ANNEXURE 3 SPECIFICATION

SPECIFICATION OF THE WORK OR PRODUCTS OR SERVICES REQUIRED

1. SCOPE OF WORK

Rails shall comply with the Infrastructure Perway Technical Specification for rails components, the Manual for Track Maintenance and EN13674-1 or equivalent specification. Anti-theft (A/T) fastening system to comply with specifications referred to in the schedule of prices. Specification PSC010, BC-H, EC-N, and drawings attached to this document.
The Supplier shall provide PRASA with proof that their product meets the EN13674-1 specification when submitting the tender. Should the Supplier's product not conform to the specification, the Supplier must specify what the non-conformances are when submitting the tender.

Unless otherwise agreed to in writing between the Parties, any deviation from Specifications will constitute a breach and the PRASA may exercise any of its rights in accordance with this Agreement.

2. General

The standard rail sections will be 48 kg/m and 57kg/m in accordance with the South Africa Manual for Track Maintenance 2000, European Standard (EN 13674-1) and secondly UIC 860-0 / UIC 861-1, latest editions or equivalent standards.

The South Africa Manual for Track Maintenance 2000, relevant UIC codes, equivalent EN standards, latest versions, must be applied for the inspection, acceptance, supply, delivery, storage, quality assurance and acceptance.

3. Technical Description

3.1. Rail Grading

The standard rail must be manufactured in accordance with South Africa Manual for Track Maintenance 2000, EN 13674-1 or equivalent and to the following grade:-

Type	***Profile***	***Trackwork Location***	***Steel grade***	***Tensile Strength***	***Hardness Brinell***
48 kg	SAR 48	Cat. B & C Lines	R350LHT, or 350 HT, or 320 CR	1175 N/mm², or 1175 N/mm², or	350 – 390, or 350 – 390, or
57kg	SAR 57	Cat. B & C Lines			
UIC 60	60 E 1	Main Lines			

UIC 54	54 E 1	Transition zone from UIC 60E1 to SAR 48		1085 N/mm²	320 - 360

The properties and chemical composition of the rail must be in accordance with EN 13674-1, latest edition or equivalent.

3.2. Main Dimensions and Tolerances

The nominal dimensions of the section and ends must be within the following tolerances:

	Dimension				***Tolerances***
	SAR 48	***SAR 57***	***UIC 60 E1***	***UIC 54 E1***	
Height of Rail	150 mm	165 mm	172 mm	159 mm	± 0.5 mm ± 0.6 mm (UIC60)
Width of Rail Foot	127 mm	140 mm	150 mm	140 mm	± 1.0 mm
Nominal Width of Rail Head	68 mm	70 mm	72 mm	70 mm	± 0.5 mm
Asymmetry of Section					± 1.2 mm
Thickness of Web (at point of minimum thickness)					+ 1.0 mm - 0.5 mm
Inclination of fishing surface (on the basis of 14 mm parallel to the inclined theoretical fishing surface)					± 0.5 mm ± 0.6 mm (UIC60)

The rail ends must be cut to 90 degree of the rail longitudinal axis to permit welding without preparatory cuts.

The supply of rails to be accompanied by the provision of 3D models and editable drawings.

3.3. Length

The standard rail length will be as specified but generally 18m, undrilled, measured at 15°C. Short rails will be permitted (E < 5%) as specified in the respective UIC code. The minimum allowable length is 6 m.

3.4. Branding and Stamping

The rails will be marked in accordance with article 7.4 of EN 13674-1 and article 1.3 of UIC Code 860 or equivalent.
Brandings must be provided on one side of the web and must include the following:

- The manufacturer's identification
- The last two digits of the year of manufacture
- The symbol of the steel grade
- The symbol of the rail profile

In addition to the branding requirements each rail shall be identified by a numerical and/or alphabetical code system, at least every 10 m hot stamped on the non-branded side of the rail web.

