

To the Durham Planning Board

Date: 12/15/21

Comments/suggestions on landscape plan for Mill Plaza development plan

From John Parry, 5 Denbow Rd., Durham, NH

Urban Forester, U.S. Forest Service (retired)

Hi Rick – Thanks for our discussion yesterday on the Mill Pond Landscape Plan. That was very helpful and I have revised my questions/comments/suggestions as needed - these are provided below.

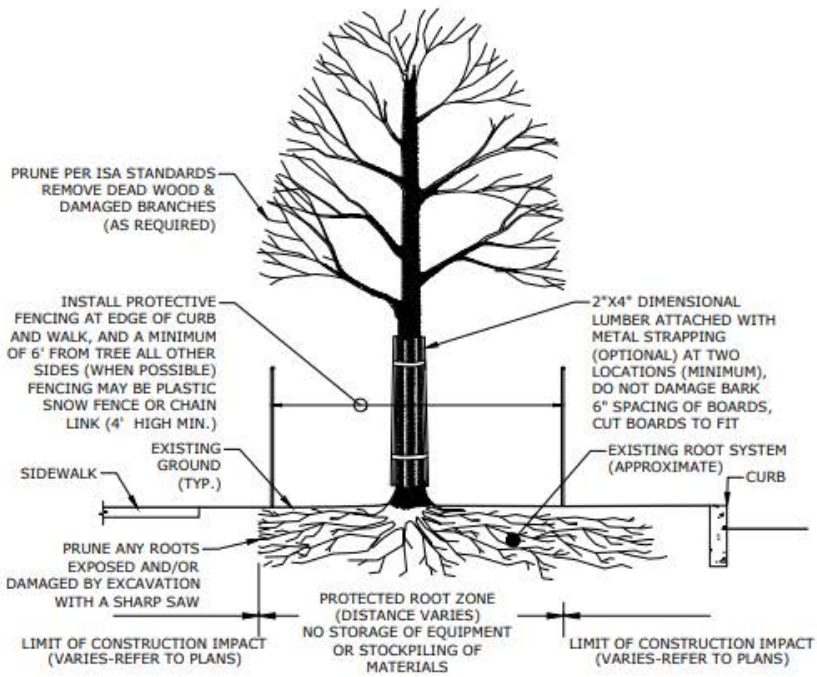
John

**Protecting Existing Trees (see figures below)**

- Landscape Note 17. on the plan states; *EXISTING TREES AND SHRUBS SHOWN ON THE PLAN ARE TO REMAIN UNDISTURBED. ALL EXISTING TREES AND SHRUBS SHOWN TO REMAIN ARE TO BE PROTECTED WITH A 4-FOOT SNOW FENCE PLACED AT THE DRIP LINE OF THE BRANCHES OR AT 8 FEET MINIMUM FROM THE TREE TRUNK. ANY EXISTING TREE OR SHRUB SHOWN TO REMAIN, WHICH IS REMOVED DURING CONSTRUCTION, SHALL BE REPLACED BY A TREE OF COMPARABLE SIZE AND SPECIES.*

It is difficult to see on the plan which trees are identified for protection? I believe some are along Mill Rd. There could also be some in the College Brook area and along the north boundary of the property. Ideally the **Town Tree Warden should identify and flag trees to protect in the planning stage.** Can we **ID on the plan which trees will be protected and how?**

- Protecting root zone around the tree is critical. Fencing at the drip line is an accepted industry standard\*. The wording in 17. above “or at an **8 foot minimum**” is **contradictory and not adequate** for larger trees over 8” in diameter.
- There are **two different diagrams in the plans** showing different levels of tree protection (see below). The first figure below (from Sheet C508) shows fencing at 6 feet. The **protection standards for existing trees are confusing and need to be clarified.**

