

<u>SPECIFICATION / SCOPE OF WORK</u>	
PURPOSE OF SUBMISSION	Bid specification- Appointment of an as and when Service provider to supply and erect various types of fencing and gates under CIP programme in South Gauteng Region for a period of 36 months.
DESCRIPTION OF GOODS / SERVICES / WORK	SUPPLY AND ERECT VARIOUS TYPES OF FENCING FOR GAUTENG SOUTH STATIONS/DEPOTS ON AN AS AND WHEN BASES FOR A PERIOD OF 36 MONTHS
REQUEST FOR PROPOSAL NUMBER	SGR/CRES/AS-AND-WHEN-GEN-BUILD/03/2024
DIVISION	PRASA CRES
USER DEPARTMENT	SGR FACILITY
DATE SUBMITTED	07 MARCH 2024

**SPECIFICATION: SUPPLY AND ERECT VARIOUS TYPES OF FENCING FOR
GAUTENG SOUTH STATIONS/DEPOTS ON AN AS AND WHEN BASES FOR
A PERIOD OF 36 MONTHS**

1. Scope Of Work

- 1.1 The work consists of alterations, removals of existing fencing, supply and installation of various types of fencing, gates for Prasa Cres - Facilities (Gauteng south, Johannesburg). All work to be done as per scope, specifications & schedule of quantities.
- 1.2 Contract duration will be for 36 months from the time of accepting the appointment.
- 1.3 The general specifications are to be read in conjunction with the relevant specification for each fencing type as listed on the pricing schedules. Tenderers should comply with these general conditions unless otherwise directed by the project manager.

2. Definitions

- 2.1 *PRASA-CRES*: One of the subsidiaries of Passenger Rail Agency of South Africa (PRASA) group responsible for managing the property portfolio of the group and the maintenance thereof.
- 2.2 *Facilities Manager*: A manager of PRASA-CRES responsible of building and infrastructure portfolio or any person authorised to act in that capacity.
- 2.3 *Normal Working Hours*: in this contract normal working hours will be will be 07h00 to 17h00 Mondays to Fridays excluding public holidays and weekends.
- 2.4 *Contractor*: Successful tender who is appointed by PRASA-CRES and will be responsible to carry out the works as per this specification.

3. TECHNICAL SPECIFICATION

3 1 Interpretations

Supporting Specifications

Project Specifications

SABS 1200 A General

SABS 1200 AA General (small works)

SABS 1200 C

4. SPECIFICATIONS

4.1 INTRODUCTION

Tenders are herewith invited for the supply, delivery & erection of various types fencing for Prasa stations/Depots on an “as and when required” basis.

4.2 BACKGROUND

Existing fences are being vandalized, broken, replaced and new fences are being erected “as and when tender required”.

4.3 PRICING RATES

Must include transport, labour and materials.

4.4 GENERAL/TECHNICAL REQUIREMENTS (RELEVANT TO ALL FENCING TYPES)

4.4.1 All completed fences shall be plumb, stretched to line and ground contour, with all posts, standards and stays firmly set.

4.4.2 Removal of Existing Fences: Contractor will be responsible to remove and dispose of existing fence if the fence needs to be replaced. If old fence is still in a condition to be used elsewhere it needs to be transported to Facilities Depot for safekeeping. Contractor must provide a price per running meter to remove and dispose of existing fence and poles.

4.4.3 Site works: The Contractor shall, on completion of each section of fence, remove all cut-offs and other loose wire so as not to create a hazard. The contractor must remove and

dispose of any spoil materials and rocks and leave the works neat and tidy on completion. Contractors need to provide a rate for rock excavation per cubic meter in the pricing schedule.

4.4.4 Establishment & Penalties: The construction period for each project will be agreed upon by both parties, before construction commences. Should the works not be completed within the agreed upon period a penalty of R 500/day will apply for each day in breach. Quality of materials and the use of the correct materials is important, if the project manager finds that sub-standard work or materials is been used the contractor will have to rectify his errors at his own expenses within an agreed period of time before payment will be made to the contractor. Failure to comply may lead to the tender being cancelled by Prasa Cres.

4.4.5 Compliance with Occupational Health and Safety Act 1993 6.7.1.

Tenderers are to note the requirements of the Occupational Health and Safety Act No. 85 of 1993 and the Construction Regulations 2003 issued in terms of Section 43 of the Act. The tenderer shall be deemed to have read and fully understood the requirements of the above Act and Regulations and to have allowed for all costs in compliance therewith. The Occupational Health and Safety Act, 1993 (Act 85 of 1993) stipulates that the Chief Executive Officer is primarily responsible or liable for the health and safety of all his/her employees. This is embedded in Section 16(1) of the said Act. This responsibility or liability is also extended to include a mandatory that performs work on behalf of the employer on his/her premises. A “mandatory” is defined in the said Act as:- “Including an agent, contractor or subcontractor for work, but without derogating from his status in his own right as an employer or user”

In terms of Section 37(2), read with Section 41, of the said Act, it is legally possible for an employer to indemnify himself from this responsibility or liability regarding the actions of the mandatory. Section 37(2) stipulates that there should be a written agreement in place between the employer and the mandatory regarding the arrangements and procedures between them to ensure compliance by the mandatory with the provisions of the Occupational Health and Safety Act, 1993.

