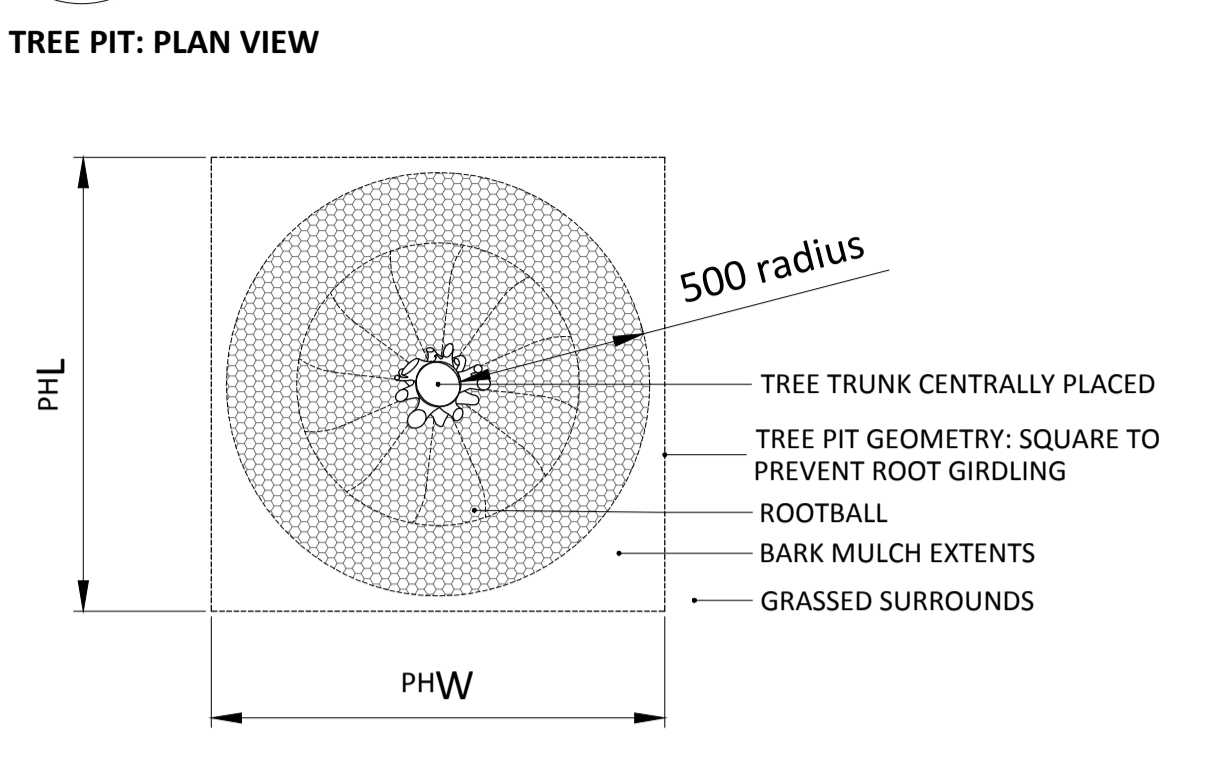


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 Drawn by RW & Checked by VA
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1. GENERAL TREE PLANTING PRINCIPLES

