BALLARD AND WATKINS
CONSTRUCTION SERVICES

TRAFFIC/ PARKING IMPACT STUDY

for

Fair-Anselm Creek Bank Stabilization Project

Fairfax, California

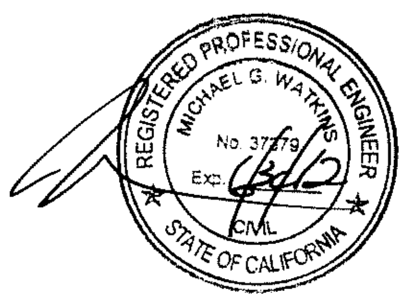
Prepared For:

FAIRFAX CENTER PROPERTIES, LLC
P.O. Box 633
Ross, CA *94957*

Prepared By:

Ballard & Watkins Construction Services
174 Pine Street
San Anselmo, CA 94960
415-457-3257
Mgwatkins@aol.com

April 19, 2012



INTRODUCTION

The proposed project involves replacement of an existing failed retaining wall and installation of shotcrete creek bank protection adjacent and under the Fair-Anselm Center structure. Staging for the project will affect approximately 8 parking spaces on the west side of the north parking lot of Fair-Anselm Center. Also affected will be traffic flow to and within this parking lot, particularly during the time during excavation of the existing creek bank to facilitate the new shotcrete retaining wall, delivery of materials for helical pier supports and tiebacks, and delivery of materials for shotcrete placement.

The purpose of this traffic study is to evaluate the impact of the Fair-Anselm Creek Stabilization Project on the current traffic flow and parking in the immediate area of the project. The project is a short duration project- less than two months, and as a result will have no long term impact on the area. The significant traffic impacts appear to result from truck traffic during deliveries and off haul, and worker vehicle traffic during arrival and departure. Parking will be impacted to the extent that a lay down area and truck staging area during delivery and off haul will result in the loss of some parking spaces at the rear of the parking lot during the course of the project. Mitigation measures have been integrated into the construction plans which will minimize the impacts of these activities.

The access to the site will be along the adjacent surface streets. A brief description of these streets is as follows:

Pastori Avenue is a two lane street to the south east of the project. Sidewalks are limited to the area immediately adjoining Center Blvd, although an unpaved area on the east side of the street is available. The street is too narrow for striped bike lanes, and on-street parking is prohibited. The prima facia speed limit on Pastori Avenue is 25 mph.

Pacheco Avenue is a collector / local street which connects Sir Francis Drake Blvd. with Center Blvd in the area immediately east of the project site. This connection is only 40 feet long, but two lanes are provided in each direction. Pacheco Avenue continues southerly from Center Blvd into an existing residential neighborhood.

Center Blvd. is the local/collector street which is immediately adjacent to the project on the east side of the Fair-Anselm parking lot. This is one of the main thoroughfares into the Town of Fairfax from the adjacent Town of San Anselmo. Traffic on this street is highest during the morning and evening commutes. Project traffic should be minimal during these hours, so should not affect the traffic flow during commute times.

Sir Francis Drake Blvd. is the regional arterial roadway for all traffic from West Marin through the Town of Fairfax. The boulevard is two lane, with bike lanes in each direction. Traffic on this street is highest during the morning and evening commutes. Project traffic should be minimal during these hours, so should not affect the traffic flow during commute times.

DISCUSSION

24 hour weekday traffic counts were made by KD Anderson & Associates, Inc. for study area streets in January 2011 as part of the Good Earth Project . The results of these traffic counts are noted in Table 1. Daily traffic volumes can vary from day to day, and the actual volumes are often rounded off to account for this variation. In this case, the counts have only been rounded to the nearest 5 vehicles rather than to the nearest 100 vehicles to best address the incremental change associated with the project.

TABLE 1
DAILY TRAFFIC VOLUMES

Street	From	To	Daily Traffic Volume
Sir Francis Drake Blvd	Claus Drive	Pacheco Avenue	16,215
Sir Francis Drake Blvd	Pacheco Avenue	Pastori Avenue	19,015
Sir Francis Drake Blvd	Pastori Avenue	Butterfield Road	20,460
Center Blvd	Pacheco Avenue	Pastori Avenue	9,985
Center Blvd	Pastori Avenue	San Anselmo Avenue	9,380
Pastori Avenue	Sir Francis Drake Blvd	Center Blvd	1,950

Traffic Impact Analysis, KD Anderson & Associates, Inc.,Good Earth Market, Fairfax, CA (March 1, 2011)

In their Traffic Impact Analysis for the Good Earth Market, Fairfax, CA (March 1, 2011) KD Anderson & Associates, Inc., does an adequate job of analyzing the impacts of that project on the surrounding streets. The projected traffic levels are currently the existing traffic levels, as the Good Earth Market has opened and is a rousing success. Levels of traffic do not appear to have significantly increased, but the number of stops and parking associated with the store has resulted in a great increase in activity immediately around the store. Traffic associated with the Creek Bank Stabilization Project should be less than 30 round trips on any given day. Increases of this magnitude are not significant, as they are well within the standard deviation for the daily traffic volumes.

As a result of the Good Earth store, parking in the store parking lot and adjacent parking lots has become at a premium, with most parking spots occupied during high activity times at the mid day, and early evening. Parking spots are usually available, but not directly adjacent to the store. Some of the Good Earth overflow parking utilizes the parking lot to the north of the Fair-Anselm Center, which is the area which will be impacted by staging of the Creek Stabilization Project.

The project documents for the Creek Bank Stabilization Project have been prepared to address the significant parking concerns in the immediate area of the project. The staging area is in the rear of the parking lot, so that traffic can still flow through the front parking aisle. The number of parking spaces lost to the project will be controlled by having the contractor stage the construction materials offsite, and store equipment onsite only during periods when it will be directly utilized on the site on a daily basis. Additionally, the documents require that worker vehicles be parked offsite, with the Fairfax Pavilion indicated as the location for offsite parking. Surveys of the Pavilion parking lot indicate that the lot is under utilized during the working hours for this project.

CONCLUSIONS

While this project will have minimal impacts on traffic, and significant impacts on parking during the course of the project, there will be no lasting impacts once the project is complete. Mitigation measures during the course of the project which have been integrated into the project documents should minimize the impacts during the project. Controlling the staging of equipment and materials on the job site, and insuring that worker parking is located away from the critical parking areas will minimize the impacts during the project. The short term of the project will insure that any impacts will quickly be resolved by the project completion.

PRELIMINARY GEOTECHNICAL INVESTIGATION

FAIR-ANSELM PROPERTY

CENTER BOULEVARD

FAIRFAX, CALIFORNIA

OUR PROJECT NUMBER: WGG0051

1.0 INTRODUCTION

This report presents the findings, conclusions, and recommendations of a preliminary geotechnical investigation conducted for the subject parcel. The 6.55 acre parcel is currently developed with four buildings and associated parking, drives, and landscaping. The existing four buildings total approximately 66,168 square feet. Proposed development will consist of renovating the southern portion of the parcel and either renovating or tearing down existing buildings and re-developing the northern portion of the parcel. Actual development plans were not available at the time of this investigation. We anticipate grading will call for minor cuts and fills or the order of 2 feet or less.

The geotechnical study conducted at this site was prepared for the use of the developer in assessing the feasibility for future development on the site. No warranty is expressed or implied. This report presents the results of this study.

2.0 SUMMARY OF CONCLUSIONS

1. The subgrade soils encountered in our test holes varied. Subgrade soils in test holes B1 through B3 generally consisted of various inter-bedded layers of clayey sand, sandy clay, silty sand, and clayey sandy silt to the maximum depths explored of 10 and 10.5 feet. Sandstone was encountered in test hole B2 at a depth of 10 feet where practical auger refusal was encountered. Subgrade soils in test holes B4 and B5 generally consisted of 18.5 to 21.0 feet of sandy clay underlain by clayey sand, sand, and gravel to the maximum depths explored of 24.5 and 26.0 feet. Groundwater was encountered at a depth of 23 feet in test holes B4 and B5 at the time of excavation. Groundwater levels can and will fluctuate.

