



Loureiro Engineering Associates, Inc.

August 13, 2010

Waterbury Development Corporation

24 Leavenworth Street
Waterbury, Connecticut 06702

Attn: Kevin Taylor, Senior Project Manager

**RE: Hazardous Building Materials Assessment
0 & 39 Cherry Street, 177 & 215 Cherry Avenue, Waterbury, Connecticut
LEA Comm. No. 91WR002.001**

Dear Mr. Taylor:

Loureiro Engineering Associates, Inc. (LEA) has prepared this letter report to summarize the results of the Hazardous Building Materials (HBM) assessment conducted at the property located at 0 & 39 Cherry Street and 177 & 215 Cherry Avenue in Waterbury, Connecticut (herein after referred to as the "Site"). The inspection activities were conducted between April 13, 2010 through 16, 2010 and April 29, 2010 and included an evaluation of the presence of lead-based paint (LBP) on building surfaces, asbestos-containing materials (ACM) in building materials, an inspection for polychlorinated biphenyls (PCBs) or diethylhexyl phthalate (DEHP) that may be contained in fluorescent light ballasts, transformers, dielectric fluids, or insulation in high voltage switches, and an inspection for mercury-containing vapor light tubes, pressure switches, and thermostatic controls for the purpose of determining appropriate management and disposal of such materials at the time of site redevelopment. In addition, the inspection included documenting locations of liquid storage at the Site such as tank or drums that would require removal upon redevelopment of the Site.

1. BACKGROUND

1.1 Site Description

The Site is occupied by five abandoned industrial-use buildings. Three of the buildings are contiguous buildings composed of 4- to 6-stories that occupy the majority of the Site: the rectangular-shaped building designated 39 Cherry Street comprises the western border of the Site, and L-shaped buildings known as 177 Cherry Avenue and 215 Cherry Avenue are perpendicular to the eastern border of 39 Cherry Street. A garage building abuts the northern border of 39 Cherry Street and a former office/carriage house (0 Cherry Street) stands alone on the southwestern property border. Basement crawl spaces are present on the northern portion of 39 Cherry Street and western portion of 177 Cherry Avenue.



The Site is located on a southerly-sloping hill, which complicates the identification of the floors within the three contiguous buildings as they are oriented to each other and to ground elevation, of which consistency is an important component of the HBM survey. In order to allow for the most consistent identification of levels between buildings, the floors were identified from the top down, beginning with the 6th floor (which is the top floor contiguous along all three main site buildings) and counting down through the floors. In this manner, the northern portion of the 215 Cherry Avenue building is identified as Floor 2 at ground level, although this same elevation is two stories high at the southern end of 39 Cherry Street. With this identification system, no “Floor 1” exists for 215 Cherry Avenue, located at the highest ground elevation of the Site. Each of the levels of the Site buildings is depicted on the attached drawing, with portions of the buildings labeled and shaded in gray where they exist at the correlating level.

1.2 **Site History**

The Site buildings were formerly part of the Waterbury Clock Company complex, at which in the early 1900s portions of the contiguous buildings were used to paint clock dials with fluorescent radium. The Connecticut Department of Environmental Protection (CTDEP) Radiation Division has been involved with the assessment of the Site and determined that building materials in areas throughout the contiguous site buildings are contaminated with radium. Remediation of these areas was initiated in 2002; however, activities were ceased when a layer of asbestos material was observed between floors prior to completion.

2. **HEALTH AND SAFETY**

2.1 **Radiation**

As an ancillary part of this HBM survey, in order to gain an understanding of the locations of radium for internal health and safety purposes and to identify appropriate sample handling, LEA reviewed records available at the CTDEP Radiation Division. Materials on file with the CTDEP Radiation Division included radium survey information presented by Scientech (2002) and CTDEP (1998), and a radon survey completed by Radon Testing Corporation of America in 1998. In addition, LEA consulted with Mr. Michael Firsick, a physicist with the CTDEP, to review the history of the Site and to arrange for oversight during destructive sampling activities at the Site. Mr. Firsick and/or his proxy Mr. Daren Strickland were on the Site for each of the days on which destructive sampling was conducted (April 14 through 16, and April 29, 2010).

The attached drawing, Drawing 1, depicts generalized areas of known radium contamination in purple hatching; these areas were identified based on written or photographic evidence of radium contamination noted in previous radium survey data and reports. This data was compiled to provide a general understanding of the locations of radium contamination and potential radium for the purposes of health and safety and



sample handling and should not be used to understand specific radium locations for remediation purposes.

At the request of CTDEP, no building material samples were collected from areas known to be subject to radium contamination, as noted from survey data on the attached drawing. The locations of radium-contaminated areas were confirmed by field screening with a Ludlum Model 3 Geiger Counter with a GM 44-9 Pancake Probe. Because sampling was prohibited in these areas, the location and quantities of hazardous buildings materials in these areas were visually assessed and estimated for the purpose of this survey.

2.2 Access

Portions of the floors of the 177 Cherry Avenue building were in various states of disrepair and therefore could not be accessed during the inspection. The entirety of each of the levels of the 177 Cherry Avenue building had been sand-blasted and was visible from the staircase with the exception of the top floor.

The Carriage House was observed to be internally collapsed, and as such only a portion of the basement area was accessed as part of this inspection. An attempt was made to view each level from the exterior; however, due to limited visibility and access, no suspect building materials could be observed from the window vantage points.

3.0 ASBESTOS-CONTAINING MATERIALS

The asbestos inspection component of the survey was conducted in order to satisfy Subpart M of the United States Environmental Protection Agency (EPA) National Emission Standard for Hazardous Air Pollutants Act (NESHAP) as amended November 10, 1990 and state and local permitting requirements for demolition. The EPA NESHAP final rule requires the identification and removal of all regulated ACM in a building prior to demolition.

The asbestos inspection involved the destructive sampling of select representative building materials by Mr. Luke Chmielecki and Nathan Emmons, both State of Connecticut Licensed Asbestos Inspectors (#000709 and #000753, respectively) and included the collection of samples of roofing material. During the inspection, samples of representative building materials were separated into one of three EPA-defined categories, sampled in accordance with recommended protocols and guidance documents, and quantified in linear or square footage. The three categories of suspect ACM include thermal system insulation (TSI), surfacing materials, and miscellaneous materials. TSI includes those materials that are typically used for the prevention of heat loss or gain or water condensation on mechanical systems. Surfacing ACM includes all ACM that is sprayed-on, troweled-on or otherwise applied to an existing surface and miscellaneous materials include all ACM not listed in thermal or surfacing category.



