SEPTIC SUITABILITY REPORT

FOR THE

VINTON ELEMENTARY SCHOOL SITE
306 STAFFORD ROAD
MANSFIELD, CT

PREPARED FOR

TOWN OF MANSFIELD
FACILITIES MANAGEMENT DEPARTMENT

APRIL 19, 2012

ANCHOR ENGINEERING SERVICES, INC.

41 Sequin Drive
Glastonbury, CT 06033
T: 860.633.8770
F: 860.633.5971

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Town of Mansfield is exploring the feasibility of consolidating the separate elementary schools in Town into two (2) buildings, one of which will be constructed on the Vinton Elementary School Site located at 306 Stafford Road. This consolidated school will accommodate up to 375 elementary school students, faculty and staff.

Anchor Engineering Services, Inc. was retained by the Town of Mansfield Facilities Management Department to analyze the septic suitability of the subject site. This analysis was performed through data collection, field testing and preliminary subsurface sewage disposal system (SSDS) calculations.

Preliminary soil testing was performed to determine whether the existing soils have sufficient capacity to carry the septic tank effluent into subsurface soils. The results of this preliminary testing along with estimates of the proposed sewage flow were utilized to evaluate the suitability of a subsurface sewage disposal system on this site. The following parameters indicate that the site has adequate hydraulic capacity to accommodate the SSDS.

- Percolation Rate = 5.1 to 10.0 min./in.
- Depth to Restrictive Layer = 65+ inches
- School Discharge (Q) = 4,125 gpd (375 Students)
- Effective Leaching Area (ELA) = 3,406.25 sq ft

Based on our observations of the site and the surrounding area, including topography, soils, groundwater depths and etc., it appears that the site can adequately accept the wastewater flows of a 375 student elementary school. This opinion is based upon the data obtained and preliminary calculations performed as part of this feasibility study. As stated in the following report, additional investigations and calculations will be necessary as part of the final design in order to fully satisfy the requirements of the CTDPH.

ANCHOR
ENGINEERING SERVICES, INC.

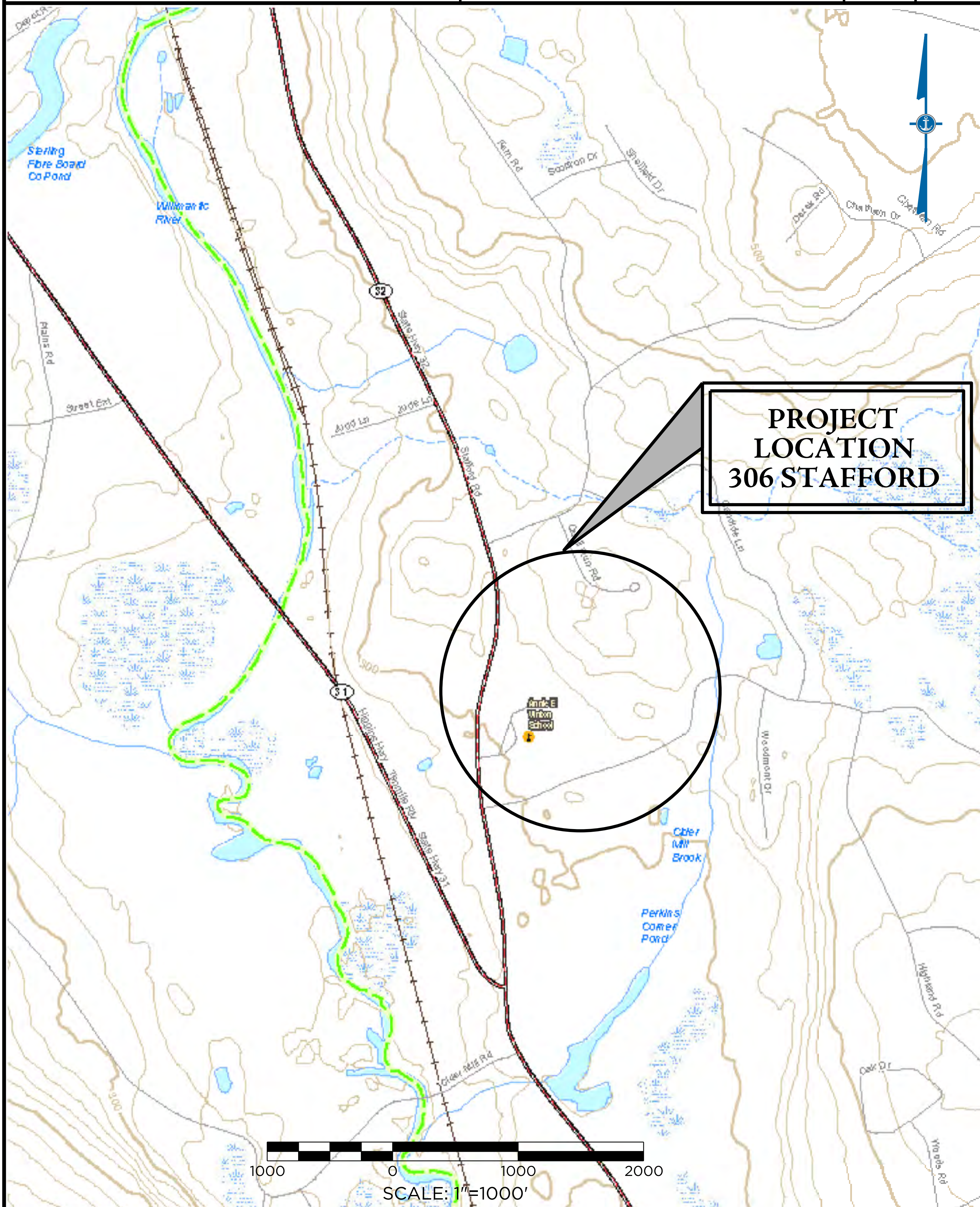
41 Sequin Drive
Glastonbury, CT 06033
Phone: (860) 633-8770
Fax: (860) 633-5971
www.anchorengr.com

Civil Engineering • Environmental Consulting • Land Surveying • Construction Management

SITE LOCATION MAP

VINTON ELEMENTARY SCHOOL
306 STAFFORD ROAD

FIGURE 1	
PROJECT	DATE
486-06	4/18/12



INTRODUCTION

The Town of Mansfield is exploring the feasibility of consolidating the separate elementary schools in Town into two (2) buildings, one of which will be constructed on the Vinton Elementary School Site located at 306 Stafford Road. This consolidated school will accommodate up to 375 elementary school students, faculty and staff.

Anchor Engineering Services, Inc. has been retained by the Town of Mansfield Facilities Management Department to analyze the septic suitability of the subject site. This analysis generally consists of the following:

1. Data collection
2. Soil testing
3. Sewage flow estimates for an 375 student elementary school
4. Evaluation of septic suitability

The following report has been prepared to summarize the work completed and provides an opinion of the septic suitability of the site based upon the information compiled to date.

DATA COLLECTION

Anchor Engineering collected data on the subject parcel through the compilation of available public information and field investigations.

COMPILATION OF EXISTING INFORMATION

The following information was obtained from public sources listed below:

- Connecticut Department of Energy & Environmental Protection (GIS data)
    - Natural Diversity Database
- USDA Natural Resource Conservation Service
    - Major Soil Types
    - Engineering Properties of Identified Soils
- Eastern Highlands Health District, Mansfield Office
    - 1970 Annie Vinton Elementary Waste Water Disposal System design
    - 1989 result analysis summary of existing subsurface sewage disposal systems
    - 1990 Vinton School Soil Testing
- Town of Mansfield
    - Additions and Alterations of the Mansfield Public Schools 2/8/90.
    - Mansfield Schools Well Location Schematics 6/6/05
    - Well Pump House Additions, Site Plan ,Goodwin School 2/8/06
    - Annie Vinton Elem. School Schematics, The Lawrence Associates 2/9/11

Based upon a review of the information obtained from the above mentioned sources, it was determined that additional field investigations were necessary to determine the septic suitability of the site. The testing methods described below were selected to allow for classification of existing soils and the determination of groundwater, mottling, ledge and/or other restrictive depths.

SOIL TESTING

DEEP TEST PITS

Seven (7) deep hole observation test pits were excavated throughout the site by Town Of Mansfield Public Works Department and witnessed by Anchor Engineering, Eastern Highlands Health District and Town of Mansfield Facility Maintenance staff. The test pits were performed to examine the soil at close range and identify characteristics such as color, firmness, particle size and moisture content and to record the presence of restrictive layers.

The test pits ranged in depth from 37" to 110". Six of the seven test pits had no apparent restrictive layers, such as ledge, hardpan or seasonally high groundwater. Ledge was observed in one of the test pits (TP-106V). In general, the observed soils consisted of a gray medium to coarse sand with cobbles and some gravel and overlain by topsoil and loam or topsoil. These observed soil types are consistent with NRCS published soil mapping, which indicates the presence of Sutton Fine Sandy Loam or Canton and Charlton Soils in the vicinity of the site. The deep test pit data logs can be found in Appendix B.

Canton and Charlton soils generally consist of coarse-loamy over sandy gravelly melt-out till derived from granite and/or schist and/or gneiss and are well drained, with a hydraulic conductivity ranging from 4.0 to 11.9 feet/day within the underlying soil strata. Observations made in the field during deep hole observation pit testing generally confirm the presence of soils consistent with the Canton and Charlton Series.

Sutton soils generally consist of coarse-loamy melt-out derived from granite and/or schist and/or gneiss and are moderately well drained, with a hydraulic conductivity ranging from 1.1 to 11.9 feet/day within the underlying soil strata. Observations made in the field during deep hole observation pit testing generally confirm the presence of soils consistent with the Sutton Series.

PERCOLATION TEST DATA

Three in-situ percolation tests were performed at the site by Anchor Engineering on April 3, 2012. A summary of results is as follows. Refer to Appendix B expanded data information.

	Test P-101V	**Test P-102V**	**Test P-104V**
Percolation Rate	5.1 to 10.0 Min./In.	1.1 to 5.0 Min./In.	5.1 to 10.0 Min./In.

Table No. 1 – Percolation Test Result

FALLING HEAD TEST DATA

Soil samples obtained from deep hole observation test pits were analyzed by Anchor Engineering to determine perrmiability. Two in-situ 1½" diam. by 6" long core samples were obtained at a depth of 56" and 68" and a falling head permeability test was conducted. Results of the falling head permeability tests are provided in the table below:

	Test Hole 103V	Test Hole 107V
Coefficient of Permeability	35.8 Ft/Day	9.3 Ft/Day

Table No. 2 – Permeability Test Result

The in-situ core sample obtained from the site was delivered intact therefore the sample was not re-compacted as is often done. Therefore a re-compaction correction factor was not applied to the results. The permeability of **9.3 ft/day** falls within the range for the Canton and Charlton Series (4.0 to 11.9 ft/day) published by the NRCS while 35.8 ft/day is slightly higher than published data.

GROUNDWATER STANDPIPE INSTALLATION & MONITORING

Two (2) shallow groundwater monitoring wells were installed by Mansfield DPW and witnessed by Anchor staff. The wells consisted of the installation of 10 foot lengths of 4" diameter PVC pipes in the deep test pits prior to backfilling. A brief summary of the well data is provided below.

Monitoring Well	Observed GW Depth	Total Well Depth
MW-101V	N/A	60"
MW-104V	N/A	110"

Groundwater depths within the monitoring wells were measured on 4/03/12 and 4/17/12. Results on both days revealed no measurable groundwater, indicating that the actual ground water elevation during this time period is beyond the reaches of installed wells.

