

Owner: Gretta & Matt Fruhan  
Address: 81 Arnold Rd.  
Applicant: D. Michael Collins Architect

July 28, 2020

Dear Wellesley Planning Board Members,

Subsequent to the Planning Board meeting of July 6th and the Historic Commission meeting of July 13th we have revised the design as requested, made a series of minor adjustments to the drawings, included items that were either missing from the initial submission or not clear in how they were represented. This letter provides a brief summary of the updates that have been completed in consideration of the recommendations from the various Boards.

The roof overhang was reduced from 14" to only 10" thereby raising the soffit slightly to accomplish the requested increase of space above the second floor windows (the frieze board) from 6" to 9".

The Shutter size was increased in width by 3" so they would appear to cover the window if they were to be closed.

The second floor windows on the front portion of the north and south elevations were adjusted so as to align vertically with windows below.

The garage and mudroom volume was adjusted and shifted (easterly) and the face of the garage is now set back 2'-4" from the face of the main house making the structure secondary to the main house.

The photometric plan was produced by a consultant from Progress Lighting Company and included in the submission.

Marquis Tree Service restated their assessment of 4 trees within the tree yard. Its letter is included. Jillson Engineering has submitted the completed The Storm Water Management Plan, submitted to Wellesley Engineering Department and included here. Jillson Engineering also submitted a memo dated 7/23/20 detailing the updates and response to the Town Engineers comments.

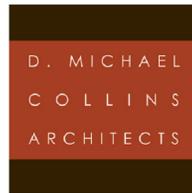
The Construction Management Plan dated July 22, 2020 is also submitted and is included here along with the previously submitted Construction Management Plan narrative. The July 22, 2020 Plan includes the requested approximate cut and fill calculations.

The tree protection details were added to the Landscape Plans.

Regards,

Michael Collins

# 81 Arnold Road



## Booklet:

1-2	Statement of Intent
3-4	Large House Review Application
5-6	TLAG Affidavit
7-8	Construction Management Plan Narrative
9-11	Memo Response
12-16	Storm Water Management
17-55	Tree Removal Documents, Removal & Replacement table Letter from the arborist, Maintenance plan from arborist TRAQ forms for 10 trees
56-68	House Lighting cut sheets and photometric data

## Index of Drawings:

	Title Page & Rendering
	Existing Conditions- Plot Plan
	Plot plan
	Site Development Plan
	Construction Management Plan
TLAG	Detail Sheet
EX 0.0	TLAG Calculation
EX1.0	Photos of Existing
EX1.1	Existing Basement Plan
EX1.2	Existing 1st Floor Plan
EX1.3	Existing 2nd Floor Plan
EX2.0	Existing Attic Plan
N1.0	Existing Elevations
N1.1	Neighborhood Delineation Plan
L-3	Neighborhood Delineation Plan
A3.0	Landscape Planting Plan
A3.1	Material Key
A3.2	Rendering Perspective
A3.3	Rendering Perspective
A3.4	Rendering Perspective
A1.0	Rendering Perspective
A1.1	Foundation Plan
A1.2	First Floor Plan
A2.1	Second Floor Plan
A2.2	Elevations
A2.3	Elevations
L-3	Proposed Site Plan and Location Key
L-1	Landscape Planting Plan- Colored
L-4.1	Tree Removal & Protection Plan
	Landscape Lighting Plan
L 1.0	Photometric Plan
L 1.1	Landscape lighting Cut sheets Exterior Lighting Plan and Cut Sheets

Wellesley Planning Board Large House Review Application  
Applicant: D. Michael Collins  
Land Owner: Greta & Matthew Fruhan  
Address: 81 Arnold Road

### **Statement of Intent**

Assessor's parcel ID# 96-13

Lot area:51,836sf

Zoning District SR20

Allowable building coverage 15%

New home will be compliant with all zoning setback requirements

Proposed TLAG is 9308 sf

First floor living area proposed 3610sf

Second floor living area proposed 3220sf

The building ridge height is an average of 32 ft and generally consistent with the neighboring structures. All of the surrounding homes within this Arnold Road neighborhood (as shown on the delineation plan), are generally in the colonial revival style with similar materials and details.

Scale and Aesthetic of Building: The new home at 81 Arnold Road has been designed in the traditional vernacular of the classic Wellesley Cliff Estate homes of the 1930's and 1940's. The white painted clapboard siding, board and batten siding, stone foundations, large double hung windows with traditional shutters, asphalt and copper roofing will weave the structure into the fabric of the existing neighborhood. The simple colonial form with two flanking wings that are set back from the main body of the building establish a hierarchy of massing. The garage/carriage house element is connected by a recessed family entry porch which is mimicked on the opposite side of the house to minimize the massing. The new home, much like to existing home, sits higher than most of the other homes on the street which gives the structure a very stately presence and we plan to continue this condition while still lowering the overall grade.

Preservation of Landscape and Open Space: The existing house sits at a high point on the lot (+/-241), with moderately sloping (6-10%) front and rear yards. The grade in the street is at 233 and the middle of the rear yard is approximately 234. There is a ravine along the northern property line that dips down to 228 and there are very steep slopes (greater than 20%) at the rear southeast corner of the lot. The new house will be settled down approximately 3.5' lower than the current house at an elevation of 237.5 in order to provide a stronger connection to the landscape without towering over it. This will also allow a stronger connection between the rear patio and lawn area, without the need for many stairs. There is an existing ledge outcropping in the front yard which will be primarily preserved and incorporated into the yard, helping to ground the project into the native landscape. Likewise, many of the existing trees in the front of the home will be preserved and underplanted with shrubs and ornamental trees to improve the

buffer and frame the house from the street. The strategic planting and large trees will create an image of an established home and landscape within the neighborhood that will complement the visual quality of the immediate environment.

A new turnaround driveway is proposed to help with the arrival to the front door, but it has been woven between the ledge and existing trees so as to be as unobtrusive as possible. In the rear, a new patio space and lawn are the only landscape elements. The yard will be minimally graded to avoid the ravines and steep hillside while still creating usable landscape space for the homeowners. The steepest portion of the yard will be preserved.

Lighting: The driveway will be lit on either side of the entry by wall wash lights on stone piers. Front walkways will be illuminated by low path lights that lead up to main access points that are illuminated with building-mounted sconces. Garage doors will also have similar sconce fixtures. In the rear yard, garden wall wash lights will illuminate patio areas, and low path lights will light grade changes and walkways. Each entry point will also have consistent sconce fixtures as the front facade. There are no uplights or accent lights proposed in order to reduce unnecessary light pollution. All path lighting and wall wash lighting will be low voltage and dark sky rated to illuminate the ground plane only.

Trees and Planting: A total of 33 trees are proposed to be removed as part of this project, but only 10 of these are located within the tree yard. 17 trees are located in the rear yard, outside the tree yard, and are primarily scrubby 8-10" conifers and poorly maintained Oaks. 6 trees are either within the new foundation of the home or are too close to be preserved, and these are also outside the tree yard. Of the 10 trees within the tree yard, 1 triple Oak failed during a March storm and the remainder had to be removed for safety (the Town was notified) and 1 Red Maple along the southern property line is dead. 4 large trees that would not be impacted by construction and were originally slated to be saved have been identified by our arborist as at-risk and recommended for removal. These include 3 Oak and 1 Elm. The final 4 requested removals are primarily smaller conifers and Oaks that would, if removed, allow two larger Oak trees to thrive along the southern property line. As mitigation, 3 overstory canopy trees, 8 overstory conifers and 4 deciduous ornamental trees are proposed to be replanted, as well as 17 Arborvitae to help buffer views off the property. The trees to be preserved include mature Oaks, Maples and Pines, all of which will help provide a green foreground and backdrop to the proposed home. New plantings in the front yard will provide a lush buffer to frame some limited views to the house, and new plantings along the sides and rear are situated so as to screen views off-site and to provide proper buffer for abutters. An extensive arborist report is being included as part of this application, with images, dates and detailed notes on health, structure and recommendations.

Storm Water Management: The accompanying storm water plan and report will show the mitigation measures to control and manage any new storm water flow created by this new development. The design will meet the MA DEP Storm Water Management Standards and the Town of Wellesley rules and regulations.



**Town of Wellesley  
Planning Department**  
Lower Level - Town Hall  
525 Washington Street  
Wellesley, MA  
781-431-1019 x2232

**Wellesley Planning  
Board  
LARGE HOUSE  
REVIEW APPLICATION**

**Applicant, please complete this form and include it with your application for Large House Review. Please read the LHR Rules and Regulations and consult with Planning Department for application requirements.**

**Application Information:**

Property Address: 81 Arnold Road

Area District: 20,000 Project type (check one): New House  Addition

Proposed TLAG (sq. ft.): New House: 9,308

Addition: Existing: \_\_\_\_\_ Proposed: \_\_\_\_\_ % Increase: \_\_\_\_\_

Property Owner Name: Matthew Fruhan

Owner Mailing Address: \_\_\_\_\_

Email Address: David@swhlawoffice.com (agent) Phone: 781-237-8180 (Agent)

Applicant Name: Matthew Fruhan

Applicant Mailing Address: \_\_\_\_\_

Email Address: David@swhlawoffice.com (agent) Phone: 781-237-8180 (Agent)

Fee: \$3000 New House: \$2,000 for TLAG less than 5,900 sq. ft.; \$3,000 for TLAG of 5,900 sq. ft. or greater. Additions: total TLAG less than 5,900 sq. ft., % TLAG increase x \$2,000, not to exceed \$2,000; total TLAG of 5,900 sq. ft. or greater, % TLAG increase x \$3,000, not to exceed \$3,000.

**Application Authorization:**

*I give permission for Planning Department Staff to enter upon my land for purposes related to this application during regular business hours:*

Signature of Property Owner: Matthew Fruhan Date: 5/13/20

**For Town Use Only**

Submission Date: \_\_\_\_\_ Case Number: LHR- \_\_\_\_\_

Action Required By: \_\_\_\_\_ DRB Review Date(s): \_\_\_\_\_

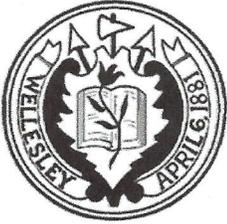
Planning Board Review Date(s): \_\_\_\_\_ Planning Board Action: \_\_\_\_\_

**REVISED**

Side 1 of 2

**Design Professionals (if applicable):**

Name, Phone # and Email of Land Surveyor:	The Jillson Company, Inc. Kevin O'Leary (781) 400-5946 koleary@jillsoncompany.com
Name, Phone # and Email of Engineer:	The Jillson Company, Inc. Kevin O'Leary (781) 400-5946 koleary@jillsoncompany.com
Name, Phone # and Email of Architect:	D. Michael Collins Architects Michael Collins (508) 651-7099 Mike@dmcarch.com
Name, Phone # and Email of Landscape Architect:	K.D. Turner Design Kim Turner (781) 632-6004 kdt@kdturnerdesing.com
Name, Phone # and Email of General Contractor:	



**Town of Wellesley**  
**Planning Department/Building Department**  
 Lower Level - Town Hall  
 525 Washington Street  
 Wellesley, MA  
 781-431-1019 x2232

**Large House Review**  
**TLAG AFFIDAVIT**

*Attachment 1 to the Large House  
 Review Rules and Regulations  
 Adopted 6/27/17; Effective 7/1/17*

**Instructions:**

This Affidavit and the Directions on pages 3 thru 5 are used to determine the "Total Living Area plus Garage Space" or "TLAG" of single family dwellings and associated accessory structures. TLAG is a defined term in Section XVID, *Large House Review*, of the Zoning Bylaw, by which the floor area of single family dwellings and associated accessory structures is calculated. **This Affidavit is required to be completed and submitted (pgs 1 & 2 only; use additional sheets if necessary) for review by the Building Department for all new single-family dwellings and additions to single-family dwellings, all new accessory structures over 100 square feet in area and additions to such structures, and any other project for which the Inspector of Buildings deems submission of the form necessary.**

Please complete this Affidavit in full and provide the following materials:

- Complete and accurate dimensioned plans, including floor plans, elevations of the entire structure (alterations of existing buildings that add 5% or less of TLAG are not required to submit plans for the entire structure).
- A separate plan providing calculations for determining the TLAG of the proposed structure.

This information will be used by the Building Department to determine whether a project is subject to review by the Planning Board under Section XVID, *Large House Review*, of the Zoning Bylaw. Large House Review ("LHR") is required for:

- New single-family homes and associated accessory structures which exceed the area calculation threshold established in the LHR section (XVID) of the Zoning Bylaw; or
- Additions to single-family homes and associated accessory structures when the addition increases the existing calculated area of the dwelling by more than 10% **and** the resulting area of the dwelling exceeds the same established threshold.

**Application Information:**

Property Address: 81 Arnold Road

Single Residence Area District (Circle One):	10,000	15,000	20,000	30,000/40,000
TLAG Threshold:	3,600	4,300	5,900	7,200

Applicant Name: Matthew Fichen Phone #: 781-690-2872  
 (Builder or Record of Permit Application)

***I do hereby certify under the pains and penalties of perjury that the information provided within this Affidavit is true and correct and these calculations are for zoning purposes only.***

Applicant's Signature Matthew Fichen Date 5/13/20

For Town Use Only	
Affidavit: <input type="checkbox"/> Approved <input type="checkbox"/> Denied	Notes:
Large House Review: <input type="checkbox"/> Required <input type="checkbox"/> Not Required	
Building Inspector _____	Date _____

**LARGE HOUSE REVIEW - TLAG AFFIDAVIT**

**Property Address:** 81 Arnold Road  
**Applicant Name:** Matthew Fruhan

**CHECK ONE:**

**For New Single Family Dwelling (including accessory structure(s)):**

Proposed TLAG (a+b+c+d+e+f from calculations below) = 9,308

**For Additions to Single Family Dwellings/Accessory Structures:**

TLAG of Existing Dwelling/Accessory Structures (subtract any areas to be removed):	
TLAG of Proposed Addition(s):	
Proposed Total TLAG of Existing Dwelling/Accessory Structures plus Addition(s):	
% Increase of TLAG: $\frac{\text{Total TLAG} - \text{Existing TLAG}}{\text{Existing TLAG}} \times 100 =$	

**BASEMENT TLAG CALCULATION - refer to Basements on pages 4 and 5**

Basement Area 1

Height of basement wall: 10'; Average height of basement wall above grade: 1.3'

% of basement wall above grade: 13%; If 25% or greater a portion counts as TLAG

Entire basement area (sq. ft.): 3,427 S.F.; Basement area that counts toward TLAG (sq. ft.): 0 SQ.FT.  
(a)

Basement Area 2(if applicable; if basement-ceiling heights are not the same height in different portions of the basement, please calculate those sections separately.)

Height of basement wall: \_\_\_\_\_; Average height of basement wall above grade: \_\_\_\_\_

% of basement wall above grade: \_\_\_\_\_; If 25% or greater a portion counts as TLAG

Entire basement area (sq. ft.): \_\_\_\_\_; Basement area that counts toward TLAG (sq. ft.): 0  
(a)

**ABOVE-GRADE TLAG CALCULATION - refer to Above-Grade Floors on page 3**

First floor area (sq. ft.) 4,788 Second floor area (sq. ft.) 3,220  
(b) (c)

**ATTIC TLAG CALCULATION - refer to Attics on page 3**

Attic area (sq. ft.): 1,300  
(d)

**ACCESSORY STRUCTURE TLAG CALCULATION**

Number of detached accessory structures greater than 100 sq. ft. in area: 0

First floor area (sq. ft.) 0 Second floor area (sq. ft.) 0  
(e) (f)

## CONSTRUCTION MANAGEMENT PLAN NARRATIVE

### GENERAL INFORMATION

#### Intent

The purpose of this Construction Management Plan (CMP) is to identify the impacts resulting from the proposed construction activity at 81 Arnold Road and provide solutions that lessen the effect on the surrounding neighborhood and to augment the information contained within the Construction Management/Operation & Maintenance Plan that is included within the Storm Water Management Analysis.

#### Project Description

The project at 81 Arnold Road will consist of the construction of a new house with attached garage. The project will also include removal of seven hazardous trees and re-landscaping the lot to include extensive additional plantings. An existing asphalt driveway will be removed and a new asphalt paved driveway installed.

#### Project Team

Owner: Greta and Matthew Fruhan

Contacts: Michael Collins, Brian Morgan, architects. 508-651-7099

[mike@dmcharch.com](mailto:mike@dmcharch.com); [brian@dmcharch.com](mailto:brian@dmcharch.com)

Builder: TBD

### SITE OPERATIONS

#### Site Maintenance

Sedimentation barrier installation (staked hay waddle) will be installed before any construction activities are initiated on site to prevent runoff into any catch basins. Erosion control devices will be inspected on a daily basis and supplemented/repared as necessary. These measures will be kept in place for the duration of the construction period.

A construction dumpster will be kept on-site starting during the framing of the house and running through near-completion. We will ensure that materials in this dumpster are kept organized and packed neatly to reduce plastics and other materials from blowing in the wind. The site will be picked-up daily to also reduce wind-blown trash.

