

REPORT

PROJECT

Subsurface Exploration Services
Proposed Advance Auto
Natrona Heights, Pennsylvania

CLIENT

Mr. Adam Sellner
Primax Properties
1065 East Morehead Street
4th Floor
Charlotte, NC 28204-2812

SUBMITTED BY

ATC Associates of North Carolina, PC
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Pennsylvania Registration # PE-043389-R

PROJECT
45.27739.0052

DATE: May 12, 2011





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May 12, 2011

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ATC Project No. 45.27739.0052

Reference: Report of Subsurface Exploration Services
Proposed Advance Auto
Natrona Heights, Pennsylvania

Dear Mr. Sellner:

ATC Associates of North Carolina, PC is pleased to present this report of subsurface exploration and geotechnical analysis for the Proposed Advance Auto in Natrona Heights, PA. This report contains the results of our subsurface exploration, boring logs, and laboratory test information. It is expected that the findings of this exploration will aid in the design and construction of foundations, pavements, earthwork, and other soil related aspects of the construction.

We have enjoyed being of service to Primax Properties during the design phase of this project. If you should have any questions regarding the information and recommendations contained in the accompanying report or if we can be of further assistance, please do not hesitate to contact us.

Respectfully,

ATC ASSOCIATES OF NORTH CAROLINA, PC

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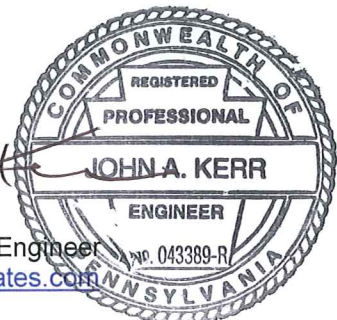


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PROJECT OVERVIEW

Executive Summary

This report presents the results of our subsurface exploration and geotechnical engineering analysis for the proposed Advance Auto to be located on the south side of Broadview Boulevard just west of the intersection with Pacific Avenue in Natrona Heights, Pennsylvania. Based on the information provided, the project will consist of the construction of a typical Advance Auto Prototype Building consisting of load bearing masonry walls with steel frame structure and slab on grade, and associated parking areas and access.

The site was previously a car dealership that has recently been demolished and removed, with asphalt paving and a concrete slab over the entire site underlain by a base layer consisting of SAND and Cinders. The subsurface conditions at the site are generally uniform and consisting of a thin layer of asphalt or stone at the surface with CLAYEY SILT or SILTY CLAY with varying amounts of Sand to a depth of about 12 feet and a very dense SILTY SAND to the termination of borings at 15 feet. The soils to a depth of about 5 feet in the area of Boring B-4 were soft and wet fill and will likely have to be replaced.

In summary, we recommend that the proposed building be supported on a shallow spread footing foundation system. The spread footings may be designed to bear on either compacted Engineered Fill or suitable natural soils. Soil conditions at this site include a moderately Plastic CLAY which is typical of the soils in this region and will be sensitive to disturbance. For footings designed as discussed herein, a net allowable soil bearing pressure of 2,000 pounds per square foot (psf) may be utilized for column and wall footings. In order to attain this allowable capacity, it will be necessary to adhere to the design and construction recommendations discussed in the text of this report. We recommend that the footings be well reinforced with reinforcing steel to help bridge over soft spots due to the plastic CLAY subgrade soils.

Based on the design bearing pressure and the anticipated structural loads, total settlements are anticipated to be less than 3/4 inch with long term differential settlements of approximately one-half this amount.

It is anticipated that only minor grading will be required to match existing roadway grades. It may be possible to pave over existing pavement provided that current grades are adequate for drainage.

Further information regarding the subsurface exploration procedures used; groundwater conditions; foundations; floor slab and pavement design; building and pavement area earthwork operations; and construction considerations is included in the text of this report.

Scope of Work

The conclusions and recommendations contained in this report are based upon our field exploration, which consisted of a site visit by an engineer of this office and 6 soil test borings. Laboratory testing performed on several representative samples obtained during the field exploration aided in the evaluation of the field data.

Borings were located in the field by measuring distances and estimating right angles from existing site features. The locations shown on the boring location diagram provided in the Appendix should be considered approximate.

The recommendations contained herein were developed from our interpretation of the subsurface data obtained from the soil test borings. The borings indicate subsurface conditions at specific locations at the time of the exploration. If, during the course of construction, variations appear evident, the Geotechnical Engineer should be informed so that the conditions can be addressed. Design recommendations were developed based on design criteria considered typical for this type of project. Should structural loading characteristics differ from those discussed herein, ATC should be contacted for review of these conditions and possible revisions to the recommendations of this report.

Purpose of Exploration

The purpose of this exploration was to explore the soil and groundwater conditions at the site and to develop engineering recommendations to aid the design and construction of the project. This was accomplished by drilling soil test borings, performing a site reconnaissance, performing laboratory testing on representative samples obtained from the borings, and analyzing the field and laboratory data to develop appropriate engineering recommendations regarding earthwork specifications and the design of foundations, slabs, and pavements.

Project Characteristics

Based on the information provided, the proposed Advance Auto will be located as shown on the attached site plan and will consist of the construction of a typical Advance Auto Prototype Building consisting of load bearing masonry walls with steel frame structure and slab on grade, and associated parking areas and access.

The site was previously a car dealership that has recently been demolished and removed, with asphalt paving and a concrete slab over the entire site underlain by a base layer consisting of SAND and Cinders.

It is anticipated that only minor grading will be required to meet the proposed slab elevation grades. It may be possible to pave over existing pavement provided that current grades are adequate for drainage.

EXPLORATION PROCEDURES

Surface Exploration Procedures

A representative of ATC performed a reconnaissance of the project site and located the boring locations. The site was cleared by calling the Pennsylvania One-Call Center prior to drilling operations. During the site visit, visual observations of drainage and surface water conditions were made. The results of this field visit are discussed under **Site Conditions**. Photos of the site are included in the appendix to this report.

Subsurface Exploration Procedures

In order to characterize the general subsurface conditions at the site, a total of 6 soil test borings were performed.

Four borings were performed in the proposed building area (B-1 through B-4) and two in the proposed parking and drive areas (P-1 through P-2). The borings were advanced to a depth of 15.0 feet below the ground surface in the building area and 10.0 feet in the parking area. All borings were performed with Truck-mounted drilling equipment utilizing continuous-flight, hollow-stem augers to advance the boreholes. Drilling fluid was not used in this process.

Representative soil samples were obtained by means of the split-barrel sampling procedure in accordance with ASTM Specification D-1586. In this procedure, a 2-inch O.D., split-barrel sampler is driven into the soil a distance of 24 inches by a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler through a 12-inch interval is termed the Standard Penetration Test (SPT), N-value and is indicated for each sample on the boring logs. This value can be used as a qualitative indication of the in-place relative density of cohesionless soils. In a less reliable way, it also indicates the consistency of cohesive soils. Many factors

can significantly affect the Standard Penetration resistance value and prevent a direct correlation between drill crews, drill rigs, drilling procedures, and hammer-rod-sampler assemblies. Samples were taken at 2.5 feet intervals to a depth of 10 feet and at 5-foot intervals thereafter.

After recovery, each sample was removed from the sampler and placed in sealed containers. The samples were taken to our laboratory for a visual classification and laboratory testing.

Laboratory Testing Program

Representative soil samples from the borings were selected and tested in our laboratory to substantiate visual classifications and to determine pertinent engineering properties. The laboratory testing program included Moisture Content tests, Liquid and Plastic Limits test, and Calibrated Penetrometer tests on representative soil samples and a Standard Proctor Compaction test on the bulk sample obtained at the site. The results of all laboratory testing performed are included in the Appendix of this report.