Following the collection of samples from representative building materials, LEA transferred the samples to a State of Connecticut Department of Public Health (DPH)-approved laboratory, EMSL Analytical, Inc. of Wallingford, Connecticut, for analysis by Polarized Light Microscopy (PLM). PLM is the EPA-accepted method of analysis for identification of asbestos in bulk matrices. A sample set (typically three per location) is systematically analyzed until one sample is determined to contain asbestos. Upon determination that one sample in the set contains asbestos, analysis of the remaining samples in the set is discontinued. If no asbestos was observed during analysis of the set of samples, the suspect material is determined to be negative for asbestos content. A single sample of certain suspect materials are collected where appropriate.

Sample analysis results are reported in percentage of asbestos and non-asbestos components. The EPA defines any material that contains greater than one percent asbestos, utilizing PLM, as being ACM. Any material determined to contain greater than one percent (1%) asbestos is regulated by the EPA, the DPH, the CTDEP, and the United States Department of Labor.

Asbestos was detected in the following materials and locations:

- In a layer of floor material that appears to be continuous beneath all wood flooring in all the site buildings (except the garage, which did not contain wood flooring), estimated at greater than 155,000 square feet;
- walls, windows, doors, pipe insulation, building insulation and roofing materials of the garage building;
- windows, door, flashing, floor tile, vapor barrier material, and roofing materials of the 177 Cherry Street building;
- pipe insulation, floor tile, ceiling board, electric box material, and roofing materials in the 39 Cherry Avenue building;
- wallboard, pipe insulation, transite board, paper, caulk, and roofing materials of the 215 Cherry Street building; and
- window and roofing materials of the Carriage House

For each occurrence of ACM documented, an estimated quantity of material is provided in Table 1. These materials will need to be abated prior to building demolition. A summary of all results, both positive and negative, are summarized in Table 2. Laboratory analytical reports are attached as Attachment 1.



4.0 LEAD-BASED PAINT

A lead-based paint (LBP) inspection was completed as part of this HBM inspection in general accordance with prevailing EPA and State of Connecticut guidelines and regulations. The identification of LBP was performed in order to determine if lead-contaminated debris would be present during demolition activities. This determination was performed in accordance with the CTDEP *Guidance for the Management and Disposal of Lead-Contaminated Material Generated in the Lead Abatement, Renovation, and Demolition Industries*, updated November 21, 2007.

The site-screening was conducted using a Niton XL-309 X-Ray Fluorescence (XRF) analyzer by Mr. Andrew Miller, a State of Connecticut certified Lead Inspector (Certification #001127). The XRF analyzer is designed to measure the lead content of surface coatings on a variety of building surfaces, substrates, and components. The lead inspection included testing of representative portions of all painted and stained interior and exterior surfaces and was conducted to assess the lead content of the surfaces and consequently, the most appropriate disposal method for demolition debris. A surface is considered to be covered by LBP if the XRF screening result is greater than one milligram per square centimeter (mg/cm^2).

Lead-based paint was identified in the following materials and locations, as identified by the XRF:

- door, wood window, small section of brick wall were determined to contain lead via XRF in the garage. In addition, the ceiling (which was not safely accessible) is assumed to contain lead in the garage;
- wood on window openings in the 177 Cherry Street building; and
- wood posts, wood window units, and a small amount of brick/concrete wall (typically in the stairwells) in the 39 Cherry Avenue and 215 Cherry Street buildings.

A painted material sample was collected from the garage and from 39 Cherry Avenue and 215 Cherry Street buildings and subject to TCLP analysis to determine disposal requirements. Leachable lead was detected at concentrations below the hazardous waste threshold value of 5 mg/l.

A copy of the lead inspection results is provided as Attachment 2 to this letter.

5.0 PCBS AND DEHP

Polychlorinated biphenyls (PCBs) and di(2-ethylhexyl)phthalate (DEHP) have historically been incorporated as a dielectric fluid in the capacitors of fluorescent lighting ballasts. Upon banning the use of PCBs in 1978 under the Toxic Substances Control Act



(TSCA), ballast manufacturers substituted PCBs with DEHP. DEHP was used in ballasts until the early 1990s. Both PCBs and DEHP are listed as hazardous materials under the Resource Conservation and Recovery Act (RCRA) and require special handling and disposal.

In order to determine if PCB- or DEHP-containing light ballasts exist at the Site, individual light fixtures were disassembled and the ballasts were visually inspected for labeling indicating the absence of PCBs. Ballasts that are labeled “No PCBs” are assumed to contain DEHP if the manufacturer’s date stamp is between 1980 and 1991 or is not present. Ballasts that are not labeled “No PCB’s” are assumed to contain PCBs if they contain no date stamp. Any ballast with a manufacturer’s date stamp after 1991 is considered to have a low potential to contain PCBs or DEHP. No sampling of ballast dielectric fluid was conducted during the inspection.

According to the EPA, ballasts indicated as containing PCBs or DEHP must be removed from a building prior to demolition and properly recycled or incinerated. A total of 623 unlabelled light ballasts were observed at the Site. Since no label was present, these light ballasts are assumed to contain PCBs or DEHP. An inventory of ballasts and their locations identified at the Site is provided in the attached Table 3.

6.0 MISCELLANEOUS BUILDING MATERIALS

As part of this HBM inspection, an LEA representative visually inspected the site buildings for the presence of building components that may contain mercury, PCBs, Freon[®], or other HBM that may require special handling and disposal at the time of building demolition. This component of the inspection included an inspection of all lamps potentially containing mercury vapor and switches potentially containing liquid mercury, electrical devices that have the potential to contain capacitors or transformers housing PCB-containing oil, electronic equipment such as refrigerators, copiers, and portable air conditioning units that may contain Freon[®], and other miscellaneous equipment that may contain HBM.

