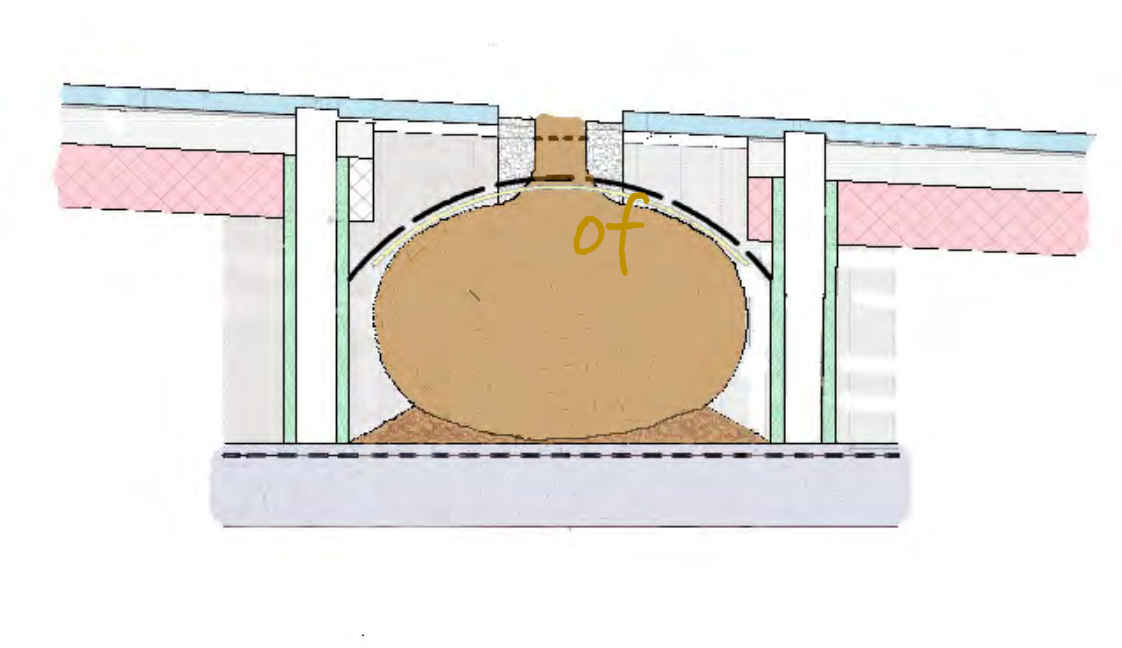

THE CANDLE LAB
PHILCO
cub shrub
SHARE THE ROAD
one line coffee

One grade of soil to a depth of at least 1.5 metres

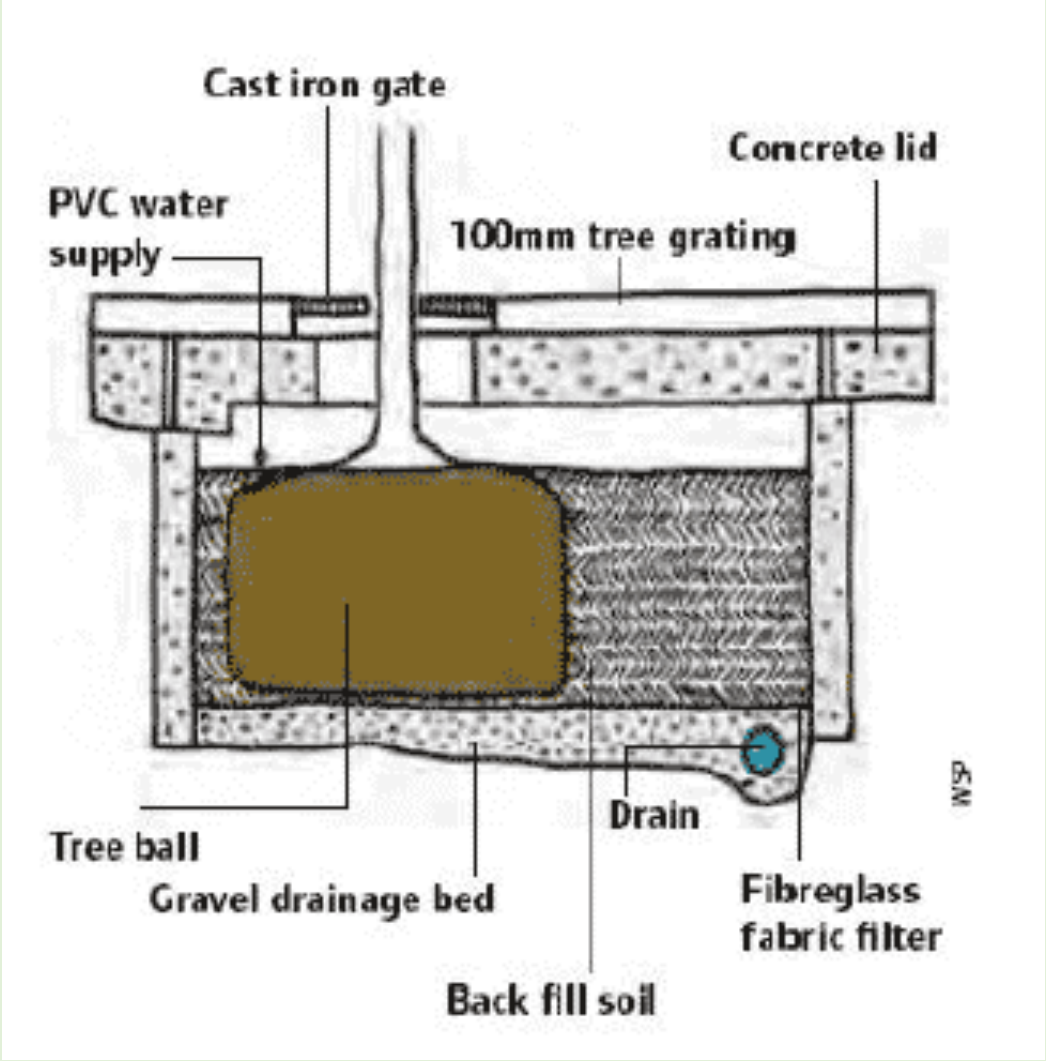


