

## Appendix 9.14 Preliminary Geotechnical Investigations

Appendix 9.14.1 Preliminary Geotechnical Investigation  
9/2006

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*Preliminary Geotechnical Interpretive Report*  
*for*  
**Silo Ridge Golf Resort Community**

Town of Amenia  
Dutchess County  
New York

September 14, 2006



Prepared for:  
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Amenia, New York 12501

*Preliminary Geotechnical Interpretive Report*  
*for*  
**Silo Ridge Golf Resort Community**

**Town of Amenia  
Dutchess County  
New York**

September 14, 2006



Project Number: 30631.00

Prepared by:

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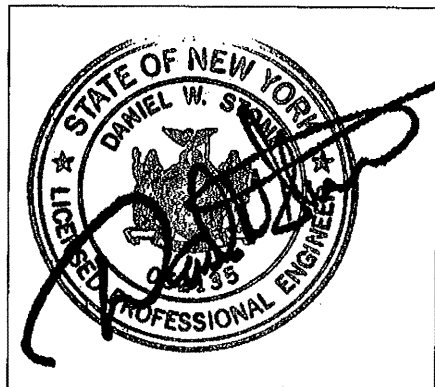
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*Preliminary Geotechnical Interpretive Report*  
for  
**Silo Ridge Golf Resort Community**

Town of Amenia  
Dutchess County  
New York

September 14, 2006

THE  
*Chazen*  
COMPANIES



## TABLE OF CONTENTS

<b>1.0 EXECUTIVE SUMMARY.....</b>	<b>1</b>
<b>2.0 INTRODUCTION.....</b>	<b>1</b>
<b>3.0 PHYSICAL SETTING .....</b>	<b>2</b>
<b>4.0 SUBSURFACE INVESTIGATION .....</b>	<b>2</b>
4.1 Test Boring Explorations.....	2
4.2 Subsurface Stratigraphy.....	3
4.3 Groundwater Condition.....	4
4.4 Laboratory Analysis.....	4
<b>5.0 RECOMMENDATIONS .....</b>	<b>5</b>
5.1 Preliminary Building Foundation Alternatives .....	5
5.1.1 Northeast & Southeast Structures .....	5
5.1.2 Southwest Structure.....	6
5.1.3 General Foundation Recommendations .....	6
5.2 Site Seismic Characterizations.....	7
5.3 Foundation Walls.....	8
5.4 Utilities.....	9
5.5 Fill Materials.....	9
5.5.1 Stone Fill & Granular Fill.....	10
5.5.2 Structural Fill.....	10
5.5.3 Bedding Fill .....	11
5.5.4 Common Fill .....	11
5.5.5 On-Site Soils .....	11
<b>6.0 OTHER CONSIDERATIONS.....</b>	<b>12</b>
6.1 Excavation.....	12
6.2 Control of Water.....	12
<b>7.0 CLOSURE .....</b>	<b>13</b>

## LIST OF FIGURES

Figure 1	Site Location Map
Figure 2	Exploration Location Plan
Figure 3	Conceptual Layout Plan
Figure 4	Foundation Details

## LIST OF APPENDICES

Appendix A	Exploration Logs
Appendix B	Laboratory Test Results

## 1.0 EXECUTIVE SUMMARY

The Chazen Companies (TCC) conducted a preliminary subsurface investigation to provide geotechnical recommendations for design of a hotel consisting of three separate multi-story buildings, each with potential underground parking in the Town of Amenia, Dutchess County, New York, hereinafter referred to as the "site".

Overburden at the site consists of Silty Sand and Poorly Graded Sand with Silt and Gravel. Bedrock was encountered between El. 582 and El. 542 feet above mean sea level. Groundwater was not observed within the limits of the explorations.

Shallow foundations consisting of reinforced concrete continuous strip footings and isolated spread footings with a soil supported slab are recommended to support the proposed buildings. An allowable bearing capacity of 6 tons per square foot (tsf) is recommended for shallow spread footings for the Northeast and Southeast structures and 3 (tsf) for a soil supported slab. Depending on the design concept chosen for the Southwest structure, we anticipate that an allowable bearing capacity between 2 tsf and 6 tsf is achievable for shallow spread footings and between 1 tsf and 3 tsf for a soil supported slab. However, additional studies are required to develop the entire site, particular the Southwest structure.

Differential settlement could result if a foundation spans over different soil types. Therefore, foundations should be designed to accommodate differential settlement or utilize the lowest allowable bearing capacity to support foundation design. Based on the existing site conditions, the seismic design category for the site is "B" assuming that less than 10 feet of soil will be present between bedrock and building foundations. Overburden soils may be suitable for reuse as common fill for general earthwork and landscaping purposes, but are not recommended for use as fill beneath buildings, pavements or against foundations walls.

Provided the geotechnical recommendations and construction considerations are incorporated in the design and during construction activities, the site is considered suitable for the proposed development.

## 2.0 INTRODUCTION

Higher Ground Country Club Management Company LLC retained The Chazen Companies (TCC) to provide preliminary geotechnical engineering services described in the Proposal for Professional Services dated July 12, 2006. The authorized scope included planning, coordinating and conducting a preliminary subsurface investigation and preparation of this geotechnical interpretive report.

This report includes interpretation of subsurface conditions, preliminary geotechnical recommendations and feasible foundation alternatives for design of the proposed hotel consisting of three separate multi-story buildings, which may include below grade parking. The site is located within the Town of Amenia, Dutchess County, New York as shown on the Site Location Map included as Figure 1.

### **3.0 PHYSICAL SETTING**

The proposed site for the hotel is west of NYS Route 22 and southeast of the current clubhouse. The proposed site is situated partially on an existing parking area and is adjacent to the main road leading to the existing club house. The site is open and undeveloped with large rock outcroppings observed across the site.

Existing topography indicates that a ridge runs south to north across the middle of the site. The high point on the ridge is located on the southern portion of the proposed site, at El. 590 ft msl. Ground surface elevations decrease gently to the north and west to El. 570 ft msl and to the east to El. 550 ft msl, respectively. Existing site conditions are depicted in Figure 2, Exploration Location Plan.

Elevations noted herein are based on a site survey performed by others utilizing the National Geodetic Vertical Datum of 1929 (NGVD 29).

### **4.0 SUBSURFACE INVESTIGATION**

This section summarizes the results of the subsurface investigation performed at the site in July 2006 in the area of the proposed development.

#### **4.1 Test Boring Explorations**

A preliminary subsurface investigation was conducted to characterize the in situ conditions and to recover representative soil and rock samples. Samples were used for both visual classification and laboratory testing to determine the engineering properties at the site. Three test boring explorations, designated SRB-1 through SRB-3, and eight auger probes, designated SRP-1 through SRP-8, were performed within the limits of the site. These explorations were performed to obtain subsurface information at specific points based on the locations of the three proposed buildings.

Proposed exploration locations were marked in the field prior to the subsurface investigation by a TCC representative for utility clearance. In some instances, exploration locations were relocated from marked location due to site conditions. Offset measurements were collected by TCC personnel from the original location to



the as-drilled location to document the actual location of each exploration as shown on Figure 2, Exploration Location Plan.

Test boring explorations were performed on August 7, 2006 and August 8, 2006 by SJB Services, Inc. of Balston Spa, New York. Test boring explorations were advanced to a maximum depth of 29 feet below existing site grades. Explorations were advanced using a CME 550 X all terrain vehicle (ATV) drill rig capable of spinning 3 1/4 inch I.D. hollow stem augers. Soil samples were collected in test boring explorations at approximately 5 foot intervals unless indicated otherwise on the exploration logs. Rock samples were collected in the three test boring explorations using a 5-foot long NX size core barrel with an I.D. of 2 inches.

Explorations were monitored by a TCC representative to advise the driller as to location and depth of borings, to record subsurface activities, and to modify the subsurface investigation as necessary. During soil sample collection, a 2-inch split spoon sampler was driven approximately 2 feet and the number of blows required to drive the sampler every 6 inches were recorded in accordance with ASTM D 1586 to determine the in situ compactness and consistency. The number of blows required to drive the sampler 12 inches, between the 6 and 18 inch interval, is a Standard Penetration Test (SPT) and the total number of blows recorded in this range is the N-value. Split spoon refusal is defined as 50 blows or more recorded within one 6 inch interval. Soil samples collected during the subsurface investigation were visually classified in the field in accordance with the Unified Soil Classification System (USCS) and ASTM D 2488. Logs detailing the explorations were prepared by TCC to document subsurface conditions at the site and are included in Appendix A.

#### 4.2 Subsurface Stratigraphy

Explorations indicate that at least three distinct strata are present within the depth of explorations at the site. However, all strata may not be present at all exploration locations. The stratification lines designating the interface between soil types on the exploration logs represent approximate boundaries. The sequence of strata, starting from existing site grades and working downward, is: Silty Sand, Poorly Graded Sand with Silt and Gravel, and Gneiss. Each stratum is further defined in the following paragraphs.

**Silty Sand:** A stratum of Silty Sand (SM) was encountered, across a majority of the site, from existing ground surface to a depth up 10 feet, El. 585 to El. 570 ft msl, approximately. This stratum consists of dry, brown, loose sand with some silt, a little to trace of clay and a trace of gravel.

**Poorly Graded Sand with Silt and Gravel:** A stratum of Poorly Graded Sand with Silt and Gravel (SP-SM) was encountered at existing ground surface to depths between 1.5 ft and 6 ft, El. 567 ft to El. 542 ft msl, approximately, in SRB-1, SRB-2, SRP-2 and SRP-3. However, in the other explorations this stratum underlies the Silty Sand at depths between 1.5 ft to 10 ft, El. 585 ft to El. 570 ft msl, approximately. This stratum consists of dry, gray, very dense sand with some gravel and a little silt.

**Bedrock (Gneiss):** All explorations terminated on or within Bedrock (Gneiss), which underlies the overburden within the project area as confirmed by three recovered core samples. In addition, exposed bedrock outcrops were observed along the southeastern portion of the ridge.

The depth to bedrock varied across the site from 1.5 feet to 19 feet, El. 582 ft to El. 542 ft msl, approximately. Based on visual observations and measurements of the recovered rock samples during our subsurface investigation the cored rock is a medium hard to hard, gray and white, coarse to fine grained Gneiss, that is moderately to slightly weathered, with horizontal bedding plans and with slight staining and joints that are irregular and smooth. Laboratory results indicated that the unconfined compressive strength for a sample from exploration SRB-2, RC-1 was 4,740 pounds per square inch (psi), which is less than the typical range for this rock, 7,250 psi – 29,000 psi.

A few cobbles were encountered during the investigation, but no boulders. However, greater quantities of cobbles and or boulders could potentially be present within soils encountered at the site.

#### 4.3 Groundwater Condition

Groundwater was not observed during the site exploration based upon field observations and visual classifications of soil samples. Groundwater levels will fluctuate with season, precipitation, nearby construction activity, and other factors.

#### 4.4 Laboratory Analysis

Representative soil and rock samples were selected for geotechnical laboratory testing. The samples were delivered to Atlantic Testing Laboratories in Clifton Park, New York for basic classification testing to verify classifications and rock strength. Field classifications were revised, if necessary, based on the laboratory test results. The following laboratory tests were conducted:

- 2 – Natural Moisture Content test,
- 2 – Particle-Size Analysis (Mechanical), and
- 1 – Unconfined Rock Compression test

Laboratory test results are provided in Appendix B.

## **5.0 RECOMMENDATIONS**

This section presents our geotechnical foundation recommendations for preliminary design of the proposed building based on the subsurface exploration. Our recommendations are in accordance with the Building Code of New York State (BCNYS).

### **5.1 Preliminary Building Foundation Alternatives**

The exact location, elevation or configuration of the proposed structures had not been established at the time of the investigation. However, based on provided footprint dimensions and the subsurface conditions observed during the investigation, the use of shallow foundations, consisting of continuous strip footings and isolated spread footings, if necessary, are suitable foundation alternatives to support the proposed structure in the general location investigated.

#### **5.1.1 Northeast & Southeast Structures**

Shallow bedrock, generally, was encountered between 1 and 6 feet in the northeast and southeast portions of the hotel development area. Therefore, the Northeast and Southwest structures, as shown on Figure 3, Conceptual Layout Location Plan, are likely to bear on weathered gneiss bedrock, which can typically provide an allowable bearing capacity between 8 and 12 tons per square foot (tsf). Based on the low Rock Quality Designation (RQD) observed, we recommend an allowable bearing capacity of 6 tsf.

Below grade parking for these two structures is possible, but will require significant rock excavation. The maximum Rock Quality Designation (RQD) observed during the investigation was 26.7%, which indicates the rock is fractured and weathered into a less massive formation that could potentially be excavated without blasting. Additional studies are recommended to further characterize the bedrock within the footprints of these two structures in order to assess excavation requirements.

