

ASSOCIATED TERRA CONSULTANTS, Inc.
ENVIRONMENTAL SERVICES ENGINEERING GEOLOGY HYDROGEOLOGY

LIMITED ADDITIONAL ENGINEERING

GEOLOGIC FAULT INVESTIGATION

APN 558-41-033, OLD SANTA CRUZ HIGHWAY

SANTA CLARA COUNTY, CALIFORNIA

for

Mr. Bill Chiocchi
APN 558-41-033, Old Santa Cruz Highway
Los Gatos, CA 95033

August 25, 2016
File No: 257111

ASSOCIATED TERRA CONSULTANTS, Inc.
ENVIRONMENTAL SERVICES ENGINEERING GEOLOGY HYDROGEOLOGY

August 25, 2016

File No: 257711

Mr. Bill Chiocchi
APN 558-41-033, Old Santa Cruz Highway
Los Gatos, CA 95033

Subject: **LIMITED ADDITIONAL ENGINEERING GEOLOGIC FAULT INVESTIGATION**
APN 558-41-033, Old Santa Cruz Highway
Santa Clara County, California

Dear Mr. Chiocchi:

The attached is the report of our limited geologic fault investigation on the subject property for your proposed residential development. It is at present planned to construct a new residential structure. This report includes the logs of our new exploratory trench and test pits along with appropriate conclusions and recommendations based on this work. This work reviewed active fault exploration by John Coyle & Associates (2006), confirmation and accurate location of a fault trace found by them, additional trenching along the strike of this fault, surveying to accurately locate all the fault traces found, and preparation of this report.

All conclusions and recommendations presented in this report are contingent upon Associated Terra Consultants, Inc. being retained to review the building locations, foundation plans, and any grading plans prior to construction. The County mandates inspection and review letters to document the construction process. It is the owner's responsibility to schedule inspections for documentation purposes.

Please do not hesitate to call us if you have any questions or if we can be of any other service. I may be reached directly at (408) 590-8311. Thank you.

Very truly yours,

ASSOCIATED TERRA CONSULTANTS, Inc.



Rick Haltenhoff
President

Distribution: 4 Copies, 1 ecopy – Addressee

LIMITED ADDITIONAL
ENGINEERING GEOLOGIC FAULT INVESTIGATION
APN 558-41-033, OLD SANTA CRUZ HIGHWAY
SANTA CLARA COUNTY, CALIFORNIA

Introduction and Purpose

This is a report of our limited additional investigation of geologic fault conditions affecting or potentially affecting a residential structure at present proposed on the project site, the property at APN: 558-41-033, Old Santa Cruz Highway, Santa Clara County, California. This report is supplemental to a *Geologic Fault Investigation Study* previously performed at the project site, in 2006, by John Coyle & Associates of Fortuna, California. That work was performed to delineate a building envelope for the proposed construction of a single-family residential structure. The reader is referred to that report for the details contained therein.

John Coyle & Associates (2006) noted that the site is within the Alquist-Priolo Special Study zone along the San Andreas fault, as well as a Seismic Slope Stability Zone. Seismic Slope Stability Zones are considered by the State of California (2002) as having a potential for seismically triggered landsliding. John Coyle & Associates did not show any photolineaments lineaments crossing the project site based on their stereo aerial photointerpretation.

John Coyle & Associates (2006) excavated and logged two trenches and reported the presence of a moderately northwest trending and southwest-dipping fault trace in one of their trenches. They considered this a splay from a fault found on the adjacent property to the north by Connelly (2002a). Connelly described the fault in his trench as offsetting Tertiary Vaqueros Sandstone from Mesozoic serpentinized ultramafics, and weathered rock of the Tertiary and Quaternary Santa Clara Formation. John Coyle & Associates projected these traces to join southeast of the project site, and a second trace that projects northwest past the southwest side of an abandoned barn building pad to the northwest. Their fault traces 1A and 1B were interpreted by John Coyle & Associates as zones of about one and a half feet wide of mashed and sheared, dark to medium gray rock with rock fragments up to five inches. As shown on their logs, these two faults zones offset the overlying soils. Their fault zone identified as 1C was described as a 10-foot wide zone of shearing that he considered to include three individual fault traces. These faults offset similar materials as in fault 1A and fault 1B, and all three faults appear to have offset the overlying soils. They also reported “chaotic bedding” interpreted by them as resulting from long-term movement of the Black Road Landslide. They recommended a 50-foot setback from the fault 1A logged in their Trench T4-1. John Coyle & Associates also reported that the southern portion of the property is within a landslide complex within the Black Road Landslide. They characterized these as ‘dormant-historic’. They recommended a setback from their mapped extent of these landslides: they projected an

inclined plane from the tops of the landslide masses in this complex upwards towards the north and northwest, and recommended a setback along the line where this plane intercepts the ground surface. The approximate locations of these features are shown on the (*Project Site Engineering Geologic Map* (Attachment 1), *Log of Trench T-1* (Attachment 6), and *Engineering Geologic Cross-Sections* (Attachments 4 and 5)). They concluded the project site is developable from a geologic perspective, and that any structure for human occupancy on the site be designed to withstand strong seismic shaking.

Scope of Work

Our efforts were directed primarily at refining the location of the active fault trace which runs north of the proposed building envelope on the site. Our work on during this supplemental investigation included:

1. An engineering geologic surface reconnaissance of the site;
2. Performance of a limited site engineering geologic subsurface field investigation, addressing existing geologic fault conditions. We first located the Fault 1A logged by John Coyle & Associates (2006) in Trench T4-1. We then excavated a new trench across the projection of this fault towards the northern edge of the Proposed Building Envelope;
3. We surveyed the locations of our trench and Fault 1A (John Coyle & Associates, 2006), and displayed them on our Project Site Engineering Geologic Map;
4. Development of a geologic map and cross-section of the proposed development area limited to the information available to us, including to the extent possible, the distribution and structure of the fault, and associated geologic materials, including colluvium, landslide deposits, alluvium, fill, and bedrock, as appropriate; and
5. Preparation of this report and accompanying graphics in accordance with currently accepted practices of the profession, summarizing the previous work at the site and displaying our data collected, and presenting our conclusions and recommendations for a set-back from the fault for development of the site with a single-family dwelling, for submission to the County. This work was under the direction of Mr. Rick Haltenhoff, Professional Geologist (#3552), Certified Engineering Geologist (#1038) and, Certified Hydrogeologist (#244).

