

SUPPLY OF A-PLANT CONVERTER INTERNALS

(Catalyst Support grids, division plates and support columns)

Tender no:

Revision¹:

1.0 see legend at bottom of page

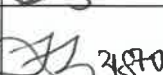
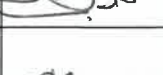
Revised date: 01/08/2026

NAME	TITLE	Empl. no	SIGNATURE	DATE
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SCOPE OF WORKS**1.0 Background, Present Situation and Proposed Solution****1.1 Background**

Foskor Richards Bay Acid division produces 98.5% sulphuric acid from three sulphuric acid plants namely A, B and C which are all Monsanto Enviro-Chem Systems (MECS) design. Two of the acid plants, A and B have a design production capacity of 1800 metric tons per day and are part of the original design, jointly referred to as the old plant. And B plants are identical and were commissioned in 1976.

C plant, which is referred to as the new plant had an original design capacity of 3000MTPD, which was derated to 2650 MTPD after the compliance project at the end of 2024.

A-plant has been offline since the end the 2024/25 financial year (end of March 2025) pending compliance with the Atmospheric Emission License (AEL) requirements. B plant was put offline at the end of the 2025/26 financial year (end of March 2026) for a statutory and mandatory maintenance shut as per OSHA and NEMA to improve safety and enhance equipment reliability.

Both A and B-plant converters have been operational over that past five decades and have been exposed to numerous thermal cycles. A converter is the 'heart' of the sulphuric acid plant. This is a critical piece of process equipment where catalytic oxidation of sulphur dioxide occurs over a catalyst vanadium pentoxide to yield sulphur trioxide. Efficient converter performance is key to sulphuric acid plant production.

1.2 Present Situation

Over the recent past, production of sulphuric acid from A and B plants was adversely affected by grid collapse in the converters. Technical inspections conducted by the original equipment manufacturer (OEM) confirmed that both A and B converters were in a compromised mechanical state. It was therefore resolved to conduct a major refurbishment of the B plant converter, which entailed stripping all converter internals, replacing compromised components with good ones and reinstallation.

However, due to the extensive damage of B-plant converter internals discovered during the stripping process, the available spare parts inventory at Foskor Richards Bay was not adequate for the refurbishment. Consequently, approval was granted by Foskor management to strip A-plant converter internals (catalyst support grids, division plates and support columns) to recover spares for use to complete B-plant converter refurbishment. Following a good recovery of internal components from the A-plant converter, B plant converter was successfully refurbished.

As part of Foskor's future production plan, it is required to bring A-plant back into production, compliant with the new AEL requirements (less than 350 mg/Nm³ sulphur dioxide on the main stack). To achieve this, a functional and efficient A-plant converter is required.

Since the A-plant converter internals were cannibalised for B converter refurbishment, it is therefore required to procure converter internals (catalyst support grids, division plates and support columns) for the refurbishment of A plant converter, preparatory to the restarting of A-plant.

1.3 Proposed Solution: Reason for this Tender

The proposed solution is to procure, without further delay, converter internals (*catalyst support grids, division plates and support columns*) for the refurbishment of the A-plant converter so that the plant can be brought back online. Since the lead time for casting, preparation and delivery of the converter internals by foundries is long, averaging three to six months, timely procurement of the catalyst support grids, division plates and support columns will enable A-plant to resume production as planned.

SUPPLY A-PLANT CONVERTER INTERNALS (*Catalyst support grids, division plates and support columns*)

1.4 Technical Details

Flow and Production Rates	
Total Feed gas flow, Nm ³ /hr	163,400
Production rate, MTPD	1800
Gas Conditions	
Gas Composition	mole %
Sulphur dioxide	10.50
Oxygen	10.45
Nitrogen	79.05

CATALYST LOADING FOR STANDARD CATALYST			
Bed No.	Catalyst Type	Catalyst Shape	Volume, Litres
1	VK38, 25mm	Daisy	9,000
	VK38, 12mm	Daisy	61,000
2	VK38	Daisy	83,000
3	VK48	Daisy	93,000
4	VK69	Daisy	81,000
Total Volume			327,000