In order to ensure that this written agreement is honoured at all times, regular inspections of work that is performed will be conducted and if found to be noncompliant with the said agreement, a notice of non-compliance will be issued. All work will be stopped and reasons for non-compliance must be given and what corrective action will be taken to rectify the situation must be stipulated.

5. GENERAL FENCING SPECIFICATIONS AND DIFFERENT FENCING MATERIALS

5.1. Galvanized poles, stays and intermediate poles

5.1.1. All posts to be planted in concrete (15Mpa).

5.1.2. Intermediate posts to be planted at a maximum c/c distance of 3metres.

5.1.3. After posts have been firmly set in accordance with the foregoing requirements, the fence wire shall be attached thereto.

5.1.4. Galvanized straining posts shall be erected at all ends, corners and bends in the line of fences and at all junctions with other fences.

5.1.5. All posts shall be accurately aligned and set plumb.

5.1.6. For 1.2m high fences – poles to be 1.8 meter in length.

5.1.7. For 1.8m high fences – poles to be 2.4 meter in length.

5.1.8. For 2.1m high fences – poles to be 2.7 meter in length.

5.1.9. For 2.4m high fences – poles to be 3.0 meter in length.

5.1.10. For 1.8m high fences with flat wrap on top the poles need to be 3 meter in length to leave enough space for the flat wrap to be tied on and not to make use of brackets or extensions.

5.2 Galvanized fencing poles and stays:

5.2.1. Galv Int Post 1800mm x 48.5mm

5.2.2. Galv Int Post 2400mm x 48.5mm

5.2.3. Galv Int Post 3000mm x 48.5mm

- 5.2.4. Galv Int Post 2400mm x 48.5 + 450mm
 - 5.2.5. Galv Int Post 3000mm x 48.5 + 450mm
 - 5.2.6. Galv Stay 1800mm x 48.5mm
 - 5.2.7. Galv Stay 2400mm x 48.5mm
 - 5.2.8. Galv Stay 3000mm x 48.5mm
 - 5.2.9. Galv Straining Post 1800mm x 76mm
 - 5.2.10. Galv Straining Post 2400mm x 76mm
 - 5.2.11. Galv Straining Post 3000mm x 76mm
 - 5.2.12. Galv Straining Post 2400mm x 76 + 450mm
 - 5.2.13. Galv Straining Post 3000 mm x 76 + 450mm
 - 5.2.14. Galv Corner Post 1800mm x 101mm
 - 5.2.15. Galv Corner Post 2400 mm x 101mm
 - 5.2.16. Galv Corner Post 3000mm x 101mm
 - 5.2.17. Galv Corner Post 2400mm x 101mm + 450mm
 - 5.2.18. Galv Corner Post 3000 mm x 101mm + 450mm
- 7.3. Foundations

5.3. Foundations

5.3.1 All foundation sizes for poles to be: 400mm x 400mm x 600mm deep.

5.4. Bolts for Stays

5.4.1 All bolts for stays shall be galvanized steel bolts of the required length and diameter, which shall not be less than 12mm diameter. All the necessary bolts together with nuts and washers must be supplied by the contractor. Above mentioned items must be hot dipped galvanized in accordance with SANS 763 type C1.

5.5. Galvanized fencing wire staples

5.5.140mm in length, 4.00mm in diameter could alternatively be used instead of binding wire to fix fencing and wire to poles.

5.6. Wire

5.6.1. Smooth wire shall comply with the requirements of SANS 675 and shall be of the types specified below:

5.6.2. Fencing wire shall be 3.15mm diameter heavy-duty galvanized wire to SANS 675

5.6.3. Specification or in the case of PVC coated fences PVC coated wire must be used. Tying wire shall be 2mm diameter mild steel heavy galvanized wire or PVC coated for tying fencing wire to post and droppers and 1.6mm mild steel heavy galvanized wire or PVC coated for tying netting and mesh wire to fencing wire.

5.6.4. All fencing wire shall be wired to the sides of posts to prevent the wires from being displaced or becoming loose. The wire shall be carefully stretched and hung without sag, and with true alignment, care being exercised not to stretch the wire so tightly that it will break or that end, corner, straining posts will be pulled up.

