



December 20, 2024

Lara Davis
ZBA Principal Assistant
Zoning Board of Appeals & Conservation Department
Town of Southborough
9 Cordaville Road
Southborough, MA 01772

**Re: 250 Turnpike Road / 0 Parkerville Road, Southborough, MA
Civil Engineering Peer Review – 1**

Dear Board Members,

Howard Stein Hudson (HSH) is pleased to provide the Southborough Zoning Board of Appeals and Conservation Department with this review of the Site Plan, Stormwater Management Report, Subsurface Disposal System Design, and the Traffic Impact Study prepared and submitted under MGL Chapter 40B. We have received the following documents as part of this review:

- Plan set entitled “Site Plan of Land at 250 Turnpike Road in Southborough, Massachusetts” consisting of 19 sheets, prepared for FD 250 Turnpike, LLC by Expedited Engineering, LLC, dated May 28, 2023, and revised through November 20, 2024.
- Report entitled “Drainage Report for Comprehensive Permit Development at 250 Turnpike Road, Southborough, MA” prepared by Expedited Engineering, LLC, dated April 15, 2024 and revised through November 20, 2024.
- “Predevelopment Drainage Area Plan at 250 Turnpike Road in Southborough, Mass.” Prepared for FD 250 Turnpike, LLC by Expedited Engineering, LLC, dated July 16, 2023
- “Postdevelopment Drainage Area Plan at 250 Turnpike Road in Southborough, Mass.” Prepared for FD 250 Turnpike, LLC by Expedited Engineering, LLC, dated April 15, 2024, and revised through November 20, 2024.
- Massachusetts Department of Environmental Protection Checklist for Stormwater Report signed and dated November 20, 2024.
- “Sewage Disposal System Plan” Prepared for FD 250 Turnpike, LLC by Expedited Engineering, LLC, dated November 20, 2024.
- “List of Requested Waivers from Applicable Town of Southborough Bylaws and Regulations”



The project located at 250 Turnpike Road in Southborough MA is proposing to construct 32 townhouse rental units in a combination of duplex and triplex buildings. The proposed units are located within the Residence A district with an access easement from the Industrial parcel to the north having primary access from the development entering and exiting off of Turnpike Road. All 32 townhouse units will be accessed via a 1,010'± dead end roadway with a proposed private septic system and municipal water which will be fed from the project via a utility easement to Parkerville Road.

HSH has reviewed the above referenced design plans and calculations for good engineering practices, compliance with the Massachusetts Department of Environmental Protection (MassDEP) Stormwater Handbook (Stormwater Handbook), Massachusetts G.L. C.40B Comprehensive Permit Guidelines, Town of Southborough Zoning (Chapter 174), Wetlands Protection (Chapter 170), Stormwater and Erosion Control (Chapter 154), Sewage Disposal (Chapter 223), Southborough Comprehensive Permit Regulations, and Earth Removal (Chapter 85) Regulations.

Based on our review of the referenced documents, HSH offers the following preliminary comments:

Zoning Regulations – Chapter 174

- 174-6 – Applicability. The applicant has requested a waiver from this section due to the zoning district of Residence A not allowing multifamily dwellings. HSH defers to the board for approval of this waiver, however the waiver request seems applicable.
- 174-8(A) Schedule of Use Regulations. The applicant requests a waiver from this section due to the construction of multifamily dwellings. HSH defers to the board for approval of this waiver, however the waiver request seems applicable.
- 174-8(B) Schedule of Use Regulations. The applicant requests a waiver from this section due to the non-compliance with the setbacks spelled out within the dimensional standards. Refer to dimensional standard comments below. HSH defers to the board for approval of this waiver.
- 174-8.2(C) Prohibited Uses. The applicant requests a waiver from this section due to the construction of multifamily dwellings within a district which it is not allowed. HSH defers to the board for approval of this waiver, however the waiver request seems applicable.
- 174-8.2(D) – RA Residence A District – Development Standards
 - Building unit #1 is located 2 feet from the proposed side property line where 25' is required.
 - Units 30-32 are all approximately 24-26'± from the rear yard setback where 50' is required.



- Provide architectural plans to verify building height in accordance with maximum building height of 35 feet / 2 ½ stories (including basement heights per the definition of story) and maximum floor area ratio of 0.18 to which a waiver was requested.
- 174-8.9 – WFP Wetland and Floodplain District
 - The proposed development is not located within a FEMA Floodplain so this overlay district is not applicable.
- 174-9.1 - Common Driveways
 - Common driveways serving more than two or more detached single-family dwellings shall not be permitted in any district. Since the plan lists this access from Turnpike Road as a driveway serving 32 units, provide an alternative means of access or a waiver is needed from this section.
- 174-11 Signs
 - 174-11(C)(2)d – a waiver was requested from the requirement that no sign may be illuminated between 10:00p.m. and 6:00 a.m. HSH defers to the board for approval of this waiver.
 - 174-11(E)(1) – Special Permit – a waiver was requested from this section however it is unclear if this waiver is required. If a waiver is requested and approved from the bylaw it would be required a by-right use and not fall under a special permit under MGL-40B. If waivers are required for items listed within 174-11 such a height, setback, max number, square feet, etc. the applicant should request them at this time. HSH refers to the board on both the applicability and approval of this and any subsequent waivers.
- 174-12 – Parking and loading regulations
 - 174-12(C)(2) – Dimensional Requirements for parking – Each parking space shall be at least 9 ½ feet wide and 18' long exclusive of aisles and maneuvering space... unobstructed access to and from a street shall be provided and shall not require backing out and into a street.
 - 174-12(E)(1) – Dwellings: two spaces for each dwelling unit containing one or two bedrooms, three spaces for each dwelling units containing three bedrooms. The project required 68 parking spaces for the 68 bedrooms proposed. 72 parking spaces have been designed including the garage spots for each building. In most instances the parking is in series, one spot in the garage and one behind the garage requiring backing out into the road.



Confirm the number of spaces by showing spaces at the appropriate size throughout the development.