Project Site Description

The project property is a hillside lot of more than twelve acres on a northeast-facing slope in an unincorporated portion of Santa Clara County in the central Santa Cruz Mountains, southwest of Lexington Reservoir. Access to the site is from Highway 17 via a private gated driveway. Attachment 2, the *Site Vicinity Map* and Attachment 3 is the *Area Geologic Map*, show the approximate location of the project property.

The project site is bordered to the west by Highway 17, the other sides there are moderately to steeply sloping hillsides. There appears to have been grading at some point on the property, as there are four improved dirt roads, and a building pad from an old barn that is no longer present on the property. We understand it was destroyed in a storm. Elevations at the property range from approximate elevation 800 feet above Mean Sea Level to approximately 960 feet based on review of the U.S. Geologic Survey Los Gatos, California 7.5-minute topographic quadrangle map.

Vegetative cover on the project site consists primarily of native grasses and small-to medium-sized trees. Drainage of the site is by overland flow directly to Lexington Reservoir along the eastern boundary of the site. From there, the water flows north-eastward to the San Francisco Bay via Los Gatos Creek and the Guadalupe River.

Mapped Geology

Geologic maps of the area by Dibblee and Brabb (2005; *Area Geologic Map* in this report) and McLaughlin and others (2001) show the project property and vicinity to be covered by landslide deposits. Mapping by Sarna-Wojcicki and others (1975) also shows the project property to be located within a zone of massive landsliding, as do several other geologic maps of the area. The direction of movement of this landsliding is shown as directly downhill to the northeast, towards Lexington Reservoir.

The site is located in a region of high seismic activity dominated by continued movement along the San Andreas Fault Zone. The San Andreas fault last had a major earthquake in the project site area in 1989, the 6.9Mw Loma Prieta Earthquake. This earthquake did not produce surface rupture, but did cause strong ground shaking in the vicinity of the project site. The epicenter of that earthquake was in the Forest of Nisene Marks, about ten miles south-southwest of the project site. The largest previous earthquake in this area was in 1906, with its epicenter directly west of the Golden Gate. That event had a magnitude of 7.9Mw, with substantial surface rupture occurring from San Juan Bautista to Cape Mendocino.

The San Andreas fault has been mapped as a complex zone of deformation up to about a mile wide throughout much of the Santa Cruz Mountains. The map by Rogers and Armstrong (1973) shows the 1906 surface rupture to be located approximately 1,200 feet southwest of the property, which closely matches the location shown by Sarna-Wojcicki and others (1975). According to the mapping by Sarna-Wojcicki and others, the project property is also located approximately 2,200 feet southeast of a relatively minor subsidiary trace of the fault. Work by Prentice and Schwartz of the U.S. Geological Survey (1998, personal communication) suggests that the region of active faulting is confined to a narrow zone that is largely coincident with the principal fault trace mapped by Sarna-Wojcicki and others. Their work also suggests that this trace most likely coincides with the 1906 surface rupture trace through this area. McLaughlin and others (2001) mapped a fault trace to the northwest of the project site about 1800 feet, this trace trends southeast-northwest.

Other major faults in the region of the project site are the Hayward and Calaveras faults. The principal trace of the Hayward fault is located approximately 20 miles northeast of the property. The Hayward fault last had a major earthquake in 1868, with an estimated magnitude of 7.0 ± 0.5 (Richter). The epicenter of that earthquake is believed to have been about 20 miles northeast of the project site in the Milpitas area. The Calaveras fault is approximately 22 miles northeast of the project site. Strain is accommodated along substantial portions of the Calaveras fault and parts of the Hayward fault primarily by a combination of creep and large numbers of small- to moderate-sized earthquakes; large magnitude events are much less common in those areas. All of the aforementioned faults comprising the San Andreas system are northwest-trending, right-lateral, strike-slip faults.

Subsurface Investigation

The field investigation was done on May 10, 2016 and on July 8, 2016, by our Project Engineering Geologist under the direction of the Certified Engineering Geologist. This work included re-excavating a portion of Trench T4-1 by John Coyle & Associates (2006) to expose the fault trace identified in their geologic report. We also excavated and logged a new exploratory trench roughly parallel with the trench by John Coyle & Associates, near the northern boundary of the Proposed Building Envelope. This essentially extended their trench towards the southwest. The field investigations included geologic reconnaissance of the site and vicinity and the excavation, inspection, and logging of the new exploratory trench, two test pits, and survey of the approximate locations of the trenches excavated by John Coyle & Associates, as well as approximate locations of the borings drilled by Silicon Valley Soil Engineering are shown on the *Project Site Engineering Geologic Map*.... The new trench and test pits were excavated by a backhoe equipped with a 24-inch-wide bucket. The general average trend of the San Andreas fault in the site area, is approximately N 30° W to N 40° W. We surveyed the locations of the excavations using a total station using conventional surveying techniques. Upon completion of these field investigations the trenches were loosely backfilled with native materials. We surveyed the locations of our trenches and test pits and displayed the results on a topographic map of the site. In total we spent 17 hours of field investigation for this work.

Soils and Bedrock Conditions

The project site is underlain by native soils, all upon or a part of a large landslide. The soils observed in our trench were a mixture of gravelly clays and sandy clays. These ranged from light brown to brownish-gray, and were generally damp to wet. The gravelly clay had low plasticity with sub-angular to angular clasts of various lithologies. The sandy clays had high plasticity and were typically stiff and very gummy. Some places had slickenside surfaces with an orientation of N65°W 59°S. The soils observed in the test pits were consistent with the soils reported by John Coyle & Associates (2006) in his trench T4-2.

Weathered sandstone was observed in the trench. It was clean, fine-grained, well-sorted, light-gray sand with localized areas that had black discolorations. Zones of the sandstone exposure were weathered to

sand. We also encountered weathered to moderately weathered meta-graywacke in the western extent of our trench T-1. This unit was medium-grained to coarse-grained sandstone with grains of conchoidally fractured quartz and euhedral to sub-euhedral plagioclase.