A prefabricated concrete wash out unit is to be installed along the southern border, as noted on the Construction Management Plan dated July 22, 2020.

**NEW  
PAGE**

## Construction Hours

Construction activities will take place primarily between the hours of 7:00 AM and 5:00 PM; Monday through Friday and from 8:00 AM to 4:00 PM on Saturdays. From time to time, some activities after these hours may be anticipated. At all times, we will comply with the Town of Wellesley noise ordinance. Police details will be utilized as required.

## Deliveries

Material deliveries will be unloaded on site whenever possible. Deliveries requiring larger trucks that cannot be pulled onto the job site will be scheduled to avoid higher traffic times and school bus pickup/drop-off schedules. Again, police details will be utilized as required.

## Truck Traffic

Construction vehicle traffic will use Cliff Road to Lowell Road to Arnold Road. All commercial truck drivers will be advised that commercial trucking is prohibited on Rt. 16 between Rt. 9 and Rt. 128. This traffic plan is subject to further modification by the Wellesley Police Department.

## COMMUNICATION

The applicant is committed to open and frequent communication with the Town of Wellesley, its governmental boards and departments and most especially, the surrounding neighborhood.

Neighbors, other citizens and town officials are invited to call us with any questions or concerns at any time and expect prompt response.

A yard sign with contact telephone number and website will be placed in a visible location at the beginning of the project

## SUMMARY

We are committed to building our modest addition with architectural appeal that will be a benefit to the neighborhood. We are equally committed to conducting ourselves during this process in a professional, open and honest manner that is respectful to our neighbors and fellow townspeople at all times.

# Memo

To: Atty. David Himmelberger, Mike Collins

From: Kevin O'Leary

Cc: Matt Fruhan, Brian Morgan, Kim Turner

Date: 7/23/20

Re: 81 Arnold Road - Large House Review (LHR) - Engineering Response

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This doc is created to provide responses to LHR 6/22/20 letter from George Saraceno to Planning Director Don McCauley. Beginning on page 2 of Saraceno's letter;

## GENERAL

1. Various plans provided state that the elevations shown refer to the N.A.V.D. of 1988. The plan elevations must be shown on the Town of Wellesley benchmark system. Revise the plans to show accordingly and state that the plans are on the Town of Wellesley datum.
  - Contours & grade elevations on the revised plans remain on the N.A.V.D. of 1988 vertical datum per discussions with Saraceno & McCauley & 7/14/20 e-mail authorization from Don McCauley. Upon project completion, the required as-built engineering & survey plans will be prepared based on Wellesley town datum. Plan notes have also been added to state same.
2. The CMP should include a route map for trucking and material movement into and from the site. The route map must be reviewed and approved by the Wellesley Police Department. We recommend that the engineer present an approximation for the amount of ledge removal required for the project.
  - A Construction Management Plan (CMP) has been prepared & is provided with the packet of revised Jillson Co. plans. Access to & from the project is indicated on the CMP as well as temporary construction parking & material stockpiling areas. A Ledge Removal figure of 1600 cubic yards has been estimated & is listed on the CMP.
3. Provide cut and fill calculations for the project.
  - An itemization of the project Cut & Fill quantities is provided on the CMP.
4. The Site Development Plan shows, additional trees to be removed, which are separate from the Tree Removal Plan mentioned above. The Tree Removal Plan should show and include in the table the total list of trees to be removed.

- The existing trees and trees to be removed have been taken off of the Site Development Plan. See last revised Tree Removal Plan prepared by Landscape Architect for updated tree removal information.
5. The plans should show the proposed utilities connections for the water, sewer, electric, gas and telephone or cable lines. Details for the sewer and water lines must be included on the Details Sheet. We recommend using the Town of Wellesley standard details.
    - The proposed utility information has been added to the Site Development Plan & Detail Sheet.
  6. The Site Development Plan should include a note and show the limits of milling and paving the utility trenches on Arnold Road, curb to curb. The limits of the milling and paving must be discussed with the Town of Wellesley Street Permit Inspector.
    - Wellesley's Street Permit Inspector was contacted for brief project discussion. The Site Development Plan & Detail Sheet have been revised to show proposed utility connections & construction details & specifications along with depicting limits of milling and paving in the street.
  7. Provide a copy of the Sediment and Erosion Control Plan, including material storage, location of a temporary perimeter fence, concrete washout area and onsite parking.
    - On the Construction Management Plan (CMP) Sedimentation & Erosion Control Barrier locations have been provided. An Erosion Control Barrier detail specifying "FilterMitt" has also been provided on the Detail Sheet. Material stockpile locations perimeter fencing to follow "Limit of Work" line, as delineated, concrete wash-out area & onsite parking are all specified on the CMP.

## DRAINAGE

1. We recommend that the designer provide a table in the Stormwater Report that shows the pre versus post development peak stormwater runoff rate and volume for each storm event analyzed. The post development stormwater peak runoff rates and volumes must be less than the pre-development stormwater peak runoff rate and volume for each design storm. We suggest using a single design point to show the comparison of the pre-development versus post-development conditions for the entire lot.
  - The "Summary of Stormwater Flows" table in the Stormwater Report has been revised to include Pre & Post Development peak runoff rates and volumes for each design storm. The table & entire report is based on a single design point & shows a decrease for all storm events analyzed.
2. The proposed drainage structures should be labeled on the Site Development Plan. Each Structure should include an invert in and invert out elevation with the labeled structure.
  - All proposed drainage structures on the Site Development Plan have been labeled in plan view. Invert & rim elevations for same is also provided.
3. How is the stormwater roof runoff mitigated for the site as the plans only show area drains?

- Gutters & down-spouts are proposed on all sides of the house. Runoff from the roof will be piped to the Cul-Tec recharge basin labeled as “Proposed Drainage System UC#1” depicted on the Site Development Plan.
4. Does the foundation and basement require a drainage system such as a perimeter drain or a French drain? The plans should show proposed drainage for the foundation and or basement if necessary.
    - Although not shown on the Site Development Plan, a foundation perimeter drain typically constructed adjacent to the foundation footings will be constructed. The perimeter drain will pick-up & convey any intercepted water to a sump basin either inside or outside the basement area. A sump-pump in the collection basin will pipe the sump water to a rear yard dry-well. The Site Development Plan has been revised to include the sump pump discharge pipe & terminate it in a dedicated leaching dry-well. A detail for same has been added to the Detail Sheet.
  5. The O&M Plan should simply state in bold letters that the owner must submit annually to the Town Engineer a copy of the O&M logs for the onsite stormwater drainage system.
    - The “Operation & Maintenance Plan Proposed Drainage System – Post Construction section of the Stormwater Report has been revised in the “Records” paragraph to include a “bold” note reading; **"The owner must submit the form entitled "INSPECTION SCHEDULE AND EVALUATION CHECKLIST – POST CONSTRUCTION PHASE" to the Town Engineer annually after inspection of the onsite stormwater drainage system"**. Additionally, the following note was placed on the O & M Plan checklist below the title of the “Inspection Schedule and Evaluation Checklist - Post Construction Phase”; **"The Owner must submit this form annually to the Town Engineer after inspection of the onsite stormwater drainage system."**
  6. Provide a copy of the signed Illicit Discharges Prohibited statement as required by the MADEP Checklist for Stormwater Report.
    - The Illicit Discharge Statement has been signed by the project proponent & owner & is included in the supplemental revised Stormwater Report.

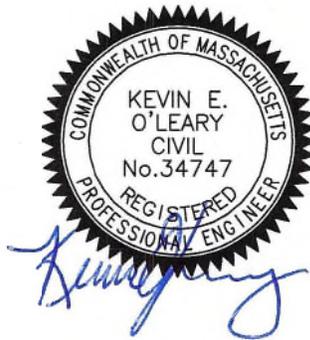
The following plans & docs are attached;

- "Supplemental Stormwater Report Requested Data" dated 7/22/20 (6 pgs.)
- "81 Arnold Road Site Development Plan" sheet 1 of 2 dated 5/18/20 last revised 7/22/20
- "81 Arnold Road Detail Sheet" sheet 2 of 2 dated 5/18/20 last revised 7/22/20
- "81 Arnold Road Construction Management Plan" dated 7/22/20
- "81 Arnold Road Plot Plan" dated 5/18/20 last revised 7/22/20

The Jillson Company, Inc.  
32 Fremont Street, Suite 200  
Needham, MA 02494  
(781) 400-5946

SUPPLEMENTAL STORMWATER REPORT  
REQUESTED DATA

Large House Review  
81 Arnold Road  
Wellesley, MA



Matt Fruhan  
81 Arnold Road  
Wellesley, MA 02481

July 22, 2020

**NEW  
PAGE**

The following table summarizes runoff for the Pre and Post-Development conditions.

**SUMMARY OF STORMWATER FLOWS**

Design Storm	Existing Conditions		Proposed Conditions		Reduction Percentage	
	(cfs)	(ft <sup>3</sup> )	(cfs)	(ft <sup>3</sup> )	(cfs)	(ft <sup>3</sup> )
2 Year	0.02	538	0.02	373	0.0%	30.7%
5 Year	0.14	1,374	0.09	1,082	35.7%	21.3%
10 Year	0.27	2,055	0.17	1,665	37.0%	19.0%
25 Year	0.61	3,539	0.41	2,948	32.8%	16.7%
100 Year	1.38	6,391	1.02	5,457	26.1%	14.6%

As listed above, the summary tables demonstrate the proposed conditions will either mirror or reduce the peak rate and volume of runoff for any storm event. The effects of the proposed development will be offset as SA2A is routed to the underground chamber system UC#1 and is fully infiltrated for the 100 year storm.

**Mass DEP - Checklist for Stormwater Report**

**STANDARD 10. ILLICIT DISCHARGES PROHIBITED**

*There are no existing illicit discharges on site. All illicit discharges to the stormwater management system are prohibited.*

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**Illicit Discharge Statement**

This statement is intended to meet Standard #10 of the Stormwater Management requirements

Illicit discharges to the stormwater management system are discharges that are not entirely comprised of stormwater.

Except for the potential for deliberate criminal act of discharge by an unauthorized entity for which the property owner has no control, there are to be no illicit discharges into the stormwater system.

*Matt Fruhan*

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Matt Fruhan

**NEW  
PAGE**

**Subsurface Structures**

Responsibility for maintenance: Owner

After construction, the subsurface structures shall be inspected for proper function and stabilization after every major storm event until the lot is completely developed and stabilized. Inspect each subsurface structure at least twice per year or if lack of performance is observed and perform necessary corrective measures to maintain infiltration capacity; as required by the Stormwater Management Policy.

**Lawn Fertilization**

Lawn fertilizer shall be slow release and limited to 3 lbs per 1000 s.f. per year.

**Snow Management**

Snow shall be collected and stored adjacent to the road and driveway as shown on the plans. The party responsible for snow plowing is the party listed at the beginning of the Operation and Maintenance Plan.

**Records**

Records of inspection and maintenance shall be kept up to date and available for review and inspection by the Town's official. **The owner must submit the form entitled "INSPECTION SCHEDULE AND EVALUATION CHECKLIST – POST CONSTRUCTION PHASE" to the Town Engineer annually after inspection of the onsite stormwater drainage system.**

**Estimated Annual Budget**

TOTAL: \$800 - \$1,500

This estimated O&M ANNUAL BUDGET has been formulated by the Declarant. It does not include items that are unknown or unlikely to occur. Actual annual costs to comply with the Approved O&M Plan requirements will be determined annually.

**STORMWATER MANAGEMENT**  
**BEST MANAGEMENT PRACTICES**

**INSPECTION SCHEDULE AND EVALUATION CHECKLIST – POST CONSTRUCTION PHASE**

**The owner must submit this form annually to the Town Engineer after inspection of the onsite stormwater drainage system.**

PROJECT LOCATION: 81 Arnold Road –Wellesley MA  
 Revision: 06/11/20

Latest

Best Management Practice	Inspection Frequency (1)	Date Inspected	Inspector	Minimum Maintenance and Key Items to Check	Cleaning/Repair Needed yes/no List items	Date of Cleaning/Repair	Performed By	Water Level in Detention System
<b>Deep Sump Catch Basins</b>	Four times per year							
<b>Subsurface Infiltration System(s)</b>	Twice per year							

**(1) Refer to the Massachusetts Stormwater Management, Volume Two: Stormwater Technical Handbook for recommendations regarding frequency for inspection and maintenance of specific BMPs.**

Stormwater Control Manager:

Stamp



MARQUIS TREE SERVICE INC.,  
10 Republic Road, N. Billerica, MA 01862  
Tel: 781-860-9618 978-657-5633 781-272-6662

July 20, 2020

Town of Wellesley  
Tree Protection Plan

To Natural Resource Commission:

Matthew Fruhan, of 81 Arnold Road, Wellesley, Ma. is Seeking permission from the board to remove 3 trees at 81 Arnold Road, Wellesley, Ma. that are within the 20 foot "tree yard". The trees are plotted on the plan #L-0.3, supplied by KDTurner Design, Landscape Architect, 27 High Street, Newburyport, Ma. and are known as tree #2, #23, #32, and #37.

A visual level 2 assessment was preformed on these trees and the recommendation for removal of these trees is base on the current health and/or structural stability of the trees.

- **Tree #2 *Quercus rubra* (Red Oak)** This tree failed during a wind storm and has been removed for safety reasons.
- **Tree #23 *Acer rubrum* (Red Maple)** This tree is dead. Recommend removal.
- **Tree #32 *Quercus rubra* (Red Oak)** This tree is in fair to poor health and fair to poor structural condition. This tree is very large and leans heavily to one side there is a large cavity on the trunk. Recommend Removal.
- **Tree #37 *Quercus rubra* (Red Oak)** This tree is in fair to good health and fair to poor structural condition. This triple leader oak tree has included bark between the leaders and signs of unidentified mushrooms growing on the trunk flare. Recommend removal.

If you have any questions, please feel free to call me at 978-877-8755

Respectfully,

MARQUIS TREE SERVICE, INC

Jay Webster  
Arborist  
ISA #NE-6330BUT

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MARQUIS TREE SERVICE INC.,  
10 Republic Road, N. Billerica, MA 01862  
Tel: 781-860-9618 978-657-5633 781-272-6662

July 20, 2020

Town of Wellesley  
Tree Protection Plan

To Natural Resource Commission:

I have been hired by Matthew Fruhan to provide a tree maintenance plan for the trees at 81 Arnold Road, Wellesley, Ma. as required by Rules and Regulations, Town of Wellsley, Section XVIIE, Tree preservation and Protection. The trees are plotted on the plan #L-0.3, supplied by KDTurner Design, Landscape Architect, 27 High Street, Newburyport, Ma. and are known as tree #1, #8, #10, #18.

- Tree #1 *Quercus rubra* (Red Oak)
  - ◇ DBH: 28 inch
  - ◇ Proposed: Retain tree
  - ◇ CRZ: 42 feet
  - ◇ Prior to construction the tree will be pruned to remove dead wood 1 inch in diameter and larger to a height of 65 feet. This tree will be minimally impacted by construction. A barrier will be erected at the limit of work to protect the tree. The tree will be pruned in accordance with the specifications in this report.
- Tree #8 *Quercus rubra* (Red Oak)
  - ◇ DBH: 26 inch
  - ◇ Proposed: Retain tree
  - ◇ CRZ: 39 feet
  - ◇ Prior to construction the tree will be pruned to remove dead wood 1 inch in diameter and larger to a height of 65 feet. This tree will be minimally impacted by construction. A barrier will be erected at the limit of work to protect the tree. The tree will be pruned in accordance with the specifications in this report.
- Tree #10 *Quercus rubra* (Red Oak)
  - ◇ DBH: 30 inch
  - ◇ Proposed: Retain tree
  - ◇ CRZ: 45 feet
  - ◇ Prior to construction the tree will be pruned to remove dead wood 1 inch in diameter and larger to a height of 65 feet. A tree support system will be Installed between the 2 main leaders of the tree and reduction cuts will be made where necessary. On the side of the tree where construction activities will encroach on the CRZ, Roots will be exposed with an air spade and cleanly cut under the supervision of a certified arborist at the defined edge of planned work. All exposed roots will be kept moist during the period of exposer and then maintained at a reasonable moisture during the duration

of construction to minimize desiccation. The barrier will be erected and inspected by an arborist prior to commencement of work. Arborist to oversee all pruning, tree support system installation, and irrigation.

- Tree #18 Elm (Ulmus)
  - ◇ DBH: 33 inch
  - ◇ Proposed: Retain tree
  - ◇ CRZ: 50 feet
  - ◇ Prior to construction the tree will be pruned to remove dead wood 1 inch in diameter and larger to a height of 65 feet. This tree will be minimally impacted by construction. A barrier will be erected at the limit of work to protect the tree. The tree will be pruned in accordance with the specifications in this report.

