

	URS	Nuclear Project Management
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Title: **Civil Services to develop and construct facilities for the RPVCH replacement project**

Document Identifier: **NPM21/008**

Alternative Reference Number: **N/A**

Area of Applicability: **U**

Documentation Type: **TS**

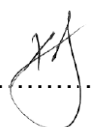
Revision: **1**

Total Pages: **21**

Next Review Date: **N/A**

Disclosure Classification: **CONTROLLED DISCLOSURE**

Compiled by

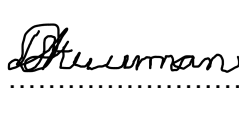


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ADDITIONAL CLASSIFICATION INFORMATION

Business Level:	3
Working Document:	1
Importance Classification:	N/A
NNR Approval:	No
Safety Committee Approval:	No
ALARA Review:	No
Functional Control Area:	Reactor Pressure Vessel Closure Head, Nuclear Project Management

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1 INTRODUCTION

Koeberg Nuclear Power Station (KNPS) will be replacing the Unit 2 Reactor Pressure Vessel Closure Head (RPVCH) with Control Rod Drive Mechanisms (CRDMs) and In-core Instrumentation System (RIC) connection cables in outage 225. The RPVCH with CRDMs and RIC connection cables project itself is divided into 6 work packages. Work package 6 pertains to the RPVCH installation and commissioning, and in order to support the RPVCH replacement project, a number of facilities and infrastructure need to be developed and constructed.

The Low Level Waste (LLW) Storage complex (HQB) at Koeberg Nuclear Power Station (KNPS) is used for the interim storage of low and intermediate level waste drums, prior to shipment and ultimate disposal at Vaalputs. The project team intends to temporarily store the RPVCH with CRDMs in the Low Level Waste Building until it is shipped off to Vaalputs for final disposal.

The LLW Building entrance for the RPVCH haulage is not high enough for the component and the selected self-propelled modular transporter (SPMT) to enter. Alteration to the entrance of the HQB is thus required. An area will be made available in the LLW Building for the temporary storage of the RPVCH with CRDMs. Temporary shielding by means of movable concrete shielding panels similar to those being used for Unit 1 RPVCH currently stored in the LLW Building will be required. The civil works required to carry out the moving and storage of the old Unit 2 RPVCH is divided into two work packages as listed below:

- Work package 01: Modification of the LLW Building and Supply of Concrete Shielding Panels.
- Work package 02: Refurbishment of the R.O. Building.

1.1 PROJECT PURPOSE

The project purpose is to specify all civil activities required for the RPVCH Project.

1.2 SCOPE

The scope of this document shall cover the following civil activities:

Controlled zone area

- The permanent enlargement of the LLW main equipment entrance opening.
- Removal of the old door and Installation of a new door at the main entrance into the LLW building.
- Removal of the door supported by a rail anchored on the overhead reinforced concrete beam.
- Removal of the overhead reinforced concrete beam inside the LLW building.
- Installation of a removable structural steel beam in the place of the removed overhead reinforced concrete beam.
- Reinstatement of the door to the overhead structural steel beam.
- Modify existing panels to have coverage of up to a height of 5.5 meters.

Non-Controlled zone area

- Refurbishment of R.O. Building outside the LLW building.

1.3 Applicability

This document is applicable to all civil works for the RPVCH with CRDMs and RIC connection cables project at the Koeberg Operating Unit (KOU) and should only be used in that context.

1.4 Effective date

This URS shall be effective from date of authorisation.

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2 REFERENCES

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.1 Normative

- [1] 14/12/16/3/3/2/947/AM1: Environmental Authorisation in Terms of the National Environmental Management Act, 1998: GN R. 982/983/984/985: Construction of a Used Fuel Transient Interim Storage Facility at Koeberg Nuclear Power Station, Western Cape
- [2] 32-418 Rev. 4 Working at Heights Standard
- [3] 32-520 Rev. 3 Occupational Health and Safety Risk Assessment Procedure
- [4] Construction Regulations – 2014
- [5] Construction Regulations Act 18 of 2003 To be removed- Non existent
- [6] ISO 9001 Quality Management Systems – Requirements
- [7] KAA-578 Rev 6 Control of Welding, Grinding, Cutting And Hot Work Operations
- [8] KAA-611 Rev. 9 Emergency Mustering, Accountability and Evacuation
- [9] KGA-067 Rev. 7 SHE Risk Assessment Guide
- [10] KGA-073 Rev. 6 SHE Specification Guideline
- [11] KAA-866 Rev. 0 The Management of Incidents, Occupational Injuries and Diseases at Koeberg Nuclear Power Station
- [12] National Building Regulation and Building Standards Act, Act No 103 of 1977
- [13] 331-86: Design Changes to Plant, Plant Structures or Operating Parameters.
- [14] Guide for Classification of Plant Components, Structures and Parts
- [15] KAA-501: Project Management Process for the Koeberg Nuclear Power Station Modifications 331-134: Screening and Safety Evaluation Guide
- [16] KAA-502: project management process for new building and civil projects and changes to existing building and civil projects at Koeberg nuclear power station

2.2 Informative

- [17] SANS 1200 (SABS 1200) Series Standardized specification for civil engineering construction: Concrete (structural)
- [18] SANS 10400: The application of the National building Regulations – All Parts
- [19] OHS Act: Occupational Health and Safety Act No. 85 of 1993 and not as OHSA No 85/93
- [20] SANS 10100: All Parts – The structural use of concrete
- [21] SANS 2001 – Construction works (All Relevant Parts)
- [22] KBA00A1C01001: Koeberg Site Data
- [23] 0.46/4576 – Low Level Waste Building Elevation on Walls
- [24] 4600062954E/C 01063 – VHR-INST - 4600062954 – Early Warning concerning the dimensions of the Low Level Waste Building door
- [25] KBA 06 03 Y60 1000 – HQB (Low Level Waste) General Layout
- [26] SANS 10142-1: The Wiring of Premises: Part 1 – Low Voltage Installations)

