SDMS DocID 460385

Harvard Project Services LLC

Via US Mail

January 8, 2010

Superfund Records Center
SITE: [illegible]
BREAK: [illegible]
OTHER: [illegible]

Joseph F. LeMay, P.E.
Remedial Project Manager
US EPA, Office of Site Remediation and Restoration
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Re: Responses to EPA's November 30, 2009 Email Questions
UniFirst Property Indoor Air Quality and Vapor Intrusion Assessment
Wells G&H Site, Woburn, Massachusetts

Dear Joe,

In the attached document, I have provided responses to each of the questions posed in your email to me on November 30, 2009. As requested, figures (Figures A & B) showing the approximate locations of operations or features identified in the responses are included. Also attached are copies of the following drawings:

1. An undated drawing (dark but readable) that appears to have been a design drawing for Building B. This drawing confirms that, historically, Building A was used for offices and a stockroom before Building B was constructed.
2. A drawing (labeled Exhibit 2A in the center) dated in 1966 that appears to show the design layout of Building B. This drawing identifies the location of a boiler room and a garage, as well as a structure labeled "gutter." These features are discussed in further detail in response to Question 1 in the attachment.
3. A 1985 drawing of vents and exhaust equipment. This drawing shows the use of the buildings after all laundry and chemical storage activities had ceased.

You indicated in your email that the information you have requested may provide you with a better understanding of where historical operations/activities and possible releases occurred on the UniFirst property, where possible sub-slab and indoor samples may need to be adjusted/added under/inside the building, and where future sampling efforts may need to be located on the property. You also indicated that the information may identify other potential areas of environmental concern on the property.

Since writing your email you already have provided us with your comments on possible sub-slab and indoor air sample locations. Overall, the intent of the vapor intrusion study

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is to obtain data that are truly representative of indoor conditions, which can be achieved regardless of the history of the building.

I believe we also have addressed your previously stated concern that diatomaceous earth from dry-cleaning operations conducted in the late 1960s may have been disposed of under the foundation of Building B. Simply put, no such operations were conducted on the property until Building B had been constructed, and during the brief period when such operations were conducted they occurred inside Building B. Regardless, there already is an extensive array of sampling and testing data taken from locations throughout the UniFirst property. From the initial site assessments commenced in 1983, to the HNu soil vapor survey done in 1987, and through the detailed groundwater and soils investigations conducted and reported to EPA, there is no evidence of random disposal of materials on the property.

EPA initiated its investigation at the Wells G & H Site in 1980, listed the Site on the National Priority List in 1983, issued its Record of Decision in 1989, and entered a Consent Decree with UniFirst and other performing parties in 1991. During that period, both EPA and UniFirst conducted extensive investigations concerning the history of UniFirst's operations in Woburn. Subsequently, UniFirst conducted additional investigations concerning uses and potential disposal activities on the UniFirst property prior to 1965, when UniFirst's corporate predecessor first began operations there. The results of these investigations were submitted to EPA, and are included among the many, many volumes of reports and correspondence already on file at EPA.

At the time that these investigations were initiated, many years already had passed since the historical operations and events of interest had occurred. Many more have passed since 1995, when EPA last discussed historical site issues with UniFirst, in connection with the 1994 Soils Report[1]. It is only fair to point out that any questions that EPA may have about site operations are even more difficult to address now, twenty-one years after EPA completed its remedial investigation and feasibility study and issued its ROD, than they were then.

You are aware, as well, that so much data has been collected at the Wells G&H Site that it has justly been called one of the most studied Superfund sites in the country. This is particularly true with respect to assessment of conditions in unconsolidated deposits and groundwater at the UniFirst property. Extensive site assessment work began on the

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[1] Applied Groundwater Research Ltd. and Environmental Project Control, Inc. 1994. *Summary of Unconsolidated Deposits Investigations at UniFirst Property, Woburn, Massachusetts.* Submitted to U.S. Environmental Protection Agency, Region 1. September 2, 1994

property in 1983. A comprehensive HNu study was performed in 1987. Test pits, rather than isolated soil borings, were installed at several locations on the property to confirm stratigraphy and contaminant distribution relative to physical conditions.

The 1994 Soils Report lists and summarizes the results of six prior unconsolidated deposits-specific reports, and Figure 3-3 of that report shows the extent of investigations conducted on the east end of the property. Unconsolidated-deposits investigations previously undertaken at the UniFirst property have included: logging and soil sampling from 32 borings and 13 test pits; installation of 14 soil vapor probes, 7 vapor monitoring wells, and 21 groundwater monitoring wells; chemical analysis of 140 unconsolidated deposit soil samples; characterization of approximately 60 soil samples for grain size, moisture content, carbon content, and other physical properties; petroleum hydrocarbon characterization of 29 unconsolidated deposit samples and bituminous concrete pavement samples; and chemical analysis of approximately 30 soil vapor samples.

Nothing has occurred in the intervening years since all of these investigations were completed that would warrant searching for new areas of environmental concern or reopening the entire site assessment process.

Should you have any questions regarding the foregoing, or the answers included in the attachment, please contact me.

Sincerely,

Timothy Cosgrave

TMC: hs

Attachment: Responses to Email from Joe LeMay, November 30, 2009

cc: Jack Badey, UniFirst
Greg Bibler, Goodwin Procter LLP

Attachment
Responses to Email from Joe LeMay, November 30, 2009

Hi Tim,

Thank you for your submission of the proposed Indoor Air Quality and Vapor Intrusion Assessment Scope of Work (SOW) on behalf of UniFirst. The SOW is currently being reviewed by EPA and its consultants. I anticipate providing a response within a week or two.

In your SOW, there are references to historical operations on the property. In addition, there were descriptions of historical operations in UniFirst's February 19, 1987 104(e) Response. It would be very helpful to me if you could provide information/responses to the questions posed below. The information would provide me a better understanding of where historical operations/activities and possible releases occurred on the property, where possible sub-slab and indoor samples may need to be adjusted/added under/inside the building, and where future sampling efforts may need to be located on the property.
The information may also help me further understand the basis for your proposed sub-slab & indoor air samples locations in the building as represented in SOW Figure 4, as well as other potential areas of environmental concern on the property. In the questions below, I've included either specific references to pages in the VIA SOW or cut and paste specific sections from the 104(e) response so it is easier for you to understand where the question originated from. I've also included our May 14th question regarding construction details/operations for Building A, B, C, loading dock and eastern retaining wall.

It would be great if you could provide a response to these questions within the next couple of weeks, or soon as practicable (where appropriate, please use SOW Figure 4 for illustrating locations).

Please let me know if you'd like to discuss these questions in greater detail. Thanks!

As you know, EPA initiated its investigation at the Wells G & H Site in 1980, listed the Site on the National Priority List in 1983, issued its Record of Decision in 1989, and entered a Consent Decree with UniFirst and other performing parties in 1991. During that period, both EPA and UniFirst conducted extensive investigations concerning the history of UniFirst's operations in Woburn. Subsequently, UniFirst conducted additional investigations concerning uses and potential disposal activities on the UniFirst property prior to 1965, when UniFirst's corporate predecessor first began operations there. The results of these investigations were submitted to EPA in the many, many volumes of

reports and correspondence already on file at EPA. At the time that these investigations were initiated, many years already had passed since the historical operations and events of interest had occurred. Many more have passed since 1995, when EPA last discussed historical site issues with UniFirst, in connection with the 1994 Soils Report[1].

Since you have available to you the results of these prior investigations, together with an even more extensive collection of physical data from what has justly been called one of the most studied Superfund sites in the country, I will not attempt to reiterate or reference all of that information here. My purpose here is simply to respond as best I can, at this late date, to your particular questions concerning site history.

Questions from October 9, 2009 VI scope of work:

1) Please illustrate on Figure 4 or 3, the following:
   a. the locations of one drycleaning machine and several conventional washing machines (SOW, p. 4) within Building B between 1967 and 1969 for "white shirt laundry";
   b. the locations of PCE chemical storage, and any other chemical storage, within Building B and/or A between 1967 and 1969;
   c. the locations of PCE diatomaceous earth (SOW, p. 4) filter within Buildings B and/or A between 1967 and 1969;

The single dry cleaning machine and several washing machines were located in Building B on the west side of a concrete wall that remains today. This is believed to be the same concrete wall shown in the 1966 Building C design drawing as running north-south across the western portion of the building. The washing machines were located on a washroom trench which ultimately connected to the sanitary sewer. The washroom trench is likely the same structure identified as "gutter" on the 1966 design drawing.

During the short time that laundry operations were conducted, soiled laundry would have been brought in through the loading dock at the east end of the building, processed through the washroom, and stored on shelving or hanging racks before leaving the building on delivery trucks that would load from the loading dock on the front (south) side of the building.

As the laundry operations were confined to Building B, storage and use of chemicals and equipment associated with those operations also would have been limited to Building B.

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[1] Applied Groundwater Research Ltd. and Environmental Project Control, Inc. 1994. *Summary of Unconsolidated Deposits Investigations at UniFirst Property, Woburn, Massachusetts.* Submitted to U.S. Environmental Protection Agency, Region 1. September 2, 1994

Precise locations cannot be provided for specific equipment and chemicals. The dry cleaning machine was a 50-pound capacity machine, which is relatively small, and comparable to modern home laundry equipment. The machine was a single unit that contained the washing process and diatomaceous earth filter used to recover PCE.

The approximate locations of the washing machines and the dry cleaning machine are shown in Figure A. It is expected that the PCE used in the dry cleaning machine would have been stored near that machine.

d. the locations of drums for transferring and storing (until transport to a municipal landfill or placement in a facility dumpster) used diatomaceous earth (SOW, p. 4) within Buildings B, A and/or the property.

The spent diatomaceous earth would have been collected, and the drums would have been located, where the dry cleaning machine itself was located in Building B. During the period 1966 through 1968, the dumpster was located outdoors in the southeast area of the property, as shown in the figure previously provided to EPA.[2].

e. the location and extent of a spill of 100 gallons of PCE (SOW, p. 4) inside Building B;

This release is reported to have been the result of overfilling or a failure of a filter on the fill pipe[3] of the 5,000 gallon PCE tank. The spill occurred around the tank location that is illustrated in Figure 2 of the VI Work Plan and in Figure 2-1 of the 1994 Soils Report.

f. the locations and extents of the two "release" areas (approximately 525 ft2 and 700 ft2, respectively) (SOW, p.5);

The "release areas" described in the SOW were taken directly from the 1994 Soils Report and were meant to reflect the context in which those areas were defined in that report. The release areas are described as the waste oil area (525 ft^2) and the area south of the loading dock (700ft^2), both of which are shown on Figure A.

