

## PART 3: SCOPE OF WORK

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## C3.1: EMPLOYER'S WORKS INFORMATION

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# 1 Description of the works

## 1.1 Background

Durban Container Terminal (DCT) requires 28 new four high diesel electric straddle carriers to replace its ageing fleet of "Kalmar" diesel hydraulic straddle carriers at present in service. The delivery of these machines before the terminal operational peak commencing August 2011 is highly desirable, and as such will be a key criteria of the evaluation process. This equipment will be serviced in the new straddle carrier workshop, see Annexure 1.

## 1.2 The scope of works

### 1.2.1 Main Scope

The works comprise the following:

1. The design, manufacture, delivery, erection, testing and commissioning of twenty eight (28) four-high, diesel electric, single lift straddle carriers (here-after called "straddle carriers") for the Durban Container Terminal in the Port of Durban.
2. The straddle carriers shall be utilised for the handling of 20ft, 40ft and 45ft ISO containers, 20ft tank containers, cargo flats and other loads.
3. The straddle carriers shall have a lifting capacity of 40 tons under the spreader and be capable of handling containers that are empty or fully laden up to the maximum load as allowed for in the ISO standard. The tank container can have a total mass of 38,000 kg. In the case of the 20ft ISO containers, the total mass of the container is 30,480 kg.
4. The straddle carriers shall be capable of stacking containers four high and have the ability to perform both hoisting and lowering functions while travelling.
5. Critical Spares to support the straddle carriers for the first 5 years.
6. An electronic spares catalogue with drawings of the equipment which has a drill down option to zoom into the specific spare part must be provided. Further additional information will be required of the successful Tenderer as described in "Spares Parts Interchangeability Record (SPIR)" in section C1.2 (Part 1), Annexure D within 4 weeks of award of this Contract.
7. The electronic spares catalogue must also show related spares prices as at the time of purchase and the indicated spare's prices should be fixed for at least 12 months.
8. Training of *Employers* maintenance staff on the new equipment is required prior to the equipment being delivered on site. Training for the operational staff on the new equipment will commence once the machines have been commissioned. This training is to include all aspects of diesel electric straddles.
9. The straddle carrier must be fitted with a suitable load sensor and monitoring system.
10. Details of shore power requirements together with the periods that the equipment may be parked without being connected to shore power must be given.
11. Details of individual wheelloading including static and dynamic loads under operation with the maximum container mass must be given.
12. The tenderer shall provide any details of "value add" systems, designs or innovations that are incorporated into the design and manufacture of the straddle carriers.

### 1.2.2 Priced Options

1. A priced option is required for a stock standard 40 tonne single lift straddle carrier. Identify deviations from the TPT technical specification TPT\_TS\_SL\_DESC. Notwithstanding the Employer's detailed technical specification, contained in the Works Information for the Straddle Carriers, the Employer will consider offers differing from this detailed specification, should these offers result in a cost and/or time and/or quality/reduced risk benefit. In other words, should the supplier have a preferred specification that is tried and tested and generally

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supplied to the rest of the market (i.e. Stock Standard), that is different to the Employer's detailed technical specification and can be offered at a lower price and/or shorter lead time and/or reduced risk, then the supplier must make this offer under item 3 of the Section C2.2 Activity Schedule.

2. A priced option is required for a straddle carrier with twin lift capability of 65 tonne under the spreader. Identify deviations from the TPT technical specification TPT\_TS\_SL\_DESC.
3. A priced option is required for a stock standard twin lift straddle carrier. Identify deviations from the TPT technical specification TPT\_TS\_SL\_DESC. Load capacity under the spreader to be supplied.
4. A priced option is required for spares to support the straddle carrier fleet for the first year of service. Assume 4500 hrs use pa. Spares must be delivered with the first equipment and must be sufficient to cover the fleet requirements including any commissioning spares.
5. A priced option for an engineer/technician stationed on site for the first 12 months is required. The functions of the engineer/technician will be to do root cause analysis, provide knowledge transfer to the *Employer's* maintenance and operations staff, undertake various upgrades, adjustments as may be required, provide performance records and analysis information reports to the local maintenance manager.
6. A priced option is required for a lift access system to the cabin (if available). This option to be submitted only if it does not compromise the overall straddle carrier design.
7. A priced option is required for a driver assist mode which will assist the driver to navigate between the containers in the stacks without collision (if available).
8. A priced option is required for the straddle carrier equipped with a DGPS system which shall operate in conjunction with the terminal's yard planning system (NAVIS N4) to provide container position verification (if available).
9. A priced option for a RAM spreadertwin lift, 20' to 40'/45' telescoping type is to be provided.