Care should be taken not to disturb soils at the bearing surface. The zone of influence is defined as a line drawn outward and downward from the lower edge of the footing at a 1 Horizontal: 1 Vertical (1H: 1V) slope as shown on Figure 4, Foundation Detail. Exposed subgrades should be lightly compacted (proofrolled) prior to placement of foundation elements using appropriate construction equipment in large, accessible excavations and hand-guided compaction equipment in smaller excavations where access is limited. All unsuitable soils and disturbed soils should be excavated and replaced with placed and compacted structural fill.

We recommend that installed continuous strip footing foundations and isolated spread footing foundations have minimum lateral dimensions of at least 2 feet and 3 feet, respectively. For isolated spread footings with a lateral dimension less than 3 feet, the allowable soil bearing pressure should be reduced to a value equal to one third of the maximum allowable bearing pressure, multiplied by the least lateral footing dimension (in feet). Foundation elements must be constructed in accordance with the BCNYS, Section 1805.

Total settlement for statically loaded footings designed using the recommended allowable bearing capacity is expected to be less than 1.0 inch and differential settlement (non-uniform settlement) is anticipated to be less than 0.5 inches.

While preparing the slab subgrade, all unsuitable materials, should be overexcavated 12 inches and replaced with compacted structural fill before placing at least 4-inches of stone fill for the slab to bear on, as required by the BCNYS, Section 1807.4.1. A vapor barrier placed between the moisture sensitive slab and placed on compacted stone fill is recommended as per Section 1807.2.1 of the BCNYS.

Design and construction of the slab should take into account potential differential shrinkage between the top and bottom surfaces of the slab that could result in curling. A coefficient of friction of 0.20 should be used between the slab and vapor barrier and 0.35 for concrete cast directly against proofrolled in situ soils or compacted structural fill.

## 5.2 Site Seismic Characterizations

The on-site soils have been characterized for seismic conditions in accordance with Section 1615 of the BCNYS. Soils at the site are judged not susceptible to liquefaction due to the absence of water based on the exploration, relative density, soil type, and published peak ground acceleration.

A soil supported slab, designed for an allowable bearing capacity of 3 tsf is recommended for each building when founded on placed and compacted stone fill founded on weathered bedrock.

### 5.1.2 Southwest Structure

The subsurface conditions in the southwest portion of the development site change dramatically from east to west. The subsurface investigation indicates that shallow bedrock is present near the eastern end of the Southwest structure, but the rock drops to a depth of approximately 19 feet in the western end of the structure. Therefore, the concept needs to be further developed before a recommendation can be provided that addresses differential settlement potential, which must be limited to within the tolerable range. The foundation elevation will be a major factor in determining the bearing material and the appropriate allowable bearing capacity to design for. Depending on the foundation elevation and design approach, we anticipate that an allowable bearing capacity for the shallow foundations and a soil supported slab will range between 2 tsf to 6 tsf and 1 tsf to 3 tsf, respectively.

Since structures founded on different soil types have the potential for differential settlement and associated structural symptoms, design of the foundation for the Southwest structure must take the varying bearing materials into account to limit differential settlement. This can be performed in a number of ways including providing a 12 inch layer of compacted, granular fill above bedrock beneath the whole structure, designing foundations to the lowest strength in situ bearing material or designing foundations based on the capacity of a high strength fill material that may approach the strength of the bedrock.

Below grade parking is also possible for this structure, but will require some rock excavation and filling due to the rapid drop in bedrock at the western end of the building. Excavated rock could potentially be used for filling to provide a more uniform bearing surface.

### 5.1.3 General Foundation Recommendations

The bottom of spread footing foundations, not bearing on bedrock, should be located a minimum of 4 feet below the lowest adjacent ground surface exposed to freezing and the subgrade must be protected from freezing during construction. Spread footings not exposed to freezing temperatures during construction and located beneath continuously heated interior spaces should bear at least 18 inches below the top of the soil supported slab.

Based on the existing site conditions, proposed locations and assuming structure classifications as defined in Table 1604.5 of the BCNYS, we recommend the following:

Category	Main Structures
Seismic Use Group	II
Seismic Importance Factor, $I_E$	1.25
Site Class	B <sup>1</sup>
Seismic Design Category	B

1. A Site Class of B was selected assuming that less than 10 feet of soil will be present between the bedrock and the building foundation. If this condition is not achieved, a Site Class of C is more appropriate.

### 5.3 Foundation Walls

If below grade foundation walls will be utilized at this site, we recommend using the following equivalent fluid pressure values in pounds per cubic foot (pcf) to model lateral earth pressures assuming a level back slope and that no hydrostatic pressures (drained conditions) will be present, an internal friction angle for backfill soil of 34°, and a unit weight of 120 pcf:

Lateral Earth Pressure Type	Equivalent Fluid Unit Weight
At Rest - Static, ( <i>Restrained condition at top of wall</i> )	54 pcf
Active ( <i>Wall allows for deflection at top</i> )	34 pcf
Passive	350 pcf
Active with Seismic ( <i>PGA, 2% PE in 50 years</i> )	46 pcf

Passive pressure resistance is often not incorporated into design to provide an additional factor of safety and for other reasons including the large amount of movement required to mobilize passive resistance and the potential future removal of soil.

Equivalent fluid pressures stated herein do not include safety factors. When recommended equivalent fluid pressures are utilized, appropriate factors of safety for sliding, overturning, and bearing capacity should be applied in the design.

We recommend installation of drainage fill or drainage board against retaining walls to relieve hydrostatic pressures where they could develop by allowing downward flow of water to a perimeter foundation drainage system in accordance with the BCNYS, Sections 1807.4 and 1807.1.3. The drainage system should maintain groundwater at an elevation not less than 6 inches below the bottom of the lowest floor. The system should include a 4 inch diameter (min.) perforated drain pipe encased in stone fill and located adjacent to the spread footing. Installation of a cleanout is also recommended to facilitate maintenance of the drainage system. In addition, we recommend application of damp-proofing materials to the exterior surface of below grade foundation walls, in accordance with the BCNYS, section 1807.2.2.

#### **5.4 Utilities**

Utility trenches and established trench invert elevations should be located outside the "zone of influence" of foundation elements. Trench excavation widths should extend a minimum of 12 inches beyond the outer edges of the utility elements to be installed. Exposed subgrades should be lightly compacted (proofrolled) and filled with placed and compacted bedding fill extending 6 inches (minimum) below and above each utility. When utilities are located in trenches below building slabs and pavements, trenches should be backfilled above this point with compacted structural fill up to the proposed subgrade located beneath the building slab or pavement section. In landscaped areas, utility trenches above this point may be backfilled with common fill.

Visible markers at the surface and an underground trace line should be installed along the utility line to facilitate location of the utility in the future.

#### **5.5 Fill Materials**

Fill materials shall be free of unsuitable material such as organics, construction debris, cobbles/boulders, frozen material, etc. Stockpiles of fill materials should be maintained to prevent material from fluctuating from the optimum moisture content, freezing, separating due to migration of fine grained soils, and collection of snow or ice within the stockpiles. Fill areas should be cleared of all vegetation, roots, and other organic materials prior to placement of fill. Stockpiled soils may require installation of run-off protection between drainage channels and the stockpile.

Compaction should consist of at least 4 systematic passes using a vibratory roller. In confined areas, hand guided vibratory equipment shall be utilized to compact the soil to the specified criteria. If soil weaving or other disturbance is noticed during compaction, vibratory compaction should be discontinued. Heavy

compaction equipment should not be utilized within 3 feet of foundation and retaining walls. Compaction shall meet the requirements stated below or as approved by a qualified engineer.

#### 5.5.1 Stone Fill & Granular Fill

Stone fill, such as a uniformly graded  $\frac{3}{4}$  inch crushed stone, is recommended for prepared subgrades for slab construction and also for use around perforated drain pipes when used with an appropriate geotextile filter fabric.

Stone fill should be placed in loose lifts not to exceed 8 inches in thickness for heavy compaction equipment and 6 inches for lighter compaction equipment. Prior to placement of stone fill, we recommend placement of a non-woven, geotextile, filter fabric on the prepared subgrade to prevent migration of fines into the stone void space. A fabric should be selected based on the gradation of the surrounding soils.

Granular fill used for drainage along foundation walls should be clean, uniformly graded granular fill, which meets the following suggested gradation:

Sieve Size	Percent Passing by Weight
$\frac{3}{4}$ inch	100
No. 4	50-75
No. 40	10-20
No. 200	0-5

Granular fill should be placed in lifts not exceeding 8 inches loose measure and compacted to 90% of the maximum dry density as defined by ASTM D 1557. Stone fill should not be used against damp-proofed foundation walls unless a protective barrier is used to prevent direct contact between the stone and the damp-proofing.

#### 5.5.2 Structural Fill

Clean, granular, structural fill meeting the following suggested gradation should be placed in lifts not exceeding 8 inches loose measure and compacted to 95% of maximum dry density as defined by ASTM D 1557. Structural fill materials should be adjusted to within +2% and -1% of optimum moisture content to facilitate proper compaction. Structural fill is recommended for backfill within the footprint of the building and above utilities within the "zone of influence".



Sieve Size	Percent Passing by Weight
3 inch	100
½ inch	50-85
No. 4	30-75
No. 40	10-25
No. 200	0-8

#### 5.5.3 Bedding Fill

Bedding fill should be provided and compacted as recommended by the pipe manufacturer for backfill around utilities. If the manufacturer does not provide recommendations for pipe bedding material, a clean, granular, bedding fill meeting the following suggested gradation should be placed in lifts not exceeding 8 inches loose measure and compacted to 92% of maximum dry density as defined by ASTM D 1557.

Sieve Size	Percent Passing by Weight
¾ inch	100
No. 4	70-85
No. 40	10-40
No. 200	0-10

#### 5.5.4 Common Fill

Common fill should consist of inorganic, sand based, granular soils that meet the following basic, gradation requirements:

Sieve Size	Percent Passing by Weight
3 inch	100
No. 40	20-80
No. 200	0-20

Common fill used for site grading and landscaping should be placed in lifts not exceeding 9 inches loose measure and compacted to 90% of the maximum dry density as determined by ASTM D 1557. All fill should be placed to promote positive drainage away from structures.

#### 5.5.5 On-Site Soils

On-site soils are not suitable for use as structural fill as described above due to the high percentage of fine grained soil. Silty Sand may be suitable for use as

landscaping fill. Poorly Graded Sand with Silt and Gravel could possibly be used as common fill or bedding fill if screened to remove the larger particles.

## 6.0 OTHER CONSIDERATIONS

This section presents additional considerations to address excavation and groundwater conditions.

### 6.1 Excavation

We anticipate that excavation of the on-site soils can be accomplished using conventional earthwork equipment and techniques (i.e., backhoes, scrapers, excavators, or dozers) based on the physical characteristics and relative density of the materials.

Excavation of bedrock is anticipated in order to achieve desired bearing elevations. Typically, the quality of rock increases with depth. Based on the amount of rock recovered during coring from 47% to 100% and calculated RQD's, % to 27%, rock at the site could potentially require alternative methods of excavation such as jack hammering, hoe ramming and blasting. Care should also be taken when excavating due to the presence of existing utilities on the site.

Generally, all temporary cut slope excavations should not be left open or unbraced for extended periods of time. Temporary cuts should be sloped as required for stability in accordance with OSHA regulations and protected from erosion. Based on the subsurface explorations, the on-site soils should, generally, be classified as Type "C" material according to OSHA regulations, but be verified for each excavation. OSHA requires that Type "C" material must be benched at a 1-1/2 Horizontal: 1 Vertical (1-1/2H: 1V) slope for temporary excavations. Excavations in rock may be performed with steeper slopes depending on the orientation of fractures and stability observed during excavation; a qualified person should determine proper sloping during earthwork operations at the site.

### 6.2 Control of Water

Groundwater was not observed during the site investigation. Groundwater seepage into open excavations is not anticipated at this time. However, the contractor should be prepared to control potential water conditions in order to maintain a stable subgrade for construction activities and the integrity of the natural bearing rock or soil.

During foundation construction and fill placement, temporary swales and ditches may be necessary to control surface water that could potentially runoff into open excavation and maintain a dry excavation for foundation construction.

Upon completion of fill placement, the final grade should be set to promote positive drainage away from the building. Topsoil with more than 20% fines will limit infiltration of surface water into the subgrade.

## **7.0 CLOSURE**

This report and the recommendations contained herein have been prepared for the exclusive use of Higher Ground Country Club Management Company, LLC and its representatives for specific application to the design and construction of the three proposed hotel structures at the Silo Ridge Golf Resort Community in the Town of Amenia, Dutchess County, New York.

This report was prepared in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made. The analysis, designs and recommendations submitted in this report are based in part upon the data obtained from subsurface explorations available at the time of this report. The nature and extent of variations between these explorations may not become evident until construction. If significant variations then appear, it may be necessary to reevaluate the recommendations of this report.

Soil samples collected during the subsurface investigation are currently stored at TCC's facilities and will be retained until September 30, 2006, the discard date. If a representative does not inquire about the samples prior to the discard date, the samples shall be removed from TCC's facilities and disposed of appropriately.

