Technical Specification
Heavy Industrial Sliding Gates
General Notes

The works under this subsection shall comprise the design, manufacture, installation, commissioning, training and maintenance of the following described gate systems at various sites.

The work for the sites shall include, but not be limited to the supply and installation of access controlled power operated heavy industrial sliding gate system as shown on sub drawings at various sites and locations.

The heavy industrial sliding gate systems are to be controlled by access control cards and voice communication systems as specified and shown on the drawings.

The objective of this project is to safely restrict access by unauthorized personnel and vehicles.

The method to be used for construction is to be in the form of an electrically operated heavy industrial sliding gate/s at the locations shown on the drawings.

The construction and detailing used has to be suitable for a secure location and therefore no ledges, protrusions etc. should be inbuilt to allow ease of climbing and access within the secured area.

All tenders are to supply and install electrically operated heavy industrial sliding gate systems as shown on the drawings and as described in the specification. Each heavy industrial sliding gate system shall comprise a single or dual gate leaf to fully cover the relevant road opening. The approximate erected height of each gate shall be 2350mm. The vehicle gates are to be equipped with an electric drive motor, gearbox; guide roller systems, vehicle and pedestrian safety devices and power fail gate locking brake system. The system must be reliable, functional and shall be based on the proven technology for performance systems.
All tenders shall allow providing data and control cables to suit each gate situation i.e. card system and voice communication.

All tenders shall allow a 240-volt 15Amp circuit to power each sliding gate system and associated equipment. This shall be from the nearest suitable existing switchboard.

All tenders are to allow provision of all necessary conduit work associated with the cabling to all the relevant Australian Standards (i.e. electrical orange, data white).

All tenders are to allow to conduit and cable all equipment points at each gate intersection so as to interconnect these locations.

All tenders shall allow training of all relevant site personnel on each site in the proper use of their system.

All tenders shall supply a list of clientele showing where equipment of this type has been installed. This list should include site contacts and phone numbers. A minimum of 20 contact sites is required ranging from new to five years old systems.

All tenders shall allow the supply of as built drawings and two sets of technical and maintenance manuals per gate system installation.

All tenders shall allow to supply a 36-month defects and liability warranty on parts and labour. This based on a Routine Maintenance program of 36 months.

All tenders shall demonstrate on an existing site all equipment specifically as specified with emphasis on all safety systems.

All tenders shall provide information to confirm that the automatic gate systems offered are up to date technically, of industry quality, 100% cycle and reliability.

The automatic gate company offered should adequately demonstrate that this work is their core business and with that provide qualifications to this fact i.e. ref sites, amount of high speed heavy industrial sliding gate systems in current operation within Australia, location of business, service support facilities, spare parts holding and staff numbers dedicated to this work.

It is preferred that Australian made products be offered for these works providing they meet the technical specifications.

It is desirable that the successful automatic gate manufacturer is based within the relevant tender state. This base should include full manufacturing and support facilities.

Any company that has performed this type of work previously for our organisation should detail these works, sites and contacts.

The systems provided overall are to be the latest in technology and upgradeable without major parts redundancy. It shall be a formidable barrier, heavier in construction. All operations shall be smooth and quiet.

Each gate system shall satisfy all safety requirements for entry and exit of vehicles and the occasional pedestrian.

The company providing this product should be a specialist company in this field. Systems such as the Ezi slide range of gates as provided by Ezi Security Pty. Ltd. will be acceptable for consideration.

The automatic cantilever gate systems proposed should be fully risk assessed. Your full risk assessment documentation shall be included in with your tender submission.

Technical Specification
Heavy Industrial Sliding Gate

EZI SLIDE- 012-014

Heavy Industrial Sliding Gate System (Metalwork)

Each heavy industrial sliding gate system shall consist of the following metal work items. Gate leaf, main equipment tower, end post, back rail, motor mounting platform, roller brackets, sheet metal cover sets and fixings.

All items shall be manufactured utilising heavy-duty materials. All items shall be fully seam welded. All items shall be hot dipped galvanized after manufacturing and cleaned as required to give a smooth even galvanized finish.