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3 DEFINITIONS AND ABBREVIATIONS

3.1 Definitions

Term	Description
<i>Contractor</i>	A person, company, or firm (or his sub-supplier or sub-Contractor) who holds a contract for carrying out the works and/or the supply of goods or services in connection with the project.
Employer	A legal entity that controls and directs a servant or worker under an express or implied contract of employment and pays (or is obligated to pay) him or her salary or wages in compensation
Engineer	The person, company, department or group which will conduct the quality control (QC) of the works.
Project Team	The RPVH project team, whom form the Employer and ultimate modification of the LLW Building, construction of the concrete slab/plinths and modification of LLW shielding wall

3.2 Abbreviations

Abbreviation	Description
ACP	Access Control Point
CRDMs	Control Rod Drive Mechanisms
CoC	Certificate of Conformance
FFD	Fitness For Duty
HQB	Storage complex
KNPS	Koeberg Nuclear Power Station
LLW	Low Level Waste
MSDS	Material Safety Data Sheets
OHS	Occupational Health and Safety
PPE	Personnel Protective Equipment
PQP	Project Quality Plan
QMS	Quality Management System
RPVH	Reactor Pressure Vessel Head
RPVCH	Reactor Pressure Vessel Closure Head
RP	Radiation Protection
SANS	South African National Standard

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Abbreviation	Description
SHE	Safety Health and Environment
URS	User Requirement Specification
WP	Work Package

4. SPECIFIC REQUIREMENTS

4.1 Licencing Requirements

There are no licencing requirements associated with this scope of work.

The project management requirements specified in KAA-502: Project management process for new building and civil projects and changes to existing building and civil projects at Koeberg nuclear power station [16] are applicable for this project.

4.2 Environmental Impact

- No harmful material will be used in the material specified for the installation.
- No harmful material will be used during installation.
- Standard construction waste will be generated during the installation. Therefore, waste generated shall be managed in accordance with Radiation Protection requirements where applicable.

5 ENVIRONMENTAL CONDITIONS

5.1 Normal Environment:

Temperature : Ambient Conditions
Pressure : Ambient Conditions
Humidity : Ambient Conditions
Radiation : Ambient Conditions around the LLW building
Corrosion : Marine environment, aggressive corrosion

5.2 Accident Environment

Temperature : Ambient Conditions
Pressure : Ambient Conditions
Humidity : Ambient Conditions
Radiation : >10 000 $\mu\text{Sv/h}$ (basis is that this is the lower limit of a red zone)

5.3 Nuclear Safety

- The works required on the LLW building are classified as minor works and as such it is expected that the structural integrity of the building will not be negatively affected which in turn may result in radioactive releases to the external environment. This does not apply to the R.O. Building (Work Pack 2).
- A visual assessment was performed as well as a study of the structural drawings to ensure that no structural members are negatively affected by the implementation of these works.
- Note that all *Contractor* staff working in the LLW Building will be required to undergo the specified Radworker training before they are allowed to enter the area.

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5.4 Conventional Safety

Normal Construction Regulations shall govern the construction works during implementation of this project to ensure Occupational Health and Safety (OHS) standards are adhered to.

5.5 Impact on Original Design Bases

The main equipment entrance door shall be enlarged to meet the dimensional requirements of the RPVCH replacement project (Refer to Figure 1). In addition, the overhead beam adjacent to this entrance shall be removed to make way for the haulage of the RPVCH. However, the structural integrity of the building will not be negatively impacted by these changes.

5.6 Risk Assessment

A risk assessment is to be completed by the appointed Safety Health and Environment (SHE) agent prior to the commencement of construction. However, the following risks on the project should be noted:

- Construction methodology, inspection and test plans as well as general safety plans are to be approved prior to any construction work commencing.
- The *Contractor* to remain responsible for all temporary works, bracing of structural steel, etc. It is also required for the erection of the structural steel works and any operations required for the construction.

6. DESCRIPTION OF THE WORKS (Work Package 01 & 02)

6.1 WORK PACKAGE 01: Modification of the LLW Building and Supply of Concrete Shielding Panels.

In order to store the RPVCH in this area the following work activities are required to be executed by the *Contractor* (Refer to Appendix A & B below for graphical representation):

- 6.1.1 Removal of the existing door at gridline DI (Roller shutter door).
- 6.1.2 Permanent increment of the height of the door opening at gridline DI from 4,5 m to 6 m.
- 6.1.3 Permanent removal of the overhead reinforced concrete beam (500 mm x 5000 mm) at gridline EI and replacing with a removable structural steel beam (PFC 300x100).
- 6.1.4 Removal of existing door at gridline EI (Metal Sliding door).
- 6.1.5 Coating of the newly repaired concrete area by hydrophobic coating or equivalent (coating must be applied on both sides of the wall and extend 1 m beyond the repaired area).
- 6.1.6 Coating of the structural steel beam and associated anchorage.
- 6.1.7 Installation of a new door at gridline DI.
- 6.1.8 Reinstatement of the door at gridline EI.
- 6.1.9 Construct and deliver to the LLW Building, 8 off 1500 mm wide by 5,500 mm high precast concrete shield panels that will serve as shielding partitions to the balance of the LLW Building. Refer to concept drawing for Shielding Panels in Appendix C.