### 1.3 Interpretation and terminology

#### 1.3.1 Abbreviations

The following abbreviations are used in this Works Information:

Abbreviation	Meaning given to the abbreviation
SANS	South African National Standards
FEM	European Federation of Materials Handling and Storage Equipment
ISO	International Standard Organisation
ASTM	American Society for Testing and Material
IEC	International Electric Code
NEMA	National Electrical Manufacturing Association

BS	British Standards Institute Specifications
CEMP	Construction Environmental Management Plan
ISPS	International Ship&PortFacility Security Code
TNPA	Transnet National Ports Authority of South Africa
TPT	Transnet Port Terminals
MSL	Mean Sea Level
WLL	Working Load Limit, previously known as Safe Working Load (SWL)

### 1.3.2 Definitions

SPECIFICATION means the document/s forming part of the contract in which are described the methods of executing the various items of work to be done, and the nature and quality of the materials to be supplied and includes technical schedules and drawings attached thereto as well as all samples and patterns.

Reference in the Works Information and standard specifications to “equipment” means the straddle carriers as defined in the scope of *works*.

Where "tonne", "ton" or the abbreviation "t" is used, it means "metric ton" which is equivalent to 1 000kg or approximately 2 204,62 pound mass.

### 1.3.3 Interpretation of incorporated documentation

Word or phrase	Interpretation
'Transnet Port Terminals' in the context of: owner, occupier or user of the new asset; insurer of the <i>works</i> ; paymaster (i.e. Transnet Port Terminals shall pay); a party to the contract.	the <i>Employer</i>
'Transnet Port Terminals' in the context of: a duty or procedure to be performed in the administration of the contract	the <i>ProjectManager</i> or the <i>Supervisor</i> as determined by the conditions of contract
accepted by (or to the satisfaction of) the <i>ProjectManager</i> , Engineer or the Architect	accepted by the <i>ProjectManager</i> or the <i>Supervisor</i>
a duty, procedure, decision or action of the Engineer or the Architect and of the Superintendent, client representative, Site Supervisor or Clerk of works	an action of the <i>ProjectManager</i> or the <i>Supervisor</i> depending on the context. Clause 14 of the Core Clauses determines what the actions of each are.

## 2 Management and start up.

### 2.1 Management meetings

The *Project Manager* shall arrange for a design review to be performed by a suitable third party inspectorate company during the planning phases of the contract. For the remainder of the contract, the *Contractor* shall attend all management meetings as called by the *Project Manager*. It is envisaged that at least monthly contract management meetings, plus weekly site meetings during the site erection phase and daily meetings during the commissioning phase, will be held. The *Contractor* must present all relevant information including quality plans, schedules, (including progress) subcontractor management, and health, environmental and safety issues at such meetings.

The *Project Manager* shall arrange for regular inspections during the manufacturing phase in accordance with agreed hold and witness points and shall also be used as a manufacturing progress report evaluation. The *Contractor* shall attend risk reduction meetings as and when called by the *Project Manager*.

Other meetings of a specialist nature may be convened as specified elsewhere in this Works Information or if not so specified by persons and at times and locations to suit the Parties, the nature and the progress of the *works*. Records of these meetings shall be submitted to the *Project Manager* by the person convening the meeting within five days of the meeting.

All meetings shall be recorded using minutes or a register prepared and circulated by the person who convened the meeting. Such minutes or register shall not be used for the purpose of confirming actions or instructions under the contract as these shall be done separately by the person identified in the *conditions of contract* to carry out such actions or instructions.

### 2.2 Documentation control

The *Contractor* shall submit all documentation (including correspondence and drawings) to Transnet (*Employer*) standards and to the *Project Manager's* requirements in accordance with the *Project Manager's* document control procedure. The *Contractor* shall use his own suitable document control system for the control, maintenance and handling of all relevant documentation and drawings issued to him.

### 2.3 Safety risk management

All aspects of the works must comply with the Health and Safety requirement OHS Act No 85 of 1993, refer to Annexure 9.

### 2.4 Environmental constraints and management

All aspects of the *works* must comply with the *Employer's* environmental management plan, statutory requirements and regulations made by relevant authorities and the *Contractor* must ensure compliance of Site activities as well as the design of the equipment supplied..

### 2.5 Quality assurance requirements

Refer to EEAM-Q-009 for the *Employer's* Quality Management  
Special attention must be paid to the following:

- Quality management objectives.
- Design control system with emphasis on design review procedures and *Employer* requirements evaluation.
- Documentation and change control procedures.
- Quality control procedures that will apply to purchased materials.
- Quality control plan for all components manufactured or supplied to ensure conformance.
- The identification of suitable hold points to ensure proper quality assurance throughout manufacturing.
- Quality control of all welding and corrosion protection activities.
- The quality control procedure that will apply to erection and painting on site.
- Hold point on manufacture until design review approved.

The services of an independent third party will be engaged by the *Employer* to assist him with meeting his quality assurance objectives and the *Contractor* must give the necessary co-operation and supply all the necessary quality management documentation as required. The cost of the QA work by the third party will be borne by the *Employer*.

The *Contractor* shall ensure that the quality assurance requirements placed on him under this Contract are transferred into any subcontracts.

Quality system requirements shall be applied on all subcontracts to the point where the acceptability of supplies can be demonstrated solely by the conduct of inspection and/or examination of goods upon receipt at the designated point of delivery.

