DEPARTMENT OF WATER AND SANITATION

DUE AT 11:00 ON

(CLOSING DATE: 29 NOVEMBER 2022)

DWS08-1022 (WTE)

THE DRILLING AND BLASTING FOR DAM FOUNDATION EXCAVATION AND SLOPE PROTECTION FOR THE CLANWILLIAM DAM IN THE WESTERN CAPE PROVINCE

CIDB CONTRACTOR GRADING DESIGNATION OF CIDB 9SC OR CIDB 9SE OR HIGHER

SUBMIT BID DOCUMENTS TO:

POSTAL ADDRESS:
DIRECTOR-GENERAL:
WATER AND SANITATION
PRIVATE BAG X313
PRETORIA, 0001

OR

TO BE DEPOSITED IN:
THE BID BOX AT THE ENTRANCE
OF ZWAMADAKA BUILDING
157 FRANCIS BAARD STREET
PRETORIA, 0001

Compulsory Briefing Session
Date: 10 November 2022
Time: 10:00am
Venue: Clanwilliam Dam Site

BIDDER: (Company Address OR Stamp)

COMPILED BY: DEPARTMENT OF WATER AND SANITATION: CONSTRUCTION SOUTH

TENDER DOCUMENT

(Based on General Conditions of Contract for construction works. (3rd edition 2015) (GCC)

DEPARTMENT OF WATER AND SANITATION

DWS08 - 1022 (WTE)

THE DRILLING AND BLASTING FOR DAM FOUNDATION EXCAVATION AND SLOPE PROTECTION FOR THE CLANWILLIAM DAM IN THE WESTERN CAPE PROVINCE

CIDB CONTRACTOR GRADING DESIGNATION OF

CIDB 9SC OR CIDB 9SE OR HIGHER

Tender document created date: 28 June 2022

Issued by:
Department of Water and Sanitation
Zwamadaka building
157 Francis Baard Street
Pretoria
0001

Prepared by:
Clanwilliam dam Construction
Raising of Clanwilliam dam Project
Construction South
Department of Water and Sanitation

Administrative Contact:
Email: bidenquirieswte@dws.gov.za

Technical Contact:
Mr. M. Rohrs
Email: rohrsm@dws.gov.za
OR
Mr. A. Frylinck
Email: frylinckA@dws.gov.za

Employer or employer's agent compiles procurement documents, which establish:

- draft terms and conditions, including the basis upon which the contractor will be remunerated for the completion of an activity, deliverable or attainment of a milestone;
- what is to be provided; and
- requirements and constraints relating to the manner in which the work is to be executed.

Tenderers obtain procurement documents in response to employer's invitation to do so and prepare response to terms, conditions, constraints and requirements.

Tenderers compile tender **offer** and submit them to the employer.

Employer or employer's agent evaluates tenders, identifies successful tender, **accepts** tender offer and prepares a contract for the successful tenderer, which includes:

- agreed terms and conditions;
- what is to be provided;
- requirements and constraints relating to the manner in which the work is to be executed; and
- agreed prices for work completed.

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T1.3 Standard Conditions of Tender

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T2.1 Returnable documents and schedules

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THE CONTRACT

Part C1: Contract data

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C1.3 Performance guarantee

Part C2: Pricing data

C2.1 Pricing Instructions

C2.2 Bill of Quantities

Part C3: Scope of work

C3.1 Standard Specifications

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Part C4: Site Information

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THE DRILLING AND BLASTING FOR DAM FOUNDATION EXCAVATION AND SLOPE PROTECTION FOR THE CLANWILLIAM DAM IN THE WESTERN CAPE PROVINCE

T1.1 INVITATION TO TENDER

It is estimated that Tenderers should have a CIDB Contractor grading designation of CIDB 9SC or CIDB 9SE or higher.

Documents may be downloaded from Department of Water and Sanitation website at www.dws.gov.za .Queries relating to the issue of these documents may be addressed in writing to:

- Admin Queries:
  Email: bidenquirieswte@.gov.za

- Technical Queries:
  Mr. M.Rohrs at Email: RohrsM@dws.gov.za

  OR

  Mr. A. Frylinck at Email: FrylinckA@dws.gov.za

A compulsory site clarification meeting with representatives of the Employer will take place at Clanwilliam Dam Site on **10 November 2022** starting at 10:00am.

The closing time for receipt of tenders is 11:00 hrs on **29 November 2022**. Telegraphic, telephonic, telex, facsimile, e-mail and late tenders will not be accepted.

Tenders may only be submitted on the tender documentation that is issued.

Requirements for sealing, addressing, delivery, opening and assessment of tenders are stated in the Tender Data.

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THE DRILLING AND BLASTING FOR DAM FOUNDATION EXCAVATION AND SLOPE PROTECTION FOR THE CLANWILLIAM DAM IN THE WESTERN CAPE PROVINCE

T1.2 TENDER DATA

IMPORTANT INFORMATION

PLEASE READ CAREFULLY THROUGH THE ENTIRE TENDER DOCUMENT BEFORE COMPLETING THE DOCUMENT.

TENDER AND CONTRACT STANDARDS CONDITIONS APPLICABLE TO THIS DOCUMENT

SANS 10845-1	Processes, methods, and procedures.
SANS 10845-2	Formatting and compilation of procurement documentation.
SANS 10845-3	Standard conditions of tender.
GCC	The General Conditions of Contract for Construction Works, 3rd Edition (2015), published by the South African Institution of Civil Engineering.

INSTRUCTIONS TO BIDDERS

All recipients of these bid documents, whether they submit a Bid or not, shall treat the details of the documents as PRIVATE AND CONFIDENTIAL.

1. ISSUING OF DOCUMENTS

(a) Bidders must satisfy themselves that the document is complete and conform to the index of this document. Should any figures or writing be indistinct, or should any pages be missing from this document or should this document or the drawing(s) contain any obvious errors, the Bidders must immediately notify the Department in order to have any discrepancy rectified or clarified before submitting his bid. Such clarification will be valid only if made by the Department by means of formal amendment as described hereunder prior to the date of submission of bids. The Department may issue amendments to clarify or modify the Bid Documents. A copy of each amendment will be issued to each Bidder and shall be acknowledged on the form issued with the amendments. No claim whatsoever will be entertained for faults in the bid price resulting from the above-mentioned discrepancies.

(b) No alterations, omissions or additions shall be made to this document, but should it be deemed necessary to do so, the Bidder is at liberty to qualify his bid.

(c) All Bidders shall be deemed to have waived, renounced and abandoned any conditions printed or written upon any stationery used by them for the purpose of or in connection with the submission of bids which are in conflict with the conditions laid down in this document.

2. COMPLETION OF BIDS

(a) The completed tender as submitted will be deemed to be part of the contract document.

(b) The bid must be signed on Part A Invitation to Bid form (SBD 1) with all blanks filled in Part A Invitation to Bid and Part B Terms and Conditions for Bidding. All forms and schedules as per section T2.1 shall be completed in full. The documents as per section T2.2 shall be submitted. The Pricing Schedule in Section C2 of the bid document must be fully completed and priced out by the Bidder. Failure to do so will deem your bid invalid.

(c) The bid documents shall not be separated in any way, nor must any pages be detached from the original documents.

(d) Each page of the completed document that will be submitted should be initialled by the Bidder at the bottom of the page.

(e) Not make any alterations or additions to the bid documents, except to comply with instructions issued by the Department, or necessary to correct errors made by the Bidder. All signatories to the bid offer shall initial all such alterations. Erasures and the use of masking fluid are prohibited.

(f) Submit alternative bid offers only if a main bid offer, strictly in accordance with all the requirements of the bid documents, is also submitted. The alternative bid offer is to be submitted with the main bid offer together with a schedule that compares the requirements of the bid documents with the alternative requirements the Bidder proposes.

3. SIGNATURE ON BIDS

If the bid is submitted by joint venture of more than one person and/or Companies and/or firms it shall be accompanied by the following:

(a) The original or a notarial certified copy of the original document under which such joint venture was constituted which must define precisely inter alia the conditions under which the joint venture will function, its period of duration and the participation of the several constituent persons and/or companies and/or firms.

(b) A certificate signed by or on behalf of each participating person and/or company and/or firm authorising the person who signed the bid to do so.

4. DEPARTMENT NOT LIABLE FOR BIDDER'S EXPENSES

The Department will not be held liable for any expenses incurred in preparing and submitting bids, including the costs of any testing necessary to demonstrate that aspects of the offer satisfy requirements.

5. REJECTION OF BID

Bids not complying with the requirements of the tender data, specifications and clauses of SANS 10845-3 as stated below will be regarded as incomplete and will not be considered.

6. RESULTS OF BIDS

Results of non-acceptance of bids will be sent to individual unsuccessful Bidders. Particulars of accepted bids are published weekly in the Government Tender Bulletin.

T1.2.1 TENDER SPECIFIC DATA

The conditions of tender are those contained in the latest edition of SANS 10845-3, Construction Procurement – Part 3: Standard conditions of tender.

SANS 10845-3 makes several references to the Tender Data for details that apply specifically to this tender. The Tender Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the provisions of SANS 10845-3.

Each item of data given below is cross-referenced to the clause in SANS 10845-3 to which it mainly applies.

Clause number	TENDER DATA
2	**TERMS AND DEFINITIONS**
2.1	Wherever reference is made in the documentation to Bill of Quantities it shall also mean Pricing Schedule or Schedule of Quantities.
2.7	Whenever reference is made in the documentation to Employer it shall also mean Employers Agent.
2.18	Whenever reference is made in the documentation to Bidder or Tenderer it shall mean is the person or organization that submits a tender offer. (The successful Bidder will be appointed as Contractor as per GCC 2015- Clause 1.1.1.9)
3	**GENERAL REQUIREMENTS**
3.1	The Employer is the **Department of Water and Sanitation**
3.2	The tender documents issued by the employer comprise the following documents: **THE TENDER** **Part T1: Tendering procedures** T1.1 - Tender notice and invitation to tender T1.2 - Tender data **Part T2: Returnable documents and schedules** T2.1 - Returnable documents and schedules T2.2 - List of Returnable documents and schedules **THE CONTRACT** **Part C1: Agreements and Contract data** C1.1 - Form of offer and acceptance C1.2 - Contract data C1.3 - Performance guarantee **Part C2: Pricing data** C2.1 - Pricing assumptions C2.2 - Bill of quantities **Part C3: Scope of work** C3.1 - Standard Specifications C3.2 - Project Specifications C3.3 - Particular Specifications C3.4 - Variations and Additions to Specifications **Part C4: Site information** C4.1 - Tender Drawings
3.3	The completed tender as submitted will be deemed to be part of the contract document.
3.4	The employer's agent is: Department of Water and Sanitation Construction Management Construction South –Raising of Clanwilliam dam project Contracts Manager – Construction South
3.4	The language for communications is English.

Clause number	TENDER DATA
3.5	The Department may accept or decline any tender. The Department may cancel the tender process and reject all tender offers at any time before the formation of a contract. The Department shall not accept or incur any liability to a Tenderer for such cancellation and rejections. The Department does not bind itself to accept the lowest or any bid.
3.6	The competitive selection, open procedure shall be applied.
4	**TENDERER'S OBLIGATIONS**
4.1	Only those Tenderers who satisfy the following eligibility criteria and who provide the required evidence in their tender submissions are eligible to submit tenders and have their tenders evaluated: **An Entity is not eligible to submit a bid if:** (a) the Bidder does not comply with the legal requirements of the Department's Procurement; (b) the Entity submitting the bid is under restrictions or has principals who are under restriction to participate in the Department's procurement due to corrupt of fraudulent practices; (c) the Bidder does not have the legal capacity to enter into the contract; (d) the Entity submitting the bid is insolvent, in receivership, bankrupt or being wound up, has his affairs administered by a court or a judicial officer, has suspended his business activities, or is subject to legal proceedings in respect of the foregoing; (e) the Bidder cannot demonstrate that he possesses the necessary professional and technical qualifications and competent, financial resources, equipment and other physical facilities, managerial capability, personnel, experience and reputation to perform the contract; (f) the Bidder cannot provide proof that he is in good standing with respect to duties, taxes, levies and contributions required in terms of legislation applicable to the work in the contract; (g) the Bidder has failed to perform on any previous contract and has been given a written notice to this effect; (h) the Bidder or a competent authorized representative of the Entity who submitted the tender has not attended the compulsory clarification meeting or site briefing session if applicable; (i) the bid offer is not signed by a person authorized to sign on behalf of the Bidder; (j) more than one bid has been submitted by a Bidder. Each Bidder shall submit only one bid for the same project, either individually as a Bidder or as a partner in a joint venture. No Entity can be a Sub-contractor while submitting a bid individually or as a partner of a joint venture in the same bidding process. An Entity, if acting in the capacity of Sub-contractor in any bid, may participate in more than one bid, but only in that capacity. A Bidder who submits or participates in more than one bid will cause all the proposals in which the Bidder has participated to be disqualified.
4.1	Only those Tenderers who are registered with the CIDB, or are capable of being so prior to the evaluation of submissions, in a Contractor grading designation equal to or higher than a Contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations, for a CIDB 9SC or CIDB 9SE or higher class of construction work, are eligible to have their tenders evaluated. All projects of R60m and above must apply the Standard for Indirect Targeting for Enterprise Development. Joint ventures are eligible to submit tenders provided that: 1. every member of the joint venture is registered with the CIDB; 2. the lead partner has a Contractor grading designation in the CIDB 8SC or CIDB 8SE or higher class of construction work; and 3. the combined Contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a Contractor grading designation determined in accordance with the sum tendered for a CIDB 9SC or CIDB 9SE or higher class of construction work or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations.

Clause number	TENDER DATA
4.7	The arrangements for a compulsory site clarification meeting are as stated in the Tender Notice and Invitation to Tender. (Site clarification meeting is also referred to as site briefing session.) The person/s attending site clarification meeting must sign the attendance register in the company's name they are representing. If needed, an addendum will be issued to those companies appearing on the attendance list.
4.10	Tenderers are required to state the rates and currencies in South African Rand (ZAR).
4.12	Alternative offer is acceptable if the design stays similar. But Tender document must be prices as per C2- pricing schedule before document is evaluated and any alternative offer is looked at.
4.13.1	Parts of each tender offer communicated shall be submitted as an original.
4.13.2	An Entity is not eligible to submit a bid if the bid offer is not signed by a person authorized to sign on behalf of the Bidder. Each page of the completed document that will be submitted should be initialled by the Bidder at the bottom of the page. State clearly in Form D under T2.2 returnable documents and schedules, the authorised signatories that are liable on the behalf of the Tenderer, with proof from the employer and or company.
4.13.5 4.15	The ORIGINAL printed, completed tender document together with a cover letter and all supporting documents needs to be placed and sealed in an envelope. The enveloped needs to be clearly marked as below indicated. The employer's details and address for delivery of tender offers and identification details that are to be shown on the envelope: **1) <u>Tender Identical details:</u>** **Tender reference number:** DWS08 - 1022 WTE **Title of Tender:** THE DRILLING AND BLASTING FOR DAM FOUNDATION EXCAVATION AND SLOPE PROTECTION FOR THE CLANWILLIAM DAM IN THE WESTERN CAPE PROVINCE **2) <u>The employer's details and address for delivery of tender offers and closing time are:</u>** **Location of tender box:** THE BID BOX AT THE ENTRANCE **Physical address:** ZWAMADAKA BUILDING 157 FRANCIS BAARD STREET, PRETORIA, 0001 **Closing date & time:** 29 November 2022 at 11:00 hrs. **3) <u>Name of the Bidder (shall be clearly shown)</u>**
4.13.6	Telephonic, telegraphic, telex, facsimile or e-mailed tender offers shall **NOT** be accepted.
4.15	The closing time for submission of tender offers is as stated in the Tender Notice and Invitation to Tender.
4.16.1	The tender offer validity period is 120 days.
4.18	Provide, on request by the employer, any other material that has bearing on the tender offer within 5 working days of request.
4.19	The employer reserve the right to arrange access for the following inspections, tests, and analysis at Bidder's facilities.
4.20	The Tenderer is required to submit with his tender a letter of intent from an approved insurer undertaking to provide the Performance Guarantee to the format included in Part C1.3 of this procurement document. (See also GCC 2015: Clause 6.2 – Security.)

5	**EMPLOYER'S UNDERTAKINGS**
5.1	The Employer will respond to requests for clarification received up to seven (7) working days before the tender closing time.
5.2	The employer shall issue addenda until four (4) working days before tender closing time.
5.4	Tenders will be opened immediately after the closing time for tenders at 11:00 hrs.
5.8	Bids will be evaluated in accordance with the new Preferential Procurement Regulations, 2017, using 90/10 preference points system as prescribed in the Preferential Procurement Policy Framework Act (PPPFA, Act 5 of 2000. The lowest acceptable bid will score 90 points for price and a maximum of 10 points will be awarded for attaining the Broad-Based Black Economic Empowerment (B-BBEE) Status Level of Contribution. Maximum of 100 points will be scored for functionality (quality). Bids received will be evaluated on the six (6) phases namely: (1) Mandatory Requirements, (2) Pre-Qualification (Compulsory Sub-Contracting), (3) Functionality (5.11.9), (4) Administrative Compliance, (5) Price & Preference (5.11.7 & 5.11.8), and (6) Evaluation Method 4 (5.11.5).
5.8	**PHASE 1: MANDATORY REQUIREMENTS:** Failure to submit any of the documents listed below will render your bid non-responsive and the bid will be disqualified. • CIDB registration in terms of construction industry development board (CIDB) grade. (As per clause 4.1 bottom of page 9) • Certificate of attendance at the compulsory site briefing session. • Certificate of completed project for the similar work for the worth of R30 million in the recent 5 years. • Blast Designer (s): Mining /Rock Engineer with valid ECSA registration, or relevant Engineering with valid ECSA registration. • Blaster: Valid registration with SAPS. • Rock Support Specialist: Geotechnical Engineer with valid ECSA registration.

5.8

PHASE 2: PRE-QUALIFICATION – COMPULSORY SUB CONTRACTING:

Failure to submit any of the documents listed below may render your bid non-responsive and may be disqualified.

SUBCONTRACTING:

Failure to meet the below indicated prequalification criteria in terms of the PPR, 2017, Regulation 9, will automatically disqualify your bid.

- Bidders must submit a list and contact information of Sub-contractors to be Sub-contracted (as and when required) in order to meet the 30% minimum subcontracting requirement. The Sub-contractors shall be EMEs or QSEs that are 51% Black owned by any of the following enterprises:

		Tick which type of enterprise is subcontracted	
	Enterprises	**QSE**	**EME**
1.	Black people		
2.	Black people who are youth		
3.	Black people who are women		
4.	Black people with disabilities		
5.	Black people living in rural or underdeveloped areas or townships		
6.	Cooperatives which are 51% owned by Black people		
7.	Black people who are military veterans		

Bidders shall submit subcontracting agreements between the lead Bidder (party) and the Sub-contractor with this bid. Failure to submit subcontracting agreements shall render your bid non-responsive.

Verification documentation to be submitted to confirm 30% sub-contracting compliance requirements (failure to submit the supporting documents, the Bidder will be disqualified):

- A copy of a valid B-BBEE status level verification certificate, or valid Sworn Affidavit of Sub-contractor.
- The Sub-contractor's proof of Central Supplier Database registration (CSD).
- Tax compliant with SARS (to be verified through CSD and SARS). Attach a copy of Tax Compliance Status Pin Page.
- Pro-forma sub-contracting agreement signed by both parties.

5.8

PHASE 3: FUNCTIONALITY COMPLIANCE

As explained in 5.11.9.

The Bidder must score a minimum of 70 points out of 100 to allow them to proceed to the next phase of evaluation.

Extra list of documents required in Annexure O to be submitted for Health and Safety purposes.

5.8 **PHASE 4: ADMINISTRATIVE COMPLIANCE**

Bidders are required to comply with the following listed below:

No	Criteria	Yes	No
1	Companies must be registered with National Treasury's Central Supplier Database must submit CSD report. Sub-contractors CSD reports to be included. In bids where there is Consortia/Joint Ventures, CSD reports of all parties to be included.		
2	Tax compliant with SARS. Attach a copy of valid Tax Compliance Status pin page (to be confirmed through SARS). Sub-contractors copy of valid Tax Compliance Status pin page to be included. In bids where there is Consortia/Joint Ventures, Tax Compliance Status pin page of all parties to be included.		
3	Active registration with Company Intellectual Property Commission (to be verified through CSD and CIPC). Attach copy of Bidder's CIPC / CIPRO certificate. Sub-contractors CIPC certificate to be included. In bids where there is Consortia/Joint Ventures, CIPC / CIPRO certificate of all parties to be included.		
4	A valid copy of B-BBEE Status Level Verification Certificate (failure to submit, the Bidder will forfeit the preferential points to be claimed). Sub-contractors' certificate (or Sworn Affidavit) to be included. In bids where there is Consortia/Joint Ventures, a consolidated valid B-BBEE certificate must be submitted.		
5	A valid letter of Good Standing with the Compensation Commissioner in terms of the Compensation for Occupational Injuries and Diseases Act No 130 of 1993 and or third parties' insurance registered with Financial Service Board (COID). Sub-contractor certificate to be included (if applicable). In bids where there is Consortia/Joint Ventures, COID Certificate of all JV/ Consortium partners be included.		
6	Initial and sign all required documents as per Tender data (T2).		
7	Letter of appointment of duly authorized person to sign bid. Proof of such authority must be submitted with the bid. If by an individual, must be signed by that individual or by someone on his behalf duly authorised thereto and proof of such authority must be produced. If the bid is by a Company, it must be signed by a person duly authorised thereto by a Resolution of a Board of Directors a copy of which Resolution, duly certified by the Chairman of the Company is to be submitted with the bid. (Refer to returnable documents and schedules under section T2.2 - Form D.)		
8	Complete, sign, submit SBD1, SBD3.2, SBD4, SBD6.1 In bids where there is Consortia/Joint Ventures, , each partner of Consortia/Joint Ventures must complete SBD 4).		

5.8 **PHASE 5: PRICE AND PREFERENCE**

As explained in 5.11.7 & 5.11.8.

5.11.5

PHASE 6: EVALUATION METHOD

Method 4: Financial offer, quality and preference ➔ This method shall apply for the evaluation of this tender

The procedure for the evaluation of responsive tenders is Method 4 (Financial offer, quality and preference).

The total number of tender evaluation points (T_{EV}) shall be determined in accordance with the following formula:

$$T_{EV} = N_{FO} + N_P + N_Q$$

Where:

N_{FO} ➔ is the number of tender evaluation points awarded for the financial offer made in accordance with SANS 10845 clause 5.11.7, (where N_{FO} is maximum 90 points);

N_P ➔is the number of tender evaluation points awarded for preference claimed in accordance with SANS 10845 clause 5.11.8, (where N_P is maximum 10 points);

N_Q ➔is the number of tender evaluation points awarded for functionality (quality) in accordance with SANS 10845 clause 5.11.9, (where N_Q is maximum 100 points).

Example:

For example, if a Tenderer scores the following:

75 points for pricing (N_{FO}) out of 90;

6 points for preferencing (N_P) out of 10; and

70 points for functionality (quality) (N_Q) out of 100.

Where the weights are:	**Example values scored**
Total points for financial offer (N_{FO}) ➔ 90	75
N_P ➔10	6
N_Q ➔ *100*	70
Total Tender evaluation points (T_{EV}) ➔ 200	151

5.11.7

Price Score:

Score for financial offers using the following formula:

$$N_{FO} = W_1 \, x \, A$$

Where:

N_{Fo} ➔ is the number of tender evaluation points awarded for the financial offer;

$$A = \left(1 - \left(\frac{P - P_m}{P_m}\right)\right)$$ (As per Preferential Procurement Regulations, 2017)

P is the comparative offer of the tender offer under consideration;

P_m is the comparative offer of the most favourable comparative offer; and

W_1 equals 90 where the financial value inclusive of VAT of all responsive tenders received have a value in excess of R50 000 000,00.

5.11.8

Preference Score:

Preferential Procurement Regulations, 2017, Act no. 5 of 2000 will be used to evaluate this proposal as per the applicable threshold value.

Bid proposals will be evaluated based on the 90/10 preference points system in accordance with the PPPFA Act (Act no. 5 of 2000). Where a maximum of 90 pints will be awarded in respect of price and a maximum of 10 points will be awarded for B-BBEE status level.

N_p shall be calculated as described:

Points are based on a Tenderer's scorecard measured in terms of the Broad-Based Black Economic Empowerment Act (B-BBEE, Act53 of 2003) and the regulations (2017) to the Preferential Procurement policy framework Act (PPPFA, Act 5 of 2000).

Point awarded will be according to a Tenderer's B-BBEE status level of contributor and summarized in the table below:

B-BBEE Status Level Contributor	Number of Points (N_p) (90/10 System)
1	10
2	9
3	8
4	5
5	4
6	3
7	2
8	1
Non -Compliant	0

Eligibility for preference point is subject to the following conditions:

a) A Bidders shall submit a copy of B-BBEE Status level of contributor certificate in accordance with the revised Notice of Clarification published in the Notice 44 of 2015 published in Government Gazette 38799 on 15 May 2015 by the Department of Trade and Industry; and

b) B-BBEE Status level shall be submitted as a copy of the certificate attached to returnable schedule (Annexure A) in T2; and

c) The certificate shall:

   i) Be a copy of the B-BBEE Status Level of Contributor Certificate; and

   ii) Have been issued by a verification agency accredited by the South Africa National Accreditation System (SANAS); or

   iii) Be in the form of a sworn affidavit, signed by the company representative and attested by a Commissioner of oath, confirming its annual total revenue and level of Black ownership in case of an Exempted Micro Enterprise (EME) or Qualifying Small Enterprise (QSE); and

   iv) Be valid at the tender closing date; and

   v) Have a date of issue less than 12 (twelve) months prior to the tender closing data (see Tender Data 4.15);

   and;

d) Compliance with any other information requested to be attached to Returnable Schedule, T2, Annexure A; and

e) Failure to submit a valid verification certificate(s) and/or all the information in compliance with, Returnable Schedule (T2) Annexure A, will result in 0 (zero) preference points awarded, unless the intended subcontractor is an EME that has the capability to execute the subcontract; and

f) In bids where there is Consortia/Joint Ventures, a consolidated valid B-BBEE certificate must be submitted.

5.11.9	**Functionality (Quality) Score:** The score obtained in 5.11.9 (functionality criteria) will be used for the following formula: $N_Q = W_2 \; x \; \frac{S_0}{M_s}$ Where N_Q ➔ is the number of tender evaluation points awarded for functionality offered; W_2 = 100; S_O ➔ is the score for functionality criteria (5.11.9) allocated to the submission under consideration; and M_S ➔ is the maximum possible score for functionality criteria (100).

5.11.9 **Functionality (Quality) Score (continue):**

Functionality is the terminology used to define the technical ability of the Tenderer, based on experience, to deliver the required product in accordance with the specialised quality, reliability and functionality.

