pbscommissions - Re: Engelhardt Comments: 11/17/21 CPA Special Meeting: CDP 2019-0024, CDP 2019-0034 (Caltrans)

From: "S. Dall" <sdall49@aol.com>
To: "pbscommissions@mendocinocounty.org" <pbscommissions@mendocinocounty.org...
Date: 11/17/2021 10:28 AM
Subject: Re: Engelhardt Comments: 11/17/21 CPA Special Meeting: CDP 2019-0024, CDP 2019-0034 (Caltrans)
Cc: "angelbluff30@gmail.com" <angelbluff30@gmail.com>, "bob.merrill@coastal....
Attachments: 01-0C550 PGDR FINAL 5_15_20.pdf

Re: CDP 2019-0024

Geotechnical analysis is not a requirement for application, but it is a requirement for project design that has not been met.

Please see recommendation on Page 8 of the attached Caltrans document, and attached soils analyses. As of June 2021 those studies had not been conducted, and if they have been performed subsequently (there is no evidence that they have), the project design before the County does not reflect that input.

Stephanie Dall, Partner
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-----Original Message-----
From: S. Dall <sdall49@aol.com>
To: pbscommissions@mendocinocounty.org <pbscommissions@mendocinocounty.org>; krogj@mendocinocounty.org <krogj@mendocinocounty.org>; gonzalesn@mendocinocounty.org <gonzalesn@mendocinocounty.org>
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Sent: Tue, Nov 16, 2021 4:56 pm
Subject: Engelhardt Comments: 11/17/21 CPA Special Meeting: CDP 2019-0024, CDP 2019-0034 (Caltrans)

TO: Mendocino County PBS/Coastal Permit Administrator–

Beverly Engelhardt, is Trustee of the Engelhardt Trust/owner of APN 123-310-016, located on Navarro Ridge across from the Navarro Point Preserve, a portion of which has been condemned by Caltrans for the Navarro Safety Project.

Contact Information:
Beverly Engelhardt, Trustee
Engelhardt Living Trust
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Email: angelbluff30@gmail.com
cc: bbengelhardt@gmail.com
sdall49@aol.com

Mrs. Engelhardt is unable to participate in the County hearings scheduled for tomorrow on the two Caltrans applications referenced above, and has requested that the points summarized below be submitted on her behalf for your consideration prior to any action on this items either now or in the future.

Summary of Mrs. Engelhardt's comments to the Mendocino County Coastal Permit Administrator:

Introduction:
• Resident of Navarro Ridge for over 30 years, and personally familiar with:
- Highway 1 traffic and safety conditions adjacent to Navarro Ridge and Coastal Mendocino County.
- Unstable geology along Highway 1 adjacent to Navarro Ridge, including on Engelhardt and neighboring properties.
- Flora and fauna on the Navarro Point Preserve, and on Navarro Ridge itself.
• Requests postponement of action on CDP 2019-0024 and 0034, until adequate information is in hand to identify and avoid potential significant impacts to coastal resources, the traveling public, and the Albion community
OR
• Requests outright denial of CDP 2019-0024 and 0034, for failure to comply with the County's certified LCP.

Reasons in support of requests:

1. No need for CDP 2019-0024 (segment already straight and safe, and other locations far more dangerous; Project in CDP 2019-0034 is flawed (not most effective or least damaging).

2. Inadequate information available to County and Public to analyze and approve these projects, including, but not limited to:

- **GEOLOGIC HAZARDS**.
- geologic instability and failures triggered by construction activity in this area is well known.
- Proposed "slopecut" has high risk of destabilizing Engelhardt and neighboring properties.

- Caltrans told CTC in October 2020: all geological studies completed/no worries for adverse effects on remainder Engelhardt property, but referenced "report" recommended more geotechnical investigations before designing project (Report dated May 15, 2020).
- Caltrans, however, continued seeking access to Engelhardt property for geotechnical investigation into June 2021.

- On June 22, 2021 Caltrans attorney unexpectedly told Engelhardt trustees that seismic refraction surveys had been performed on other properties in the project area were all that would be needed, but never produced those studies to Engelhardt trustees.

- No such geotechnical investigation reports/boring logs found in documents posted to County web site when last checked/request to County for such documents unanswered.

- Nothing in County staff report either identifying or addressing geologic hazards in relation to project design, landform alteration, or human health and safety.

- In condemning Engelhardt and other properties, Caltrans avers it is indemnified against claims for damage to remainder of properties not condemned, leaving owners in the lurch if poorly designed projects fail.

- **CEQA/NEPA** Environmental Review.