Scale 1:20 TREE SUPPORT SYSTEMS & IRRIGATION MEASURES OMITTED FOR CLARITY



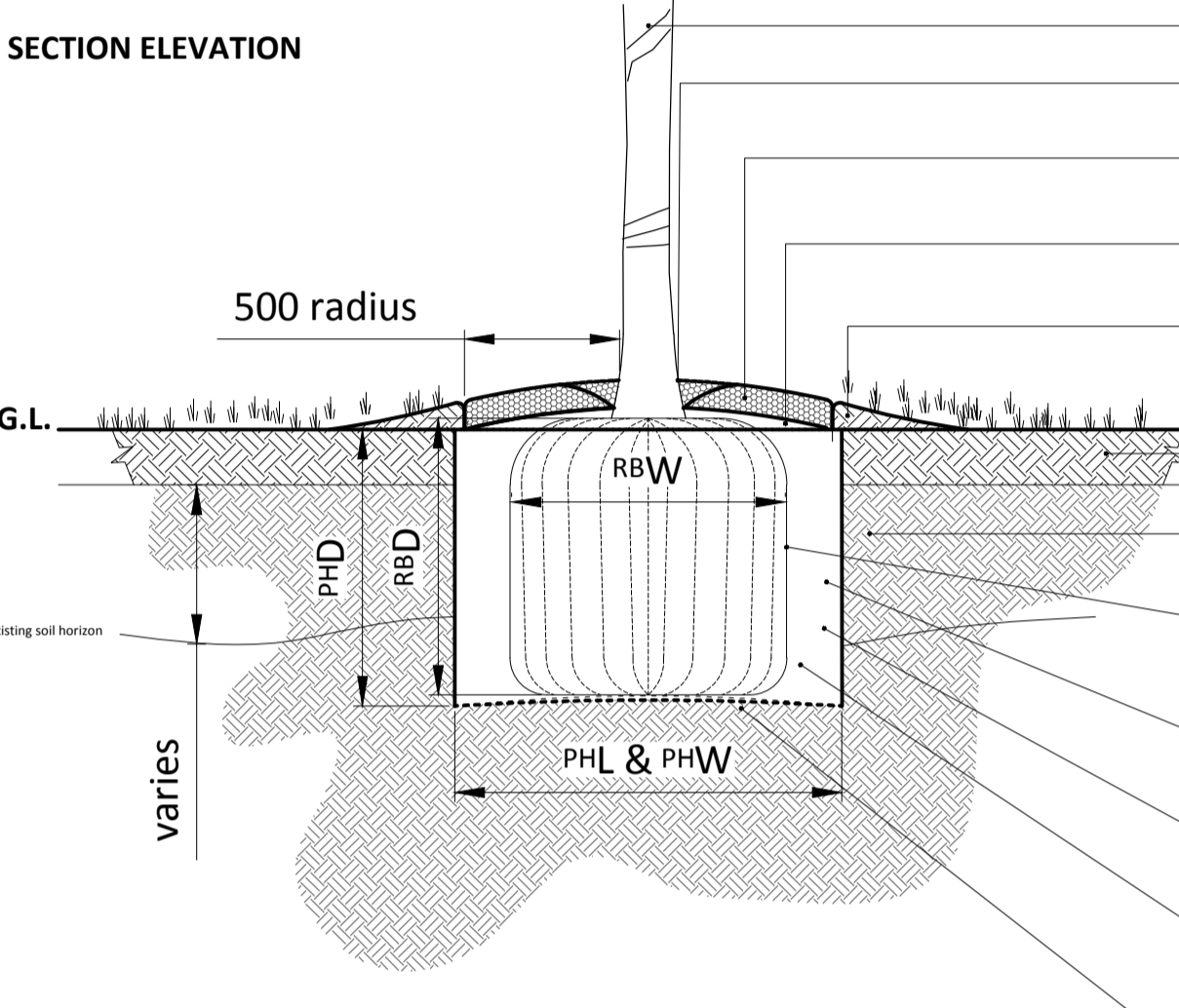
FORM	GIRTH	ROOTBALL DIMENSIONS		PLANTING HOLE DIMS	
		(^{RB} Ø)	(^{RB} Dp)	(^{PH} L)	(^{PH} W)
LS	6-8	400	300	700	700
S	8-10	400	300	700	700
SSe	10-12	400	400	700	700
H	12-14	500	400	800	800
EH	14-16	600	500	900	900
	16-18	600	500	900	900
	18-20	600	500	900	900
SM	20-25	750	750	1050	1050
	30-35	1000	1000	1300	1300

where: ^{RB}Ø = Rootball diameter, ^{RB}Dp = Rootball depth, ^{PH}L = Planting hole length, ^{PH}W = Planting hole width, ^{PH}D = Planting hole depth, LS = Light Standard, S = Standard, SSe = Selected Standard, H = Heavy Standard, EH = Extra Heavy Standard, SM = Semi Mature

N.B. Staked tree planting hole dimensions to accommodate the rootball are a minimum. Rootball dimensions can, & do, vary: some variance is to be expected naturally between species, tree stock, suppliers and season. In the event that the rootball exceeds the stated dimensions, the contractor shall seek advice from the Landscape Architect before commencing further. Thereafter, the Landscape Contractor shall excavate the hole (in Open Ground) to the advice given in BS 8545: 2014 with the exception of tree pit dimensions which shall be varied to achieve a minimum diameter of 150mm greater** than the rootball. Tree pit depth shall generally be no greater than the existing rootball or container depth. The Landscape Contractor shall take care not to damage any underground utilities &/or services.

** where root spread is taken to be rootball size.

** section 10.3.3 of BS 8545:2014 states that "Tree pits should have a diameter at least 75mm greater than that of the root system." However, this does not allow adequate space for firming in around the rootball by footfall.



TREE PLACEMENT: TREE PIT CENTRE

ROOT COLLAR FLARE: SET JUST PROUD OF G.L.

BARK MULCH: AMENITY, 75mm DEEP, GRADE BACK TO EXPOSE ROOT FLARE

BACKFILL LEVEL: c.30mm ABOVE G.L. TO ALLOW FOR SETTLEMENT & TO PREVENT PONDING

TOPSOIL SAUCER: CREATE FOR WATERING PURPOSES & TO RETAIN MULCH

150mm WELL DRAINED LOAMY TOPSOIL TO BS 3882

TREE PIT SIDES: RIP / FORK THOROUGHLY TO AID ROOT PENETRATION & DRAINAGE.