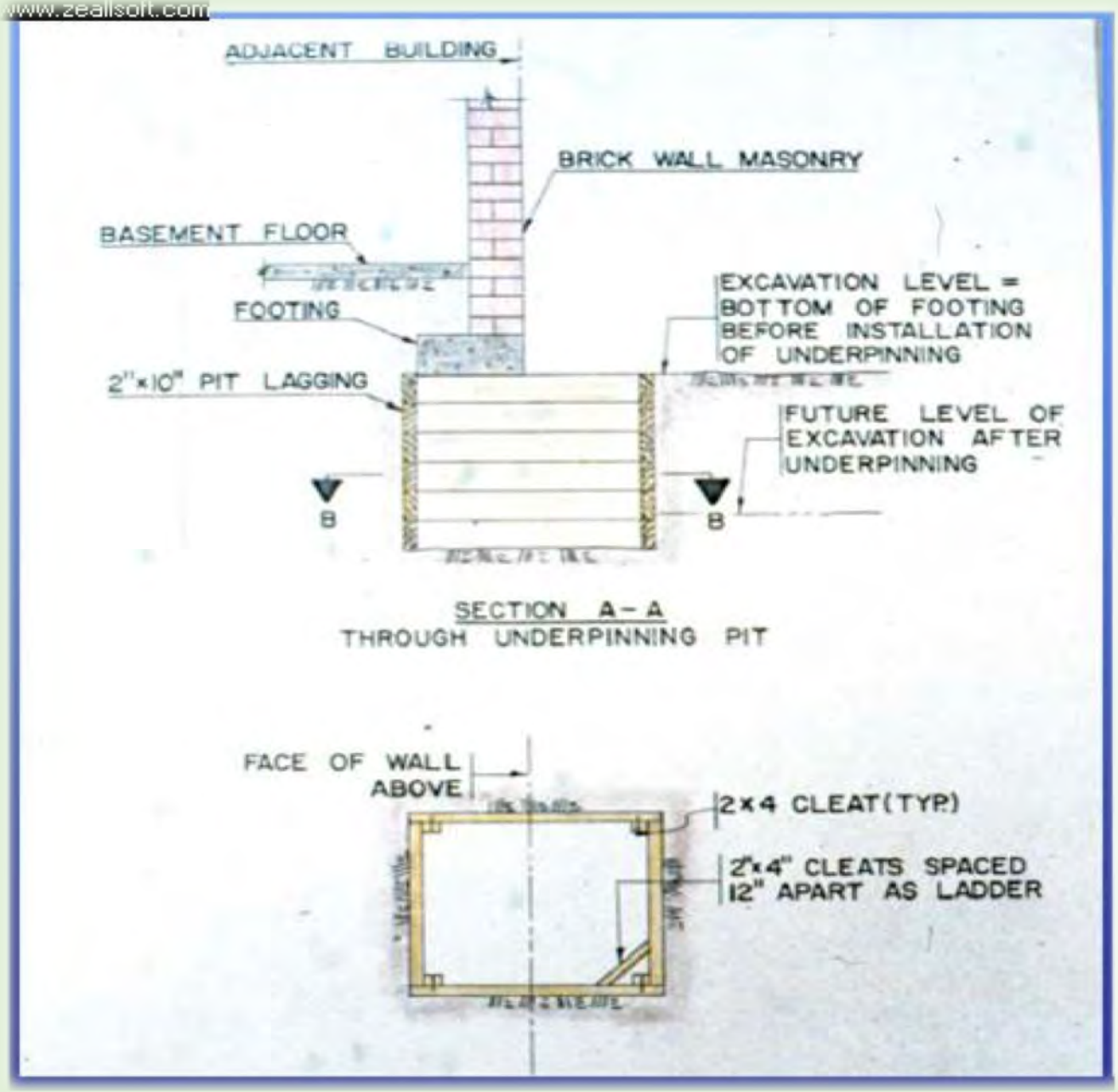
Finished planting space, note already before
tree is planted there is surface compaction
and rain water is not escaping