5.6.5. Each strand of fencing wire shall be securely fastened in the correct position to each post with soft galvanized binding wire or wire staples. The binding wire for each horizontal fence wire shall pass through a hole or notch in the post to prevent slipping of the fence wire in a vertical direction, while the ends of the wire shall be wound at least four times around the fencing wire to prevent it moving in a vertical direction.

5.7. Galvanized Welded Mesh (1.8m, 2.1m, 2.4m)

Weld mesh 50mm x 50mm x 3.15mm (class C) thick shall be used. To comply with the requirements of SANS 1024. To be stretched against the fence and properly tied to the fencing wire. To be secured by means of soft binding wire at 1.0m centres along all the fencing wires.

5.8. Anti-climb Welded Razor mesh fencing (2.4m) and Standard and High Density Welded Razor Mesh (2.4m) (Cochrane or similar)

Spacing and panel sizes for Welded Razor Mesh

5.8.1. Standard

- a) Centre to Centre: 150mm Width and 300mm Height
- (b) Aperture 125mm Wide 250mm Height

5.8.2. High density:

- (a) Centre to Centre 75mm 150mm
- (b) Aperture 50mm 95mm
- (c) Panel size 6m 2400mm

5.9. Barb Wire Fences and Smooth wire fence (1.8m, 2.1m, 2.4m)

5.9.1. Barb Wire 2 x 2.00mm diameter wire to be used and must be fully galvanized. Smooth wire 4mm diameter stainless steel wire to be used. Wire must comply with the SANS requirements. The number of strands of fence wires varies from 6 for a 1.2 meter high fence, 9 for a 1.8 meter high fence and 12 for a 2.4 meter high fence. Barb wire shall be stretched and securely fastened to the fence poles. Fence wires may be either barbed wire or smooth wire or a combination of barbed and smooth wire.

5.9.2. On the pricing schedule require that 1 Strand Barb Wire be erected on top of a Welded Mesh Fence and Diamond mesh fence and must be priced accordingly.

5.10. Galvanized Diamond Mesh Fences (1.8m, 2.1m, 2.4m and 3mH)

Aperture 50 x 50mm, wire diameter 3.15mm, fully galvanized and must comply with SANS requirements. Mesh shall be stretched against the fence and properly tied to the fencing wire. Weld mesh shall be secured by means of soft binding wire at 1.0m centres along all the fencing wires.

5.11. Plastic coated Diamond Mesh Fences (1.8m, 2.1m, 2.4m, 3m)

5.11.1 Aperture 50 x 50mm, wire diameter 3.15mm, fully galvanized and plastic coated and must comply with SANS requirements. Mesh shall be stretched against the fence and

properly tied to the fencing wire. Weld mesh shall be secured by means of soft binding wire at 1.0m centres along all the fencing wires.

5.12. Standard precast concrete fence_(1.8m, 2.1m, 2.4m,)

Posts: To be 3, 0 / 2.7m in overall length, having a minimum cross sectional dimension of 130mm x 125mm and reinforced with 4 x R8mm x 2,86m long steel bars.

Panels:Length to be 1,5m long, 300mm high and Width - Thickness of 50 - 55mm at the bottom edge tapering to 40mm at the top edge. Reinforced with 2 x 3,5mm x 1,4m long steel bars.

Concr.Strength: Concrete strength for all components is minimum 30MPa at 28 days.

Installation: Foundations to be 400mm x 400mm x 600mm deep, 15 MPa concrete. Posts are set at 1,5m centres and panels slide into the groove in the post. The panels are then caulked into the grooves of the posts with 4:1 sand, cement grouting mix.

5.13. Flat wrap razor wire and barbed tape razor wire

The flat wrap consists of a 500mm single strand spring steel wire 2.5mm diameter heavy galvanized to which a razor tape has been attached. Flat wrap razor wire or barbed tape wire to be securely fixed at the top of the fences where necessary.

If necessary extended arm brackets must be secured on top of the fence to enable the contractor to fix the razor wire or barbed tape to the top of the fence. The coils shall be securely tied to the extension arms with 1.6mm galvanized steel wire at each post. Steel strands (3) (top, middle and bottom) to be stretched and secured to the extended arm brackets and razor wire fixed onto it. Razor wrap shall be securely tied to the steel strands

using 1.6mm wire. Each 500mm circle of razor wire shall be tied at three places. This is likely to be needed at vibracrete fences and or existing brick boundary walls. Rate to include the supply and installation of the brackets, razor wire and steel wire strand.

5.14. Wall Spikes

Spike lengths of 1500mm and is 30-40mm wide. The spikes should stand 80mm high above the pre-cast wall. The spikes must be made of 1.2mm thick pre-galvanized steel.