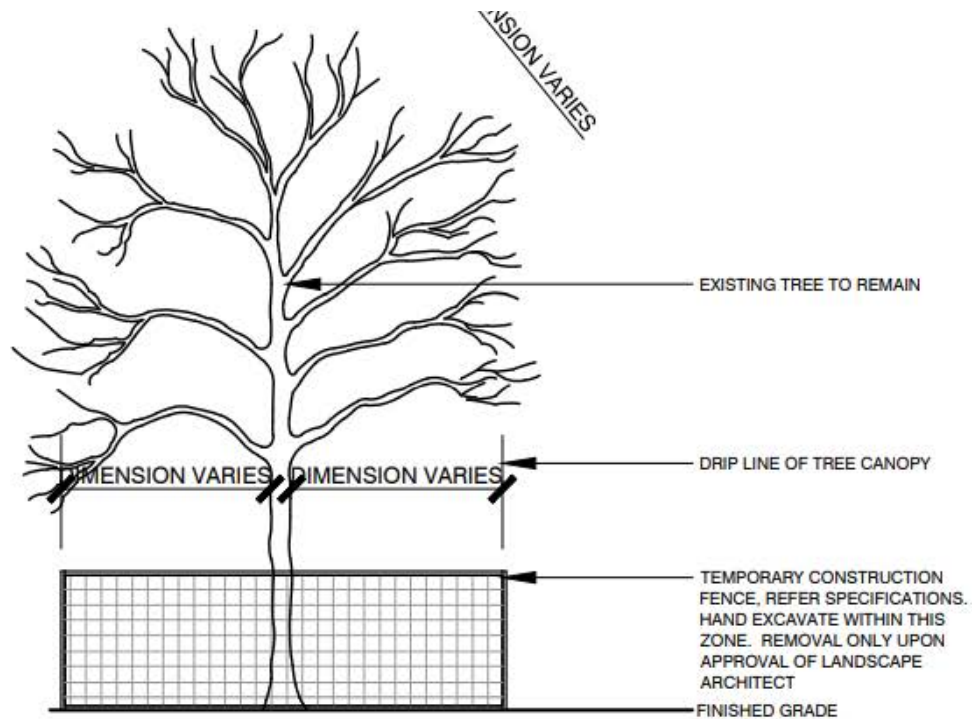


**NOTE:**

1. CONTRACTOR SHALL WALK THE PERIMETER OF THE SITE WITH OWNER PRIOR TO CONSTRUCTION TO IDENTIFY TREES TO BE PROTECTED DURING CONSTRUCTION.

**TREE PROTECTION FOR EXISTING TREE**

NO SCALE



**NOTE:**  
 1. DO NOT STORE ANY MACHINERY OR MATERIALS WITHIN FENCED AREAS UNLESS OTHERWISE NOTED IN THE CONTRACT DOCUMENTS

**SECTION**

**1 PROTECTION FOR EXISTING TREES**  
 Scale: Not To Scale

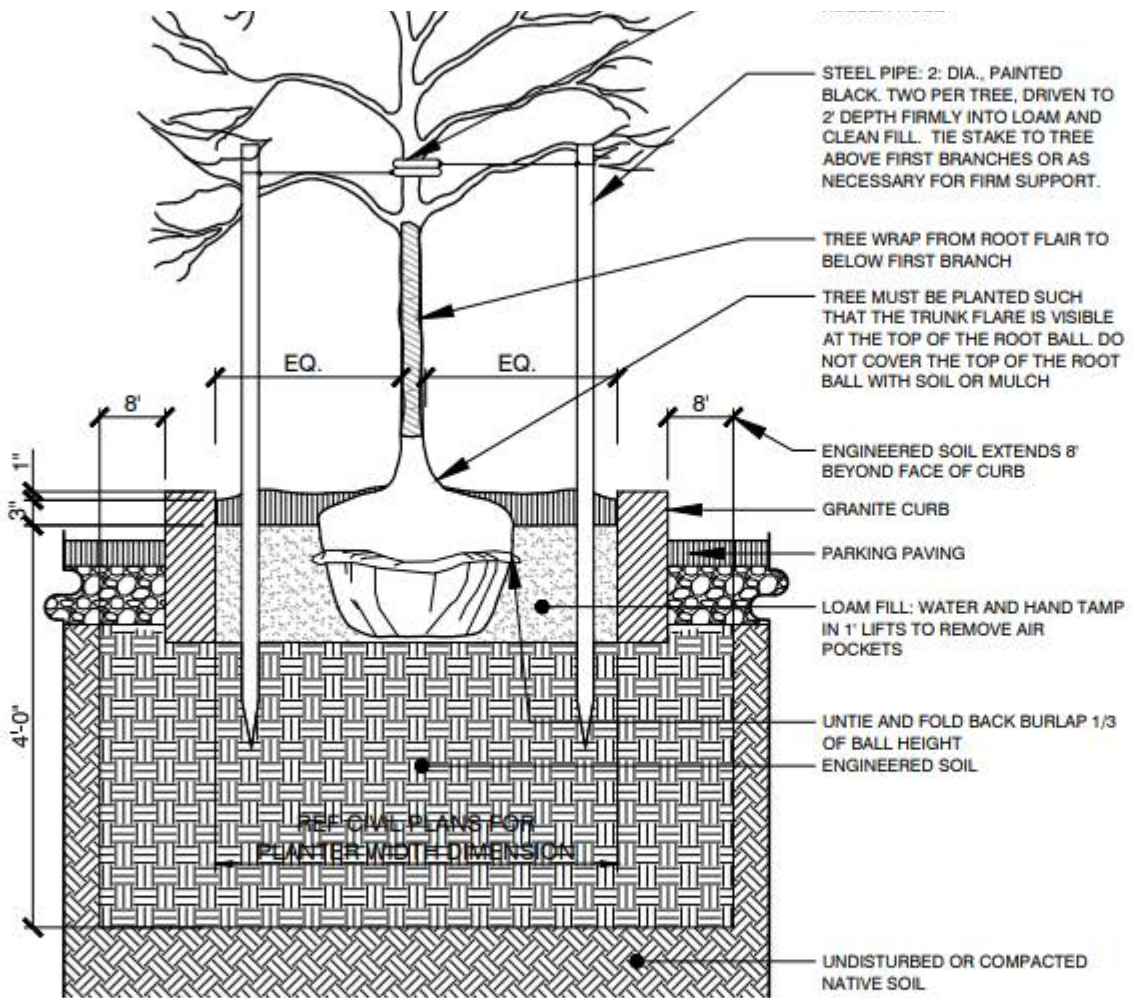
- **Sites where tree planting will occur should also be protected from soil compaction.** Also, any setbacks or otherwise protected areas should be protected from all construction activities. I know in past projects, building was not allowed on wetland and shoreland setback areas, but developers were allowed to store supplies, park vehicles, pile soil, etc. in those areas, and this “temporary use” did significant damage/compaction in those areas.
- Some **deer protection may be needed on trees planted in/near natural areas near the brook.**