Starting first with the area south of the loading dock: Figure 3-3 of the 1994 Soils Report shows the location of TP1, which is described on page 3-4 of that report, as being "adjacent to the fill pipe from the former PCE storage tank in an area outside the current

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[2] Environmental Research & Technology, Inc. 1984. *Evaluation and Recommendations for Alternatives Concerning Additional Investigation of Ground-Water Contamination*. Prepared for UniFirst Corporation. ERT Document No. P-B961-820. September 24, 1984. Figure 1.

[3] Applied Groundwater Research Ltd. and Environmental Project Control, Inc. 1994. *Summary of Unconsolidated Deposits Investigations at UniFirst Property, Woburn, Massachusetts.* Submitted to U.S. Environmental Protection Agency, Region 1. September 2, 1994. Pg 2-3.

loading dock where some scarring of the surface pavement had been noted." The 700ft^2 is approximately the area of the rectangle that extends the width of the loading dock to the southern edge of the building.

The waste oil area is described on page 3-16 of the 1994 Soils Report, including the information collected from the excavation of Test Pits F and G and installation of soil vapor probes SV10 through SV13.

g. the locations and extents of the residual dense nonaqueous phase liquid (DNAPL) found in small discontinuous zones within each area (SOW, p. 5);

The description of site investigations provided on page 5 of the SOW likewise was derived from the much more comprehensive 1994 Soils Report. Section 3.0 of the 1994 Soils Report describes the results of the multiple phases of investigations undertaken to characterize contamination and contaminant transport on the UniFirst property, including efforts to identify any evidence of very high VOC concentrations in soil or other indications of residual DNAPL within the release areas. Section 4.0 of the Soils Report also provides a conceptual model, based on these results, for the nature and fate of contaminants on the UniFirst property, including the incidence of residual DNAPL there.

h. the locations where it is believed that a substantial amount of contaminated materials were removed during excavation of an influent line trench and test pits (SOW, p. 5);

Soil removal was undertaken during the excavation of sections of the piping trench that runs from UC22 to the treatment building. Most of the soil came from the wider section of the trench near Test Pits F and G, shown on Figure 3-3 of the 1994 Soils Report. According to UniFirst's records, materials encountered in the trench, including concrete, railroad ties and 40 yd^3 of contaminated soil, were shipped to an off-site disposal facility.

i. the locations of the residual dense nonaqueous phase liquid (DNAPL) found in small discontinuous zones within each area (SOW, p. 5) remaining on the property;

As noted above, the 1994 Soils Report provides a very comprehensive discussion of contamination and contaminant transport on the UniFirst property, including those instances in which very high VOC concentrations in soil or other indications of residual DNAPL were identified. I refer you to that report.

j. the location of the "zone of low to moderate PCE concentrations extending southwestward from the east end of the property (approximately 1,300 square feet in area) attributed to contaminant vapors migrating upward from contaminated groundwater."

A typographical error reported this area as 1,300 ft^2; it was described in the 1994 Soils Report as 13,000 ft^2. This area was illustrated by the authors in Figure 4-1 of that report as the estimated area of soil contamination greater than 500 µg/kg.

k. the depths and locations of foundation footings/ walls for each portion of the building (e.g. A, B, C, etc) as well as the eastern concrete retaining wall;

A 1978 design drawing for Building C includes a section illustrating the footings, with design depth data. No additional building foundation information can be located at this time.

Questions from 2-19-87 104(e) Response:

2) Please identify the location of the sewer line that reportedly transported waste water from the drycleaning operations (pg. 3 of Croatti cover letter to Ruda). Please also identify the location of the diesel tank which was removed in Decemver 1986. See below excerpt.

substances or waste. Excavation of a diesel tank in December 1986 also exposed a sewer line that reportedly transported wastewater from the 1966-69 drycleaning operations, and no evidence of leakage was detected. A test pit was dug outside

The location of the diesel tank, based on Figure 2-1 of the 1994 Soils Report previously submitted to EPA, is shown on Figure A. Since the sewer line was exposed by the excavation of the tank, the line must exit the building in that area. The sewer line connects to a trunk line that runs east to west along Olympia Avenue.

3) Please illustrate the locations within the building for storing cleaning supplies (used within the building and distributed for use outside the property) (Enclosure 8 - Draft Environmental Assessment by ERAS, Inc., pg. 4). See below excerpt.

As noted above, current operations at IUS headquarters include those of a routine office nature, distribution of garments received from manufacturing operations in Puerto Rico, and distribution of cleaning supplies such as bleach, filter material used in dry cleaning machines, etc. The company also has a small show room for demonstrating dry cleaning machines.

Figure B illustrates the general location of operations during the late 1960s.

4) Please identify the location of the distillation unit and distillation heat vents, including the location of the heat vent exiting the building (Enclosure 8 - Draft Environmental Assessment by ERAS, Inc., pg. 5 and 6)? See below excerpt.

The laundry operations which occurred between 1966-1969 provided an 'executive type' service (i.e., white shirts). The company bought a small laundry in Worcester, MA and moved it to Woburn. It consisted of a number of washing machines and 1 or 2 small dry cleaning units which could handle 25-35 pounds of clothing per load. About 2 loads were dry cleaned per day. The tetrachloroethylene solvent was continuously passed through a diatomaceous earth filter until the solvent was too dirty. About 1-2 times per week, the solvent was distilled. Solvent trapped in the filter material was partially driven off into the

distillation unit by heating. The remaining still bottoms consisted of a diatomaceous earth cake containing about 20% by weight tetrachloroethylene. Their cake is described as a solid non-flowing waste. According to the past production manager (now retired), Mr. Barnaby, who was contacted by Mr. Croatti, this cake material generated about 1 five gallon pail per week of waste. A present employee engaged in demonstrating dry-cleaning equipment (without knowledge of the environmental issue) was asked to estimate weekly waste volume for 1-2 loads a day and confirmed the one pail estimate. The waste was either put in the trash dumpster, which was unloaded by a commercial hauler, or put into drums which were trucked to the municipal dump. Mr. Barnaby assured Mr. Croatti that this waste material was not dumped on IUS's property or the surrounding property.

The distillation unit was integrated into the dry cleaning unit, as was typical of dry-cleaning machines of the day. Since the tetrachloroethene was "continuously passed through a diatomaceous earth filter", the units had to be connected. The location of the vents is not known now.

5) Please identify the locations of the wash-troughs and sewer line that the washing machines drained in to (Enclosure 8 - Draft Environmental Assessment by ERAS, Inc., pg. 6). See below excerpt.

ing the period of the dry-cleaning operation. All washing machines drained to wash-troughs which discharged to the sewer system. Any solvent spills from the dry-cleaning equipment would have also drained to the troughs.

A 1966 drawing of Building B identifies a "gutter" structure that is consistent with the wash trough referred to in this excerpt. See response to Question 2) above for an approximate location of the sewer line.

6) Please identify the location of the hose coupling, and/or the four small saucer-like depression outside the building from the former hose coupling (Enclosure 8 - Draft Environmental Assessment by ERAS, Inc., pg. 6 and 7). See below excerpt.

related to laundry operations, or into tank trucks. The small tanks

were filled using something similar to a gasoline nozzle. The hose coupling was located on the outside of the building. Because the solvent in question dissolves asphalt, any spills outside the building would leave small saucer-like depressions in the parking lot surface. Only four of these, a few inches in diameter, are visible beneath the former hose coupling.

Because the ERAS report was prepared in 1983, well after the east end loading dock was enclosed, the hose coupling and depressions in the asphalt that the report identified must have been located at the edge of the current loading dock (see response to Question 1f, above).

7) Please illustrate the location of the tank that overflowed, and the location and dimensions of the large room that housed the tank (Enclosure 8 - Draft Environmental Assessment by ERAS, Inc., pg. 7). See below excerpt.

located. In late 1979, the tank overflowed; it is estimated that 100-150 gallons spilled onto the concrete floor. Mr. Croatti indicated to the surveyors the areal extent of the spill, which was completely confined within a single large room. The spill was mopped up with rags. The rags were sent to be dry-cleaned in Nashua, NH so that the solvent could be recovered in the cleaning machine.

The 5,000 gallon PCE tank was located in the east end of the building, near the former loading dock as illustrated on Figure A, based, for example, on Figure 2-1 in the 1994 Soils Report previously submitted to EPA. The "large room" that housed the tank was located at the east end of Building B, to the north of the boiler room and garage area. Concrete block interior walls, illustrated in Figure A, would have defined the western and southern edges of the room referred to in the ERAS Report.

8) Please describe where the fill came from that was used to level the west side of lot in the early 1980's (a small earthern embankment was replaced with a larger retaining wall and soil used to level the lot with the existing grade to the west (paved access road west of building A))(Enclosure 8 - Draft Environmental Assessment by ERAS, Inc., pg. 7). See below excerpt.

> The lot on the outside slopes upward from west to east. A retaining wall on the west side of the lot has replaced what used to be a small embankment. The slope has been filled to level the lot in this location. On the east side, a small triangular patch of IUS's property is unpaved. The land at this point slopes somewhat steeply upward from the parking lot.

It is not known now what the source of the fill material for this area was.

9) Please illustrate the location of these one of two stormwater drains in the front of the parking lot. Please also illustrate the location of the swales (which these stormwater drains drained into) and where the swales discharged into the Aberjona River (Enclosure 8 - Draft Environmental Assessment by ERAS, Inc., pg. 7). See below excerpt.

> Any spills of drums of solvent from the loading dock on the east side would flow into one of two stormwater drains located in the front parking lot. These drain into swales which ultimately feed the Aberjona River. The paving in front of the truck loading dock where tetrachloroethylene was delivered is recessed and equipped with a drain. It is believed that any spills in this area would enter the recess drain or the parking lot drain for the adjacent paved area.

The property storm drain system is illustrated on Figure A, based on Figure 2-1 in the 1994 Soils Report previously submitted to EPA. None of these drains originate near the loading dock at the east end of the building (possibly the ERAS report mistakenly referred to the loading dock on the south side of the building, but UniFirst does not believe that drums of solvent were handled at this loading dock). The locations of any

swales that the City of Woburn may have constructed are not known now. In 1992, when the treatment system discharge piping was connected to the storm sewer, the storm sewer consisted of a continuous pipe buried in Olympia Avenue that leads to the Aberjona River.