5.15. Gates (galvanized, standard pipe diameters)

5.15.1 All Gates installed need to be securely fixed to fencing poles. All gates to be hot dip Galvanized.

5.15.2. All Gates must be covered with welded mesh unless diamond mesh, Anti Climb welded mesh or welded razor mesh is specified in the requirements whereby a per meter rate would apply for other material other than welded mesh.

- (a) 27mm pipe diameter Pedestrian Gate 900mm W x 1200mm H
- (b) 27mm diameter Pedestrian Gate 900mm W x 1800mm H
- (c) 32mm diameter Pedestrian Gate 900mm W x 1800+450mm H
- (d) 38mm diameter Pedestrian Gate 900mm W x 2400+450mm H
- (e) 38mm diameter Double Leaf Gate 3500mm W 2400mm H
- (f) 43mm diameter Double Leaf Gate 4000mm W x 2400mm H
- (g) 43mm diameter Double Leaf Gate 6000mm W x 2400mm H
- (h) 38mm diameter Double Leaf Gate 3000mm W x 2400+450mm H
- (i) 38mm diameter Double Leaf Gate 3500mm W 2400+450mm H
- (j) 43mm diameter Double Leaf Gate 4000mm W x 2400+450mm H
- (k) 43mm diameter Double Leaf Gate 5000mm W 2400+450mm H
- (l) 43mm diameter Double Leaf Gate 6000mm x 2400+450mm H

5.16. Steel palisade [18 pales per panel] fencing (1.8m, 2.1m and 2.4mH)

- Posts:** To be IPE section – 100 x 55mm.
To be 3m at 3m centre's
Must have trident heads or spear point
- Panels:** Pales to be 65mm wide x 4mm thick hot rolled corrugated iron.
The 3m panel must have 1 anti-sag support bracket.
The 3m panels must have 18 pales
Pales to be welded to rail angle sections of 50 x 50 x 4mm
Pales to have trident heads or spear point
Pales to be equally spaced between the posts to a distance of 89mm
- Foundation:** Foundation pits to be 300mm x 300mm x 650mm deep
Concrete strength to be 30Mpa
Base plates and anchor bolts to be used for fences that need to be erected and fixed on concrete walls and parapets. And hi-tensile anti vandal shear nuts to be used
- Steel:** Finish to be hot dipped galvanized (please allow for non-galvanized steel) to comply with SABS 763 Specifications and must be painted on request.
Steel sections shall comply with the requirements of CKS 82

5.17. Palisade Gates (All Hot dip galvanized)

(a) Sliding Gate: 5 meter wide, Height: 1.8 meter, 2.1m and 2.4 meter. The main frame of the sliding gate is 80x80x4mm box beam. Vertical palisade bars are placed 110mm apart from each other. The buttresses are manufactured from 80x80x3mm box beams. 4 x Polyamid rollers to keep the gate vertical and in line. Buttresses to be fixed to concrete footings by steel anchors.

(b) Swing gates: 2 x 3 meter wide. Height: 1.8 meter, 2.1m and 2.4 meter. Vertical palisade bars are placed 110mm apart from each other. Provision must be made for a barrel bolt and drop bolts.

(c) Pedestrian gate: 1.5 meter wide. Height: 1.8 meter, 2.1m and 2.4 meter. Vertical palisade bars are placed 110mm apart from each other. Provision must be made for a barrel bolt.

5.18. Palisade concrete fencing [10 pales per section] (or 1.8m, 2.1m and 2.4m height)

Posts: 3,0m and 2.7 in overall length, the front face to be 75mm extending to the back to a thickness of 140mm and breadth of the post to be 225mm. posts to be slotted in two positions to take the horizontal load-bearing rails. Reinforcing to the posts to be 4 x R8 mm x 2,86m long hard drawn steel bars.

Rail: 2,0m long x 80mm thick, the depth to be 150mm. the top edge of the rail to be bevelled 10mm from the front to the back the rail to be reinforced with 4 x Y12 x 1,97m and 1 x r8mm x 1,86m long steel bars. Minimum mass per rail to be 58 kg.

Pales: The pales to be 2.4 and 2.1m long. The flat front face to be 80mm extending to the back to a thickness of 75mm minimum and breadth of 100mm minimum over the total length of the pale except the section where the fixing rail passes through the pale. each pale to have one cut out to take the horizontal rail each pale to be reinforced with 4 x R6mm x 2,2m long steel bars. 10 pales per 2m section. minimum mass per pale: 42 kg. to have two recessed bolt holes of 10mm diameter top and bottom to suit bolt holes in the rail

Concrete: Concrete strength to all precast items to be a minimum of 30 MPa at 30 days. concrete cover as for SABS 1372-1983 (at least 12mm)

Installation: Foundations to be 400mm x 400mm x 600mm deep 15 MPa concrete. the posts to be spaced at 2,0m centres and are slotted to take a horizontal rail. the pales are hooked over the top rail. the open groove below the top rail is then caulked with 2:1 sand, cement-grouting mix.