©2007 Neil O. Anderson & Associates, Inc

2. It is proposed to renovate the southern portion of the parcel and either renovate or tear down existing buildings and re-develop the northern portion of the parcel. Actual development plans were not available at the time of this investigation. Subgrade soils encountered in our test holes at foundation depths consist of medium dense to very dense sandy silt and clayey sand and stiff to very stiff sandy clay. Due to the variability of the subgrade soils, additional investigation will be required once the locations of any new buildings are determined in order to provide foundation recommendations. Based on our test holes, shallow spread footing foundations should be anticipated.

3. We anticipate any proposed grading will consist of minor cuts and fills. Grading recommendations for cuts or fills on the order of 2 feet or less are provided in the report. If grading will consist of cuts, fills, or excavations greater than 2 feet, additional investigation will be required once the proposed extents of grading are determined.

4. The parcel is relatively level. However, the northern edge of the site slopes from the south up to the north at a 2:1 (H:V) grade and San Anselmo Creek runs from the west to the east along the southern edge of the site approximately 20 feet below the parcel elevation. Planned site drainage should be incorporated into the grading and development of the site to reduce the potential for problems from excessive groundwater and/or surface runoff. The life of the structures and pavements located at the site can be increased by properly planned site drainage. Good surface drainage should be constructed to provide rapid removal of runoff away from the proposed improvements. Drainage from adjacent sites could create soil problems within the proposed development. Grading for the subject project and adjacent upslope parcels should be coordinated to help reduce the potential for soil problems associated with runoff from adjacent parcels.

©2007 Neil O. Anderson & Associates, Inc

5. The site is covered by flexible (asphalt) paving between the existing structures. Asphalt thicknesses across the site varied between 2 and 3 inches. No aggregate base was encountered below the asphalt in our test holes. The pavement is rutted and deteriorating across the entire parcel and along Center Boulevard. It is our opinion that the existing pavement is not a candidate for asphalt overlay. Minimum recommendations for flexible (asphalt) and rigid (concrete) pavements sections are provided in this report. However, pavement sections may be altered once proposed grading and park lot and driveway layouts are known. It is our opinion that the existing asphalt sections are too thin to be ground and reused as subbase. The effort that would be required to grind, process, and clean the thin asphalt sections from debris would not likely be economical.

6. The southern edge of the parcel along San Anselmo Creek has eroded over time. Portions of the parcel along the creek are retained by beam and timber lagging retaining walls. The retaining walls have failed in several locations. The southern edge of the parcel along San Anselmo Creek will likely require new retaining walls to reduce erosion and support the development. Options for retaining wall construction have been provided in the report.

3.0 PREVIOUS INVESTIGATIONS

A Phase I ESA report prepared for the building located at 702 Center Boulevard, Fairfax, California by ENV America Inc. (Project No. FAP-06-01, Dated December 2006) and a Post- Remediation report prepared for Picaroto Cleaners located at 709 Center Boulevard, Fairfax, California by PES Environmental, Inc. (Project No. 745.001.01.010, Dated October 24, 2001) was provided to our office by Catlin Properties. These reports have been reviewed in preparation of this report.

4.0 GENERAL SITE CONDITIONS

At the time of our investigation, the 6.55 acre parcel was developed with the Fair-Anselm Plaza, a United States Post Office, a Java Hut building, and a vacant grocery store with associated parking areas and landscaping. The majority of the site between the buildings consists of asphalt paving with a few scattered planters. The Fair-Anslem Plaza located on the southern half of the site consisted of timber construction with stucco. The plaza building extends out over San Anselmo Creek and is supported by concrete columns. Cracking was observed in the foundation of the plaza building. The Post Office located in the southwest corner of the parcel consists of a masonry structure with a wood framed entry. The Java Hut consists of a small timber structure located in the northwest corner of the parcel. The Post Office and Java Hut appear to be

©2007 Neil O. Anderson & Associates, Inc

performing well. The vacant grocery store located in the northeast corner of the site consists of a tilt-up concrete structure faced with cobble. Some minor cracking was observed in the grocery store columns. Cracking was observed in the concrete flatwork across the parcel. In addition, the paving across the site and along Center Boulevard was rutted and deteriorating. Cracking and subsidence was observed along the utility trenches that ran through the parking areas.

The parcel is located in the bottom of a valley. The site is relatively level. San Anselmo Creek runs from west to east along the southern edge of the site. The creek is approximately 20 feet lower in elevation than the parcel. The southern edge of the parcel is retained by beam and timber lagging retaining walls. The retaining walls are failing in several locations. San Anselmo Creek is approximately 30 to 40 feet wide and had a steady flow at the time of our investigation. The northern edge of the site slopes from the south up to the north at a 2:1 (H:V) grade with 20 to 25 feet of relief. Sir Francis Drake Boulevard borders the site to the north. Center Boulevard splits the parcel in half. Residential homes were located across Pastori Drive to the east and adjacent to and west of the site. The surrounding area consists of mixed commercial and residential development.

5.0 GENERAL GEOLOGIC CONDITIONS

A geologic map of the area indicates the site geology consists of Holocene age alluvium underlain by Franciscan Melange consisting of a tectonic mixture of variably sheared shale and sandstone containing hard tectonic inclusions largely of greenstone, chert, graywacke, and their metamorphosed equivalents[1]. The closest active fault is the San Andreas (1906) fault located a distance of 11.5 kilometers (7.1 miles)[2] west of the site.

The California Geological Survey assigns a probabilistic (10% probability of exceeding that motion in a 50 year period) peak horizontal ground acceleration for surface soil at the subject site of 0.488 g based on longitude and latitude coordinates[3].

Following is a table of the 2007 California Building Code Soil Parameters[4] which may be used for design of structures at the subject site:

[1] U.S. Geological Survey, 2000, Geologic Map and Map Database of Parts of Marin, San Francisco, Alameda, Contra Costa, and Sonoma Counties, California, Miscellaneous Field Studies MF-2337
[2] Blake, T.F., 1998a, UBC Seismic Version 1.03
[3] http://www.consrv.ca.gov/cgs/rghm/pshamap/psha12138.html
[4] California Building Code, 2007 Edition, Section 1613

©2007 Neil O. Anderson & Associates, Inc

2007 CALIFORNIA BUILDING CODE SEISMIC DESIGN PARAMETERS	
Site Class	D
Mapped Spectral Acceleration Value of Rock (Short Period), S_S	1.50g
Mapped Spectral Acceleration Value of Rock (1-Second Period), S_1	0.65g
Site (Amplification) Coefficient, F_a	1.0
Site (Amplification) Coefficient, F_v	1.5
Maximum Considered Earthquake/Site Modified (MCE) Spectral Response Acceleration Value (Short Period), S_{MS}	1.50g
Maximum Considered Earthquake/Site Modified (MCE) Spectral Response Acceleration Value (1-Second Period), S_{M1}	0.975g
Design Spectral Acceleration Value (Short Period), S_{DS}	1.0g
Design Spectral Acceleration Value (1-Second Period), S_{D1}	0.650g

A site latitude and longitude of 37.98627° and 122.58416° were utilized in conjunction with the tools provided by United States Geologic Survey web site[5].

6.0 FIELD EXPLORATION AND LABORATORY TESTING

The field investigation conducted at this site consisted of excavating 5 exploratory test holes carried to depths from 10 to 26 feet. The test holes were excavated with a B-24 truck mounted drill rig equipped with 4 inch diameter augers. The locations of the test holes are shown on the Location Map, Plate No. 1. The locations of the test holes were determined by pacing from existing site features; hence, accuracy can be implied only to the degree that this method warrants.

Sampling of the test holes was performed at various depths using a California Modified 2.5 inch o.d. split spoon sampler with stainless steel tube liners and a 2.25 inch o.d. hand sampler (HS) with stainless steel tube liners. The split spoon sampler was driven by a 140 pound hammer with a 30-inch drop. Blow counts required to drive the sampler every 6 inches for a total of 18 inches were recorded. This information is presented in the Log of Test Borings, Plate Nos. 2 through 6.

Soil samples obtained from the test holes were preserved in stainless steel tubes until the samples could be tested in the laboratory. Samples were taken to the laboratory of Neil O. Anderson & Associates, Inc., Concord, California and used for performing various laboratory tests. Tests performed consisted of moisture contents, Atterberg Limits, and gradation. A summary of the test results are presented on the Log of Test Boring sheets, Plates 2 through 6.