BURLAP / WIRE CAGE / CONTAINER: REMOVE

BACKFILL MATERIAL: SELECT 'AS DUG' MATERIAL TO MATCH ADJACENT SOIL HORIZONS WHERE SUITABLE FOR TREE GROWTH; TBC ONSITE BY CONTRACTOR. OTHERWISE: MULTI-PURPOSE TOPSOIL TO BS 3882.

AMELIORANTS: TBC ONSITE, THEREIN: AS REQUIRED

CIRCULAR TABLED SURFACE: ADJUST HEIGHT IF REQUIRED TO PREVENT OVERDEEP PLANTING & ALLOW FOR DEVELOPMENT OF EVENLY SPACED LATERAL ROOTS. IDEALLY, TREE PIT BASE SHOULD BE CONCOMITANT WITH ROOTBALL BASE.

TREE PIT BASE / FORMATION LEVEL: DISH TO PREVENT PONDING, RIPPING: NOT REQUIRED

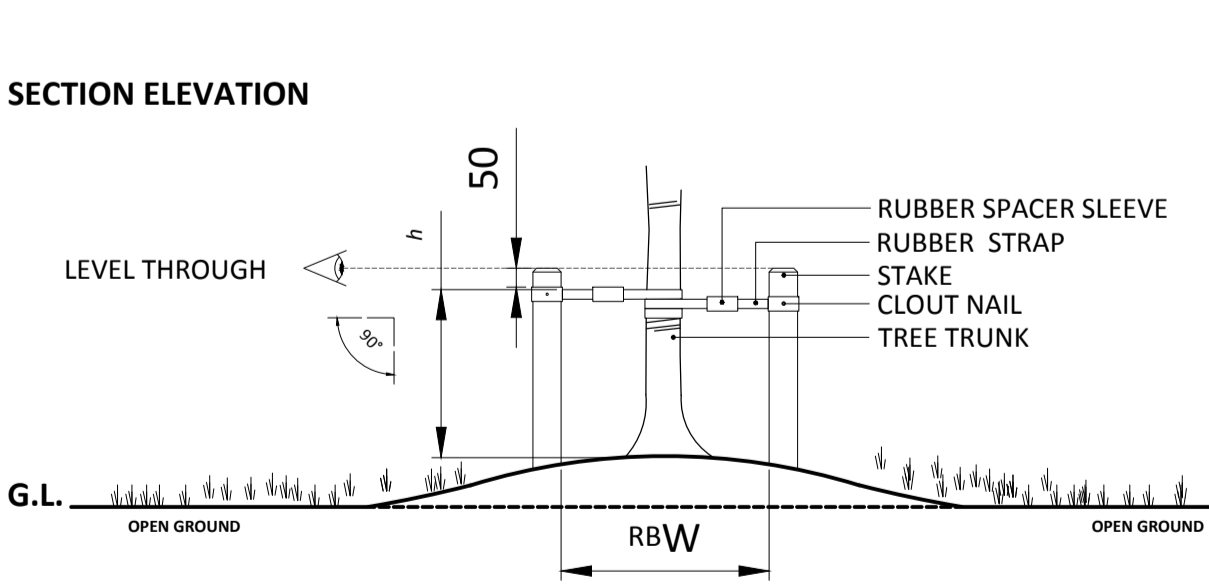
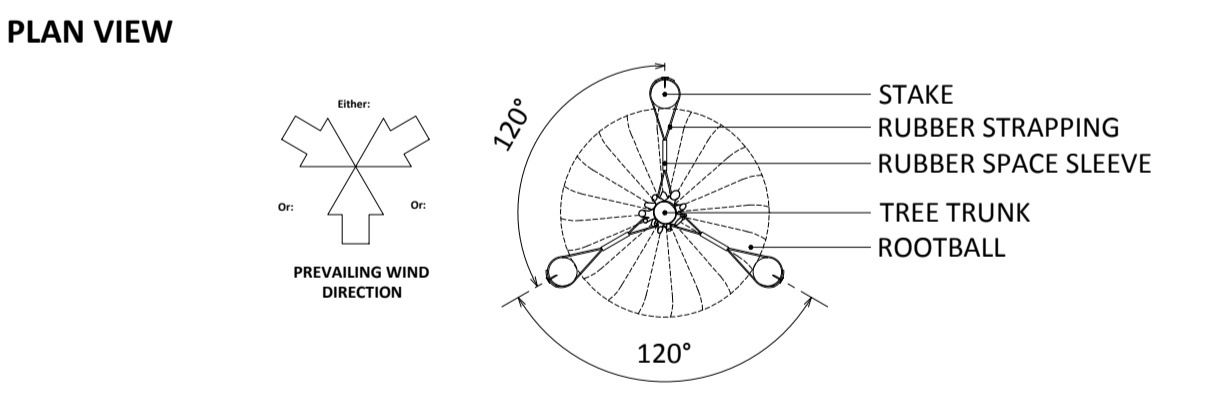
N.B. tree pit dimensions are a function of rootball size. Rootball dimensions are dependent on size of tree specified. Refer to table.