- Project doesn't qualify for original Caltrans CEQA/NEPA exemptions because of its location and proximity to sensitive flora and fauna.

- Environmental information is outdated and inadequate even when done.

- The County cannot rely on either the Caltrans exemptions or its outdated biological information in determining Local Coastal Program consistency.

-More recent preliminary Navarro Ridge project area botanical survey by a well-known local botanist demonstrates the inadequacy of Caltrans site evaluations so far.

- **LCP SCENIC PROTECTION**.

- Highly scenic Navarro Ridge and Navarro Point Preserve not properly identified or afforded protection and enhancement required by LCP -- and imposed on private owners.

- **LCP SENSITIVE PLANT PROTECTION.**

- Sensitive trees and plant species not properly identified or afforded protection and enhancement required by LCP -- and imposed on private owners.

3. Project alternatives/cumulative impacts not addressed.

- Caltrans ignored cumulative effects and only addressed "no project" in its documents.

- County does not appear to have addressed either.

Conclusion:

The Engelhardt Trust thanks County staff for its efforts and appreciates the work done to keep California's highways safe, but proper steps have not been taken so far to protect coastal and human resources affected by these projects. Mrs. Engelhardt asks the County to either postpone action until the proper information and analysis can be made available to County staff to uphold the LCP, OR to deny the projects on November 17 and send Caltrans back to the drawing board to do it correctly, as private owners would be required to do.

Submitted on behalf of Beverly A. Engelhardt, Trustee
Engelhardt Living Trust
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State of California
Department of Transportation

Business, Transportation and Housing Agency

Memorandum

Serious drought.
Help Save Water!

To: Jim Rasmussen, PE
Chief, Design Branch M3
North Region-Office of Design

Date: May 15, 2020

File: 01-MEN-001 PM 41.8/42.3
EA: 01-0C550
EFIS ID: 0112000300

Attn: Jon McKean

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
OFFICE OF GEOTECHNICAL DESIGN WEST
BRANCH F

Subject: Preliminary Geotechnical Design Report for Navarro Ridge Safety Project

1. INTRODUCTION

This safety project is in Mendocino County on State Route 1 between Post Miles 41.8 and 42.3 (Figure 1). The purpose of this project is to reduce the frequency and severity of collisions. The project proposes to widen existing shoulders, which will result in greater sight distance and provide added shoulder width for bicycles.

1.1 Project Description

This report provides recommendations for recutting existing cutslopes, the placement of conventional fills, and the construction of a Geosynthetic Reinforced Embankment (GRE). The components of the project addressed in this report are presented in Table 1. The limits of the cuts and fill are shown on the layouts in Appendix 1.

Table 1 – Geotechnical Project Components

Design Item	Stationing "M" Line		Length (Feet)	Maximum Design Height, (Feet)	Notes
	Approximate Begin	Approximate End			
Fillslope	0+00	2+50	250	9	1.8H:1V to 2H:1V
Fillslope	2+50	3+65	115	3	2H:1V
Fillslope	4+50	5+50	100	13	2H:1V

Fillslope	6+00	7+00	100	14	1.8H:1V to 2H:1V
Fillslope	8+00	13+00	500	5	2H:1V Sliver Fills
Fillslope	13+01	15+51	250	12	2H:1V
GRE	16+75	17+55	80	14	1.4H:1V
Fillslope	17+56	26+00	844	16	1.8 to 2H:1V
Cutslope	5+00	7+50	250	32	1.1H:1V to 1.3H:1V
Cutslope	8+00	14+00	600	6	1.5H:1V Ditch
Cutslope	14+50	24+75	1025	55	1.5H:1V
Cutslope	25+00	26+63	163	6	1.5H:1V Ditch

1.2 Exception to Policy

There are no exceptions for this project.

2 GEOTECHNICAL INVESTIGATION

Our investigation consisted of a review of published geologic maps, field mapping, laboratory testing, and review of the project plans.

2.1 Subsurface Exploration

Three bulk soil samples were collected from the existing cutslopes using a shovel and pick to aid in characterizing the subsurface materials. A summary of the bulk soil samples collected is provided in Table 2.

Table 2 – Bulk Soil Sample Summary

Sample #	Sample Location Coordinates		Approximate Stationing "M" Line (Feet)	Approximate Ground Surface Elevation (Feet)	Depth (ft)	Date Collected
	Latitude	Longitude				
1	39° 11' 56.706" N	123° 46' 1.614" W	5+75	225	0-2	9-12-19
2	39° 12' 5.346" N	123° 46' 5.815" W	15+25	220	0-2	9-12-19
3	39° 12' 10.019" N	123° 46' 8.353" W	20+50	215	0-2	9-12-19

2.2 Laboratory Testing

Laboratory tests were performed on the three bulk soil samples detailed in Table 2. The following tests were performed: Mechanical Analysis, Atterberg Limits, Relative Compaction, and Corrosivity. The laboratory test results are provided in Appendix 2.