---

[5] USGS Earthquake Ground Motion Parameters Version: 5.0.8 – 11/20/07

©2007 Neil O. Anderson & Associates, Inc

7.0 SOIL CONDITIONS

Visual classification of each soil stratum encountered according to ASTM D2488 (Visual – Manual Procedure) was made in the field by a representative from our office at the time the test holes were excavated. The samples obtained were checked in the laboratory by a geotechnical engineer and classification verified according to ASTM D2487. A classification and graphical representation of each soil encountered is presented on the Log of Test Boring sheets. The test boring legend is presented on Plate No. 7. The subgrade soils encountered in our test holes varied. Subgrade soils in test holes B1 through B3 generally consisted of various inter-bedded layers of clayey sand, sandy clay, silty sand, and clayey sandy silt to the maximum depths explored of 10 and 10.5 feet. Sandstone was encountered in test hole B2 at a depth of 10 feet where practical auger refusal was encountered. Subgrade soils in test holes B4 and B5 generally consisted of 18.5 to 21.0 feet of sandy clay underlain by clayey sand, sand, and gravel to the maximum depths explored of 24.5 and 26.0 feet. The clayey sand, silty sand, clayey sandy silt, and sand was medium to very dense and moist to saturated. The sandy clay was stiff to very stiff and moist. For a more detailed description of the soils encountered in the test holes see the Logs of Test Boring sheets.

Four samples of sandy clay and one sample of sandy silt were tested in our laboratory for Atterberg Limits. The sandy clay exhibited liquid limits from 21 to 37, plasticity indexes from 6 to 34, and contained 46 to 83 percent silt and clay-sized particles (passing the No. 200 sieve). The sandy silt exhibited a liquid limit of 21, a plasticity index of 1, and contained 60 percent silt and clay-sized particles (passing the No. 200 sieve). The laboratory test results are summarized in the Log of Test Borings.

At the time of this investigation, groundwater was encountered in test holes B4 and B5 at a depth of 23 feet. Groundwater conditions in the future could change due to rainfall, construction activities, irrigation, or other factors. The evaluation of these factors is beyond the scope of this study.

Test hole logs show subsurface conditions at the date and location indicated and it is not warranted that they are representative of subsurface conditions at other locations and times.

©2007 Neil O. Anderson & Associates, Inc

8.0 PRELIMINARY DESIGN STUDIES AND RECOMMENDATIONS

From a soil engineering standpoint, our office concludes that the site is suitable for re-development; however, all of the conclusions and recommendations presented in this report should be incorporated into the design and construction to help reduce the potential for soil and foundation problems. The recommendations provided in this report are preliminary and additional investigation will be required once the plans for re-development of the site are known. The mains items of consideration for development at this site are the deteriorating pavement and the need for repair of the retaining walls along the southern edge of the site.

The existing pavement is rutted and deteriorating throughout the site and is not suitable for asphalt overlay. The pavement in areas that will be redeveloped should be re-constructed. The retaining walls along the southern edge of the site have failed. New retaining walls should be constructed along the southern edge of the site to help reduce the potential for erosion of the parcel and provide support for parking areas and existing structures.

8.1 Demolition and Backfill

Portions of the site may be re-developed. The re-development may require demolition of buildings and asphalt paving at the site. All debris generated from the demolition should be completely removed. It is our opinion that the existing asphalt sections are too thin to be ground and reused as subbase. The effort that would be required to grind, process, and clean the thin asphalt sections from debris would not likely be economical. After removal of debris, any loose soil should be removed and the resulting excavations should be scarified to a depth of 12 inches, moisture conditioned, and compacted to at least 90 percent of maximum density as determined by ASTM D1557, modified proctor density. Any underground utilities that will be abandoned, and are **smaller** than 4 inches in diameter may be left in place. Utilities 4 inches in diameter or larger should be removed, grouted solid, or crushed in place and back-filled. Voids resulting from concrete or utility removal should be cleaned out of all loose soil and debris and then scarified, moisture conditioned, and compacted as specified in Appendix A. Voids should then be backfilled with engineered fill as specified in Appendix A.

©2007 Neil O. Anderson & Associates, Inc

8.2 Grading Recommendations

The site is relatively level. We anticipate grading for re-development of the site or any new development will consist of cuts and fills on the order of 2 feet or less. If any development will require cuts, fills, or excavations greater than 2 feet, additional investigation will be required once proposed extents of grading are determined. The site should initially be cleared of all surface organic growth, loose soil, old asphalt, miscellaneous debris, and debris generated from the demolition of any structures. Required fills less than 2 feet should be placed and compacted as engineered fill as specified in Appendix A, Engineered Fill Specifications. After any required cuts and/or fills are made, the final subgrade within new building pad areas should be scarified to a depth of 12 inches, moisture conditioned, and compacted as specified in Appendix A. The onsite soils are suitable for use as engineered fill. However, any clay utilized as engineered fill should be moisture conditioned to 2 percent over optimum moisture content and compacted as specified in Appendix A. Any additional fill material should be non-expansive as specified in Appendix A. **A sample of any import engineered fill material should be submitted to our office for testing and approval prior to construction.** Engineered fill should extend a minimum of five feet beyond proposed foundation lines or under any perimeter sidewalks or other exterior concrete flat work. **A representative of our firm should be present during construction to observe site grading and test compaction.**

8.3 Foundations

Subgrade soils encountered in at foundation depths consist of medium dense to very dense sandy silt and clayey sand and stiff to very stiff sandy clay. Due to the variability of the subgrade soils, additional investigation will be required once the locations of any new buildings are determined to provide foundation recommendations. Based on the soils conditions encountered our test holes, shallow spread footing foundations with allowable bearing capacities between 1,500 and 3,000 pounds per square foot (psf) should be anticipated.

©2007 Neil O. Anderson & Associates, Inc

8.4 Retaining Walls

San Anselmo Creek runs along from west to east along the southern edge of the site. The creek level is approximately 20 feet below the elevation of the site. The edge of the parcel along the creek has eroded over time. Portions of the parcel along the creek are retained by beam and timber lagging retaining walls. The retaining walls have failed in several locations. The southern edge of the parcel along the creek will likely require new retaining walls to reduce erosion and support the development. The following options may be considered for new retaining walls along the creek:

- Beam and lagging:
  Wall consists of vertical steel I-beams supported by concrete drilled piers. Timber lagging spans between the I-beams and retains the soil. Beam and lagging walls have a limited life and will require drilling into the creek bed for foundation construction.
- Soil nail wall:
  Soil nail walls consist of drilling and installing threaded steel bars into cuts. The steel bars are grouted in place. The cuts are then faced with shotcrete anchored in place by the soil nails. Soil nails are an economical means of creating retaining walls and are often less disruptive than other means of retaining wall construction.
- Helical screw anchor wall:
  Helical screw anchor walls are similar to soil nail walls. However, steel screws with helical plates are screwed into the cuts and are used for anchoring a shotcrete wall facing into place. Helical screw anchors are ready for loading immediately following installation while soils nails require curing time.

Our office is available for discussing retaining wall alternatives for the parcel.

8.5 Drainage

The parcel is relatively level. However, the northern edge of the site slopes from the south up to the north at a 2:1 (H:V) grade and San Anselmo Creek runs from the west to the east along the southern edge of the site and is approximately 20 feet below the parcel elevation. Planned site drainage should be incorporated into the grading and development of the site to reduce the potential for problems from excessive groundwater and/or surface runoff. The life of the structure and pavements located at the site can be increased by properly planned site drainage. Good surface drainage should be constructed to provide rapid removal of runoff away from the proposed improvements. Drainage from adjacent sites could create soil problems within the

©2007 Neil O. Anderson & Associates, Inc

proposed development. Grading for the subject project and adjacent upslope parcels should be coordinated to help reduce the potential for soil problems associated with runoff from adjacent parcels.

