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**The South African
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AFRICAN RENAISSANCE ROADS UPGRADING PROGRAMME (ARRUP)



SAICE BRANCH AWARDS – 2003 COMMUNITY BASED PROJECTS

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Prepared by :

**Tifflin Purchase and
Associates**

P.O.Box 1575

Westville
3630

Tel. (031) 267 0960

Fax. (031) 267 2739

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SAICE BRANCH AWARDS – 2003
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The Construction of Main Road 68

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1. LOCALITY PLAN

Overleaf

2. INTRODUCTION

The upgrading of Main Road 68 was chosen by The Department of Transport as one of its ARRUP projects because it provides an important link between the inland communities of Highflats and St Faiths and the coastal towns of Umtentweni and Port Shepstone.

3. THE ARRUP PROGRAMME

As part of the African Renaissance Roads Upgrading Programme (ARRUP), this road has been programmed to be constructed using only Emerging Contractors registered on the Department of Transport's database. The ARRUP Programme involves the upgrading of a number of rural main roads to blacktop. The strategy for this ARRUP project using only Emerging Contractors has been outlined in Appendix 1. This philosophy alone indicates the Departments' commitment to poverty alleviation and the improvement of the lives of the people affected by road construction (i.e. The Vukuzakhe Programme).

4. THE VUKUZAKHE PROGRAMME

Vukuzakhe is a four-staged development programme for emerging contractors within the KwaZulu-Natal Department of Transport.

The policy has defined the target group as enterprise owned, managed and controlled by previously disadvantaged individuals and which is overcoming business impediments arising from the legacy of apartheid. All enterprises in the programme have to be 100% black owned.

The four stages are:

STAGE 1

This stage is effectively divided into two, Stage 1a and Stage 1b. The maximum contract values are R50 000 for Stage 1a and R200 000 for Stage 1b. Examples of these contracts are as follows:

Grass cutting, clearing of road edge build up, cleaning of pipes & outlets, cleaning of kerbs and channels, labour based teams, guard rail repairs but not installation.

STAGE 2

The maximum contract value in this stage is R500 000. These are construction or maintenance contracts where the contractors engage labour and their own transport/equipment./plant and purchase of materials. Examples of these contracts are as follows:

Road markings, road stud installation, signpost erection and repairs, guardrail repairs and installs, kilometre post erection, concrete repairs, gabion repairs,

building maintenance, crack sealing and blacktop patching, culverts and causeways, concrete lined channels, kerbs and channels, minor concrete works, blading, construction of roads, patch gravelling, betterment.

STAGE 3

The maximum contract value in this stage is R1 000 000. Examples of these contracts are as follows:

Same as for stage 2 however all type of structures and a number of different maintenance activities are covered, such as:

Blading, construction of road up to and including type 6, patch gravelling, betterment, drainage maintenance (ie large drains, side drains, mitre drains etc), emergency repairs.

STAGE 4

The maximum contract value in this stage is R5 000 000. These contracts are for construction and all ancilliary works including headwalls, stormwater culvert and causeways for all road types including blacktop roads.

5. SCOPE OF THE PROJECT

The upgrading of Main Road 68 is a 6 year project starting at the Assisi Clinic in the east with the completion of sidewalks, drainage and earthworks, and ending at St Faiths in the west with the construction of 24km of main road. The construction of the entire length of road has been unbundled into a number of Emerging Contractor contracts (see attached schedule of some of the forthcoming contracts in Appendix 1). For the purposes of this submission, the sidewalks, site security, drainage and earthworks contracts will be discussed as they have been substantially complete in the year preceding (contracts 3 to 10 on the attached schedule).

6. CONTRACT DETAILS

6.1 Type of Work

The primary operations involved the laying of kerbs, construction of asphalt sidewalks and concrete/ grass lined v-drains. Other work included signposting and the installation of bus-shelters. All works included a fair amount of traffic accommodation and the implementation of road safety measures.

It must be remembered that as Stage 1 Emerging Contractors, much, if not all of the work carried out was new and challenging. These contractors' previous experiences included general tasks such as bush clearing and pipe de-silting operations. In constructing the gravel bases, priming, asphalt laying and kerb construction, many new-found skills were imparted to the contractors. The experience gained on these contracts will be of immense

value to these Stage 1 contractors when they advance to the higher levels of the Vukuzakhe Programme.

The bulk earthworks and drainage-works follow traditional methods of construction but are completely executed by Stage 3 and 2 Emerging Contractors respectively. Local labour was also employed for these contracts as flagmen, line/level/dip men, bricklayers, pipelayers as well as general workers.

6.2 Engineering Characteristics

Many engineering principles and tasks were involved in the execution of the works. All contractors worked off design plans and were introduced to the concepts of orientation, scales, measurement and planning.

Coupled with the engineering facets, a training and mentoring system was in place for all contracts, to guide and transfer new skills to the contractors.

6.3 Public Appeal and Functionality

It is needless to stress the importance of sidewalks along any route. The sidewalks constructed serve a community of approximately six schools and thousands of scholars as well as a number of public transport commuters. The shelters for commuters have been beautified by a special project run to encourage scholars to express their artistic talents.

The signposts erected give motorist adequate warning for their own safety, as well as the safety of the public.

The road construction (earthworks and drainage) provides the foundation for the complete road and the good standard of work done to date gives the community a sense of the type of finished product that they can expect. Feedback from community meetings indicates that they are excited about the standard of work produced by these Emerging Contractors.