An experienced Soils Engineer classified each soil sample on the basis of texture and plasticity in accordance with the Unified Soil Classification System. The group symbols for each soil type are indicated in parentheses following the soil descriptions on the boring logs. A brief explanation of the Unified System is included with this report. The Soils Engineer grouped the various soil types into the major zones noted on the boring logs. The stratification lines designating the interfaces between earth materials on the boring logs are approximate; in-situ, the transitions may be gradual.

The soil samples will be retained in our laboratory for a period of 60 days, after which they will be discarded unless other instructions are received as to their disposition.

EXPLORATION RESULTS

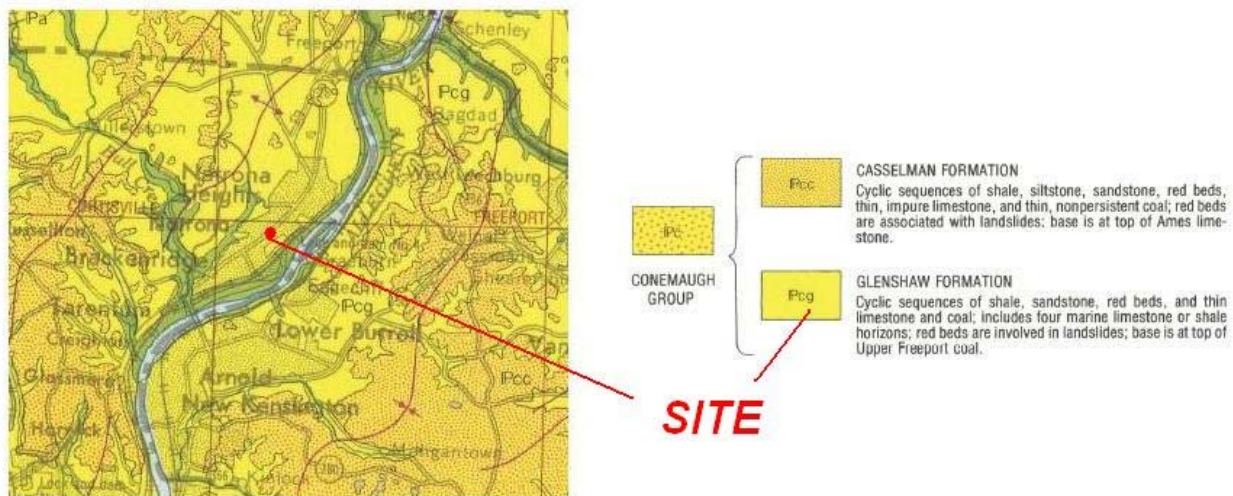
Site Conditions

The project site for the proposed Advance Auto is located on the south side of Broadview Boulevard just west of the intersection with Pacific Avenue in Natrona Heights, Pennsylvania. Based on the information provided, the project will consist of the construction of a typical Advance Auto Prototype Building consisting of load bearing masonry walls with steel frame structure and slab on grade, and associated parking areas and access.

The site was previously a car dealership that has recently been demolished and removed, with asphalt paving and a concrete slab over the entire site underlain by a base layer consisting of SAND and Cinders. Photos of the site conditions are included in the appendix to the report.

Regional Geology

The project site lies in the valley of the Allegheny River in the Appalachian Plateau. Bedrock is of the Glenshaw Formation of the Conemaugh Group (Pcg) in the Pennsylvanian Group geologic area. The soils in this area consist of interbedded layers of alluvial Silts, Sands, and Clays.



Subsurface Conditions

Boring logs describing the soil conditions encountered in the soil borings are included in the appendix of this report. A general description is included in the table below:

Generalized Profile

DEPTH (ft)	SOIL DESCRIPTION	Density or Consistency	Calibrated Penetrometer (TSF)	SPT Values (Blows/Ft)
0-0.3	3 to 5 inches of Concrete over most of site asphalt over concrete in P-2	N/A		N/A
0.3- 0.8	Pavement Base consisting of Sand and Cinders	N/A		N/A
0.8 – 6.0	SANDY to SILTY CLAY, trace to some Sand, (CL) Soft and Wet in Boring B-4	Stiff	2.0 to 3.0 0.5-1.0 in B-4	4-9
6.0 to 12.0	SILTY SAND with varying amounts of Clay, Brown (SM)	Medium Dense		8-25
12.0 to 15.0	SAND with varying amounts of Gravel, Brown (SW-SM)	Very Dense		42-49

Groundwater Observations

Observations for groundwater were made during sampling and upon completion of the drilling operations at each boring location. In auger drilling operations, water is not introduced into the boreholes, and the groundwater position can often be determined by observing water flowing into or out of the boreholes. Furthermore, visual observation of the soil samples retrieved during the auger drilling exploration can often be used in evaluating the groundwater conditions.

Groundwater was not noted in the borings and the borings typically caved in at 7 to 11 feet below the existing ground surface. Based on these observations it appears the groundwater level at this site is greater than 10 feet below the existing ground surface. Trapped or “perched” water was noted in Boring B-4 in the top 5 feet in the soft clay FILL soils.

ANALYSIS AND RECOMMENDATIONS

Seismic Site Classification

Based on the results of our exploration and our previous experience in the area, we estimate that the SEISMIC SITE CLASSIFICATION will be D for this site under the 2009 Pennsylvania Building Code (2006 International Building Code with Amendments).

Foundations

Based on the results of our exploration, we anticipate that the proposed structure can be supported by shallow spread footing foundation systems placed to bear on the existing natural soils.

We recommend that the proposed building be supported on a shallow spread footing foundation system. The spread footings may be designed to bear on either compacted Engineered Fill or suitable natural soils. Soil conditions at this site include a moderately Plastic CLAY which is typical of the soils in this region and will be sensitive to disturbance. For footings designed as discussed herein, a net allowable soil bearing pressure of 2,000 pounds per square foot (psf) may be utilized for column and wall footings.

In order to attain this allowable capacity, it will be necessary to adhere to the design and construction recommendations discussed in the text of this report. We recommend that the footings be well reinforced with reinforcing steel to help bridge over any small, localized soft spots due to the CLAY subgrade soils.

Provided the foundation design and construction recommendations discussed herein are employed, the total settlement for the proposed structures is estimated to be less than 3/4 inch with differential settlements estimated to be a maximum of 1/2 inch between column footings and wall footings, or along 50-foot lengths of wall.

The net allowable soil bearing pressure refers to that pressure which may be transmitted to the foundation bearing soils in excess of the final minimum surrounding overburden pressure. The bearing capacity at the final footing elevation should be verified in the field by an experienced Soils Engineer to assure that the in-situ bearing capacity at the bottom of each footing excavation is adequate for the design loads. Exterior footings should bear at least 3 feet below exterior grade for frost protection. Some undercutting of objectionable soils should be anticipated such as near Boring 4.

Footings should be positioned so as to avoid bearing above or in close proximity to any deep utilities or storm drains.

Slab on Grade Design

Prior to slab construction after fill placement, all exposed subgrades should be evaluated by the geotechnical engineer. If encountered in slab areas, any unsuitable materials should be undercut and either replaced with engineered fill or recompacted in accordance with the recommendations of this report. The stripped area should be observed by an experienced Soils Engineer during the time of construction in order to aid in locating all such unsuitable materials.

All lifts of engineered fill should be compacted to a minimum 95 percent of the maximum dry density obtained in accordance with ASTM Specification D-698, Standard Proctor Method. Engineered Fill material required to reach the design floor slab subgrade elevation should consist of an approved inorganic material classified as ML, SM, SC, SP or better and free of debris.

