

RPF Port Elizabeth

N7 Upgrade Cape Town to Malmesbury

3rd July 2019

SANRAL



Overview

- Project description and cost
- Key elements
- Some visuals to describe project
- Design aspects relating to RPF core business
 - Cement stabilised layers
 - Asphalt design
- Environmental management

N7: Upgrading to Freeway

- N.007-010-2009/1 (Phase 1): Melkbos Intersection (Section 1, km 17) to Atlantis South Intersection (Section 1, km 26). Completed in January 2015;
- N.007-010-2011/1 (Phase 2): Atlantis South Intersection (Section 1, km 26) to Kalbaskraal (Section 1, km 38.2) currently in progress; and
- Phase 3 (after unbundling)
 - N.007-012-2014/1 (Phase 3 Stage 1) : N7 sections 1 & 2 Abbotsdale (km 48.6 and 52.271) to Voortrekker Interchange (km 3.9) currently in progress and;
 - N.007-020-2016/1 (Phase 3 Stage 2) : N7 section 2 Voortrekker Interchange (km 3.9) to Hopefield intersection (km 7.7) currently in progress; and
 - N.007-010-2015/1 (Phase 3 Stage 3) : N7 section 1 Kalbaskraal (km 39.1) to Abbotsdale (km 48.78) currently in progress.

N7: Upgrading to Freeway

Description	PHASE 2 Atlantis to Leliefontein	PHASE 3 Leliefontein to Hopefield intersection		
		Stage 1	Stage 2	Stage 3
Commencement Completion	July 2015 October 2019	March 2015 December 2018	January 2017 August 2019	January 2017 January 2020
Start End	N7/1 km 26.0 N7/1 km 38.2	N7/1 km 49.0 N7/1 km 52.0	N7/2 km 3.0 N7/2 Km 7.7	N7/1 km 38.2 N7/2 km 49.0
Distance	12.2 km	3.0 km	4.7 km	10.8 km
Construction Cost	R 864 m	R 506 m	R 285 m	R 602 m

Key elements of the project

- Roadworks
 - 50 mm A-E2 asphalt surfacing
 - 150 mm G1 base
 - 250 mm C3 subbase
- Structures
 - Conventional reinforced concrete bridges river crossing
 - MSEW structures road over road at interchanges
 - MSEW at pedestrian underpasses
 - Conventional reinforced concrete agricultural underpasses
- Service roads
- Geotechnical works and retaining structures
- Environmental management

N007-012-2014/1: Existing bridge at Malmesbury



N007-012-2014/1: Construction at Malmesbury



N007-012-2014/1: Bridge 2nd Carriageway at Malmesbury





N007-012-2014/1: Bridge 2nd Carriageway at Malmesbury



N007-012-2014/1: Final bridge



N007-010-2011/1: Offramp terminal at Klein-Dassenberg



N007-010-2011/1: Planting trees at Kalbaskraal



Tree planting Arbor Day 2017, plant trees in the rain

About 110 000 plants rescued to a nursery and then relocated to open areas

Cement stabilised layers

N007-010-2011/1: Offramp terminal at Klein-Dassenberg

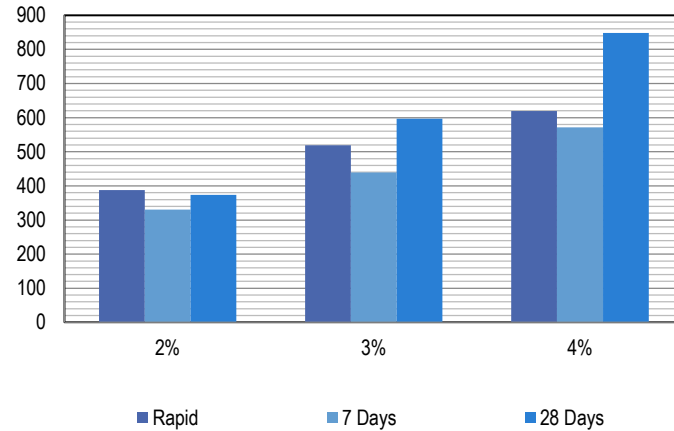


Cement stabilised layers

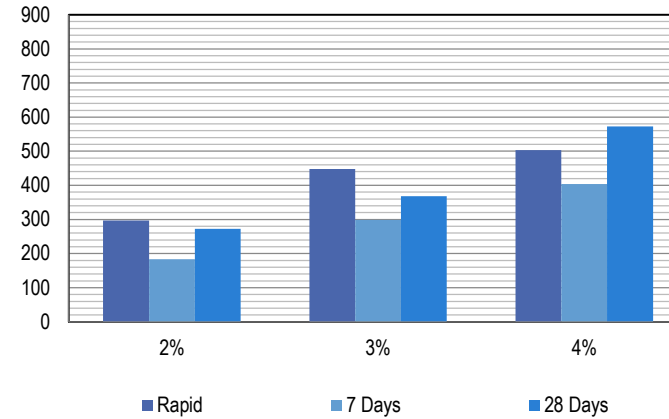
- Material design should accommodate influences on strength and quality of material
- Construction methods play a large role in ultimate material strength and quality
- Especial time/strength relationship important
 - Specification: 28 day strength (ITS) @ 25 °C
 - Design: 7 day strength @ 25 °C
 - QA: Accelerated curing 24 hrs @ 70 °C