The *Contractor's* quality plan shall include or reference the quality plans of subcontractors.

## 2.6 Programming constraints

### 2.6.1 General

The Contract programme, progress reports, subsequent updates, revisions and supplementary programmes as detailed in this section are an essential part of the project control system used by the *Employer* for managing the *works* and in monitoring the progress of the work under the Contract. The information and data provided by the *Contractor* pursuant to this procedure must therefore be reliable, accurate and timely in presentation.

### 2.6.2 Programme submission

A copy of the *Contractor's* First Programme shall be submitted with the Tender Document returnables that shall comply with the requirements as indicated in the Works Information. The *Contractor's* Detailed Programme shall be submitted in both hard and soft copy forms within two weeks of award using a computer software package approved by the *Project Manager*.

The preferred software package is Microsoft Projects or similar approved.

### 2.6.3 Contract programme (baseline)

The *Contractor's* First Programme, agreeing with the tender submission, shall become the "Contract Programme" or "baseline" against which actual time performance will be compared. Once the baseline has been established, all subsequent programmes will have baseline (target) bars shown against each activity. This programme will be used as the basis on which all variations, extensions of time and changes to methods of delivery shall be assessed.

Identified deviations from the baseline shall be addressed by the *Contractor* by either demonstrating that the deviation does not constitute a problem to the overall *Contractor's* Programme or providing a course of action to remedy the deviation.

#### 2.6.4 Revisions to contract schedule

The *Project Manager's* written approval of any revised contract programme shall be given prior to the revised contract programme becoming the new contract programme.

Additional detail may be inserted into the Contract Programme at the request of either the *Contractor* or the *Project Manager*. In such cases, the overall start and finish dates of the detail activities shall not vary from the original summary activity(s) that were replaced.

All revisions to the contract programme shall be prepared by, and at the cost of the *Contractor*.

#### 2.6.5 Supplementary programmes

The *Project Manager* may at any time, and at the cost and expense of the *Contractor*, direct the *Contractor* to produce supplementary programmes to highlight a particular aspect of the work under the Contract.

The *Project Manager* shall not unreasonably request supplementary programmes.

#### 2.6.6 Cash flow

The *Contractor* shall submit to the *Project Manager* a detailed cash flow chart based on the contract programme showing the anticipated cash flow as represented by expected payment claim submissions, not only payments received.

#### 2.6.7 Progress reporting

To demonstrate the actual progress of the work under the Contract the *Contractor* shall, on a monthly basis, update and submit the contract programme and the progress to the *Project Manager*.

The contract programme shall be in the form of a three week look ahead schedule, and shall show the following two separate bars for each activity so as to enable comparison of the actual progress to the contract programme:

- o The contract programme "baseline" activity bar
- o The current schedule activity bar identifying the currently forecast start and finish dates of the activity, and the status (% completion of each activity).

#### 2.6.8 Progress monitoring and review

Monitoring and review of the progress of work under the Contract shall consist of an assessment of all activities currently in progress. The following shall be determined:

- o percentage complete;
- o forecast completion date;
- o deviations from the baseline programme; and
- o actions required to remedy any deviations.

#### 2.6.9 Monthly status report

The *Contractor* shall provide a written status report by the 20<sup>th</sup> of each month or such other reporting period as may be required by the *Project Manager* from time-to-time. The report shall summarise progress and problems encountered during that month in respect of all parts of the work under the Contract.

As a minimum the report shall include:

- o progress against the current approved contract programme;
- o summary of progress achieved during the period;
- o list of milestones achieved during the period;
- o status of design, procurement, and off-site works;
- o status of on-site works;

- o deviations from the contract programme “baseline”, and in particular, the forecast completion dates of activities which have or should have commenced;
- o status of approvals;
- o actual or anticipated problems with corresponding action plans to minimise the impact;
- o summary of works planned for the following period, and
- o cash flow status versus the original forecast.

The progress report shall form the basis of a monthly progress meeting between the *Project Manager* and the *Contractor*.

#### 2.6.10 Monthly expediting report

The *Contractor* shall submit to the *Project Manager* by facsimile or email within four (4) days after month end a report on progress of any off-site manufacturing activities of the *Contractor* during the previous month.

The report shall state the current percentage progress of each major piece of equipment as applies at that date.

Each report shall state the actual completion date for those manufacturing activities completed in the last reported period, shall advise the anticipated completion date for each major piece of equipment and shall comment on any delay or variance with respect to scheduled progress.

The *Contractor* shall also report his calculated overall completion percentage for each Subcontract at each report date.

## 2.7 Contractor’s management, supervision and key people

The *Contractor* shall make an adequate, experienced and stable project team available for the duration of the contract. Every effort must be exercised by the *Contractor* to minimise replacement of individual project team members in order to ensure optimum contract management continuity.

