84 LUMBER COMPANY SITE DEVELOPMENT

SP# 09-22

STAFF REPORT #5

(Please refer to 1/25/23, 2/22/23, 3/22/23, and 6/14/23 reports for earlier comments) August 23, 2023

SITE: 3 Sullivan Road; Map 145 Lot 015

ZONING: Industrial District (I)

PURPOSE OF PLAN: To depict the proposed lumber yard and associated site improvements over tax map 145 lot 15.

PLANS UNDER REVIEW:

Site Development Plans / 84 Lumber Company, Map 145 Lot 15, 3 Sullivan Road, Hudson, New Hampshire; prepared by: Fieldstone Land Consultants, PLLC, 206 Elm Street, Milford, NH 03055; prepared for 84 Lumber Company, 1019 Route 519, Building 4, Eighty Four, PA 15330; consisting of 11 sheets and general notes 1-26 on Sheet 2 and 3 Exhibit sheets; dated August 2, 2022; last revised August 10, 2023.

ATTACHMENTS:

- A. Environmental Noise Survey and Noise Impact Predictions for Proposed 84 Lumber Site Revision 3, Hudson, NH; Noise Control Engineering, LLC, received August 8, 2023.
- B. Peer review of Environmental Noise Survey and Noise Impact Predictions Revision 2, Harris Miller Miller & Hanson Inc., July 26, 2023.
- C. Response to Transportation Comments and revised Signal Warrant Analysis at Route 111 & Lawrence Rd./Sullivan Rd, for proposed 84 Lumber Site, Vanasse & Associates Inc., received August 8, 2023.
- D. Test Pit Report, Fieldstone Land Consultants, received August 10, 2023
- E. CAP Fee worksheet

APPLICATION TRACKING:

- August 2, 2022 Application received.
- January 25, 2023 Application accepted, public hearing held and continued.
- February 22, 2023 Public hearing held and continued.
- March 22, 2023 Public hearing held and continued to May 10, 2023.
- May 10, 2023 Deferred to June 14, 2023.
- June 14, 2023 Public hearing held and continued to July 26, 2023

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- July 26, 2023 Deferred to August 23, 2023
- August 23, 2023 Public Hearing Scheduled

WAIVER REQUESTS

1. §276-11.1 B(12)c: the applicant is requesting a waiver to allow a storm water management pond, fencing, and landscaping improvements within the 100' building setback line from adjacent residential properties.

COMMENTS & RECOMMENDATIONS:

REVISED SOUND STUDY

The Applicant submitted a revised Noise Survey and Noise Impact Predictions, intended to address prior comments from the peer review done by HMMH. The revisions clarified the locations for noise predictions, added a recommendation for a sound barrier, and remediated several minor errors. A third revision found in **Attachment A** was completed after further comments, to remediate final questions. The comments submitted by HMMH can be found in **Attachment B**. All comments have been answered or remediated in the third revision of the sound study. The report finds that the proposed development will comply with the Town of Hudson Noise Ordinance provided the following conditions outlined in the sound study are met:

- An acoustic barrier outlined in appendix C of the study and shown on the site plan is installed per the manufacturer's recommendations.
- Forklifts are equipped with ambient sensitive white noise back up alarms.
- Propone Forklifts be utilized on site.
- Idling laws are enforced for Heavy Trucks/Tractor Trailers
- Tractor Trailer or other Heavy Trucks are not present on Saturday.

TRAFFIC

The Applicant has provided a response to comments & questions received from the Planning Board in **Attachment C**, alongside comparable site data. Staff raised several methodology questions which have been answered.

Also within **Attachment C** is the Signal Warrant Analysis. As noted the Manual on Uniform Traffic Control Devices (MUTCD) has 9 criteria to evaluate the need for a traffic signal. At least one of them should be met to justify the installation of a signal, but meeting one does not by itself require a signal. This requires further engineering evaluation which is currently underway with NHDOT. In their analysis, the Applicant finds that Warrant #3 (peak hour) is currently met under existing conditions. Under No-Build (i.e. without the proposed development), the analysis predicts that and additional warrant (#2 - 4-hour volume) will be met in 2034. With the addition of the proposed development, the analysis predicts a third warrant will be met in 2034 (#1 - 8 hour volume). Although comparable site data predicts fewer trips than the ITE based model, the warrant analysis remains unchanged. To reiterate, the requirement of a traffic light at Sullivan Road/NH 111 is currently under review by, and authority of, NH DOT.

Last, the Applicant has submitted a reconfiguration of the Sullivan Road/Bridle Bridge Path/site driveway intersection, found as an exhibit at the end of the revised plan set. This proposal has been reviewed by Engineering, Fire, Planning, Police and Public Works, which resulted in the staff recommendation of a two-way stop at the site drive and Bridle Bridge Road, with Sullivan Road as the through-road, and vertical granite curbing to be installed along the reclaimed shoulder along the reconfigured approach.

RECOMMENDATION

A waiver request for the 100-foot buffer (\$276-11.1 B(12)c) is pending. As part of this, the Applicant has made arrangements with the abutting resident and has added acoustic fencing to the plan. The Board may wish to consider the waiver request while also reviewing the plan updates with the Applicant.

DRAFT MOTIONS

<u>GRANT</u> a waiver:

I move to grant a waiver from §276-11.1 B(12)c to allow a portion of the storm water management area within the 100-foot buffer, based on the Board's discussion, the testimony of the Applicant's representative, and in accordance with the language included in the submitted Waiver Request Form for said waiver.

Motion by: _____ Second: _____ Carried/Failed: _____

<u>CONTINUE</u> the public hearing to a date certain:

I move to continue the site plan application for the Site Development Plans / 84 Lumber Company, Map 145 Lot 15, 3 Sullivan Road, to date certain, _____, 2023.

Motion by: _____ Second: _____ Carried/Failed:

(Draft motions are on the next page)

<u>APPROVE</u> the site plan application:

I move to approve the Site Plan application for 84 Lumber Company, Map 145 Lot 15, 3 Sullivan Road, Hudson, New Hampshire; prepared by: Fieldstone Land Consultants, PLLC, 206 Elm Street, Milford, NH 03055; prepared for 84 Lumber Company, 1019 Route 519, Building 4, Eighty Four, PA 15330; consisting of 11 sheets and general notes 1-26 on Sheet 2 and 3 Exhibit sheets; dated August 2, 2022; last revised August 10, 2023.

That the Planning Board finds that this application complies with the Zoning Ordinances, and with the Land Use Regulations; and for the reasons set forth in the written submissions, together with the testimony and factual representations made by the applicant during the public hearing;

Subject to, and revised per, the following stipulations:

- 1. All stipulations of approval shall be incorporated into the Notice of Decision, which shall be recorded at the HCRD, together with the Plan.
- 2. A cost allocation procedure (CAP) amount of \$87,135.00 shall be paid prior to the issuance of a Certificate of Occupancy.
- 3. Prior to the issuance of a final certificate of occupancy, an L.L.S. Certified "as-built" site plan shall be provided to the Town of Hudson Land Use Division confirming that the development conforms to the Plan approved by the Planning Board.
- 4. Prior to the Planning Board endorsement of the Plan, it shall be subject to final administrative review by Town Planner and Town Engineer.
- 5. Prior to application for a building permit, the Applicant shall schedule a preconstruction meeting with the Town Engineer.
- 6. Construction activities involving the subject lot shall be limited to the hours between 7:00 A.M. and 7:00 P.M. No exterior construction activities shall be allowed on Sundays.
- 7. Hours of refuse removal shall be exclusive to the hours between 7:00 A.M. and 7:00 P.M., Monday through Friday only.
- 8. No woodcutting or wood processing shall occur on site.
- 9. Noise barriers recommended in the sound study shall be implemented according to manufacturer's specifications
- 10. Forklifts shall be propane-powered and equipped with ambient sensitive white noise backup alarms.
- 11. Tractor Trailer or other Heavy Trucks shall not be present on Saturdays.

Motion by:	Second:	Carried/Failed:	



NCE TECHNICAL MEMO 2023-021

Environmental Noise Survey and Noise Impact Predictions for Proposed 84 Lumber Site, Hudson, NH

Revision 3

Ben Bonnice Tyler Cameron Zachary Weiss

8/7/2023

NCE Job No. 23515.01

<u>Prepared for</u>: 84 Lumber Company 1019 Route 519, Building 5 Eighty Four, PA 15330 Attention: *Mr. Guy A. Flament, Jr.*

Prepared by: Noise Control Engineering, LLC 85 Rangeway Rd. Building 2, Floor 2 Billerica, MA 01862 978-670-5339 978-667-7047 (fax) noise-control.com

REVISION HISTORY

Rev	Date	Summary of Changes
0	03/21/2023	Original Issue
1	04/7/2023	Addition of Truck Noise Source, Modeling Refinements
2	7/17/2023	Updated to correct daytime/nighttime noise limits. Added Barrier to control noise. Added prediction locations. Updated HVAC Source Levels Reduced number of trucks servicing facility based on updated information from 84 Lumber
3	8/7/2023	Updated for Comments from HMMH and Town

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0.0 EXECUTIVE SUMMARY

An application for a permit has been requested for the construction and operation of an 84 Lumber facility at the corner of Sullivan Road and Central Street (Route 111) in Hudson, NH. As part of the permit, a noise study is required to determine if the operations of the proposed facility will meet the required noise ordinances. Noise Control Engineering, LLC (NCE) has been retained by the 84 Lumber Company to conduct an environmental noise survey quantifying existing noise levels, as well as to evaluate potential noise impacts to the community from the proposed site through acoustic predictions.

The primary noise sources from the proposed development are expected to be forklifts operating around the facility, trucks pulling in and out of the facility, and the building HVAC systems. This site is a storage and distribution yard. There will be no cutting or wood processing equipment at this facility. The forklifts are only expected to be operating while workers are onsite between 0600 and 1800 hours Monday through Saturday. During the weekdays, it is understood that no more than three tractor trailers will arrive in the morning period, and no more than three tractor trailers will arrive in the evening period. No tractor trailers or other heavy trucks will be operating on Saturdays. The HVAC systems are expected to be operating continuously. This report presents the results of background noise measurements taken on the proposed site and predicted noise levels for the site once operational.

To quantify existing noise levels, unattended long-term monitoring was performed at the two locations within the proposed site. Average hourly ambient levels ranged from 30 to 54 dB(A) across the two locations.

This effort is intended to evaluate compliance with the noise regulations for the Town of Hudson. Primarily, the noise at the abutting property lines cannot exceed 10 dB above the background noise level or the noise levels in Table 2, whichever is lower. Daytime hours are defined as 0700-1800 Monday through Friday. Nighttime hours are defined as 1800-0700 Monday through Friday and all day on weekends. Since the facility will be operating between 0600 and 0700 Monday through Friday and on Saturdays the facility will need to meet the nighttime noise limit during certain times. Based on the long-term noise measurements, the noise limits for the site are shown in Table 1.

Table 1. Noise Linnes, ub(A)				
Location	Daytime Limit	Operating Hours Nighttime Limit	Continuously Operating Equipment	
Residences along Route 111	55	50	44	
Residences along Sullivan Rd and Cheney Rd	54	50	40	

Table	1.	Noise	Limits,	dB(A)
abic	1.	110130	Linnes,	uD(11)

Noise predictions were performed using the environmental noise modeling software CadnaA configured with international standard ISO 9613-2. Sources for this site consisted of forklifts

operating during working hours, tractor trailers or other heavy trucks moving around the yard and HVAC operating continuously. The noise from these sources were predicted at 38 discrete locations corresponding to residences near the proposed facility and across the study area through the computation of noise contour sets.

All noise levels are predicted to comply with the Town of Hudson noise ordinance for the proposed 84 Lumber site. The highest noise level predicted during operating hours was 48 dB(A) at 8 Sullivan Rd when both forklifts and trucks are operating. The noise level predicted at the house for this location is 45 dB(A). The highest noise levels predicted from the HVAC was 34 dB(A) at 63 Lawrence Rd. This level is well below the required 40-44 dB(A) during nighttime, non-working hours. These predictions assume that the noise barrier in section 6.3 is installed per manufacturer's recommendations.

0.1 Abbreviations and Definitions

DAQC	Division of Air Quality Control
dB	Decibel
dB(A)	A-Weighted Decibel
LA _{eq}	The equivalent continuous A-weighted decibel sound pressure level
L90	The decibel level exceeded 90% of the Measurement Period
LA90	The A-weighted decibel level exceeded 90% of the Measurement Period
L _{max}	Maximum RMS Sound Pressure Level During Measurement Period
FHWA	Federal Highway Administration
NHGIS	New Hampshire Geographic Information
NCE	Noise Control Engineering, LLC
NIST	National Institute of Standards and Technology
HVAC	Heating Ventilation and Air Conditioning
Trucks	Trucks in the document refer to tractor trailers or other heavy trucks

1.0 INTRODUCTION

An application for a permit has been requested for the construction and operation of an 84 Lumber facility at the corner of Sullivan Road and Central Street (Route 111) in Hudson, NH. As part of the permit, a noise study is required to determine if the operations of the proposed facility will meet the required noise ordinances. Noise Control Engineering, LLC (NCE) has been retained by the 84 Lumber Company to conduct an environmental noise survey quantifying existing noise levels, as well as to evaluate potential noise impacts to the community from the proposed site through acoustic predictions.

The primary noise sources from the proposed development are expected to be forklifts operating around the facility, tractor trailers or other heavy trucks moving around the yard, and HVAC. This site is a storage and distribution yard. There will be no cutting or wood processing equipment at this facility. The forklifts and trucks are expected to be operating while workers are onsite between 0600 and 1800 hours. The HVAC systems are expected to be operating continuously. This report presents the results of background noise measurements taken on the proposed site and predicted noise levels for the site once operational.

This effort is intended to predict compliance with noise regulations for the state of New Hampshire and the Town of Hudson, NH. Section 2 presents the criteria from these regulations, Section 3 details the site, Section 4 details the ambient measurements, Section 5 details the Noise Criteria for the site, Section 6 details the noise modeling process, Section 7 presents the predicted levels from the noise model, and Section 8 includes the conclusion from the results. Appendix A provides full results tables for the noise predictions.

2.0 NOISE ORDINANCE

2.1 <u>New Hampshire</u>

The State of New Hampshire has not established regulations that set community noise exposure criteria. It is up to each individual community to establish noise regulations through community by-laws.

2.2 Hudson Noise Ordinance

Noise in the Town of Hudson, NH is regulated under Chapter 249 Noise in the Town's general code. All criteria from this chapter are copied below, including both quantitative and qualitative criteria, with NCE comments in square brackets. Analysis will focus on the quantitative criteria given in Noise Limits 2 to 6.

§ 249-4. Prohibited noise emissions and conditions.

No person or persons owning, leasing or controlling the operations of any source or sources of noise shall willfully, negligently or through failure to provide necessary equipment or facilities or through failure to take necessary precautions make or permit the emission of noise levels or conditions exceeding the following noise limits for the applicable land use:

§ 249-4-A. Noise Limit 1: General prohibition of noise emissions

No person or persons owning, leasing or controlling the operation of any source or sources of noise shall willfully, negligently or through failure to provide necessary equipment or facilities or to take necessary precautions permit the establishment of a condition or conditions constituting noise pollution, as defined in § 249-2 of this chapter.

§ 249-2 defines noise pollution as "The presence of that amount of acoustic energy for that amount of time necessary to cause one or more of the following effects:

- A. Temporary or permanent hearing loss in persons exposed.
- B. Injury to or tendency to injure, on the basis of current information, the public health or welfare.
- C. Nuisance
- D. Interference with the comfortable and reasonable enjoyment of life and property, or interference with the conduct of business.
- E. Exceeding the limits or restrictions established herein or pursuant to the granting of any permit by the Town governing body.

§ 249-4-B. Noise Limit 2: Continuous sound-level limits

No person shall cause the continuous sound level to exceed the following limits, as measured at the applicable locations in accordance with the provisions of § 249-3D(5) of this chapter. (which defines the necessary steps in taking sound-level measurements)

Receptor Land Use Category	Daytime	Nighttime
Residential/rural/institutional ¹	55	50
Business/recreational ²	65	55
Industrial	75	75

 Table 2: Continuous Sound Level Limits Leq (dB(A), 1-Hour³)

Notes:

¹ Hospitals, schools, places of worship, libraries, public parklands, etc.

² Public playgrounds, swimming pools, athletic fields, golf courses, etc.

³ Where the offending source of noise is nearly constant over a one-hour period, a measurement sampling period of less than one hour, but no less than five minutes, is permitted. This measurement shall be made with the sound-level meter set to slow A-weighting responses.

§ 249-4-C. Noise Limit 3: Impulsive sound-level limits

No person shall cause an impulsive sound level that exceeds the following limits, as measured at the applicable locations in accordance with the provisions of § 249-3D (5) of this chapter.

Receptor Land Use Category	Daytime	Nighttime
Residential/rural/institutional ¹	67	62
Business/recreational ²	77	67
Industrial	87	87

Table 3: Continuous Sound Level Limits (dB(C), Fast Time Weighting)

Notes:

¹ Hospitals, schools, places of worship, libraries, public parklands, etc.

² Public playgrounds, swimming pools, athletic fields, golf courses, etc.

§ 249-4-D. Noise Limit 4: Background referenced sound level

No person shall cause the background noise level, as defined in § 249-2 of this chapter, to increase by more than 10 dBA in any receptor area at any time of day.

§ 249-4-E. Noise Limit 5: Pure-tone conditions

No person shall produce a pure-tone condition at the nearest receptor buildings or activity areas in rural/residential/-institutional or business/recreational/industrial zoned property. [Pure-tones are defined as the sound pressure level in any octave band from exceeding the sound pressure level in the two adjacent octave bands by 3 dB or more.]

§ 249-4-F. Noise Limit 6: High noise-level areas

In areas where the ambient sound level is already as high as or higher than three dB below the sound-level limits of Noise Limit 2, no person shall cause the noise level in any area to increase by more than three dB. This limit is in lieu of Noise Limit 2 but shall not supersede any other noise limit as defined in this chapter.

3.0 SITE LOCATION

The Proposed Site is located at the corner of Sullivan Road and Central Street (Route 111) in Hudson, NH. The general location of the facility is shown in Figure 1 by the red and white hatched polygon. A site plan of the facility is shown in Figure 2.

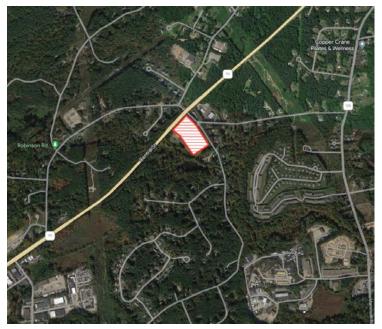
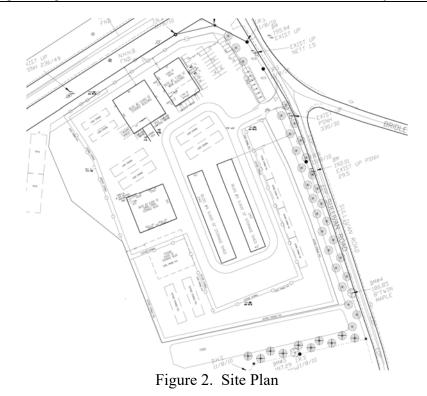


Figure 1. General location of the facility



4.0 AMBIENT NOISE MEASUREMENTS

4.1 Methodology

Long-term unattended noise monitoring was performed at residences near the proposed facility at two locations over a period of seven days from February 16 to 23 to quantify the existing background noise in the community at all hours of the day. Locations of both monitors are shown in Figure 3.

The two unattended monitors (Locations 1 and 2) consisted of Larson Davis Type 831 sound level meters with PCB model 377B20 ¹/₂" microphones and PCB model PRM831 preamplifiers. This equipment was situated within weatherproof cases and installed at ground level. The microphones were affixed to tripods about 5 feet above ground level and covered with waterproof windscreens to minimize noise from wind gusts. The meters were configured to average sound pressure levels continuously in both 1-second and 5-minute intervals for the duration of the monitoring period. Data was collected at these intervals in overall dB(A), A-weighted L₉₀, and one-third octave-band formats. The meters were field calibrated using a Larson Davis CAL200 both prior to installation and during their retrieval.

Temperature and humidity data during the monitoring period was measured onsite using a Kestrel DROP D3 Data Logger, while wind and rainfall data was retrieved from World Weather Online for the Town of Hudson. The last day of the monitoring was the only day with significant precipitation and was excluded from the data set in the calculation of the background noise. All instrumentation used for the long-term measurements was laboratory calibrated traceable to NIST standards within the previous 12 months.



Figure 3. Long-Term Unattended Measurement Locations

4.2 <u>Background</u>

The 5-minute A-weighted L_{eq} and L_{90} from locations 1 and 2 for the entire measurement period are shown in Figure 4 and Figure 5 below. Daily fluctuation of noise levels were seen to be fairly consistent throughout the measurement period.

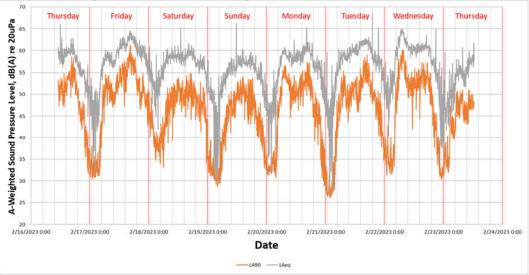


Figure 4. Location 1 5-minite A-weighted L_{eq} and L_{90} .

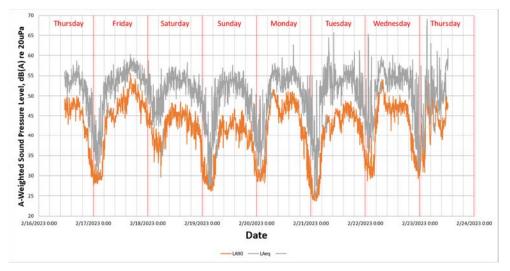


Figure 5. Location 2 5-minite A-weighted Leq and L90.

The average hourly A-weighted L₉₀ sound levels for each of the 24 hours of the day at the two monitoring locations is presented in Figure 6. These levels were derived from the 1-second interval data gathered throughout the monitoring period. This data was used to calculate the noise limits for the site.

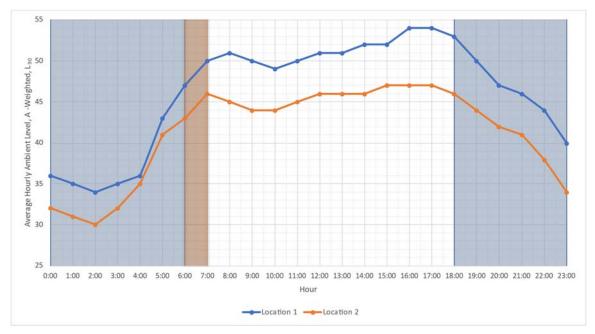


Figure 6. Average Hourly Ambient Levels Derived from Noise Monitoring Data (A-Weighted L₉₀)

The blue shaded area of Figure 6 highlights the times when the facility will not be operating. These levels were only considered when calculating the background for equipment that will be operating constantly. For this site that is only the HVAC. The orange shaded area highlights between 0600 and 0700. During weekday operations this time period must meet the nighttime limits from Table 1. During the weekends the site must meet nighttime limits for the entirety of the day. The unshaded area, white background, was used to calculate the daytime limits for the site during weekday operations.

Location 1, which is closer to Central St (Route 111) was typically louder than location 2. During the hours of operation of the proposed site, 0600 to 1800, levels were on average 6 dB louder at location 1 than 2. This is likely due to the proximity of Location 1 to Central St.

Between the two meters, average hourly levels during operation hours ranged from 43 dB(A) (Location 2 at 0600) to 54 dB(A) (Location 1 at 1700). There is a peak in the average hourly levels around 0800 at Location 1 and then a steady rise in average hourly levels from 1000 until 1700. The peak in the morning and evening is likely due to traffic noise on central street from commuting. The noise at Location 2 seems to also be controlled by the noise from Central Street. The lower level is due to being further from the street. After 1700, levels decreased steadily each hour until 0200, after which they increased steadily until 0700. This pattern with the quietest period around 0200 is common for similar locations.

5.0 NOISE CRITERIA FOR SITE

Based on the Town of Hudson's noise ordinance [1], the noise at the abutting property lines cannot exceed 10 dB above the background noise level or the noise levels in Table 2, whichever is lower. The exception to this rule is if the background noise level is less than 3 dB below the levels shown in Table 2. Then the noise at the abutting property lines cannot increase the background by more than 3 dB. Background noise level is defined in section 249-2 of the Town of Hudson's noise ordinance as the highest A-weighted sound-pressure level which exceeded 90% of the time period. This is also the definition of the A-weighted L₉₀ (LA₉₀).