Special care should be taken to ensure adequate drainage is provided throughout the life of existing structures and proposed improvements. Properly designed and constructed foundations can be seriously damaged by neglecting to install and regularly verify performance of recommended drainage systems. Appropriate down spout extensions from roof drainage should fall on splash blocks a minimum of 2 feet from the structure or be connected to tight lines that drain away from the buildings. Any flatwork adjacent to the buildings should slope a minimum of 1 percent for a distance of 5 feet. Exposed exterior subgrade (soil or non-paved areas) should slope away from the structures at a minimum slope of ½ inch per foot for a distance of 8 to 10 feet beyond the building perimeters. If this grade is unable to be obtained, proper drainage inlets will need to be placed to carry surface water away from the foundations.

Care should be taken to ensure that landscaping is not excessively irrigated and to ensure that landscaping drains away from the structures. Implementation of adequate drainage for this project can effect the surrounding developments. Consequently in addition to designing and constructing drainage for the subject site, the effects of site drainage must be taken into consideration for surrounding sites.

8.6 Testing, Inspections and Review

Our office should be retained to review the completed grading and foundation plans to verify that our recommendations have been properly interpreted and incorporated. Unless our office is allowed this opportunity, we disavow any responsibility from problems arising from failure to follow geotechnical recommendations or improper interpretation and implementation of our recommendations. Our office is qualified to provide structural engineering services for the house, pool house, and swimming pool.

Our office shall be retained to perform the recommended pier excavation inspections and compaction testing. Unless we have been retained to provide these services, our office can not be held responsible for problems arising during or after construction that could have been avoided had these services been performed. *The fees for these services are in addition to that associated with this report.*

©2007 Neil O. Anderson & Associates, Inc

9.0 PAVEMENT RECOMMENDATIONS

The site is covered by flexible (asphalt) paving between the existing structures. Table 1 indicates the asphalt thicknesses encountered in our test holes. No aggregate base was observed below the asphalt in our test holes.

Table 1

Test Hole	Asphalt Thickness, in.
B1	3.00
B2	3.00
B3	2.75
B4	2.00
B5	2.00

The pavement is rutted and deteriorating across the entire parcel. It is our opinion that the existing pavement is not a candidate for asphalt overlay. It is our opinion that the existing asphalt sections are too thin to be ground and reused as subbase. The effort that would be required to grind, process, and clean the thin asphalt sections from debris would not likely be economical. Minimum recommendations for flexible (asphalt) and rigid (concrete) pavements are being provided. However, additional investigation will be required and pavement sections may be altered once proposed grading and park lot and driveway layouts are known.

Based on our experience with this type of project, traffic indices of 3.5, 5.0, and 7.0 were used for design. If traffic indices different from these are required, please contact our office and a suitable recommended design can be provided. Pavement sections have been design according to the latest addition of the Cal Trans highway design manual using a 20-year pavement life. The pavement sections are presented next:

FLEXIBLE PAVEMENT SECTION DESIGN				
Subgrade R-Value	**Traffic Index**	**Traffic**	**Pavement Section, inches**	
			Asphalt Concrete	**Aggregate Base**
5	3.5	auto parking	2.0	7.0
5	5.0	auto drives	3.0	10.0
5	7.0	drives	4.0	15.5

©2007 Neil O. Anderson & Associates, Inc

The recommended concrete pavement sections have been designed utilizing the Portland Cement Associations manual "Thickness Design for Concrete Highway and Street Pavements". Design is based on a 20 year pavement life. The rigid pavement sections are presented next:

RIGID (CONCRETE) PAVEMENT SECTION DESIGN				
Subgrade Strength	Traffic Pattern	Pavement Section, inches		
		Concrete Pavement	Compressive Strength, psi	Aggregate Base
low	8 truck per day	6.0	3,000	4.0
low	3 trucks per day	5.5	3,500	4.0

The paving materials must conform to the requirements of the State of California, Department of Transportation, Standard Specification. Type B asphaltic concrete and CalTrans Class II aggregate base should be used. If material other than CalTrans Class II aggregate base is desired for use as base material, our office should be contacted to provide additional pavement recommendations.

A minimum of 12 inches of compacted subgrade should be provided beneath the pavement sections. The subgrade should be compacted to dry densities in excess of 95 percent of the maximum dry density obtainable in the ASTM D1557 Compaction Test. All aggregate base should be compacted to 95 percent of the maximum dry density obtainable in the ASTM D1557 Compaction Test.

Studies have indicated that a major factor in extending pavement life is to provide adequate drainage for both the pavement surface and subgrade. Care should be made during the development of the grading plan to provide for good drainage. It is recommended that extruded concrete curbing not be utilized for planters. Landscaped and irrigated planters that exist or are constructed adjacent to pavement should have cut-off curbing constructed around them that extends a minimum of 6 inches into the subgrade soils. It is also recommended that a 6 inch thick concrete slab be constructed in front of any trash enclosures to help resist the impact loads associated with garbage trucks.

©2007 Neil O. Anderson & Associates, Inc

10.0 UTILITY CONSTRUCTION

Based on Occupational Safety and Health Standards, the soils encountered in our test holes classify Type B soils. Type B soils require a maximum slope of 1:1 (horizontal to vertical) for excavations less than 20 feet deep. The contractor should have a competent person identify all soils encountered in excavations and refer to OSHA and Cal-OSHA standards to determine appropriate methods to protect individuals working in excavations.

Backfill placed in trenches should be placed in approximately 8 inch lifts in uncompacted thickness. However, thicker lifts may be used, provided the method of compaction is approved by the soil engineer and the required minimum degree of compaction is achieved. Trench backfill should be compacted to 90 percent relative compaction as determined by ASTM D1557, modified proctor density. The upper 12 inches of trench backfill in driveway areas should be compacted in excess of 95 percent relative compaction.

11.0 LIMITATIONS

The recommendations of this report are based on the information provided regarding the proposed construction as well as the subsoil conditions encountered at the test hole locations. If the proposed construction is modified or re-sited, or if it is found during construction that subsurface conditions differ from those described on the test hole logs, the conclusions and recommendations of the report should be considered invalid unless the changes are reviewed and the conclusions and recommendations modified or approved in writing.

The analysis, conclusions and recommendations contained in this report are based on the site conditions as they existed at the time we drilled our test holes. It was assumed that the test holes are representative of the subsurface conditions throughout the site. If there is a substantial lapse of time between the submission of our report and the start of the work at the site, or if conditions have changed due to natural causes or construction operations at or adjacent to the site, we urge that our report be reviewed to determine the applicability of the conclusions and recommendations considering the changed conditions and time lapse. This report is applicable only for the project and site studied. This report should not be used after 3 years.

©2007 Neil O. Anderson & Associates, Inc

Our professional services were performed, our findings obtained, and our recommendations proposed in accordance with generally accepted engineering principles and practices. This warranty is in lieu of all other warranties either expressed or implied. Test findings and statements of professional opinion do not constitute a guarantee or warranty, expressed or implied.

The scope of our services did not include any environmental assessment or investigation for the presence or absence of wetlands, hazardous or toxic materials in the soil, surface water, groundwater or air, on or below or around this site. Any statements in this report or on the soil logs regarding odors noted or unusual or suspicious items or conditions observed are strictly for the information of our client.

©2007 Neil O. Anderson & Associates, Inc

APPENDIX A
Engineered Fill Specifications

SCOPE

Principal items of work included in this section are as follows:

A. Cleaning and Striping
B. Construction of Fill

A. CLEANING AND STRIPPING

Work includes cleaning and stripping of the building pad and surrounding area as indicated on the drawings. From this area remove all debris, irrigation lines, old pavement, trees, brush, roots, and vegetable ruin and grub out all large roots (1/2 inch or greater diameter) to a depth of at least two feet below the footing elevation. The vegetable materials and all materials from the cleaning operation shall be removed from the site.

B. CONSTRUCTION OF FILL

1. <u>Preliminary Operations</u>

After the cleaning and stripping operation and the cuts have been completed and before any fill is placed in any particular area, the existing surface shall be scarified to a depth of 8 inches and compacted to dry densities in excess of 90 percent of the maximum dry density as obtained by the Standard Test Methods for Laboratory Compaction Characteristics of Soil using Modified Effort, ASTM D1557 designation. The soil should be compacted at a moisture content between 1 and 3 percentage points above the optimum moisture content. It may be necessary to adjust the moisture content of the subgrade soil by watering or aeration, to bring the moisture content of the soil near optimum in order that the specified densities can be obtained.