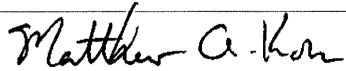
We recommend that TCC be retained to:

1. Design site specific temporary excavation support, if necessary,
2. Prepare or review contract documents pertaining to site work and foundations, and
3. Provide construction monitoring to observe compliance with design assumptions and to facilitate design changes in the event that subsurface conditions differ from those anticipated.

The estimated fees and detailed scope of services for these additional tasks can be provided at your request.

Please feel free to contact us at (518) 273-0055 if you have any questions. TCC looks forward to working with you on this project

Sincerely,

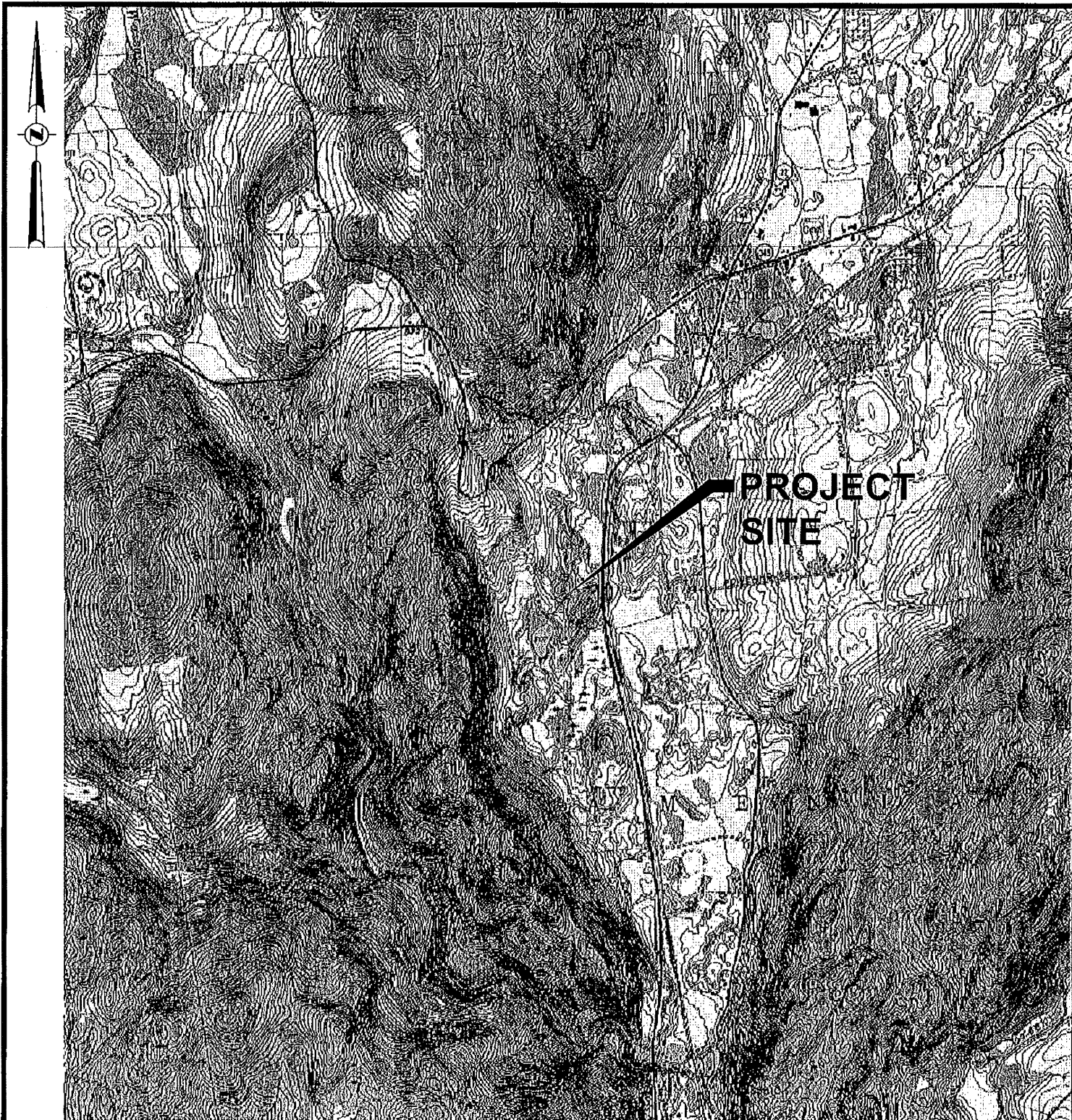


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Project Geotechnical Engineer



Kevin B. O'Malley, P.E.  
Director of Geotechnical  
Engineering Services

**Figures**



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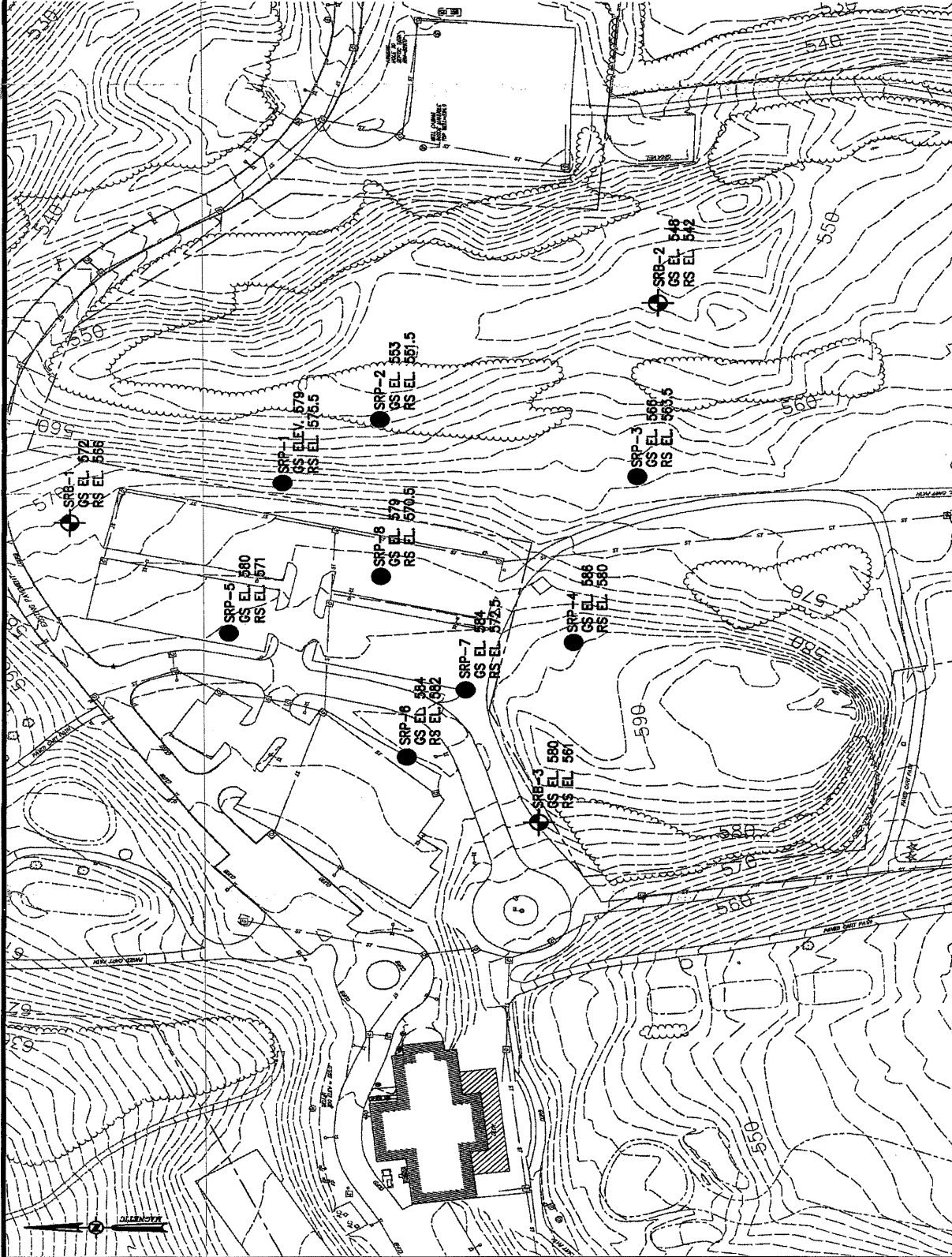
**SILO RIDGE GOLF RESORT COMMUNITY**

## **SITE LOCATION MAP**

**TOWN OF AMENIA, DUTCHESS COUNTY, STATE OF NEW YORK**

drawn JCR	checked MAK
date 9/12/06	scale NONE
project no. 30631.00	
sheet no. <b>FIG.1</b>	

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## LEGEND:

SRB-1 BORING EXPLORATION

SRP-1 TEST PROBE

GS EL XXX GROUND SURFACE ELEVATION

RS EL XXX ROCK SURFACE ELEVATION

### NOTES:

1. VERTICAL DATUM BASED ON NGVD-29 ESTABLISHED BY GPS OBSERVATIONS AT THE TIME OF SURVEY.

2. TOPOGRAPHIC SURVEY TITLED, "SILO RIDGE GOLF COURSE PERFORMED BY GOLDEN AERIAL SURVEYS, INC., DATED 4-28-04.

SILO RIDGE GOLF RESORT COMMUNITY

## EXPLORATION LOCATION PLAN

TOWN OF AMENIA, DUTCHESS COUNTY, STATE OF NEW YORK

### CHAZEN ENGINEERING & LAND SURVEYING CO., P.C.

Dutchess County Office:  
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Newburgh, NY 12550  
Phone: (845) 267-1133

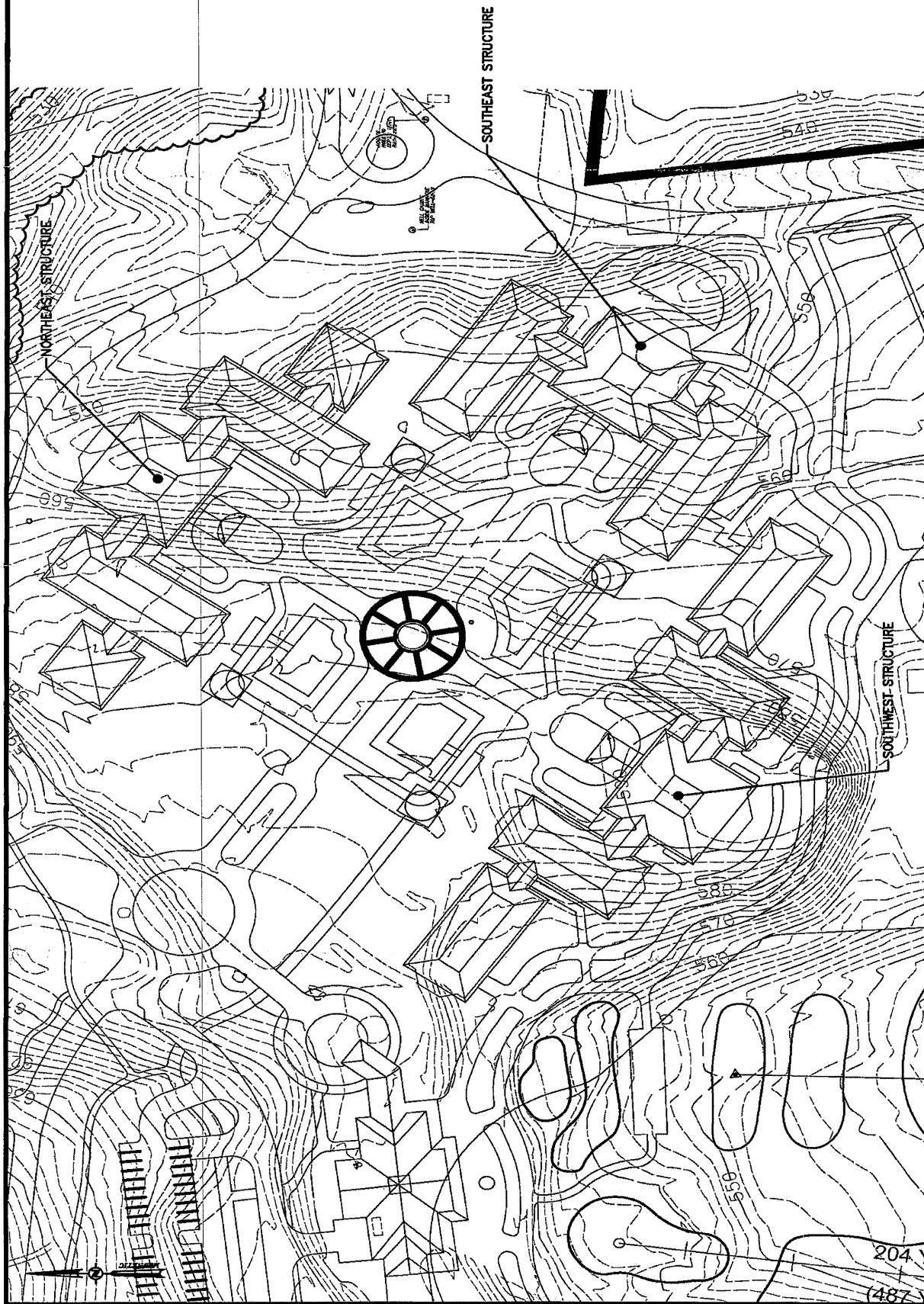
North Country Office:  
100 Oak Street  
New York, NY 10001  
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drawn	JCR	checked	MAK
date	9/12/06	scale	1"=100'-0"
project no.	30631.00	sheet no.	