6.2. WORK PACKAGE 02: Refurbishment of R.O. Building

- 6.2.1 Cleaning/rubble removal from R.O. Building and surrounding area (up to 5 m from building perimeter). Overgrowth to be cut and removed.
- 6.2.2 Missing asbestos sheets are to be replaced with glass fibre sheets of a similar profile. The interior surfaces of all existing sheets on the building are to be sprayed with a suitable sealer in order to prevent any discharge of fibres/dust. No cutting, drilling, breaking of asbestos sheets or any other action which could cause the generation of asbestos dust or fibres shall be carried out.
- 6.2.3 Break out pump/machine plinths to level with floor.

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- 6.2.4 Fill all cable trenches with mass concrete and apply a 50 mm screed over entire floor. Mass concrete fill to be 30 MPa. The finished floor to be smooth and even and capable of carrying the anticipated loads (including the operations of a 7 Ton forklift).
- 6.2.5 Inspect and repair 2 x steel frame double doors. Doors to be repaired and re-hung if necessary and must swing freely and be lockable by means of a padlock.
- 6.2.6 Install industrial grade steel shelving (floor standing approximately 8 m (w) X 2 m (h) – 4 shelves - 50 kg/m load) in Filter Storage Room.
- 6.2.7 Install 1 X 2 Ton – 3 m industrial grade chain block. To be certified and approved by Koeberg Rigging Department. To be installed in a position to be indicated by the Employer's representative.
- 6.2.8 Electrical Works in RO Building as per detail in Section 9.1.3 below.
- 6.2.9. Complete installation for the smoke & fire alarm systems as per accepted Employer requirement.

6.3 Site Visit Requirement.

- 6.3.1 Prospective Contractors will be required to attend a site meeting three days after issuance of this enquiry.

6.4 Schedule of Works.

- 6.4.1 Prospective Contractors shall submit a high-level activity schedule with their quotations.
- 6.4.2 Commencement and completion dates: The *Contractor* shall commence Works on site by no later than 21 February 2022 and all Works shall be completed by 28 March 2022.
- 6.4.3 All Works on the LLW Building will be carried out during KNPS Outage operations and must be planned so as not to negatively affect the operations of the Radwaste Department in the building.
- 6.4.4 Prospective Contractors must note that timeous completion of the Works on both the LLW and RO Buildings is critical to the envisaged contract. Planning must allow for all possible risks and contingencies.

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7 CONSTRUCTION

7.1 Quality Requirements

7.1.1 The works shall be performed in accordance with the *Contractor's* Quality Management System (QMS), which is to be reviewed and approved by the Employer before the commencement of the works.

7.1.2 The *Contractor* shall provide the Employer with a Project Quality Plan (PQP) which is to be reviewed and approved by the Employer before commencement of the works.

7.2 Classification Summary of the Construction Works

7.2.1 The proposed classification of the structure and the ancillaries are:

Specification required: YES (Construction Drawings will be provided)
Quality Level : Q1 (Q3 for RO Building Works)
RD-0034 Safety Level : L3

Note: All designs and design alterations shall be signed off by an ECSA registered Professional Engineer.

7.3 Interfaces with Existing Plant

No interfaces. However, the *Contractor's* modifications is not allowed to affect the existing infrastructure.

7.4 Environmental Considerations during construction

The expected waste during construction and the management of the waste is summarized in table 1 below:

Table 1: Waste Management during Construction

Waste Type	Measure to reduce the amount of waste	Type of Storage	Responsible Party
Imported fill (if required)	The quantities of the material shall be carefully calculated to minimise waste	Left over material shall be returned to the supplier	<i>Contractor</i>
Concrete	The quantities of the material shall be carefully calculated to minimise waste	None. Ready mix concrete shall be used.	<i>Contractor</i>
Reinforcement Steel	The quantities of the material shall be carefully calculated to minimise waste	Recycling of all waste shall be pursued	<i>Contractor</i>
Other materials	The quantities of the material shall be carefully calculated to minimise waste	Reuse of all left over material	<i>Contractor</i>

8 QUALITY ASSURANCE

In all cases, the applicable SANS standards shall be adhered to. Where any discrepancies exist between the design or works information and relevant SANS standards is noted, the SANS standard

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shall govern. The *Contractor* shall inform the Project Team immediately when discrepancies are observed.

8.1 Quality Control Requirements

8.1.1 The *Contractor* shall develop a (Quality Control Plan) QCP for all activities to be performed on-site.

8.1.2 The QCP shall reference all applicable quality management documentation that the *Contractor* might have, and relevant codes and standards where test activities are performed.

8.1.3 All material on site shall have a certificate of conformance (CoC) from the supplier.

8.1.4 The Employer shall review, add intervention points and accept the QCP prior to any activities being performed on-site.

8.1.5 Intervention points shall include but shall not be limited to Hold Points, Witness Points and Review Points. Different terminology may be used by the *Contractor* in accordance with his QMS.

8.1.6 The *Contractor* shall allow the Employer to perform quality oversight as per the accepted QCP's.

8.1.7 The *Contractor* shall provide the Employer with a detailed program with weekly updates of progress reports.

9 INSTALLATION

The installation of this works shall strictly be done in accordance with applicable specifications such as design drawings and associated notes, project specifications and all other relevant SANS standards. When further uncertainties exist, the *Contractor* shall inform the Employer timeously, i.e. during the planning phase, to avoid any delays and compensation events.

8.1 Civil and Structural requirements:

Modification, performed by the *Contractor*, of the LLW building main Equipment entrance door shall meet the following requirements:

9.1 Concrete Works

9.1.1 Works required on Gridline DI

The works required on Gridline DI, i.e. the main entrance/ opening in the structure are described below, and will be performed by the *Contractor* and inspected by Employer's Agent accordingly. The *Contractor*:

- Marks out the affected area that requires breaking out of the concrete as indicated in Figure 1 below. The area to be broken out is approximately 1m (Height) × 5 m (Width) × 0.5 m (Thickness) reinforced concrete.
- Removes the existing roller door and break out the concrete.