If you have any questions, please feel free to call me at 978-877-8755

Respectfully,

MARQUIS TREE SERVICE, INC

Jay Webster  
Arborist  
ISA #NE-6330BUT

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## Tree Protection Specification

### 81 Arnold Road

- Pre-construction:

- ⇒ It is the General Contractors responsibility to ensure that each contractor working on the site understands and complies with the tree protection plan.
- ⇒ Tree Pruning - All Significant trees in the tree yard setback listed on this plan shall be pruned in accordance with the ANSI A300 Pruning standard by a qualified Arborist. Diseased, crossing, weak and dead wood 1 inch and larger in diameter to a height of 65 feet shall be removed from the tree. Stubs will be removed cutting outside any reaction wood (wound wood) that has formed around the branch.
- ⇒ Root Pruning - If excavation is requires within the tree protection zone a qualified arborist shall expose all roots along the limit of work utilizing an Air - Spade. Roots shall be cut with appropriate pruning tool. All exposed roots shall be kept moist while exposed. Once cut all roots shall be covered with soil and supplemental water added to minimize desiccation.
- ⇒ Designate Jobsite material storage - Prior to the commencement of work consultants shall designate an acceptable location for the deposit and storage of spoils and other job site materials. No materials of any kind will be permitted within tree protection zones.
- ⇒ Designate Jobsite parking - Prior to the commencement of work consultants shall designate an acceptable location for parking of workers and contractors vehicles, trucks, and equipment. No vehicles are to be permitted within the tree protection zones for any reason.
- ⇒ Designate Cement Rinsing area - Prior to the commencement of work consultants shall designate an acceptable location for the rinsing and washing of jobsite equipment and materials like.
- ⇒ Tree Protection Fencing - A physical barrier shall be installed according to the specifications of the tree protection plan to minimize damage to significant trees within the tree protection zone. The fencing shall be maintained for the duration of the project. All fencing shall be inspected by the town planner prior to commencement of construction.
- ⇒ Sediment and erosion control - Sediment control shall be installed to prevent siltation and/or erosion within tree protection zone.
- ⇒ Root Protection - If access is needed for work or material storage within the outer 50% of the critical root zone, additional root zone protection shall be required. Root protection measures shall remain in place for the duration of the project. Acceptable root zone protection shall include:
  - a. 9 - 12 inches of evenly dispersed woodchips over the area of the CRZ.
  - b. 4 - 6 inches of evenly dispersed wood chips over the area of the CRZ and 3/4 inch minimum thickness plywood, commercial logging or road mats evenly laid on top of the wood chips.

- During Construction:

- ⇒ Monitoring of CRZ Moisture levels: All trees shall be irrigated on a schedule to be determined by the consultant during construction. Any cut or exposed roots shall be kept moist for the duration of exposure.
- ⇒ Root Protection - Any grading, construction, demolition, or other work that will encounter tree roots shall be monitored by a certified arborist.

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- Post-construction:

- ⇒ Soil Aeration: An air-spade shall be used by a certified arborist to incorporate 2 inches of compost to a depth of 6-8 inches within the critical root zone of trees that have been significantly impacted by construction.
- ⇒ Irrigation: Supplemental irrigation shall be applied to any tree that suffered root loss during construction. The amount of water applied must be appropriate to the circumstances and the needs of the specific tree in question.
- ⇒ Mulching: A 4-6 inch layer of organic mulch will be spread under the canopy of trees within the tree protection zone where acceptable.
- ⇒ Fertilization: In cases where soil and tissue samples have determined there is a nutrient deficiency the soil PH shall be checked and corrected if necessary and fertilizer shall be added at an appropriate rate to correct the deficiency.

## Fruhan Residence Tree Removal and Replacement Table

### *Protected Trees to be Removed*

Site Key	Tree Species	Note	DBH
T2	Red Oak, triple leader (Decid)	Failed during 3/17 storm, removed	24"
T23	Red Maple (Decid)	Dead	18"
T24	Pine (Conif)	Remove to improve health of neighboring Oak	18"
T26	Pine (Conif)	Remove to improve health of neighboring Oak	12"
T27	Pine (Conif)	Remove to improve health of neighboring Oak	16"
T28	Pine (Conif)	Remove to improve health of neighboring Oak	14"
T32	Red Oak (Decid)	Advised to be removed, poor structure	32"
T37	Red Oak, triple leader (Decid)	Advised to be remove, poor structure	16"

### *Replacement Trees*

Qty	Tree Species	Note	size
1	Red Maple	Deciduous overstory	4" cal.
1	Redbud	Deciduous understory	2.5" cal.
3	Dogwood	Deciduous understory	2.5" cal.
3	White Fir	Evergreen overstory	12' ht.
5	Norway Spruce	Evergreen overstory	14' ht.
5	American Holly	Evergreen understory	8' ht.
12	Arborvitae	Evergreen understory	10' ht.

**REVISED**

# ISA Basic Tree Risk Assessment Form

Client Matt Fruhan Date 2-26-2020 Time 1:14pm  
 Address/Tree location 81 Arnold Road, Wellesley, Ma. Tree no. 2 Sheet      of       
 Tree species Red Oak (Quercus rubra) dbh 24", 27", 23" Height 75 Feet Crown spread dia. 63 Feet  
 Assessor(s) Jay Webster Time frame 5 Years Tools used Tape Measure, Laser

## Target Assessment

Target number	Target description	Target zone			Occupancy rate 1-rare 2-occasional 3-frequent 4-constant	Practical to move target?	Restriction practical?
		Target within drip line	Target within 1 x Ht.	Target within 1.5 x Ht.			
1	House	<input checked="" type="checkbox"/>			4	no	no
2	Car	<input checked="" type="checkbox"/>			1	yes	yes
3	Pedestrian	<input checked="" type="checkbox"/>			1	yes	yes
4							

## Site Factors

History of failures Yes, History of limb failure on site      Topography Flat  Slope       % Aspect       
 Site changes None  Grade change  Site clearing  Changed soil hydrology  Root cuts  Describe Installation of driveway in CRZ  
 Soil conditions Limited volume  Saturated  Shallow  Compacted  Pavement over roots  40 % Describe Driveway 12" from trunk  
 Prevailing wind direction      Common weather Strong winds  Ice  Snow  Heavy rain  Describe Heavy seasonal weather

## Tree Health and Species Profile

Vigor Low  Normal  High  Foliage None (seasonal)  None (dead)  Normal      % Chlorotic      % Necrotic      %  
 Pests      Abiotic Driveway installation and landscaping  
 Species failure profile Branches  Trunk  Roots  Describe Red oak is a fairly failure-resistant. Root disease in old age is primary concern.

## Load Factors

Wind exposure Protected  Partial  Full  Wind funneling       Relative crown size Small  Medium  Large   
 Crown density Sparse  Normal  Dense  Interior branches Few  Normal  Dense  Vines/Mistletoe/Moss        
 Recent or planned change in load factors     

## Tree Defects and Conditions Affecting the Likelihood of Failure

### — Crown and Branches —

Unbalanced crown  LCR 33 % Cracks       Lightning damage   
 Dead twigs/branches  5 % overall Max. dia. 6-8" Codominant  Large leader with bark inclusion Included bark   
 Broken/Hangers Number      Max. dia.      Weak attachments       Cavity/Nest hole      % circ.  
 Over-extended branches  Previous branch failures       Similar branches present   
**Pruning history**  
 Crown cleaned  Thinned  Raised  Dead/Missing bark  Cankers/Galls/Burls  Sapwood damage/decay   
 Reduced  Topped  Lion-tailed  Conks  Heartwood decay        
 Flush cuts  Other      Response growth       
 Main concern(s)     

Load on defect N/A  Minor  Moderate  Significant        
 Likelihood of failure Improbable  Possible  Probable  Imminent      

### — Trunk —

Dead/Missing bark  Abnormal bark texture/color   
 Codominant stems  Included bark  Cracks   
 Sapwood damage/decay  Cankers/Galls/Burls  Sap ooze   
 Lightning damage  Heartwood decay  Conks/Mushrooms   
 Cavity/Nest hole 8 % circ. Depth 1 inch Poor taper   
 Lean 20 ° Corrected? yes  
 Response growth Yes  
 Main concern(s) Codominant leaders poor attachment  
Tree leans heavily towards the house.

Load on defect N/A  Minor  Moderate  Significant   
 Likelihood of failure Improbable  Possible  Probable  Imminent

### — Roots and Root Collar —

Collar buried/Not visible  Depth      Stem girdling   
 Dead  Decay  Conks/Mushrooms   
 Ooze  Cavity       % circ.  
 Cracks  Cut/Damaged roots  Distance from trunk       
 Root plate lifting  Soil weakness

Response growth       
 Main concern(s) Trunk flare buried, impact of driveway and construction damage.

Load on defect N/A  Minor  Moderate  Significant   
 Likelihood of failure Improbable  Possible  Probable  Imminent





**Picture above:** taken Thursday, March 26, 2020, 1:51:23 PM

The picture shows one of the leaders of the triple leader oak leaning over the driveway toward the house. The tree is located in the planting bed between the driveways of the two houses and has been impacted by the installation of the driveways, construction, and maintenance. One leader is leaning at approximately 18 to 20 degrees. According to Dr. Kim Coder, University of Georgia. Trees with a lean of 15-20 degrees should be considered for removal and as lean angle passes 20 degrees, structural failure risks are compounded geometrically. These recommendations **do not** take into consideration complications such as cut, damaged, or decayed roots, different soil types, the impacts of construction damage, or fill. All of these things can greatly affect the likelihood of failure.

**Pictures below:** Taken Monday, April 20, 2020, 12:42:24 PM

Show the leader that was leaning over the driveway toward the house after failure during the wind storm. It is clear from the pictures that the tree has been negatively impacted by the driveway, prior construction, and maintenance. The failure revealed the extent of the decay present in the base of the tree. It is likely that the other two leaders are in similar structural condition.



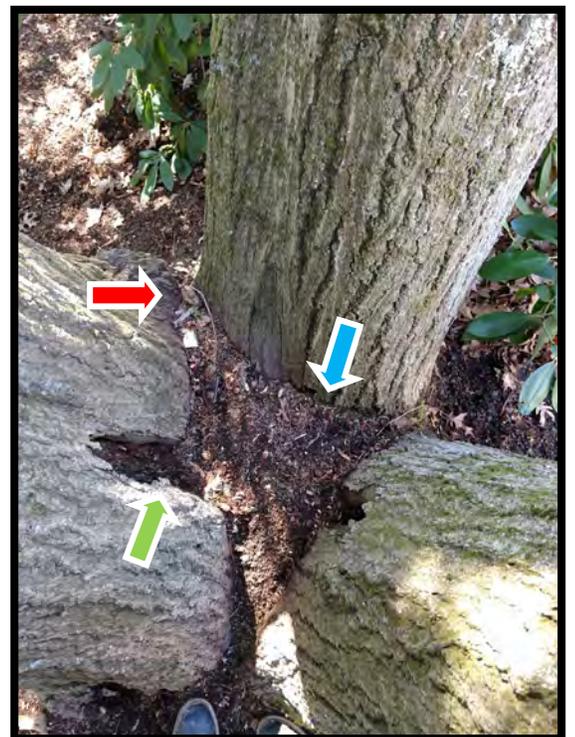


**Picture top left:** taken Thursday, March 26, 2020, 1:49:14 PM. Yellow arrow is pointing to the lack of trunk flare indicating that the grade was raised around this tree at some point in the past. The red arrow is indicating the proximity of the cobble stones and the edge of the driveway to the base of the tree. It is very likely that the root system of the tree has been damaged and is compromised in some way.

**Picture top right:** taken Thursday, March 26, 2020, 1:50:36 PM. Yellow arrow is pointing to the lack of trunk flare. The Green arrow is pointing to the trunk of the tree indicating past mechanical damage.

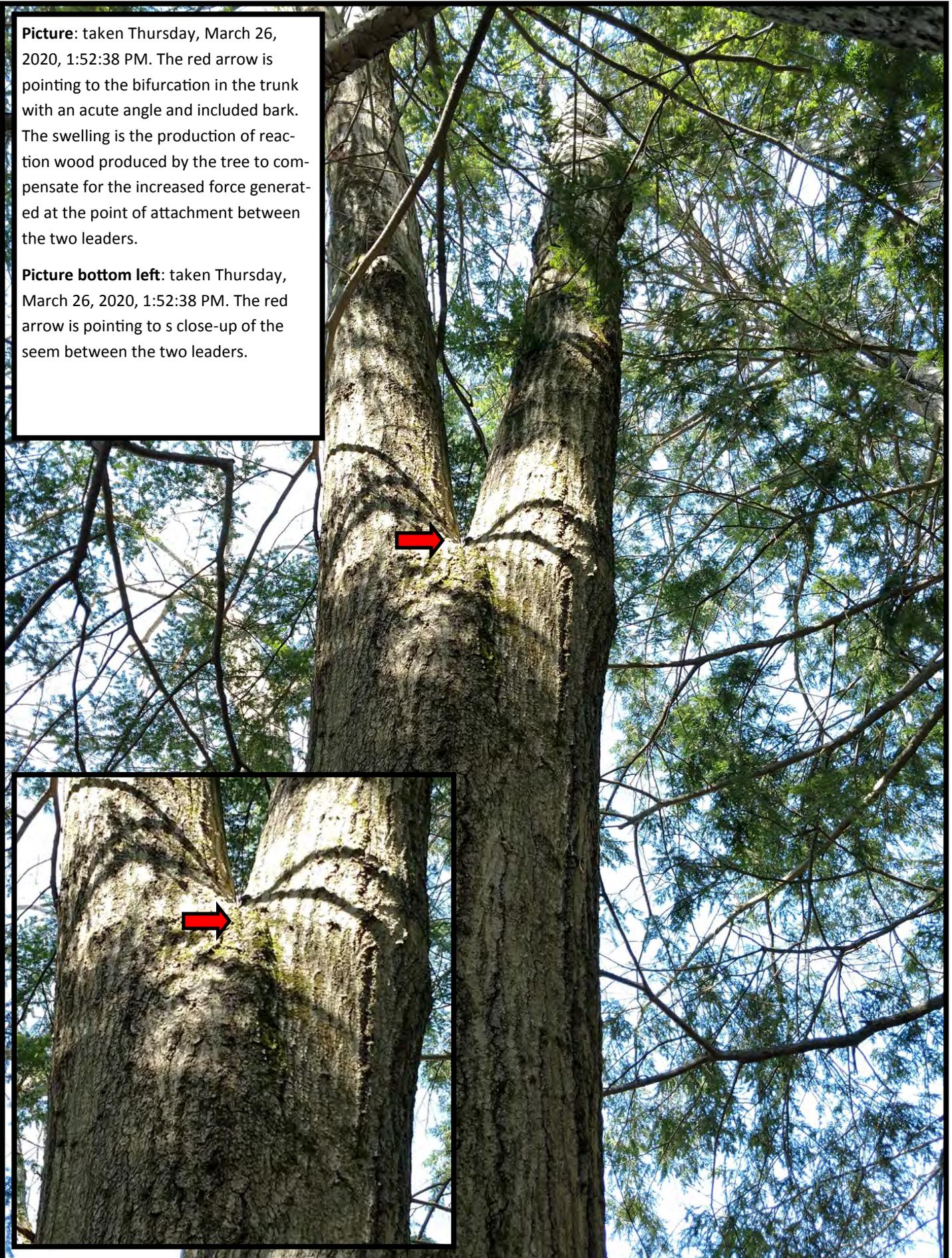
**Picture bottom left:** taken Thursday, March 26, 2020, 1:49:52 PM. The red arrow is indicating the seem with included bark between the leaders.

**Picture bottom left:** taken Thursday, March 26, 2020, 1:49:32 PM. Red arrow pointing to the included bark between the two leaders. Blue arrow indicating the mulch and composted material built up in the area between the leaders. This material holds moisture against the trunk of the tree. The green arrow is indicating mechanical damage to the trunk of the tree where there is an open cavity. The mulch and decomposing material between the trunks of the tree holds moisture against the trunk and any damage on the trunk providing a good environment for the decay fungi.



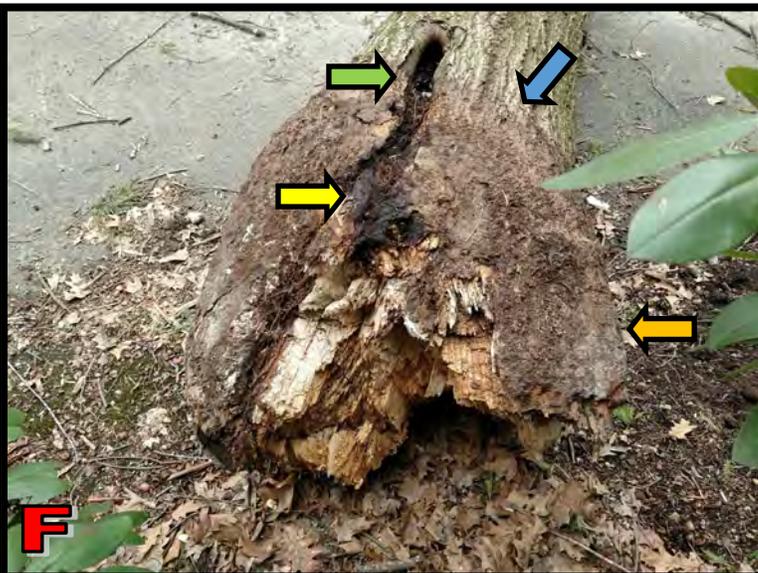
**Picture:** taken Thursday, March 26, 2020, 1:52:38 PM. The red arrow is pointing to the bifurcation in the trunk with an acute angle and included bark. The swelling is the production of reaction wood produced by the tree to compensate for the increased force generated at the point of attachment between the two leaders.