FIG.2





Drawing Name: S:\3\30600-30699\30631-00\30631-00\_GEO.dwg Date Printed: Sep 12, 2009 9:33am

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# CHAZEN ENGINEERING & LAND SURVEYING CO., P.C.

**Rushmore County Office:**  
21 Fox Street  
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Phone: (646) 367-1133

**North County Office:**  
100 Glen Street  
New York, NY 13801  
Phone: (518) 812-5013

SILLO RIDGE GOLF RESORT COMMUNITY

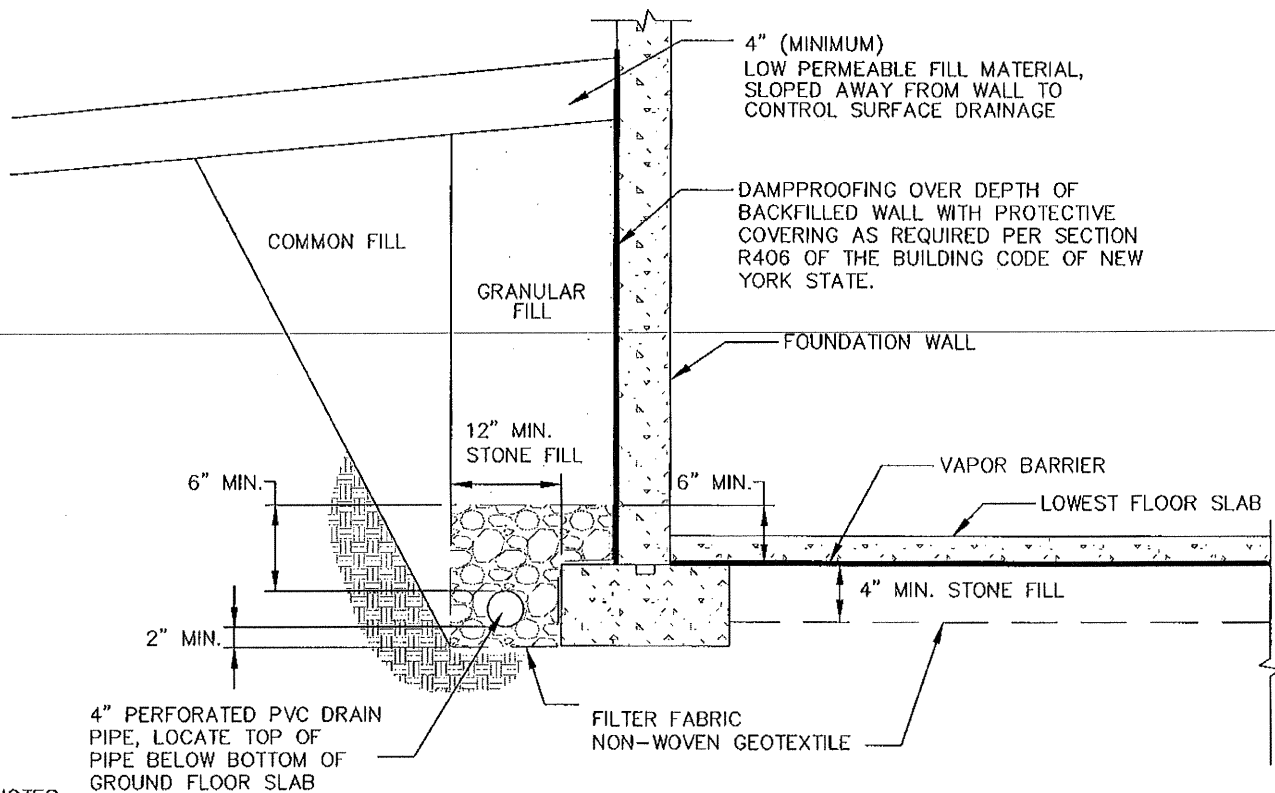
## CONCEPTUAL LAYOUT LOCATION PLAN

TOWN OF AMENIA, DUTCHESS COUNTY, STATE OF NEW YORK

drawn	JCR	checked	MAK
date	9/12/08	scale	1"=100'-0"
project no.	30631.00	sheet no.	

FIG.3

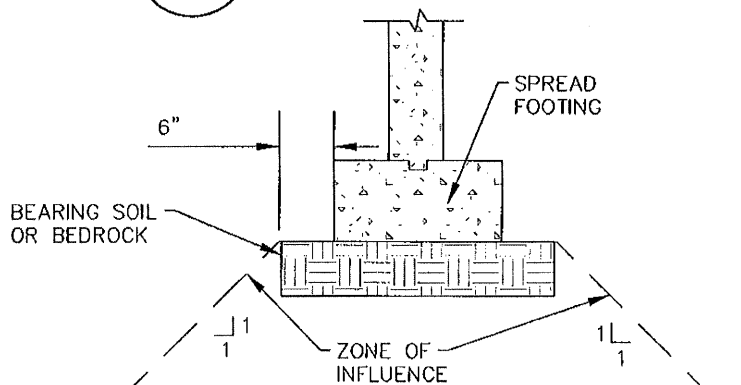




**NOTES:**

1. LOOP FOUNDATION SYSTEM DRAIN PIPE TO PROVIDE FOR ALTERNATE FLOW ROUTES IN THE EVENT OF A LOCALIZED PIPE BLOCKAGE AND PROVIDE POSITIVE DISCHARGE BY GRAVITY OR OTHER MEANS TO AN APPROVED SUBSURFACE SYSTEM.
2. FOUNDATION DRAIN PIPE CONSTRUCTION AS PER BUILDING CODE OF NEW YORK STATE SECTION R405.

**1**  
**FIG. 4** **FOUNDATION DRAINAGE DETAIL**  
SCALE: NONE



**2**  
**FIG. 4** **ZONE OF INFLUENCE**  
SCALE: NONE

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**THE**  
**Chazen**  
**COMPANIES**

Engineers/Surveyors  
Planners  
Environmental Scientists

**Dutchess County Office:**  
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**Capital District Office:**  
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Phone: (518) 273-0055

**Orange County Office:**  
356 Meadow Avenue Newburgh, NY 12550  
Phone: (845) 567-1133

**North Country Office:**  
100 Glen Street Glens Falls, NY 12801  
Phone: (518) 812-0513

**SILO RIDGE GOLF RESORT COMMUNITY**

**FOUNDATION DETAILS**

**TOWN OF AMENIA, DUTCHESS COUNTY, STATE OF NEW YORK**

drawn JCR	checked MAK
date 9/12/06	scale NONE
project no. 30631.00	
sheet no. <b>FIG. 4</b>	

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## **Appendix A: Exploration Logs**

## ROCK CLASSIFICATIONS

Rock Classifications are visual descriptions on the basis of the Driller's, Technician's, Geologist's or Geotechnical Engineer's observations of the coming activity and the recovered samples applying the following classifications.

	CLASSIFICATION TERM	DESCRIPTION
Hardness	Very Hard	Unable to scratch with a knife
	Hard	Difficulty scratching with a knife
	Medium Hard	Able to groove 1/16" with a knife
	Soft	Easily grooved with a knife
	Very Soft	Easily scratched with a fingernail
Weathering	Fresh	No visible signs of rock weathering
	Slightly Weathered	Fresh rock with staining at joints
	Moderately Weathered	Less than ½ of rock is discolored or weathered
	Highly Weathered	More than ½ of rock is discolored or weathered
	Completely Weathered	All rock material decomposed to soil, structure intact
Texture	Amorphous	Too small to be seen with naked eye
	Fine Grained	Barely seen with naked eye to 1/8"
	Coarse Grained	1/8" to 1/4"
	Very Coarse Grained	Greater than 1/4"
Attitude	Horizontal	0 – 5°
	Shallow	6 – 20°
	Moderate Dipping	21 – 45°
	Steep Dipping	46 – 85°
	Vertical	86 – 90°

Visual observation of the fracture joints should be described as either clean, stained or filled (clay, mineral vein or other) and noted as to whether they are rough, irregular or smooth.

Core sample RECOVERY (REC) is expressed as percent of recovered of total sampled. The ROCK QUALITY DESIGNATION (RQD) is the total length of core sample pieces exceeding 4 in. in length divided by the total interval cored for N size cored.

### GENERAL

- Soil and Rock classifications are made visually on samples recovered. The presence of Gravel, Cobbles and Boulders will influence sample recovery classification density/consistency determination.
- Groundwater, if encountered, was measured and its depth recorded at the time and under the conditions as noted.
- Topsoil or pavements, if present, were measured and recorded at the time and under the conditions as noted.
- Stratifications Lines are approximate boundaries between soil types. These transitions may be gradual or distinct and are approximated.

## INTERPRETATION OF SUBSURFACE LOGS

The Exploration Logs present observations and the results of tests performed in the field by the Driller, Technician, Geologists, and Geotechnical Engineers as noted. Soil/Rock classifications are made visually and modified accordingly based on laboratory results. The classification of soils or soil like material is subject to limitations imposed by the size of the sampler, the size of the sample and it's degree of disturbance and moisture.

The following defines some of the terms utilized in the preparation of the Subsurface Logs.

### SOIL CLASSIFICATIONS

Soil classifications are visual descriptions on the basis of the United Soil Classification ASTM D-2488. The soil density or consistency is based on the penetration resistance determined by ASTM D 1586. Soil Moisture of the recovered materials is described as DRY, MOIST, WET or SATURATED.

SIZE DESCRIPTION		RELATIVE DENSITY/CONSISTENCY (BASIS ASTM D1586)			
Soil Type	Particle Size	Granular Soil		Cohesive Soil	
Boulder	>12"	Density	Blows/FT	Consistency	Blows/FT
Cobble	3" - 12"	Very Loose	< 4	Very Soft	< 2
Gravel-Coarse	3" - ¾"	Loose	5 - 10	Soft	2 - 5
Gravel-Fine	¾" - #4	Medium Dense	11 - 30	Medium Stiff	6 - 10
Sand-Coarse	#4 - #10	Dense	31 - 50	Stiff	10 - 20
Sand-Medium	#10 - #40	Very Dense	50+	Very Stiff	20 - 30
Sand-Fine	#40 - #200			Hard	>30
Silt/NonPlastic	< #200				
Clay/Plastic	< #200				

SOIL STRUCTURE		RELATIVE PROPORTION OF SOIL TYPES	
Structure	Description	Description	% of Sample by Weight
Layer	6" Thick or Greater	Mostly	50 - 100
Seam	6" Thick or Less	Some	30 - 45
Parting	Less than ¼" thick	Little	15 - 25
Varved	Uniform horizontal partings or seams	Few	5 - 10
		Trace	Less than 5

Additional Notes:

- Utilized c: coarse, m: medium, and f: fine when describing the size of sand or gravel.
- WOH – weight of hammer.
- WOR – weight of rods.
- bgs – below ground surface
- NA – Not Available
- ▼ – Phreatic Surface, if observed

Refusal:

- Split-spoon refusal is considered 50 blows over six inches.
- Auger and Casing refusal occurs if the driller is unable to advance the boring.
- Roller bit refusal occurs if the bit is worn and needs to be replaced or the bedrock is a dense very hard material.