- Confirm that the additional surface spots are located directly adjacent to the 3 bedroom units which require the additional parking spaces with an accessible route to and from the parking arrays.
- The proposed driveway for each unit should not include the 5' section for the sidewalk which runs parallel to the proposed roadway to allow for an unobstructed sidewalk. Provide a minimum of 23' from the back of curb to face of building along the side of the roadway where the sidewalk is provided to provide for pedestrian traffic across the drive when a vehicle is parked.
- Provide building architectural plans to verify that the internal parking spaces within the garages are a minimum of 9 ½ feet wide and 18' long
- It is noted that the parking provided is reliant on tandem parking for the residents (1 parking within the garage and 1 parking within the driveway). Confirm whether the applicant has considered adding additional visitor parking to avoid people parking on the street for gatherings and holidays.
- Verify that the garages and building entrances are accessible in accordance with the state regulations for accessible units.
- Provide electric charging stations into this layout per new state regulations.
- 174-12(G)(1) – Egress
 - Any Driveway likely to carry more than 200 trips per average business day must comply with the following criteria within this section on Route 9.
 - Confirm and/or provide an unobstructed sight distance at edge of traveled way of 500 feet, driveway centerline separation from other driveways serving 200 plus trips of 300 feet, driveway centerline separation from intersecting street sidelines of 150', maximum driveway width unless greater width justified by engineered design of 24', curb radius of 50', and the additional of an acceleration and deceleration lane.
- 174-12.1 – Outdoor illumination
 - The proposed development is located within the Residence A zone which would be subject to the LZ-1 zoning within 174-12.1(E)(2), however the proposed development does not directly apply to the spirit and intent of the regulations as spelled out within the table of recommended uses. Since the development is a 32-unit rental townhouse



development, this is listed within the LZ-2 table of uses within the lighting regulations which would be more applicable for lighting of the proposed development.

- The lighting plan shows that the proposed lights will leave significant dark spots throughout the site with only 8 proposed lights for over 1,000 feet of road and 32 units. Almost the entirety of the sidewalk is unlit which will significantly decrease pedestrian safety.
- The plan calls out driveway light fixtures, but each fixture only seems to illuminate a small corner of a single driveway and a small section of the abutting roadway while leaving the majority of the other residential driveways without being lit.
- As these units will be utilized as rental properties, additional lighting should be incorporated into the design in the form of streetlights for pedestrian safety, front porch lights, etc.
- 174-12.1(F) Provide a total site lumen limit calculation per table 1.
- Provide the appropriate calculations per table 2: Lighting Limits for residential uses.
- Provide information in compliance with 174-12.1(G-R) to verify compliance with these regulations.
- Landscape plan comments have been provided under a separate cover by James Emmanuel, RLA LEED AP from James K. Emmanuel Associates.
- 174-13.1 – Concept Plans
 - 174-13.1(A) – Applicability. Any use which is designated in 174-8 as being subject to this article required concept plan approval by town meeting prior to being acted upon for special permit approval. It is recommended that the applicant request a waiver from this section.
- 174-13.1 – Major Residential Development
 - 174-13.2(1) – Applicability. Major residential development, that is, the creation of eight or more lots or construction of eight or more dwelling units within an eight-year period from or on a property or set of contiguous properties in common ownership. It is recommended that the applicant requests a waiver from this section.
- 174-13.3 Lower Impact Development
 - 174-13.3(C) – Applicability. This bylaw shall be applicable to all new development and redevelopment... that will result in an increased amount of stormwater runoff or



pollutants flowing from a parcel of land, or any activity that will alter the drainage characteristics of a parcel of land.

- Provide compliance with criteria spelled out within 174-13.3(E)(2) and detail how each criteria has been met.
- These bylaws focus on non-structural vegetative stormwater treatment for treatment, increasing vegetation, and reducing heat island effects. Please explain how non-structural stormwater practices have been included in this stormwater design and or why they cannot be utilized.

Wetland Protection Regulations

- 170-2 – Jurisdiction. The applicant has requested a waiver from this section siting that the proposed development will disturb areas within the 20' no disturb buffer of the resource area. It is also noted within the footnote of this waiver that the applicant has filed a Notice of Intent with the Conservation Commission and intends to comply with other applicability sections of chapter 170. HSH notes that waiving the jurisdiction section of the bylaw would allow all items spelled out within the jurisdiction section by right. It would be appropriate to alter the language relative to the specific alteration being requested and where it is being altered within the site within the request to avoid a blanket alteration of the 20' no disturb buffer during construction. The applicant should explain why it is necessary to infringe on the local 20 foot no disturb and how the values of the onsite resource areas are protected by this proposal.

Subdivision Regulations

- 244-4 – Plan Requiring approval. The applicant is requesting a waiver from this section since the Zoning Board of Appeals is the permit granting authority within all Chapter 40B applications. This waiver request is appropriate.
- 244-6 – Limit on dwelling on a lot. This proposal is to construct 32 townhouse units on a single parcel of land, and this would require planning board approval. The applicant is requesting a waiver from this section since the Zoning Board of Appeals is the permit granting authority within all Chapter 40B applications. This waiver request is appropriate.
- 244-8(B) – Standards of Adequacy. Provide the following information to confirm that the proposed roadway is in compliance with these standards for pavement width, maximum grade, sight distance, etc.
- Per 4.1.3.1, all plans submitted shall conform to the requirements of the town subdivision rules and regulations 244-10.



- 244-10(B)(13) – provide existing and proposed profiles of the proposed private road since over 1,000 of roadway with a complex set of roadway utilities and drainage are being proposed.
 - There are significant utility crossings throughout the roadway for the various water and sewer mains and services. Provide a crossing analysis to verify that 10' horizontal and 18" vertical separation between the outside of the pipes have been achieved throughout the site. Verify that 5' minimum cover has been achieved for the water mains
- 244-10(B)(15) – Water mains and drains
 - Confirm the adequacy of the town water system for the 32 units which will require 7,480 GPD of water usage.
 - Provide evidence that water line flushing can occur without erosion or flooding to abutters per 244-10(B)(15)(b).
- 244-10(B)(19) – Provide compliant cross sections per town standards.
- 244-12(A)(2) – Design criteria. Provide evidence that the criteria spelled out within these sections has been adhered to within the proposed design. Provide a cut-fill analysis for review.
- 244-13(A)(4) – Dead-end streets. Dead-end streets shall not exceed the lesser of 1,000 feet or the length needed to accommodate 12 lots. Please revise the design or request a waiver.
- 244-13(A)(7) – Provide grading for the revised entrance out to Route 9 and confirm that this requirement has been met.
- 244-13(B)(2) – Confirm that at a minimum, the curb cuts for the proposed units are at least 10' in width with a 3' radius flare for the pavement entrances.
- 244-15(A) – Easements. Expand the proposed 20' utility easement to 30' per this section or request a waiver.
- 244-16(B) – Drainage System.
 - The HydroCAD modeling is lacking significant level of detail and modeling to verify that the proposed drainage network will work as proposed. Pipe and manhole routing and modeling has not been quantified within the HydroCAD model. Please provide a drainage analysis of the pipes to verify that they can pass the 100-year storm event including the effects of tailwater per this section, 7.6(k)(1) of the Stormwater Regulations and 6.10 of the Comprehensive Permit Regulations.



- The wetland system between units 29 and 30, and the stream on the eastern side of the access road have been hydraulically disconnected with the proposed road. Provide a cross culvert with supporting calculations to verify that the culvert will pass the 100-year storm event in accordance with this section. Provide a culvert design in compliance with 244-27(D)
- The pipes as currently proposed appear to be undersized and do not meet the minimum pipe size of 12" per 244-16(B)(2).
- The top 8" outlet for the Retain-it structure is noted to be capped within the plan details. If this is the case, remove this out of the HydroCAD model for the system as these are shown to both be flowing full within the 100 year storm event.