6.1 Mercury Vapor Lamps and Thermostatic Controls

Liquid mercury and/or mercury vapor have historically been used in fluorescent lamps and thermostatic controls. Mercury use and disposal is regulated by the EPA under RCRA. In accordance with EPA regulations, the mercury associated with these products must be reclaimed prior to disposal of the products.

Thermostatic controls were disassembled and inspected for the presence of mercury bulbs. Electronic or pneumatic thermostats typically do not contain mercury bulbs and were, therefore, not specifically targeted during the inspection. Three thermostatic controls was observed at the Site with mercury vials, and three additional thermostatic controls could not be opened and should be assumed to contain mercury. Table 4



provides a summary of miscellaneous materials, including thermostatic controls, observed at the Site.

A total of 736 fluorescent bulbs were observed at the Site. Fluorescent light bulbs contain mercury and must be disposed of properly (and can be disposed of as universal waste). A tally of the bulbs identified and their locations is provided in Table 3.

6.2 Capacitors

Capacitors found in electrical equipment such as appliances (white goods) and other equipment may contain oil with PCBs. Small capacitors containing PCB oil can be found in air conditioners, fluorescent light ballasts and mercury vapor lamps, (addressed above), dehumidifiers, microwave ovens, submersible pumps, copy machines, and electric control panels. PCBs are listed as RCRA hazardous materials and require special handling and disposal.

Table 4 provides a summary of miscellaneous materials, including electronic switches and capacitors, observed at the Site. The majority of the electric boxes at the Site had been stripped clean of equipment. A total of approximately 20 fuses were observed within fuse boxes or discarded at the Site. Fuses have the potential to contain PCB oil and should be removed as hazardous waste.

6.3 Transformers

Concrete-pad mounted or pole-mounted wet-type transformers are used to transfer electric feeds from street-level voltages to that which is usable within a building. Wet-type transformers are equipped with oil (dielectric fluid) used to enhance electrical conduction within the unit. Prior to 1978, transformers typically contained oil with PCBs in order to retard flammability. Since that time, PCB use in transformer oil has been discontinued.

Transformers were not identified at the Site, with the exception of a small transformer was observed on the back of die cutting machine on the 5th floor of the 215 Cherry Street building.

6.4 Freon®

Freon® is a trade name for chlorofluorocarbons (CFCs) or hydrochlorofluorocarbons (HCFCs), commonly used as cooling agents in air conditioning units and refrigerators. Handling and disposal or recycling of Freon® is regulated by the EPA. During inspection activities, LEA personnel noted the locations of refrigerators that have the potential to contain Freon® or other CFCs/HCFCs. These units are provided in the HBM inventory in Table 4.



6.5 Other HBM

Several drums and containers of varying size, condition, and content were identified at the Site, as were numerous pieces of miscellaneous equipment. These materials are identified on Table 4.

7.0 SUMMARY AND CONCLUSIONS

LEA performed a Hazardous Building Materials survey of the site buildings to determine whether HBM are present in site buildings and in quantities that would require special management and/or disposal at the time of building demolition. A summary of those findings are presented below. However, it should be noted that it has been determined that radium contamination is present within building materials at the Site. This survey did not include an evaluation of that radium contamination beyond that needed to ensure the proper handling of the materials. It should be noted that a radium survey will be required to determine how to handle that material prior to building demolition/rehabilitation. LEA can provide those services as needed.

Asbestos was detected in walls, windows, doors, pipe insulation, floor tiles, vapor barrier material, transite board, paper, caulk, ceiling board, electric box materials, building insulation and roofing materials throughout the site buildings. Estimated quantities are provided in Table 1. In addition, asbestos was found in a layer of floor insulation that appears continuous beneath all wood flooring in all site buildings. These materials will need to be abated prior to building demolition. A State of Connecticut licensed asbestos abatement contractor must be retained to perform the removal work. Visual inspections and final air clearance sampling may be required in certain abatement areas at the completion of the abatement work. The visual inspections and final air clearance sampling must be performed by a State of Connecticut licensed Project Monitor. The abatement areas must meet final visual inspection and final air clearance sampling criteria prior to the abatement area being reoccupied or re-entered for demolition activities.

Lead-based paint was detected in the wood posts, wood window units, and a small amount of brick/concrete wall (typically in the stairwells) in the site buildings. Materials samples subject to TCLP analysis were below the hazardous waste threshold value of 5 mg/l. Therefore, with respect to the presence of lead, building materials will not be required to be removed from the Site as hazardous waste.

Three thermostats containing mercury were found at the Site, and three additional thermostats that could not be opened and must be assumed to contain mercury. These mercury control, as well as the electric boxes, switches, and fuses potentially containing PCBs, and refrigerators potentially containing CFCs/HCFCs, must be removed from the Site and disposed of in accordance with appropriate local, state, and federal regulations. The fluorescent light bulbs containing mercury can be disposed of as universal waste.



Prior to building demolition, drums and miscellaneous equipment storage noted on interior portions of the Site should be removed. LEA can provide coordination and hauling of these materials at your request.

We thank you for the opportunity to provide these services to you. If you have any questions regarding this project, please contact me at (860) 747-6181.

Sincerely,

LOUREIRO ENGINEERING ASSOCIATES, INC.