NCE has interpreted this ordinance to mean sources that are constantly operating such as HVAC will be compared against a noise limit calculated using lowest average hourly A-weighted L₉₀ of the entire day. For operations that are limited to working hours¹, such as forklifts, the lowest average hourly A-weighted L₉₀ during those hours will be used to calculate background. Since the site is operating between 0600 and 1800 Monday through Saturday. The site will need to be evaluated against both daytime and nighttime limits. Nighttime is defined as the hours between 1800 and 0700 Monday through Friday and weekends. While for most of the working hours the facility needs to comply with the daytime limits, the hour between 0600 and 0700 and all day Saturday the facility needs to comply with the nighttime limits.

Based on the long-term measurements, compliance with the Town of Hudson's noise ordinance for operational noise is assessed based on the lowest average hourly levels during daytime hours 0700-1800, shown in Table 4. The nighttime operating limit is compared with the lowest average hourly levels between 0600 and 0700, shown in Table 5. The continuous operation is assessed based on the lowest average hourly levels for the day, shown in Table 6.

¹ Working hours are defined as 0600-1800

Location	Limit, dB(A)	Justification	
Route 11155dB(A). This level less that the limit but more the 3 of		Average Background quietest hour is 49 dB(A). This level less than 10 dB below the limit but more the 3 dB below limit. Therefor the limit is from Table 2	
Residences along Sullivan Rd and Cheney Rd	54	Average Background quietest hour is 44 dB(A). Level cannot exceed 10 dB from this level	

Table 4. Daytime Hours Noise Limit

Table 5. Nighttime Hours Noise Limit

Location Limit, dB(A)		Justification	
Residences along Route 111 50		Average Background quietest hour is 47 dB(A). This level less than 10 dB below the limit but more the 3 dB below limit. Therefor the limit is from Table 2	
Residences along Sullivan Rd and Cheney Rd	50	Average Background quietest hour is 47 dB(A). This level less than 10 dB below the limit but more the 3 dB below limit. Therefor the limit is from Table 2	

Table 6. Continuously Operating Noise Limit

Location	Limit, dB(A)	Justification
Residences that are along Route 11144		Average Background quietest hour is 34 dB(A). Level cannot exceed 10 dB from this level
Residences along Sullivan Rd and Cheney Rd	40	Average Background quietest hour is 30 dB(A). Level cannot exceed 10 dB from this level

6.0 NOISE PREDICTION

Noise predictions were performed using the environmental noise modeling software CadnaA to predict sound pressure levels from the proposed facility at nearby residences. CadnaA was configured to use the international standard ISO 9613-2 [2] to calculate sound propagation using spherical spreading, reflection off hard surfaces, acoustic shielding, and ground effects. Foliage was not included as there are not enough trees near the project site to be acoustically significant. The general layout of the proposed facility was taken from the site plan shown in Site Development Plan Rev D [3], presented in Figure 2. Elevation contours and building polygons of

the properties surrounding the proposed site were retrieved from the New Hampshire Geodata Portal (NHGIS) [4]. The elevation contours and building information for the proposed site itself were provided by 84 Lumber Company. A barrier was located between the site and 15 Sullivan Rd and assumed in the baseline model.

Five primary conditions were modeled:

- (1) the HVAC systems operating alone during non-working hours
- (2) Forklifts operating compared with the nighttime limit for hours between 0600-0700 on weekdays and between 0600 and 1800 for Saturdays.
- (3) Forklifts operating compared with the daytime limit for hours between 0700 and 1800 on weekdays.
- (4) Trucks and Forklifts operating compared with the night time limit for hours between 0600 and 0700 weekdays. Trucks do not operate on weekends.
- (5) Trucks and Forklifts operating compared with the daytime limit for hours between 0700 and 1800

The HVAC units were modeled as point sources. The Forklifts were modeled as an area source over the entire site, with levels adjusted upwards to reflect 3 forklifts operating. Trucks were modeled as a line source moving around buildings #4 and #5 as they enter the site and drive around to get loaded. The HVAC systems were evaluated as a separate condition to ensure that they do not violate the noise ordinance outside of working hours.

Source noise levels for each piece of equipment were determined and provided to the software as sound power levels in octave bands from 31.5 Hz to 8000 Hz.

Results were predicted at 23 discrete locations corresponding to property lines around the proposed facility. These Locations, seen in Table 7, marked 1-24², are along Hudson Hill Dr, Lawrence Rd, Sullivan Road, Bridle Bridge Road, and Cheney Drive. NCE also predicted the noise at the house for the 14 properties that directly surround the proposed facility, marked 1A-15A. All the receiver locations are shown in Figure 4.

Street Address	Property Line Prediction Location Number	House Location Predication Location Number
12 Hudson Hills Dr	1	1A
6 Hudson Hill Dr	2	2A
4 Hudson Hill Dr	3	3A
2 Hudson Hill Dr	4	4A
63 Lawrence Rd	5	5A
2 Sullivan Rd	6	6A
4 Bridle Bridge Rd	7	7A, 7B

Table 7. Prediction Locations and Street Addresses

² There is no location 8. Location numbering goes from 1-7 and 9-24.

Street Address	Property Line Prediction Location Number	House Location Predication Location Number
1 Bridle Bridge Rd	9	9A
8 Sullivan Rd	10	10A
10 Sullivan Rd	11	11A
12 Sullivan Rd	12	12A
16 Sullivan Rd	14	14A
15 Sullivan Rd	13	13A
18 Sullivan Rd	15	15A
19 Sullivan Rd	16	-
17 Cheney Dr	17	-
13 Cheney Dr	18	-
11 Cheney Dr	19	-
9 Cheney Dr	20	-
7 Cheney Dr	21	-
5 Cheney Dr	22	-
15 Cheney Dr	23	-
3 Cheney Dr	24	-

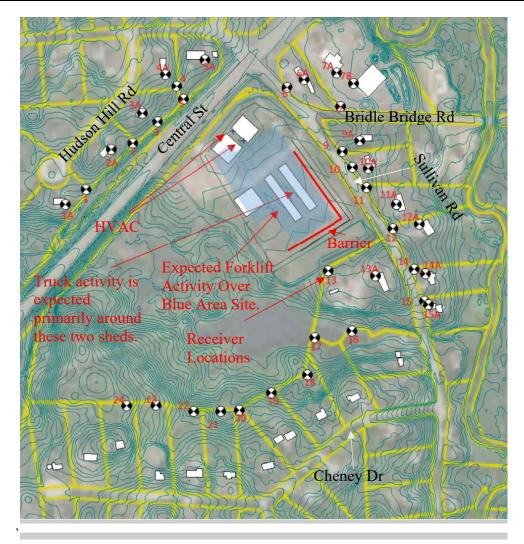


Figure 7. Location of Noise Sources and receivers in the CadnaA Model

6.1 Model Geometry

The site plan drawing was imported into the software, scaled to the correct physical dimensions, and georeferenced. Ground topography for the modeled area was included in the model using three (3) meter elevation contours acquired from NHGIS [4]. A soft ground surface was used throughout the study area (ground factor of 1), with the exception of the proposed facility site and neighborhood roadways, which were modeled as hard ground (ground factor of 0). Foliage was not included as there are not enough trees near the project site to be acoustically significant.

6.2 <u>Noise Sources</u>

The sound power levels for the primary noise sources onsite are presented in Table 5. The HVAC systems are comprised of a Trane 5-ton and 10-ton unit. The octave band sound power levels were provided by the manufacturer [7] and are shown in Appendix B. These units are continually operating on the site and were evaluated against the limits shown in Table 3 and 4.

Forklifts are expected to be operating during working hours between 0600 and 1800 hours. The forklift sound power source levels are based on measured levels by Spectrum Acoustical Consulting of a diesel forklift [5], with levels adjusted upwards to reflect 3 forklifts operating. The levels in Table 8 represent the forklift before this adjustment. The Forklifts were evaluated against the limits shown in Table 3.

This site is expected to operate propane forklifts which are generally quieter. Forklifts were assumed to be operating using white noise back up alarms that automatically adjust to background noise. This will prevent the units from violating the tonal requirements of the Town of Hudson noise ordinance and bothering the surrounding neighbors.

As this site is an active lumber yard, the occasional tractor trailer or heavy truck will be present on site to be loaded or unloaded. The client has estimated that the site will have on average 3 heavy trucks during morning hours and 3 heavy trucks during evening hours. Standardized source levels for heavy trucks were developed from the Federal Highway Administration Traffic Noise Model Version 3.1 Reference Energy Mean Emission Levels for a truck operating at 5 mph [6]. For conservative prediction purposes, three trucks were assumed to arrive and depart within a one-hour period. These trucks were assumed to enter the facility and drive around buildings 4 and 5. Given a 5 mph speed and the length of the truck loop, this corresponds to modeling a truck under motor for about 12 minutes of the hourly period. Per New Hampshire regulations trucks need to be shut down if they will be sitting onsite for more than 5 minutes, which excluded extended truck idling from consideration as a noise source. The facility both designed so that trucks will not need to back up and so back up alarms from trucks are not considered. It is 84 lumber's policy that if a truck needs to reposition, the trucks should go around the loop as this is both safer and does not disrupt the flow of traffic in the facility.

				,	1				
		Octave Band Center Frequency (Hz)							
Source	31.5	63	125	250	500	1000	2000	4000	8000
Forklift, Diesel	109	109	106	93	88	88	87	80	71
Truck, 5 mph	105,	106,	109,	109,	109,	93,	93,	96,	93,
Upper, Lower*	101	104	106	105	101	93	92	93	91
HVAC, Trane 5 Ton	84	84	91	79	77	74	71	68	63
HVAC, Trane 10 Ton	83	83	86	80	77	73	69	66	60

Table 8. Source Levels, dB re: 1pW

*Trucks were modeled with upper and lower sub-sources, per [6]

6.3 Noise Mitigation

In order to reduce the noise of the facility in order to meet nighttime limits while operating, an 8 ft high AcoustiFence[®] noise barrier is recommended between the site and the Sullivan Road properties. This is a barrier that can be attached to the proposed fence. The produce data sheet is included in Appendix C. The location of the barrier can be seen in Figure 8.

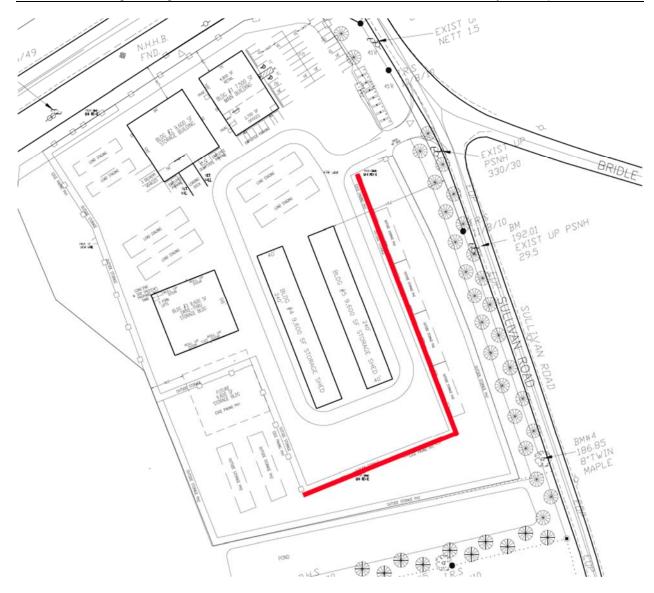


Figure 8. Location of Barrier

The barrier is approximately 240 ft long the southern side and 410 ft long the eastern side. If phase II is implemented the barrier will need to be moved from the current proposed location to the new fence. The barrier lengths will need to increase in that case.

7.0 RESULTS

The following sections present the predicted levels for HVAC and operation noise.

7.1 HVAC Noise Prediction

The predicted noise levels for HVAC at the surrounding property lines are presented in Table 9. Predicted noise levels are between 34 and 6 dB(A) from the HVAC units. The highest predicted

Meeting Date: 8/23/23	SP# 09-22 84 Lumber Siteplan - Attachment A
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Noise Control Engineering, LLC	Noise Survey and Impact Predictions

level is 34 dB(A) at 63 Lawrence Rd. The four most affected properties, 63 Lawrence Rd and 2-6 Hudson Hill Dr, were across Central St. The highest predicted levels being across Central St are due to the barrier effect the site buildings have on the units. Even if the building provided no barrier effect predicted levels would still meet the noise limits from Table 6. Figure 9 shows the noise contour lines for the HVAC predicted levels.

Reference		Predicted	Predicted		
Number		Property	Levels at		_
	Location	Line	house,	Limit,	Excesses,
		Level	dB(A)	dB(A)	dB
		dB(A)			
5	63 Lawrence Rd	34	28	44	-
3	4 Hudson Hill Dr	31	30	44	-
4	2 Hudson Hill Dr	30	29	44	-
2	6 Hudson Hill Dr	29	27	44	-
7	4 Bridle Bridge Rd	24	18	40	-
13	15 Sullivan Rd	23	23	40	-
10	8 Sullivan Rd	22	20	40	-
1	12 Hudson Hills Dr	20	15	40	-
9	1 Bridle Bridge Rd	20	11	44	-
11	10 Sullivan Rd	20	16	40	-
24	3 Cheney Dr	18	-	40	-
6	2 Sullivan Rd	17	16	44	-
18	13 Cheney Dr	17	-	40	-
17	17 Cheney Dr	16	-	40	-
22	5 Cheney Dr	15	-	40	-
14	16 Sullivan Rd	13	13	40	-
19	11 Cheney Dr	13	-	40	-
20	9 Cheney Dr	13	-	40	-
21	7 Cheney Dr	13	-	40	-
15	18 Sullivan Rd	12	14	40	-
16	19 Sullivan Rd	10	-	40	-
23	15 Cheney Dr	8	-	40	-
12	12 Sullivan Rd	6	6	40	-

Table 9. Predicted Level at Property lines due to HVAC, A-Weighted Leq

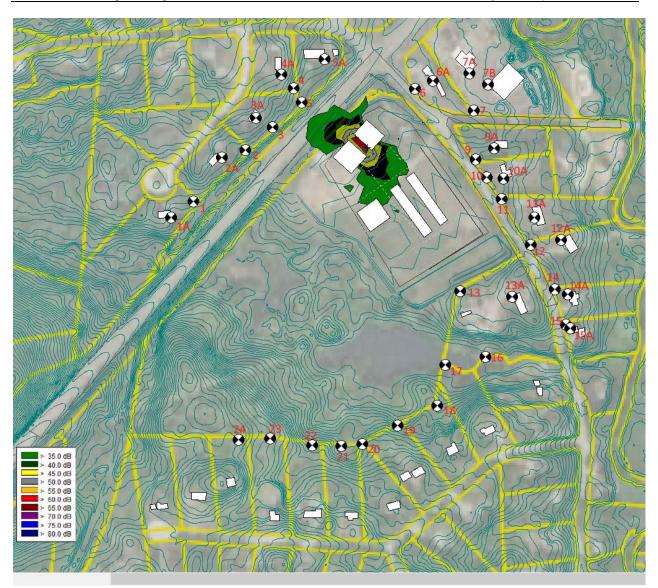


Figure 9. Noise Contour Map of the HVAC Noise.

7.2 Operation Noise Prediction

Four operating conditions were predicted:

- Forklifts operating during nighttime hours
- Forklifts operating during daytime hours
- Heavy Trucks and Forklifts operating during nighttime hours
- Heavy Trucks and Forklifts operating during daytime hours

All operating noise predictions are made with the HVAC operating. All predictions include the proposed sound barrier from section 6.3.

7.2.1 Forklifts Operating, Nighttime Hours

The predicted noise levels for three forklifts at the surrounding property lines are presented in Table 10, evaluated against the nighttime noise limits which apply while operating between 0600 and 0700 during weekdays and at all hours on Saturdays. Noise levels at property lines were predicted between 33 and 46 dB(A). The highest predicted level of 46 dB(A) was at 8 Sullivan Rd. This is 4 dB below the nighttime limit of 50 dB(A) from Table 5. A noise contour map with the reference numbers can be seen in Figure 10.

-		1			
Reference		Predicted	Predicted		
Number		Property	Levels at	Limit,	Excesses,
	Location	Line	house,	dB(A)	dB
		Level	dB(A)	()	
		dB(A)			
10	8 Sullivan Rd	46	44	50	-
9	1 Bridle Bridge Rd	45	42	50	-
3	4 Hudson Hill Rd	44	43	50	-
11	10 Sullivan Rd	44	42	50	-
13	15 Sullivan Rd	44	41	50	-
2	6 Hudson Hill Dr	43	42	50	-
5	63 Lawrence	42	39	50	-
6	2 Sullivan Rd	42	42	50	-
4	2 Hudson Hill Dr	41	39	50	-
7	4 Bridle Bridge Rd	41	39	50	-
1	12 Hudson Hills Dr	40	35	50	-
12	12 Sullivan Rd	40	38	50	-
14	16 Sullivan Rd	38	38	50	-
18	13 Cheney Dr	38	-	50	-
19	11 Cheney Dr	38	-	50	-
20	9 Cheney Dr	38	-	50	-
21	7 Cheney Dr	38	-	50	-
24	3 Cheney Dr	37	-	50	-
22	5 Cheney Dr	36	-	50	-
17	17 Cheney Dr	35	-	50	-
23	15 Cheney Dr	35	-	50	-
15	18 Sullivan Rd	34	36	50	-
16	19 Sullivan Rd	33	-	50	-

Table 10. Predicted Level due to Forklifts Compared with Nighttime Limit, A-weighted Leq

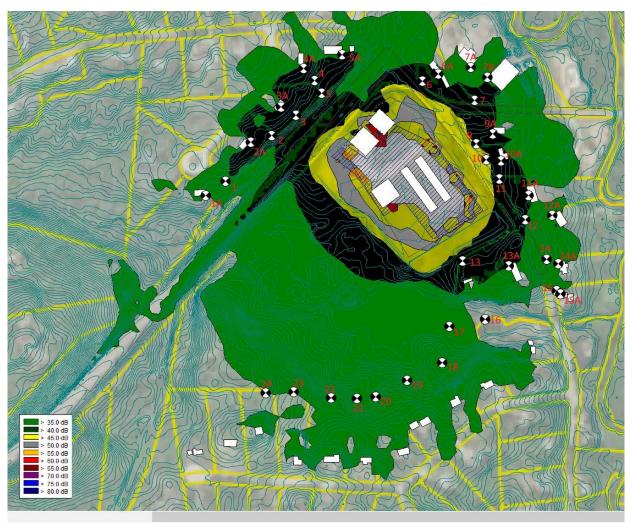


Figure 10. Noise Contour Map of the Forklift Noise.

7.2.2 Forklift Operating, Daytime Limit

Table 11 presents the same predicted levels for three forklifts at the surrounding property lines as the previous table but evaluated against the daytime limits. These apply during operation between 0700 and 1800 Monday through Friday. The highest predicted level of 46 dB(A) at 8 Sullivan Rd. is 8 dB below the Daytime limit of 54 dB(A) from Table 4. The noise contour map presented in Figure 10 above also applies to this condition.

Reference		Predicted	Predicted		
Number	Leastien	Property	Levels at	Limit,	Excesses,
	Location	Line Level	house,	dB(A)	dB
		dB(A)	dB(A)		
10	8 Sullivan Rd	46	44	54	-
9	1 Bridle Bridge Rd	45	42	55	-
3	4 Hudson Hill Dr	44	43	55	-
11	10 Sullivan Rd	44	42	54	-
13	15 Sullivan Rd	44	41	54	-
2	6 Hudson Hill Dr	43	42	55	-
5	63 Lawrence	42	39	55	-
6	2 Sullivan Rd	42	42	55	-
4	2 Hudson Hill Dr	41	39	55	-
7	4 Bridle Bridge Rd	41	39	55	-
1	12 Hudson Hills Dr	40	35	55	-
12	12 Sullivan Rd	40	38	54	-
14	16 Sullivan Rd	38	38	54	-
18	13 Cheney Dr	38	-	54	-
19	11 Cheney Dr	38	-	54	-
20	9 Cheney Dr	38	-	54	-
21	7 Cheney Dr	38	-	54	-
24	3 Cheney Dr	37	-	54	-
22	5 Cheney Dr	36	-	54	-
17	17 Cheney Dr	35	-	54	-
23	15 Cheney Dr	35	-	54	-
15	18 Sullivan Rd	34	36	54	-
16	19 Sullivan Rd	33	-	54	-

Table 11. Predicted Level due to Forklifts Com	nared with Davtime Limit. Lea
Table 11. I redicted Level due to Forkints Com	parcu with Daytime Linni, Leq

7.2.3 Forklift and Heavy Trucks, Nighttime limit

The predicted noise levels for the forklifts and heavy trucks at the surrounding property lines are presented in Table 12, evaluated against the nighttime noise limits. Heavy trucks will not be present on Saturdays, so this analysis is a worst case for if all three trucks arrive between 0600 and 0700 during the week. A noise contour map can be seen in Figure 11. Noise levels were predicted between 34 and 48 dB(A). The highest predicted level of 48 dB(A) at 8 Sullivan Rd. This is 2 dB below the nighttime limit of 50 dB(A) from Table 5. Predicted noise levels at the house of 8 Sullivan Rd are 45 dB(A).

Table 12. Predicted Level due to Forklifts and Heavy Trucks Compared with Nighttime Limit, Leq

				0	
Reference Number	Location	Predicted Property Line Level dB(A)	Predicted Levels at house, dB(A)	Limit <i>,</i> dB(A)	Excesses, dB
10	8 Sullivan Rd	48	45	50	-
9	1 Bridle Bridge Rd	47	44	50	-
11	10 Sullivan Rd	46	43	50	-
13	15 Sullivan Rd	45	43	50	-
2	6 Hudson Hill Dr	44	42	50	-
3	4 Hudson Hill Dr	44	43	50	-
6	2 Sullivan Rd	44	44	50	-
5	63 Lawrence Rd	43	40	50	-
7	4 Bridle Bridge Rd	43	41	50	-
4	2 Hudson Hill Dr	42	41	50	-
12	12 Sullivan Rd	42	40	50	-
1	12 Hudson Hills Dr	40	36	50	-
14	16 Sullivan Rd	39	40	50	-
18	13 Cheney Dr	39	-	50	-
19	11 Cheney Dr	39	-	50	-
20	9 Cheney Dr	39	-	50	-
21	7 Cheney Dr	39	-	50	-
24	3 Cheney Dr	38	-	50	-
22	5 Cheney Dr	37	-	50	-
15	18 Sullivan Rd	36	37	50	-
17	17 Cheney Dr	36	-	50	-
23	15 Cheney Dr	36	-	50	-
16	19 Sullivan Rd	34	-	50	-



Figure 11. Noise Contour Map of the Forklift and Truck Noise.

7.2.4 Forklift and Heavy Trucks, Daytime Limit

Table 13 presents the same predicted levels for the forklifts and heavy trucks at the surrounding property lines as the previous table but evaluated against the daytime limits. The highest predicted level of 48 dB(A) at 8 Sullivan Rd. is 6 dB below the daytime limit of 54 dB(A) from Table 4. Predicted noise levels at the house of 8 Sullivan Rd are 45 dB(A). The noise contour map presented in Figure 11 above also applies to this condition.