**Picture bottom left:** taken Thursday, March 26, 2020, 1:52:38 PM. The red arrow is pointing to a close-up of the seam between the two leaders.





**Picture:** taken Monday, April 20, 2020, 12:39:20 PM Shows the leaning leader that failed during the wind storm and hit the house.



A. Picture taken: Monday, April 20, 2020: Picture of the base of the tree showing the decay where the trunk failed. Notice there is no fiber tear or roots pulled out of the ground. The decay is quite extensive.

B. Picture taken: Monday, April 20, 2020: The red arrow is indicating the soil line on the trunk of the tree. The soil line is an indication of the amount of grade change around the tree. Notice there are no roots attached to the trunk.

C. Picture taken: Monday, April 20, 2020: Shows the trunk snapped off and the hole in the soil where the trunk was attached.

D. Picture taken: Monday, April 20, 2020: Shows the trunk across the driveway.

E. Picture taken: Monday, April 20, 2020: Picture of the back of the house and the damage caused by the tree.

F. Picture taken: Monday, April 20, 2020: Close up of the base of the tree. Green arrow pointing to the mechanical damage. The blue arrow pointing to the soil line on the trunk. The yellow arrow pointing to the discoloration. The orange arrow pointing to the included bark where the trunks of the tree grow together.



MARQUIS TREE SERVICE INC.,  
10 Republic Road, N. Billerica, MA 01862  
Tel: 781-860-9618 978-657-5633 781-272-6662

March 29, 2020

Town of Wellesley  
Tree Protection Plan

To Natural Resource Commission:

Tree Number ten on the tree protection plan for 81 Arnold Road, Wellesley, Ma. is a red oak tree located within the 20 foot "tree yard" set back area.

The tree is in good health and fair to poor structural condition.

The tree is located in the front of the house and has been impacted by past maintenance and construction. There is some concern regarding the damage to the base of the tree. Cracks, seams, swelling, abnormal bark patterns, and "Abnormal growth" are all indicators of potential structural issues. The presence of these characteristics can be an indication that there is decay present, however the extent of the decay is not known. Cracks and seams can also be a result of damage and/or decay in the roots. The main bifurcation of the trunk has an acute angle and there is included bark between the two leaders. This is notable due to the increased likelihood of failure associated with this characteristic. Due to the existing conditions it is my opinion that this tree is not a good candidate for retention.

It is my opinion that the oak tree should be removed.

If you have any questions, please feel free to call me at 978-877-8755

Respectfully,

MARQUIS TREE SERVICE, INC

Jay Webster  
Arborist  
ISA #NE-6330BUT

# ISA Basic Tree Risk Assessment Form

Client Matt Fruhan Date 2-26-2020 Time 4:50pm  
 Address/Tree location 81 Arnold Road, Wellesley, Ma. Tree no. 10 Sheet      of       
 Tree species Red Oak (Quercus rubra) dbh 30" Height 73 Feet Crown spread dia. 74 Feet  
 Assessor(s) Jay Webster Time frame 5 Years Tools used Tape Measure, Laser

## Target Assessment

Target number	Target description	Target zone			Occupancy rate 1-rare 2-occasional 3-frequent 4-constant	Practical to move target?	Restriction practical?
		Target within drip line	Target within 1 x Ht.	Target within 1.5 x Ht.			
1	Power lines	<input checked="" type="checkbox"/>			4	no	no
2	Car	<input checked="" type="checkbox"/>			1	yes	no
3	Pedestrians	<input checked="" type="checkbox"/>			1	yes	yes
4							

## Site Factors

History of failures Yes, Large limb failure. Topography Flat  Slope  % Aspect       
 Site changes None  Grade change  Site clearing  Changed soil hydrology  Root cuts  Describe Installation of driveway in CRZ  
 Soil conditions Limited volume  Saturated  Shallow  Compacted  Pavement over roots  20 % Describe Street within drip edge  
 Prevailing wind direction      Common weather Strong winds  Ice  Snow  Heavy rain  Describe Heavy seasonal weather

## Tree Health and Species Profile

Vigor Low  Normal  High  Foliage None (seasonal)  None (dead)  Normal      % Chlorotic      % Necrotic      %  
 Pests      Abiotic landscaping and grade change  
 Species failure profile Branches  Trunk  Roots  Describe Red oak is a fairly failure-resistant. Root disease in old age is primary concern.

## Load Factors

Wind exposure Protected  Partial  Full  Wind funneling       Relative crown size Small  Medium  Large   
 Crown density Sparse  Normal  Dense  Interior branches Few  Normal  Dense  Vines/Mistletoe/Moss        
 Recent or planned change in load factors Tree removal on site for construction.

## Tree Defects and Conditions Affecting the Likelihood of Failure

### — Crown and Branches —

Unbalanced crown  LCR 37 % Cracks       Lightning damage   
 Dead twigs/branches  2 % overall Max. dia. 6-8" Codominant  Large leader with bark inclusion      Included bark   
 Broken/Hangers Number      Max. dia.      Weak attachments       Cavity/Nest hole      % circ.  
 Over-extended branches  Previous branch failures  Large Limb      Similar branches present   
**Pruning history**  
 Crown cleaned  Thinned  Raised  Dead/Missing bark  Cankers/Galls/Burls  Sapwood damage/decay   
 Reduced  Topped  Lion-tailed  Conks  Heartwood decay   
 Flush cuts  Other      Response growth       
 Main concern(s) Large codominant leaders.

Load on defect N/A  Minor  Moderate  Significant        
 Likelihood of failure Improbable  Possible  Probable  Imminent      

### — Trunk —

Dead/Missing bark  Abnormal bark texture/color   
 Codominant stems  Included bark  Cracks   
 Sapwood damage/decay  Cankers/Galls/Burls  Sap ooze   
 Lightning damage  Heartwood decay  Conks/Mushrooms   
 Cavity/Nest hole      % circ. Depth      Poor taper   
 Lean      ° Corrected?     

Response growth Yes  
 Main concern(s) Abnormal bark patterns, seems, abnormal growth, dead and missing bark, reaction wood production.

Load on defect N/A  Minor  Moderate  Significant   
 Likelihood of failure Improbable  Possible  Probable  Imminent

### — Roots and Root Collar —

Collar buried/Not visible  Depth      Stem girdling   
 Dead  Decay  Conks/Mushrooms   
 Ooze  Cavity       % circ.  
 Cracks  Cut/Damaged roots  Distance from trunk       
 Root plate lifting  Soil weakness

Response growth       
 Main concern(s) Damage on one section of trunk extending into the soil. trunk flattened on one side.

Load on defect N/A  Minor  Moderate  Significant   
 Likelihood of failure Improbable  Possible  Probable  Imminent

**Risk Categorization**

Condition number	Tree part	Conditions of concern	Part size	Fall distance	Target number	Target protection	Likelihood												Consequences				Risk rating of part (from Matrix 2)
							Failure				Impact				Failure & Impact (from Matrix 1)				Negligible	Minor	Significant	Severe	
							Improbable	Possible	Probable	Imminent	Very low	Low	Medium	High	Unlikely	Somewhat	Likely	Very likely					
1	Canopy	Co-dominant leaders	18"	73'	1	none	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	High
			18"	73'	2	none	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Low
			18"	73'	3	none	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Low
2	Trunk	Construction damage	30"	73'	1	none	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Mod
			30"	73'	2	none	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Low
			30"	73'	3	none	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Low
3	Roots	Construction damage	30"	73'	1	none	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Mod
			30"	73'	2	none	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Low
			30"	73'	3	none	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Low
4							<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
							<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
							<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impacting Target			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

North

**Notes, explanations, descriptions** Large red oak with abnormal growth and bark patterns at the base. Missing and dead bark and reaction wood production. Included bark at main bifurcation of trunk the large leader leans heavily out over the road and the power lines. Tree has a history of failure.

**Mitigation options** Remove tree Residual risk Low  
 Reduction pruning, crown cleaning and installation of tree support system. Residual risk Moderate  
Residual risk  
Residual risk

**Overall tree risk rating** Low  Moderate  High  Extreme

**Work priority** 1  2  3  4

**Overall residual risk** Low  Moderate  High  Extreme

**Recommended inspection interval** \_\_\_\_\_

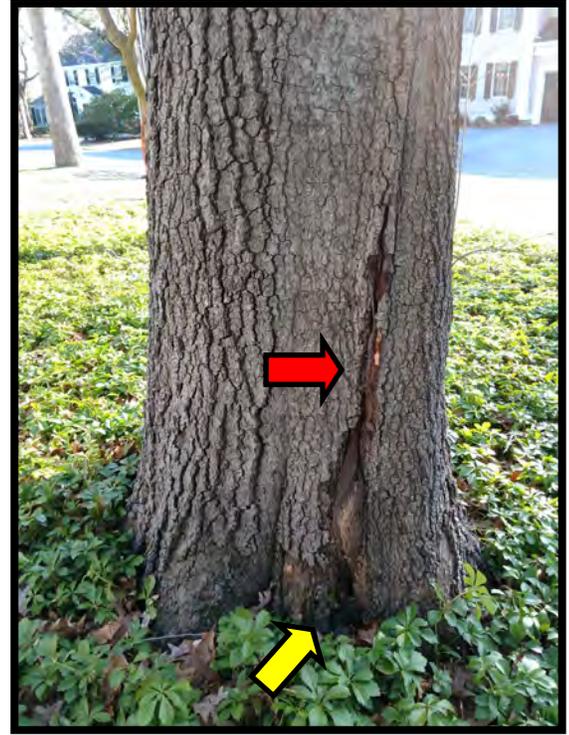
**Data**  Final  Preliminary **Advanced assessment needed**  No  Yes-Type/Reason \_\_\_\_\_

**Inspection limitations**  None  Visibility  Access  Vines  Root collar buried Describe \_\_\_\_\_



Picture: taken Thursday, March 26, 2020, 4:53:33 PM

The picture shows the red oak tree in the front of 81 Arnold Road. The tree is located in the lawn area directly in front of the house.



Picture top left: taken Thursday, March 26, 2020, 4:51:11 PM. Picture of the reaction wood production on the trunk. The red arrow is pointing to the location of the wound wood.

Picture top right: taken Thursday, March 26, 2020, 4:51:19 PM. The red arrow is pointing to the reaction wood and the yellow arrow is pointing to the dead spot at the base of the tree.

Picture bottom Left: taken Thursday, March 26, 2020, 4:51:53 PM. Picture of the abnormal growth and the abnormal bark patterns on the trunk.

Picture bottom middle: taken Thursday, March 26, 2020, 4:51:38 PM. Blue arrow is pointing to the flattening of the trunk and the green arrow is indicating the abnormal bark pattern.

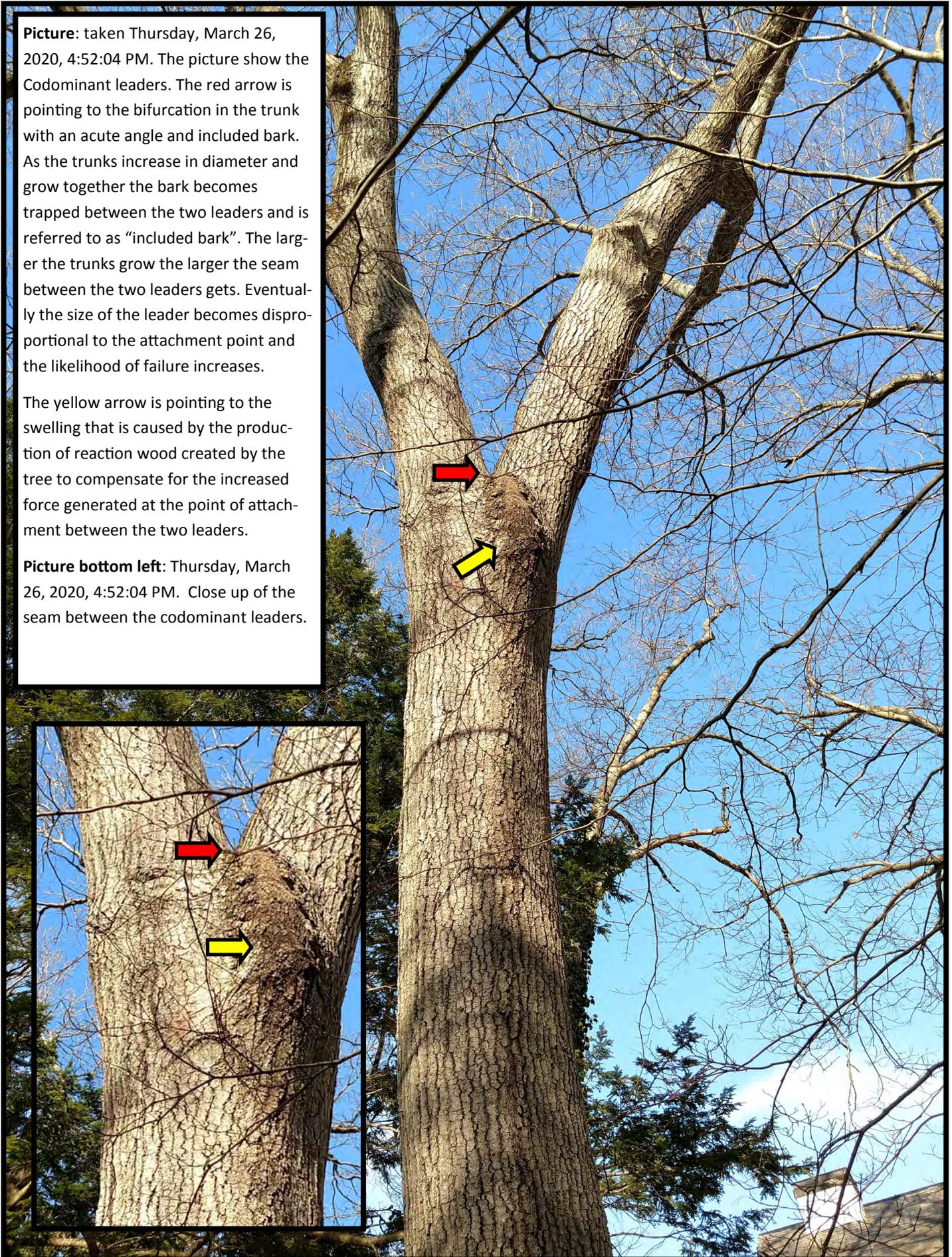
Picture bottom right: taken Thursday, March 26, 2020, 4:51:40 PM.



**Picture:** taken Thursday, March 26, 2020, 4:52:04 PM. The picture show the Codominant leaders. The red arrow is pointing to the bifurcation in the trunk with an acute angle and included bark. As the trunks increase in diameter and grow together the bark becomes trapped between the two leaders and is referred to as “included bark”. The larger the trunks grow the larger the seam between the two leaders gets. Eventually the size of the leader becomes disproportional to the attachment point and the likelihood of failure increases.

The yellow arrow is pointing to the swelling that is caused by the production of reaction wood created by the tree to compensate for the increased force generated at the point of attachment between the two leaders.

**Picture bottom left:** Thursday, March 26, 2020, 4:52:04 PM. Close up of the seam between the codominant leaders.





MARQUIS TREE SERVICE INC.,  
10 Republic Road, N. Billerica, MA 01862  
Tel: 781-860-9618 978-657-5633 781-272-6662

March 29, 2020

Town of Wellesley  
Tree Protection Plan

To Natural Resource Commission:

Tree Number eighteen on the tree protection plan for 81 Arnold Road, Wellesley, Ma. is an elm tree located within the 20 foot "tree yard" set back area.

The tree is in fair to poor health and fair to good structural condition.

The tree is located in a wooded portion of the lot in a low lying area. There is English Ivy growing on the trunk of the tree making it difficult to see the trunk and underlying structure. There is a cavity at the base of the tree however the extent of the decay is not known. There does not appear to be any obvious structural characteristics in the upper canopy that would increase the likelihood of failure. There is some concern about the health of the tree. The canopy appears thin and there seems to be some tip dieback. It is possible that the tree has Dutch elm disease. Due to the existing conditions it is my opinion that this tree is a poor candidate for retention.

It is my opinion that the Elm tree should be removed. Decision to retain this tree should take into consideration the scope of work in this area, proximity of the tree to any new structures, age of the tree, health of the tree and possible **disease concerns**.