# TEST BORING LOG

Page 1 of 1

<b>THE Chazen COMPANIES</b>		<b>547 River Street</b> <b>Troy, New York 12180</b> Phn: (518) 273-0055 Fax: (518) 273-8391		<b>PROJECT:</b> Silo Ridge Country Club <b>LOCATION:</b> Town of Armonia, Dutchess County, New York <b>CLIENT:</b> Silo Ridge Country Club <b>PROJECT NO.:</b> 30631.00				<b>Test Boring No.:</b> <b>SRB-1</b>																					
<b>Contractor:</b> SJB Services Inc. <b>Drill Rig:</b> CMB-550X ATV <b>Driller:</b> John Leonhardt <b>Inspector:</b> Pete Steenland				<b>Start Date:</b> August 7, 2006 <b>Finish Date:</b> August 7, 2006 <b>El. Datum:</b> NGVD29 <b>G.S. Elevation:</b> 572		<b>Northing:</b> See Figure 2 <b>Easting:</b> See Figure 2 <b>Longitude:</b> -- <b>Latitude:</b> --		<b>Total Depth:</b> 10.5 ft. <b>Borehole Dia.:</b> 7.25 in. <b>Water Depth:</b> NA ft. <b>Rock Depth:</b> 10.5 ft. <b>Sample Hammer:</b> Automatic																					
Depth (Ft)	Elevation (Ft)	Casing Blows	Sample No.	SPT Blows	Recovery (in)	Groundwater	Group Symbol	Stratum and Field Descriptions:	Field Notes, Comments:																				
1	571		SS-1	14	24		GP-GM	Poorly Graded Gravel with Silt and Sand (GP-GM): Mostly gravel, some sand, little silt, gray, dry (Highly Weathered Rock)																					
				33				4 inch Quartz seam																					
2	570			50																									
3	569																												
4	568																												
5	567		SS-2	50/4"	3		SP-SM	Poorly Graded Sand with Silt and Gravel (SP-SM): Mostly sand, some gravel, little silt, gray, dry (Highly Weathered Rock)	Auger Refusal at 5.5' - begin coring																				
6	566		RC-1		60			(5.5' to 10.5') Gneiss: very soft to hard, highly to slightly weathered, fine to coarse grained, horizontal bedding, gray and white, joints are irregular and smooth	REC for RC-1 = 100% RQD for RC-1 = 10 % RQD - one piece at 6"																				
7	565																												
8	564																												
9	563																												
10	562																												
11	561							Test Boring Terminated at 10.5 feet in Bedrock.																					
12	560																												
13	559																												
14	558																												
15	557																												
16	556																												
17	555																												
18	554																												
19	553																												
20	552																												
<b>METHODS:</b> HSA- Hollow Stem Auger, RWH- Rotary Wash, SSA- Solid Stem Auger, CPT- Cone Penetrometer <b>SAMPLE TYPES:</b> AS-Auger, WS-Wash, SS-Split Spoon, RC-Rock Core, GS-Grab, ST-Shelby Tube, PS-Piston <b>STANDARD</b> 1. Samples classified in accordance with ASTM D-2488 unless otherwise noted. <b>NOTES:</b> 2. Test Boring Log Page 1: 0 - 20 feet. Each subsequent page: Additional 25 feet. 3. Refer to the "Interpretation of Subsurface Logs" for additional symbology and abbreviation definitions.								<b>DRILLING INFORMATION</b> Method: HSA 0 to 5.5 Method: RC 5.5 to 10.5 <table border="1"> <tr> <th></th> <th>Casing</th> <th>Sample</th> <th>Core</th> </tr> <tr> <td>Type</td> <td>HSA</td> <td>SS</td> <td>NX</td> </tr> <tr> <td>Int Diam.</td> <td>3.25 "</td> <td>2"</td> <td>2"</td> </tr> <tr> <td>Weight</td> <td>--</td> <td>140 lb</td> <td></td> </tr> <tr> <td>Fall</td> <td>--</td> <td>30"</td> <td></td> </tr> </table>			Casing	Sample	Core	Type	HSA	SS	NX	Int Diam.	3.25 "	2"	2"	Weight	--	140 lb		Fall	--	30"	
	Casing	Sample	Core																										
Type	HSA	SS	NX																										
Int Diam.	3.25 "	2"	2"																										
Weight	--	140 lb																											
Fall	--	30"																											
<b>ADDITIONAL NOTES:</b>																													

# TEST BORING LOG

Page 1 of 1

<b>THE</b> <b>Chazen</b> <b>COMPANIES</b>		<b>547 River Street</b> <b>Troy, New York 12180</b> Phn: (518) 273-0055 Fax: (518) 273-8391		<b>PROJECT:</b> Silo Ridge Country Club <b>LOCATION:</b> Town of Amenia, Dutchess County, New York <b>CLIENT:</b> Silo Ridge Country Club <b>PROJECT NO.:</b> 30631.00				<b>Test Boring No.:</b> <b>SRB-2</b>																					
<b>Contractor:</b> SJB Services Inc. <b>Drill Rig:</b> CMB-550X ATV <b>Driller:</b> John Leonhardt <b>Inspector:</b> Pete Steenland				<b>Start Date:</b> August 8, 2006 <b>Finish Date:</b> August 8, 2006 <b>El. Datum:</b> NGVD29 <b>G.S. Elevation:</b> 548		<b>Northing:</b> See Figure 2 <b>Easting:</b> See Figure 2 <b>Longitude:</b> -- <b>Latitude:</b> --		<b>Total Depth:</b> 15.8 ft. <b>Borehole Dia.:</b> 7.25 in. <b>Water Depth:</b> NA ft. <b>Rock Depth:</b> 6 ft. <b>Sample Hammer:</b> Automatic																					
Depth (ft)	Elevation (ft)	Casing Blows	Sample No.	SPT Blows	Recovery (in)	Groundwater	Group Symbol	Stratum and Field Descriptions:	Field Notes, Comments:																				
1	547		SS-1	8	17		SP-SM	Poorly Graded Sand with Silt and Gravel (SP-SM): Mostly sand, some gravel, little silt, gray, dry (Highly Weathered Rock)	Moisture Content - 1.2%																				
2	546			18																									
3	545			43																									
4	544			50/3"																									
5	543		SS-2	16	8		SP-SM	Poorly Graded Sand with Silt and Gravel (SP-SM): Mostly sand, some gravel, little silt, gray, dry (Highly Weathered Rock)	Auger Refusal at 5.8' - begin coring																				
6	542		RC-1		49			(5.8'-10.8') Gneiss: medium hard to hard, moderately to slightly weathered, coarse to fine grained, horizontal bedding, gray and white, joints have very little staining and are irregular and smooth	REC for RC-1 = 81.7% RQD for RC-1 = 0%																				
7	541																												
8	540																												
9	539																												
10	538																												
11	537		RC-2		57			(10.8'-15.8') Gneiss: hard, slightly weathered, coarse to fine grained, horizontal bedding, gray and white, joints have very little staining and are irregular and smooth	REC for RC-2 = 95% RQD for RC-2 = 26.7% RQD - 3 pieces over 4" totaling 16"																				
12	536																												
13	535																												
14	534																												
15	533																												
16	532							Test Boring Terminated at 15.8 feet in Bedrock.																					
17	531																												
18	530																												
19	529																												
20	528																												
<b>METHODS:</b> HSA- Hollow Stem Auger, RWH- Rotary Wash, SSA- Solid Stem Auger, CPT- Cone Penetrometer <b>SAMPLE TYPES:</b> AS-Auger, WS-Wash, SS-Split Spoon, RC-Rock Core, GS-Grab, ST-Shelby Tube, PS-Piston <b>STANDARD:</b> 1. Samples classified in accordance with ASTM D-2488 unless otherwise noted. <b>NOTES:</b> 2. Test Boring Log Page 1: 0 - 20 feet. Each subsequent page: Additional 25 feet. 3. Refer to the "Interpretation of Subsurface Logs" for additional symbology and abbreviation definitions.								<b>DRILLING INFORMATION</b> Method: HSA 0 to 5.8 Method: RC 5.8 to 15.8 <table border="1"> <thead> <tr> <th></th> <th>Casing</th> <th>Sample</th> <th>Core</th> </tr> </thead> <tbody> <tr> <td>Type</td> <td>HSA</td> <td>SS</td> <td>NX</td> </tr> <tr> <td>Int Diam.</td> <td>3.25 "</td> <td>2"</td> <td>2"</td> </tr> <tr> <td>Weight</td> <td>--</td> <td>140 lb</td> <td></td> </tr> <tr> <td>Fall</td> <td>--</td> <td>30"</td> <td></td> </tr> </tbody> </table>			Casing	Sample	Core	Type	HSA	SS	NX	Int Diam.	3.25 "	2"	2"	Weight	--	140 lb		Fall	--	30"	
	Casing	Sample	Core																										
Type	HSA	SS	NX																										
Int Diam.	3.25 "	2"	2"																										
Weight	--	140 lb																											
Fall	--	30"																											
<b>ADDITIONAL NOTES:</b>																													

# TEST BORING LOG

Page 1 of 2

<b>THE</b> <i>Chazen</i> <b>COMPANIES</b>		<b>547 River Street</b> <b>Troy, New York 12180</b> <b>Phn: (518) 273-0055</b> <b>Fax: (518) 273-8391</b>		<b>PROJECT: Silo Ridge Country Club</b> <b>LOCATION: Town of Amenia, Dutchess County, New York</b> <b>CLIENT: Silo Ridge Country Club</b> <b>PROJECT NO.: 30631.00</b>				<b>Test Boring No.: SRB-3</b>																						
<b>Contractor: SJB Services Inc.</b> <b>Drill Rig: CME-550X ATV</b> <b>Driller: John Leonhardt</b> <b>Inspector: Pete Steenland</b>				<b>Start Date: August 8, 2006</b> <b>Finish Date: August 8, 2006</b> <b>El. Datum: NGVD29</b> <b>G.S. Elevation: 580</b>		<b>Northing: See Figure 2</b> <b>Easting: See Figure 2</b> <b>Longitude: --</b> <b>Latitude: --</b>		<b>Total Depth: 29 ft.</b> <b>Borehole Dia.: 7.25 in.</b> <b>Water Depth: NA ft.</b> <b>Rock Depth: 19 ft.</b> <b>Sample Hammer: Automatic</b>																						
<b>Depth (Ft)</b>	<b>Elevation (Ft)</b>	<b>Casing Blows</b>	<b>Sample No.</b>	<b>SPT Blows</b>	<b>Recovery (in)</b>	<b>Groundwater</b>	<b>Group Symbol</b>	<b>Stratum and Field Descriptions:</b>	<b>Field Notes, Comments:</b>																					
1	579		SS-1	3	15		SM	Silty Sand (SM): Mostly sand, some silt, few gravel, trace clay, brown, dry	Moisture Content - 9.9%																					
2	578			3																										
3	577			4																										
4	576			7																										
5	575		SS-2	3	1		SM	Silty Sand (SM): Mostly sand, some silt, few gravel, trace clay, brown, dry																						
6	574			4					Cobble encountered at 6 feet																					
7	573			5																										
8	572			6																										
9	571								Approximate Strata change																					
10	570		SS-3	7	20		SP-SM	Poorly Graded Sand with Silt and Gravel (SP-SM): Mostly sand, some gravel, little silt, gray, dry (Completely Weathered Rock)																						
11	569			8																										
12	568			14																										
13	567			14																										
14	566																													
15	565		SS-4	14	18		SP-SM	Poorly Graded Sand with Silt and Gravel (SP-SM): Mostly sand, some gravel, little silt, gray, dry (Highly Weathered Rock)																						
16	564			16																										
17	563			50/5"																										
18	562																													
19	561								Auger Refusal at 19.0' - begin coring																					
20	560		RC-1		31																									
<b>METHODS: HSA- Hollow Stem Auger, RWH- Rotary Wash, SSA- Solid Stem Auger, CPT- Cone Penetrometer</b> <b>SAMPLE TYPES: AS-Auger, WS-Wash, SS-Split Spoon, RC-Rock Core, GS-Grab, ST-Shelby Tube, PS-Piston</b> <b>STANDARD 1.</b> Samples classified in accordance with ASTM D-2488 unless otherwise noted. <b>NOTES:</b> 2. Test Boring Log Page 1: 0 - 20 feet. Each subsequent page: Additional 25 feet. 3. Refer to the "Interpretation of Subsurface Logs" for additional symbology and abbreviation definitions.									<b>DRILLING INFORMATION</b> Method: HSA 0 to 19 Method: RC 19 to 29 <table border="1"> <tr> <td></td> <td>Casing</td> <td>Sample</td> <td>Core</td> </tr> <tr> <td>Type</td> <td>HSA</td> <td>SS</td> <td>NX</td> </tr> <tr> <td>Int Diam.</td> <td>3.25 "</td> <td>2"</td> <td>2"</td> </tr> <tr> <td>Weight</td> <td>--</td> <td>140 lb</td> <td></td> </tr> <tr> <td>Fall</td> <td>--</td> <td>30"</td> <td></td> </tr> </table>			Casing	Sample	Core	Type	HSA	SS	NX	Int Diam.	3.25 "	2"	2"	Weight	--	140 lb		Fall	--	30"	
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Type	HSA	SS	NX																											
Int Diam.	3.25 "	2"	2"																											
Weight	--	140 lb																												
Fall	--	30"																												
<b>ADDITIONAL NOTES:</b>																														