■ 244-17 – Water Supply and Fire Hydrants.

- Several hydrant locations do not meet the required separation requirements to the proposed sewer infrastructure. Please adjust.
- The waterline is proposed with a "Y" layout and two dead end stubs. This will lead to frequent purging of the waterline. Please provide a water loop to prevent this.

■ 244-22 – Curbs and Berms. Curbing shall be straight or radial granite curbing with a seven-inch initial reveal from exposed face above gutter line. Revise details.

■ 244-27 – Special Construction Details. Retaining walls shall be constructed whenever the slope of land adjacent to the street would be too steep for the stability of soil [generally in excess of one (1) foot vertical to two (2) feet horizontal] or would require grading for more than thirty (30) feet back to meet the existing grade at a slope of one to two (1:2).

- Significant retaining walls are proposed around the exterior of the development adjacent to the bordering vegetated wetlands. Where retaining walls are not proposed, 1:1 slopes are proposed directly adjacent to property lines or local no alteration zones adjacent to BVW. Section 244-20F – maximum slope shall not exceed two (2) horizontal and one (1) vertical in fill. It is advised that the slope be revised to 3:1 which is a mow-able and maintainable slope with exceptions for 2:1 in circumstances where the grade is unavoidable in compliance with the regulations. Anywhere the slope is equal or greater than 2:1 erosion control blankets or geotextiles shall be used to maintain vegetation.
- A 1:1 slope is proposed directly off the side of the foundation and edge of driveway adjacent to unit 1. Please detail how this will be constructed and maintained within this close proximity to the property line



- Several of the area drains behind units 11-3 are located within sections of 1:1 slopes. This could lead to undermining of the pipes within this area. It is suggested that these drain lines be adjusted out of this section of steep slopes and the slopes be revised.
- A 1:1 slope is proposed off the driveway from unit 2 which then drops 6 feet to the wetland. Provide guardrail and slope stabilization through this section.
- A retaining wall is proposed approximately 1 foot away from the existing property line which abuts the abutter noted as 5 Sarsen Stone Way. Please provide a guardrail for vehicular safety and detail how this wall will be constructed with allowance for erosion control and room to construct the wall. This guardrail should extend along the section of 1:1 slope and along the wall abutting unit 20.
- Unit 26 directs water 17.5' down a 1:1 slope directly at units 27 through 29. Please revise to remove the flooding concern for these units.

Stormwater and Erosion Control Regulations

- 154-3 – Applicability. The applicant has requested a waiver from the entirety of the Stormwater and Erosion Control Regulations. HSH does not believe that this is appropriate as it is the applicant's duty to work with the municipality to determine which of the sections within the bylaw can be complied with and which would pose a significant hardship on the applicant over and above the state regulations. It is requested that the applicant review the regulations and provide individual waivers from sections that would be required to be waived.
- 7.6(j)(viii) - The existing conditions plans list 23 "official deep observation holes", however information associated with the project show only test pits #21, 22, and 23 have been included in the submission package. Please provide the soil logs for the remainder of the test pits performed onsite.
- 7.6(l)(1) – provide detailed cut and fill calculations.
- 7.6(o) – Stormwater and Erosion Control Management Plan. Provide a stormwater and erosion control plan in accordance with 7.6(o)(3-4).
- 8.1(g) – Post-Development Stormwater Management Criteria for New Developments. Revise stormwater calculations to comply with this section.

Comprehensive Permit Regulations

- 4.1.2 – The applicant requests a waiver from a complete financial pro forma, detailing the projected costs and revenues of the proposed project. HSH refers to the board for approval of this waiver.



- 4.1.3.8 – Provide electric and/or gas lines through the development.
- 4.1.3.13 – A waiver has been requested from the requirement to show the location and results of soil, percolation and water table tests using the Department of Environmental Protection Soil Evaluation procedures under Title V. As previously noted, there are several test pits missing or not displayed within the development which make the review of the stormwater systems and drainage design incomplete. It would provide a better understanding of the soil conditions of the site for the soil logs relative to the 23 test pits to be provided for review.
- 4.1.5 - Provide building architectural plans per this requirement.
- 4.1.6 – Provide this traffic analysis, neighborhood plan, etc.
 - A paragraph has been added to detail sheet 4 of the site plans which gives limited detail regarding the traffic for the site. Please expand upon this traffic information to discuss how the increased traffic along with the potential contractor's yard to the north will interact with the traffic along Route 9.
 - A complete Traffic Impact Report shall be provided and submitted in accordance with 4.1.14.
- 4.1.12 – Prepare and provide an “Environmental Analysis” in accordance with this section for review.
- 4.1.15 – Prepare a long term monitoring plan per this section.
- 6.5 – Access – To assure reasonable standards of public safety, there shall be adequate means of access to a comprehensive permit development. Typically, this means at least two means of access to the property if eleven (11) or more dwelling units are proposed or otherwise recommended by the DPW, the fire chief and the police chief. Please provide information on the single entrance and exit provided for this 32-unit development and how this satisfies this requirement.
 - Provide a swept path analysis of the largest fire truck for the town through the proposed development to determine the vehicle's ability to access all units.

Sewage Disposal Regulations

- 223-6(D)(1-10) – provide elevations and dimensions per this section. Certain items appear to be missing.
- 223-29(E) – Leaching Area Requirements – utilizing a design percolation rate of 20 minutes per inch the factor associated with this rate would be 0.50 sf/gal vs the 0.53 rate that was utilized within the design. Please revise the calculations.



- 223-29(E) – Leaching Area Requirements – the bottom area of the trench will not be considered without prior approval of the Board of Health. Please provide approval or revise the design calculations.
 - Verify that garbage grinders are not allowed within the rental development per note #6 or revise the system in accordance with 310 CMR:15.240(4) and request a waiver per this bylaw.
- Per 223-32 and 15.211 Title 5 minimum setback distance requirements, the project is located within the outstanding resource water of the watershed associated with the reservoir which would be subject to a 100' setback from the soil absorption system from wetlands which border or are tributary to a surface water supply. Revise the septic field location to be outside of this setback from the adjacent wetland systems shown approximately 50' away.
 - 15.211 Minimum Setback Distances - Provide a minimum of 20' between the soil absorption system and unit 15 due to basement separation requirements.
- 223-54 – Capacity. A septic tank shall have an effective liquid capacity of not less than 150% of the design flow estimated.
 - 223-58 – Tanks in Series. The capacity of the first compartment is at least equal to the requirements in 223-54 or at a minimum the criteria spelled out within 15.224 of the Title 5 regulations. Revise the tank size and/or provide calculations to support the minimum hydraulic detention times required.
- Revise outlet tee below flow line per the requirements of 223-62.
- 223-70 – Confirm that the invert elevation of the outlet from the septic tanks is at least one foot above the SHWT elevation.
- 223-73 – Alternation. Dosing shall alternate when the total volume of waste to be disposed of exceeds 5,000 gallons per day. Alternating siphons and pumps shall discharge to separate disposal areas of equal size. Revise the design to accommodate this.
- 223-74 – Capacity. Confirm that the dosing tanks have the capacity to discharge a volume adequate to cover the dosed leaching area to a depth of at least one inch in not over 15 minutes.
- 223-87 – Standby power. Provide location and callouts for backup generation, panels, fuel, etc. for when emergency power is needed.
- The 2" lateral inverts are noted as being at elevation 309.00. Please confirm this is a typographical error.
- The finish grade is called out as 310.50. Please confirm this is a typographical error.