Material Sizes

Gate Frame	150 x 150 x 5mm RHS
End Post	150 x 150 x 5mm RHS
Back Rail	Twin 150 C Channels
Gate Housing	150 x 150 x 3mm RHS
Gate Vertical Bars	26.9 O.D Round Tube
Bottom Main Member	250x150x6 RHS
Rear Bracing Support	150x150x6 RHS
Mid Gate Supports at 3000mm Centre's	150x100 RHS

The maximum spacing between all vertical bars shall be 125mm.
The erected height of each gate system shall be 2350mm. This should consist of 150-185mm maximum ground clearance and 2200mm of gate height. Each gate frame shall be 2000mm from the top of the gate frame to the bottom of gate frame, with 200mm of crimped 26.9 O.D spear protruding through the top gate frame. Each spear top shall be part of the relevant vertical bar of the gate and should pass right through the top main member. All vertical bars shall also be fully welded. The width of each gate opening shall be determined on site and shall cover the entire road width. Each gate system shall be constructed such that it is a bolt together assembly. Infill panels attached to mid gate supports. Each gate system shall have an end post constructed of 150mm RHS with locating ears fitted. The main equipment tower shall consist of four vertical 150mm squared RHS sections connected top and bottom to form a solid full height support tower and equipment enclosure. The support tower height shall be 2450mm and width should be 1000mm. Each tower shall then be sheet metal clad on top and on the back face, the front face shall be covered by the use of a full height hinged service access door, this door shall be key lockable. The gate main tower service door shall always be on the secure side of the property. All sheet metal covers and doors shall have a galvanized finish.

The gate system shall be bolted to its relevant concrete footing using M 16mm x 125mm thru bolts (zinc plated).

An additional second supporting bracing saddle made out of 150x150x5mm – RHS mounted behind main tower at about 2m with two guide rollers.

EZI SLIDE- 0224

Drive Rack

Each gate system shall use drive rack for power transfer. The drive rack to be used with each gate system shall be zinc plated mild steel. The drive rack shall be welded to the underside of the top main member of the sliding gate frame. All drive rack shall be inverted so as not to collect grit and dirt. This rack shall directly mesh with the motor output shaft drive cog. The rack width is a minimum of 80mm.

EZI SLIDE- 0324

Drive Cog

Each gate drive motor gearbox shall have a steel drive cog fitted directly to the motor/gearbox output shaft. This drive cog shall be keyway fitted and be no larger than 120mm in diameter. The bore size of this drive cog should be a minimum of 25mm.

EZI SLIDE- 0424

Guide Rollers

Each gate system shall be fitted with gate equipment tower guide rollers (total 4 of). Two mounted to suit the top rail of the gate and two to suit the bottom rail. Each of these rollers shall be fitted with two sealed bearings. The roller size shall be a minimum of 100mm x 60mm diameter. These rollers should be made from black UV resistant nylon. An additional 2 x 100mm guide rollers are fitted to the rear of the tower for these larger gates.

EZI SLIDE- 0524

Main Rollers

Each gate system shall be fitted with twin load sharing main front rollers and two-twin load sharing back trolley rollers. The front main rollers body shall be zinc plated mild steel. Each roller shall be fitted with two sealed bearings and a 30mm mild steel axle. The minimum load rating on the main roller shall be 40 tonnes. The two back trolley rollers shall each consist of a sealed bearing fitted to a zinc plated steel tyre. A rating each of 20 tonnes is to be a minimum requirement for each back trolley roller.

EZI SLIDE- 0624

Drive Motor and Gearbox

Each heavy industrial sliding gate motor gearbox drive unit shall be a 3-phase 1.5kW unit. These motor gearbox units shall be IP56 rated and be of true industrial grade and quality.

This drive motor gearbox unit must be rated for a minimum frequency of 100 operations per hour and/or 100° duty cycle.

The drive motor system shall be suitable for the speeds as described under section EZI SLIDE- 09 with the cog size as described under section EZI SLIDE- 03. The motor gearbox drive system is to utilise and inbuilt safety mechanism to protect the unit from excessive drive torque. A power fail brake system or lock is to be built into this drive motor gearbox system. This shall lock the gate in the closed position and lock the gate during power fail. A motor release platform handle is to be included with the system. This handle shall be able to be released and held open mechanically without the need for a person to hold it down. Each motor is to be installed on a cushion-mounted platform, which allows for safe compression of components under load. The motor gearbox and platform assembly shall bolt together and this assembly shall be set up to engage the drive racking which is to be mounted on the top horizontal main member of the gate frame i.e. 2150mm off ground level.

EZI SLIDE- 07

Electronic Equipment Enclosure

Each gate control logic module shall be housed within an IP56 steel or poly enclosure, size shall be no less than 600 x 400 x 200mm. Each enclosure shall have a hinged door and key locking system. Each of these enclosures shall house a true PLC, frequency invertor, power supply, loop detector, GPO, test button, buzzer and misc. items such as duct, cable etc. to suit the relevant heavy industrial sliding gate system electronic control.

All equipment mounted within these enclosures shall be installed on din rail. All cabling within each enclosure where practical shall be trunked within duct. No equipment shall be mounted on the enclosure door. All cable penetrations shall have proper glands fitted. An electrical schematic shall be installed within a plastic sleeve on the inside of the enclosure door.

