Pacific Region
Division of Transportation

FDR Engineering Considerations

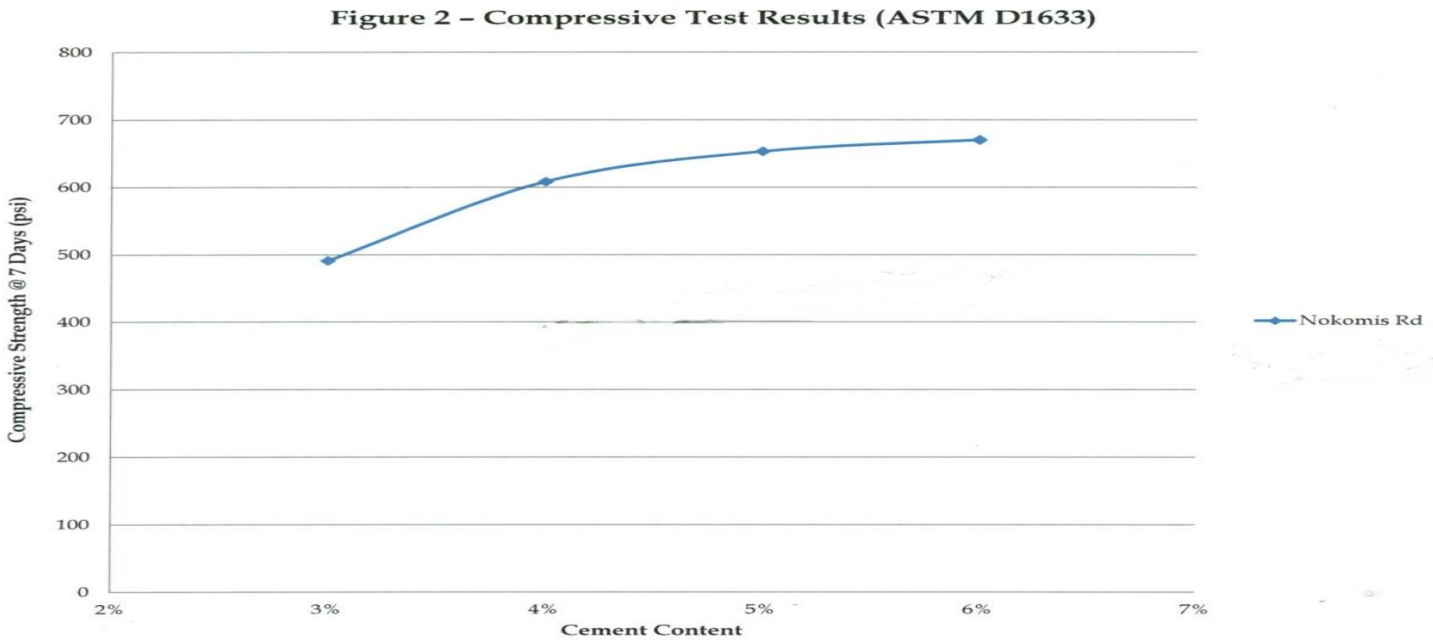
Full-Depth Reclamation - Recent Projects by BIA (Pavement Design Parameters)

- California Legal Load Limits (HS - 25)
  - HS is the Highway Semi-Truck Loading requirements
- Traffic Index (TI = 6)
  - TI is a number that correlates to the expected equivalent single axle loads (ESALs) for a given road section
- Pulverization Depth 9” Minimum, 12” Maximum
- Life Span - 20 years

R-Value

- R-Value is the resistance of the soil to any load pressing down on the road surface
- Minimum R-Value required by the State of California = 78 for Class 2 AB
- Existing R-Value before mixing
  - Nokomis 34
- **R-Value after mixing with cement**
  - **Nokomis 91**

Compressive Test



Calculated Structural Section

Road Name	AC Thickness	AB Thickness	FDR Depth	Cement(%)	Estimated Cost.
Nokomis (FDR-Force Account)	2”		10”	3	$231252.00
Nokomis (Conventional)	3”	6”			$421945.00

- Cost Saving = $421945-$231252/$421945 =0.45
- So the FDR process cost is almost 45% less than conventional method cost

R – Value

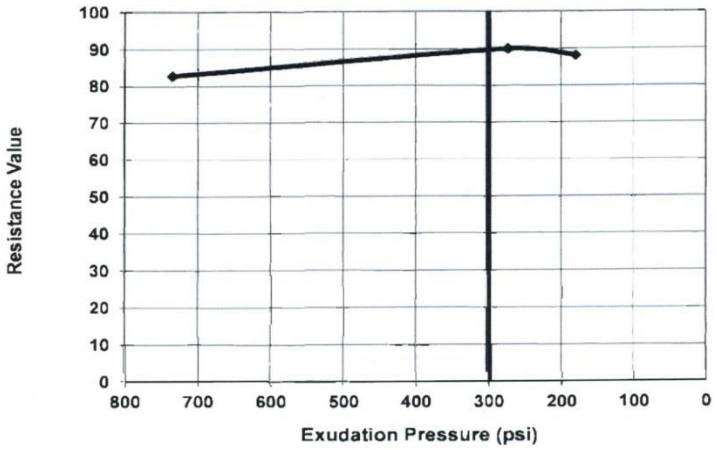
Resistance, R-Value

Caltrans Method 301

Project :	Hopland FDR	**Project No. :**	415056
Client :	Hopland	**Sampled By :**	DJG
Sample Location :	Nakomas Road	**Test Date :**	10/29/2015
Sample Description :	Grindings w/ 3% cement	**Sample Number :**	15-536

Test Specimen	1	2	3
Moisture Content (%)	10.2	10.7	8.5
Dry Density (pcf)	130.0	132.0	136.8
Expansion Pressure (psf)	0.0	0.0	0.0
Exudation Pressure (psi)	180	273	735
Resistance Value	88	90	83

R Value at 300 psi Exudation Pressure: **91**



Summary

- The reason for sampling and testing in the lab is to assure that the full depth section is equivalent to a conventional section.
- Sampling and testing is needed to determine optimum cement content
  - Diminishing returns: too much cement is a waste of money and creates a brittle structure.
- Each project will be tested the same way