Points allocated for functionality shall be evaluated in accordance with the criteria as listed below table. An overall minimum threshold of 70 (M_s) points out of total 100 (M_s) must be achieved for the tender to be eligible. Tenderers who also fail to achieve the minimum score per criteria will be disqualified and not be eligible for further evaluations.

See T2 returnable annexure (as indicated in table below) for applicable documents with detail on point allocation for the sub-criteria's.

Functionality criteria		**ANNEXURE**	**Maximum number of points**
1	Company Experience	H & H-1	15
2	Managerial Capacity	J & J-1	25
3	Method statement: Drilling & blasting	M	40
4	Method statement: Rock support	N	20
Maximum possible score for quality (M_s)			**100**

SCORING OF FUNCTIONALITY:

The evaluators are to score the functionality criteria's and sub-criteria's as per the below table (unless otherwise stated). The score allocated needs to be applied as a percentage of total maximum allowed points for the evaluated specific criteria.

Score	**Prompt for judgement**
0	Failed to address the question / issue
20	A detrimental response / answer / solution – limited or poor evidence of skill / experience sought or high risk that relevant skills will not be available
40	Less than acceptable – response / answer / solution lacks convincing evidence of skill / experience sought or medium risk that relevant skills will not be available.
60	Acceptable response / answer / solution to the particular aspect of the requirements and evidence given of skill / experience sought
80	Above acceptable – response / answer / solution demonstrating real understanding of requirements and evidence of ability to meet it.
100	Excellent – response / answer / solution gives real confidence that the Tenderer will add real value.

The scores of each of the evaluators will be averaged, weighted and then totalled to obtain the final score for quality.

This score of the criteria and sub criteria for quality will be used to determine the tender evaluation points awarded for quality in the formula as per clause 5.11.9.

EXAMPLE OF EVALUATION:

Criteria	**SCORE (out of 0% - 100%)**	**WEIGHT (POINTS)**	**TOTAL (A% score x 5 points)**
Sub-Criteria	0-100 according to Table M.2	5 POINTS (max allowed points for this sub-criteria)	
Example 1	80 score (=80%): response demonstrate the real understanding of requirements and evidence of ability to meet it.	5	= 5 * 80% = **4**
Example 2	60 score (=60%): response demonstrate the real understanding of requirements and evidence of ability to meet it.	20	= 20 * 60% = **12**

5.11	**EVALUATION SUMMARY** The procedures for the evaluation of responsive tenders are as follows: 1. Mandatory Requirements, 2. Pre-Qualification (Compulsory Sub-Contracting), 3. Functionality (5.11.9), 4. Administrative Compliance, 5. Price & Preference (5.11.7 & 5.11.8), and 6. Evaluation as per Method 4 (In SANS 10845 clause 5.11.5). For item 6 the following evaluation phases will be followed to determine the preferred Bidder according to SANS 10854. Evaluation data from Phase 4 & 5 will be used for the final evaluation of method 4: $T_{EV} = N_{FO} + N_P + N_Q$ Where: N_{FO} ➔ is the number of tender evaluation points awarded for the financial offer made in accordance with SANS 10845 clause 5.11.7, (where N_{FO} is maximum 90 points); N_P ➔is the number of tender evaluation points awarded for preference claimed in accordance with SANS 10845 clause 5.11.8, (where N_P is maximum 10 points); N_Q ➔is the number of tender evaluation points awarded for functionality (quality) in accordance with SANS 10845 clause 5.11.9, (where N_Q is maximum 100 points).
5.13	Tender offers will only be accepted if: a) the Tenderer is registered on the Central Supplier Database (CSD) for the South African government (see https://secure.csd.gov.za/) unless it is a foreign supplier with no local registered entity; b) the Tenderer is in good standing with SARS according to the Central Supplier Database; c) the Tenderer submits a letter of intent from an approved insurer undertaking to provide the Performance guarantee to the format included in Part C1.3 of this procurement document; d) the Tenderer is registered with the Construction Industry Development Board (CIDB) in an appropriate Contractor grading designation; e) the Tenderer or any of its directors/shareholders is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector; f) the Tenderer has not: i) abused the Employer's Supply Chain Management System; or ii) failed to perform on any previous contract and has been given a written notice to this effect; g) the Tenderer has completed the Compulsory Declaration and there are no conflicts of interest which may impact on the Tenderer's ability to perform the contract in the best interests of the employer or potentially compromise the tender process; h) the Tenderer is registered and in good standing with the compensation fund or with a licensed compensation insurer; i) the employer is reasonably satisfied that the Tenderer has in terms of the Construction Regulations, 2003, issued in terms of the Occupational Health and Safety Act, 1993, the necessary competencies and resources to carry out the work safely.
5.17	The number of paper copies of the signed contract to be provided by the employer to the successful Bidder is One (1).

DEPARTMENT OF WATER AND SANITATION

DWS08 – 1022 WTE

THE DRILLING AND BLASTING FOR DAM FOUNDATION EXCAVATION AND SLOPE PROTECTION FOR THE CLANWILLIAM DAM IN THE WESTERN CAPE PROVINCE

T1.3 STANDARD CONDITIONS OF TENDER

T1.3: STANDARD CONDITIONS OF TENDER

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T1.3: STANDARD CONDITIONS OF TENDER

1. SCOPE

This part of SANS 10845 sets out standard conditions of tender which,

a) bind the employer and Tenderer to behave in a particular manner,

b) establish what a Tenderer is required to do in order to submit a compliant tender,

c) make known the evaluation criteria to Tenderers, and

d) establish the manner in which the employer conducts the process of offer and acceptance and provide the necessary feedback to Tenderers on the outcomes of the process.

This part of SANS 10845 is intended for use in procurements relating to goods, services and construction works and disposals other than by auction.

NOTE 1: Annex A contains commentary on the clauses in this part of SANS 10845. Annex B provides guidance on how to develop the tender data for a procurement document using this part of SANS 10845.

NOTE 2: SANS 10845-2 establishes the manner in which procurement documents should be formatted and compiled. The standard conditions contained in this part of SANS 10845 may by reference be incorporated in procurement documents formatted and compiled in accordance with the provisions of SANS 10845-2.

2. TERMS AND DEFINITIONS

For the purposes of this document, the following terms and definitions apply.

2.1 Bill of quantities

Document that lists the items of work and the quantities and rates associated with each item to allow Contractors to be paid, at regular intervals, an amount equal to the agreed rate for the work multiplied by the quantity of work completed.

2.2 Bond

Sum of money or securities submitted to the employer or placed in the hands of a third party to guarantee completion of the work and recovery of the sums which the Contractor would be recognized as owing under the terms of the contract.

2.3 Comparative offer

Tenderer's financial offer after all tendered parameters that can affect the value of the financial offer have been taken into consideration to enable comparisons to be made on a comparable basis.

2.4 Conflict of interest

Any situation in which someone in a position of trust has competing professional or personal interests which make it difficult for him to fulfil his duties impartially, an individual or organization is in a position to exploit a professional or official capacity in some way for his personal or for corporate benefit, or incompatibility or contradictory interests exist between an employee and the organization which employs that employee.

2.5 Contract data

Document that identifies the applicable conditions of a contract and states the associated contract-specific data.

2.6 Corrupt practice

Offering, giving, receiving or soliciting of anything of value to influence the action of the employer or his staff or agents in the tender process.

2.7 Employer

Person or organization intending to or entering into a contract with the Contractor for the provision of goods, services, or engineering and construction works.

2.8 Form of offer and acceptance

Document that formalizes the legal process of offer and acceptance.

2.9 Form of securities

Document that provides for the securities required by the employer.

2.10 Fraudulent practice

Misrepresentation of the facts in order to influence the tender process, or the award of a contract arising from a tender offer to the detriment of the employer, including collusive practices intended to establish prices at artificial levels.

2.11 Joint venture

Grouping of two or more Contractors acting as one legal entity, where each is liable for the actions of the other.

2.12 Organization

Company, firm, enterprise, association or other legal entity, whether incorporated or not, or a public body.

2.13 Quality

Totality of features and characteristics of a product or service that bears on the ability of the product or service to satisfy stated or implied needs.

2.14 Returnable document

Document that a Tenderer is required to complete and submit to the employer as part of his tender submission.

2.15 Scope of work

Document that specifies and describes the goods, services, or engineering and construction works which are to be provided, and any other requirements and constraints relating to the manner in which the contract work is to be performed.

2.16 Tender data

Document that establishes the Tenderer's obligations in submitting a tender and the employer's undertakings in administering the tender process and evaluating tender offers.

2.17 Tender offer

Written offer for the provision of goods, or to carry out a service or engineering and construction works under given conditions, usually at a stated price, and which is capable of acceptance and conversion into a binding contract.

2.18 Tenderer

Person or organization that submits a tender offer.

3. GENERAL REQUIREMENTS

3.1 Actions

The employer and each Tenderer submitting a tender offer shall comply with the standard conditions of tender. In their dealings with each other, they shall discharge their duties and obligations, as set out in Clauses 4 and 5, in a timely manner and with integrity, behave equitably,

Honestly and transparently, comply with all legal obligations and not engage in anti-competitive practices.

The employer and the Tenderer, and all the agents and employees involved in the tender process, shall avoid conflicts of interest and, where a conflict of interest is perceived or known, declare any such conflict of interest, indicating the nature of such conflict. Tenderers shall declare any potential conflict of interest in their.

Tender submissions. Employees, agents and advisors of the employer shall declare any conflict of interest to whoever is responsible for overseeing the procurement process at the start of any deliberations relating to the procurement process or as soon as they become aware of such conflict and abstain from any decisions where such conflict exists or recuse themselves from the procurement process, as appropriate.

The employer shall not seek and a Tenderer shall not submit a tender without having a firm intention and the capacity to proceed with the contract.

NOTE 1 : A conflict of interest can arise due to a conflict of roles which can provide an incentive for improper acts in some circumstances or positions. A conflict of interest can create an appearance of impropriety that can undermine confidence in the ability of that person to act properly in said circumstance or position, even if no improper acts result.

NOTE 2 : Conflicts of interest with respect to those engaged in the procurement process include direct, indirect or family interests in the tender or outcome of the procurement process and any personal bias, inclination, obligation, allegiance or loyalty which can in any way affect any decisions taken.

3.2 Tender documents

The documents issued by the employer for the purpose of a tender offer are listed in the tender data.

3.3 Interpretation

The tender data and additional requirements contained in the tender schedules that are included in the returnable documents are deemed to be part of the standard conditions of tender in this part of SANS 10845.

The standard conditions of tender contained in this part of SANS 10845, the tender data and tender schedules which are only required for tender evaluation purposes, shall not form part of any contract arising from the invitation to tender.

3.4 Communication and employer's agent

Each communication between the employer and a Tenderer shall be to or from the employer's agent only, and in a form that can be read, copied and recorded, and in the language stated in the tender data. The employer shall not take any responsibility for non-receipt of communications from or by a Tenderer. The name and contact details of the employer's agent are stated in the tender data.

3.5 Employer's right to accept or reject any tender offer

The employer may accept or reject any variation, deviation, tender offer, or alternative tender offer, and may cancel the tender process and reject all tender offers at any time before the formation of a contract. The employer shall not accept or incur any liability to a Tenderer for such cancellation and rejection but shall give written reasons for such action upon written request to do so.

The employer may not, subsequent to the cancellation or abandonment of a tender process or the rejection of all responsive tender offers, re-issue a tender covering substantially the same scope of work within a period of six months unless only one tender was received and such tender was returned unopened to the Tenderer.

3.6 Procurement procedures

3.6.1 General

Unless otherwise stated in the tender data, a contract shall, subject to 5.13, be concluded with the Tenderer who, in terms of 5.11, is the highest ranked or the Tenderer scoring the highest number of tender evaluation points, as relevant, based on the tender submissions that are received at the closing time for tenders.

3.6.2 Competitive negotiation procedure

Where the tender data require that the competitive negotiation procedure is to be followed, Tenderers shall submit tender offers in response to the proposed contract in the first round of submissions. Notwithstanding the requirements of 5.4, the employer shall only announce the names of the Tenderers who make a submission. The requirements of 5.8, relating to the material deviations or qualifications which affect the competitive position of Tenderers, shall not apply.

All responsive Tenderers, or not less than three responsive Tenderers that are highest ranked in terms of the evaluation method and evaluation criteria stated in the tender data, shall be invited in each round to enter into competitive negotiations, based on the principle of equal treatment and keeping confidential the proposed solutions and associated information. Notwithstanding the provisions of 4.17, the employer may request that tenders be clarified, specified and fine-tuned in order to improve a Tenderer's competitive position, provided that such clarification, specification, fine-tuning or additional information does not alter any fundamental aspects of the offers or impose substantial new requirements which restrict or distort competition or have a discriminatory effect.

At the conclusion of each round of negotiations, Tenderers shall be invited by the employer to make a fresh tender offer, based on the same evaluation criteria, with or without adjusted weightings. Tenderers shall be advised when they are to submit their best and final offer.

The contract shall be awarded in accordance with the provisions of 5.11 and 5.13 after Tenderers have been requested to submit their best and final offer.

3.6.3 Proposal procedure using the two-stage tendering system

3.6.3.1 Option 1

In the first stage, Tenderers shall submit technical proposals and, if required, cost parameters around which a contract may be negotiated.

The employer shall evaluate each responsive submission in terms of the method of evaluation stated in the tender data.

In the second stage, the employer shall negotiate a contract with the Tenderer scoring the highest number of evaluation points and award the contract in terms of the standard conditions of tender.

3.6.3.2 Option 2

In the first stage, Tenderers shall submit only technical proposals. In the second stage, the employer shall invite all responsive Tenderers to submit tender offers, following the issuing of procurement documents.

The employer shall evaluate tenders received during the second stage in terms of the method of evaluation stated in the tender data and award the contract in terms of the standard conditions of tender in this part of SANS 10845.

4. TENDERER'S OBLIGATIONS

The Tenderer shall comply with the following obligations.

4.1 Eligibility

4.1.1 Submit a tender offer

Submit a tender offer only if the Tenderer satisfies the eligibility criteria stated in the tender data and if the Tenderer, or any of the Tenderer's principals, is not under any restriction to do business with the employer.

4.1.2 Notify the employer

Notify the employer of any proposed material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used by the employer as the basis in a prior process to invite the Tenderer to submit a tender offer and obtain the employer's written approval to do so before the closing time for tenders.

4.2 Cost of tendering

Accept that, unless otherwise stated in the tender data, the employer does not compensate the Tenderer for any costs incurred in the preparation and submission of a tender offer, including the costs of any testing necessary to demonstrate that aspects of the offer comply with requirements.

4.3 Checking documents

Check the tender documents on receipt for completeness and notify the employer of any discrepancy or omission.

4.4 Confidentiality and copyright of documents

Treat as confidential all matters arising in connection with the tender. Use and copy the documents issued by the employer only for the purpose of preparing and submitting a tender offer in response to the invitation.

4.5 Reference documents

Obtain, as necessary for submitting a tender offer, copies of the latest versions of standards, specifications, conditions of contract and other publications, which are incorporated into the tender documents by reference.

4.6 Acknowledging addenda

Acknowledge receipt of addenda to the tender documents, which the employer may issue, and, if necessary, apply for an extension to the closing time stated in the tender data, in order to take the addenda into account.

4.7 Clarification meeting

Attend, where required, a clarification meeting, the details of which are stated in the tender data, at which Tenderers may familiarize themselves with aspects of the proposed work, services or supply, and raise questions.

4.8 Seeking clarification

Unless otherwise notified in the tender data, request clarification of the tender documents, if necessary, by notifying the employer at least five working days before the closing time stated in the tender data.

4.9 Insurance

Be aware that the extent of insurance to be provided by the employer (if any) might not be for the full cover required in terms of the conditions of contract identified in the contract data.

4.10 Pricing the tender offer

Include in the rates, prices, and the tendered total of the prices (if any), all duties, taxes which the law requires to be paid [except value added tax (VAT)], and other levies payable by the successful Tenderer, that are applicable 14 days before the closing time stated in the tender data.

Show the VAT payable by the employer separately as an addition to the tendered total of the prices.

Provide rates and prices that are fixed for the duration of the contract and not subject to adjustment except as provided for in the conditions of contract identified in the contract data.

State the rates and prices in monetary value of the contract unless otherwise instructed in the tender data.

NOTE: The contract data can provide for part payment in other currencies

4.11 Alterations to documents

Do not make any alterations or additions to the tender documents, except to comply with instructions issued by the employer or to correct errors made by the Tenderer and ensure that all signatories to the tender offer initial all such alterations.

Do not make erasures using masking fluid.

4.12 Alternative tender offers

Unless otherwise stated in the tender data, submit alternative tender offers only if a main tender offer, strictly in accordance with all the requirements of the tender documents, is also submitted, as well as a schedule that compares the requirements of the tender documents with the alternative requirements that are proposed.

Accept that an alternative tender offer may be based only on the criteria stated in the tender data or criteria otherwise acceptable to the employer.

4.13 Tender submissions

4.13.1 General submission requirements

Submit one tender offer only, either as a single entity or as a member in a joint venture, to provide the whole of the works, services or supply identified in the draft contract, unless otherwise stated in the tender data.

Return all returnable documents to the employer after completing them in their entirety, either electronically (if they were issued in electronic format) or by writing legibly in non-erasable ink.

Submit:

a) the parts of the tender offer communicated on paper as an original plus the number of copies stated in the tender data, with a translation of any documentation in a language other than the language of communication established in 3.4, and

b) the parts communicated electronically in the same format as they were issued by the employer.

4.13.2 Signature

Sign the original and all copies of the tender offer where required in terms of the tender data.

State in the case of a joint venture which of the signatories is the lead partner whom the employer shall hold liable for the purpose of the tender offer.

NOTE: The employer holds all authorized signatories liable on behalf of the Tenderer.

4.13.3 Tender securities

Submit, as require s part of the tender submission, a tender security from a bank or insurer that is in a strong enough commercial position to carry such security in the name of the Tenderer, or in the names of each of the member of a joint venture, in the amount, for the period and in the form specified in the tender data.

4.13.4 Inclusion of certificates

Include in the tender submission, or provide the employer with, any certificates as stated in the tender data.

4.13.5 Sealing of documents

Seal the original and each copy of the tender offer as separate packages, marking the packages as "ORIGINAL" and "COPY". Unless otherwise specified in the tender data, seal the "ORIGINAL" and "COPY" packages in a single package and state on the outside of such package the employer's address and identification details specified in the tender data, as well as the Tenderer's name and contact address.

Where a two-envelope system is required in terms of the tender data, place and seal the returnable documents listed in the tender data in an envelope marked "FINANCIAL PROPOSAL" and place the remaining returnable documents in an envelope marked "NON-FINANCIAL PROPOSAL". State on the outside of each envelope the employer's address and identification details stated in the tender data, as well as the Tenderer's name and contact address. Seal the original tender offer and copy packages together in an outer package that states, on the outside, only the employer's address and identification details as specified in the tender data.

4.13.6 Employer's acceptance of tender submissions

Accept that the employer does not assume any responsibility for the misplacement or premature opening of the tender offer if the outer package is not sealed and marked as stated.

Accept that the employer shall not accept tender offers submitted by telegraph, telex, facsimile or e-mail, unless otherwise stated in the tender data.

4.14 Information and data to be completed in all respects

Accept that tender offers which do not provide all the data or information requested, completely and in the form required, may be regarded by the employer as being non-responsive.

4.15 Closing time

Ensure that the employer receives the tender offer at the address specified in the tender data not later than the closing time stated in the tender data. Proof of posting shall not be accepted as proof of delivery.

Accept that, if the employer extends the closing time stated in the tender data for any reason, the requirements of the standard conditions of tender in this part of SANS 10845 apply equally to the extended deadline.

4.16 Tender offer validity

4.16.1 Period of validity

Hold the tender offer(s) valid for acceptance by the employer at any time during the validity period stated in the tender data after the closing time stated in the tender data.

If requested by the employer, consider extending the validity period stated in the tender data for an agreed additional period, with or without any conditions attached to such extension. Extend the period of the tender security, if any, to cover any agreed extension requested by the employer.4.16.2 Withdrawal of tenders.

4.16.2 Withdrawal of tenders

Accept that a tender submission that has been submitted to the employer may only be withdrawn or substituted by giving the employer's agent written notice before the closing time for tenders that a tender is to be withdrawn or substituted.

Where a tender submission is to be substituted, submit a substitute tender in accordance with the requirements of 4.13 with the packages clearly marked as "SUBSTITUTE".

4.17 Clarification of tender offer after submission

Provide clarification of a tender offer during the evaluation of tender offers, in response to a request from the employer to do so.

NOTE: Such clarifications can include providing a breakdown of rates or prices and correction of arithmetical errors by the adjustment of certain rates or item prices (or both). No change in the competitive position of Tenderers or substance of the tender offer is sought, offered, or permitted.

4.18 Other material

Provide, on request by the employer, any other material that has a bearing on the tender offer, the Tenderer's commercial position (including notarized joint venture agreements), preferencing arrangements, or samples of materials considered necessary by the employer for the purpose of a full and fair risk assessment. Should the Tenderer not provide the material, or a satisfactory reason as to why it cannot be provided, by the time for submission stated in the employer's request, the employer may regard the tender offer as being non-responsive.

Dispose of samples of materials provided for the employer's evaluation.

4.19 Inspections, tests and analysis

Provide access during working hours to premises for inspections, tests and analysis, as provided for in the tender data.

4.20 Submitting securities, bonds, policies, etc.

If requested, submit for the employer's acceptance before formation of the contract all securities, bonds, guarantees, policies and certificates of insurance required in terms of the conditions of contract identified in the contract data.

4.21 Check final draft

Check the final draft of the contract provided by the employer within the time available for the employer to issue the contract.

4.22 Returning other tender documents

If so instructed by the employer, return all retained tender documents within 28 days of the expiry of the validity period stated in the tender data.

5. EMPLOYER'S UNDERTAKINGS

The employer shall carry out the following undertakings.

5.1 Responding to requests from the Tenderer

Unless otherwise notified in the tender data, respond to a request for clarification received up to five working days before the tender closing time stated in the tender data, and notify all Tenderers who obtained procurement documents.

Consider any request to make a material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used to re-qualify a Tenderer to submit a tender offer in terms of a previous procurement process.

Deny any such request if, as a consequence,

a) an individual firm, or a joint venture as a whole, or any individual member of the joint venture fails to comply with any of the collective or individual qualifying requirements,

b) the new partners to a joint venture were not pre-qualified in the first instance, either as individual firms or as another joint venture, or

c) in the opinion of the employer, acceptance of the material change would compromise the outcome of the pre-qualification process.

5.2 Issuing addenda

If necessary, issue addenda that may amend or amplify the tender documents to each Tenderer during the period from the date that tender documents are available until, unless otherwise notified in the tender data, three working days before the tender closing time stated in the tender data.

If, as a result of the issuing of addenda, it is necessary to extend the closing time stated in the tender data, grant such extension and notify all respondents accordingly.

5.3 Returning late tender offers

Return tender offers received after the closing time stated in the tender data unopened, unless it is necessary to open a tender submission to obtain a forwarding address to the Tenderer concerned.

5.4 Opening of tender submissions

Unless the two-envelope system is to be followed, open valid tender submissions in the presence of Tenderers who choose to attend, at the time and place stated in the tender data. Tender submissions for which acceptable reasons for withdrawal have been submitted are not opened.

Announce at the meeting held immediately after the receipt of tender submissions, at a venue indicated in the tender data, the name of each Tenderer whose tender offer is opened and, where applicable, the total of the Tenderer's prices, preferences claimed and time for completion, for the main tender offer only.

Make available, upon request, to all interested persons the record of tender parameters that are announced in respect of each tender received.

5.5 Two-envelope system

Where stated in the tender data that a two-envelope system has been followed, open only the non-financial proposal of valid tenders in the presence of Tenderers' agents, who choose to attend, at the time and place stated in the tender data and announce name of each Tenderer whose technical proposal is opened.

Evaluate the non-financial proposals offered by Tenderers, then advise Tenderers who remain in contention for the award of the contract of time and place when the financial proposals are to be opened.

Open only the financial proposals of Tenderers who, in the quality evaluation score, have more than the minimum number of points for quality stated in the tender data, and announce the score obtained for the non-financial proposals and the total price and any preferences claimed. Return unopened financial proposals to Tenderers who/ion-financial proposals failed to achieve the minimum number of points for quality.

5.6 Non-disclosure

Do not disclose to Tenderers, or to any person not officially concerned with such processes, information relating to the evaluation and comparison of tender offers, the final evaluation price and recommendations for the award of a contract, until after the award of the contract to the successful Tenderer.

5.7 Grounds for rejection and disqualification

Determine whether there has been any effort by a Tenderer to influence the processing of tender offers and instantly disqualify a Tenderer (and said Tenderer's offer) if it is established that the Tenderer engaged in corrupt or fraudulent practices.

5.8 Test for responsiveness

Determine, after opening and before detailed evaluation, whether each tender offer that was properly received

a) complies with the requirements of the standard conditions of tender in this part of SANS 10845,

b) has been properly and fully completed and signed, and

c) is responsive to the other requirements of the tender documents.

A responsive tender is one that conforms to all the terms, conditions, and scope of work of the tender documents, without material deviation or qualification. A material deviation or qualification is one which, in the employer's opinion, would

d) detrimentally affect the scope, quality, or performance of the works, services or supply identified in the scope of work,

e) significantly change the employer's or the Tenderer's risks and responsibilities under the contract, or

f) affect the competitive position of other Tenderers presenting responsive tenders, if it were to be rectified.

Reject a non-responsive tender offer, and do not allow it to be subsequently made responsive by correction or withdrawal of the non-conforming deviation or reservation.

5.9 Arithmetical errors, omission and discrepancies

Check responsive tenders for discrepancies between amounts in words and amounts in figures. Where there is a discrepancy between the amounts in figures and the amount in words, the amount in words shall govern.

Check the highest ranked tender or Tenderer with the highest number of tender evaluation points after the evaluation of tender offers in accordance with 5.11 for

a) the gross misplacement of the decimal point in any unit rate,

b) omissions made in completing the pricing schedule or bill of quantities, or

c) arithmetical errors in

1. line item totals resulting from the product of a unit rate and a quantity in bill of quantities or schedules of prices, or
2. the summation of the prices.

Notify the Tenderer of all errors or omissions that are identified in the tender offer and either confirm the tender offer as tendered or accept the corrected total of prices.

Where the Tenderer elects to confirm the tender offer as tendered, correct the errors as follows:

d) If a bill of quantities or pricing schedules apply and there is an error in the line item total resulting from the product of the unit rate and the quantity, the line item total shall govern and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line item total as quoted shall govern, and the unit rate shall be corrected.

e) Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the Tenderer's addition of prices, the total of the prices shall govern and the Tenderer shall be asked to revise selected item prices (and their rates if bill of quantities apply) to achieve the tendered total of the prices.

Consider the rejection of a tender offer if the Tenderer does not correct or accept the correction of errors in the required manner.

5.10 Clarification of a tender offer

Obtain clarification from a Tenderer on any matter that could give rise to ambiguity in a contract arising from the tender offer.

