CITY OF LOS ANGELES
CALIFORNIA

DEPARTMENT OF
BUILDING AND SAFETY
201 NORTH FIGUEROA STREET
LOS ANGELES, CA 90012

ROBERT R. "BUD" OVROM
GENERAL MANAGER

RAYMOND S. CHAN, C.E., S.E.
EXECUTIVE OFFICER

SOILS REPORT APPROVAL LETTER

January 20, 2012

LOG # 76033
SOILS/GEOLOGY FILE - 2

Los Angeles City
111 E. First Street, Room 201
Los Angeles, CA 90012

TRACT: 7921
LOT(S): A
LOCATION: 845 W. 12th Street

CURRENT REFERENCE REPORT/LETTER(S)	REPORT No.	DATE(S) OF DOCUMENT	PREPARED BY
Soils Report	041137	10/23/2004	T. I. N. Engineering
Addendum Report	"	12/12/2011	"

The Grading Division of the Department of Building and Safety has reviewed the referenced reports providing recommendations for the proposed park improvements. The improvements will consist of the construction of retaining walls up to 6 feet high, new concrete slabs for the skate park and batting cage/golf range areas, and a new office and equipment room. The earth materials at the subsurface exploration locations consist of up to 5 feet of uncertified fill underlain by older alluvium.

The consultants recommend to support the proposed structures on conventional foundations bearing on native undisturbed soils or on the existing fill. In order to approve the placement of new foundations on the existing fill, a copy of the Department's approval letter for the fill should be provided. Therefore, native undisturbed soil is the only bearing material approved at this time.

The referenced reports are acceptable, provided the following conditions are complied with during site development:

(Note: Numbers in parenthesis ( ) refer to applicable sections of the 2011 City of LA Building Code. P/BC numbers refer the applicable Information Bulletin. Information Bulletins can be accessed on the internet at LADBS.ORG.)

1. All foundations shall derive entire support from native undisturbed soils.

2. Existing uncertified fill shall not be used for support of footings, concrete slabs or new fill. (1809.2)

3. In the event existing compacted fill is planned to be used for support of new fill, slabs and/or foundations, a copy of the Department's approval letter for the existing fill shall be provided.

4. Approval shall be obtained from the Department of Public Works, Bureau of Engineering, Constituent Service Division for the proposed removal of support and/or retaining of slopes adjoining to public way. (3307.3.2)
638 S. Beacon St Suite 427, San Pedro (310) 732-4677

5. The soils engineer shall review and approve the detailed plans prior to issuance of any permit. This approval shall be by signature on the plans which clearly indicates that the soils engineer has reviewed the plans prepared by the design engineer and that the plans included the recommendations contained in his report. (7006.1)

6. All recommendations of the reports which are in addition to or more restrictive than the conditions contained herein shall be incorporated into the plans.

7. A copy of the subject and appropriate referenced reports and this approval letter shall be attached to the District Office and field set of plans. Submit one copy of the above reports to the Building Department Plan Checker prior to issuance of the permit. (7006.1)

8. A grading permit shall be obtained for all structural fill and retaining wall backfill. (106.1.2)

9. All man-made fill shall be compacted to a minimum 90 percent of the maximum dry density of the fill material per the latest version of ASTM D 1557. Where cohesionless soil having less than 15 percent finer than 0.005 millimeters is used for fill, it shall be compacted to a minimum of 95 percent relative compaction based on maximum dry density (D1556). Placement of gravel in lieu of compacted fill is allowed only if complying with Section 91.7011.3 of the Code. (7011.3)

10. Drainage in conformance with the provisions of the Code shall be maintained during and subsequent to construction. (7013.12)

11. The applicant is advised that the approval of this report does not waive the requirements for excavations contained in the State Construction Safety Orders enforced by the State Division of Industrial Safety. (3301.1)

12. A structure shall be considered surcharging an excavation if the structure is located within a horizontal distance from the top of the excavation equal to the depth of the excavation. (3307.3.1)

13. A supplemental report shall be submitted to the Grading Division of the Department containing recommendations for shoring, underpinning, and sequence of construction in the event that any excavation would remove lateral support to the public way or adjacent structures. A plot plan and cross-section(s) showing the construction type, number of stories, and location of the structures adjacent to the excavation shall be part of the excavation plans. (3307.3 & 7006.2)

14. The soils engineer shall review and approve the shoring plans prior to issuance of the permit.

(3307.3.2)

15. Unsurcharged temporary excavations over 5 feet shall be trimmed back at a gradient not exceeding 1:1, as recommended.

16. Shoring shall be designed for a minimum EFP of 30 PCF; all surcharge loads shall be included into the design, as recommended.

17. Footings supported on approved compacted fill or expansive soil shall be reinforced with a minimum of four (4) ½-inch diameter (#4) deformed reinforcing bars. Two (2) bars shall be placed near the bottom and two (2) bars placed near the top.

18. The foundation/slab design shall satisfy all requirements of the Information Bulletin P/BC 2008-116 "Foundation Design for Expansive Soils".

19. The seismic design shall be based on a Site Class D as recommended. All other seismic design parameters shall be reviewed by LADBS building plan check.

20. Retaining walls up to 6 feet in height shall be designed for the minimum lateral earth pressures specified on Plate 7 of the 10/23/2004 report. All surcharge loads shall be included into the design.

21. All retaining walls shall be provided with a standard surface backdrain system and all drainage shall be conducted to the street in an acceptable manner and in a non-erosive device. (7013.11)

22. With the exception of retaining walls designed for hydrostatic pressure, all retaining walls shall be provided with a subdrain system to prevent possible hydrostatic pressure behind the wall. Prior to issuance of any permit, the retaining wall subdrain system recommended in the soil report shall be incorporated into the foundation plan which shall be reviewed and approved by the soils engineer of record. (1805.4)

23. Installation of the subdrain system shall be inspected and approved by the soils engineer of record and the City grading/building inspector. (108.9)

24. Prefabricated drainage composites (Miradrain) (Geotextiles) may be only used in addition to traditionally accepted methods of draining retained earth.

25. Where the ground water table is lowered and maintained at an elevation not less than 6 inches below the bottom of the lowest floor, or where hydrostatic pressures will not occur, the floor and basement walls shall be damp-proofed. Where a hydrostatic pressure condition exists, and the design does not include a ground-water control system, basement walls and floors shall be waterproofed. (1803.5.4, 1805.1.3, 1805.2, 1805.3)

26. All roof and pad drainage shall be conducted to the street in an acceptable manner. (7013.10)

27. All concentrated drainage shall be conducted in an approved device and disposed of in a manner approved by the LADBS. (7013.10)

28. The soils engineer shall inspect all excavations to determine that conditions anticipated in the report have been encountered and to provide recommendations for the correction of hazards found during grading. (7008 & 1704.7)

29. Prior to the pouring of concrete, a representative of the consulting soils engineer shall inspect and approve the footing excavations. He shall post a notice on the job site for the LADBS Building Inspector and the Contractor stating that the work so inspected meets the conditions of the report, but that no concrete shall be poured until the City Building Inspector has also inspected and approved the footing excavations. A written certification to this effect shall be filed with the Grading Division of the Department upon completion of the work. (108.9 & 7008.2)

30. Prior to excavation, an initial inspection shall be called with LADBS Inspector at which time sequence of shoring, protection fences and dust and traffic control will be scheduled. (108.9.1)

31. Installation of shoring shall be performed under the continuous inspection and approval of the soils engineer and deputy grading inspector. (1704.7)

32. Prior to the placing of compacted fill, a representative of the soils engineer shall inspect and approve the bottom excavations. He shall post a notice on the job site for the City Grading Inspector and the Contractor stating that the soil inspected meets the conditions of the report, but that no fill shall be placed until the LADBS Grading Inspector has also inspected and approved the bottom excavations. A written certification to this effect shall be included in the final compaction report filed with the Grading Division of the Department. All fill shall be placed under the inspection and approval of the soils engineer. A compaction report together with the approved soil report and Department approval letter shall be submitted to the Grading Division of the Department upon completion of the compaction. In addition, an Engineer's Certificate of Compliance with the legal description as indicated in the grading permit and the permit number shall be included. (7011.3)

J. ADOLFO ACOSTA
Geotechnical Engineer I

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213-482-0480

cc: Jerry C. Rodin, AIA, Applicant
T. I. N. Engineering, Project Consultant
SP District Office

T.I.N. ENGINEERING COMPANY

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File No.: 041137
December 12, 2011

Boys and Girls Club of San Pedro
Mr. Mike Lansing, Executive Director
1200 South Cabrillo Avenue
San Pedro, California 900731

SUBJECT: Updated Letter to Limited Soil Engineering Investigation and Report for Proposed New Retaining Wall and Site Improvements at Daniels Field Skate Park, 845 West 12th Street, San Pedro Area, City of Los Angeles, California

REFERENCE: T.I.N. Engineering Company, Limited Soil Engineering Investigation and Report for Proposed New Retaining Wall and Site Improvements at Daniels Field Skate Park, 845 West 12th Street, San Pedro Area, City of Los Angeles, California, dated October 23, 2004.