Cement stabilised layers

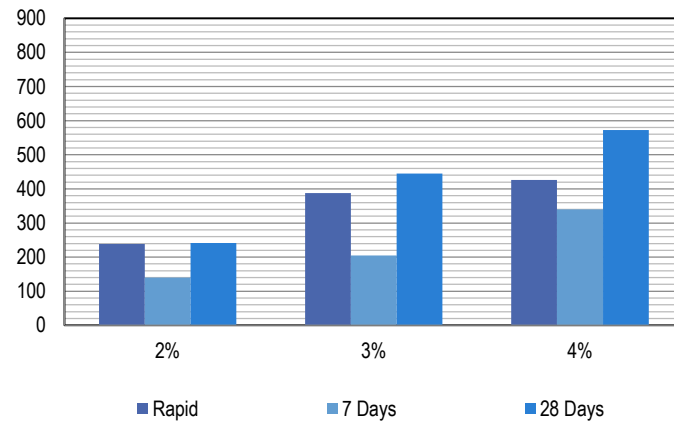
20% Sand with Cement A - ITS



20% Sand with Cement B - ITS



20% Sand with Cement C - ITS



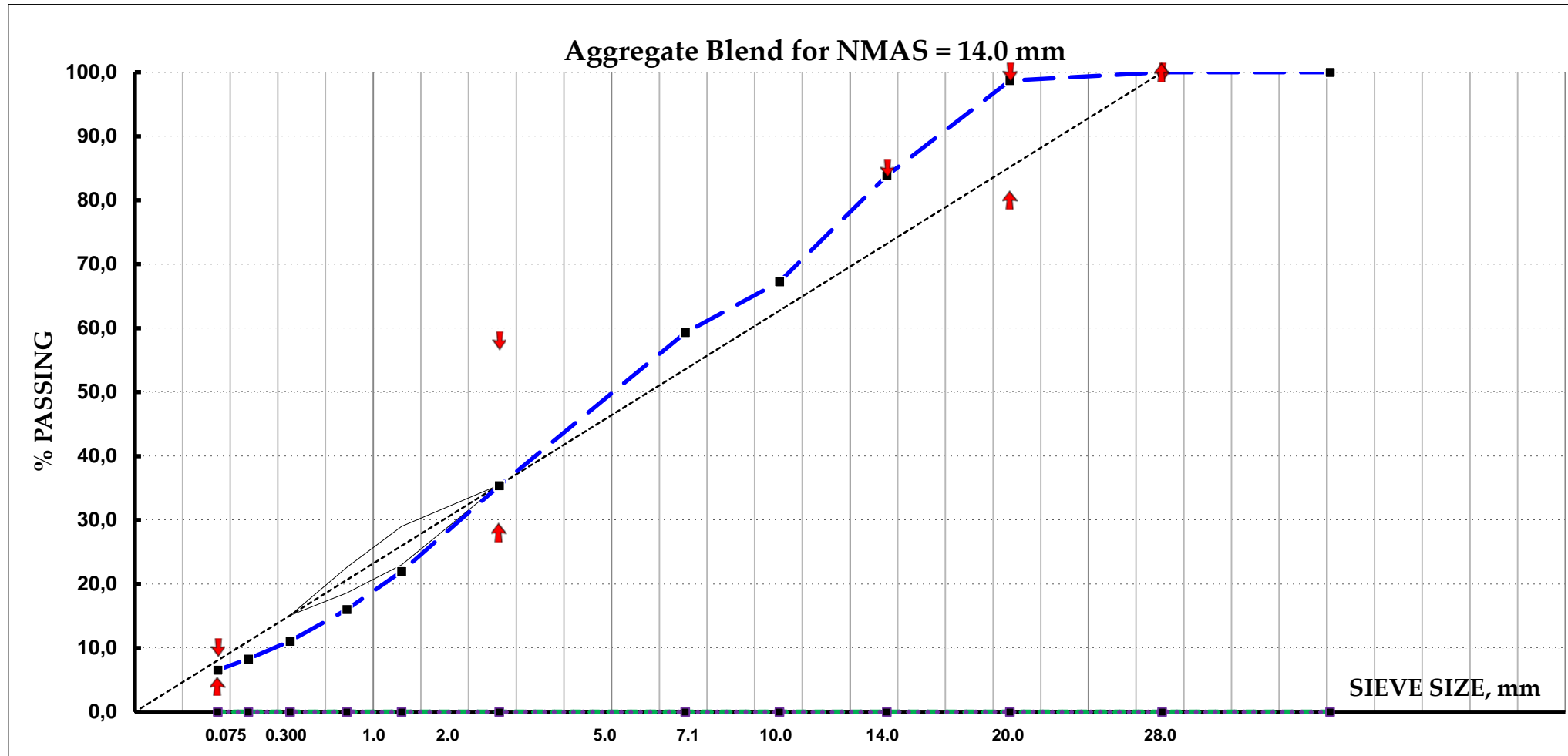
The appropriate cement product for a specific material is important

Asphalt design

Asphalt construction for riding quality



Asphalt design new TRH8/Manual 35



Environmental management

Environmental management

- Design and construction preceded by about 3 year environmental process
- Full EIA required for Phase 2 and Phase Stage 3
- Environmental Management Committee (EMC) required by Environmental Authorisation
- Search and rescue and nursery
 - About 110 000 plants recovered with search and rescue
 - Accommodated in temporary nursery
 - Replanted and established as dedicated areas became available
- Required part of nature reserve, had to provide offset

Thank you