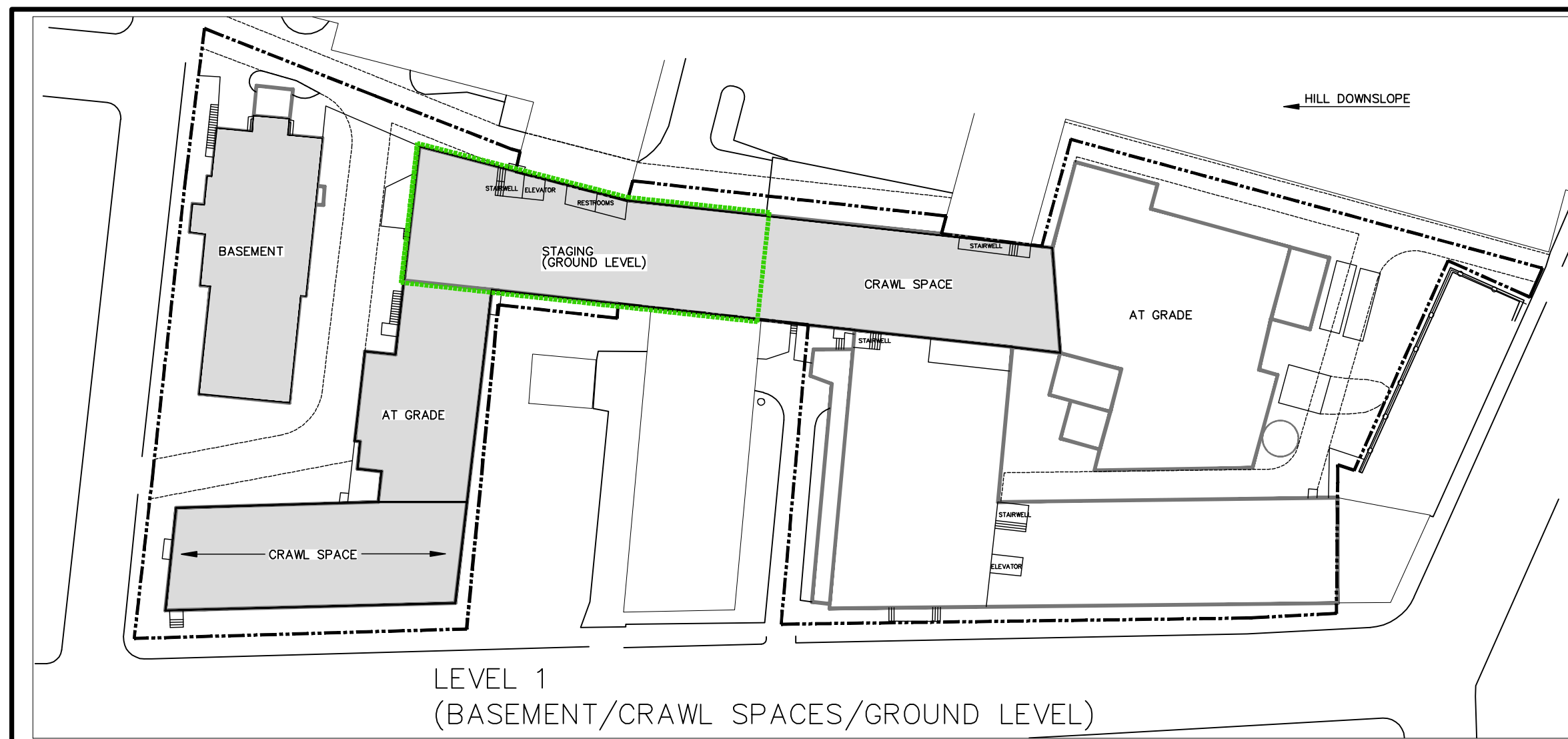
Kimberly M. Clarke, L.E.P.
Senior Project Manger
Lead Inspector #002118
Asbestos Inspector #000580

Attachments

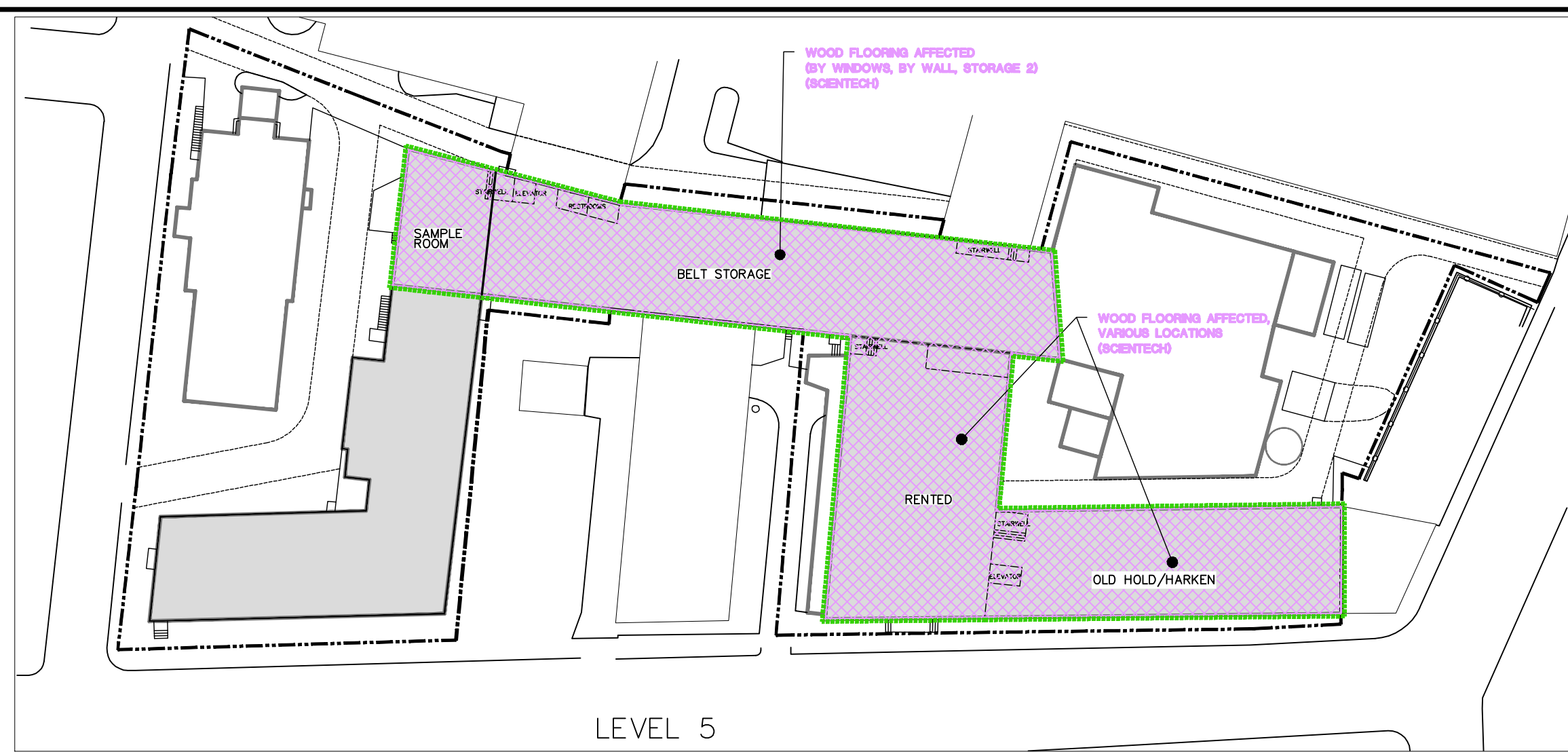
Table 1	Summary of Asbestos Containing Materials
Table 2	Summary of Asbestos Sampling Results
Table 3	Inventory of Light Ballast Inspection
Table 4	Summary of Miscellaneous Building Materials

