



## Evergreen Engineering Corporation

SUBJECT: Report on temporary bridge at Humboldt Drive and existing culvert on Rancho Tehama Road at Government Gulch.

Dear Mr. Jekel:

On the afternoon of December 16, 1983, both Roger Froslic and I inspected the two above mentioned sites. This letter contains our recommendations as to the best and most economical way to repair the damage done in the recent flooding and prevent further damage to the existing structure. While we are both Registered Civil Engineers familiar with bridge and culvert design, our recommendations are based only on cursory inspection and the possibility of further damage due to even more severe flooding always exists.

### A. TEMPORARY BRIDGE AT HUMBOLDT DRIVE.

As the closure of Humboldt Drive is causing severe hardship to many residents, we can see the necessity for a temporary bridge. The use of railroad flatcars seems an ideal solution to this problem in that the existing approaches appear to be stable and used flatcars are available. The work that has been done in preparation for the placing of the flat cars directly on the existing roadbed appears satisfactory.

I have not seen the flatcars, and have done no actual engineering on the structure. There is no way I can certify the safety or the structural adequacy of the proposed bridge. Judging from our past experience with this type of bridge, I am fairly certain that the structure will be strong enough to support light and slow-moving traffic. My main concern would be for the possibility of one or both of the cars tilting under an off-center load. This can be prevented by ensuring that the ends of the flat cars are soundly bedded on the existing roadbed.

We were told the pipe culverts at that location had lasted for over ten years. Since the free area under your temporary bridge will be even greater than that provided by the culverts, it is unlikely that the temporary bridge will be damaged by future storms.

While this structure is acceptable as a temporary emergency bridge, we strongly recommend that a properly

engineered and constructed bridge be built as soon as weather and stream conditions permit. We would be happy to work with you on this project and believe we can provide an economical design as we have designed flatcar bridges in the past. We will send you a proposal for the required engineering services in the near future.

### B. CORRUGATED STEEL CULVERT AT RANCHO TEHAMA ROAD

We also inspected the existing culvert under Rancho Tehama road at Government Gulch near the entrance to Rancho Tehama. It is our understanding that his structure appeared to be in some danger of failure during the same storm that washed out the culverts discussed above. We found that the structure had sustained no significant damage and is presently in a safe condition.

There are some problems with the structure as it now stands that should be fixed when stream and weather conditions permit. We know that you are planning to lengthen the culvert and realign the road next spring. As the steel culvert parts have already been purchased and the existing culvert has lasted for the past 13 years, I believe you should complete this project as planned. We have some suggestions for additional work that would improve the performance of the culvert and could be completed at the same time as the lengthening. They are as follows:

1. Stormwater on the existing road currently drains over the edge of the shoulder with no provisions for transporting it to the stream below. This is causing some erosion of the fill over the culvert. When the roadway is realigned, it should be constructed with 6" A.C. dikes on either side for approximately 100 feet on either side of the culvert. These dikes should direct runoff to overside drains with corrugated steel pipe downdrains similar to Caltrans Standard D. 87-A6 (See Attached). Ditchwater from areas above the A.C. dikes should be routed away from the culvert and fills.

2. When the culvert is extended, a reinforced concrete cutoff-wall should be constructed at the downstream end to prevent erosion and undermining of the culvert. The cutoff wall should be approximately one foot thick and about two feet deep or as far into the hardpan as can be dug with a backhoe. The wall should be constructed directly under the end of the pipe. The last section of the new corrugated steel pipe should be set in the wet concrete of the cutoff wall to insure a close fit.

3. Concrete wingwalls or aprons should be constructed at the existing entrance of the culvert. Currently

there is a pocket several feet wide between the existing wall of the gully and the side of the culvert. This gap will cause turbulence during high flows and result in both decreased culvert capacity and increased erosion. The wingwall should be formed to match the shape of the culvert and extend about ten feet upstream. On the Southeast corner it should be keyed into the existing hardpan at the side of the gully. The wingwall should be about one foot thick and reinforced with No. 4 steel bars at 12" on center.

In both cases, the construction planned by the R.T.R. Association, if constructed as proposed in this letter, should serve its intended purposes unless extremely unusual storms occur. At both locations, it would be advisable to have people and equipment standing by during high flows to clear any debris that may accumulate at the structures.

Please call me if you would like to discuss this matter further.

Sincerely,  
Jim Crandall  
R.C.E. 32934

## WE RECEIVE MAIL!!!

The following mail was received by the Trailblazer and is copied here for the membership. In copying mail, please be advised this in no way expresses the opinion of the editorial staff).

11/30/83

Trailblazer  
R.T.R.  
Corning, CA 96021  
Dear Editor:

I should like to thank all my friends and the "Neighborhood Watch" for their efforts to keep down vandalism on R.T.R.

Whoever would damage another's home has what a Psychologist would diagnose as "sick".

When my husband and I lived there, we enjoyed the "fun things" always going on. Among other things, we were Mr. & Mrs. Santa Claus for the young people - plus other efforts to make activity and fun for all. So it is beyond me why someone dislikes me this much as to damage the home we loved so much.

Love to all  
Jeanesse Sorensen

(Ed. note:)

Thanks to Neighborhood Watch, and the community effort, vandalism has decreased on the Ranch to a small fraction of what it was. Three cheers for this endeavor.