Table 13. Predicted Level due to Forklifts and Heavy	v Trucks Compared with Davtime Limit Lea
Table 13. I feulcieu Level due to Forkints and fleav	y Trucks Compared with Daytime Linn, Leq

Location	Predicted Property Line Level dB(A)	Predicted Levels at house, dB(A)	Limit <i>,</i> dB(A)	Excesses, dB
8 Sullivan Rd	48	45	54	-
1 Bridle Bridge Rd	47	44	55	-
10 Sullivan Rd	46	43	54	-
15 Sullivan Rd	45	43	54	-
6 Hudson Hill Dr	44	42	55	-
4 Hudson Hill Dr	44	43	55	-
2 Sullivan Rd	44	44	55	-
63 Lawrence Rd	43	40	55	-
4 Bridle Bridge Rd	43	41	55	-
2 Hudson Hill Dr	42	41	55	-
12 Sullivan Rd	42	40	54	-
12 Hudson Hills Dr	40	36	55	-
16 Sullivan Rd	39	40	54	-
13 Cheney Dr	39	-	54	-
11 Cheney Dr	39	-	54	-
9 Cheney Dr	39	-	54	-
7 Cheney Dr	39	-	54	-
3 Cheney Dr	38	-	54	-
5 Cheney Dr	37	-	54	-
18 Sullivan Rd	36	37	54	-
17 Cheney Dr	36	-	54	-
15 Cheney Dr	36	-	54	-
19 Sullivan Rd	34	-	54	-
	8 Sullivan Rd 1 Bridle Bridge Rd 10 Sullivan Rd 15 Sullivan Rd 6 Hudson Hill Dr 4 Hudson Hill Dr 2 Sullivan Rd 63 Lawrence Rd 4 Bridle Bridge Rd 2 Hudson Hill Dr 12 Sullivan Rd 12 Hudson Hills Dr 16 Sullivan Rd 13 Cheney Dr 11 Cheney Dr 9 Cheney Dr 7 Cheney Dr 3 Cheney Dr 18 Sullivan Rd 17 Cheney Dr 15 Cheney Dr	LocationProperty Line Level dB(A)8 Sullivan Rd481 Bridle Bridge Rd4710 Sullivan Rd4615 Sullivan Rd456 Hudson Hill Dr444 Hudson Hill Dr442 Sullivan Rd432 Sullivan Rd434 Bridle Bridge Rd432 Sullivan Rd4212 Sullivan Rd4212 Sullivan Rd4212 Sullivan Rd3913 Cheney Dr3911 Cheney Dr399 Cheney Dr393 Cheney Dr385 Cheney Dr3718 Sullivan Rd3617 Cheney Dr3615 Cheney Dr36	LocationProperty Line Line Level dB(A)Levels at house, dB(A)8 Sullivan Rd48451 Bridle Bridge Rd474410 Sullivan Rd464315 Sullivan Rd45436 Hudson Hill Dr44424 Hudson Hill Dr44432 Sullivan Rd43404 Bridle Bridge Rd434163 Lawrence Rd43412 Hudson Hill Dr424112 Sullivan Rd424012 Sullivan Rd394013 Cheney Dr39-9 Cheney Dr39-3 Cheney Dr38-5 Cheney Dr37-18 Sullivan Rd363717 Cheney Dr36-15 Cheney Dr36-15 Cheney Dr36-	LocationProperty Line Level dB(A)Levels at house, dB(A)Limit, dB(A)8 Sullivan Rd4845541 Bridle Bridge Rd47445510 Sullivan Rd46435415 Sullivan Rd4543546 Hudson Hill Dr4442552 Sullivan Rd4443552 Sullivan Rd44445563 Lawrence Rd4341552 Hudson Hill Dr42415512 Sullivan Rd42405412 Hudson Hill Dr42405412 Sullivan Rd39405413 Cheney Dr39-543 Cheney Dr39-543 Cheney Dr38-543 Cheney Dr37-5418 Sullivan Rd36375417 Cheney Dr36-5415 Cheney Dr36-54

8.0 CONCLUSION

The noise was predicted from the HVAC, Forklifts and Heavy Trucks for various times of day and operations. Noise limits for this facility range from 40-55 dB(A) depending on the time of day. These limits were established for the site based on the background noise levels measured during the February 16-23 noise monitoring in accordance with the Town of Hudson Noise Ordinance.

Predictions level for both the continuously operating HVAC, and the operation noise during business hours met the Town of Hudson Noise Ordinance.

These results are valid based on the following assumptions and recommendations:

- The noise barrier discussed in section 6.3 is installed per the manufacturer's recommendations.
- Forklifts are equipped with ambient sensitive white noise back up alarms.
- Propone Forklifts be utilized on site.
- Idling laws are enforced for Heavy Trucks/Tractor Trailers
- Tractor Trailer or other Heavy Trucks are not present on Saturday.

9.0 REFERENCES

- 1. Township of Hudson, New Hampshire, The Code Part II General Legislation Chapter 249 Noise
- "ISO 9613-2:1996 Acoustics -- Attenuation of Sound during Propagation Outdoors -- Part
 2: General Method of Calculation." ISO International Organization for Standardization
- 3. Fieldstone Land Consultants, "Site Development Plans 84 Lumber Company, Hudson New Hampshire," prepared for 84 Lumber Company, dated 3/8/23
- 4. NH Grant, New Hampshire's Statewide GIS Clearinghouse, Web < https://granit.unh.edu/>.
- 5. Spectrum Acoustical Consultants, "Appendix 18.11: Site operational noise assumptions and calculation procedure," dated 2/6/2007
- Hastings, Aaron, "Technical Manual, Traffic Noise Model 3.1," U.S. Department of Transportation Federal Highway Administration, FHWA-HEP-21-041, dated September 2021
- 7. Trane Produce Catalog, "Packaged Rooftop Air Conditioners" March 2015
- 8. Federal Highway Administration, "Fundamentals and Abatement of Highway Traffic Noise Textbook and Training Course," FHWA, Washington, D.C., 1980

APPENDIX A: NOISE LEVELS

Noise measurements and predictions in this report are presented primarily in terms of Aweighted decibels, with units of dB(A). The A-weighting process approximates the frequency response of human hearing at moderate levels and is one of the most common metrics in use for assessing impact from noise. To provide context for these values, see Figure A-1, presents approximate A-weighted sound pressure levels for common outdoor and indoor and indoor noise sources and environments. Within this study, the relevant measured and predicted noise levels are largely between the background level of a small theater (low-30s) and that of a large business office (mid-50s).

Common Outdoor Noises	Sound Press Level, dB(
Jet Flyover at 300 meters	110	Rock Band at 5 meters
Gas Lawn Mower at 1 meter	100	Inside Subway Train (New York)
Diesel Truck at 15 meters	90	Food Blender at 1 meter
Noisy Urban Daytime	80	Garbage Disposal at 1 meter Shouting at 1 meter
Gas Lawn Mower at 30 meters Commercial Area	70	Vacuum Cleaner at 3 meters Normal Speech at 1 meter
	60	Large Business Office
Quiet Urban Daytime	50	Dishwasher in Next Room
Quiet Urban Nighttime Quiet Suburban Nighttime	40	Small Theatre, Large Conference Room (Background)
	30	Library Bedroom at Night
Quiet Rural Nighttime	20	Concert Hall (Background)
	10	Broadcast and Recording Studio
	0	Threshold of Hearing

Figure A-1: Common Outdoor and Indoor Noise Levels, adapted from reference [8]

A description of common terms from the Federal Highway Administration, Reference [8]

The **L90** is a statistical descriptor of the sound level exceeded 90% of the time of the measurement period. This is considered to represent the background noise without the source in question. Where the noise emissions from a source of interest are constant (such as noise from a fan, air conditioner or pool pump) and the ambient noise level has a degree of variability (for example, due to traffic noise), the L90 descriptor may adequately describe the noise source.

The **LEQ** is the Time-Equivalent Sound Level, descriptor accounts for noise fluctuations from moment to moment by averaging the louder and quieter moments and giving more weight to the louder moments. It represents the equivalent continuous sound pressure level over a given period. LEQ is SEL over some time period normalized by that time. It can be obtained using

short-term measurements. LEQ should not be confused with L50; LEQ is a measure of sound energy, not a statistical measure or statistical average.

The LMAX, or Maximum Sound Level, descriptor is the highest sound level measured during a single noise event (such as a vehicle pass by), in which the sound level changes value as time goes on. The maximum sound level is important in judging the interference caused by a noise event with common activities. LMAX ignores the number and duration of these events, and cannot be totaled into a one-hour or a 24-hour cumulative measure of impact.

APPENDIX B: TRANE NOISE DATA

and constraints and the set

Tons	Unit Model	Octave Center Frequency										
	Number	63	125	250	500	1000	2000	4000	8000	dBA		
5	T/YSC060ED	84	91	79	77	74	71	68	63	80		
6	T/YSC072ED	83	90	86	82	79	75	70	63	85		
71/2	T/YSC090ED	83	90	86	83	80	75	71	64	85		
8.5	T/YSC102ED	83	89	84	81	77	72	69	62	83		
10	T/YSC120ED	83	86	80	77	73	69	66	60	79		

Table 9. Outdoor sound power level-dB (ref. 10-2 W)

Note: Tests follow ARI270-95.

APPENDIX C: NOISE BARRIER MATERIAL



Product Name

AcoustiFence[®] Noise Reducing Fences

For Manufacturer Info:

Contact:

Acoustiblok, Inc. 6900 Interbay Boulevard Tampa, FL 33616 Call - (813) 980-1400 Fax - (813) 549-2653 Email - <u>sales@acoustiblok.com</u> www.acoustiblok.com

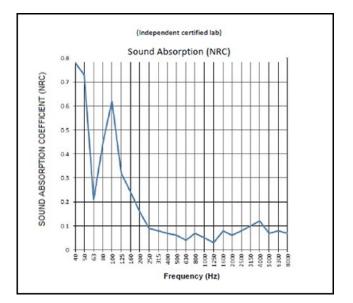
Product Description

Basic Use

AcoustiFence was originally developed by Acoustiblok, Inc. for noise isolation on offshore oil rigs, but has since proven successful in many other demanding outdoor settings, such as construction sites, commercial/industrial facilities, and residential communities.

AcoustiFence Noise Reducing Fences

AcoustiFence is a unique, heavy-mineral filled, barium free, viscoelastic acoustical material that is made in the U.S.A. Unlike fences or shrubs, this material does extraordinarily well in blocking direct sound, and a unique characteristic of the material sets it apart from other sound barriers when dealing with very low frequencies.



Sound Absorption Test Results

Benefits:

- Effectively reduces exterior noise
- Easy to install
- Resistant to UV, dirt and water
- Resistant to corrosion, mold and mildew



Product Name

AcoustiFence[®] Noise Reducing Fences

AcoustiFence Noise Reducing Fences continued...

In frequencies of 50Hz and below, the heavy limp AcoustiFence material actually begins to vibrate from low frequency sound waves. In essence it is transforming these low frequency sound waves into mechanical movement and internal friction energy. Laboratory tests indicate that this transformation process inhibits these lower frequencies from penetrating AcoustiFence, reducing their level by over 60 percent relative to the human ear. In addition, AcoustiFence becomes an absorbent material in these frequencies with test results show an NRC (noise reduction coefficient) as high as 0.78 (with 1.00 being the max). As such it is clear that AcoustiFence not only reduces sound as a barrier, but also acts as an acoustical absorbent material in very low frequencies, as opposed to reflecting those frequencies back like most other barriers. It is worth noting that lead sheets (which are toxic) work in the same manner.

Green AcoustiFence

One of Acoustiblok's most popular products, designed as an advanced sound barrier that easily attaches to most types of fencing, is now available in a new green shade that easily blends into the environment. This makes it ideal for landscaping projects, residential home use and any outdoor applications where blending into the natural foliage is a concern. Green AcoustiFence has the same sound deadening properties and features as our original black AcoustiFence. In addition, this new version features advanced reinforced edging and stainless steel cable ties. Made and sourced in the USA, It comes in 6x30 foot sections and is one of the most effective first steps in reducing noise for industrial, commercial and residential projects.



Product Name

AcoustiFence® Noise Reducing Fences

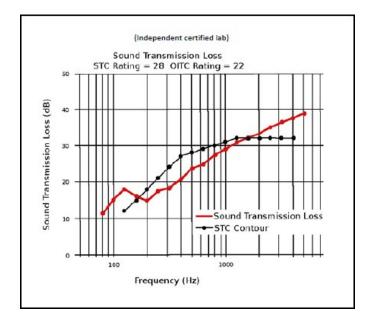
Sound Transmission Class (STC)

Sound Transmission Class (STC) is a single number that represents the sound blocking capacity of a partition such as a wall or ceiling.

STC numbers are often called out in architectural specifications, to assure that partitions will reduce noise levels adequately. For performance similar to laboratory test numbers, it is necessary to adhere closely to the construction materials and techniques used in the tested partition.

STC is calculated by comparing the actual sound loss measured when 16 test frequencies pass through a partition, with fixed values for each STC level. The highest STC curve that the measured sound loss numbers fit under, determines the STC rating of the partition.

STC calculations emphasize sound frequencies that match the human voice. A high STC partition will block the sound of human speech and block noise that interferes with human speech. To estimate high and low frequency performance, consult the Sound Transmission Loss graph included in STC test reports. Impact Insulation Class (IIC) measure transmitted impact noise and are specified for floor-ceiling assemblies only. Acoustical test reports for numerous wall and floor/ceiling designs are available from Acoustiblok on request. All our test data is taken directly from independent 3rd party laboratories under NVLAP certification.



Sound Transmission Loss Test Results



Product Name

AcoustiFence[®] Noise Reducing Fences

Physical Properties

- Barium free
- Minimum STC 28 per ASTM E90-02 & ASTM E413-87
- Minimum sound attenuation 24 dBA @ 100Hz & 16dBA @ 40Hz
- Size 6 ft.(1.83m) x 30 ft.(9.14m) x 0.125 in. (.3mm) 180 ft² (16.83m²)
- Color black or green
- High UV resistance
- Heat tolerance: 200°F (93°C) for 7 days, less than 1% shrinkage with no deformation.
- Freezes at -40°F (-40°C). Do not unroll or flex frozen material. Properties not affected by freeze/thaw cycles.
- No fungal or algal growth and no visible disfigurement, per ASTM D3273 and ASTM D3274 (rating=10)
- Tensile Strength min. 510 PSI
- Weight per section: 185 lbs. (84Kg)

Material Specifications – Part # "Acoustifence 6x30 Industrial"

	1
Acoustical Rating	STC 28 / OITC 22
Size	6 ft. (1.83m) x 30 ft. (9. 14m) x 0.125 in .(3mm) 180 ft² (16.72m²)
Weight	185 lbs. (84Kg)
Fastening	Black brass grommets every 6 in. (152mm) along top edge with four grommets spaced along the bottom edge. Commonly installed horizontally.
Color	Black
(This is an industr possibility.)	al product and minor surface blemishes are a



6900 Interbay Blvd. Tampa, Florida USA 33616 Telephone: (813)980-1400 www.Acoustiblok.com sales@acoustiblok.com

Information herein is, to the best of our knowledge and belief, accurate. However, since conditions of handling and use are beyond our control, we make no guarantee of results and assume no liability for damages incurred by the use of this material/product. All material/products may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards are that exist. Final determination of suitability of this material/product is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any nature are made hereunder with respect to the information contained herein or the material/product to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations. Specifications subject to change without notice.

700 District Avenue, Suite 800 Burlington, Massachusetts 01803 781.229.0707 www.hmmh.com

July 26, 2023

Mr. Steve Reichert 50 Commercial Street Unit 2S Manchester, NH 03101

via email at SReichert@fando.com

Subject: Peer review of revised noise study report for proposed 84 Lumber location in Hudson NH Reference: HMMH Project 23-0137A

hmmh

Dear Steve:

I've reviewed the revised version of the NCE noise study report for the proposed 84 Lumber site in Hudson. The revisions successfully addressed the most significant shortcomings that I identified in my preliminary review. The revised report shows that the proposed project satisfies the requirements of the Town of Hudson's noise ordinance, and I believe the study and evaluation were performed correctly. However, several errors and additional shortcomings that I've identified in the revised report should be addressed before it is submitted to the planning board as final. Without further revision, there is potential for confusion and lack of trust in the report's accuracy. Please forward this letter to the applicant and their noise consultant so that they can revise the report before it is sent to the planning board.

- Table 7 and many other but not all tables with street addresses of the prediction sites All street addresses have "PL" at the end. This implies Property Line, but both house and property line site numbers are given. The PL is confusing, and I suggest it be removed from all tables with it. Also "Street" is misspelled in the column heading.
- Section 7.1 The second sentence states predicted levels are between 32 and 6 dBA. The third sentence says that one site has a predicted level of 34 dBA. Please adjust the range to 34 dBA.
- Section 7.2 In many of the tables and in much of the text, Sullivan Road is listed as Sullivan Dr. This is confusing as it implies they are different streets. Please correct all of them.
- Sections 7.2.1 and 7.2.3 The second to last sentence references the limit in Table 1. Table 1 is in the executive summary, without any context. I suggest the reference be to Tables 2 and 5, which are in sections of the report with appropriate context for readers.
- 5. Section 7.2.2 The second to last sentence references the limit in Table 1. Table 1 is in the executive summary, without any context. I suggest the reference be to Table 4, which is in a section of the report with appropriate context for readers.
- 6. Tables 11, 12 and 13 The column headings are incorrect and should match the headings in Table 10. The Property Line and House column headings need to be correct for readers to reference the figures and the text correctly.
- 7. Sections 7.2.3 and 7.2.4 The last sentence of the paragraph states that levels at the house are 46 dBA, where the table shows 45 dBA. Please correct in both locations.

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- 8. Section 8 The last sentence of the first paragraph should be reworded to include the Town of Hudson's Noise Ordinance maximum sound level limits in the applied noise limit range described in the previous sentence.
- Section 8 I suggest calling the bullet list "assumptions and recommendations" to emphasize the importance of the noise control elements. Then, the list should also include a recommendation for propane power for the forklifts, since they are quieter than the diesels used in the modeling.
- 10. Appendix A It would be best if this appendix also included descriptions of the time-based metrics used in the report including Leq, Lmax, and L90. Two of these metrics are not always well understood. Also, there is a missing reference in this section.

Please feel free to contact me if you have any questions or comments.

Sincerely, Harris Miller Miller & Hanson Inc.

hustopher W Menge

Christopher W. Menge, INCE Senior Vice President and Principal Consultant

Ref: 9517

July 31, 2023

Mr. Brian Groth, AICP Town Planner Town of Hudson 12 School Street Hudson, NH 03051

Re: Response to Transportation Comments – 84 Lumber Hudson, New Hampshire

Dear Mr. Groth:

Vanasse & Associates, Inc. (VAI) hereby submits responses to the comments received from a Planning Board member related to traffic associated with the proposed project to be located at the intersection of Central Street (Route 111) and Sullivan Road/Lawrence Road in Hudson, New Hampshire. For convenience, we have reproduced the comment followed by our response.

Planning Board Member June 14, 2023

- **Comment 1:** It is important to get actual counts from a similar site as that proposed and not rely on the *ITE Trip Generation Manual.*
- **Response:** The initial trip generation estimates for the project were based on Institute of Transportation Engineers (ITE) trip generation statistics¹ for land uses similar to the proposed 84 Lumber store. However, these land uses are not the same as the 84 Lumber store and relied on a combination of uses to estimate the project trip generation. A review of this data both internally and by the Hudson Planning Board raised concerns that this theoretical approach may not model actual conditions appropriately. Therefore, data was provided by the Applicant consisting of transactions for an 84 Lumber store similar in operations and size to the proposed Project in Hudson. Transactions in the form of packing slips are proof that an order has been picked up and traffic activity would represent a vehicle trip. VAI used the number of packing slips and the time of the transaction to create daily and peak hour trip rates for the proposed site.

Data was provided for the most recent month of June 2023 and the Applicant has indicated that June represents an above average/peak month, as contractors are in the midst of construction season and are actively purchasing and picking up building materials and supplies to complete their improvement projects. This data was from a store in West Springfield that is slightly smaller than the proposed Hudson store, so trip rates (trips per 1,000 square feet (sf)) were calculated from this store and applied to the proposed Hudson

¹*Trip Generation*, 11th Edition; Institute of Transportation Engineers; Washington, DC; 2021.

Meeting Date: 8/23/23 Mr. Brian Groth, AICP July 31, 2023 Page 2 of 3

store. Table 1 summarizes the results and also provides the proposed ITE trips from the initial traffic assessment for comparison.

Time Period/ Directional Distribution	Similar Site ^a	Empirical Trip Rate ^b Trips/1,000 sf	Empirical-Based Site Trips ^c	For Comparison: Previous Site Trips ^d
Weekday Daily	96	2.9	158	210
Weekday Morning Peak Hour:				
Entering	9	0.27	14	
Exiting	6	0.18	10	
Total	15	0.45	24	NA
Weekday Evening Peak Hour:				
Entering	4	0.12	6	11
Exiting	4	0.12	7	15
Total	$\frac{4}{8}$	<u>0.12</u> 0.24	$\frac{7}{13}$	$\frac{15}{26}$
Saturday Daily	14	0.41	22	396
Saturday Midday Peak Hour:				
Entering	2	0.06	3	38
Exiting	2	0.06	$\frac{3}{6}$	<u>_36</u>
Total	4	0.12	6	74

Table 1PROPOSED SITE TRIP-GENERATION SUMMARY

^aBased on 84 Lumber Site; 33,300 sf.

^bBased on trips per 1,000 sf.

Based on Proposed 84 Lumber Site; 54,000 sf.

^dMemorandum, Traffic Assessment – Proposed Lumber Yard, Hudson, New Hampshire, VAI; October 28, 2023.

As shown in Table 1, the empirical-based trips from the similar 84 Lumber store represent daily trip differences that are between 52 and 374 trips fewer than previously expected. During the peak hours, the empirical-based trips are between 13 and 68 trips fewer than previously projected with the ITE data. Weekday morning peak hour trips were not calculated initially based on the ITE data indicating this was not a peak time period. Based on the results from Table 1, it was determined that the traffic signal warrant analysis for the Project Site driveway should be revised using the new empirical-based vehicle trips during the weekday time period. However, the new analysis did not indicate any change in the results and a traffic signal is still warranted at this location. This is shown in Table 2.



Table 2 UPDATED TRAFFIC SIGNAL WARRANTS ANALYSIS RESULTS^a ROUTE 111 AT LAWRENCE ROAD/SULLIVAN ROAD

Warrant No.	Description	Satisfied for 2023 Existing Conditions	Satisfied for 2034 No-Build Conditions	Satisfied for 2034 Build Conditions
1	Eight-Hour Vehicular Volume	No	No	Yes
2	Four-Hour Vehicular Volume	No	Yes	Yes
3	Peak Hour	Yes	Yes	Yes
4	Pedestrian Volume	No	No	No
5	School Crossing	No	No	No
6	Coordinated Signal System	No	No	No
7	Crash Experience	No	No	No
8	Roadway Network	No	No	No
9	Grade Crossing	No	No	No

^aTSWA based on counts conducted in January 2023.

It should be noted that under the 2034 No-Build conditions, the intersection trips warrant levels for 7 of 8 hours for the Eight-Hour Vehicular Volume warrant. Only a small increase is needed to get one more hour to exceed the thresholds. In fact, with the empirical-based trip projections, the Project would result in a 0.73 percent increase during the evening peak hour. This indicates the Project has a minimal effect on the intersection operations.

If additional information is required, please do not hesitate to contact me.

Sincerely,

VANASSE & ASSOCIATES, INC.