6.4 Environmental Issues

All operations were performed with the utmost regard for the surrounding environment. Great care was taken for operations such as the mixing of concrete and the spraying of the bitumen. All contracts boasted a high degree of cleanliness and tidying-up.

Current contracts include landscaping, topsoiling and grassing of all banks where erosion is expected. These contracts are being done by Stage 1 Emerging contractors.

6.5 Employment of Labour and Community Empowerment

All contracts boast a high local labour component as well as a fair proportion of female employees. A total of 41 males and 25 females were employed for a period of 5 months. The use of plant and machinery was kept to a minimum

to create the maximum possible labour opportunities. All local labour was acquired through Inkhosi Lushaba of the Oshabeni Tribal Authority, as agreed by the Project Liaison Committee (PLC). Subsequently a Labour Acquisition Sub-committee was formed through which the contractors sourced their labour. Again this demonstrates a high level of community involvement and job creation.

A local suppliers database was developed through which the contractors were able to source plant and materials for their work. This gave the local community an opportunity to create small businesses based on the needs of the project. Enterprises such as truck and loader services, bricks, blocks, sand, stone and cement suppliers have since been registered on this database.

6.6 Programme and Budget

The co-ordination of the 4 contractors and the timing of the various operations to ensure continuity of work and production, posed an initial challenge, but were soon overcome and operations on the site then ran smoothly. The contracts were practically complete within the contract period, with minor works extending past the completion date.

The contracts were completed well under the budgeted amount owing to the cost-saving initiatives. The maintenance of daily costing and allowable schedules improved the efficiency and production of the work force and a resultant cost saving.

6.7 Conclusion

Main Road 68 exhibits excellent commitment in complete and entire community involvement in all planning and construction stages of a 24km section of Provincial/ Main road (approximately 2.5km has been substantially constructed last year).

To this end we are proud that our client considers the upgrading of main road 68 as a forerunner and leader amongst the ARRUP projects.

The works detailed in this report were the direct responsibility of Mr Roger Purchase and Mr Sunil Rupee, both SAICE members.

7. CONSTRUCTION PHOTOGRAPHS

7.1 SIDEWALKS

Before



The existing sidewalks before commencement of work. The shoulders were generally too narrow.

During



Fill widening and gravel base construction.

During







The compacted gravel base was primed and then surfaced with a 20mm asphalt layer.

After



The completed asphalted sidewalks.

Before	During
 <p>26 10:25 AM</p> <p>Existing shoulders with evidence of erosion.</p>	 <p>22 9:41 AM</p> <p>Traffic accommodation during the construction.</p>

During	During
 <p>17 10:19 AM</p> <p>Ladies excavating for the mini-kerb at the back of the sidewalk.</p>	 <p>22 1:37 PM</p> <p>Workers were trained to use templates to grade the gravel base to the required 2% fall towards the road edge.</p>

During



Compacted gravel base ready for priming.

During



Workers spreading gravel material to be compacted by the pedestrian roller.

During







A newly trained kerb-layer constructs haunching to the mini-kerb. The neatness and accuracy in the line and level is remarkable.

After







A completed section of the asphalted sidewalks.



During	After
 <p>A kerb-layer levelling the mini-kerb with the existing figure 6 kerb.</p>	 <p>Neatening-off of the banks at the back of the sidewalks was done well and created a well-finished product.</p>



After	After
 <p>More completed sidewalks with trimmed banks.</p>	 <p>Completed sidewalks.</p>

7.2 CONCRETE V-DRAINS



Before	During
 <p>The existing open side drains had been severely eroded in places.</p>	 <p>Existing drains were hand-trimmed and compacted. Formwork was erected and the panels were poured with concrete mixed on site.</p>

Before	During
 <p>Existing v-drain condition.</p>	 <p>Semi-skilled workers use templates to obtain the correct v-drain shape. A line level was used to create a fall to an outlet point.</p>

During	After
 <p>A concrete chute outlet being floated.</p>	 <p>The concrete chute almost complete. The laying of panels in alternate sections can be clearly seen.</p>



Before	During
 <p>The extent of the eroded road banks and drains involved a large amount of corrective work to be carried out before trimming and construction of the drains could be undertaken.</p>	 <p>Concrete v-drain slabs laid in alternate panels.</p>



7.3 BULK EARTHWORKS

Before	During
 <p>Partially built fills in poor condition.</p>	 <p>Benching and building of the fills.</p>

Before	After
 <p>Another partially built fill in poor condition.</p>	 <p>A completed fill.</p>

7.4 DRAINAGE WORKS

During	After
 <p>An outlet apron slab being prepared for concreting.</p>	 <p>A completed headwall, to be neaten off.</p>

During	During
 <p>Pipe bedding being prepared to line and level.</p>	 <p>Building of a manhole in progress.</p>

7.5 THE SITE CAMP

During



The Oshabeni Training Centre was used as the construction site camp where the offices, plant and material was housed.

During



The site camp was used to batch concrete for the v-drains. Seen here – a visit by the KZN Department of Transport Development Directorate staff.

Before



The Oshabeni Training Centre Hall at the site camp, seen here, was in need of some repair and restoration.

After



The broken fascia boards and drains were fixed and walls were sanded down and re-painted.

Appendix 1

Contracts Unbundling