2. <u>Source of Material</u>

Engineered fill materials (on site or import) shall consist of sandy silts, sands, or sands and gravels unless stated otherwise in the report. Engineered fill material shall not contain rocks greater than 3 inches in greatest dimension and should be non-expansive in nature with a plasticity index less than 7.

©2007 Neil O. Anderson & Associates, Inc

At least seven days prior to the placement of any fill, the engineer shall be notified of the source of materials. Samples of the proposed fill shall be obtained to determine the suitability of the materials for use as engineered fill.

3. Placing and Compacting

Fill materials shall be spread in layers and shall have a uniform moisture content that will provide the specified dry density after compaction. If necessary to obtain uniform distribution of moisture, water shall be added to each layer by sprinkling and the soil disked, harrowed, or otherwise manipulated after the water is added. The layers of the fill material shall not exceed 8 inches and each layer shall be compacted with suitable compaction equipment to provide the specified dry densities.

4. Required Densities

The dry density of the compacted earth shall be at least 90 percent of the maximum dry density obtainable by the ASTM D1557 test method. The optimum moisture content and maximum dry density will be determined by the engineer and this information supplied to the contractor.

5. Seasonal Limits

No fill shall be placed during weather conditions which will alter the moisture content of the fill materials sufficiently to make adequate compaction impossible. After placing operations have been stopped because of adverse weather conditions, no additional fill material shall be placed until the last layer compacted has been checked and found to be compacted to the specified densities.

6. Control of Compaction

The density of the upper 6 inches of subgrade and of each layer of fill shall be checked by the engineer after each layer has been compacted. Field density tests shall be used to check the compaction of the fill materials. Sufficient tests shall be made on each layer by the engineer to assure adequate compaction throughout the entire area. If the dry densities are not satisfactory, the contractor will be required to increase the weight of the roller, the number of passes of the roller, or manipulate the moisture content as required to produce the specified densities.

©2007 Neil O. Anderson & Associates, Inc

UNIFIED SOIL CLASSIFICATION SYSTEM AND BORING LOG SYMBOLS

	DESCRIPTION	MAJOR DIVISIONS		
GW	Well-graded gravels, gravel sand mixtures, little or no fines.	Clean gravels (little or no fines)	Gravel and gravelly soils More than 50% of coarse fraction retained on No. 4 sieve	Coarse grained soils more than 50% larger than No. 200 sieve
GP	Poorly-graded gravels, gravel sand mixtures, little or no fines			
GM	Silty gravels, gravel-sand-clay mixtures	Sands with appreciable amount of fines		
GC	Clayey gravels, gravel-sand-clay mixtures			
SW	Well-graded sands, gravelly sands, little or no fines	Clean sand (little or no fines)	Sands and sandy soils More than 50% of coarse fraction passing No. 4 sieve	
SP	Poorly-graded sands, gravelly sands, little or no fines			
SM	Silty sands, sand-silt mixtures	Sands with appreciable amount of fines		
SC	Clayey sands, sand-silt mixtures			
ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	Liquid limit less than 50	Silts and clays	Fine grained soils more than 50% smaller than No. 200 sieve
CL	Inorganic clays of low to medium plasticity, gravelly clays, lean clays			
OL	Organic silts and organic silty clays of low plasticity			
MH	Inorganic silts, micacious or diatomaceous fine sand or silty soils	Liquid limit greater than 50	Silts and clays	
CH	Inorganic clays of high plasticity, fat clays			
OH	Organic clays of medium to high plasticity, organic silts			
PT	Peat, humas swamp soils with high organic content	Highly organic soils		

DEPTH (FEET)	SAMPLE	SAMPLE TYPE
	PS	**Push Sample**
	SPT	**Drive Sample**, 2.0" o.d., 1.38" i.d., sampler driven with 140 lb. hammer, 30" drop (Standard Penetration Test, SPT).
	CM	**Drive Sample**, 2.5" o.d., 1.92" i.d., sampler driven with 140 lb. hammer, 30" drop, with 6" tube liners (California Modified, CM).
	ES	**Ely Sample**, Used to determine unit weight.
	HS	**Hand Sampler**, 2.0" o.d. sampler driven with 10 lb. hammer, 18" drop, with 4" tube liners.
	GS	**Grab Sample**, disturbed sample taken from auger tailings and sealed in plastic bag.

TEST TYPE	NOTES
Plasticity	pi
Grain Size Analysis	gr
Uniformity Coefficient	Cu
Coefficient of Gradation	Cc
Coefficient of Consolidation	Cv
Specific Gravity	sg
Shrink/Swell	s/s
Direct Shear	ds
Unconfined Compression	uc
Triaxial Compression	tx
Pocket Penetrometer	p
Torvane Shear	ts
Consolidations	c

Plate Number 7

©2007 Neil O. Anderson & Associates, Inc

LOCATION MAP

EXPLANATION

B-1 Location of test hole

NORTH

SCALE: NO SCALE

FAIR-ANSELM PROPERTY
CENTER BOULEVARD
FAIRFAX, CALIFORNIA

Neil O. Anderson & Assoc., Inc.
1190 Burnett Ave, Suite A, Concord, CA 94520
(925)609-7224 Fax (925)609-6324

LOG OF TEST BORING

BOREHOLE NUMBER: **B1**

PROJECT NUMBER: WGG0051
PROJECT NAME: FAIR-ANSELM PROPERTY
LOCATION: CENTER ROAD, FAIRFAX, CA
DRILLING EQUIP.: B-24 TRUCK MOUNTED DRILL RIG

DATE DRILLED: 12/28/07
GROUND SURFACE ELEVATION: 0.0 Feet

PLATE NO. 2

Depth, ft.	Sampling Method	Moisture, %	Dry Density, pcf	Blow Counts	Soil Lithology Description	Notes
0					ASPHALT: (AC) Asphaltic Concrete, 3"	
-1	CM	20	112	22	SANDY SILT: (ML) Silt, sandy, clayey, stiff, moist, brown, rust mottling	
-4	CM	22	90	19		
-4.5					SANDY CLAY: (CL-ML) Clay, sandy, silty, medium stiff to stiff, moist, grey	
-7	CM	26		14		pi (ll = 27, pi = 6) -200 = 78%
-7.5					SANDY CLAY: (CL) Clay, sandy, soft, moist, dark brown	
-9.5	G	22	99	25		
-9.5 to -10					SANDY CLAY: (CL) Clay, sandy, stiff, moist, grey	
-10						Test hole terminated

Depth scale: 0 to -15 ft.

Neil O. Anderson & Assoc., Inc.
1190 Burnett Ave, Suite A, Concord, CA 94520
(925)609-7224 Fax (925)609-6324

LOG OF TEST BORING

BOREHOLE NUMBER

B2

PROJECT NUMBER:	WGG0051	DATE DRILLED:	12/28/07
PROJECT NAME:	FAIR-ANSELM PROPERTY	GROUND SURFACE ELEVATION:	0.0 Feet
LOCATION:	CENTER ROAD, FAIRFAX, CA		
DRILLING EQUIP.:	B-24 TRUCK MOUNTED DRILL RIG	PLATE NO.	3

Depth, ft.	Sample	Sampling Method	Moisture, %	Dry Density, pcf	Blow Counts	Blow Count Histogram	Ground Water	Soil Lithology	Soil Lithology Description	Notes
0									ASPHALT: (AC) Asphaltic Concrete, 3"	
0 to -5									SANDY SILT: (ML) Silt, sandy clayey, very dense, moist, light brown	
-1 to -2.5	■	CM	20	108	50+					pi (ll = 21, pi = 1) -200 = 60%
-5 to -10									SILTY SAND: (SM) Sand, silty, very dense, moist, moderately cemented, tan, brown	
-5 to -6.5	■	CM	12	113	50+					-200 = 50%
-10 to -10.5	■	CM	10	92	50+				SANDSTONE: Sandstone, hard, tan	Practical auger refusal

Depth scale: 0, -1, -2, -3, -4, -5, -6, -7, -8, -9, -10, -11, -12, -13, -14, -15

Neil O. Anderson & Assoc., Inc.
1190 Burnett Ave, Suite A, Concord, CA 94520
(925)609-7224 Fax (925)609-6324

