

TRC Lowney

MEMORANDUM

To: City of Oakland		From: John R. Dye, P.E., G.E.	
Firm:	Fax:	Date: September 13, 2006	Pages:
cc: c/o Mike Petouhoff	Fax:	Project: Shepherd Canyon Parking Lot	
cc: Shepherd Canyon Home Owners Association	Fax:	Project #:	

Urgent
 For review
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In this memorandum we present parking lot recommendations for Shepherd Canyon Park located in the Village of Montclair in Oakland, California. We understand that the City of Oakland proposed to expand the size of the existing gravel parking lot to accommodate increased parking needs, and to improve drainage and long-term maintenance. We received a copy of the preliminary plan titled "Plans for Shepherd Canyon Parking Lot, Option C," prepared by the City of Oakland.

Site Observations

We visited the site on August 23, 2006, to observe the existing site conditions and exposed soil conditions. The existing gravel parking lot is relatively level and surrounded by lawn areas on three sides. The proposed parking lot expansion area is covered with dry grasses and weeds, some irrigated lawn, several mature redwood trees, and one eucalyptus tree. Topographic information was not available at this time, but the site appears to slope gradually down towards the east where an existing shallow drainage ditch empties into a culvert beneath Shepherd Canyon Road. The adjacent drainage swale was dry at the time of our observations; therefore, perched water is not likely to exist at shallow depths. It has been our experience that ground water in the Oakland hills is greater than 20 feet or more.

Soil observed in an exposed tree stump excavation and along the drainage ditch indicated the surficial soils consist of sandy clay with varying amounts of gravel. Based on our experience with similar soils in the City of Oakland, the Resistance value (R-value) of the surficial soil likely ranges from 5 to 10. Since an R-value of 5 is the lowest value used for pavement design purposes, an R-value of 5 would represent worst-case conditions.

Project Description

We understand that several parking lot alternatives have been considered by the City of Oakland, including 1) simply extending an un-reinforced gravel base parking lot, 2) using a cellular-confinement system to reinforce an aggregate base section, or 3) installing a grass-paver reinforced pavement system.

The ultimate goal of the parking lot design is reportedly to provide a relatively cost effective system that reduces the long-term maintenance of a conventional gravel parking lot. Based on our understanding of the project, in our opinion, either of these options would provide a reasonably adequate parking surface for a lightly used recreational parking lot. Our

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MANTECA
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MOUNTAIN VIEW
 T: 650.967.2365
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OAKLAND
 T: 510.267.1970
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recommendations for each alternative parking lot section are presented in the following sections:

1. **Alternative 1:** Gravel-Only Section – If a gravel only section is considered, we suggest that at least 9 inches of Caltrans Class II aggregate based material be placed over compacted subgrade soils. All subgrade soil and AB should be compacted to 95 percent relative compaction in accordance with ASTM D-1557 (latest edition). It should be noted that this alternative will likely required the highest maintenance to repair rutting and potholes.
2. **Alternative 2:** Cellular Confinement System – To improve the long-term performance of the surface of the parking lot, the parking lot section can be constructed with a minimum 4-inch height cellular confinement system (CCS), such as Terracell®, Geoweb® or approved equivalent. Compact subgrade to 95 percent relative compaction. Place a layer of geotextile fabric, such as Mirafi 500X or approved equivalent, across the subgrade soils and overlap 12 to 18 inches at the seams. Then place and stake the CCS across the fabric and track-walk or end-dump either ½ to ¾ inch crushed rock or Class II aggregate base material into the cells. Overfill cells by 1 to 2 inches and track-walk or compacted with vibratory equipment to consolidate gravel into the cells.
3. **Alternative 3:** Turf Pavers - If it is desired to plant the parking surface with lawn or native grasses, the parking lot can also be constructed using turf pavers, such as Tufftrack TT24 Grass Paver, Geoblock®, Grasspav2 or approved equivalent. For turf block applications, the manufacturer's specifications should be followed with respect to planting soil and leveling requirements. The turf block system should be underlain by at least 6 inches of Class II AB compacted to 95 percent relative compaction. It should be noted that prudent landscape watering should be provided if the turf blocks are to be planted with an irrigated lawn. Over-watering could cause reduced design life and localized rutting due to saturated subgrade conditions. Otherwise, the turf blocks could be planted with native grasses that require no watering.

In general, adequate surface drainage should be provided to prevent standing water in the parking lot. We hope this provides the information you need at this time to finalize your design. This memorandum was prepared for the sole use of City of Oakland for application to the Shepherd Canyon Parking lot in accordance with generally accepted geotechnical engineering practices at this time and location. No other warranty is expressed or implied.

If you have any questions, please call.

Sincerely,

TRC Lowney



John Dye, G.E. No. 2582 (Exp. 12/31/06)
Principal Engineer

SR, Shepherd Canyon Park memo