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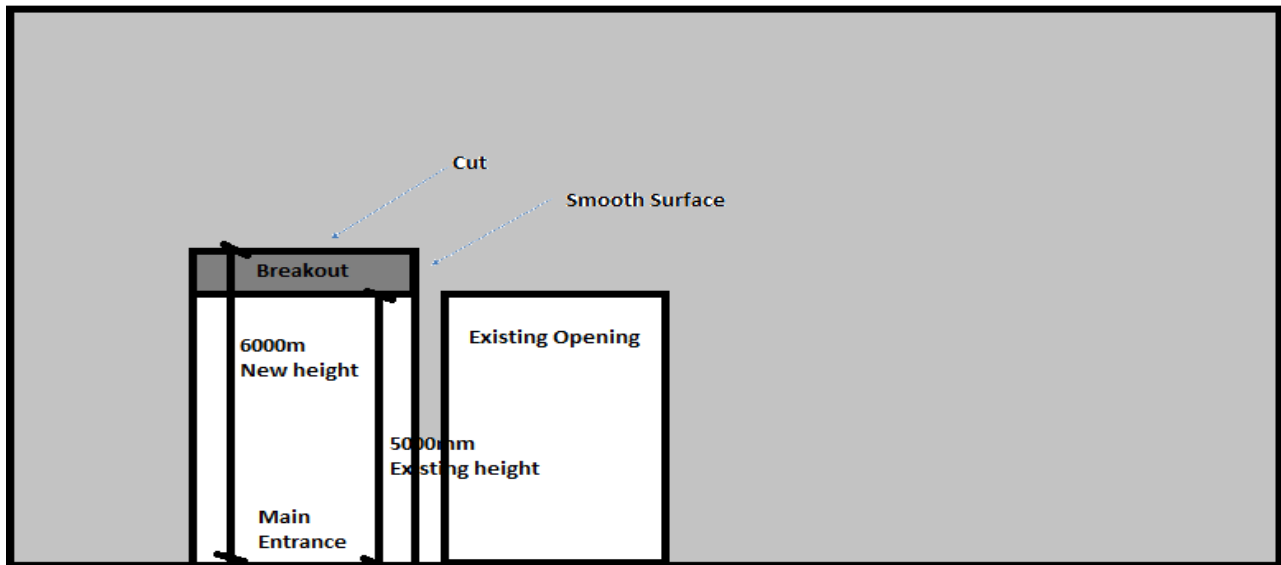


Figure 1: Marking out of the LLW Building Outer Wall (Gridline DI)

- Takes caution and ensure that no damage is inflicted on the immediate surrounding areas during execution of the works.
- The anticipated concrete strength of the affected area is 35 MPa which may have since increased over the years after commissioning of the building.
- After breaking out of concrete and cutting of in situ rebar in the affected area, the area is prepared, by the *Contractor*, for reinstatement of the concrete cover using an approved repair mortar. The concrete cover to be used is 50 mm.
- Provides the finishing similar as existing.
- After curing of the repair mortar, coats the newly repaired area with corrosion resistant coating on the both the internal and external surface of the affected area.
- Executes concrete works in accordance with relevant SANS 2100 standards and manufacturers specifications.
- Submits all proposed products, to be used in the works, to the Employer's Agent for review and acceptance before commencement of any works can take place.
- Submit detailed method statements, Quality Control Plans and Risk Assessments for all the work activities to the Employer's Agent prior to implementation of the works for review and acceptance.
- All installation works shall be the responsibility of the *Contractor*.

9.1.2 Works required on Gridline EI

The *Contractor*:

- Removes door rail and associates anchored on overhead beam in gridline EI.
- Breaks/Cuts out the overhead reinforced concrete beam on gridline EI as indicated in figure 2 above.
- Cuts through the entire section of the beam and remove the entire beam safely.
- The *Contractor* shall take caution and ensure that no damage is inflicted on the immediate surrounding areas during execution of the works.

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- Marks out and prepare the area where the new overhead removable steel beam is to be installed in accordance with requirements in drawing KBA 0003Y001000 Doc No: 136463– Overhead Beam (Low Level Waste Building) seen in Appendix 4.1.
- Sets out the coordinates and levels of bolts before installation.
- Installs removable overhead steel beam in accordance with drawing specification KBA0003Y001000 Doc No: 136463-Overhead beam (Low Level Waste Building) seen in Appendix 4.1.
- All structural steel, provided by the *Contractor* shall be Grade S 355 JR.
- All steel works, performed by the *Contractor*, shall be coated in accordance with 331-170: Requirements for protective coatings for use at Koeberg Power Station.
- All the steel works to be done in accordance with SANS 2001-CS1 Structural Steelwork.
- Submits detailed method statements, quality control plans and risk assessments for all the work activities to the client prior to implementation of the works, to the Employer's Agent, for review and acceptance.
- All installation works shall be the responsibility of the *Contractor*.

9.1.3 Works at RO Building

- Breaks out all concrete pump bases/other down to floor level.
- Removes any existing cables/other materials and rubble from the cable trenches and floor.
- Fills the cable trenches with concrete to floor level.
- Pours and floats to a smooth surface a concrete screed of at least 50mm thick.