Scott W. Thornton, P.E. Principal

Attachments: Empirical Data and Updated Signal Warrant Analysis

cc: File



APPENDIX

EMPIRICAL DATA TRAFFIC SIGNAL WARRANT ANALYSIS EMPIRICAL DATA

Transaction	Data
Hansaction	Dala

	6 am	7 am	8 am	9 am	10 am	11 am	12 pm	1 pm	2 pm	3 pm	4 pm	5 pm	Grand Total
Monday	15	23	38	30	18	16	13	15	23	19	4	5	219
Tuesday	19	24	32	17	13	22	20	9	9	9	5	2	181
Wednesday	15	23	24	27	19	13	27	6	13	27	11	5	210
Thursday	21	26	39	27	23	26	17	16	18	18	11	5	247
Friday	23	25	29	25	22	14	12	14	12	12	8	1	197
Saturday		3	2	8	6	7	1						27
Grand Total	93	124	164	134	101	98	90	60	75	85	39	18	1081

Trips

Row Labels	6 am	7 am	8 am	9 am	10 am	11 am	12 pm	1 pm	2 pm	3 pm	4 pm	5 pm
Monday	7.5	11.5	19	15	9	8	6.5	7.5	11.5	9.5	2	2.5
Tuesday	9.5	12	16	8.5	6.5	11	10	4.5	4.5	4.5	2.5	1
Wednesday	7.5	11.5	12	13.5	9.5	6.5	13.5	3	6.5	13.5	5.5	2.5
Thursday	8.4	10.4	15.6	10.8	9.2	10.4	6.8	6.4	7.2	7.2	4.4	2
Friday	9.2	10	11.6	10	8.8	5.6	4.8	5.6	4.8	4.8	3.2	0.4
Wk Avg	8.42	11.1	14.8	11.6	8.6	8.3	8.32	5.4	6.9	7.9	3.52	1.68
Saturday	0	1.5	1	4	3	3.5	0.5	0	0	0	0	0

	Similar Site	Empirical	Proposed
Weekday	96.52	2.90	158
Daily			
AM	14.84	0.45	24
PM	7.9	0.24	13
Sat Daily	13.5	0.41	22
Sat Mid	4	0.12	6
Size	33,300sf	1,000sf	54,000sf

Porposed Trip Generation							
Weekday	Daily	158					
AM							
	IN	14					
	OUT	10					
	TOTAL	24					
PM							
	IN	6					
	OUT	7					
	TOTAL	13					
Sat Daily		22					
Sat Mid							
	IN	3					
	OUT	3 3 6					
	TOTAL	6					

Distribution Based on LUC 812

TRAFFIC SIGNAL WARRANT ANALYSIS

Maatin	a Data: 9/2	2/02			HC	S Warran		0.00 00 00 00 00 00 00 00 00 00 00 00 00	4 Luimhor	Cito plan A	ttoobmont	C
Meeting	<u>g Date: 8/23</u>	<u>3/23</u>			Warra	nts Anal		7# 09-22 8	4 Lumper	<u>Slte plan - A</u>	llachment	
File Name: Analyst: Agency: Date Perform	med:		- \	TSWA 2034 TJH/SWT VAI 7/27/2023	1 Build		Month As	justment	ts Updat	ed.xsw		
Time Analyze	ed:			7AM to 7F								
Analysis Yea						Average	Month Adj	ustments	5			
Project Deso Units:	cription	:		9517 Hund J.S. Cust								
		<u> </u>				General_						
Starting Tir Median Type Major Street	jor Street Direction: East-WestPopulation <10,000: Noarting Time Interval: 7Coordinated Signal System: Nodian Type: UndividedCrashes Per Year: 0jor Street Speed (mi/h): 50Adequate Trials of Crash Experience Alternatiarest Signal (ft): 0Crashes Per Year: 0								atives:	No		
Number of C		in lliche	at llauna				adway Net		Ne			
Number of St Number of Ac Number of M:	dequate (Gaps in	Period: (W	eekend C	re Major ount: No owth Facto					
					Railr	oad Cros	sing					
Grade Cross: Highest Volu Distance to	ume Hour	with Tr	ains: Unl	known	Н	igh Occu	fic (trai pancy Bus railer Tr	es (%):	0			
					_	y and Tr						
	Ea L 	astbound T	R	We L 	estbound T	R	No L 	rthbound T	R R	So L 	uthbound T	d R
No. Lanes Lane Usage	0	1 LTR	0	0	1 LTR	0	0	1 LTR	0	0	1 LTR	0
Traffic Volu		•										
	Ea	astbound T	R	W6 L	estbound T	R	NO L	rthbound T	R	50 L	uthbound T	R
Hour 07 - 08	7	560	16	 11	742	20	23	26	35	55	47	28
08 - 09	4	459	25	21	578	21	23	13	42	37	19	20
09 - 10		359	14	20	453	20	19	19	18	23	19	7
10 - 11 11 - 12	7 7	339 330	17 21	17 19	367 377	16 26	28 16	13 12	24 19	28 21	18 18	17 6
12 - 12	7 7	361	21	21	364	35	10	12	23	17	12	11
L3 - 14	15	395	13	15	375	27	14	16	15	18	13	13
L4 - 15	12	541	32	24	440	44	14	15	24	18	16	7
L5 - 16	8	637	21	48	580	52	18	20	24	21	17	12
16 - 17	13	859	34	29	538	66	23	28	30	26	25	11
7 10	11 17	808 450	28 27	46	566 388	56	13 17	30 17	24 23	20	15 15	12
	1/	450		32	388	55	1/	17	23	16	15	12
18 - 19				ur)					4	50	uthhour	Ч
18 - 19				Westbound Gaps Volume			Northbound Gaps Volume			Southbound Gaps Volume		u
18 - 19 Pedestrian N		astbound		:			No Gaps			Gaps		olume
18 - 19 Pedestrian N Hour	Ea Gaps 	astbound	/olume	Gaps		olume	Gaps		olume	Gaps		
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18 - 19 Pedestrian N Hour 07 - 08 08 - 09	Ea Gaps 0 0	astbound	Volume	Gaps 0 0		olume 0 0	Gaps 0 0		0 0	Gaps 0 0		0 0
18 - 19 Pedestrian N Hour 07 - 08 08 - 09 09 - 10	Ea Gaps Ø	astbound	/olume 0	Gaps 0		olume 0	Gaps 0		olume 0	Gaps 0		0
18 - 19 Pedestrian N Hour 07 - 08 08 - 09 09 - 10 10 - 11	Ea Gaps 0 0	astbound	0 0 0 0	Gaps 0 0		olume 0 0 0	Gaps 0 0 0		0 0 0 0	Gaps 0 0 0		0 0 0
18 - 19 Pedestrian N Hour 27 - 08 28 - 09 29 - 10 10 - 11 11 - 12	Ea Gaps 0 0 0	astbound	0 0 0 0 0 0	Gaps 0 0 0 0		olume 0 0 0 0	Gaps 0 0 0		0 0 0 0 0	Gaps 0 0 0		0 0 0 0
18 - 19 Pedestrian N 27 - 08 28 - 09 29 - 10 10 - 11 11 - 12 12 - 13 13 - 14	Ea Gaps 0 0 0 0	astbound	0 0 0 0 0 0 0 0	Gaps 6 0 0 0 0 0 0		olume 0 0 0 0 0	Gaps		0 0 0 0 0 0	Gaps 0 0 0 0		0 0 0 0
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Delay Meeting Date: 8/23/23 SP# 09-22 84 Luimber SIte plan - Attachment C Eastbound Westbound Northbound Southbound secs/veh veh-hrs secs/veh veh-hrs secs/veh veh-hrs secs/veh veh-hrs Hour 07 - 08 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 08 - 09 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 09 - 10 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 10 - 11 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 11 - 12 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 12 - 13 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 I 13 - 14 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 I 14 - 15 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 I 15 - 16 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 T 16 - 17 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 I 17 - 18 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 18 - 19 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 I

						Summary_						
	Major	Minor	Total	1A	1A	1B	1B	2	3A	3B	4A	4B
	Volume	Volume	Volume	70%	56%	70%	56%	70%	70%	56%	70%	56%
Hour												
07 - 08	1356	130	1570	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
08 - 09	1108	78	1262	No	No	Yes	Yes	Yes	No	Yes	No	No
09 - 10	873	56	978	No	No	Yes	Yes	No	No	No	No	No
10 - 11	763	65	891	No	No	Yes	Yes	Yes	No	No	No	No
11 - 12	780	47	872	No	No	No	Yes	No	No	No	No	No
12 - 13	809	58	907	No	No	Yes	Yes	No	No	No	No	No
13 - 14	840	45	929	No	No	No	Yes	No	No	No	No	No
14 - 15	1093	53	1187	No	No	Yes	Yes	No	No	No	No	No
15 - 16	1346	62	1458	No	No	Yes	Yes	Yes	No	No	No	No
16 - 17	1539	81	1682	No	No	Yes	Yes	Yes	No	Yes	No	No
17 - 18	1515	67	1629	No	No	Yes	Yes	Yes	No	No	No	No
18 - 19	969	57	1069	No	No	Yes	Yes	No	No	No	No	No
Total	12991	799	14434	1	1	10	12	6	0	3	0	0

Results

Results	
Warrant 1: Eight-Hour Vehicular Volume	[X]
A. Minimum Vehicular Volumes	[]
B. Interruption of Continuous Traffic	[X]
56% Vehicularand Interruption Volumes	[]
Warrant 2: Four-Hour Vehicular Volume	[X]
Four-Hour Vehicular Volumes	[X]
Warrant 3: Peak Hour	[X]
A. Peak-Hour Conditions	[]
B. Peak-Hour Vehicular Volume Hours Met	[X]
Warrant 4: Pedestrian Volume	[]
A. Four Hour Volumes	[]
B. One-Hour Volumes	[]
Warrant 5: School Crossing	[]
Gaps Same Period	[]
Student Volumes	[]
Nearest Traffic Control Signal	[]
Warrant 6: Coordinated Signal System Degree of Platooning	[]
Warrant 7: Crash Experience	[]
A. Adequate Trials of Alternatives	[]
B. Reported Crashes	[]
C. 56% Volumes for Warrants 1A, 1Bor 4	[X]
Warrant 8: Roadway Network	[]
A. Weekday Volume	[]
B. Weekend Volume	[]

Warranter Strate: 8/23/23ing

- A. Grade Crossing within 140 ft --and--
- B. Peak-Hour Vehicular Volumes

This text report was created in HCS™ Warrants Version 2023 on 7/27/2023 3:51:28 PM



Test Pit Data Map 145 Lot 15 3 Sullivan Road Hudson, NH

10/13/22

0-6"- 10YR 3/3 dark brown, loamy sand, granular, friable

6-12"- 10YR 5/6 yellowish brown, gravelly medium to coarse sand, single grain, loose

ESHWT = None Observed Water = None Ledge/Boulders = 12" Roots = None

Test Pit #2

10/13/22

0-7"- 10YR 3/3 dark brown, loamy sand, granular, friable

7-72"- 10YR 5/6 yellowish brown, gravelly medium to coarse sand, single grain, loose

ESHWT = None Observed Water = None Ledge/Boulders = None Roots = None

Test Pit #3

10/13/22

0-12"- 10YR 3/3 dark brown, loamy sand, granular, friable

12-24"- 10YR 4/4 dark yellowish brown, loamy medium to coarse sand, single grain, loose

24-76"- 2.5Y 6/6 olive brown, gravelly medium to coarse sand, single grain, loose

ESHWT = None Observed Water = None Ledge/Boulders = 76" Roots = None

Test Pit #4

10/13/22

0-12"- 10YR 3/3 dark brown, loamy sand, granular, friable

12-24"- 10YR 4/4 dark yellowish brown, loamy medium to coarse sand, single grain, loose

24-70"- 2.5Y 6/6 olive brown, gravelly medium to coarse sand, single grain, loose

ESHWT = None Observed Water = None Ledge/Boulders = 70" Roots = None



12-24"- 10YR 4/4 dar		, friable dium to coarse sand, single gr coarse sand, single grain, loos Ledge/Boulders = None	
15-24"- 10YR 4/4 dar		, friable dium to coarse sand, single gr coarse sand, single grain, loos Ledge/Boulders = 68"	
9-16"- 10YR 5/6 yello	brown, loamy fine sand, granu owish brown, loamy fine sand, Ilowish brown, loamy fine sar Observed Water = None	, massive, friable	Roots = 4"
-	brown, gravelly sandy loam, t yellowish brown, loamy fine Observed Water = None		Roots = None
26-44"- 10YR 4/6 dar	brown, sandy loam, massive, k yellowish brown, stony/grav t olive brown, stony/gravelly Observed Water = None	velly sandy loam, massive, fria	ble Roots = None



6-19"- 10YR 5/6 yello 19-32"- 2.5Y 6/3 light	rown, loamy sand, granular, f wish brown, loamy sand, mas olive brown, medium to coar olive brown, fine to medium Observed Water = None	sive, friable se sand, single grain, loose	Roots = None
12-24"- 10YR 5/6 yell 24-36"- 2.5Y 6/4 light	brown, loamy sand, granular, owish brown, loamy sand, ma yellowish brown, sandy loam olive brown, silty loam, mass Observed Water = None	issive, friable 1, massive, friable ive, friable	Roots = 22"
Test Pit #12 10/13/22 0-36"- 10YR 3/3 dark ESHWT = None	brown, stony sandy loam, gra Observed Water = None		Roots = None
12-23"- 10YR 5/6 yell 23-36"- 2.5Y 6/4 light	brown, loamy sand, granular, owish brown, loamy sand, ma yellowish brown, sandy loam olive brown, silty loam, mass Observed Water = None	issive, friable 1, massive, friable ive, friable	Roots = 24"
36-48"- 10YR 4/6 darl	brown, sandy loam, massive, < yellowish brown, stony/grav t olive brown, stony/gravelly s Observed Water = None	elly sandy loam, massive, fria	ble Roots = None



12-48"- 2.5Y 6/3 ligh	•	friable *fill coarse sand, single grain, loo dium sand, single grain, loose Ledge/Boulders = None	
6-18"- 2.5Y 5/4 Light 18-48" – 2.5 Y 6/6 Ol 48-60"- 10YR 5/6 yel	brown loam, massive, friable. yellowish brown sand, granu ive brown loam and boulders lowish brown fine sandy loam ght yellowish brown loamy fin Observed Water = None	lar, friable *fill , granular, friable *fill , granular, friable	Roots = 60"
6-50"- 2.5Y 5/4 Light 50-54" – 10 YR 3/3 D 54-60"- 10 YR 5/6 Ye	brown loam, massive, friable yellowish brown sand, granu ark brown loam, granular fria llowish brown fine sandy loar ght yellowish brown sand, gra Observed Water = None	lar, friable *fill ble n, granular, friable	Roots = 8"
6-24"- 2.5Y 5/4 Light 24-30" – 10 YR 3/3 D 30-32"- 10 YR 5/6 Ye	brown loam, massive, friable yellowish brown sand, granu ark brown loam, granular fria llowish brown fine sandy loar ght yellowish brown sand, gra Observed Water = None	lar, friable *fill ble n, granular, friable nular, friable	Roots = 4"



Test Pit #186/7/230-6"- 10YR 3/3 Dark brown loam, massive, friable. *fill6-18"- 2.5Y 5/4 Light yellowish brown sand, granular, friat18-50" - 2.5 Y 6/6 Olive brown loam and boulders, granul50-60"- 10YR 5/6 yellowish brown fine sandy loam, granul60-120" - 2.5Y 5/4 Light yellowish brown loamy fine sandESHWT = 110"Observed Water = NoneLedge	lar, friable *fill lar, friable I, granular, friable	Roots = 6"
Test Pit #196/7/230-6"- 10YR 3/3 Dark brown loam, massive, friable. *fill6-18"- 2.5Y 5/4 Light yellowish brown sand, granular, friat18-50" - 2.5 Y 6/6 Olive brown loam and boulders, granul50-54"- 10YR 5/6 yellowish brown fine sandy loam, granul54-130" - 2.5Y 5/4 Light yellowish brown loamy fine sandESHWT = NoneObserved Water = NoneLedge	lar, friable *fill lar, friable I, granular, friable	Roots = 4"
Test Pit #206/7/230-6"- 10YR 3/3 Dark brown loam, massive, friable *fill6-50"- 2.5Y 5/4 Light yellowish brown sand, granular, friable50-54" - 10 YR 3/3 Dark brown loam, granular friable54-62"- 10 YR 5/6 Yellowish brown fine sandy loam, granular, for62-120" - 2.5Y 5/4 Light yellowish brown sand, granular, forESHWT = NoneObserved Water = NoneLedge	ular, friable riable	Roots = None
Test Pit #216/7/230-8"- 10YR 3/3 Dark brown loam, massive, friable *fill8-48"- 2.5Y 5/4 Light yellowish brown sand, granular, friable48-52" - 10 YR 3/3 Dark brown loam, granular friable52-60"- 10 YR 5/6 Yellowish brown fine sandy loam, granular, for60-130" - 2.5Y 5/4 Light yellowish brown sand, granular, forESHWT = NoneObserved Water = NoneLedge	ular, friable riable	Roots = 18"



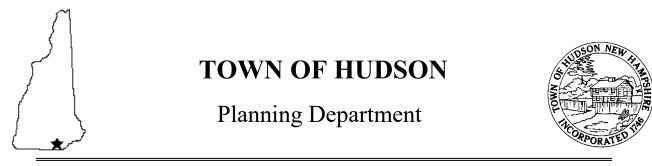
Test Pit #226/7/230-18"- 10YR 3/3 Dark brown loam, massive, friable18-24"- 10 YR 5/6 Yellowish brown loamy fine sand, granular, friable24-52" - 2.5Y 5/4 Light yellowish brown fine sand, granular, friableESHWT = NoneObserved Water = NoneLedge/Boulders = 52"

Roots = 48"

Logged By: Christopher Guida

Munlydn Club

Christopher A. Guida, CSS, CWS Certified Soil & Wetland Scientist NH Licensed Designer #1401

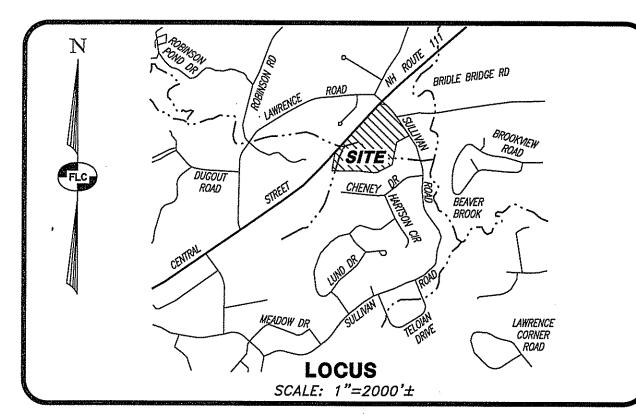


12 School Street · Hudson, New Hampshire 03051 · Tel: 603-886-6008 · Fax: 603-594-1142

CAP FEE WORKSHEET - 2023

Date:	<u>08-16-23</u> Zo	ne # <u>2</u>	Map/Lot:			
Project N	ame:	84 Lumb	<u>er Site Projec</u>		ivan Road	
Proposed	ITE Use #1:	General Light	t Industrial			
Proposed	Building Area (square footage)	:	55,500)	S.F.
CAP FEE	CS: (ONE CHEC	K NEEDED)				
1.	(Bank 09) 2070-702	Traffic Impr (Zone 2)	ove	<u>\$</u>	87,135	_
		Total CAP F	ee	<u>\$</u>	87,135	

Check should be made payable to the <u>Town of Hudson</u>.



ABUTTER INFORMATION:

MAP 145 LOT 1 1 BOCKES ROAD, LLC 25 PELHAM ROAD, SUITE 103 SALEM, NH 03079 BK.8752 PG.2019 5/5/2015 (1 BOCKES ROAD)

MAP 145 LOT 5 MILAP CORPORATION 2 SULLIVAN ROAD HUDSON, NH 03051 BK.6234 PG.473 4/28/2000 (2 SULLIVAN ROAD)

MAP 145 LOT 9 HOPE M. GIBBS JASON M. DEBOW 1 BRIDLE BRIDGE ROAD HUDSON, NH 03051 BK.9209 PG.2313 9/16/2019 (1 BRIDLE BRIDGE ROAD)

MAP 145 LOT 10 MELISSA JOHNSON AARON LOCKE 8 SULLIVAN ROAD HUDSON, NH 03051 BK.8689 PG.2481 9/5/2014 (8 SULLIVAN ROAD)

MAP 145 LOT 11-1 JOSEPH C. THOMPSON 10 SULLIVAN ROAD HUDSON, NH 03051 BK.8767 PG.501 7/2/2015 (10 SULLIVAN ROAD)

MAP 145 LOT 11-2 ROBERTA JOHNSON 12 SULLIVAN ROAD HUDSON, NH 03051 BK.7432 PG.2490 3/22/2005 (12 SULLIVAN ROAD)

MAP 145 LOT 12 ROBERT A. & LOUISE E VERCELLIN 14 SULLIVAN ROAD HUDSON, NH 03051 BK.8342 PG.1975 8/19/2011 (14 SULLIVAN ROAD)

MAP 145 LOT 14 DANIEL H. & CAROLE H. RODIER 15 SULLIVAN ROAD HUDSON, NH 03051 BK.8464 PG.130 8/27/2012 (15 SULLIVAN ROAD)

MAP 153 LOT 15 STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION PO BOX 483 1 HAZEN DRIVE ROOM 204 CONCORD, NH 03302 (361 CENTRAL STREET)

MAP 153 LOT 17 MARGUERITE THIBEAU 11 CHENEY DRIVE HUDSON, NH 03051 BK.5833 PG.1654 7/21/1997 (11 CHENEY DRIVE)

MAP_153_LOT_18 MARYBETH & MARK E. PETROS 13 CHENEY DRIVE HUDSON, NH 03051 BK.8572 PG.470 6/17/2023 (13 CHENEY DRIVE)

MAP 153 LOT 19 PAUL HENRY ALLEN LEONORA LOUISE SARANTAKIS 15 CHENEY DRIVE HUDSON, NH 03051 BK.5630 PG.455 5/31/1995 (15 CHENEY DRIVE)

MAP 153 LOT 20 NANCY FREDHOLM 17 CHENEY DRIVE HUDSON, NH 03051 BK.3298 PG.945 4/28/1985 (17 CHENEY DRIVE)

MAP 153 LOT 21 MATTHEW P. & JULIE E. ROY **19 CHENEY DRIVE** HUDSON, NH 03051 BK.9295 PG.260 5/12/2020 (19 CHENEY DRIVE)

MAP 153 LOT 22 NICOLE KELLEY FEINAUER MAE LUCILLE GAY 21 CHENEY DRIVE HUDSON, NH 03051 BK.9322 PG.1275 7/17/2020 (21 CHENEY DRIVE)

MAP 153 LOT 48 ROGERIO & JANET ABREU 38 CHENEY DRIVE HUDSON, NH 03051 BK.8746 PG.1638 4/28/2015 (38 CHENEY DRIVE)

MAP 144 LOT 22-1 STATE OF NEW HAMPSHIRE C/O DRED 172 PEMBROKE ROAD PO BOX 1856 PEMBROKE, NH 03302 BK.423 PG.145 (CENTRAL STREET)

MAP 144 LOT 23 PROPERTIES INC. C/O ELECTRICAL SUPERINTENDENT PO BOX 270 HARTFORD, CT 06141 (CENTRAL STREET)

MAP 144 LOT 24-6 SEAN M. & MEGHAN E. JORDAN 12 HUDSON HILLS DRIVE HUDSON, NH 03051 BK.9096 PG.2282 06/08/2018 (12 HUDSON HILLS DRIVE)

MAP 144 LOT 24-10 ROBERT & JENNIFER GANAS 63 LAWRENCE ROAD HUDSON, NH 03051 BK.7925 PG.848 11/28/2007 (63 LAWRENCE ROAD)

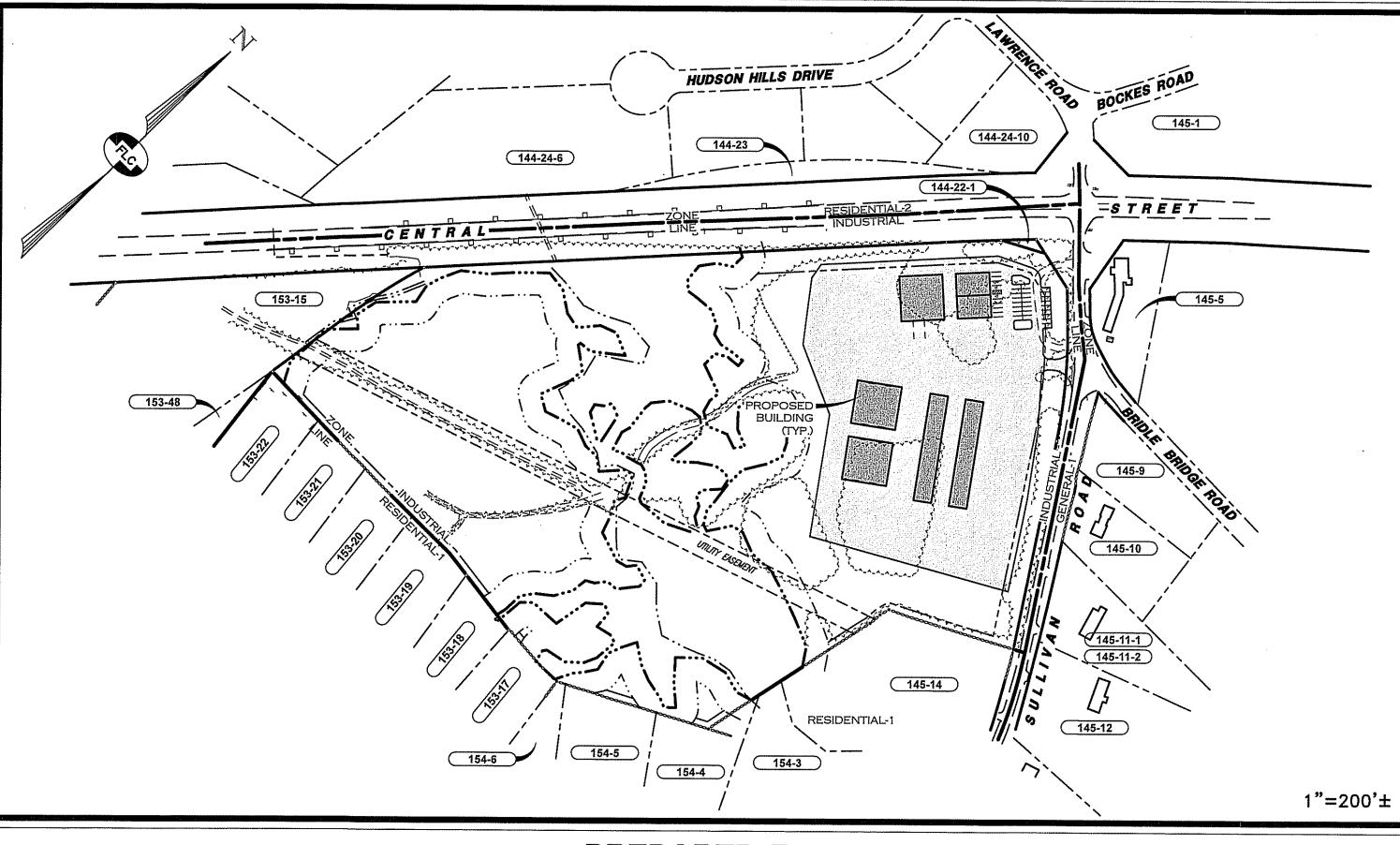
MAP 154 LOT 3 DAVID J. & DONNA MARIE HAMILTON **3 CHENEY DRIVE** HUDSON, NH 03051 BK.7069 PG.1372 9/17/2003 (3 CHENEY DRIVE)

MAP 154 LOT 4 ROBERT H. & THERESA A. FOURNIER 5 CHENEY DRVIE HUDSON, NH 03051 BK.8751 PG.2734 5/8/2015 (5 CHENEY DRIVE)

MAP 154 LOT 5 CHISTOPHER MICHAEL ESTRELLA CHENEY DRIVE HUDSON, NH 03051 BK.9200 PG.1940 8/20/2019 (7 CHENEY DRIVE)

MAP 154 LOT 6 MARILYN M. PATINSKAS 9 CHENEY DRIVE HUDSON, NH 03051 BK.4299 PG.29 7/23/1987 (9 CHENEY DRIVE)

MAP 144 LOT 22-1 STATE OF NEW HAMPSHIRE C/O DRED 172 PEMBROKE ROAD PEMBROKE, NH 03302-1856



1. THE LOCATION OF THE UTILITIES SHOWN ARE APPROXIMATE IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING AND

UTILITY COMPANIES PRIOR TO AND DURING CONSTRUCTION THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ROPOSED WORK PRIOR TO CONSTRUCTION. CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

COORDINATING WITH ALL JURISDICTIONAL AGENCIES AND

AND PRESERVE ALL UTILITY SERVICES.