N.B.

- BS 8545: 2014 states that, "Sensible tree pit design begins with intention of doing as little as possible other than digging a pit, planting the tree, and using the existing soil, separated as subsoil and topsoil, as backfill. Each additional level of complexity added to the basic pit design can be related to the amelioration of a particular constraint".
- Tree shown planted in open ground in optimal conditions with minimal site constraints.
- Tree support systems are omitted for clarity.
- Tree pit dimensions are a function of rootball size. Rootball dimensions are dependent on size of tree specified. Refer to table.

2. TREE SUPPORT STRATEGY FOR TREES IN OPEN GROUND: TRIPLE STAKE AND RUBBER STRAP - (Tst)

Scale 1:20



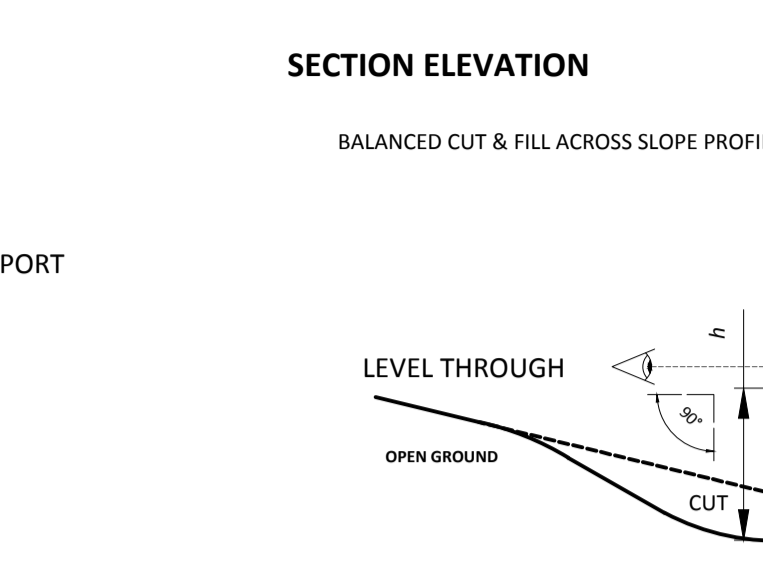
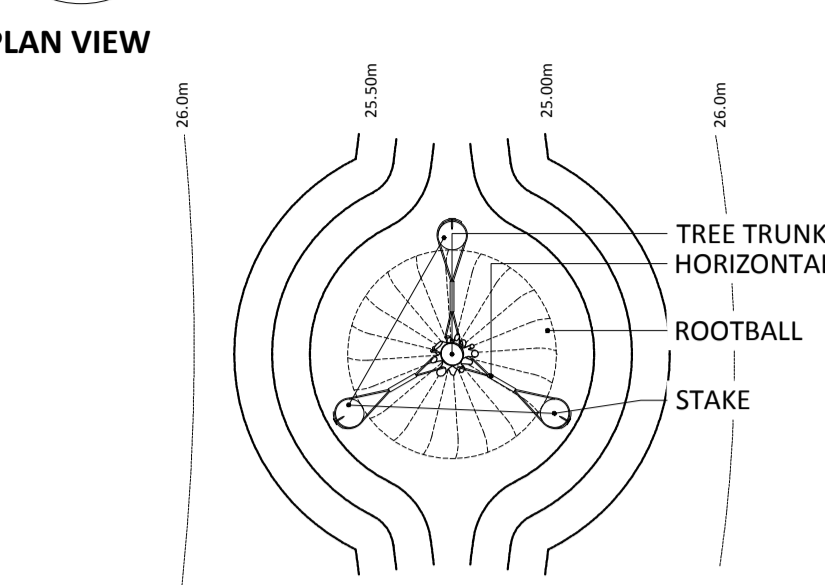
CLEAR STEM HEIGHT (mm)	SUPPORT HEIGHT (A) (mm)
1750	500
1750	600
2000	650
2500	850
>2500	ASK

N.B. *According to "BS 6042: 1989 Recommendations for transplanting root-balled trees", "How withdrawn, but still current" tree support height is calculated as $\frac{1}{2}$ where A is the clear stem height. (No alternative to calculating tree support height is given within the standard BS 6042: 2014). For these purposes, tree support height shall therefore be calculated as $\frac{1}{2}$ rounded to the nearest 50mm. There is also a note in BS 6042: 2014 stating "A 150mm tree support height is 1m height as this prevents trunk sway. In such instances, the standard clear stem height should be used to calculate clear stem height, subject to local conditions, etc."