Electrical Works in RO Building

- Replace existing fluorescent fittings with LED tubes to provide similar levels of illumination.
- Installation of 6 x 15A, 230V plug-points and internal reticulation.
- Smoke detectors: Check and repair/replace existing.
- Installing all necessary equipment systems to provide the appropriate power supply to the R.O. Building from the existing transformer. This would include the necessary cabling, equipment and switchgear required to link the transformer to the internal distribution board (DB to be provided by the *Contractor*).
- Complete earthing resistance test report.
- Provide all rigging requirements (if required).
- Provide all scaffolding requirements (if required).
- Special tools that may be required.
- Materials list to be maintained and issued on completion of work.
- All work and installations to be done in accordance with relevant SANS Standards (See SANS 10142-1: The Wiring of Premises: Part 1 – Low Voltage Installations).

VERIFICATION AND TESTS

The following verifications and test are to be performed by the *Contractor*: Verification and tests applies to the LLW Building.

- The *Contractor* shall measure the clear distance between the supports before and after removal of the beam and confirm opening of 5 m is still achieved.
- The *Contractor* shall inspect the affected areas prior to commencement of the works for cracks and notify the Employer. The *Contractor* shall ensure that the affected areas and surrounding are free of cracks after completion of the works.

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- Installations shall be inspected and tested in accordance with the project specifications, reference documentation, detailed drawings and the manufacturer's specifications, instructions and recommendations.
- Verify concrete placing and test records including:
 - slump tests verification against concrete mix designs
 - concrete cube tests records to verify compressive strength of hardened concrete
- Verify that the curing of concrete (in accordance with approved curing method statement), is done immediately after the concrete is placed.
- Verify that all concrete defects are repaired subsequent to the removal of formwork.
- The Site supervisory authority is to provide an occupation certificate after all works, verifications and testing has been completed and approved.

10 GENERAL REQUIREMENTS

10.1 Safety, Health and Environmental Requirements

- The *Contractor* shall at all times adhere to the site safety requirements and all national legislation including the OHS Act [19].
- The *Contractor* shall conduct safety risk assessment for all the proposed activities on site and document all mitigation measures that will be implemented.
- The *Contractor* is to appoint all relevant safety personnel as required by the Construction Regulations.
- The information above shall be in a form of a safety file which shall be submitted to the Employer for acceptance prior to commencement of work.
- All personnel working on site are expected to have the correct Personnel Protective Equipment (PPE). Suitable protective equipment shall be worn at all times to prevent the spread of Covid-19. The *Contractor* is responsible to supply all his staff with the required safety equipment prior to the start of the works.
- The *Contractor* shall ensure provision is made for the collection of waste generated from the site by use of a skip that shall be monitored and emptied in an approved waste dump.
- The *Contractor* shall be responsible for maintaining a clean and tidy construction site, ensuring that the site is kept clean on a daily basis.
- Proper construction sign boards shall be displayed at the site at all times.
- The site shall be barricaded at all times.
- As there will be drilling and cutting operations at the site, a hot work permit shall be required. This permit will be provided by the Employer and the *Contractor* must request this 24 hours before any work requiring a hot work permit may commence. Also note, a hot work permit is only valid for three days.
- All chemicals used on site shall be CRACK approved and accompanied with the necessary Material Safety Data Sheets (MSDS).

10.2 Risk Management Requirements

- As part of risk management, the *Contractor* is expected to visit site to verify all information supplied in documents prior to tender.
- The *Contractor* must familiarise himself with the Employer processes especially the KAA-502 process.

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10.3 Statutory/Legal Requirements

- All personnel on site shall be subjected to police clearance which might take time to be approved. It is expected that the *Contractor* shall manage this process and ensure that personnel used for the works have the necessary police clearance and prevent avoidable delays.
- All personnel shall be subjected to a site access training (or fitness for duty (FFD) training) followed by a written exam in English. The *Contractor* is advised to use appropriately skilled personnel taking account of these requirements.

10.4 Site and Logistics Requirements

- The KNPS is a nuclear site and as such has certain specific access requirements. The *Contractor* is expected to familiarise himself with the necessary restrictions.
- The Client's representative will accompany the *Contractor* on the initial site visit and on successful placement of the contract. The Client's representative will arrange access. After completion of the generic training as stipulated, the *Contractor* will be issued with a personal Identification Access Card. All the relevant information to complete the security access application form must be submitted timeously for approval.
- All vehicles accessing site will be subjected to security inspection which takes some time to complete. The *Contractor* needs to factor this in their work schedule.
- All vehicles entering the KNPS site shall have all the necessary safety features (e.g. safety belts, proper registration/be registered to be on the road etc.). No personnel may be transported in the back of heavy or light duty industrial vehicles.

10.5 Documentation Requirements

The *Contractor* shall provide the following documentation:

- Marked-up drawings which can be captured as 'As-Built Drawings'
- The *Contractor* shall use the 'Issued for construction' pack drawings and mark-up the As-Built conditions.
- The mark-up shall be conducted on a copy of the original document in a neat and legible manner with colour indicating; Red – Add Detail, Blue – Remove Detail and Green – Representing Comments.
- All drawings shall be provided to the Employer in Native (.dxf or .dwg format) and pdf form.
- The *Contractor* shall update all existing Employer drawings and generate the required drawings as appropriate.
- Technical (design review comments) shall be captured using the DCRF format.
- All drawings, data and technical documents supplied to the Employer by the *Contractor* or any supplier shall be in the English language with SI System of measurements. The drawings, data and technical documents shall be submitted in accordance with requirements stated in this specification.
- All detailed design drawings, assembly- drawings and as-built drawings shall be supplied in accordance with 331-86 [13].
- Hard copies of documents submitted for review and approval shall be in the form of sets of clear, legible, full-size paper copies of reproducible quality. Hard copies of final submittal of *Contractor's* documentation shall be in the form of a clear, legible, full-size paper (A0) copy of reproducible quality suitable for microfilming.