Expected Performance for VK69, VK38 catalyst					
Bed No	Inlet Temperature °C	Inlet Temperature °C	Conversion %	Pressure Drop Mm WC	Inlet pressure Bar abs
1	415	609	66.8	110	1.43
2	440	510	90.7	135	1.37
3	440	456	96.1	145	1.34
4	400	414	99.94	135	1.12

**** Pressure drop is across fresh catalyst layers including 15mm WC across grids and ceramics**

Overall conversion = 99.94%

1.5 Hoisting Equipment

Foskor Richards Bay takes on the responsibility of providing a crane and/or forklift for the offloading of the converter internals for the agreed upon period specified by the supplier and customer viz. Foskor Richards Bay.

1.6 Pre-requisites & Inputs

FOSKOR Richards Bay will supply the successful Tenderer with the following:

- Equipment specified above in 1.5.
- Availability of duly authorised personnel to represent FOSKOR for this project
- FOSKOR technical specifications.

1.7 Legislation, Standards and Codes of Practice

Latest revisions or amendments of the listed codes and specification are applicable to this contract:

Number	Title / Description	Revision
Act 85 of 1993	Occupational Health and Safety (OHS Act)	Latest
ISO 9000	Quality Systems Series	Latest
ASME IX	Qualifications Standards for Welding Specifications	Latest
FG 001	General Requirements for Projects	Latest
FQ 001	General Engineering Quality Requirements	Latest

All work listed in this scope of work shall be completed in accordance with the specifications and codes as listed above. It is the responsibility of the Contractor to be in possession of the latest standards and codes as listed above in the execution of this contract.

Suppliers of materials and the like, whose quality systems apply with one or more of the SABS/SANS ISO 9000 Series should be used whenever possible in the absence of a particular SABS/SANS Specification Standard Mark.

1.8 Project Requirements

The main requirement of the project is the Supply of Converter internals (catalyst support grids, division plates and support columns) with the following requirements:

CATALYST SUPPORT GRIDS, DIVISION PLATES AND SUPPORT COLUMNS

The cast catalyst support grids, division plates and support columns for the respective converter passes should conform to the drawings shown in Section 1.19.

- When all sections of the division plates are assembled with an appropriate clearance, they should form a true circle of 10,732mm diameter to fit in a 10744mm internal diameter vessel with a clearance of 6mm all around. This is applicable for grids and division plates.
- Castings are to be made from good quality close grained Meehanite metal free from flaws, blowholes or other defects and suitable for a working temperature of 650°C.
- No wrought iron chaplets should be used in the manufacturing process.
- All castings to be properly fettled on all grid plates. Any protruding spots should be ground off to provide a smooth area.
- The required converter internals quantities are detailed in the drawings included in section 1.19

1.9 Plant Data

To deliver at

FOSKOR(Pty) LTD – RICHARDS BAY DIVISION,
21 JOHN ROSS PARKWAY,
RICHARDS BAY,
3900
SOUTH AFRICA

1.10 Drawings and/or Equipment Manuals

Foskor shall supply the contractor with reference drawings for the required converter internals. Any modifications required by Foskor to the existing drawings shall be discussed and noted down.

On completion of the project, the contractor must certify all documentation and drawings for correctness and conformance to the OHS Act.

1.11 Supplied Services

1.11.1 Foskor Supplied Services

Foskor shall be responsible for		Applicable
1	Supply a copy of the relevant Foskor Procedure Specification(s).	YES
2	Supply the relevant Foskor Technical Specifications	YES
3	Supply a copy of reference drawings if required.	Refer 1.10
4	Supply equipment (if applicable)	Refer 1.5
5	Provide access to ablutions facilities. (Not change rooms) - Successful Tenderer (Contractor/Consultant)'s workers to be fully dressed in required PPE when coming on site. - The successful Tenderer to ensure that its workers/subcontractors/ supplier that are making use of facilities, do so in an orderly and well-mannered way. - Successful Tenderer is not allowed to make use of Foskor's change room or tearoom facilities unless agreed to in writing. - The successful Tenderer might be called on to assist with the maintenance and cleaning of ablutions, should Foskor at its discretion believe it be necessary. Cost associated with such cannot be claimed from Foskor.	NO
6	Assist in issuing of work clearances and HIRA certificates.	YES
7	Make available duly authorized personnel to represent Foskor on this project	YES
8	Waste/ Scrap bins for disposal of waste (general and contaminated) where and when required. (Only if not part of the scope of works) Successful Tenderer (Contractor/Consultant) to indicate the type (number and size of bins) and frequency of waste disposal it would require.	NO