We recommend that the floor slab be isolated from the foundation footings so differential settlement or movement of the slab or structure will not induce shear stresses in the floor slab. Also, in order to minimize the crack width of any shrinkage cracks that may develop near the surface of the slab, we recommend mesh reinforcement be included in the design of the floor slab. The mesh should be in the top half of the slab to be effective.

We recommend the slabs-on-grade be underlain by a minimum of 6 inches of clean, angular gravel (crushed stone) having a maximum aggregate size of 1.5 inches. No. 57 Stone is considered suitable for this purpose. This porous fill layer will facilitate the fine grading of the building pad, provide more uniform bearing conditions, and help prevent the rise of water to the bottom of the slab (capillary action). As an alternate, should select off site borrow be readily available on this project, the porous fill layer can consist of 12 inches of relatively clean Sand classified as SP, SW or better with a maximum 5% passing the No. 200 sieve. Before placement of concrete, a polyethylene vapor barrier should be placed on top of the granular material to provide additional moisture protection. Slabs supported by well-compacted on site borrow or firm, natural subgrades treated as discussed herein can be designed assuming a Modulus of Subgrade Reaction (K_S) of 150 pounds per cubic inch.

Below Grade Walls

At this time there is no indication that retaining walls will be used at the project.

Drainage

As indicated previously groundwater is not expected to be a significant issue.

Positive drainage should be provided around the perimeter of the buildings to minimize moisture infiltration into the foundation soils. We recommend landscaped areas adjacent to the buildings or pavements be provided with a fall of at least 3 to 5% for the first 10 feet outward from the wall.

Additional drainage recommendations are provided under **Exterior Pavements**.

Exterior Pavements

In areas of new pavements, the area should be stripped and the stripped or filled surfaces should be proofrolled and carefully observed at the time of construction immediately prior to placement of the Stone Base in order to aid in identifying any

localized soft or unsuitable materials. Such materials should be removed prior to Stone placement.

Based on the current topography and the site plan provided we anticipate that most of the proposed pavement areas can be overlaid on top of the existing Asphalt and Concrete. Based on topographic data and anticipated grading requirements for the site, soil classification performed on the on site materials, we estimate soaked CBR values of 4 in a saturated condition and 12 in a dry condition at 95 percent compaction. These values have been utilized in our pavement design according to AASHTO standards. The following minimum pavement sections are recommended on this project:

Heavy Duty Pavements

EAL = 150,000

(Main traffic and truck access lanes if applicable)

OLD PAVEMENT AREAS:

Overlay with 1.5 inches of Superpave Hot-Mix Asphalt, 9.5mm Fine Grade (FG)
Use a paving fabric for bridging cracks and at the interface of asphalt and concrete pavements.

NEW PAVEMENT AREAS:

Subgrade: Stable and compacted to a dry density of at least 95% of that soil's Standard Proctor maximum dry density (ASTM D-698).

Fabric: We recommend that a woven geotechnical fabric, minimum 10 ounce be used to separate the clay subgrade from the Aggregate Base.

Aggregate Base: 8.0 inches Aggregate Base

Asphalt Base: 2.0 inches Asphalt Concrete Base – (Superpave PG-Binder).

Asphalt Surface: 1.0 inches Asphalt Concrete Surface - (Superpave Hot-Mix Asphalt, 9.5mm Fine Grade (FG)).

Standard Duty Pavements

EAL = 30,000

(Automobile access and parking stalls)

OLD PAVEMENT AREAS:

Overlay with 1.5 inches of Superpave Hot-Mix Asphalt, 9.5mm Fine Grade (FG)
Use a paving fabric for bridging cracks and at the interface of asphalt and concrete pavements.

NEW PAVEMENT AREAS:

Subgrade: Stable and compacted to a dry density of at least 95% of that soil's Standard Proctor maximum dry density (ASTM D-698).

OPTIONAL Fabric: We recommend that a woven geotechnical fabric, minimum 10 ounce be used to separate the clay subgrade from the Aggregate Base over soft areas identified in the field.

Aggregate Base: 8.0 inches Aggregate Base

Asphalt Surface: 2.0 inches Asphalt Concrete Surface - (Superpave Hot-Mix Asphalt, 9.5mm Fine Grade (FG)).

It is noted that large, front loading trash trucks frequently impose concentrated front-wheel loads on pavement during trash pick-up. This type of loading typically results in rutting of the pavement and ultimately pavement failures. Therefore, we recommend that the pavement in trash pickup areas consist of a minimum 6-inch thick, mesh reinforced concrete slab supported on at least a 6.0 inch layer of Aggregate Base Material.

Fill Design and Construction

Soils from off-site sources for use as Engineered Fill should be primarily granular in nature consisting of silty and clayey fine SANDS (SC, SM) or SANDS (SP, SW).

Building Pad fill should be designed to extend generally horizontally outward from the edge of the footings or pavement a distance of at least 10 feet.

Subgrade Preparation and Earthwork Operations

The near-surface soils at the site are medium stiff to stiff fine grained moderate plasticity SILTY CLAY and should provide adequate support at grade. However, there may be isolated areas where clay content and plasticity may exceed typical levels. Some areas may require some undercutting and/or re-compaction.

Most of the shallow soils observed in our borings are fine grained and moderately plastic and are very ***moisture sensitive and sensitive to disturbance***. We recommend that the grading operations at this site be performed during the drier periods of the year (April 1st to May 12th). If grading is attempted during the wet winter months, extra cost for undercutting of saturated soils may be incurred. However, during the drier periods of the year, the moisture content of these soils may be adjusted using discing or other drying procedures to achieve moisture contents consistent with good compaction results. In addition, construction traffic should be routed to avoid disturbing the subgrade. The existing pavement areas should be used for construction testing to prevent disturbing the subgrade soils.

After stripping to the desired grade and prior to fill placement, the stripped surface should be observed by an experienced Soils Engineer or his authorized representative. Proof-rolling using a dump truck or other construction equipment loaded to one-half capacity is recommended because of the proximity of the existing building. Any soft or unsuitable materials encountered during this proof rolling should be removed and replaced with engineered fill.

Following stripping, proof rolling, and subgrade preparation procedures, Engineered Fill can be placed. Subgrades which are clean and stable and to be covered by Engineered Fill need not be compacted. Fill used to support any part of the proposed foundation system and pavements should be placed in lifts not exceeding 8 inches in loose thickness, moisture conditioned to within +/- 3% of the optimum moisture content and compacted to at least 95% of the maximum dry density obtained in accordance with ASTM Specification D-698, Standard Proctor Method.

Field density testing of subgrades and each lift of fill should be performed at a rate of no less than one test per 5,000 square feet in the building area and one test per 10,000 square feet in the pavement areas.

It is recommended that the construction contract include a unit rate for undercut and backfill below subgrade elevations. The construction contract should also provide for a unit price for importation of a clean fill for placement to design subgrades.

The following fill types are recommended for use on this project:

Engineered Fill (on site): Soil Material obtained on site classified as ML or MH, SM, SC or better.

Engineered Fill (imported): Soil Material obtained off site classified as ML, SP, SW, SM, SC or better.

Porous Fill: Clean crushed gravel (No. 57 Stone) with a maximum aggregate size of 1.5 inches placed in a minimum 6 inch layer or clean Sand classified as SP, SW, or better with a maximum 5% passing the No. 200 Sieve placed in a minimum 12 inch layer.

Aggregate Base: Aggregate Base Course.