# TEST BORING LOG

Page 2 of 2

<b>THE</b> <i>Chazen</i> <b>COMPANIES</b>		<b>547 River Street</b> <b>Troy, New York 12180</b> Phn: (518) 273-0055 Fax: (518) 273-8391		<b>PROJECT:</b> Silo Ridge Country Club <b>LOCATION:</b> Town of Amenia, Dutchess County, New York <b>CLIENT:</b> Silo Ridge Country Club <b>PROJECT NO.:</b> 30631.00		<b>Test Boring No.:</b> <b>SRB-3</b> <b>Total Depth:</b> 29 ft.			
Depth (Ft)	Elevation (Ft)	Casing Blows	Sample No.	SPT Blows	Recovery (in)	Groundwater	Group Symbol	Stratum and Field Descriptions:	Field Notes, Comments:
21	559							(19'-24') Gneiss: medium hard to hard, highly to moderately weathered, coarse to fine grained, horizontal bedding, gray and white, joints are irregular and smooth with a slight silt coating	REC for RC-1 = 51.7% RQD for RC-1 = 0%
22	558								
23	557								
24	556		RC-2		28				
25	555							(24'-29') Gneiss: medium hard to hard, highly to moderately weathered, coarse to fine grained, horizontal bedding, gray and white, joints are irregular and smooth	REC for RC-2 = 46.7% RQD for RC-2 = 0%
26	554								
27	553								
28	552								
29	551							Test Boring Terminated at 29 feet in Bedrock.	
30	550								
31	549								
32	548								
33	547								
34	546								
35	545								
36	544								
37	543								
38	542								
39	541								
40	540								
41	539								
42	538								
43	537								
44	536								
45	535								

ADDITIONAL NOTES:



# AUGER PROBE LOG

Page 1 of 1

 <b>THE Chazen COMPANIES</b>		547 River Street Troy, New York 12180 Phn: (518) 273-0055 Fax: (518) 273-8391		<b>PROJECT:</b> Silo Ridge Country Club <b>LOCATION:</b> Town of Amenia, Dutchess County, New York <b>CLIENT:</b> Silo Ridge Country Club <b>PROJECT NO.:</b> 30631.00				<b>Probe No.:</b> <span style="font-size: 1.2em; font-weight: bold;">SRP-1</span>																					
		<b>Contractor:</b> SJB Services Inc. <b>Drill Rig:</b> CMB-550X ATV <b>Driller:</b> John Leonhardt <b>Inspector:</b> Pete Steenland		<b>Start Date:</b> August 7, 2006 <b>Finish Date:</b> August 7, 2006 <b>El. Datum:</b> NGVD29 <b>G.S. Elevation:</b> 579		<b>Northing:</b> See Figure 2 <b>Easting:</b> See Figure 2 <b>Longitude:</b> -- <b>Latitude:</b> --		<b>Total Depth:</b> 3.5 ft. <b>Borehole Dia.:</b> 7.25 in. <b>Water Depth:</b> NA ft. <b>Rock Depth:</b> 3.5 ft.																					
Depth (Ft)	Elevation (Ft)	Casing Blows	Sample No.	SPT Blows	Recovery(in)	Groundwater	Group Symbol	Stratum and Field Descriptions:		Field Notes, Comments:																			
1	578						SM	Silty Sand (SM): Mostly sand, some silt, few gravel, trace clay, brown, dry		Approximate strata change																			
2	577						SP-SM	Poorly Graded Sand with Silt and Gravel (SP-SM): Mostly sand, some gravel, little silt, gray, dry (Highly Weathered Rock)																					
3	576																												
4	575							Auger Refusal at 3.5 feet on Assumed Bedrock.																					
5	574																												
6	573																												
7	572																												
8	571																												
9	570																												
10	569																												
11	568																												
12	567																												
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14	565																												
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16	563																												
17	562																												
18	561																												
19	560																												
20	559																												
<b>METHODS:</b> HSA- Hollow Stem Auger, RWH- Rotary Wash, SSA- Solid Stem Auger, CPT- Cone Penetrometer								<b>DRILLING INFORMATION</b>																					
<b>SAMPLE TYPES:</b> AS-Auger, WS-Wash, SS-Split Spoon, RC-Rock Core, GS-Grab, ST-Shelby Tube, PS-Piston								Method: HSA      0 to 3.5																					
<b>STANDARD</b> 1. Samples classified in accordance with ASTM D-2488 unless otherwise noted.								Method:																					
<b>NOTES:</b> 2. Auger Probe Log Page 1: 0 - 20 feet. Each subsequent page: Additional 25 feet.								<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td></td> <td style="text-align: center;">Casing</td> <td style="text-align: center;">Sample</td> <td style="text-align: center;">Core</td> </tr> <tr> <td style="text-align: center;">Type</td> <td style="text-align: center;">HSA</td> <td style="text-align: center;">--</td> <td style="text-align: center;">--</td> </tr> <tr> <td style="text-align: center;">Int Diam.</td> <td style="text-align: center;">3.25 "</td> <td style="text-align: center;">--</td> <td style="text-align: center;">--</td> </tr> <tr> <td style="text-align: center;">Weight</td> <td style="text-align: center;">--</td> <td style="text-align: center;">--</td> <td style="text-align: center;">--</td> </tr> <tr> <td style="text-align: center;">Fall</td> <td style="text-align: center;">--</td> <td style="text-align: center;">--</td> <td style="text-align: center;">--</td> </tr> </table>			Casing	Sample	Core	Type	HSA	--	--	Int Diam.	3.25 "	--	--	Weight	--	--	--	Fall	--	--	--
	Casing	Sample	Core																										
Type	HSA	--	--																										
Int Diam.	3.25 "	--	--																										
Weight	--	--	--																										
Fall	--	--	--																										
<b>ADDITIONAL NOTES:</b> 3. Refer to the "Interpretation of Subsurface Logs" for additional symbology and abbreviation definitions.																													

# AUGER PROBE LOG

Page 1 of 1

 <b>THE Chazen COMPANIES</b>		<b>547 River Street</b> <b>Troy, New York 12180</b> Phn: (518) 273-0055 Fax: (518) 273-8391		<b>PROJECT:</b> Silo Ridge Country Club <b>LOCATION:</b> Town of Amenia, Dutchess County, New York <b>CLIENT:</b> Silo Ridge Country Club <b>PROJECT NO.:</b> 30631.00				<b>Probe No.:</b> <span style="font-size: 1.2em; font-weight: bold;">SRP-2</span>	
		<b>Contractor:</b> SJB Services Inc. <b>Drill Rig:</b> CME-550X ATV <b>Driller:</b> John Leonhardt <b>Inspector:</b> Pete Steenland		<b>Start Date:</b> August 7, 2006 <b>Finish Date:</b> August 7, 2006 <b>El. Datum:</b> NGVD29 <b>G.S. Elevation:</b> 553		<b>Northing:</b> See Figure 2 <b>Easting:</b> See Figure 2 <b>Longitude:</b> -- <b>Latitude:</b> --		<b>Total Depth:</b> 1.5 ft. <b>Borehole Dia.:</b> 7.25 in. <b>Water Depth:</b> NA ft. <b>Rock Depth:</b> 1.5 ft.	
Depth (Ft)	Elevation (Ft)	Casing Blows	Sample No.	SPT Blows	Recovery (in)	Groundwater	Group Symbol	Field Notes, Comments:	
<b>Stratum and Field Descriptions:</b>									
1	552						SP-SM	Poorly Graded Sand with Silt and Gravel (SP-SM): Mostly sand, some gravel, little silt, gray, dry (Highly Weathered Rock)	
2	551							Auger Refusal at 1.5 feet on Assumed Bedrock.	
3	550								
4	549								
5	548								
6	547								
7	546								
8	545								
9	544								
10	543								
11	542								
12	541								
13	540								
14	539								
15	538								
16	537								
17	536								
18	535								
19	534								
20	533								
<b>METHODS:</b> HSA- Hollow Stem Auger, RWH- Rotary Wash, SSA- Solid Stem Auger, CPT- Cone Penetrometer <b>SAMPLE TYPES:</b> AS-Auger, WS-Wash, SS-Split Spoon, RC-Rock Core, GS-Grab, ST-Shelby Tube, PS-Piston <b>STANDARD</b> 1. Samples classified in accordance with ASTM D-2488 unless otherwise noted. <b>NOTES:</b> 2. Auger Probe Log Page 1: 0 - 20 feet. Each subsequent page: Additional 25 feet. 3. Refer to the "Interpretation of Subsurface Logs" for additional symbology and abbreviation definitions.								<b>DRILLING INFORMATION</b>	
<b>ADDITIONAL NOTES:</b>								Method: HSA      0 to 1.5 Method:	
								Casing      Sample      Core	
								Type      HSA      --      --	
								Int Diam.      3.25 "      --      --	
								Weight      --      --	
								Fall      --      --	

# AUGER PROBE LOG

Page 1 of 1

		547 River Street Troy, New York 12180 Phn: (518) 273-0055 Fax: (518) 273-8391		<b>PROJECT:</b> Silo Ridge Country Club <b>LOCATION:</b> Town of Amenia, Dutchess County, New York <b>CLIENT:</b> Silo Ridge Country Club <b>PROJECT NO.:</b> 30631.00				<b>Probe No.:</b> <span style="font-size: 1.2em; font-weight: bold;">SRP-3</span>			
		<b>Contractor:</b> SJB Services Inc. <b>Drill Rig:</b> CMB-550X ATV <b>Driller:</b> John Leonhardt <b>Inspector:</b> Pete Steenland		<b>Start Date:</b> August 7, 2006 <b>Finish Date:</b> August 7, 2006 <b>El. Datum:</b> NGVD29 <b>G.S. Elevation:</b> 566		<b>Northing:</b> See Figure 2 <b>Easting:</b> See Figure 2 <b>Longitude:</b> -- <b>Latitude:</b> --		<b>Total Depth:</b> 2.5 ft. <b>Borehole Dia.:</b> 7.25 in. <b>Water Depth:</b> NA ft. <b>Rock Depth:</b> 2.5 ft.			
Depth (ft)	Elevation (ft)	Casing Blows	Sample No.	SPT Blows	Recovery (in)	Groundwater	Group Symbol	Stratum and Field Descriptions:		Field Notes, Comments:	
1	565						SP-SM	Poorly Graded Sand with Silt and Gravel (SP-SM): Mostly sand, some gravel, little silt, gray, dry (Highly Weathered Rock)  Auger Refusal at 2.5 feet on Assumed Bedrock.			
2	564										
3	563										
4	562										
5	561										
6	560										
7	559										
8	558										
9	557										
10	556										
11	555										
12	554										
13	553										
14	552										
15	551										
16	550										
17	549										
18	548										
19	547										
20	546										

<b>METHODS:</b> HSA- Hollow Stem Auger, RWH- Rotary Wash, SSA- Solid Stem Auger, CPT- Cone Penetrometer		<b>DRILLING INFORMATION</b>																					
<b>SAMPLE TYPES:</b> AS-Auger, WS-Wash, SS-Split Spoon, RC-Rock Core, GS-Grab, ST-Shelby Tube, PS-Piston		Method: HSA	0 to 2.5																				
<b>STANDARD</b> 1. Samples classified in accordance with ASTM D-2488 unless otherwise noted.		Method:																					
<b>NOTES:</b> 2. Auger Probe Log Page 1: 0 - 20 feet. Each subsequent page: Additional 25 feet.		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td></td> <td style="text-align: center;">Casing</td> <td style="text-align: center;">Sample</td> <td style="text-align: center;">Core</td> </tr> <tr> <td style="text-align: center;">Type</td> <td style="text-align: center;">HSA</td> <td style="text-align: center;">--</td> <td style="text-align: center;">--</td> </tr> <tr> <td style="text-align: center;">Int Diam.</td> <td style="text-align: center;">3.25 "</td> <td style="text-align: center;">--</td> <td style="text-align: center;">--</td> </tr> <tr> <td style="text-align: center;">Weight</td> <td style="text-align: center;">--</td> <td style="text-align: center;">--</td> <td style="text-align: center;">--</td> </tr> <tr> <td style="text-align: center;">Fall</td> <td style="text-align: center;">--</td> <td style="text-align: center;">--</td> <td style="text-align: center;">--</td> </tr> </table>			Casing	Sample	Core	Type	HSA	--	--	Int Diam.	3.25 "	--	--	Weight	--	--	--	Fall	--	--	--
	Casing	Sample	Core																				
Type	HSA	--	--																				
Int Diam.	3.25 "	--	--																				
Weight	--	--	--																				
Fall	--	--	--																				
<b>ADDITIONAL NOTES:</b> 3. Refer to the "Interpretation of Subsurface Logs" for additional symbology and abbreviation definitions.																							