Dear Mr. Lansing:

In accordance with your authorization, we have herein completed this updated letter for the proposed site improvements at the subject site. The previous geotechnical report, Reference, was prepared by us on October 23, 2004.

On December 2, 2011, we visited the subject site and observed the site conditions. It was our finding that the subject site conditions remain the same. Accordingly, all conclusions and recommendations in our earlier geotechnical report, Reference, are still considered to be valid for the proposed site improvement construction.

Due to the City adopting the 2010 Building Code, we have herein provided the updated seismic coefficients for the design of the proposed structures. In review of the referenced geotechnical report, older alluvium was encountered at the subject site. The foundations of the proposed structures are to be founded into firm older alluvium. Therefore, the following seismic coefficients should be utilized for designs of the proposed structures at the subject site:

- Site Latitude = 33.732775, Longitude = -118.294382
- Site Class: D
- Site Coefficient, $F_a = 1.0$
- Site Coefficient, $F_v = 1.5$
- Spectral Acceleration for Short Periods, $S_S = 1.902$
- Spectral Acceleration for a 1-Second Period, $S_1 = 0.797$
- Maximum Spectral Acceleration for Short Periods, $S_{MS} = F_a S_s = 1.902$
- Maximum Spectral Acceleration for a 1-Second Period, $S_{M1} = F_v S_1 = 1.195$

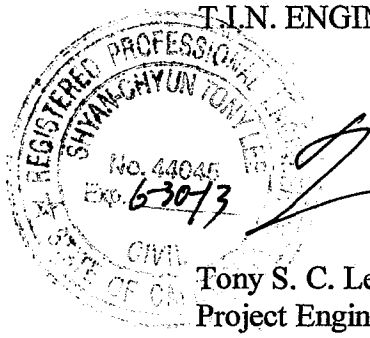
- Design Spectral Acceleration at Short Periods, $S_{DS} = 2/3\ S_{MS} = 1.268$
- Design Spectral Acceleration at 1-Second Period, $S_{D1} = 2/3\ S_{M1} = 0.797$
- Seismic Design Category: E

All other conclusions and recommendations in the previous geotechnical report, Reference, not superseded by this addendum letter, remain in effect and in force.

Thank you for this opportunity to be of service. If you have any questions regarding this report, please contact the undersigned at the letterhead location.

Very truly yours,

T.I.N. ENGINEERING COMPANY



Tony S. C. Lee, M.S., P.E.
Project Engineer

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Distribution: Client (5)

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File No.: 041137
October 23, 2004

Boys and Girls Club of San Pedro
Mr. Mike Lansing, Executive Director
1200 South Cabrillo Avenue
San Pedro, California 900731

SUBJECT: Limited Soil Engineering Investigation and Report for Proposed New Retaining Wall and Site Improvements at Daniels Field Skate Park, 845 West 12th Street, San Pedro Area, City of Los Angeles, California

Dear Mr. Lansing:

In accordance with your authorization, we have completed the subject investigation for the proposed retaining wall and site improvement at the subject site. The work was performed within the terms of your authorization using the degree of care and skill ordinarily exercised under similar circumstances by geotechnical engineers practicing in this locality, and in accordance with generally accepted foundation engineering procedures. The investigation included excavation of three test trenches, specific field soil logging and sampling, laboratory soil sample tests, and engineering analyses summarized herein. In the opinion of the undersigned, the accompanying report has been substantiated by the available field and laboratory data, and presents the design information you requested.

Introduction

This investigation was made for the purpose of obtaining information on the subsurface soil condition in the area of the proposed retaining wall and site improvements on which to base conclusions and recommendations for suitable foundation designs for the proposed retaining wall and site improvement at the subject property.

Proposed Site Improvements

The majority of the subject site is currently occupied by a football and soccer field to the west and a volleyball and basketball court to the east. The proposed site improvement is to be performed in the volleyball and basketball court. The football and soccer field is to remain uncharged. We will hereafter refer to the volleyball and basketball court as "the subject property" or "subject site" or "the skate park."

The proposed retaining wall, approximately 5 to 6 feet high, is to be located along the east and south sides of the subject site. An approximately 2 to 3 foot high retaining wall is to be constructed between the football and basketball court.

It is our understanding that the subject site is to be cut approximately 2 feet down and put this soil from the cut to the south to create a retained area of approximately 6 feet along the perimeter of the subject site. The subject site will be approximately 2 feet below the existing football field south end zone. The skate park will be approximately 6 feet above the side walk. An approximately 12 inch wide landscape planter will be installed at the perimeter of the subject site.

The south side of the subject site will be a new concrete slab skate park area. On-grade slab will be constructed at the proposed batting cage/golf range areas. The baseball batting cage and the golf driving cage areas are to be located on the northeast and north sides of the subject site, respectively. An office and equipment room are to be located on the northwest side of the subject site.

The vicinity map of the subject site is shown on Plate 1. The existing topographic map, supplied by your architect and reduced to 1" = 20' by us, is shown on Plate 2.1. The proposed site development is shown on Plate 2.2.

This report is not intended as a bidding document, and any contractors reviewing this report should draw their own conclusions regarding required construction quantities and procedures.

Field and Laboratory Investigation

On September 14 and 17, 2004, three test trenches were excavated at the locations as shown on the attached Plate 2.1. Two cross sections A-A' and B-B', drawn through the proposed skate park area, are shown on Plate 3. The earth materials encountered were logged by us as shown in the attached Trench Logs presented on Plates 4.1 through 4.3. Representative samples of the earth materials encountered were obtained as appropriate. Intact samples were obtained by carefully driving a hand-sampler loaded with thin walled tubes by hand into the trench walls and bottom. Bulk samples were obtained from the trench castings. Samples were returned to our laboratory for determination of their in-situ moisture content and density, classification, direct shear, and other appropriate testing.

The results of the in-situ moisture and density tests are summarized in the attached Plate 5. Plots of direct shear test data are presented in the attached Plate 6. See the attached Appendix A for specific information on testing methods.

Location and Site Conditions

The subject site is located at the southwesterly corner of Cabrillo Avenue and 12th Street, approximately 3,500 feet southwesterly from the intersection of Gaffey Street and No. 110 Harbor Freeway within the San Pedro area of the County of Los Angeles. The subject site is a park land. An office building is located on the north side of the site. A basketball and

volleyball court are located on the south side of the site. Small slopes, approximately up to 9 feet high, are located on the east and south sides of the site as shown on Cross Sections A-A' and B-B', Plate 3. The subject site is surrounded by a football field to the west and bounded by 13th Street to the south.

Earth Materials

The site earth materials encountered in the exploratory trenches were assumed to be representative of those throughout the area of proposed development. Variations in depth, thickness of strata, and the type of earth materials expected may occur. The design and construction procedures should take this into account. Modification of plans may be required during project construction.

Fill and Older Alluvium (Qoa)

Fill, approximately 5 feet deep, was encountered in the exploratory trenches. The encountered fill consisted of light brown, grayish brown, and dark brown, dry to moist, silty clay and silty sand. The upper 2 feet of the fill encountered in the trenches T-2 and T-3 consisted of abundant concrete and other construction debris. The encountered lower fill at the depth of approximately from 2 to 5 feet in the trench T-3, appeared to be well-compacted. Below the fill, older alluvium was encountered. The encountered upper older alluvium, approximately up to 3.5 feet thick, consisted of dark chocolate brown, moist, moderately stiff to stiff, adobe clay. The lower older alluvium consisted of light brown, moist, stiff, silty clay.

Groundwater

No groundwater was encountered, nor were any springs or seeps observed during the course of this investigation. However, it should be noted that fluctuations in the level of the ground water may occur due to variations in rainfall, temperature, and other factors not evident at the time of our study.