10) If photographs were collected at the time of ERAS visit supporting ERAS, Inc.'s Draft Environmental Report, can you please provide me a copy of the photographs (Enclosure 8 - Draft Environmental Assessment by ERAS, Inc., pg. 10)?
See below excerpt.

> The survey was carried out by Charles Humpstone and Leslie Nelken of ERAS, who visited the IUS facility in Woburn on May 25, 1983. They met with the following individuals: Mr. Aldo Croatti, President and Founder of IUS, Mr. John Bartlett, Vice President of Finance, Mr. Philip Pizzo, Chief Engineer, Mr. Jeffrey Bates, Legal Counsel for IUS, and Mr. John Lynch of Environmental Research and Technology, acting as a consultant to IUS. The surveyors were highly impressed with the management of IUS's operations and with the candor of the participants in this meeting. Mr. Croatti had made contact with a retired production manager regarding past waste management practices.
>
> Ms. Nelken also met with Mr. Richard Leighton of Region I EPA. He is the EPA Coordinator for the Woburn Project.

UniFirst is not aware of any photographs taken by the ERAS surveyors.

11) Please identify the location of the following rooms/areas: Stockroom, Emblem Area, Storage Area, Matenance Area, Custom Care Area (Enclosure 9 - Hazardous Substance Summary and SDMS). See below excerpt.

SUBSTANCE	DATES OF USE	LOCATION USED	OPERATION	PHYSICAL STATE
Dimethyl Formamide	1984-1987	Stockroom	Emblem Remover	Liquid
1,1,1 tri-chloro-ethane	1982-1984	Stockroom	Emblem Remover	Liquid
Methylene Chloride	1979-1982	Stockroom	Emblem Remover	Liquid
Inks (see MSDS)	1979-1987	Emblem	Screem Print.	Liquid
Catalysts (see MSDS)	1979-1987	Emblem	Screen Print.	Liquid
Xylol	1979-1982	Emblem	Thinner & Cleaning	Liquid
Methylene chloride	1982-1983	Emblem	Thinner & Cleaning	Liquid
1,1,1 tri-chloro-ethane	1978-1979	Storage	Storage for Transhipment	Liquid
	1983-1987	Emblem	Thinner & Cleaning	Liquid
Janitorial Products (see MSDS)	1965-1987	Maintenance	Maintain Facility	Liquid, aerosal containers
Super Agitene	1977-1987	Maintenance	Clean Parts	Liquid
Tetra-chloro-ethylene	1965-1969	Custom Care	Dry Cleaning,	Liquid
	1975/6-1982/3	Storage	Storage for transhipment	Liquid

Waste Inks and solvents are placed in drums and disposed of by a licensed hazardous waste contractor.

SVS-3418/U

The general locations of these areas are illustrated on Figure B.

Question from May 14, 2009 draft comments:

12) Please provide a response to the May 14th general comment #11 (see excerpt below), where responses to the above questions did not address to questions within the comment.

11. **Limited Understanding of Historical Operations, and Building(s) Design and Construction.**

UniFirst identified PCE on the property from 1966-68 and 1977- 1982, as well as various construction on the property such as Buildings B and C, load dock and concrete retaining wall. Please provide a description of all operations/ activities which have occurred historically in each building, including location of washing equipment, wash troughs, chemical storage, all drains for sewer and storm water (including all floor drains). Provide all drawings illustrating the locations of operations in Building A, B and C, including the location of containers/ tanks, wash troughs, sewer and storm water drainage piping and floor drains on the Property, including Building A, B and C and loading dock. Please also provide a complete description of each operation. Please provide all construction drawings illustrating all civil engineering work and building construction, including pre and post construction grades, for the property including Building A, B, and C, loading dock, and retaining wall east of Building B, as well as progression of construction activities relative to any soil movement or excavation. Please also provide an annual chemical inventory list for every year of operation at the property since 1965/1966 to 1982.

In addition, please provide any monitoring well information, logs, notes and instrument readings regarding the attempted monitoring well installation on the Massachusetts Rifle Association property near DP3 around the late 1980s. The attempted installation was possibly abandoned due to encountered artesian conditions.

UniFirst has enclosed documentation relating to construction of Building C. The boring log for UC-21 also is enclosed.

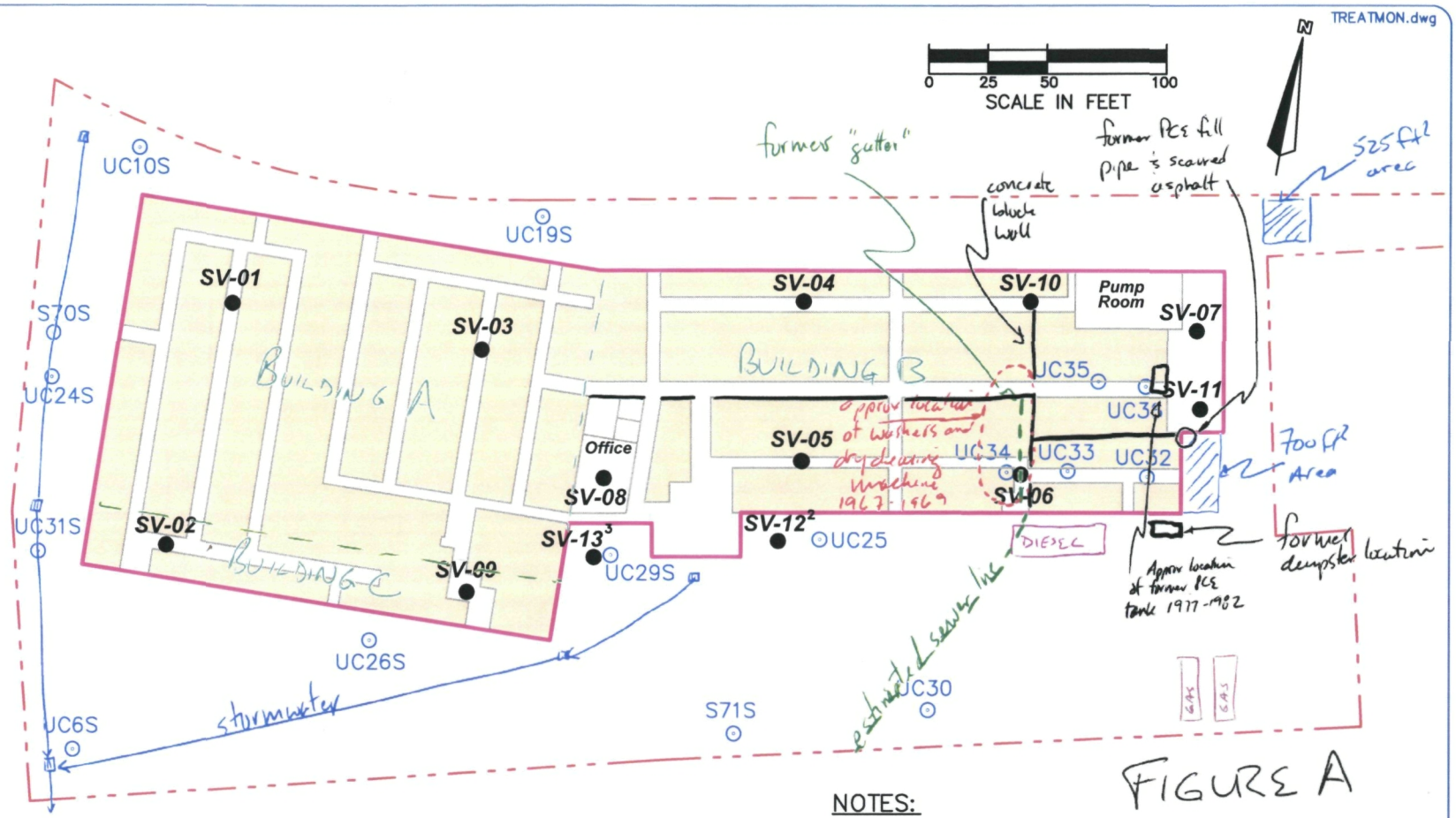

FIGURE A

LEGEND

SV-01 ●	PROPOSED COLOCATED SUB-SLAB / INDOOR AIR VAPOR SAMPLING LOCATION [1]
UC6S ⊙	EXISTING MONITORING WELL SAMPLING LOCATION
———	BUILDING FOOTPRINT
—·—·—	SITE BOUNDARY
▒	APPROXIMATE STORAGE AREA FOOTPRINT

catch basin

former UST

NOTES:

1. PROPOSED SAMPLING LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED FOLLOWING FIELD REVIEW.
2. SV–12 LOCATED NEAR WELL UC25.
3. SV–13 LOCATED NEAR WELL UC29S.

(BASED ON AN UNDATED LAYOUT DRAWING OF THE EXTRA SPACE STORAGE OPERATION PROVIDED TO UNIFIRST CORP.)