- The 1/8" perforations are listed within the notes as 4' spacing but depicted within the diagram as spaced "5' typ" confirm spacing.
- Confirm construction and stone standards have been complied with per 223-119 and 223-120.
- 223-123 – confirm the grade above and adjacent to the leaching trench slopes at a minimum of 2%.
- Provide test pit #11 information as it is located within the proposed septic system.
- The force main pipe size is called out as two different dimensions between the plans and the septic profiles. Please confirm pipe size and material.

310 CMR 15.00 Title 5 Regulations

- 15.212(2) - Depth to groundwater. For systems with a design flow of 2,000 gpd or greater, the separation for high groundwater as required by 310 CMR 15.212 (1) shall be calculated after the effects of groundwater mounding to the high groundwater elevation as determined pursuant to 310 CMR 15.103(3). Please provide a mounding analysis and revise the design of the system accordingly.
- 15.220(k) - Provide the location of every water supply, public and private.
 - The abutter at 258 Turnpike Road is noted via the well drillers report as having a domestic well on the property. Please locate and depict on the plan.
- 15.221(7) - The top of all systems components, including septic tanks, distribution box, pump chambers, dosing chamber, and soil absorption systems shall be installed no more than 36" below finish grade. The proposed design shows the top of the system approximately 45" below finish grade. Please revise.
- Provide sewer service callouts in conformance with 310 CMR:15.222
- 15.231 – Dosing Chambers and Pumps. Per the calculations with sheet 2, it is noted that the volume below the pump on is 3,234 gallons however note 5 calculates the total volume within the system which would need to be held per 15.231 is 3,251 gallons. The emergency gallons calculated is within 10 gallons of the requirement. Please increase the pump chamber to accommodate the additional gallons required.
- Confirm venting criteria meets the items spelled out within 15.241

Generic Plan Comments

- Existing Conditions Plan Comments:



- Existing conditions plan does not appear to be printed at the scale shown on the plans. Please review the existing conditions sheets and provide updated plans which reflect the scale listed on the plans.
- Confirm that the existing conditions plan shows the current layout of the property lines between Lot A and Lot B. Currently the drainage easement is shown crossing over both parcels and the pre- and post- development drainage maps depict an older property line.

■ Site Layout Plan comments:

- The proposed industrial development is noted as not being included within this development. However, the site plans, stormwater design, drainage calculations and narrative, all study this industrial development and multifamily development as dependent on one another for the stated outcome.
 - The development of the 40B should be isolated from the development of the contractors' yard within the industrial parcel as they are two different permitting paths and it cannot be anticipated that they will be constructed at the same time.
- Existing drainage pipe from the industrial parcel outlets to an existing drainage basin and drainage easement on the proposed parcel. Proposed building units #1 and #2 are depicted on top of this drainage system. Please show how this drainage system connection can be maintained.
- Per Massachusetts Building Code, a pedestrian safety fence on top of a retaining wall greater than 30" must be a minimum of 42" from the top of the wall for pedestrian fall protection. Please add a safety fence where required.

■ Grading, Drainage and Erosion Plan Comments:

- Several buildings appear to have basement elevations multiple feet within the groundwater table as evidenced by the adjacent wetland elevation. It is recommended to have a basement elevation at least 2 feet above the groundwater table based on good engineering practices.
- Sections of the proposed driveway/sidewalk exceeds ADA running slope maximums of 5%. Please detail the proposed sidewalk in compliance with ADA accessibility standards.
- The infiltration drywells behind unit 24 and unit 10 show testing in the area but this testing has not been provided to determine SHWT, soil texturing, etc. Please provide soil testing evidence to support this determination.



- The infiltration drywell behind unit 21 does not show testing near the system yet denotes a SHWT elevation within the detail callout. Provide evidence to support this determination.
- Provide roof drainage inverts into the infiltration drywells so that the HydroCAD calculations can verify that these systems do not backup the inverts.
- Provide top and bottom of retaining wall elevations.
- The proposed limit of work is located outside of the proposed property line. Reduce the limit of work to be located within the property limits.
- The erosion and sediment control plan depicts what looks like haybales as the primary source of erosion control. It is preferred that the straw wattle with silt fence backing be the primary source of erosion control on the site.
- The erosion control notes state that the entirety of the project including the site entrance and utility work will surpass 5 acres. A phased construction management plan will need to be developed per the Construction General Permit as part of a Stormwater Pollution Plan (SWPPP) filing under MEPA requirements.

■ Detail Plan Comments:

- It is recommended to expand the site exit construction mat detail to a minimum of 24' in width to accommodate two-way traffic in and out of the site.
- Provide test pit information for the drywell infiltration chambers located behind units 10, 24, and 21. Provide a mounding analysis for these systems where less than 4' separation to SHWT and/or ledge is noted from the most restrictive test pit within or near the system.
- Per the stormwater manual, table IB.1, one soil sample for every 5,000 ft of basin area is recommended with a minimum of three samples are required for each infiltration basin.
- The most restrictive test pit (TP 23) for the Retain-it infiltration chambers shows 40" down from an elevation of 320 yielding a SHWT elevation of 316.67'. Provide a mounding analysis for this system.
- Provide overflow outlets for each of the infiltration drywell chambers in case of clogging or other soil restrictions so the system does not only have to rely on infiltration as the primary outlet.
- Area drain A is shown as taking a large section of water from the rear of the townhouses 12-17, however the contours depict that the water will be directed mostly



at the rear of the units. Revise the grading to reflect the design intent and provide calculations to support this drainage runoff.