Difficult Excavation and Rock Excavation

Rock excavation is not anticipated to be an issue at this site.

Construction Considerations

Proper compaction control of fill is an essential aspect of this project. Therefore, we recommend that all cut and fill operations be observed full-time by a qualified Soil Technician to determine if minimum earthwork and compaction requirements are being met.

Closing

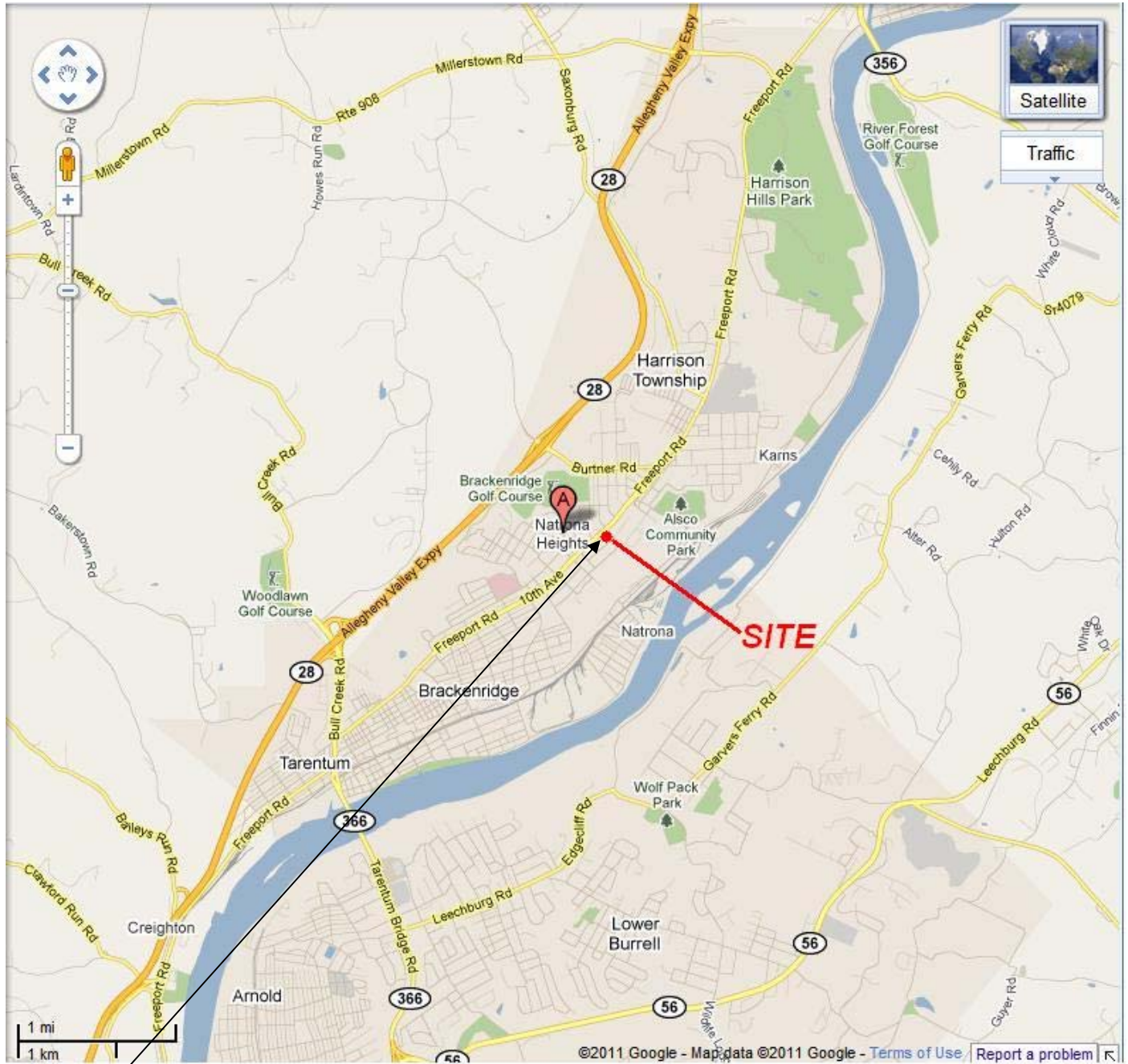
We recommend that the construction activities be monitored full time by a qualified geotechnical engineering firm to provide the necessary overview and to check the suitability of the subgrade soils for supporting the footings. We would be most pleased to provide these services.

This report has been prepared in order to aid in the evaluation of this property and to assist the architect and/or engineer in the design of this project. The scope is limited to the specific project and locations described herein and our description of the project represents our understanding of the significant aspects relative to soil and foundation characteristics. In the event that any change in the nature or location of the proposed construction outlined in this report are planned, we should be informed so that the changes can be reviewed and the conclusions of this report modified or approved in writing by the soil and foundation engineer. It is recommended that all construction operations dealing with earthwork and foundations be reviewed by an experienced soils engineer to provide information on which to base a decision as to whether the design requirements are fulfilled in the actual construction. If you wish, we would welcome the opportunity to provide field construction services for you during construction.

The analysis and recommendations submitted in this report are based upon the data obtained from the soil borings and tests performed at the locations as indicated on the Boring Location Diagram and other information referenced in this report. This report does not reflect any variations which may occur between the borings. In the performance of the subsurface exploration, specific information is obtained at specific locations at specific times. However, it is a well known fact that variations in soil and rock conditions exist on most sites between boring locations and also such situations as groundwater levels vary from time to time. The nature and extent of

variations may not become evident until the course of construction. If variations then appear evident, it will become necessary for a reevaluation of the recommendations for this report after performing on-site observations during the construction period and noting characteristics and variations.