3.5. Manufacture

The steel making process must comply with the procedure of the Manufacturer as accepted by major railway companies' worldwide.

The Manufacturer is required to substantiate the necessary details for submission. The process must be one of the following: liquid steel melt tapped out of converter (basic oxygen) or electric arc furnace and must comply with article 7 of EN 13674-1 or equivalent.

The Manufacturer must describe in detail the process under which the rails are to be produced. The description must include:

- the source of rail steel,
- the steel making process,
- chemical composition of final rails,
- the procedure for straightening rails, and
- the quality control system for manufacture.

The manufacturer must provide a certificate of conformance to his specification.

3.6. Corrosion Protection Coating for Rails

Rails destined for the coastal areas will be induced to the highly corrosive costal environment. Therefore, it is required that corrosion resistant coating is applied to rails that are destined to be delivered at the coastal areas. This process will happen as part of the manufacturing process for rails.

3.7. Protection during Transport and Storage

Storage and transport must be arranged such that the rails are not mechanically damaged and not exposed to aggressive chemical influences.
Rails are not to be stored at port awaiting shipment.
Suitable commonly used protection methods against environmental damage must be proposed for approval.

3.8. Acceptance Tests

The manufacturer must supply the necessary gauges of each rolling to be used for spot checks on site.
Testing must be performed at the manufacturer's plant by independent qualified personnel which must be approved by the Purchaser. All major specification criteria must be tested and inspected to confirm compliance.

The frequency of testing must follow the respective standards of major railways, adjusted for smaller quantities. Test certificates must be delivered with the rails. No delivery may take place before acceptance by the Purchaser.

The testing and acceptance of the quality of the rails must include:

- chemical composition,
- tensile tests,
- hardness tests,
- ultrasonic testing for internal defects,
- surface tests, and
- dimension tests.
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In accordance with the South Africa Manual for Track Maintenance 2000 and article 9 of European Standard Rails (EN 13 674-1) or equivalent.
A report of the required tests must be submitted to the PRASARAIL Quality Assurance Inspector prior to delivery. The report of the test results must be traceable to each batch manufactured.

Remark:
The manufacturer's quality assurance system has to be at least equivalent to the requirements of ISO 9001(latest edition). Qualifying tests must be carried out according to article 8 of EN 13 674-1. The current certificate must be submitted.