Attachment 1 Laboratory Analytical Reports for Asbestos Analysis
Attachment 2 Lead Paint Inspection Report

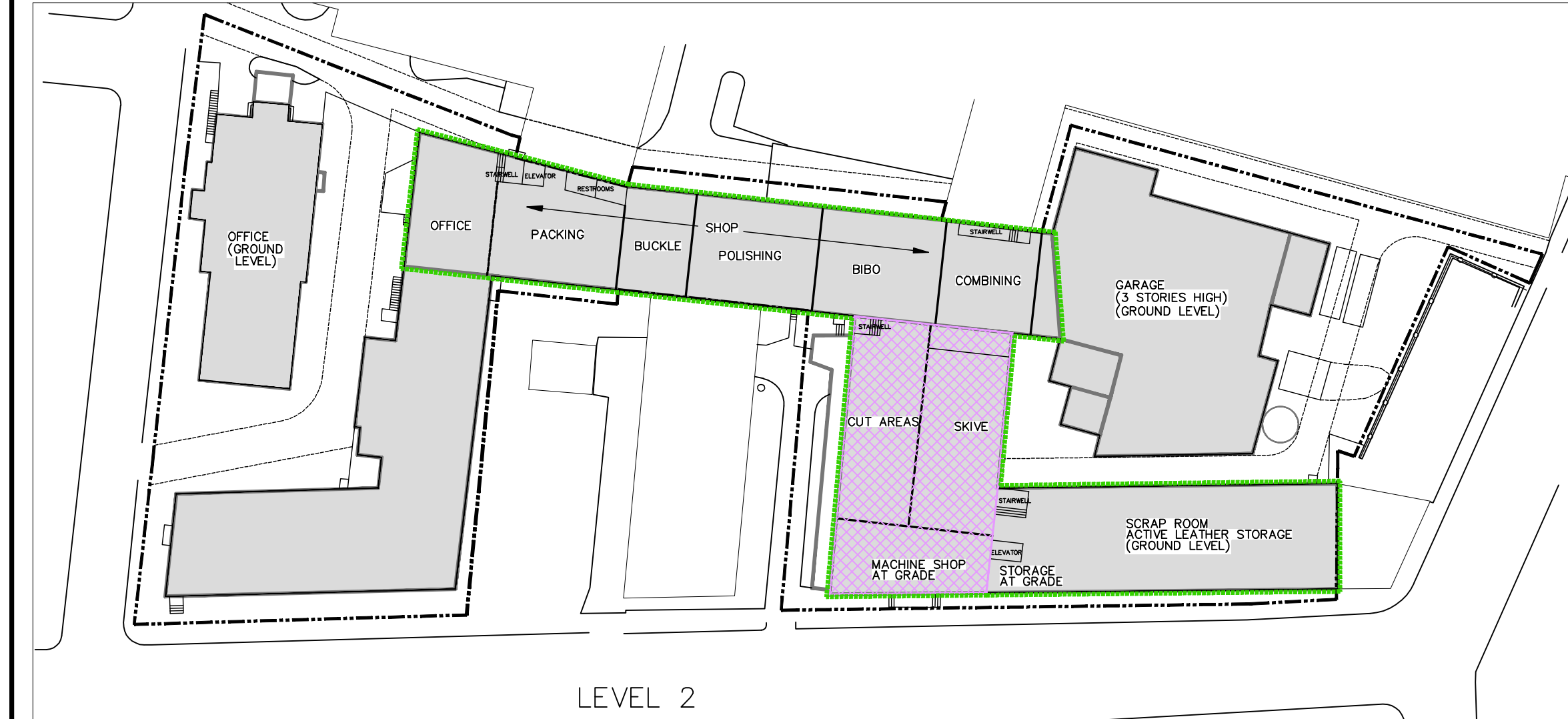
DRAWING



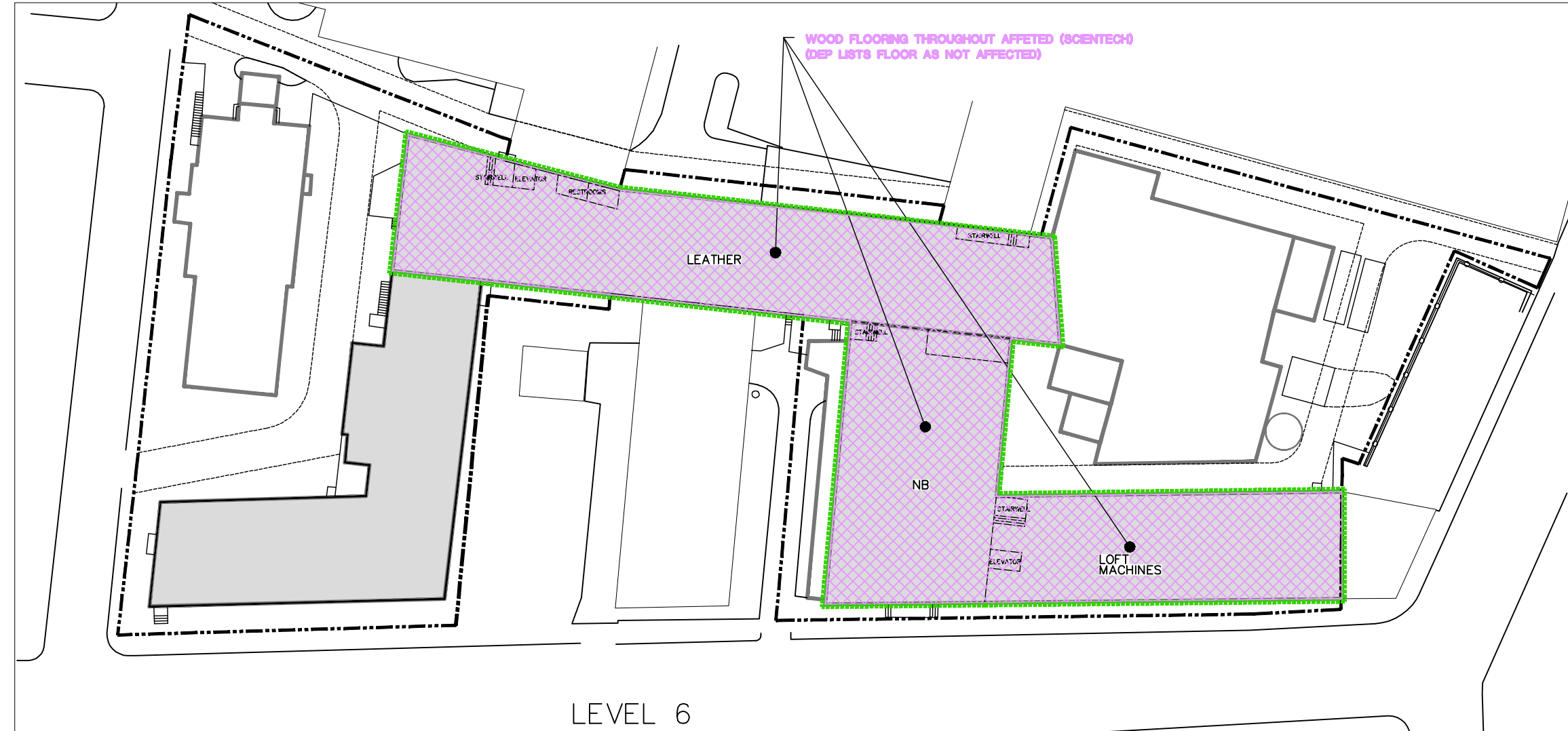
LEVEL 1
(BASEMENT/CRAWL SPACES/GROUND LEVEL)