All gate logic control modules shall be installed within the protection of the sliding gate main tower adjacent to the drive motor location. Each equipment enclosure door shall be numbered and a site location shall be nominated. The distribution point for the relevant power feed shall also be nominated on this door. All labels shall be screw fixed Trefolite type.

All work within these cabinets shall conform to all the relevant Australian Standards.
Extra low and low voltages must be segregated with solid barrier where possible.

EZI SLIDE- 08

Programmable Logic Controller

Each gate motor drive system is to be PLC controlled utilising a NIAS brand compact PLC. Each PLC shall be fully programmable and have a minimum of 14.I.O. (being 8 outputs and 6 inputs).

These control units shall be capable of being reprogrammed on site after installation for possible further ancillary functions. Each PLC must be expandable if required and offer possibilities of networking. All safety systems described shall be constantly monitored by this PLC system. The background for the proposed program utilised on each gate PLC shall be field tried and proven for a minimum of five years.

EZI SLIDE- 09

Frequency Invertor

A frequency invertor is to be utilised on each gate system. This frequency invertor shall be utilised for the control of gate operating speeds and control the ramp up and ramp down settings. These units shall be suitable for use on up to 2HP motor ratings. Each frequency invertor shall be set up to display reliable speeds of 800mm per second gate travel. However, it is envisaged that the final set up speeds for each gate will be 700mm per second opening and 600mm per second closing. Each frequency invertor shall have a built in program keypad which should remain with the gate system after programming and commissioning.

EZI SLIDE- 10

Inductive Loop Detector

Each heavy industrial sliding gate system shall include within the relevant equipment enclosure a single channel inductive loop detector; this loop detector shall have two inductive loops connected to it so as to provide vehicular safety and auto closing. The cable tails from the two inductive road loops shall have conduit into the equipment enclosure within the confines of the main tower to the relevant loop detector.

EZI SLIDE- 11

Power Supply

A switching power supply is to be installed in each gate system control logic module. This power supply shall be din rail mounted and suitable for industrial applications. These power supplies shall be of a regulated type i.e. voltage drop off with over current.

EZI SLIDE- 12

Test Button

Each equipment module shall have a din rail mounted test button installed within the enclosure. This button shall have a trefolite test button label mounted below it. This button when depressed shall pulse the gate system open. Closing will be automatic through the safety systems and or time out facility.

EZI SLIDE- 13

Misc. Items

Each gate control logic module shall have a GPO fitted. This item will need to be din rail mounted. This GPO shall be earth leakage protected.

EZI SLIDE- 14

Safety Buzzer

Each heavy industrial sliding gate system shall be fitted with a suitable low voltage, audible buzzer to announce gate movement. The buzzer shall be controlled by the gate system PLC. The buzzer must sound 1 second prior to gate movement and shall continue to pulse sound at 1-second intervals during the full open and close cycle for the relevant gate.

Each gate buzzer shall be fitted to the outside of the control equipment enclosure. This buzzer is to be designed to warn pedestrians who may be close to the gate system that the gate is about to move. This buzzer is not to be excessive in noise level.

EZI SLIDE- 15

Safety Flashing Light

Each heavy industrial sliding gate system shall be supplied with a flashing red low voltage strobe light, which shall be fitted to the top of the main gate housing. This strobe light will be controlled by the gate system PLC. It is to flash 1 second prior to gate movement and shall continue to flash during the full open and close cycle for the relevant gate. All cables from the strobe unit shall have conduit to within the main gate housing to the control logic enclosure module.

EZI SLIDE- 16

Safety Photo Electric Beams

A series of fail-safe photoelectric beams shall be utilised to provide adequate safety measures for pedestrians. Each heavy industrial sliding gate system shall have four photoelectric safety beam sets fitted. These beams must be transmitter to receiver type and be proven in performance and reliability. The relevant gate PLC must constantly monitor all PE beams. Should a PE beam unit fail, the system must recognise this and shut down the gate system immediately. Similarly, should a person or vehicle the system block a beam should stop and re open and wait until clear, prior to any gate closure. All beams shall be set up as safety reopen. The beam locations will be as follows, two vertical beams looking down the inside of the gate tower, these being designed to detect the possibility of a person riding or being dragged by the gate into the gate tower. If this is detected the system must fully stop until the obstruction is removed. The two horizontal beams, set up either side of the gate leaf looking across the road to the end post location are to detect persons and vehicles moving through the gate path. If this is detected, the gate shall remain open or proceed to open until the beams are clean for which it should close the gate. The height settings for the horizontal beams will be 500mm and 1000mm from the ground.