If you have any questions, please feel free to call me at 978-877-8755

Respectfully,

MARQUIS TREE SERVICE, INC

Jay Webster  
Arborist  
ISA #NE-6330BUT

# ISA Basic Tree Risk Assessment Form

Client Matt Fruhan Date 2-26-2020 Time 4:27pm  
 Address/Tree location 81 Arnold Road, Wellesley, Ma. Tree no. 18 Sheet      of       
 Tree species Elm tree (Ulmus spp.) dbh 33" Height 82 Feet Crown spread dia. 70 Feet  
 Assessor(s) Jay Webster Time frame 5 Years Tools used Tape Measure, Laser

## Target Assessment

Target number	Target description	Target zone			Occupancy rate 1 - rare 2 - occasional 3 - frequent 4 - constant	Practical to move target?	Restriction practical?
		Target within drip line	Target within 1 x Ht.	Target within 1.5 x Ht.			
1	Power lines	<input checked="" type="checkbox"/>			4	no	no
2	Car	<input checked="" type="checkbox"/>			1	yes	yes
3	Pedestrian	<input checked="" type="checkbox"/>			1	yes	yes
4							

## Site Factors

History of failures Yes, History of limb failure on site      Topography Flat  Slope       % Aspect       
 Site changes None  Grade change  Site clearing  Changed soil hydrology  Root cuts  Describe       
 Soil conditions Limited volume  Saturated  Shallow  Compacted  Pavement over roots       % Describe       
 Prevailing wind direction      Common weather Strong winds  Ice  Snow  Heavy rain  Describe Heavy seasonal weather

## Tree Health and Species Profile

Vigor Low  Normal  High  Foliage None (seasonal)  None (dead)  Normal      % Chlorotic      % Necrotic      %  
 Pests      Abiotic       
 Species failure profile Branches  Trunk  Roots  Describe All are prone to disease. internal decay. branch failure from snow and ice

## Load Factors

Wind exposure Protected  Partial  Full  Wind funneling       Relative crown size Small  Medium  Large   
 Crown density Sparse  Normal  Dense  Interior branches Few  Normal  Dense  Vines/Mistletoe/Moss  English Ivy  
 Recent or planned change in load factors Tree removal on site for construction.

## Tree Defects and Conditions Affecting the Likelihood of Failure

### — Crown and Branches —

Unbalanced crown  LCR 20 % Cracks       Lightning damage   
 Dead twigs/branches  5 % overall Max. dia. 1-2" Codominant       Included bark   
 Broken/Hangers Number      Max. dia.      Weak attachments       Cavity/Nest hole      % circ.  
 Over-extended branches  Previous branch failures       Similar branches present   
**Pruning history**  
 Crown cleaned  Thinned  Raised  Dead/Missing bark  Cankers/Galls/Burls  Sapwood damage/decay   
 Reduced  Topped  Lion-tailed  Conks  Heartwood decay        
 Flush cuts  Other      Response growth       
 Main concern(s)     

Load on defect N/A  Minor  Moderate  Significant   
 Likelihood of failure improbable  Possible  Probable  Imminent

### — Trunk —

Dead/Missing bark  Abnormal bark texture/color   
 Codominant stems  Included bark  Cracks   
 Sapwood damage/decay  Cankers/Galls/Burls  Sap ooze   
 Lightning damage  Heartwood decay  Conks/Mushrooms   
 Cavity/Nest hole 3 % circ. Depth 1' 6" Poor taper   
 Lean      ° Corrected?       
 Response growth Yes  
 Main concern(s) Cavity at base of tree 6"W x 2'4"L x 1'6"D

Load on defect N/A  Minor  Moderate  Significant   
 Likelihood of failure improbable  Possible  Probable  Imminent

### — Roots and Root Collar —

Collar buried/Not visible  Depth      Stem girdling   
 Dead  Decay  Conks/Mushrooms   
 Ooze  Cavity       % circ.  
 Cracks  Cut/Damaged roots  Distance from trunk       
 Root plate lifting  Soil weakness   
 Response growth       
 Main concern(s) Tree in low area and there is ledge present

Load on defect N/A  Minor  Moderate  Significant   
 Likelihood of failure improbable  Possible  Probable  Imminent

**Risk Categorization**

Condition number	Tree part	Conditions of concern	Part size	Fall distance	Target number	Target protection	Likelihood												Consequences				Risk rating of part (from Matrix 2)
							Failure				Impact				Failure & Impact (from Matrix 1)								
							Improbable	Possible	Probable	Imminent	Very low	Low	Medium	High	Unlikely	Somewhat	Likely	Very likely	Negligible	Minor	Significant	Severe	
1	Trunk	Cavity	33"	82'	1	none	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Low						
			33"	82'	2	yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Low						
			33"	82'	3	yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Low						
2	Roots	soil conditions	33"	82'	1	none	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Low						
			33"	82'	2	yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Low						
			33"	82'	3	yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Low						
3						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impacting Target			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

North

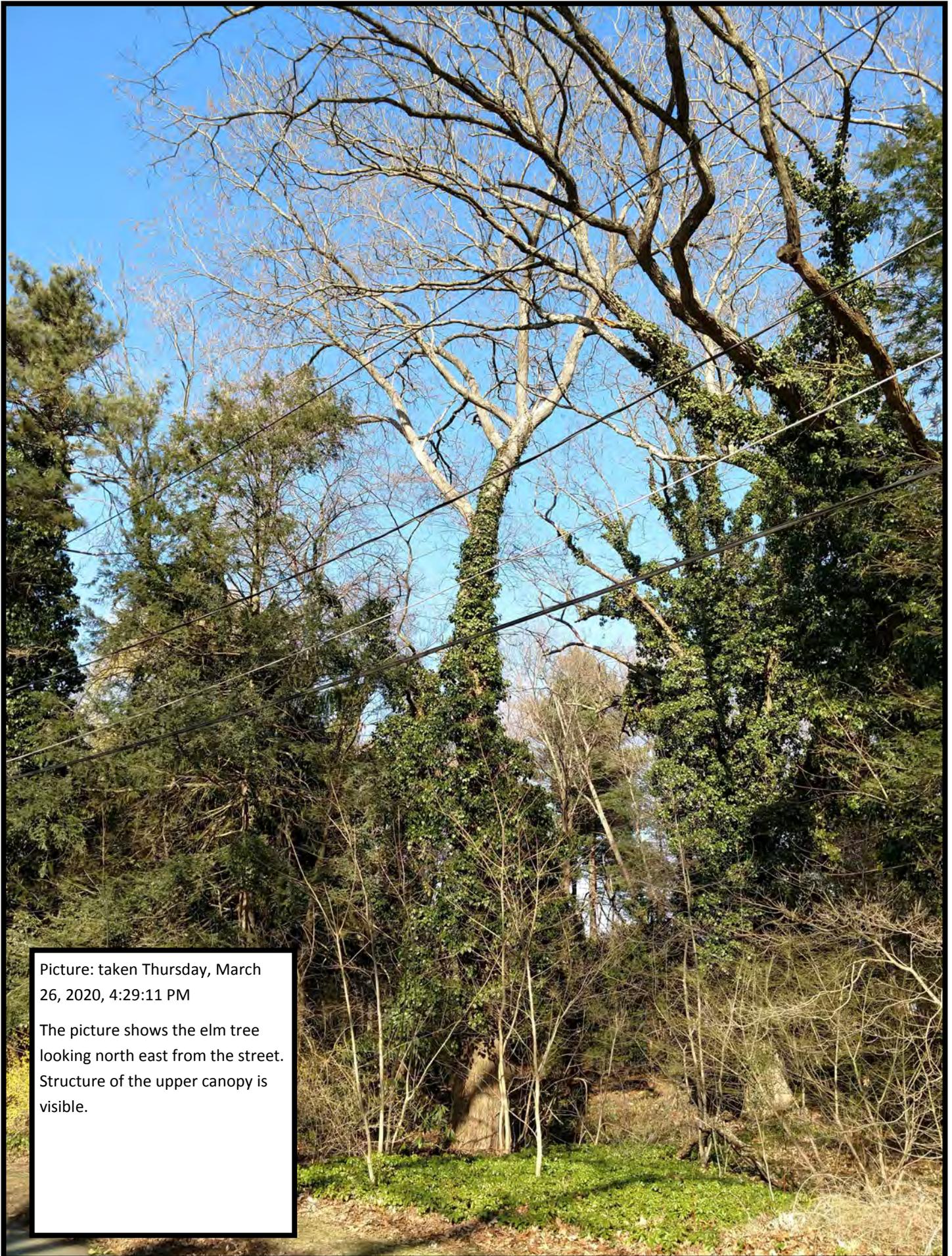
**Notes, explanations, descriptions** Large elm tree covered with english ivy. Tree has a cavity at the base, extent of decay is not known.  
 There appears to be fair amount of tip dieback. The health of the tree may be a concern. If the tree has Dutch elm disease the risk rating of the tree will change as it declines.

**Mitigation options** Remove tree Residual risk Low  
 Crown clean and inspect structure in upper canopy, remove vines on trunk. Residual risk Low  
 \_\_\_\_\_ Residual risk \_\_\_\_\_  
 \_\_\_\_\_ Residual risk \_\_\_\_\_

**Overall tree risk rating** Low  Moderate  High  Extreme  **Work priority** 1  2  3  4   
**Overall residual risk** Low  Moderate  High  Extreme  **Recommended inspection interval** \_\_\_\_\_

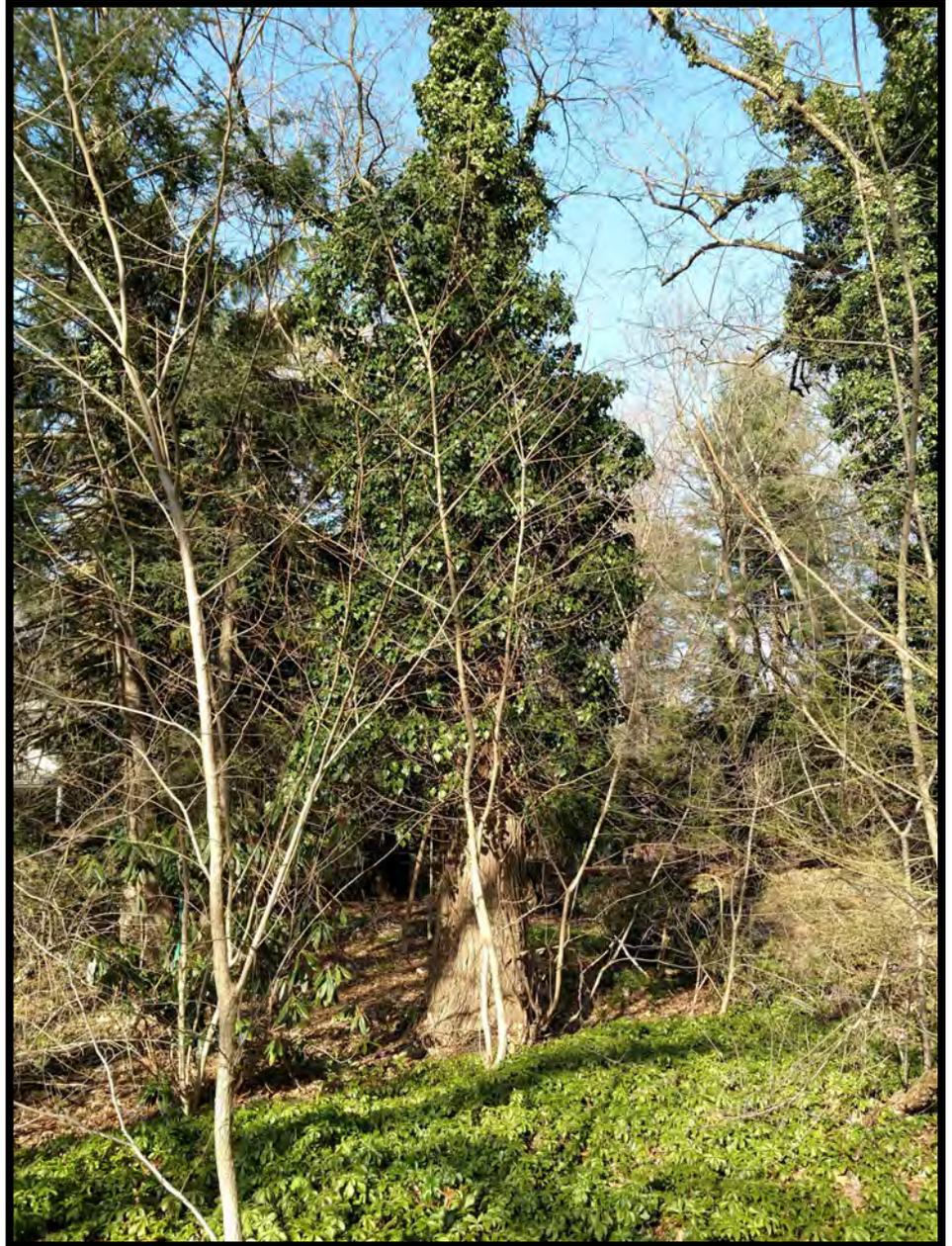
**Data**  Final  Preliminary **Advanced assessment needed**  No  Yes-Type/Reason Inspect canopy, Monitor foliage throughout spring.

**Inspection limitations**  None  Visibility  Access  Vines  Root collar buried Describe \_\_\_\_\_



Picture: taken Thursday, March 26, 2020, 4:29:11 PM

The picture shows the elm tree looking north east from the street. Structure of the upper canopy is visible.



Picture top left: taken Thursday, March 26, 2020, 4:29:44 PM. The yellow arrow indicating the location of the cavity at the base of the trunk. The extent of the decay is unknown.

Picture middle left: taken Thursday, March 26, 2020, 4:30:02 PM. Image is a close up of the base of the tree.

Picture bottom left: taken Thursday, March 26, 2020, 4:29:57 PM. The image shows the ivy at the base of the tree.

Picture top right: taken Thursday, March 26, 2020, 4:28:01 PM. Shows the English ivy on the trunk of the tree reducing visibility of the structure.



MARQUIS TREE SERVICE INC.,  
10 Republic Road, N. Billerica, MA 01862  
Tel: 781-860-9618 978-657-5633 781-272-6662

March 29, 2020

Town of Wellesley  
Tree Protection Plan

To Natural Resource Commission:

Tree Number twenty three on the tree protection plan for 81 Arnold Road, Wellesley, Ma. is a dead maple tree located within the 20 foot "tree yard" set back area.

The tree is dead and is located in a wooded portion of the lot in the back of the house near the property line. There is euonymus growing up the trunk and the tree is leaning toward the neighbors shed. There is a large open cavity running down the length of the trunk from an old limb failure. The tree is hollow in places and the decay is advanced.

It is my opinion that the tree should be removed for safety reasons.

If you have any questions, please feel free to call me at 978-877-8755

Respectfully,

MARQUIS TREE SERVICE, INC

Jay Webster  
Arborist  
ISA #NE-6330BUT

# ISA Basic Tree Risk Assessment Form

Client Matt Fruhan Date 2-26-2020 Time 3:33pm  
 Address/Tree location 81 Arnold Road, Wellesley, Ma. Tree no. 23 Sheet      of       
 Tree species Red Oak (Quercus rubra) dbh 18" Height 53 Feet Crown spread dia. 25 Feet  
 Assessor(s) Jay Webster Time frame 5 Years Tools used Tape Measure, Laser

## Target Assessment

Target number	Target description	Target zone			Occupancy rate 1 - rare 2 - occasional 3 - frequent 4 - constant	Practical to move target?	Restriction practical?
		Target within drip line	Target within 1 x Ht.	Target within 1.5 x Ht.			
1	Shed	✓			4	no	no
2	Pool House	✓			4	no	no
3							
4							

## Site Factors

History of failures Yes, History of limb failure on site Topography Flat  Slope       % Aspect       
 Site changes None  Grade change  Site clearing  Changed soil hydrology  Root cuts  Describe       
 Soil conditions Limited volume  Saturated  Shallow  Compacted  Pavement over roots       % Describe       
 Prevailing wind direction      Common weather Strong winds  Ice  Snow  Heavy rain  Describe Heavy seasonal weather

## Tree Health and Species Profile

Vigor Low  Normal  High  Foliage None (seasonal)  None (dead)  Normal      % Chlorotic      % Necrotic      %  
 Pests      Abiotic Driveway installation and landscaping  
 Species failure profile Branches  Trunk  Roots  Describe The tree is dead.

## Load Factors

Wind exposure Protected  Partial  Full  Wind funneling  Relative crown size Small  Medium  Large   
 Crown density Sparse  Normal  Dense  Interior branches Few  Normal  Dense  Vines/Mistletoe/Moss  Euonymus       
 Recent or planned change in load factors Tree removal on site for construction.

## Tree Defects and Conditions Affecting the Likelihood of Failure

### — Crown and Branches —

Unbalanced crown  LCR 0 % Cracks  Lightning damage   
 Dead twigs/branches       % overall Max. dia.      Codominant  Included bark   
 Broken/Hangers Number      Max. dia.      Weak attachments  Cavity/Nest hole      % circ.  
 Over-extended branches  Previous branch failures  Similar branches present   
**Pruning history**  
 Crown cleaned  Thinned  Raised  Dead/Missing bark  Cankers/Galls/Burls  Sapwood damage/decay   
 Reduced  Topped  Lion-tailed  Conks  Heartwood decay   
 Flush cuts  Other      Response growth     

Main concern(s) The tree is dead and has euonymus growing on it which adds weight to the tree increasing the possibility of a failure.