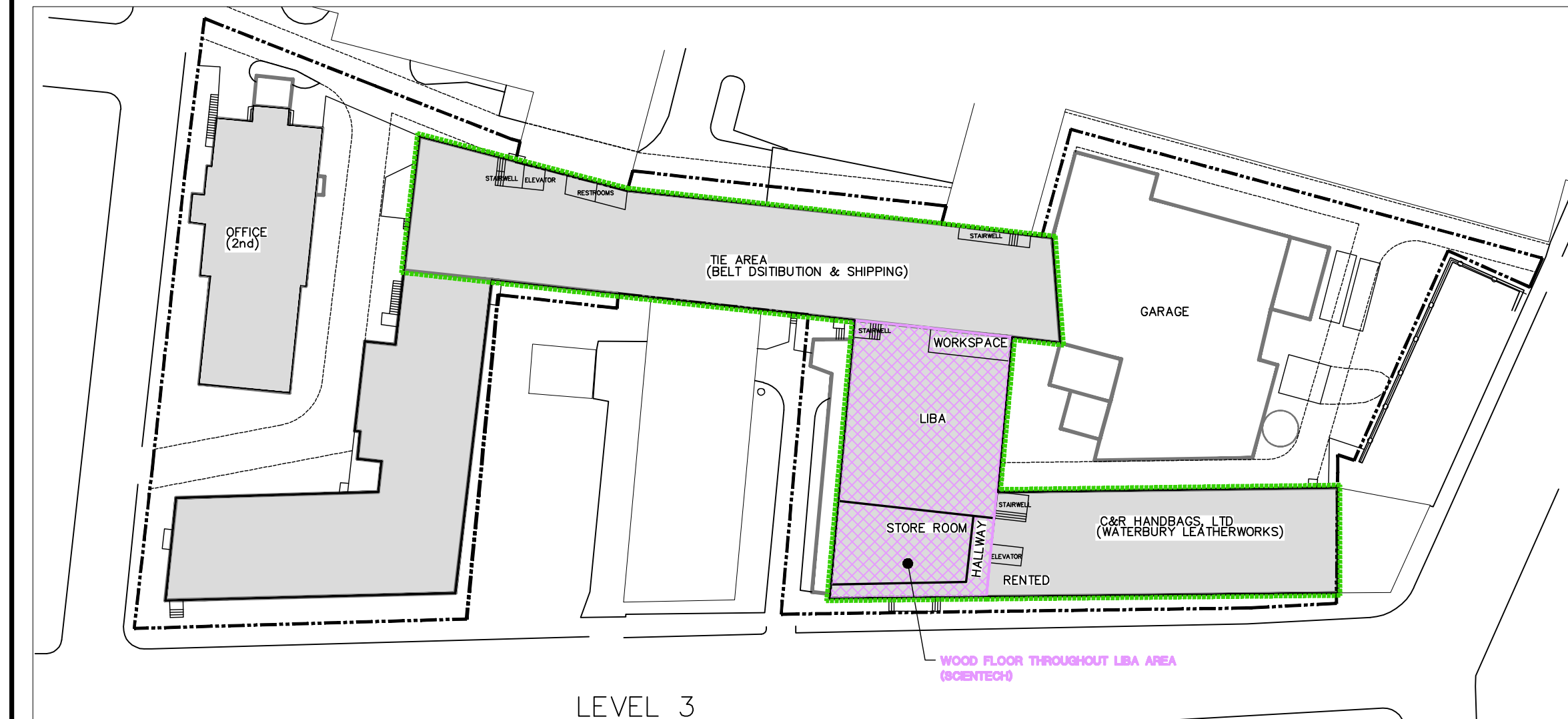
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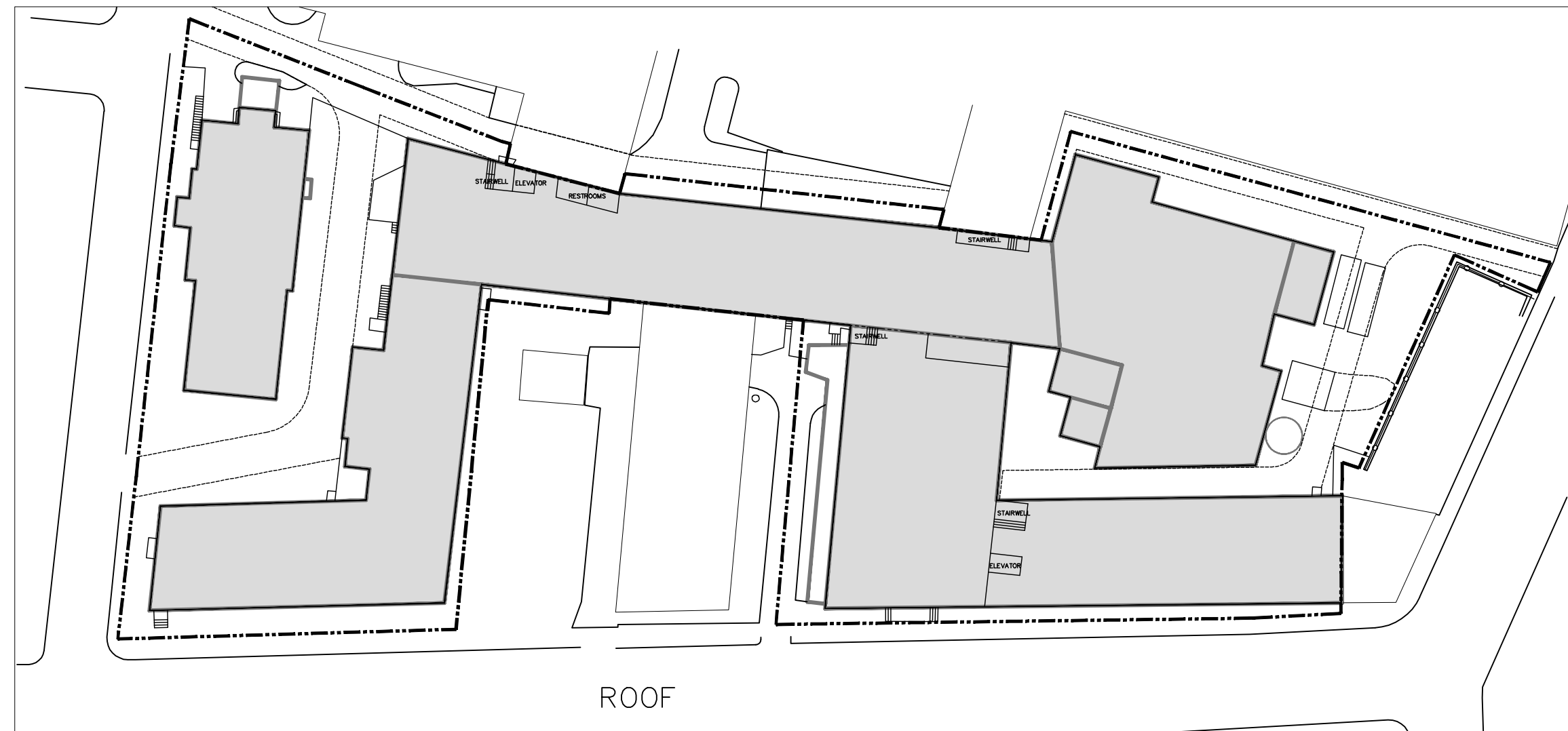
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