



public works

Department:
Public Works
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF PUBLIC WORKS

PROJECT:

**PARLIAMENTARY PRECINCT: STALPLEIN:STRUCTURAL
REPAIRS TO GRANITE STRUCTURES**

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SCOPE OF WORKS

- **GRANITE REPAIRS IN THE FOLLOWING AREA'S AROUND STALPLEIN:**
- BASEMENT PARKING ENTRANCE AREA
- PLANTER BOXES
- POT PLANT PLINTHS
- PAVERS & KERBS ON STALPLEIN AND PARLIAMENT STREET
- STAIRWELLS WITH EFFLORESCENCE STAINING
- FLAME OF REMEMBRANCE

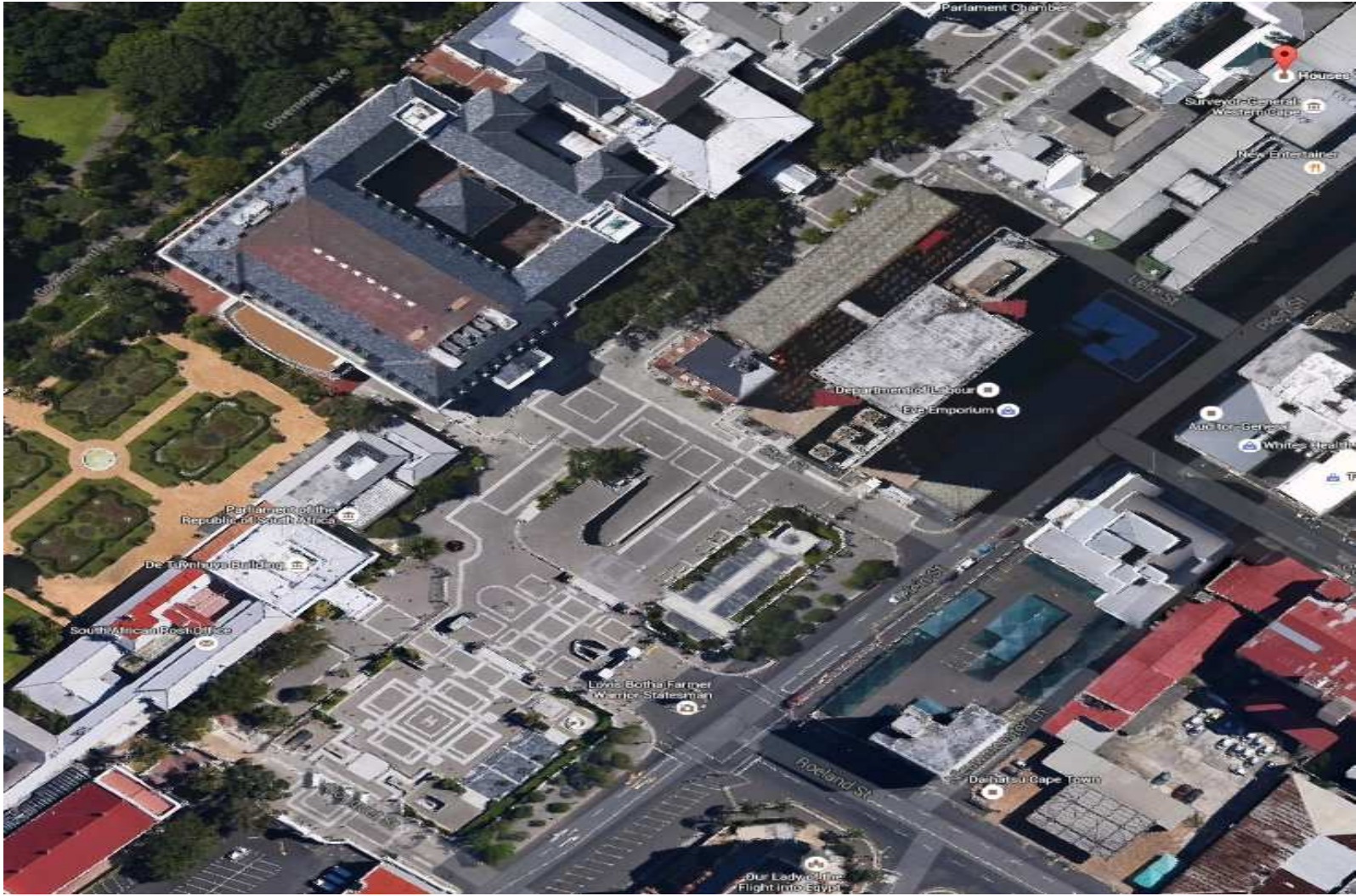
- **GENERAL PAVING COBBLE REPAIRS**

- **REPLACE DAMAGED SLATE TILES**

- **REPLACE CORRODED BALLUSTRADES & HAND RAILINGS AT STAIRWELLS**

- **MISCELLANEOUS ITEMS**
- TRIMMING OF TREE ROUTES THAT ARE IMPACTING ON THE GRANITE PAVERS AROUND THE TREE AND ALSO CLEANING OF STAINED MARBLE FOUNTAIN.
- USING OF UNDERGROUND RESERVOIR FOR LANDSCAPING AND WATER IN DROUGHT CONDITIONS

STALPLEIN SQUARE AT PARLIAMENT



HISTORIC BACK GROUND



Constructed in the early 1980's. New Parliament building with the bronze plaque of Nelson Mandela in front of it, facing the Stalplein area.

PROBLEM AREAS:

