

Trees and the underground (Part B) – which method to use, where, why and how
Held on 19th July 2023. Questions, comments and references.
CPD partners: Chartered Institution of Highways and Transportation (CIHT) and the Institute of Highway Engineers (IHE)

Trees and the underground (Part B) – which method to use where, why and how (Held online)



Agenda

Chair: **Jim Smith**, Urban Forestry Adviser, Forestry Commission

What highway engineers need to understand about planting highway trees in hard and soft landscapes

Hen Abbott, Principal Highways Coordinator, Gloucestershire County Council

Stockholm 20 years on

Bjorn Embren, Arboricultural Consultant and former tree officer for the City of Stockholm

Or do we combine methods?

Martin Gammie, Director, Consulting with Trees

Case study: podium garden in Seething Lane, City of London and the role of cell systems

Steve Chatwin-Grindey, Commercial Director DeepRoot Urban Solutions

The recording and presentations are available on the TDAG website:
<https://www.tdag.org.uk/past-events.html>

Below are the comments, questions, responses from the speakers and attendees as well as references that took place in the 'chat' during the meeting.

Hen Abbott on issues concerning highway engineers.

This raised a number of questions and comments:

- Tree growth and max size in an urban context likely to be reduced from the optimum / open grown specification that the RHS might be referencing.
- Many developers don't want to pay for tree crating, which is a shame, but from what I understand 1 create can cost up to 8K?

Responses

- We are having a TDAG seminar on costs and commuted sums in December.
- When we say expensive - compared to what? How about looking at the value of a mature tree in an urban setting?
- Expensive compared to planting a tree in soft landscaped area.

- With tree costs as with other costs you need to take a whole life approach - which makes even an expensively tree planted in hard landscape look very cost effective...it is just that the cost is spread on 100+ years if all goes well!
- Planting trees in hard surfaces (properly) is very expensive. - Ideally designed out where possible.
- There just needs to be a good reason to plant trees in hard landscape, and this may well be justified in an urban context.
- Changing weather patterns with climate change are putting an important case for street treesso cost benefit is even greater.
- Growth rates for trees in tree pits tends to be reduced by up to 50% on comparable open grown trees on sites I've visited / surveyed historically.
- Planners and developers should be incorporating far more green space within developments, and more off-street parking.
- If all local planning authorities had robust evidence-based tree strategies that set out what is required for developments, then the developers could assess the price they pay for the land against the costs that they will need to incur in the development to provide green/blue infrastructure
- Should, but they don't know how, or are in too much of a hurry to bother. Such considerations slow things down and add costs. As a tree officer, I was asked by my manager to restrict my planning application responses to two lines. Difficult when proposals for a huge housing scheme are lacking in every way. If government want positive change, there need to be inspections and penalties.

- **Manual for Streets and Technical Guidance for Highway Tree Management**

At the National Tree Officers Conference, in November 2021, Mr Smith informed that new 'Supplementary Technical Guidance for Highway Tree Management' was in development, under a new DfT 'Manual for Streets':

<https://ianswalkonthewildside.wordpress.com/2021/10/25/late-flowers-and-autumn-berries/comment-page-1/#comment-6000>

Response:

- No date as yet for the updated Manual for Streets and the TDAG led technical guidance is delayed waiting for Manual for Streets.

- **Hen indicated that she was asked to approve tree planting specifications but did not feel sufficiently informed on the subject:**

Response:

- Hen, I don't understand why the landscape architects/tree officers passing the schemes on to you aren't specifying what is needed for the tree ie. tree pits/space/supports and management? Is this common for highways engineers?

- Why isn't space changeable?

Response:

- Space isn't changeable because the developer needs to maximise the space for houses, the land is sold based on the agreed outline application number of dwellings, the layout is agreed at planning stage. With new trees on existing highways obviously space is defined.
 - Planners and developers should be incorporating far more green space and off-street parking within developments.
- Parts of the UK had a prolonged period of low rainfall in late spring and early summer this year, and we may be subject to another dry period from mid-August. Ensuring trees planted in the last season or so have sufficient water can be a real issue, particularly when water restrictions are invoked. At the Environment Agency we are exploring sources of grey-water to minimise the use of potable water and to limit abstraction of water from watercourses. There doesn't appear to be a simple solution for sourcing grey water in sufficient quantities, but I'd like to hear if anyone has any experience of this application, please.

Response:

- In Stockholm they use roof water to water street trees...of course that is useful when it rains but you are talking about grey water and grey water storage? Frederic Segur in Lyon used disused underpasses to store rainwater.

Bjorn Embren provided an overview of his work in Stockholm and particularly about success with biochar.

- Is biochar expensive? Is it used widely in the UK for local authority tree planting?

Responses:

- It is not in expensive at Newport we have started using it as of last year <https://www.carbongold.com/shop/>
 - Stockholm Tree Pits Ltd also supply enriched biochar for use in urban tree pits in the UK.
- Bjorn...do you create the biochar as part of a circular approach?

Response:

- Yes, arisings from trees used for district heating and creating biochar.
 - Do the benefits of biochar outweigh the carbon emissions required to produce the material? (See answer from Stockholm above)
- Have permeable surfaces been used in Stockholm in place of 'wells' to allow water and gas exchange? For example, concrete block permeable paving with 2-6mm grit joints and bedding?
 - Is an aeration well still required if about half of the surface is open to the air, and the other half under the pavement?