It is a requirement of this contract that the *Contractor* employs a full time, fully qualified and experienced site manager who has been delegated sufficient authority to manage the contract efficiently on Site during erection and commissioning. The site manager is required to be fluent in English, both in writing and orally. An organogram of all the *Contractor’s* people who will be directly involved with the management and execution of this contract down to supervisory level, showing each key person named to do the job as stated in the Contract Data, shall be submitted with the Tender Document Returnables.

## 2.8 Training workshops and technology transfer

The following *Employer’s* personnel concerned with operating and maintenance of the equipment will be made available for training by the *Contractor* in their various functions at the Port concerned:

Designation	Number to be trained
Training Officer	10
Technical Supervisor	4
Technician (Electrical)	30
Technician (Mechanical)	30
Technician (Systems)	6

These numbers are indicative only and may vary due to additional requirements of the *Employer* for the operation and maintenance of the equipment.

## 2.9 Insurance provided by the *Employer*

The insurance provided by the *Employer* with the applicable limits and deductibles required by the *conditions of contract* (if any) is given in the Contract Data. The *Employer's* insurance is applicable to work undertaken on the site only, and the *Contractor* provides insurance for the works for the period up to delivery to the site. This includes insurance during transit and off loading at the site.

## 2.10 Provision of bonds and guarantees

The form in which a bond or guarantee required by the *conditions of contract* (if any) is to be provided by the *Contractor* is given in Part 1 Agreements and Contract Data, document C1.3, Sureties.

The *Employer* may withhold payment of amounts due to the *Contractor* until the bond or guarantee required in terms of this contract has been received and accepted by the person notified to the *Contractor* by the *Project Manager* to receive and accept such bond or guarantee. Such withholding of payment due to the *Contractor* shall not affect the *Employer's* right to termination stated in this contract.

## 2.11 Invoicing

At each *assessment interval*, the *Contractor* submits to the *Employer* a forecast rate of invoicing that includes all the expected payments by the *Employer* to the *Contractor* on an agreed forecast rate of invoicing for the contract duration.

The *Contractor* submits an application for payment, with supporting documentation, to the *Project Manager* as per the milestone payment schedule.

The *Contractor* submits original invoices complying with the Value Added Tax Act and containing specified details and information to:

Invoices must be addressed to:	<b>Transnet Port Terminals</b>
Transnet Limited VAT Registration number:	<b>4720103177</b>
Original invoices can be posted to:	<b>PO Box 1024 OR Tambo Parade Durban 4056 South Africa</b>
Invoices can be hand delivered to:	<b>Kingsmead Office Park Stalwart Simelane Street Durban 4001</b>
	<b>Tel. No.:031-308 8309 Fax No.:031-308 8379</b>
Invoices must be for the attention of:	<b>The Project Manager, Transnet Port Terminals</b>

The invoices from the *Contractor* contain the following information:

- The registered name of the *Contractor*;
- The VAT registration number of the *Contractor*;

- The address of the *Contractor*;
- The *Employer's* contract number;
- The VAT registration number of the *Employer*;
- The amount paid to date;
- The value of the invoice split into payments as indicated in the Price Lists;
- Any retention monies to be deducted from the invoice;
  - Any interest payable;
  - Escalation formula used where applicable;
  - Settlement discount;
  - Proof of ownership of materials supplied.

## 2.12 Payment

The *Contractor* is paid by electronic bank transfer 30 days after the payment milestone achievement date. The *Contractor* ensures that the *Employer* has his correct banking information to make the transfer.

All payments are provisional and subject to audit.

The *Contractor* preserves its records for such a period as the Department of Internal Revenue may require, but in any event for not less than five years.

The *Employer* deducts any amount owed by the *Contractor* to the *Employer* from any amount payable by the *Employer* to the *Contractor*.

## 2.13 Participation in the Competitive Supplier Development Programme

### 2.13.1 Introduction

The Competitive Supplier Development Programme (CSDP) is a government initiative run by the Department of Public Enterprises. The aim of CSDP is to increase the competitiveness, capacity and capability of the South African supply base where there are comparative advantages and potential competitive advantages of local supply. This can be achieved by increasing the local content of items procured as well as building new capability in the local supplier base through investment and skills transfer.

### 2.13.2 Characteristics of the Programme

Due to relatively low expenditures over the past thirty years, the capacity of South African supply industries has been significantly reduced. Therefore, since 2007 Transnet has chosen to participate in CSDP to allow for investment into its own supply chain. The goal of Transnet's CSDP programme is to encourage investment into Transnet's supply chain to rebuild the local supply base. This will allow Transnet to reduce supply chain costs, promote economic growth, reduce unemployment and poverty and avoid capital leakage that will be introduced by its large infrastructure spend.

CSDP is generally applied to transactions where

- There is an opportunity to develop a local industry within Transnet's supply chain; and/or
- When a limited local supply base exists and the potential to develop existing suppliers is evident; and/or
- When there is a strong opportunity for intellectual property (IP) and skills transfer to local suppliers and/ or Transnet for which the capability does not presently reside in South Africa.