The distribution of these units to the depths investigated is shown on the *Project Site Engineering Geologic Map*, on the trench and test pit logs, and on the *Engineering Geologic Cross-sections (Attachment 4 and 5)*. The trench log and test pits contain detailed descriptions of the units encountered. Attachment 6 displays the Log of Trench T-1, Attachment 7 displays the Logs of Test Pits TP-1 and TP-2, and Attachment 8 is the Explanation for Trench T-1 and Test Pits TP-1 and TP-2.

Feasibility

We believe it is geologically feasible to construct a residential structure on the project site, provided the conclusions and recommendations in this report are incorporated into the development plans, specifications and construction. We must review the improvement plans for the project site to confirm conformity with the conclusions and recommendations of this report.

Site Faulting

We observed a zone of faulting in our Trench T-1 at the approximate location John Coyle & Associates (2006) projected in their report. We observed the juxtaposition of different rocks across this zone separated by zones of clay that were sheared, very gummy, and slickensided. This fault zone is about 20 feet wide and dips to the southwest into the hillside at about 59°. It is true that landslide movement – such as movement of the very large Black Road Landslide - can displace near-surface fault traces in a downhill direction and distort them, making correct identification of the location(s) and mode(s) of recent fault activity a complicated task. However, the facts that the surficial A- and B-soils were disturbed and varied in thicknesses at the two locations observed by us (in the portion of trench T4-1 by John Coyle & Associates excavated by us and in our Trench T-1), with discontinuous and missing units, juxtaposing different rocks types at a location of obvious fault movement, indicate to us this is an active trace of the San Andreas fault.

Part of our surface engineering geologic reconnaissance was along Highway 17 seeking lithology changes or a fault trace outcropping there. The materials we observed in those cut exposures were consistent with those we observed southwest of the fault trace in the portion of trench T4-1 by John Coyle & Associates (2006) excavated by us and in our Trench T-1, and those reported by John Coyle & Associates from other locations southwest of the fault trace. We did not observe any evidence that the fault trace outcrops in the exposures afforded us in the cuts along Highway 17.

Geologic mapping by Dibblee (2005) shows a continuous fault trace crossing approximately through the Proposed Building Envelope. This trace has the same approximate trend and alignment as the fault trace observed in our Trench T-1 and as projected by John Coyle & Associates (2006) from their trench T4-1.

We believe the trace observed by us is likely the same as mapped by Dibble (2005) and McLaughlin and others (2001). John Coyle & Associates also showed this same relationship.

Evaluation of the potential for future surface fault rupture at any specific location generally is limited to proving or disproving the presence of direct evidence of past surface fault rupture at that location. When viewed on human time scales, active faulting tends to occur most often on existing fault traces. John Coyle & Associates (2006) reported no fault trace observed in their Trench T4-2, which traverses the entire uphill portion of the Proposed Building Envelope. We have accurately located the active fault trace observed by John Coyle & Associates and us in their trench T4-1 and in our Trench T-1. We recommend a fault setback of at least 25 feet from this fault trace to the Proposed Building Envelope as shown on our Project Site Engineering Geologic Map. We believe that the chance of surface fault rupture occurring through the Proposed Building Envelope should be considered moderate to low within the life expectancy of the proposed house. We recommend that the setback from this fault trace be marked in the field by either us or a Licensed Land Surveyor based on the relationships shown on our Project Site Engineering Geologic Map.

Site Landsliding

John Coyle & Associates (2006) performed stereo aerial photograph interpretation and mapped the very large Black Road Landslide beneath the Proposed Building Envelope and smaller landslides upon the Black Road Landslide south of the Proposed Building Envelope. We were provided with a Preliminary Slope Stability Analysis performed by United Soil Engineering, Inc (2006) for the project site and the two adjacent parcels. They reported a pseudostatic factor of safety of 1.7 for the project site and 1.4 pseudostatic factor of safety for the adjacent lots. They did not provide a static factor of safety nor a Newmark analysis of potential movement.

We viewed the extent of the landsliding near the Proposed Building Envelope during our site engineering geologic reconnaissance. We agree the site is upon the very large Black Road Landslide. The smaller landslides mapped by John Coyle & Associates (2006) upon the Black Road Landslide were readily visible southwest of the Proposed Building Envelope. We then excavated two test pits to investigate conditions between the landslide and the Proposed Building Envelope. These test pits were south of the Proposed Building Envelope at the locations shown on our Project Site Engineering Geologic Map. The geologic materials in these test pits were consistent with the soils in our Trench T-1 and with those reported in trench T4-2 by John Coyle & Associates southwest of the active fault trace. We observed no evidence of landsliding in these test pits. We recommend a 100-foot set back from the tops of the landslides mapped by John Coyle & Associates and confirmed by us visually in the field.

Strong Seismic Shaking

Strong to very violent ground shaking, which would likely result from a large earthquake on the San Andreas or any of the other nearby faults in the region, is a significant hazard at the project site. This shaking would be like that or greater than that which occurred during the 7.9Mw earthquake in 1906 –

and the 1989 Loma Prieta 6.9Mw earthquake. This is a hazard that cannot be eliminated due to the presence of an active fault trace very close to the northeast of the Proposed Building Envelope, and the large number of active earthquake faults present in the region; however, current building codes provide standards of construction intended to minimize potential damage resulting from such shaking.

Foundation

We recommend that the foundation for the proposed structure be of a rigid grid, pier and grade-beam construction.

Ground Water

We encountered free groundwater only as films on fracture surfaces within the fault zone encountered by us in our Trench T-1 and the portion of the John Coyle & Associates (2006) trench T4-1 excavated by us. Ground water levels vary from time to time, most notably with the seasons. We do not expect the performance of foundation members will be significantly affected by shallow ground water levels as we only saw the water within the fault zone.