1.11.2 Successful Tenderer (Contractor/Consultant) Responsibilities

The successful Tenderer (Contractor/Consultant) shall be responsible for (inter alia):		Applicable:
1	Supply suitable qualified and competent labour inter alia: general, specialized, artisans and supervision to fulfill the scope of work.	NO
2	Supply of tools and any specialized equipment.	NO
3	On approval of request for Site Establishment, to safely complete and set up site.	NO

The successful Tenderer (Contractor/Consultant) shall be responsible for (inter alia):		Applicable:
	▪ On completion of works, site to be re-instated to original or accepted in writing as-is.	
4	Supply suitable (approved) personal protective equipment (PPE).	NO

1.12 Scope of Work

The Scope of Work ("Works") calls for the supply of converter internals and all the relevant associated works that are required to make such components functional for their purpose.

Scope of supply:

NB. The specifications are the minimum requirements for converter internals. Any improvements in terms of efficiency and construction must be clearly detailed in the quotation.

A-plant converter Internals

REFER TO DETAILED DRAWINGS PROVIDED IN SECTION 1.19

The project will be undertaken in terms of the latest revisions and amendments of all relevant legislation, standards, and Codes of Practices. The contractor will complete the Works in accordance with all statutory obligations, municipal regulations, and all other relevant requirements. The Contractor is specifically reminded of the requirements in terms of the Occupation Health and Safety Act, Act 85 of 1993 and latest amendments in terms of this project.

1.12.1 Extent of the Work

The Tenderer is to supply a tender with pricing for the supply of the converter internals as specified.

Please note that Foskor may accept or reject any part of a Tender without being obliged to accept such a tender in its entirety.

The Tenderer would determine the work methodology and approach; however, it is imperative that the outcome of the work meets the expected requirements:

[Note: All references to **Contract** mean the same as **Tender**, and to **Contract Works** mean the same **Works** or **Scope of Works**.]

1.12.1 Supply of Converter Internals

The Tenderer shall, in accordance with the requirements of the Scope of Work, provide the converter internals on or before the due date determined in accordance with this Tender, and/or stated in a written order/instruction issued by Foskor.

(a) PACKAGING, MARKING AND DELIVERY

1. Unless otherwise stated in the Tender, all containers (including packing cases, boxes, tins, drums and wrappings) supplied by the Tenderer shall be considered as non-returnable, and their cost having been included in the price of the Equipment.
2. The Tenderer shall:
 - a) Clearly mark the outside of each consignment or package with the Tenderer's name and full details of the destination in accordance with Foskor's order and include a packing note stating the contents thereof.
 - b) on dispatch of each consignment, send to Foskor at the address for delivery of the converter internals, some advice notes specifying the means of transport, weight, number, or volume as appropriate and the point and date of dispatch.
 - c) Send to Foskor a detailed priced invoice as soon as is reasonably practical after dispatch of the converter internals, and
 - d) State on all communications the relevant order number and code number (if any).
3. Converter internals shall be delivered on the days between the times and at the address specified by Foskor.
4. Should the Tenderer fail to supply any of the converter internals on the date or dates or within the period or periods specified thereof, or should he fail to replace any rejected converter internals as required by Foskor, the Tenderer shall be liable to make good to Foskor all loss and damage occasioned by such failure, including any reasonable price (whether greater than the appropriate Tender price or not) paid by Foskor in purchasing the converter internals on which default has been made, from a source other than the Tenderer. In such an event, Foskor shall be at liberty to retain the amount of any such loss or damage from any money due by Foskor to the Tenderer but without prejudice to other methods of recovery open to Foskor.