**2.13.3 How to satisfy the CSDP Requirements**

The supplier will be required to compile a CSDP Proposal, see Returnable Schedule T2.2-20 The Supplier’s CSDP Proposal should focus on three components: localisation, skills transfer and sustainability. CSDP proposals must reflect new or incremental initiatives that are mutually beneficial to the South African economy and to the tenderer. Details regarding completion of CSDP Proposal can be found in Section C1.2 (Part 1) Annexure C, CSDP Supplier Guidelines.

If the suppliers tender bid is successful, the supplier will be required to develop a detailed business CSDP Plan and deliver it to Transnet in 60 days. The supplier will be required to report quarterly on attainment of key milestones and KPIs. Failure of the supplier to comply with their CSDP commitments would constitute a breach of contract.

The CSDP proposal submitted is required to cover the option to purchase 28 straddles. In addition, if the contract option to purchase further straddle carriers is exercised, the supplier will be required to increase their CSDP obligation accordingly.

**3 Engineering and the Contractor’s design**

**3.1 Employer’s design requirements**

The equipment shall be designed to comply with the *Employer’s* specification for straddle carriers (Annexure 1, Technical Specification) as well as the following requirements:

3.1.1 Design parameters

The contractor is required to submit for acceptance the operating philosophy, operators cabin layout, control equipment and displays prior to any associated manufacture/procurement.

The *Contractor* must ensure that the straddle carrier as designed meets all performance and operational requirements and must clearly indicate where the design parameters values will differ from these:

Parameter	Value
Distance between containers in the stack at DCT is 1.65m  The straddle carrier shall have a suitable gated exit system to enable the operator to exit at the required maintenance platform in the workshop (see attached photographs and workshop detail in Annexures 2, 4, 5, 6, 7 and 8)	

### 3.1.2 Basic performance requirements

The straddle carrier shall be designed to handle standard 20' and 40'/45' ISO containers, 20ft tank containers, cargo flats and other loads using a standard telescopic spreader. Twin lift functionality must be indicated together with any restrictions this may place on the equipment – maximum mass. The twin lift 65 tonne straddle as the priced option must also be fully detailed regarding capabilities and loadings.

#### General requirements

The equipment as made and supplied shall be complete in every respect, of modern design using most advanced technology extensively supported by reputable local companies, and be designed and built to applicable recognised standards and good engineering practices.

All electrical and mechanical Plant to be fitted shall have been type tested for reliability and extended lifetime in the conditions to be expected.

The equipment shall be designed and constructed such that as many common components as possible are used on the equipment to enable the minimization of spares types and numbers. This must specifically be applied to drives, brakes, ropes, sheaves, electrical Plant and components, bearings and wheels.

All drives must be such that the same drive can be used in both left hand and right hand applications.

### 3.1.3 Environmental conditions

The equipment offered must be able to operate in a marine environment subject to the following conditions:

- |                       |   |
|-----------------------|---|
| o Altitude            | Sea Level                                       |
| o Ambient temperature | 5 – 45°C  |
| o Relative humidity   | Frequently 100%                                 |
| o Air Pollution       | Heavily saline, dust laden and industrial fumes |

All electrical, hydraulic and pneumatic components shall be suitable and treated for use in tropical climate where rapid changes in weather conditions produce severe moisture condensation problems. The equipment shall be capable of withstanding the highly corrosive effects of the moist, saline atmosphere. All electrical components not installed in controlled environments (machine and electrical house or operator's cabin) must have a minimum enclosure protection of IP55.

### 3.1.4 Functional requirements

The straddles shall be designed for the movement of containers from one location to another location in the terminal.

- o Two sets of special tools as required.

### 3.1.5 Maintenance Requirements

The *Contractor* shall identify all maintenance activities with such restricted access and cover the method statements for such activities in the maintenance manuals.

## 3.2 Parts of the works which the *Contractor* is to design

The *Contractor* shall do all the designs for the *works* to comply with the *Employer's* design requirements.

## 3.3 Procedure for submission and acceptance of *Contractor's* design

Immediately after the *starting date*, the *Contractor* shall start with the design of the equipment. During this design phase of the contract the *Contractor* is required to hold regular design review meetings to confirm

all *Employer* requirements and to obtain the *Project Manager's* acceptance for all design concepts, design interfaces and specifications to ensure that quality is designed into the final product.

Structural and component design shall be verified by the *Contractor* by using finite element analysis models and tested material properties.

The services of an independent third party will be engaged by the *Employer* to review the *Contractor's* design and the *Contractor* must give the necessary co-operation and supply all the necessary design data as required. The cost of the design review by the third party will be borne by the *Employer*.

The *Contractor* must prepare and submit by the dates as indicated on the Accepted Programme two copies of black line paper prints of the general arrangements, working drawings and schematics for acceptance by the *Project Manager*. These drawings and schematics are to be submitted in a systematic manner, accompanied by an index sheet of all the completed and planned drawings and schematics.

Drawings which are submitted for the acceptance of the *Project Manager* must bear the signature and designation of the *Contractor's* responsible professional Engineer.

General arrangement drawings must show the complete structural layout arrangements with plan views, elevations, cross sections, location and sizes of members, erection details, cladding details, services where applicable, etc.