FIGURE 4: PROPOSED SAMPLING LOCATIONS
UNIFIRST CORPORATION
WOBURN, MASSACHUSETTS

The Johnson Company

100 State Street, Suite 600
Montpelier, VT 05602
(802) 229-4600

Drawn by: TJK	Date: 9/30/09
Chk'd by: BLL	Date: 9/30/09
Scale: As Shown	Project: 1-2114-2

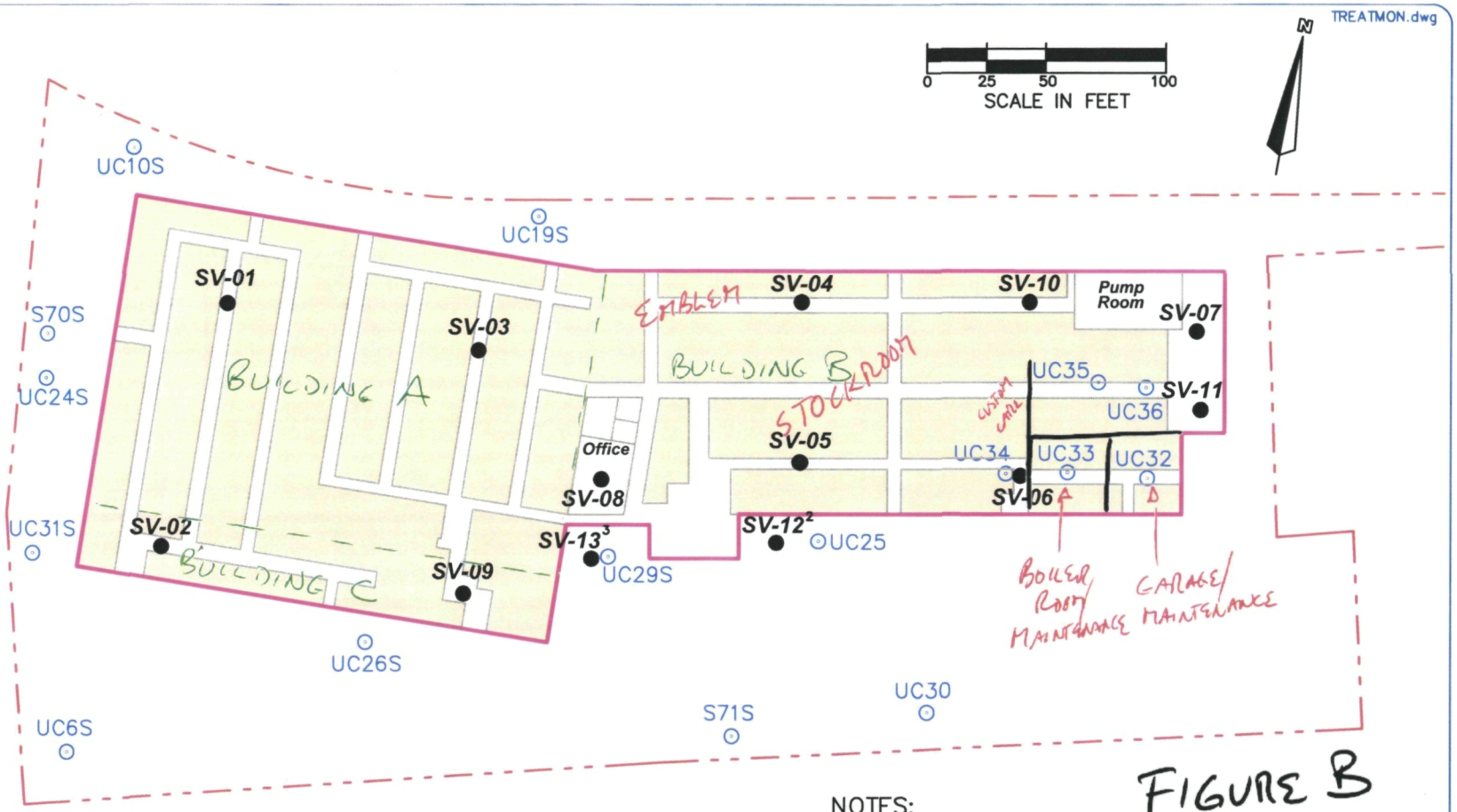

FIGURE B

LEGEND

SV-01 ●	PROPOSED COLOCATED SUB-SLAB / INDOOR AIR VAPOR SAMPLING LOCATION[1]
UC6S ⊙	EXISTING MONITORING WELL SAMPLING LOCATION
	BUILDING FOOTPRINT
	SITE BOUNDARY
	APPROXIMATE STORAGE AREA FOOTPRINT

NOTES:

1. PROPOSED SAMPLING LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED FOLLOWING FIELD REVIEW.
2. SV-12 LOCATED NEAR WELL UC25.
3. SV-13 LOCATED NEAR WELL UC29S.

(BASED ON AN UNDATED LAYOUT DRAWING OF THE EXTRA SPACE STORAGE OPERATION PROVIDED TO UNIFIRST CORP.)

FIGURE 4: PROPOSED SAMPLING LOCATIONS
UNIFIRST CORPORATION
WOBURN, MASSACHUSETTS

The Johnson Company

100 State Street, Suite 600
Montpelier, VT 05602
(802) 229-4600

Drawn by: TJK	Date: 9/30/09
Chk'd by: BLL	Date: 9/30/09
Scale: As Shown	Project: 1-2114-2

UC21

Project 0495-004 Site UNIFIRST **BORING** [redacted] Sh 1 of 7

Date Started 12/22/87 Completed _____ Ground Elevation _____

Total Depth 319.1 Location _____ Logged by L. Hyan

Casing I.D. 4"-K.S +3" - 62' Contractor GVED - DARRELL GREEN

Remarks TOP OF BEDROCK - 60.5 - 61'

Elev. Feet	Depth Feet	Sample Type & Number	~~Blows Per 6 In.~~ RQD	Sample Depth Range	Sample Rec.	Graphic Log	Sample Description	Equipment Installed
	60						SPIN CASING FROM 0 TO 62' NO SAMPLES	
	65	NQ-1	36%	62'-68'	4.6'	GBD	GABBRO DIORITE W/ KSPAR INTRUSIONS < 5% JOINTS @ 62.9, 63.2, 63.8 CLOSELY SPACED JOINTS 64.2 - 64.6 JOINT @ 65.2, VERTICAL JOINT 65.6 - 66.6 JOINTS ARE SMOOTH PLANAR TO WAVY 0°-60° WITH FeO + MnO COATING	
	70 75	NQTT 1	61%	68-76	7.8		GABBRO DIORITE W/KSPAR INTRUSIONS UP TO 15% SOME COMPOSITIONAL ZONING 70-80° TO CORE AXIS JOINTS @ 69', 70.5', 71.3', 71.7', 72.1' CLOSELY SPACED ∧ JTS 72.7'-73.1', ALSO 73.8-74' JOINT @ 74.6' JOINTS ARE SMOOTH PLANAR TO WAVY WITH FeO, CHLORITE + MnO COATING	
	80 85	NQTT 2	65%	76-86	~~10.0~~ 9.6		AS ABOVE ∧ JOINTS @ 76.8 JOINTS @ 77.8, 78, 78.3 78.6, 79.2, 79.5, 80.5 ∧ JOINTS 82.2-82.4, 82.9-83.2 OPEN JOINTS @ 83.7, 84.0, 84.2, 84.8 85.1 — JOINTS 30°-90°	
		NQTT 3	36%	86-91	5		AS ABOVE	

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Project 0415-004 Site unifirst Woburn **BORING** VC-2/Sh 2 of 7

Elev. Feet	Depth Feet	Sample Type & Number	Blows per 6 in. / RQD	Sample Depth Range	Sample Rec.	Graphic Log	Sample Description	Equipment Installed
		NQ/T 2		8 86-91	5.0		AS ABOVE JOINTS 0.2'-0.8' THROUGHOUT SOME CLOSELY SPACED ∩ JOINTS SMOOTH PLANAR TO WAVY 15°-85°	
	90							
12/20		NQ/T 4	N/A	91.0 to 96.0	2.0		Mislatch - previous core wedged in shoe change bit & reamer Longyear series 4 silty dark gray gabbrodiorite ~~[illegible]~~ grained ~10% pink m-f grained pink granodiorite core locally pulverized & redrilled from mislatch	
	95							
		NQ/T 5	84%	96.0 to 106.0	10.0	gbd	f-grained dark gray gabbrodiorite 97.9-98.3, 100.6-102.0 c-m grained pink granodiorite joints 45°-90° to core axis planar rough coated 100.0 ∩ 30°-45° to core axis	
	100							
	105							
		NQ/T 6	87% ~~85%~~	106.0 to 116.0	9.9 ~~9.7~~ 9.7 8.8	gbd	107.4-108.3 closely spaced jts 45°-90° planar rough coated and 111.5-111.8 111.8-112.7 m. grained grd 113.8 — oo wavy filled jt core slips leave 1.2 down hole, retrace 111 ~~[illegible]~~ in barrel	
	110							
	115		7.6					
		NQ/T 7	61%	116.0 to 126.0	10.0		F-m grain gabbrodiorite 116.0-119.7 joints every 0.2-0.5' 20°-80° smooth planar some ∩ with chlorite coating - schistosities closely spaced ∩ joints @ 120.6-120.7 121.3-122.5 med grain pink granodiorite no joints 122.5-126 med gabbrodiorite w/up to 10% K spar joints every 0.3'-1.0' 20°-90° smooth planar w Fe chlorite coating	
	120							
	125							

1812 (1/81)

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Project 0495 Site [illegible] **BORING** K-21 Sh 3 of 7

Elev. Feet	Depth Feet	Sample Type & Number	Sample Blows/6 in.	Sample Depth Range	Sample Rec.	Graphic Log	Sample Description	Equipment Installed
	130 135	NQ II 8	70%	126.0 TO 136.0	10.0		126 TO 136.5 F GRAIN GABBRO DIORITE WITH K SPAR INTRUSIONS UP TO 30% 136.5 TO 138.8 M GRAIN GBD JOINTED EVERY 0.3 TO 0.8' 15° TO 85° SMOOTH PLANAR TO WAVY MNO + CHLORITE COATING 138.8 TO 130.2 JOINTED FROM 0.1' TO 0.3' W/ K SPAR INTRUSIONS @ 70° TO 90°. JOINTS @ 130.8, 131.3, 132.4 133.4. ~~[illegible]~~ MOTTLED GRANODIORITE INTRUSIONS 132.6, 133.4. JOINTS @ 133.9, 134.2, 135.4 CLOSELY SPACED JOINTS 135.1 - 136.0 POSSIBLE FAULT GOUGE @ 135.4 - 136.0	
	140 145	NQ II 9	51%	136.0 TO 146.0	10.1		136.0 - 136.5 gbd w 20% KSPAR + ORIENTING OF GRAINS GOUGE TO AXIS - CHLORITIZED 136.5 - 139.5 m-c GRAIN GRANODIORITE JOINTED 0.2 - 0.8' MNO, FEO + CHLORITE COATING 60° TO 80° TO AXIS WAVY, PLANAR 139.5 - 141. gbd MNO gdr INTERMIX CLOSELY SPACED JOINTS 140 - 140.6 + 141.0 141.0 TO 143.1 m-c GRAIN GRANODIORITE JOINTS 0.1 TO 0.8' 20° TO 30° SMOOTH PLANAR 143.1 TO 146.1 gbd + gdr INTERMIX JOINTED EVERY 0.1' TO 0.7' 10° TO 80°. POSSIBLE FAULT GAGE @ 146.4	
	150 155	NQ II 10	61%	146.0 TO 156	10.0		146.1 - 148 - m GRAIN DK GREY gbd JOINTS @ 146.5 - 147.2, CLOSELY SPACED INTERSECTING @ 147.7 - 148 - 149.3 CHLORITIZED PINK TO GREEN GREY F-C GRAIN FAULT GOUGE (CONSOLIDATED) 149.3 - 156.0 m GRAIN GABBRODIORITE JOINTED 0.5 - 2.5' 10° TO 90° WAVY UP TO 20% K SPAR INTRUSIONS PARTIALLY FILLED VERTICAL FRACTURE FROM 152' TO 154'	
	160 165	NQ II 11	55%	156 TO 164	8.4		DK GREY MED GRAIN GABBRODIORITE W/ UP TO 10% K SPAR CLOSELY SPACED ∧ JOINTS FROM 156.6' TO 158.6' SMOOTH PLANAR TO BLOCKY 10° - 75°. CHLORITE COATING + SCHLICKENSIDES SMALL GRANODIORITE INTRUSION @ 162.3 ∧ JOINT SET @ 159.5 - 15° + 60° SMOOTH PLANAR JOINTS @ 160.1 + 160.8. GRANODIORITE INTRUSION @ 162.3 - 162.6 CLOSELY SPACED ∧ JOINTS FROM 162.6 - 164.2 0° - 70° WAVY, MNO COATING	
		NQ II 12	43%	164 TO 167	3.5			