What is the ideal tree pit and is there such a thing?



Usually there is a drawing or drawings all with varying degrees of complexity


Cast iron gate
Concrete lid
PVC water supply
100mm tree grating
Drain
Tree ball
Gravel drainage bed
Fibreglass fabric filter
Back fill soil

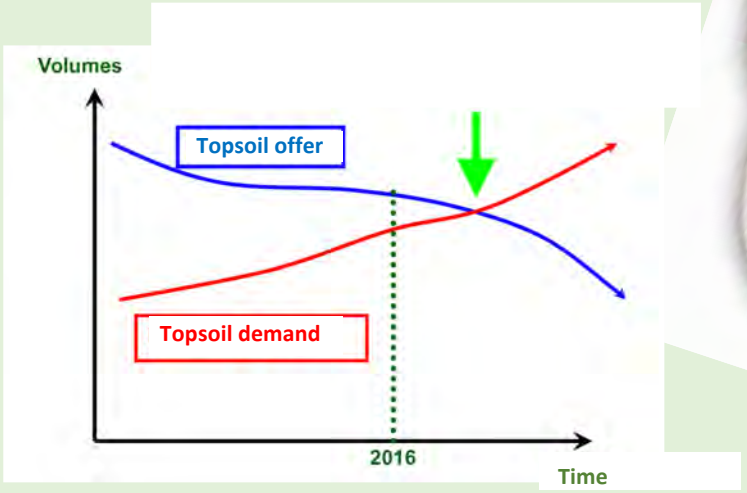



Taylor Wimpey
CAUTION
PEDESTRIANS CROSSING
12

“What’s the ideal tree pit?”

Is this the best way to frame the question?

- **Trees as pot plants?**
- **Focus on size and soil volume?**



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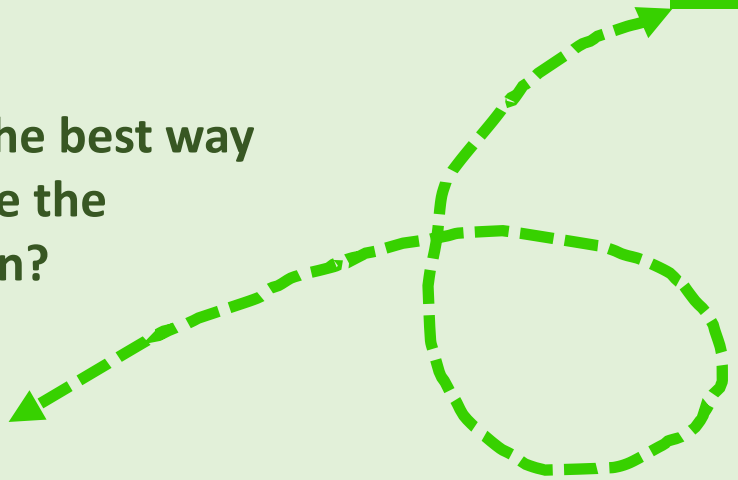