5.11 Evaluation of tender offers

5.11.1 General

Appoint an evaluation panel to evaluate submissions. Ensure that not less than three persons evaluate quality in terms of 5.11.9.

Reduce each responsive tender offer to a comparative offer and evaluate submissions using the tender evaluation methods and associated evaluation criteria and weightings that are specified in the tender data.

5.11.2 Method 1: Financial offer

In the case of a financial offer:

a) rank tender offers from the most favourable to the least favourable comparative offer, and

b) recommend the highest ranked Tenderer for the award of the contract, unless there are compelling and justifiable reasons not to do so.

Re-rank all Tenderers should there be compelling and justifiable reasons not to recommend the Tenderer with the highest ranked tender, and recommend the highest ranked Tenderer, unless there are compelling and justifiable reasons not to do so, in which case the process set out in this subclause shall be repeated.

5.11.3 Method 2: Financial offer and quality

In the case of a financial offer and quality,

a) score each tender in respect of the financial offer made and quality offered in accordance with the provisions of 5.11.7 and 5.11.9, rejecting all tender offers that fail to score the minimum number of points for quality stated in the tender data, if any,

b) calculate the total number of tender evaluation points (T_{EV}) in accordance with the following formula:

$$T_{EV} = N_{FO} + N_Q$$

where

N_{FO} is the number of tender evaluation points awarded for the financial offer made in accordance with 5.11.7;

N_Q is the number of tender evaluation points awarded for quality offered in accordance with 5.11.9,

c) rank tender offers from the highest number of tender evaluation points to the lowest, and

d) recommend the Tenderer with the highest number of tender evaluation points for the award of the contract, unless there are compelling and justifiable reasons not to do so.

Rescore and re-rank all Tenderers should there be compelling and justifiable reasons not to recommend the Tenderer with the highest number of tender evaluation points, and recommend the Tenderer with the highest number of tender evaluation points, unless there are compelling and justifiable reasons not to do so, in which case the process set out in this subclause shall be repeated.

5.11.4 Method 3: Financial offer and preferences

In the case of a financial offer and preferences:

a) score each tender in respect of the financial offer made and the preferences claimed, if any, in accordance with the provisions of 5.11.7 and 5.11.8,

b) calculate the total number of tender evaluation points (T_{Ev}) in accordance with the following formula:

$$T_{EV} = N_{FO} + N_P$$

where

N_{FO} is the number of tender evaluation points awarded for the financial offer made in accordance with 5.11.7;

N_P is the number of tender evaluation points awarded for preferences claimed in accordance with 5.11.8,

c) rank tender offers from the highest number of tender evaluation points to the lowest,

and

d) recommend the Tenderer with the highest number of tender evaluation points for the award of the contract, unless there are compelling and justifiable reasons not to do so.

Rescore and re-rank all Tenderers should there be compelling and justifiable reasons not to recommend the Tenderer with the highest number of tender evaluation points and recommend the Tenderer with the highest number of tender evaluation points, unless there are compelling and justifiable reasons not to do so, in which case the process set out in this subclause shall be repeated.

5.11.5 Method 4: Financial offer, quality and preferences

In the case of a financial offer, quality and preferences:

a) score each tender in respect of the financial offer made, the preference claimed, if any, and the quality offered in accordance with the provisions of 5.11.7 to 5.11.9, rejecting all tender offers that fail to score the minimum number of points for quality stated in the tender data, if any,

b) calculate the total number of tender evaluation points (T_{EV}) in accordance with the following formula, unless otherwise stated in the tender data:

$$T_{EV} = N_{FO} + N_P + N_Q$$

where

N_{FO} is the number of tender evaluation points awarded for the financial offer made in accordance with 5.11.7;

N_P is the number of tender evaluation points awarded for preferences claimed in accordance with 5.11.8;

N_Q is the number of tender evaluation points awarded for quality offered in accordance with 5.11.9,

c) rank tender offers from the highest number of tender evaluation points to the lowest, and

d) recommend the Tenderer with the highest number of tender evaluation points for the award of the contract, unless there are compelling and justifiable reasons not to do so.

Rescore and re-rank all Tenderers should there be compelling and justifiable reasons not to recommend the Tenderer with the highest number of tender evaluation points, and recommend the Tenderer with the highest number of tender evaluation points, unless there are compelling and justifiable reasons not to do so, in which case the process set out in this subclause shall be repeated.

5.11.6 Decimal places

Score financial offers, preferences and quality, as relevant, to two decimal places.

5.11.7 Scoring financial offers

Score the financial offers using the following formula:

$$N_{FO} = W_1 \, x \, A$$

Where

N_{FO} is the number of tender evaluation points awarded for the financial offer;

W1 is the maximum possible number of tender evaluation points awarded for the financial offer as stated in the tender data;

A is the number calculated using the relevant formula described in Table 1, as stated in the tender

Table 1 - Formulae for calculating the value of A^8

Formula number	Basis for comparison	Formula
1	Highest price or discount	*P/Pm*
2	Lowest price or percentage commission or fee	*Pm/P*
a Pm is the comparative offer of the most favourable comparative offer. *p* is the comparative offer of the tender offer under consideration.		

5.11.8 Scoring preferences

Confirm that Tenderers are eligible for the preferences claimed in accordance with the provisions of the tender data and reject all claims for preferences where Tenderers are not eligible for such preferences.

Calculate the total number of tender evaluation points for preferences (Np) claimed in accordance with the provisions of the tender data.

5.11.9 Scoring quality

Score each of the criteria and subcriteria for quality in accordance with the provisions of the tender data.

Calculate the total number of tender evaluation points for quality (Na) using the following formula:

$$N_Q = W_2 \, x \, \frac{S_0}{M_s}$$

Where:

W_2 is the maximum possible number of tender evaluation points awarded for the quality as stated in the tender data;

S_O is the score for quality allocated to the submission under consideration;

M_S is the maximum possible score for quality in respect of a submission.

5.12 Insurance provided by the employer

If requested by the proposed successful Tenderer, submit, for the Tenderer's information, the policies or certificates of insurance (or both) which the conditions of contract identified in the contract data require the employer to provide.

5.13 Acceptance of a tender offer

Accept a tender offer should it be considered not to present any unacceptable commercial risk, only if the Tenderer:

a) is not under restrictions, or has principals who are under restrictions, preventing participation in the employer's procurement,

b) can, as necessary and in relation to the proposed contract, demonstrate the possession of the professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, experience and reputation, expertise and personnel, to perform the contract,

c) has the legal capacity to enter into the contract,

d) is not insolvent, in receivership, bankrupt or being liquidated, does not have affairs administered by a court or a judicial officer, does not have suspended business activities, or is subject to legal proceedings with respect to any of the foregoing,

e) complies with the legal requirements, if any, stated in the tender data, and

f) is able, in the opinion of the employer, to perform the contract free of conflicts of interest.

5.14 Preparing contract documents

If necessary, revise documents that shall form part of the contract and that were issued by the employer as part of the tender documents to take account of

a) addenda issued during the tender period,

b) inclusion of some of the returnable documents, and

c) other revisions agreed between the employer and the successful Tenderer during the process of offer and acceptance.

Complete the schedule of deviations attached to the form of offer and acceptance, if any.

5.15 Completing adjudicator's contract

Unless alternative arrangements have been agreed or otherwise provided for in the contract, arrange for both parties to complete the formalities for appointing the selected adjudicator at the same time as the main contract is signed.

5.16 Notice to successful and unsuccessful Tenderers

Notify the successful Tenderer of the employer's acceptance of the tender offer by completing and returning one copy of the form of offer and acceptance before the expiry of the validity period stated in the tender data or agreed additional period.

After the successful Tenderer has been notified of the employer's acceptance of the tender, notify other Tenderers that their tender offers have not been accepted.

5.17 Providing copies of the contracts

Provide to the successful Tenderer the number of copies stated in the tender data of the signed copy of the contract as soon as possible after completion and signing of the form of offer and acceptance.

5.18 Returning of tender securities

Return tender securities to the successful Tenderer and unsuccessful Tenderers before the expiry period stated in the tender data or in the tender security.

5.19 Providing written reasons for actions taken

Provide, upon request, written reasons to Tenderers for any action that is taken in applying any of this part of SANS 10845, but withhold information which is not in the public interest to be divulged, which is considered to prejudice the legitimate commercial interests of Tenderers and respondents or which might prejudice fair competition between Tenderers.

DEPARTMENT OF WATER AND SANITATION

DWS08 - 1022 WTE

THE DRILLING AND BLASTING FOR DAM FOUNDATION EXCAVATION AND SLOPE PROTECTION FOR THE CLANWILLIAM DAM IN THE WESTERN CAPE PROVINCE

T2: RETURNABLE DOCUMENTS AND SCHEDULES

CONTENTS

T2.1: RETURNABLE DOCUMENTS AND SCHEDULES

T2.2: LIST OF RETURNABLE DOCUMENTS AND SCHEDULES

T2.1 RETURNABLE DOCUMENTS AND SCHEDULES

THE TENDER DOCUMENT MUST BE SUBMITTED AS A WHOLE i.e. All volumes (including the fully priced and extended Provisional Bills of Quantities) as is bound together in one single document herein. All forms must be properly completed in black ink as required, and the document shall not be taken apart or altered in any way whatsoever.

Note: Should any of the below-mentioned documents and/or the entire Tender Enquiry Document not be submitted the tender submission may be viewed as NON-RESPONSIVE.

T2.2 LIST OF RETURNABLE DOCUMENTS AND SCHEDULES

The tendered must complete the following returnable document/schedules:

RETURNABLE SCHEDULES REQUIRED FOR TENDER EVALUATION PURPOSES THAT WILL BE INCORPORATED INTO THE CONTRACT		
Doc. Ref. Nr.	**Document/ Schedule**	**Completed (Tick)**
SBD 1	SBD 1-: Invitation to Bid	
SBD 3.2	SBD 3.2: Bill of Quantities – Non-Firm Price (Priced and extended Provisional Bill of Quantities - Part C2.2)	
SBD 4	SBD 4: Declaration of Interest	
SBD 6.1	SBD 6.1: Preference Points Claim Form: General Conditions and Definitions	
FORM A	Certificate of Attendance at Compulsory Site Briefing session	
FORM B	Record of Addenda to Tender Documents	
FORM C	Compulsory Declaration	
FORM D	Certificate Authority of Signatory	
FORM E	Proposed Qualifications (if applicable)	
FORM F	Annual Financial Statements Declaration	
FORM G	Pro Forma Form of Offer and Acceptance (Part C1.1)	
FORM H	Contract Data (Part C1.2)	
FORM I	Pro Forma Performance Guarantee (Part C1.3)	
FORM J	Contractor's health and safety declaration	
FORM K	Agreement in terms of section 37(2) of the occupational health and safety act, no.85 of 1993 (Form of Occupational Health and Safety Act 1993)	
FORM L	Verification Documentation	
ANNEXURE A	Preferencing Schedule for Broad Based Black Economic Empowerment Status, together with a copy of B-BBEE certificate	
ANNEXURE B	Proof of active Contractor Registration issued by the Construction Industry Development Board (CIDB)	
ANNEXURE C	A valid copy/copies of Tax Compliance Status Pin page issued by the South African Revenue Services.	
ANNEXURE D	Central Supplier Database (CSD) proof of registration containing MAAA number.	
ANNEXURE E	Originally certified copies of Bidder's CIPC company registration documents listing all members with percentages	
ANNEXURE G	Letter of good standing from COIDA (Compensation for Occupational Injuries & Diseases Act)	

RETURNABLE SCHEDULES REQUIRED FOR TENDER EVALUATION PURPOSES THAT WILL BE INCORPORATED INTO THE CONTRACT		
Doc. Ref. Nr.	**Document/ Schedule**	**Completed (Tick)**
ANNEXURE H	Tenderer's specific experience related to this project (similar work undertaken and completed by Bidder)	
ANNEXURE H-1	Schedule of similar work undertaken	
ANNEXURE J	Managerial Capacity	
ANNEXURE J-1	Schedule of Qualifications / Experience of key project team members. Schedule: Experience of key staff with CV's (inclusive certified certificates of qualifications) of applicable work for key personnel.	
ANNEXURE K	Schedule of Proposed sub-contractor together with a pro-forma sub-contracting agreement signed by both parties	
ANNEXURE L	Schedule of Plant and Equipment	
ANNEXURE M	Preliminary Method statements: Drilling & Blasting	
ANNEXURE N	Preliminary Method statements: Rock Support	
ANNEXURE O	Supporting Documents	

NOTE: Failure to provide all these listed documents may result in the tender not being evaluated

PART A
INVITATION TO BID

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE (*NAME OF DEPARTMENT/ PUBLIC ENTITY*)					
BID NUMBER:	DWS08 1022 WTE	CLOSING DATE:	29 NOVEMBER 2022	CLOSING TIME:	11H00
DESCRIPTION	**THE DRILLING AND BLASTING FOR DAM FOUNDATION EXCAVATION AND SLOPE PROTECTION FOR THE CLANWILLIAM DAM IN THE WESTERN CAPE PROVINCE CIDB CONTRACTOR GRADING DESIGNATION OF CIDB 9SC OR CIDB 9SE OR HIGHER**				

BID RESPONSE DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT (*STREET ADDRESS*)
THE BID BOX AT THE ENTRANCE OF ZWAMADAKA BUILDING
157 FRANCIS BAARD STREET, PRETORIA, 0001

BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO		TECHNICAL ENQUIRIES MAY BE DIRECTED TO:	
CONTACT PERSON	**Bid Office**	CONTACT PERSON	**Mr. M Rohrs**
TELEPHONE NUMBER	**012 336 7780/6562/8151/7596**	TELEPHONE NUMBER	
FACSIMILE NUMBER		FACSIMILE NUMBER	
E-MAIL ADDRESS	bidenquirieswte@dws.gov.za	E-MAIL ADDRESS	RohrsM@dws.gov.za

SUPPLIER INFORMATION					
NAME OF BIDDER					
POSTAL ADDRESS					
STREET ADDRESS					
TELEPHONE NUMBER	CODE		NUMBER		
CELLPHONE NUMBER					
FACSIMILE NUMBER	CODE		NUMBER		
E-MAIL ADDRESS					
VAT REGISTRATION NUMBER					
SUPPLIER COMPLIANCE STATUS	TAX COMPLIANCE SYSTEM PIN:		**OR**	CENTRAL SUPPLIER DATABASE No:	MAAA
B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE	TICK APPLICABLE BOX] ☐ Yes ☐ No		B-BBEE STATUS LEVEL SWORN AFFIDAVIT		[TICK APPLICABLE BOX] ☐ Yes ☐ No

[A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE/ SWORN AFFIDAVIT (FOR EMES & QSEs) MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE]			
ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?	☐Yes ☐No [IF YES ENCLOSE PROOF]	ARE YOU A FOREIGN BASED SUPPLIER FOR **THE GOODS /SERVICES /WORKS OFFERED?**	☐Yes ☐No [IF YES, ANSWER THE QUESTIONNAIRE BELOW]

QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS	
IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)?	☐ YES ☐ NO
DOES THE ENTITY HAVE A BRANCH IN THE RSA?	☐ YES ☐ NO
DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA?	☐ YES ☐ NO
DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA?	☐ YES ☐ NO
IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION?	☐ YES ☐ NO

IF THE ANSWER IS "NO" TO ALL OF THE ABOVE, THEN IT IS NOT A REQUIREMENT TO REGISTER FOR A TAX COMPLIANCE STATUS SYSTEM PIN CODE FROM THE SOUTH AFRICAN REVENUE SERVICE (SARS) AND IF NOT REGISTER AS PER 2.3 BELOW.

PART B
TERMS AND CONDITIONS FOR BIDDING

1. BID SUBMISSION:
1.1. BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION.
1.2. **ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED–(NOT TO BE RE-TYPED) OR IN THE MANNER PRESCRIBED IN THE BID DOCUMENT.**
1.3. THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT, 2000 AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2017, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.
1.4. **THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FILL IN AND SIGN A WRITTEN CONTRACT FORM (SBD7).**
2. TAX COMPLIANCE REQUIREMENTS
2.1 BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.
2.2 BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VERIFY THE TAXPAYER'S PROFILE AND TAX STATUS.
2.3 APPLICATION FOR TAX COMPLIANCE STATUS (TCS) PIN MAY BE MADE VIA E-FILING THROUGH THE SARS WEBSITE WWW.SARS.GOV.ZA.
2.4 BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.
2.5 IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.
2.6 WHERE NO TCS PIN IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.
2.7 NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE, COMPANIES WITH DIRECTORS WHO ARE PERSONS IN THE SERVICE OF THE STATE, OR CLOSE CORPORATIONS WITH MEMBERS PERSONS IN THE SERVICE OF THE STATE."

NB: FAILURE TO PROVIDE / OR COMPLY WITH ANY OF THE ABOVE PARTICULARS MAY RENDER THE BID INVALID.

SIGNATURE OF BIDDER: ……

CAPACITY UNDER WHICH THIS BID IS SIGNED: ……
(Proof of authority must be submitted e.g. company resolution)

DATE: ……

NB: FAILURE TO PROVIDE ANY OF THE ABOVE PARTICULARS MAY RENDER THE BID INVALID.

SBD 3.2

PRICING SCHEDULE – NON-FIRM PRICES (PURCHASES)

SBD 3.2 is in section – Contract C2, under C2.2

Complete this document and place back into bid at C2.2

BIDDER'S DISCLOSURE

1. PURPOSE OF THE FORM

Any person (natural or juristic) may make an offer or offers in terms of this invitation to bid. In line with the principles of transparency, accountability, impartiality, and ethics as enshrined in the Constitution of the Republic of South Africa and further expressed in various pieces of legislation, it is required for the Bidder to make this declaration in respect of the details required hereunder.

Where a person/s are listed in the Register for Tender Defaulters and / or the List of Restricted Suppliers, that person will automatically be disqualified from the bid process.

2. Bidder's declaration

2.1 Is the Bidder, or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest1 in the enterprise, employed by the state? **YES/NO**

2.1.1 If so, furnish particulars of the names, individual identity numbers, and, if applicable, state employee numbers of sole proprietor/ directors / trustees / shareholders / members/ partners or any person having a controlling interest in the enterprise, in table below.

Full Name	Identity Number	Name of State institution

[1] the power, by one person or a group of persons holding the majority of the equity of an enterprise, alternatively, the person/s having the deciding vote or power to influence or to direct the course and decisions of the enterprise.

2.2 Do you, or any person connected with the Bidder, have a relationship with any person who is employed by the procuring institution? **YES/NO**

2.2.1 If so, furnish particulars:

……

……

2.3 Does the Bidder or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest in the enterprise have any interest in any other related enterprise whether or not they are bidding for this contract? **YES/NO**

2.3.1 If so, furnish particulars:

……

……

3 DECLARATION

I, the undersigned, (name)…… in submitting the accompanying bid, do hereby make the following statements that I certify to be true and complete in every respect:

3.1 I have read and I understand the contents of this disclosure;

3.2 I understand that the accompanying bid will be disqualified if this disclosure is found not to be true and complete in every respect;

3.3 The Bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium2 will not be construed as collusive bidding.

3.4 In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications, prices, including methods, factors or formulas used to calculate prices, market allocation, the intention or decision to submit or not to submit the bid, bidding with the intention not to win the bid and conditions or delivery particulars of the products or services to which this bid invitation relates.

3.4 The terms of the accompanying bid have not been, and will not be, disclosed by the Bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.

[2] Joint venture or Consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract.

3.5 There have been no consultations, communications, agreements or arrangements made by the Bidder with any official of the procuring institution in relation to this procurement process prior to and during the bidding process except to provide clarification on the bid submitted where so required by the institution; and the Bidder was not involved in the drafting of the specifications or terms of reference for this bid.

3.6 I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

I CERTIFY THAT THE INFORMATION FURNISHED IN PARAGRAPHS 1, 2 and 3 ABOVE IS CORRECT.
I ACCEPT THAT THE STATE MAY REJECT THE BID OR ACT AGAINST ME IN TERMS OF PARAGRAPH 6 OF PFMA SCM INSTRUCTION 03 OF 2021/22 ON PREVENTING AND COMBATING ABUSE IN THE SUPPLY CHAIN MANAGEMENT SYSTEM SHOULD THIS DECLARATION PROVE TO BE FALSE.

……	……
Signature	Date
……..	……
Position	Name of Bidder

SBD 6.1

PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2017

This preference form must form part of all bids invited. It contains general information and serves as a claim form for preference points for Broad-Based Black Economic Empowerment (B-BBEE) Status Level of Contribution.

NB: BEFORE COMPLETING THIS FORM, BIDDERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF B-BBEE, ASPRESCRIBED N THE PREFERENTIAL PROCUREMENTREGULATIONS, 2017.

1. GENERAL CONDITIONS

1.1 The following preference point systems are applicable to all bids:

- the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included); and
- the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).

1.2

a) The value of this bid is estimated to exceed R50 000 000 (all applicable taxes included) and therefore the 90/10 preference point system shall be applicable: or

1.3 Points for this bid shall be awarded for:

(a) Price; and

(b) B-BBEE Status Level of Contributor.

1.4 The maximum points for this bid are allocated as follows:

	POINTS
PRICE	90
B-BBEE STATUS LEVEL OF CONTRIBUTOR	10
Total points for Price and B-BBEE must not exceed	**100**

1.5 Failure on the part of a bidder to submit proof of B-BBEE Status level of contributor together with the bid, will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed.

1.6 The purchaser reserves the right to require of a bidder, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the purchaser.

2. DEFINITIONS

(a) **"B-BBEE"** means broad-based black economic empowerment as defined in section 1 of the Broad-Based Black Economic Empowerment Act;

(b) "**B-BBEE status level of contributor"** means the B-BBEE status of an entity in terms

of a code of good practice on black economic empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act;

(c) **"bid"** means a written offer in a prescribed or stipulated form in response to an invitation by an organ of state for the provision of goods or services, through price quotations, advertised competitive bidding processes or proposals.

(d) **"Broad-Based Black Economic Empowerment Act"** means the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);

(e) **"EME"** means an Exempted Micro Enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9 (1) of the Broad-Based Black Economic Empowerment Act.

(f) **"functionality"** means the ability of a Tenderer to provide goods or services in accordance with specifications as set out in the tender documents.

(g) **"prices"** includes all applicable taxes less all unconditional discounts.

(h) **"proof of B-BBEE status level of contributor"** means:

1) B-BBEE Status level certificate issued by an authorized body or person.

2) A sworn affidavit as prescribed by the B-BBEE Codes of Good Practice.

3) Any other requirement prescribed in terms of the B-BBEE Act.

(i) **"QSE"** means a qualifying small business enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9 (1) of the Broad-Based Black Economic Empowerment Act;

(j) **"rand value"** means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;

3. POINTS AWARDED FOR PRICE

3.1 THE 80/20 OR 90/10 PREFERENCE POINT SYSTEMS

A maximum of 80 or 90 points is allocated for price on the following basis:

80/20 **or** **90/10**

$$Ps = 80\left(1 - \frac{Pt - P\min}{P\min}\right) \quad \text{or} \quad Ps = 90\left(1 - \frac{Pt - P\min}{P\min}\right)$$

Where

Ps = Points scored for price of bid under consideration

Pt = Price of bid under consideration

Pmin = Price of lowest acceptable bid

4. POINTS AWARDED FOR B-BBEE STATUS LEVEL OF CONTRIBUTOR

4.1 In terms of Regulation 6 (2) and 7 (2) of the Preferential Procurement Regulations, preference points must be awarded to a bidder for attaining the B-BBEE status level of contribution in accordance with the table below:

B-BBEE Status Level of Contributor	Number of points (90/10 system)	Number of points (80/20 system)
1	10	20
2	9	18
3	6	14
4	5	12
5	4	8
6	3	6
7	2	4
8	1	2
Non-compliant contributor	0	0

5. BID DECLARATION

5.1 Bidders who claim points in respect of B-BBEE Status Level of Contribution must complete the following:

6. B-BBEE STATUS LEVEL OF CONTRIBUTOR CLAIMED IN TERMS OF PARAGRAPHS 1.4 AND 4.1

6.1 B-BBEE Status Level of Contributor: = ……(maximum of 10 or 20 points)

(Points claimed in respect of paragraph 7.1 must be in accordance with the table reflected in paragraph 4.1 and must be substantiated by relevant proof of B-BBEE status level of contributor.

7. SUB-CONTRACTING

7.1 Will any portion of the contract be sub-contracted?

(***Tick applicable box***)

YES		NO	

7.1.1 If yes, indicate:

i) What percentage of the contract will be subcontracted.....……%
ii) The name of the sub-contractor……
iii) The B-BBEE status level of the sub-contractor.....……
iv) Whether the sub-contractor is an EME or QSE
(Tick applicable box)

YES		NO	

v) Specify,by ticking the appropriate box, if subcontracting with an enterprise in terms of Preferential Procurement Regulations,2017:

Designated Group: An EME or QSE which is at last 51% owned by:	EME √	QSE √
Black people		
Black people who are youth		
Black people who are women		
Black people with disabilities		
Black people living in rural or underdeveloped areas or townships		
Cooperative owned by black people		
Black people who are military veterans		
OR		
Any EME		
Any QSE		

8. **DECLARATION WITH REGARD TO COMPANY/FIRM**

8.1 Name of company/firm:……

8.2 VAT registration number:……

8.3 Company registration number:……

8.4 TYPE OF COMPANY/ FIRM

- ☐ Partnership/Joint Venture / Consortium
- ☐ One person business/sole propriety
- ☐ Close corporation
- ☐ Company
- ☐ (Pty) Limited

[TICK APPLICABLE BOX]

8.5 DESCRIBE PRINCIPAL BUSINESS ACTIVITIES

……
……
……
……..

8.6 COMPANY CLASSIFICATION

- ☐ Manufacturer
- ☐ Supplier
- ☐ Professional service provider
- ☐ Other service providers, e.g. transporter, etc.

[*TICK APPLICABLE BOX*]

8.7 Total number of years the company/firm has been in business:……

8.8 I/we, the undersigned, who is / are duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the B-BBE status level of contributor indicated in paragraphs1.4 and 6.1 of the foregoing certificate, qualifies the company/ firm for the preference(s) shown and I / we acknowledge that:

i) The information furnished is true and correct;

ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;

iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs1.4 and 6.1, the contractor may be required to furnish documentary proof to the satisfaction of the purchaser that the claims are correct;

iv) If the B-BBEE status level of contributor has been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the purchaser may, in addition to any other remedy it may have –

(a) disqualify the person from the bidding process;

(b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;

(c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;

(d) recommend that the bidder or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted by the National Treasury from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and

(e) forward the matter for criminal prosecution.

WITNESSES 1. ……. 2. …….	…… SIGNATURE(S) OF BIDDERS(S) DATE: …….

FORM A

NOTICE OF SITE BRIEFING SESSION

1.1 Bidders will be invited to quote to provide a service at Clanwilliam Dam in the Western Cape. Bidders are therefore invited to the compulsory site briefing that will be held at Clanwilliam Dam Construction Site. (Personal Protective Equipment (PPE) such as safety boots will be required before entering the site to examine some of the items.)