The *Contractor's* fabrication shop drawings and detailed drawings are not required for purpose of acceptance by the *Project Manager* except when the *Project Manager* specifically requests such drawings for approval or to assist the *Supervisor* in the inspection of the structure at any stage.

Notwithstanding any formal acceptance of drawings and schematics submitted by the *Contractor*, the sole responsibility for the adequacy of the design remains entirely with the *Contractor*.

Time required for all the activities associated with the design of the equipment must be allowed for and indicated by the *Contractor* in his programme.

### **3.4 Use of *Contractor's* design**

The *Contractor* will grant to the *Employer* a non-exclusive licence, in accordance with the provisions of section 22 of the Copyright Act 1978 (Act 98 of 1978), (a) to copy any plan, diagram, drawing, specification, bill of quantities, design calculation or other similar document made other than under the direction or control of the *Employer*, by the *Contractor* in connection with the installation, (b) to make free and unrestricted use thereof for its own purposes, (c) to provide copies thereof to consultants to be used by them for the purpose of the consultancy and (d) to provide other parties with copies for tenders invited by it. The *Contractor*, furthermore, if any plan, diagram, drawing, specification, bill of quantities, design calculations or other similar document made, other than under the direction or control of the *Employer*, by any principal or sub-contractor of the *Contractor*, is used in connection with the installation, shall cause such principal or sub-contractor to grant to the *Employer* a similar non-exclusive licence in respect of such plan, diagram, drawing, specification, bill of quantities, design calculation or other similar document. The provisions of this clause shall not apply to documents made, in the case of equipment to be supplied in connection with the manufacturing process of the equipment supplied but only to the equipment supplied itself. No separate or extra payment shall be due by the *Employer* in respect of any non-exclusive licence granted in terms of this clause.

### **3.5 As-built drawings, operating and maintenance manuals**

The *Contractor* shall provide all the as-built drawings, operating and maintenance manuals 3 hardcopies and 2 electronic copies all in English. An advanced electronic copy of these manuals and drawings are required 3 months before straddle delivery for approval purposes per batch delivered.

## **4 Procurement**

### **4.1 Subcontracting**

#### 4.1.1 Preferred subcontractors

##### 4.1.1.1 Spreaders

Spreaders shall be of the Bromma twin lift, 20' to 40'/45' telescoping type, with a priced option for the RAM equivalent.

#### 4.1.2 Subcontract documentation, and assessment of subcontract tenders

The *Contractor* is required to appoint his sub-contractors under the NEC3 Engineering Contract Sub Contract unless accepted otherwise by the *Project Manager*.

#### 4.1.3 Attendance on subcontractors

The *Contractor* must notify the *Project Manager* of all inspections at his Subcontractors at least 3 working days in advance of such inspections. The *Contractor* must ensure that his Subcontractor has the relevant quality management plans available at such inspections. The *Supervisor* will give the *Contractor* 24 hour notice in writing of his intention to be present at the inspections.

## 4.2 Plant and Materials

#### 4.2.1 Quality

If requested by the *Supervisor*, the *Contractor* must produce evidence to show that both his welding procedures and welders have passed all the relevant requirements and tests in terms of BS 5135 and SABS 044 Parts III and IV.

#### 4.2.2 *Contractor's* procurement of Plant and Materials

The *Contractor* must take all necessary steps to ensure that all Plants and Materials are adequately protected against damage during shipping, transport and storage.

If the completed straddles are transported fully erected by sea, the *Contractor* shall take all necessary steps to ensure that all temporary sea bracing and strengthening required, as well as the lashing of the straddles can be fitted and removed without welding or cutting. No welding or cutting on the fully erected straddle structure will be allowed.

If the completed straddles are transported fully erected by sea, the *Contractor* shall take extra precaution to protect all mechanical and electrical Plant from the corrosive effect of wave splashes, rain and salt spray. Waxoyl shall be applied to the inside of handrails and other small sealed sections before being sealed.

#### 4.2.3 Spares and consumables

The *Contractor* shall supply to site all the spares and consumables as identified by the *Project Manager* from the *Contractor's* recommended spares list. Packaging of the spares and consumables shall be suitable to protect its contents from environmental damage when stored in warehouses in close proximity to the coast. Packaging of sensitive spares and consumables shall be suitable to protect its contents from mechanical damage due to handling.

## 4.3 Tests and inspections before delivery

Where the Works Information requires inspections or tests to be performed, the *Contractor* shall provide such assistance, labour, materials, electricity, fuel, stores, apparatus and instruments as may be a requisite

and as may be reasonable demanded to carry out such tests efficiently. The *Contractor* shall ensure that all gauges, templates, tools and other equipment required to check the accuracy of the work are calibrated at regular intervals by a laboratory approved by the National Calibration Services of the Council for Scientific and Industrial Research of South Africa, or by the respective authority in the country of origin of the equipment.

