Project Facts
Jellinbah Coal Haul Road Stabilisation

Problem:
Jellinbah Coal Mine is situated west of Bluff, Qld. Haul road ‘A’ is constructed of mine spoil (mainly tertiary clays). Road structure was unstable in several areas requiring constant maintenance and watering for dust control. The running course was undulating and softened to depth during rain events.

Solution:
Deep compaction techniques were applied initially to strengthen the roads lower levels. After compaction the running course was stabilised (100mm) using PolyCom stabilising aid.

Project Aims:
1. Improve the haul road wear course to reduce maintenance and watering
2. Prevent softening after rain event
3. Reduce fuel consumption
4. Validate completed work

Validation:
Validation of improved road conditions after work - Dynamic modulus of the road was improved from 38.8 to 69. Rolling resistance was reduced by 15%
Translated to effective fuel savings and CO2 emissions of 5%

PolyCom has delivered a road with increased strength, and durability and with a high degree of water resistance. This surface also delivers improvements to tyre wear and fuel economy.
Client:  
Minerva Mine  
Main Contractor:  
Mosley Mining  
Specialist Sub-contractors:  
SEALS Group  
Project description:  
Haul road stabilisation  
Southern and Northern haul road  
Location:  
Springsure, Qld  
Date:  
November 2008  
Product:  
PolyCom Stabilising Aid

Problem:  
Minerva mine is situated south of Emerald, Qld  
Haul roads are constructed of mine spoil (mainly mudstone with some blast rock). Road structure was stable and settled but wear course was prone to dust, blowouts and soft spots requiring constant watering and maintenance. The nature of the construction material also made these roads prone to softening to a depth during rain events.

Solution:  
Some local basalt was located and a re-sheeting and in-situ material blending program was completed. The area was then stabilised using PolyCom stabilising aid to an approx 100mm. Standard mine equipment was used for all works and no other plant was required.

Project Aims:  
1. Improve the haul road wear course to reduce maintenance and watering  
2. Prevent softening after rain events  
3. Improve tyre life  
4. Reduce fuel consumption

For detailed project information contact:  
PT Rekakarya Geoteknik  
Tel: +62 (21) 392 2727  
HP: +62 812 1886 3179  
office@rekakarya.com  
www.rekakarya.com

Southern haul road pre-work

Southern haul road 3 months after works - watering and maintenance reduced by 80%, improved tyre life, fuel savings achieved and no stoppages after rain.
Project Facts
Stabilisation of re-sheet gravel

Problem:
Local availability of consistent pit gravel is increasingly hard to source and most roads are being maintained with variable gravel mixes. Some of these gravels do not wear very well and have a low resistance to water, softening to a depth with rain events. The local councils maintenance crews are stretched as is there budget for ongoing repairs and maintenance. Council management needed an economic and efficient stabilisation product to provide some longevity to the newly placed gravel and to deliver a high degree of water resistance. In addition the stabilisation product needed to be re-workable and reusable for ease of future maintenance and servicing.

Solution:
SEALS Group solution was to stabilise the re-sheet gravel with PolyCom stabilising aid to deliver increased strength, flexibility and a very high degree of water resistance. This stabilisation would be carried out at site utilising the council grader crew. Standard works methods for a re-sheet were followed with the addition of PolyCom treated water.

Project Aims Achieved:
1. Significantly improve the service life of the re-sheet gravel
2. Increase maintenance interval
3. Provide a high degree if weather immunity

Both pictures taken in Dec 2011 - 10 months after the original works. This road is in excellent condition with no visible material loss and no deformations or displacement. Project aims have been met to provide council with a more economic management strategy providing increased durability and weather immunity.

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office@rekakarya.com
www.rekakarya.com
Problem:
End of life road section with several repair options available. The road’s original construction was local bush gravels with a pavement depth of approximately 150mm. Sub-grade material consisted of brownish red high PI material with a well drained local area. No sub-grade failures were obvious along this section of road. With only 150mm of pavement thickness conventional stabilisation was not considered.

Solution:
SEALS Group was engaged as a sub-contractor to supply PolyCom stabilising aid and offer technical assistance for the stabilisation of the pavement.

Project Aims:
1. Stabilise in-situ pavement to increase strength and eliminate a costly rebuild to upgrade this area.
2. Introduce a degree of water resistance and flexibility to this thin pavement layer.
3. Extend pavement life as economically as possible.

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Project aims have been achieved. In particular pavement strength has been increased substantially (x4) delivering a valuable increase in pavement life.
Project Facts
Polymer stabilisation of sub-grade

Problem:
Mt Tyson road reconstruction required the establishment of a side road to cope traffic volumes for the term of the works. (high truck volumes)
Conventional construction of the side road over low strength black soil meant the importation of a considerable amount of gravel from a pit more than 50 Klm away. An unwanted expense over and above the actual road re-construction.

Solution:
Together, shire management and SEALS Group elected to improve the in-situ sub-grade (black soil) with PolyCom stabilising aid. This work would deliver a competent sub-grade of sufficient strength and weather resistance to enable the placement of a reduced local gravel sheet to manage traffic volumes during the works. Stabilising the existing sub-grade saved the shire money by eliminating the requirement for the trucking in of large quantities of gravel and considerable time efficiencies were also realised.

Project Aims Achieved:
1. Improved sub-grade strength and workability
2. Reduced gravel sheet requirements due to improved sub-grade
3. Reduced side road construction costs by 40%

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Problem:
Requirement was to up-grade a local rural road to a standard which will support road train haul traffic from the mine. Haul traffic consists of doubles and triples transporting coal. Local sub-grade is of very low strength and with clay variations from silty to sandy/loamy material and some local bush gravels added to sections over the past years. This existing road/track is considered sub-grade with the entire area to be re-sheeted. Secondary problem is a lower layer of rock and heavy clay which has trapped ground water in this area producing instability. Some areas were responding well to a standard treatment of opening, drying and re-compacting but some areas required further work.