APPENDIX I
SITE LOCATION AND AERIAL PHOTOS



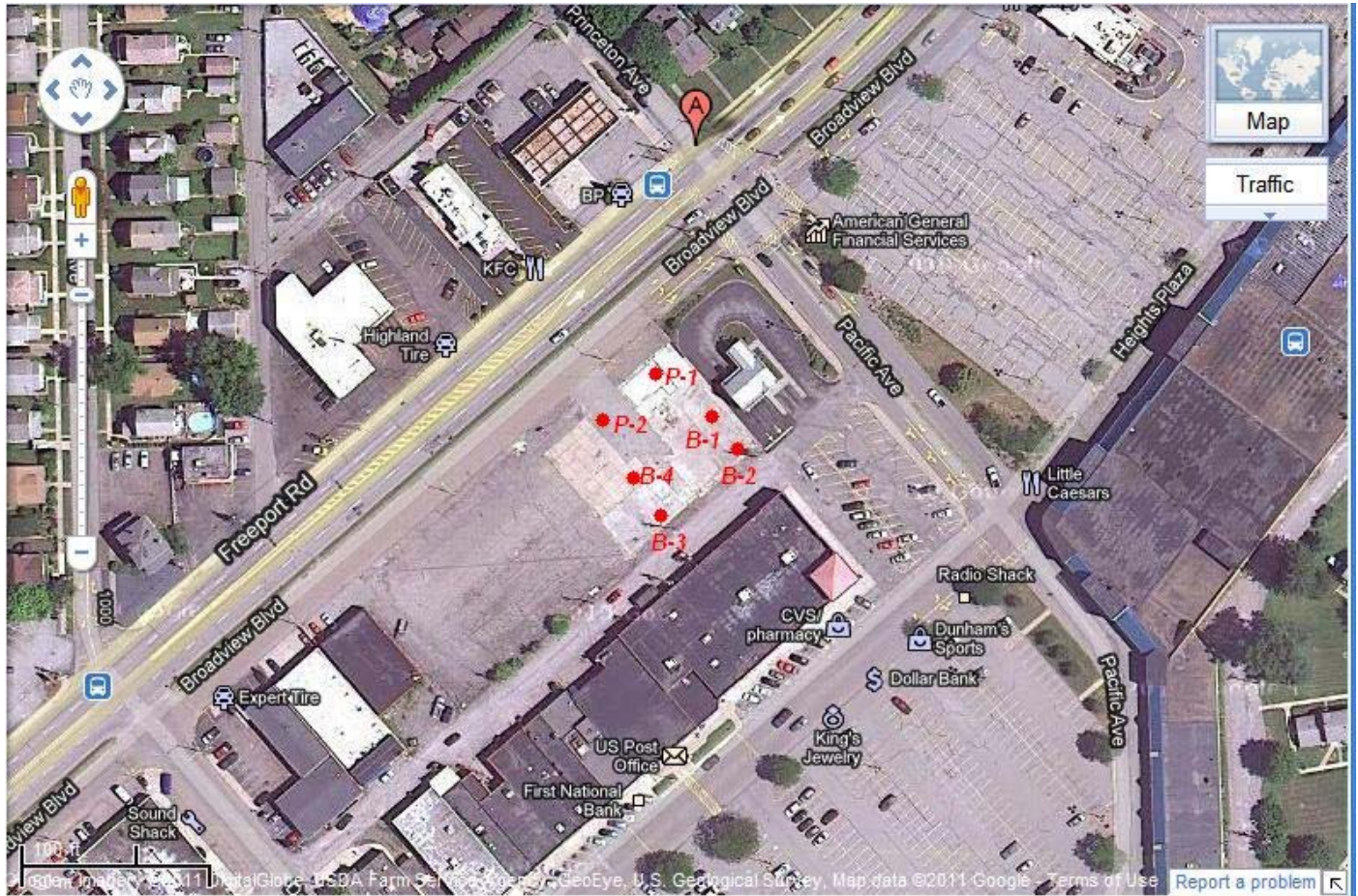
SITE - SOURCE: Google

SITE LOCATION

Subsurface Exploration Services
 Proposed Advance Auto
 Natrona Heights, PA

ATC PROJECT NO.
 45.27739.0052
 SCALE: NOTED





SITE AERIAL
SOURCE: GOOGLE

NORTH



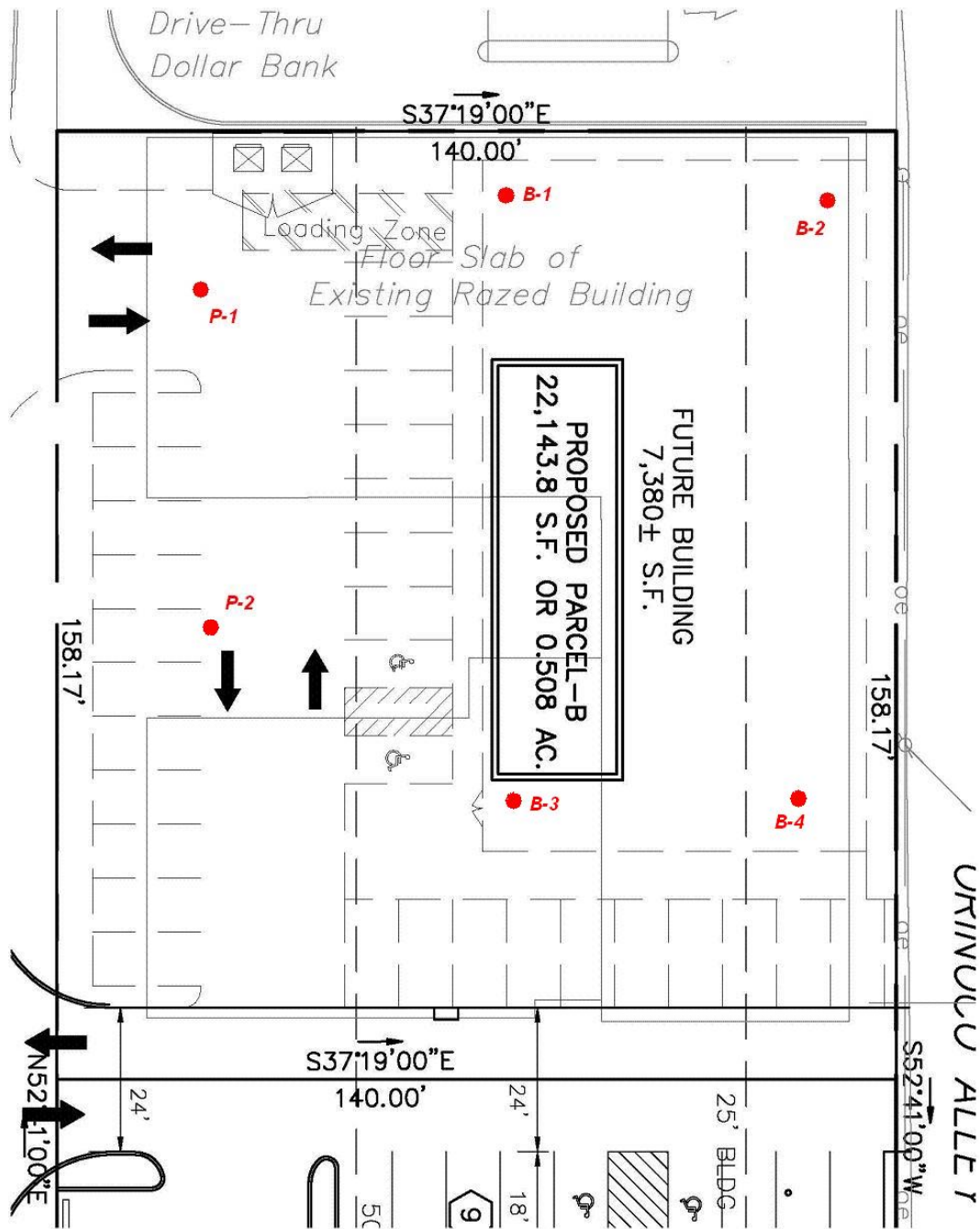
SITE AERIAL PHOTO

Subsurface Exploration Services
Proposed Advance Auto
Natrona Heights, PA

ATC PROJECT NO.
45.27739.0052
SCALE: NOTED



APPENDIX II
BORING LOCATION DIAGRAM
AND SITE LAYOUT PLANS



PROPOSED SITE LAYOUT AND BORING LOCATIONS

SOURCE: Primax Properties

SITE LAYOUT

Subsurface Exploration Services
 Proposed Advance Auto
 Natrona Heights, PA

ATC PROJECT NO.
 45.27739.0052
 SCALE: NOTED



APPENDIX III
SOIL BORING LOGS



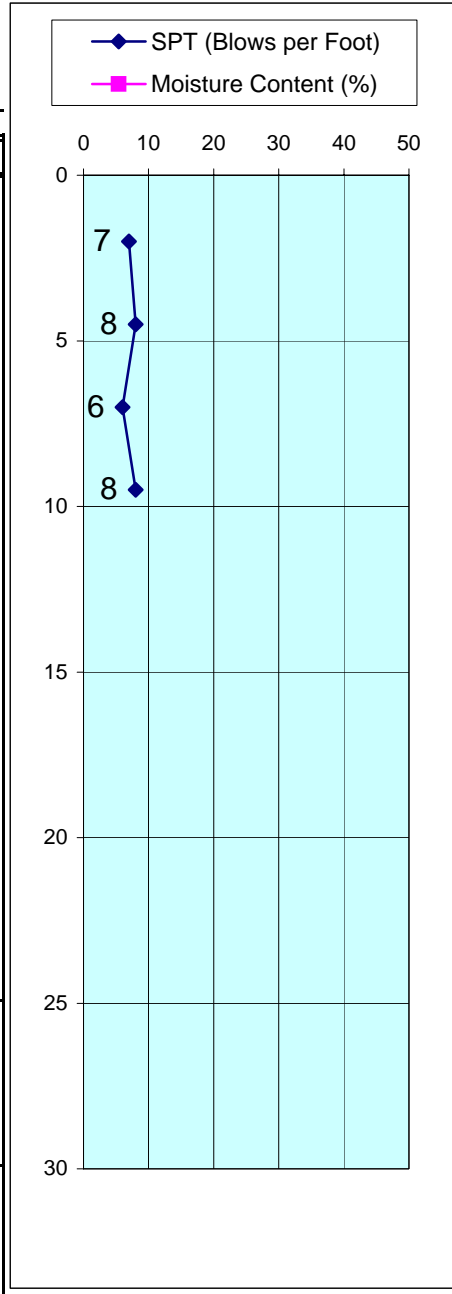
ATC Associates of North Carolina, PC

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 Raleigh, North Carolina 27604 Fax: (919) 871-0335

LOG OF BORING
P-1

Project Name: Advance Auto **ATC Project # :** 45.27739.0052
Project Location: Natrona Heights, PA **Engineer:** BVW
Client: PRIMAX

Depth (Ft)	Elev. (Ft)	Sample Number	SAMPLE DESCRIPTION	Depth Change (Ft)
0			5.0 inches Concrete	0.3
		1	5 inches Black SAND & Cinders	0.9
5		2	SANDY CLAY Brown, Medium Dense (SM)	
		3		6.0
10		4	SILTY SAND, trace to some Clay Brown, Medium Dense, (SM)	
15		5	Boring Terminated at 10.0 Feet Hollow Stem Auger Used Full Depth	