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- Electronic media shall be in a format fully compatible with the following software (latest version in use by the Employer at the time of delivery):

Processing:	Microsoft Word
Database:	Microsoft Access
Spreadsheets:	Microsoft Excel
Photogrammetry 3D drawings:	Electronic files compatible with Microstation
Digital photographs:	JPEG format
Drawings:	DWG/DXF/DGN format
- Electronic copies of documents for review and approval shall be provided in searchable pdf format on a USB-drive apart from and in addition to the hard copies.
- All drawings including graphs and figures larger than A4 submitted for Employer's review and approval shall be in the form of hard copies and electronic media (Adobe Acrobat format, PDF) Final hard copies of drawings shall be submitted.
- All drawings to be created using CAD software such as Bentley Micro Station (preferred CAD software).

11 EMPLOYER SCOPE OF SUPPLY

Employer shall supply the following in support of the work scope:

- Security access permits where required.
- Fitness for duty (FFD) training.
- Supply point for potable water connection on site.
- Supply point for electricity on site.
- Provide a connection point for the installation/ connection of construction site ablution facilities.
- Provide to the *Contractor* all completed and partially completed designs for this scope of works, all changes to the LLW Building by the *Contractor* must be within the Employer's design envelope.

12 SHIFT REGIME

Normal working hours:

Monday to Thursday: 07h35 am until 16h35 pm

Friday : 07h35 am until 13:30 pm

Non-working times:

10h00 – 10h15 am; 12h15 – 12h50pm excluding Fridays.

Note: All other hours are subject to Employers approval.

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14 PROJECT TEAM CONCURRENCE

This document has been seen and accepted by:

Name	Designation
Tshetlwane Moila	Civil Engineer
Xoliswa Motlhale	Project Manager
Letitia Geldenhuys	Design Engineering
Ngoako Mashao	Radiation Protection
Namhla Mphupu	Facilities Manager
Claire Nel	OH&S
David Stuurman	NPM Civil Manager

15 REVISIONS

Date	Rev.	Compiler	Remarks
January 2022	1	NPM	Include R.O. Building modification and remove Options.

16 APPENDICES

Appendix A: Plan View of the LLW complex (Gridline EI and DI)

Appendix B: Elevation view of the LLW building and affected areas

Appendix C: Shielding Barriers

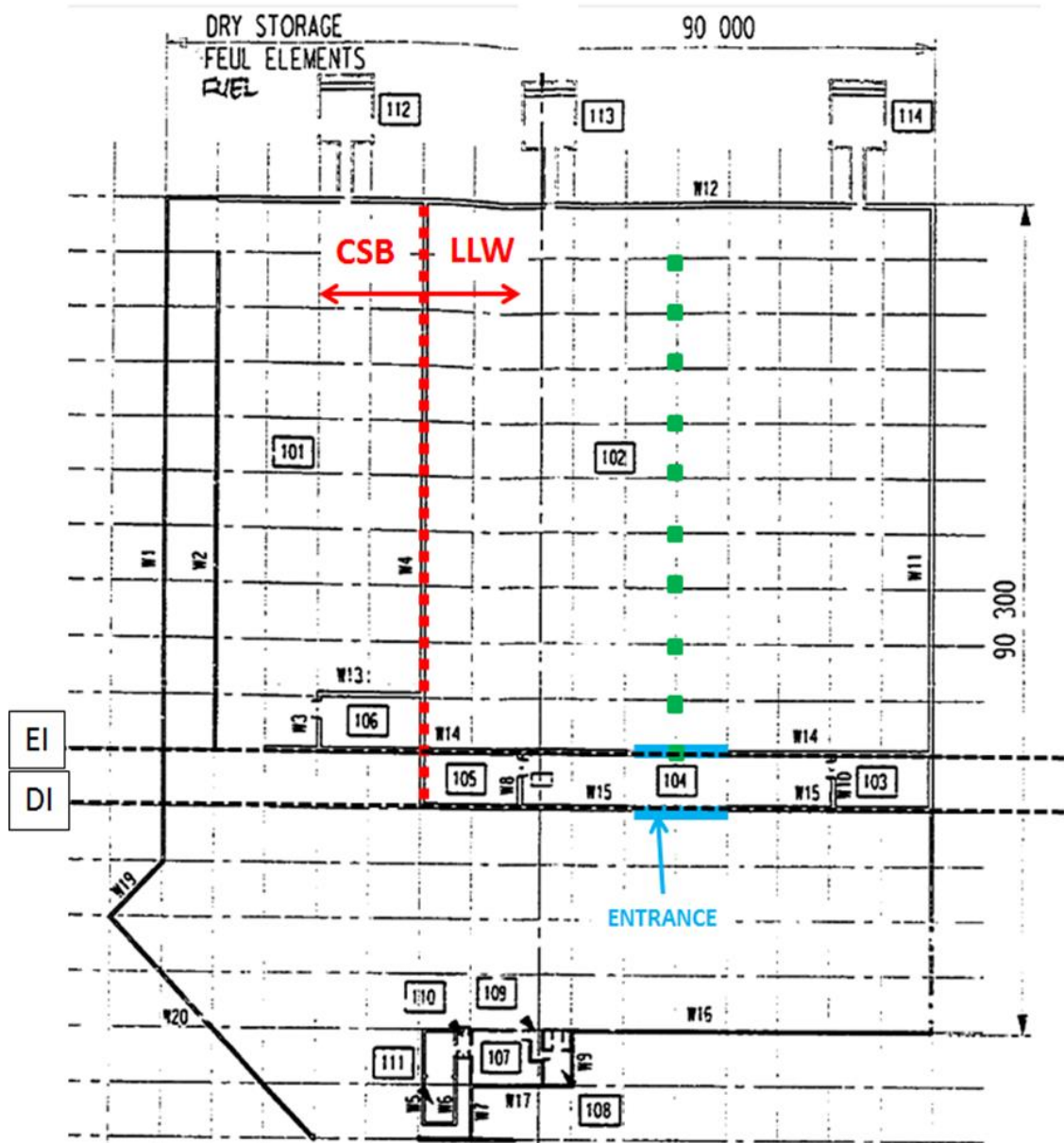
Appendix D: R.O. Building Electrical Works