**Design for Tree Planting in Parking Lot Islands (see figures below)**

- The islands are 6 feet wide. My understanding is that measurement is to the outside of the curb, so the curbs will take up about 12+ inches of the island space. That **leaves just 5 feet or less of soil width for tree rooting** in the islands. Some of the species selected can grow to a large size at maturity when adequate space is available. Trees in the existing lot, and on main street are examples of what happens long term without adequate rooting space. Most roots naturally grow horizontally from the root ball. I am glad to see species were selected that will have a larger size at maturity, but I feel **the width of the Islands should have been increased (to at least 8 feet) to allow adequate**

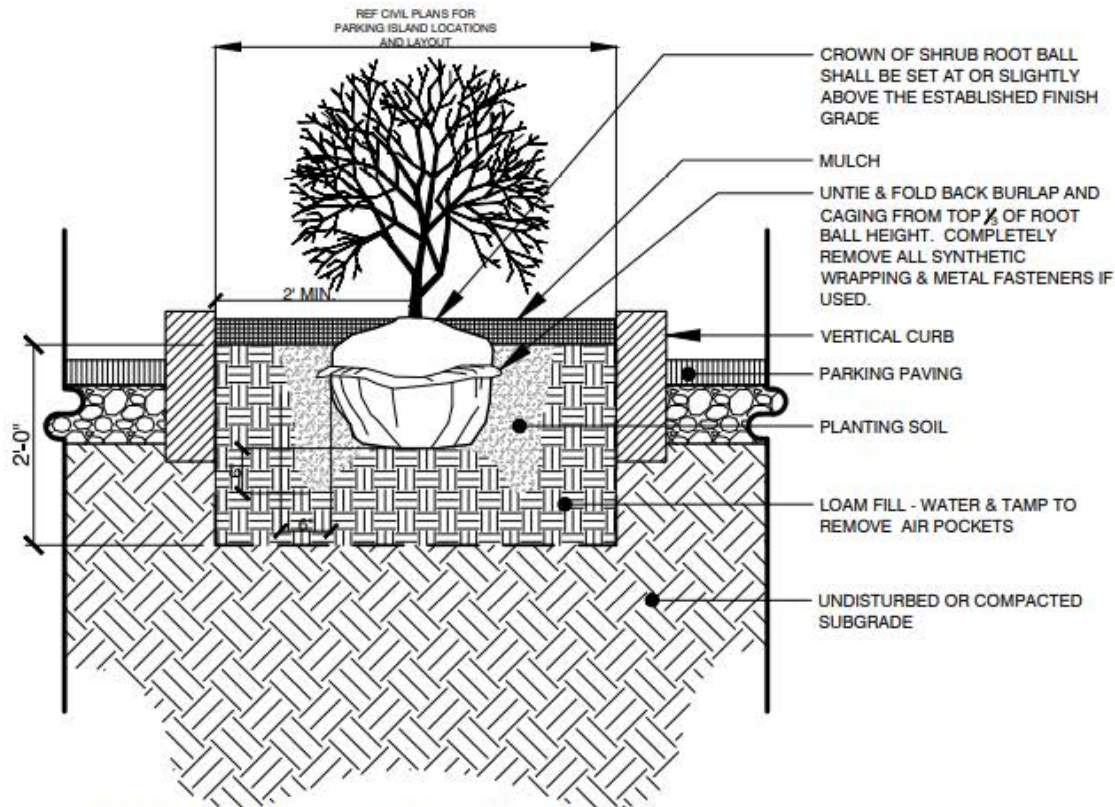
**rooting space.** Wider islands may also allow planting one or two additional trees in each island.