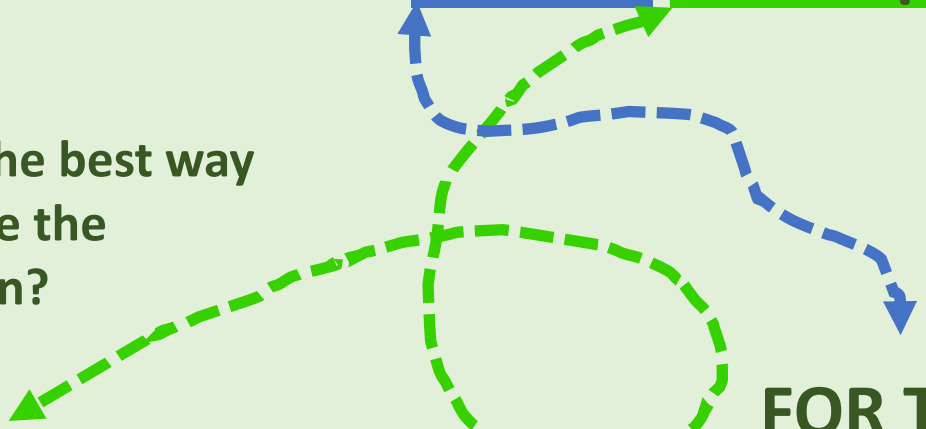
Surface opening?

Planting hole?

Rooting environment?

+ other above or below-ground infrastructure supporting tree growth (e.g. watering tube, anchoring system…)

“What’s the ideal tree pit?”



Is this the best way to frame the question?

Surface opening?
Planting hole?
Rooting environment?

+ other above or below-ground infrastructure supporting tree growth (e.g. watering tube, anchoring system…)

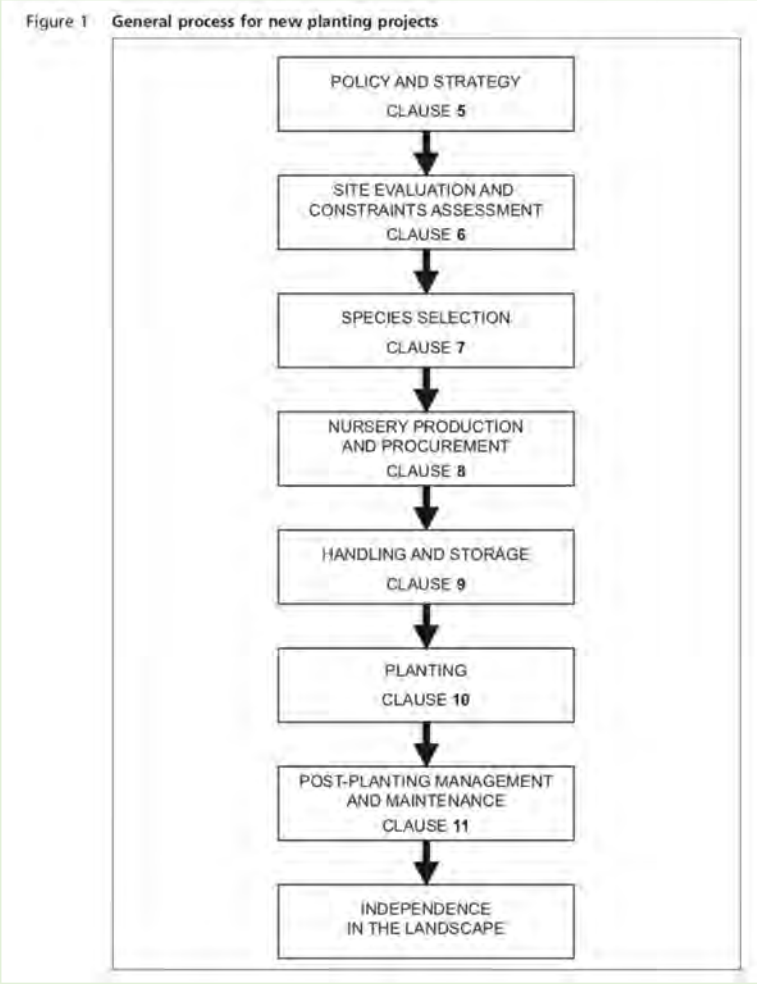
(Don’t get yourself into a hole!)

FOR THE TREE (what kind)?
FOR THE THE USERS AND SURROUNDING SPACE (what kind of place? what users?)

(No one size fits all solution)

…There is an ideal design process…

One in which the voice of the tree specialist is part of the decision-making from policy, brief setting and conceptual design stages….



