



# TECHNOLOGY MANAGEMENT

## SPECIFICATION

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### Sentrand Machine Vision Laboratory: Specialised Tools, Instruments, Machinery and Equipment

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# 1 SCOPE

## 1.1 IDENTIFICATION

This document describes tools, instruments and equipment needed to develop and utilise the Machine Vision (MV) laboratory at the Sentrarrand Kraal. This laboratory consists of a platform with three existing buildings, asset numbers 02AK213J (Machine Vision Integration Room), 02AK214J (Store Room and MV Development workshop) and 02AK215J (Locker room and Kitchen). Also part of this facility is 4 railway lines that run parallel to this platform and buildings.

## 2 BACKGROUND

The Sentrarrand kraal facility in the past, served a purpose for storing and loading of general goods and livestock into wagons. This service has been extinct for many years that have lead to the current buildings been left unoccupied and neglected. The Condition Assessment Technologies (CAT) section has taken ownership (lease) of the Sentrarrand Kraal. This unused facility shall be transformed into a new worldwide leading Machine Vision facility (as specified throughout this document) where vision concepts shall be investigated, developed and tested to solve many of Transnet's railway problems.

## 3 ITEMS REQUIRED

### 3.5 WORKSHOP EQUIPMENT

All workshop equipment shall be high industrial quality. CAT shall approve all Items before purchase. Incorrectly supplied items that do not adhere to the standards shall not be accepted by CAT.

#### 3.5.1 Electronic Workbenches and Chairs

The ergonomic electronic workbenches shall be sturdy and have a laminated top surface. They shall be adjustable from 600mm to 900mm. The table top thickness shall be at least 32mm thick. The laminated PVC shall be at least 3mm thick. The table shall be fitted with an overhead support rack for standing power supplies, measuring instruments while test and evaluation of MV sub system is deployed. The table shall provide 4 x 10 amp 2 pin plug and 4 x 16 amp 3 pin plug socket outlets. The table shall also be fitted with a fluorescent light fitting underneath the shelf. The table shall provide component bins. The table shall be at least 1650 long x 750 wide x 600-900mm high.

The table shall also have lockable draws.

The table shall be coated with industrial quality epoxy.

The table shall be provided with a suitable technician work chair with back support rest..

The supplier shall supply 2 electronic work benches and 4 chairs.

### **3.5.2 Metal Workshop Workbench and Vice**

The workshop metal workbenche1 shall be sturdy and have a metal top surface.

The metal top shall be at least 3mm steel.

The table frame shall be coated with durable industrial quality epoxy and be ergonomically designed for heavy duty work.

The workshop bench vice shall be robust and made of steel. The vice shall be gas lift type to attain adjustable height of 277mm and 360 degree rotation of the work piece.

The jaw shall be able to open 150mm wide. The vice shall be epoxy coated. The size of the workbench shall be at least 2000mm x 800mm x 890mm.

The supplier shall supply 1 work bench and a gas lift vice.

### **3.5.3 Wood Workshop Workbench**

The workshop wood top workbench shall be sturdy and have a metal frame but a wood top surface.

The wood shall be at least 38mm thick and be of good quality for example saligna..

The table frame shall be industrial epoxy coated and be ergonomically designed for heavy duty work.

The size of the table shall be at least 2000mm x 800mm x 890mm.

The supplier shall supply 1 work bench

### **3.5.4 Workshop Tool Cabinets**

The tool cabinet shall be for the storage of tools and shall be manufactured from at least 1.6mm cold rolled steel.

The cabinet shall be fitted with perforated plates for installation of tool holders and prongs. The cabinet shall be lockable and epoxy coated.

The tool cabinet shall be at least 1200mm x 350mm in size

The supplier shall supply 2 cabinets.

### **3.5.5 Cabinet Tool Holders**

The cabinet tool holders shall provide support holders for the electrical and electronic tools for the workshop and the laboratory. These holders are single metal items that

shall be fitted into the workshop cabinets which have pre-punched slots to hold the tools in place to provide safe keeping and storage.