1.2 Bidders are advised to acquaint themselves with the local conditions.

1.3 Claims that may arise at a later stage due to lack of information in this regard WILL NOT BE CONSIDERED.

2. COMPULSORY SITE BRIEFING DATE

The date and time of the site visit will be published in the Government Gazette along with the advertisement for this bid.
The site briefing session will be held at following venue: Clanwilliam Dam Construction Site

NOTE: PLEASE NOTE THAT NO CLAIMS FOR ATTENDING THE COMPULSORY SITE BRIEFING SESSION SHALL BE CONSIDERED. ALL COSTS PERTAINING TO ATTENDING THIS SESSION SHALL BE BOURNE BY THE CONTRACTOR(S).

3. SITE DESCRIPTION

The dam site is situated on the Olifants River, in the Western Cape, approximately 2 km South- West of Clanwilliam town in the Western Cape province.

The site is immediately next to the N7 and accessed through a controlled gate. The gravel site roads will be regularly maintained but could get challenging under abnormal rainfall conditions.

There compulsory site briefing session shall be held as follows:

OPERATIONAL AREA	VENUE FOR COMPULSORY SITE MEETING	GPS COORDINATES		CONTACT PERSON	CONTACT NUMBERS
		SOUTH	EAST		
Western Cape West Coast Clanwilliam	Clanwilliam Dam Raising Construction Site	32º11'28.02"S	18º 52' 29.96"E	Mr. A. Frylinck	Clanwilliam dam reception: 027 050 0886 **OR** A Frylinck 064 761 0506

Note: These contact numbers are only for directions queries (if get lost). All other queries will be dealt with in writing via emails.

FORM A CERTIFICATE OF ATTENDANCE AT SITE BRIEFING

This is to certify that *(Tenderer) I,* .....

was represented by the person of (Bidder) .....

of*(address)* .....

Telephone number .....

named below at the compulsory meeting held for all Tenderers at *(location)*.....

on*(date)*..... starting at *(time)*.....

I acknowledge that the purpose of the meeting was to acquaint myself with the site of the works and / or matters incidental to doing the work specified in the tender documents in order for me to take account of everything necessary when compiling our rates and prices included in the tender.

Having previously studied the documents, I carefully examined the site and equipment. I have made myself familiar with all the equipment likely to influence the work and the cost thereof.

I further certify that I am satisfied with the description of the work and the explanations given by the Department of Water and Sanitation Representative, and I understand perfectly the work to be done, as specified and implied, in the execution of this Contract.

Particulars of person attending the meeting: (Signed on behalf of Bidder) PRINT NAME & SIGNATURE

Name: .. .. Signature: .....

Capacity: .....

Attendance of the above person at the meeting is confirmed by the Employer's representative, namely:

(PRINTED NAME & SIGNATURE)

Name: . ..... Signature: .....

Capacity: ..... Date and Time: .....

FORM B RECORD OF ADDENDA TO TENDER DOCUMENTS

We confirm that the following communications received from the Employer before the submission of this tender offer, amending the tender documents, have been taken into account in this tender offer:

	Date	Title or Details
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		

Attach additional pages if more space is required.

Signed ..... Date .....

Name ..... Position .....

Tenderer .....

FORM C COMPULSORY DECLARATION

The following particulars must be furnished. In the case of a joint venture, separate declaration in respect of each partner must be completed and submitted.

Section 1: **Enterprise Details**

Name of enterprise:	
Contact person:	
Email:	
Telephone:	
Cell no	
Fax:	
Physical address	
Postal address	

Section 2: Particulars of companies and close corporations

Company / Close Corporation registration number	

Section 3: SARS Information

Tax reference number	
VAT registration number:	*State Not Registered if not registered for VAT*

Section 4: CIDB registration number

CIDB Registration number *(if applicable)*	

Section 5: National Treasury Central Supplier Database

Supplier number	
Unique registration reference number	

Section 6: Particulars of principals

principal: means a natural person who is a partner in a partnership, a sole proprietor, a director of a company established in terms of the Companies Act of 2008 (Act No. 71 of 2008) or a member of a close corporation registered in terms of the Close Corporation Act, 1984, (Act No. 69 of 1984).

Full name of principal	Identity number	Personal tax reference number

Attach separate page if necessary

Section 7: Record in the service of the state

Indicate by marking the relevant boxes with a cross, if any principal is currently or has been within the last 12 months in the service of any of the following:

- ☐ a member of any municipal council
- ☐ a member of any provincial legislature
- ☐ a member of the National Assembly or the National Council of Province
- ☐ a member of the board of directors of any municipal entity
- ☐ an official of any municipality or municipal entity
- ☐ an employee of any department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act of 1999 (Act No. 1 of 1999)
- ☐ a member of an accounting authority of any national or provincial public entity
- ☐ an employee of Parliament or a provincial legislature

If any of the above boxes are marked, disclose the following:

Name of principal	**Name of institution, public office, board or organ of state and position held**	**Status of service** *(tick appropriate column)*	
		Current	**Within last 12 months**

*insert separate page if necessary

Section 8: Record of family member in the service of the state

family member: a person's spouse, whether in a marriage or in a customary union according to indigenous law, domestic partner in a civil union, or child, parent, brother, sister, whether such a relationship results from birth, marriage or adoption

Indicate by marking the relevant boxes with a cross, if any family member of a principal as defined in section 5 is currently or has been within the last 12 months been in the service of any of the following:

- ☐ a member of any municipal council
- ☐ a member of any provincial legislature
- ☐ a member of the National Assembly or the National Council of Province
- ☐ a member of the board of directors of any municipal entity
- ☐ an official of any municipality or municipal entity
- ☐ an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999)
- ☐ a member of an accounting authority of any national or provincial public entity
- ☐ an employee of Parliament or a provincial legislature

Name of family member	**Name of institution, public office, board or organ of state and position held**	**Status of service** **(tick appropriate column)**	
		Current	**Within last 12 months**

*insert separate page if necessary

Section 9: Record of termination of previous contracts with an organ of state

Was any contract between the tendering entity including any of its joint venture partners terminated during the past 5 years for reasons other than the employer no longer requiring such works or the employer failing to make payment in terms of the contract.

☐ Yes ☐ No (Tick appropriate box)

If yes, provide particulars (interest separate page if necessary)

Section 10: Declaration

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the tendering entity confirms that the contents of this Declaration are within my personal knowledge, and save where stated otherwise in an attachment hereto, are to the best of my belief both true and correct, and:

i) neither the name of the tendering entity or any of its principals appears on:

a) the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act of 2004 (Act No. 12 of 2004)

b) National Treasury's Database of Restricted Suppliers (see www.treasury.gov.za)

ii) neither the tendering entity of any of its principals has within the last five years been convicted of fraud or corruption by a court of law (including a court outside of the Republic of South Africa);

iii) any principal who is presently employed by the state has the necessary permission to undertake remunerative work outside such employment (attach permission to this declaration);

iv) the tendering entity is not associated, linked or involved with any other tendering entities submitting tender offers

v) has not engaged in any prohibited restrictive horizontal practices including consultation, communication, agreement, or arrangement with any competing or potential tendering entity regarding prices, geographical areas in which goods and services will be rendered, approaches to determining prices or pricing parameters, intentions to submit a tender or not, the content of the submission (specification, timing, conditions of contract etc) or intention to not win a tender;

vi) has no other relationship with any of the Tenderers or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest;

vii) neither the Tenderer or any of its principals owes municipal rates and taxes or municipal service charges to any municipality or a municipal entity and are not in arrears for more than 3 months;

viii) SARS may, on an on-going basis during the term of the contract, disclose the Tenderer's tax compliance status to the Employer and when called upon to do so, obtain the written consent of any subcontractors who are subcontracted to execute a portion of the contract that is entered into in excess of the threshold prescribed by the National Treasury, for SARS to do likewise.

Signed .....

Name ..... Date .....

Position .....

Enterprise name .....

.....

NOTE 1 The Standard Conditions of Tender contained in SANS 10845-3 prohibits anticompetitive practices (clause 3.1) and requires that Tenderers avoid conflicts of interest, only submit a tender offer if the Tenderer or any of his principals is not under any restriction to do business with employer (4.1.1) and submit only one tender either as a single tendering entity or as a member in a joint venture (clause 4.13.1). Clause 5.7 also empowers the Employer to disqualify any Tenderer who engages in fraudulent and corrupt practice. Clause 3.1 also requires Tenderers to comply with all legal obligations.

NOTE 2: Section 30(1) of the Public Service Act, 1994, prohibits an employee (person who is employed in posts on the establishment of departments) from performing or engaging remunerative work outside his or her employment in the relevant department, except with the written permission of the executive authority of the department. When in operation, Section 8(2) of the Public Administration Management Act, 2014, will prohibit an employee of the public administration (i.e. organs of state and all national departments, national government components listed in Part A of Schedule 3 to the Public Service Act, provincial departments including the office of the premier listed in Schedule 1 of the Public Service Act and provincial departments listed in schedule 2 of the Public Service Act, and provincial government components listed in Part B of schedule 3 of the Public Service Act) or persons contracted to executive authorities in accordance with the provisions of section 12A of the Public Service Act of 1994 or persons performing similar functions in organs of state from conducting business with the State or to be a director of a public or private company conducting business with the State. The offence for doing so is a fine or imprisonment for a period not exceeding 5 years or both. It is also a serious misconduct which may result in the termination of employment by the employer.

FORM C

NOTE 3: Regulation 44 of Supply Chain Management regulations issued in terms of the Municipal Finance Management Act of 2003 requires that organs of state and municipal entities not award a contract to a person who is the service of the state, a director, manager or principal shareholder in the service of the state or who has been in the service of the state in the previous twelve months.

NOTE: 4: Regulation 45 of Supply Chain Management regulations requires a municipality or municipal entity to disclose in the notes to the annual statements particulars of any award made to a close family member in the service of the state.

NOTE: 5 Corrupt activities which give rise to an offence in terms of the Prevention and Combating of Corrupt Activities Act of 2004) include improperly influencing in any way the procurement of any contract, the fixing of the price, consideration or other moneys stipulated or otherwise provided for in any contract and the manipulating by any means of the award of a tender.

NOTE: 6 Section 4 of the Competition Act of 1998 prohibits restrictive horizontal practice including agreements between parties in a horizontal relationship which have the effect of substantially preventing or lessening competition, directly or indirectly fixing prices or dividing markets or constitute collusive tendering. Section 5 also prohibits restrictive vertical practices. Any restrictive practices that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties.

Signed ..... Date .....

Name ..... Position .....

Tenderer .....

FORM D CERTIFICATE AUTHORITY OF SIGNATORY

Indicate the status of the Tenderer by ticking the appropriate box hereunder. The Tenderer must complete the certificate set out below for the relevant category. Delete whichever is inapplicable.

A Company	B Partnership	C Joint Venture	D Sole Proprietor	E Close Corporation

A. CERTIFICATE FOR COMPANY

I, ……..……, chairperson of the board of directors of

……..……..……..……,

hereby confirm that by resolution of the board taken on ……..…… 20……..…...

Mr/Ms……..……, acting in the capacity

of ……, was authorised to sign all documents in connection with this tender for

Contract reference number ……..…… and any contract resulting from it

on behalf of the company.

As witnesses:-

1. …… ……
Witness Chairman

2. …… ……
Witness Date

FORM D

B. CERTIFICATE FOR PARTNERSHIP

We, the undersigned, being the key partners in the business trading as

……

hereby authorise Mr/Ms ……,

acting in the capacity of …… to sign

all documents in connection with the tender for Contract reference number ……..…..……..

and any contract resulting from it on our behalf.

NAME	ADDRESS	SIGNATURE	DATE

NOTE: This certificate is to be completed and signed by all of the key partners upon whom rests the direction of the affairs of the Partnership as a whole.

FORM D

C. CERTIFICATE FOR JOINT VENTURE

We, the undersigned, are submitting this tender offer in Joint Venture and hereby authorise Mr/Ms ……, authorised signatory of the company ……, acting in the capacity of lead partner, to sign all documents in connection with the tender offer for Contract reference number…… and any contract resulting from it on our behalf.

This authorisation is evidenced by the attached power of attorney signed by legally authorised signatories of all the partners to the Joint Venture.

NAME OF FIRM	ADDRESS	AUTHORIZING SIGNATURE, NAME & CAPACITY
Lead Partner		
Partner 1		
Partner 2		
Partner 3		
Partner 4		

FORM D

D. CERTIFICATE FOR SOLE PROPRIETOR.

I, …….…… hereby confirm that I am the sole owner of

the business trading as ……

As witnesses:-

1. …… ……
Witness Signature: Sole owner

2. …… ……
Witness Date

FORM D

E. CERTIFICATE FOR CLOSE CORPORATION

We, the undersigned, being the key partners in the business trading as

……..……..……

……..……..……

hereby authorise Mr/Ms ……,

acting in the capacity of …… to sign

all documents in connection with the tender for Contract reference number ……..…..……..

and any contract resulting from it on our behalf.

NAME	ADDRESS	SIGNATURE	DATE

NOTE: This certificate is to be completed and signed by all of the key members upon whom rests the direction of the affairs of the Close Corporation as a whole.

FORM E PROPOSED QUALIFICATIONS

The Tenderer should record any other qualifications he may wish to make, to the tender documents, in this Returnable Schedule. Alternatively, a Tenderer may state such qualifications in a covering letter to his tender and reference such letter in this schedule.

The Department reserve the rights to accept and or reject any proposed qualifications.

The Tenderer's attention is drawn to clause 5.8 (d, e & f) of SANS 10845-3 regarding proposed qualifications.

Page	Clause or item	Proposal

Signed ..... Date .....

Name ..... Position .....

Tenderer .....

FORM F ANNUAL FINANCIAL STATEMENTS DECLARATION

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the respondent, confirms that:

1) The enterprise's financial year end is . . . . . .

2) The enterprise's financial statements have been prepared in accordance with the provisions of the Companies Act of 2008 or the Close Corporation Act of 1984, as applicable

3) The enterprise has compiled its financial accounts [tick one box]:

☐ internally ☐ independently

4) The following statement applies to the enterprise [tick one box and provide relevant information]

☐ enterprise has had its financial statements audited;

name of auditor . . . . . .

☐ enterprise is required by law to have an independent review of its financial statements

name of independent reviewer . . . . . .

☐ enterprise has not had its financial statements audited and is not required by law to have an independent review or audit of such statements

5) The attached income statement and balance sheet is a true extract from the financial statements complying with applicable legislation for the preceding financial year within 12 months of the financial year end.

[Attach the income statement and the balance sheet contained in the financial statement]

6) The annual turnover for the last financial year is R . . . . . .

7) The total assets as at the end of the last financial year is R . . . . . .

8) The total liabilities as at the end of the financial year is R . . . . . .

I hereby declare that the contents of this Declaration are within my personal knowledge, and save where stated otherwise are to the best of my belief both true and correct.

Signed ..... Date .....

Name ..... Position .....

Tender .....

FORM G PRO FORMA FORM OF OFFER AND ACCEPTANCE

Pro Forma Form of Offer and Acceptance is in section – Contract C1, under C1.1

Complete this document and place back into bid at C1.1

FORM H CONTRACT DATA

Contract data is in section – Contract C1, under C1.2

Complete this document and place back into bid at C1.2

FORM I PRO FORMA PERFORMANCE GUARANTEE

Pro Forma Performance Guarantee is in section – Contract C1, under C1.3

Complete this document and place back into bid at C1.3

FORM J CONTRACTOR'S HEALTH AND SAFETY DECLARATION

In terms of Clause 4(4) of the OHSA 1993 Construction Regulations 2003 (referred to as "the Regulations" hereafter), a Contractor may only be appointed to perform construction work if the Employer is satisfied that the Contractor has the necessary competencies and resources to carry out the work safely in accordance with the Occupational Health and Safety Act No 85 of 1993 and the OHSA 1993 Construction Regulations 2003.

To that effect a person duly authorised by the Tenderer must complete and sign the declaration hereafter in detail.

Declaration by Tenderer

1. I the undersigned hereby declare and confirm that I am fully conversant with the Occupational Health and Safety Act No 85 of 1993 (as amended by the Occupational Health and Safety Amendment Act No 181 of 1993), and the OHSA 1993 Construction Regulations 2003.
2. I hereby declare that my company / enterprise has the competence and the necessary resources to safely carry out the construction work under this contract in compliance with the Construction Regulations and the Employer's Health and Safety Specifications.
3. I hereby undertake, if my tender is accepted, to provide a sufficiently documented Health and Safety Plan in accordance with Regulation 5(1) of the Construction Regulations, approved by the Employer or his representative, before I will be allowed to commence with construction work under the contract. I hereby agree that my company/enterprise will not have a claim for compensation for delay or extension of time because of my failure to obtain the necessary approval for the said safety plan.
4. I confirm that copies of my company's approved Health and Safety Plan, the Employer's Safety Specifications as well as the OHSA 1993 Construction Regulations 2003 will be provided on site and will at all times be available for inspection by the Contractor's personnel, the Employer's personnel, visitors, and officials and inspectors of the Department of Labour.
5. I hereby confirm that adequate provision has been made in my tendered rates and prices in the bill of quantities to cover the cost of all resources, actions, training and all health and safety measures envisaged in the OHSA 1993 Construction Regulations 2003, including the cost for specific items that may be scheduled in the bill of quantities.
6. I hereby confirm that I will be liable for any penalties that may be applied by the Employer in terms of the said Regulations for failure on my part to comply with the provisions of the Act and the Regulations as set out in Regulation 30 of the Regulations.
7. I agree that my failure to complete and execute this declaration to the satisfaction of the Employer will mean that I am unable to comply with the requirements of the OHSA 1993 Construction Regulations 2003, and accept that my tender will be prejudiced and may be rejected at the discretion of the Employer.
8. I am aware of the fact that, should I be awarded the contract, I must submit the notification required in terms of Regulation 3 of the OHSA 1993 Construction Regulations 2003 before I will be allowed to proceed with any work under the contract.

SIGNATURE: ..... DATE: .....….....
(of person authorised to sign on behalf of the Tenderer)

FORM K HEALTH AND SAFETY ACT AGREEMENT

AGREEMENT IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, NO. 85 OF 1993

The Employer and the Contractor hereby agree, in terms of the provisions of Section 37(2) of the Occupational Health and Safety, Act No. 85 of 1993, hereinafter referred to as 'the Act', that the Contractor as an employer in its own right and in its capacity as Contractor for the execution of the works, shall have certain obligations and that the following arrangements shall apply between them to ensure compliance by the Contractor with the provisions of the Act, namely:-

i) The Contractor undertakes to acquaint the appropriate officials and the employees of the Contractor with all relevant provisions of the Act, and the regulations promulgated in terms of the Act, and

ii) The Contractor undertake that all relevant duties, obligations and prohibitions imposed in terms of the Act and regulations will be fully complied with, and

iii) The Contractor hereby accepts sole liability for such due compliance with the relevant duties, obligations and prohibitions imposed by the Act and regulations and expressly absolves the Employer from being obliged to comply with any of the aforesaid duties, obligations and prohibitions.

iv) The Contractor shall be obliged to report forthwith to the Employer any investigation, complaint, or criminal charge which may arise as a consequence of the provisions of the Act and regulations pursuant to work performed on behalf of the Employer, and shall, on written demand, provide full details in writing of such investigation, complaint or criminal charge.

SIGNED at ……..…….…… On this …….. day of …… 20……...

For and on behalf of the Contractor: Name: _____

Company Name: _____

AS WITNESSES:

1. _____

2. _____

for and on behalf of the Employer:

AS WITNESSES:

1. _____

2. _____

NOTE: As and when required; the Contractor will be required to sign project specific agreements in terms of section 37(2) of the Occupational Health and Safety Act no 85 of 1993.

FORM L VERIFICATION DOCUMENTATION

VERIFICATION DOCUMENTATION

The Tenderer shall attach the following documentation in support of the pre-qualification specification of this bid:

Attach a valid B-BBEE Certificate or copies thereof.

Tenderers who qualify as Exempted Micro Enterprises (EME) may submit a valid Sworn Affidavit signed by the EME representative and attested by a Commissioner of Oaths confirming its annual total revenue of R10 million or less and indicating B-BBEE Level Contributor. Alternatively, the bidder may submit a valid B-BBEE Certificate for Exempted Micro Enterprises issued by the Companies & Intellectual Property Commission (CIPC) on behalf of the Department of Trade and Industry on 24 April 2018.

In the case of Qualifying Small Enterprises (QSE), if the bidding entity is more than 51% black owned, the bidder may submit a valid Sworn Affidavit, signed by the QSE representative and attested by a Commissioner of Oaths. (in line with the Justices of the Peace and Commissioners of Oaths Act, 1963). If the QSE is less than 51% black owned, then the bidding entity will be required to provide an original and valid BBBEE Certificate or copies thereof.

An EME that is regarded as a Specialized Enterprise is required to submit a sworn affidavit confirming their annual turnover/allocated budget/ gross receipt of R10 million or less and level of percentage of black beneficiaries to substantiate their EME rating claims.

A QSE is required to submit a Sworn Affidavit confirming their annual total revenue of between R10 million and R50 million and level of black ownership or a B-BBEE level verification certificate to substantiate their QSE rating claims.

NOTE: It is a requirement of this contract that the verification documentation of the names of proposed Sub-contractors for the work must be provided with the Tender.

SIGNATURE: .....……...…….. DATE: …….....
(of person authorised to sign on behalf of the Tenderer)

ANNEXURE A B – BBEE STATUS VERIFICATION CERTIFICATE

Preferencing schedule: Broad Based Black Economic Empowerment Status

Preamble

Section 10(b) of the Broad-Based Black Economic Empowerment Act of 2003 (Act No. 53 of 2003) states that "*Every organ of state and public entity must take into account and. as far as is reasonably possible. apply any* ***relevant code of good practice*** *issued in terms of this Act in developing and implementing a preferential procurement policy:"*

A number of codes of good practice have been issued in terms of Section 9(1) of the B-BBEE Act of 2003 including a generic code of good practice and various sector codes. The sector codes vary the metrics, weightings and targets used in the generic code of good practice to establish the overall performance of an entity and its B-BBBEE status. The B-BBEE status needs to be assessed in accordance with the applicable code.

1 Conditions associated with the granting of preferences

Tenderers who claim a preference shall provide sufficient evidence of their B-BBEE Status in accordance with the requirements of section 2 in respect of the applicable code as at the closing time for submissions, failing which their claims for preferences will be rejected.

2 Sufficient evidence of qualification

2.1 Exempted micro enterprises

Sufficient evidence of qualification as an Exempted Micro-Enterprise is a :

a) a registered auditor's certificate or similar certificate issued by an accounting officer as contemplated in the Close Corporation Act of 1984 in respect of the entity's last financial year or a 12 month period which overlaps with its current financial year; or a certificate issued by a verification agency and which is valid as at the closing date for submissions; or.

b) a sworn affidavit - B-BBEE Exempted Micro Enterprise (see www.thedti.gov.za/gazzettes/Affidavit_EME.pdf

2.2 Enterprises other than micro exempted enterprises

Sufficient evidence of B-BBEE Status is:

a) A valid copy of the certificate issued by a verification agency accredited by the South African National Accreditation System (SANAS) and which is valid as at the closing date for submissions; or.

b) a sworn affidavit – B-BBEE Qualifying Small Enterprise (see www.thedti.gov.za/gazzettes/BBEE_QUALIFYING_SMALL_ENTERPRISE.pdf)

3 Tender preferences claimed

The scoring shall be as follows:

B-BBEE Status Level Contributor	Number of Points (N_p) (90/10 System)
1	10
2	9
3	8
4	5
5	4
6	3
7	2
8	1
Non -Compliant	0

ANNEXURE A

4 Declaration

The Tenderer declares that

a) the tendering entity is a level contributor as stated in the submitted evidence of qualification as at the closing date for submissions

b) the tendering entity has been measured in terms of the following code *(tick applicable box)*

☐ Generic code of good practice

☐ Other – specify . . . . . .

c) the contents of the declarations made in terms of a) and b) above are within my personal knowledge and are to the best of my belief both true and correct

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the Tenderer confirms that he / she understands the conditions under which such preferences are granted and confirms that the Tenderer satisfies the conditions pertaining to the granting of tender preferences.

Signature : .....

Name : .....

Duly authorised to sign on behalf of : .....

Telephone : .....

Fax: ..... Date : .....

Name of witness . . . . . Signature of witness . . . . . .

Note: 1) Failure to complete the declaration will lead to the rejection of a claim for a preference

2) Supporting documentation of the abovementioned claim for a preference must be submitted with the tender submission to be eligible for a preference

NOTE: ATTACHED TOGETHER WITH PREFERENCING SCHEDULE THE FOLLOWING:

Attached a valid copy of B-BBEE certificate issued in accordance with the revised Notice of Clarification published in the Notice 44 of 2015 published in Government Gazette 38799 on 15 May 2015 by the Department of Trade and Industry.

Attached hereto this page is my / our B-BBEE Status Level verification Certificate/s. My failure to submit the certificate/s with my / our tender document may result in the award of 0 (zero) points for preference and or maybe not eligible to tender.

SIGNATURE: ..... DATE: ……..... *(of person authorised to sign on behalf of the Tenderer)*

ANNEXURE B CIDB PROOF OF REGISTRATION

CONTRACTOR'S CERTIFICATE OF REGISTRATION WITH CIDB

Attached to this page: copy of registration of Contractor Registration issued by the Construction Industry Development Board (CIDB).

Note: Only proof of registration for the specified category 9SC or 9SE or higher are acceptable. Applications, or acknowledgement of applications by CIDB, will only be acceptable if it is certain that the application will be successful and a certificate will be issued before award of the contract.

Attached hereto this page is my / our Certificate of Registration with CIDB. My failure to submit the certificate with my / our tender document will lead to the conclusion that I am / we are not registered with the CIDB and therefore will not be eligible to tender.

SIGNATURE: .....……..…….. DATE: …….....
(of person authorised to sign on behalf of the Tenderer)

ANNEXURE C TAX COMPLIANCE STATUS PIN PAGE

CONTRACTOR'S TAX COMPLIANCE STATUS PIN PAGE

Attached to this page: Valid copy of Tax Compliance Status Pin page issued by the South African Revenue Services.

Attached hereto this page is my / our Tax Compliance Status Pin page/s. My failure to submit the Tax Compliance Status Pin page with my / our tender document may lead to the conclusion that I am / we are not Tax compliant and therefore maybe not eligible to tender.

SIGNATURE: .....……...…….. DATE: …….....
(of person authorised to sign on behalf of the Tenderer)

ANNEXURE D CENTRAL SUPPLIER DATABASE

CONTRACTOR'S CENTRAL SUPPLIER DATABASE (CSD) PROOF OF REGISTRATION

Attached to this page: Central Supplier Database (CSD) proof of registration containing MAAA number.

Attached hereto this page is my / our Proof of Registration with National Treasury's Central Supplier Database (CSD).