DIGSAFE.COM OR DIAL 81 CALL BEFORE YOU DIG

APPROVED BY THE HUDSON, NH PLANNING BOARD

DATE OF MEETING:

CHAIRMAN:

SIGNATURE DATE

SIGNATURE DATE

SECRETARY

REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES ONE YEAR FROM DATE OF APPROVAL.

PURSUANT TO THE SITE

SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

SITE DEVELOPMENT PLANS 84 LUMBER COMPANY

TAX MAP 145 PARCEL 15 (3 SULLIVAN ROAD) HUDSON, NEW HAMPSHIRE

> AUGUST 2, 2022 REVISED: AUGUST 10, 2023

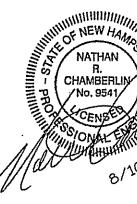
PREPARED FOR: 84 LUMBER COMPANY 1019 ROUTE 519, BUILDING 4

EIGHTY FOUR, PA 15330

LAND OF: **PIERCE HARDY LIMITED PARTNERSHIP** 1019 ROUTE 519, BUILDING 4

EIGHTY FOUR, PA 15330

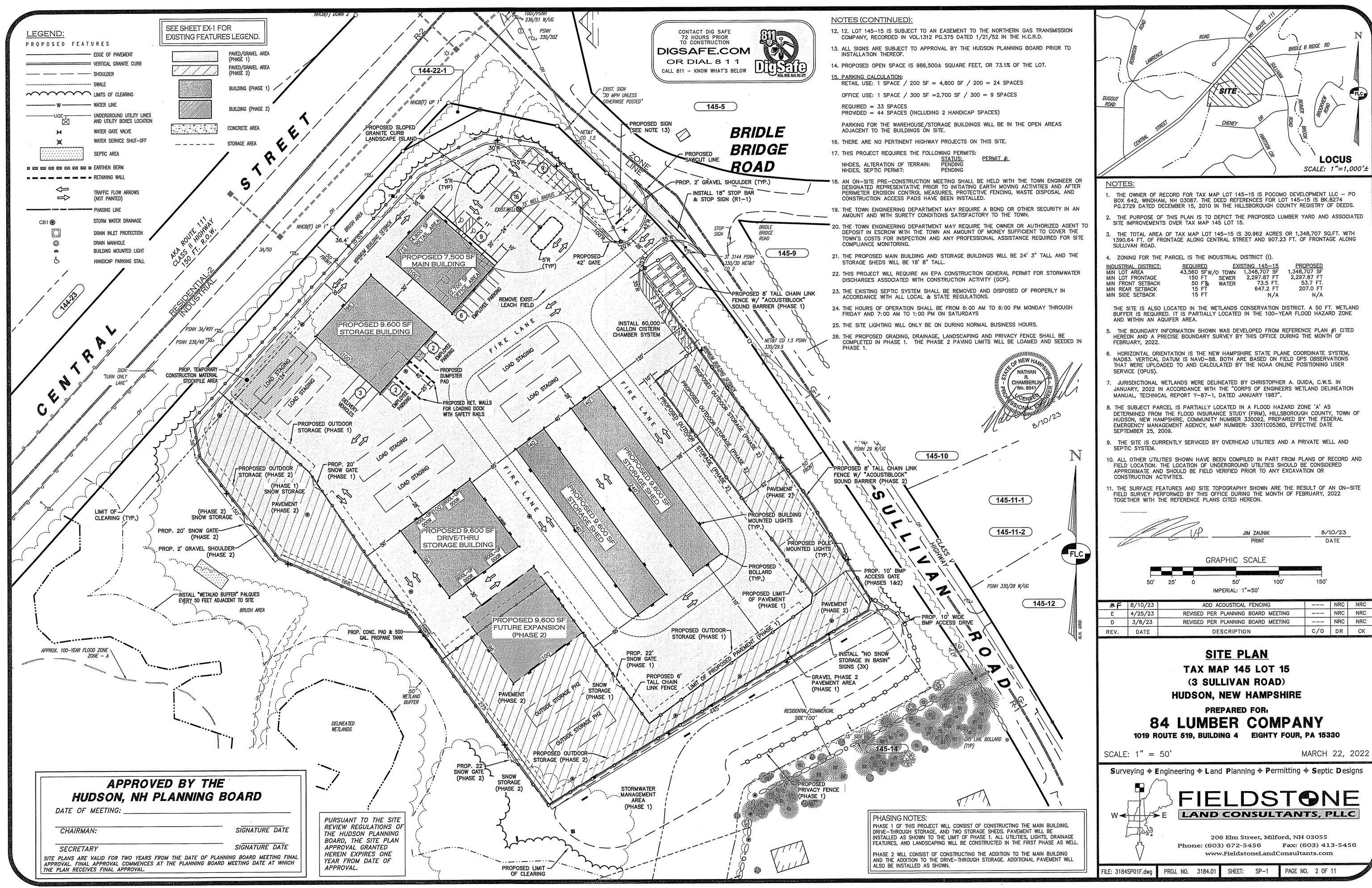




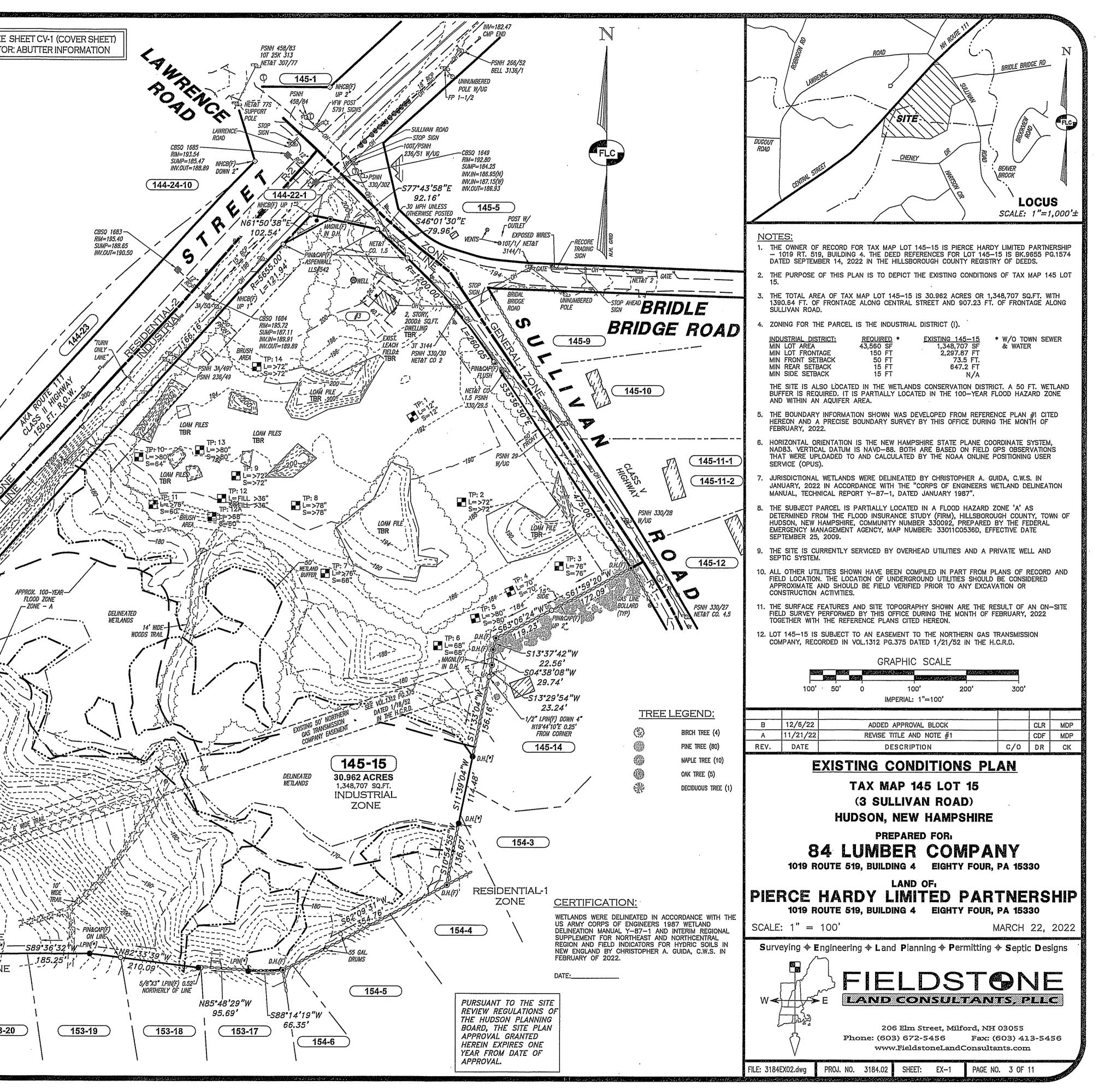
SHEET INDEX				
PAGE	SHEET	TITLE		
1	CV-1	COVER SHEET		
2	SP-1	SITE PLAN		
3	EX-1	EXISTING CONDITIONS PLAN		
4	GR—1	GRADING PLAN		
5	UT—1	UTILITY PLAN		
6	LT—1	LIGHTING PLAN		
7	LS-1	LANDSCAPING PLAN		
8	DT—1	EROSION CONTROL DETAILS		
9	DT-2	CONSTRUCTION DETAILS		
10	DT-3	CONSTRUCTION DETAILS		
11	DT-4	CISTERN DETAILS		

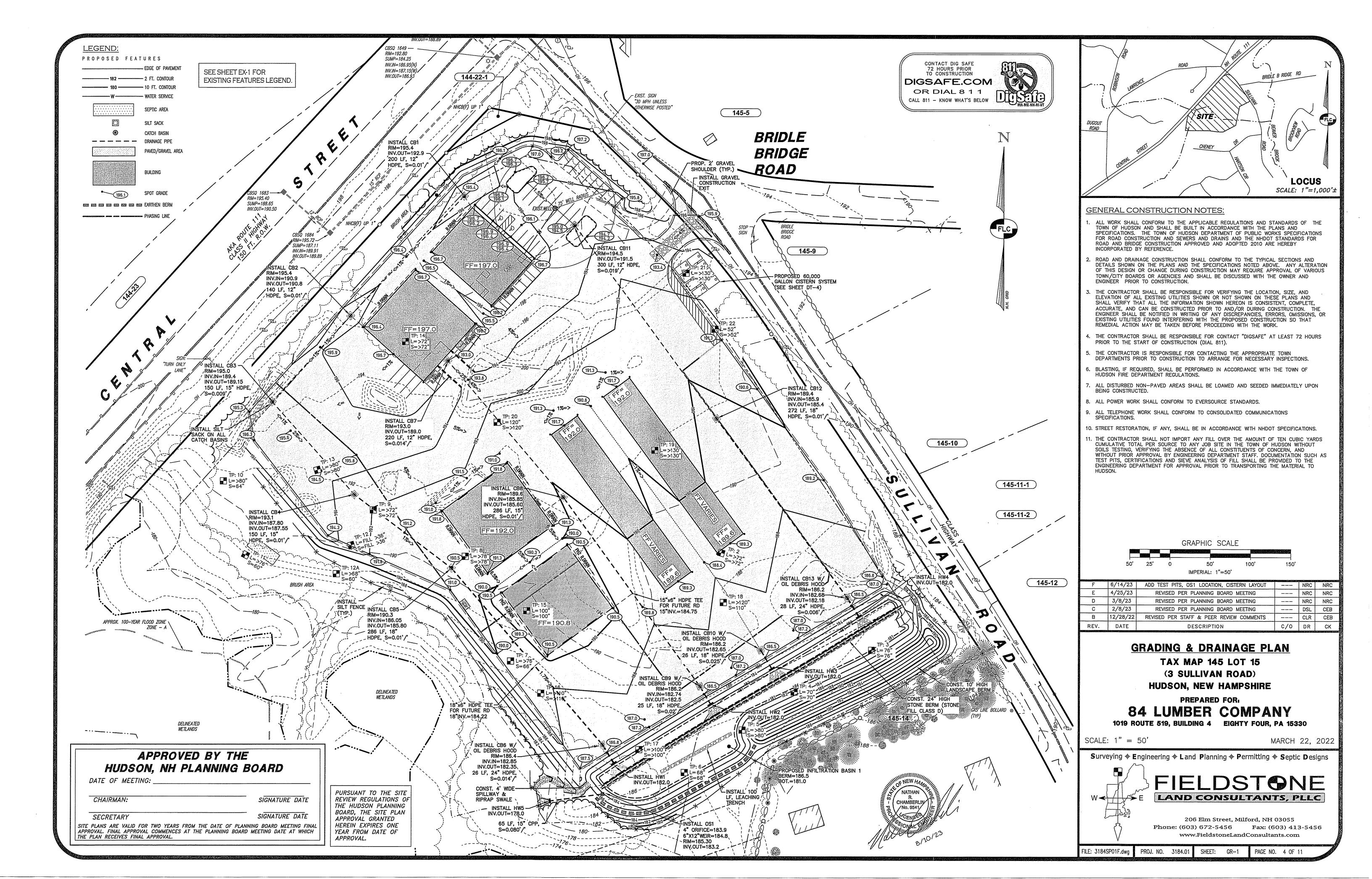
-	EXHIB	IT SHEET INDEX
PAGE	SHEET	TITLE
1	EH—1	SIGHT DISTANCE EXHIBIT
2	EH—2	PROPOSED SEWEGE DISPOSAL SYSTEM PLAN
3	EH—3	HIGH INTENSITY SOIL MAP

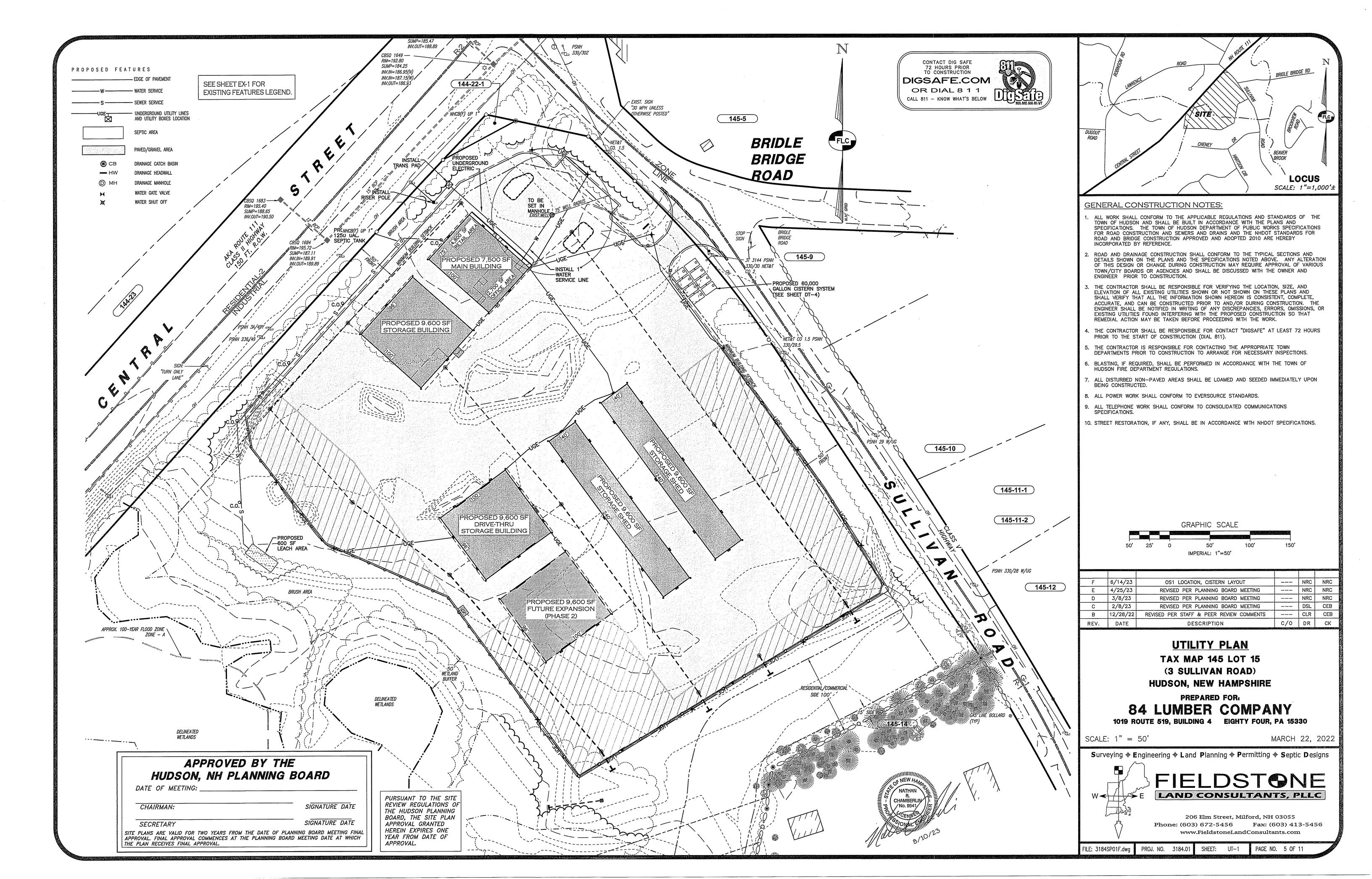
F	8/10/23	ACOUSTICAL FENCING, TEST PITS, CISTE	RN, OS-1		NR
E	4/25/23	REVISED PER PLANNING BOARD ME	ETING	[DLS
D	3/8/23	REVISED PER PLANNING BOARD ME	ETING		DLS
С	2/8/23	REVISED PER 1/25/23 PB MEET	ING	HPB	DLS
8	1/6/23	REVISED PER STAFF & PEER REVIEW C	OMMENTS		CLR
А	11/17/22	REVISED PER CLIENT & FIRE REV	/IEW		CLR
REV.	DATE	DESCRIPTION		C/0	DR