5.19. Clear view fencing

(a) Panels

i. Panels to be made from heavy welded mesh, provided with horizontal reinforcements.

Width: 2518,6mm or 3052mm.

ii. Mesh sizes: 12,7 x 76,2 mm (H x W)

iii. Wire diameter: 3.65mm (coated) 3.00mm (uncoated). 3.65mm core wire also available on request.

(b) Posts and fixing:

i. The panels must be fixed laterally onto the Super Secure posts (up to 2m height) with specific fixators made out of metal.

ii. The welded tubular posts (70x44mm), in H-shape must be galvanised inside and outside, PVC coated and covered with a polyamide cap.

iii. For heights over 2400mm the Super Secure (100x54mm) posts are recommended.

(c) Coating:

PVC Coating: Hot dipped galvanised wire panels are sealed with an adhesion epoxy coating prior to the PVC coating to ensure a perfect bond.

(d) Colours: Standard colours: green RAL 6005 or anthracite RAL 7021. Other colours on request

(e) Quality: The quality of the product must meet the highest standard.

Super Secure Post Profile (mm)

- i. 1800mm H Fence x 2500mm W x 2 No of reinforcements per panel x 24000mm Post length
- ii. 2100mm H Fence x 2500mm W x 3 No of reinforcements per panel x 2700mm Post length
- iii. 2400mm H Fence x 2500mm W x 4 No of reinforcements per panel x 3000mm Post length

5.19.1. Medium Fencing or Similar

(a) Panels

- i. The panels must have a width of 2500 mm and must be available in a range of heights: from 1800 to 2400 mm. The panels must have vertical barbs of 30 mm at one side, the barbs can be placed at the top or at the bottom.
- ii. Horizontal reinforcements to give the panels extra rigidity.
- iii. The meshes must be 100 x 50 mm, as well as the reinforcements.
- iv. Wire diameter horizontal wires: 4,05 mm
- v. Wire diameter vertical wires: 4,05 mm

(b) Coating

- i. Panels must be made out of galvanised wires and must go through a pre-treatment process to guarantee a perfect PVC-coating adhesion to the product surface.
- ii. The posts must be in- and outside galvanised (min. coating 275g/m², both sides together), in accordance with SANS 10224-2:2003. Afterwards an adhesion coating must be applied and finally the posts must be PVC coated (min. 60 micron).

(c) Colours The colour of the panels to be green RAL 6005 or anthracite 7021.

(d) Posts Lateral fixing on the Secure, Super Secure or Square posts.

- i. 1800mm H Fence x 2500mm W x 2 No of reinforcements per panel x 2400mm Post length

- ii. 2100mm H Fence x 2500mm W x 3 No of reinforcements per panel x 2700mm Post length
- iii. 2400mm H Fence x 2500mm W x 4 No of reinforcements per panel x 3000mm Post length\

5.19.2. Single and double swing gates

- (a) Frame Frame to be made out of square tube 60 x 60 mm, with welded Nylofor in-fill.
- (b) Coating To be galvanised. Both the in- and outside, then polyester coated (min. 60 micron).
- (c) Colour Green RAL 6005
- (d) Posts Square posts to be made out of welded tube with cap, with threaded inserts for the fixation assembly of the fencing panels.

(e) Single Swing gates:

- i. 1000mm W x 1800/2100/2400mm H x 920mm Free passage x 1110mm needed space
- ii. 1500mm W x 1800/2100/2400mm H x 1470mm Free passage x 1660mm needed space
- iii. 2000mm W x 2100/2400 H x 1970mm Free passage x 2160mm needed space
- iv. 3000mm W x 2030mm H x 3000mm Free passage x 32700mm needed space

(f) Double Swing Gates:

- i. 3000mm W x 1730/2030mm H x 2900mm Free passage x 3090mm needed space
- ii. 4000mm W x 1730/2030mm H x 3900mm Free passage x 4090mm needed space
- iii. 5000mm W x 1730/2030mm H x 4900mm Free passage x 5170mm needed space
- iv. 6000mm W x 1730/2030mm H x 5960mm Free passage x 6230mm needed space
- v. 8000mm W x 1730/2030mm H x 7980mm Free passage x 8290mm needed space
- vi. 10000mm W x 1730/2030mm H x 9980mm Free passage x 10330mm needed space