■ Drainage Comments:

- Subcatchment 7, 8 and 9 are analyzing watershed patterns which are external to the project analysis. Each of these watershed areas will have an intricate system of pipes, manholes, and basins which would need to be quantified to verify if any of the water does in fact make its way into the proposed development drainage network.
- The LiDar imagery located within the pre- and post- watershed maps does not corroborate the detail of pond storage and outlet detail that is modeled within the existing HydroCAD pond nodes 7P and 8P. Provide additional detail on where this information was obtained.
- The pre-development and post-development watershed maps are difficult to read and hard to understand where the information is coming from. The reaches/analysis points identified within the HydroCAD should be labeled within the Pre- and Post-development watershed maps for clarity.
- Please provide pre- and post- analysis points for the abutters to the south and east comparing the existing runoff to the proposed runoff from the new untreated grass areas, roof and reduction of woodland per 154-9(A)(6).
- Revise the soil and cover information for the existing site wetlands to reflect soil group D and water surface.
- Provide a soil listing printout for both the pre- and post- development HydroCAD.
- The area listing depicts a large portion of Subcatchment 7S as HSG D whereas the Wed Soil Survey soils depict this soil as group B.
- Another approximately half-acre of area is depicted as HSG group D within the pre and post development HydroCAD. Please provide determination for utilizing this group instead of group B or group C as shown within the NRCS Map for the site.

■ Massachusetts Stormwater Standards and Stormwater Checklist:

- A Notice of Intent (NOI) Application was not included within the provided material.
- It is noted that the project is minimizing disturbance to existing trees and shrubs, however the project appears to be cutting the majority of the upland located within the project site including that which exits within the town no disturbance buffer. Please explain how the resource areas will be protected from erosion and sedimentation control and the interests of the Wetlands Protection Act be protected by this project in close proximity to the resource areas.



- Standard #1
 - Revise the calculations within the Stormwater Checklist in accordance with Volume 3, Chapter 1, Page 2 of the Massachusetts Stormwater Handbook.
 - Provide updated Rip-Rap calculations for each outlet for the revised drainage design.
- Standard #2
 - Standard 2 includes the proposed design for the industrial parcel to the north. As stated above, the 40B rental development should have a drainage design and Site Plan design which stands on its own separate from this development in the event that one or the other is not permitted or constructed at the same time. Revise the calculations provided per the above comments.
- Standard #3
 - In general, the site appears that each system which is being utilized for infiltration is being captured into a Contech CDS Filtration Unit prior to discharging into the system.
 - Provide the required calculations per the Massachusetts Stormwater Handbook to quantify that the site meets the 44% TSS requirement prior to entering an infiltration practice and provide additional calculations to support the additional drywell systems being utilized for recharge within the site. Provide additional drawdown calculations for the other three drywell systems within the site.
- Standard #4
 - Provide calculations weighted over the site and various treatment trains per the above comments relative to 90% TSS and 60% TP.
 - Provide BMP specific water quality calculations to verify that each system is treating the required amount that is being directed to that system.
 - The CDS flow-based sheets are noted to be attached to the document but cannot be located, only the sheets relating to operation and maintenance. Supply information from the supplier that details the removal efficiency for the given flow rates through the pipes for each unit.
 - The box should be checked within the stormwater checklist to show soils with rapid infiltration rates are being utilized.



- Standard #5
 - The Post drainage maps show that drainage from the proposed contractors yard development within the industrial land to the north flows into the property and into the site's wetlands. It is listed within standard #5 that the proposed residential development is not a land use with higher potential pollutant loads but verify that the proposed industrial development to the north which contributes to the drainage of this site is also not a land use with a higher potential pollutant load.
 - It is noted that the Stormwater Pollution Prevention Plan (SWPPP) was included within the stormwater report. Please provide a draft copy for review.
- Standard #6
 - Appropriate BMP's have been used within the proposed design to satisfy this criterion.
- Standard #7
 - This project is not a redevelopment as stated within the submittal documents.
- Standard #8
 - The proposed grading and drainage plans depict retaining walls and grading approximately 1' from the side lot lines. The proposed erosion control is proposed at a width of approximately 1.5' with additional space needed to install these measures. Please detail how these measures can be installed in concert with the proposed site features and grading.
- Standard #9
 - Provide all six items listed within the Massachusetts Stormwater handbook Volume 1, Chapter 1, page 23 within the operation and maintenance plan.
- Standard #10
 - An illicit discharge statement has been provided.



Thank you for this opportunity to assist the Southborough Zoning Board of Appeals and Conservation Department in their review of this project. Please contact me at (978) 844-5263 or pbogle@hshassoc.com or Katie Enright at (978) 844-5251 or kenright@hshassoc.com, if you have questions or comments

Sincerely,

Howard Stein Hudson



Patrick Bogle, P.E.
Associate | Senior Civil Engineer



Katie Enright, P.E.
Associate Principal | Senior Civil Engineer



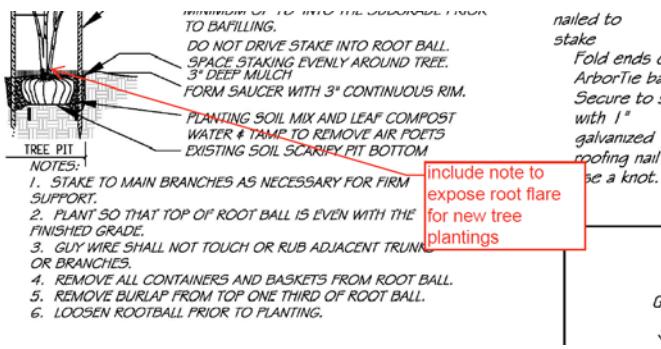
12/19/24

Patrick Bogle
Howard Stein Hudson
Boston, MA 02210

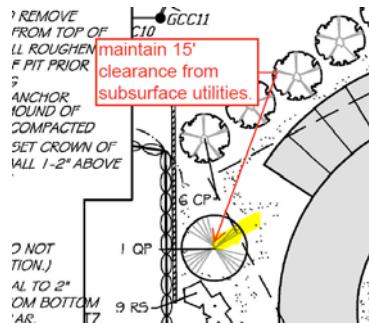
Patrick,

Below and attached is the peer review for the 250 Turnpike Rd. Southborough, MA Landscape Plan:

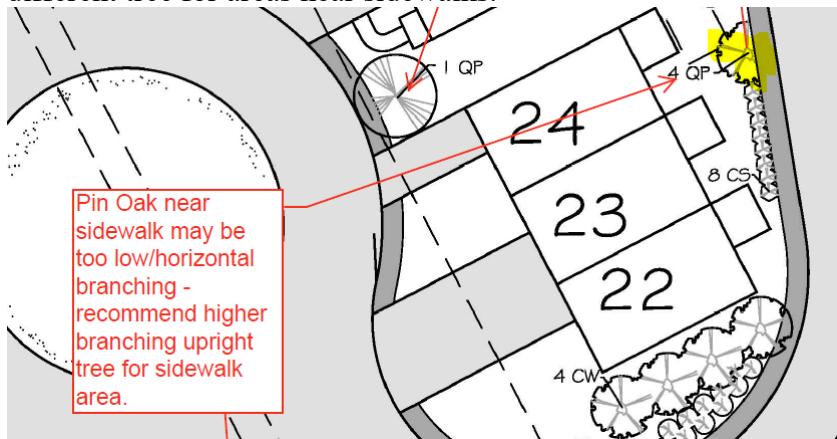
1. Plant list – indicate locations of non-combustible (non-mulch) areas on plan. Provide alternative ground cover.
2. Tree Planting Detail – include note to “expose root flare” for new tree plantings.