SIGNATURE: .....……..…….. DATE: ……..
(of person authorised to sign on behalf of the Tenderer)

ANNEXURE E COMPANY INTELLECTUAL PROPERTY COMMISSION CERTIFICATE

CONTRACTOR'S COMPANY INTELLECTUAL PROPERTY COMMISSION (CIPC/CIPRO) PROOF OF REGISTRATION

Attached to this page: Originally certified copies of Bidder's CIPC / CIPRO company registration documents listing all members with percentages.

Attached hereto this page is my / our Proof of CIPC/CIPRO active registration certificate.

SIGNATURE: .....……...…….. DATE: …….....
(of person authorised to sign on behalf of the Tenderer)

ANNEXURE G LETTER OF GOOD STANDING FROM COIDA

CONTRACTOR'S LETTER OF GOOD STANDING FROM COIDA

Attached to this page: A valid letter of Good Standing with the Compensation Commissioner in terms of the Compensation for Occupational Injuries and Diseases Act No 130 of 1993 and or third parties insurance registered with Financial Service Board

Attached hereto this page is my / our Letter of Good Standing from COIDA.

SIGNATURE: .....……..…….. DATE: …….....
(of person authorised to sign on behalf of the Tenderer)

ANNEXURE H COMPANY EXPERIENCE

COMPANY EXPERIENCE

Attached to this page:

1. Schedule of similar work undertaken ➔Tenderer's specific experience related to this project (similar work undertaken and completed by Bidder).
   (To be complete on next page- Annexure H-1)
2. Completion Certificates of previous projects completed.
3. Contactable contract client reference letters.
4. Proof of the value of work undertaken.
5. Current Commitments
6. Short description of the work carried out.

Only completed projects that dealt with drill and blasting methods, for relevant work done, as per below methods, will be accepted for evaluation:

- Bulk-controlled face blasting
- Controlled blasting to dimension tolerances
- Controlled blasting to vibration tolerances
- Pre-split blasting
- Foundation trim blasting

For rock slope (support) stabilization, projects that have dealt with the following rock support methods for relevant work done, as per below methods, will be accepted for evaluation:

- Rock anchors
- Rock dowels
- Rock bolts
- Shotcrete

Where the value of the projects is stated in other currencies, state the exchange rate at the time of project execution (as indicated in below in "Schedule of Similar work undertaken" – Annexure H-1).

Please attach proof of value together with completion certificates of previous projects completed as listed in "Schedule of similar work undertaken" – Annexure H-1.

Provide a minimum of 3 contactable references of clients form whom work was carried out in the last 10 years. Contactable reference (description of the project, period of the contract, contract amount and project manager for reference).

Bidders must submit signed reference letter(s) from previous clients/employer.

This scoring system as indicated Table H.1 shall be used to score these criteria

ANNEXURE H

Table H.1: Evaluation of Company Experience

FUNCTIONAL CRITERIA: 1- COMPANY EXPERIENCE		
SUB-CRITERIA: Work experience	**MINIMUM POINTS: 9**	**MAXIMUM POINTS: 15**
Proof of 10 or more previous complete projects of relevant works [15 points] Proof of more than 8 but less than 10 completed projects of relevant works [12 points] Proof of more than 6 but less than 8 completed projects of relevant works [9 points]		

Attached hereto this page is my / our documents as listed above.

SIGNATURE: …… DATE: ……
(of person authorised to sign on behalf of the Tenderer)

ANNEXURE H-1 SCHEDULE OF SIMILAR WORK UNDERTAKEN

The Bidder shall, in the schedule hereunder, list all work of a similar nature to that contained in this Contract which has been successfully executed by him during the past ten years and/or which is at present being carried out by him.

DESCRIPTION AND LOCALITY OF WORK (NATURE OF WORK)	NAME -TELEPHONE NUMBER AND EMAIL ADDRESS OF FIRM OF ENGINEERS, MUNICIPALITY, OR GOVERNMENT DEPARTMENT WHO ADMINISTERED THE WORK	VALUE OF WORK IN RAND (Inclusive of VAT)	DATE COMPLETED OR EXPECTED TO BE COMPLETED

NOTE: IF NO SIMILAR WORK HAS BEEN CARRIED OUT, THE ABOVE SCHEDULE IS TO BE MARKED “NIL” BY THE TENDERER

NAME OF BIDDER: _____

COMPANY NAME: _____

SIGNATURE OF BIDDER: _____

DATE: _____

IMPORTANT NOTE:

FAILURE BY THE BIDDER TO LIST PREVIOUS SIMILAR WORK DONE, THE BID SHALL BE REGARDED AS NON-RESPONSIVE

ANNEXURE J MANAGERIAL CAPACITY

MANAGERIAL CAPACITY **[MAX POINTS: 25 & MIN POINTS:17,5]**

The tendered shall attach his proposed Management and key personal structure AND human resource plan for the execution of the works as follows but not limited to:

Attached to this page:

1. Organogram (showing site management reporting to top management)
2. CV's (inclusive certified certificates of qualifications) of applicable experience key personnel / staff, showing applicable experience.
   (As listed in "Schedule of qualifications / experience key project team members" – Annexure J-1).
3. Proof of qualifications, and accreditation / affiliations of applicable experience key personnel / staff. *(As listed in "Schedule of qualifications / experience of key project team members" – Annexure J-1)*
   With the following identified key project team members (but not limited to) required proof of registrations:
   - Contracts Manager: Shall have proven experience
   - Site agent: Proven relevant experience
   - Blast Designer (s): Must be an Mining/ Rock Engineer with valid ECSA register or relevant Engineer with valid ECSA registration, with relevant proven experience. Proven experience should be in the field of mining and or demolition. The blast designer will act as independent blast designer and will be responsible to sign off (approve) the blast installation before the actual blasting.
   - Blaster: Must be in position of a valid registration with SAPS.
   - Rock Support Specialist: Must be a Geotechnical Engineer -with valid ECSA registration, with relevant proven experience.

This scoring system as indicated in Table J.1 shall be used to score this criteria

NOTE: The years' experience will be the total years' experience obtained in the past 15 years

Attached hereto this page is my / our documents as listed above.

SIGNATURE: .....…….…….. DATE: ….....
(of person authorised to sign on behalf of the Tenderer)

Table J.1: Evaluation of Managerial Capacity

TABLE J.1 FUNCTIONAL CRITERIA: 2- MANAGERIAL CAPACITY		
SUB-CRITERIA: Contracts Manager (Construction Manager)	**MINIMUM POINTS:**	**MAXIMUM POINTS:**
Proof that Contracts Manager has more than 20 years of relevant work experience. [5 points] Proof that Contracts Manager has more than 15 years but less than 20 years of relevant work experience. [4 points] Proof that Contracts Manager has less than 15 years but more than 10 years of relevant work experience. [3,5 points] If the Contracts manager has less than 10 years will mean that the Bidder is non-responsive. COMPLETE ANNEXURE J & J-1 AND **ATTACHED CV'S (proven relevant experience)**	3,5	5
SUB-CRITERIA: Site Supervisor	**MINIMUM POINTS:**	**MAXIMUM POINTS:**
Proof that Site Supervisor has more than 20 years of relevant work experience. [5 points] Proof that Site Supervisor has more than 15 years but less than 20 years of relevant work experience. [4 points] Proof that Site Supervisor has less than 15 years but more than 10 years of relevant work experience. [3,5 points] If Site Supervisor has less than 10 years will mean that the bidder is non-responsive. COMPLETE ANNEXURE J & J-1 AND **ATTACHED CV'S (proven relevant experience)**	2.8	4
SUB-CRITERIA: Professional Blast Designer	**MINIMUM POINTS:**	**MAXIMUM POINTS:**
Proof that Professional Blast designer has more than 20 years of relevant work experience, after registration. [5 points] Proof that Professional Blast designer has more than 15 years but less than 20 years of relevant work experience, after registration. [4 points] Proof that Professional Blast designer has less than 15 years but more than 10 years of relevant work experience, after registration. [3,5 points] If the Professional Blast designer has less than 10 years will mean that the Bidder is non-responsive. COMPLETE ANNEXURE J & J-1 AND **ATTACHED CV'S with ECSA Registration Certificate**	3,5	5
SUB-CRITERIA: Blaster	**MINIMUM POINTS:**	**MAXIMUM POINTS:**
Proof that Blaster has more than 20 years of relevant work experience, after receiving certification of competency (blasting ticket). [5 points] Proof that Blaster has more than 15 years but less than 20 years of relevant work experience, after receiving certification of competency (blasting ticket). [4 points] Proof that Blaster has less than 15 years but more than 10 years of relevant work experience, after receiving certification of competency (blasting ticket). [3,5 points] If the Blaster has less than 10 years will mean that the Bidder is non-responsive. COMPLETE ANNEXURE J & J-1 **ATTACHED CV'S with COC**	3,5	5

ANNEXURE J

SUB-CRITERIA: Rock Support Specialist	MINIMUM POINTS:	MAXIMUM POINTS:
Proof that Rock Support Specialist (Geotechnical Engineer) has more than 20 years of relevant work experience, after registration. [5 points] Proof that Rock Support Specialist (Geotechnical Engineer) has more than 15 years but less than 20 years of relevant work experience, after registration. [4 points] Proof that Rock Support Specialist (Geotechnical Engineer) has less than 15 years but more than 10 years of relevant work experience, after registration. [3,5 points] If the Rock Support Specialist (Geotechnical Engineer) has less than 10 years will mean that the Bidder is non-responsive. COMPLETE ANNEXURE J & J-1 AND **ATTACHED CV'S with ECSA Registration Certificate**	3,5	5

ANNEXURE J - 1 SCHEDULE OF QUALIFICATIONS / EXPERIENCE OF KEY PROJECT TEAM MEMBERS

SCHEDULE OF QUALIFICATIONS / EXPERIENCE OF KEY PROJECT TEAM MEMBERS

The Bidder shall state hereunder the qualifications and experience of each key project team members whom he proposes to employ in the execution of all or main sections of the works.

NAME	QUALIFICATIONS	PROJECT TEAM MEMBER (WORKS AND TIME SPENT)

SIGNATURE OF BIDDER

DATE

ANNEXURE K SCHEDULE OF PROPOSED SUB-CONTRACTORS

SCHEDULE OF PROPOSED SUB-CONTRACTORS (At least 30%)

COMPLETE AND ATTACHED: Schedule of Proposed Sub-contractor together with a pro-forma sub-contracting agreement signed by both parties

In accordance with the General Conditions of Contract the Bidder shall state hereunder the names of Sub-contractors he proposes to employ for the execution of certain sections of the Works.

ITEM (Please specify)	PROPOSED SUB-CONTRACTOR	ADDRESS TELEPHONE AND FAX NUMBER WHERE MANUFACTURE INSPECTION AND TESTS WOULD BE EXECUTED	B-BEE LEVEL OF SUB-CONTRACTOR (B-BEE Certificate or sworn affidavit from DTI must be attached)

IMPORTANT NOTE: Refer to SBD 2: Tax Clearance Certificate Requirements, paragraph 4: In bids where Consortia / Joint Ventures / Sub-contractors are involved, each party must submit a separate Tax Clearance Certificate. (Failure to comply with this requirement may render your bid non-responsive)

ANNEXURE K

DID YOU ATTACH ORIGINAL AND VALID TAX CLEARANCE CERTIFICATES OF ALL SUB-CONTRACTORS AS LISTED ABOVE?

YES ☐ **NO** ☐

FAILURE BY THE BIDDER TO ATTACH LISTED SUB-CONTRACTORS' ORIGINAL AND VALID TAX CLEARANCE CERTIFICATES, THE BID MAY BE REGARDED AS NON-RESPONSIVE

DID YOU ATTACH CERTIFIED COPIES OF VALID B-BBEE CERTIFICATES OF ALL SUB-CONTRACTORS' AS LISTED ABOVE?

YES ☐ **NO** ☐

FAILURE BY THE BIDDER TO ATTACH LISTED SUB-CONTRACTORS' CERTIFIED COPIES OF VALID B-BEE CERTIFICATES OR IN CASE OF EMEs A SWORN AFFIDAVIT OBTAINABLE FROM THE DEPARTMENT OF TRADE AND INDUSTRY, THE BID MAY BE REGARDED AS NON-RESPONSIVE

DID YOU ATTACH CERTIFIED COPIES OF VALID ID DOCUMENTS OF OWNERS OF ALL SUB-CONTRACTORS' AS LISTED ABOVE?

YES ☐ **NO** ☐

FAILURE BY THE BIDDER TO ATTACH LISTED SUB-CONTRACTORS' CERTIFIED COPIES OF VALID ID DOCUMENT, THE BID MAY BE REGARDED AS NON-RESPONSIVE

DID YOU ATTACH CERTIFIED COPIES OF INCORPORATION OF THE COMPANY (CIPC CERTIFICATES) OF ALL SUB-CONTRACTORS AS LISTED ABOVE?

YES ☐ **NO** ☐

FAILURE BY THE BIDDER TO ATTACH LISTED SUB-CONTRACTORS' CERTIFIED COPIES OF INCORPORATION OF COMPANY (CIPC CERTIFICATES), THE BID MAY BE REGARDED AS NON-RESPONSIVE

NAME OF BIDDER:_____

COMPANY NAME: _____

SIGNATURE OF BIDDER: _____ DATE: _____

ANNEXURE L SCHEDULE OF PLANT AND EQUIPMENT

The following are lists of major items of relevant equipment that I / we presently own or lease and will have available for this contract if my / our tender is accepted.

(a) Details of major equipment that is owned by me / us and immediately available for this contract.

DESCRIPTION *(type, size, capacity etc)*	QUANTITY	YEAR OF MANUFACTURE	PRESENT FINANCIAL LIABILITY

Attach additional pages if more space is required

(b) Details of major equipment that will be hired, or acquired for this contract if my / our tender is accepted

DESCRIPTION *(type, size, capacity etc)*	QUANTITY	HOW ACQUIRED	
		HIRE/BUY	SOURCE

Attach additional pages if more space is required

The Tenderer undertakes to bring onto site without additional cost to the Employer any additional plant not listed but which may be necessary to complete the contract within the specified contract period.

Failure to complete this form properly and correctly, will lead to the conclusion that the Tenderer does not have the necessary plant and equipment resources at his disposal, which may prejudice his tender.

SIGNATURE: .....……..…….. DATE: ……..
(of person authorised to sign on behalf of the Tenderer)

ANNEXURE M PRELIMINARY METHOD STATEMENT FOR - Drilling & Blasting

The attached method statement under this annexure, for drilling and blasting shall include the 5 sections as show in table M.1. More information on each of these sections is explain below.

Table M.1: Summary of Method statement layout

METHOD STATEMENT FOR DRILLING & BLASTING		TOTAL POINTS 40
SUB-CRITERIA (AS EXPLAINED BELOW)		MAXIMUM POINTS
1	Project program	5
2	Equipment to be used for these activities (As indicated in "schedule of plant and equipment list" – Annexure Y)	5
3	Methodology – that will be used to do the work	20
4	Quality management plan	5
5	Environmental, Health & Safety	5

Table M.1 will be score to the Table M.2.

Table M.2: Scoring system that shall be used to score this criteria

Score	Prompt for judgement
0	Failed to address the question / issue
20	A detrimental response / answer / solution – limited or poor evidence of skill / experience sought or high risk that relevant skills will not be available
40	Less than acceptable – response / answer / solution lacks convincing evidence of skill / experience sought or medium risk that relevant skills will not be available.
60	Acceptable response / answer / solution to the particular aspect of the requirements and evidence given of skill / experience sought
80	Above acceptable – response / answer / solution demonstrating real understanding of requirements and evidence of ability to meet it.
100	Excellent – response / answer / solution gives real confidence that the Tenderer will add real value.

The evaluators are to score the functionality criteria's and sub-criteria's as per the below table (unless otherwise stated). The score allocated needs to be applied as a percentage of total maximum allowed points for the evaluated specific criteria.

EXAMPLE OF EVALUATION:

Criteria	SCORE (out of 0-100%)	WEIGHT (POINTS)	TOTAL (A% score x 5 points)
Sub-Criteria	0-100 according to Table M.2	5 POINTS (max allowed points for this sub-criteria)	
Example 1	80 score (=80%): response demonstrate the real understanding of requirements and evidence of ability to meet it.	5	= 5 * 80% = **4**
Example 2	60 score (=60%): response demonstrate the real understanding of requirements and evidence of ability to meet it.	20	= 20 * 60% = **12**

Table M.3 indicated the point allocated under each sub-criteria.

ANNEXURE M

METHOD STATEMENT SECTIONS EXPLAINED:

1) PROJECT PROGRAM: **[MAX: 5 POINTS/ MIN: 4 POINTS]**

The tendered shall attached a preliminary programme of works (project program), reflecting the proposed sequence, duration, and milestones of execution of the various activities comprising the work for this contract. This program shall be in line with the methodology.
The programme shall be in accordance with the information provided in the schedule of constructional equipment and with all other relevant aspects of the tender.

An preliminary programme in the form of a Gant chart must be submitted with the tender. The following must be shown:

a) The proposed sequence of the various activities.
b) The dependencies that exist between the activities and whether these are time related or resource limited.
c) Any shutdown periods proposed by the Contractor.
d) Any slack time built into various activities or sub-phases.
e) The critical path of the work to be undertaken.

This programme shall be in sufficient detail so that it can form the basis of a more detailed construction programme to be prepared after the Contract has been awarded.

Nr	Work Place	Start Date	End Date	Working days
1.	Excavation of Approach channel and Inlet works upstream of dam wall			
2.	Excavation of Left Non-Overspill section above existing level to new level			
3.	Excavation for the Outlet works downstream of the dam wall			
4.	Excavation for Spillway section below existing Apron downstream of the dam wall			
5.	Excavation for Right Non-Overspill section downstream of the dam wall and above the existing level to the new levels			
6.	Right Bank Outlet works downstream of the dam wall			
7.	Drill and Blast trials in the Quarry			

Page limitation: Max – 2 pages writing & 2 Attachment pages

2) EQUIPMENT: **[MAX: 5 POINTS / MIN: 3 POINTS]**

The Tenderer shall indicate equipment that will be used, and for what equipment shall be use, which will be in line with the methodology. Any specialised equipment must be indicated. Tendered needs to indicate if equipment is their own or intent to hire form each equipment. The storage space for equipment in the Contractor's yard shall be indicated. Also, the inspection and service forms, and the place allocated where these inspections and services is intended to be done.
A fully completed and signed schedule list of items of relevant equipment or plant (Annexure L) that are in good working condition that the Bidder own or will hire and have for this contract must be provided. The following must be presented on the schedule to be provided:

- Item description
- Type (Make& Model)
- Size/ capacity
- Year of Manufacture
- Quantity

All these equipment will also be indicated in "Schedule Of Plant And Equipment" – Annexure L.

Provide the location(s) where the plants may be inspected related to contactable references.

Page limitation: Max – 2/3 pages

3) METHODOLOGY: [MAX: 20 POINTS/ MIN: 16 POINTS]

It is a requirement that the Tenderer shall attach / submit a preliminary Method Statement, that adequately details all activities, durations and any associated risks in terms of airside operations envisaged on this contract. With the preliminary method statement for drilling and blasting for each section of work as part of bid document in which the following is clearly stated:

- Proposed phases of blasting;
- The intended blasting methods;
- The type of explosives to be used for different blasting methods and the respective data sheets;
- The intended drill pattern / blast design to be used for different blasting methods; and
- The intended method of Measurement.

Page limitation: Max – 6 pages

4) QUALITY MANAGEMENT PLAN (QMP) [MAX: 5 POINTS/ MIN: 3 POINTS]

The tendered shall also attached QMP showing clearly how quality assurance and process control will be manged both at the plant, equipment and on site. The plan will be used to evaluate the tenders as the quality of workmanship is of highest priority in this contract. Any quality certification by recognised international body must be stated.
Page limitation: Max – 2 pages

5) ENVIRONMENTAL, HEALTH & SAFETY: [MAX: 5 POINTS/ MIN: 3 POINTS]

ENVIRONMENT: [MAX: 2.5 POINTS / MIN 1,5POINTS]
Proposed contract specific Environmental Management System, inclusive of environmental management plan and waste management plan. This shall also contain details of all site layouts and environmental protection measures. Provide environmental plan management system for all the work to be carried out with specific reference to:

- EMP
- CWD 67

HEALTH & SAFETY: [MAX:2.5 POINTS / MIN: 1,5 POINTS]
Provide Health and Safety management system for all the work to be carried out with specific reference to:

- Organogram and legal appointments,
- Preliminary baseline risk assessment for all activities (Drilling, Blasting, explosives),
- File structure of documentation,
- Safe handling of explosives,
- Risk Assessment – Explosives Transport, Storage and Usage including blasting process, and
- Complete and attached all required documents as per Annexure O.

Page limitation: Max – 3 to 4 page for section 5 – Environmental, Health & Safety.

The above method statement must be submitted with the tender to evaluate the ability of the Contractor to perform the work according to specification.

The method of scoring that shall be used is indicated in Table M.2 and applied to each section according to maximum allowed points in Table M.3.

Attached hereto this page is my / our Preliminary Method Statement for Drilling & Blasting.

SIGNATURE: .....……..…….. DATE: ……

ANNEXURE M

Tabel M.3: Point allocation for each section

(4) FUNCTIONAL CRITERIA- METHOD STATEMENT: DRILLING & BLASTING (TOTAL 40) (ref T1: 5.11.8 & 5.11.9)			
A fully completed and signed with the following sections:			
SUB-CRITERIA:1 - PROJECT PROGRAM	**SCORE out of 0-100%**	**WEIGHT (POINTS)**	**TOTAL (% score x 5 points)**
A fully completed and signed program for each section and the entire project which have: [Max 5 / Min 4] • Gannt Chart with timeline, deliverables, milestones, dependencies • Time taken to complete the entire project within 36 months • Deliverables: Activities and their chronological order for the execution of the project • Dependencies: such as equipment delivery waiting periods • Any slack time built into various activities or sub-phases. • The critical path of the work to be undertaken.		5	
SUB-CRITERIA:2 - PLANT AND EQUIPMENT	**SCORE out of 0-100%**	**WEIGHT (POINTS)**	**TOTAL (% score x 5 points)**
A fully completed and signed schedule list of items of relevant equipment or plant (Annexure L) that are in good working condition that the Bidder own or will hire and have for this contract must be provided. The equipment to be used as per Annexure L to be listed together with methodology and other requirements in Annexure M. [Max 5 / Min 3]		5	
SUB-CRITERIA: 3 - METHODOLOGY	**SCORE out of 0-100%**	**WEIGHT (POINTS)**	**TOTAL (% score x 20 points)**
A fully completed and signed Method Statement Methodology for Drilling & Blasting, that adequately details all activities, durations and any associated risks in terms of airside operations envisaged on this contract. [Max 20 / Min16] • Proposed phases of blasting • The intended blasting methods • The type of explosives to be used for different blasting methods and the respective data sheets • The intended drill pattern/blast design to be used for different blasting methods; NB: Highlight all the risks and the treatments of the risks that may be encountered during drilling and blasting foundation activities		20	

ANNEXURE M

SUB-CRITERIA: 4 - QUALITY MANAGEMENT	SCORE out of 0-100%	WEIGHT (POINTS)	TOTAL (% score x 5 points)
Attached QMP plan, and clearly explained. And provide sample of record sheets. [Max 5 / Min 3]		5	
SUB-CRITERIA: 5 – ENVIRONMENTAL, HEATH & SAFETY	**SCORE out of 0-100%**	**WEIGHT (POINTS)**	**TOTAL (% score x 5 points)**
Proposed contract specific Environmental Management System, inclusive of environmental management plan and waste management plan, with reference to CWD 67 & EMP [Max 2,5 / Min 1,5] Provide Health and Safety management system for all the work to be carried out with specific reference to: [Max 2,5 / Min 1,5] • Organogram and legal appointments, • Preliminary baseline risk assessment for all activities (Drilling, Blasting, explosives) • File structure of documentation • Safe handling of explosives • Risk Assessment – Explosives Transport, Storage and Usage including blasting process • Complete and attached all required documents as per Annexure O.		**5**	

SIGNATURE: .....……..…….. DATE: …….....
(of person authorised to sign on behalf of the Tenderer)

ANNEXURE N PRELIMINARY METHOD STATEMENT
Rock Support

The attached method statement under this annexure, for rock support shall include the 5 sections as show in table N.1. More information on each of these sections is explain below.

Table N.1: Summary of Method statement layout

METHOD STATEMENT FOR DRILLING & BLASTING		TOTAL POINTS 20
SUB-CRITERIA (AS EXPLAINED BELOW)		MAXIMUM POINTS
1	Project program	2,5
2	Equipment to be used for these activities (As indicated in "schedule of plant and equipment list" – Annexure Y)	2,5
3	Methodology – that will be used to do the work	10
4	Quality management plan	2,5
5	Environmental, Health & Safety	2,5

Table N.1 will be score to the Table N.2.

Table N.2: Scoring system that shall be use to score this criteria

Score	Prompt for judgement
0	Failed to address the question / issue
20	A detrimental response / answer / solution – limited or poor evidence of skill / experience sought or high risk that relevant skills will not be available
40	Less than acceptable – response / answer / solution lacks convincing evidence of skill / experience sought or medium risk that relevant skills will not be available.
60	Acceptable response / answer / solution to the particular aspect of the requirements and evidence given of skill / experience sought
80	Above acceptable – response / answer / solution demonstrating real understanding of requirements and evidence of ability to meet it.
100	Excellent – response / answer / solution gives real confidence that the Tenderer will add real value.

The evaluators are to score the functionality criteria's and sub-criteria's as per the below table (unless otherwise stated). The score allocated needs to be applied as a percentage of total maximum allowed points for the evaluated specific criteria.

EXAMPLE OF EVALUATION:

Criteria	SCORE (out of 0-100%)	WEIGHT (POINTS)	TOTAL (A% score x 5 points)
Sub-Criteria	0-100 according to Table M.2	5 POINTS (max allowed points for this sub-criteria)	
Example 1	80 score (=80%): response demonstrate the real understanding of requirements and evidence of ability to meet it.	5	= 5 * 80% = **4**
Example 2	60 score (=60%): response demonstrate the real understanding of requirements and evidence of ability to meet it.	20	= 20 * 60% = **12**

Table N3 indicated the point allocated under each sub-criteria.

ANNEXURE N

METHOD STATEMENT SECTIONS EXPLAINED:

1) PROJECT PROGRAM: **[MAX: 2,5 POINTS / MIN: 2 POINTS]**

The tendered shall attached a preliminary programme of works (project program), reflecting the proposed sequence, duration, and milestones of execution of the various activities comprising the work for this contract. This program shall be in line with the methodology.
The programme shall be in accordance with the information provided in the schedule of constructional equipment and with all other relevant aspects of the tender.

An preliminary programme in the form of a Gant chart must be submitted with the tender. The following must be shown:
a) The proposed sequence of the various activities.
b) The dependencies that exist between the activities and whether these are time related or resource limited.
c) Any shutdown periods proposed by the Contractor.
d) Any slack time built into various activities or sub-phases.
e) The critical path of the work to be undertaken.