5.20. Sliding Gates

5.18.1. Other than Palisade sliding gates

- (a) Gates

- i. Frame constructed with an under-beam 140 x 80 x 5 mm (6,5 to 12 m), 120 x 60 x 3 mm (3 to 6 m) and welded frame 60 x 60 x 2 mm. Bars 25 x 25 x 1,5 mm welded with a distance of 110 mm between the bars.
- ii. Provided with a locking mechanism to lock the gate with padlocks.
- iii. Integrated rollers in under-beams diameter 80 -120 mm depending on height of gates.
- iv. Use heavy duty Rail type/floor tracks 65 x 25 mm for gates wider than 6 meters. Security topping to be constructed for 2.4m high gates. Use heavy duty floor tracks bolted to concrete beam for gates 3m to 5m wide.
- v. Price to Include for manufacture, supply and delivery and Installation complete with concrete work and labour
- vi. Gates to be made to manually open and close and must be made to incorporate and gate motor if needed.

(b) Guiding of the gate

- i. Guiding posts bridge & end posts bridge of 80 x 80 x 3 mm with welded ground plates or encased into concrete footings. Two guiding bridges in the case of free entrance > 8 m.
- ii. Rubber end Stoppers must also be installed.

(c) Coating Gates to be treated with the best coating processes: galvanised in- and outside (minimum 275 g/m², 2 sides combined).

(d) Colours Hot dip galvanising only.

- i. 3000mm W x 1700/2000/2400mm H x 3028mm Free passage x 6575mm needed space
- ii. 4000mm W x 1700/2000/2400mm H x 4108mm Free passage x 8735mm needed space
- iii. 5000mm W x 1700/2000/2400mm H x 5188mm Free passage x 10895mm needed space
- iv. 6000mm W x 1700/2000/2400mm H x 5998mm Free passage x 12515mm needed space
- v. 7000mm W x 1700/2000/2400mm H x 7213mm Free passage x 14945mm needed space
- vi. 8000mm W x 1700/2000/2400mm H x 8158mm Free passage x 16835mm needed space

vii. 10000mm W x 1700/2000/2400mm H x 10148mm Free passage x 21795mm needed space

viii. 12000mm W x 1700/2000/2400mm H x 12038mm Free passage x 25575mm needed space

5.21. A typical Sliding gate

5.20.1. Clearview High Security Fences and Gates

This Specification covers material requirements and installation of security fences and gates for Prasa Cres Gauteng Region.

5.20.2. Submittals upon approval of tender before work commences:

- (a) Certificate of compliance for materials and coatings
- (b) Shop drawings for gates.
- (c) Submittal requirements are identified within the Specifications.
- (d) Quality control program must be submitted to the project manager for review prior to commencement of any work.

5.20.3. General

- (a) Suggested manufacturer of fencing: Cochrane or Similar.
- (b) All steel materials to be commercial quality, Galvanized Steel.
- (c) All pipes shall be Galvanized, one piece without joints.
- (d) Furnish moisture proof caps for all posts.
- (e) Zinc coating to be smooth and essentially free from lumps, globs or points.
- (f) Miscellaneous material must be all galvanized.

5.20.4. Description of Fence system

(a) Posts:

- i. Posts to be 2.4m - 3.6m long taper locking posts .
- ii. Posts width to be 85mm – taper to 45mm with a depth of 85mm
- iii. Posts to include „Locking Recess Mechanism“ to secure panel edge.
- iv. Posts to be sealed with a UV stabilized polymer cap.
- v. Posts finish to be galvanized then Fusion Bond Coated.
- vi. Posts foundations to be 600mm x 400 mm 15 Mpa concrete.

(b) Panel:

- i. Panels to be of 3.297m width and 1.8m – 3m in height.
- ii. Panel aperture size (centres) to be 76.2mm x 12.7mm.
- iii. The panel to be reinforced with 4 x 50mm deep „V“ formation horizontal recessed bands (rigidity)
- iv. Panel to have 2 x 70° flanges along the sides (internal fixtures – all fixtures to be on the inside of the fence line)
- v. Panel to have 2 x 30° flanges along top and toe (integrated rigid angle, anti-scale locking devices)
- vi. Panel post to have a flush panel finish with no climbing aid.
- vii. Panel to be affixed to post over 48 line wires using 8 x double bolt comb clamps and 8 x Single comb clamps using 24 x anti vandal bolts.
- viii. Panel and fixtures to be galvanized then Marine Fusion Bond Coated.
- ix. Panel Post connection minimum break force.