Conclusions and Recommendations

General

Based upon our evaluation of the site and soil conditions, the foregoing data and information, the following conclusions and recommendations are made. Construction of the proposed site improvements is feasible from the standpoint of geotechnical engineering practice at the subject site, provided all recommendations and conditions made herein, are incorporated into all design. The thickness of earth materials and the depths to foundation stratum indicated in this report are based on the data obtained from the exploratory trenches. The actual thickness of earth materials and depths to foundation stratum between the trenches may vary from that indicated herein. The design and construction procedures should take this into account.

1. The proposed retaining walls should be founded on spread footings penetrating into the underlying firm older alluvium or previously well-compacted fill as specified below. The depth to the firm older alluvium along the east and south property boundary is to be approximately 1 to 3 feet below the exiting grade. The depth to the firm previously compacted fill along the west property boundary is estimated to be approximately 2 to 3 feet below the existing grade, although it may be deeper.

2. The existing basketball and volleyball courts are to be converted into a new concrete slab skate park. It was our finding that the courts were covered with approximately up to 5 feet of fill. The upper 2 to 2.5 feet of the encountered fill consisted of abundant construction debris. It is recommended that all construction debris be removed and cleaned out. It is our understanding that the basketball and volleyball courts are to be cut 2 feet down. This cutting may remove some construction debris. However, the construction debris may still exist below 2 feet. Therefore, deeper removal of construction debris may be required subject to observation by the soil engineers. Once all the construction debris is removed, the subgrade soil in the proposed skate park area should be recompacted to at least 90% compaction for concrete slab support.

3. The upper 1 to 2 feet of the topsoil in the proposed baseball batting and golf driving cage areas should be removed and recompacted to at least 90% for slab support.

4. Garden wall, less than 4 feet high (measured from the top of wall to the bottom of footing) may be founded on spread footings penetrating into firm previously compacted fill or older alluvium, subject to observation by the soil engineers.

5. Spread foundations for support of the proposed light power pole, prefabricated modular trailer, and other minor structures may be founded into firm previously compacted fill or older alluvium, subject to observation by the soil engineers.

6. The on-site soil is classified to be an expansive soil.

Spread Footing Foundations

Spread footings founded into previously compacted 90% engineered fill or firm older alluvium may be used for support of the proposed site improvements. The following design criteria for new foundation are considered appropriate:

Allowable Bearing Capacity.....1,500 psf

Minimum Embedment Below Lowest Adjacent Grade
and into Previously Compacted 90% Fill or Older Alluvium

Retaining Wall.....12 inches
One-Story .....18 inches

Minimum Width of Spread Foundation:

One-Story .....15 inches

All continuous footings should be reinforced with a minimum of four #4 steel bars, two placed near the top, and two placed near the bottom of the footings.

Lateral Design

Resistance to lateral loading may be provided by friction acting at the base of foundations and by passive earth pressure within firm previously compacted fill or older alluvium. An allowable coefficient of friction of 0.35 may be used with the dead load forces.

For spread footings in firm previously compacted fill or older alluvium the allowable passive earth pressure may be computed as an equivalent fluid having a density of 250 pounds per square foot per foot with a maximum earth pressure of 2,500 pounds per square foot.

When combining the passive and friction values for calculating the lateral resistance, the passive component shall be reduced by one third.

The vertical and lateral bearing values indicated above are for the total of dead and all frequently applied live loads and may be increased by one-third for short duration loading which includes the effects of wind or seismic forces.

Seismic Coefficients

The subject site is located approximately 3 kilometers southerly of the Palos Verdes fault. Therefore, the following seismic coefficients should be utilized for designs of the proposed structures at the subject site:

- Soil Profile Type: S_D
- Near Source Factor, $N_a = 1.2$
- Near Source Factor, $N_v = 1.47$
- Seismic Zone Factor, $Z = 0.40$
- Seismic Coefficient, $C_a = 0.44\ N_a$
- Seismic Coefficient, $C_v = 0.64\ N_v$
- Seismic Source Type: B

Foundation Settlement

Settlement of the new foundation system founded into firm previously compacted fill or older alluvium is expected to occur on initial application of loading. The settlement is expected to be ¼ to ½ inch, depending upon final loads. Differential settlement is not expected to exceed 1/3 inch for a horizontal distance of 30 feet.

Retaining Wall

Freestanding walls should be designed per Table as shown on Plate 7. For allowable bearing values see "Spread Footing Foundations." For resistance of lateral loads see "Lateral Design."

Wall should be backfilled with on-site soil materials, compacted as described under "Grading", or with uniform crushed rock vibrated into place, and provided with backfill subdrains. If the wall is backfilled with the latter, the upper two feet should be backfilled with an impermeable layer of compacted earth. The subdrains should consist of 4-inch minimum diameter perforated pipe placed within filter material 3 to 5 inches vertically above the earth, 12 inches horizontally to any soil and 2 inches clear of any masonry or concrete surface. The filter material should consist of ¾ inch crushed rock. The base of the filter material should be three feet wide, or the width of the area to be backfilled whichever is less, placed up against the stem of the wall at a 1:1 slope and a one-foot thickness continued up along the stem of the wall to within 24 inches of the finish grade surface. The invert of the perforated pipe should be at least 12 inches below finished floor slab elevation. Perforated pipe should slope at least one percent, preferably two percent to daylight, with perforations pointing down and out to the side. Open head joints in concrete block are often inadequate as grout flow may seal them off.

Where penetration of moisture or water through wall is undesirable, the designer should take appropriate measures. As a minimum the designer should give consideration to treatment of the backfill side of the wall with a bituminous coating for resistance to penetration of water vapor. Troweled mortar coats, particularly for masonry surfaces, may be required to level irregular wall surfaces before application of bituminous coatings. In more critical applications, particularly where there may be a hydrostatic head of water, a bituminous membrane or similar system should be considered. All concrete and masonry should be of durable materials and carefully constructed to obtain a watertight member.

Temporary Construction Excavations

Excavations will be required for the proposed construction. The excavation is expected to expose clayey soil which is not suitable for vertical excavations over five feet. The portions of excavations over five feet should be trimmed to a 1:1 slope gradient. All excavations should be stabilized within 30 days of initial excavation. Water should not be allowed to pond on top of the excavation nor to flow toward it. No vehicular surcharge should be allowed within five feet of the top of cut.

All safety provisions of Cal OSHA and other related statutory agencies should be adhered to, especially as related to support of adjacent structures.

Temporary shoring should be designed for an active equivalent fluid pressure of 30 pounds per cubic foot.

Slabs On-Grade

The on-site soil is classified to be an expansive soil. Slabs should be cast over a minimum of two inches of vibrated sand placed on firm subgrade soil. The subgrade soil should be proof-rolled to remove any soft spots prior to covering of sand bedding and vapor barriers. The subgrade soil should be re-moistened to at least 10% over the optimum moisture content prior to covering of concrete slab. Slabs should be reinforced with a minimum of #4 rebars at 16 inches on center each way. A minimum 5 inch concrete slab should be designed for concrete slabs and flatwork over expansive soils.

As is typical in reinforced concrete construction, cracking of concrete can occur and is a common process. Reinforcement and crack control joints are intended to minimize this risk. In addition, irregularities of new slabs are common. A completed slab is generally not perfectly level and not free of some type of cracking.

Grading

The General Earthwork Specifications, Appendix B, should be used in preparation of the grading plans and job specifications where engineered fills are used and constitute our definition of an engineered fill. We should review all documents prior to submittal for statutory permits or contracting in order to ascertain that the intents of our recommendations are conveyed.

Drainage Control

Control of soil moisture is essential for the long term performance of improvements, particularly those located on or near expansive soils. All roof and surface drainage should be conducted away from the development in engineered non-erosive devices to a safe point of discharge. No site runoff drainage should be allowed to cross over the tops of slopes except in engineered non-erosive devices.

Slabs and planted areas immediately adjacent to the dwelling or appurtenant structures should slope away from said structures to mitigate pooling of water. All slabs and planted areas should be sloped to drain to a safe point of collection. Slabs should have a minimum slope of one percent and planted areas a minimum of two percent. All roof drainage should be collected in eave gutters that discharge directly into engineered non-erosive drainage devices. All joints in slab and swales should be maintained sealed with an appropriate joint compound.
Drainage devices shall be provided as specified by the Building Code and Grading Ordinances.

Plan Reviews

Final development plans should be reviewed by this office to ascertain that the general intents of the recommendations of this report have been incorporated into the plans. Additional structures not analyzed during this investigation should be reviewed by a representative of this office.