Artificial Fill

We cannot vouch that we have identified all locations of artificial fill at the project site; this investigation did not set out to do so. We investigated only those areas that pertain to the location of the active fault trace on the site. Artificial fill may be encountered at locations not shown by us on the *Project Site Engineering Geologic Map* and *Log of Trench T-1*. We refer the reader to the report by John Coyle & Associates (2006) for identification and location of artificial fill not shown on our *Project Site Engineering Geologic Map* and *Log of Trench T-1*. We recommend the quality of the artificial fill be determined by testing by a Geotechnical Engineer. Until properly tested and approved by a Geotechnical Engineer, all artificial fill at the site must be considered un-engineered fill, must be considered unstable, may present a hazard to life and limb, and shall not be relied upon to support a structure. No structure shall be placed uphill of artificial fill or downhill of artificial fill unless and until specifically approved by a Geotechnical Engineer. The soft soils must be removed and replaced as necessary as properly compacted fill under the direction of a Geotechnical Engineer in areas close to the proposed construction.

Trench Backfill

Upon completion of this investigation, the trenches were loosely backfilled with native materials. The backfill should be removed from these excavations and replaced as properly compacted fill, as necessary, under the direction of a Geotechnical Engineer.

Future Modifications

Future modifications of the project site shall be carefully planned with professional consultation. This is especially true for any construction activity involving water such as landscape irrigation systems and swimming pool additions.

Future Occupants

The recommendations set forth in this report shall be presented to all future occupants of the project site to insure their understanding of how they can best maintain the integrity and value of the property.

INVESTIGATION LIMITATIONS

This report has been prepared in accordance with generally accepted Engineering Geologic practices. The conclusions and recommendations contained in this report have resulted from Engineering Geologic analyses based upon reasonable interpretations of the materials encountered at the site and literature reviewed. The work herein was limited to the location of the active fault near the Proposed Building Envelope and the setback therefrom, and the quality of the geologic materials between the Proposed Building Envelope and landslides to the south and the setback therefrom, and shall not be construed to be a complete Engineering Geologic investigation and report or used for any other purpose. The conclusions and recommendations are based on the assumption that the geologic conditions do not deviate significantly from those observed. No warranty, expressed or implied, is made.

This report is issued with the understanding that it is the responsibility of the owner or owner's representative to ensure that the contents of this report are called to the attention of Architects and Engineers, and that these recommendations are incorporated into the plans, specifications, and construction. Moreover, it is the responsibility of the owner to see that the Contractors carry out these recommendations in the field.

The findings of this report are valid as of the present time. However, the passing of time will change the conditions of the existing property due to natural processes or the works of man. In addition, legislation or the broadening of knowledge may require other recommendations. Accordingly, the findings of this report may be invalidated, wholly or partly, by changes beyond our control. Therefore, this report should not be relied upon after a period of three years without being reviewed by a Certified Engineering Geologist.

It has been a pleasure to be of service to you on this project. Please do not hesitate to call us if you have any questions or if we can be of any other service. Thank you.

Respectfully submitted,
ASSOCIATED TERRA CONSULTANTS, Inc.



Katie Bryant
Project Engineering Geologist



Rick Haltenhoff
Certified Engineering Geologist, 1038

Selected References

Attachments:

1. *Project Site Fault Map (in pocket)*
2. *Site Vicinity Map*
3. *Area Geologic Map*
4. *Engineering Geologic Cross-section A-A'*
5. *Engineering Geologic Cross-section B-B'*
6. *Log of Trench T-1*
7. *Log of Test Pits TP-1 & TP-2*
8. *Explanation for Trench T-1 and Test Pits TP-1 & TP-2*



SELECTED REFERENCES

California, State of, 1991, Earthquake fault zones map of the Los Gatos 7.5-minute quadrangle, Santa Clara County, California: U. S. Geological Survey Map, 1:24,000 scale.

_____, 2002, Seismic hazard zones map of the Los Gatos 7.5-minute quadrangle, Santa Clara County, California: U. S. Geological Survey Map, 1:24,000 scale.

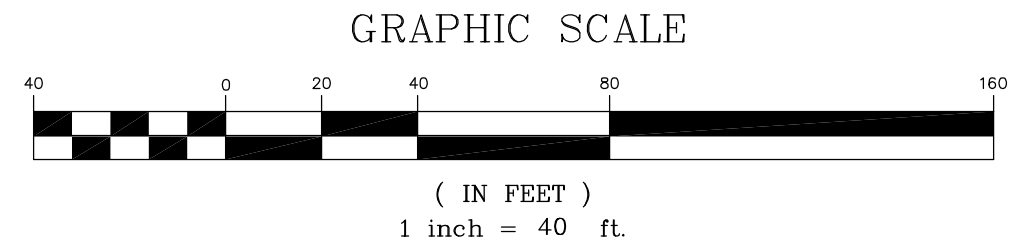
Connelly, S.F., 2002a, Engineering Geologic Investigation; Proposed Residence, J.C. Potter Property; Parcel 1; Old Santa Cruz Highway, Santa Clara County, California: unpublished report dated July 9, 2002.

Dibblee, T.W. and Minch, J.A., 2005, Geologic map of the Los Gatos quadrangle, Santa Clara & Santa Cruz Counties, California: Dibblee Geological Foundation, Dibblee Foundation Map DF-157, scale 1:24,000.

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McLaughlin, R.J., Helley, E.J., 2001, Sheet 4: Santa Teresa Hills and southwestern part of the Morgan Hill quadrangles, in McLaughlin, R.J., Clark, J.C., Brabb, E.E., and Colon, C.J., 2001, Geologic maps and structure sections of the southwestern Santa Clara Valley and southern Santa Cruz Mountains, Santa Clara and Santa Cruz Counties, California: U.S. Geological Survey Miscellaneous Field Studies Map MF-2373, 1:24,000 scale.