2.3 Geologic Mapping

Field mapping focused on examining the materials exposed in the existing cutslopes, the areas where fill is to be placed, and surface drainage. The performance of the existing cutslopes and embankments was evaluated as part of the field mapping.

3 GEOTECHNICAL CONDITIONS

3.1 Geology

The project is underlain by Undivided Cretaceous marine deposits (Jennings, C.W. and Strand, R.G., 1960), Figure 2. The deposits are described as sandstone, shale, and conglomerates. Overlying the Cretaceous marine deposits are Quaternary marine terrace deposits. Laboratory testing of soil samples excavated from the existing cutslopes indicate the marine terrace deposits consist of Silty Sand and Sandy lean Clay. Prominent rock outcrops exist upslope of the roadway outside of Caltrans Right of Way. They likely represent the underlying Cretaceous bedrock. The highway is located at the intersection of a terrace surface and a terrace riser. The terrace surface is relatively flat. The terrace riser upslope of the roadway is more steeply inclined and eroded forming an undulating surface.

4 ANALYSES AND RECOMMENDATIONS

4.1 Excavated Slopes

The project proposes to realign the roadway upslope by excavating into the existing cutslopes. The existing cutslopes are weathered, subtly undulating in plane, and exhibit evidence of bioturbation, rilling, and locally shallow (<1-foot deep) debris slides. In situ exposures of the terrace deposits reveal a subtle blocky and laminated structure. Iron staining is observable on the margins of the fractures within the laminated soil. Generally, the material is well consolidated and requires a rock hammer or a pick to excavate. Erosion of the cutslopes appears to be the result of concentrated runoff from the grazed grasslands upslope and bioturbation (gophers burrows).

The locations of the proposed cuts are presented below by stationing along the "M" Line (Highway Centerline). All the proposed cuts are located Station Right. The limits of the proposed cuts are shown on the layouts provided in Appendix 1.

Approximately Station 5+00 to Approximately Station 7+50: This section of highway bisects the toe of a ridge. The existing cut appears to be a compound cut. The cut measures approximately 15 feet in height at its tallest point. The toe of the cut is inclined approximately 0.4 to 0.5H:1V. The upper portion of the cut is inclined between 0.75H:1V and 1H:1V. Gravel

sized clasts exposed in the existing cut disintegrate into silty sand to sandy silt with minimal effort. Bulk Soil Sample 1 was obtained from the cutslope at approximately Station 5+75. The laboratory results indicate the material is SILTY SAND.

Native slopes above the cutslope are inclined between 25 and 30 degrees. The slope is densely vegetated with grasses and ferns. An old fence is located at the top of the cut. The fence is unmaintained and the majority of the wood posts are laying on the ground surface. The few remaining upright posts exhibit a downslope lean. This could be the result of soil creep or related to how the fence is failing.

We observed a few locations where shallow (<1-foot deep x 3 feet in length and width) debris slides have occurred in the lower portion of the cut. The debris slides appear to be in response to oversteepening and saturation that likely occurs during a high intensity rain events.

The proposed cut will retreat into the existing slope approximately 12 feet to create a 4-foot wide shoulder and approximately 5-foot wide inside ditch.

To accommodate the proposed shoulder widening and stay within Right of Way, we recommend a cutslope inclination no steeper than 1.1H:1V. At this inclination, the new cutslope will measure approximately 32 feet in height with the new top of cut approximately 40 feet further upslope.

Recommendations:

- The proposed cutslope should be no steeper than 1.1H:1V in inclination.

Approximately Station 8+00 to Approximately Station 14+00: This section of highway traverses the toe of a broad swale. The existing cut is approximately 2 to 5 feet in height and is inclined from 1.5H:1V to 1:1V. The slope is well vegetated with grass. Slopes upslope of the cut are inclined between 12 and 15 degrees. The native slopes are densely vegetated with grasses, short height shrubs and ferns and infrequent conifer trees.

The proposed cutslope will be approximately 10 feet further into the existing cutslope resulting in a new cutslope height of approximately 6 feet. We recommend a cutslope inclination no steeper than 1.5H:1V.

Recommendations

- The proposed cutslope should be no steeper than 1.5H:1V in inclination.