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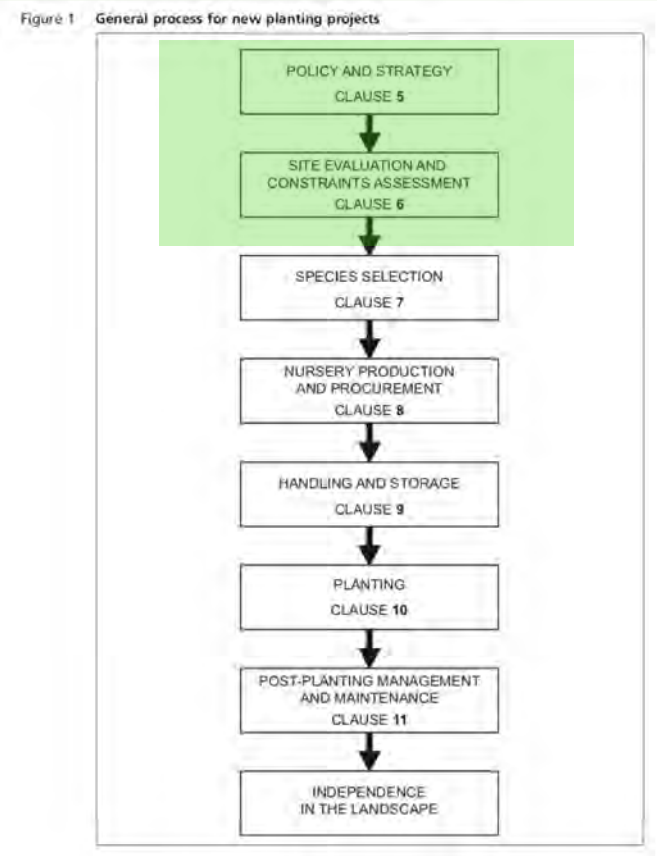


How do we plant with purpose and shape some of the constraints that area within our collective capacity to shape?

- **Available space and integration with utilities**
- **Load bearing requirement and available solutions**
- **Water access**

Proactive engagement on securing below-ground space and integration with utilities

Input into the "Services and utilities" section of your local Residential Design Guide, design briefs for major development sites, design codes produced by developers…

S2.10 Services and utilities

The location of service runs should be identified at an early stage in the design process to ensure coordination with other elements of street design, in particular planting and surface material design.

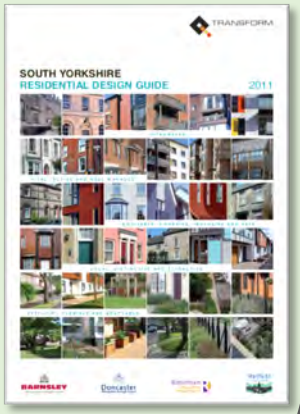
Use a common service trench in accordance with the National Joint Utilities Group guidance.

Route services to avoid damage to existing and proposed trees.

Surface material design should allow like-for-like replacement and repair that minimises the visual evidence of the repair.

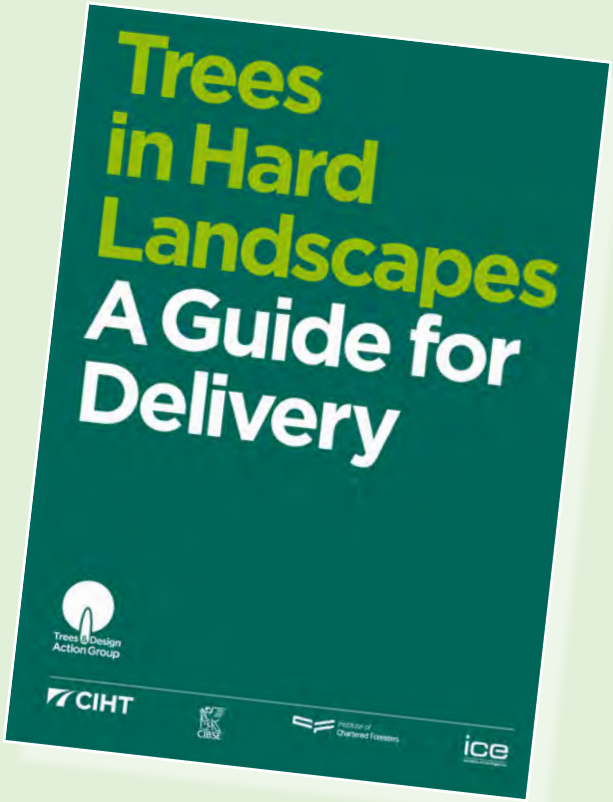
See Section 3F, Manual for Streets, NJUG Guidance *and* BS 5837:2005.