(b) QUALITY OF CONVERTER INTERNALS

1. All converter internals supplied shall comply with the requirements of the Scope of Work.
2. All converter internals covered by this Tender shall be always the subject of Foskor's inspection and test before, during or after supply.
3. If the Tenderer fails to supply converter internals or services in accordance with the provisions of the Tender, Foskor may reject any part of the converter internals by giving written notice to the Tenderer specifying the reason for rejection and whether replacement converter internals are required and within what time.
4. All rejects shall be held at the Tenderer's risk and expense including all transportation and handling costs until returned to or collected by the Tenderer. All rejects shall be replaced or rectified and made good at the Tenderer's expense within the specified replacement period to the full satisfaction of the inspectors and in conformity with the standards, specification, or samples specified in this Tender.
5. In the event of the tenderer failing to remove such rejected equipment within five days of notification of the rejection, Foskor shall be at liberty to return them at the Tenderer's risk, the cost of carriage being recoverable from the Tenderer. If the Tenderer considers himself aggrieved, he may, within five days of the receipt of notification of rejection give Foskor notice of objection, whereupon the equipment shall not be removed until Foskor so directs.

(c) WARRANTY

Without prejudice to any other rights of Foskor under these conditions, the Tenderer warrants that:

- i) All converter internals delivered will be free from defects.
- ii) This warranty shall survive any inspection, delivery, acceptance, or payment by Foskor

1.12.2 Site Conditions

The site is located on the Foskor Richards Bay Plant; approximately **500** meters from the main entrance and access for vehicles are possible.

1.12.3 Location of the Works

The site is situated within the premises of Foskor at Richards Bay. No site visit is required, but it can be arranged if necessary.

1.12.4 Sample of Materials

Samples of converter internals can be arranged if necessary.

1.12.5 Invoicing and Payment

Payment will be made by Foskor, after approval by the Foskor Project Representative (i.e., Engineer, Area Manager) of the submitted Payment Certificate to the Contractor within **30** (thirty) days from the date of receipt of the Contractors approved invoice.

The invoice shall be approved in accordance with the provisions of Foskor's terms and conditions.

The invoice submitted is to be in a format acceptable to the Foskor Project Representative and need to contain the following minimum information:

- Company details, registration no and VAT registration no
- Purchase Order no
- Detail of work done to date
- Detail of claims to date (Excluding the current claim)
- Value of the current claim and work done
- VAT charged

1.12.6 Progress of Works

Should Foskor or its appointed Agent at any time be of the opinion that the rate of progress of the Works or any part thereof is too slow to ensure the completion of the Works or any part thereof by the completion Date, he shall so notify the Contractor in writing, with specific reference to this Clause, and the Contractor shall thereupon, subject to the approval of Foskor, which approval shall not be unreasonably withheld, take such steps as are necessary to expedite progress so as to complete the Works or the said part thereof by the Due Completion Date.

1.12.7 Cancellation of the Contract by Foskor

If:

- (a) (i) the estate of the Contractor shall be sequestrated (provisionally or finally), or
- (ii) the Contractor shall publish a notice of surrender of his estate as insolvent, or
- (iii) the Contractor, being a company or a close corporation, shall go into liquidation (provisionally or finally), or
- (iv) the Contractor shall assign the Contract without the consent in writing of Foskor having first been obtained, or
- (v) the Contractor shall enter a compromise with the general body of his creditors, or
- (vi) the Contractor shall have an execution levied on his goods, or
- (b) the Foskor Project Representative shall certify in writing to Foskor, and to the Contractor, with specific reference to this Clause, that in his opinion the Contractor
 - (i) has abandoned or repudiated the Contract, or
 - (ii) has, without reasonable excuse, failed to commence the Works in terms of the time allowed for it agreed to, or
 - (iii) has suspended the progress of the Works without due cause, or
 - (iv) has failed to proceed with the Works with due diligence, or
 - (v) has failed to remove materials from the Site or to pull down and replace work, which materials or work have been condemned and rejected by the Foskor Project Representative, or
 - (vi) is not executing the Works in accordance with the Contract, or
 - (vii) has, without the approval of the Foskor Project Representative, subcontracted any part of the Contract or has failed to expel any subcontractor after having been instructed to do so, or
 - (viii) has failed to provide the Surety ship, Guarantees or Proof of Insurance within the time stipulated and for 14 days after receiving a written notice from the Foskor Project Representative, referring specifically to the default concerned and to this Clause, failed to remedy the default,

Foskor may, by written notice to the Contractor, cancel the Contract.