20				
25				
30				



Water Level & Lab Test Results

Cp= 2.0 TSF
 Cp=2.0 TSF
 Water Level Dry Cave in at 7.5' at 0 hrs

Date Started: 4/26/2011 Drilling Method: Hollow Stem Auger
 Date Completed: 4/26/2011 Sampling Method: Split Spoon
 Driller: Ridgeway Page: 1 of 1



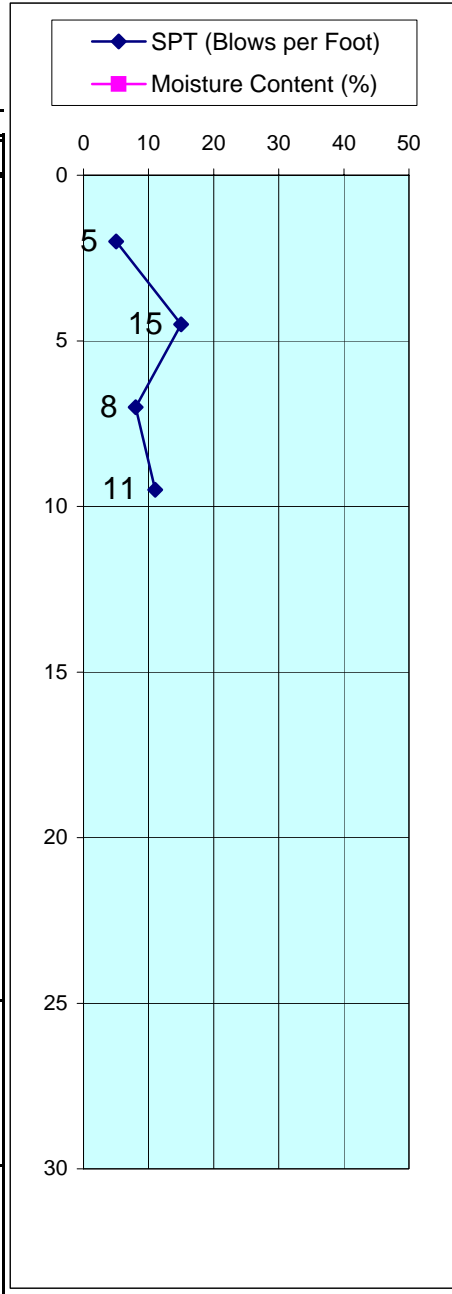
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LOG OF BORING
P-2

Project Name: Advance Auto **ATC Project # :** 45.27739.0052
Project Location: Natrona Heights, PA **Engineer:** BVW
Client: PRIMAX

Depth (Ft)	Elev. (Ft)	Sample Number	SAMPLE DESCRIPTION	Depth Change (Ft)
0			6.0 inches Asphalt 3.0 inches Concrete	
		1	9 inches Black SAND & Cinders	1.5
5		2	SANDY CLAY Brown, Medium Dense (SM)	
		3		6.0
10		4	SILTY SAND, trace to some Clay Brown, Medium Dense, (SM)	
15		5	Boring Terminated at 10.0 Feet Hollow Stem Auger Used Full Depth	
20				
25				
30				



Water Level & Lab Test Results

Cp= 2.0 TSF
 Cp=2.0 TSF
 Water Level Dry Cave in at 7.0' at 0 hrs

Date Started: 4/26/2011 Drilling Method: Hollow Stem Auger
 Date Completed: 4/26/2011 Sampling Method: Split Spoon
 Driller: Ridgeway Page: 1 of 1



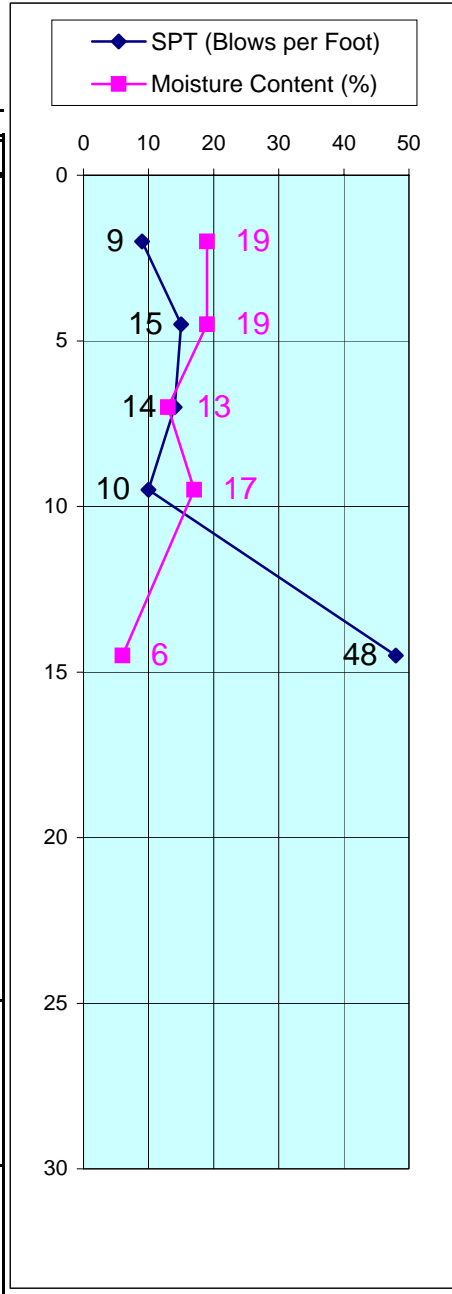
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LOG OF BORING
B-1

Project Name: Advance Auto **ATC Project # :** 45.27739.0052
Project Location: Natrona Heights, PA **Engineer:** BVW
Client: PRIMAX