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Appendix A: Plan View of the LLW complex (Gridline EI and DI)

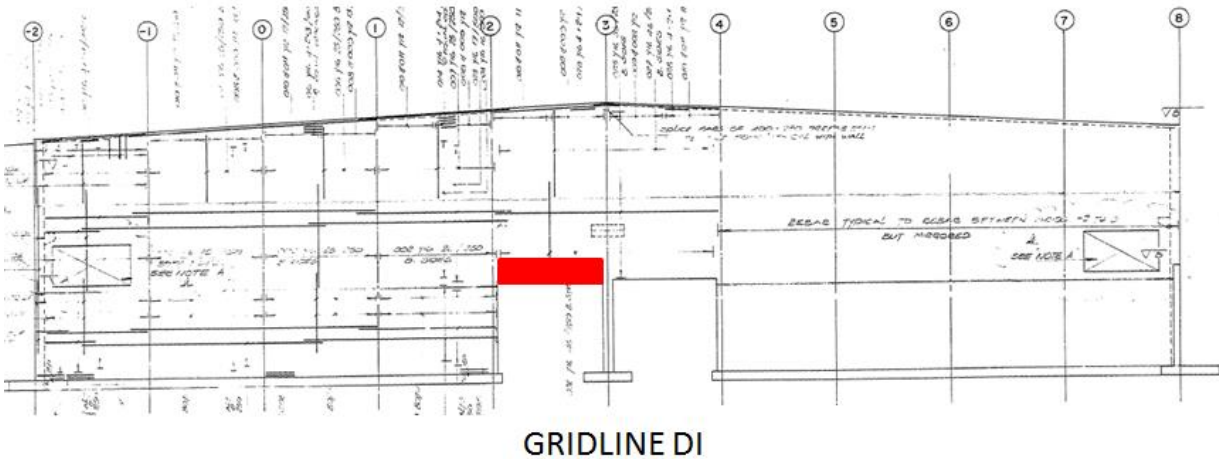
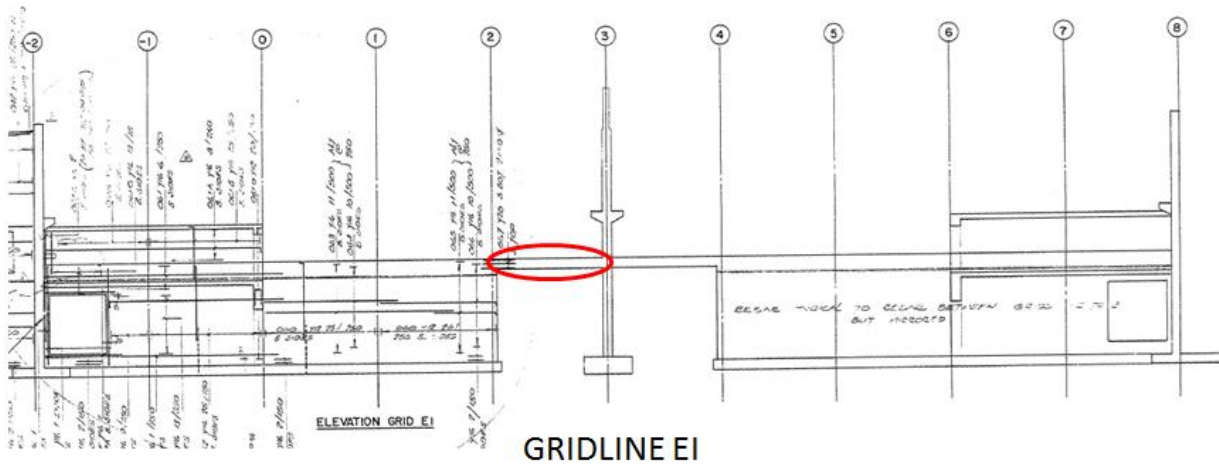


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APPENDIX B: Elevation view of the LLW building and affected areas