1.13 Company Profile

Tenderers are to submit an extensive portfolio indicating their experience and expertise with reference to supplying converter internals

1.14 Quality Management

The successful Tenderer is to adhere to Foskor's Quality Management System and specifications incorporated in this Tender Document.

1.14.1 Quality Assurances:

- i. It is a requirement of the contract that the successful Tenderer (Contractor/Consultant) maintains an effective documented system for the control of product quality.

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- ii. Proof of compliance (performed quality document) with a recognized quality assurance standard, such as ISO 9000, should be submitted with the Tenderer's (Contractor/Consultant) tender.
 - iii. The Tenderer's (Contractor/Consultant) Quality Assurance Department Manager shall be responsible to a senior executive only and not be under the control of persons responsible for production.
 - iv. The Tenderer's (Contractor/Consultant) Quality Assurance Manager is regarded as the principal link between the Tenderer (Contractor/Consultant) and Foskor in all matters affecting quality.
 - v. The successful Tenderer's (Contractor/Consultant) Quality Manager shall have access to the successful Tenderer's (Contractor/Consultant) offer document and to all other associated specifications, drawings and documents necessary for the satisfactory execution of the project.

1.15 Tender Adjudication

Proposals will be adjudicated on a mix of the following criteria (in no order):

- Technical support
- Track record
- Foskor's HDSA Policy. Policy available on request.
- Price

1.16 Tender Acceptance

Note that Foskor is not obligated to accept the lowest tenderer in the tender process.

1.17 Site Visit

No site visit required, but it can be arranged if necessary.

Foskor Contacts:

Technical Enquiries

Process Engineer: Takura Nyashanu (035) 902 3086 or takuran@foskor.co.za

Commercial Enquiries

Procurement - Buyer: Harry Mthembu (035) 902 3228 or HarryM@foskor.co.za

The tender must be in a sealed envelope, with the tender number and closing date clearly marked on the outside. Tender must be deposited in the tender box, situated at Foskor Richards Bay's Main reception, before 12H00 of the closing date.

1.18 Bill of Quantities

CATALYST SUPPORT GRIDS: 1 st Pass						
Stock code	Item	Quantity required	Material	Description	Unit Price	Total cost
520301240	Item 1	6	Meehanite	Grid		
520301241	Item 2	6	Meehanite	Grid		
520301242	Item 3	6	Meehanite	Grid		
520301243	Item 4	6	Meehanite	Grid		
520301244	Item 5	6	Meehanite	Grid		
520301245	Item 6	96	Meehanite	Grid		
520301246	Item 7	6	Meehanite	Grid		
520301247	Item 8	6	Meehanite	Grid		