NJUG
National Joint Utilities Group



Proactive engagement with highways colleagues on load-bearing requirements and available solutions

Input into your local public realm/highways/streets Design Guide, design briefs for major development sites, design codes produced by developers…



CIBSE

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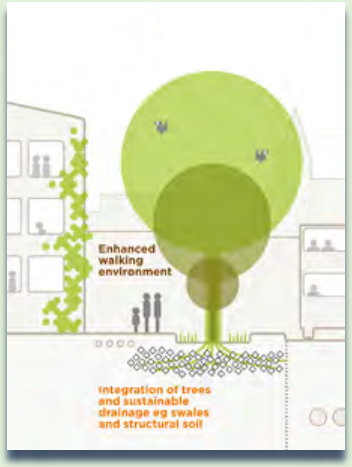
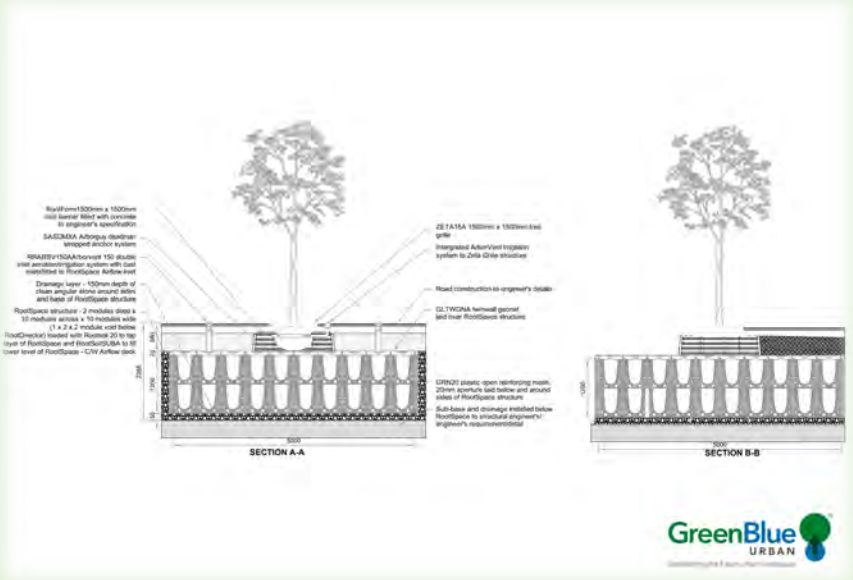
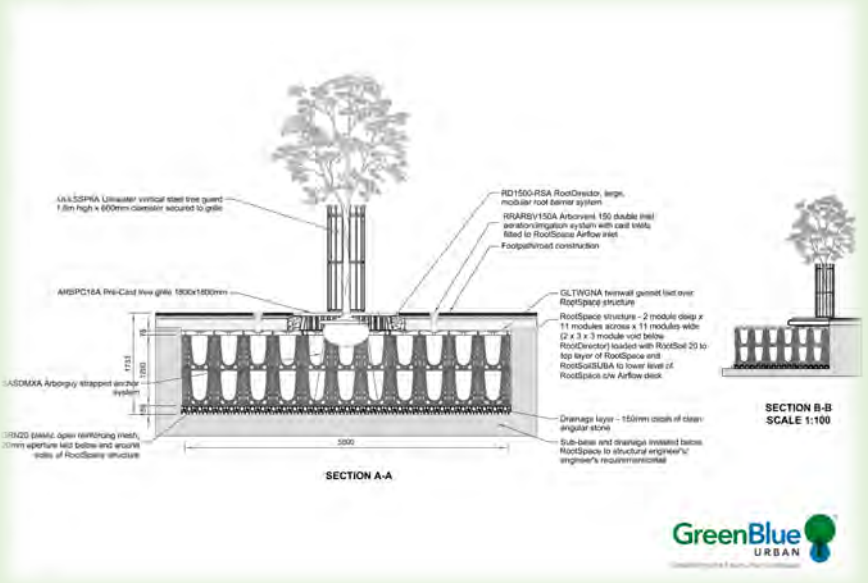
Institution of Civil Engineers