Depth (Ft)	Elev. (Ft)	Sample Number	SAMPLE DESCRIPTION	Depth Change (Ft)
0			3.5 inches Concrete	0.3
		1	SILTY SAND, some Cinders Black, Medium Dense (SM)	
5		2	SILTY CLAY, Trace Fine Sand Brown, Stiff (CL)	3.0
		3		6.0
10		4	SILTY SAND, trace to some Clay Brown, Medium Dense, (SM)	
15		5	SAND, Some Gravel Brown, Very Dense (SW)	13.0
			Boring Terminated at 15.0 Feet Hollow Stem Auger Used Full Depth	
20				
25				
30				



Water Level & Lab Test Results

Cp= 2 TSF
 S-2 PI=17
 LL=30 PL=13

Water Level Dry Cave in at 8.5' at 0 hrs

Date Started: 4/26/2011 Drilling Method: Hollow Stem Auger
 Date Completed: 4/26/2011 Sampling Method: Split Spoon
 Driller: Ridgeway Page: 1 of 1



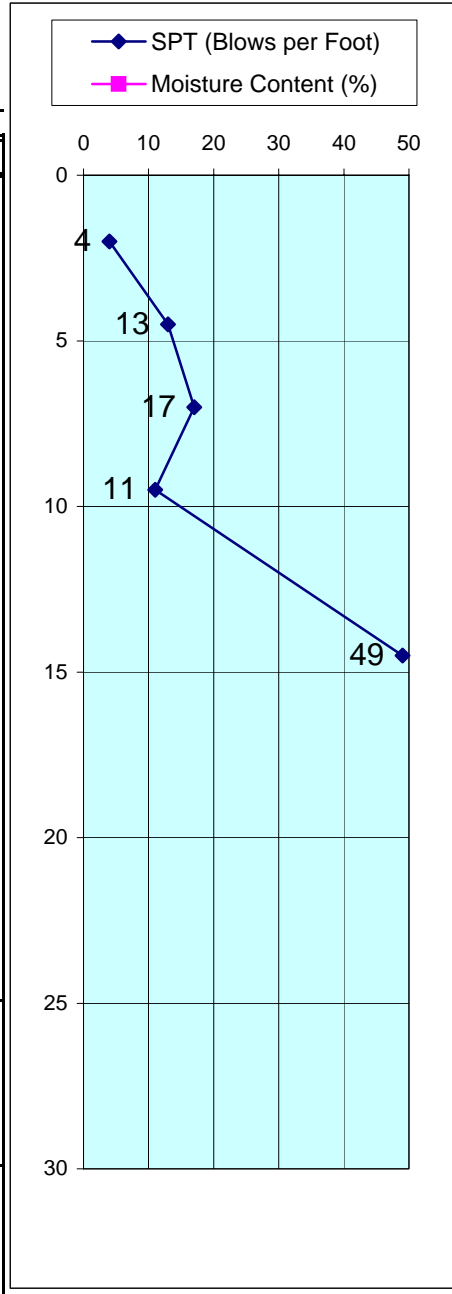
ATC Associates of North Carolina, PC

2725 E. Millbrook Road Suite 121 Phone: (919) 871-0999
 Raleigh, North Carolina 27604 Fax: (919) 871-0335

LOG OF BORING
B-2

Project Name: Advance Auto **ATC Project # :** 45.27739.0052
Project Location: Natrona Heights, PA **Engineer:** BVW
Client: PRIMAX

Depth (Ft)	Elev. (Ft)	Sample Number	SAMPLE DESCRIPTION	Depth Change (Ft)
0			3.5 inches Concrete	0.3
		1	6 inches Cinders and slag SILTY SANDY CLAY Brown, Stiff (CL)	0.8
5		2	SILTY CLAY, Trace Fine Sand and Rock Fragments, Brown, Stiff (CL)	3.0
		3		6.0
10		4	SILTY SAND, trace to some Clay Brown, Medium Dense, (SM)	
15		5	SAND, Some Gravel Brown, Very Dense (SW)	13.0
			Boring Terminated at 15.0 Feet Hollow Stem Auger Used Full Depth	
20				
25				
30				



Water Level & Lab Test Results

Cp= 2.0 TSF

Cp=3.0 TSF

Water Level
Dry Cave in at
11.0' at 0 hrs

Date Started: 4/26/2011
 Date Completed: 4/26/2011
 Driller: Ridgeway

Drilling Method: Hollow Stem Auger
 Sampling Method: Split Spoon
 Page: 1 of 1



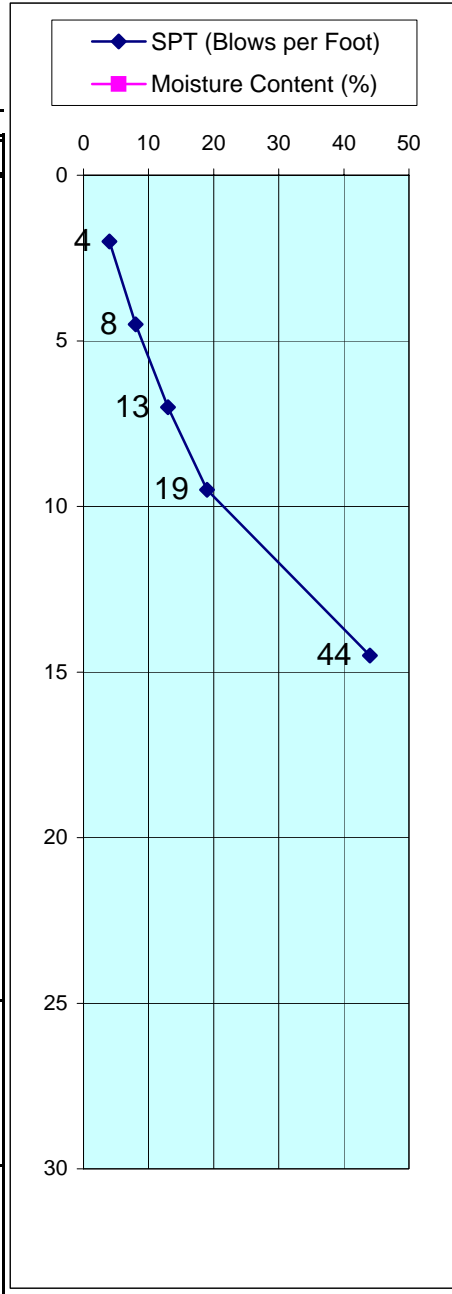
ATC Associates of North Carolina, PC

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 Raleigh, North Carolina 27604 Fax: (919) 871-0335

LOG OF BORING
B-3

Project Name: Advance Auto **ATC Project # :** 45.27739.0052
Project Location: Natrona Heights, PA **Engineer:** BVW
Client: PRIMAX

Depth (Ft)	Elev. (Ft)	Sample Number	SAMPLE DESCRIPTION	Depth Change (Ft)
0			3.0 inches Concrete	0.3
		1	5 inches Black SAND & Cinders SILTY SANDY CLAY Brown, Stiff (CL)	0.8
5		2	SANDY SILT, trace Clay Brown, Stiff (ML)	3.0
		3		6.0
10		4	SILTY SAND, trace to some Clay Brown, Medium Dense, (SM)	
15		5	SAND, Some Gravel Brown, Very Dense (SW)	13.0
			Boring Terminated at 15.0 Feet Hollow Stem Auger Used Full Depth	
20				
25				
30				