Load on defect N/A  Minor  Moderate  Significant   
 Likelihood of failure Improbable  Possible  Probable  Imminent

### — Trunk —

Dead/Missing bark  Abnormal bark texture/color   
 Codominant stems  Included bark  Cracks   
 Sapwood damage/decay  Cankers/Galls/Burls  Sap ooze   
 Lightning damage  Heartwood decay  Conks/Mushrooms   
 Cavity/Nest hole 20 % circ. Depth 6-8" Poor taper   
 Lean      ° Corrected?     

Response growth       
 Main concern(s) The tree is dead and there is a large open cavity from and old limb failure running down the trunk.

Load on defect N/A  Minor  Moderate  Significant   
 Likelihood of failure Improbable  Possible  Probable  Imminent

### — Roots and Root Collar —

Collar buried/Not visible  Depth      Stem girdling   
 Dead  Decay  Conks/Mushrooms   
 Ooze  Cavity       % circ.  
 Cracks  Cut/Damaged roots  Distance from trunk       
 Root plate lifting  Soil weakness

Response growth       
 Main concern(s) The tree is dead.

Load on defect N/A  Minor  Moderate  Significant   
 Likelihood of failure Improbable  Possible  Probable  Imminent

**Risk Categorization**

Condition number	Tree part	Conditions of concern	Part size	Fall distance	Target number	Target protection	Likelihood												Consequences				Risk rating of part (from Matrix 2)		
							Failure				Impact				Failure & Impact (from Matrix 1)				Negligible	Minor	Significant	Severe			
							Improbable	Possible	Probable	Imminent	Very low	Low	Medium	High	Unlikely	Somewhat	Likely	Very likely							
1	Trunk		18"	53'	1	yes	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Low						
			18"	53'	2	yes	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mod					
							<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2	Roots		18"	53'	1	yes	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Low						
			18"	53'	2	yes	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mod					
							<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impacting Target			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

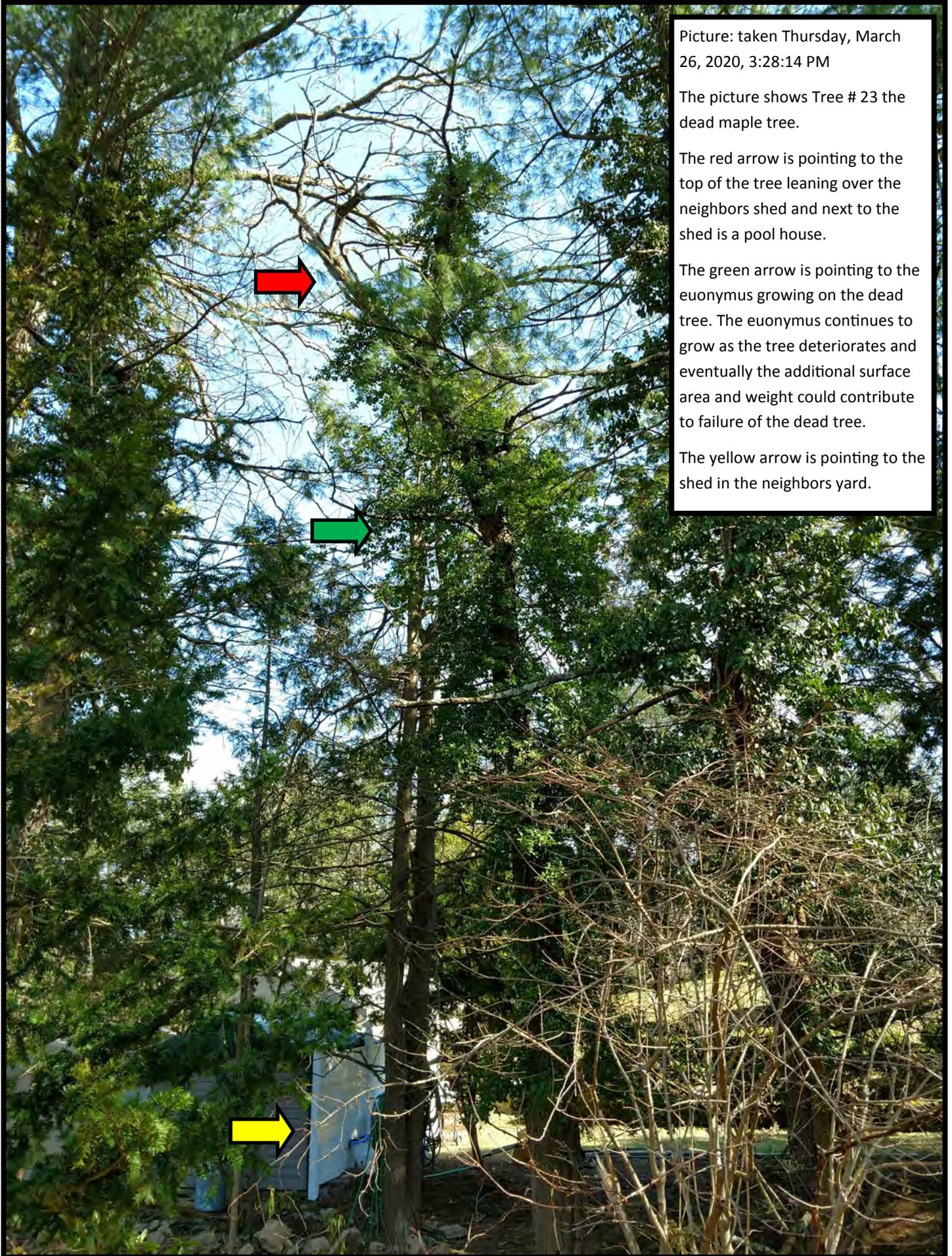
Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Notes, explanations, descriptions The tree is dead and structurally unstable. The tree should be removed.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Mitigation options Remove tree Residual risk Low  
 \_\_\_\_\_ Residual risk \_\_\_\_\_  
 \_\_\_\_\_ Residual risk \_\_\_\_\_  
 \_\_\_\_\_ Residual risk \_\_\_\_\_

Overall tree risk rating Low  Moderate  High  Extreme  Work priority 1  2  3  4   
 Overall residual risk Low  Moderate  High  Extreme  Recommended inspection interval \_\_\_\_\_

Data  Final  Preliminary Advanced assessment needed  No  Yes-Type/Reason \_\_\_\_\_  
 Inspection limitations  None  Visibility  Access  Vines  Root collar buried Describe \_\_\_\_\_



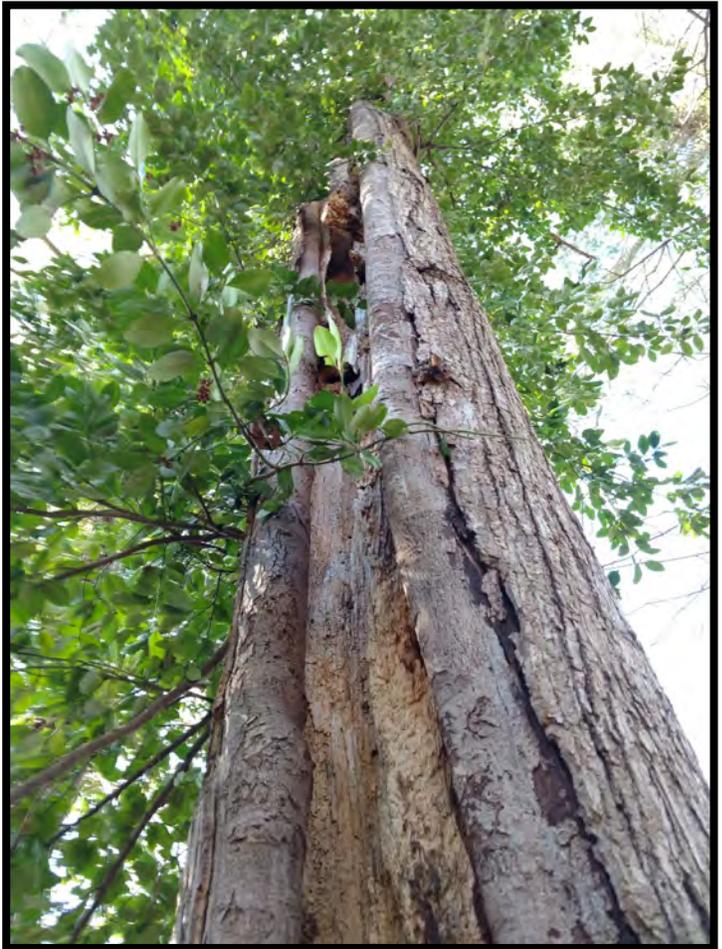
Picture: taken Thursday, March 26, 2020, 3:28:14 PM

The picture shows Tree # 23 the dead maple tree.

The red arrow is pointing to the top of the tree leaning over the neighbors shed and next to the shed is a pool house.

The green arrow is pointing to the euonymus growing on the dead tree. The euonymus continues to grow as the tree deteriorates and eventually the additional surface area and weight could contribute to failure of the dead tree.

The yellow arrow is pointing to the shed in the neighbors yard.



Picture top left: taken Thursday, March 26, 2020, 3:27:27 PM. Shows the decay at the base of the tree.

Picture top right: taken Thursday, March 26, 2020, 3:33:12 PM. Shows the tear down the side of the trunk and the decay

Picture bottom left: Thursday, March 26, 2020, 3:37:27 PM. Shows the damage on the side of the trunk from an old limb failure.

Picture bottom middle: Thursday, March 26, 2020, 3:32:39 PM. Shows trunk and euonymus.

Picture bottom right: Thursday, March 26, 2020, 3:37:27 PM. Shows the damage at the base of the tree.





MARQUIS TREE SERVICE INC.,  
10 Republic Road, N. Billerica, MA 01862  
Tel: 781-860-9618 978-657-5633 781-272-6662

March 29, 2020

Town of Wellesley  
Tree Protection Plan

To Natural Resource Commission:

Tree Number thirty two on the tree protection plan for 81 Arnold Road, Wellesley, Ma. is a red oak tree located within the 20 foot "tree yard" set back area.

The tree is in fair to poor health and fair to poor structural condition.

The tree is located in a wooded portion of the lot on the east side of the property. There is some concern regarding the health and the structure of the tree. The branching in the canopy of the tree does not appear full, the interior branching is sparse. These can be indications that the tree is under stress or declining. The tree is covered in English Ivy extending almost to the top of the tree. The English Ivy can add surface area and weight to the tree potentially affecting the trees likelihood of failure. There is a cavity located about 8 to 10 feet above the ground in the trunk. The extent of the decay is not known. The cavity is on the back side of the lean or the tension side of the tree. Wood fiber is much stronger under tensile loading than under compressive loading, as a result much of the structural integrity of a tree relies on the tensile strength of the wood. Any decay or deviation of the wood fiber can affect the structural integrity of the tree. Due to the existing conditions it is my opinion that this tree is not a good candidate for retention.

It is my opinion that the tree should be removed for health and structural reasons. The decision to retain this tree should take the scope of work in this area and the proximity of the tree to any new structures into consideration.

If you have any questions, please feel free to call me at 978-877-8755

Respectfully,

MARQUIS TREE SERVICE, INC

Jay Webster  
Arborist  
ISA #NE-6330BUT

# ISA Basic Tree Risk Assessment Form

Client Matt Fruhan Date 2-26-2020 Time 3:41pm  
 Address/Tree location 81 Arnold Road, Wellesley, Ma. Tree no. 32 Sheet      of       
 Tree species Red Oak (Quercus rubra) dbh 33" Height 62 Feet Crown spread dia. 40 Feet  
 Assessor(s) Jay Webster Time frame 5 Years Tools used Tape Measure, Laser

## Target Assessment

Target number	Target description	Target zone			Occupancy rate 1-rare 2-occasional 3-frequent 4-constant	Practical to move target?	Restriction practical?
		Target within drip line	Target within 1 x Ht.	Target within 1.5 x Ht.			
1	Putting green		✓		4	no	no
2							
3							
4							

## Site Factors

History of failures Yes, History of limb failure on site Topography Flat  Slope  % Aspect       
 Site changes None  Grade change  Site clearing  Changed soil hydrology  Root cuts  Describe       
 Soil conditions Limited volume  Saturated  Shallow  Compacted  Pavement over roots  % Describe       
 Prevailing wind direction      Common weather Strong winds  Ice  Snow  Heavy rain  Describe Heavy seasonal weather

## Tree Health and Species Profile

Vigor Low  Normal  High  Foliage None (seasonal)  None (dead)  Normal     % Chlorotic     % Necrotic     %  
 Pests      Abiotic       
 Species failure profile Branches  Trunk  Roots  Describe Red oak is a fairly failure-resistant. Root disease in old age is primary concern.

## Load Factors

Wind exposure Protected  Partial  Full  Wind funneling  Relative crown size Small  Medium  Large   
 Crown density Sparse  Normal  Dense  Interior branches Few  Normal  Dense  Vines/Mistletoe/Moss  English Ivy   
 Recent or planned change in load factors Tree removal on site for construction.

## Tree Defects and Conditions Affecting the Likelihood of Failure

### — Crown and Branches —

Unbalanced crown  LCR 40 %  
 Dead twigs/branches  5 % overall Max. dia. 4-6"  
 Broken/Hangers Number      Max. dia.       
 Over-extended branches   
 Pruning history  
 Crown cleaned  Thinned  Raised   
 Reduced  Topped  Lion-tailed   
 Flush cuts  Other       
 Cracks  Lightning damage   
 Codominant  Included bark   
 Weak attachments  Cavity/Nest hole      % circ.  
 Previous branch failures  Similar branches present   
 Dead/Missing bark  Cankers/Galls/Burls  Sapwood damage/decay   
 Conks  Heartwood decay   
 Response growth     

Main concern(s) Structure obscured by Ivy growing on approximately 90% of the tree. Ivy can add weight and surface area adding force that could contribute to failure.

Load on defect N/A  Minor  Moderate  Significant   
 Likelihood of failure Improbable  Possible  Probable  Imminent

### — Trunk —

Dead/Missing bark  Abnormal bark texture/color   
 Codominant stems  Included bark  Cracks   
 Sapwood damage/decay  Cankers/Galls/Burls  Sap ooze   
 Lightning damage  Heartwood decay  Conks/Mushrooms   
 Cavity/Nest hole 8 % circ. Depth 1 inch Poor taper   
 Lean 10 ° Corrected? yes

Response growth Yes  
 Main concern(s) The tree branches low on trunk and leans heavily. There is a cavity 8 to 10 up. trunk sounds hollow.

Load on defect N/A  Minor  Moderate  Significant   
 Likelihood of failure Improbable  Possible  Probable  Imminent

### — Roots and Root Collar —

Collar buried/Not visible  Depth      Stem girdling   
 Dead  Decay  Conks/Mushrooms   
 Ooze  Cavity  % circ.  
 Cracks  Cut/Damaged roots  Distance from trunk       
 Root plate lifting  Soil weakness

Response growth       
 Main concern(s) Tree growing on the edge of a slope there is ledge present. Unbalanced crown

Load on defect N/A  Minor  Moderate  Significant   
 Likelihood of failure Improbable  Possible  Probable  Imminent





Picture Top left: taken Thursday, March 26, 2020, 3:45:58 PM. The picture shows the cavity in the side of the trunk. The extent of the decay is not known. An off center open cavity can affect the structural stability of the trunk.

Picture Top right: taken Thursday, March 26, 2020, 3:46:31 PM. Shows the tree leaning toward the neighbors yard. The red arrow is pointing to the location of the cavity.

Picture Bottom left: taken Thursday, March 26, 2020, 3:43:21 PM. Shows how much of the tree is covered by ivy. Eventually the ivy will grow to the top of the canopy. The picture also shows the lean of the tree.



Picture: taken Thursday, March 26, 2020, 3:43:21 PM

The picture shows the lean of the tree. The red arrow is pointing to the ivy that has grown into the upper canopy of the tree. The ivy can add surface area and weight to the tree potentially increasing the possibility of failure. The picture also shows the lack of interior growth, thin branching and sparse growth in the top of the tree.



MARQUIS TREE SERVICE INC.,  
10 Republic Road, N. Billerica, MA 01862  
Tel: 781-860-9618 978-657-5633 781-272-6662

March 29, 2020

Town of Wellesley  
Tree Protection Plan

To Natural Resource Commission:

Tree Number thirty seven on the tree protection plan for 81 Arnold Road, Wellesley, Ma. is a red oak tree located within the 20 foot "tree yard" set back area.

The tree is in fair to good health and fair to poor structural condition.