1812 (1/83)

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Project DAVIS [illegible] Site [illegible] **BORING** UC-2/Sh 4 of 7

Elev. Feet	Depth Feet	Sample Type & Number	Sample Rec.	Sample Depth Range	Sample Rec.	Graphic Log	Sample Description	Equipment Installed
	165	NQTT 12	43%	164 TO 167	3.5		164-164.7 V.C. granitic gabbrodiorite, lge F.g. grains, 1 steep joint 164.7-165.4 F.g. gbd vert. frac. (poss drill induced) 1 dull joint grain 165.4-165.6 highly fractured frags only 165.6-166.4 F.g. gbd solid core, 1 frac 166.4-167 highly fractured poss. open seam	
	170	NQ TT 13	75/22 34%	167 TO 169	2.2		167-169 Porphyritic gabbrodiorite w/ several large veins K-spar, 6 frac at shallow < along plane of foliation 168-169 F.g. gbd w/ 3 thin seams of K-spar, 1 moderate step frac. at 168.8 along another K-spar seam	
		NQ TT 14	2.6/3.3 79%	169 - 173'	3.3/4.0		169-169.7 gabbrodiorite w/ VC pink K-spar, 2 sm fracs, mod step 169.7-170.3 less K-spar, 2 fracs w/ coating on surf 170.3-172.3 pink gabbrodiorite, K-spar dominates, 1 high < sealed frac. @ 172.5, 2 shal. < fracs @ 171'+ (1 w/coating), some hor. fracs at 172.3	
	175	NQ TT 15	7.0 77%	173 - 181	8.0		173-176.8 pink gabbrodio (lge K-spar), 1 thin seam vis 176.8-177.5 VF gr. gabbrodior, no K-spar 177.5 - 180.0 pink gabbrodio., somehigh < fracs at 177.5-178 180 - 181.3 reduc in K-spar, some hi < fracs w/ coating at ~181	
	180							
		NQTT 16	58%	181-183	1.9'		PINK SAOBRODIORITE JOINTS EVERY 0.3 - 0.8' BLOCKY 60°-90° UP TO 50% K SPAR	
	185	NQTT 17	59%	183 TO 193	10'		183-186.1 Pink gbd JOINTED FROM 0.2' - 1.0' 70°-90° BLOCKY CALCS & MNO COATING 186.1 - 187 CLOSELY SPACED 0°-90° CHLORITE + CALCS COATING 187-189 PINK gbd FRAC. EVERY 1' 189-189.7 GREY F.GR. gbd INTERBDS 189.7-193 PINK gbd-M.C GRAIN, JOINTED 0.1'-0.3' 50°-90° SMOOTH PLANAR	
	190							
							OILY BLEEDS IN WASH - SAMPLE ★	
	195	NQTT 18	31%	193 TO 203	10'		193-193.7 Pink Lg grain gbd INTER MIXED W GREY F GRAIN gbd CLOSELY SPACED ∩ JOINTS 20°-60° SMOOTH PLANAR MNO - CHLORITE COATED 193.7-196.4 Pink MED-Lg GRAIN gbd JOINTED EVERY 1.0' 90° ROUGH & FRESH 196.4 - 203.1 GREY F GRAIN gbd W >10% K SPAR + QUARTZ INFUSION HIGHLY JOINTED : FRACTURED 10°-80°	
	200							

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1012(1/81)

Project D495 Site UNIFIRST WOBURN **BORING** UC-21 Sh 5 of 7

Elev. Feet	Depth Feet	Sample Type & Number	Blows per 6 in.	Depth Range	Rec.	Graphic Log	Sample Description	Equipment Installed
	205	NQTT 19	24%	203 TO 208	5.0		Light grey m. grain gabbro diorite up to 20% K-spar closely spaced joints (oily bleeds in wash water) Thin short. Lg red + white calcite inclusion @ 207.4	
	210	NQTT 20	44%	208 TO 213	5.2		208 - 211.1 As above. Highly fractured from 208 - 209.4 211.1 - 213.2 Pink lg grain granodiorite joints every 0.1' - 0.4' 20°-80° wavy mnO + FeO	
	215	NQTT 21	34%	213 TO 223	10		213 - 215.2 Pink lg grain granodiorite as above 215.2 - 220 As above but K-spar has become weathered + fracture frequency increases (RQD 100%) (K spar 60%) 220 - 223 Pink - grey med grain granodiorite K-spar 20% jointed every 0.1' - 0.8' 15°-90° blocky mnO - FeO + CaCO3 filling	
	225	NQTT 22	50%	223 TO 233	9.9		223 - 225.3 Pink grey m. grain gabbro diorite with up to 20% K spar some compositional zoning + orientation of grains jointed @ 223.8 - 224.1 70° smooth planar 225.3 - 225.6 closely spaced joints w/ FeO + CaCO3 227.1 - 231.7 Green grey f grain gabbro diorite w 10% K spar phenocrysts highly fractured 231.9 - 233 Fault gouge w/ CaCO3 veins + weathered spar	
	235	NQTT 23	0%	233 TO 241	3.8		As above Highly fractured 2.1' of core is lost with cuttings CaCO3 is detrital 234.3 - 236.8 Weathered pink lg grain granodiorite	
	240	NQTT 24		241 TO 243	1.3		241 - 243 Green grey fault gouge + detrital CaCO3 may have lost small CaCO3 voids	

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Project D495 Site [illegible] **BORING** UC-21 Sh 6 of 7

Elev. Feet	Depth Feet	Sample Type & Number	Sample Recovery	Sample Depth Range	Sample Rec.	Graphic Log	Sample Description	Equipment Installed
	245	NQII 25	7%	243 TO 248	5.1		GREY m GRAIN GABBRO DIORITE W/ OCCASIONAL K SPAR PHENOCRYSTS. CLOSELY SPACED ∩ JOINTS THROUGHOUT 0-90° WAVY CHLORITE + CLAY MINERALS COATING FRACTURES	
	250	NQII 26	84%	248 TO 253	5.0		GREY m GRAIN GABBRODIORITE JOINTED @ 249, 250.1, 250.8 251.3, 251.6, 252, 252.5 WAVY SURFACE 45°-80° 10% K SPAR UP TO 252.2 THEN 50% SOME CaCO3 FILLING	
	255	NQII 27	76%	253 TO 263	10.0		Lg GRAIN GABBRO DIORITE W. 50% K SPAR PHENOCRYSTS. CLOSELY SPACED ∩ JOINTS FROM 254.5-255 10°-80° CHLORITE + CaCO3 COATING OTHER JOINTS EVERY 0.8'-1.1' ROUGH FACES FROM DRILLING 258.7 K-SPAR DECREASES TO <10% m. GRAIN GABBRODIORITE JOINT FREQUENCY IS THE SAME 10°-90° SMOOTH PLANAR CHLORITE + CaCO3 261-261.3 K SPAR UP TO 50% 261.3-263 m GRAIN GREY gbd	
	270	NQII 28	82%	263 TO 273	10.0		LT GREY m GRAIN gbd K SPAR UP TO 10% JOINT EVERY [illegible] FROM 263-266.3 266.3-268.9 K SPAR [illegible] TO 20% CLOSELY SPACED ∩ JOINTS 267.1-267.5 + 267.9 268.9 Lg K SPAR [illegible] GROUND MASS TO [illegible] 271-273 K SPAR [illegible]	
	280	NQII 29	90%	273 TO 283	10.1		GREY [illegible] GRAIN [illegible] JOINTS 0.2-1.0' [illegible] 50% [illegible] 20-90° SMOOTH PLANAR TO WAVY SOME CaCO3	

1912 (1/81)

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Project | Site | **BORING** UC-21 Sh 7 of 7

Elev. Feet	Depth Feet	Sample Type & Number	Blows per 6 in. (RQD)	Sample Depth Range	Rec.	Graphic Log	Sample Description	Equipment Installed
	285	NQTT 30	55%	283 TO 293	10.1		LT GREY M GRAIN GABBRODIORITE 10% K SPAR SOME ORIENTATION OF GRAINS + COMPOSITIONAL BANDING JTS EVERY 0.2 - 1.0' MnO + CaCO3 COATING - 285.8 K SPAR PHENOCRYSTS INCREASE IN SIZE + UP TO 20% ORIENTATION IS MORE DEFINED 45° TO AXIS 290.4 - 294.4 CLOSELY SPACED ∩ JTS 5° - 50° ROUGH WAVY FEO STAINED 292 - 293 LG GRAIN PINK GRANODIORITE	
	290							
	295	NQTT 31	51%	293 TO 297.3	4.4		293 - 296 AS ABOVE ∩ JTS @ 295 45° 296 - 297.3 MAFIC MINS INCREASE + ORIENTATION OF GRAINS RESUMES	
	300	NQTT 32	82%	297.3 TO 303	5.5		297.3 - 299.5 PINK-GREY M GRAIN GABBRODIORITE 10° - 20° K SPAR JTS EVERY 0.5 - 1.0' ~30° SMOOTH PLANAR CaCO3 COATING 299.5 - 303 PINK GRANODIORITE JOINTS EVERY 0.2 - 1.0' ROUGH + FRESH SOME CaCO3 FILLING	
	305	NQTT 33	97%	303 TO 313	10.1		PINK LG GRAIN GRANODIORITE UP TO 10% MAFIC MINS JOINTED EVERY 0.5 - 1.5' 90° ROUGH WAVY + FRESH FROM DRILLING	
	310							
	315	NQTT 34	14%	313 TO 316.1	3.1		GREY F GRAIN GABBRODIORITE 313 - 314 ROUGH FRESH FRAX 314 - 314.9 GRANODIORITE INTRUSION MIX 314.9 - 315.7 HIGHLY FRACTURED 3bl 315.7 - 316.1 PINK LG GRAIN GRANODIORITE	
		NQTT 35	57%	316.1 TO 319.1	3.0		316.1 - 319.1 PINK LG GRAIN GRANODIORITE JOINTED EVERY 0.2 TO 1.0' 50° - 90° ROUGH WAVY SOME FRESH FROM DRILLING MnO + CaCO3 COATING	
	320						BOTTOM OF BORING @ 319.1 BORING IS GROUTED SHUT ON 1/22/88	

1812(1/81)

ERT
ENVIRONMENTAL RESEARCH & TECHNOLOGY, INC.

