DISTRICT 4

EMPOWER | INNOVATION | CHAMPIONS

2014 INNOVATION FAIR

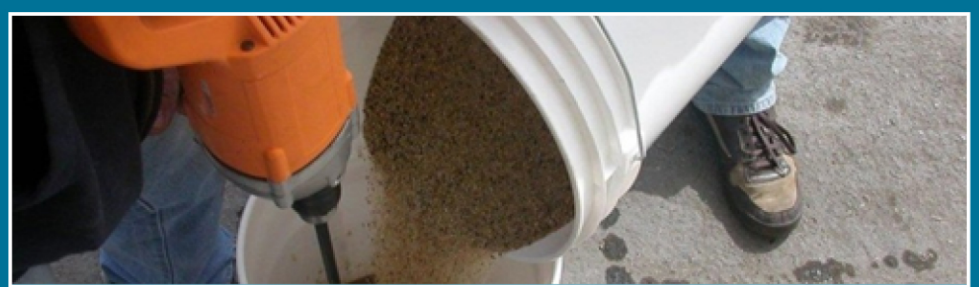
DIVISION OF DESIGN

Natural Low Visual Impact Surfacing

A new material that protects our roadways over time without compromising public safety, and with minimal visual impact on the communities we serve.

It can be placed over asphalt or concrete in areas where additional surfacing is required but the visual impact of these raw materials over the stretch of a wide shoulder or vegetation control area would adversely affect the setting of nearby communities.

Quartz aggregate and polyester resin selected for adjacent terrain



Sonoma 1 Fort Ross Site

A/V GRAPHICS | CT2624 | IFAIR2014 | 071414

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Deputy District Director: Helena "Lenka" Culik-Caro
Number of Division Employees: 314
Contact Person: Harold Gaskill

Natural Low Visual Impact Surfacing

Office of Engineering Services

District 4 Engineering Services – Materials is responsible for providing materials recommendations and reports for all the federal and state highways in the District's nine county jurisdiction. This includes, but is not limited to pavement design using both hot mix asphalt and concrete materials and corrosion investigations for culvert design. Additionally, Materials provides materials support as well as forensics studies to Caltrans field personnel in construction and maintenance. Materials also operates the District 4 Materials Laboratory in addition to the Independent Assurance Sampling and Testing Group that certifies all testers and qualifies labs to perform tests on Caltrans construction projects.

Close-up View of Polyester-Quartz Surface

Finishing of Test Strip behind Metal Beam Guard Rail

Overview of Low Visual Impact Polyester-Quartz Surfacing on Route 1 in Sonoma County

In order to obtain permits for the construction of a new retaining wall and rock slope protection (RSP) to preserve this stretch of Highway 1 near Fort Ross along the coast of Sonoma County, aesthetic enhancements were implemented, including low visual impact surfacing, native seed mix, and backfill of voids in RSP with native soil. In this project, vegetation control and swale paving are required to blend in with the natural coastal setting.

The resin used has been tested widely by the Department in bridge overlays and joint replacements and meets stringent mechanical requirements. With the addition of red and yellow iron oxides, titanium dioxide, and carbon black, a chemically stable color will last through the years. A thin coating of polyester resin (below left) is applied to the prepared surface, onto which the quartz aggregate (below right) is spread. After a nominal 1-hour 'green' cure time, the surface is wire-brushed to remove loose or partially bonded quartz grains. The resulting surface is expected to outlast the adjacent HMA roadway requiring no maintenance over the pavement life.