** Clear stem height of 1.75m. For tree stock in the L, S, SSe, H & SM categories, the support height should be rounded to the nearest 50mm as per nursery suppliers working to the National Plant Specification. For further information regarding supported clear stem height, refer to Landscape Planning Plan Schedule.

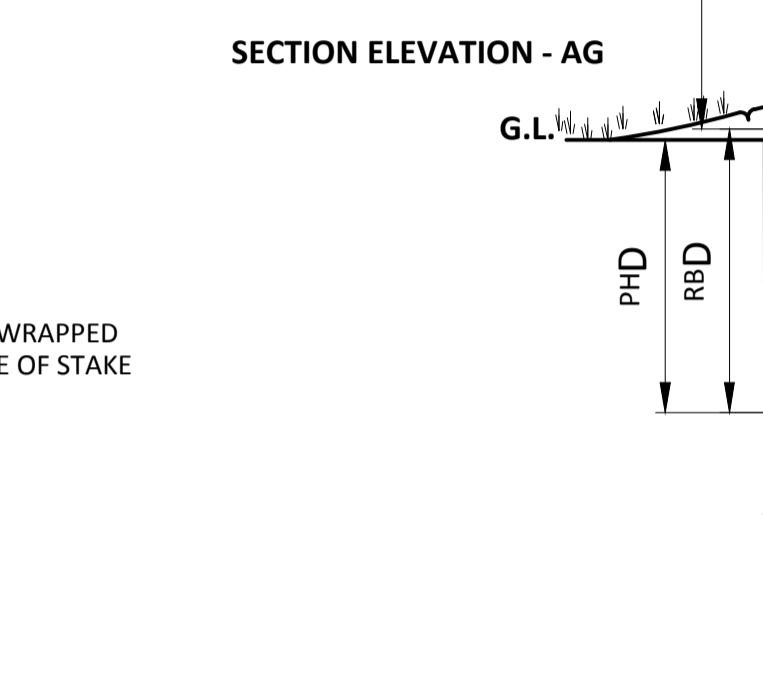
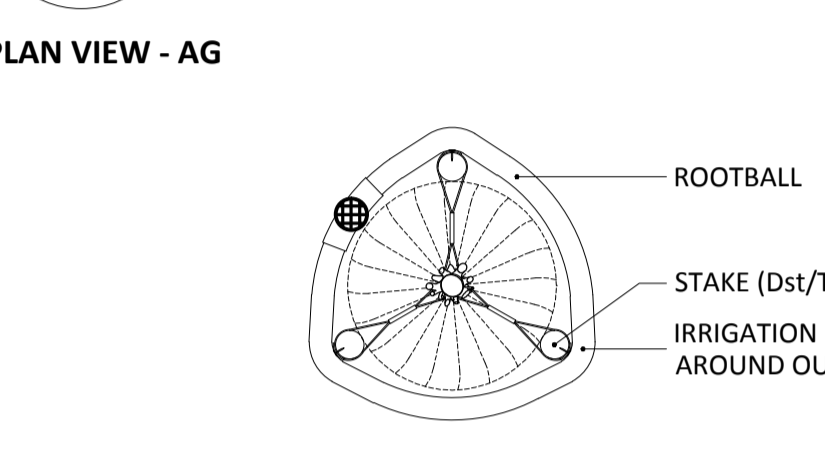
4. SINGLE / DOUBLE / TRIPLE STAKING / UNDERGROUND GUYING ON SLOPING GROUND WHERE STAKES SET PERPENDICULAR TO CONTOURS