On-Site Construction Reviews

On-site construction reviews of all grading, drainage, and foundation work should be performed by a field representative of this office to ascertain compliance with the recommendations of this report. Final grading and/or construction should be observed and a written observation form or report issued by this office stating that the work meets the recommendations of this report. The stages at which our on-site construction reviews are to be performed should include, but are not necessarily limited to, the following stages of work:

1. Observation of wall footing excavations prior to placement of form boards or reinforcing steel.

2. As called for in Appendix B for on-site construction reviews and testing of all grading work and of compacted earth backfilling behind new retaining wall.

3. During proof rolling of subgrade soil and pre-moistened subgrade soil to at least 10% above the optimum moisture content before placement of base material or reinforcing steel, and again following the placement of base material prior to placing reinforcing.

4. Observation of installation of subdrain perforated pipes before covering with gravel or filter material, and again after placing the filter material over perforated pipes before covering with backfill.

5. observation of installation of drainage structures and completion of all work.

All work and materials should comply with the latest applicable specifications of the City of Los Angeles.

Permits

Design and construction should be carried out under applicable conditions and permits of the City of Los Angeles Building Code and other concerned statutory authorities.

Remark

The conclusions and recommendations submitted in this report are based in part upon the data obtained from the three trenches excavated by this office and site observations during the exploration operations. The nature and extent of variations between the trenches may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the recommendations of this report. No warranty is made nor should any be construed that deep-seated soil or geological weaknesses may not exist below the depths explored. This office shall be notified if any unusual conditions differing from that disclosed by this report are encountered during construction.

In the event of any change in the assumed nature, or design of the proposed project as planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed by this office and the conclusions of this report modified or verified in writing.

This report is issued with the understanding that it is the responsibility of the owner, or of their representative to insure that the information and recommendations contained herein are called to the attention of the architect and engineers for the project and incorporated into the plan, and that the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

This report has been prepared for the exclusive use of the client and authorized agents, and in accordance with generally accepted soil and foundation engineering practices. No other warranties either expressed or implied are made as to the professional advice provided under the terms of this agreement and included in the report.

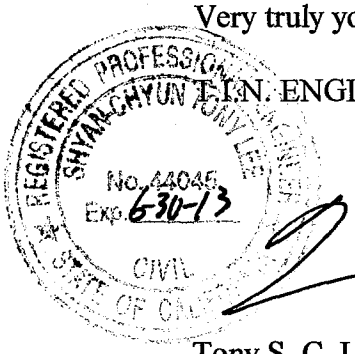
It is recommended that this office be provided the opportunity for a general review of final design and specifications in order that earthwork and foundation recommendations may be properly interpreted and implemented in the design specifications. As a condition for use of this report the above described "Plan Reviews" and "On-Site Construction Reviews" are to be performed. (If this office is not accorded the privilege of making the recommended reviews, we can assume no responsibility for misinterpretation of their recommendations).

The statement contained in this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge, the conclusions of this report could be invalidated, wholly or partially, by changes outside of our control.

Thank you for this opportunity to be of service. If you have any questions regarding this report, please contact the undersigned at the letterhead location.

Very truly yours,

T.I.N. ENGINEERING COMPANY



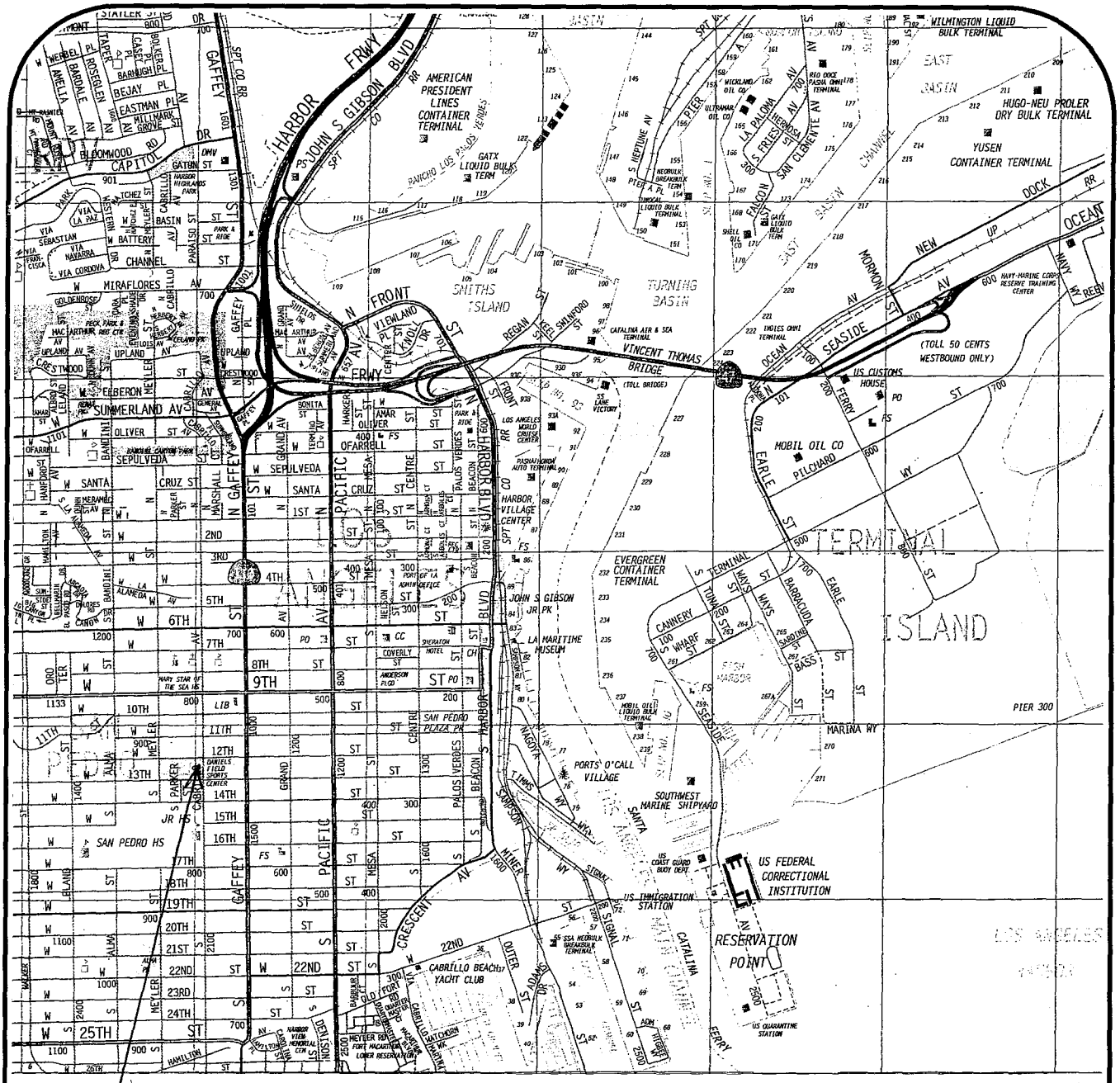
Tony S. C. Lee, M.S., P.E.
Project Engineer

TSCL:ir

Enclosures:

Vicinity Map	Plate 1
Existing Topographic Map	Plate 2.1
Proposed Site Development Plan	Plate 2.2
Cross Sections A-A' and B-B'	Plate 3
Test Trench Logs	Plates 4.1 - 4.3
Moisture Density Test Results	Plate 5
Direct Shear Test Results	Plate 6
Design of Freestanding Wall	Plate 7
Exploration and Laboratory Testing	Appendix A
General Grading	Appendix B

Distribution: Client (5)