Unless the *Project Manager* otherwise accepts, no Plant or Materials shall be delivered to the *working areas* until the *Supervisor* issues an inspection certificate in respect of such Plant or Materials. The *Contractor* is responsible for taking delivery of all Plant and Materials delivered to the *working areas*. Completed straddles that are to be shipped fully erected or in modules to site are to be inspected and commissioned or tested by the *Contractor* prior to leaving the *Contractor's* or his Subcontractor's works. The associated test and inspection protocol submitted by the *Contractor* must show the estimated duration for each item on the protocol.

## 5 Site work and completion of the works

### 5.1 Working Areas, Site services & construction constraints

#### 5.1.1 Berthing services

The *Contractor* will be responsible for all planning and arrangements with the necessary authorities in this regard.

#### 5.1.2 Working Areas

When required in terms of the delivery methodology, the *Contractor* will indicate his requirements for site erection on a suitable drawing submitted with the tender.

At least some of the Site work will take place while the adjacent port terminal areas will be in operation. The *Contractor* shall take all necessary steps for his works not to interfere with port operations and to ensure that normal traffic flow of the operational terminal is not obstructed.

Establishment, fencing and other work required to make the *working area* fit for use is entirely the *Contractor's* responsibility.

The *Contractor* is responsible for the security of the *works* until completion and hand-over, and must make his own arrangements for security and the safekeeping of his property. The *Contractor's* watchmen are allowed on Site for this purpose.

The *Contractor* must ensure that the *working area* is well lit at night and that all the fences, obstacles and hazards are marked.

The *Contractor* must maintain the *working area* in a neat and tidy condition to the satisfaction of the *Project Manager*.

#### 5.1.3 Housing

Housing of the *Contractor's* people on site is not permitted.

#### 5.1.4 Clearing of site

The *Contractor*, within fourteen days after completion, must completely remove from site all his plant, materials, Equipment, stores and temporary accommodation or any other asset belonging to him and leaves the site in a tidy condition to the satisfaction of the *Project Manager*.

#### 5.1.5 Site books

The *Contractor* must supply and have available at the site office at all times, the following site books which remains the property of the *Employer*:

- Risk register book:  
This is a suitable carbon copy book, size A4, with two detachable sheets for registering risks and early warnings in triplicate as identified by the *Project Manager, Supervisor* or *Contractor*.
- Site diary book:  
This is a suitable carbon copy book, size A4, with two detachable sheets for a page to a day where all events affecting execution of the *works*, such as arrivals of plans, breakdown of Equipment, weather conditions etc., are entered. Equipment, labour, Plant and Materials on site are recorded as well as work performed. Entries are made by the *Contractor* (or his appointed agent) and signed daily by both the *Contractor* and the *Supervisor*. The site diary may be used to establish the validity of claims for Compensation Events.

#### 5.1.6 Co-operation with Others

During the course of the contract, departments of Transnet and other contractors may be working in the general area surrounding the *working area*. The *Contractor* must make allowance for the necessity to interface with the activities of Others, and to allow for safe access and working conditions.

The success of the project depends on the effective co-operation of all contractors on site, and the *Contractor*, if necessary, must discuss his programme on a day to day basis with the *Project Manager* to ensure effective co-ordination.

#### 5.1.7 Customs and port regulations

The *working area* is situated within a Customs controlled area and the *Contractor* and his people shall observe all Customs regulations within the port area.

The *working area* is also within a promulgated port area and the *Contractor* and his people shall observe all ISPS and Port Regulations within the port area. Copies of the Harbour Regulations are obtainable from the Port admin offices.

The fullest collaboration between the *Contractor*, the Port and the *Project Manager* is essential in regard to the working of the port.

#### 5.1.8 Health and safety facilities on Site

At all times during the fabrication, erection and testing of the equipment the *Contractor* is responsible for the safety of all persons on the Site and on the equipment and shall have the necessary systems and procedures in place to effectively manage this.

#### 5.1.9 Site services and facilities

The contractor shall indicate what services and facilities are required if any. The *Contractor* is responsible for connecting up and for electrical cabling in the *working area* together with any associated costs.

A water supply point is available to the *Contractor* if required in the *working area*.

The *Contractor* must make his own arrangements for the disposal of sewerage and wastewater. Sewerage may not be wasted on site. Transnet facilities may not be used.

The *Contractor* must make his own arrangements for telecommunication facilities, if required, for his use during the execution of the *works*.

The *Contractor* shall provide everything else necessary for Providing the Works.

## 5.2 Completion, testing, commissioning and correction of Defects

### 5.2.1 Work to be done by the Completion Date

On or before the Completion Date the *Contractor* shall have done everything required to Provide the Works. The *Project Manager* cannot certify Completion until all the work, done and is also free of Defects which would have, in his opinion, prevented the *Employer* from using the works and Others from doing their work.