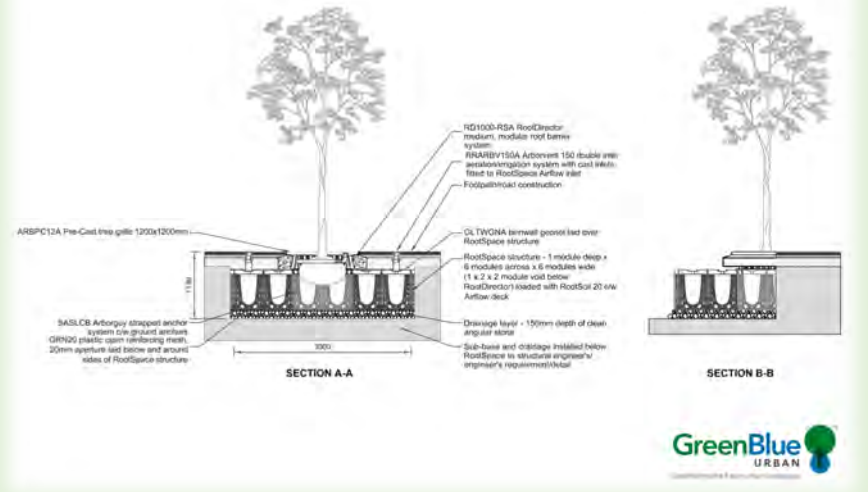
THE CHARTERED INSTITUTION OF HIGHWAYS & TRANSPORTATION



Design drawings for a crate system





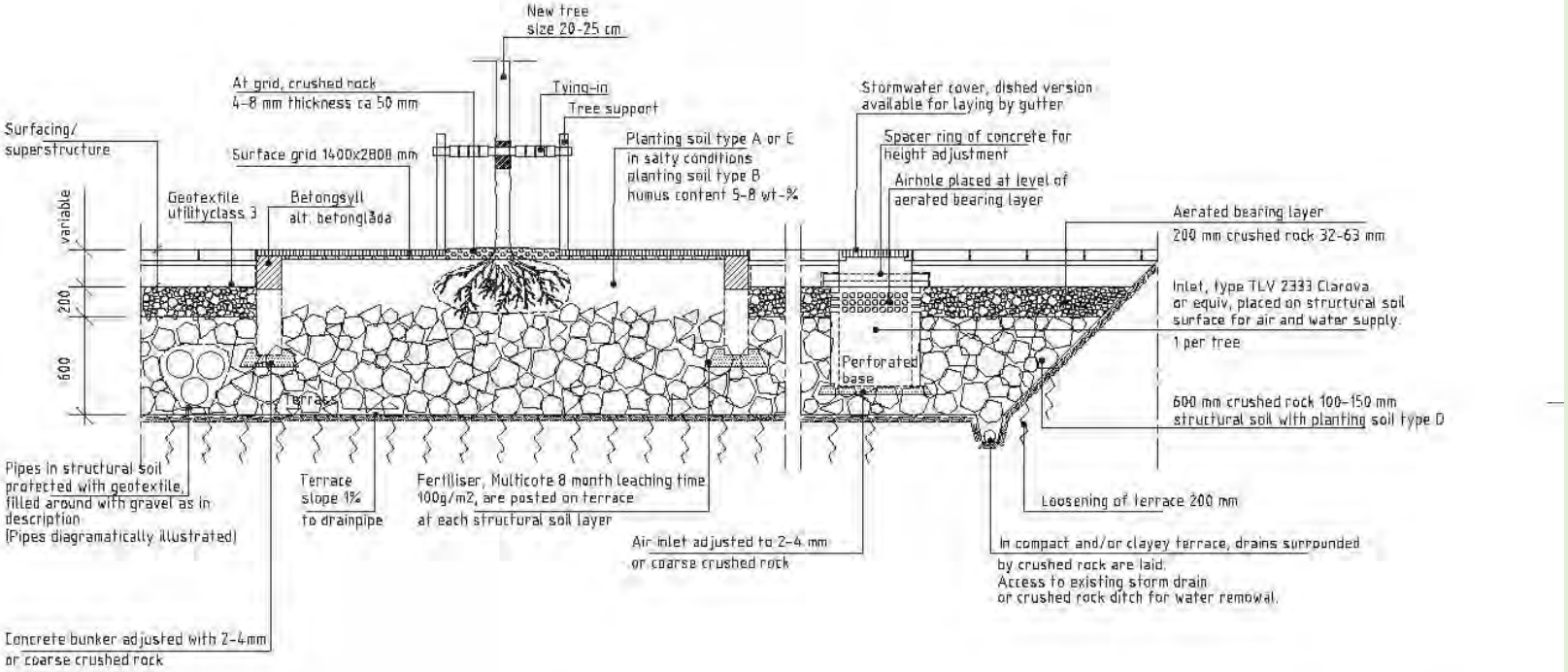


Deciding which load-bearing solution to use...crates

Seething Lane Garden City of London

A variation from the Netherlands


2018/06/08 11:11



NEW PLANTING – TREE IN PAVED AREA WITH SURFACE GRID
Principle section
SCALE 1:20 (A2), 1:40 (A4)