The tree is located on the north side of the lot in a wooded area. This triple leader oak tree has structural characteristics known to increase the likelihood of failure. There is "included bark" present at the junctions of all 3 leaders. This characteristic is known to affect the structural stability of the tree. In addition to the codominant leaders there are mushrooms growing at two locations on the base of the tree. The mushrooms are unidentified, however they are usually an indication of decay. Some types of fungi only produce mushrooms at an advanced state of decay while others produce mushrooms much earlier in the process. The extent of the decay is unknown. Due to the existing conditions it is my opinion that this tree is a poor candidate for retention.

It is my opinion that this oak tree should be removed.

If you have any questions, please feel free to call me at 978-877-8755

Respectfully,

MARQUIS TREE SERVICE, INC

Jay Webster  
Arborist  
ISA #NE-6330BUT

# ISA Basic Tree Risk Assessment Form

Client Matt Fruhan Date 2-26-2020 Time 4:00pm  
 Address/Tree location 81 Arnold Road, Wellesley, Ma. Tree no. 37 Sheet      of       
 Tree species Red Oak (Quercus rubra) dbh 22", 17", 13" Height 66 Feet Crown spread dia. 50 Feet  
 Assessor(s) Jay Webster Time frame 5 Years Tools used Tape Measure, Laser

## Target Assessment

Target number	Target description	Target zone			Occupancy rate 1-rare 2-occasional 3-frequent 4-constant	Practical to move target?	Restriction practical?
		Target within drip line	Target within 1 x Ht.	Target within 1.5 x Ht.			
1							
2							
3							
4							

## Site Factors

History of failures Yes, History of limb failure on site Topography Flat  Slope  % Aspect       
 Site changes None  Grade change  Site clearing  Changed soil hydrology  Root cuts  Describe       
 Soil conditions Limited volume  Saturated  Shallow  Compacted  Pavement over roots  % Describe       
 Prevailing wind direction      Common weather Strong winds  Ice  Snow  Heavy rain  Describe Heavy seasonal weather

## Tree Health and Species Profile

Vigor Low  Normal  High  Foliage None (seasonal)  None (dead)  Normal     % Chlorotic     % Necrotic     %  
 Pests      Abiotic       
 Species failure profile Branches  Trunk  Roots  Describe Red oak is a fairly failure-resistant. Root disease in old age is primary concern.

## Load Factors

Wind exposure Protected  Partial  Full  Wind funneling  Relative crown size Small  Medium  Large   
 Crown density Sparse  Normal  Dense  Interior branches Few  Normal  Dense  Vines/Mistletoe/Moss   
 Recent or planned change in load factors     

## Tree Defects and Conditions Affecting the Likelihood of Failure

### — Crown and Branches —

Unbalanced crown  LCR 29 % Cracks  Lightning damage   
 Dead twigs/branches  5 % overall Max. dia. 12" Codominant  Included bark   
 Broken/Hangers Number      Max. dia.      Weak attachments  Cavity/Nest hole      % circ.  
 Over-extended branches  Previous branch failures  Similar branches present   
**Pruning history**  
 Crown cleaned  Thinned  Raised  Dead/Missing bark  Cankers/Galls/Burls  Sapwood damage/decay   
 Reduced  Topped  Lion-tailed  Conks  Heartwood decay   
 Flush cuts  Other      Response growth     

Main concern(s) Large dead limb

Load on defect N/A  Minor  Moderate  Significant   
 Likelihood of failure Improbable  Possible  Probable  Imminent

### — Trunk —

Dead/Missing bark  Abnormal bark texture/color   
 Codominant stems  Included bark  Cracks   
 Sapwood damage/decay  Cankers/Galls/Burls  Sap ooze   
 Lightning damage  Heartwood decay  Conks/Mushrooms   
 Cavity/Nest hole      % circ. Depth      Poor taper   
 Lean 10 ° Corrected? Yes  
 Response growth Yes

Main concern(s) Codominant leaders poor attachment signs of mushrooms at the base of the tree.

Load on defect N/A  Minor  Moderate  Significant   
 Likelihood of failure Improbable  Possible  Probable  Imminent

### — Roots and Root Collar —

Collar buried/Not visible  Depth      Stem girdling   
 Dead  Decay  Conks/Mushrooms   
 Ooze  Cavity  % circ.  
 Cracks  Cut/Damaged roots  Distance from trunk       
 Root plate lifting  Soil weakness

Response growth       
 Main concern(s)     

Load on defect N/A  Minor  Moderate  Significant   
 Likelihood of failure Improbable  Possible  Probable  Imminent





Picture above: taken Thursday, March 26, 2020, 4:05:11 PM: The red arrow is pointing to the remanence of mushrooms growing at the base of the tree. Mushroom production can be a sign of decay in the tree.

Picture lower left: taken Thursday, March 26, 2020, 4:05:56 PM: The yellow arrow is pointing to the seem between the two trunks of the tree. The red circle is around the remanence of mushrooms at the base of the tree. There are two locations mushrooms growing on the tree.

Picture lower middle: Thursday, March 26, 2020, 4:05:44 PM: Yellow arrows pointing to locations where the trunks of the tree are growing together with "included bark". The red circle is around one of the two locations mushrooms are growing at the base of the tree.

Picture lower right: March 26, 2020, 4:05:44 PM: Red circle around the mushroom growth at second location on the base of the tree.





Picture: taken Thursday, March 26, 2020, 4:06:30 PM

The picture shows the Triple leader oak tree.

## Medium Wall Lantern

Wall mounted • Wet location listed **PROGRESS LED**



### Description:

LED wall lantern with etched white linen glass. Includes dark sky shield for full cut-off illumination or remove for a traditional lighting effect. 120V AC replaceable LED module, 1,211 lumens 71.2 lumens/watt per module (source). 3000K color temperature and 90+ CRI.

### Specifications:

- Black (-31) (powder coat paint)
- Aluminum Construction
- Etched White Linen glass cylindrical diffuser
- LED Module is replaceable (part # 93053641)
- Etched white linen glass.
- Includes removable dark sky shield for full cut-off illumination.
- Powder coated finish.
- 1,211 lumens 71.2 lumens/watt per module (source)
- 3000K color temperature, 90+ CRI.
- Dimmable to 10% brightness (See Dimming Notes)
- Back plate covers a standard 4" octagonal recessed outlet box
- Mounting strap for outlet box included
- 6" of wire supplied
- ENERGY STAR® qualified
- Meets California Title 24 high efficacy requirements for outdoor use only

### Performance:

Number of Modules	1
Input Power	17w
Input Voltage	120 V
Input Frequency	60 Hz
Lumens/LPW (Source)	1211/71.2 (LM-82)
Lumens/LPW (Delivered)	234/14.1 (LM-79)
CCT	3000 K
CRI	90 CRI
Life (hours)	60,000 (L70/TM-21)
FCC	Meets FCC Title 47, Part 15 Class B
Min. Start Temp	-30 °C
Max. Operating Temp	30 °C
Warranty	5 year warranty
Labels	cCSAus Wet location listed ENERGY STAR® qualified Meets California Title 24 high efficacy requirements for outdoor use only

## P6085-3130K9

### Images:



### Dimensions:

Width: 9"  
Depth: 10-1/2"  
Height: 12-1/2"  
H/CTR: 3-1/8"

Glass  
Width: 5-5/16"  
Height: 7-3/8"

## P6085-3130K9

### Dimming Notes:

---

P6085 is designed to be compatible with many ELV/Reverse Phase controls.

The following is a partial list of known compatible dimmer controls.

### Dimming Controls

---

Lutron Nova T NTELV-300

Lutron Verti VTELV-600

Lutron Maestro MAELV-600

Lutron spacer/system SPSELV-600

Leviton Renoir II AWRMG-EAW

Dimming capabilities will vary depending on the dimmer control, load, and circuit installation. Always refer to dimmer manufacturer instructions or a controls specialist for specific requirements.

Dimmer control brand names where identified above are trade names or registered trademarks of each respective company.

Project Number  
15.00828



**HUBBELL**  
Lighting

Date  
5/20/2015

LAB 1

### Test Sample Description

Catalog Number: P6085-3130K9  
Description: WISH - 1-Lt. Med. LED Wall Lantern w/ HAL 17W Module

Test Method: IES LM-79-08 § 10  
Preburn Time: 00:30  
Time To Stabilize: 1:17  
Total Operating Time: 2:34  
  
Input Voltage (Volts): 120.0  
Input Current (Amps): 0.149  
Input Wattage (Watts): 16.6  
Ambient Temp (°C): 25.2



**Hubbell Lighting, Inc.**  
701 Millennium Boulevard  
Greenville, SC 29607  
www.hubbellighting.com

Checked: D. ROBBINS  
Approved: M. WASHBURN





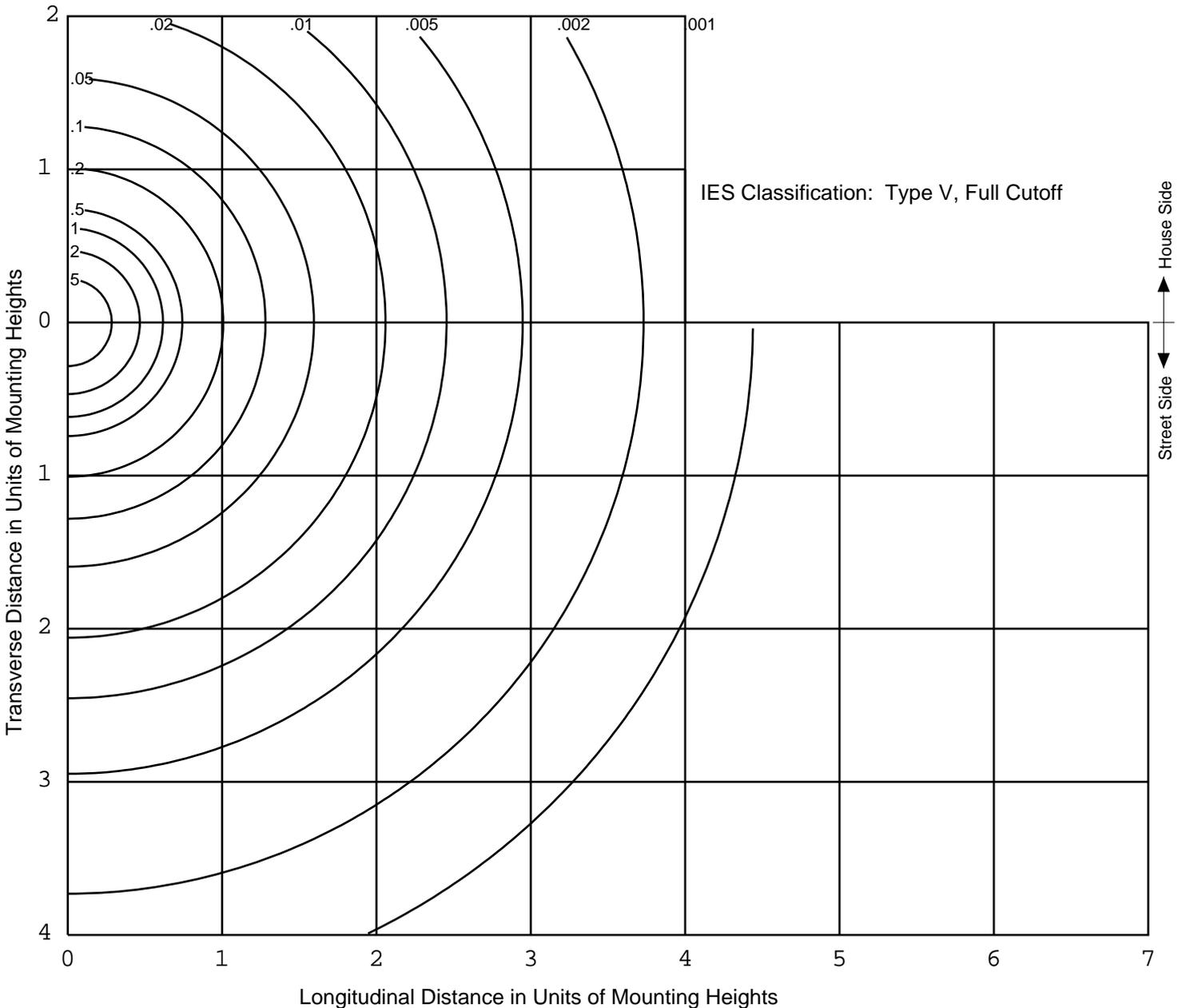
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**ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION**  
Values based on 6.6 foot mounting height.

REPORT NUMBER: 15.00828  
ISSUE DATE: 05/20/15 PAGE: 2 OF 9  
PREPARED FOR: PROGRESS  
CATALOG NUMBER: P6085-3130K9  
LUMINAIRE: WISH - 1-Lt. Med. LED Wall  
Lantern w/ HAL 17W Module  
LAMP CAT. NO.: 93047261-4130  
LAMP: 40 - NICHIA 3000K LEDs  
REFRACTOR: Etched White Linen Glass  
Shade Part# 93061284 w/ Metal  
Cylinder painted Gloss White insert  
MOUNTING: WALL  
NOTE: DATA SHOWN IS ABSOLUTE FOR THE  
SAMPLE PROVIDED.





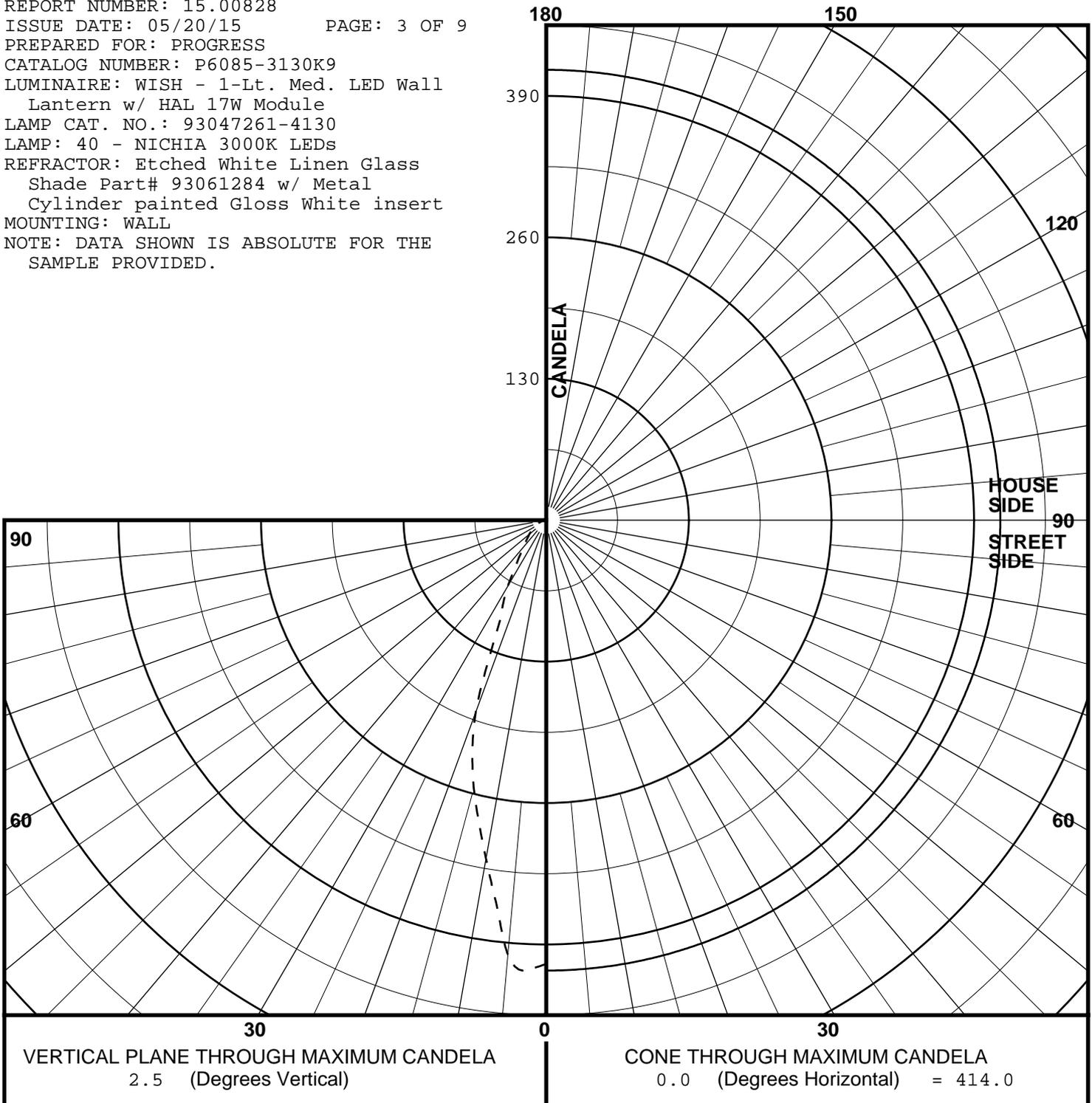
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MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

REPORT NUMBER: 15.00828  
 ISSUE DATE: 05/20/15 PAGE: 3 OF 9  
 PREPARED FOR: PROGRESS  
 CATALOG NUMBER: P6085-3130K9  
 LUMINAIRE: WISH - 1-Lt. Med. LED Wall  
 Lantern w/ HAL 17W Module  
 LAMP CAT. NO.: 93047261-4130  
 LAMP: 40 - NICHIA 3000K LEDs  
 REFRACTOR: Etched White Linen Glass  
 Shade Part# 93061284 w/ Metal  
 Cylinder painted Gloss White insert  
 MOUNTING: WALL  
 NOTE: DATA SHOWN IS ABSOLUTE FOR THE  
 SAMPLE PROVIDED.