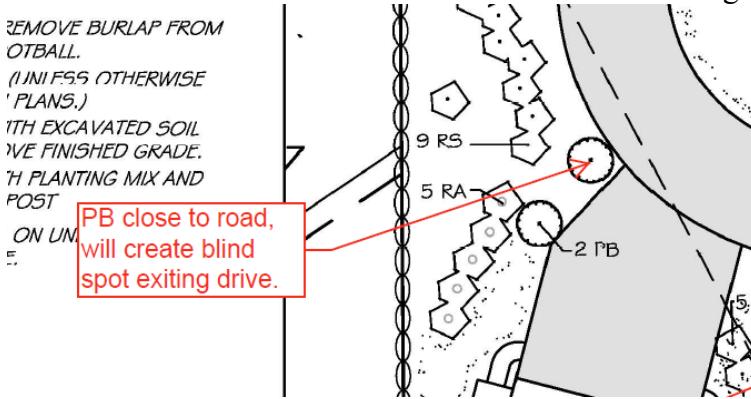
3. Section 174-13-B.5 indicates that tree staking be removed after 1 year. Adjust tree planting detail to comply.
4. Subsurface utilities are indicated on the plan. Large Pin Oak trees are proposed near this utility. Ensure a minimum of 15' clearance from the tree to the utility.



5. Pin Oak trees are low / horizontal branching with a wide canopy. Recommend a different tree for areas near sidewalks.



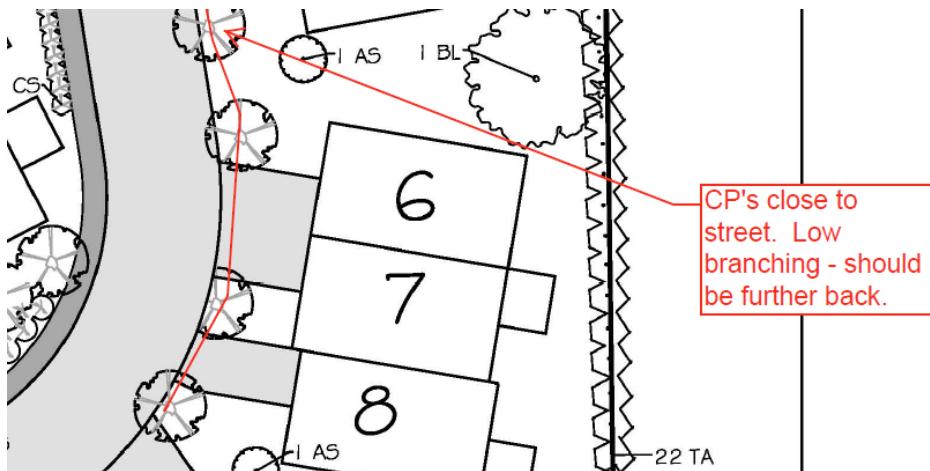
6. "PB" indicated close to street. Should be set back for sight lines and future growth.



7. Indicate type of grass to be used to ensure it is drought tolerant as per waiver request.

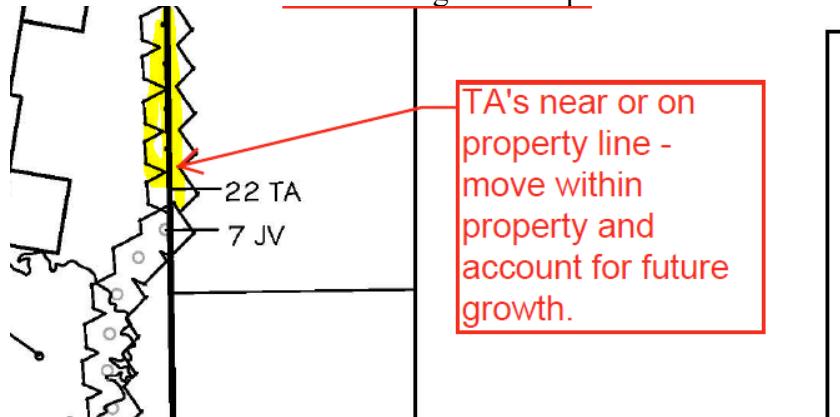
8. North Arrow should be included on plan. Evergreens at bottom of sheet (South?) appear to be mis-labeled.

9. CP plantings are shown too close to the street considering the tree size/shape:



10. Several plants are not drought resistant as indicated in the waiver request. See plan for types in question.

11. Arborvitae screen appears to be on the property line. Adjust planting location to be within lot and account for future growth of plant.



12. Ensure proposed planting locations are compatible with civil drainage/utilities plan. (Utilities not shown on landscape plan).

13. Landscaping waiver requests:

- A. 174-13(B)(10): Applicant is providing landscaping throughout the development to create additional “planting areas”. If not in conflict with utilities, there appears to be room for a few additional shade trees within the site.
- B. 174-13(B)(9): An operation and maintenance plan should be provided to accompany the landscape plan to describe the methods for watering the plantings during the establishment period. This may include the use of off-site water by a landscape contractor or other entity. Drought tolerant plants will need to be watered to get established during the first growing season when initially planted.
- C. 174-13(B)(10)(c): It appears there are no invasive plantings proposed for the site. Most of the plantings appear to be native. Any non-native planting should be identified and indicated as drought tolerant.
- D. 174-13(D): The applicant should indicate any existing vegetation to remain on the plan for the side and rear lot lines. Plantings are shown on the plan too close to the lot line. It would be beneficial for buffer plantings to be diversified a bit to decrease a hedge effect and allow for a more naturalistic planting. There are extensive areas where only Arborvitae are proposed.
- E. 174-13(E)(2): There may be room for additional trees to be located in open spaces to come closer to meeting this requirement. Coordinate with site utilities and locate trees where possible to come closer to compliance with this requirement.