3.9. **Inspection and Dispatch**

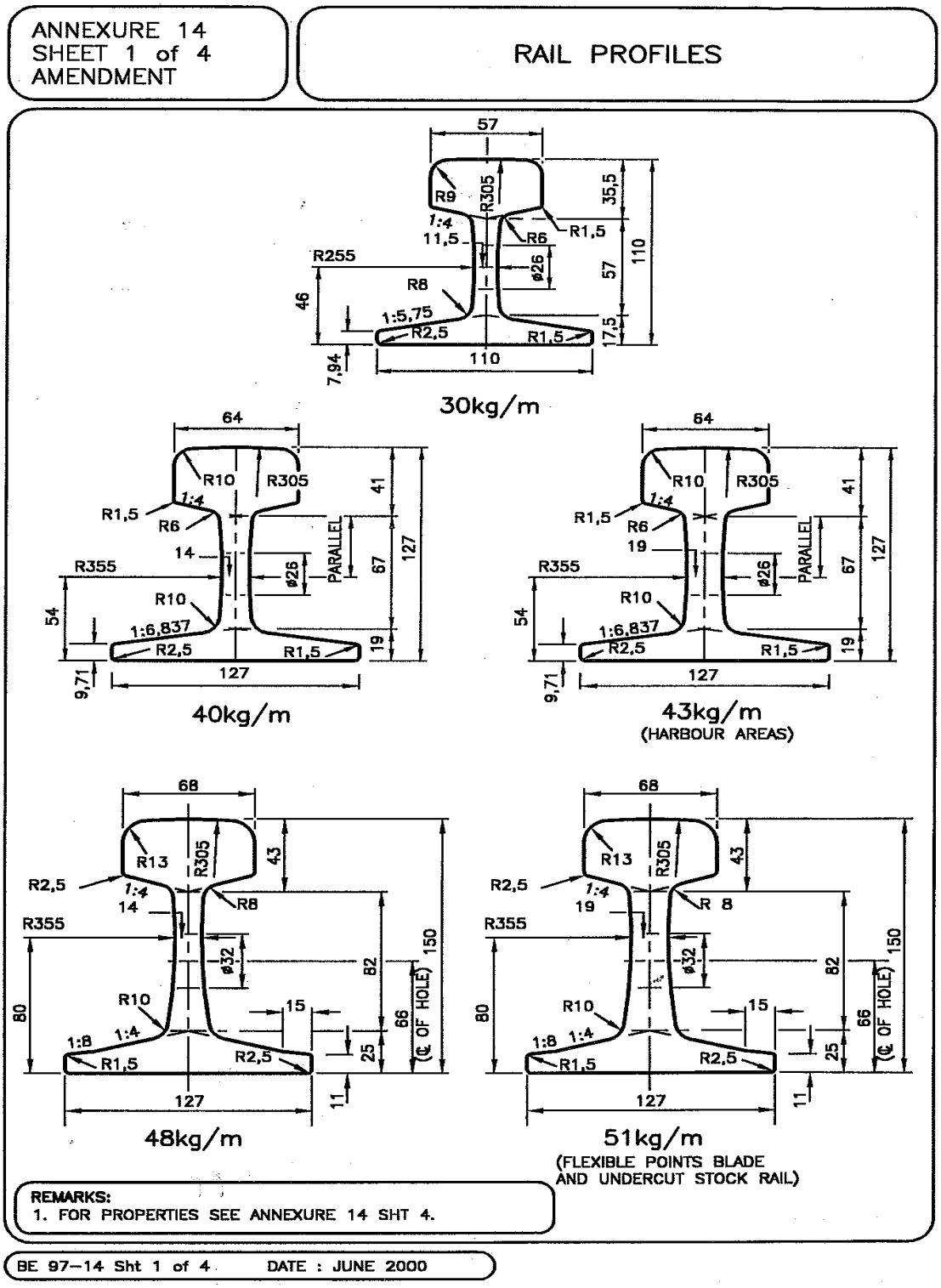
Representatives of PRASARAIL will be entitled to witness, at any time, the manufacturing process in all details, including all testing procedures (approval of the gauges of each rolling according to Annexure "E" of EN 13674-1 or equivalent).

The manufacturer must give the inspector at least 15 days written notice of the date of rolling of the rails for this contract.

The inspector must stamp all rails accepted by him, at least 10% of each rolling out. No rails may be dispatched for use by PRASARAIL unless 10% of each lot carry his acceptance mark.