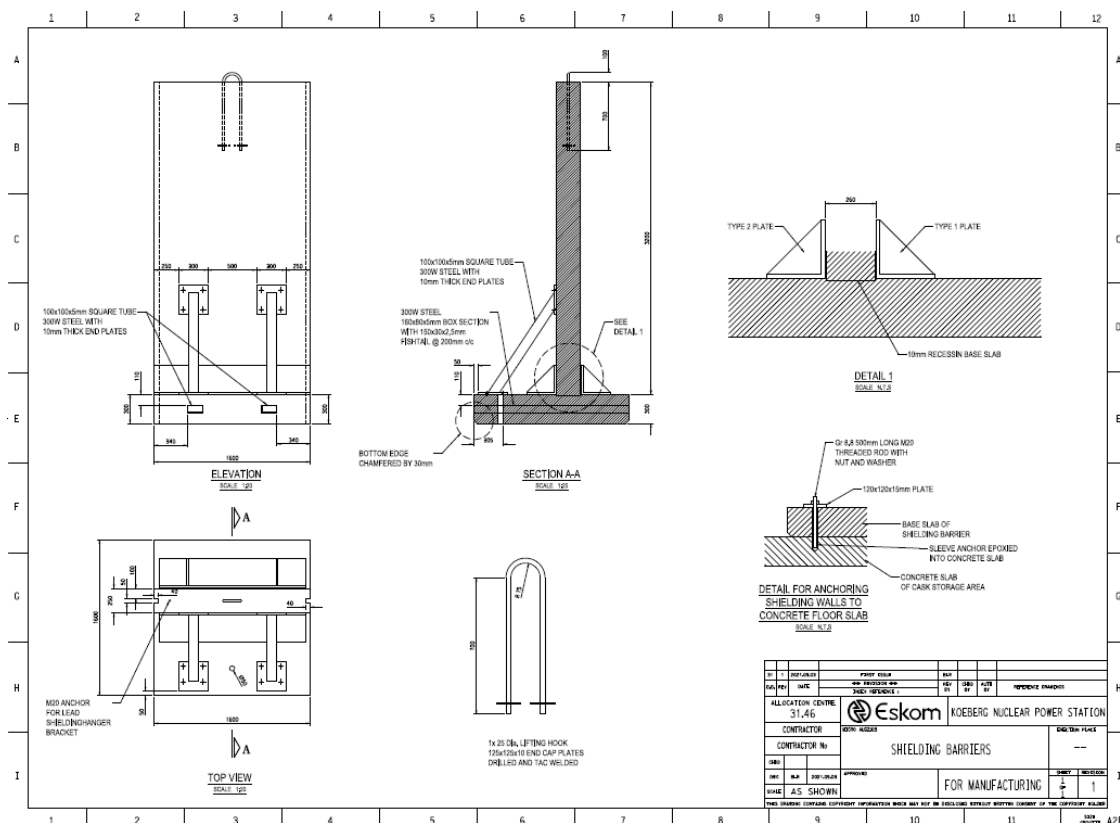


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APPENDIX C: Shielding Barriers

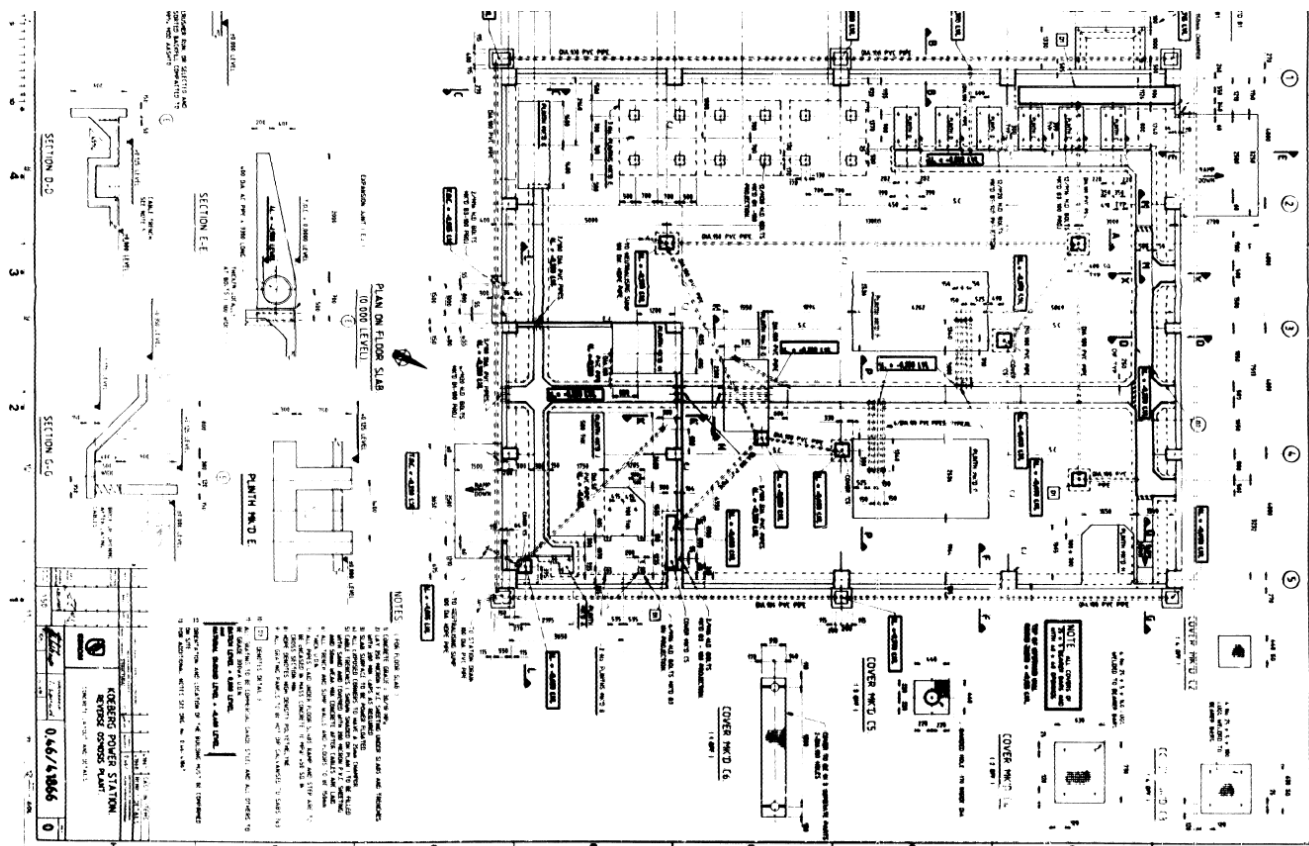


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APPENDIX D: R.O. Building Plan View.



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