### 5.2.2 Testing and commissioning

#### 5.2.2.1 Prerequisites for commissioning

A complete and detailed test and inspection protocol for testing of pre-assembled modules (if applicable), as well as the commissioning of the straddle carrier, shall be submitted by the *Contractor* for approval by the *Project Manager*, two months before the start of testing and/or commissioning. This test and inspection protocol shall include all tests and inspections required in terms of the respective specifications and other tests and inspections deemed necessary by the *Contractor* to prove to the *Employer's* satisfaction that the equipment complies with the Works Information and must include the following where applicable:

- Pre-commissioning tests to be performed by the *Contractor*
- Performance test recording the speeds of all motions under various load conditions
- Overload tests to straddle carrier.
- Stability tests
- Tests to prove the integrity of the safety devices, limit systems and emergency systems
- Tests to prove the integrity of all service brakes and emergency brakes
- Functional tests
- Operational tests under simulated conditions
- General inspection for final quality, including paint quality

The *Contractor* will be required to show practically and analytically that the straddle carrier can repeat the duty cycle continuously at rated capacity and rated speeds and accelerations, without over heating or unduly breaking down.

#### 5.2.2.2 Testing and commissioning

Modules pre-assembled off site shall be trial assembled and fully tested as far as practical and be accepted by the *Supervisor* prior to delivery to site. All tests performed off site shall be repeated once the straddle has been completely erected as part of commissioning.

Before commissioning starts, the *Contractor* shall satisfy himself that the equipment is complete in all respects and shall carry out the necessary pre-commissioning tests of the equipment. During this period the *Supervisor* will carry out visual inspections on the equipment.

After approval of the test and inspection protocol by the *Project Manager*, the *Contractor* shall fully test the equipment in the presence of the *Supervisor* and according to the approved protocol. As far as practical the equipment shall be fully tested prior to it being moved into the operational area.

Load testing on the straddle shall be performed at the erection area in accordance with code of practice 29 ( 125% overload tests. The *Contractor* shall be responsible for the supply of all load testing masses and measuring instruments.

All motions of the equipment shall be tested under load to simulate actual conditions, where applicable, to prove correct operation and to enable position indicators and limit switches to be set, and other operational adjustments made. Load shall be defined as the safe working load when the straddle is working at maximum capacity, and including dynamic factors such as wind loads, shock loads due to acceleration and deceleration, etc.

Before the commencement of any tests the *Contractor* shall provide the initial fill of oil for all gearboxes and grease for components which require grease lubrication.

All simulation devices and test weights required shall be provided by the *Contractor*.

#### 5.2.2.3 Acceptance testing

After successful completion of commissioning, the equipment shall be subjected to acceptance testing, i.e. actual operation of the equipment in the handling of containers in the operational area of the port..

Acceptance testing will constitute a minimum of 100 hours (either continuous or consecutive sessions) of actual hours operation of the equipment doing container handling, of which the last 80 hours must be completely trouble free operation to the satisfaction of the *Project Manager*. If the operation is not trouble free, acceptance testing will continue until the equipment functions trouble free for 80 hours before the acceptance testing is deemed complete.

During acceptance testing the straddle will be operated by the *Employer's* operators, but the *Contractor* shall provide at his own cost the personnel and all equipment necessary for acceptance testing, including a sufficient number of suitably qualified people to assist the *Employer's* straddle operators for the duration of acceptance testing as and if required.

On completion of acceptance testing and before take-over, the *Contractor* shall supply in triplicate complete test certificates, as necessary, and such prescribed statutory documents as are required certifying the class and safe working loads of the equipment (and specific components e.g., twistlocks, ropes hoists etc.) and that the equipment is in complete working order and that all working parts are effectively lubricated. Where required by law these certificates shall be issued by local authorities.

#### 5.2.3 Technical support after Completion

The *Contractor* shall undertake that spares for all mechanical and electrical components of the straddle carrier shall be readily available for at least 7 years from date of Completion. Should spares be required during this period but not be readily available, the *Contractor* shall make modifications to the straddles to use readily available spares at that time, and at no cost to the *Employer*

Should the equipment become substantially inoperable, inefficient or unsafe during the period between take over and the *defects date* due to defects, the *defects date* will be extended by the same amount of time that it takes to return the equipment to satisfactory operating state.

## 6 Plant and Materials standards and workmanship

### 6.1 Referenced standard specifications

The tests prescribed in the relevant standard specifications shall be carried out at the manufacturer's works before delivery of the Plant and Materials ordered by the *Contractor*. The test results shall be submitted to the *Project Manager*.

Plant and Materials made and tested to alternative standard specifications will be considered at the discretion of the *Project Manager*, provided that such specifications are not less stringent than those laid down.

### 6.2 General

All Plant and Materials shall be new.

All Plant shall be installed according to the manufacturer's recommendations.

All Plant must be securely mounted on the straddle such that vibration and movement will not dislodge any components.

All rotating components shall be statically balanced before fitting. High speed rotating components shall also be dynamically balanced.

All fatigue sensitive welds on manufactured components shall be post weld treated by local burr grinding and shot preening afterwards.

Further to clause 3.13.1 of the Employer's Technical Specification, the Transnet corporate branding logo's are as per Part 3, "Scope of Work".