VICINITY MAP

SOURCE: The Thomas Guide, 1996
Sheet No. 824, Los Angeles County

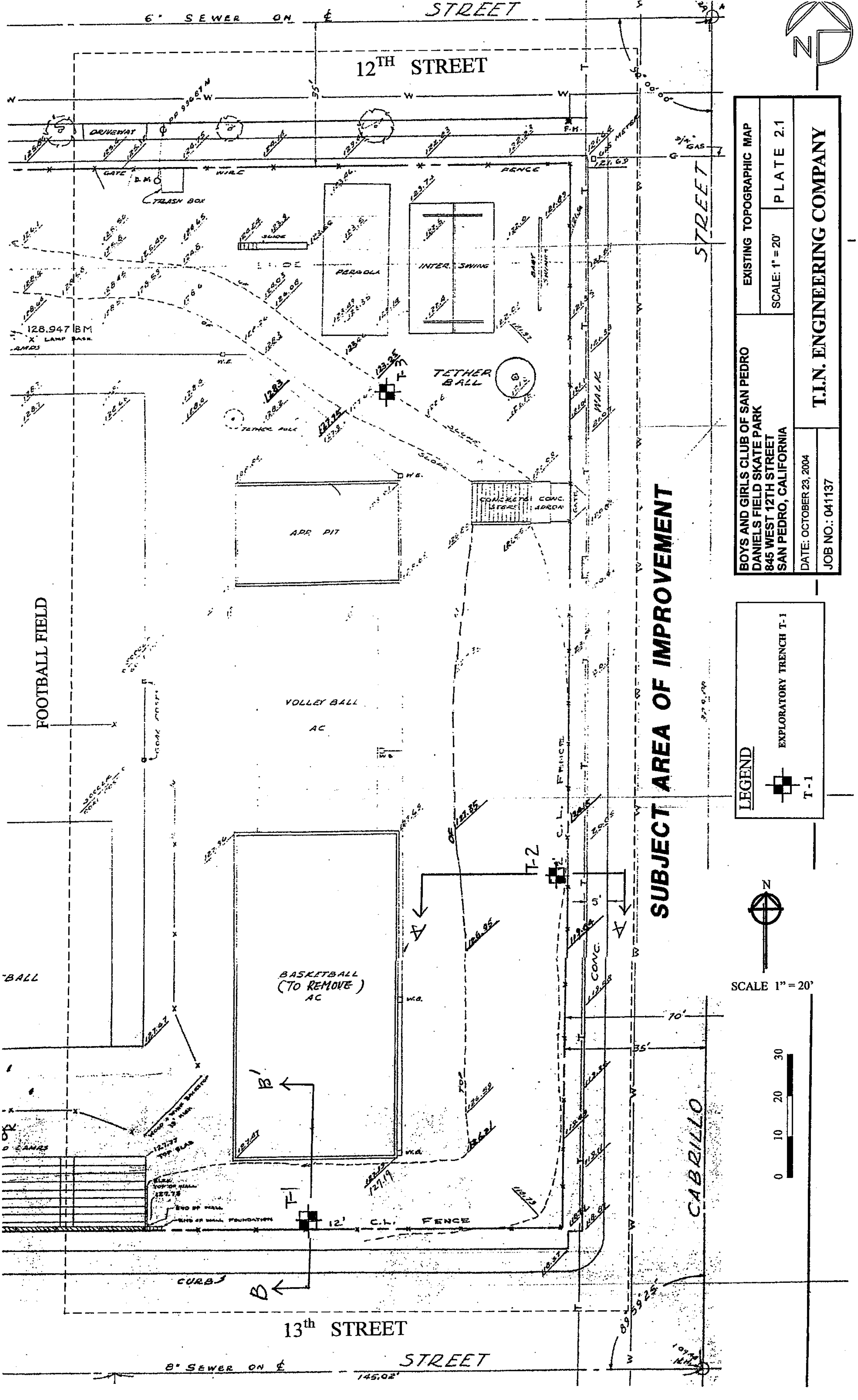
N

SCALE 1" = 2,400'

JOB NO.: 041137	DATE: October 23, 2004	PLATE 1

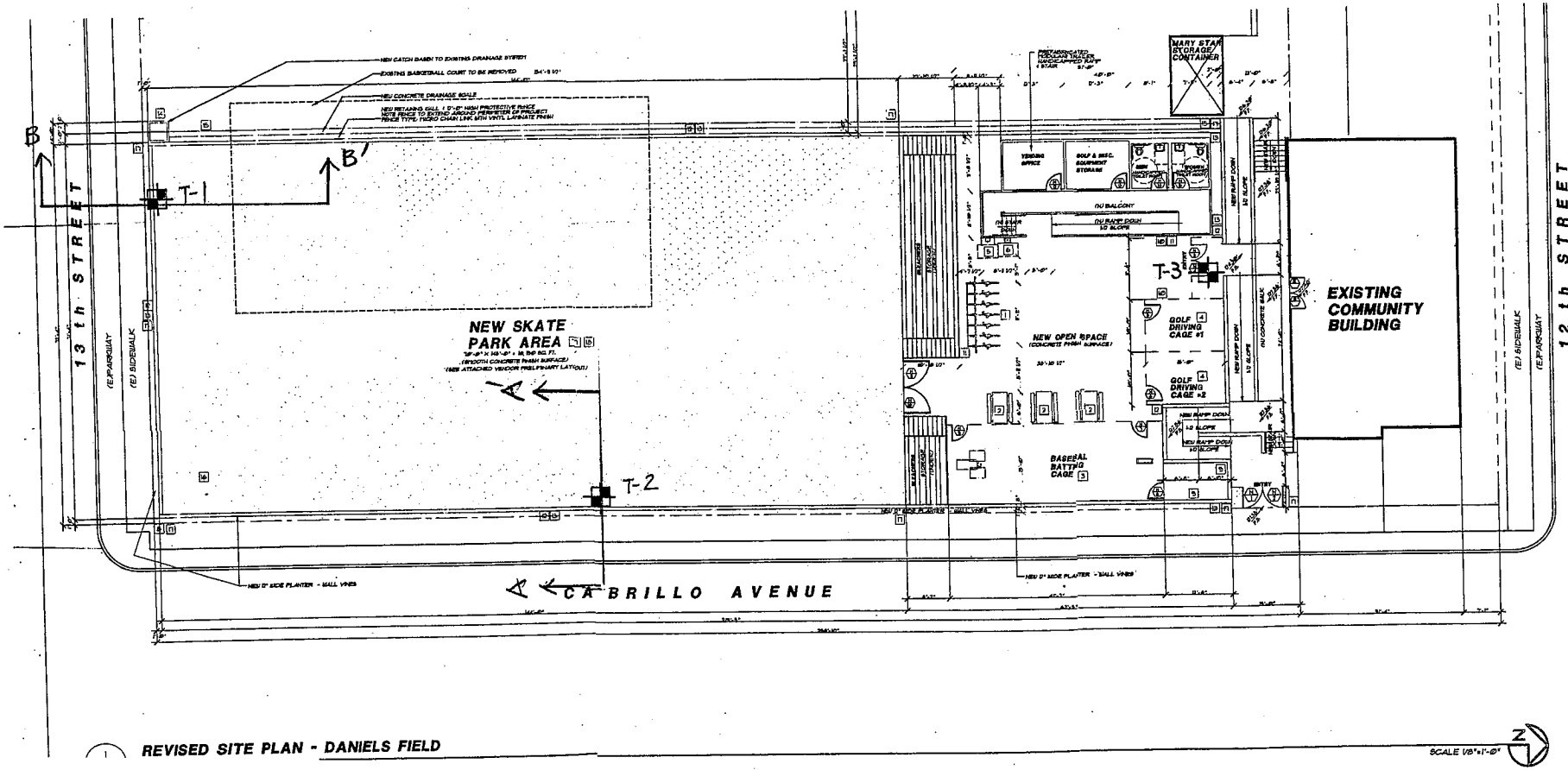
SITE Boys and Girls Club of San Pedro
845 West 12th Street, San Pedro, California

T.I.N. ENGINEERING COMPANY
17834 BAILEY DRIVE • TORRANCE • CALIFORNIA (310) 371-7045



12TH STREET
6" SEWER ON ℄ STREET
FOOTBALL FIELD
VOLLEY BALL
AC
BASKETBALL
(TO REMOVE)
AC
TETHER BALL
PERGOLA
INTER. SWING
APP. PIT
TRASH BOX
DRIVEWAY
FENCE
128.947 BM
T-1
T-2
T-3
A
A'
B
B'
C.L. FENCE
CURB
SUBJECT AREA OF IMPROVEMENT
CABRILLO
STREET
13th STREET
8" SEWER ON ℄ STREET
145.02'
BOYS AND GIRLS CLUB OF SAN PEDRO
DANIELS FIELD SKATE PARK
845 WEST 12TH STREET
SAN PEDRO, CALIFORNIA
DATE: OCTOBER 23, 2004
JOB NO.: 041137
EXISTING TOPOGRAPHIC MAP
SCALE: 1" = 20'
PLATE 2.1
T.I.N. ENGINEERING COMPANY
LEGEND
EXPLORATORY TRENCH T-1
T-1
N
SCALE 1" = 20'
0
10
20
30

FOOTBALL FIELD



REVISED SITE PLAN - DANIELS FIELD

SCALE 1/8"=1'-0"

