

# Memorandum

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Be energy efficient!*

**To:** WILMAR KUHL, Chief  
Office of Design IV  
Design Branch L

**Date:** July 25, 2007  
**File:** 06-SJ-4 KP R8.7/R11.0  
PM R5.4/R6.8  
EA: 10-0H04U1

**Attention:** Caroline Reyes  
Project Engineer



**From:** DEPARTMENT OF TRANSPORTATION  
DIVISION OF ENGINEERING SERVICES  
GEOTECHNICAL SERVICES – MS 5

**Subject:** Supplemental Recommendations for Geotechnical Design Report

## Introduction

Per your request, we are providing supplemental recommendations to the Geotechnical Design Report (GDR) dated May 25, 2006 for proposed improvements to State Route 4 between KP R8.7 and R11.0 (PM R5.4 and R6.8), located approximately 17 km (10.6 miles) west of the city of Stockton in San Joaquin County, California. The project proposes to improve the nonstandard horizontal curves on Highway 4 and widen the shoulders to standard width.

## Geotechnical Recommendations

The GDR dated May 25, 2006 recommended a settlement period of two years without wick drains. Design requested additional measures to reduce this settlement period and clarification of some of the recommendations in the original GDR. The following recommendations are a result of that request:

- The surcharge in the original GDR was listed as both 1.5 m and 2.0 m. A surcharge of 1.5 m should be used.
- The permeable layer beneath the fill embankment may be reduced from 760 mm to 300 mm.
- To reduce the waiting period, wick drains are needed. The addition of wick drains will reduce the waiting period from 24 months to approximately 6-9 months.

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Wick drains should be 40 feet long and have a triangular spacing of 5 feet center to center. The estimated cost for wick drains is \$1.00 per linear foot.

- Piezometers should be installed to a depth of 40 feet.

All recommendations in the original GDR shall remain applicable, with the exception of the recommendations listed above.

If you have any questions or comments, please contact me at (916) 227-6979.



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c: Qiang Huang  
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