14. See attached plan for summary of comments.

Sincerely,

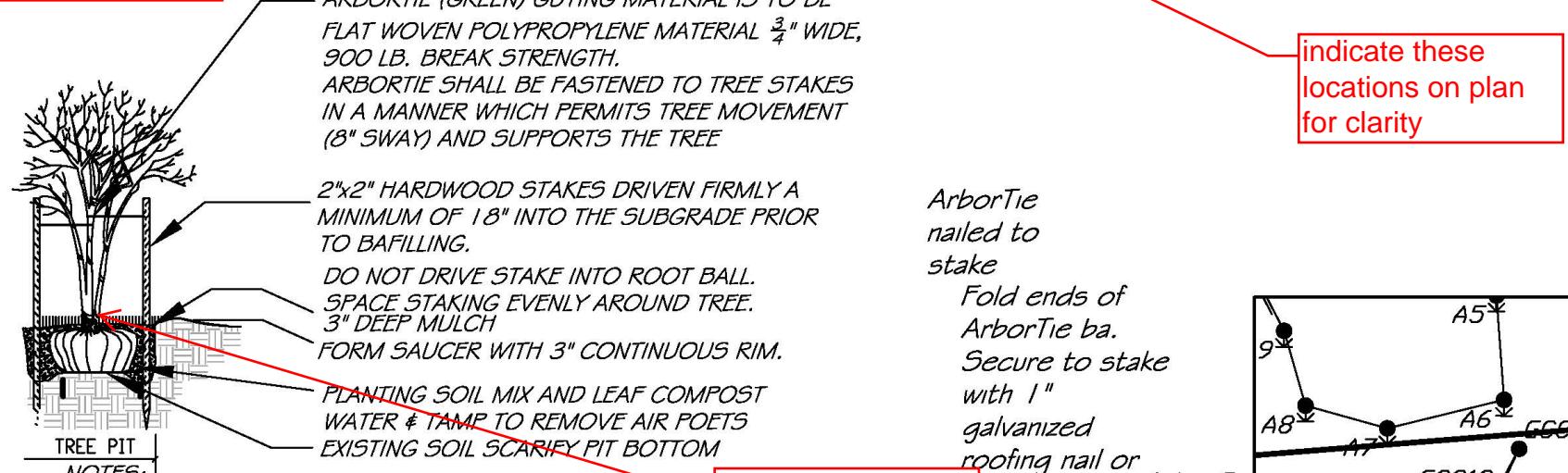
A handwritten signature in black ink, appearing to read "J. Emmanuel".

James Emmanuel
Landscape Architect

LANDSCAPING NOTES

- NOTIFY DIG-SAFE AT 1-800-DIG-SAFE AND LOCAL AUTHORITIES PRIOR TO ANY TYPE OF SITE PREPARATION OR CONSTRUCTION.
- THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIAL AND MULCH IN SUFFICIENT QUANTITIES TO COMPLETE PLANTING AS SHOWN ON THE DRAWINGS.
- DRAWING CONTROLS SHALL PREDOMINATE OVER PLANT LIST QUANTITIES.
- ALL PLANT MATERIAL SHALL CONFORM TO THE STANDARDS SET FORTH BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION.
- ALL TREES AND SHRUBS SHALL BE PLANTED WITH THE 'W337' FACE SHOWING. ALL PLANTS SHALL BE BALLED AND BURLAPED OR CONTAINER GROWN, UNLESS OTHERWISE APPROVED BY THE LANDSCAPE ARCHITECT.
- ALL CONTAINER GROWN STOCK SHALL BE HEALTHY, VIGOROUS, WELL ROOTED AND ESTABLISHED IN THE CONTAINER IN WHICH THEY ARE GROWING. THEY SHALL HAVE TOPS OF GOOD QUALITY, NO APPARENT INJURY AND BE IN A HEALTHY GROWING CONDITION. A CONTAINER GROWN PLANT SHALL HAVE A WELL ESTABLISHED, DENSE, REACHING ROOT SYSTEM WHICH IS FREE OF DISEASE AND INJURY.
- THE PLANTING OF ALL TREES AND SHRUBS IS TO BE NORMAL FOR THE SPECIES. ALL PLANTS ARE TO HAVE DEVELOPED ROOT SYSTEMS, TO BE FREE OF INSECTS AND DISEASES AS WELL AS MECHANICAL INJURIES, AND IN ALL RESPECTS BE SUITABLE FOR PLANTING.
- ALL CONIFERS SHALL HAVE DORMANT BUDS AND SECONDARY NEEDLES.
- WHERE SPECIFIED, CALIPER SIZE IS TO BE THE OVERRIDING FACTOR IN TREE SELECTION. CALIPER SIZE SHALL BE MEASURED 12" ABOVE THE ROOTBALL.
- PLANT SUBSTITUTIONS ARE NOT ALLOWED, EXCEPT APPROVED BY PROJECT LANDSCAPE ARCHITECT AND ZONING PLANNER.
- ALL PLANTS SHALL NOT BE PLANTED IN SOIL WHICH HAS BEEN AMENDED AND PREPARED FOR A LOWER GRADE AND CONDITIONS.
- PRIOR TO INSTALLING ANY PLANT MATERIAL, THE CONTRACTOR SHALL SUBMIT A CLAM SOIL SAMPLE FOR A ROUTINE, ORGANIC, SALTS, AND NITRATE SOIL TEST. UPON THE RESULTS OF THIS TEST, THE SITE CONTRACTOR SHALL AMEND THE LOAM AS RECOMMENDED.
- PRIOR TO PLANTING, THE LANDSCAPER SHALL REVIEW AND COORDINATE WITH THE SITE UTILITY PLAN AND GRADING PLAN.
- THE ROOTS OF NEWLY PLANTED TREES AND SHRUBS MUST BE KEPT STEADILY MOIST, AS THE DEVELOPING ROOTS ESTABLISH IN THE NEW SOIL. AT PLANTING, THE PLANTER SHOULD WATER THE PLANT DAILY, AND AT LEAST ONCE A DAY, DURING THE FIRST MONTH. WATERING SHOULD BE STOPPED EACH WEEK DURING THE FIRST GROWING SEASON AFTER PLANTING DEPENDS ON RECENT RAINFALL, TEMPERATURE, AND WIND. IF LESS THAN ONE-INCH OF RAIN HAS FALLEN OVER THE PAST FIVE TO SEVEN DAYS, THE NEW PLANTINGS MUST BE WATERED. LAWNS, TREES, AND SHRUBS WATERING SHALL OCCUR AT A MINIMUM OF TWO (2) TIMES A DAY THE FIRST TWO (2) MONTHS, ONCE IN THE EARLY MORNING AND THEN IN THE LATE AFTERNOON. IN GENERAL TEN GALLONS OF WATER APPLIED TWICE A WEEK WILL WET A 20'-24' ROOT BALL AND PROVIDE THE EQUIVALENT OF ONE-INCH OF RAIN PALL. NEW LAWNS SHALL WATER DAILY, AND SHRUBS AND TREES SHALL RECEIVE ONE-INCH (1") OF WATER EVERY WEEK.
- LANDSCAPE BEDS ADJACENT TO THE BUILDING FOUNDATION MUST NOT INCLUDE PINE, SPRUCE, OR CEDAR MULCH OR OTHER COMBUSTIBLE LANDSCAPE MATERIALS SHALL BE INSTALLED WITHIN 18" OF THE FOUNDATION.
- ALL LANDSCAPE BEDS SHALL RECEIVE THREE-INCHES OF BARK MULCH.
- LANDSCAPE AREAS SHALL BE DEEPLY TILLED TO A DEPTH OF TWELVE INCHES TO FACILITATE DEEP WATER PENETRATION.
- ANY TREE AND VEGETATION REMOVAL SHALL BE IN COORDINATION WITH THE PROJECT LANDSCAPE ARCHITECT AND WITH APPROVAL FROM THE PLANNING BOARD.