Approximately Station 14+50 to Approximately Station 24+75: The section of the highway is a broad sweeping curve to the north across the toe of a terrace riser. The safety project calls for cutting approximately 10 to 12 feet into the existing cutslope.

The existing cutslope measures up to 15 feet in height. The cutslope is predominantly inclined between 0.9H:1V and 1H:1V. Between Station 14+50 and 16+00, the cutslope has slumped and eroded to 1.25H:1V. This section of the cutslope is predominantly void of vegetation and exhibits rills. Concentrated runoff from fenced areas upslope may be responsible for the erosion.

Throughout the stationed segment, we observed a generally sub-horizontal fabric suggesting that the exposed material is laminated. Iron staining and grass roots are frequently observed where there is separation of laminated layers or the layers are fissured. There is a natural tendency for the exposed soils to fracture along lamination margins resulting in an apparent gravel textured soil when excavated. Bulk Soil Sample 2 was excavated from the cutslope at approximately Station 15+25. The laboratory results indicate the material is SANDY lean CLAY. Bulk Soil Sample 3 was excavated from the cutslope at approximately Station 20+50. The laboratory results indicate the material is also SANDY lean CLAY.

Due to the high percentage of clay, we recommend recutting the slope no steeper than 1.5H:1V. This inclination is flatter than the existing cutslope and will increase the height of the cut to approximately 55 feet, relocating the top of cut approximately 45 feet farther upslope. The flatter slope will reduce the potential for slope instability and facilitate revegetation treatments.

Recommendations:

- The proposed cutslope should be no steeper than 1.5H:1V in inclination.

4.2 Embankments

The limits of the proposed embankments are presented below by stationing along the "M" Line (Highway Centerline). All the proposed embankments are located Station Left. The limits of the proposed embankments are shown on the layouts provided in Appendix 1. The original ground surface on which the proposed embankments are to be constructed is relatively flat and the existing embankments exhibit no signs of instability.

Approximately Station 0+0 to 2+50, 4+50 to 5+50, 6+00 to 7+00, 8+00 to 13+00, 13+01 to 15+51, and 17+56 to 26+00: Most of the fills shown in the plans are necessary to accommodate shoulder widening along the southbound lane. Based on our review of the site conditions, fillslopes inclined at 1.75H:1V and flatter are appropriate provided their construction follow Section 19 (Earthwork) of the Standard Specifications.

Recommendations:

- Embankment construction should be in accordance with Section 19 of the Standard Specifications. The fillslope inclinations should be no steeper than 1.75H:1V.

4.3 Geosynthetic Reinforced Embankment (GRE)

Between Station 16+75 and 17+55, due to Right of Way constraints, the inclination of the embankment required to achieve the proposed shoulder widening will be steeper than 1.75H:1V and have a maximum height of approximately 14 feet. To ensure the steeply inclined fillslope will be stable, we recommend the embankment be constructed as a GRE.

Design of the GRE follows the guidelines outlined in the Embankments and Geosynthetics modules of the Caltrans Geotechnical Manual (December 2014 and May 2013), as well as Publication No. FHWA-NHI-10-024 (March 2012).

The grade of the highway in this location is approximately -2.4%. The plane of contact between the proposed base of the GRE and Original Ground is approximately 10%, sloping to the north. See Figure 3 for a GRE typical cross-section and GRE profile view.

ReSSA (Version 3.0) and SLOPE/W (Version 8.13.1.9253) were used to design the GRE. The interpreted soil engineering properties used in the models are listed in Table 3. The soil descriptions are based on the Mechanical Analysis and Atterberg Limits laboratory test results. The interpreted soil engineering properties are based on typical values for the soil types and consistencies found at the project site, as well as on the performance of existing slope inclinations observed along the project length.

Table 3 – Soil Engineering Properties

Soil Zone	General Soil Description	Interpreted Soil Engineering Properties		
		Unit Weight (pcf)	Cohesion (psf)	Friction Angle (degrees)
Reinforced Soil	Sandy Lean Clay (CL); Silty Sand (SM); Clayey Sand (SC)	120	0	30
Retained Soil	Sandy Lean Clay (CL); Silty Sand (SM); Clayey Sand (SC)	120	0	36
Foundation Soil	Sandy Lean Clay (CL); Silty Sand (SM); Clayey Sand (SC)	120	0	38

The GRE was designed with the following loading and performance requirements:

- Live Load Surcharge = 250 psf (on roadway surface)
- Minimum Factor of Safety for Internal Stability = 1.3
- Minimum Factor of Safety for External Stability = 1.3

- Design of the GRE does not require consideration of the Extreme Event I Limit State, since the GRE does not have the potential to impact an adjacent structure during a seismic event (Embankments section of Caltrans Geotechnical Manual, December 2014)

Various methods of analysis were performed in ReSSA and SLOPE/W. The calculated minimum Factors of Safety for each method of analysis ranged from 1.30 to 1.52.