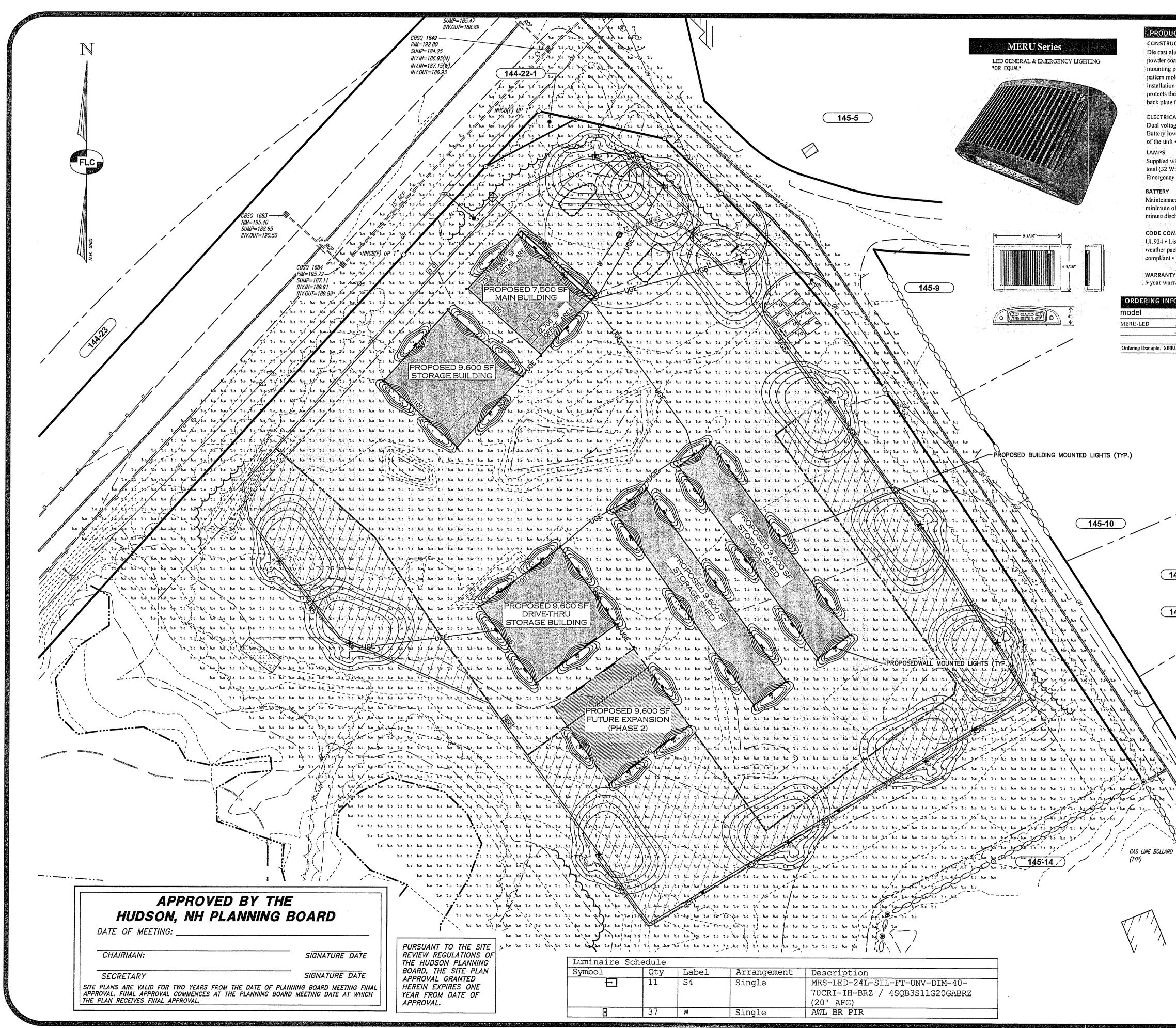


LEGEND:		REFERENCE PLANS: 1. "SUBDIVISION PLAN - MAP 145 / LOT 015 - SULLIVAN ROAD & CENTRAL STREET - HUDSON
	RIGHT-OF-WAY LINE	NH - OWNED BY: - POCOMO DEVELOPMENT, LLC - 72A OLD DERRY ROAD - HUDSON, NH 03051", SCALE: 1"=100', DATED: FEBRUARY 2013, REVISED THROUGH: APRIL 3, 2013, PREPARED
	Boundary line Abutting lot line	BY: EDWARD N. HERBERT ASSOC. INC. & RECORDED AS PLAN #37715 IN THE H.C.R.D.
	- BUILDING SETBACK LINE	2. "CHENEY ACRES - FINAL SUBDIVISION - PLAN OF LAND - OWNED BY: HARTSON E. CHENEY HUDSON, N.H.", SCALE: 1"=100', DATED: OCTOBER 31, 1974, PREPARED BY: AMHERST SURVEY ASSOCIATES, INC. & RECORDED AS PLAN #7994 IN THE H.C.R.D."
	- EDGE OF PAVED ROAD	3. "TOWN OF HUDSON, NH PLAN OF LAND - SULLIVAN RD. & ROUTE 111 HUDSON, N.H
	- EDGE OF GRAVEL ROAD	MAP 145 / LOT 015 - OWNERS: PETER HOVLING, LINDA SUMMIT - ERIC J. HOVLING & KURT HOVLING - 3 SULLIVAN ROAD - HUDSON, NH 03051", SCALE: 1"=100', DATED: NOVEMBER, 2010
	⇒ curb line ⇔ stone wall	PREPARED BY: EDWARD N. HERBERT ASSOC., INC. & RECORDED AS PLAN #36944 IN THE H.C.R.D 4. "STATE OF NEW HAMPSHIRE – DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS – PLANS OF
		PROPOSED - FEDERAL AID SECONDARY PROJECT - NO. S28(7) - N.H. PROJECT NO. S-3791-A - HUDSON-WINDHAM ROAD", SCALE: 1"=50', DATED: NOVEMBER, 1960.
200 ·		5. "CORRECTIVE PLAN PREPARED FOR - HUDSON HILLS SUBDIVISION - TAX MAP 144; LOT 24 -
202		LAWRENCE ROAD, HUDSON, NEW HAMPSHIRE", SCALE: 1"=50', DATED: DECEMBER 5, 2005, PREPARED BY: WOODLAND DESIGN GROUP INC. & RECORDED AS PLAN #34463 IN THE H.C.R.D.
п	— GUARDRAIL — OVERHEAD UTILITY LINE	
		CERTIFICATION:
	- EXISTING EASEMENT	"I HEREBY CERTIFY THAT THIS PLAN IS THE RESULT OF AN ACTUAL FIELD SURVEY MADE ON THE GROUND PER THE PRECISION AND ACCURACY STANDARDS FOR AN URBAN CLASSIFICATION SURVEY AS SPECIFIED IN THE NEW
	- 50' WETLAND BUFFER LINE	HAMPSHIRE LAND SURVEYOR'S ADMINISTRATIVE RULES (LAN 503.04) AND HAS A MAXIMUM ERROR OF CLOSURE OF ONE PART IN TEN THOUSAND (1:10,000)
	- Delineated Wetlands - Edge of Water	ON ALL PROPERTY LINES WITHIN AND BORDERING THE SUBJECT PROPERTY."
	- APPROX. 100 YR FLOOD LINE	DATE:
145-15	TAX MAP & LOT NUMBER	
G.B.(F)	GRANITE BOUND FOUND	
⊚ ^{D.H.(F)} ⊙ ^{I.PIN(F)}	DRILL HOLE FOUND	
⊙ ^{I.PIP} (F) ⊙ ^{I.PIPE(F)}	iron pin found Iron pipe found	
NHCB(F)	NH Concrete Bound Found	
₩ ^{D.H.[*}]/I.PIN[Monument per reference plan #1	
Φ	GAS LINE MARKER	
	utility pole & guy Single Sign post	
ф.	Light Post	
Ē	Square catch basin	
	MAILBOX	
#3	STREET ADDRESS	// &
	EXISTING BUILDING	
unun		
TBR	TO BE REMOVED	144-24-6
		C / M
		INV.IN=176.38
		NET&T CO. 29 PSNH 46
	•	
		NET&T CO 307
		H/2 W/UG
	DETAIL SCALE: 1"=5'	NET&T CO. 28
	/ 1 10 LOT N80"23'36"	PSNH 45 NETWT
1	1 99 0 145-15 -1.17'	
. 1	11 11 PM -7/16"X18" I.PIN(F)	
	LOT NB8°49'47"W	
	LOT LOT LOT LOT 153-48 153-22	
	``	LPINIT LEDGE
	\sim /	153-15
	\times	VEHICLE
	P	PARIS PARIS
	NET&T CO. 27	MARKER (TVP)
	NET&T CU. 27 PSNH 44	R=1961.77'
	······	THE
		I 5-8 5-9 '\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
	APPROVED BY	11 111 215 12
HUDS	ON, NH PLANNII	11 111 215 12
	ON, NH PLANNII	NG BOARD
HUDS	ON, NH PLANNII	NG BOARD SIGNATURE DATE
DATE OF MEET	ON, NH PLANNII	NG BOARD SIGNATURE DATE
HUDS DATE OF MEET CHAIRMAN: SECRETARY SITE PLANS ARE VALID	ON, NH PLANNII	NG BOARD SIGNATURE DATE









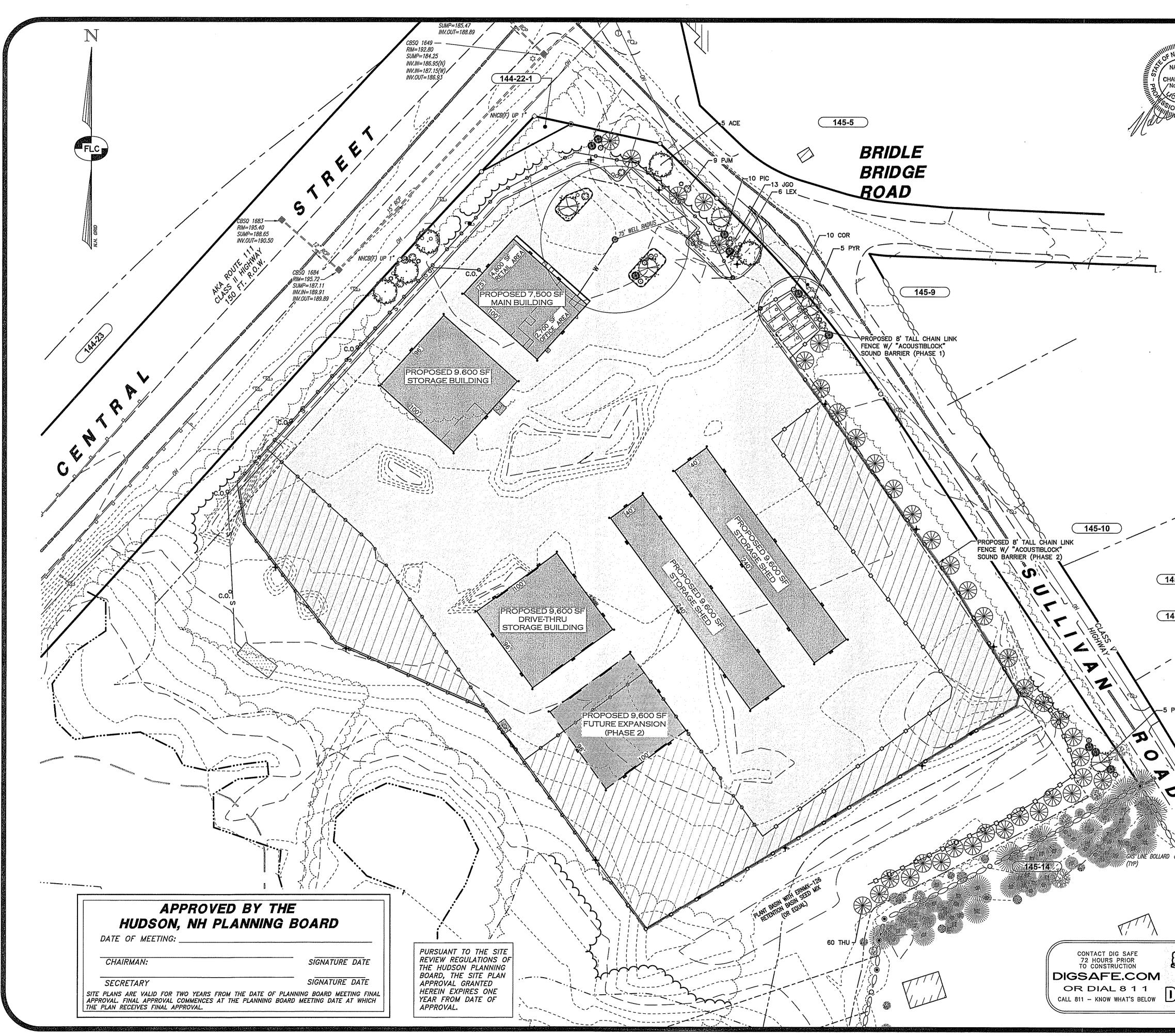
VIII VIII	1 QCY	Taper	ALLANGEMENC	Description
Ð	11	S4	Single	MRS-LED-24L-SIL-FT-UNV-DIM-40-
				70CRI-IH-BRZ / 4SQB3S11G20GABRZ (20' AFG)
•	37	W	Single	AWL BR PIR

DUCT SPECIFICATIONS TRUCTION st aluminum housing with superior heat r coat finish • UV resistant polycarbona ing plate are held together by four stain 1 molded into the back plate • 1/2" threa ation • Silicone rubber seal with hollow is the electrical components • Junction b late for a weather proof installation • Da	te lens • Snap-fit housing and less steel clips • Universal mountin ded top access for surface conduit v center, shape adaptive design box neoprene seal is attached to the	ng OR DIAL 8 1 CALL 811 - KNOW WHAT'S E	
RICAL oltage 120/277VAC 60Hz input • Solic y low voltage disconnect • AC power in unit • Standard with Self Diagnostics to	idicator and test switch at the bott	lom	
5 ed with eight (8) LG SMD 4000K LED' 2 Watts with IH option) • 1600 Lumens ency mode • Full cut-off optics for Dark	in AC mode, 600 Lumens in	NEW HA	<i>W</i> .
RY nance-free, long-life rechargeable NiCac im of 90 minutes in the event of a power discharge.			
COMPLIANCE • Listed for wet location applications ((r package for (-40°C-50°C) • IP65 Rated ant • NEC and OSHA compliant • DLC ANTY	d • NFPA 101 Life Safety Code	THE SUCH	0/2 ³
warranty. Product specifications subjec	to change without notice.		
INFORMATION operation mode	housing color	options	
ACEM = General & Emergency Lighti AC = General Lighting	ng DB = Dark Bronze WH = White	<u>Self-Diagnostics & Photocell</u> Ancholed Standard) III – Internal Heater	
MERU-ACEM-DB	BK = Black NK = Nickel	PIR = Passive Infra-Red Motion Sensor	
145-11-2	OR STREETS TO T 2. OUTDOOR LIGHTING SAFETY AND SECU 3. ALL OUTDOOR LIG LIGHT DOWNWARD 4. THE DESIGN WAS EMERGENCY LIGHT IS TO BE USED, I' FIXTURES ARE AV	TES: G SHALL BE DIRECTED AWAY FROM ABUT THE EXTENT POSSIBLE. G IS RESTRICTED TO THAT WHICH IS NEC URITY OF THE DEVELOPMENT. HTING FIXTURES MUST UTILIZE CUT-OFF AND MINIMIZE GLARE AND LIGHTS SCAT COMPLETED BY CHARRON LIGHTING USIN TING FIXTURES LISTED. IF ANOTHER MANU T MUST BE APPROVED BY THE ENGINEER AILABLE THROUGH CHARRON LIGHTING. GRAPHIC SCALE	AYS · ROBOWBYS · Building Areas TING PROPERTIES OR HIGHWAYS RESSARY FOR ADVERTISING, TYPE FIXTURES TO DIRECT TERING. G THE MERU LED GENERAL & FACTURER OR MODEL FIXTURE
145-12	F 6/14/23 E 4/25/23	CISTERN LAYOUT REVISED PER PLANNING BOARD MEE	TING NRC NRC
\	D 3/8/23 C 2/8/23	REVISED PER PLANNING BOARD MEE REVISED PER PLANNING BOARD MEE	TING NRC NRC
	B 12/28/22 R	REVISED PER STAFF & PEER REVIEW COM	MENTS CLR CEB
	REV. DATE		C/O DR CK
		LIGHTING PLAN TAX MAP 145 LOT	
olro B //		(3 SULLIVAN ROAD	
		HUDSON, NEW HAMPS	

PREPARED FOR **84 LUMBER COMPANY** 1019 ROUTE 519, BUILDING 4 EIGHTY FOUR, PA 15330

SCALE: 1" = 50'MARCH 22, 2022 Surveying & Engineering & Land Planning & Permitting & Septic Designs FIELDSTONE LAND CONSULTANTS, PLLC W <\ / \ / → E 206 Elm Street, Milford, NH 03055 Phone: (603) 672-5456 Fax: (603) 413-5456 $www. {\it Fieldstone Land Consultants.com}$

FILE: 3184SP01F.dwg PROJ. NO. 3184.01 SHEET: LT-1 PAGE NO. 6 OF 11



	DESI	IGN NO	TEC					
			REQUIREMENTS:					
AN HE		<u>TREES</u> 1 TREE/1,0	600 SF	REQUIRED 10 TREES	PROPOSEI 10 TREES			
		SHRUBS:		REQUIRED	PROPOSED			
		INTERIOR L	S/PARKING SPACE	56 SHRUBS REQUIRED	59 <u>PROPOSEE</u>			
8/10/23			NG LOT AREA	10% X 14,600 SF = 1,460 SF	1,485± Si			
			SIDENTIAL LOTS					
	1. THE	LANDSCAPE (G NOTES:					
			all notify the owners re 10 remain shall be prese				CING.	
	3. UNTI		IG AND CONSTRUCTION HAS				lant mat	ERIAL
			e noted or approved, al	l trees must be balled a	and Burlappe	ED.		
			IALS INSTALLED SHALL MEET OCK" BY THE AMERICAN AS			e American	STANDAR	RDS
			lant material substitution			REPRESEN	TATIVE.	
		PLANT MATER	IAL SHALL BE GUARANTEED	BY THE INSTALLER FOR ONE	e year follow	WING DATE	OF	
	8. in a Bef(AREAS OF STO ORE PLACING	NE MULCH LAY 6 MIL SHEE STONE, MINIMUM 6" OVERLA					RADE
	Stoi 9. Unli		e noted loam and seed a	LL DISTURBED ARES WITH A	A MINIMUM 4"	OF SUITARI	E LOAM	
	SLO	PES GREATER	THAN 3:1 SHALL BE PROTE	CTED WITH AN EROSION COM	NTROL BLANKE	Γ. SEE SΠ	e plan.	
	SPR	ING AND STOP	E, THE CONTRACTOR SHALL RED FOR FALL PLANTING.			LANIS DUG	IN IHE	
			NSTALLED WITHIN ONE YEA			FS OF SIO	יוביד אז ד	
	ENT	RANCE AND IN	TERNAL INTERSECTIONS.					
			AREAS WILL BE MAINTAINED TION OR BY OTHER MEANS.	TO HAVE A SUFFICIENT AMO	ount of wate	r to maint	'ain viabi	LITY
		Posed planti Jttes	NGS SHALL NOT CONFLICT N	WITH SNOW STORAGE AREAS,	LIGHT FIXTUR	es or und	ERGROUN	D
	<u>PLAI</u>	NT SYI	MBOLS F	PLANT LIST & *or equal*	NAME	G	<u> TY.</u>	
	aring .	ACE	ACER PLATANOIDS (C	RIMSON KING MAPLE T	TREE)	(5) 3" (CAL., 12	2' TALL
	Finger					/=\ -"		
		手 PYR	MTRUS CALLERYANA	(CALLERY PEAR TREE)		(5) 2" (JAL., 7'	IALL
	G	PJM	RHOD. 'P.J.M.' COMP (COMPACT RHODODE)			(9) 3 G	AL.	
	R) тни	•	RK AMERICAN ARBORVI	TAE)	(39) 6-	·7'	
		JGO	JUNIPERUS CHINENSI	S (GREY OWL JUNIPER)	(13) 3	GAL.	
1-1	0	LEX		UE PRINCE' (MALE HOI		(6) 3 G		
	O Ø	COR PIC		(WINTER FLAME DOGWO F ALBERTA SPRUCE)	•	(10) 3 (10) 3		
1-2)			·	APHIC SCALE				
<u></u> /	7					Sector and the		
		•	25' 0	50' 1 IPERIAL: 1"=50'	00'	150'		
		50'	11					
	F	50' 8/10/23		0S1 LOCATION. CISTER	n layout		NRC	NRC
145-12	E	8/10/23 4/25/23	ACOUSTICAL FENCE, REVISED PER	OS1 LOCATION, CISTER PLANNING BOARD ME	ETING		NRC	NRC
	E D C	8/10/23 4/25/23 3/8/23 2/8/23	ACOUSTICAL FENCE, REVISED PER REVISED PER REVISED PER	PLANNING BOARD ME PLANNING BOARD ME PLANNING BOARD ME	ETING ETING ETING		NRC NRC DSL	NRC NRC CEB
	E D	8/10/23 4/25/23 3/8/23	ACOUSTICAL FENCE, REVISED PER REVISED PER REVISED PER REVISED PER STAF	PLANNING BOARD ME PLANNING BOARD ME	ETING ETING ETING		NRC NRC	NRC NRC
	E D C B	8/10/23 4/25/23 3/8/23 2/8/23 12/28/22	ACOUSTICAL FENCE, REVISED PER REVISED PER REVISED PER REVISED PER STAF	PLANNING BOARD ME PLANNING BOARD ME PLANNING BOARD ME F & PEER REVIEW CO	ETING ETING ETING		NRC NRC DSL CLR	NRC NRC CEB CEB
	E D C B	8/10/23 4/25/23 3/8/23 2/8/23 12/28/22	ACOUSTICAL FENCE, REVISED PER REVISED PER REVISED PER REVISED PER STAF D	PLANNING BOARD ME PLANNING BOARD ME PLANNING BOARD ME F & PEER REVIEW CO	eting Eting Eting Mments		NRC NRC DSL CLR	NRC NRC CEB CEB
	E D C B	8/10/23 4/25/23 3/8/23 2/8/23 12/28/22	ACOUSTICAL FENCE, REVISED PER REVISED PER REVISED PER STAF D LANDS TAX M	PLANNING BOARD ME PLANNING BOARD ME PLANNING BOARD ME F & PEER REVIEW CO ESCRIPTION CAPING PL AP 145 LOT	eting eting eting mments _AN 15		NRC NRC DSL CLR	NRC NRC CEB CEB
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2. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH STANDARDS AND SPECIFICATIONS THEREOF IN NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICE STORM WATER MANUALS, VOLUME 1-3, LATEST EDITION.

3, EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED PER PLANS AND DETAILS. PERIMETER CONTROLS SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF EARTH DISTURBING ACTIVITIES.

4. INSTALL INLET PROTECTION AROUND ALL STORM DRAIN STRUCTURES. INLET PROTECTION BMP'S SHALL REMAIN UNTIL THE SITE IS STABILIZED. CONSTRUCTION OF STORMWATER BASINS AND TREATMENT SWALES SHALL OCCUR PRIOR TO AND EARTH MOVING OPERATION THAT WILL INFLUENCE STORM WATER RUNOFF.

5. THE WORK AREA SHALL BE GRADED, SHAPED AND OTHERWISE DRAINED IN SUCH A MANNER AS TO MINIMIZE SOIL EROSION, SILTATION OF DRAINAGE CHANNELS, DAMAGE TO EXISTING VEGETATION, AND DAMAGE TO PROPERTY OUTSIDE THE LIMITS OF THE WORK AREA.

6. EXISTING VEGETATION IS TO REMAIN UNDISTURBED WHEN POSSIBLE.

7. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE KEPT CLEAN DURING CONSTRUCTION. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE A WEEK AND AFTER EVERY 0.25-INCH OR GREATER RAINFALL. SEDIMENTS SHALL BE DISPOSED OF IN AN UPLAND AREA THAT WILL NOT CONTRIBUTE TO SEDIMENT OFF-SITE AND BE PERMANENTLY STABILIZED.

8. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION. AT NO TIME SHALL THE TOTAL UNSTABILIZED DISTURBED AREA, INCLUDING LOT DISTURBANCES, BE GREATER THAN FIVE (5) ACRES.

9. THE LAND AREA EXPOSED SHALL BE KEPT TO THE SHORTEST PRACTICAL PERIOD OF TIME. ALL NON-ACTIVE DISTURBED AREAS SHALL BE STABILIZED WITHIN 30 DAYS OF THE DISTURBANCE. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF FINAL GRADING.

10. DITCHES, SWALES AND DRAINAGE BASINS SHALL BE CONSTRUCTED DURING THE INITIAL PHASE OF CONSTRUCTION AND STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.

- 11. AN AREA SHALL BE CONSIDERED STABILIZED IF ONE OF THE FOLLOWING HAS OCCURRED: A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
- 3. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED; C. A MINIMUM OF 3-INCHES OF NON-EROSIVE MATERIAL, SUCH AS STONE OR RIPRAP, HAS BEEN INSTALLED; OR
- D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

12. EROSION CONTROL BLANKETS SHALL BE INSTALLED ON ALL SLOPES THAT ARE STEEPER THAN 3:1 (HORIZONTAL / VERTICAL). UNLESS OTHERWISE SPECIFIED THE CONTRACTOR SHALL USE NORTH AMERICAN GREEN SC150, OR APPROVED EQUAL.

13. ALL AREAS RECEIVING EROSION CONTROL STONE OR RIPRAP SHALL HAVE A GEOTEXTILE MATERIAL INSTALLED BELOW THE STONE (SEE APPROPRIATE DETAILS).

14. ALL DISTURBED AREAS TO TURF FINISHED SHALL BE COVERED WITH A MINIMUM THICKNESS OF 6 INCHES OF COMPACTED LOAM. LOAM SHALL BE COVERED WITH THE APPROPRIATE SEED MIXTURE AS INDICATED BELOW: PERMANENT SEED (LAWN AREAS) LBS / 1,000 SQ. FT. | PERMANENT SLOPE SEED MIX LBS / 1,000 SQ. FT.

			Land and the second
CREEPING RED FESCUE PERENNIAL RYEGRASS KENTUCKY BLUEGRASS REDTOP	0.92 LBS 1.15 LBS 0.58 LBS 0.12 LBS	CREEPING RED FESCUE PERENNIAL RYEGRASS REDTOP ALSIKE CLOVER BIRDSFOOT TREFOIL	0.80 LBS 0.69 LBS 0.12 LBS 0.12 LBS
**APPLICATION RATE TO 2.8 LBS PER 1,000		**APPLICATION *1.85 LBS PE	
15. TEMPORARY STABILIZATION OF DIS	STURBED AREAS:		

STRIPPED SOIL SHALL BE STOCKPILED UNCOMPACTED, AND STABILIZED AGAINST EROSION AS OUTLINED BELOW: SEED BED PREPARATION: 10-10-10 FERTILIZATION TO BE SPREAD AT THE RATE OF 7 LBS. PER 100 SF AND AGRICULTURAL LIMESTONE AT A RATE OF 90 LBS PER 1000 SF AND INCORPORATED INTO THE SOIL. THE SOIL, FERTILIZER AND LIMESTONE SHALL BE TILLED TO PREPARE FOR SEEDING.

,	SEED	MIXTURE:	USE	ANY	OF	THE	FOLL	owing:	

SPECIES	RATE PER 1,000 SF	DEPTH	SEEDING DATES
WINTER RYE OATS	2.5 LBS 2.5 LBS	1 INCH 1 INCH	8/15 TO 9/1 4/15 TO 10/
ANNUAL RYEGRASS	1.0 LBS	0.25 INCH	4/15 TO 10/ 8/15 TO 9/1

B. MULCHING: MULCH SHOULD BE USED ON HIGHLY ERODIBLE AREAS, AND WHERE CONSERVATION OF MOISTURE WILL FACILITATE PLANT ESTABLISHMENT AS FOLLOWS

8/15 TO 9/15

4/15 TO 10/1

8/15 TO 9/15

Ľ.	PLANI ESTABLISHMENT AS FUL	LUWS:	
	TYPE	RATE PER 1.000 SF	USE AND COMMENTS
	STRAW	70 TO 90 LBS	MAY BE USED WITH PLANTINGS, MUST BE ANCHORED TO BE USED ALONE
	WOOD CHIPS OR BARK MULCH	460 TO 920 LBS	USED WITH TREE AND SHRUB PLANTINGS
	FIBROUS MATTING	AS RECOMMENDED BY MANUFACTURER	MUST BE BIODEGRADABLE. USE IN SLOPE AREAS AND AREAS DIFFICULT TO VEGETATE
	CRUSHED STONE 1/4" TO 1-1/2" DIA.	SPREAD TO GREATER THAN 1/2" THICKNESS	use in specific areas as shown on plan or as needed

16. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS. IF SOIL TESTING IS NOT FEASIBLE (CRITICAL TIME FRAMES OR VARIABLE SITES) THEN APPLY FERTILIZER AT A RATE OF 11 POUNDS PER 1,000 SF AND LIMESTONE AT A RATE OF 90 POUNDS PER 1,000 SF. FERTILIZER SHALL BE LOW PHOSPHATE (LESS THAN 2% PHOSPHORUS).

17. CAUTION SHOULD BE TAKE WHEN THE PROPERTY IS LOCATED WITHIN 250 FEET OF A WATER BODY. IN THIS CASE ALL FERTILIZERS SHALL BE RESTRICTED TO A LOW PHOSPHATE, SLOW RELEASE NITROGEN FERTILIZER. SLOW RELEASE FERTILIZERS MUST BE AT LEAST 50% SLOW RELEASE NITROGEN COMPONENT. NO FERTILIZER EXCEPT LIMESTONE SHALL BE APPLIED WITHIN 25 FEET OF THE SURFACE WATER. THESE ARE REGULATED LIMITATIONS.