The following cabinet tool holders shall be required:

- 1 x 9 way allen key holder
- 1 x 19 way socket holder 8-32mm , universal joint, T wrench, 2 extensions and ratchet handle.
- 1 x 16 way ring flat spanner holder 8 – 23mm
- 2 x 9 way screwdriver holder
- 1 x 26 way drill bit holder
- 1 x 5 way punch holder
- 1 x 4 way hacksaw holder
- 2 x 3 way plier holder
- 1 x Clip holder size 6, 12, 32
- 1 x Single prong holder 35, 50, 75
- 1 x Double prong holder 60 100

The supplier shall supply 1 of each of the items above except for the plier and screwdriver 2 units of each item shall be supplied.

### 3.5.6 Workshop Tool Trolleys

The workshop trolley shall be used to store electrical powered tools and provide a work top surface area.

The top 3 drawers shall be at least 50mm high.

The 4<sup>th</sup> bottom draw shall be 150mm high at least.

The trolley shall be fitted with rubber castor wheels, two fixed and two that shall swivel.

The trolley shall have fitted hinge handles and slide easily.

The trolley size shall at least be 562mm x 705mm x 530mm

The supplier shall supply 2 workshop trolleys

### 3.5.7 Laboratory Trolleys

The laboratory trolley shall be used to store electronic powered tools and provide a work top surface area.

The top 2 drawers shall be at least 75mm high.

The 3<sup>rd</sup> draw shall be at least 100mm high.

The 4<sup>th</sup> draw shall be 150mm high at least.

The 5<sup>th</sup> draw shall be 200mm high at least.

The trolley shall be fitted with rubber castor wheels, two fixed and two that shall swivel.

The trolley shall have fitted hinge handles and slide easily.

The trolley size shall at least be 562mm(Width) x 705(Depth)mm x 830mm(Height)

The supplier shall supply 2 laboratory trolleys

### 3.5.8 Equipment Trolleys

The laboratory carrying trolley shall be used to carry electronic powered equipment and material for moving portable equipment from laboratory to test site.

The trolley shall have 2 shelves and lockable containers.

The trolley size shall be 990mm(long) x 620mm(depth) x 980mm(high).

The loading capacity shall be 400kg.

The supplier shall provide 1 trolley.

### 3.5.9 Laboratory Equipment and Component Cabinet

The cabinet shall provide draws to store electronic components. It shall also provide draws for mechanical bolt, nuts, washers and spring washers.

The larger draws shall also provide space for electrical wire, lugs, heat shrink and all workshop materials.

The cabinet shall be at least 1023mm(width) x 705mm(depth) x 1450mm(height) with 15 draws.

The cabinet shall be epoxy coated.

The draws shall as follows:

3 x 50mm high, 7 x 75mm, 4 x 150mm

The supplier shall provide 1 cabinet.

### 3.5.10 Laboratory Component Utility Insert

The cabinet draws shall have utility inserts to stack various components into.

The first utility insert shall have 36 slots 150mm(depth) x 75mm(width) x 30mm(height)

The supplier shall supply 3 units.

The second utility insert shall have 36 slots 150mm(depth) x 75mm(width) x 52mm(height)

The supplier shall supply 8 units.

The third utility insert shall have 5 dividers with 4 slots to fit draw size of 150mm

The supplier shall supply 4 units.

### 3.5.11 Workshop Lockers

The lockers shall be rigid and made of heavy duty steel and shall be epoxy coated.

The bench seats shall be pine wood. The door hinges shall be the bullet type. The lock shall be a lockable 3 point lever lock. There shall be ventilation holes for compartments. The compartment shall have 1 shelf, wardrobe rail and 3 sliding hooks.

The size of the lockers shall be 2100mm(Height) x 1225mm(Wide) x 500mm(Depth).

The supplier shall supply 1 locker with 4 doors and 1 locker with 8 doors.

### 3.5.12 Workshop Shelving

The shelving shall be for light duty application. The shelving shall be bolted together and epoxy coated. The Shelves shall be chromadek and shall be height adjustable with a pitch of 50mm.

The bay shall provide sufficient corner gussets, nuts and bolts.

The shelf height shall be 2215mm x 457mm x 914mm and have 6 shelves.

The supplier shall supply 2 full shelves.

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