This programme shall be in sufficient detail so that it can form the basis of a more detailed construction programme to be prepared after the Contract has been awarded.
Page limitation: Max – 2 pages writing & 2 Attachment pages

2) EQUIPMENT: **[MAX: 2,5 POINTS / MIN: 1,5 POINTS]**

The Tenderer shall indicate equipment that will be used, and for what equipment shall be use, which will be in line with the methodology. Any specialised equipment must be indicated. Tendered needs to indicate if equipment is their own or intent to hire form each equipment. The storage space for equipment in the Contractor's yard shall be indicated. Also, the inspection and service forms, and the place allocated where these inspections and services is intended to be done.
A fully completed and signed schedule list of items of relevant equipment or plant (Annexure L) that are in good working condition that the Bidder own or will hire and have for this contract must be provided. The following must be presented on the schedule to be provided:

- Item description
- Type (Make& Model)
- Size/ capacity
- Year of Manufacture
- Quantity

All these equipment will also be indicated in "Schedule Of Plant And Equipment" – Annexure L.
Provide the location(s) where the plants may be inspected related to contactable references.
Page limitation: Max – 2/3 pages

3) METHODOLOGY: **[MAX: 10 POINTS / MIN: 8 POINTS]**

It is a requirement that the Tenderer shall attach / submit a preliminary Method Statement, that adequately details all activities, durations and any associated risks in terms of airside operations envisaged on this contract. With the preliminary method statement for rock support for each section of work as part of bid document in which the following is clearly stated:

- Proposed phases of blasting
- The intended blasting methods and plans
- The type of explosives to be used for different blasting methods and the respective data sheets;
- The intended drill pattern / blast design to be used for different blasting methods; and
- The intended method of Measurement

Page limitation: Max – 6 pages

4) QUALITY MANAGEMENT PLAN (QMP) **[MAX: 2,5 POINTS / MIN: 1.5 POINTS]**

The tendered shall also attached QMP showing clearly how quality assurance and process control will be manged both at the plant, equipment and on site. The plan will be used to evaluate the tenders as the quality of workmanship is of highest priority in this contract. Any quality certification by recognised international body must be stated. Page limitation: Max – 2 pages

5) ENVIRONMENTAL, HEALTH & SAFETY: **[MAX: 2,5 POINTS / MIN: 1,5 POINTS]**

ENVIRONMENT:
Proposed contract specific Environmental Management System, inclusive of environmental management plan and waste management plan. This shall also contain details of all site layouts and environmental protection measures. Provide environmental plan management system for all the work to be carried out with specific reference to EMP & CWD 67.

HEALTH & SAFETY:
Provide Health and Safety management system for all the work to be carried out with specific reference to:

- Organogram and legal appointments,
- Preliminary baseline risk assessment for all activities (Rock Support)
- File structure of documentation

Page limitation: Max – page 2/3

The above method statement must be submitted with the tender to evaluate the ability of the Contractor to perform the work according to specification.
The method of scoring that shall be used is indicated in Table N.2 and applied to each section according to maximum allowed points in Table N.3.

ANNEXURE N

Table N.3: Point allocation for each section

(4) FUNCTIONAL CRITERIA- METHOD STATEMENT: ROCK SUPPORT (TOTAL 20) (ref T1: 5.11.8 & 5.11.9)			
A fully completed and signed with the following sections:			
SUB-CRITERIA:1 - PROJECT PROGRAM	**SCORE out of 0-100%**	**WEIGHT (POINTS)**	**TOTAL (% score x 2,5 points)**
A fully completed and signed program for each section and the entire project which have: [Max 2,5 / Min 2] • Gannt Chart with timeline, deliverables, milestones, dependencies • Time taken to complete the entire project within 36 months • Deliverables: Activities and their chronological order for the execution of the project • Dependencies: such as equipment delivery waiting periods • Any slack time built into various activities or sub-phases. • The critical path of the work to be undertaken.		2,5	
SUB-CRITERIA:2 - PLANT AND EQUIPMENT	**SCORE out of 0-100%**	**WEIGHT (POINTS)**	**TOTAL (% score x 2,5 points)**
A fully completed and signed schedule list of items of relevant equipment or plant (Annexure L) that are in good working condition that the Bidder own or will hire and have for this contract must be provided. The equipment to be used as per Annexure L to be listed together with methodology and other requirements in Annexure N. [Max 2,5 / Min 1,5]		2,5	
SUB-CRITERIA: 3 - METHODOLOGY	**SCORE out of 0-100%**	**WEIGHT (POINTS)**	**TOTAL (% score x 10 points)**
A fully completed and signed Method Statement Methodology for Rock Support, that adequately details all activities, durations and any associated risks in terms of airside operations envisaged on this contract. [Max 10 / Min 8] • Installation of rock bolts; rock anchors and dowels • Shotcrete application • Fixing of double twisted wire mesh to the rock surface • Respective data sheets NB: Highlight all the risks and the treatments of the risks that may be encountered during geotechnical investigations and during drilling and foundation activities.		10	

ANNEXURE N

SUB-CRITERIA: 4 - QUALITY MANAGEMENT	SCORE out of 0-100%	WEIGHT (POINTS)	TOTAL (% score x 2,5 points)
Inspection and test plan for each activity in which the sequence of events are listed with the applicable conformance criteria, standards, specifications and drawings as well as frequency and records of inspections with holding points. Provide sample of record sheets. [Max 2,5 / Min 1,5]		2,5	
SUB-CRITERIA: 5 – ENVIRONMENTAL, HEATH & SAFETY	**SCORE out of 0-100%**	**WEIGHT (POINTS)**	**TOTAL (% score x 2,5 points)**
Proposed contract specific Environmental Management System, inclusive of environmental management plan and waste management plan, with reference to CWD 67 & EMP. [Max 1,25 Points/ Min 0,8] Provide Health and Safety management system for all the work to be carried out with specific reference to: [Max 1,25 Points/ Min 0,8] • Organogram and legal appointments • Preliminary baseline risk assessment for all activities (Rock support)		2,5	

SIGNATURE: .....……..…….. DATE: …….....
(of person authorised to sign on behalf of the Tenderer)

ANNEXURE O SUPPORTING DOCUMENTS

The attached required list of documents under this annexure shall be attached under this section. If this is already attached under Annexure J and J-1 please indicated that clearly.

The following documentation shall be submitted together with tender:

1) Blaster/s appointment & including CV of Blaster/s with relevant qualifications and registrations
2) Blast designer qualifications and relevant registrations, including CV, and appointment letter
3) Registration of Blasting Company
4) Explosives: Certificates of Registration from SAPS
5) Permit to transport explosives (Temporary transport permit)
6) Explosives manager appointment & including CV with relevant qualifications and registrations

Attached hereto this page is my / our supporting documents

SIGNATURE: .....……..…….. DATE: ……..
(of person authorised to sign on behalf of the Tenderer)

DEPARTMENT OF WATER AND SANITATION

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THE DRILLING AND BLASTING FOR DAM FOUNDATION EXCAVATION AND SLOPE PROTECTION FOR THE CLANWILLIAM DAM IN THE WESTERN CAPE PROVINCE

C1: AGREEMENT AND CONTRACT DATA

CONTENTS

C1.1 PRO FORMA FORM OF OFFER AND ACCEPTANCE

C.1.2 CONTRACT DATA

- **C 1.2.1 GENERAL CONDITIONS OF CONTRACT**
- **C 1.2.2 SPECIAL CONDITIONS OF CONTRACT**
- **C 1.2.3 CONTRACT SPECIFIC DATA**

C1.3 PRO FORMA FORM OF GUARANTEE

FORM G – PRO FORMA FORM OF OFFER AND ACCEPTANCE

C1.1 PRO FORMA FORM OF OFFER AND ACCEPTANCE - RENDERING OF SERVICES (as per GCC 2015)

OFFER

The Employer, identified in the acceptance signature block, has solicited offers to enter into a contract in respect of the following works:

THE DRILLING AND BLASTING FOR DAM FOUNDATION EXCAVATION AND SLOPE PROTECTION FOR THE CLANWILLIAM DAM IN THE WESTERN CAPE PROVINCE

The Tenderer, identified in the Offer signature block below, has examined the documents listed in the Tender Data and addenda thereto as listed in the Tender Schedules, and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the Tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance, the Tenderer offers to perform all of the obligations and liabilities of the Contractor under the Contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the Conditions of Contract identified in the Contract Data.

THE OFFERED TOTAL OF THE PRICES INCLUSIVE OF VALUE ADDED TAX IS

.....

.....Rand (in words); R ..... (in figures)

This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document to the Tenderer before the end of the period of validity stated in the Tender Data, whereupon the Tenderer becomes the party named as the Contractor in the Conditions of Contract identified in the Contract Data.

For the Tenderer:

Signature(s): _____

Name(s): _____

Capacity: _____

Date: _____

FORM G

Name and address of organisation:

_____

_____

_____

_____

Signature and names of witness:

Signature(s): _____

Name(s): _____

Capacity: _____

Date: _____

ACCEPTANCE

By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the Tenderer's offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the Conditions of Contract identified in the Contract Data. Acceptance of the Tenderer's offer shall form an agreement, between the Employer and the Tenderer upon the terms and conditions contained in this Agreement and in the Contract that is the subject of this Agreement.

The terms of the contract, are contained in

Part T1: Tender Data

Part T2: Returnable Schedules and Documents

Part C1: Contract Data

Part C2: Pricing Data

Part C3: Scope of Work

Part C4: Site Information

and drawings and documents or parts thereof, which may be incorporated by reference into Part T1 to Part C4 above.

FORM G

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules as well as any changes to the terms of the Offer agreed by the Tenderer and the Employer during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Agreement. No amendments to or deviations from said documents are valid unless contained in this Schedule, which must be duly signed by the authorised representative(s) of both parties.

The Tenderer shall within two weeks after receiving a completed copy of this Agreement, including the schedule of deviations (if any), contact the Employer's agent (whose details are given in the Contract Data) to arrange the delivery of any bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the Conditions of Contract identified in the Contract Data at, or just after, the date this Agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this Agreement.

Notwithstanding anything contained herein, this Agreement comes into effect on the date when the Tenderer receives one fully completed original copy of this document, including the schedule of deviations (if any). Unless the Tenderer (now Contractor) within five days of the date of such receipt notifies the Employer in writing of any reason why he cannot accept the contents of this Agreement, this agreement shall constitute a binding contract between the parties.

For the Employer:

Signature(s): _____

Name(s): _____

Capacity: _____

Date: _____

Name and address of organisation:

_____

_____

_____

_____

FORM G

Signature and names of witness:

Signature(s): _____

Name(s): _____

Capacity: _____

Date: _____

SCHEDULE OF DEVIATIONS

Notes:

1. The extent of deviations from the tender documents issued by the Employer prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender;
2. A Tenderer's covering letter shall not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid become the subject of agreements reached during the process of, offer and acceptance, the outcome of such agreement shall be recorded here;
3. Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties becomes an obligation of the contract shall also be recorded here;
4. Any change or addition to the tender documents arising from the above agreements and recorded here, shall also be incorporated into the final draft of the Contract.

1. **Subject:** _____

   Details _____

2. **Subject:** _____

   Details _____

By the duly authorised representatives signing this Agreement, the Employer and the Tenderer agree to and accept the foregoing schedule of deviations as the only deviations from and amendments to the documents listed in the Tender Data and addenda thereto as listed in the Tender schedules, as well as

any confirmation, clarification or change to the terms of the offer agreed by the Tenderer and the Employer during this process of offer and acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the receipt by the Tenderer of a completed signed copy of this Agreement shall have any meaning or effect in the contract between the parties arising from this Agreement.

FOR THE TENDERER:		**FOR THE EMPLOYER**
_____	Signature(s)	_____
_____	Name(s)	_____
_____	Capacity	_____
Name and address of organisation		Name and address of organisation
_____		_____
_____		_____
_____		_____
_____	Witness signature	_____
_____	Witness Name	_____
_____	Date	_____

C1.2 CONTRACT DATA

C1.2.1 GENERAL CONDITIONS OF CONTRACT

The Contract shall be governed by the **"**General Conditions of Contract for Construction works, Third Edition, 2015, published by the South African Institution of Civil Engineering, Private Bag X200, Halfway House, 1685 and is obtainable from www.saice.org.za. It is supplemented with the Special Conditions of contract for the GCC and the Contract Data for GCC.

The only variations from these General Conditions of Contract shall be given in the Special conditions of Contract below. Whenever there is a conflict, the provisions in the Special Conditions and contract specific data of Contract shall prevail.

C1.2.2 SPECIAL CONDITIONS OF CONTRACT

C1.2.2.1 GENERAL

These Special Conditions of Contract (SCC) form an integral part of the Contract. The Special Conditions of Contract shall amplify, modify or supersede, as the case may be, to the extent specified below, and shall take precedence and shall govern.

C1.2.2.2 AMENDMENT TO THE GENERAL CONDITIONS OF CONTRACT FOR CONSTRUCTION WORKS. (3rd Edition 2015) (GCC)

The clauses of the Special Conditions hereafter are numbered "SCC" followed in each case by the number of the applicable clause or sub clause in the General Conditions of Contract for Construction Works (3rd Edition 2015), and the applicable heading. A new special condition, that has no relation to the existing clauses, is introduced by a number that follows after the last clause number in the General Conditions, and an appropriate heading.

The pro forma annexures included in the General Conditions of Contract for Construction Works (3rd Edition 2015) are deleted for the purpose of this Contract and are replaced with the forms bound into this document

SCC 1(1) Definitions

The definitions contained in Clause 1(1) are hereby amended and/or supplemented as follows:

SCC 1.1.1 In the contract defined as:

DWS 0007-12-21 (WTE)

" THE DRILLING AND BLASTING FOR DAM FOUNDATION EXCAVATION AND SLOPE PROTECTION FOR THE CLANWILLIAM DAM IN THE WESTERN CAPE PROVINCE"

the following words and expressions shall have the meanings herby assigned to them except where the context otherwise requires:

SCC1.1.1.15 "Employer" means the Minister of Water and Sanitation acting on behalf of the Government of the Republic of South African and shall include the Employer's duly authorised representative.

SCC1.1.1.16 "Employers Agent" means Contract Manager Department of Water and Sanitation: Construction South or any other person appointed from time to time by him and notified in writing to the Contractor.

SCC 6.5 Day works: Delete in entirety

SCC 8.6.1 Change paragraph to read “Except if provided otherwise in the Contract Data, the Contract, without limiting his obligations in terms of the Contract, shall as part of the documentation required before commencing with the works in accordance with Clause 5.3.1, at his own cost, effect and maintain the following insurances in the name of the Contractor.”

SCC 8.6.1.1 Delete

SCC 8.6.1.1.1 Delete with sub-clauses

SCC 8.6.1.3 Change paragraph to read “Liability insurance that covers the Contractor against its respective liability for the death of, or injury to any person, or loss of, or damage to property arising from or in the course of the fulfilment of the Contract, from the Commencement Date to the issue of the Certificate of Completion for a limit of indemnity covering the risks of the Contractor for an amount not less than stated in the Contract Data.”

SCC 8.6.6 Delete

SCC 8.6.7 Delete

C1.2.3 CONTRACT SPECIFIC DATA

The General Conditions of Contract for Construction Works, Third Edition, 2015 published by the South African Institution of Civil Engineering, Private Bag X200, Halfway House, 1685, is applicable to this Contract and copies of these Conditions of Contract may be obtained from the South African Institution of Civil Engineering (Tel 011 805 5947), www.saice.org.za.

The General Conditions of Contract make several references to the Contract Data for specific data, which together with these conditions collectively describe the risks, liabilities and obligations of the contracting parties and the procedures for the administration of the Contract. The Contract Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the General Conditions of Contract.

The following contract specific data, referring to the General Conditions of Contract for Construction Works Third Edition (2015), are applicable to this Contract:

PART 1 COMPULSORY DATA PROVIDED BY THE EMPLOYER

Clause	Description	Information
1.1.1.13	Defects and liability period	12 Months
1.1.1.14	The time for practical Completion	36 Months from commencement date
1.1.1.15	The name of Employer	Department of Water and Sanitation
1.2.1.2	The address of the Employer	Department of Water and Sanitation Private Bag X313 Pretoria 0001 Email: Bidenquirieswte@dws.gov.za
1.1.1.16	The name of the Employers Agent.	Contract Manager Department of Water and Sanitation Construction South
1.2.1.2	The address of the Employers Agent.	Department of Water and Sanitation Construction South 4-6 Alkmaar Str. Paarl
1.1.1.26	The Pricing Strategy	Re-measurable
3.2.3	Specific approval of the Employer required	5.7.3 Acceleration 5.12.3 Extension of Time 6.3.1 Variations 9.1 Termination of Contract 9.2 Termination by Employer 10 Claims and Disputes
5.1.1.1	Special non-working days	1. Statuary holidays as declared by National or Regional Government. 2. Three weeks annual Builders holiday December to January (dates to be confirmed) 3. The last Friday of every month.
5.8.1	The non-working days	Sundays

5.3.1	The documentation required before commencement with works execution:	Health and Safety plan (Clause 4.3) Initial programme (Clause 5.6) Security (Clause 6.2) Insurance (Clause 8.6) Method Statements (as required by the applicable Specifications) Environmental Plan Other documents as specified in C3
5.3.2	The time to submit the documentation required before commencement with Works execution	28 days
5.4.2	The access and possession of the Site	Shall not be exclusive to the Contractor but as set out in the Site Information
5.13.1	The penalty for failing to complete the Works	R50 000,00 per working day
5.14.1	Requirements for practical completion	On submission and signed of all drillings and blasting records and reports of scheduled work. All signed of rock support records and reports of scheduled work.
5.16.3	The latent defect period	10 years
6.8.2	The value of the certificates issued shall be adjusted in accordance with the Contract Price Adjustment Schedule with the following values: $(1 - \mathrm{x})\left[\frac{aL_t}{L_o} + \frac{bP_t}{P_o} + \frac{cM_t}{M_o} + \frac{dF_t}{F_o} - 1\right]$	x = 0,10 (Fixed) Values of coefficients are: a = 0.15 Labour b = 0.30 Contractors Equipment c = 0.45 Material d = 0.10 Fuel Total of all coefficients must equal 1.0
6.8.2	The definition and source of: "L_t" is the "labour Index", "P_t" is the "Plant Index" "M_t" is the "Materials Index"	The Consumer Price Index for the urban area nearest to the Site, in the Western Cape Province, as stated in the Contract Data, and as published in the Statistical News Release, P0141, Additional Tables: Table A "CPI- all items according to area" of Statistics South Africa and published by SAFCEC from time to time. Producer Price Index applicable to the appropriate Construction equipment as stated in the Contract Data and as published in the Statistical Release P0151.1, Plant (Civil) Table 4 of Statistics South Africa and published by SAFCEC from time to time. Producer Price Index applicable to the appropriate materials as stated in the Contract Data and as published in the Statistical Release P0151.1, Material (Civil) Table 6 of Statistics South Africa

	"F_t" is the Fuel Index	and published by SAFCEC from time to time. Producer Price Index for Diesel at wholesale level for the coastal area as stated in the Contract Data and as published in the Statistical Release P0142.1 Diesel Fuel Coastal, Table 1 of Statistics South Africa and published by SAFCEC from time to time.
6.8.2	The base month	The base month used for the calculation will be 30 days before the closing date of the bid.
6.5.1.2.3	The percentage allowance on the net cost of materials actually used in completed work	15%
6.10.1.5	The percentage advance on materials not yet built into the Permanent Works	0%
6.10.3	The limit of retention money	**5%** of the Contract Value
8.6.1.1.2	Value of plant and materials supplied by the employer to be included in the insurance sum	0
8.6.1.1.3	Amount cover professional fees for repairing damage and loss to be included in the insurance sum	R 10 000 000,00
8.6.1.3	The limit of indemnity for liability insurance	R 400 000 000,00
10.5.3	The number of Adjudication Members to be appointed by the Contractor	Three (3)
10.7.1	The determination of disputes	Legal Process

FORM H CONTRACT DATA

C1.2 CONTRACT DATA

PART 2: DATA PROVIDED BY THE CONTRACTOR

Clause	Description	Information
1.1.1.9	The name of the Contractor	
1.2.1.2	The address of the Contractor	Physical address: Postal address: E-mail address:
6.2.1	The security to be provided by the Contractor	Performance guarantee of **10%** of Contract sum.
6.8.3	Price adjustments for variations in the costs of special materials are allowed	Special Material(s) Unit Rate …… …… …… …… …… …… …… …… …… …… …… ……

(End of Section C1)

FORM I PRO FORMA PERFORMANCE GUARANTEE

C1.3 PRO FORMA PERFORMANCE GUARANTEE

Tender Reference No: ……..……

General Conditions of Contract for Construction Works, Third Edition (2015)

PRO FORMA

PERFORMANCE GUARANTEE

For use with the General Conditions of Contract for Construction Works, Third Edition (2015).

GUARANTOR DETAILS AND DEFINITIONS

"Guarantor" means: ….....

Physical address: .....

"Employer" means: ….....

"Contractor" means: .....

"Employer's Agent" means: ...……

"Works" means: .....

"Site" means: .....

"Contract" means: The Agreement made in terms of the Form of Offer and Acceptance and such amendments or additions to the Contract as may be agreed in writing between the parties.

"Contract Sum" means: The accepted amount inclusive of tax of R .....

Amount in words: .....

"Guaranteed Sum" means: The maximum aggregate amount of R .....

Amount in words: .....

Type of Performance Guarantee: ……(*Insert Variable or Fixed*)

"Expiry Date" means: ……..……(*Give date*) or any other later date set by the

Contractor and/or Employer provided such instruction is received prior to the Expiry Date as indicated here.

CONTRACT DETAILS

Employer's Agent issues: Interim Payment Certificates, Final Payment Certificate and the Certificate of Completion of the Works as defined in the Contract.

1. VARIABLE PERFORMANCE GUARANTEE

1.1 Where a Variable Performance Guarantee has been selected, the Guarantor's liability shall be limited during the following periods to diminishing amounts of the Guaranteed Sum as follows:

1.1.1 From and including the date of signing the Performance Guarantee up to and including the date of the interim payment certificate certifying, for the first time, more than 50% of the Contract Sum:

R.....(Amount in words……..)

1.1.2 From the day following the date of the said interim payment certificate up to and including the Expiry Date, or the date of issue by the Employer's Agent of the Certificate of Completion of the Works, whichever occurs first:

R.....(Amount in words……..)

1.2 The Employer's Agent and/or the Employer shall advise the Guarantor in writing of the date on which the interim payment certificate certifying, for the first time, more than 50% of the Contract Sum, has been issued and the date on which the Certificate of Completion of the Works has been issued.

2. FIXED PERFORMANCE GUARANTEE

2.1 Where a Fixed Performance Guarantee has been selected, the Guarantor's liability shall be limited to the amount of the Guaranteed Sum.

2.2 The Guarantor's period of liability shall be from and including the date on which the Performance Guarantee is signed, up to and including the Expiry Date, or the date of issue by the Employer's Agent of the Certificate of Completion of the Works, or the date of payment in full of the Guaranteed Sum, whichever occurs first.

2.3 The Employer's Agent and/or the Employer shall advise the Guarantor in writing of the date on which the Certificate of Completion of the Works has been issued.

3. CONDITIONS APPLICABLE TO VARIABLE AND FIXED PERFORMANCE GUARANTEES

3.1 The Guarantor hereby acknowledges that:

3.1.1 Any reference in this Performance Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship.

3.1.2 Its obligation under this Performance Guarantee is restricted to the payment of money.

3.2 Subject to the Guarantor's maximum liability referred to in 1.1 or 2.1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in 3.2.1 to 3.2.3:

3.2.1 A copy of a first written demand issued by the Employer to the Contractor stating that payment of a sum certified by the Employer's Agent in an Interim or Final Payment Certificate has not been made in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 3.2.2;

3.2.2 A first written demand issued by the Employer to the Guarantor at the Guarantor's physical address with a copy to the Contractor stating that a period of seven (7) days has elapsed since the first written demand in terms of 3.2.1 and the sum certified has still not been paid;

3.2.3 A copy of the aforesaid payment certificate which entitles the Employer to receive payment in terms of the Contract of the sum certified in 3.2.

3.3 Subject to the Guarantor's maximum liability referred to in 1.1 or 2.1, the Guarantor undertakes to pay to the Employer the Guaranteed Sum or the full outstanding balance upon receipt of a first written demand from the Employer to the Guarantor at the Guarantor's physical address calling up this Performance Guarantee, such demand stating that:

3.3.1 the Contract has been terminated due to the Contractor's default and that this Performance Guarantee is called up in terms of 3.3; or

3.3.2 a provisional or final sequestration or liquidation court order has been granted against the Contractor and that the Performance Guarantee is called up in terms of 3.3; and

3.3.3 the aforesaid written demand is accompanied by a copy of the notice of termination and/or the provisional/final sequestration and/or the provisional liquidation court order.

3.4 It is recorded that the aggregate amount of payments. required to be made by the Guarantor in terms of 3.2 and 3.3 shall not exceed the Guarantor's maximum liability in terms of 1.1 or 2.1.

3.5 Where the Guarantor has made payment in terms of 3.3, the Employer shall upon the date of issue of the Final Payment Certificate submit an expense account to the Guarantor showing how all monies received in terms of this Performance Guarantee have been expended and shall refund to the Guarantor any resulting surplus. All monies refunded to the Guarantor in terms of this Performance Guarantee shall bear interest at the prime overdraft rate of the Employer's bank compounded monthly and calculated from the date payment was made by the Guarantor to the Employer until the date of refund.

3.6 Payment by the Guarantor in terms of 3.2 or 3.3 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.

3.7 Payment by the Guarantor in terms of 3.3 will only be made against the return of the original Performance Guarantee by the Employer.

3.8 The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the Employer may consider fit and the Guarantor shall not have the right to claim his release from this Performance Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.

3.9 The Guarantor chooses the physical address as stated above for the service of all notices for all purposes in connection herewith.

3.10 This Performance Guarantee is neither negotiable nor transferable and shall expire in terms of 1.1.2 or 2.2, where after no claims will be considered by the Guarantor. The original of this Guarantee shall be returned to the Guarantor after it has expired.

3.11 This Performance Guarantee, with the required demand notices in terms of 3.2 or 3.3, shall be regarded as a liquid document for the purposes of obtaining a court order.

3.12 Where this Performance Guarantee is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrates' Courts Act No 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Signed at: ……

Date: ……

Guarantor's signatory (1): ……

Capacity: .....

Guarantor's signatory (2): .....

Capacity: .....

Witness signatory (1): .....

Witness signatory (2): .....

DEPARTMENT OF WATER AND SANITATION

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THE DRILLING AND BLASTING FOR DAM FOUNDATION EXCAVATION AND SLOPE PROTECTION FOR THE CLANWILLIAM DAM IN THE WESTERN CAPE PROVINCE

C2 PRICING DATA

CONTENTS

C2.1 PRICING INSTRUCTIONS

C2.2 BILL OF QUANTITIES

C2.1 PRICING INSTRUCTIONS

1. GENERAL

The Bill of Quantities forms part of the Contract Documents and must be read and priced in conjunction with all the other documents comprising the Tender Documents which include the Conditions of Tender, Conditions of Contract, the Specifications (including the Project Specification), and the Drawings.