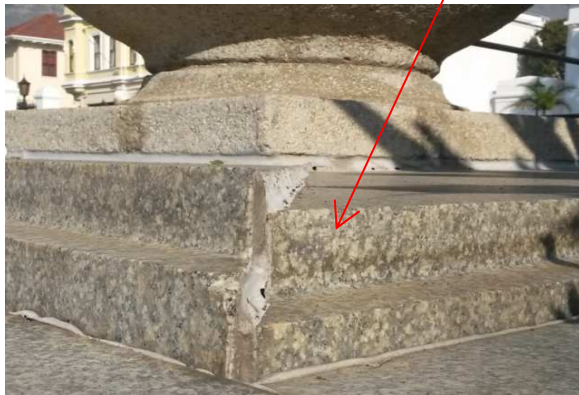
1. BASEMENT PARKING ENTRANCE



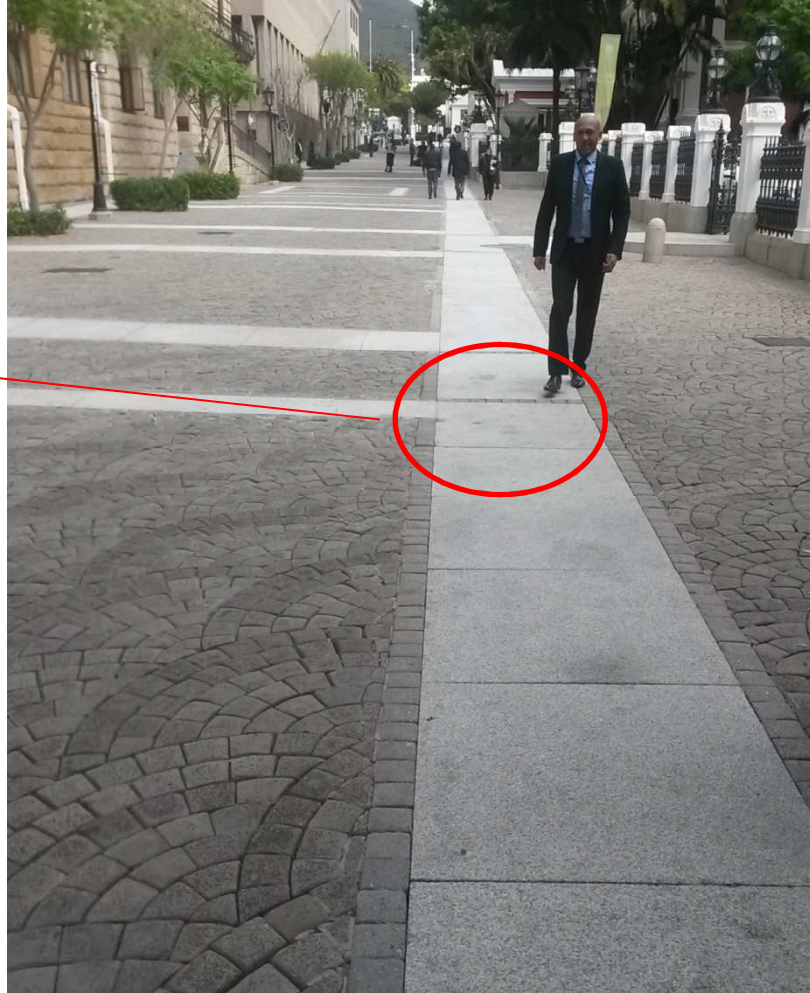
2. GRANITE PLANTER BOXES



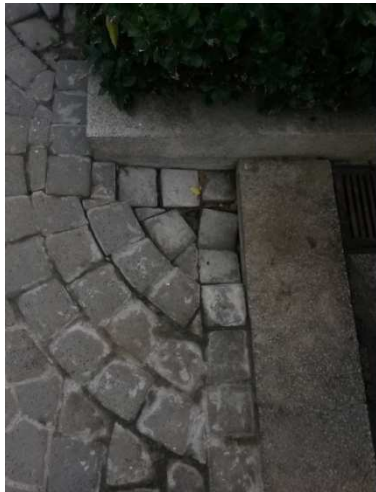
3. GRANITE POT PLANT PLINTHS



4. PAVERS & KERBS ON STALPLEIN AND PARLIAMENT STREET



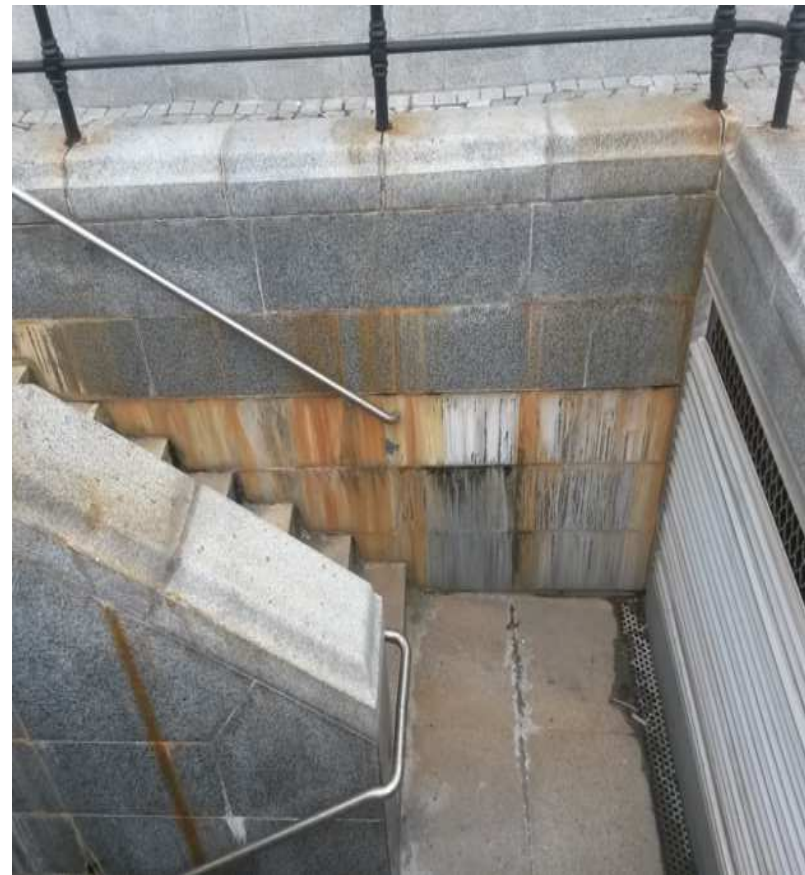
5. COBBLE STONES SETTLING OR DISCOLOURED WITH PAINT SPOTS



6. DAMAGED SLATE TILES



7. STAIRWELLS WITH EFFLORESCENCE STAINING



8. CORRODED BALUSTRADE AND HANDRAIL



9. TREE THAT IS LIFTING GRANITE SLABS & HAS OUTGROWN ITS TREE RING



10. MARBLE FOUNTAIN WITH STAIN MARKS



REMEDIAL OPTIONS FOR REPAIRING
GRANITE ELEMENTS – TEMPORARY
SCAFFOLD STRUCTURE TO ALLOW
ACCESS TO BASEMENT WHILE WORKS
OVERHEAD IS DONE



GRANITE PLANTER BOXES: RECONSTRUCT & PLANT NEW SLOW GROWING STRELITZIA'S – MANDELA'S GOLD

Strelitzia reginae Aiton 'Mandela's Gold'

Family: Strelitziaceae (Strelitzia family)

Common names: Mandela's gold strelitzia, yellow strelitzia, yellow crane flower, yellow bird of paradise, geelkraanvoel blom, geel piesang



Strelitzia reginae 'Mandela's Gold' is a rare yellow form of the well-known crane flower, *Strelitzia reginae*.