# AUGER PROBE LOG

Page 1 of 1

 <b>THE Chazen COMPANIES</b>		547 River Street Troy, New York 12180 Phn: (518) 273-0055 Fax: (518) 273-8391		<b>PROJECT:</b> Silo Ridge Country Club <b>LOCATION:</b> Town of Amenia, Dutchess County, New York <b>CLIENT:</b> Silo Ridge Country Club <b>PROJECT NO.:</b> 30631.00				<b>Probe No.:</b> <span style="font-size: 1.2em; font-weight: bold;">SRP-4</span>																					
		<b>Contractor:</b> SJB Services Inc. <b>Drill Rig:</b> CME-550X ATV <b>Driller:</b> John Leonhardt <b>Inspector:</b> Pete Steenland		<b>Start Date:</b> August 7, 2006 <b>Finish Date:</b> August 7, 2006 <b>El. Datum:</b> NGVD29 <b>G.S. Elevation:</b> 586		<b>Northing:</b> See Figure 2 <b>Easting:</b> See Figure 2 <b>Longitude:</b> -- <b>Latitude:</b> --		<b>Total Depth:</b> 6 ft. <b>Borehole Dia.:</b> 7.25 in. <b>Water Depth:</b> NA ft. <b>Rock Depth:</b> 6 ft.																					
Depth (Ft)	Elevation (Ft)	Casing Blows	Sample No.	SPT Blows	Recovery(in)	Groundwater	Group Symbol	Stratum and Field Descriptions:		Field Notes, Comments:																			
1	583						SM	Silty Sand (SM): Mostly sand, some silt, few gravel, trace clay, brown, dry		Approximate strata change																			
2	584						SP-SM	Poorly Graded Sand with Silt and Gravel (SP-SM): Mostly sand, some gravel, little silt, gray, dry (Highly Weathered Rock)																					
3	583																												
4	582																												
5	581																												
6	580																												
7	579																												
8	578																												
9	577																												
10	576																												
11	575							Auger Refusal at 6 feet on Assumed Bedrock.																					
12	574																												
13	573																												
14	572																												
15	571																												
16	570																												
17	569																												
18	568																												
19	567																												
20	566																												
<b>METHODS:</b> HSA- Hollow Stem Auger, RWH- Rotary Wash, SSA- Solid Stem Auger, CPT- Cone Penetrometer								<b>DRILLING INFORMATION</b>																					
<b>SAMPLE TYPES:</b> AS-Auger, WS-Wash, SS-Split Spoon, RC-Rock Core, GS-Grab, ST-Shelby Tube, PS-Piston								Method: HSA      0 to 6																					
<b>STANDARD</b> 1. Samples classified in accordance with ASTM D-2488 unless otherwise noted.								Method:																					
<b>NOTES:</b> 2. Auger Probe Log Page 1: 0 - 20 feet. Each subsequent page: Additional 25 feet.								<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;"></td> <td style="width: 20%;">Casing</td> <td style="width: 20%;">Sample</td> <td style="width: 20%;">Core</td> </tr> <tr> <td>Type</td> <td>HSA</td> <td>--</td> <td>--</td> </tr> <tr> <td>Int Diam.</td> <td>3.25 "</td> <td>--</td> <td>--</td> </tr> <tr> <td>Weight</td> <td>--</td> <td>--</td> <td></td> </tr> <tr> <td>Fall</td> <td>--</td> <td>--</td> <td></td> </tr> </table>			Casing	Sample	Core	Type	HSA	--	--	Int Diam.	3.25 "	--	--	Weight	--	--		Fall	--	--	
	Casing	Sample	Core																										
Type	HSA	--	--																										
Int Diam.	3.25 "	--	--																										
Weight	--	--																											
Fall	--	--																											
<b>ADDITIONAL NOTES:</b>																													

# AUGER PROBE LOG

Page 1 of 1

<b>THE Chazen COMPANIES</b> 547 River Street Troy, New York 12180 Phn: (518) 273-0055 Fax: (518) 273-8391		<b>PROJECT:</b> Silo Ridge Country Club <b>LOCATION:</b> Town of Amenia, Dutchess County, New York <b>CLIENT:</b> Silo Ridge Country Club <b>PROJECT NO.:</b> 30631.00						<b>Probe No.:</b> SRP-5			
		<b>Contractor:</b> SJB Services Inc. <b>Drill Rig:</b> CMB-550X ATV <b>Driller:</b> John Leonhardt <b>Inspector:</b> Pete Steenland		<b>Start Date:</b> August 7, 2006 <b>Finish Date:</b> August 7, 2006 <b>El. Datum:</b> NGVD29 <b>G.S. Elevation:</b> 580		<b>Northing:</b> See Figure 2 <b>Easting:</b> See Figure 2 <b>Longitude:</b> -- <b>Latitude:</b> --		<b>Total Depth:</b> 9 ft. <b>Borehole Dia.:</b> 7.25 in. <b>Water Depth:</b> NA ft. <b>Rock Depth:</b> 9 ft.			
Depth (Ft)	Elevation (Ft)	Casing Blows	Sample No.	SPT Blows	Recovery(in)	Groundwater	Group Symbol	Field Notes, Comments:			
							SM	Silty Sand (SM): Mostly sand, some silt, little clay, trace gravel, brown, dry			
1	579										
2	578										
3	577										
4	576										
5	575										
6	574										
7	573										
8	572						SP-SM	Approximate strata change			
9	571							Poorly Graded Sand with Silt and Gravel (SM-SP): Mostly sand, some gravel, little silt, gray, dry (Highly Weathered Rock)			
10	570							Auger Refusal at 9 feet on Assumed Bedrock.			
11	569										
12	568										
13	567										
14	566										
15	565										
16	564										
17	563										
18	562										
19	561										
20	560										
<b>METHODS:</b> HSA- Hollow Stem Auger, RWH- Rotary Wash, SSA- Solid Stem Auger, CPT- Cone Penetrometer								<b>DRILLING INFORMATION</b>			
<b>SAMPLE TYPES:</b> AS-Auger, WS-Wash, SS-Split Spoon, RC-Rock Core, GS-Grab, ST-Shelby Tube, PS-Piston								Method: HSA      0 to 9			
<b>STANDARD</b> 1. Samples classified in accordance with ASTM D-2488 unless otherwise noted.								Method:			
<b>NOTES:</b> 2. Auger Probe Log Page 1: 0 - 20 feet. Each subsequent page: Additional 25 feet.								Type	HSA	--	--
3. Refer to the "Interpretation of Subsurface Logs" for additional symbology and abbreviation definitions.								Int Diam.	3.25 "	--	--
<b>ADDITIONAL NOTES:</b>								Weight	--	--	
								Fall	--	--	

# AUGER PROBE LOG

Page 1 of 1

		<b>547 River Street</b> <b>Troy, New York 12180</b> Phn: (518) 273-0055 Fax: (518) 273-8391		<b>PROJECT:</b> Silo Ridge Country Club <b>LOCATION:</b> Town of Amenia, Dutchess County, New York <b>CLIENT:</b> Silo Ridge Country Club <b>PROJECT NO.:</b> 30631.00				<b>Probe No.:</b> <span style="font-size: 1.2em; font-weight: bold;">SRP-6</span>					
		<b>Contractor:</b> SJB Services Inc. <b>Drill Rig:</b> CMB-550X ATV <b>Driller:</b> John Leonhardt <b>Inspector:</b> Pete Steenland		<b>Start Date:</b> August 7, 2006 <b>Finish Date:</b> August 7, 2006 <b>El. Datum:</b> NGVD29 <b>G.S. Elevation:</b> 584		<b>Northing:</b> See Figure 2 <b>Easting:</b> See Figure 2 <b>Longitude:</b> -- <b>Latitude:</b> --		<b>Total Depth:</b> 2 ft. <b>Borehole Dia.:</b> 7.25 in. <b>Water Depth:</b> NA ft. <b>Rock Depth:</b> 2 ft.					
<b>Depth (Ft)</b>	<b>Elevation (Ft)</b>	<b>Casing Blows</b>	<b>Sample No.</b>	<b>SPT Blows</b>	<b>Recovery (In)</b>	<b>Groundwater</b>	<b>Group Symbol</b>	<b>Stratum and Field Descriptions:</b>		<b>Field Notes, Comments:</b>			
1	583						SM	Silty Sand (SM): Mostly sand, some silt, few gravel, trace clay, brown, dry		Approximate strata change			
2	582						SP-SM	Poorly Graded Sand with Silt and Gravel (SP-SM): Mostly sand, some gravel, little silt, gray, dry (Highly Weathered Rock) Auger Refusal at 2 feet on Assumed Bedrock.					
3	581												
4	580												
5	579												
6	578												
7	577												
8	576												
9	575												
10	574												
11	573												
12	572												
13	571												
14	570												
15	569												
16	568												
17	567												
18	566												
19	565												
20	564												
<b>METHODS:</b> HSA- Hollow Stem Auger, RWH- Rotary Wash, SSA- Solid Stem Auger, CPT- Cone Penetrometer <b>SAMPLE TYPES:</b> AS-Auger, WS-Wash, SS-Split Spoon, RC-Rock Core, GS-Grab, ST-Shelby Tube, PS-Piston <b>STANDARD:</b> 1. Samples classified in accordance with ASTM D-2488 unless otherwise noted. <b>NOTES:</b> 2. Auger Probe Log Page 1: 0 - 20 feet. Each subsequent page: Additional 25 feet. 3. Refer to the "Interpretation of Subsurface Logs" for additional symbology and abbreviation definitions.										<b>DRILLING INFORMATION</b>			
<b>ADDITIONAL NOTES:</b>										<b>Method:</b> HSA		0 to 2	
										<b>Method:</b>			
										Type	HSA	--	--
										Int Diam.	3.25 "	--	--
										Weight	--	--	--
										Fall	--	--	--

## AUGER PROBE LOG

<b>THE Chazen COMPANIES</b> 547 River Street Troy, New York 12180 Phn: (518) 273-0055 Fax: (518) 273-8391		<b>PROJECT:</b> Silo Ridge Country Club <b>LOCATION:</b> Town of Amenia, Dutchess County, New York <b>CLIENT:</b> Silo Ridge Country Club <b>PROJECT NO.:</b> 30631.00		<b>Probe No.:</b> <b>SRP-7</b>							
<b>Contractor:</b> SJB Services Inc. <b>Drill Rig:</b> CME-550X ATV <b>Driller:</b> John Leonhardt <b>Inspector:</b> Pete Steenland		<b>Start Date:</b> August 8, 2006 <b>Finish Date:</b> August 8, 2006 <b>El. Datum:</b> NGVD29 <b>G.S. Elevation:</b> 584		<b>Northing:</b> See Figure 2 <b>Easting:</b> See Figure 2 <b>Longitude:</b> -- <b>Latitude:</b> --							
		<b>Total Depth:</b> 11.5 ft. <b>Borehole Dia.:</b> 7.25 in. <b>Water Depth:</b> NA ft. <b>Rock Depth:</b> 11.5 ft.									
Depth (Ft)	Elevation (Ft)	Casing Blows	Sample No.	SPT Blows	Recovery(in)	Groundwater	Group Symbol	Stratum and Field Descriptions:	Field Notes, Comments:		
							SM	Silty Sand (SM): Mostly sand, some silt, few gravel, trace clay, brown, dry			
1	583										
2	582										
3	581										
4	580										
5	579										
6	578										
7	577										
8	576						SP-SM	Poorly Graded Sand with Silt and Gravel (SP-SM): Mostly sand, some gravel, little silt, gray, dry (Highly Weathered Rock)			
9	575										
10	574										
11	573										
12	572							Auger Refusal at 11.5 on Assumed Bedrock.			
13	571										
14	570										
15	569										
16	568										
17	567										
18	566										
19	565										
20	564										
<b>METHODS:</b> HSA- Hollow Stem Auger, RWH- Rotary Wash, SSA- Solid Stem Auger, CPT- Cone Penetrometer								<b>DRILLING INFORMATION</b>			
<b>SAMPLE TYPES:</b> AS-Auger, WS-Wash, SS-Split Spoon, RC-Rock Core, GS-Grab, ST-Shelby Tube, PS-Piston								Method: HSA      0 to 11.5			
<b>STANDARD</b> 1. Samples classified in accordance with ASTM D-2488 unless otherwise noted.								Method:			
<b>NOTES:</b> 2. Auger Probe Log Page 1: 0 - 20 feet. Each subsequent page: Additional 25 feet.											
3. Refer to the "Interpretation of Subsurface Logs" for additional symbology and abbreviation definitions.											
<b>ADDITIONAL NOTES:</b>								Type	HSA	--	--
								Int Diam.	3.25 "	--	--
								Weight	--	--	
								Fall	--	--	