0 10 20 30

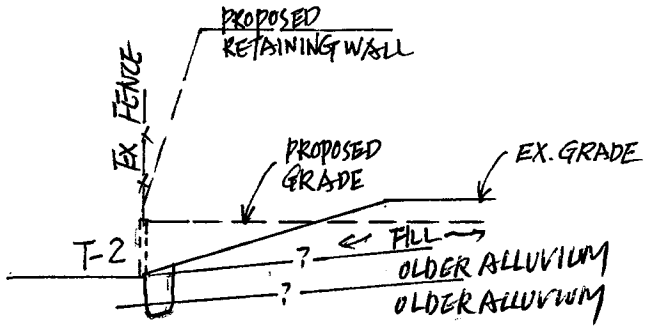
SCALE 1" = 20'

N

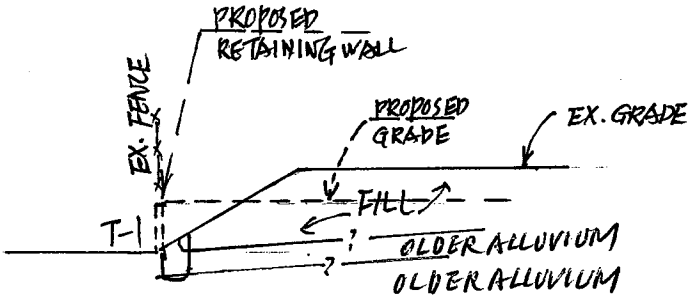
LEGEND

T-1 EXPLORATORY TRENCH T-1

BOYS AND GIRLS CLUB OF SAN PEDRO DANIELS FIELD SKATE PARK 845 WEST 12TH STREET SAN PEDRO, CALIFORNIA	PROPOSED SITE DEVELOPMENT PLAN	
	SCALE: 1" = 20'	PLATE 2.2
DATE: OCTOBER 23, 2004 JOB NO.: 041137	T.I.N. ENGINEERING COMPANY	



CROSS SECTION A-A'
SCALE 1"=20'



CROSS SECTION B-B'
SCALE 1"=20'

BOYS AND GIRLS CLUB OF SAN PEDRO **DANIELS FIELD SKATE PARK** **845 WEST 12TH STREET** **SAN PEDRO, CALIFORNIA**	**CROSS SECTIONS A-A', & B-B'**	
	SCALE: 1" = 20'	PLATE 3
DATE: OCTOBER 23, 2004 JOB NO.: 041137	**T.I.N. ENGINEERING COMPANY**	

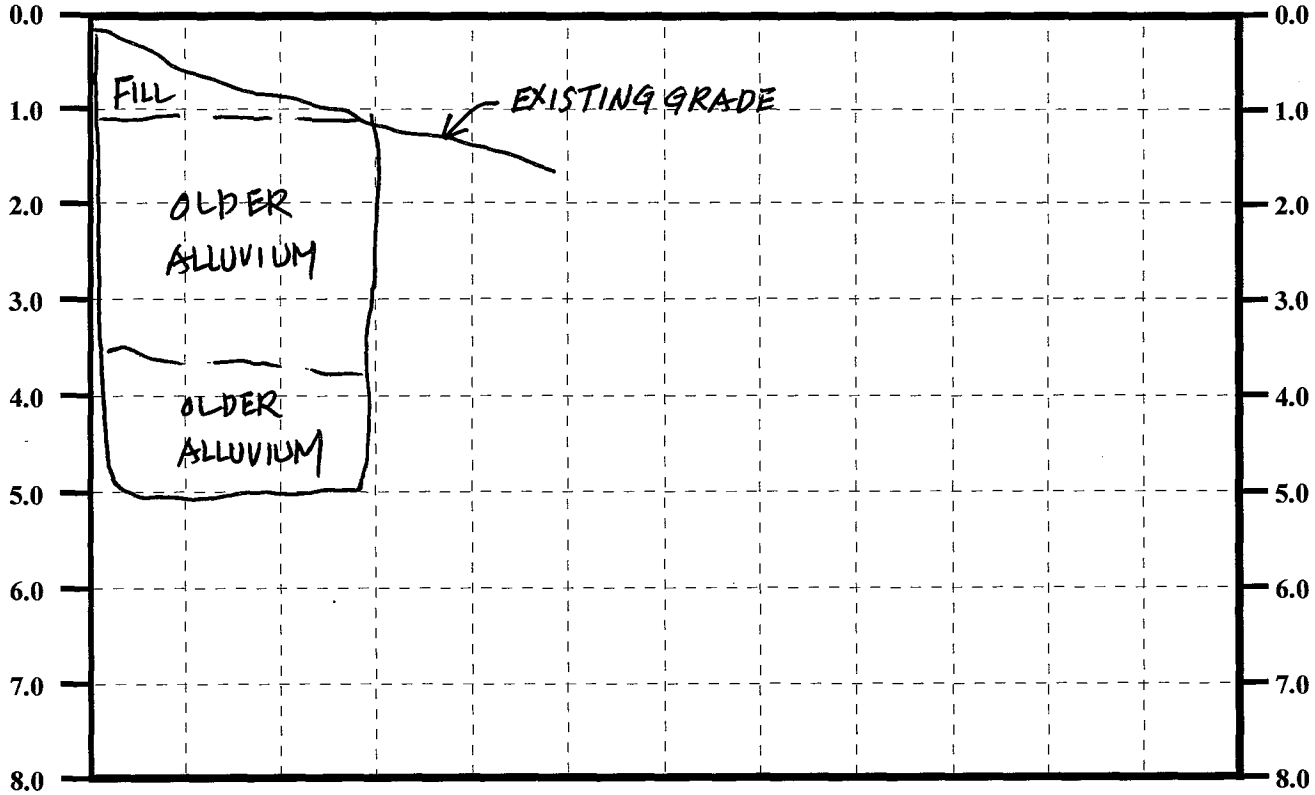
EXCAVATED TEST TRENCH T-1 LOG

0.0' - 1.0' Fill - light brown, moist, loose, silty sand (SM).

1.0' - 3.5' Older Alluvium - dark chocolate brown, moist, stiff, adobe clay (CL).

3.5' - 5.0' Older Alluvium - light brown, moist, stiff, silty clay (CL).

(No caving encountered. No groundwater encountered.)



Trench No. T - 1 , Length 3.0' , Width 3.0' , Depth 5.0'

THE LOG OF SUBSURFACE CONDITIONS HEREON APPLIES ONLY AT THE SPECIFIC LOCATION AND THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