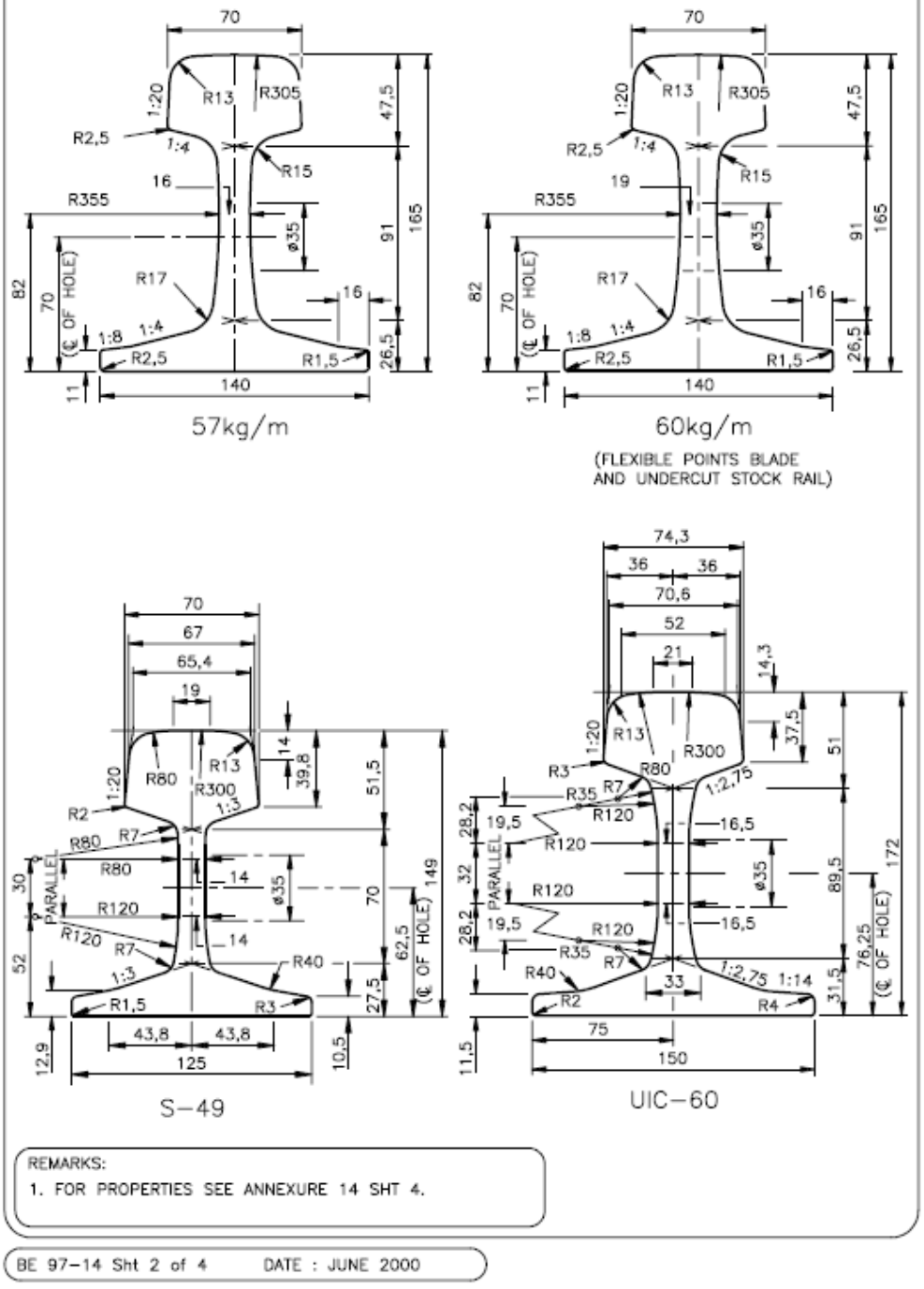
Final inspection will be performed at the delivery point.

3.10. ANNEXURES EXTRACTED FROM MANUAL FOR TRACK MAINTENANCE 2000



ANNEXURE 14
SHEET 2 of 4
AMENDMENT

RAIL PROFILES



REMARKS:
1. FOR PROPERTIES SEE ANNEXURE 14 SHT 4.

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3.11. APPLICABLE SPECIFICATIONS

The documents forming the contract are to be taken as complimentary to each other. In case of any discrepancy or inconsistency between contract documents, the order of precedence will be:

a) SANS 3000-1 to 2, Railway Safety Management;
b) SABS 1200NB Railway Sidings (Track work);
c) EN13674-1, UIC 860-0, UIC 8610-1 or the latest equivalent standard;
d) EN13848 - Railway applications – Track geometry quality or the latest equivalent standard;
e) Standard specifications E7/2;
f) Safety Arrangements and Procedural Compliance with the Occupational Health and Safety Act (Act 85 of 1993) and Applicable Regulations (E4E); including any subsequent amendments;
g) E10: General Specifications for Railway Track work;
h) E10/1: Laying of Rails;
i) E10/2: Laying of sleepers;
j) E10/4: Ballasting and alignment;
k) Manual for Track Maintenance (2000); and
l) Railway Safety Regulator Act (Act 16 of 2004)
m) Infrastructure Perway Technical Specification for Rails