(c) Topping Options:

- i. 100mm high toughened steel shark tooth spike to be affixed to panel edge, internally at 150mm intervals using anti vandal bolts. Spike finish to be hot dipped galvanized.
- ii. 100mm high toughened steel castle spike to be affixed to panel edge, internally at 150mm intervals using anti vandal bolts. Spike finish to be hot dipped galvanized.
- iii. 100mm toughened steel spear spike to be affixed to panel edge, internally at 150mm intervals using Anti vandal bolts. Spike to be hot dipped galvanized.
- iv. 450mm high ripper blade smart concertina coil (NON-ELECTRIFIED) to be fixed to post as anti-scale topping.

(d) Anti – Burrow Options:

- i. 600 mm ClearVu mesh extension to be secured to the lower edge integrated angle.
- ii. 500mm ripper flat wrap to be secured to the lower edge integrated angle.
- iii. 200mm concrete sill to be secured to the lower edge integrated angle.

(a) 1800mm H x 2400mm Length of Posts x Taper: 85 x 45mm Depth 85mm Post Size

(b) 2100mm H x 2700mm Length of Posts x Taper: 85 x 45mm Depth 85mm Post Size

(c) 2400mm H x 3000mm Length of Posts x Taper: 85 x 45mm Depth 85mm Post Size

(d) 3000mm H x 3600mm Length of Posts x Taper: 85 x 45mm Depth 85mm Post Size

5.20.5. Gates

(a) Swing Gates

- i. All connections and joints shall be welded to form rigid frames or assembled with corner fittings.
- ii. Hinges shall not twist or turn under the action of the gate, shall be so arranged that a closed gate cannot be lifted off the hinges to obtain entry.

(b) Sliding Gates

- i. Gate frame fabrication and miscellaneous items shall be similar to Swing Gates.
- ii. All fittings, brackets and rear wheel tracks shall be standard manufactured products for the intended application.
- iii. Provided with a locking mechanism to lock the gate with padlocks.
- iv. Integrated rollers/wheel tracks in under beams diameter 80 -120 mm depending on height of gates.
- v. Security topping to be constructed for 2.4m high gates. Use heavy duty floor tracks bolted to concrete beam for gates 3m to 6m wide.
- vi. Price to Include for manufacture, supply and delivery and Installation complete with concrete work and labour

vii. Gates to be made to manually open and close and must be made to incorporate and gate motor if needed.

(c) Guiding of the gate

- i. Guiding Posts Bridge & end posts bridge of 80 x 80 x 3 mm with welded ground plates or encased into concrete footings.
- ii. Rubber end Stoppers must also be installed at the end of the track.

Item Type of ClearVu Gate Height Width

- (a) Clearview Gate Single Swing Gate 1800mmH 1500mmW
- (b) Clearview Gate Single Swing Gate 2400mmH x 1500mmW
- (c) Clearview Gate Double Swing Gate 1800mmH x 3000mmW
- (d) Clearview Gate Double Swing Gate 2400mmH x 3000mmW
- (e) Clearview Gate Double Swing Gate 3000mmH x 3000mmW

- (f) Clearview Sliding Gate 1800mmH 1500mmW
- (g) Clearview Sliding Gate 2400mmH x 1500mmW
- (h) Clearview Sliding Gate 1800mmH x 3000mmW
- (i) Clearview Sliding Gate 2400mmH x 3000mmW
- (j) Clearview Sliding Gate 1800mmH x 6000mmW
- (k) Clearview Sliding Gate 2400mmH x 6000mmW

5.20.6. Execution of works for CLEARVU fencing

(a) General

- i. Install all fencing and gates in accordance with the drawings, specifications, instructions, and as specified lines and grades indicated.
- ii. Line posts shall be spaced at intervals of 3.382 m.
- iii. Terminal posts shall be set at abrupt changes in vertical and horizontal alignment.

(b) Posts

- i. Post holes shall be cleared of loose material.
- ii. Waste material shall be spread where directed by project manager.
- iii. The ground surface irregularities along the fence line shall be eliminated to the extent necessary

(c) High Security Fences and Gates

- i. Posts shall be set plumb, and follow the indicated alignment.
- ii. All posts shall be set to the depth indicated on the design documents.
- iii. Concrete shall be thoroughly consolidated around each post, free of voids, and finished with a domed shaped surface, with the base of dome at grade elevation.
- iv. Concrete shall be allowed to cure prior to installing any additional components to the posts.
- v. Concrete footings shall be carried down to at least the depth indicated on the design documents and shall not be smaller than the dimensions shown.
- vi. Where a rock layer is encountered within the required depth to which the post is to be erected, a hole of a diameter slightly larger than the largest dimension of the post may be drilled into the rock and the post grouted in. Then the regular concrete footing shall be placed between the top of the rock and the top of the footing elevation as shown on the design documents.
- vii. Posts shall be approximately centred in their footings.
- viii. All concrete shall be placed promptly and consolidated by tamping or other approved methods ix. Otherwise rock must be excavated (Rate for Rock Excavation is included in Pricing Schedule.)
- x. Where the ground is firm enough to permit excavation of the post hole to neat lines, the concrete may be placed without forms by completely filling the hole.
- xi. Curing may be achieved by covering the concrete with not less than four inches of loose moist material immediately after placing concrete, or by using a curing compound.