LOG OF TEST BORING

BOREHOLE NUMBER

B3

PROJECT NUMBER: WGG0051
PROJECT NAME: FAIR-ANSELM PROPERTY
LOCATION: CENTER ROAD, FAIRFAX, CA
DRILLING EQUIP.: B-24 TRUCK MOUNTED DRILL RIG

DATE DRILLED: 12/28/07
GROUND SURFACE ELEVATION: 0.0 Feet

PLATE NO. 4

Depth, ft.	Sample	Sampling Method	Moisture, %	Dry Density, pcf	Blow Counts	Blow Count Histogram	Ground Water	Soil Lithology	Soil Lithology Description	Notes
0 to -0.25									ASPHALT: (AC) Asphaltic Concrete, 2.75"	
-0.25 to -5									CLAYEY SAND: (SC) Sand, clayey, medum dense, very moist, grey	
-2	■	CM	15	106	10					
-5 to -10									SANDY CLAY: (CL) Clay, sandy, stiff to very stiff, moist, grey, brown, rust mottling	
-5.5	■	CM	17	107	34					
-8.5	■	CM	16	105	48					
-10										Test hole terminated

Depth scale: 0, -1, -2, -3, -4, -5, -6, -7, -8, -9, -10, -11, -12, -13, -14, -15

Neil O. Anderson & Assoc., Inc.
1190 Burnett Ave, Suite A, Concord, CA 94520
(925)609-7224 Fax (925)609-6324

LOG OF TEST BORING

BOREHOLE NUMBER

B4

PROJECT NUMBER:	WGG0051	DATE DRILLED:	12/20/07
PROJECT NAME:	FAIR-ANSELM PROPERTY	GROUND SURFACE ELEVATION:	0.0 Feet
LOCATION:	CENTER ROAD, FAIRFAX, CA		
DRILLING EQUIP.:	B-24 TRUCK MOUNTED DRILL RIG		

PLATE NO. 5

Depth, ft.	Sampling Method	Moisture, %	Dry Density, pcf	Blow Counts
-3	CM	16	96	22
-6	CM	20	103	25
-9	CM	17	107	29
-12	CM	18	115	15
-15	CM	20	94	18
-18	CM	15	114	40
-21	CM	8	113	44
-24	CM	12	129	29

Depth, ft.	Soil Lithology Description	Notes
0	ASPHALT: (AC) Asphaltic Concrete, 2"	
0 to -13	SANDY CLAY: (CL) Clay, sandy, stiff, moist, brown, rust mottling	pi (ll = 21, pi = 9) -200 = 46%
-13 to -15	SANDY CLAY: (CL) Clay, sandy, stiff, moist, dark brown, black	pi (ll = 28, pi = 8) -200 = 70%
-15 to -18.5	SANDY CLAY: (CL) Clay, sandy, stiff to very stiff, blue grey	
-18.5 to -24.5	CLAYEY SAND: (SC) Sand, clayey, very dense, moist, slightly cemented, blue grey	
-24.5		Test hole terminated

Neil O. Anderson & Assoc., Inc.
1190 Burnett Ave, Suite A, Concord, CA 94520
(925)609-7224 Fax (925)609-6324

LOG OF TEST BORING

BOREHOLE NUMBER

B5

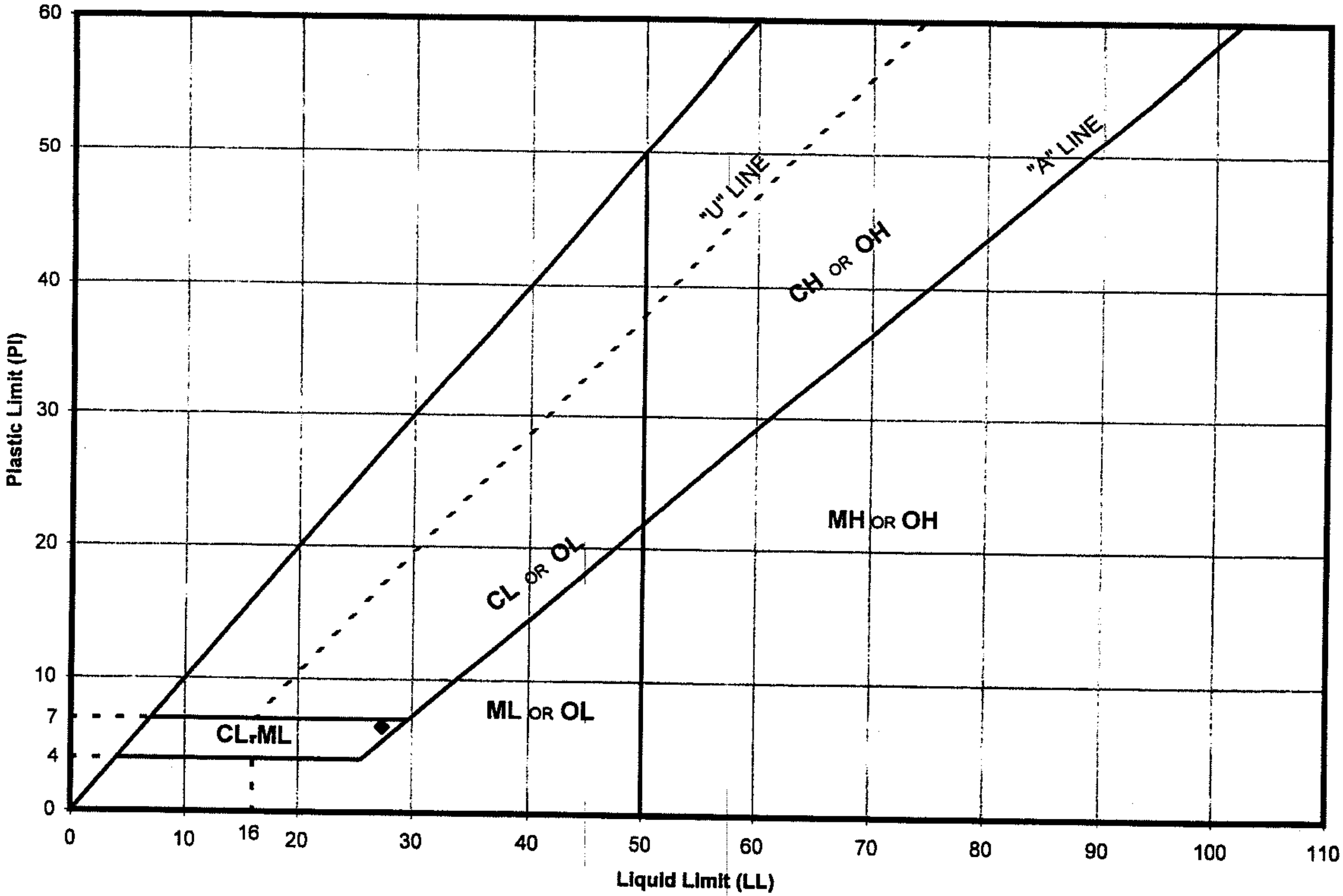
PROJECT NUMBER: WGG0051
PROJECT NAME: FAIR-ANSELM PROPERTY
LOCATION: CENTER ROAD, FAIRFAX, CA
DRILLING EQUIP.: B-24 TRUCK MOUNTED DRILL RIG