SEWAGE FLOW ESTIMATES

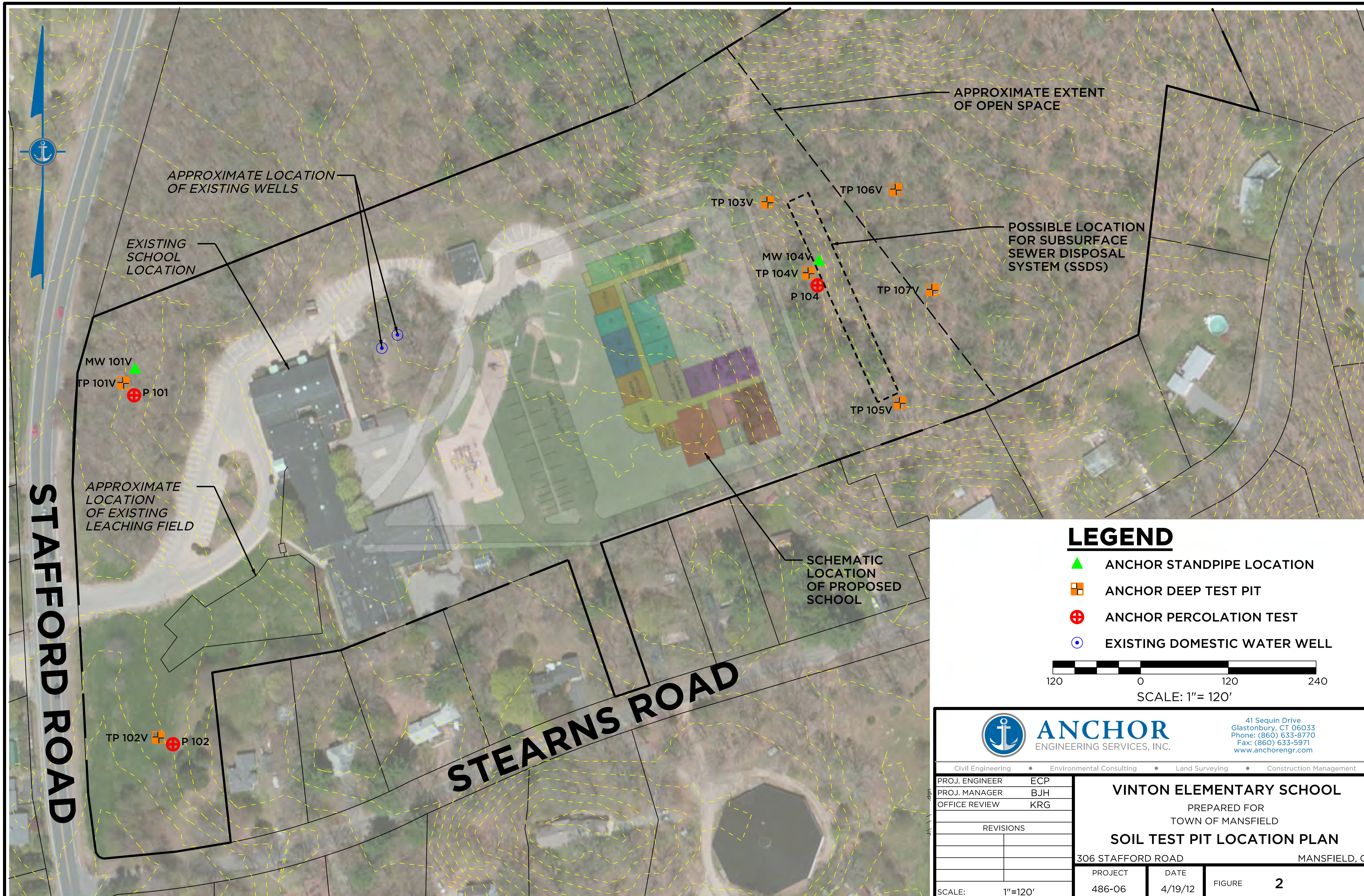
SEWAGE FLOW ESTIMATES

The Town of Mansfield has stipulated that the Subsurface Sewage Disposal System (SSDS) required for the proposed school will need to be designed to accommodate up to 375 elementary school students.

Sewage design flows for an elementary school, as provided in Table No. 4 of the Connecticut Public Health Code, Regulations and Technical Standards for Subsurface Sewage Disposal Systems, is 8.0 gallons per day/per pupil (gpd/pp). Additional design flows to be considered include those resulting from kitchen facilities (+3.0 gpd/pp) and/or shower facilities (+3.0 gpd/pp).

As a conservative measure, a total sewage design flow of 11.0 gpd/pp was used in consideration of the base flow and the likely presence of full kitchen facilities in the new school. Shower facilities were not considered in the study as they are not typical for an elementary school. The projected daily sewage flow for the proposed school is **4,125 gpd**.

Prior to final design, it is recommended that water usage data for the three (3) existing Mansfield elementary schools be compiled to confirm or adjust the conservative design flow utilized in this preliminary study.


APPROXIMATE EXTENT OF OPEN SPACE
APPROXIMATE LOCATION OF EXISTING WELLS
EXISTING SCHOOL LOCATION
POSSIBLE LOCATION FOR SUBSURFACE SEWER DISPOSAL SYSTEM (SSDS)
TP 103V
TP 106V
MW 104V
TP 104V
P 104
TP 107V
TP 105V
MW 101V
TP 101V
P 101
APPROXIMATE LOCATION OF EXISTING LEACHING FIELD
SCHEMATIC LOCATION OF PROPOSED SCHOOL
TP 102V
P 102
STAFFORD ROAD
STEARNS ROAD
LEGEND
ANCHOR STANDPIPE LOCATION
ANCHOR DEEP TEST PIT
ANCHOR PERCOLATION TEST
EXISTING DOMESTIC WATER WELL
120 0 120 240
SCALE: 1"= 120'
ANCHOR
ENGINEERING SERVICES, INC.
41 Sequin Drive
Glastonbury, CT 06033
Phone: (860) 633-8770
Fax: (860) 633-5971
www.anchorengr.com
Civil Engineering • Environmental Consulting • Land Surveying • Construction Management
PROJ. ENGINEER ECP
PROJ. MANAGER BJH
OFFICE REVIEW KRG
REVISIONS
SCALE: 1"=120'
VINTON ELEMENTARY SCHOOL
PREPARED FOR
TOWN OF MANSFIELD
SOIL TEST PIT LOCATION PLAN
306 STAFFORD ROAD
MANSFIELD, CT
PROJECT 486-06
DATE 4/19/12
FIGURE 2

EVALUATION OF SEPTIC SUITABILITY

The SSDS required for the proposed school will be designed to accommodate up to 375 elementary school students in accordance with the CT Public Health Code. The following preliminary calculations and determinations were performed to determine the septic suitability of the site.

DESIGN DATA

The following summary of data was collected during on the site investigation performed on April 3, 2012. Refer to Appendix B expanded data information.

Depth to Mottling:	N/A
Depth to Ledge:	N/A (System will not be located in the vicinity of TP-106V)
Depth to Groundwater:	N/A
Percolation Rate:	5.1 to 10.0 Min./In.

EFFECTIVE LEACHING AREA (ELA)

The effective leaching surface area (ELA) of a SSDS is the interface area between the soil and the facilities used for applying the pretreated wastewater to the soil (the leaching system). For the purposes of this study a range of anticipated effective leaching area values was calculated.

Daily Design Flow = 4,125 gal/day
ELA = Design Flow/Application Rate
Use App. Rate of 1.5 for Base Student Flow (Table 8, CT Public Health Code)
Use App. Rate of 0.8 for Kitchen Flow (Table 7, CT Public Health Code)
ELA = 3,000 gpd/1.5 + 1,125 gpd/0.8 = **3,406.25 Sq Ft**

Based upon available site area for construction of the SSDS it appears that the site can accommodate a system with an effective area of 3,406.25 square feet.

MINIMUM LEACHING SYSTEM SPREAD (MLSS)

The minimum leaching system spread (MLSS) of a SSDS is the required minimum length of leaching system for effective effluent application to the receiving soils based on hydraulic gradient and percolation rates of the receiving soils as well as flow factors of the design building. MLSS is not applicable on sites having a receiving soil depth that exceeds 60 inches.

Minimum depth to a restrictive layer encountered on this site is 37" (TP-106V). Since there are much more suitable areas on site the SSDS, the vicinity adjacent to TP-106V can be avoided, therefore MLSS is not applicable for this system.

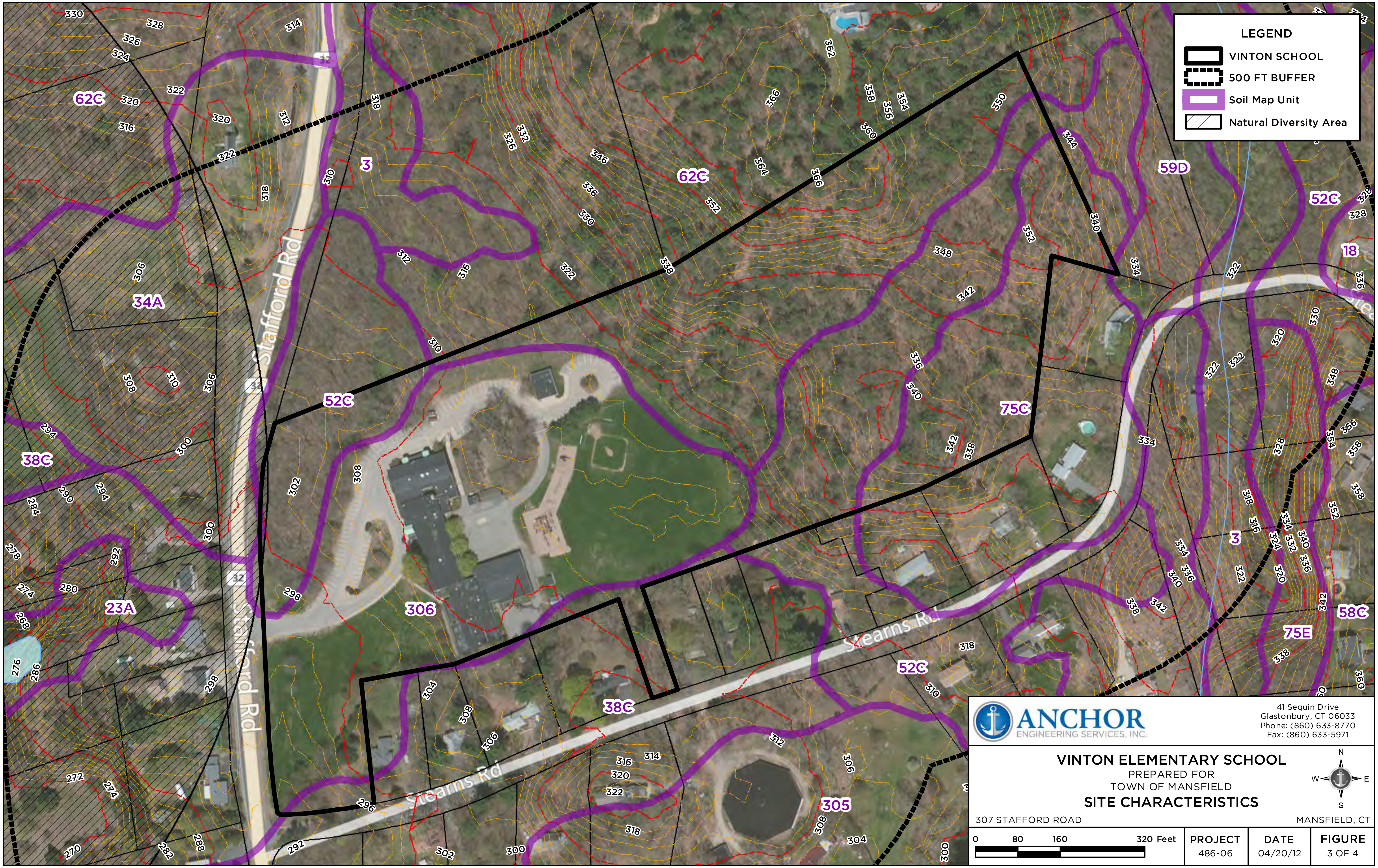
PRELIMINARY OPINION OF SITE SEPTIC SUITABILITY

Based on our observations of the site and the surrounding area, including topography, soils, groundwater depths, and etc., it appears that the site can adequately accept the wastewater flows of a 375 student elementary school. This opinion is based upon the data obtained and preliminary calculations performed as part of this feasibility study. As stated throughout this report, additional investigations and calculations will be necessary as part of the final design in order to fully satisfy the requirements of the CTDPH.