2. DESCRIPTION OF ITEMS IN THE SCHEDULE

The Bill of Quantities has been drawn up generally in accordance with the Standards System of Measuring Builders work 6th Edition as an issue by the Association, which has been drawn up in accordance with the project and particular specifications.

The short descriptions of the items in the Bill of Quantities are for identification purposes only and the measurement and payment clause of the Standardised Specifications and each Particular Specification, read together with the relevant clauses of the Project Specification and directives on the drawings, set out what ancillary or associated work and activities are included in the rates for the operations specified.

3. QUANTITIES REFLECTED IN THE SCHEDULE

The quantities given in the Bill of Quantities are estimated quantities only and will be subject to re-measuring during the execution of the work. Where quantities or sums are indicated as "Provisional, the Employer reserves the right to adjust the quantity or sum upwards or downwards as necessary, or the item can be omitted altogether. The Contractor shall obtain the Employers Agent's detailed instructions for all work before ordering any materials or executing work or making arrangements for it.

The Works as finally completed in accordance with the Contract shall be measured and paid for as specified in the Bill of Quantities, and the contract price for the completed contract shall be computed at the relevant unit rates and prices, all in accordance with the General and Special Conditions of Contract, the Specifications and Project Specifications, and the Drawings, et.. Unless otherwise stated, items are measured net in accordance with the Drawings, and no allowance has been made for waste.

The validity of the contract will in no way be affected by differences between the quantities in the Bill of Quantities and the quantities finally certified for payment.

4. PRICING OF THE SCHEDULE

The prices and rates to be inserted by the Tenderer in the Bill of Quantities shall be the full inclusive prices to be paid by the Employer for the work described under the several items, and shall include full compensation for all costs and expenses that may be required in and for the completion and maintenance during the defects liability period of all the work described and as shown on the drawings as well as all overheads, profits, incidentals and the cost of all general risks, liabilities, and obligations set forth or implied in the documents on which the Tender is based. Reasonable unit rates and prices shall be entered in the Bill of Quantities as these will be used for the assessment of payment for any additional work that may have to be carried out.

Each item shall be priced and extended to the "Total" column by the Tenderer, with the exception of the items for which “rate only” is required or items which already have Prime Cost or Provisional Sums affixed thereto. If the Contractor omits to price any items in the Bill of Quantities, then these items will be considered to have a nil rate or price.

All items for which terminology such as "inclusive" or "not applicable" have been added by the Tenderer will be regarded as having a nil rate which shall be valid irrespective of any change in quantities during the execution of the Contract.

All rates and amounts quoted in the Bill of Quantities shall be in Rand and shall include all levies and taxes (other than VAT). VAT will be added in the summary of the Bill of Quantities.

5. CORRECTION OF ENTRIES

Incorrect entries shall not be erased or obliterated with correction fluid but must be crossed out neatly. The correct figures must be entered above or adjacent to the deleted entry, and the alteration must be initialled by the Tenderer.

6. MONTHLY PAYMENTS

Unless otherwise specified in the Specifications and Project Specifications, progress payments in Interim Certificates, referred to in Clause 6.10 of the General Conditions of Contract 2015 (Third edition), in respect of "sum" items in the Schedule of Quantities shall be by means of interim progress instalments assessed by the Employers Agent and based on the measure in which the work actually carried out relates to the extent of the work to be done by the Contractor.

7. UNITS OF MEASUREMENT

The units of measurement described in the Bill of Quantities are metric units for which standard international abbreviations are used. Abbreviations used in the Bill of Quantities, including some non-standard abbreviations, are as follows:

Non-Standard Abbreviations	
%	percent
No.	number
Prov sum	Provisional sum
R/only	Rate only
sum	lump sum
Standard Abbreviations	
kPa	kilopascal
m	metre
m²	square metre
m³	cubic metre
MN	meganewton
MN.m	meganewton-metre
MPa	megapascal
t	ton (1000 kg)

For the purpose of this Bill of Quantities, the following words shall have the meanings hereby assigned to them:

Unit:	The unit of measurement for each item of work
Quantity:	The number of units of work for each item.
Rate:	The agreed payment per unit of measurement.
Amount:	The product of the quantity and the agreed rate for an item.
Lump-sum:	An agreed amount for an item, the extent of which is described in the Bills of Quantities but the quantity of work of which is not measured in any units.

8. ARITHMETICAL ERRORS

Where there is a discrepancy between the amounts in figures and in words, the amount in words shall govern.

If a bill of quantities (or schedule of quantities or schedule of rates) applies and there is a discrepancy between the unit rate and the line-item total resulting from multiplying the unit rate by the quantity, the line item total shall govern and the rate shall be corrected. However, in exceptional cases where, in the opinion of the Employer, there is an obviously gross misplacement of the decimal point in either the unit rate or line total, or where the error was obviously not a result of incorrect arithmetic but rather the result of a writing error, the Employer reserves the right to correct either the tendered rate or the line total as the case may be, subject to clarification in terms of SANS 10845 -3 Clause 4.10.

Where there is an error in the total of the prices, either as a result of other corrections required by this checking process or in the Tenderer's addition of prices, the total of the prices shall be adjusted to obtain the correct tender value.

DEPARTMENT OF WATER AND SANITATION

DWS08 - 1022 (WTE)

THE DRILLING AND BLASTING FOR DAM FOUNDATION EXCAVATION AND SLOPE PROTECTION FOR THE CLANWILLIAM DAM IN THE WESTERN CAPE PROVINCE

C2.2 BILL OF QUANTITIES

SBD 3.2

PRICING SCHEDULE – NON-FIRM PRICES (PURCHASES)

NOTE: PRICE ADJUSTMENTS WILL BE ALLOWED AT THE PERIODS AND TIMES SPECIFIED IN THE BIDDING DOCUMENTS.

IN CASES WHERE DIFFERENT DELIVERY POINTS INFLUENCE THE PRICING, A SEPARATE PRICING SCHEDULE MUST BE SUBMITTED FOR EACH DELIVERY POINT

Name of Bidder……Bid number……

Closing Time 11:00 …….. Closing date……..

1. OFFER TO BE VALID FOR 120 DAYS FROM CLOSING DATE OF BID

ITEM NO	PAY REF	SHORT DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SECTION A : PRELIMINARY AND GENERAL						
CWD 01 SC						
A1 - FIXED-CHARGE ITEMS						
A1. 10	5.3.1	Establishment of Facilities for Contractor on site (Including all insurance and other costs)	Sum	1	……	……
A1. 20	5.3.2	Removal of Site Establishment	Sum	1	……	……
A1. 30	5.3.3	Temporary de-establishment	Nr	3	……	……
A1. 40	5.3.4	Re-establishment after temporary de-establishment	Nr	3	……	……
A2 - TIME-RELATED ITEMS						
A2. 10	5.4.1	Health and Safety and Environmental	Sum	1	……	……
A2. 20	5.4.2	Supervision for Duration of Contract	Sum	1	……	……
					Total of Section A Carried forward to Summary	……

DEPARTMENT OF WATER AND SANITATION

DWS08 - 1022 (WTE)

THE DRILLING AND BLASTING FOR DAM FOUNDATION EXCAVATION AND SLOPE PROTECTION FOR THE CLANWILLIAM DAM IN THE WESTERN CAPE PROVINCE

ITEM NO	PAY REF	SHORT DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SECTION B: BLASTING						
CWD20 EXCAVATION AND BACKFILL FOR DAMS AND WATERWAYS						
B. 10	20.8.3.7 (b)	Test section	Sum	1	……..…	……
CWD 09 BLASTING						
APPROACH CHANNEL AND INLET ON LEFT BANK (Refer Drg CWD 1001-1003)						
		PHASE 1				
B. 20	09.13.2	- Perimeter Blasting	m²	7 200	……..…	……
B. 30	09.13.3	Trim Blasting	m²	1 200	……..…	……
B. 40	09.13.4	Bulk Blasting	m³	108 000	……..…	……
B. 50	09.13.4 (a)	Extra over bench ≤ 2m	m³	10 800	……..…	……
		PHASE 2				
B. 60	09.13.2	- Perimeter Blasting	m²	2 400	……..…	……
B. 70	09.13.4	Bulk Blasting	m³	4 800	……..…	……
B. 80	09.13.4 (a)	Extra over bench ≤ 2m	m³	1 200	……..…	……
LEFT BANK NON-OVERSPILL SECTION						
B. 90	09.13.2	- Perimeter Blasting	m²	4 200	……..…	……
B. 100	09.13.3	Trim Blasting	m²	1 200	……..…	……
B. 110	09.13.4	Bulk Blasting	m³	16 800	……..…	……
B. 120	09.13.4 (a)	Extra over bench ≤ 2m	m³	1 800		
				Carried Forward	……..…	……

ITEM NO	PAY REF	SHORT DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		Brought Forward			……	……
LEFT BANK OUTLET WORKS						
B. 130	09.13.2	- Perimeter Blasting	m²	4 320	……	……
B. 140	09.13.3	Trim Blasting	m²	1 200	……	……
B. 150	09.13.4	Bulk Blasting	m³	39 840	……	……
B. 160	09.13.4 (a)	Extra over bench ≤ 2m	m³	3 600	……	……
SPILLWAY AND APRON						
B. 170	09.13.2	- Perimeter Blasting	m²	240	……	……
B. 180	09.13.3	Trim Blasting	m²	120	……	……
B. 190	09.13.4	Bulk Blasting	m³	14 400	……	……
B. 200	09.13.4 (a)	Extra over bench ≤ 2m	m³	1 800	……	……
RIGHTBANK NON-OVERSPILL SECTION AND OUTLET						
B. 210	09.13.2	- Perimeter Blasting	m²	8 400	……	……
B. 220	09.13.3	Trim Blasting	m²	1 200	……	……
B. 230	09.13.4	Bulk Blasting	m³	54 000	……	……
B. 240	09.13.4 (a)	Extra over bench ≤ 2m	m³	6 000	……	……
Total of Section B - Carried forward to Summary					……	

ITEM NO	PAY REF	SHORT DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SECTION C: ROCK SUPPORT						
CWD27 ROCK SUPPORT						
RCC COFFER DAM (Refer Drg. Reg. No. CWD 1001-1003)						
		Vertical and inclined dowels into rock and/or concrete (Epoxy Protected at interface, 0,5m)				
C. 10	27.8.2.1 (a)	- 9,5 m long, Y25 mm dia., 48 mm NB percussion drilled holes and grouted 8 m deep into rock using a cementitious non-shrink grout below left bank cladding as indicated on CWD1005 (Refer PS27-1)	No	113	……	……
C. 20	27.8.2.1 (a)	- 5,8 m long, Y32 mm dia., 48 mm NB percussion drilled holes and grouted 4 m deep into foundation using a cementitious non-shrink grout, under section of left bank cladding as indicated on CWD1005 (Refer PS27-1)	No	29	……	……
C. 30	27.8.2.1 (b)	- Extra-over for Y25 Rock Dowel length	m	1 072	……	……
C. 40	27.8.2.1 (b)	- Extra-over for Y32 Rock Dowel length	m	168	……	……
		Inclined Rock anchors into rock				
C. 50	27.8.2.1 (a)	- 13 m long, Y32 mm dia., 48 mm NB percussion drilled holes and grouted using a cementitious non-shrink grout, as indicated on CWD1301-1305 (Refer PS27-1)	No	540	……	……
C. 60	27.8.2.1 (b)	- Extra-over for Y32 Rock Anchor length	m	7 020	……	……
C. 70	PS27-2	- Diamond wire mesh reinforcement for vertical blast faces as directed by Engineering Geologist	m^2	540	……	……
					Carried Forward	……

		Brought Forward				……
INTAKE TOWER						
ITEM NO	**PAY REF**	**SHORT DESCRIPTION**	**UNIT**	**QTY**	**RATE**	**AMOUNT**
		Excavated Rock Face Rock bolts				
C. 80	27.8.2.2 (a)	- 13 m long, Y32 mm dia. for vertical rock faces drilled at 45˚ with horizontal (Refer Drg. Reg. No. CWD 4055)	No	780	……	……
C. 90	27.8.2.2 (b)	- Extra-over for Rock Dowel length	m	1 040	……	……
C. 100	27.8.2.4	- Shotcrete	m^2	1 856	……	……
C. 110	27.8.2.5	- Mesh Reinforcement	m^2	1 856	……	……
		Vertical dowels into rock and/or concrete (Epoxy Protected)				
C. 120	27.8.2.1 (a)	- 4 m long, Y25 mm dia., 48 mm Φ NB percussion drilled holes and grouted 2 m deep into rock, under Inlet Tower RL 81,00 masl (Refer Drg. Reg. No. CWD 4055)	No	280	……	……
C. 130	27.8.2.1 (b)	- Extra-over for Rock Dowel length	m	1 124	……	……
LEFT BANK NOC						
C. 140	27.8.2.1 (a)	- Toe footprint (Y32, 11 m deep, 1,5 m c/c)	No	1 200	……	……
C. 150	27.8.2.1 (b)	- Extra-over for Rock Dowel length	m	15 600	……	……
C. 160	27.8.2.1 (a)	- RCC Coffer Dam (5m Y25, 4 m deep, 1,5 m c/c)	No	204	……	……
C. 170	27.8.2.1 (b)	- Extra-over for Rock Dowel length	m	1 020	……	……
C. 180	27.8.2.6	- Double Twisted Wire Mesh for d/s excavated face	m^2	648	……	……
SPILLWAY						
C. 190	27.8.2.1 (a)	- Footprint (13 m Y32, 11 m deep, 1,5 m c/c)	No	840	……	……
C. 200	27.8.2.1 (b)	- Extra-over for Rock Dowel length	m	10 920	……	……
C. 210	27.8.2.6	- Double Twisted Wire Mesh for d/s excavated face	m^2	810	……	……
					Carried Forward	……

		Brought Forward				……
RIGHT BANK NOC						
ITEM NO	**PAY REF**	**SHORT DESCRIPTION**	**UNIT**	**QTY**	**RATE**	**AMOUNT**
C. 220	27.8.2.1 (a)	- Footprint (13 m Y32, 11 m deep, 1,5 m c/c)	No	1 152	……	……
C. 230	27.8.2.1 (b)	- Extra-over for Rock Dowel length	m	14 976	……	……
C. 240	27.8.2.2 a)	- Y32 Rockbolts @ 1,5 m C/C 11 m deep into rock (CWD4145) supplied and Installed	No.	276	……	……
C. 250	27.8.2.2 b)	- Extra-over for rockbolt length	m	3 036	……	……
C. 260	27.8.2.4	- Shotcrete	m^2	708	……	……
C. 270	27.8.2.5	- Mesh Reinforcement	m^2	708	……	……
C. 280	27.8.2.6	- Double Twisted Wire Mesh for d/s excavated face	m^2	1 620	……	……
APRON						
C. 290	27.8.2.1 (a)	- Y25 dia. dowels with hooked ends 11,0 m deep into concrete/rock, including supply, drilling and grouting in with an approved cementitious non-shrink grout. Refer to Drg. Reg. No. CWD 2104 for details.	No	1 512	……	……
C. 300	27.8.2.1 (b)	- Extra-over for rock dowel length	m	1 512	……	……
EXTENSION OF EXISTING SPILLWAY BOTTOM RIVER OUTLETS (CWD2121)						
C. 310		- Fix sleeve valve floor slab to RCC (Y25, 2.6 m long)	No	22	……	……
C. 320		- Fix sleeve valve top roof slab to bottom RC roof slab (Y20, 2.5 m long)	No	22	……	……
PIPE ENCASEMENT (Refer Drg. Reg. No. CWD 4001, 5016)						
C. 330	27.8.2.1 (a)	**Vertical dowels into rock and/or concrete (Epoxy Protected at interface, 0,5m)** - 5.3 m long, Y25 mm dia., 48 mm NB percussion drilled holes and grouted 2,5 m deep Using a cementitious non-shrink grout into foundation of the pipe encasement (Refer PS27-1)	No	726	……	……
C. 340	27.8.2.1 (b)	- Extra-over for Rock Dowel length	m	3 848	……	……
C. 350	PS27-2	- Diamond wire mesh reinforcement for vertical blast faces as directed by Engineering Geologist	m^2	960	……	……
					Carried Forward	……

		Brought Forward				……
ITEM NO	**PAY REF**	**SHORT DESCRIPTION**	**UNIT**	**QTY**	**RATE**	**AMOUNT**
		Vertical dowels into rock and/or concrete (Epoxy Protected at interface, 0,5m)				
C. 360	27.8.2.1 (a)	- 4 m long, Y25 mm dia., 48 mm NB percussion drilled holes and grouted 2,5 m deep into foundation using a cementitious non-shrink grout, under outlet chamber (Refer PS27-1)	No	1 416	……	……
C. 370	27.8.2.1 (b)	- Extra-over for Rock Dowel length	m	567	……	……
C. 380	PS27-2	- Diamond wire mesh reinforcement for vertical blast faces as directed by Engineering Geologist	m^2	270	……	……
LB PLATFORM						
		Vertical dowels into rock and/or concrete (Epoxy Protected at interface, 0,5m)				
C. 390	27.8.2.1 (a)	- 5.3 m long, Y25 mm dia., 48 mm NB percussion drilled holes and grouted 2,5 m deep Using a cementitious non-shrink grout into foundation of the outlet works	No	1 601	……	……
C. 400	27.8.2.1 (b)	- Extra-over for Rock Dowel length	m	2 487	……	……
C. 410	PS27-2	- Diamond wire mesh reinforcement for vertical blast faces as directed by Engineering Geologist	m^2	2 410	……	……
LB RETRAINING WALL						
		Rock dowels (epoxy protected)				
C. 420	27.8.2.1 (a)	- 4 m long, Y32 mm dia., 48 mm NB percussion drilled holes and grouted 2,5 m deep into mass concrete base using a cementitious non-shrink grout, under left bank retaining wall(Refer PS27-1)	No	816	……	……
C. 430	27.8.2.1 (b)	- Extra-over for rock dowel length	m	3 264	……	……
					Carried Forward	……

		Brought Forward				……
LEFT BANK FLOW METER CHAMBER (Refer Drg. Reg. No. CWD 4281 - 4288)						
ITEM NO	**PAY REF**	**SHORT DESCRIPTION**	**UNIT**	**QTY**	**RATE**	**AMOUNT**
		Vertical dowels into rock and/or concrete (Epoxy Protected at interface, 0,5m)				
C. 440	27.8.2.1 (a)	- 4 m long, Y25 mm dia., 48 mm NB percussion drilled holes and grouted 2,5 m deep into foundation, using a cementitious non-shrink grout, under flow meter chamber (Refer PS27-1)	No	162	……	……
C. 450	27.8.2.1 (b)	- Extra-over for Rock Dowel length	m	648	……	……
C. 460	PS27-2	- Diamond wire mesh reinforcement for vertical blast faces as directed by Engineering Geologist	m^2	180	……	……
CROSSOVER CHAMBER TO THE FLOW METER CHAMBER (Refer Drg. Reg. No. CWD 4261-4277)						
		Vertical dowels into rock and/or concrete (Epoxy Protected at interface, 0,5m)				
C. 470	27.8.2.1 (a)	- 4 m long, Y25 mm dia., 48 mm NB percussion drilled holes and grouted 2,5 m deep into foundation using a cementitious non-shrink grout, under outlet chamber (Refer PS27-1)	No	142	……	……
C. 480	27.8.2.1 (b)	- Extra-over for Rock Dowel length	m	567	……	……
CROSSOVER CHAMBER TO THE OUTLET VALVE CONTROL ROOM (Refer Drg. Reg. No. CWD 4200-4212)						
		Vertical dowels into rock and/or concrete (Epoxy Protected at interface, 0,5m)				
C. 490	27.8.2.1 (a)	- 4 m long, Y25 mm dia., 48 mm NB percussion drilled holes and grouted 2,5 m deep into foundation using a cementitious non-shrink grout, under outlet chamber (Refer PS27-1)	No	142	……	……
C. 500	27.8.2.1 (b)	- Extra-over for Rock Dowel length	m	567	……	……
					Carried Forward	……

		Brought Forward				……
LEFT BANK OFFTAKE CHAMBER (Refer Drg. Reg. No. CWD 4220-4232)						
ITEM NO	**PAY REF**	**SHORT DESCRIPTION**	**UNIT**	**QTY**	**RATE**	**AMOUNT**
		Vertical dowels into rock and/or concrete (Epoxy Protected at interface, 0,5m)				
C. 510	27.8.2.1 (a)	- 4 m long, Y25 mm dia., 48 mm NB percussion drilled holes and grouted 2,5 m deep into foundation, using a cementitious non-shrink grout into concrete, under LB Offtake Chamber (Refer PS27-1)	No	65	……	……
C. 520	27.8.2.1 (b)	- Extra-over for Rock Dowel length	m	260	……	……
RIGHT BANK PLATFORM						
		Dowels perpendicular into rock and/or concrete (Epoxy Protected at interface, 0,5m on either side of interface)				
C. 530	27.8.2.1 (b)	- 7 m long, Y25 mm dia., 48 mm NB percussion drilled holes and grouted 4 m deep into the rock using a cementitious non-shrink grout and 2 m into concrete	No	5 436	……	……
C. 540		Extra-over for Rock Dowel length	m	1 412	……	……
C. 550	PS27-2	- Diamond wire mesh reinforcement for vertical blast faces as directed by Engineering Geologist	m^2	488	……	……
RIGHT BANK FLOW METER CHAMBER (CWD4541)						
		Rock dowels (epoxy protected)				
C. 560	27.8.2.1 (a)	- 4 m long, 25 mm dia., 48 mm NB drilled and grouted 2,0 m deep into rock foundation	No	24	……	……
C. 570	27.8.2.1 (b)	- Extra-over for rock dowel length	m	96	……	……
RIGHT BANK OFFTAKE CHAMBER						
		Rock dowels (epoxy protected)				
C. 580	27.8.2.1 (a)	- 4 m long, 25 mm dia., 48 mm NB drilled and grouted 2,0 m deep into rock foundation	No	36	……	……
C. 590	27.8.2.1 (b)	- Extra-over for rock dowel length	m	144	……	……
					Carried Forward	……

		Brought Forward				……
RIGHT BANK DISCHARGE CHAMBER						
ITEM NO	**PAY REF**	**SHORT DESCRIPTION**	**UNIT**	**QTY**	**RATE**	**AMOUNT**
		Rock dowels (epoxy protected)				
C. 600	27.8.2.1 (a)	- 4 m long, 25 mm dia., 48 mm NB drilled and grouted 2,0 m deep into rock foundation	No	60	……	……
C. 610	27.8.2.1 (b)	- Extra-over for rock dowel length	m	240	……	……
PROTECTION AND DECOMMISSIONING OF EXISTING OUTLET WORKS						
C. 620	27.8.2.1 (a)	- Toe footprint (Y32, 11 m deep, 1,5 m c/c)	No	96	……	……
C. 630	27.8.2.1 (b)	- Extra-over for Rock Dowel length	m	1 248	……	……
		Total of Section C Carried forward to Summary				……

ITEM NO	PAY REF	SHORT DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SECTION D: PROVISIONAL SUMS						
PS. 1		- Provisional amount for specialist design and Installation of Rock anchor supports	Prov. Sum	1	50 000 000	50 000 000
PS. 2		- Percentage Mark up on PS. 1 above	%	1		
PS. 3		Spillway and Apron: - Provisional amount for additional drilling in Apron area and modelling making use of the existing leapfrog model development, to analyse the stability of the spillway during apron excavations, as well as recommend proposed measures to ensure stability of the existing dam wall.	Prov. Sum	1	5 000 000	5 000 000
PS. 4		- Percentage Mark up on PS. 3 above	%	1		
PS. 5		Left Bank Non-Overspill Section: - Additional drilling if required by the Engineering Geologist and making use of the existing leapfrog model developed, to analyse the stability of the Left Bank NOC Section during downstream excavations, as well as recommend stability measures to ensure stability measures to ensure stability of existing dam wall.	Prov. Sum	1	5 000 000	5 000 000
PS. 6		- Percentage Mark up on PS. 5 above	%	1		
PS. 7		Provisional amount for specialist design, drilling and blasting	Prov. Sum	1	5 000 000	5 000 000
PS. 8		- Percentage Mark up on PS. 7 above	%	1		
PS. 9		Instructions by Employers Agent	Prov. Sum	1	10 000 000	10 000 000
PS. 10		- Percentage Mark up on PS. 9 above	%	1		
Total Provisional Sum Section Carried forward to Summary						……

SUMMARY OF BILL OF QUANTITIES			
	SECTION	**DESCRIPTION**	**AMOUNT**
A	A1	**PRELIMINARY AND GENERAL** FIXED CHARGES	.....
	A2	TIME RELATED CHARGES	.....
		SUB TOTAL A (A1 + A2)	.....
B C	B	**DIRECT WORKS** BLASTING	.....
	C	ROCK SUPPORT	.....
		SUB TOTAL (B + C)	.....
D	D	**PROVISIONAL SUMS** **SUB TOTAL D**	.....
E	E	**SUB TOTAL E** (A+B+C+D)	.....
F		15 % CONTINGENCIES on Sub-total E	.....
G		**SUB TOTAL G** (E + F)	.....
H		20 % ESCALATION on Sub Total G	.....
I		**SUB TOTAL I** (G + H)	.....
		15 % VAT	.....
		TOTAL	.....

- Service basis.
  (See note here under) — CONSTRUCTION SOUTH CLANWILLIAM DAM IN THE WESTERN PROVINCE

- Period required before service after receipt of order: _____

  Country of origin _____

- Delivery period: *FIRM / NOT FIRM

- Is the price firm? *FIRM / NOT FIRM

- Does the offer comply with the specifications *YES / NO

- If not to specifications, indicated deviation(s) _____

  _____

  _____

- Is the offer strictly to specification? *YES / NO

- If not to specification, state deviation(s) _____

  _____

  _____

  _____

Any enquiries regarding bidding procedures may be directed to the –

Department of Water and Sanitation
Supply Chain Management Office
Private Bag X313, Pretoria, 0001.
Email: bidenquirieswte@dws.gov.za

Or

For technical or site information –
Mr. M Röhrs
Email: rohrsm@dws.gov.za

Mr. A. Frylick
Email: FrylinckA@dws.gov.za

PRICE ADJUSTMENTS

A NON-FIRM PRICES SUBJECT TO ESCALATION

1. IN CASES OF PERIOD CONTRACTS, NON-FIRM PRICES WILL BE ADJUSTED (LOADED) WITH THE ASSESSED CONTRACT PRICE ADJUSTMENTS IMPLICIT IN NON-FIRM PRICES WHEN CALCULATING THE COMPARATIVE PRICES

2. IN THIS CATEGORY PRICE ESCALATIONS WILL ONLY BE CONSIDERED IN TERMS OF THE FOLLOWING FORMULA:

$$(1 - \mathrm{x})\left[\frac{aL_t}{L_o} + \frac{bP_t}{P_o} + \frac{cM_t}{M_o} + \frac{dF_t}{F_o} - 1\right]$$

Where:

X = Fixed 10% (0,10) of the original bid price. Is portion of the bid price remains firm, it is not subject to any price escalations.

a = Factor of the bid price for Labour

b = Factor of the bid price for Contractors Equipment

c = Factor of the bid price for Material

d = Factor of the bid price for Fuel

The total of the various factors “a”, “b”, “c”, “d” must add up to 100%

“Lt", “Pt” , “Mt” & “Ft” = Index figure obtained from a Statistics South Africa and published by SAFCEC from time to time **(As defined in C1.2.3 – Clause 6.8.2)**

“Lo”, "Po” “Mo”, “Fo” = Index figures at time of bidding

3. The following index/indices must be used to calculate your bid price: **(As per C1.2.3 Contract data: THE INDICES BASED DATE WILL BE 30 DAYS BEFORE TENDER CLOSING DATE- CLAUSE 6.8.2)**

Index Lo = ……. Dated…….