Scale 1:20



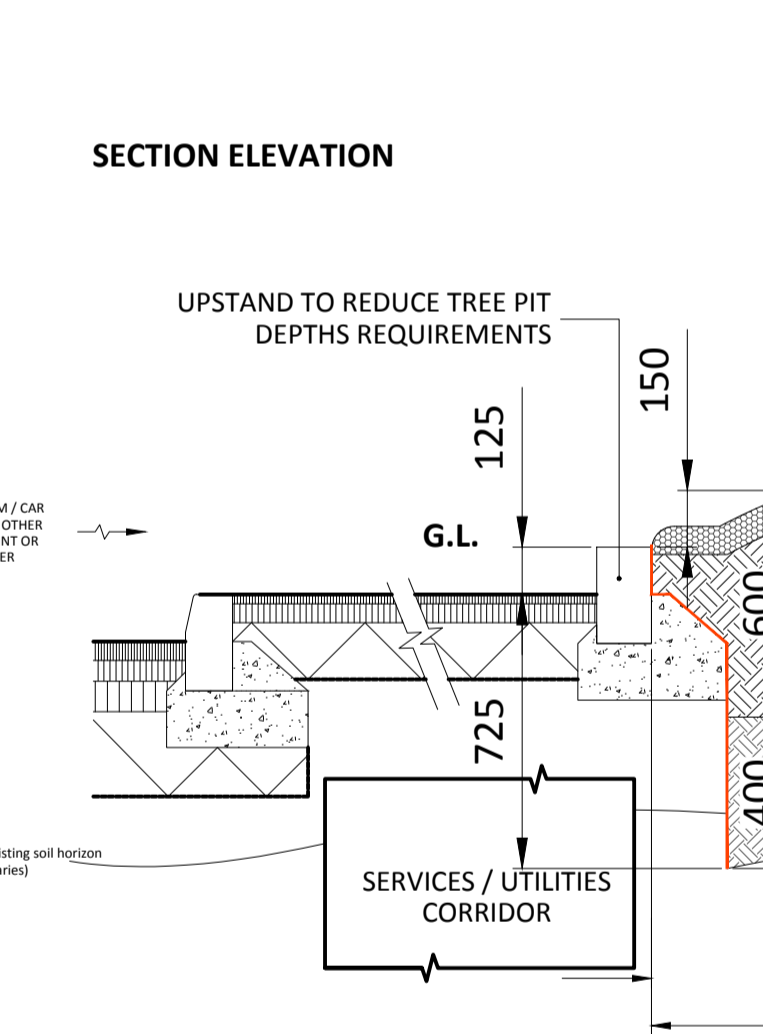
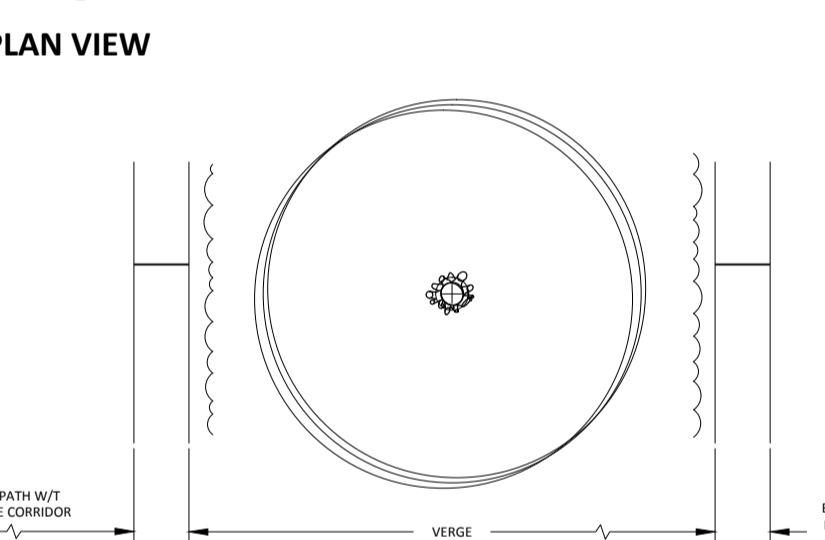
5. PROPOSED TREE IRRIGATION PRINCIPLES: FOR ABOVE GROUND (AG) TREE SUPPORT SYSTEMS