DATE EXCAVATED: 09/14/2004

DATE: October 23, 2004

JOB NO. : 041137

P L A T E 4.1

T.I.N. ENGINEERING COMPANY

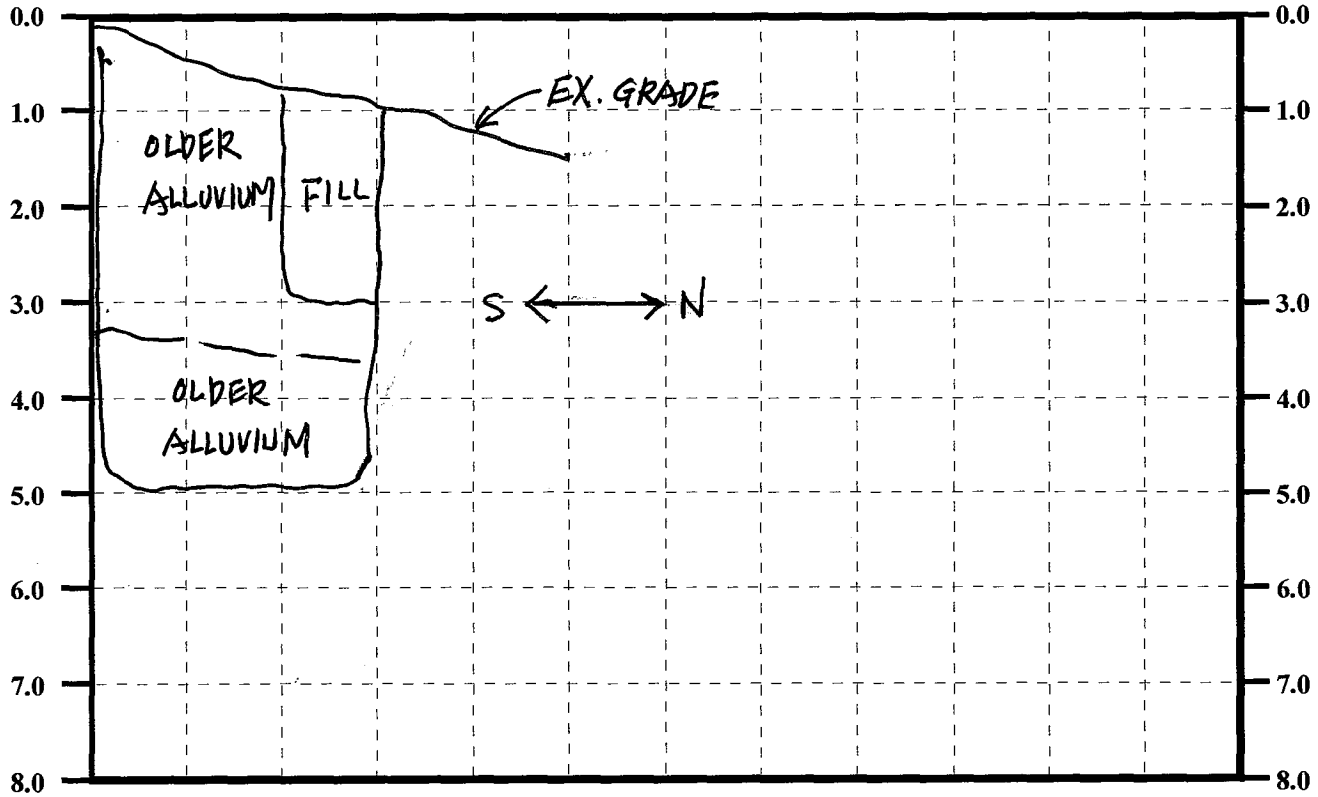
EXCAVATED TEST TRENCH T-2 LOG

0.0' - 2.5' (north side) Fill - abundant concrete debris.

0.0' - 3.5' (south side) Older Alluvium - dark chocolate brown, moist, stiff, adobe clay (CL).

3.5' - 5.0' Older Alluvium - light brown, moist, stiff, silty clay (CL).

(No caving encountered. No groundwater encountered.)



Trench No. T - 2 , Length 3.0' , Width 3.0' , Depth 5.0'

THE LOG OF SUBSURFACE CONDITIONS HEREON APPLIES ONLY AT THE SPECIFIC LOCATION AND THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

DATE EXCAVATED: 09/14/2004

DATE: October 23, 2004

JOB NO. : 041137

PLATE 4.2

T.I.N. ENGINEERING COMPANY

EXCAVATED TEST TRENCH T-3 LOG

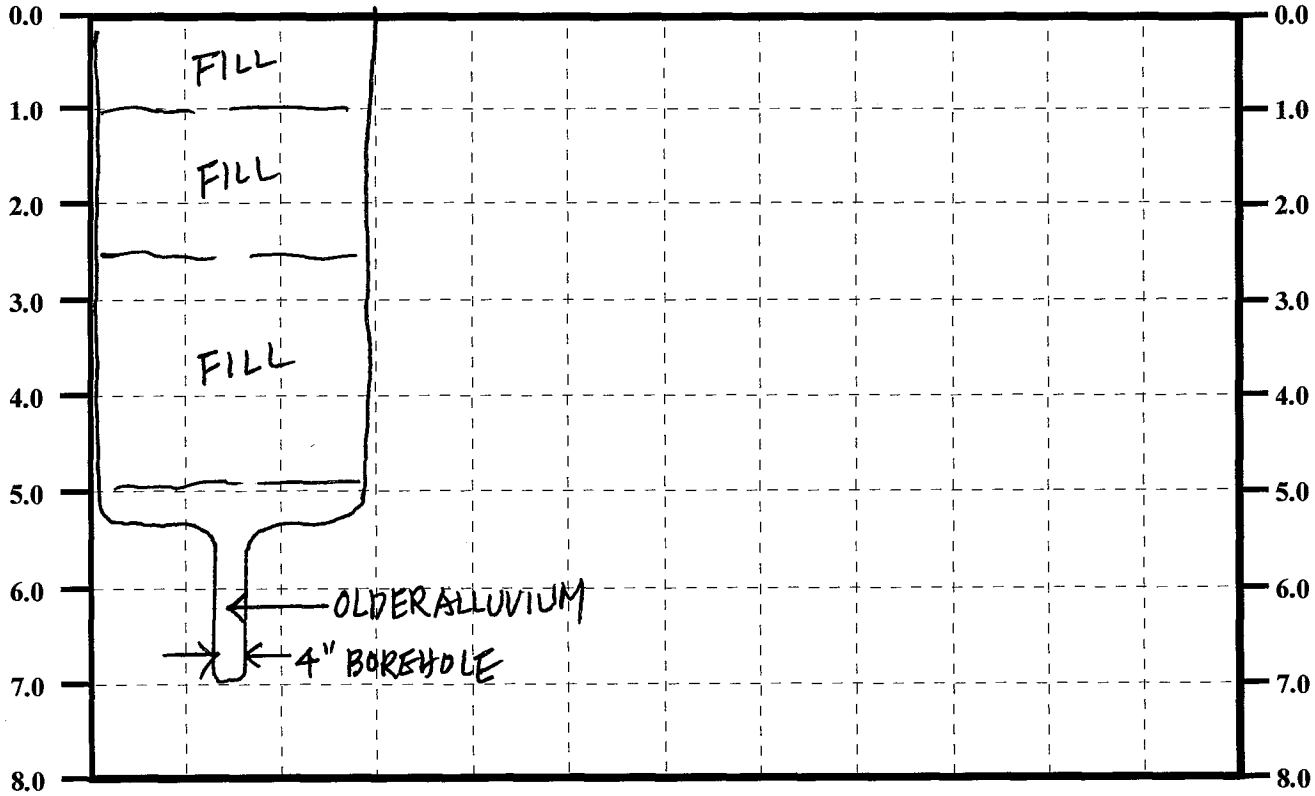
0.0' - 1.0' Fill - grayish brown to gray, dry to slightly moist, loose, silty clay (CL).

1.0' - 2.5' Fill - dark grayish brown to black, moist, moderately soft to moderately stiff, silty clay and adobe clay (CL) with abundant concrete, brick, and other construction debris.

2.5' - 5.0' Fill - light brown and dark brown, moist to very moist, moderately to well-compacted, silty clay with some bedrock fragments.

5.0' - 7.0' Older Alluvium - dark chocolate brown, moist, stiff, adobe clay (CL).

(No caving encountered. No groundwater encountered.)



Trench No. T - 3 , Length 3.0' , Width 3.0' , Depth 7.0'

THE LOG OF SUBSURFACE CONDITIONS HEREON APPLIES ONLY AT THE SPECIFIC LOCATION AND THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