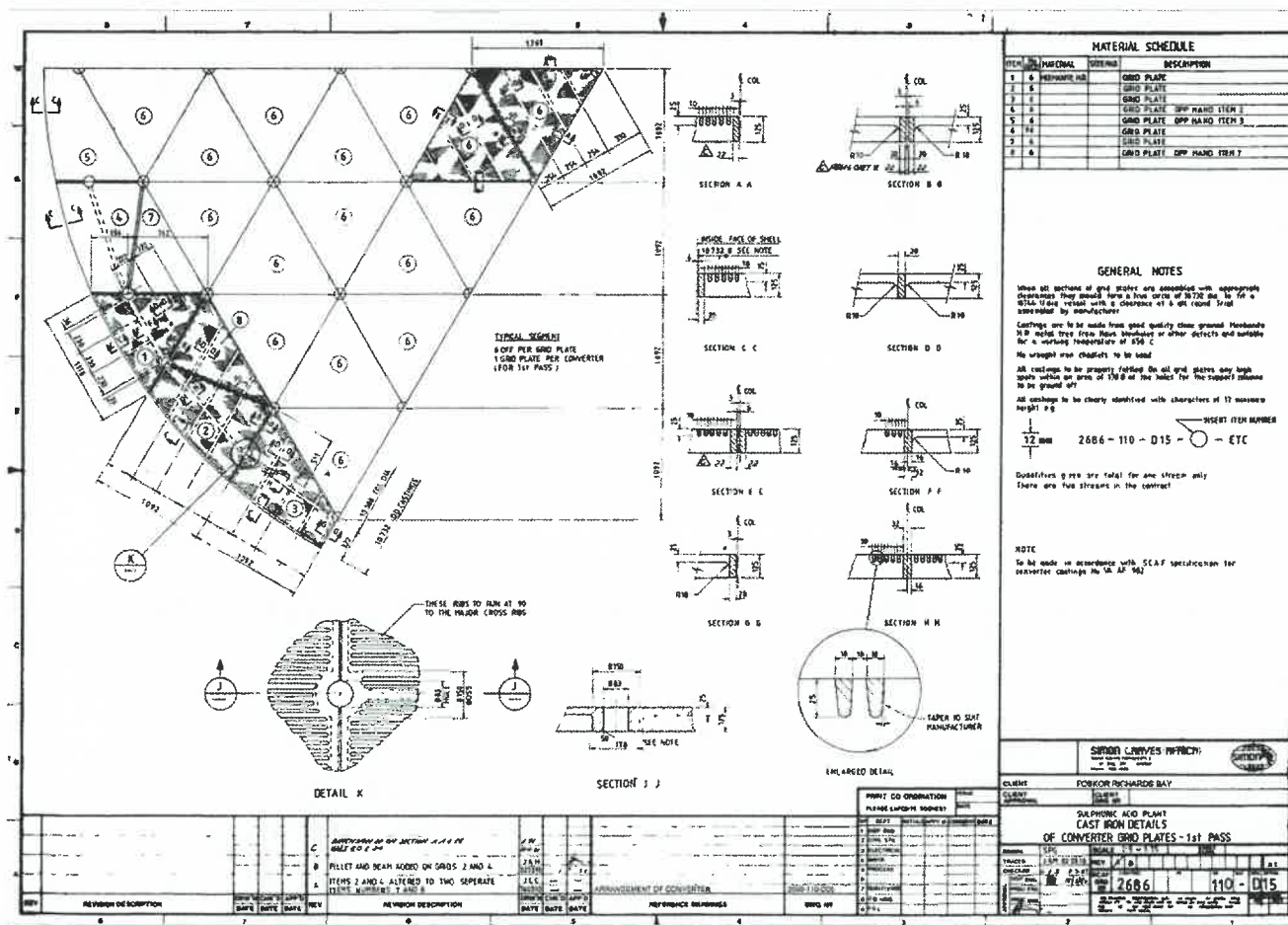
CATALYST SUPPORT GRIDS: First 2 nd – 4 th Pass						
Stock code	Item	Quantity required	Material	Description	Unit Price	Total cost
520301250	Item 1	18	Meehanite	Grid		
520301251	Item 2	18	Meehanite	Grid		
520301252	Item 3	18	Meehanite	Grid		
520301253	Item 4	18	Meehanite	Grid		
520301254	Item 5	18	Meehanite	Grid		
520301255	Item 6	288	Meehanite	Grid		
520301256	Item 7	18	Meehanite	Grid		
520301257	Item 8	18	Meehanite	Grid		

SUPPORT COLUMNS							
Stock code	Item	Quantity required	Material	Size (mm)	Description	Unit Price	Total cost
0520501230	Item 2	85	Meehanite	2.643	Column, Upper 3 rd pass		
0520501231	Item 3	170	Meehanite	1.331	Column, Lower 1 st & 2 nd pass		
0520501232	Item 4	85	Meehanite	2.588	Column, Upper 2 nd pass		
0520501233	Item 5	85	Meehanite	1.492	Column, Lower 4 th pass		
0520501234	Item 6	85	Meehanite	1.361	Column, Lower 3 rd pass		
0520501235	Item 7	85	Meehanite	2.758	Column, Upper 4 th pass		