# AUGER PROBE LOG

Page 1 of 1

 <b>Chazen</b> COMPANIES		547 River Street Troy, New York 12180 Phn: (518) 273-0055 Fax: (518) 273-8391		<b>PROJECT:</b> Silo Ridge Country Club <b>LOCATION:</b> Town of Amenia, Dutchess County, New York <b>CLIENT:</b> Silo Ridge Country Club <b>PROJECT NO.:</b> 30631.00				<b>Probe No.:</b> <b>SRP-8</b>			
		<b>Contractor:</b> SJB Services Inc. <b>Drill Rig:</b> CME-550X ATV <b>Driller:</b> John Leonhardt <b>Inspector:</b> Pete Steenland		<b>Start Date:</b> August 8, 2006 <b>Finish Date:</b> August 8, 2006 <b>El. Datum:</b> NGVD29 <b>G.S. Elevation:</b> 579		<b>Northing:</b> See Figure 2 <b>Easting:</b> See Figure 2 <b>Longitude:</b> -- <b>Latitude:</b> --		<b>Total Depth:</b> 8.5 ft. <b>Borehole Dia.:</b> 7.25 in. <b>Water Depth:</b> NA ft. <b>Rock Depth:</b> 8.5 ft.			
<b>Depth (ft)</b>	<b>Elevation (ft)</b>	<b>Casing Blows</b>	<b>Sample No.</b>	<b>SPT Blows</b>	<b>Recovery(in)</b>	<b>Groundwater</b>	<b>Group Symbol</b>	<b>Stratum and Field Descriptions:</b>		<b>Field Notes, Comments:</b>	
1	578						SM	Silty Sand (SM): Mostly sand, some silt, few gravel, trace clay, brown, dry		Approximate strata change	
2	577										
3	576										
4	575										
5	574						SP-SM	Poorly Graded Sand with Silt and Gravel (SP-SM): Mostly sand, some gravel, little silt, gray, dry (Highly Weathered Rock)			
6	573										
7	572										
8	571										
9	570							Auger Refusal at 8.5 feet on Assumed Bedrock.			
10	569										
11	568										
12	567										
13	566										
14	565										
15	564										
16	563										
17	562										
18	561										
19	560										
20	559										
<b>METHODS:</b> HSA- Hollow Stem Auger, RWH- Rotary Wash, SSA- Solid Stem Auger, CPT- Cone Penetrometer <b>SAMPLE TYPES:</b> AS-Auger, WS-Wash, SS-Split Spoon, RC-Rock Core, GS-Grab, ST-Shelby Tube, PS-Piston <b>STANDARD</b> 1. Samples classified in accordance with ASTM D-2488 unless otherwise noted. <b>NOTES:</b> 2. Auger Probe Log Page 1: 0 - 20 feet. Each subsequent page: Additional 25 feet. 3. Refer to the "Interpretation of Subsurface Logs" for additional symbology and abbreviation definitions.								<b>DRILLING INFORMATION</b>			
<b>ADDITIONAL NOTES:</b>								Method: HSA      0 to 8.5			
								Method:			
								Type	HSA	--	--
								Int Diam.	3.25 "	--	--
								Weight	--	--	--
								Fall	--	--	--



---

## **Appendix B: Laboratory Test Results**



ATLANTIC TESTING LABORATORIES, Limited

Albany  
22 Corporate Drive  
Clifton Park, NY 12065  
518/383-9144 (T)  
518/383-9166 (F)

August 31, 2006

The Chazen Companies  
547 River Street  
Troy, New York 12180

Attn: Mr. Kevin O'Malley

Re: Laboratory Test Results  
Silo Ridge  
Project # 30631.00  
ATL Report Nos. AT354SL-268 & 270-08-06

Ladies/Gentlemen:

On August 28, 2006 you delivered two soil samples to our Clifton Park, New York facility for testing. A Moisture Content in accordance with ASTM D 2216 and a Particle Size Analysis in accordance with ASTM D 422, without hydrometer was performed on each sample. The results of these tests follow:

**Moisture Content**  
**ASTM D 2216**

ATL Sample Number	Client ID#	Moisture Content (%)
AT354S268	SRB-3, SS-1, 0-2 ft	9.9
AT354S270	SRB-2, SS-1, 0-2 ft	1.2

The Particle Size Analysis are enclosed.

Please contact our office should you have any questions or if we may be of further service.

Sincerely,  
Atlantic Testing Laboratories, Limited

Robert E. Field  
Laboratory Manager

RF/nd

# Particle Size Distribution Report

Project: Laboratory Analysis

Report No.: AT354SL268-08-06

Client: The Chazen Companies

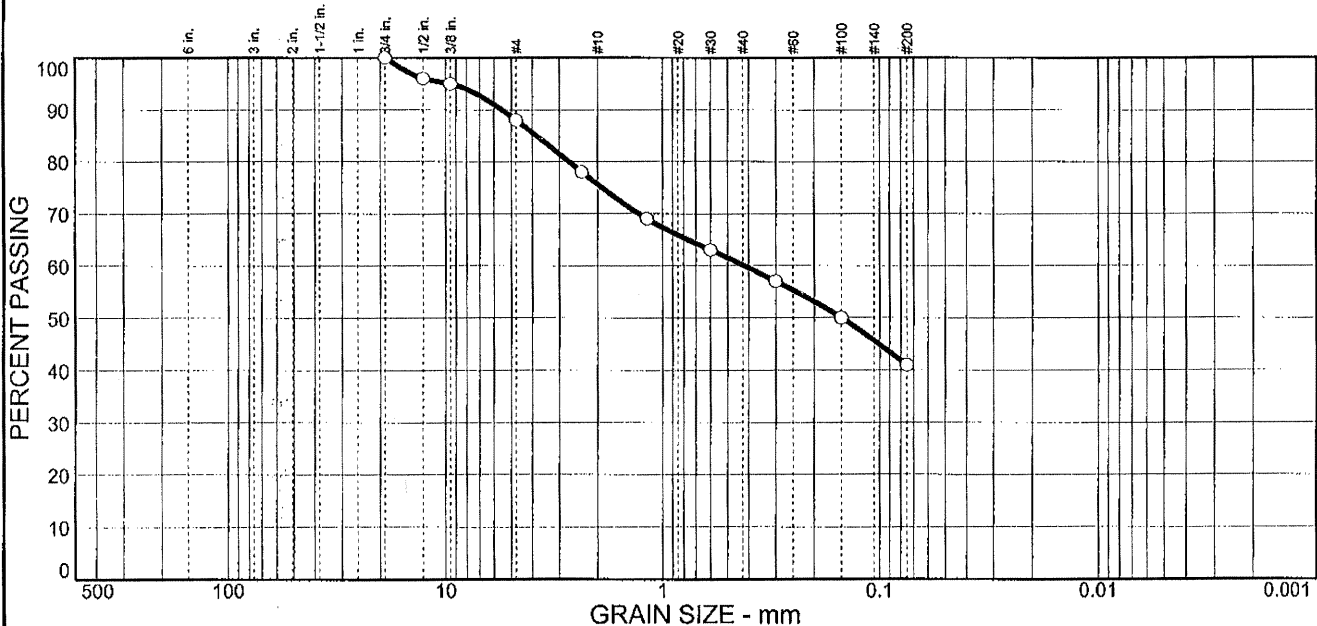
Date: 8/31/06

Sample No: AT354S268

Source of Sample: Silo Ridge 30631.00

Location: SRB-3, SS-1, 0-2 ft

Elev./Depth: 0-2 ft



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0	0	12	12	16	19	41	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
0.75 in.	100		
0.5 in.	96		
0.375 in.	95		
#4	88		
#8	78		
#16	69		
#30	63		
#50	57		
#100	50		
#200	41		

\* (no specification provided)

## Soil Description

Brown cmf SAND, little f GRAVEL, and SILT/CLAY

## Atterberg Limits

PL= ---

LL= ---

PI= ---

## Coefficients

D<sub>85</sub>= 3.83

D<sub>60</sub>= 0.420

D<sub>50</sub>= 0.150

D<sub>30</sub>=

D<sub>15</sub>=

D<sub>10</sub>=

C<sub>u</sub>=

C<sub>c</sub>=

## Classification

USCS= SM

AASHTO= A-4(0)

## Remarks

Sample delivered by the client on 8/28/06.

ASTM D 422 without hydrometer.

Moisture Content = 9.9%

ATLANTIC TESTING LABORATORIES, LIMITED

Reviewed by:                     

Date: 8/31/06

# Particle Size Distribution Report

Project: Laboratory Analysis

Report No.: AT354SL270-08-06

Client: The Chazen Companies

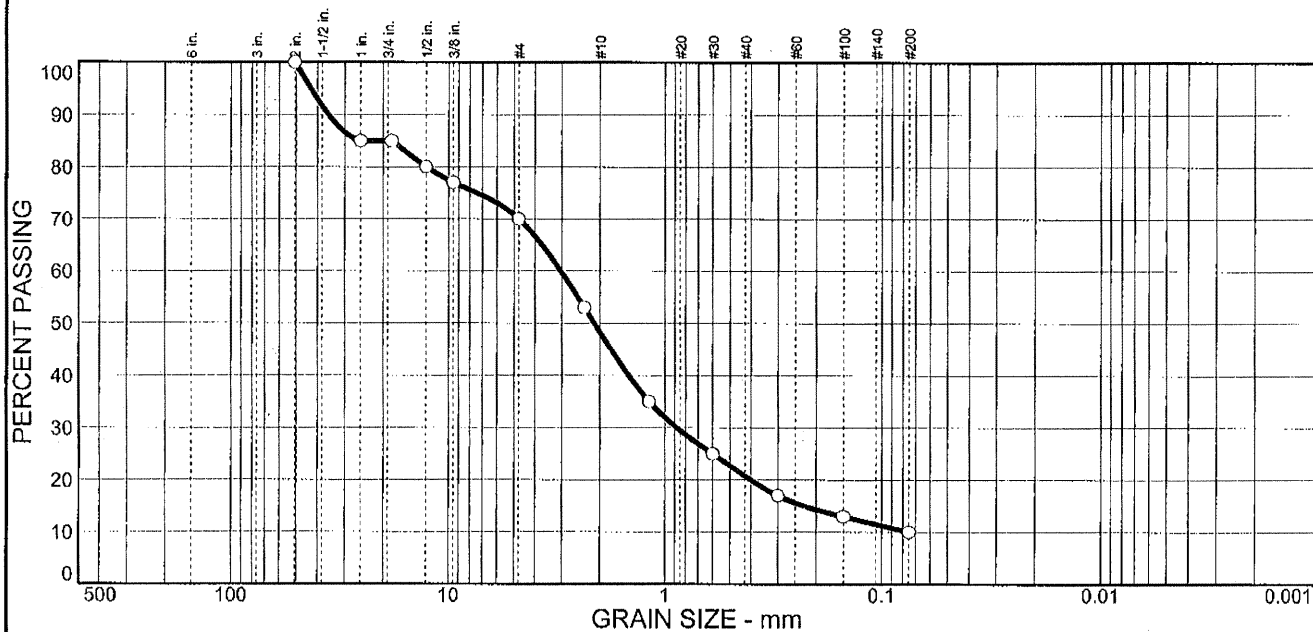
Date: 8/31/06

Sample No: AT354S270

Source of Sample: Silo Ridge 30631.00

Location: SRB-2, SS-1, 0-2 ft

Elev./Depth: 0-2 ft



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0	15	15	22	28	10	10	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
2 in.	100		
1 in.	85		
0.72 in.	85		
0.5 in.	80		
0.375 in.	77		
#4	70		
#8	53		
#16	35		
#30	25		
#50	17		
#100	13		
#200	10		

\* (no specification provided)

## Soil Description

Gray cmf SAND, some of GRAVEL, trace+ SILT/CLAY

## Atterberg Limits

PL= --- LL= --- PI= ---

## Coefficients

D<sub>85</sub>= 18.3 D<sub>60</sub>= 3.03 D<sub>50</sub>= 2.12  
D<sub>30</sub>= 0.881 D<sub>15</sub>= 0.227 D<sub>10</sub>= 0.0750  
C<sub>u</sub>= 40.46 C<sub>c</sub>= 3.41

## Classification

USCS= SP-SM AASHTO= A-1-a

## Remarks

Sample delivered by the client on 8/29/06.  
ASTM D 422 without hydrometer.  
Moisture Content = 1.2 %

ATLANTIC TESTING LABORATORIES, LIMITED

Reviewed by: PURE

Date: 8/31/06



# ATLANTIC TESTING LABORATORIES

Albany  
22 Corporate Drive  
Clifton Park, NY 12065  
518/383-9144 (T)  
518/383-9166 (F)

September 08, 2006

The Chazen Companies  
547 River Street  
Troy, New York 12180

Attn.: Mr. Kevin O'Malley

Re: Rock Core Compression Test  
Silo Ridge  
Chazen Project No. 30631-00  
ATL Report No. AT354N-02-08-06

Ladies/Gentlemen:

On August 28, 2006, a representative of the Chazen Companies delivered one 2-inch rock core sample to our Clifton Park, New York facility for testing. The samples were tested for compressive strength in general accordance with ASTM D 2938. The results are as follows:

**Compression Results**  
**ASTM D 2938**

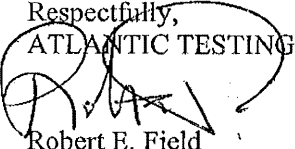
Core Identification	Core Length	Core Diameter (in.)	Core Area (in. <sup>2</sup> )	Total Load (lbs.)	Compressive Strength (psi)	L/D Capped (inches)	L/D Correction Factor	Corrected Unit Load (psi)
SRB-2, RS-1	3.877	1.938	2.95	13,980	4739	2.00	1.00	4740

**Break Descriptions**

Core Identification	Description
SRB-2, RS-1	Sheared on bedding plane

Please contact our office should you have any questions on this report, or if we may be of further service.

Respectfully,  
ATLANTIC TESTING LABORATORIES, Limited

  
Robert E. Field  
Laboratory Manager  
[bfield@atlantictesting.com](mailto:bfield@atlantictesting.com)

REF/nd