



Alto Tunnel Study

Weekly Progress Report Week Ending February 24, 2017



Report #3

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1.0 Project Activities

Project activities for the week of February 20 through February 24 included drilling Boring B-1 to completion, performing gyroscope surveys in Borings B-1 and B-1, and performing video surveys in Borings B-1 and B-2. Site erosion control measures were updated during rain events. No work was performed on Monday, February 20th due to the President's day holiday.

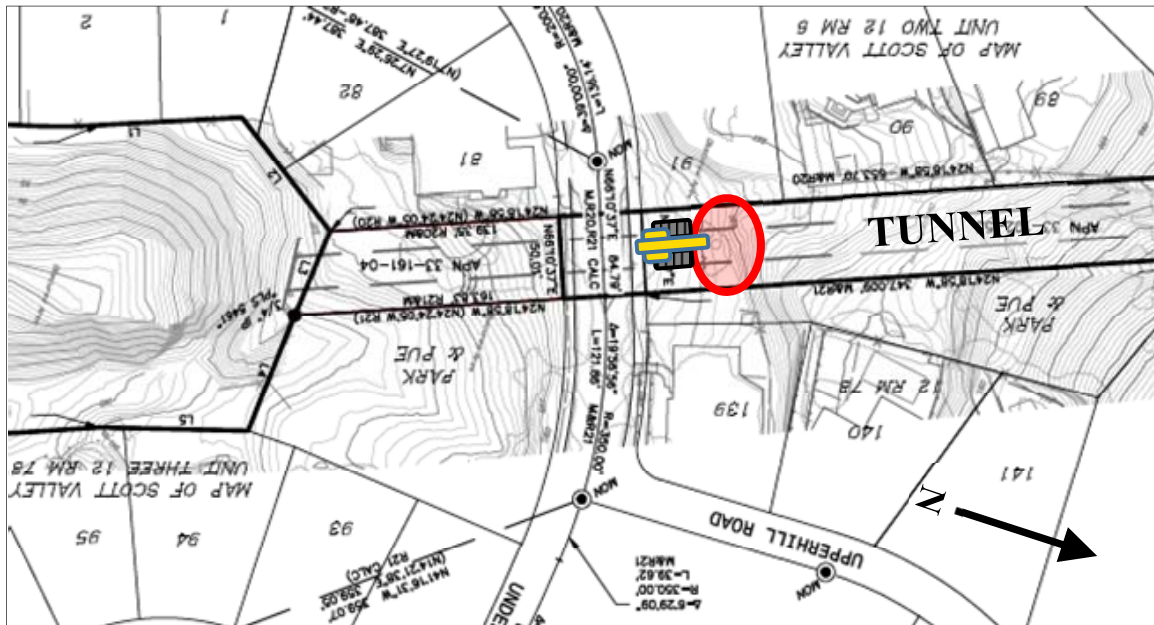


Figure 1. Drill rig and borehole locations above Alto Tunnel at the Underhill Road project site.

1.1 Underhill Site Drilling Progress

Drilling of Borehole 1 was started on Tuesday, February 21, and was completed on Wednesday, February 22. The boring and casing was advanced to a total depth of 120 feet. Soil was recovered to a depth of 9 feet where hard rock material was experienced to a depth of 115 feet. At a depth of 115 feet a void was encountered and air return through the drilling system was lost. The air return in Borehole 1 communicated through the void to the previously drilled and installed casing of Borehole 2 several hundred feet away within the tunnel.

Drill Tech surveyed the two boreholes with a gyroscope and confirmed the casings in both are within the tunnel. Borehole 2 penetrated the tunnel crown approximately 30 feet closer to the south portal than projected due to vertical drift of the boring.

A camera was lowered into the tunnel through each casing. Video in Boring B1 indicates that rubble fills the tunnel to the crown. The casing was retracted approximately 10 feet, revealing that the ground immediately above the tunnel crown is intact. Video in Boring B-2 shows a rock at the casing tip, obstructing the view beyond the casing. Drill Tech has been asked to retract the casing in Boring B-2

approximately 40 feet to the point where indications of a void were first encountered, and re-run the video survey. This will proceed next week.

1.2 Underhill Site Controls

Traffic control measures continued to be implemented along Underhill Road; these measures appeared to adequately manage the low traffic volume and provided a safe work zone. Secondary containment remained under the air compressor stored onsite. Plywood continued to protect the ground surface at the entrance of the site along Underhill Road.

Fugitive dust from drilling continued to be mitigated using water added to the air system. Site erosion controls of silt fences, sand bags, and straw waddles were implemented to control site runoff. Noise monitoring was not conducted this week at the Underhill site.

2.0 Project Schedule

2.1 Project Drilling Progress

The planned drilling activity at the Underhill site has progressed to a total drilled depth of 120 feet in Borehole 1 and 330 feet in Borehole 2. No boreholes have been completed at the Chapman site. See Figure 2 for the project drilling progress.