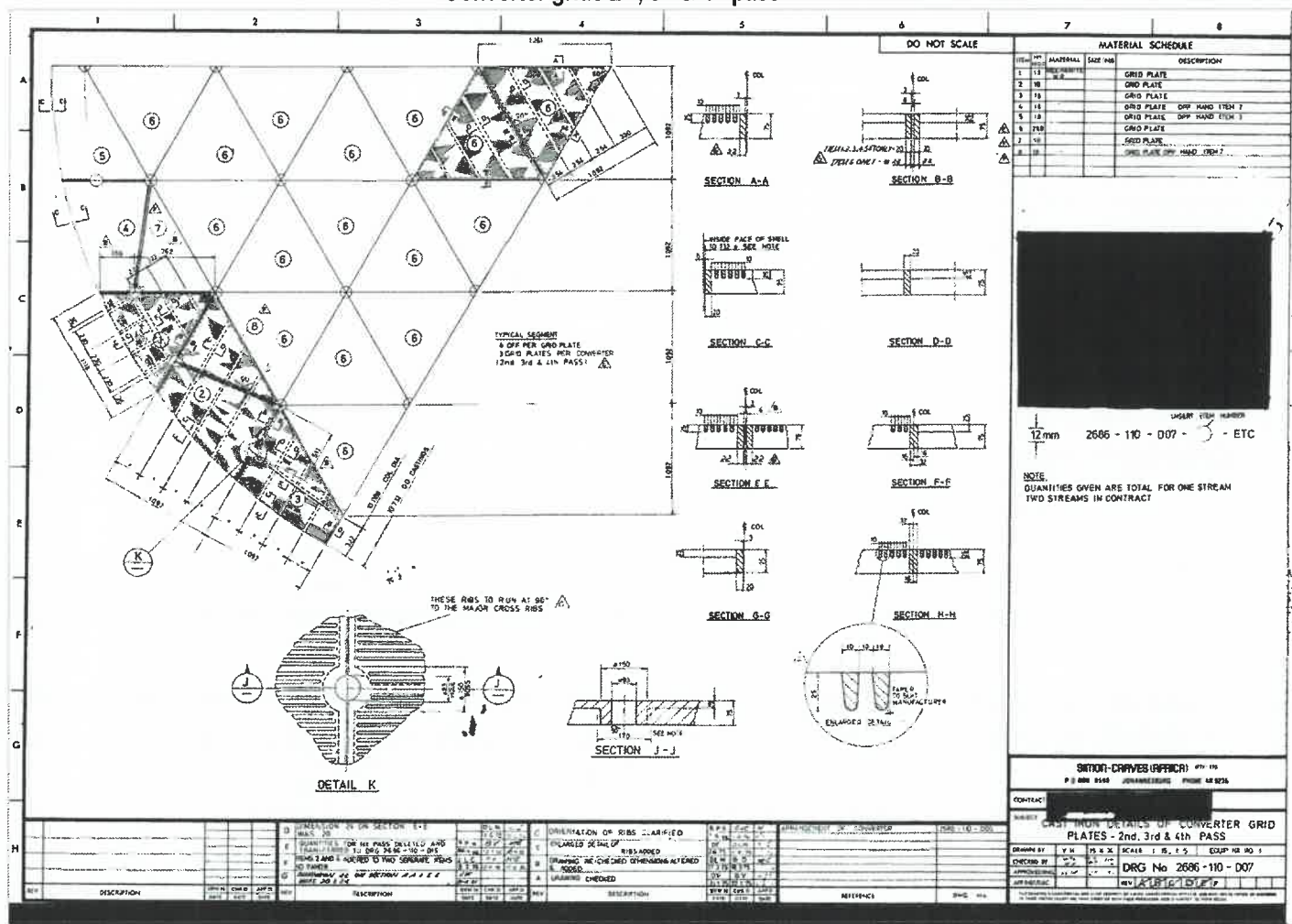
DIVISION PLATES:						
Stock code	Item	Quantity required	Material	Description	Unit Price	Total cost
	Item 1	12	Meehanite	Division plate		
	Item 2	12	Meehanite	Division plate		
	Item 3	12	Meehanite	Division plate		
	Item 4	12	Meehanite	Division plate		
	Item 5	12	Meehanite	Division plate		
	Item 6	120	Meehanite	Division plate		
	Item 7	72	Meehanite	Division plate		