4. Project specific Safety related regulations

4.1. The contractor shall comply with requirements of safety legislations and regulations in all respects.
4.2. It is the requirement of this contract that the contractor should provide PRASA with a detailed safety plan prior to being issued with a site access certificate, in accordance with the latest version of the Occupational Safety Act, 1993 (Act No: 85 of 1993) and the SPK7, PRASA SHE Specification and National Environmental Management Act 107 of 1997
4.3. All drivers shall be in possession of valid driver's licenses and Public Drivers Permits (PDP) where applicable. Crane operators will be required to have a valid Crane Operator's certificate. All vehicles shall be road worthy.
4.4. The contractor shall be responsible for all protective clothing and equipment for his/her employees. All employees required to climb structures shall be issued with suitable harnesses.
4.5. A copy of the act as well as an approved safety file shall be kept on site for the duration of the project.
4.6. The Contractor shall comply with all applicable legislation and PRASA's safety requirements adopted from time to time and instructed by the Project Manager. Such

compliance shall be entirely at the contractor's cost and shall be deemed to have been allowed for in the rates or total prices in the contract.

4.7. The Contractor shall report all incident verbally or telephonically to the project Manager within 5 minutes of occurrence.

4.8. The Contractor shall report all incidents in writing to the Project Manager. Any incident resulting in the death of or injury to any person on the works shall be reported within 12 hour of its occurrence and any other incident shall be reported within 24 hours of its occurrence.

4.9. The Contractor shall make necessary arrangements for sanitation, water, and electricity at this relevant site during the entire occupation period.

4.10. The safety file will be approved only after all the requirements on the checklist are met. WITS_LIB/RISK_MGT/SHE File Checklist (version 3) is attached in this regard.

4.11. All work shall at all times comply with the E7/2 Specification attached hereto.

4.12. Normal protection measures in accordance with the Protection Manual shall apply.

4.13. The contractor shall at all times be required to supply adequate and competent supervision. The contractor shall provide a fully qualified Track Inspector/Master - with Track Inspector/Master certificate (as required by PRASA) to properly supervise the execution of the track work.

4.14. The contractor must supply his or her own flagmen with valid flagmen certificate as required per work site for protection duties. (At least 3 flagmen per site)

4.15. The contractor shall appoint at each work site a person whose sole task shall be to be on the lookout for approaching rail traffic. This employee shall operate an audible warning device to timeously warn all people on the work site of approaching rail traffic.

4.16. The contractor shall not allow any persons on the work site to venture within the structure gauge when this warning procedure is not operating effectively.

4.17. The warning device shall be such that its sound can be clearly and effectively heard above the noise on the work site by all personnel within a radius of 100m around the centre of each work site. The cost to the contractor of providing the lookout as well as the warning device shall be deemed to be included in the rates tendered and no separate payment shall be made.

4.18. An effective safety procedure to be followed by all personnel on any work site in the case of approaching rail traffic shall be compiled by the Contractor and implemented before any work commences. This procedure shall be updated whenever the need arises, and any changes shall be communicated to all employees on a works site before work proceeds.

4.19. The Contractor shall accept responsibility for safe custody of the material and care of PRASA assets from the time the site and material is handed over into his custody by PRASA RAIL.

4.20. Any loss or damage to Material and PRASA assets will be recovered on the contractor's account.

4.21. This clause will remain effective to the duration of the contract until the contractor hand back the site to PRASA project manager.