DATE DRILLED: 12/20/07
GROUND SURFACE ELEVATION: 0.0 Feet

PLATE NO. 6

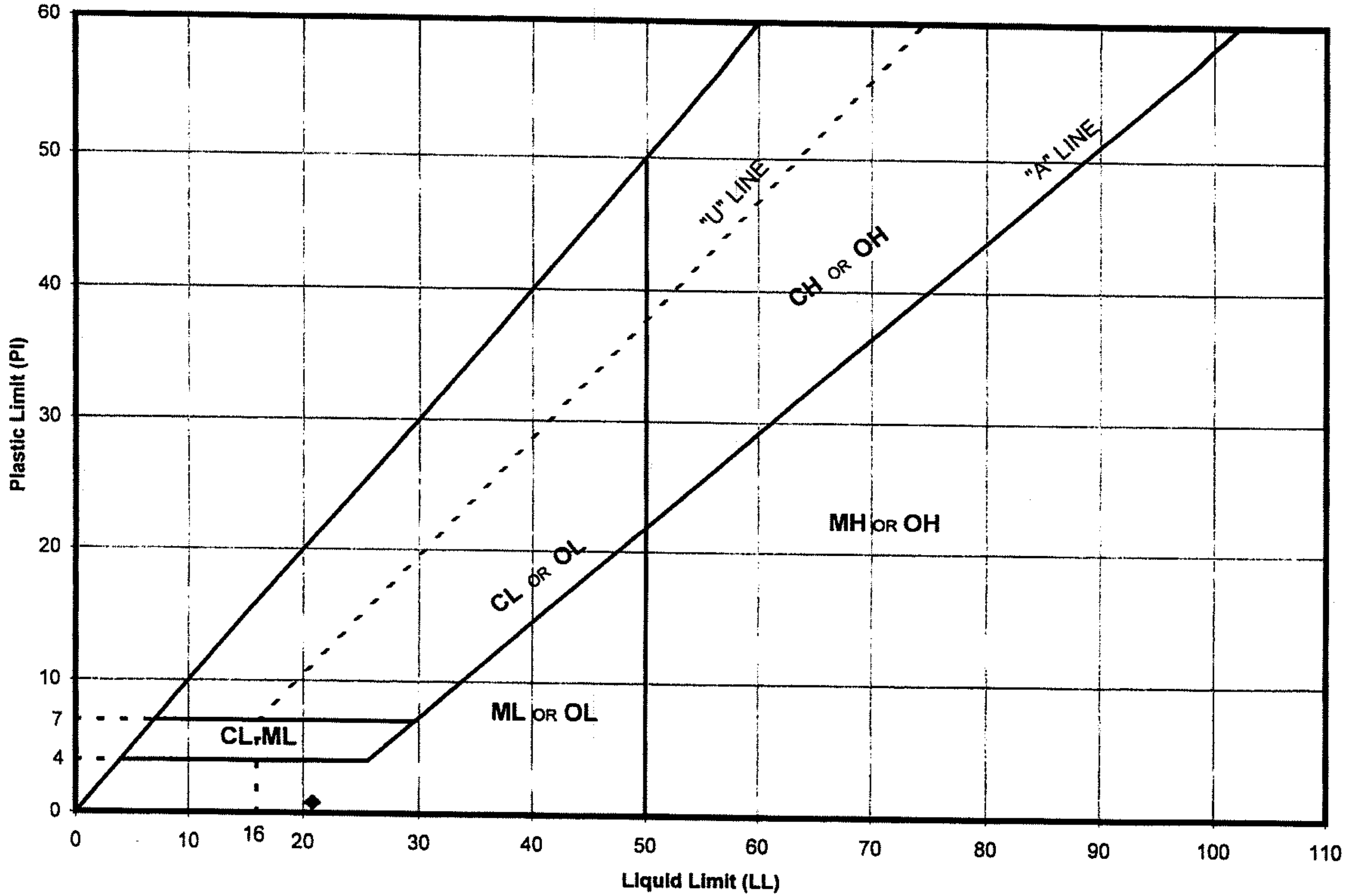
Depth, ft.	Sample	Sampling Method	Moisture, %	Dry Density, pcf	Blow Counts	Blow Count Histogram	Ground Water	Soil Lithology	Soil Lithology Description	Notes
0									ASPHALT: (AC) Asphaltic Concrete, 2"	
-1									SANDY CLAY: (CL) Clay, sandy, very stiff, moist, brown, rust mottling	
-6		CM	10	102	28					
-11		CM	11	99	36					
-13									SANDY CLAY: (CL) Clay, sandy, stiff, moist, brown, grey mottling	
-16		CM	18	101	29					pi (ll = 37, pi = 34) -200 = 83%
-21		CM	14	106	16					
-21.5									SAND: (SP) Sand, dense, very moist to saturated	
-23							▼			
-25									GRAVEL: (GP) Gravel, dense, saturated	
-26		CM	11	117	25					Test hole terminated