Solution:
SEALS Group solution was to stabilise these unstable areas of sub-grade producing a very strong soil raft - remediating the unstable sub-grade.

Project Aims:
1. Stabilise sub-grade to increase strength and add a workability factor to this difficult to manage material
2. Deliver a solid soil bridge over the unstable lower levels eliminating the need for more extensive work

Stabilisation with PolyCom has delivered increased strength and workability to the in-situ ground. This realises savings for the client with less work and materials required to remediate the area.

Standard construction equipment was used for this task.

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Problem:
Sub-grade material is medium to highly reactive clays mostly Permian. Construction method for expressway, access roads, construction and plant areas was cut and fill. This meant that areas brought to level exposed vulnerable low strength reactive sub-grade to weather and traffic damage during the construction phase leading to expensive re-work in damaged areas.

Solution:
SEALS Group solution was to stabilise the sub-grade area with PolyCom stabilising aid providing more workability and an increase in strength and flexibility as well as a very high degree of water resistance. This simply effected treatment eliminates or greatly reduces re-work and down time due to traffic or rain events.

Project Aims:
1. Deliver a sub-grade layer of increased strength and flexibility
2. Eliminate softening from water ingress
3. Reduce traffic damage in construction phase
4. Reduce down time after extreme weather events

PolyCom stabilisation of the sub-grade has delivered the desired outcomes of increased strength, flexibility, water resistance and a higher degree of material workability. This improved material is re-workable at any time and stabilisation has been achieved using standard on site construction equipment.
Project Facts
Origin Gas Plant Construction

Problem:
Existing sub-grade material consisted of sandy and silty clay material and areas of highly reactive clay with all material having medium to high sodic levels. The very low strength of the sub-grade meant considerable pavement thicknesses were required and the additional problem of erosion due to the piping (tunneling) of these highly dispersive soils was a concern. Standard solution was remove and replace or overlay the entire area with more competent material.

Solution:
SEALS Group solution was to stabilise the sub-grade area with PolyCom stabilising aid thus delivering an increase in strength, flexibility and a very high degree of water resistance thus reducing the required pavement thickness for road construction. PolyCom stabilisation also eliminates the erosion problem due to soil dispersiveness by combining this material into a solid soil raft.

Project Aims:
1. Deliver increased strength and durability to the sub-grade layer
2. Reduce water and traffic damage
3. Reduce the thickness of designed pavement layers for road construction
4. Eliminate Piping (tunneling) of these sodic soils

PolyCom has delivered all of the project aims - A stronger sub-grade with flexibility and water resistance combined with the remediation of these sodic soils. This improved material is re-workable at any time and stabilisation has been achieved using standard on site construction equipment. This work has delivered substantial cost benefits to the client.

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Project Facts
Sub-grade stabilisation

Problem:
Boundary Road East reconstruction required removal and replacement of in-situ sub-grade material or stabilisation. The over wet ground had been worked by council for several days in an attempt to dry the area to a workable state. Continued wet weather was hampering and prolonging this work.

Solution:
SEALS Group was engaged by shire management to stabilise the in-situ sub-grade with PolyCom stabilising aid to enable a more useful and workable base for the road reconstruction. PolyCom was chosen because of councils past experiences with the product - typically delivering increased workability and improvements to CBR and compaction rates in low strength and variable ground. Increasing the strength and water resistance of sub-grades ensures a longer lasting pavement - a major project benefit. The area was stabilised in the morning with proof rolling being completed the same afternoon. Gravel was placed the next day.

Project Aims Achieved:
1. Change the quality of the sub-grade to allow workability and compaction
2. Increase sub-grade strength and water resistance
3. Speed up the works delayed by rain and below par soil

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office@rekakarya.com
www.rekakarya.com
Project Facts
Unsealed road stabilisation

Problem:
The shire has limited resources with only variable gravels available for repairs and re-sheets. Most of these gravels are clayey in nature and are subject to water ingress and softening with extended rain periods. Extensive repairs are required throughout the shire after prolonged rain periods and the ongoing cost of these extra works is a major concern for management.

Solution:
Stabilise re-sheet material using PolyCom stabilising aid. The stabilisation was effected during the placement and blending of the gravel for the re-sheet using standard council plant and man power.

Project Aims:
1. Improve variable re-sheet gravel to achieve longer service life
2. Reduce water and traffic damage to new running surface
3. Reduce ongoing service requirements

Surface is tight and water resistant

11 Months after the works

Constant rain during and after the construction has had little effect on the strengthened, water resistant surface - ongoing service and rework dollars have already been saved

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Project Facts
Unsealed Road Stabilisation

Problem:
Existing gravel pavement was loose, dusty and dangerous for road users. Maintenance interval was approximately three monthly as the construction material was prone to raveling and corrugations.

Solution:
Stabilise the running course with PolyCom stabilising aid to deliver increased strength and water resistance to prevent softening. This pavement strengthening will also reduce dust, corrugations and help to prevent raveling as well as extending the service interval there by reducing ongoing costs.

Project Aims:
1. Deliver increased strength and durability
2. Reduce water and traffic damage
3. Reduce corrugations and raveling
4. Reduce dust
5. Extend the usable life of the pavement there by reducing maintenance costs

Plant:
Wear course stabilisation was completed using standard council machinery, grader, water cart and roller.

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3 years after PolyCom stabilisation and road surface is tight with little material loss. There is minimal fly and no corrugations are evident. Service interval has been extended considerably.