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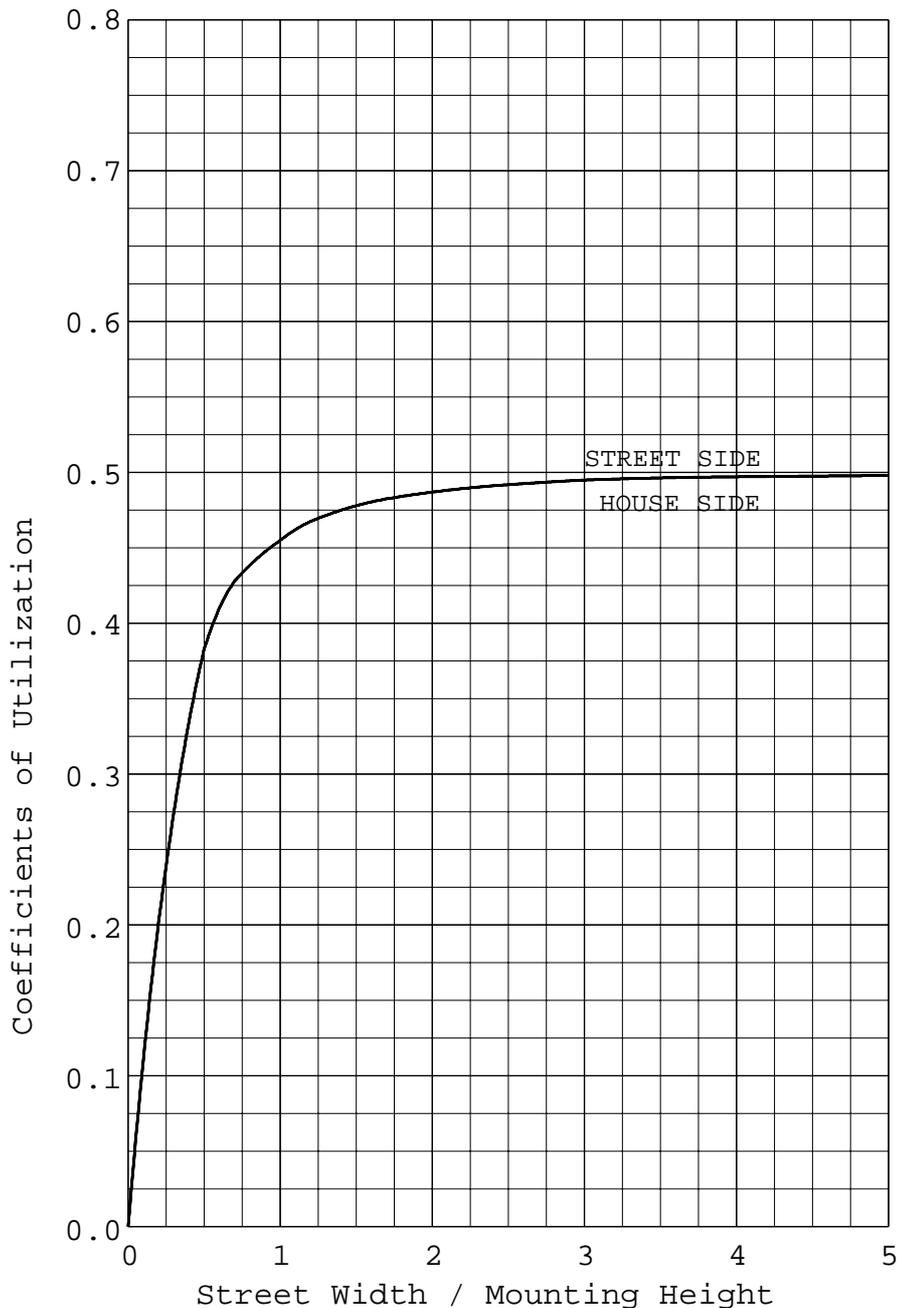
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REPORT NUMBER: 15.00828  
ISSUE DATE: 05/20/15  
PREPARED FOR: PROGRESS

PAGE: 4 OF 9

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	117.	50.0
DOWNWARD HOUSE SIDE	117.	50.0
DOWNWARD TOTAL	234.	100.0
UPWARD STREET SIDE	0.	0.0
UPWARD HOUSE SIDE	0.	0.0
UPWARD TOTAL	0.	0.0
TOTAL FLUX	234.	100.0
TOTAL INPUT WATTS = 16.6		
EFFICACY = 14.1 Lm/W		

ALL CANDELA AND LUMENS IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

THIS REPORT IS BASED ON PUBLISHED INDUSTRY PROCEDURES. FIELD PERFORMANCE MAY DIFFER FROM LABORATORY PERFORMANCE.



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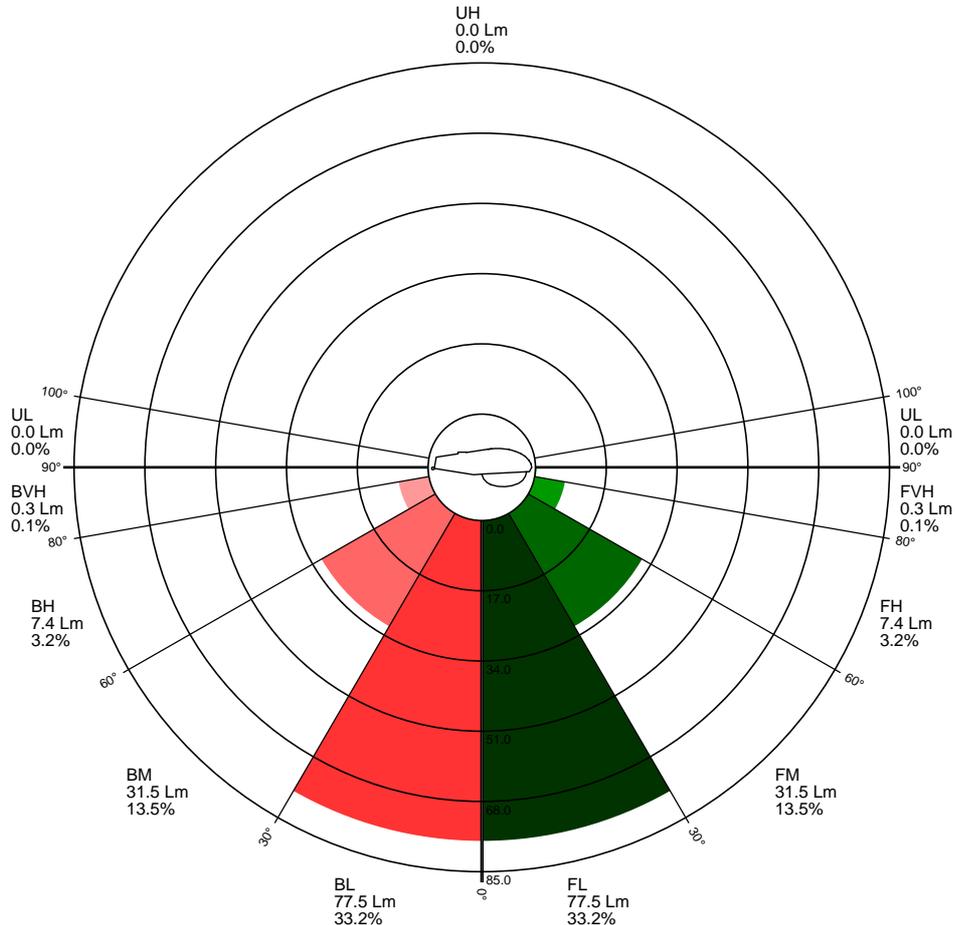
REPORT NUMBER: 15.00828  
ISSUE DATE: 05/20/15  
PREPARED FOR: PROGRESS

PAGE: 5 OF 9

BUG Rating: Zonal Summary	Lumens	% of Fixture	Zone Ratings		
			B	U	G
Forward	117	50.0			
FL (0° - 30°)	77.5	33.2			
FM (30° - 60°)	31.5	13.5			
FH (60° - 80°)	7.4	3.2			G0
FVH (80° - 90°)	0.3	0.1			G0
Backward	117	50.0			
BL (0° - 30°)	77.5	33.2	B0		
BM (30° - 60°)	31.5	13.5	B0		
BH (60° - 80°)	7.4	3.2	B0		G0
BVH (80° - 90°)	0.3	0.1			G0
Upward	0	0.0			
UL (90° - 100°)	0.0	0.0		U0	
UH (100° - 180°)	0.0	0.0		U0	
Trapped Light	0	0.0			
Total Flux	234	100.0			

**Zonal Lumen Summary**

(Linear scale)





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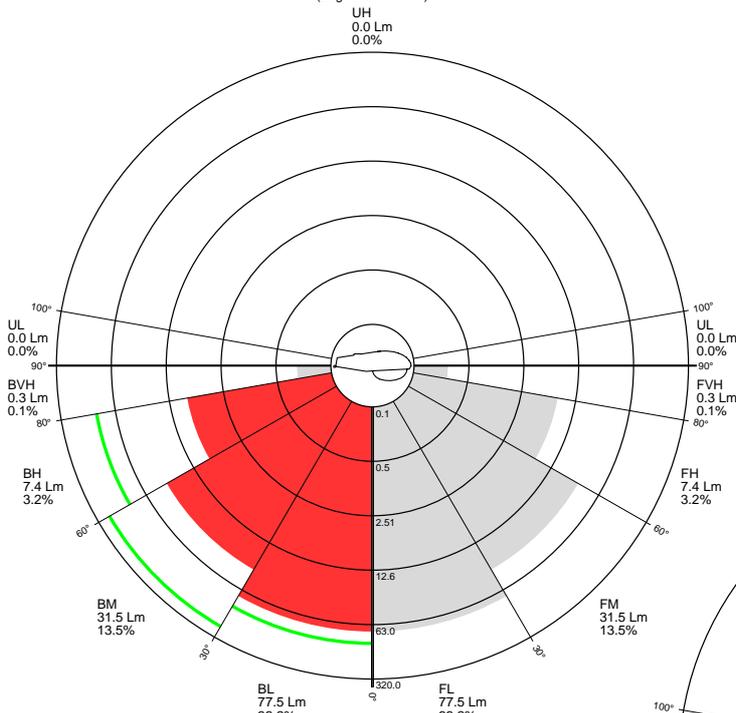
NVLAP LAB CODE: 201003-0

REPORT NUMBER: 15.00828  
ISSUE DATE: 05/20/15  
PREPARED FOR: PROGRESS

PAGE: 6 OF 9

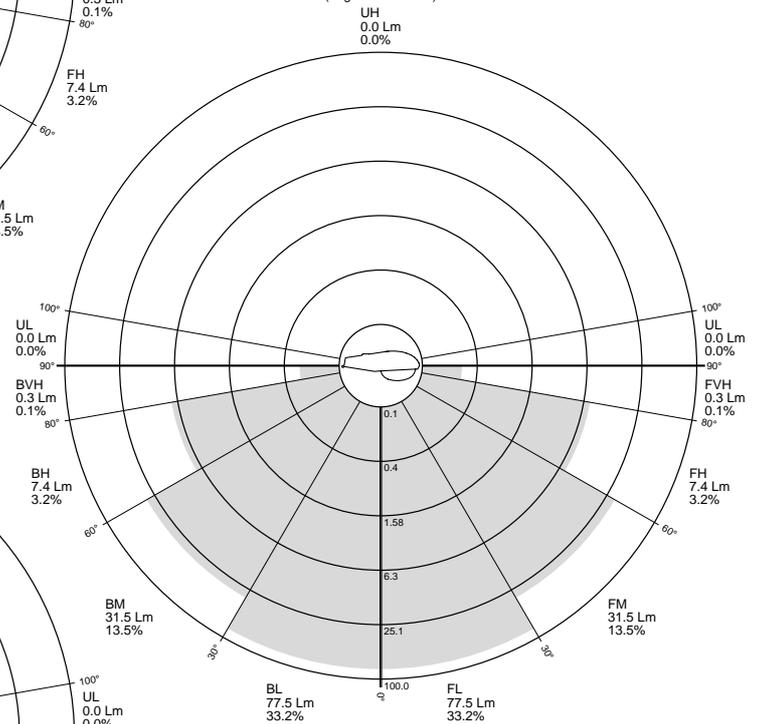
**Backlight Rating Details**

(Logarithmic scale)



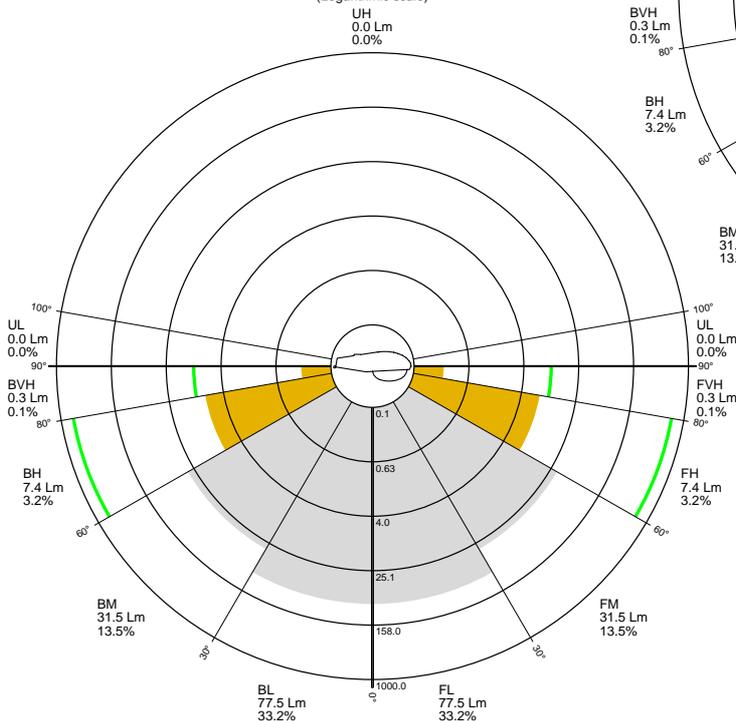
**Uplight Rating Details**

(Logarithmic scale)



**Glare Rating Details**

(Logarithmic scale)





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REPORT NUMBER: 15.00828  
ISSUE DATE: 05/20/15  
PREPARED FOR: PROGRESS  
CANDELA TABULATION -- TYPE V

PAGE: 7 OF 9

90.0	0.
87.5	0.
85.0	0.
82.5	1.
80.0	2.
77.5	4.
75.0	5.
72.5	6.
70.0	7.
67.5	8.
65.0	10.
62.5	11.
60.0	13.
57.5	14.
55.0	16.
52.5	18.
50.0	20.
47.5	22.
45.0	25.
42.5	28.
40.0	33.
37.5	38.
35.0	45.
30.0	70.
25.0	98.
20.0	188.
15.0	255.
10.0	316.
5.0	401.
2.5	414.<<
0.0	408.

<< INDICATES MAXIMUM CANDELA



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REPORT NUMBER: 15.00828  
ISSUE DATE: 05/20/15  
PREPARED FOR: PROGRESS

PAGE: 8 OF 9

5-DEGREE  
ZONAL LUMEN SUMMARY

0- 5	10
5- 10	25
10- 15	34
15- 20	37
20- 25	29
25- 30	21
30- 35	16
35- 40	13
40- 45	11
45- 50	9
50- 55	8
55- 60	7
60- 65	5
65- 70	4
70- 75	3
75- 80	2
80- 85	1
85- 90	0

10-DEGREE  
ZONAL LUMEN SUMMARY

0- 10	35
0- 20	105
0- 30	155
0- 40	184
0- 50	204
0- 60	218
0- 70	228
0- 80	233
0- 90	234

Project Number  
15.00828



**HUBBELL**  
Lighting

Date  
5/20/2015

### *Goniophotometer Calibration*

*Calibration Lamp:* GE 1000W, 120V, T6, CL (FEL)

*Lamp Number:* ITL78966-1000-38

*Calibration Current:* 8.300 Amps DC

*Total Luminous Flux:* 25753.0 Lumens

*Calibration Date:* 12/02/2014

### *Test Equipment Used*

<i>Instrument</i>	<i>Manufacturer / Model</i>	<i>S/N</i>	<i>Calibration Due:</i>
<i>Goniophotometer</i>	ITL / HLI LAB 1 - Test Distance: 31.75'	N/A	N/A
<i>Power Analyzer</i>	Yokogawa / WT 332	C2QA27071V	11/12/2015
<i>Power Source</i>	Voltage-Regulated House Power	N/A	N/A
<i>Thermometer</i>	National Instruments / USB-TC01	176F4E3	11/11/2015

### **Hubbell Lighting, Inc.**

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