Project Number: WGG0051
Project Name: Fair-Anselm
Sample Number: B1-3-2



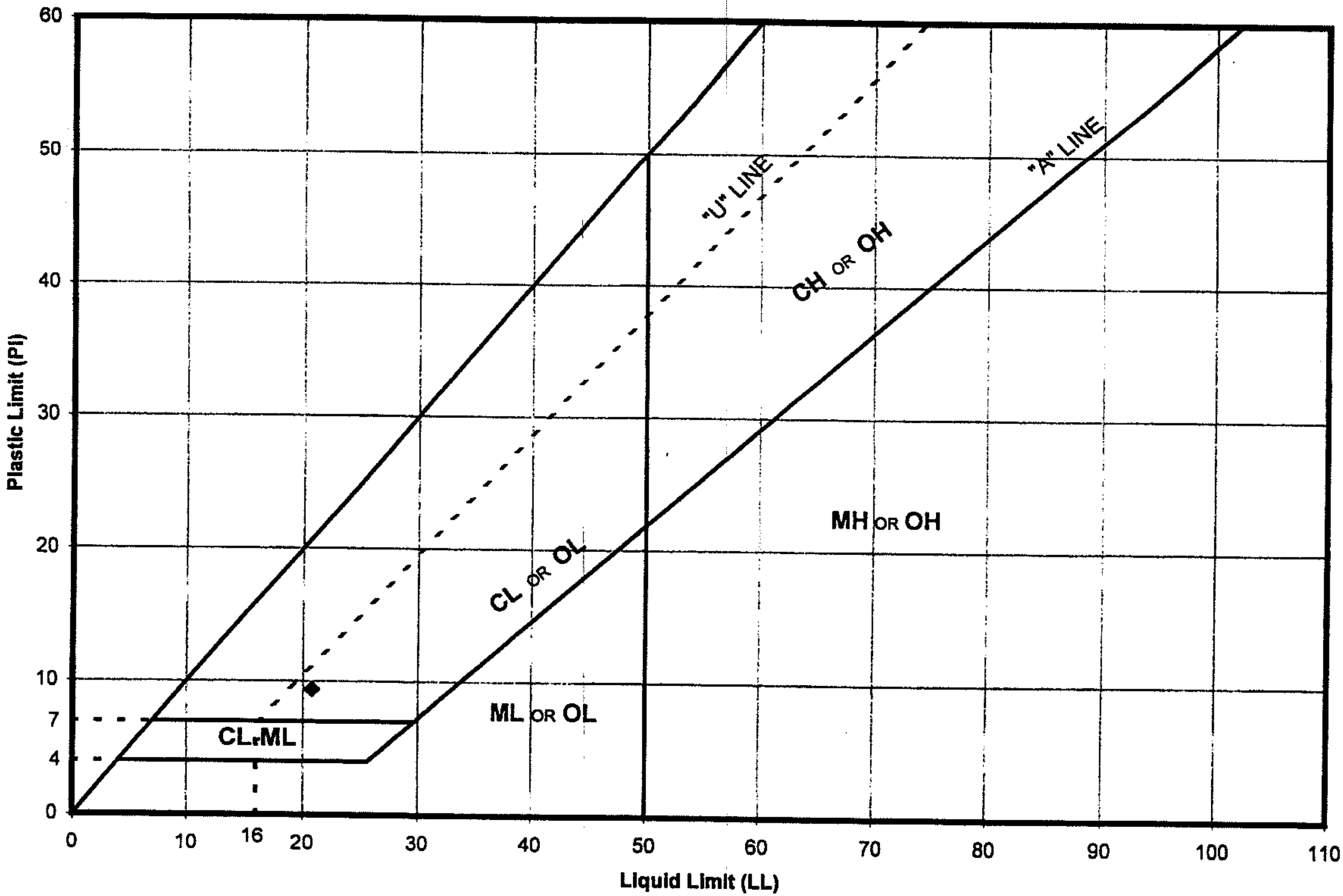
NEIL O. ANDERSON AND ASSOCIATES

Project Number: WGG0051
Project Name: Fair-Anselm
Sample Number: B2-1-1



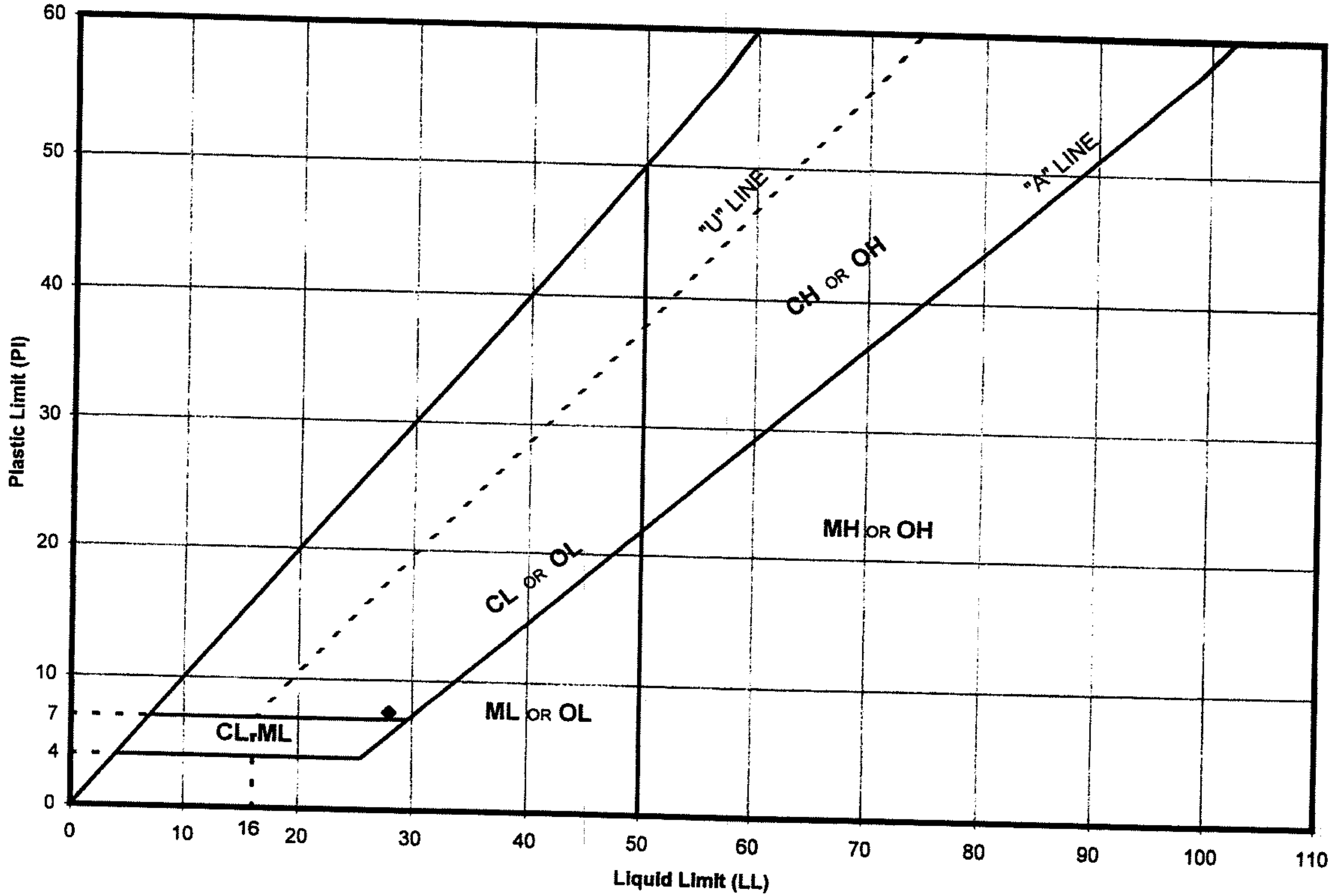
NEIL O. ANDERSON
AND ASSOCIATES

Project Number: WGG0051
Project Name: Fair Anselm
Sample Number: B4-2-2



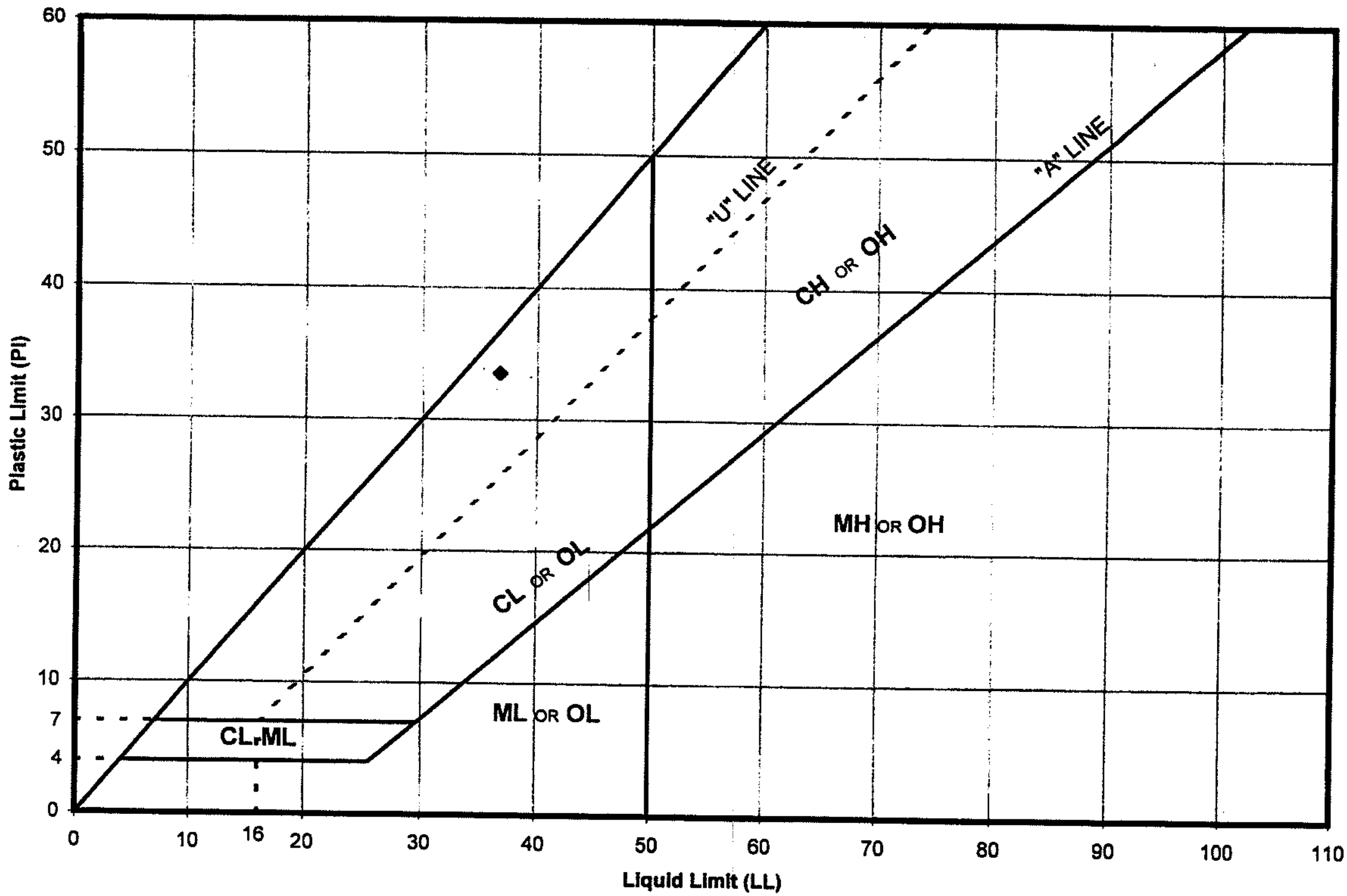
NEIL O. ANDERSON AND ASSOCIATES

Project Number: WGG0051
Project Name: Fair Anselm
Sample Number: B4-5-1



NEIL O. ANDERSON
AND ASSOCIATES

Project Number: WGG0051
Project Name: Fair Anselm
Sample Number: B5-3-2



NEIL O. ANDERSON AND ASSOCIATES