WMA Trials RPF Progress Report

May 2009 - George

Krishna Naidoo

Lower energy pavements

 It is a reality for Durban.

- Combined opportunity
 - Tools
 - Materials
 - People



Re-defining Residual Value

Streets paved with green

gold.

Selective milling.

 Securing stockpiles of RA.

 Strategic placement of stockpiles within the City



Sustainable?

- Our linear quarry (+6000km) allows us to form strategic RA stockpiles throughout the City.
- Rotating 65000 m³ RA in last 2 years.
- Screening our strategic stockpiles of RA and utilizing for:
 - Foamed-bituminized base or sub-base layer
 - Straight run RA in base for sidewalks
 - HMA
 - WMA

RA into WMA

- 85% RA + 15% c/dust through KMA.
- 50% RA + 50% G5
- 100% RA

Standard of 10% to 15% RA as routine into HMA

- Trials with 30% RA into WMA
- Trials with 20 % RA into WMA
- Trials with 10% to 15 % RA into WMA

Lessons learnt from Brackenhill

- Careful selection of trial sites – grades and variable support.
- Reduce trials to one mix per day
- Comprehensive plant trial mixes
- Develop detailed template covering entire process.













RELATIONSHIP AND DESKTOP

AGREEMENTS
AND
PROTOCOLS

MIX DESIGNS AND PLANT RUNS

SITE AND PAVEMENT SELECTION

POST CONSTRUCTION

CONSTRUCTION

EMISSIONS AND ENERGY MANUFACTURING AND CONSTRUCTION PLANNING









Warm Mix Asphalt Trials
South Africa
Template Version April 2009

protocol Introduction of parties Agree Detailed technical presentation of Agree technology plant staff Information transfer Group desktop study Agree financials in principle Follow discussion meeting with technology product can supplier temp, etc Working group meeting and agreement to go protocols to next stage

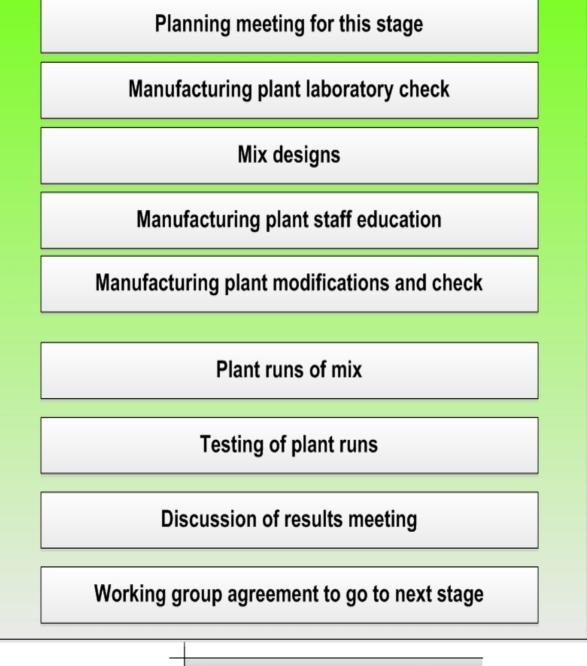
Aaree mix desian Planning meeting for this stage Site selection Agree testing Agree monitoring, protocol at plant sampling and and paver (include testing team Manufacturing curing effect) plant laboratory check Detailed pavement manufacturing Agree emission investigation monitoring requirements / protocols Mix designs modifications Agree energy Manufacturing manufacturing Rehabilitation consumption plant staff Pavement design protocols education requirements Manufacturing Agree materials plant modifications Agree LTTP Rehabilitation and check requirements pavement design report Agree blending / Working group additive addition meeting to go to Plant runs of mix protocol, applicab next stage Agree construction staff and plant Site preparation requirements Testing of plant Agree conditions within which the Site approval and Discussion of agreement to go successfully results meeting to next stage loading, support, Working group Agree safety agreement to go to next stage WMA Trials Template

Construction and Emission manufacturing monitoring planning meeting Agree construction Energy methods and consumption construction monitoring programme Monitoring and testing planning education meeting Agree construction plant to be used Manufacturing plant check Construction plant check Plant laboratory check Manufacturing plant check

Manufacture WMA Pave WMA End of construction day meeting Construction team End of construction meeting Post construction testing Trials report writing - draft consultant Trials report draft Technology supplier Trials report

LTTP

April 2009



Mix Designs and Plant runs

Further detail: Protocols for specialist areas.

- We have further identified specialist areas for which we have written up further detailed protocols viz
 - Mix design and testing: Wynand Nortje & Herman Marais
 - Manufacturing: Frank Swift
 - Construction: Mike Walsh
 - Emissions: Kevan Rocher
 - Safety: Kevan Rocher
 - LTTP: Tony Lewis
- All will evolve and improve with further iterations of trials.

Leicester Road

- Trials are being undertaken in terms of the template.
- 1 km long industrial road dual carriage-way each 8m wide
- 450 heavies per day 20 year EAL = 7 x 10⁶
- Mill and replace 80mm base AE2 modified 19mm continuously graded HMA and 50mm WMA.
- Each c/way to be split into 3 by 300 tonnes sections (600 tonnes per mix).
- Lab mix designs complete.
- Plant trials in progress.



WMA Leicester Road Trials Team

- Much Asphalt: manufacturing (batching plant)
- National Asphalt: paving
- Technology suppliers:

- SASOBIT: Sasol

Rediset: Akzo-Nobel

Specialist plant: Bomag
 Asphalt Manager



Construction Programme

Commencing last week of May 2009.

- North-bound carriageway
 - Day 1 HMA Mix D +10% RA
 - Day 2 WMA Mix D + 10% RA + 1.5% SASOBIT
 - Day 3 WMA Mix D + 10% RA + 2 % Rediset.

- Southbound carriageway
 - Day 4 to 6; same order as above.

WMA Interest Group proposes that:

- Warm Mix Asphalt (WMA) is generically defined as: "asphalt that is manufactured and paved at temperatures of at least 20°C lower than conventional hot mix asphalt, with all properties and performance being equal to or better than hot mix asphalt."
- The template currently being used by WMA Interest Group be adopted as a national protocol for the implementation of WMA trials in RSA.
- Guideline document be drawn up by the WMA Interest Group.
 Timeline completion by 2010.
- Further trials be undertaken targetting at least one technology from each generic category.
- A national Co-ordinator for WMA in RSA be appointed.