NOTES
Soil equipment such as gratings, trunk guards, tree support are specifically adapted to the project.
Fine crushed rock must not be used in structural soil profile for adjusting air inlet or concrete bunker.
In specially constructed tree holes with narrow dimensions tree root diameter must be observed.
With increasing trunk circumference clump diameter increases, see Quality regulations for nursery plants, GRÖs Plantskolesektion, 3:e upplagan, augusti 2003.

NOTESANMÄRKNING
All data in mm unless otherwise specified.

Status: TH-TYPRITNING	Datum: 2009-02-23
	Godkänd: B.EMBRÉN

TRAFIKKONTORET
Box 4311, 104 29 Stockholm, Tel 08-508 27 200

TREE IN PAVED AREA
WITH SURFACE GRID

SECTION

Skala	Ritningsnr:	Foto	Reg.
1:20(A2)/1:40(A4)	THVB004		

The continuous trench that could be called a '**tree pit**' is equally an '**attenuation trench**' from a drainage perspective and a hard surface load bearing '**foundation layer**' from a highway perspective….

Deciding which load-bearing solution to use...a structural growing medium


kra tankar blir vackra blommor.
www.rydells.se
ZEPRO

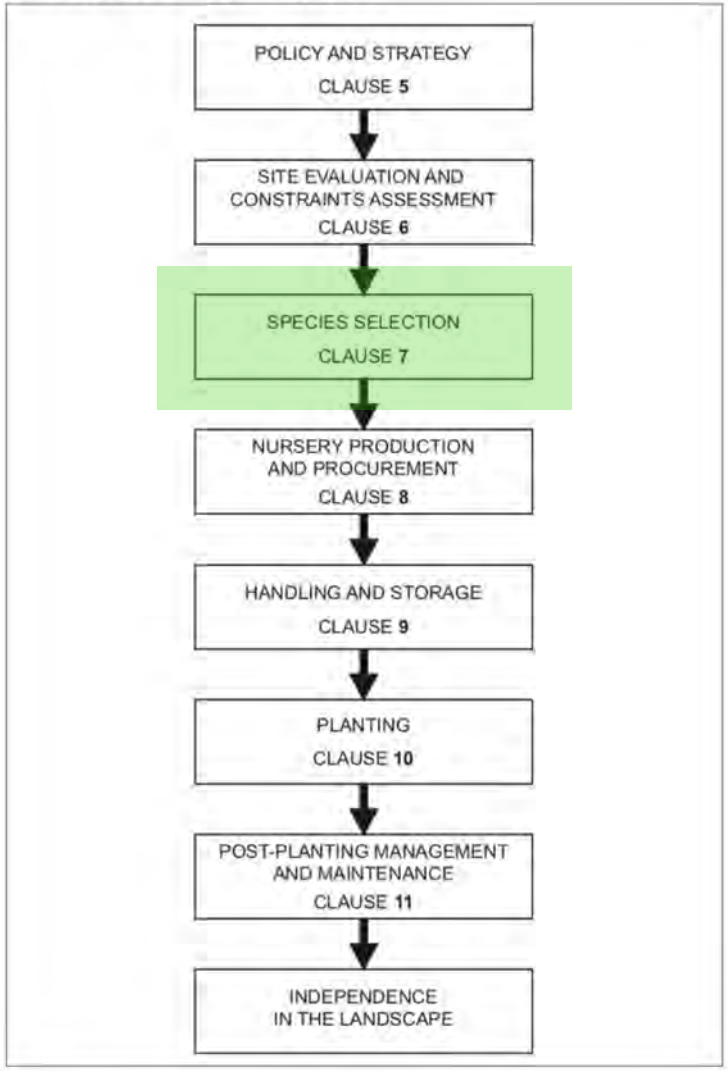

Deciding which load-bearing solution to use...a structural growing medium

Kocksgatan, Stockholm

Addressing water access…

…There is an ideal design **process**…

Figure 1 **General process for new planting projects**



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