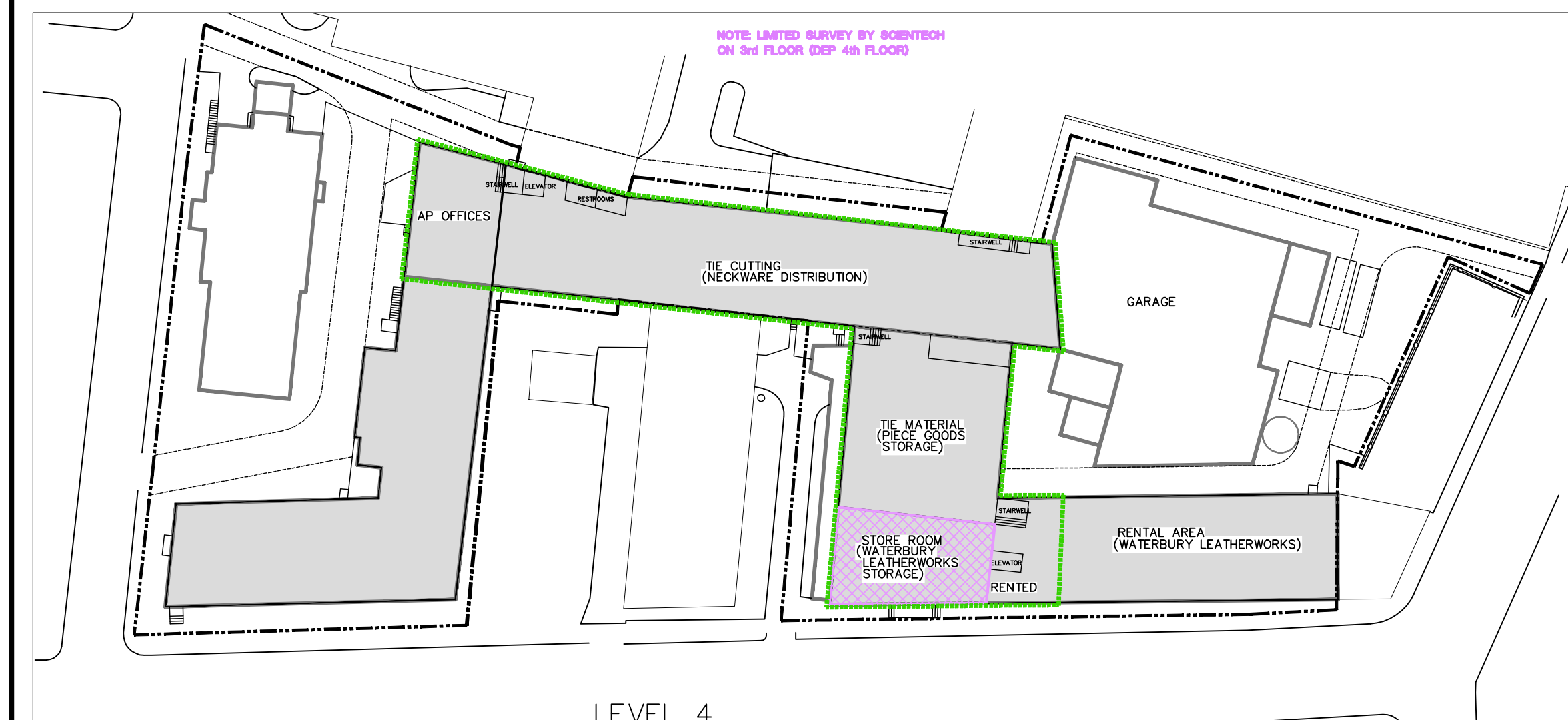
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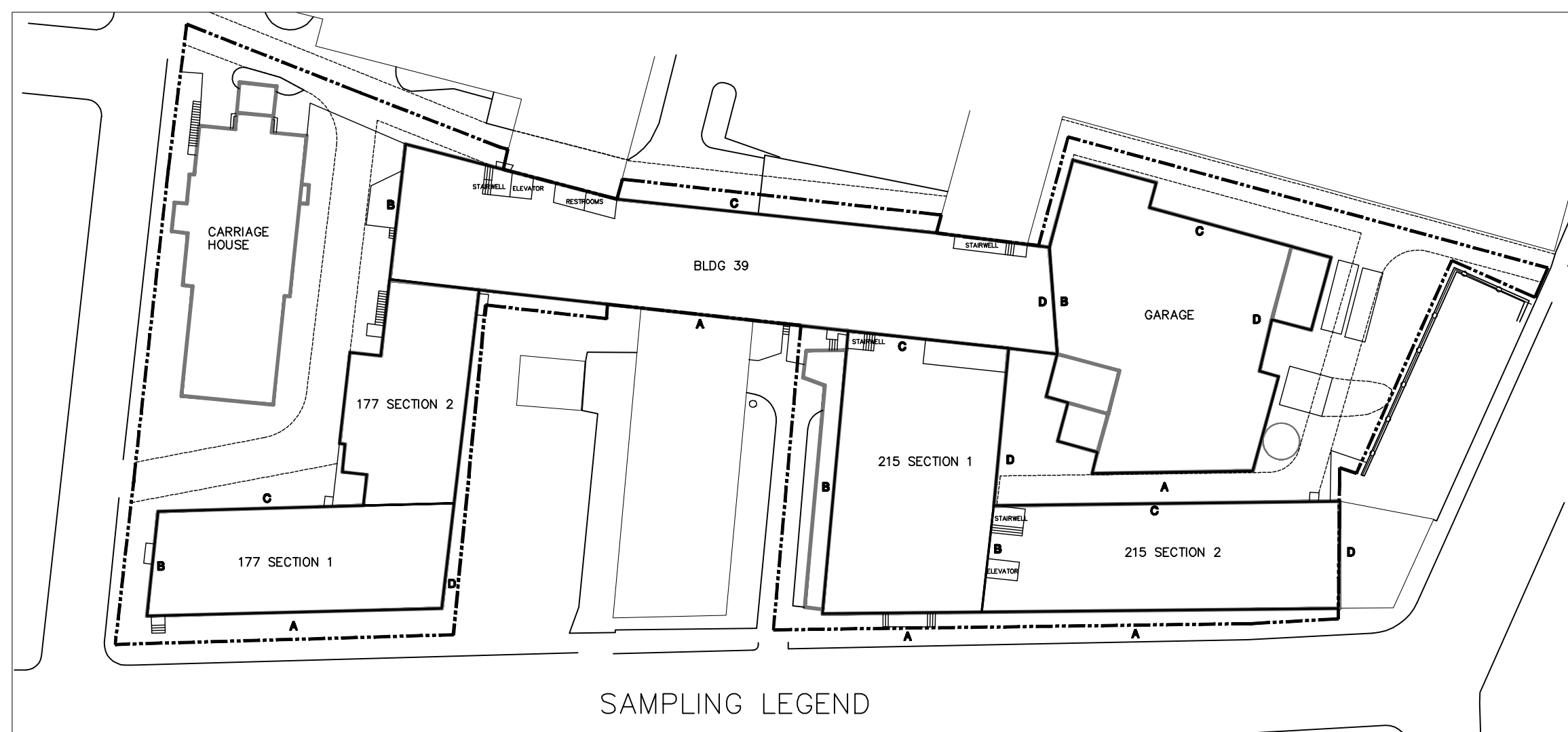
LEVEL 3