18. PERMANENT OR TEMPORARY COVER MUST BE IN PLACE BEFORE THE GROWING SEASON ENDS (SEE WINTER CONSTRUCTION NOTES). NO DISTURBED AREAS SHALL BE LEFT EXPOSED DURING THE WINTER MONTHS.

19. A VIGOROUS DUST CONTROL PROGRAM SHALL BE APPLIED BY THE SITE CONTRACTOR. DUST SHALL BE MANAGED THROUGH THE USE OF WATER AND/OR CALCIUM CHLORIDE. 20. IN NO WAY ARE THE MEASURES INDICATED ON THE PLANS OR IN THESE NOTES TO BE CONSIDERED ALL

INCLUSIVE. THE CONTRACTOR SHALL USE JUDGMENT TO INSTALL ADDITIONAL EROSION CONTROL MEASURES AS SITE CONDITIONS, WEATHER OR CONSTRUCTION METHODS WARRANT.

21. FOLLOWING PERMANENT STABILIZATION, TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED AND ACCUMULATED SEDIMENTATION IS TO BE DISPOSED OF IN AN APPROVED LOCATION, OUTSIDE OF JURISDICTIONAL WETLANDS.

22. LOT DISTURBANCE OTHER THAN SHOWN ON THE APPROVED PLANS, SHALL NOT COMMENCE UNTIL AFTER THE ROADWAY HAS THE BASE COURSE TO DESIGN ELEVATION AND THE ASSOCIATED DRAINAGE IS COMPLETE AND STABLE. 23. THE CONTRACTOR AND OWNER ARE RESPONSIBLE FOR OBSERVING AND MANAGING THE PROJECT PER RSA 430:53 AND AGR 3800 REGARDING INVASIVE SPECIES (PLANTS AND INSECTS). NO INVASIVE SPECIES PLANT OR INSECT SHALL BE INTRODUCED ONTO THE SITE.

24. THE TOWN RESERVES THE RIGHT TO REQUIRE ADDITIONAL EROSION CONTROL MEASURES DURING CONSTRUCTION.

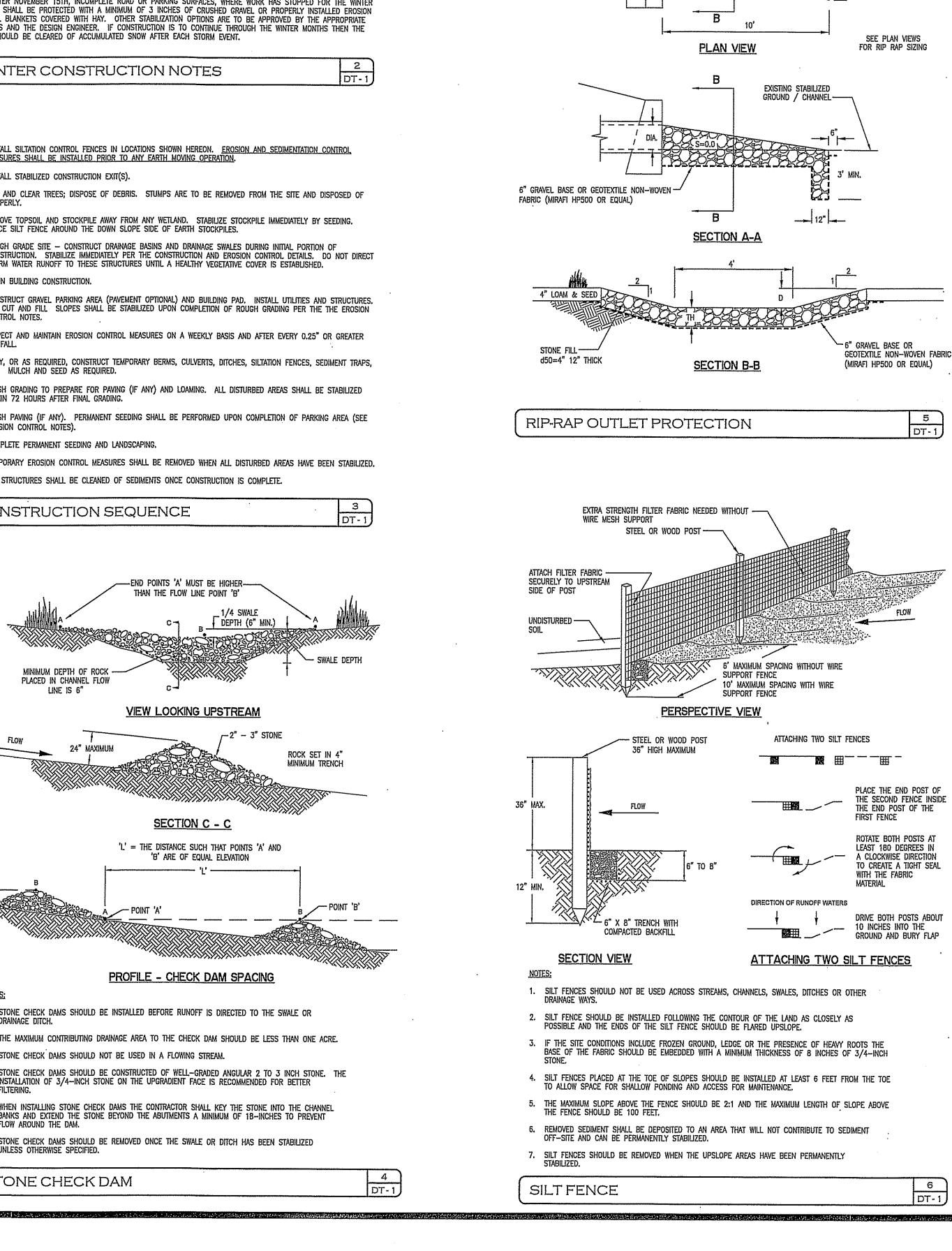
EROSION CONTROL NOTES

DATE OF MEETING:

THE PLAN RECEIVES FINAL APPROVAL.

CHAIRMAN:

SECRETARY



1/2 OF PIPE DIA.

- 6. BEGIN BUILDING CONSTRUCTION.
- CONTROL NOTES.

ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATED GROWTH BY OCTOBER

ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATED GROWTH BY OCTOBER 15TH, OR

15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED. STABILIZATION METHODS SHALL

INCLUDE SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND

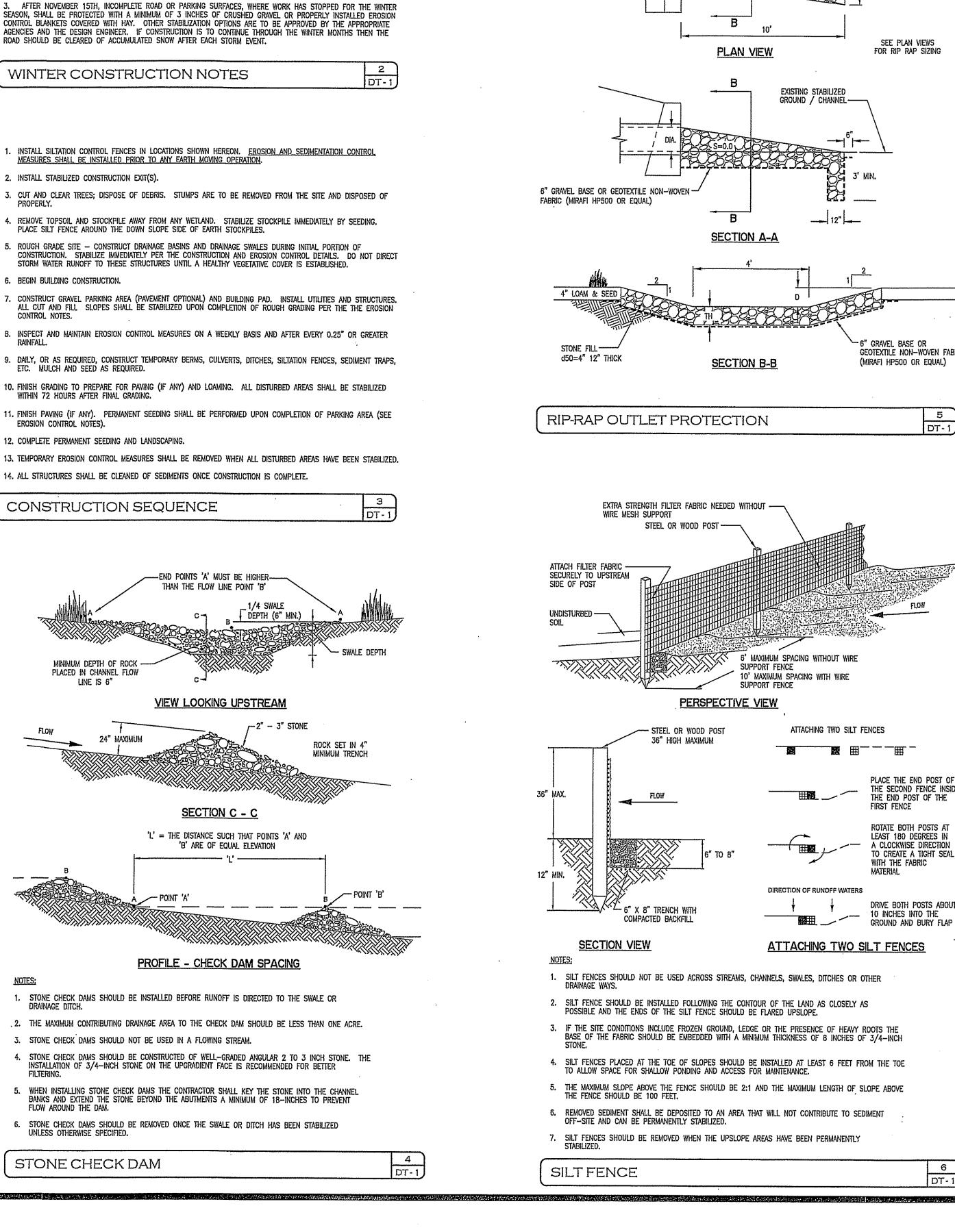
EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR FROZEN

WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS

GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.

APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.

PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF



APPROVED BY THE

HUDSON, NH PLANNING BOARD

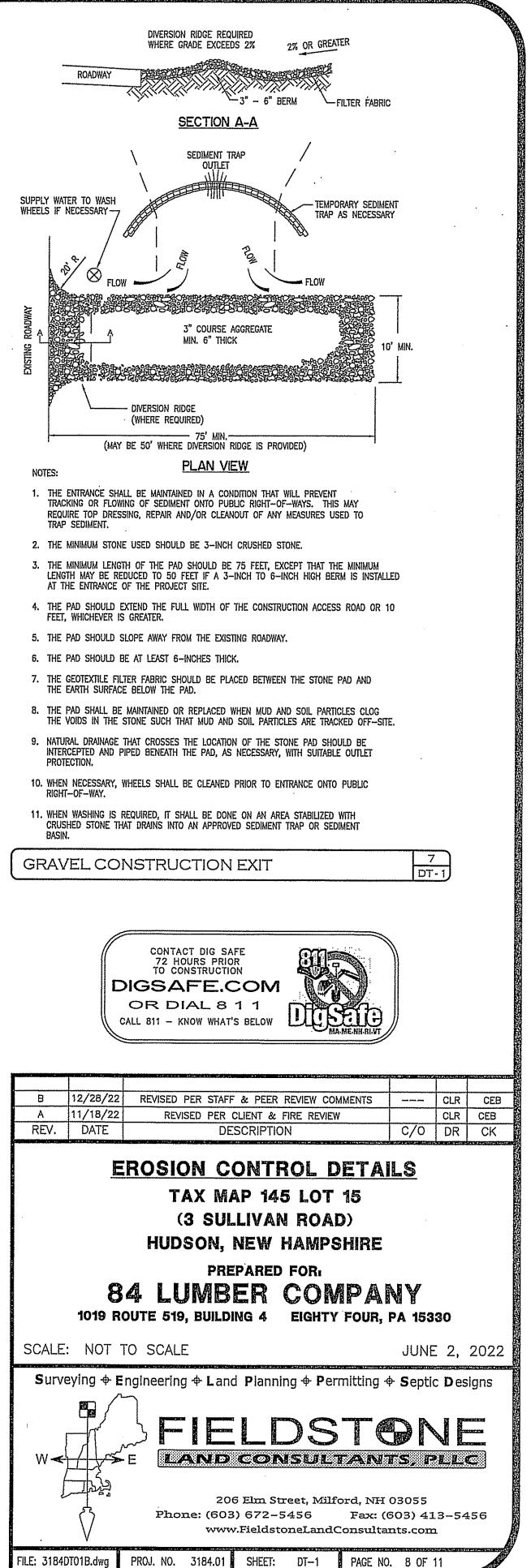
SIGNATURE DATE

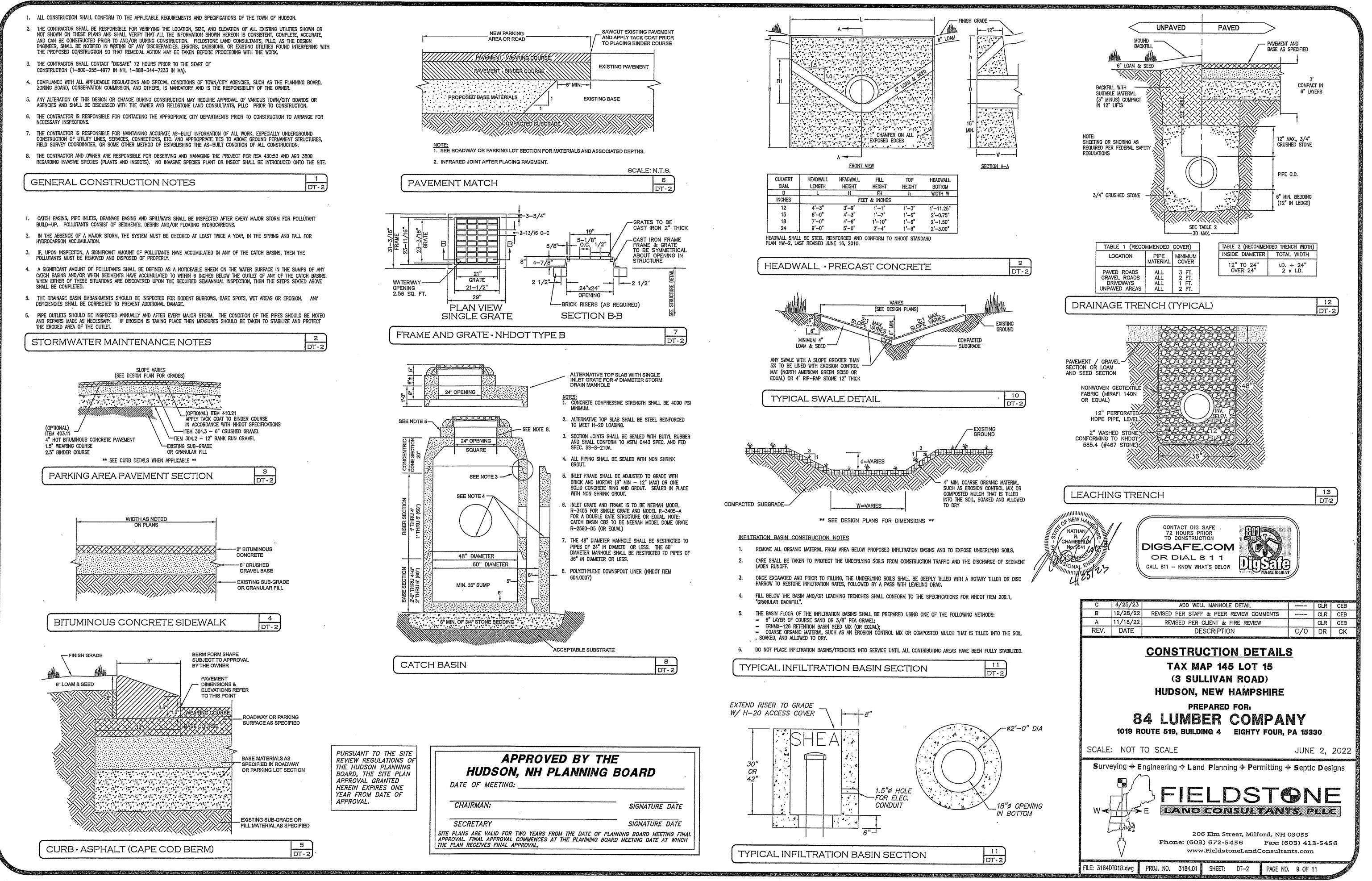
SIGNATURE DATE SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH

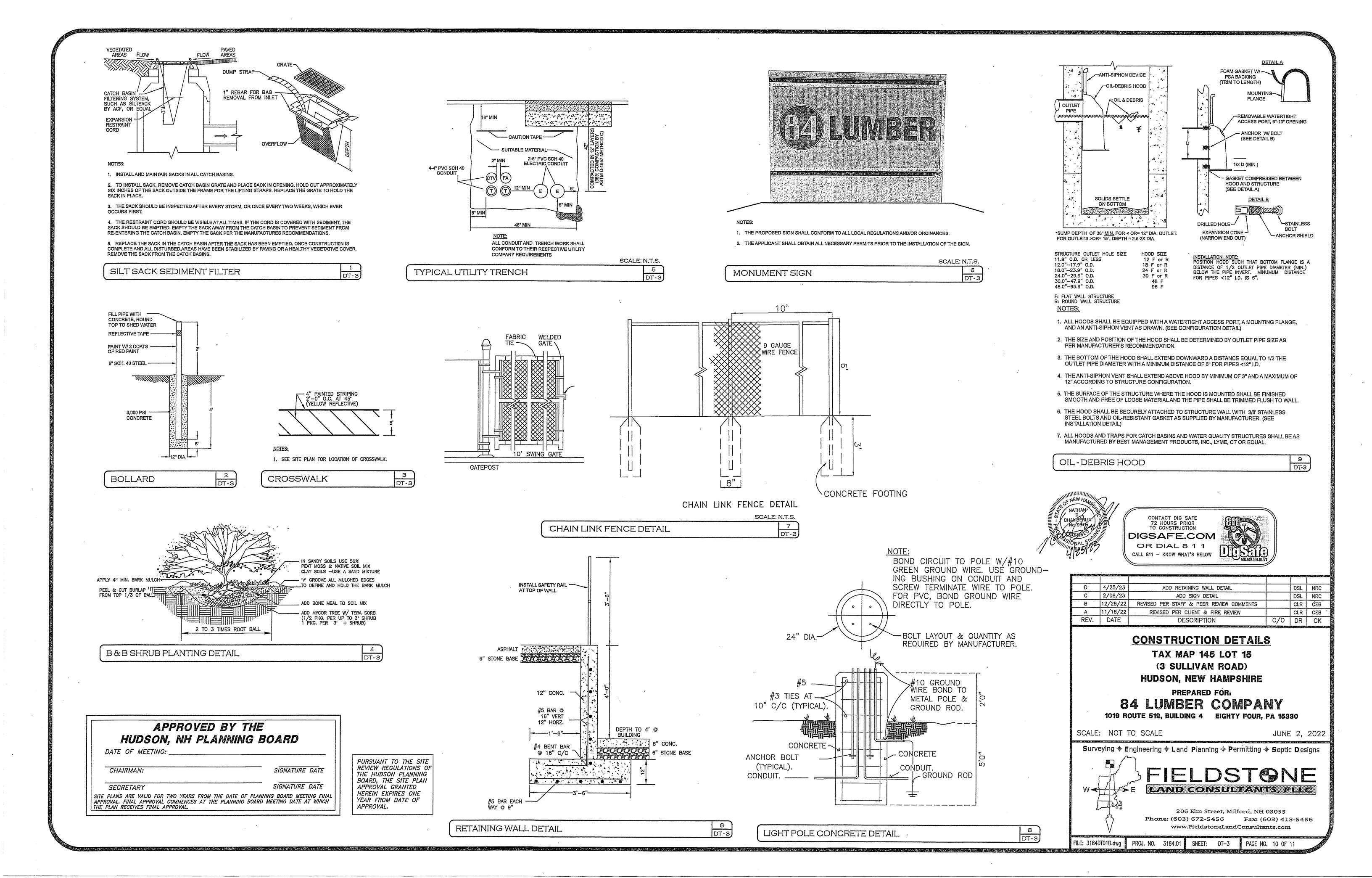
PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES ONE YEAR FROM DATE OF

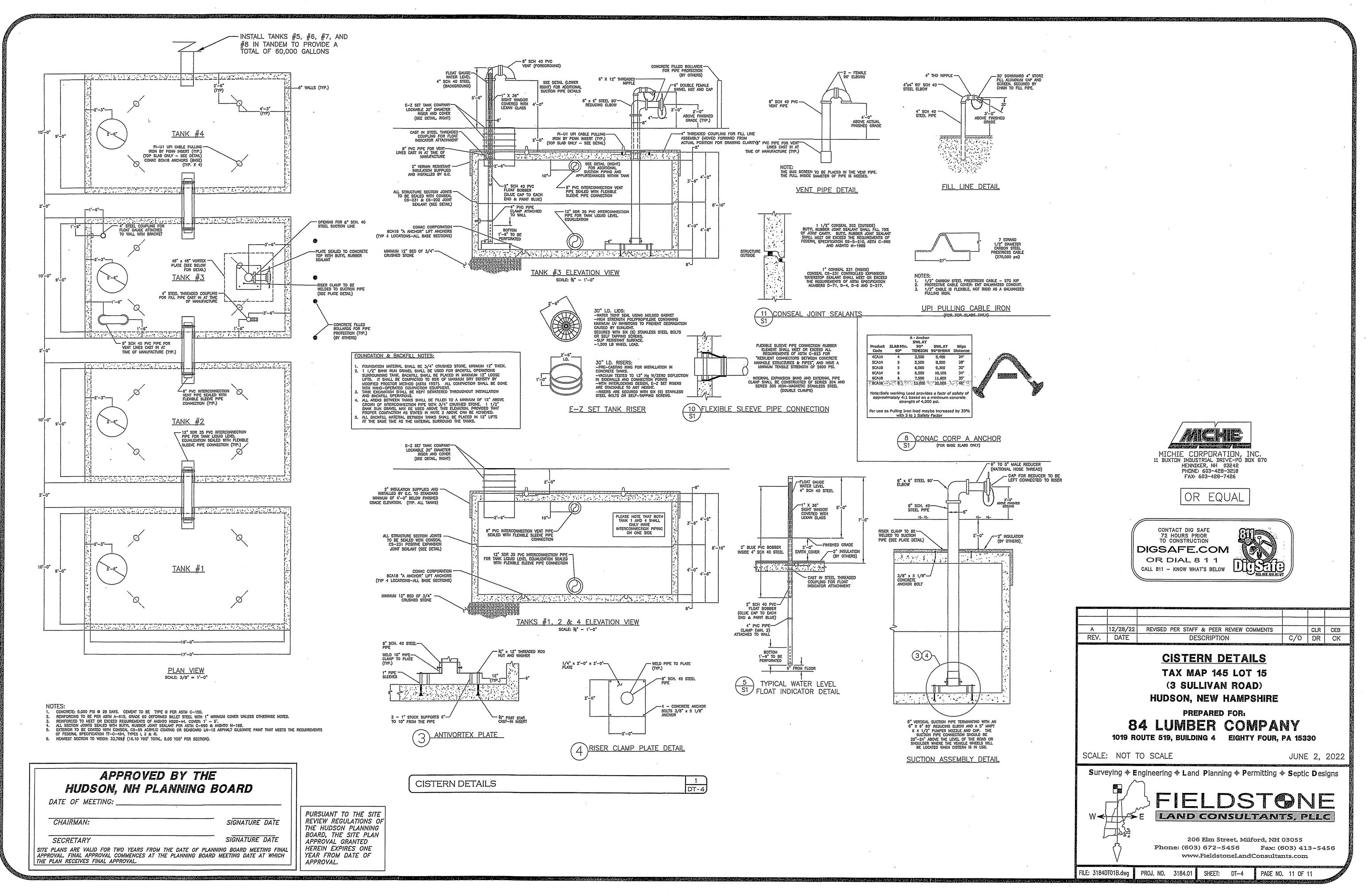
APPROVAL.