Appendix A1

Data Collection

Connecticut Department of Energy & Environmental Protection



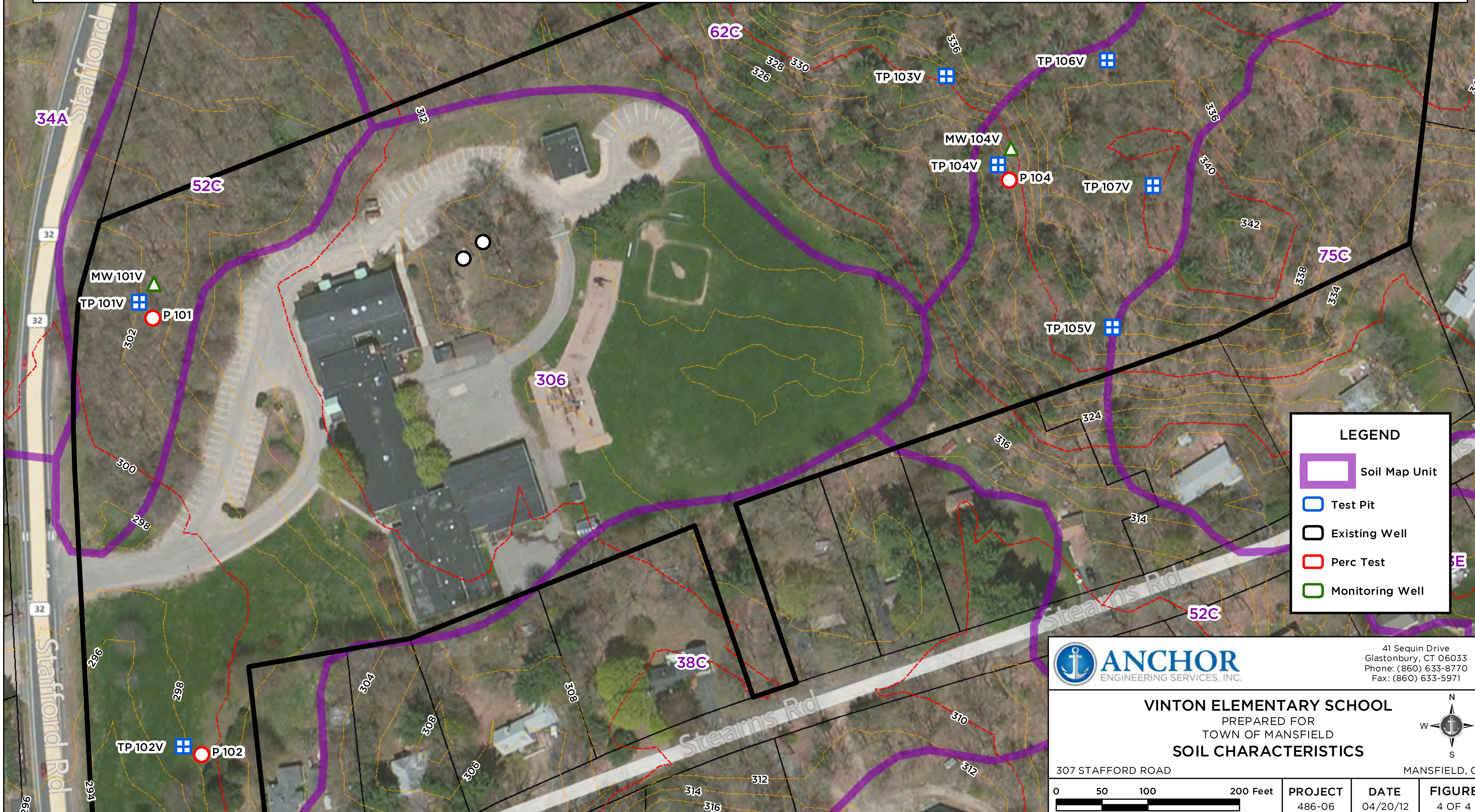
ANCHOR
ENGINEERING SERVICES, INC.
41 Sequin Drive
Glastonbury, CT 06033
Phone: (860) 633-8770
Fax: (860) 633-5971

VINTON ELEMENTARY SCHOOL
PREPARED FOR
TOWN OF MANSFIELD
SITE CHARACTERISTICS

307 STAFFORD ROAD
MANSFIELD, CT

PROJECT	DATE	FIGURE
486-06	04/20/12	3 OF 4

Map Unit	Map Unit	Inland Wetland	Hydric	Potential SSSD	Soil Parent Material	SRM Dry Basins	SRM Infiltration	SRM Pervious Paving	SRM Wet Basins	Drainage Class	Flooding Class
62C	Canton and Charlton soils, 3 to 15 percent slopes, extremely stony	Other	Other	High Potential	Melt-out Till	Least Suitable	Least Suitable	Somew hat Suitable	Least Suitable	Well drained	Other
52C	Sutton fine sandy loam, 2 to 15 percent slopes, extremely stony	Other	Other	Low Potential	Melt-out Till	Somew hat Suitable	Least Suitable	Least Suitable	Least Suitable	Moderately w ell drained	Other
75C	Hollis-Chatfield-Rock outcrop complex, 3 to 15 percent slopes	Other	Other	Very Low Potential	Melt-out Till - Shallow to Bedrock	Least Suitable	Least Suitable	Least Suitable	Least Suitable	Well drained	Other
52C	Sutton fine sandy loam, 2 to 15 percent slopes, extremely stony	Other	Other	Low Potential	Melt-out Till	Somew hat Suitable	Least Suitable	Least Suitable	Least Suitable	Moderately w ell drained	Other
306	Udorthents-Urban land complex	Other	Other	Not Rated	Urban Influenced	Not Rated	Not Rated	Not Rated	Not Rated	Well drained	Other
38C	Hinckley gravelly sandy loam, 3 to 15 percent slopes	Other	Other	Low Potential	Glaciofluvial	Least Suitable	Least Suitable	Somew hat Suitable	Least Suitable	Excessively drained	Other



ANCHOR ENGINEERING SERVICES, INC.

41 Sequin Drive
Glastonbury, CT 06033
Phone: (860) 633-8770
Fax: (860) 633-5971

VINTON ELEMENTARY SCHOOL
PREPARED FOR
TOWN OF MANSFIELD
SOIL CHARACTERISTICS

307 STAFFORD ROAD | MANSFIELD, CT

0 50 100 200 Feet

PROJECT	DATE	FIGURE
486-06	04/20/12	4 OF 4

Appendix A2

Data Collection

USDA Natural Resource Conservation Service

State of Connecticut

60B—Canton and Charlton soils, 3 to 8 percent slopes

Map Unit Setting

Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days

Map Unit Composition

Canton and similar soils: 45 percent
Charlton and similar soils: 35 percent
Minor components: 20 percent

Description of Canton

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.6 inches)

Interpretive groups

Land capability (nonirrigated): 2e

Typical profile

0 to 1 inches: Moderately decomposed plant material
1 to 3 inches: Gravelly fine sandy loam
3 to 15 inches: Gravelly loam
15 to 24 inches: Gravelly loam
24 to 30 inches: Gravelly loam
30 to 60 inches: Very gravelly loamy sand

Description of Charlton

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.9 inches)

Interpretive groups

Land capability (nonirrigated): 2e

Typical profile

0 to 4 inches: Fine sandy loam
4 to 7 inches: Fine sandy loam
7 to 19 inches: Fine sandy loam
19 to 27 inches: Gravelly fine sandy loam
27 to 65 inches: Gravelly fine sandy loam

Minor Components

Sutton

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Linear

Leicester

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave

Chatfield

Percent of map unit: 5 percent
Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Linear

Hollis

Percent of map unit: 3 percent
Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Convex

Unnamed, silt loam surface

Percent of map unit: 2 percent

Data Source Information

Soil Survey Area: State of Connecticut
Survey Area Data: Version 10, Mar 31, 2011

State of Connecticut

61C—Canton and Charlton soils, 8 to 15 percent slopes, very stony

Map Unit Setting

Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days

Map Unit Composition

Canton and similar soils: 45 percent
Charlton and similar soils: 35 percent
Minor components: 20 percent

Description of Canton

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.6 inches)

Interpretive groups

Land capability (nonirrigated): 6s

Typical profile

0 to 1 inches: Moderately decomposed plant material
1 to 3 inches: Gravelly fine sandy loam
3 to 15 inches: Gravelly loam
15 to 24 inches: Gravelly loam
24 to 30 inches: Gravelly loam
30 to 60 inches: Very gravelly loamy sand

Description of Charlton

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.9 inches)

Interpretive groups

Land capability (nonirrigated): 6s

Typical profile

0 to 4 inches: Fine sandy loam
4 to 7 inches: Fine sandy loam
7 to 19 inches: Fine sandy loam
19 to 27 inches: Gravelly fine sandy loam
27 to 65 inches: Gravelly fine sandy loam

Minor Components

Sutton

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Linear

Leicester

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave

Chatfield

Percent of map unit: 5 percent
Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Linear

Hollis

Percent of map unit: 5 percent
Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Convex

Data Source Information

Soil Survey Area: State of Connecticut
Survey Area Data: Version 10, Mar 31, 2011

State of Connecticut

51B—Sutton fine sandy loam, 2 to 8 percent slopes, very stony

Map Unit Setting

Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days

Map Unit Composition

Sutton and similar soils: 80 percent
Minor components: 20 percent

Description of Sutton

Setting

Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

Properties and qualities

Slope: 2 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.9 inches)

Interpretive groups

Land capability (nonirrigated): 6s

Typical profile

0 to 6 inches: Fine sandy loam
6 to 12 inches: Fine sandy loam
12 to 24 inches: Fine sandy loam
24 to 28 inches: Fine sandy loam
28 to 36 inches: Gravelly fine sandy loam
36 to 65 inches: Gravelly sandy loam

Minor Components

Charlton

Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear

Canton
Percent of map unit: 4 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Convex

Paxton
Percent of map unit: 3 percent
Landform: Drumlins, hills, till plains
Down-slope shape: Linear
Across-slope shape: Convex

Leicester
Percent of map unit: 3 percent
Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave

Woodbridge
Percent of map unit: 2 percent
Landform: Drumlins, hills
Down-slope shape: Concave
Across-slope shape: Linear

Rainbow
Percent of map unit: 2 percent
Landform: Drumlins, hills
Down-slope shape: Linear
Across-slope shape: Concave