Responses:

- Yes - there needs to be a clear route for oxygen to reach the structural soil beneath the pavement. (NB. Bjorn said no)
- Ta - to what distance though? If the tree is in planting bed and we're providing additional rooting space under adjacent pavement, how soon would you need an aeration well? How frequently do you need them, every m? One per tree? etc...
- The design needs to allow a clear pathway for water and air to get to the structural soil, and for carbon dioxide to get out. This is most easily done using an aeration well.
- It depends on the size of the tree. It's laid out in this table here: <https://stockholmtreepits.co.uk/assets/downloads/soil-volume-guidance-v1-4.pdf>
- I thought I saw ref to recycled brick and concrete with the Stockholm method. You'd need to be careful re the structural capabilities of brick and also leaching from concrete and issues with dodgy pH

Responses:

- Recycled brick is more suitable for raingardens

Martin Gammie reviewed different methods for planting trees

- Martin, does your plan sizes need to include m3 as well as m2. Depth of rooting zone will influence volume.
- Are all the crating systems plastic? Are any other materials available?

Responses:

- Plastic, concrete seem to be the main two.
- Recycled plastic (up to a certain percentage, not 100%)
- Any research done on long term biodegradable/inert support systems?

Issues with utilities

- A question for anyone - None of the slides seem to show dense utility environments using these systems. Similarly, both the Part A & Part B discussions don't really seem to adequately address getting around these issues. I think it's one thing to want to install trees in an urban environment (especially a dense one) it's another to do this. Do any of these events directly address dealing with dense utility environments?

Responses:

- Particularly 'retrofitting' street trees to areas where there are many existing services and we want to use STP system, haven't found many examples

- The MTOA did an event in London and showed a road in Birmingham city centre where they had to work round utilities i think it was green blue urban that did that might be worth talking to them
- I will get Jim to comment on this. TDAG and others are working on it - one of the issues is to ensure that utility companies are not claiming 'regulations' that don't necessarily exist but which suit utilities (Thames Water, Cadent come to mind here) - also tree roots and utilities are not necessarily in conflict. Again Trees, Planning and Development covers many of these issues.
- GBU's "Crate" System works extremely well in and around utilities due to its lattice interlocking design and integrated aeration lid. Further details can be found here: <https://greenblue.com/gb/resource-centre/utilities-rootspace-guide/>
- Have already dealt with GBU. Again, no real details of working with UK utilities (few examples of schemes in the US).
- LTOA <https://us02web.zoom.us/j/82320951534?pwd=V1A4>
- Interesting discussion as Cadent have recently sent out advice stating that you are not allowed to plant deciduous trees within 6m of there pipe
- Thames water ditto!
- I think it would be really handy to have a session which shows these examples of projects where trees are installed around utilities and how they were dealt with. The problem is that major cities, such as London, are absolutely full of utilities and based on aspects such as root zones, etc it can become incredibly hard. Unfortunately, these areas probably need soft landscaping the most.
- That's a hangover document from the 1990's, has no legal power. We are empowered under s96 of the Highways Act (1980) to plant trees, if we followed this, we would not be able to plant ANY street trees
- Hi, I'm from Singapore. For brownfield sites, we have common service ducts or tunnels to keep utilities separate from trees.
- It would be nice to have a communal trench but that would lead to difficulties in re instatement of the trench - but the issue there will be who failed to re instate thus they have their own trenches now
- For utility mapping please see You can find more information on NUAR on the Geospatial Commission's GOV.UK page (Note – but mapping still needs to be ground-truthed)

Steve Chatwin-Grindey described a case study for a podium garden where the cell system provided multiple solutions.

- The developer who bought the PLA building thought that it came with the garden...as it turned out the developer owned the space beneath the garden, but the garden itself was on a 999-year lease to the City of London.

- THE SHEFFIELD STREET TREE INQUIRY REPORT:
<https://ianswalkonthewildside.wordpress.com/2023/02/24/starlings-feasting-on-the-new-mealworm-feeder-in-the-wildlife-garden/comment-page-1/#comment-6949>
- The Sheffield City Council apology:
<https://ianswalkonthewildside.wordpress.com/2023/02/24/starlings-feasting-on-the-new-mealworm-feeder-in-the-wildlife-garden/comment-page-1/#comment-7125>
- My thoughts on the biodegradation of the cells over time are that if they fail in 75-100 years the soil around it will inevitably have consolidated over that time and settled. If that means that in those following years the plastic fails and sinks there will merely be a need to top up the soil material in the settled areas and it will self-supporting by then anyway and the trees well established. Thoughts?
- Settlement in silva cells?

Response:

- In my experience we do not get a lot of settlement within the Silva Cells because of the installation process. I agree in that there should not be a significant disruption should the system fail in that time period.

General discussion

- Can we please hear from Bjorn on installing STP systems around existing services?
- Won't developers be effectively forced to apply the 'Supplementary Technical Guidance for Highway Tree Management', because planners must use the NEW NATIONAL MODEL DESIGN CODE, or at least use guidance of their own that is not of a lesser standard, and the code directs people to use and apply the 'Supplementary Technical Guidance for Highway Tree Management'?
- I think it all comes down to the brief from the developer but there are good and not so good landscape architects
- TDAG will organise the seminar series for next year in Nov/Dec time, so we will remember this comment. Also - and for anyone - if you have a suggestion for a TDAG seminar topic, or want to recommend a speaker please get in touch. Sue and I welcome all suggestions