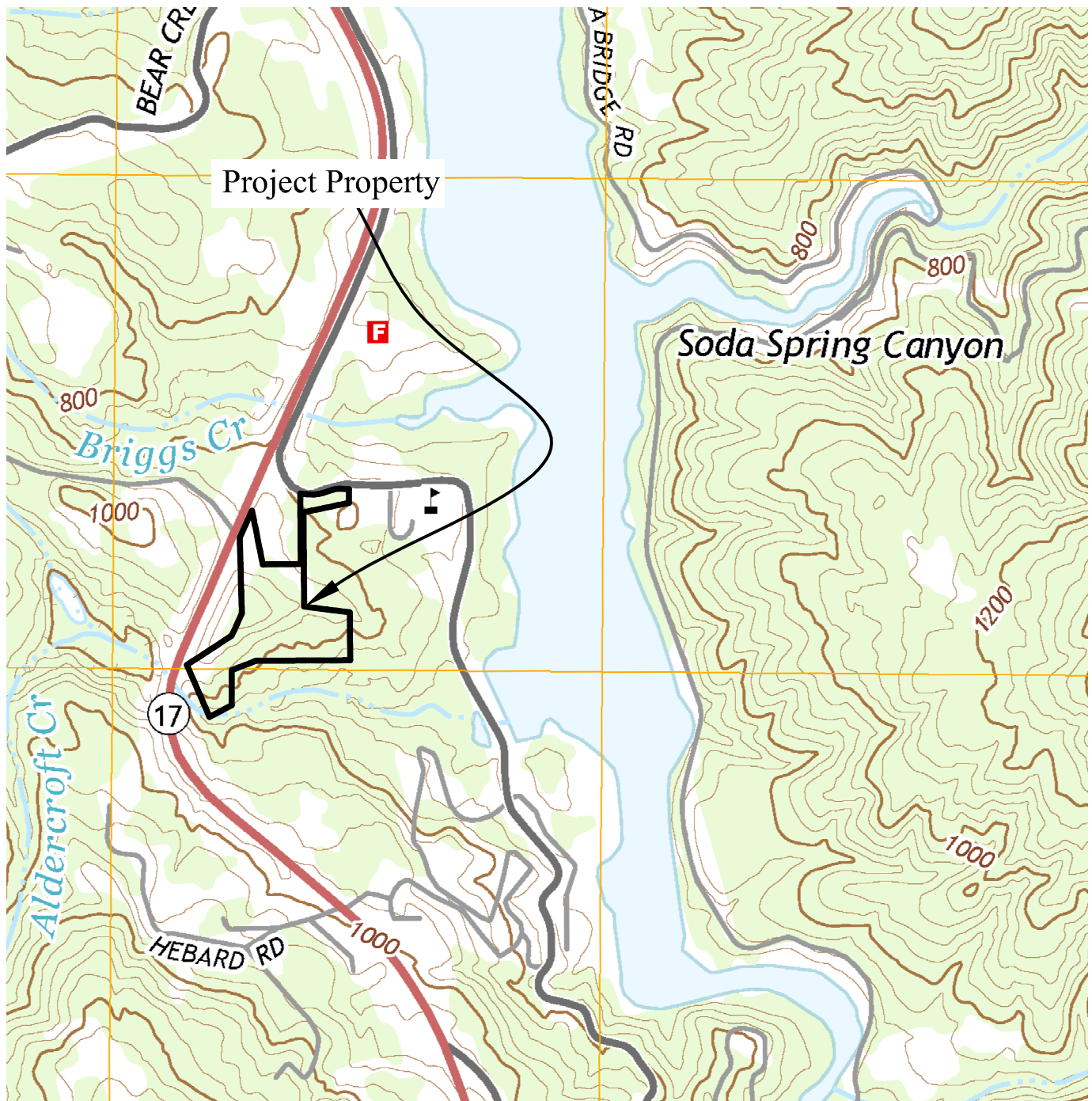
United Soil Engineering, INC., 2006, Preliminary Slope Stability Analysis, for Santa Rosa Mortgage and Investment Company California State Highway 17 and Old Santa Cruz Highway Santa Clara County California, unpublished consultants report dated January 26, 2006



Designed:	No	Revision	By	Date
Drawn By: DD				
Checked: RH				
Date: 6/26/2016				

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PROJECT SITE ENGINEERING GEOLOGIC MAP APN: 558-41-033; OLD SANTA CRUZ HIGHWAY SANTA CLARA COUNTY, CALIFORNIA	Project Number 257111
	Attachment 1



SITE VICINITY MAP

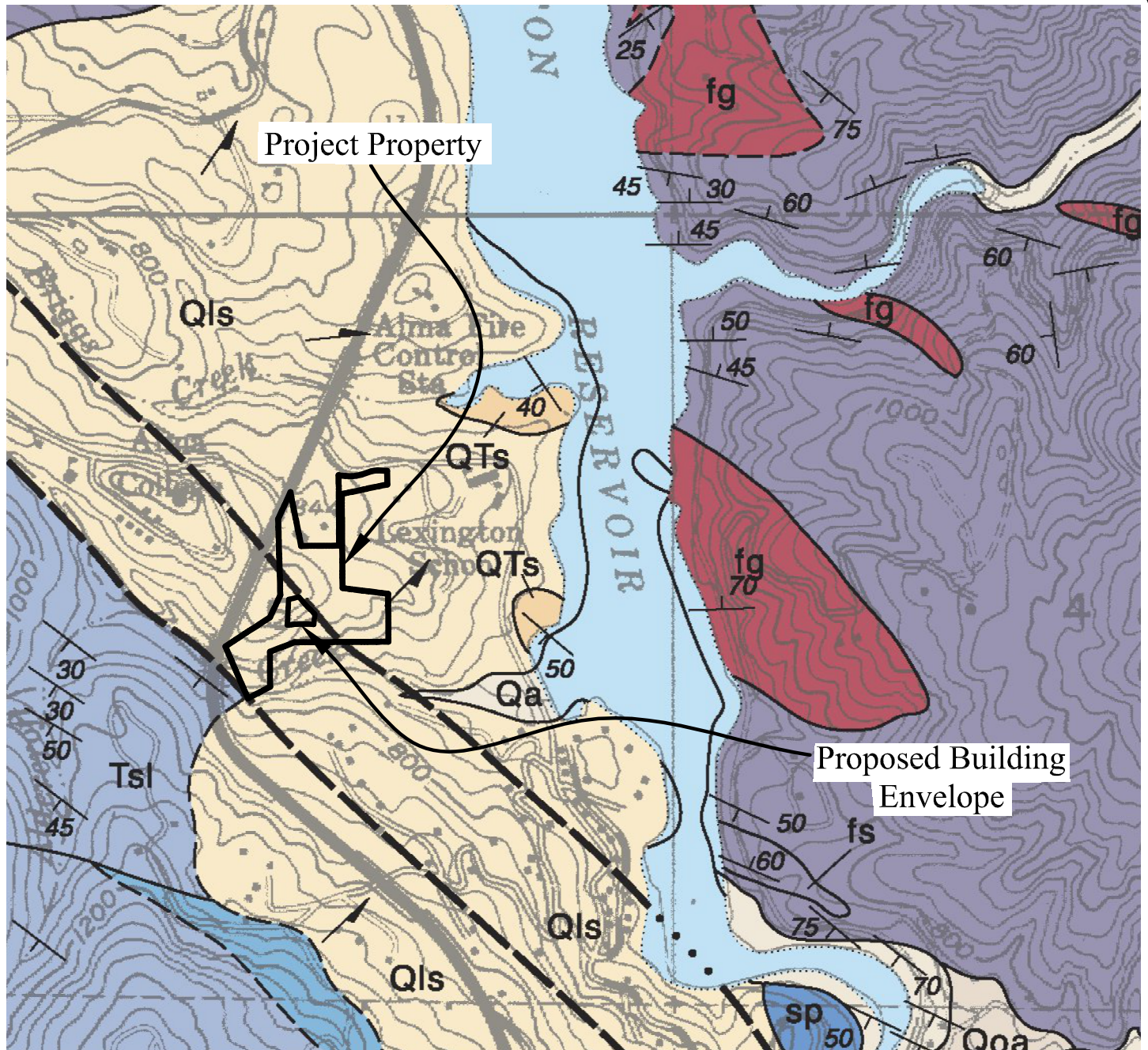
APN: 558-41-033; Old Santa Cruz Highway
Santa Clara County, California