ROOF



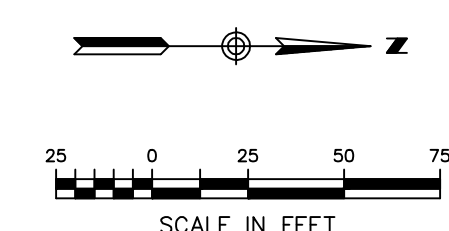
LEVEL 4



SAMPLING LEGEND

LEGEND

- BUILDING
- ROAD
- PROPERTY LINE
- ▭ SPACIAL FOOTPRINT SPECIFIC TO FLOOR
- ▨ AREAS AFFECTED BY RADIUM BASED ON HISTORICAL SURVEY DATA (EXTENT ESTIMATED AS ENTIRE FLOOR WHEN NO LIMITS PROVIDED IN SURVEY)
- LIMITS OF ETHER 1998 DEP SURVEY OR 2002 SCIENTECH SURVEY



WATERBURY DEVELOPMENT CORPORATION 0 AND 39 CHERRY AVE. AND 177 AND 215 CHERRY ST.		LEA An Employee Owned Company
SCALE AS SHOWN CORNER NO. 91WR002	DRAWN BY A.C.L. APPROVED BY K.M.C.	DATE 06/14/10 DATE 06/14/10
SITE PLAN WITH HISTORICAL RADIUM SURVEY RESULTS		DRAWING NO. 1 NO. OF SHEETS 1
WATERBURY DEVELOPMENT CORPORATION, 100 Northwest Drive • Plainville, Connecticut 06062 Phone: 860-747-5161 / Fax: 860-747-8822 An Employee Owned Company • email: info@leaetro.com		APPR. DATE REV. DESCRIPTION OF REVISION