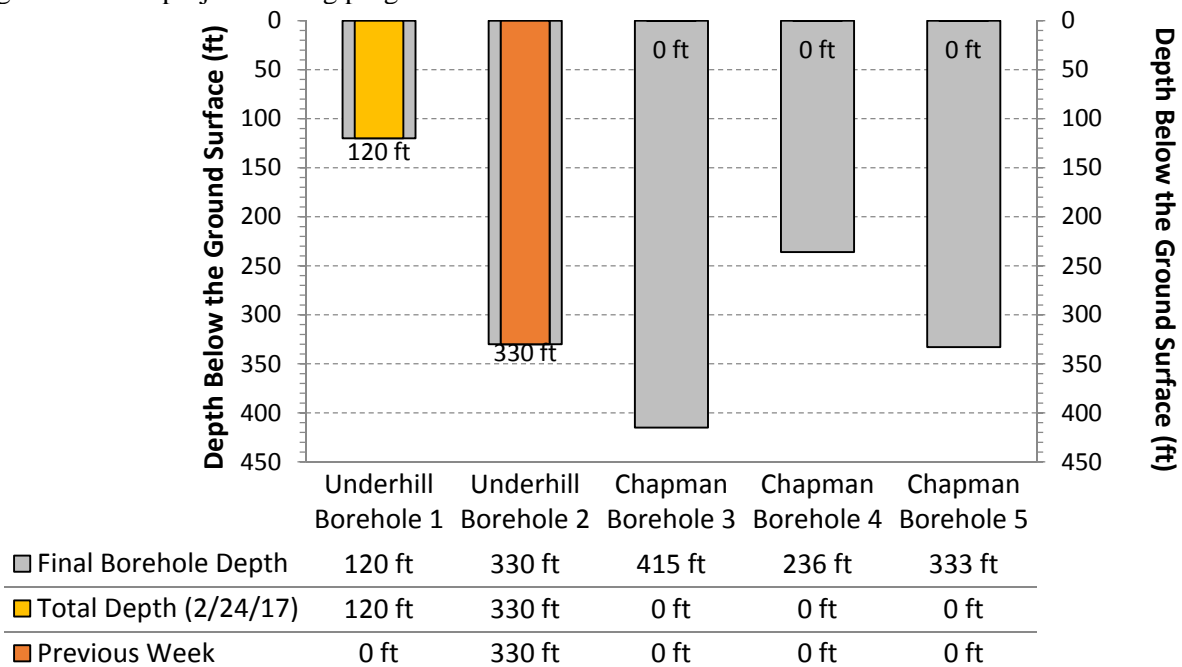


Figure 2. Project drilling progress.

2.2 Project Delays and Comments

There were no weather related project delays this week. Due to uncertainty in the ground conditions at the end point of both borings, gyroscopic and video surveys were performed in the borings. This added two days to the scheduled work at Underhill.

The project delays to date have impacted the project schedule. The delays are not anticipated to impact the current project budget scope items and have not incurred additional out of scope items. However if modifications to the borings or additional borings are added, there would be a schedule and budget impact. The project schedule was adjusted by a week to account for the weather delays. Additional weather delays are not anticipated, given the 14-day weather forecast provided in Figure 6.















MON FEB 27		Partly Cloudy	SUN MAR 5		AM Showers
TUE FEB 28		Sunny	MON MAR 6		AM Clouds/PM Sun
WED MAR 1		Sunny	TUE MAR 7		Partly Cloudy
THU MAR 2		Sunny	WED MAR 8		Mostly Sunny
FRI MAR 3		AM Clouds/PM Sun	THU MAR 9		Mostly Sunny
SAT MAR 4		AM Clouds/PM Sun	FRI MAR 10		AM Clouds/PM Sun
SUN MAR 5		AM Showers	SAT MAR 11		Showers

Figure 3. 14-day weather forecast for the project area.

2.3 Updated Project Schedule

A complete updated schedule can be found on the Walk-Bike-Marin Projects and Programs website.

http://www.walkbikemarin.org/projects_alto.php

3.0 Project Items Summary

The items for this project include two boreholes at the Underhill site and three boreholes at the Chapman site. Individual hole depth estimates and percent completed are provided in Table 2. A modification to the drilling angles has reduced the total estimated linear feet of drilling to 1434 feet.

Table 1. Completed project items Task 3.2.

Item No.	Description	Unit	Completed Quantity	Total Estimated	Completed
Underhill Site					
1	Borehole 1	LF	120	123	98%
2	Borehole 2	LF	330	360	92%
Chapman Site					
3	Borehole 3	LF	0	415	0%
4	Borehole 4	LF	0	236	0%
5	Borehole 5	LF	0	333	0%
Total		LF	450	1467	31%