SCALE

1 inch ~ 1,000 feet

Base: USGS 7.5-minute Los Gatos, California topographic quadrangle, at a scale of 1:24,000.



EXPLANATION

- Qa - Quaternary alluvial gravel, sand, silt, and clay; represents younger stream alluvium in fan deposits; mapped as part of undivided Qa where not differentiated.
- Qls - Quaternary landslide.
- QTs - Santa Clara Formation (Quaternary and Tertiary).
- sp - Serpentinite (Late Cretaceous).
- fg - Greenstone (Jurassic and Cretaceous).
- fs - Graywacke sandstone (Jurassic and Cretaceous).
- Tsl - San Lorenzo Formation (Tertiary).

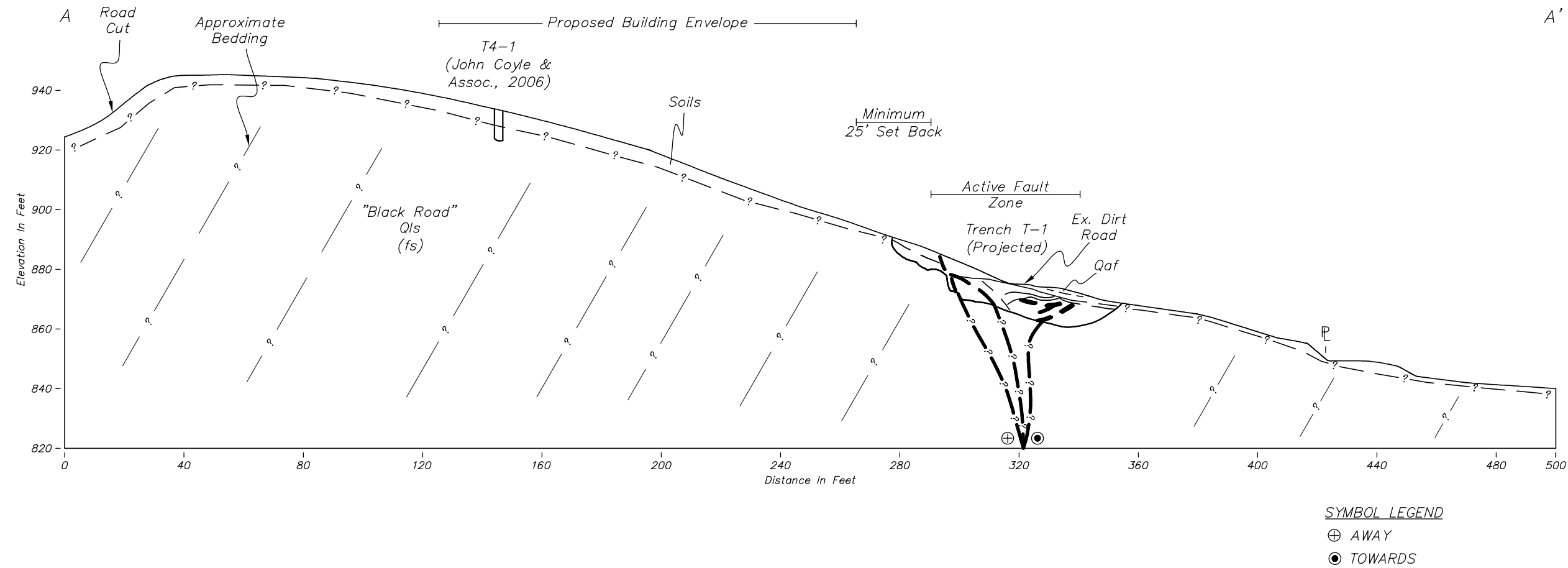
AREA GEOLOGIC MAP

APN: 558-41-033; Old Santa Cruz Highway
Santa Clara County, California



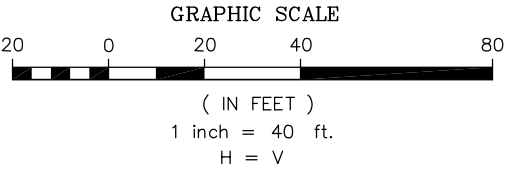
1" ~ 500'