Narragansett
Percent of map unit: 1 percent
Landform: Hills, till plains
Down-slope shape: Linear
Across-slope shape: Convex

Data Source Information

Soil Survey Area: State of Connecticut
Survey Area Data: Version 10, Mar 31, 2011

Sewage Disposal

This table shows the degree and kind of soil limitations that affect septic tank absorption fields and sewage lagoons. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches or between a depth of 24 inches and a restrictive layer is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Saturated hydraulic conductivity (Ksat) is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a Ksat rate of more than 14 micrometers per second are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

Information in this table is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this table. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Report—Sewage Disposal

[Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

Sewage Disposal– State of Connecticut					
Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
51B—Sutton fine sandy loam, 2 to 8 percent slopes, very stony					
Sutton	80	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Seepage, bottom layer	1.00	Depth to saturated zone	1.00
				Slope	0.68
57B—Gloucester gravelly sandy loam, 3 to 8 percent slopes					
Gloucester	80	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
		Filtering capacity	1.00	Slope	0.92

Sewage Disposal– State of Connecticut					
Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
58C—Gloucester gravelly sandy loam, 8 to 15 percent slopes, very stony					
Gloucester	80	Very limited		Very limited	
		Seepage, bottom layer	1.00	Slope	1.00
		Filtering capacity	1.00	Seepage	1.00
		Slope	0.63		
60B—Canton and Charlton soils, 3 to 8 percent slopes					
Canton	45	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
				Slope	0.92
Charlton	35	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
				Slope	0.92
61C—Canton and Charlton soils, 8 to 15 percent slopes, very stony					
Canton	45	Very limited		Very limited	
		Seepage, bottom layer	1.00	Slope	1.00
		Slope	0.63	Seepage	1.00
Charlton	35	Very limited		Very limited	
		Seepage, bottom layer	1.00	Slope	1.00
		Slope	0.63	Seepage	1.00

Data Source Information

Soil Survey Area: State of Connecticut
Survey Area Data: Version 10, Mar 31, 2011

Appendix A3

Data Collection

Eastern Highlands Health District, Mansfield Office

EASTERN HIGHLANDS HEALTH DISTRICT

X	Mansfield	4 South Eagleville Road, Mansfield, CT 06268	Tel: (860)429-3325
	Coventry	1712 Main Street, Coventry, CT 06238	Tel: (860)742-4064
	Bolton	222 Bolton Center Road, Bolton, CT 06043	Tel: (860)649-8066

INVESTIGATION FOR SEWAGE DISPOSAL SYSTEM

Owner: Mansfield

Date: 3/11/99

Location: Vinton School

PERCOLATION TESTS:

Hole #	Pit #	Presoak hrs.	Depth	Mark	Rate min/in

SOIL TESTS OBSERVED BY: R.L. Miller

Test Pit: A Depth: 84
Ledge: NONE Seepage: 32
Mottling: 48 (Very faint) Roots: 46

Depth	Observation
0-4	Topsoil
4-48	brown silt loam, friable
48-84	gray loamy sand firm Till

Test pit D No ledge, seepage or mottling

Depth	Observation
0-4	Topsoil
4-26	brown silt loam friable
24-84	gray loamy sand firm Till

Test Pit: B Depth: 84
Ledge: NONE Seepage: NONE
Mottling: NONE Roots: 36

Depth	Observation
0-4	Topsoil
4-28	brown silt loam friable
28-84	gray loamy sand firm Till
	20% cobbles

Test Pit: C Depth: 84
Ledge: NONE Seepage: NONE
Mottling: NONE Roots: 40

Depth	Observation
0-4	Topsoil
4-40	brown silty loam friable
40-84	gray loamy sand firm Till
	40% large cobbles


Town of Mansfield, CT - 306 Stafford Rd
A
B
D
C
306
Location: 306 STAFFORD RD ID: 31.81.1

ed kelly and associates

CIVIL ENGINEER • 111 PROSPECT HILL ROAD • WINDSOR, CONN. 06095 • (203) 688-241

March 17, 1989

Robert Mocarsky
Schoenhardt Architects
One Massaco Place
Simsbury, CT 06070

Re: Northwest, Southeast, and Annie Vinton
Elementary Schools
Mansfield, CT

Dear Mr. Mocarsky:

The following summarizes the results of analysis of existing subsurface sewage disposal systems at the above referenced schools. The analysis was based upon Public Health Code Criteria, review of original design plans, discussion with Dr. Rein Laak of Mansfield, one of the original design engineers, and projected population data supplied by your office.

Northwest School

Two existing 4000 gallon septic tanks have adequate capacity for the proposed increase in flow.

The existing leaching area is slightly short of that required by design calculations. The additional area required (44 sq ft) is so small, however, and because the design calculation is conservative, the existing systems can be considered adequate for the proposed addition.

Annie Vinton School

Existing septic tank volume of about 6500 gallons is more than adequate to accommodate the proposed increase.

The existing leaching field is also adequate to handle the proposed increase.

Southeast School

The existing septic tank is marginally adequate for the proposed increase. Design plans indicate an existing 4042 gallon tank. A minimum of 4200 gallons is required. If the maximum projected population is realized, an additional 1000 gallon tank should be installed.

ED LALLY & ASSOCIATES
111 Prospect Hill Road
WINDSOR, CONNECTICUT 06095
(203) 688-2413

JOB SCHOENHARDT- 80025I
SHEET NO. 1 OF 4
CALCULATED BY MJG DATE 3-17-89
CHECKED BY ______ DATE ______
SCALE ______

MANSFIELD ELEMENTARY SCHOOLS

Evaluation of Existing Septic Systems

Assumptions:

1) Max. school population from Architect
2) Wastewater generation = 15 gpcpd
3) Existing systems scaled or estimated from previous plans.
4) Soil data taken from previous plans or SCS Soil Survey.
5) Existing systems may be utilized for expansion.
6) No additional kitchen facilities are proposed.

Northwest School

Proposed pop. = 320 students + 22 staff

= 342 p

Design flow Q_d = 342 p × 15 gpcpd

= 5130 gpd

Septic Tank $V_{req'd}$ = 5130 gal. → 6000 gal.

Existing Tanks = 2 - 4000 gal. = 8000 > 6000 O.K.

ED LALLY & ASSOCIATES
111 Prospect Hill Road
WINDSOR, CONNECTICUT 06095
(203) 688-2413

JOB S-0025 I
SHEET NO. 3 OF 4
CALCULATED BY MJG DATE 3-17-89
CHECKED BY ____ DATE ____
SCALE ____

Annie Vinton School

Proposed pop. = 320 students + 22 staff = 342

Q_d = 342 p × 15 gpcpd = 5130 gpd

Septic Tank $V_{req'd}$ = 5130 gal → 6000 gal

Existing tank V = 6550 gal > 6000 O.K.

Leaching System 1970 Plan

18 trenches × 60' l × 3' w = 3240 S.F.

8 trenches × 65' l × 3' w = 1560 S.F.

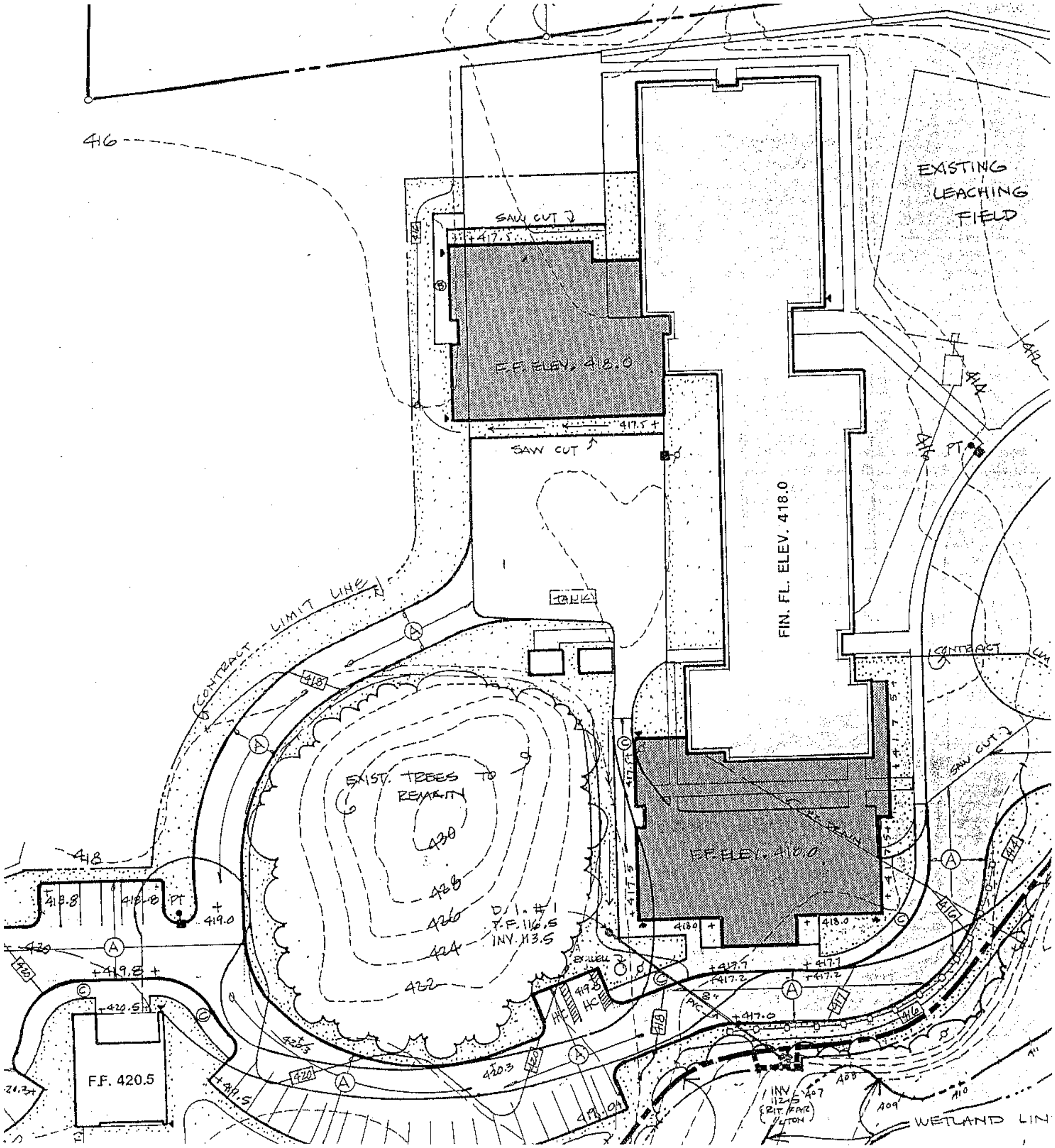
11 trenches × 50' l = 550 S.F.

Σ 5350 S.F.