other

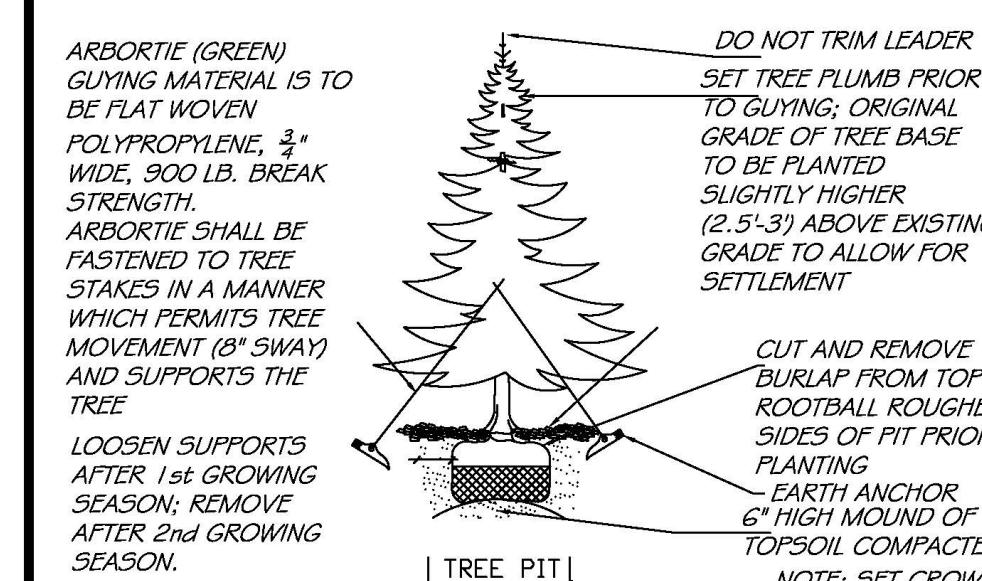


indicate these locations on plan for clarity

NOTES:

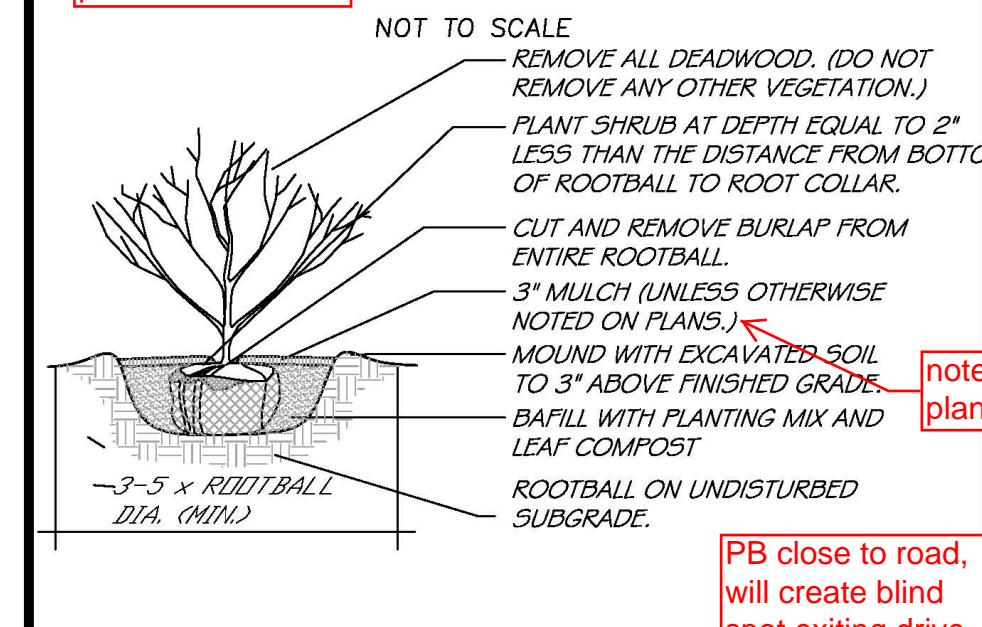
1. STAKE TO MAIN BRANCHES AS NECESSARY FOR FIRM SUPPORT.
2. PLANT SO THAT TOP OF ROOT BALL IS EVEN WITH THE FINISHED GRADE.
3. GUY WIRE SHALL NOT TOUCH OR RUB ADJACENT TRUNK OR BRANCHES.
4. REMOVE ALL CONTAINERS AND BASKETS FROM ROOT BALL.
5. REMOVE BURLAP FROM TOP ONE THIRD OF ROOT BALL.
6. LOOSEN ROOTBALL PRIOR TO PLANTING.

NOT TO SCALE



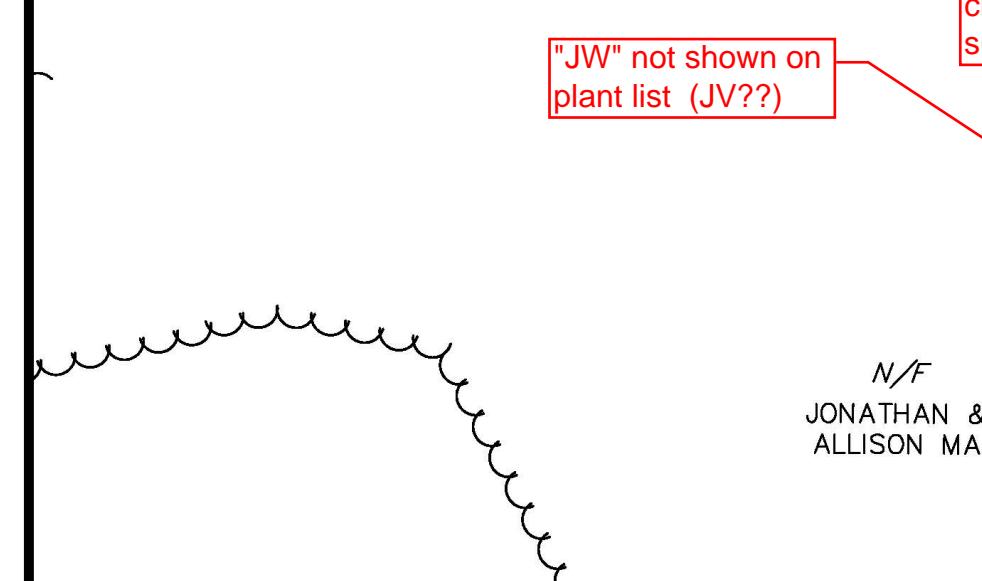
remove after 1 growing season per 174-13.B.5

NOT TO SCALE



(NOT TO SCALE)

NOT TO SCALE



NOT TO SCALE