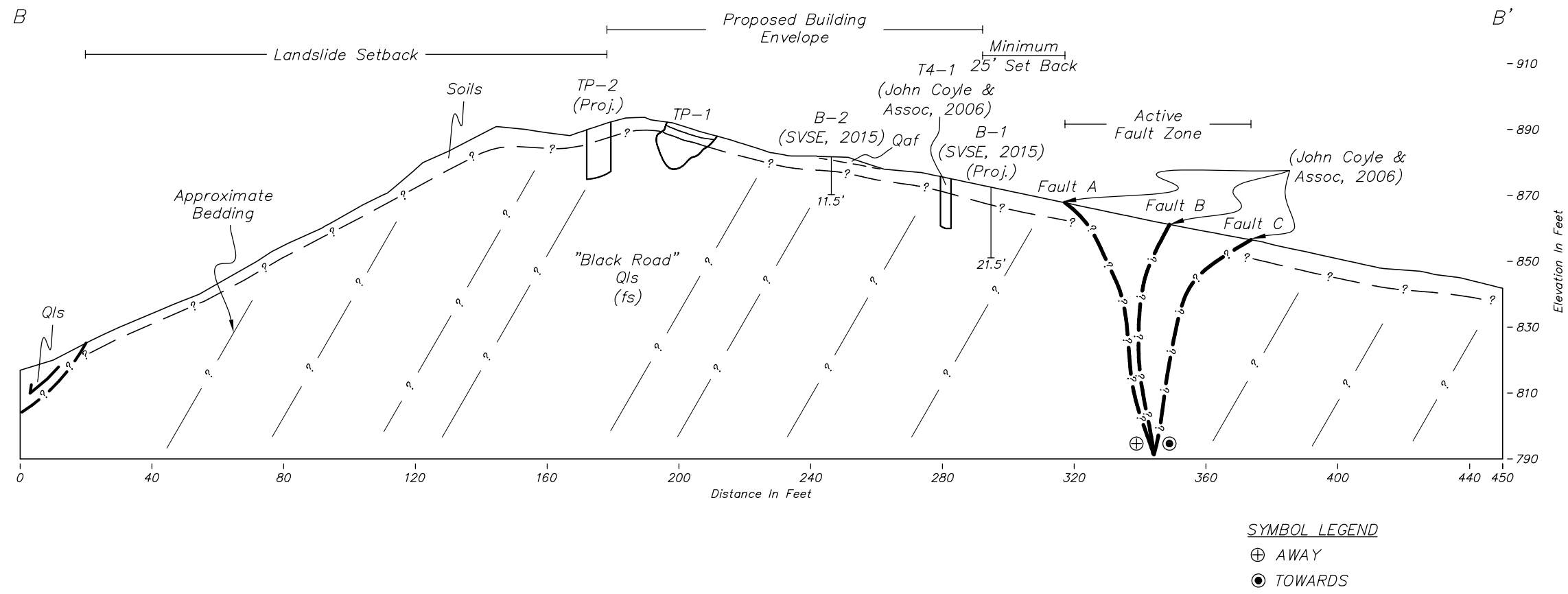
Base: Geologic Map of the Los Gatos, California Quadrangle, Dibblee (2005)



ENGINEERING GEOLOGIC CROSS-SECTION A-A'
APN: 588-41-033, Old Santa Cruz Highway
Santa Clara County, California

EXPLANATION:
See Area Geologic Map

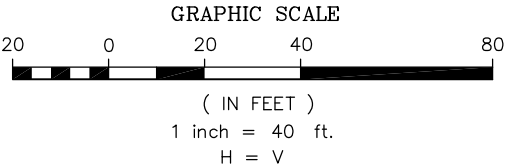


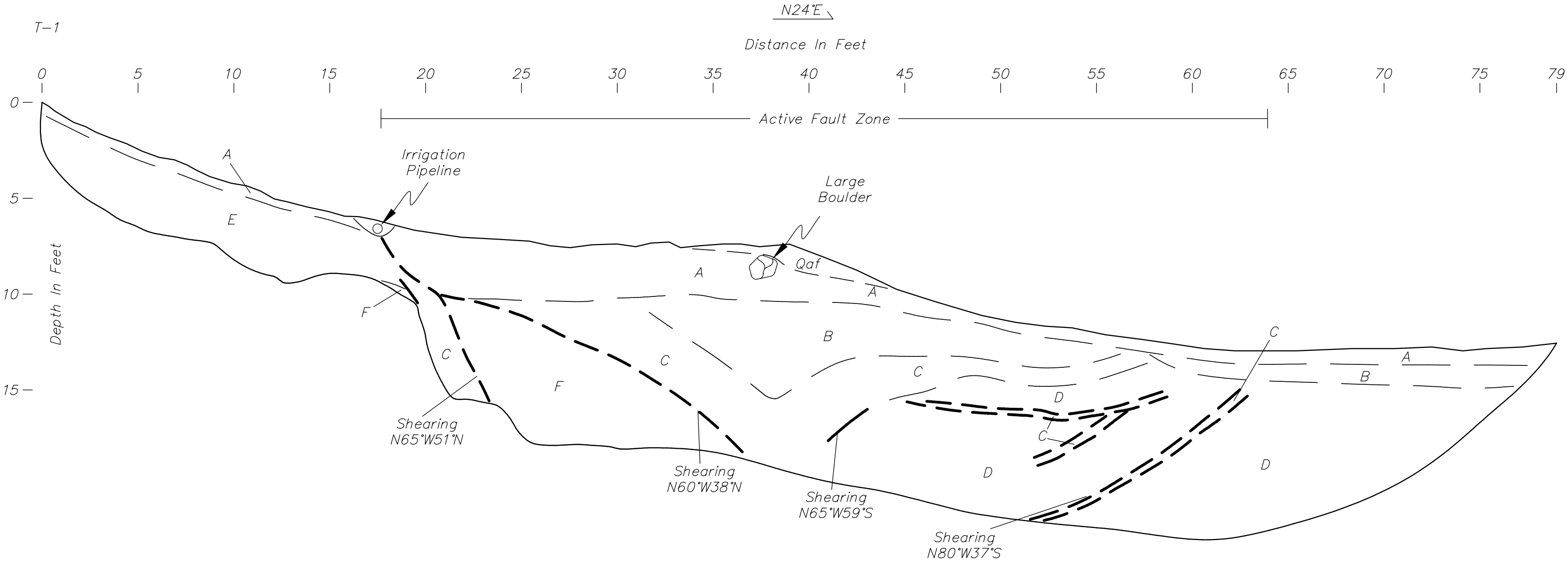


ENGINEERING GEOLOGIC CROSS-SECTION B-B'