Yellow-flowering strelitzias have been known for a number of years, plants have cropped up in France, California, Australia, Japan and in South Africa at a few locations in Eastern Cape and at Kirstenbosch and the Karoo Desert National Botanical Gardens, but always as isolated specimens. Left to their own devices, the seeds from these yellow forms will not breed true as they will most likely have been pollinated by an orange plant. To get yellow progeny, two yellow plants must be crossed. At Kirstenbosch in the 1970's, there were seven yellow plants in the nursery. John Winter, who was curator during this period, began a project to increase the stock. It took nearly twenty years of careful selection and hand-pollination, and in 1994 the original stock had been built up enough to enable us to introduce the yellow strelitzia to horticulture. It was released and traded under the name 'Kirstenbosch Gold' until 1996 when the NBI was granted permission to re-name it in honour of Nelson Mandela.



'Mandela's Gold' is a stemless, evergreen clump-forming perennial. Greyish green, banana-like leaves grow to a height of about 1.5 m and during winter and spring the large bird-like flowers are held above the foliage on the tips of long, sturdy stalks. The structure and pollination of the flowers is fascinating. The hard, beak-like sheath from which the flower emerges, is called the spathe. This is held at right angles to the stem, and has the appearance of a bird's head. Each spathe contains 4 to 6 flowers, and these emerge one at a time from the spathe. Each flower consists of 3 clear yellow sepals and 3 deep purple petals. The yellow sepals give the appearance of a crest on the 'bird's' head. Two of the purple petals are joined together around the stamens and the style to form an arrow-like structure. The third purple petal is visible as a small scale.

| SCOPE OF WORKS | RECOMMENDATION |
|--|---|
| <p>1. BASEMENT PARKING ENTRANCE: HONED PAARL GREY GRANITE</p> | <p>Overhead hanging granite elements:</p> <ul style="list-style-type: none"> •Replace missing granite element with new fixing lugs with stainless steel dome heads. •Expose fixing lug heads of vertically hanging granite slabs and treat with an anti-corrosive treatment and reseal soffit with a stainless steel dome heads. <p>Vertically hanging granite elements that are loose:</p> <ul style="list-style-type: none"> •Refix all loose panels - refer to report for method statement <p>Efflorescence staining on vertical elements:</p> <ul style="list-style-type: none"> •Investigate water route and create water proof barrier behind granite, including a storm water channel if need be to drain the water away. |
| <p>2. GRANITE PLANTER BOXES – FINE MACHINE PUNCHED PAARL GREY GRANITE</p> | <ul style="list-style-type: none"> •Remove plants and expose existing soil and drainage. •Remove all granite block and copings that have moved, and reconstruct. •Redo existing agricultural drainage system, as well as internal waterproofing against granite. •Install a Bio barrier membrane to protect granite from roots of Strelitzia's. •it is recommended that a slow growing variant (known as Mandela's Gold) be planted to replace the existing Strelitzia's, |
| <p>3. GRANITE POT PLANT PLINTS</p> | <ul style="list-style-type: none"> •Remove top coping on the side of the plinth, to investigate further, what the cause of the differential settlement is. Once the cause is determined, possible solutions can be considered. •Risk of damaging the pot plants should be avoided at all cost. |
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| <p>4. GRANITE PAVERS & KERBS</p> | <ul style="list-style-type: none"> •Remove all cracked 50mm thick slabs and make good and level out compacted sub-base underneath. •Introduce cement stabilized sub-base where rutting has occurred. •Replace all cracked granite slabs, with slabs of similar site dimensions. •Contractor to reseal joints with sand cement grout in general, but should make allowance for an elastomeric joints every 10m length of granite(not oil based as they will stain the granite). |
| <p>5. PAVING COBBLES : PORTLAND CEMENT</p> | <ul style="list-style-type: none"> •Where settlement of pavers have occurred, the pavers are to be lifted and sub-base to be re-compacted and levelled out, before repaving the affected area's. •Cobble pavers that have been stained with green paint blotches to be cleaned with biodegradable paint cleaner. |
| <p>6. SLATE TILES</p> | <ul style="list-style-type: none"> •Remove damaged slate tiles and re-compact sub-base and install new slate tiles, matching the existing. |
| <p>7. EFFLORESCENCE & CORROSION STAINING ON GRANITE WALL CLADDING</p> | <ul style="list-style-type: none"> •Remove efflorescence and corrosion staining by means of scraping or using sanding equipment. The granite is a hard wearing surface so the majority of the staining should be removed, but some remnants could still remain. •Investigate where the very white line of efflorescence is coming from, behind the wall. Possible a blocked drain, which should be cleaned out. |
| <p>8. CORRODING BALLUSTRADES & HAND RAILINGS</p> | <ul style="list-style-type: none"> •Remove and replace rusted balustrading with galvanized or stainless steel members. •Clean and repoint joints around granite coping, after re-fixing balustrading to concrete below. |