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE, R I

SHEET 1 OF 3
DATE
HOLE NO. [redacted]
LINE & STA. 4C2-1
OFFSET
SURF. ELEV.

TO ERT
PROJECT NAME Unifirst Corp. Olympia
REPORT SENT TO Above / Avenue
SAMPLES SENT TO Taken At Site.

ADDRESS Concord, Mass.
LOCATION Woburn, Mass.
PROJ. NO.
OUR JOB NO. 88-232

GROUND WATER OBSERVATIONS

At _____ after _____ Hours
Hole making water about
At _____ after _____ Hours
One Gallon per Minute

	CASING	SAMPLER	CORE BAR.
Type	HW/NW		NVD
Size I.D.	4" 3"		NQWL-2
Hammer Wt	Spun		BIT
Hammer Fall	Econo		Impregn.

	Date	Time
START	11/22/87	a.m. p.m.
COMPLETE	01/25/88	a.m. p.m.
TOTAL HRS.		
BORING FOREMAN	D. Greene	
INSPECTOR	Larry Hogan	
SOILS ENGR.		

LOCATION OF BORING

DEPTH	Casing Blows per foot	Sample Depths From - To	Type of Sample	Blows per 6" on Sampler From 0-6	To 6-12	12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No	Pen	Rec
		No Samples	Top of Rock 60.5'						Brown SAND, Gravel, trace			
								62'	of Clay and Boulders (Till)			
									Gray GABBRODIORITE			
		63'-68'	C	(NVD)						1	5'	4.6'
		68'-76'	C	(NQWLII)						2	8'	7.8'
		76'-86'	C	(NQWLII)						3	10'	9.6'
		86'-91'	C	(" " ")						4	5'	5'
								90'				
									Dark Gray GABBRODIORITE with 10% Pink Granodiorite (91'-96' mis-latch core Barrel)			
		91'-96'	C	(" " ")						5	5'	2'
		96'-106'	C	(" " ")						6	10'	10'
		106'-116'	C	(" " ")						7	10'	9.9'
		116'-126'	C	(" " ")						8	10'	10'
		126'-136'	C	(" " ")						9	10'	10'

GROUND SURFACE TO 20' USED HW "CASING: THEN Spun to NW 62'

Sample Type
D: Dry C: Cored W: Washed
UP: Undisturbed Piston
TP: Test Pit A: Auger V: Vane Test
UT: Undisturbed Thin wall

Proportions Used
trace 0 to 10%
little 10 to 20%
some 20 to 35%
and 35 to 50%

140 lb Wt. x 30" fall on 2" O.D. Sampler
Cohesionless Density: 0-10 Loose; 10-30 Med. Dense; 30-50 Dense; 50 + Very Dense
Cohesive Consistency: 0-4 Soft; 4-8 M/Stiff; 8-15 Stiff; 15-30 V. Stiff; 30 + Hard

SUMMARY
Earth Boring 63'
Rock Coring 256.1'
Samples 36

HOLE NO.

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 2 OF 3
DATE
HOLE NO. UC-21
LINE & STA.
OFFSET
SURF. ELEV.

TO
PROJECT NAME
REPORT SENT TO
SAMPLES SENT TO
ADDRESS
LOCATION
PROJ. NO.
OUR JOB NO. 88-232

GROUND WATER OBSERVATIONS

At _____ after _____ Hours

At _____ after _____ Hours

	CASING	SAMPLER	CORE BAR.
Type			
Size I.D.			
Hammer Wt.			BIT
Hammer Fall			

	Date	Time
START		a.m. p.m.
COMPLETE		a.m. p.m.
TOTAL HRS.		
BORING FOREMAN		
INSPECTOR		
SOILS ENGR.		

LOCATION OF BORING

DEPTH	Casing Blows per foot	Sample Depths From - To	Type of Sample	Blows per 6" on Sampler From 0-6	6-12	To 12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No	Pen	Rec
		136'-146'	C	(NQ	WL-II)				Dark Gray GABBRODIORITE with 10% Pink Granodiorite	10	10	10.1
		146'-156'	C	("	")					11	10	10'
		156'-164'	C	("	")				(very fractured)	12	8'	8'
		164'-167'	C	("	")					13	3'	3'
		167'-169'	C	("	")					14	2'	2'
		169'-173'	C	("	")			170'		15	4'	3.3'
		173'-181'	C	("	")				Pink Gabbrodiorite	16	8'	8'
		181'-183'	C	("	")					17'	2'	1.9'
		183'-193'	C	("	")					18	10'	10'
		193'-203'	C	("	")					19	10'	10'
								203'				
		203'-208'	C	("	")				Hole started making water about a Gallon per Minute (noticed oily washed water)	20	5'	5'
		208'-213'	C	("	")					21	5'	5.2'
		213'-223'	C	("	")					22	10'	10'

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
D=Dry C=Cored W=Washed
UP=Undisturbed Piston
TP=Test Pit A=Auger V=Vane Test
UT=Undisturbed Thinwall

Proportions Used
trace 0 to 10%
little 10 to 20%
some 20 to 35%
and 35 to 50%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency		
0-10	Loose	0-4	Soft	30 + Hard
10-30	Med. Dense	4-8	M/Stiff	
30-50	Dense	8-15	Stiff	
50 +	Very Dense	15-30	V-Stiff	

SUMMARY:
Earth Boring
Rock Coring
Samples

HOLE NO UC-21

GUILD DRILLING CO., INC.

100 WATER STREET EAST PROVIDENCE, R. I.

SHEET 3 OF 3
DATE
HOLE NO. UC-21
LINE & STA.
OFFSET
SURF. ELEV.

TO
PROJECT NAME
REPORT SENT TO
SAMPLES SENT TO

ADDRESS
LOCATION
PROJ. NO.
OUR JOB NO. 88-232

GROUND WATER OBSERVATIONS

At _____ after _____ Hours

At _____ after _____ Hours

	CASING	SAMPLER	CORE BAR.
Type			
Size I.D.			
Hammer Wt.			BIT
Hammer Fall			

	Date	Time
START		a.m. p.m.
COMPLETE		a.m. p.m.
TOTAL HRS.		
BORING FOREMAN		
INSPECTOR		
SOILS ENGR.		

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From - To	Type of Sample	Blows per 6" on Sampler From 0-6	To 6-12	12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
		223'-233'	C	(NO	WL-II)					23	10'	9.9
		233'-241'	C	("	")			233'		24	8'	3.8
									Green Gray GABBRODIORITE very weathered fractured (Fault Zone)			
		241'-243'	C	("	")					25	2'	1.3
		243'-248'	C	("	")					26	5'	5.1
		248'-253'	C	("	")					27	5'	5'
		253'-263'	C	("	")					28	10'	10'
		263'-273'	C	("	")					29	10'	10'
		273'-283'	C	("	")					30	10'	10'
		283'-293'	C	("	")					31	10'	10'
		293'-297.4	C	("	")			293'	Pink GABBRODIORITE	32	4.4	4.4
		297.4-303'	C	("	")					33	5.6	5.5
		303'-313'	C	("	")					34	10'	10
		313'-316.1'	C	("	")					35	3.1'	3.1
		316'-319.1	C	("	")					36	3.0'	3.0
								319.1'				
		~21-Bags of Cement to Grout Hole/ Had to Grout Hole							Bottom of Boring 319.1'			
		~~Hole started to make water~~							62' of NW Casing & Econo Shoe left in Hole.			
		203'-206'	(Fill of	Chemi	cals)							

GROUND SURFACE TO _____ USED _____ "CASING: THEN _____

Sample Type
D: Dry C: Cored W: Washed
UP: Undisturbed Piston
TP: Test Pit A: Auger V: Vane Test
UT: Undisturbed Thinwall

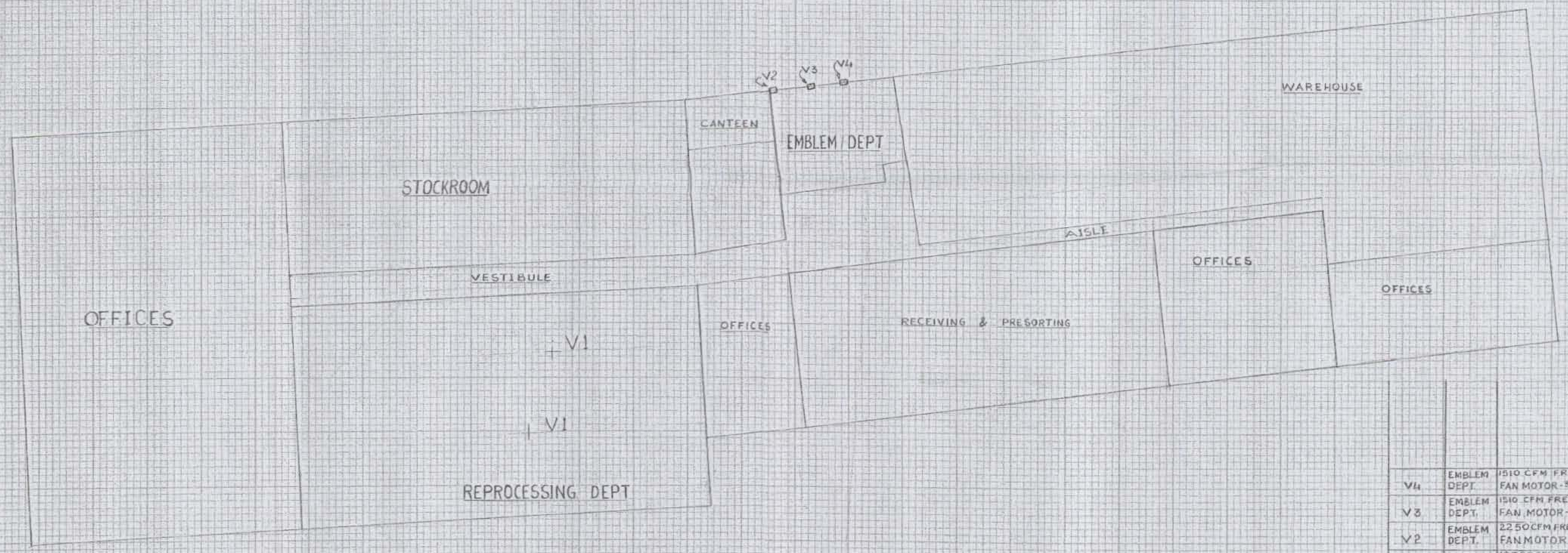
Proportions Used	
trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-10	Loose	0-4	Soft
10-30	Med. Dense	4-8	M/Stiff
30-50	Dense	8-15	Stiff
50 +	Very Dense	15-30	V-Stiff
		30 +	Hard