DATE EXCAVATED: 09/17/2004

DATE: October 23, 2004

JOB NO. : 041137

PLATE 4.3

T.I.N. ENGINEERING COMPANY

T.I.N. ENGINEERING COMPANY

Geotechnical • Structural • Environmental

Project : Boys and Girls club of San Pedro

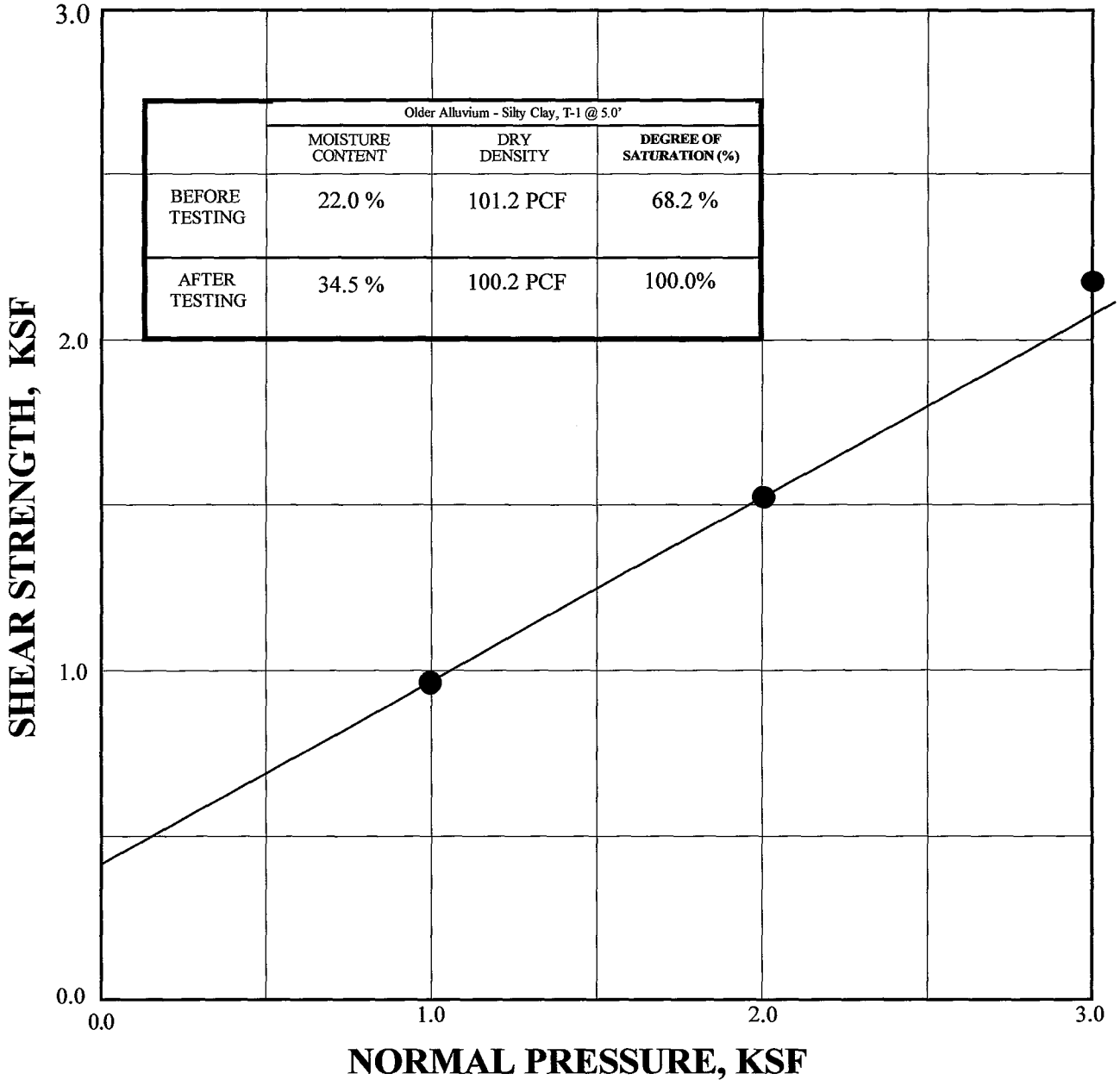
Date: October 23, 2004

MOISTURE-DENSITY RESULTS OF LABORATORY TEST

Trench No.	Depth (ft)	Moisture Content (% dry wt.)	Dry Density (pcf)	Comment
T-1	2.0	19.2	101.2	Older Alluvium
T-1	5.0	22.0	95.7	Older Alluvium
T-2	2.5	21.2	104.5	Older Alluvium
T-2	5.0	23.3	99.9	Older Alluvium

PLATE 5

SYMBOL	SOIL SAMPLE	LOCATION	DEPTH (ft)	Ø	C (psf)
●	Older Alluvium - Silty Clay, Residual, Saturated	T-1	5.0	29°	410



	Older Alluvium - Silty Clay, T-1 @ 5.0'		
	MOISTURE CONTENT	DRY DENSITY	DEGREE OF SATURATION (%)
BEFORE TESTING	22.0 %	101.2 PCF	68.2 %
AFTER TESTING	34.5 %	100.2 PCF	100.0%

PLOT OF DIRECT SHEAR TEST DATA

JOB NO: 041137

SITE Boys and Girls Club of San Pedro
845 West 12th Street, San Pedro, California

DATE: October 23, 2004

T.I.N. ENGINEERING COMPANY
17834 BAILEY DRIVE • TORRANCE • CALIFORNIA (310) 371-7045

PLATE 6

DESIGN OF FREESTANDING WALL

WITH AN EXPANSION SOIL CONDITION

Surface Slope of Retained Material *	Equivalent Fluid Weight
Horizontal to Vertical	lbs/ft^2/ft
LEVEL	45
5 TO 1	48
4 TO 1	53
3 TO 1	57
2 TO 1	65
1 ½ TO 1	83
1 TO 1	120

* Where the surface slope of the retained earth varies, the design slope shall be obtained by connecting a line from the top of the wall to the highest point on the slope whose limits are within the horizontal distance from the stem equal to the stem height of the wall.

PLATE 7

APPENDIX A

EXPLORATION AND LABORATORY TESTING

Exploration

Field exploration was performed using a truck mounted drill rig, backhoe, or hand-diggers as noted in the report.

Undisturbed samples of representative soils were obtained at frequent intervals in the boring or trench excavations. In drilling boring, the samples were obtained by driving a thin walled steel sampler with successive drops of the drilling Kelly Bar. The driving energy required for one foot of penetration is shown on the boring summary sheets. Soil samples were retained in 2 ½ inch diameter and 1 inch in height brass rings. In backhoe or hand-dug trenches, undisturbed samples were obtained with thin walled tubes carefully driven by hand into the trench walls and by carving chunk samples directly from the trench walls.

Classification of Soils

All soils were visually classified in accordance with the Unified Soil Classification System per ASTM D 2487.

Moisture and Density

The moisture density information can provide a gross indication of soil consistency and delineate local variations. The information can also be used to correlate soils found on this site with soils on other sites in the general area. The dry unit weight and field moisture content were determined for selected undisturbed samples. Moisture and density were done using the ASTM D 2216 method.

Direct Shear Test

Shear tests were made with a direct shear machine of the strain control type. The shear tests samples are saturated to simulate expected extreme moisture conditions. Unless indicated otherwise, tests were performed at a constant rate of shear displacement of approximately 0.002 inches per minute, under vary loads and under conditions of saturation. Samples at the indicated moisture conditions, were tested at three or more normal loads in order to determine the Coulomb shear strength parameters. ASTM D 3080 method was followed to perform all shear tests.

Consolidation Test

Soil settlement predictions under load are made on the basis of consolidation tests. The consolidation apparatus is designed to receive one-inch high rings. Loads are applied in several increments, in a geometric progression, and the resulting deformations are recorded at selected time intervals. Porous stones are placed in contact with the top and bottom of each specimen to permit addition and release of pore liquid. Samples are generally tested at increased content by adding water to determine the effect of water contacting the bearing soil. The normal load at which water is added is noted on the plate. Results are plotted on the "Load-Consolidation Curve." ASTM D 2435 method is followed during a consolidation test.

UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions			Group Symbols	Typical Names
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	Gravels: 50% or more of coarse fraction retained on No. 4 sieve	Clean Gravels	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		Gravels with Fines	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	Sands: More than 50% of coarse fraction passes No. 4 sieve	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines
			SP	Poorly graded sands and gravelly sands, little or no fines
		Sands with Fines	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-silt mixtures
Fine-Grained Soils: 50% or more passes No. 200 sieve	Silts and Clays: Liquid limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
			CL	Inorganic clays or low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	Silts and Clays: Liquid Limit Greater than 50%		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
Highly Organic Soils			PT	Peat, muck and other highly organic soils

APPENDIX B

GENERAL GRADING

The following guidelines should be used in preparation of any grading plans and job specifications where engineered fills are used and retaining walls backfilled. We should review all documents prior to submittal for statutory permits or contracting in order to ascertain that the intent of our recommendations is conveyed.

1. The area to receive compacted fill shall be stripped of all vegetation, debris, existing fill, and soft or disturbed soils, The excavated areas shall be reviewed by the geotechnical engineer in the field prior to placing controlled, compacted fill.

2. The exposed grade shall then be benched, appropriately graded, scarified to a depth of six inches, moistened to optimum moisture and recompacted to 90 percent of the maximum density.

3. The excavated on-site materials are considered satisfactory for reuse in the engineered fill. Remove any organic trash or deleterious materials. Remove boulders larger than 6 inches.

4. Soil shall be spread evenly in layers not to exceed 4 inches while loose for compaction by wackers. Add water as required. Only approved compaction equipment shall be used.

5. The fill shall be compacted to at least 90 percent of the maximum laboratory density for the material used. The maximum density shall be determined by ASTM D 1557-00.

6. Periodic on-site construction reviews and field tests shall be performed by the geotechnical engineer during grading to assist the contractor in obtaining the required degree of compaction and the proper moisture content. Where compaction is less than required, additional compactive effort should be made with adjustment of the moisture content, or the layer stripped out and replaced in thinner layer, as necessary, until a minimum of 90 percent relative compaction is obtained. The contractor shall call the soil engineer to test every two feet of vertical lift.

7. No fill soils shall be placed during unfavorable weather conditions. When work is interrupted by rains, fill operation shall not be resumed until the field tests by the soils engineer indicate that the moisture content and density of the fill are as previously specified.