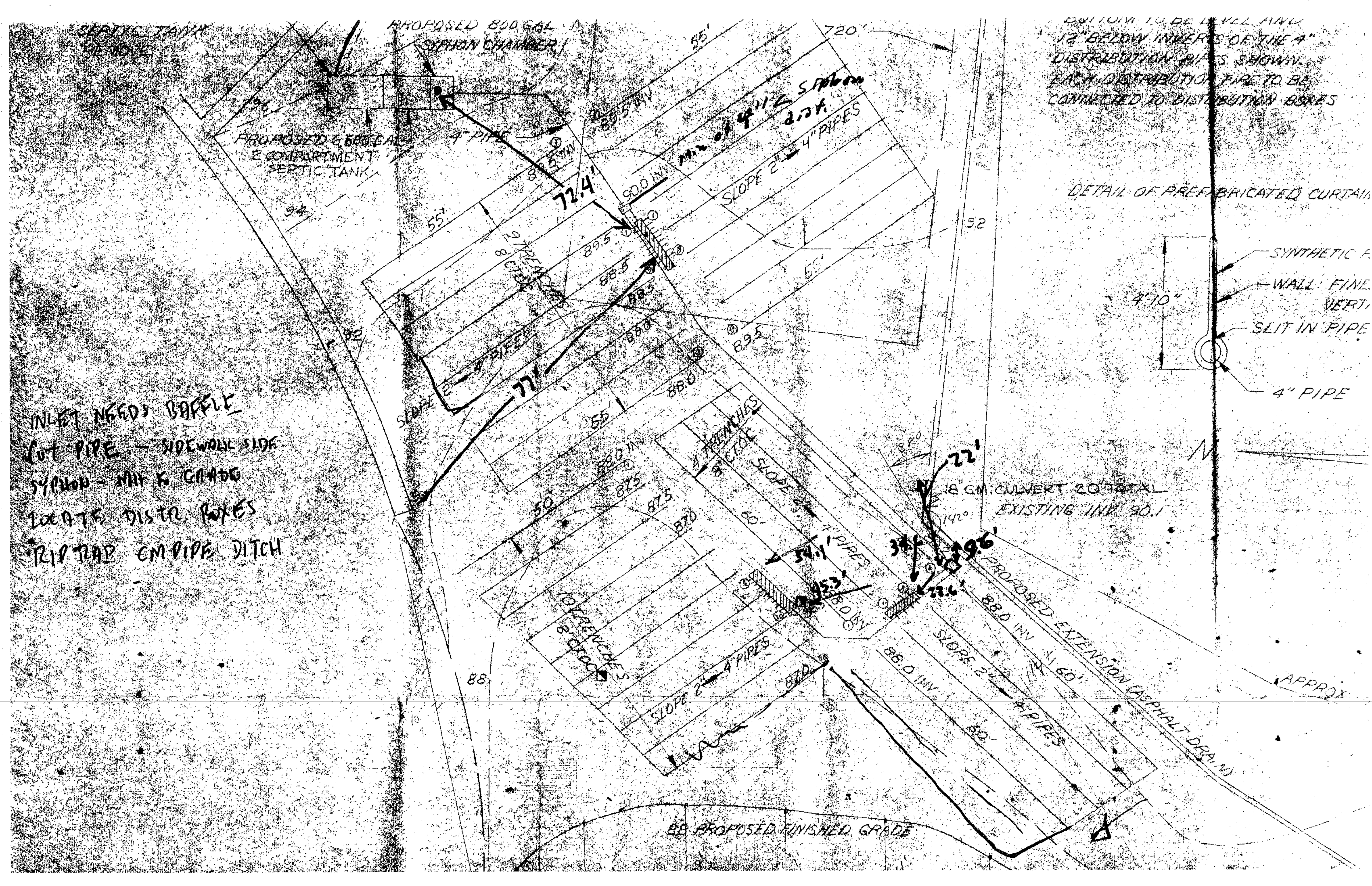
Perc. Rate = 15 min/in.

Application rate = 1.1 gpd/SF

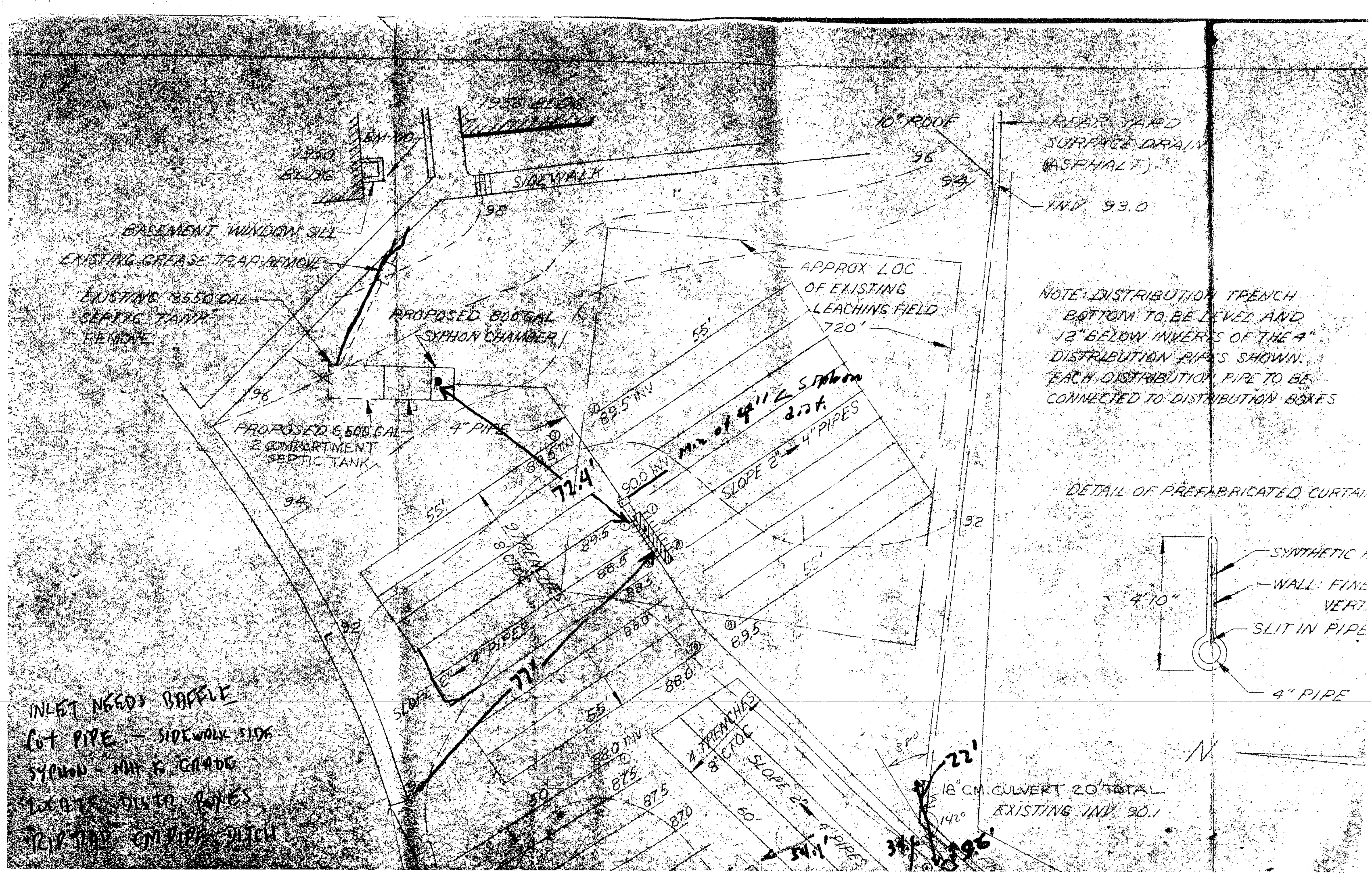
Area req'd = 5130/1.1 = 4664 < 5350 O.K.



VINTON SCHOOL



PROPOSED 800 GAL SYPHON CHAMBER
PROPOSED 6,500 GAL 2 COMPARTMENT SEPTIC TANK
4" PIPE
9 TRENCHES 8' C TO C
4 TRENCHES 8' C TO C
10 TRENCHES 8' C TO C
SLOPE 2" 4" PIPES
90.0 INV
88.0 INV
18" CM CULVERT 20' TOTAL EXISTING INV. 90.1
PROPOSED EXTENSION (ASPHALT DRAIN)
88 PROPOSED FINISHED GRADE
BOTTOM TO BE LEVEL AND 12" BELOW INVERTS OF THE 4" DISTRIBUTION PIPES SHOWN. EACH DISTRIBUTION PIPE TO BE CONNECTED TO DISTRIBUTION BOXES
DETAIL OF PREFABRICATED CURTAIN
SYNTHETIC
WALL FINE VERT
SLIT IN PIPE
4" PIPE
4'10"
APPROX
72.4'
77'
22'
INLET NEEDS BAFFLE
CUT PIPE - SIDEWALL SIDE
SYPHON - MIT & GRADE
LOCATE DISTR BOXES
RIP RAP CM PIPE DITCH


1950 BLDG
BM 100
1950 BLDG
10" ROOF
REAR YARD SURFACE DRAIN (ASPHALT)
INV 93.0
SIDEWALK
96
94
98
BASEMENT WINDOW SILL
EXISTING GREASE TRAP-REMOVE
EXISTING 8550 GAL SEPTIC TANK REMOVE
PROPOSED 800 GAL SYPHON CHAMBER
APPROX LOC OF EXISTING LEACHING FIELD 720'
NOTE: DISTRIBUTION TRENCH BOTTOM TO BE LEVEL AND 12" BELOW INVERTS OF THE 4" DISTRIBUTION PIPES SHOWN. EACH DISTRIBUTION PIPE TO BE CONNECTED TO DISTRIBUTION BOXES
55'
89.5 INV
PROPOSED 6,500 GAL 2 COMPARTMENT SEPTIC TANK
4" PIPE
72.4'
90.0 INV
SLOPE 2" 4" PIPES
DETAIL OF PREFABRICATED CURTAI
92
9 TRENCHES 8' CTOC
89.5
88.5
88.0
SLOPE 2" 4" PIPES
77'
SYNTHETIC
WALL FINE VERT
4'10"
SLIT IN PIPE
4" PIPE
4 TRENCHES 8' CTOC
SLOPE 2"
60'
88.0 INV
87.5
87.0
50
22'
18" CM CULVERT 20' TOTAL EXISTING INV 90.1
142°
38°
INLET NEEDS BAFFLE
CUT PIPE - SIDEWALL SIDE
SYPHON - MAKE GRADE
LOCATE DISTR. BOXES
RIP RAP CM PIPE DITCH

RECEIVED
MANSFIELD BOARD OF ED.

1987 APR -9 AM 10: 22

ANNIE E. VINTON ELEMENTARY SCHOOL

MANSFIELD, CONNECTICUT

DESIGN CRITERIA

WASTEWATER DISPOSAL SYSTEM

May, 1970

Revised June, 1970

R. Laak, P.E.
Lic. No 7618.

EXISTING SYSTEM

435 STUDENTS @ 15 GAL/D/S
(incl. staff)

R. Laak
April /87

HISTORY

In 1950 a 3,547 gallon septic tank and 720 feet of 36" trench field was designed by Carl J. Halmfeldt, Architect. It is assumed that the disposal system as shown on Drawing 1, Sept. 28, 1950 was installed. In 1956 and 1960 the school was expanded but the sewage disposal system was not. According to Mr. Bramhall, Assistant Superintendent Mansfield Schools, the school building now serves about 225 pupils and about 10 teachers. The Kindergarten, a separate building with 50 pupils was reported to be connected to a separate septic tank disposal system. A letter of April, 1970, addressed to the Mansfield School, based on the authority granted by the State Health Code, asked that the sewage disposal system be rectified. It appeared that the disposal system has had drainfield leakage problems during the last three years.

INVESTIGATION

Mr. Bramhall requested professional engineering services to investigate the status of the existing disposal system and if necessary design a new disposal system. It was agreed that if a new disposal system was to be built future school expansions should be considered.

a) Maintenance

According to the Vinton School Custodian, the existing septic tank had been pumped out for the first time two years ago.

The grease trap had presumably been cleaned at the same time. The grease trap, which needs cleaning up to once a months, appears to serve no useful purpose.