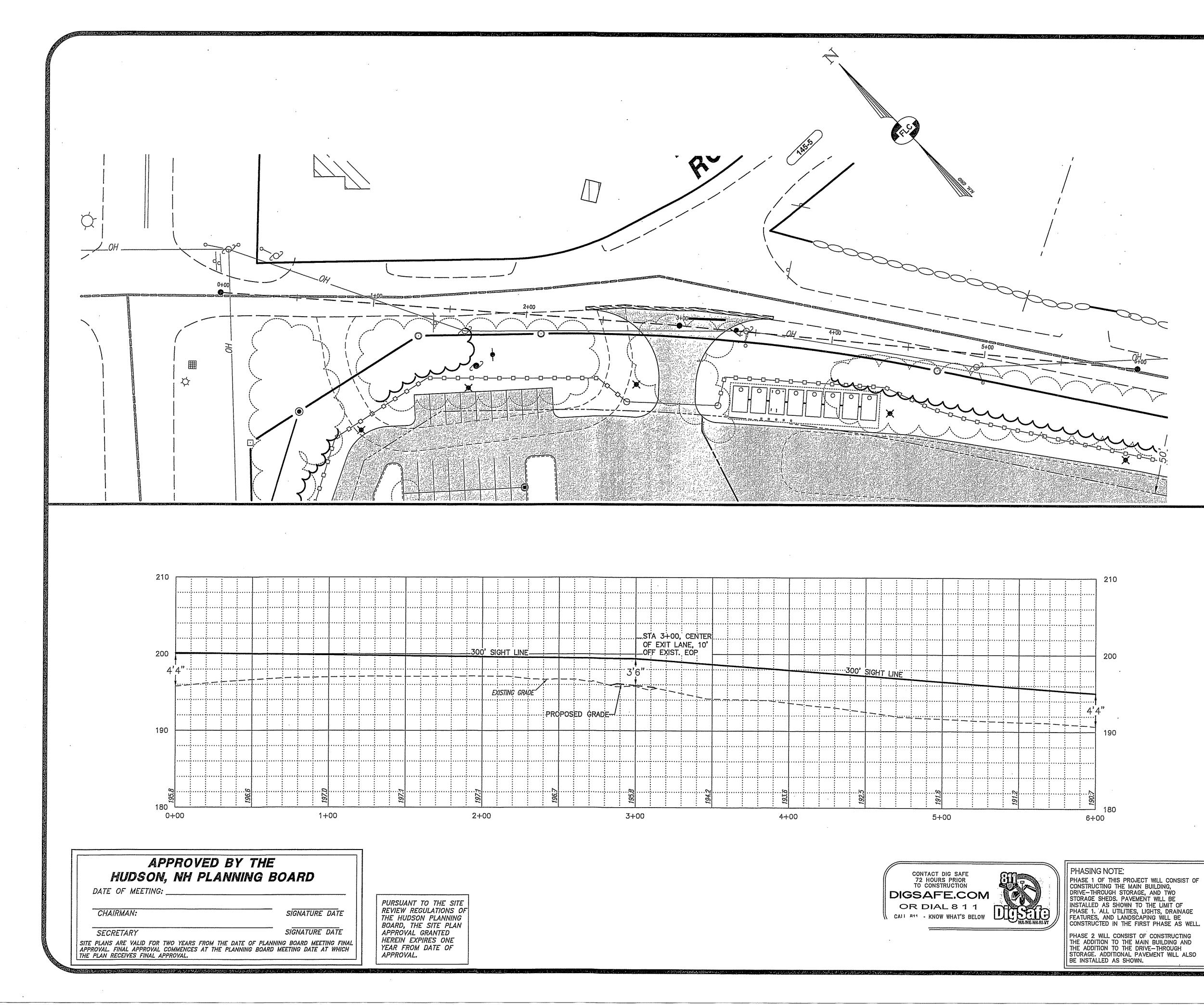
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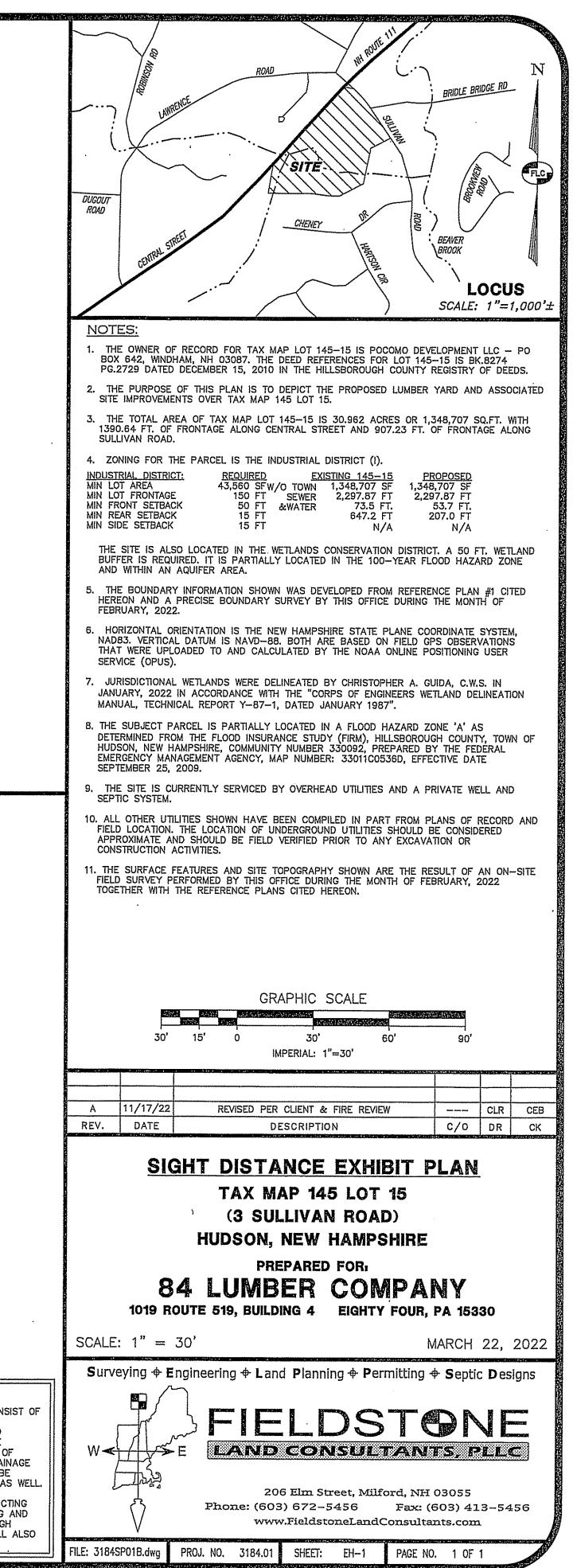


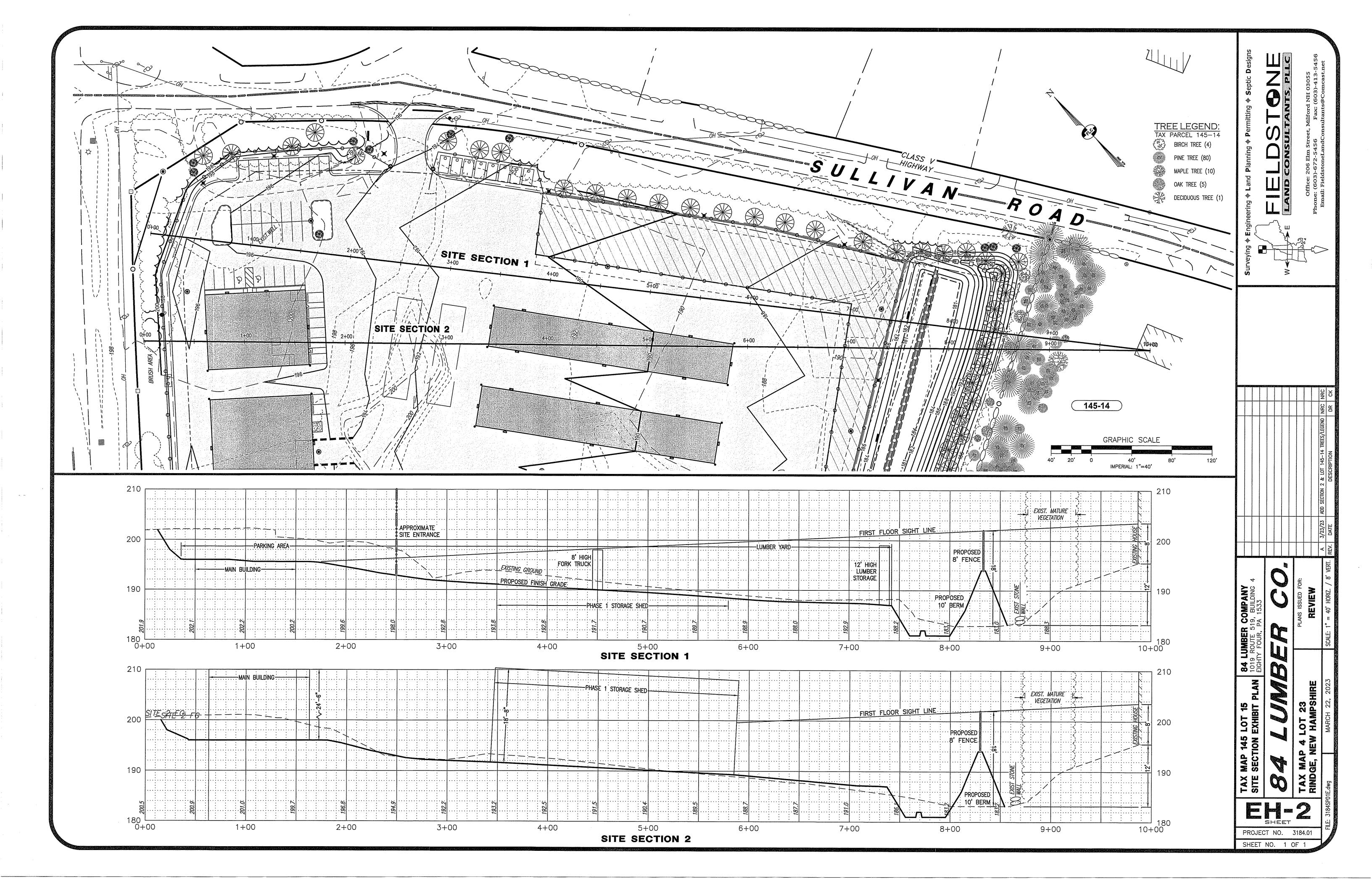


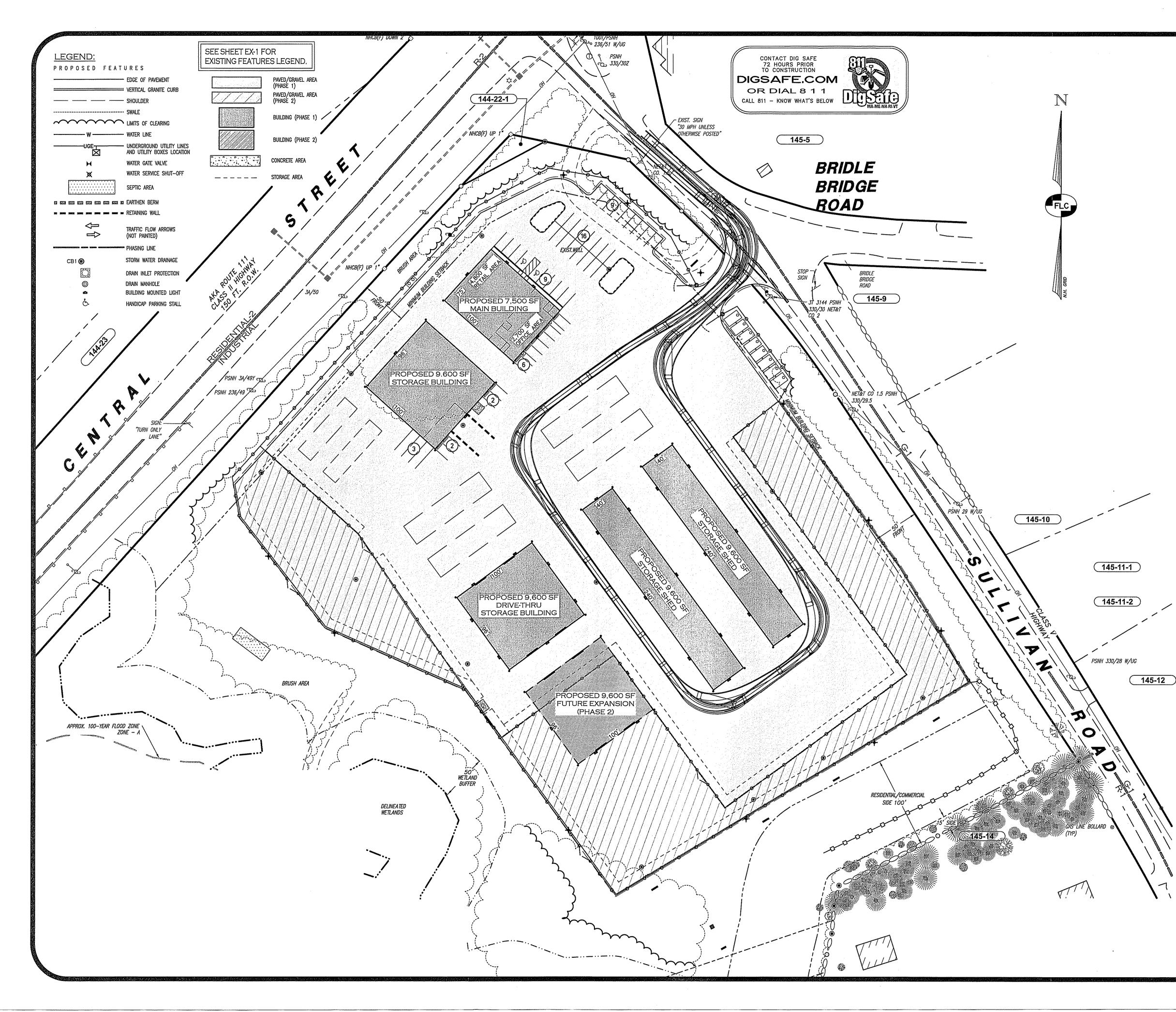


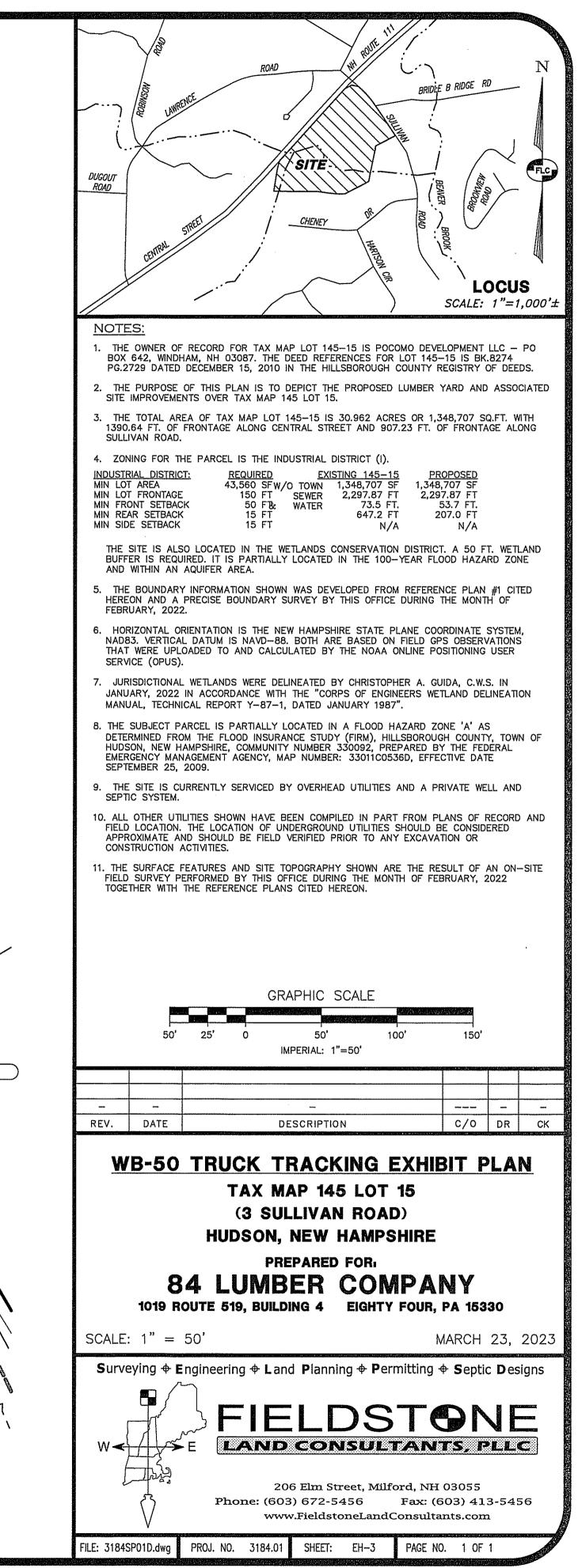


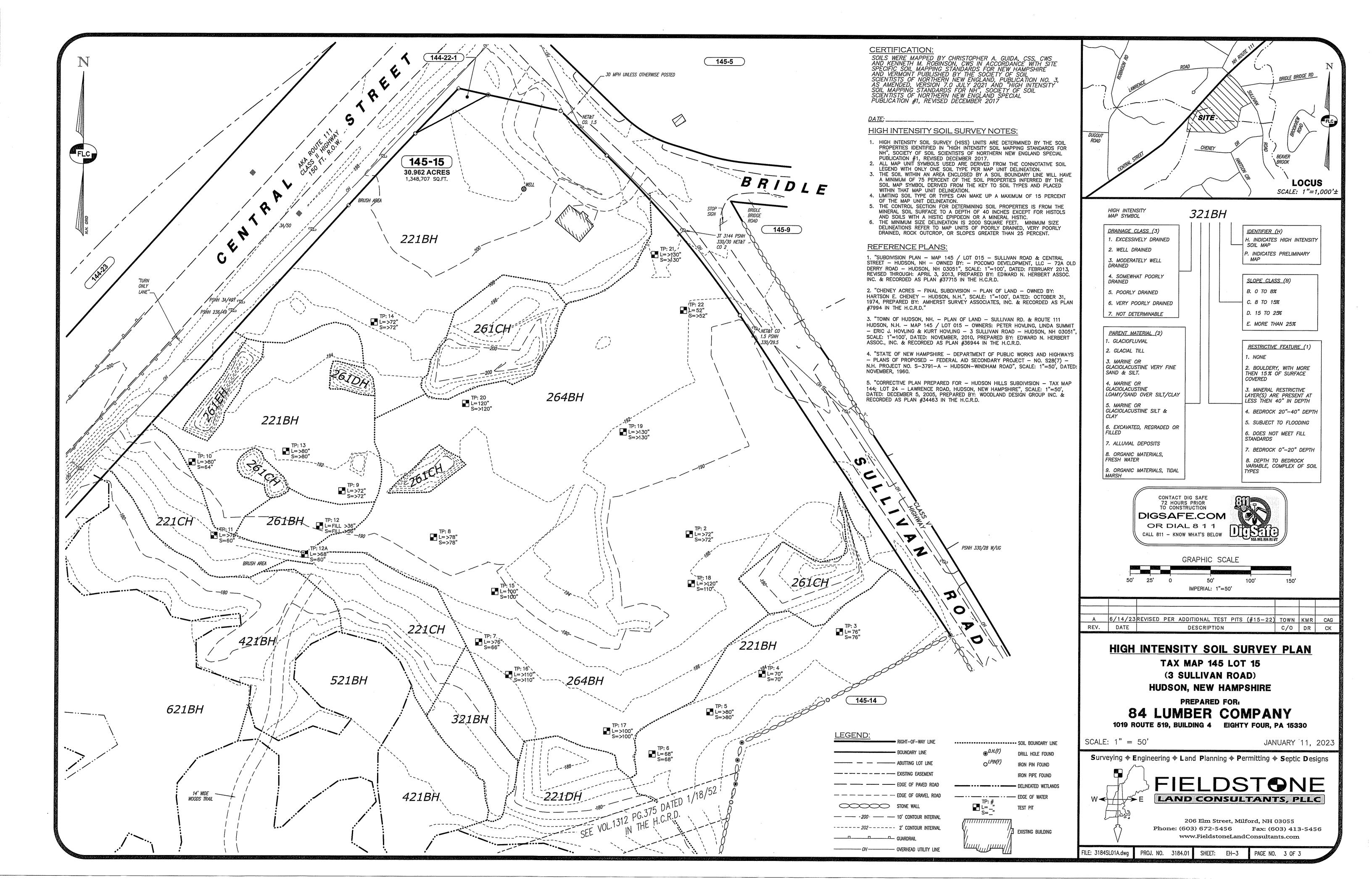


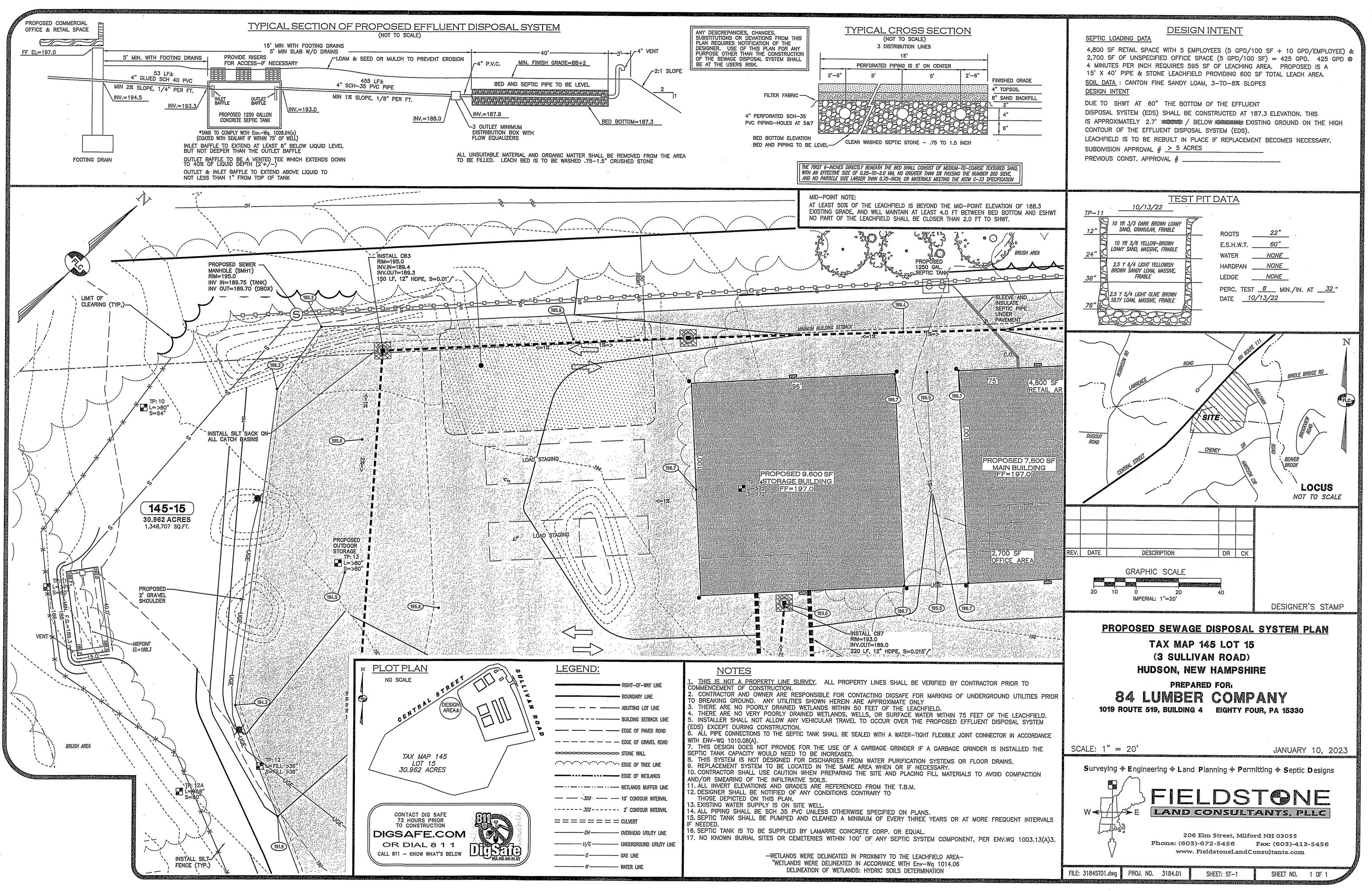












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PROPOSED FEA	TURES		:	H OH		\	
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W	WATER LINE		BUILDING (PHASE 2)				
	Underground utility lines and utility boxes location					$\mathbf{X}$	$\mathbf{N}$
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	TRAFFIC FLOW ARROWS (NOT PAINTED)		/ (				
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