- xii. All excess material from footings, including loose material used for curing, shall be disposed of as directed by the project manager.
- xiii. Where the ground cannot be satisfactorily excavated to neat lines, forms shall be used to place concrete for footings.
- xiv. Under these conditions the earth and forms coming in contact with the concrete shall be moistened and all ponded water shall be removed from the hole prior to placing concrete.
- xv. When forms are removed, the footing shall be backfilled with moistened material, and thoroughly tamped.
- xvi. The top of the concrete shall then be covered with not less than 100 mm of loose moistened material or use curing compound if the 7-days cure is not completed.
- xvii. All excess material from footings, including loose material used for curing, shall be disposed of as directed.

(d) Gates

- i. Gates shall be installed at the locations shown.
- ii. Hinged gates shall be mounted to swing as indicated.
- iii. Latches, stops, and keepers shall be installed as required.
- iv. Slide gates shall be installed as recommended by the manufacturer.

(e) Adjusting

- i. Gate: Adjust gate to operate smoothly, easily, and quietly, free from binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range.
- ii. Confirm that latches and locks engage accurately and securely without forcing or binding.
- iii. Lubricate hardware and other moving parts.

6. **Fencing and gates installations**

6.1. All planned work will be carried out during normal working hours at the cost tendered for in the Bill Of Quantities. Visits to the premises will be as scheduled for the contractor to carry out all the work as per the specification. Sites have visitors book which is to be properly completed by the Contractor on every visit and the reason for the visit recorded in the book.

6.2. PRASA-CRES reserves the right to conduct an independent safety and quality audit to be carried out on the work completed by the contractor. The contractor shall provide his own quality controls to ensure compliance with the specifications and any changes to legislation or regulations applicable. Possible modernisation products to upgrade or to improve the reliability and performance of the installation will be brought to PRASA-CRES for consideration.

7. Contract Performance

7.1. The contractor will sign a service level agreement with the PRASA-CRES. The performance of the Contractor will be discussed on the monthly basis at meetings scheduled to sit at PRASA CRES offices. Performance Items to be discussed will include:

- the number of breakdowns for specific period
- the turn around time to attend to emergency callouts
- planned vs. actual progress
- submission of reports, invoices and other administration duties
- payment of invoices

8. General Information

8.1. The contractor shall be or have in his employment an accredited person. Proof must be supplied of the above requirements

8.2. The Contractor must have the capacity to be able to work on more than one site at any given time.

8.3. All material removed to be returned to PRASA-CRES unless otherwise stated.

8.4. Compliance certificates to be issued on completion of all new work done at no cost to PRASA-CRES. Compliance certificates required for existing installations to be priced out at the prescribed set rate.

9. **SAFETY AND PROVISION OF MATERIALS:**

9.1. Prasa Cres Maintenance Manager /Supervisor reserve the right to query price of any material that is on the material list. He /she may request that the contractor justifies a copy of the material purchased, invoices or actual quotes from reputable suppliers.

9.2. Please note the following local content threshold will apply when supplying material;

9.2.1. 90% for Electrical cables.

9.2.2. 100% on steel products.

9.2.3. 100% on Polyvinyl Chloride (PVC) pipes.

9.2.4. All materials supplied and workmanship to meet the prescribed Statutory Requirements, including the Occupational Health and Safety Act of 1993.

NB: The contractor material supplier must be reputable material supplier and only market related material prices will not be accepted by PRASA.

9.3. Provision of a Safety File is a requirement and must be submitted prior to any work commences. The provisional amount of R6000.00 for a Safety File is included in the schedule of rates table, proof of cost will be required before the contract claim the amount.

10. **Quality Of Work And Workmanship:**

- Works with poor workmanship will not be signed off and PRASA Cres reserve the right to hold payments until satisfied with the quality of the works.

11. **Non-Compliance:**

- **Safety** – the contractor will at all times ensure that work is performed in accordance with all the prescribed legal prescripts.
- **NB:** No work is to be done without approval of Safety File and valid signed site access certificate being issued to the contractor. No Contractor will be allowed on site without having attended the safety Induction training and proof is to be submitted to the Project Manager
- **Proof of Work done**> the contractor will provide photos of before/during and after work completed with claim submitted. Photos can be submitted electronically.
- **Qualified personnel**- It is a requirement that personnel performing/overseeing works issued to the contractor be qualified in specific Trade.