The school, however, had taken steps to repair drainfield leaks. Fill has been spread over the field where needed.

b) Status of the Wastewater Disposal System

On April 12, 1970 a topographic survey of the S.W. corner of the school property was made. The leaching bed was found to be under water pressure and one of the trenches contained sludge slurry, indicating that the drainfield had failed.

It was found that the sewage level in the septic tank was 2 feet and 9" below the top of the tank, indicating a probable defect in the baffling system.

c) Soil Conditions

The leaching field area is in Hickley gravelly sand loam. Two 7-7.5 feet test pits (shown on plans) were dug on June 11, 1970. On June 13 and June 15, 1970 the holes were dry. It appears that the curtain drain is necessary to intercept the water that infiltrates from the open ditch in the spring.

The soil profile was in test pits as follows:

0 - 2" sod and top soil

2"-6" top soil

at 30" depth an 8" red sandy layer (iron deposits)

at 36" depth in the northern hole boulders were found.

To 7-7.5' depth gravelly sandy loam.

d) Recommendations

A new drainfield is required. The present grease trap should be removed. The existing tank should be removed and a two chamber tank with syphon installed. Before construction, the existing septic tank should be pumped and the existing seepage bed should be drained and allowed to dry for a period of 1 - 2 weeks.

e) Plan A - a system to accomodate 200 additional students, no showers in school:

Estimated sewage flow (235 + 200)15=6,525 gallons. Number of square feet of effective leaching area required (based on original design) $\frac{6,525}{1.6}$= 4,100 square feet.

Number of feet of 24" wide trench required = $\frac{4,100}{2}$ = 2,050 ft. Size of syphon chamber required 0.4x2,050= 800 gallons.

Plan B - to rectify the present system without any capacity for expansion:

Estimated sewage flow 235 x 15 = 3,525 gallons. Number of square feet of effective leaching area required = $\frac{3,525}{1.6}$ = 2,200 sq ft.

Number of feet of 24" wide trench required = $\frac{2,200}{2}$ = 1,100 ft. Size of syphon chamber required = 0.4 x 1,100 = 440 gallons.

COMMENTS

Plan A would be better for future economy. It assures more successful drainfield operation, it provides one system, whereas if it was decided to select Plan B, a separate or an expansion will be needed.

The prepared plans and suggested specifications were drawn for Plan A which included the future school expansion.

The Mansfield Schools should initiate a regular maintenance program, i.e. clean all the septic tanks annually and repair immediately leaky plumbing fixtures in order to protect and give longevity to the seepage beds. These measures will minimize future major expenditures and avoid troublesome and serious sewage disposal problems.

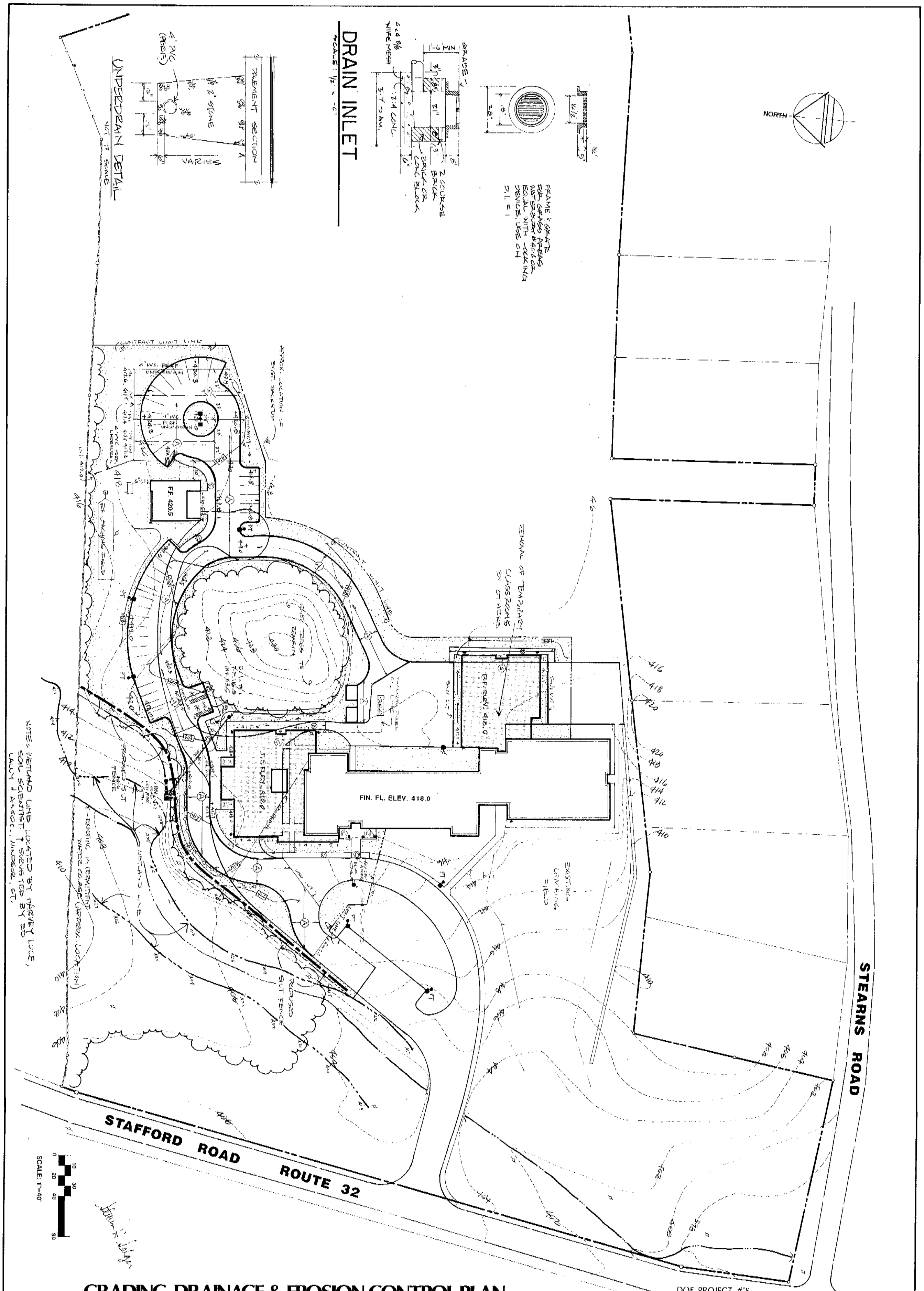
Rein Laak

STATE OF CONNECTICUT
REIN LAAK
No. 7618
REGISTERED PROFESSIONAL ENGINEER

Appendix A4

Data Collection

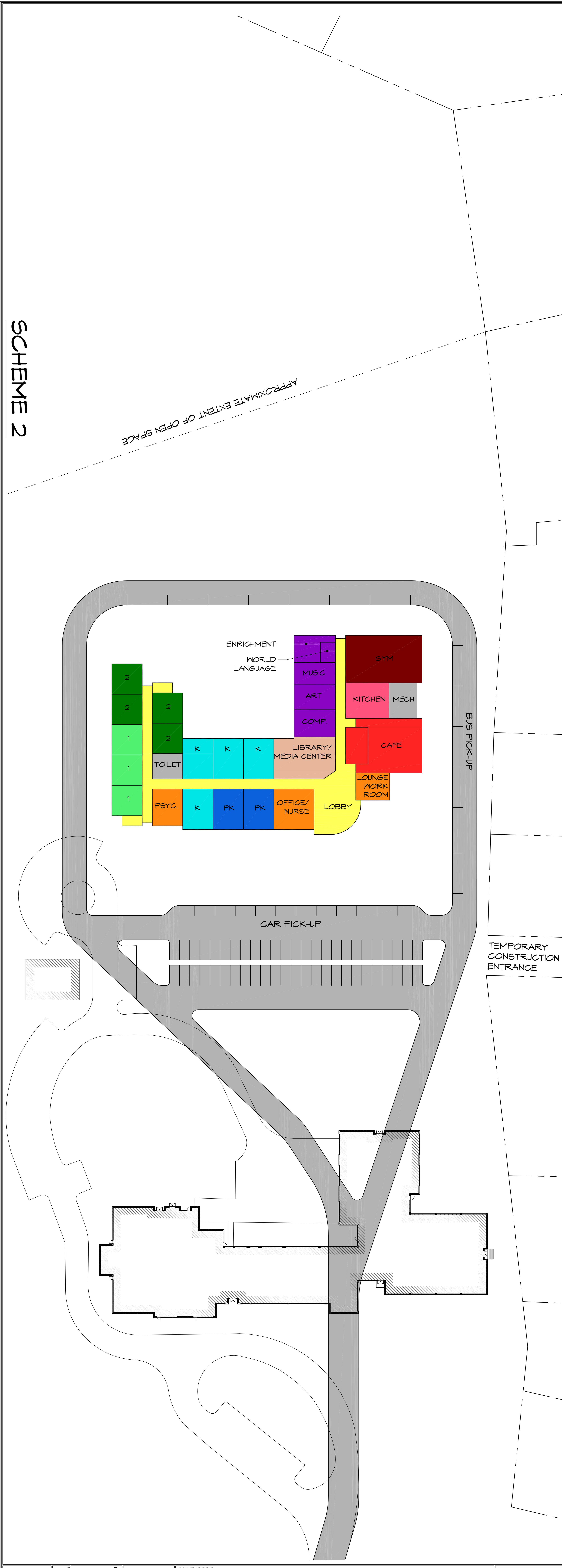
Town of Mansfield

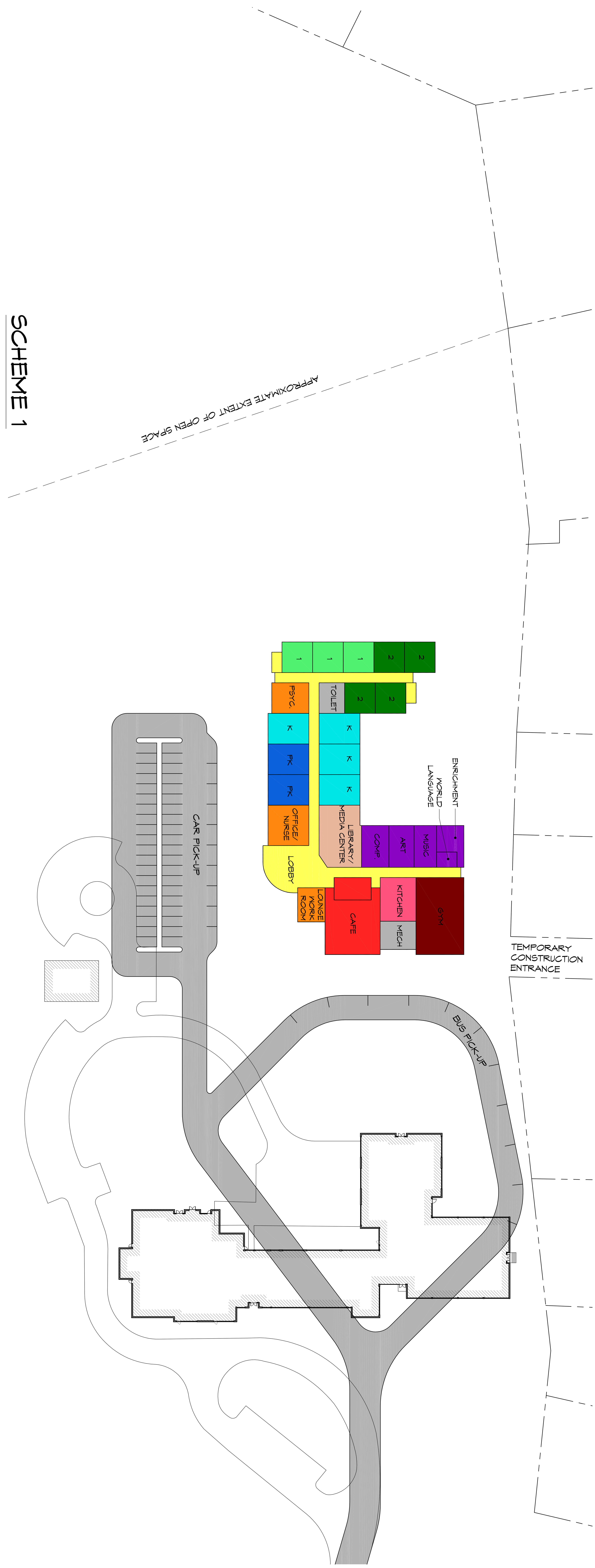


GRADING, DRAINAGE & EROSION CONTROL PLAN

DOE PROJECT #'S
078-88-048 EC/C 078-88-043 CV 078-88-050 SP

SCHOENHARDT ARCHITECTS INC.	L-3	LANDSCAPE ARCHITECTURAL DESIGN ASSOCIATES, P.C. SITE PLANNERS/LANDSCAPE ARCHITECTS SIMSBURY, CONNECTICUT	ADDITIONS AND ALTERATIONS TO THE MANSFIELD PUBLIC SCHOOLS MANSFIELD, CONNECTICUT ANNIE VINTON ELEMENTARY SCHOOL 306 STAFFORD ROAD MANSFIELD CENTER, CONNECTICUT	