SUMMARY:
Earth Boring
Rock Coring
Samples

HOLE NO UC-21



VENT	DEPT.	SPECIFICATIONS	ELEVATION	REMARKS
V4	EMBLEM DEPT.	1510 CFM FREE AIR FAN MOTOR - 3/4 HP	8 FT.	12 IN. Ø ON NORTH WALL
V3	EMBLEM DEPT.	1510 CFM FREE AIR FAN MOTOR - 3/4 HP	8 FT.	12 IN. Ø ON NORTH WALL
V2	EMBLEM DEPT.	2250 CFM FREE AIR FAN MOTOR - 3/4 HP	8 FT.	12 IN Ø ON NORTH WALL
V1	REPROCESSING	15300 CFM FREE AIR FAN MOTOR - 1 1/2 HP	16 FT.	36 X 36 IN RECT. ON ROOF

1/16" = 1 FT.
SCALE

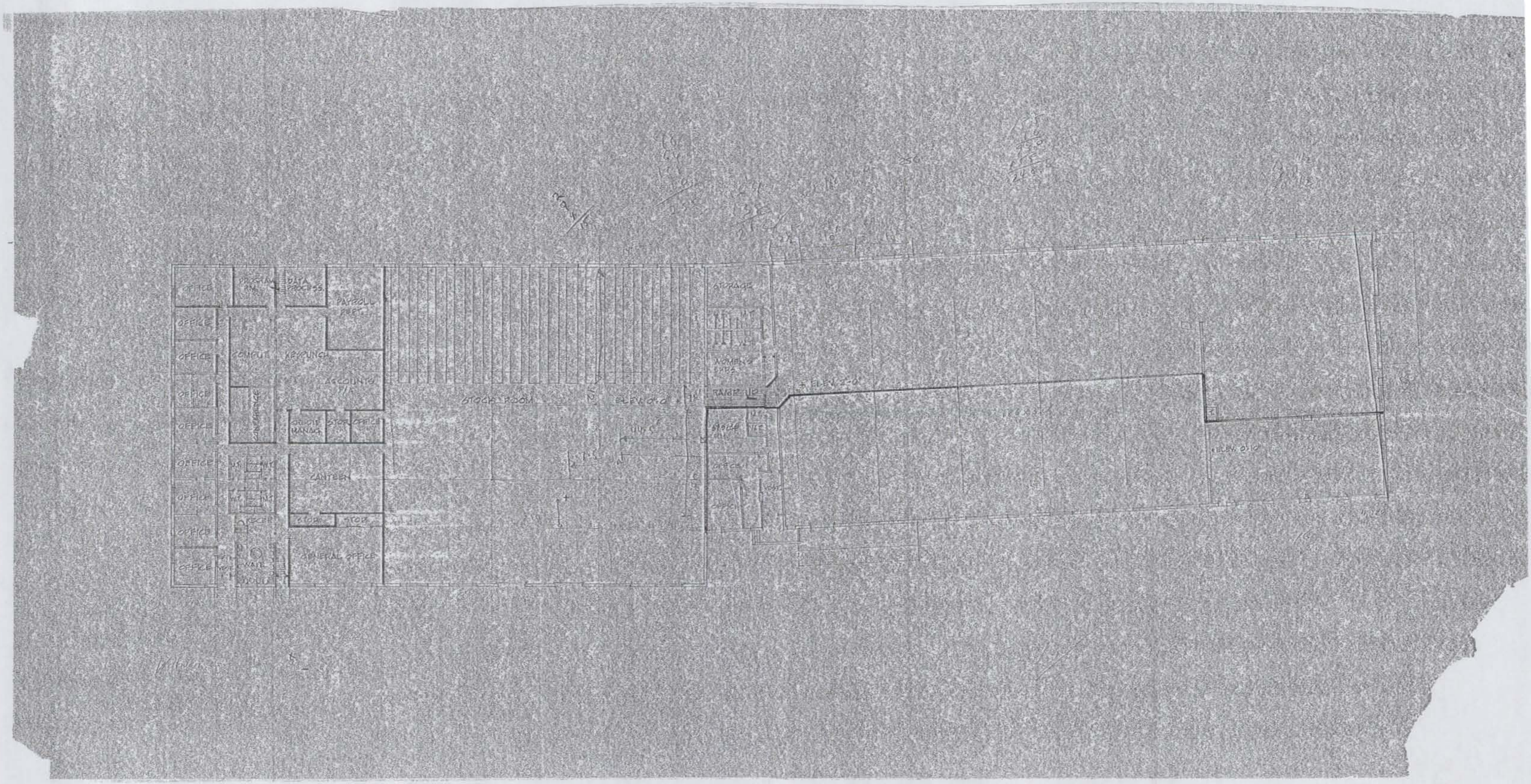
DRAWN

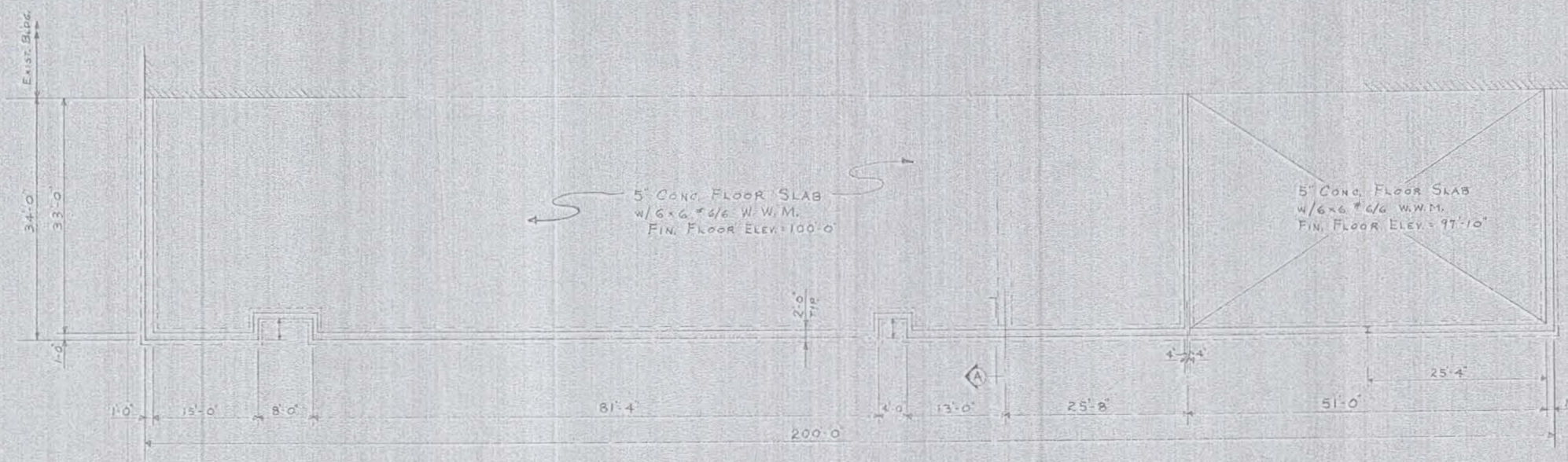
7.1.85
DATE

LINIFIRST CORPORATION
15 OLYMPIA AVN. WOBURN, MA

VENT & EXHAUST PLAN

DRG NO


OFFICE
PROGRAM RM.
DATA PROCESS.
PAYROLL PERS.
OFFICE
OFFICE
COMPUT.
KEYPUNCH
ACCOUNTG. P/A
OFFICE
CONFERENCE
STOCK ROOM
ELEV. 0'-0"
STORAGE
WOMEN'S LABS
RANGE
ELEV. 2'-0"
OFFICE
PRODUCT MANAG.
STOR.
OFFICE
STOCK
OFFICE
OFFICE
MEN
WOMEN
CANTEEN
OFFICE
WOMEN
OFFICE
STOR.
STOR.
OFFICE
OFFICE
GENERAL OFFICE
OFFICE
MEN
WAIT. ROOM
ELEV. 0'-0"



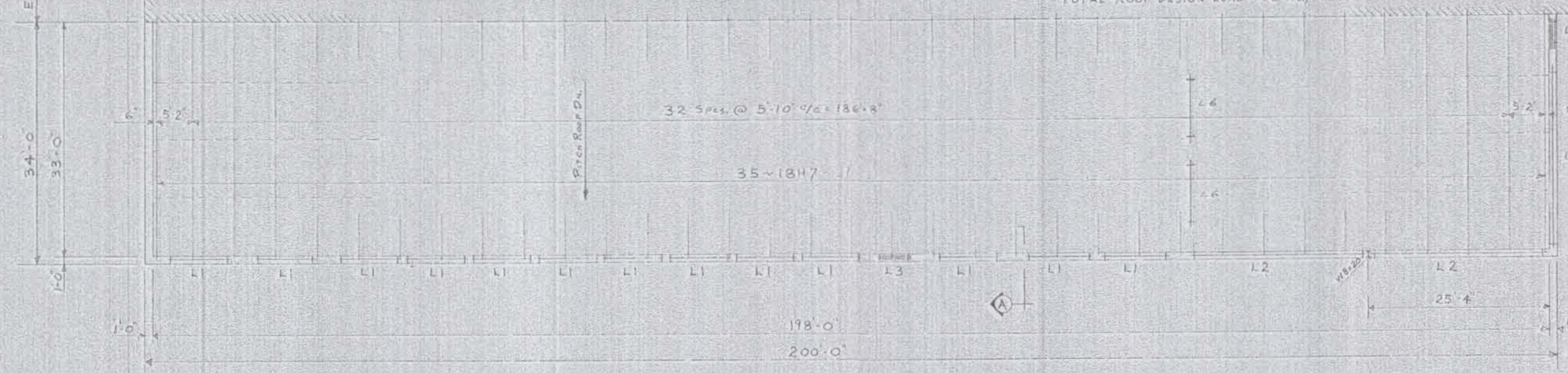
FOUNDATION PLAN — 1/8" = 1'-0"