Water Level & Lab Test Results

Cp= 2.0 TSF

Water Level Dry Cave in at 10.0' at 0 hrs

Date Started: 4/26/2011 Drilling Method: Hollow Stem Auger
 Date Completed: 4/26/2011 Sampling Method: Split Spoon
 Driller: Ridgeway Page: 1 of 1



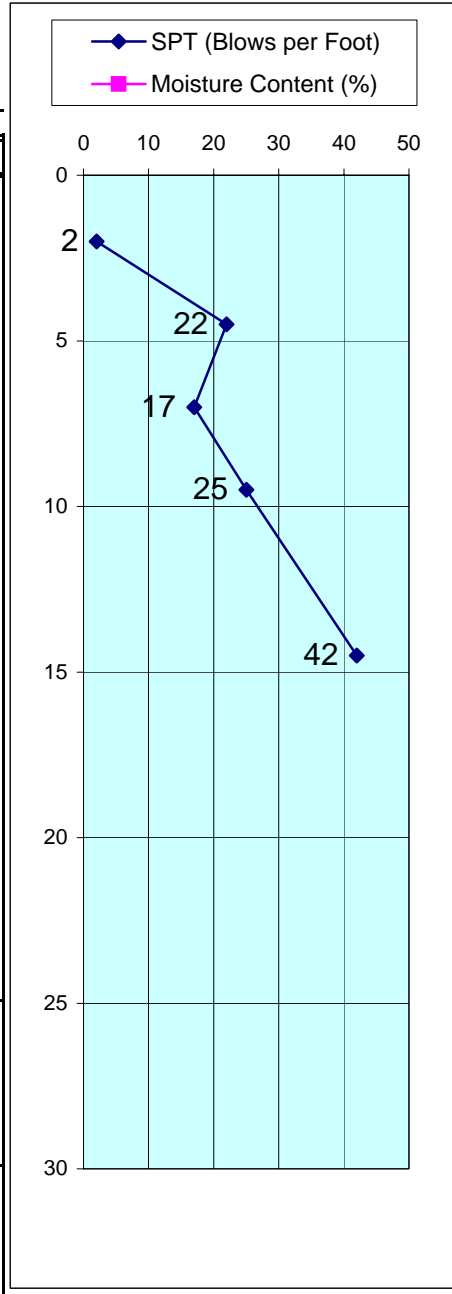
ATC Associates of North Carolina, PC

2725 E. Millbrook Road Suite 121 Phone: (919) 871-0999
 Raleigh, North Carolina 27604 Fax: (919) 871-0335

LOG OF BORING
B-4

Project Name: Advance Auto **ATC Project # :** 45.27739.0052
Project Location: Natrona Heights, PA **Engineer:** BVW
Client: PRIMAX

Depth (Ft)	Elev. (Ft)	Sample Number	SAMPLE DESCRIPTION	Depth Change (Ft)
0			3.5 inches Concrete	0.3
		1	5 inches Black SAND & Cinders FILL: SILTY SANDY CLAY Sample S-1 Wet, Brown and Grey, Stiff (CL)	0.8
5		2	FILL: Sample S-2 Wet SILTY SAND, trace Clay Brown, Medium Dense (SM)	3.0
		3		6.0
10		4	SILTY SAND, trace to some Clay Brown, Medium Dense, (SM)	
15		5	SAND, Some Gravel Brown, Very Dense (SW)	13.0
			Boring Terminated at 15.0 Feet Hollow Stem Auger Used Full Depth	
20				
25				
30				



Water Level & Lab Test Results

Cp= 1.0 TSF
 Cp=0.5 TSF
 Cp=2.0 TSF

Water Level
 Dry Cave in at
 11.0' at 0 hrs

Date Started: 4/26/2011 Drilling Method: Hollow Stem Auger
 Date Completed: 4/26/2011 Sampling Method: Split Spoon
 Driller: Ridgeway Page: 1 of 1

APPENDIX IV
LABORATORY TEST DATA



ATC Associates of North Carolina PC
 2725 E. Millbrook Rd
 Suite 121
 Raleigh, NC 27604



Atterberg Limits Data and Calculation Sheet

Job name	Advance Auto, Natrona Heights, PA	Date	10-May-11
Job #	045.27739.0052	Performed by	BW
Boring #	B-1 S-2	Depth	3.5'-5.0'
Sample description	Brown SILTY CLAY, Trace Fine Sand (CL)		
Natural water content	19%		

Plastic Limit

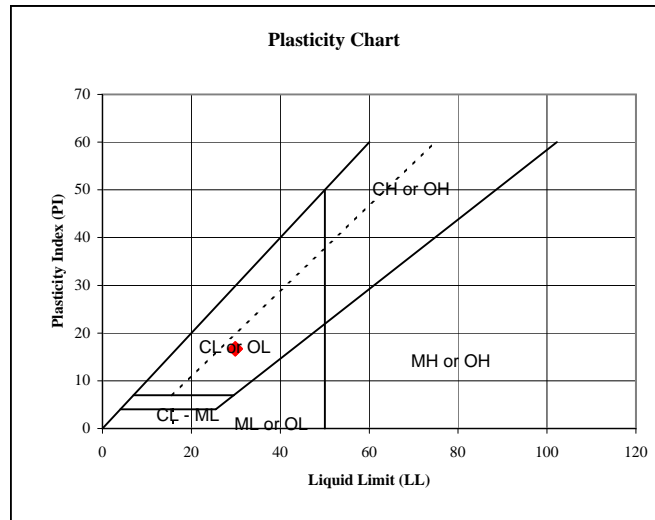
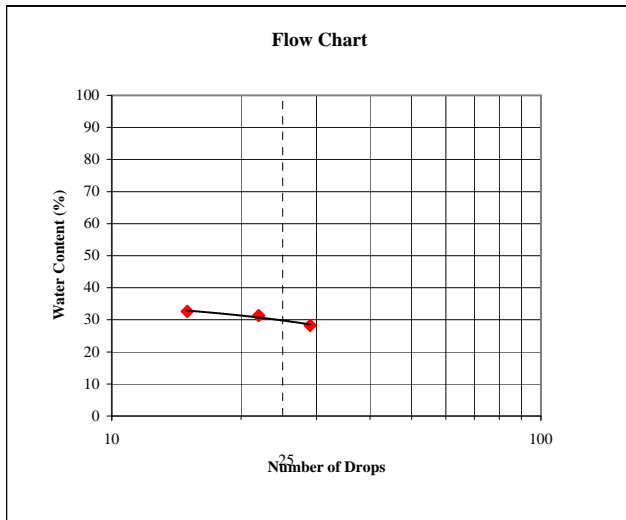
Tare #	N	U		
Tare weight	21.30	21.19		
Tare + Wet Soil	28.57	26.99		
Tare + Dry Soil	27.75	26.29		
Weight of water	0.82	0.7		
Weight of dry soil	6.45	5.1		
Water content	12.7	13.7		13.2

<= Plastic Limit

Liquid Limit

Tare #	D	14	5	
Tare weight	21.33	21.24	21.14	
Tare + Wet Soil	34.44	32.77	36.52	
Tare + Dry Soil	31.55	30.02	32.74	
Weight of water	2.89	2.75	3.78	
Weight of dry soil	10.22	8.78	11.6	
Water content	28.3	31.3	32.6	
Number of blows	29	22	15	
Water content at 25 blows			29.9	

<= Liquid Limit



Liquid Limit	30	Natural water content	19%
Plastic Limit	13	Classification	CL
Plasticity Index	17		

APPENDIX V
SITE PHOTOS

Subsurface Exploration Services
Proposed Advance Auto
Natrona Heights, PA



Photograph No. 1: Google Aerial showing building removed.



Photograph No. 2: Google Streetview showing building prior to removal.