DRAWING	OF
SCALE:	1" = 40'-0"
DATE:	2/17/11
DRAWING TITLE:	

PROJECT TITLE:

ANNIE VINTON ELEMENTARY SCHOOL

306 STAFFORD ROAD
MANSFIELD, CT

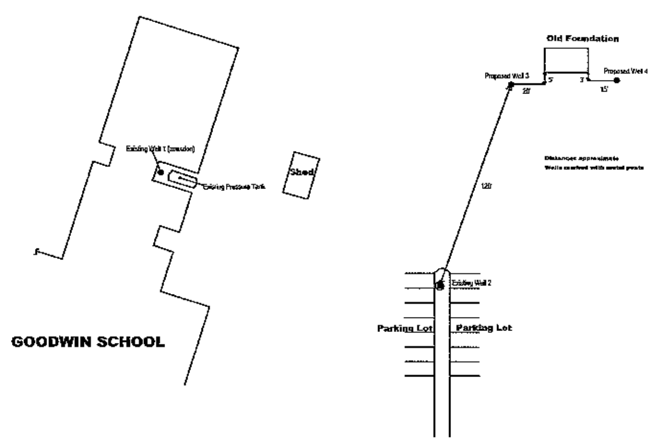
THE LAWRENCE ASSOCIATES
ARCHITECTS / PLANNERS, P.C.
1075 TOLLAND TURNPIKE. MANCHESTER, CT 06042
FAX: (860) 643-4373 (860) 643-2161

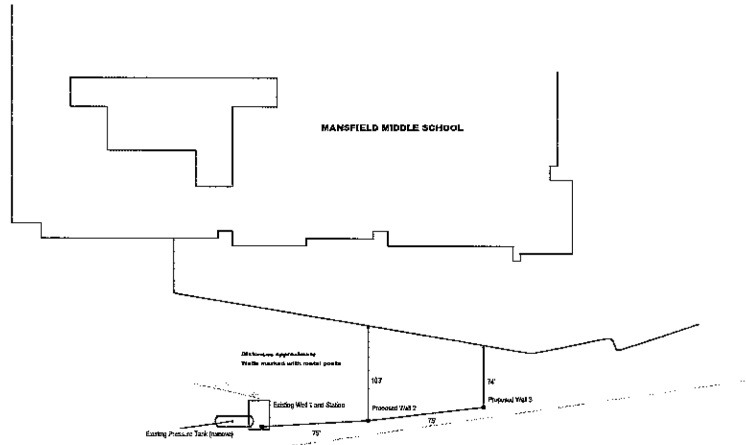
PROJECT NUMBER	STATE PROJECT NO.
06-0067	

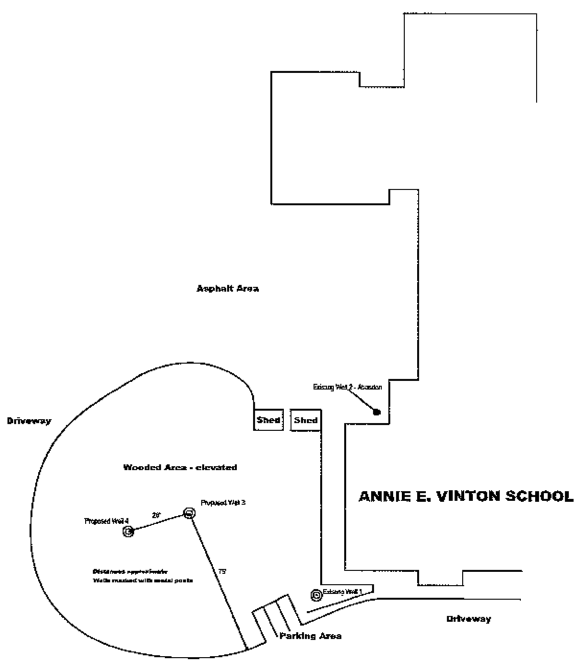
NO.	DATE	DESCRIPTION

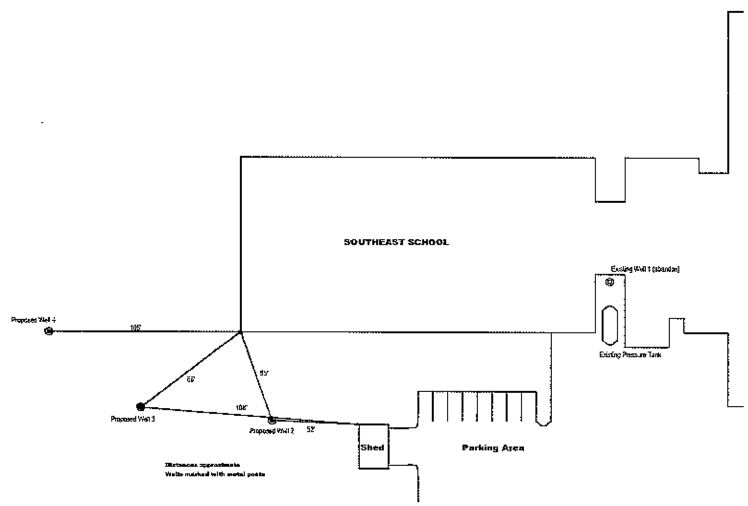
REVISIONS

OWNERSHIP OF DOCUMENTS









740 Thomaston Road Watertown, CT tel: 860-274-8853 fax: 860-274-9848	**WATER SYSTEM SOLUTIONS & DESIGN, INC.**
drawing property of Water System Solutions & Design	TITLE: **MANSFIELD SCHOOLS WELL LOCATION SCHEMATICS**
	SIZE: — CAGE CODE: — DWG NO: — REV: 1
	SCALE: NONE — 06 JULY 2005 — SHEET:

Appendix B

Soil Test Results

ANCHOR
ENGINEERING SERVICES, INC.
41 Sequin Drive
Glastonbury, CT 06033
Phone: (860) 633-8770
Fax: (860) 633-5971
www.anchorengr.com
Civil Engineering • Environmental Consulting • Land Surveying • Construction Management

SOIL DEEP TEST PIT RESULTS

VINTON ELMENTARY SCHOOL
306 STAFFORD ROAD, MANSFIELD, CT

FIGURE A

PROJECT 486-06 | DATE 4/13/12

TEST PIT #:	TP 101V
DATE PERFORMED:	4/03/12
DEPTH OF TEST PIT:	60"
SEEPAGE OBSERVED AT:	N/A
LEDGE OBSERVED AT:	N/A
ROOTS OBSERVED AT:	N/A
MOTTLING OBSERVED AT:	N/A

SOILS DESCRIPTION

0" - 7"	TOPSOIL
7" - 25"	FINE SANDY LOAM W/ COBBLES
25" - 38"	MED/COARSE SAND W/ COBBLES
38" - 44"	GRAY FINE SAND W/ COBBLES
44" - 60"	COARSE SAND W/ COBBLES

TEST PIT #:	TP 102V
DATE PERFORMED:	4/03/12
DEPTH OF TEST PIT:	72"
SEEPAGE OBSERVED AT:	N/A
LEDGE OBSERVED AT:	N/A
ROOTS OBSERVED AT:	N/A
MOTTLING OBSERVED AT:	N/A

SOILS DESCRIPTION

0" - 6"	TOPSOIL
6" - 26"	LIGHT BR. FINE SANDY LOAM
26" - 72"	TAN MED. SAND W/GRAVEL & COBBLES

TEST PIT #:	TP 103V
DATE PERFORMED:	4/03/12
DEPTH OF TEST PIT:	103"
SEEPAGE OBSERVED AT:	N/A
LEDGE OBSERVED AT:	N/A
ROOTS OBSERVED AT:	55"
MOTTLING OBSERVED AT:	N/A

SOILS DESCRIPTION

0" - 6"	TOPSOIL
6" - 34"	RED/BR. FINE SANDY LOAM
34" - 103"	GRAY MED./COARSE SAND W/COBBELS

TEST PIT #:	TP 104V
DATE PERFORMED:	4/03/12
DEPTH OF TEST PIT:	110"
SEEPAGE OBSERVED AT:	N/A
LEDGE OBSERVED AT:	N/A
ROOTS OBSERVED AT:	51"
MOTTLING OBSERVED AT:	N/A

SOILS DESCRIPTION

0" - 3"	TOPSOIL
3" - 34"	RED/BR. FINE SANDY LOAM
34" - 110"	FRAY MED/COARSE SAND

TEST PIT #:	TP 105V
DATE PERFORMED:	4/03/12
DEPTH OF TEST PIT:	65"
SEEPAGE OBSERVED AT:	N/A
LEDGE OBSERVED AT:	N/A
ROOTS OBSERVED AT:	50"
MOTTLING OBSERVED AT:	N/A

SOILS DESCRIPTION

0" - 9"	TOPSOIL
9" - 32"	RED/BR. SILTY FINE SANDY LOAM
32" - 65"	GRAY MED/COARSE SAND W/ COBBLES & BOLDERS

TEST PIT #:	TP 106V
DATE PERFORMED:	4/03/12
DEPTH OF TEST PIT:	37"
SEEPAGE OBSERVED AT:	N/A
LEDGE OBSERVED AT:	37"
ROOTS OBSERVED AT:	N/A
MOTTLING OBSERVED AT:	N/A

SOILS DESCRIPTION

0" - 3"	TOPSOIL
3" - 36"	BR. SILTY LOAM W/ LOTS OF COBBLES & BOLDERS
36" - 37"	LIGHT BR. SILTY LOAM

TEST PIT #:	TP 107V
DATE PERFORMED:	4/03/12
DEPTH OF TEST PIT:	78"
SEEPAGE OBSERVED AT:	N/A
LEDGE OBSERVED AT:	N/A
ROOTS OBSERVED AT:	23"
MOTTLING OBSERVED AT:	N/A

SOILS DESCRIPTION

0" - 2"	TOPSOIL
2" - 23"	RED/BR. FINE SANDY LOAM
23" - 78"	GRAY MED/COARSE SAND W/ COBBLES

ANCHOR
ENGINEERING SERVICES, INC.
41 Sequin Drive
Glastonbury, CT 06033
Phone: (860) 633-8770
Fax: (860) 633-5971
www.anchorengr.com
Civil Engineering • Environmental Consulting • Land Surveying • Construction Management

SOIL PERCOLATION RATES

VINTON ELEMENTARY SCHOOL
306 STAFFORD ROAD, MANSFIELD, CT

FIGURE B

PROJECT 486-06

DATE 4/13/12

PERC TEST RESULTS

PERCOLATION TEST (PT 101V)
PERFORMED 04/03/12
TOTAL DEPTH = 22"
PRESOAK @ 11:40 AM
PERC TEST STARTED @2:00 PM
PRESOAK WATER COLUMN= 16"

TIME	READING	RATE
0	8.00	-
5	12.50	1.11
10	14.25	2.85
15	15.50	4.00
20	17.00	3.33
25	18.50	1.33
30	19.50	5.00
35	20.25	6.66
40	21.25	5.00

PERC RATE 5.1-10.0 MIN./IN.