Scale 1:20



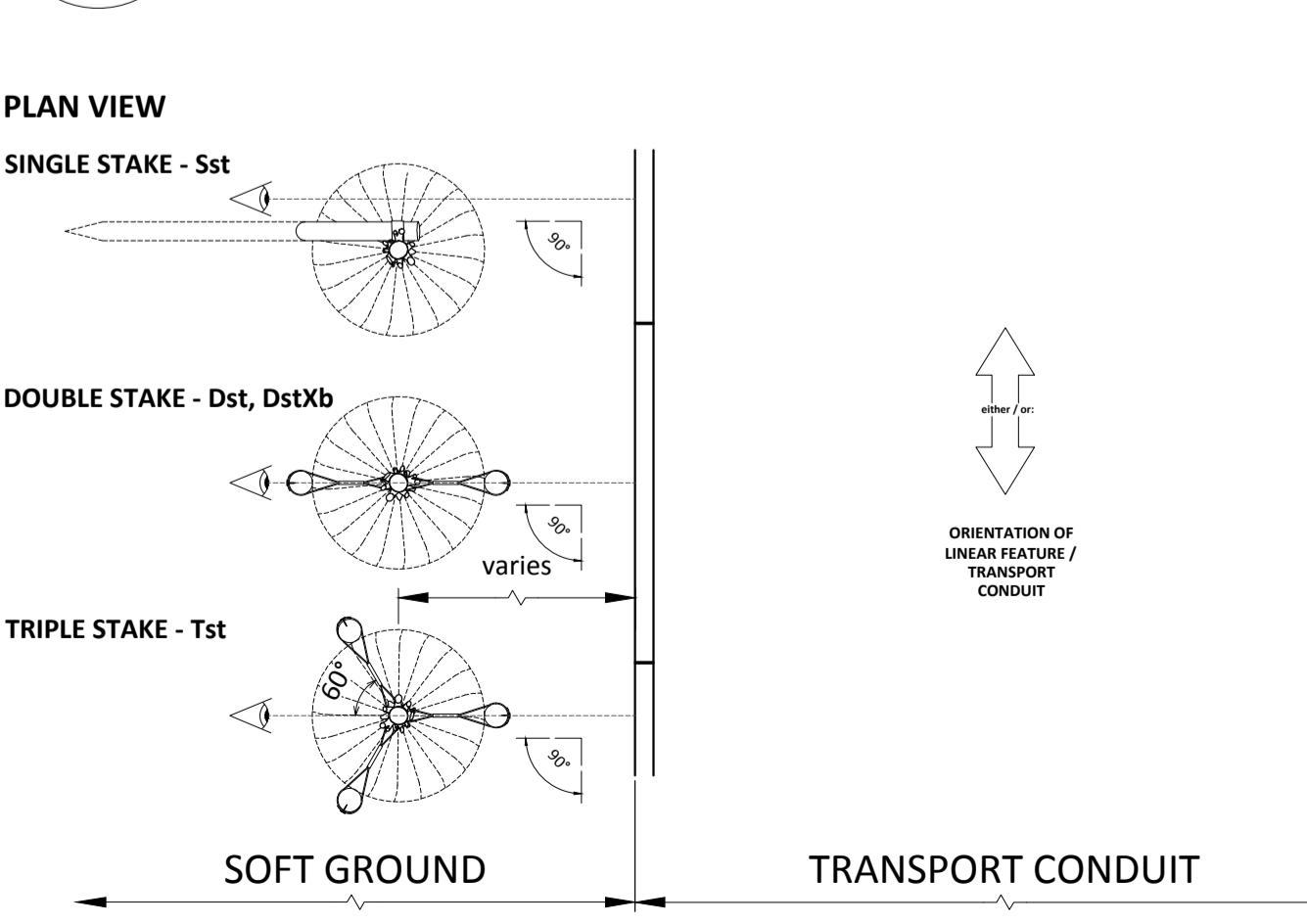
6. PROPOSED TREE PLANTING IN CONFINED SPACES &/OR VERGES NOT SUBJECT TO PEDESTRIAN / VEHICULAR OVERRUN BUT WITH POTENTIAL CONFLICTS TO ONE SIDE OR MORE SIDES

Scale 1:20



3. STAKE TYPE ORIENTATION IN PROXIMITY TO TRANSPORT CONDUITS / AVENUE / SPINE ROAD PLANTING / ETC.

Scale 1:20



N.B. tree pit dimensions are a function of rootball size. Rootball dimensions are dependent on size of tree specified. Refer to Table 1. (above)

STAKE TYPE	ORIENTATION	REASON
SINGLE	PERPENDICULAR	Visual Amenity / Protection from Mower Damage
DOUBLE	PERPENDICULAR	Visual Amenity / Protection from Mower Damage
TRIPLE	PERPENDICULAR	Visual Amenity / Protection from Mower Damage

Above Ground Tree Support Orientation Notes

- Subject to prevailing local conditions & landscape architect instruction, in areas of high amenity value, above ground tree support orientation may be varied from prevailing wind direction to perpendicular to transport conduit (as drawn).
- This is a stylistic design choice that gives a consistent look to development, especially along transport corridors as stake orientation will follow curves & bends in the road rather than being orientated to prevailing wind direction.
- In areas of mown amenity grass, this particular orientation can help to protect against mower damage during establishment.

Table 3. A.N.S. TREE SUPPORT USAGE CHART

Tree Support Position	Stake Ø (mm)	Length (m)	FORM																				
			LS	S	SSe	H	EH	SM	SM	SM	SM	SM											
ABOVE GROUND	50	1.2																					
		1.5																					
	60	1.8																					
		2.4																					
	75	1.8																					
		2.4																					
	CROSSBAR	STAKE TYPE	Stt																				
			Dst																				
			DstXb																				
			Tst																				
TREE TIES	Rubber Belling	1/2																					
		1/3																					
EARTH ANCHORING SYSTEMS	Medium duty	S																					
		M																					
Heavy duty	L																						
	XL																						
XXL	XXL																						
	XXL																						