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|---|---|
| <p>9. MISCELLANEOUS ITEMS</p> | <ul style="list-style-type: none"> •Remove steel tree ring & lift granite slabs around tree to evaluate options for cutting back root system. Horticulturalist to advise. •Clean stains on marble fountain with sandpaper. |
| <p>10. FLAME OF REMEMBRANCE</p> | <ul style="list-style-type: none"> •Settlement of brickwork at back area, below granite facade. •Underpin the footings of this area and re-build brickwork on top of this new foundation. |
| <p>11. UPGRADE OF LANDSCAPING INFRASTRUCTURE & USING RESERVOIR WATER</p> | <ul style="list-style-type: none"> •6 Quotes from reputable landscaping firms were obtained for the option of upgrading the existing landscaping infrastructure on Stalplein. •The main intention is to optimize the available water from the underground reservoir close by. •This would also offer the opportunity to create a collection point of clean water for the public, on the outside of the precinct, similar as in Newlands, due to current drought situation. |

PROJECT BUDGET ESTIMATE

| Area: | Labour (R4000/day): | Material estimate: | Total (ex VAT): |
|--|---|--|--------------------|
| 6.1 Basement Parking Entrance | | | |
| Scaffold bridge and lifting equipment | | | R100 000 |
| Re-fixing of granite slabs with stainless steel pins | 14 days: R56 000 | R100 000 for new pins, new slab, grout etc.. | R156 000 |
| Cleaning of efflorescence | 3 days: R12 000 | R 3000 for tools | R15 000 |
| Installing drain around top of entrance | 5 days: R16000 | R50 000, drain + waterproofing | R66 000 |
| Restoring jointing, etc | 7 days: R28 000 | R20 000, grout, etc | R 48 000 |
| 6.2 Granite Planter Boxes | 21 days: R84 000 | R140 000 for grout and waterproofing & drains | R224 000 |
| 6.3 Granite Pot Plant Plinths | 24 days: R120 000 | R240 000 for regrouting of copings, lifting equipment,etc | R360 000 |
| 6.4 Granite Pavers & Kerbs& general joint sealing | 30 days: R120 000 | 25m ² x R7000/m ² = R175 000 + R25 000 (grouting) | R420 000 |
| 6.5 Paving Cobbles | 10 days: R40 000 | R10000 for regrouting | R50 000 |
| 6.6 Slate Tiles | 5 days: R20 000 | 10m ² x R1000/m ² = R10 000 | R30 000 |
| 6.7 Efflorescence & Corrosion | 14 days: R56 000 | R20 000 for tools and scrapers | R76 000 |
| 6.8 Balustrades & Hand Railings | 10 days: R40 000 | New balustrading estimate: R250 000 | R290 000 |
| 6.9 Miscellaneous Items (New plants, electrical refurbishment, waterproofing etc) | 14 days: R56 000 | R300 000 | R356 000 |
| 6.10 Upgrade the landscaping infrastructure, along with the services of a reputable Landscaping firm. | 30 days and also materials: R300 000 | Drainage system under existing pavers, and a pumps to distribute the water and design by landscaping firm R300 000 | R600 000 |
| Sub-Total | 146 working days = 6 month estimate. | | R 2 791 000 |
| Provisional & General costs (15% of Sub-Total) | | | R 418 650 |
| Contingency (30 %Sub-Total) | | | R 837 300 |
| CPAP (8.5% of Sub-Total) | | | R 237 235 |
| Total (ex VAT) | | | R 4 284 185 |
| 14% VAT | | | R 599 786 |
| GRAND TOTAL (incl VAT) 2017 ESTIMATE | | | R 4 883 971 |
| PROJECT BUDGET ESTIMATE APRIL 2014 | | | R1 995 000 |