LINTEL SCHEDULE					
QTY.	MK.	DESCRIPTION	M.O.	BRG.	O.L.
13	L1	W8x13 & 11"x1/4" ℞	8'-0"	8"	9'-4"
2	L2	W12x53 & 11"x1/4" ℞	24'-0"	8"	25'-4"
ONE	L3	3L's 4"x3½"x5/16"	4'-0"	6"	5'-0"
ONE	L4	3L's 4"x3½"x5/16"	3'-0"	6"	4'-0"
△1 ONE	L5		24'-0"	8"	25'-4"
△1 2	L6	W8x10 & 7x1/4 ℞	8'-0"	8"	9'-4"

ROOF DESIGN LOAD

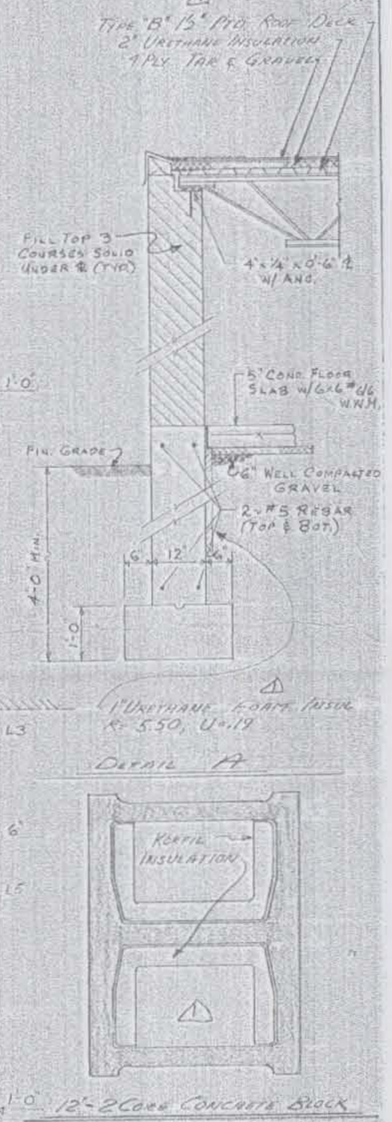
LIVE LOAD	30 #/S.F.
TAR, GRAVEL & INSUL.	11 #/S.F.
JOIST	3 #/S.F.
METAL DECK	2 #/S.F.
MISC.	2 #/S.F.

TOTAL ROOF DESIGN LOAD: 48 lbs./FT.²



ROOF FRAMING PLAN — 1/8" = 1'-0"

---- DENOTES L1 4 x 1/4 x 1/8 HORIZ. BRDG. (TYP.)
ROOF DECK TO BE 1½ TYPE B 20 GA.
PAINTED, 36" COVER.



WALLS TO HAVE AN AVERAGE U-FACTOR OF 0.25 MAX. AS PER MASS STATE BLDG CODE
OK JHB 7/21/78

STRUCTURAL STEEL

All structural steel shall be new steel conforming to ASTM A-36.

All shop and field connections may be welded or bolted. Bolts to be 3/4" diameter, holes 13/16" diameter, conforming to ASTM A-325 unless otherwise noted.

Paint all structural steel one shop coat of RED OXIDE.

STEEL JOISTS

All steel joists shall conform to the latest published requirements of the Steel Joist Institute for the types and sizes shown, and shall be fabricated by a member of the Steel Joist Institute.

Paint all joists and accessories one shop coat of RED OXIDE.

Joists shall be bridged according to standard specifications of Steel Joist Institute.

CONCRETE

Soil bearing value: 4000 lbs. per sq. ft. on undisturbed natural compact granular soil, or engineered granular fill. No footings shall be placed in water or on frozen ground. No concrete footings shall be placed until inspection of the excavation and verification of the bearing value of the soil encountered. Foundation design may require modification when actual conditions are observed.

All concrete shall be controlled concrete of ultimate strength of 3000 lbs. per sq. inch @ 28 days.

Reinforcing steel shall be new billet steel ASTM A-615 grade 60 deformation conforming to ASTM A-305. Welded wire mesh shall conform to ASTM A-185. Lap all reinforcing steel 30 diameters.

Provide and install all necessary tie bars, spacer bars, chairs, chair bars, and bolsters as required to maintain steel in a rigid position before placing concrete. All supports and accessories shall conform to requirements of ACI 315. All placement of bars and installation of accessories shall conform to the requirements of CRSI recommended practice for placing reinforcing bars.

COMMONWEALTH OF MASSACHUSETTS
ROBERT J. FIELDS
12276
REGISTERED PROFESSIONAL ENGINEER

Robert J. Fields

STRUCTURAL SYSTEMS, INC.
134 MAIN STREET
STONEHAM, MASS. 02180
(617) 438-5700

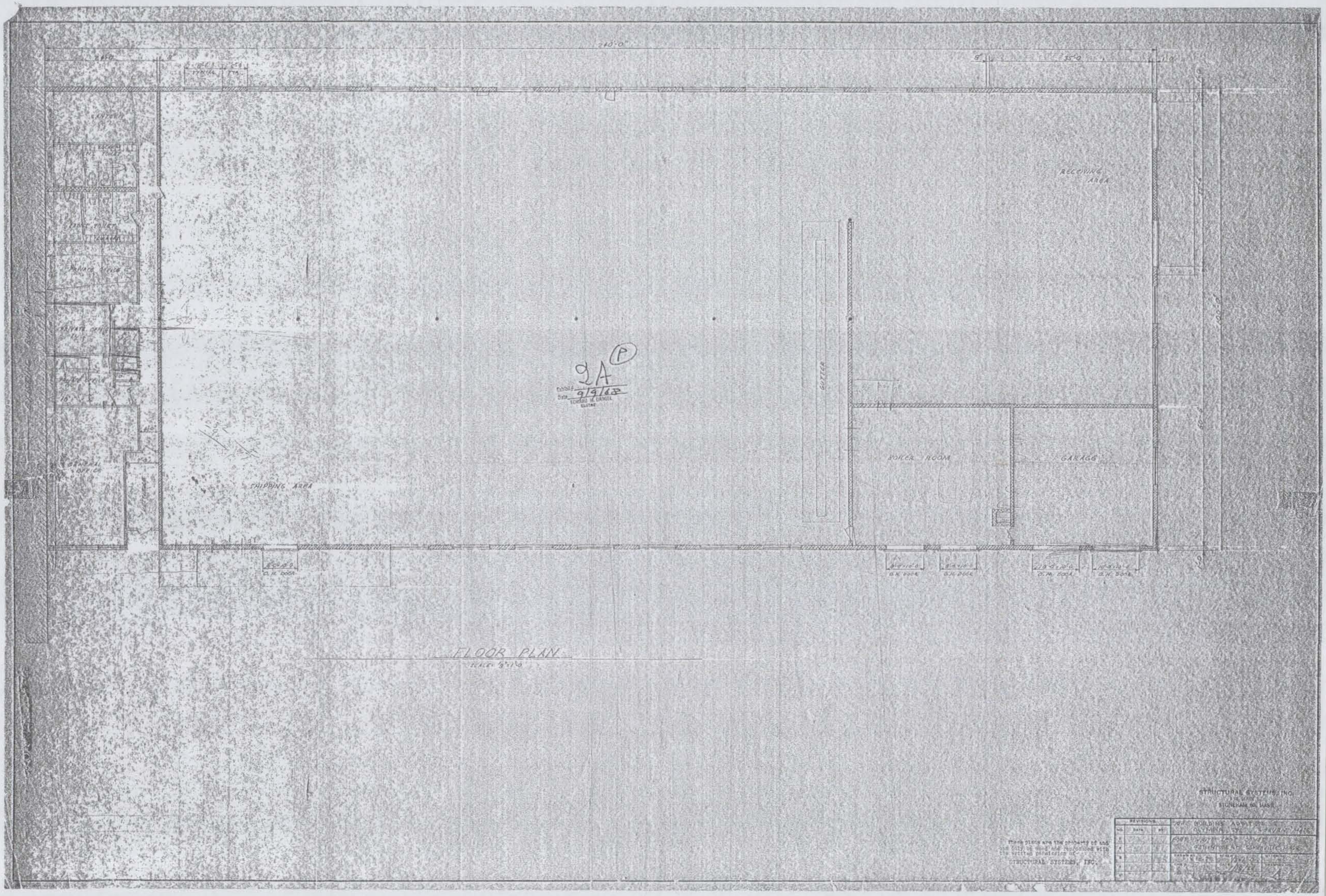
REVISIONS		
NO.	DATE	BY
1	7-10-78	CF
2		
3		
4		
5		
6		
7		

JOB: INTERSTATE LAUNDRY ADD'L
OLYMPIA AVE.
WOBURN, MASS.

FOR: INTERSTATE UNIFORM SERVICES CO.
15 OLYMPIA AVE.
WOBURN, MASS.

DRAWN: G.L. DATE: 6-9-78 DRAWING NO. S-1
SCALE: AS NOTED CHKD:

Job No. 78-6-99


240'-0"
8"
35'-0"
10"
RECEIVING AREA
GUTTER
BOILER ROOM
GARAGE
SHIPPING AREA
GENERAL OFFICE
8'-0"
O.H. DOOR
10'-0"
O.H. DOOR
10'-0"
O.H. DOOR
10'-0"
O.H. DOOR
10'-0"
O.H. DOOR
FLOOR PLAN
SCALE 1/8"=1'-0"
STRUCTURAL SYSTEMS, INC.
STONEHAM 80, MASS.
REVISIONS
NO. DATE BY
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STRUCTURAL SYSTEMS, INC.