APN: 588-41-033, Old Santa Cruz Highway
Santa Clara County, California

EXPLANATION:
See Area Geologic Map



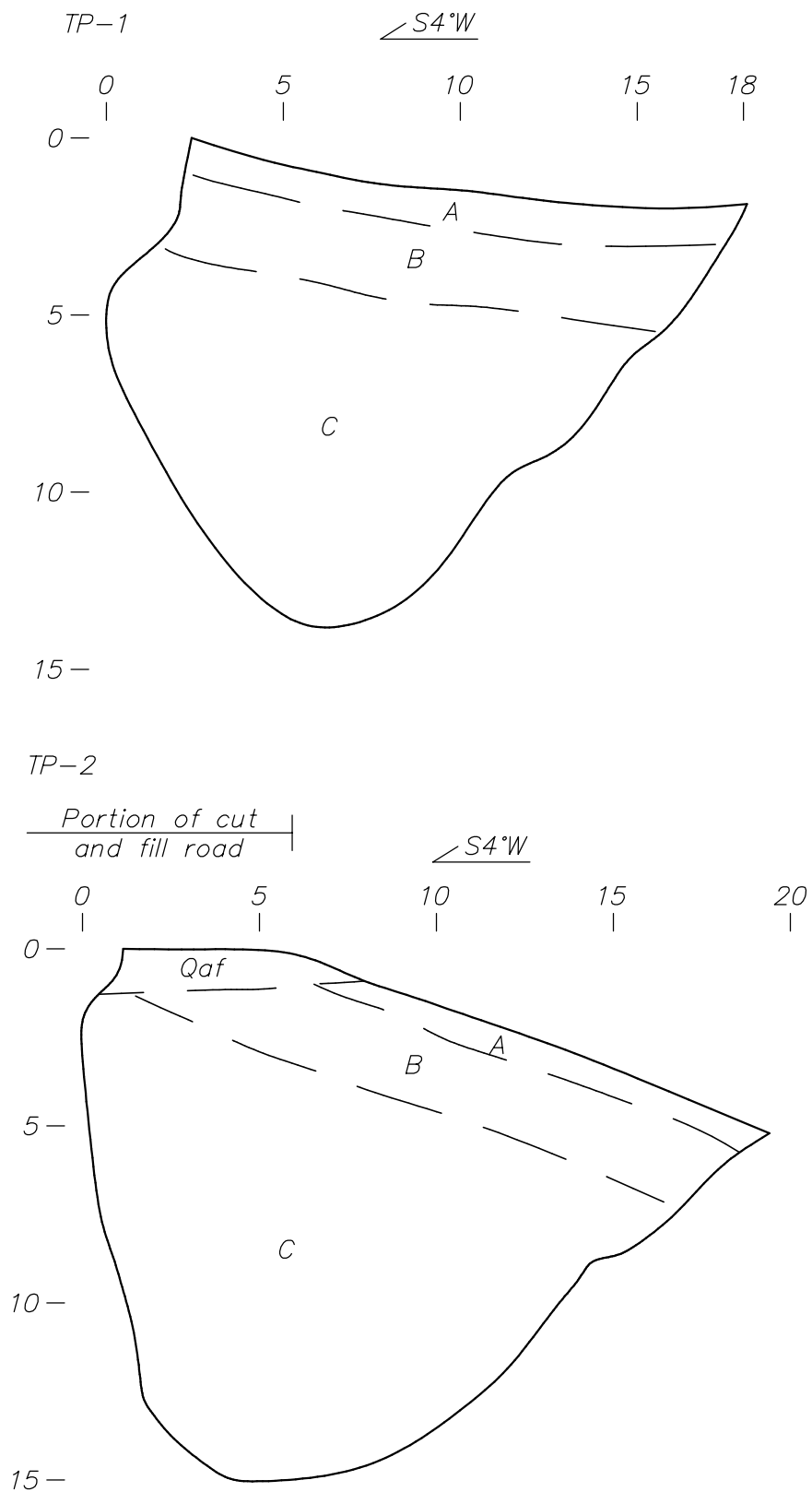


LOG OF TRENCH T-1

APN: 558-41-033; Old Santa Cruz Highway
Santa Clara County, California

See Explanation of Trench T-1 and Test Pits TP-1 and TP-2 for explanation.

1" = 5'
H = V



LOGS OF TEST PITS TP-1 AND TP-2

APN: 558-41-033; Old Santa Cruz Highway
Santa Clara County, California

- A – GRAVELLY CLAY, light brown, slightly damp, low plasticity, soft; contains clasts of various lithologies, sub-angular to angular.*
- B – SANDY CLAY, slightly damp, reddish brown, medium- to-high plasticity, medium dense to dense; some roots: B-soils horizon.*
- C – SANDY CLAY, light brownish-gray, slightly damp to damp, high plasticity, stiff; sheared, very grainy, slickensided surfaces measured N65°W59°S. Bent over northward where it approaches the surface. B-soils (subsoils) missing over this feature, but A-soils thickness unaffected.*
- D – WEATHERED SANDSTONE, light gray to black, damp, areas weathered to sand, clean well sorted sand.*
- E – META-GRAYWACKE, tannish brown to dark brown, very dense, medium- to coarse-grained, well to moderately sorted; moderately weathered to weathered, blocky texture, grains of euhedral feldspar and conchoidally fractured quartz.*
- F – CLAYEY GRAVEL, reddish brown, slightly damp, medium dense to dense; clasts are subrounded and range up to 1-inch across.*

***EXPLANATION FOR TRENCH T-1
AND TEST PITS TP-1 AND TP-2***

APN: 558-41-033; Old Santa Cruz Highway
Santa Clara County, California