PERCOLATION TEST (PT 102V)
PERFORMED 04/03/12
TOTAL DEPTH = 28"
PRESOAK @ 11:45 AM
PERC TEST STARTED @2:02 PM
PRESOAK WATER COLUMN= 18"

TIME	READING	RATE
0	6.00	-
5	12.25	0.80
10	-	-
15	18.50	-
20	20.125	3.07
25	21.75	3.07
30	23.25	3.33
35	24.50	4.00
40	25.50	5.00
45	26.50	5.00

PERC RATE 1.1-5.0 MIN./IN.

PERCOLATION TEST (PT 104V)
PERFORMED 04/03/12
TOTAL DEPTH = 52"
PRESOAK @ 12:15 PM
PERC TEST STARTED @12:55 PM
PRESOAK WATER COLUMN= 20"

TIME	READING	RATE
0	3.50	-
5	5.75	2.22
10	7.50	2.85
15	8.875	3.63
20	10.00	4.44
25	11.125	4.44
30	12.125	5.00
35	13.125	5.00
40	14.00	5.71
45	14.875	5.71
50	15.75	5.71

PERC RATE 5.1-10.0 MIN./IN.

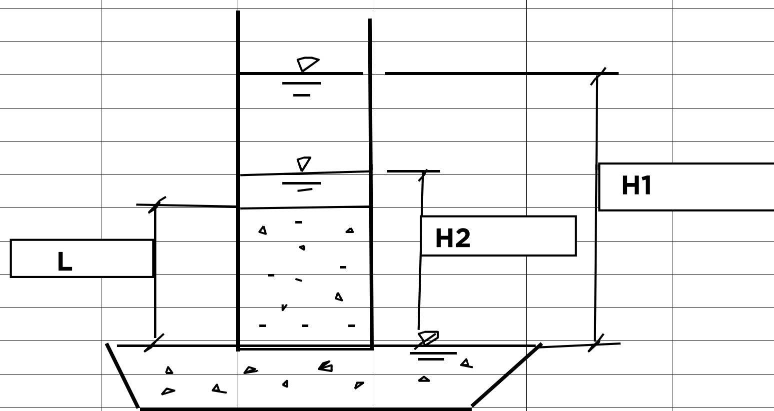
FALLING HEAD
PERMEABILITY TEST

PROJECT:	Vinton Elementary School	**PROJECT #486-06**		**BY:**	ECP
	Stafford Rd, Mansfield, CT	**DATE: 04/08/12**			

TEST PIT # **TP-103V**

SAMPLE DEPTH: **68"** **SAMPLE LENGTH:** **4.25** **in.**

SAMPLE #1



$$K = \frac{(H1 - H2) \times L}{t \times (H1 + H2)/2}$$

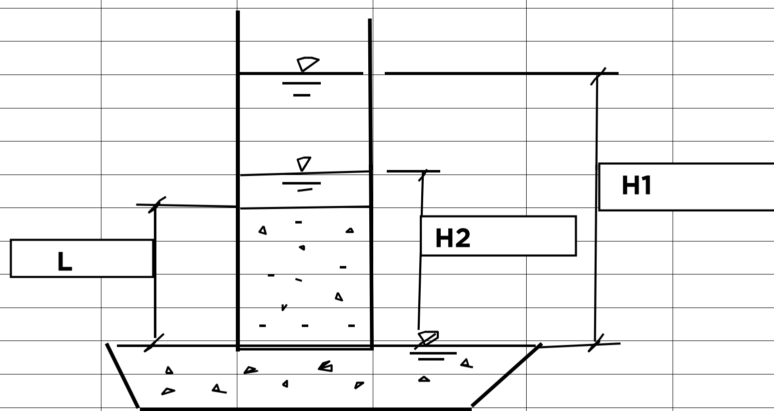
Time (min.)	H1 (in.)	H2 (in.)	H1 - H2	H1 + H2/2	K (in/min.)	K (in/hr)
0	5.75					
5.00	5.75	4.125	1.625	4.938	0.280	16.78
4.00	5.75	4.000	1.750	4.875	0.381	22.88
5.00	5.75	4.125	1.625	4.938	0.280	16.78
5.00	5.75	4.250	1.500	5.000	0.255	15.30
					Average=	**17.94**

30 Minute Pre-Soak

* Refilled tube after each reading

FALLING HEAD
PERMEABILITY TEST

PROJECT:	Vinton Elementary School	**PROJECT #486-06**		**BY:**	ECP
	Stafford Rd, Mansfield, CT	**DATE: 04/08/12**			
TEST PIT #	**TP-107V**				
SAMPLE DEPTH:	**56"**	**SAMPLE LENGTH:**	**4.00**	**in.**	
SAMPLE #1					



$$K = \frac{(H1 - H2) \times L}{t \times (H1 + H2)/2}$$

Time (min.)	H1 (in.)	H2 (in.)	H1 - H2	H1 + H2/2	K (in/min.)	K (in/hr)
0	5.75					
5.00	5.75	5.250	0.500	5.500	0.073	4.36
10.00	5.75	4.625	1.125	5.188	0.087	5.20
5.00	5.75	5.250	0.500	5.500	0.073	4.36
10.00	5.75	4.750	1.000	5.250	0.076	4.57
					Average=	**4.63**

30 Minute Pre-Soak

Appendix C

Septic Suitability Calculations

ANCHOR
ENGINEERING SERVICES, INC.
41 Sequin Drive
Glastonbury, CT 06033
Phone 860-633-8770
Fax 860-633-5971

Project No. 486-06
Date Apr. 2012

SSDS Design Calculations — Vinton

Solve For: Sewage flow Estimate

Given: Town of Mansfield proposes a 375 student Elementary school

- Table #4 of the Conn. Public Health Code
  - 8 gpd/pupil (Base flow)
  - 3 gpd/pupil additional for kitchen
  - 3 gpd/pupil additional for showers
- Showers are not typical for elementary schools therefore the 3gpm/pubil will not be included
- A conservative calculation of 11 gpd/pupil shall be applied

Conclusion:

375 students X 11 gpd/pupil = 4,125 gal per day

Proposed Daily Sewage Flow for the Proposed School will be

4,125 gal per day

Prepared By: E.C.P.
Checked By: BH

ANCHOR ENGINEERING SERVICES, INC.
41 Sequin Drive
Glastonbury, CT 06033
Phone 860-633-8770
Fax 860-633-5971

SSDS Design Calculations

Solve for: Effective Leaching Area (ELA)

Given:

- Daily Design flow = 4,125 gpd (3000 gpd/students + 1,125 gpd kitchen)
- Application Rate
  - use app rate of 1.5 for base Student flow (Tabe #8)
  - use app rate of 0.8 for Kitchen flow (Table #7)
  - percolation Rate = 5.1 to 10.0 min/in

Conclusion:

$$ELA = \frac{\text{Daily Design flow}}{\text{Application Rate}}$$

$$= \frac{3{,}000 \text{ gpd}}{1.5} + \frac{1{,}125 \text{ gpd}}{0.8}$$

$$= 2{,}000 \text{ S.F.} + 1{,}406.25 \text{ S.F.}$$

$$= 3{,}406.25 \text{ Sq. Ft.}$$

Required Effective Leaching Area = **3,406.25 sq. ft.**

Prepared By: E.C.P. Checked By: BDT

ANCHOR ENGINEERING SERVICES, INC.
41 Sequin Drive
Glastonbury, CT 06033
Phone 860-633-8770
Fax 860-633-5971

SSDS Design Calculations

Solve for: Minimum Leaching System Spread (MLSS)

Given: Depth to restrictive layer = 65+ inches

Conclusion:

- MLSS is not applicable on sites that have a receiving soil depth exceeding 60 inches

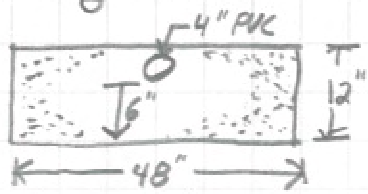
Prepared By: E.C.P.   Checked By: [illegible]

ANCHOR
ENGINEERING SERVICES, INC.
41 Sequin Drive
Glastonbury, CT 06033
Phone 860-633-8770
Fax 860-633-5971

SSDS Design

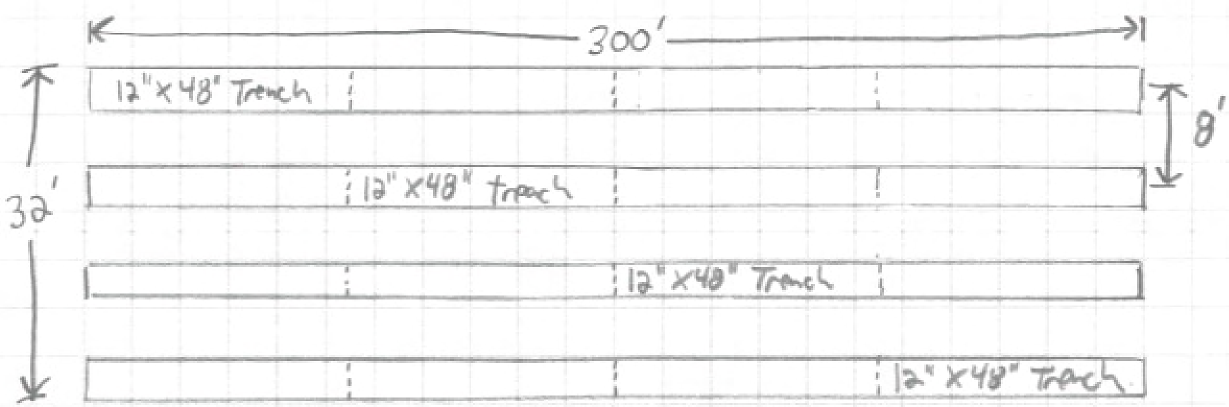
Solve for: Possibe System Size

Given:
- ELA = 3,406.25 Sq. ft.
- MLSS = N/A
- Stone Leaching Trench = 12" x 48"



- Effective Leaching Area = 3.0 sf/LF (section VIII.B)
- Center to Center Spacing = 8.0 ft (section VIII.B)

Conclusion:
- Length of Trench = $\frac{ELA}{3.0\ sf/LF} = \frac{3{,}406.25\ SF}{3.0\ sf/LF} =$ **1135.5 LF**
- Use 4 rows at 300 LF each (4 segments at 75' each)



Prepared By: E.C.P.   Checked By: BH