1.19 Drawings

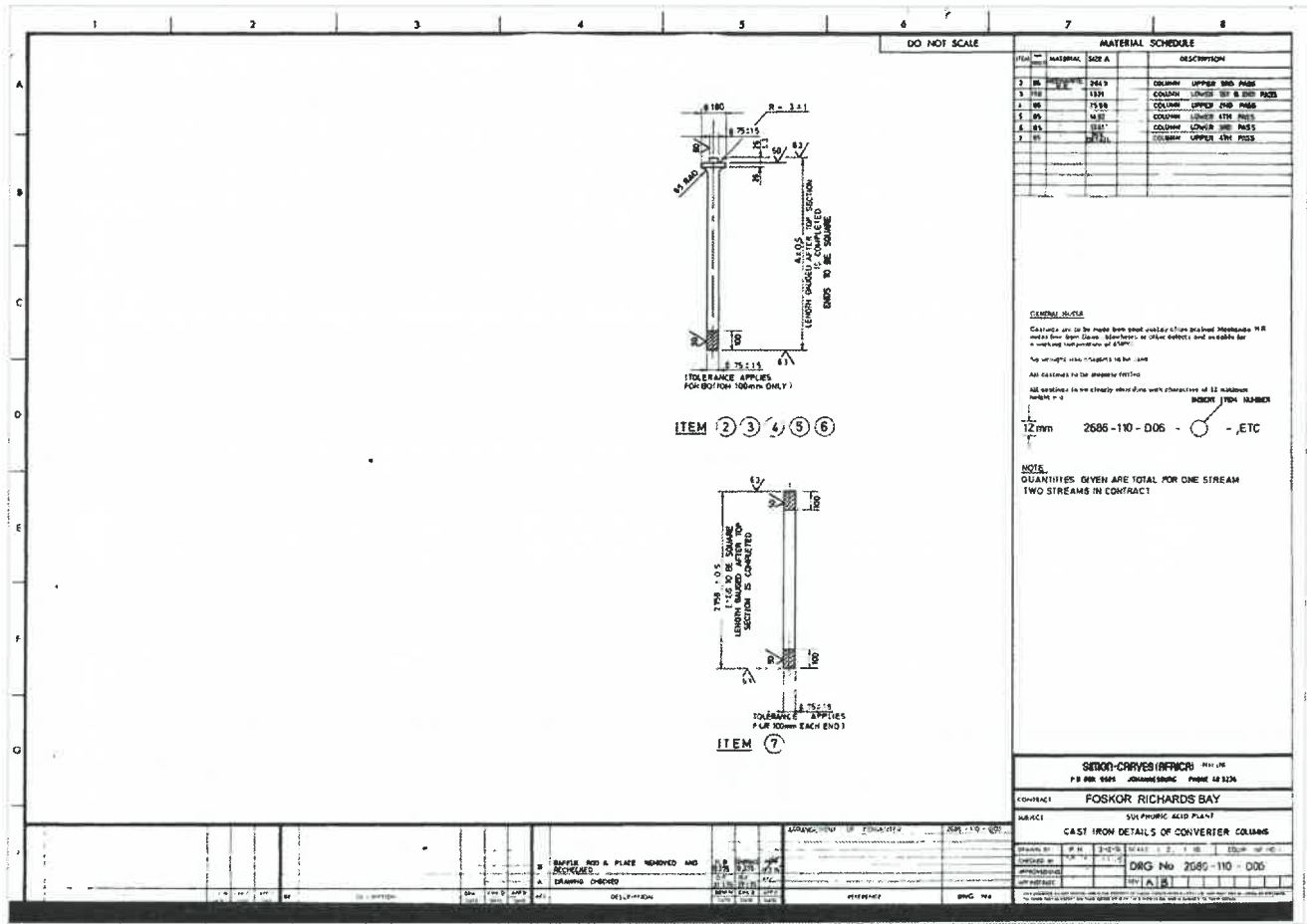
Converter grids 1st pass



Converter grids 2nd, 3rd & 4th pass



Converter support columns



- NB* All support column shoulders diameters to be increased by 30mm (New $\phi=190\text{mm}$)
- To remove shoulder from the support columns (85-off) for Upper third pass.

Tender no:

Converter Division plates