- GENERAL TREE PIT PLANTING NOTES:
- SPECIFIED MATERIALS:** all to be installed in accordance with the manufacturer's recommendations and/or instruction.
 - PLANTING GENERALLY:** Correct planting depth is critical for transplanting success, with over-deep planting identified as a common cause of failure. The Contractor shall therefore ensure that the natural root flare of the tree is clearly visible at proposed finished soiling surface. To ensure that correct final planting position / depth is achieved, the Contractor shall therefore take care to remove all:
 - soil placed above natural root flare during nursery packaging & production - rootballing, containment, etc.
 - adventitious roots above the root flare,
 - wire encircling the main stem,
 - wire cage & burlap where possible. Otherwise, peel back and remove once the tree is in the planting pit.
 - BACKFILL MATERIAL:** 'Open ground' select 'as dug' material to be reused taking care to match adjacent soil horizons (where suitability assured for tree growth); TBC onsite by Contractor. All 'as dug' material to conform to BS 3882:2007 General Purpose Topsoil. Remove all deleterious material arising (weeds, broken brick & large stones, etc). **Hard Paved Surfacing:** Use good quality topsoil to BS 3882: 2007 within primary rooting zone (rootballs) to manufacturer's instruction. Compact to manufacturer's recommendations. Use Structural Tree Soils (Arborsoil, or equal and approved) in secondary rooting zone. Backfill loose & dry (as approx. 20% is lost by volume upon compaction) into the tree pit. Lift in layers no greater than 300mm deep, and compact to between 1.5 - 2.0 mega pascals making sure the material is dry as proper compaction cannot be achieved when wet, paying special attention to the edges of the tree pit. A calibrated Penetograph can be used by a specialist approved by the Structural Tree Soil supplier, and employed by the Contractor who installed the Structural Tree Soil, to assess and confirm the level of compaction. The corresponding graph should be supplied to both the Project Structural Engineer, the Landscape Contractor & the Contract Administrator for information, before tree planting commences.
 - BACKFILL SOIL AMELIORANTS:** The Contractor shall satisfy himself of the general suitability of the top soil supplied for long term tree growth. Reason: to ensure the long term longevity of the tree supplied. Thereafter: TBC onsite.
 - ARISING:** all deleterious material arising, shall be removed off-site to a licensed tip by the Contractor.
 - TREE SUPPORT SYSTEMS:** Unless otherwise stated, all trees in open ground &/or verges will be supported using the triple stake & strap method as identified by Detail 2 opposite.
 - Stake support (Dst, DstXb, Tst) to be placed post installation of the tree into the planting hole after first confirming that the root collar is at the correct level, level and grade. Posts are to fit snugly against the rootball sides to better secure the tree and prevent 'rootball rock'. Posts to be set plumb and level across the top at the correct height above ground.
 - Irrigation pipes to fit around the outside of stakes.
 - ROOT PROTECTION MEASURES:** supply & install permeable rootbarriers (Terram RootGuard, or equal & approved) to a min. depth of 600mm below ground. Installation: as per manufacturer's instruction. Finished level: top of barrier to be 10mm above G.L. Zone of Deployment: protection of hard surfacing / services lying within a min. 5m radius of the proposed tree.
 - IRRIGATION:** Supply & fit: 'Open ground': 60mm Ø flexible polypropylene perforated drainage pipe. Wrap twice around the rootball. Proposed supplier: Greenleaf Rooftrain Urban, RIRUBSA (or Equal & Approved). **Hard paved surfacing:** Greenleaf Rooftrain Precinct, RRPRECS3; Arborvent Double Inlet, RRARBVD3C, (or Equal & Approved).
 - DRAINAGE:** the contractor shall satisfy himself that the tree pit is adequately drained, making adequate provision to do so where so required, and as site conditions dictate (i.e. supply & fit 100mm Ø, flexible, perforated polypropylene drainage pipe. Reason: to ensure the longevity & viability of the tree supplied. TBC onsite.

Notes

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Drawing Information: Information on this drawing is provided in the context of .dwg information provided by: Hunters Architects (Site G.A. plan) & WSP Engineers (Car park G.A.).

Scaling: Do not scale this drawing. Use given dimensions only.

Construction Design Information: to Engineer's design, detail & specification.

Setting out: refer to Engineers for information regarding setting out. In the event of discrepancy, refer to the appointed Engineer in the first instance.

Construction Information: all detailed design (including, but not necessarily limited to), bond patterns, kerbing, edging, tactile crossing demarcation, construction build-up, levels, drainage etc., to be provided by an appropriately qualified structural/highways engineer to be appointed by the client for presentation to (and subsequent discharge from) the relevant supervising authority and/or body.

Planting: Plant species are selected and located in line with consideration of the site conditions, NHC guidelines and discussions with the Local Authority and design team. All plants and planting procedure to conform to the David Jarvis Associates Limited Landscape Specification that will accompany the Construction Issue drawings. No species or plant location is to be varied without prior consent of the Landscape Architect.

Foundations: Developers / Contractors to ensure that all foundations (buildings and external walls) are designed and constructed so as to take into account, at the time of maturity, any existing or proposed trees, hedgerows or other vegetation on the application site or existing vegetation on land adjoining the site at the time of construction and any trees felled or hedgerows removed on or adjacent to the site during the previous 15 years. For this purpose the developer / contractors will submit all relevant details to the authority dealing with the Building Regulations Certificate.

Rev	Date	Description
A	12/11/2015	Client name change
-	02/10/2015	First Issue

PLANNING

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Drawing Title TREE PLANTING IN SOFT GROUND & VERGES, GENERALLY

Scale	Sheet Size	Date
1:20	A1	OCT 2015
Drawing No.	Revision	
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