- I see the engineered soil will be used and extends 8 feet past the curb, underneath the pavement. Glad to see you are considering engineered soil. This will help, but may not totally make up for the limited rooting space of soil at the level of the root balls. The engineered soil is placed underneath the tree root balls to a depth of 4 feet. Most tree roots grow laterally from the root ball in the top 2 - 3 feet of soil\*.
- Plan states that "Engineered soil extends 8' beyond curb". This **engineered soil should be defined or described** somewhere.
- It will be helpful that the roots can run down the length of the islands, however this will be a diminishing return. There will be less root growth farther from the tree, and there will be competition for water and nutrients from shrubs and other plant material in those areas. Also, it appears the **engineered soil does not run the full length of the islands, so in between the trees the rooting depth is more limited and soil may be more compacted.**
- There is **no engineered soil shown under the planned shrubs in the island, so that implies that the engineered soil does not run the full length of the island and is only near the trees? It would be useful to know how far the engineered soil extends around the trees.**
- A concern I have is that the existing compacted under soil (underneath the islands) will impede water drainage from the islands. Engineered soil under the trees may help with that issue. **If the engineered soil ran the full length of the islands that would be more beneficial for drainage.**
- The crown spread of some of these trees at maturity shows as up to 30' plus. **Need to plan adequate spacing in the parking lot islands to avoid branch conflicts** with pedestrians, vehicles, delivery trucks, snowplows, etc. Branches can be pruned up over time\*, but trees must be allowed to gain height before too much lower branch pruning can be done. Good species selection can help. Also, when ordering trees from nursery, contract wording can specify the height to which trees should be free of branching.
- Landscape Note 14. on the plan states; PARKING AREA PLANTED ISLANDS TO HAVE MINIMUM OF 1'-0" TOPSOIL PLACED TO WITHIN 3 INCHES OF THE TOP OF CURB ELEVATION. REMOVE ALL CONSTRUCTION DEBRIS BEFORE PLACING. **Ideally loam should be as deep as the tree root balls (approx. 24"?)**



**4 DECIDUOUS TREE PLANTING: CENTER PARKING ISLAND**

Scale: Not To Scale



3 SHRUB PLANTING: PARKING ISLAND  
Scale: Not To Scale

- The tree planting figure above shows the root ball planted high, about  $\frac{1}{4}$  of the root ball is above the soil. **I feel this is inappropriate. Trees should be planted so that the root flare is at or near ground level\***. If soil settling is a concern trees can be planted slightly high (no more than 1 – 2 inches). The **ANSI standard for planting** (ISA Tree Planting BMPs – Companion Publication to ANSI A 300 Part 6) states that “B&B root balls should have the trunk flare correctly located at the surface – the planting hole can be 1 -2 inches shallower than the root ball depth in anticipation of minor settling and flattening of the root ball”.
- Will there be no **new trees planted along Mill Rd.**? This seems like a good site for planting and a good buffer should be provided here.
- The plan indicates **tree boxes (tree pits) near the buildings** (such as in the sidewalk in front of building A and around B)? I did not see detail in the plans on the design for these tree boxes. **What is the size and how is underground rooting space designed for these tree boxes?** Armstrong maple are planned for most of these spots and it is not a small tree. Needs adequate rooting space.



## Tree Species Selected

- It is good **to diversify species** in case there is an insect, disease or other problem in the future that affects trees in the area.
- There are a large number (24) of Armstrong maple (*Acer x fremanii*) planned. **I suggest planting no more than 12 Armstrong and substitute 12 other appropriate species.**
- There are a large number (25) of redbud (*Cercis canadensis*) planned. These are not a bad choice, but are close to their northern range and do better with some shade. **I suggest planting no more than 12 Redbud and substitute 12 other appropriate species.**

## Watering

- Landscape Note 16. on the plan states; *ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24 HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL BE WATERED WEEKLY, OR MORE OFTEN, IF NECESSARY, DURING THE FIRST GROWING SEASON. LANDSCAPE CONTRACTOR SHALL COORDINATE WATERING SCHEDULE WITH OWNER DURING THE ONE (1) YEAR Guarantee period.*

Landscape Note 19. on the plan states; *UPON EXPIRATION OF THE CONTRACTOR'S ONE YEAR GUARANTEE PERIOD, THE OWNER SHALL BE RESPONSIBLE FOR LANDSCAPE MAINTENANCE INCLUDING WATERING DURING PERIODS of drought.*

**A significant watering\* program for at least 2 years after planting is critical and should be planned.** It takes that long for new trees to become established.

\*There are ANSI Standards developed for many tree planting, care and protection issues. There are also BMP booklets developed as companion publications to each ANSI Standard and these provide a very good summary of industry standards. The Planning Board should acquire a set of these ANSI Standards for future reference. These can be found at; <https://www.isa-arbor.com/store/category/117/>