Recommendations:

1. For primary reinforcement, use uniaxial geogrid with a Long-Term Design Strength (LTDS) of 1,300 pounds per foot, following Standard Specification 96-1.02D(2). Embed the geogrid a length of 13 feet. Place the geogrid layers at a vertical spacing of 2 feet.
2. For secondary reinforcement, use biaxial geogrid that meets Standard Specification 96-1.02P. Embed the geogrid a length of 4 feet. Place a layer of secondary geogrid in between (i.e. 1 foot vertically away from) adjacent layers of primary geogrid.
3. Use backfill for the GRE that meets the specifications listed in Section 19-6.02B of the Standard Specifications.
4. Install a blanket drain over the base of the excavation to receive the GRE. Grade the base of the drainage layer towards the face of the GRE at a slope of 2%. Place the material such that the drainage layer is 1.25' thick where the layer intersects the face of the GRE. Place filter fabric above and below the drainage material. Use filter fabric that meets the specifications for Class C filter fabric. Use drainage material that meets the specifications for Class 3 Permeable Material. Install a 6" diameter Schedule 40 perforated PVC plastic pipe within the drainage layer, at the north end of the GRE. Place the pipe such that it is sloped towards the face of the GRE at a grade of 2%. Compact drainage material to a dense and non-yielding condition using vibratory compaction equipment. Adjacent to the drainage pipe, use hand tamping to compact drainage material.
5. Install a 1-foot thick chimney drain between the reinforced soil and excavated slope. Place filter fabric between the drainage material and the reinforced soil, and between the drainage material and the soil comprising the excavated slope. Use filter fabric that meets the specifications for Class C filter fabric. Use drainage material that meets the specifications for Class 1 Type A Permeable Material. Extend the curtain drain upwards to the elevation that is equivalent to 2/3 the height of the GRE.

5 CONSTRUCTION CONSIDERATIONS

The proposed cuts are anticipated to be easily excavatable with standard construction equipment. However, boulders of hard rock may be encountered. Where encountered within the plane of the finished cutslope, it is recommended that the boulders be excavated in the

plane of the cutslope using rock excavation techniques as opposed to over-excavating. Over excavating tends to destabilize the slope adjacent to the excavated boulder.

The material from the proposed cuts may be used as GRE backfill, provided the stockpiled material is well-mixed, sampled, tested, and meets all the recommended specifications listed in Section 4.3 of this report.

6 FURTHER INVESTIGATION

We recommend conducting Seismic Refraction Surveys and possibly Horizontal Drilling within the limits of the proposed cuts to better characterize the subsurface conditions and develop the final cutslope recommendations.

7 REFERENCES

Berg, R. R., Christopher, B.R., and Samtani, N.C. (2009). "Design and Construction of Mechanically Caltrans Geotechnical Manual (https://des.onramp.dot.ca.gov/geotechnical-manual), Embankments Section, December 2014.

Stabilized Earth Walls and Reinforced Soil Slopes – Volume I." *Publication No. FHWA-NHI-10-024*, National Highway Institute, Federal Highway Administration, Washington, D.C.

Berg, R. R., Christopher, B.R., and Samtani, N.C. (2009). "Design and Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes – Volume II." *Publication No. FHWA-NHI-10-025*, National Highway Institute, Federal Highway Administration, Washington, D.C.

Jennings, C.W. and Strand, R.G, 1960, Geologic Map of California, Ukiah Sheet, California Division of Mines and Geology, 1:250,000 scale.

ReSSA, Version 3.0. ADAMA Engineering, Inc.

SLOPE/W. GeoStudio 2012, May 2014 Release, Version 8.13.1.9253. Copyright 1991 – 2014 GEO-SLOPE International, Ltd.

If you have questions or require further assistance, please contact Tagg Nordstrom at 707 445-7884 or Lianna Winkler-Prins at 707 441-2024.

Report By:

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FIGURES:
Figure 1: Vicinity Map
Figure 2: Geologic Map
Figure 3: GRE Typical Cross-Sections and Typical Profile View

APPENDICES:
Appendix 1: Project Layouts
Appendix 2: Laboratory Test Results

PCL XL error

Subsystem: xlparse

Error: unknown error

Operator: Parser

Position: 19063