EZI SLIDE- 17

Proximity Sensors

Two cylindrical proximity sensors and bars shall be utilised to determine and control the gate position. These proximity sensors shall be set up to detect the proximity bars as secured to the bottom rail of the gate system. These provide position sensing for the gate system. The cabling for the proximity sensors shall be installed in conduit up and into the control logic enclosure. The proximity sensors are to be set up within the confines of the lockable main equipment tower. The gate system shall not become lost or confused.

EZI SLIDE- 18

Safety Inductive Loops

Each heavy industrial sliding gate system shall have two in-ground inductive loops cut into the existing road surface. These loops will be to provide vehicular safety and auto closing. The two loops shall be connected into the inductive loop detector within the equipment enclosure. Each loop should be set back at least 1000mm from the edge of the relevant sliding gate and shall cover at least 60% of the road width.

EZI SLIDE- 19

Safety Screens

Each heavy industrial sliding gate system shall have a high impact polycarbonate clear safety screen fitted to the inside of the gate system. This sheet shall be 1000mm wide x 2000mm high x 4mm thick. The sheet shall be rivet fixed to the gate leaf. The position for this sheet shall be adjacent to the gate housing when the gate is closed. This eliminating the chance for putting limbs through any gate bars at this crucial pinch point.

EZI SLIDE- 20

Risk Assessment

The heavy industrial sliding gate system must be supported by documentation that the heavy industrial sliding gate system has been fully risk assessed to contemporary occupational health and safety standards by a competent independent organization.

EZI SLIDE- 21 (If required)

Backup Power Supply

A separate price is required to provide a suitable UPS (un-interruptible power supply) for each gate drive system. Each UPS is to be capable of providing power during the event of a power failure. Each unit should be capable of at least 10 full cycle gate operations. During this condition each cycle shall consist of a full opening and closing of the relevant gate and associated gate electronics. Each UPS system shall be wired so that at all times, it is powering the relevant gate system. The units should be based on battery storage. Each UPS unit should be housed locally to its relevant gate systems.

EZI SLIDE- 22

Safety Fence and General Fencing

Each heavy industrial sliding gate system as installed shall have the existing fencing connected to the new gate end post and main tower to secure the site properly. This fencing shall match that which exists. An additional section of fence shall be installed to section off the back rail gate travel area. This safety fence shall be full height and match that which exists i.e. cyclone mesh style. This enclosure shall be 1 meter wide and have a padlock style swing gate fitted for service access reasons. This gate shall be padlocked upon commissioning of the automatic gate by the end user.

EZI SLIDE- 23

Concrete Foundation

Each heavy industrial sliding gate system shall have substantial concrete footing installed to suit the relevant gate. This slab footing shall be 1200mm wide and as a minimum 350mm thick. This footing shall have a single row of F72 mesh installed 60mm up from the bottom of the footing. All conduit entries shall be set into the correct position prior to the concrete installation. All concrete shall be minimum 32mpa. Relevant trades persons to all Australian Standards shall perform this work.

EZI SLIDE- 24

Equipment Pedestals

Each heavy industrial sliding gate system shall have two dual height equipment pedestals. These pedestals shall be 2000mm high, flange mounted and constructed of 100 square RHS. Each pedestal shall have a weather shrouds made from folded sheet metal. All pedestals shall be hot dip galvanized and painted safety yellow. The equipment shroud plate shall be 300mm square, this to suit the intended proximity card reader and intercom station installation. One pedestal shall be for the entry location and one for the exit location. The pedestals shall be positioned on the driver's side edge of the road and shall not be closer than 4 meters from the face of the relevant automatic heavy industrial sliding gate system.

EZI SLIDE- 25

Bollards

Each sliding gate main housing will have two protective bollards installed to avoid damage to the main housing by vehicles. These would be placed within 500mm of the main housing on both vehicle approach sides. Each protective bollard shall be heavy duty in construction. Each bollard should be 1000mm high and constructed using heavy-duty wall 200mm pipe, these shall be flange mounted and capped. Each bollard shall be hot dip galvanized and painted safety yellow.

EZI SLIDE- 26

Concrete Footings

Each equipment pedestal shall have a concrete block footing set 500mm deep x 500mm square. All conduits shall be set in place centrally on these footings prior to concrete installation. Each bollard will also require a 500mm square concrete block footing.

EZI SLIDE- 27

Voice Communication

Each equipment pedestal shall be fitted with an intercom slave station to suit the intended on site communication system. This system must be capable of voice communication and opening of the relevant gate system. Closing of the gate system shall be automatic via the gate safety systems.

Debris

All and any debris as caused in the progression of works must be removed from site and not stockpile on site. At no time is debris to be left in a position, which may obstruct vehicles or persons from reasonable movement.