Index Po = …… Dated…….

Index Mo = ……... Dated…….

Index Fo = …… Dated…….

4. FURNISH A BREAKDOWN OF PRICE IN TERMS OF ABOVE-MENTIONED FORMULA. THE TOTAL OF THE VARIOUS FACTORS MUST ADD UP TO 100%.

FACTORS (“a”, “b”, “c” & “d”)	**PERCENTAGE OF BID PRICE**
a	15%
b	30%
c	45%
d	10%
TOTAL	100%

B PRICES SUBJECT TO RATE OF EXCHANGE VARIATIONS

1. Please furnish full particulars of your financial institution, state the currencies used in the conversion of the prices of the items to South African currency, which portion of the price is subject to rate of exchange variations and the amounts remitted abroad.

PARTICULARS OF FINANCIAL INSTITUTION	ITEM NO	PRICE	CURRENCY	RATE	PORTION OF PRICE SUBJECT TO ROE	AMOUNT IN FOREIGN CURRENCY REMITTED ABROAD
				ZAR=		
				ZAR=		
				ZAR=		
				ZAR=		
				ZAR=		
				ZAR=		

2. Adjustments for rate of exchange variations during the contract period will be calculated by using the average monthly exchange rates as issued by your commercial bank for the periods indicated hereunder: (Proof from bank required)

AVERAGE MONTHLY EXCHANGE RATES FOR THE PERIOD:	DATE DOCUMENTATION MUST BE SUBMITTED TO THIS OFFICE	DATE FROM WHICH NEW CALCULATED PRICES WILL BECOME EFFECTIVE	DATE UNTIL WHICH NEW CALCULATED PRICE WILL BE EFFECTIVE

DEPARTMENT OF WATER AND SANITATION

DWS DWS08 - 1022 (WTE)

THE DRILLING AND BLASTING FOR DAM FOUNDATION EXCAVATION AND SLOPE PROTECTION FOR THE CLANWILLIAM DAM IN THE WESTERN CAPE PROVINCE

C3: SCOPE OF WORKS

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C3.2 PROJECT SPECIFICATION

C3.3 PARTICULAR SPECIFICATIONS

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C3.1 STANDARD SPECIFICATION

SS 1 APPLICABLE STANDARD SPECIFICATIONS

In the event of any discrepancy between a part or parts of the Standardised or Particular Specifications and the Project Specifications, the Project Specifications and Particular Specifications shall take precedence. In the event of a discrepancy between the Specifications, (including the Project Specifications) and the drawings and / or the Bill of Quantities, the discrepancy shall be resolved by the Employers Agent before the execution of the work under the relevant item.

The applicable standard specifications are mentioned in the Project Specification and Particular specification.

List of Standard Specifications applicable, but not, limited to:

- SANS 10100
- SANS 920
- SANS 1700
- SANS 1373
- SANS 1491
- SANS 675
- SANS 1580
- SANS 1200 A
- SANS 5861
- SABS 5863
- BS 5896
- BS 4447
- BS 1881
- ASTM 820
- AC1-506R085
- COTO (DS of 2020)

(All work shall be done in accordance with the specifications listed in the Project Specification, the Particular Specifications and Drawings.)

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C3.2 PROJECT SPECIFICATION

The applicable Project Specification is as follows:

Olifants-Doorn River Water Resources Project (ODRWRP)
Raising Of Clanwilliam Dam - Volume 3: C3.2
Project Specification
(Will be provided in electronic format.)

All work shall be done in accordance with the specifications listed in the Project Specification, the Particular Specifications and Drawings.

PS 1. DESCRIPTION OF THE PROJECT

The raising of Clanwilliam Dam, which will be the first phase of the Olifants-Doorn River. Water Resources Project (ODRWRP), will increase the yield of the dam by about 70 Mm3 per annum to augment the water supplies to the Olifants River irrigation scheme situated in the north-western part of the Western Cape province, as well as to assist in the development of resource-poor farmers.

Clanwilliam Dam is located on the Olifants River, in the Western Cape, approximately 2 km South West of the town of Clanwilliam. The original dam was constructed in 1932-1935 (38m high from the base). The existing structure is a concrete gravity dam, consisting of a controlled ogee gravity spillway with 13 vertical crest gates. The length of the wall is 255 m. The total spillway length is 117,58 m, including the piers between the gates. The dam was raised in 1964 with vertical crest gates. Tensioned cables were supplied to ensure stability of the dam wall.

Currently, water is released downstream via the Olifants River to Bulshoek Weir from where the water is diverted into the dilapidated irrigation canal situated on the left bank. Water is also released from the existing outlet works situated on the right bank into an irrigation canal situated on the right bank, to the pump station on the right bank supplying water to the town of Clanwilliam, and to the hydropower plant situated downstream on the right bank.

The feasibility investigation for raising the dam was completed at the end of 2007 and the Record of Decision (ROD) was issued on 12 May 2009 by the Department of Environmental Affairs. Approval by the Minister for raising the dam by 13 m was issued on 18 August 2010.

In order to comply with current dam safety standards, the Department of Water and Sanitation is also required to implement remedial measures with the raising in the height of the dam wall.

The raised dam wall will be approximately 370 m in length and 49 m in maximum height. At full supply level the reservoir will cover a surface area of approximately 2 022 ha and capacity of 344,3 million cubic metre. The works include addition of concrete on the downstream side, extending the apron, construction of a free standing intake tower, river outlet control house, a power generating house, short tunnel and coffer dam works on the upstream side, as well as various other pipe outlet structures on the downstream side. This work must be done without interfering with the day to day operation of the dam.

PS 2. SCOPE OF THE CONTRACT

PS2.1 General

The detail of the work to be carried out under this contract includes, but is not limited to:

a) The Contractors' site establishment, including the establishment of compressed air installations, drilling equipment, all material required and any equipment required to do the work.
b) Performing a trial blast in order to be able to compile a specification for maximum allowable vibration.
c) Do blasting of hard material in the excavation at the different sections.
d) Provide blasting records and legal compliance documentation in terms of Explosives Amendment Act 83 of 1997 and blasting records as required.
e) Mechanical demolition of some of the components of apron concrete slab needs to be performed before blasting excavation.

f) The excavated face must be made safe and will consist of the following methods either as stand alone or in any combination as proposed by Contractor and approved by Employers Agent on exposure of slopes:
   - Double twisted wire mesh protection of slopes and cliffs where there may be a danger of falling rocks;
   - Shotcrete applied to rock surface; and
   - Rock bolts, rock anchors and rock dowels as indicated on drawings.

g) Documenting the slope protection measures in agreed format.

It is envisaged that the work be carried out in phases, and it could be necessary to temporary de-mobilize and remobilize to site. The final extent of the contract will depend on the geological conditions. The quantities are considered to be a reasonable estimate of the expected work to be done under this contract.

The work is divided into sections and the quantities of the work items in the Bill of Quantities have been listed under the following sections:

- Excavation for the Approach channel and Inlet works upstream of dam wall;
- Excavation for Left Non-Overspill section above existing level to new level;
- Excavation for the Left Bank Outlet works downstream of the dam wall;
- Excavation for Spillway section below existing Apron downstream of the dam wall;
- Excavation for Right Non-Overspill section downstream of the dam wall and above the existing level to the new level;
- Excavation for the Right Bank Outlet works downstream of the dam wall; and
- Excavation for access roads, weirs and other small works.

It is envisaged that the excavation work will be carried out in phases. As a section of rock is blasted, the excavation work will commence, and rock material will be removed to spoil. During this operation the Contractor is expected to commence with the drilling of anchors and/or dowels and shotcrete where required and/or placing of the rock drapery. There is no time allowed for in the excavation process to do this as a separate process.

PS2.2 Drill & Blast

Since a major part of the works undertaken in the raising of Clanwilliam Dam is to improve the safety of the existing dam wall, especially its sliding resistance, all excavations performed shall be done in such a manner, that it does not destabilize the dam wall.

Blast Designer (s) shall be Mining/ Rock Engineer with valid ECSA register or relevant Engineer with valid ECSA registration, with relevant proven experience. Proven experience should be in the field of mining and or demolition. The blast designer will act as independent blast designer and will be responsible to sign off (approve) the blast installation before the actual blasting.

Blast designs to keep the Maximum Peak Particle Velocity and Frequency to the minimum within the allowed specified tolerance as specified under:

(Project Specifications PS20-2 Blasting Adjacent or near to Structures-page CWD PS/109) - Blasting to be carried out within 100m of any concrete and/or grouting regardless of age, shall be done by means of Gas-Induced Fracture Technology (GIFT) using Nonex, or by means of controlled blasting techniques, to the approval of the Employer's Agent. All such blasting shall be designed to keep peak particle velocities (PPV) to below 12.7 mm/s and the frequency above 10 Hz. Trial blasting to be done first for approval of method statement.

All blasting shall be done, in sections and phases according to specifications and agreed with the Employers Agent.

Blaster shall be in position of a valid registration with SAPS.

Blasting shall be done by making use of Perimeter, Trim and Bulk blasting methods to accommodate the hard excavation in the different areas. If contractor would like to propose alternative blasting methods, these will have to be approved by the Employers Agent.

Excavation of the Approach Channel and Inlet section on the left bank is envisaged to be done in the following phases:

- Phase 1: From highest point ± RL 115 down to RL 108 (7m)
- Phase 2: From RL108 to RL 103.6 (4.4 m)
- Phase 3: From RL 103.6 to RL 100 (3.6m)
- Phase 4: From RL100 to 94 (6m)
- Phase 5: From RL 94 to RL 88 (6m)
- Phase 6: From RL 88 to RL 83 (5m)

Excavation of the existing apron shall be done in a phased block by block manner, in which a block is excavated and filled with concrete before the immediate next block is excavated. Appropriate rock slope stability measures to be applied to ensure safety of the workers. A proposed sequence of excavations of the blocks is shown below.

The left bank and right bank excavation detail is to be seen on drawings together with geological reports.

See preliminary excavation drawings under C4 for other structures & sections.

See PS1, under section C3.3 for more detail on blasting requirements and specifications.

It is a requirement that the Tenderer will submit a preliminary Method Statement as per requirement in T2- returnable schedules (Annexure M) as well as list of experience key staff (Annexure J & J-1).

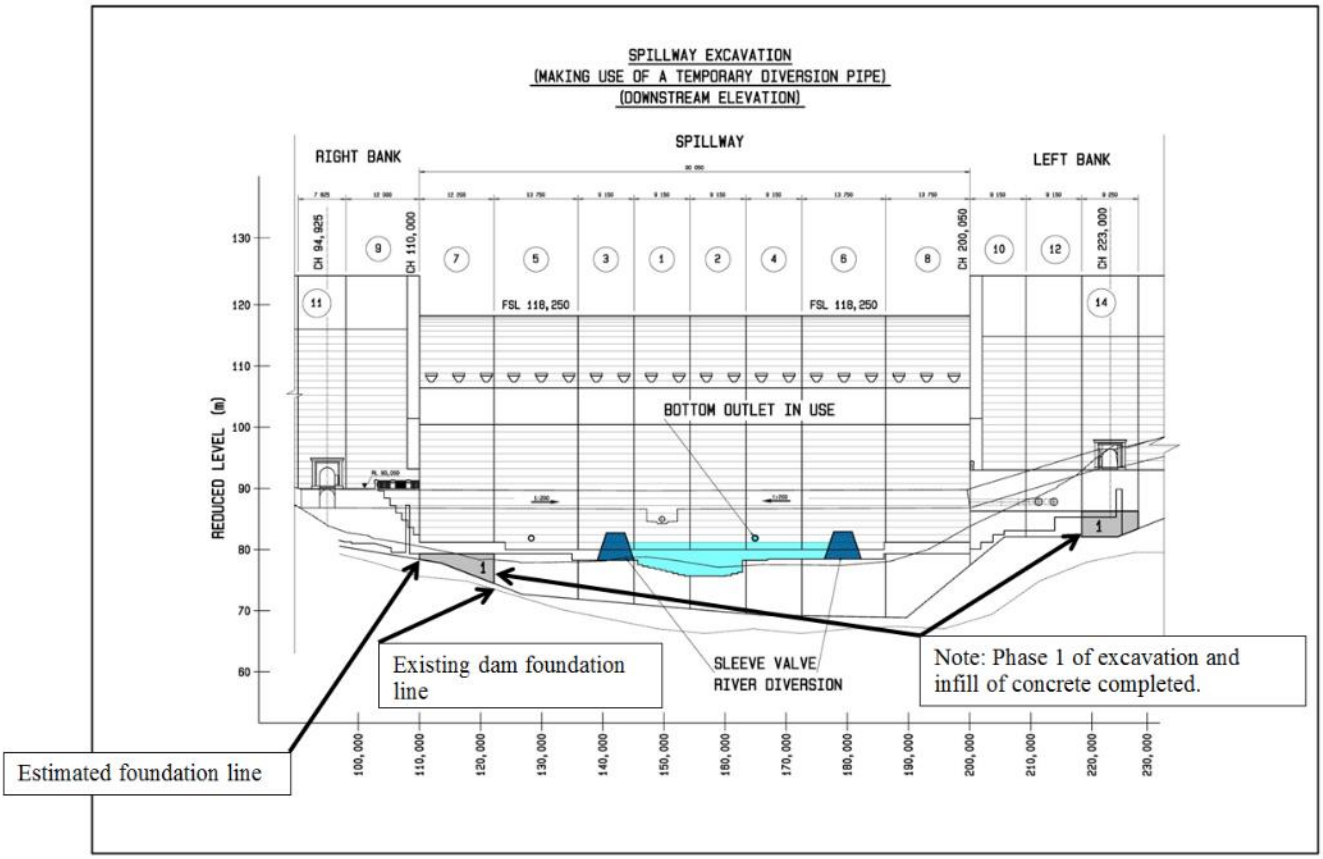
PS 2.2.1 Definitions

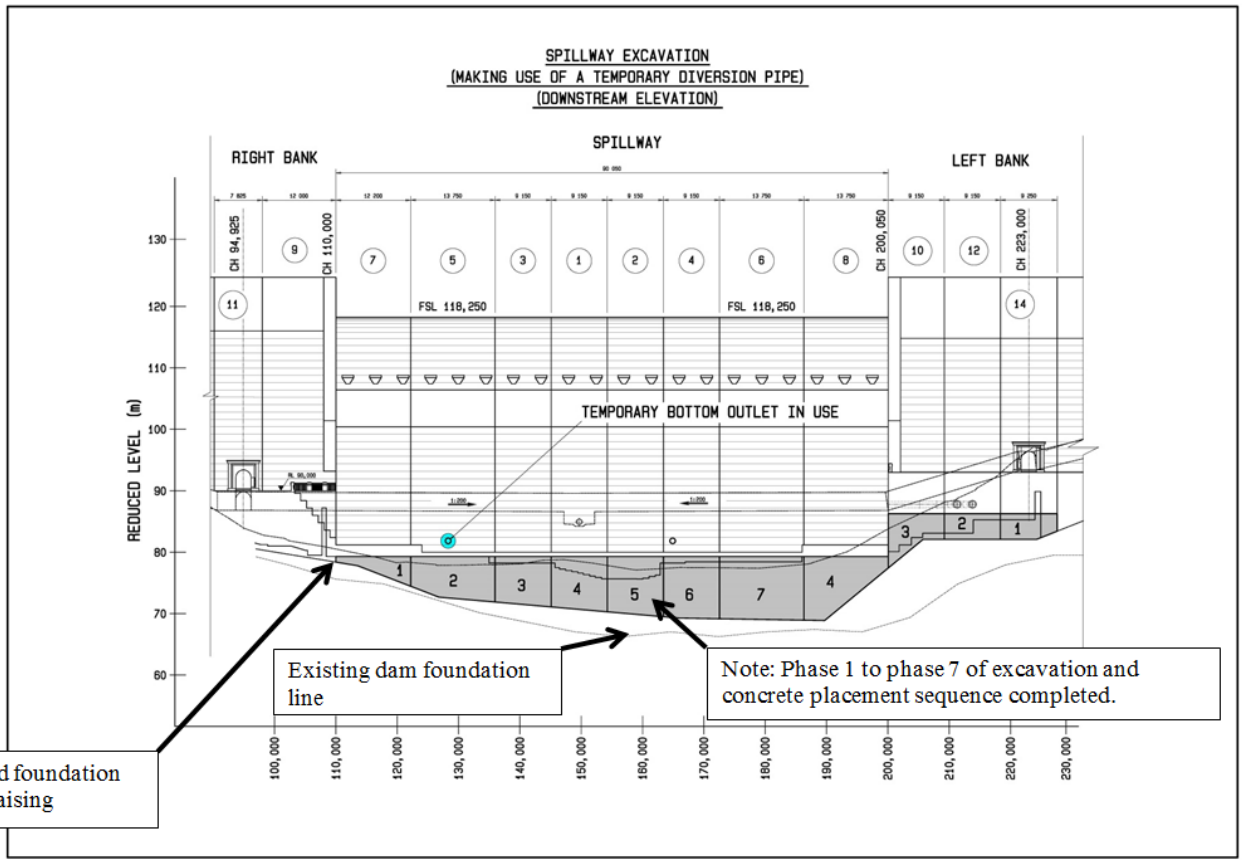
Classes of Excavation - Hard Rock Excavation (See Particular specification CWD20.3.1.2.c.i)

(i) Hard Rock excavation, other than in restricted excavation, shall be excavated (excluding boulder excavation) in material that cannot be, before removal, be efficiently ripped by a bulldozer equivalent to that specified under (b)(i) – intermediate excavation).

Note: Such excavation generally includes material such as formations of un-weathered rock that can be removed only after blasting.

(ii) In the case of restricted excavation, hard rock excavation shall be excavation in material (excluding boulder excavation) that cannot be efficiently removed without blasting or without wedging and splitting.


SPILLWAY EXCAVATION
(MAKING USE OF A TEMPORARY DIVERSION PIPE)
(DOWNSTREAM ELEVATION)
SPILLWAY
RIGHT BANK
LEFT BANK
CH 94,925
CH 110,000
CH 200,050
CH 223,000
FSL 118,250
FSL 118,250
BOTTOM OUTLET IN USE
REDUCED LEVEL (m)
Existing dam foundation line
SLEEVE VALVE
RIVER DIVERSION
Note: Phase 1 of excavation and infill of concrete completed.
Estimated foundation line


SPILLWAY EXCAVATION
(MAKING USE OF A TEMPORARY DIVERSION PIPE)
(DOWNSTREAM ELEVATION)
SPILLWAY
RIGHT BANK
LEFT BANK
CH 94,925
CH 110,000
CH 200,050
CH 223,000
FSL 118,250
FSL 118,250
TEMPORARY BOTTOM OUTLET IN USE
REDUCED LEVEL (m)
Existing dam foundation line
Note: Phase 1 to phase 7 of excavation and concrete placement sequence completed.
Estimated foundation line for raising

PS2.3 Rock support

Due to the uncertainty of the methods to be described by the Engineering Geologist used for rock support, certain items are refer to, but not limited to.

Rock support is required to stabilize the deep excavation walls and to provide a safe work area. The rock support will be implemented as soon as the blasting is completed and the rock face become clear, during excavation, for inspection. The Employers Agent will confirm if the requirements on the drawings are sufficient and or any other additional measures are required. The rock support consisting of any combination of but not limited to rock bolts, wire mesh and shotcrete, will be completely installed before the next phase of excavation continue.

Holes for the installation of rock dowels, rock bolts and rock anchors shall be drilled at the locations, in the directions, at the inclinations and to the depths and diameters shown on the drawings or instructed by the Employers Agent. Holes for dowels, rock bolts and rock anchors shall be drilled by percussion type methods using either top hammer or bottom hammer equipment, unless otherwise directed.

Each hole drilled shall be protected from becoming clogged or obstructed by means of the installation of a temporary wooden plug or other suitable device. Any hole that becomes clogged or obstructed before installation of the rock support or the dowels shall be cleaned out in a manner satisfactory to the Employers Agent or another hole provided.

Rock support will be installed as indicated on the drawings and directed by the Employers Agent according to Particular Specification CWD27 Rock Support.

Rock Support Specialist shall be a Geotechnical Engineer with ECSA registration, with relevant proven experience.

It is a requirement that the Tenderer will submit a preliminary Method Statement as per requirement in T2- returnable schedules (Annexure N) as well as list of experience key staff (Annexure J & J-1).

PS 3. THE SITE

PS 3.1 Location and access to site

The dam site is situated on the Olifants River, in the Western Cape, approximately 2 km South- West of Clanwilliam town in the Western Cape province.

The site is immediately next to the N7 and accessed through a controlled gate. The gravel site roads will be regularly maintained but could get challenging under abnormal rainfall conditions.

PS 3.2 Weather Conditions

The Clanwilliam Dam site is situated in the Western Cape province in the winter rainfall region with hot summers and cold wet winters. Average summer maximum and minimum temperatures are in the order of 39°C and 11°C respectively. Corresponding winter temperatures are 31°C and 4°C.

Relevant detailed meteorological information was obtained for the site from Weather Station No 00846710 at Clanwilliam Dam, situated at RL 103 m. Average monthly minimum and maximum temperatures obtained from that station are listed in Table 1. These records will be used for tender purposes and will be compared to information from a weather station to be installed at the dam site before construction commence. The prevailing wind direction(s) is South East and North West.

Table 1: Average Minimum and Maximum Temperatures (°C) Measured at Clanwilliam

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	41	40,5	39	37	32	27	26	29	33	35	40	41
Min	13,5	13	11	8	5	3	2	2,5	5	7	10	12

The Clanwilliam Dam catchment has a mean annual precipitation (MAP) of 575 mm. The area has a winter rainfall pattern.

Water levels in Clanwilliam Dam are fluctuating throughout the year. Below figure show the average dam levels in Clanwilliam Dam from January to December.

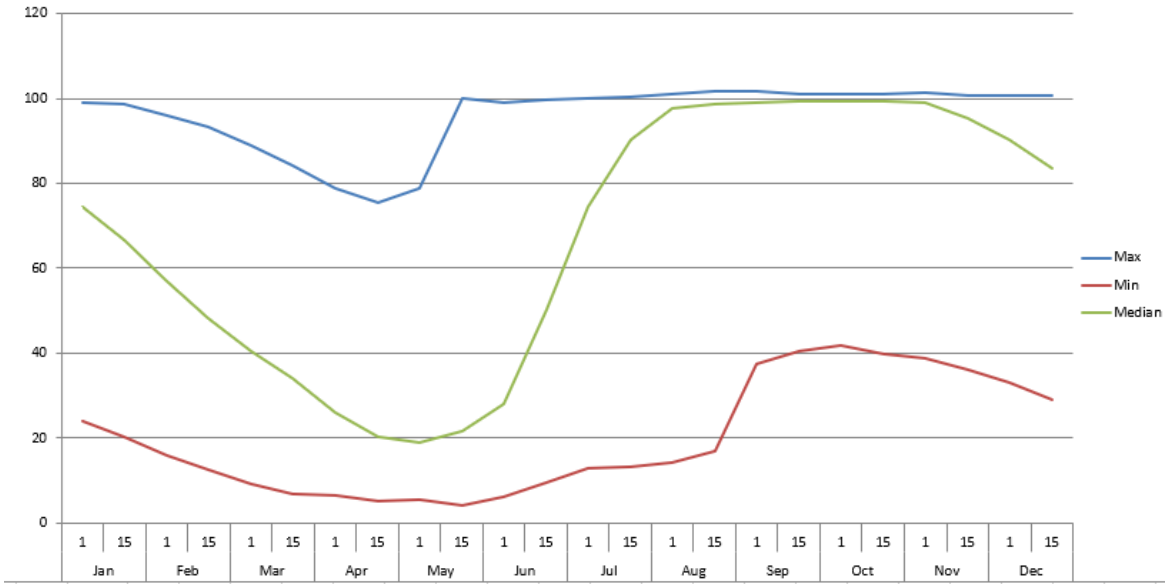


Figure: Average Water Levels in Clanwilliam Dam for January to December.

PS 3.3 General Geological Conditions

The Clanwilliam Dam is underlain by the Skurweberg Formation, Nardouw Subgroup of the Table Mountain Group, which comprise of thickly bedded, medium to coarse grained sandstone. The dam is located in a major synclinal structure within the western arm of the Cape Fold Belt, which, apart from the history of deformation and folding, is also associated with large scale faulting.

The foundation geology comprises quarzitic sandstone which is characterised by minor interbedded siltstone horizons. The overall structure of the founding rock mass is governed by the bedding which, on the left flank and within the river section, dips at angles between 10° and 20° in a downstream direction, but on the right flank dips slightly out of the slope (also at shallow angles).

On the upper left flank, the rock mass is generally slightly weathered but highly weathered horizons are also present; the mid flanks are mainly slightly weathered, and the strata within the river section generally slightly to moderately weathered, hard rock to very hard rock. The right flank similarly mainly comprises slightly too moderately weathered strata. Numerous highly weathered, medium hard to soft rock and sandstone horizons also occur. The interbedded siltstone horizons typically comprise medium hard rock to soft or very soft rock and are even weathered to clay in places.

Packer (Lugeon) tests revealed the founding rock mass on the left flank to generally be impervious. Highly pervious zones were recognised within the river section, but the rock mass was otherwise impervious.

The right flank is characterised by a number of pervious zones as well as numerous total water losses. The Lugeon pattern further indicates wash-out, presumably relating to the weathered siltstone inter beds. Foundation grouting is necessary; curtain grouting will control foundation seepage as well as erosion of the siltstone inter beds while consolidation grouting of the footprint will contribute to improving the integrity of the founding rock mass and enhancing the stiffness.

For detail information see the Engineering Geological Reports for design of Clanwilliam Dam raising. (Will be provided in electronic format.)

PS 4. FACILITIES PROVIDED BY EMPLOYER'S AGENT to CONTRACTOR

PS4.1 Contractors Yard

A Storage area ,to the west of the N7 will be provided as part of the main site establishment area. If the Contractor requires more area or any other area it must be specified in his document and be negotiated with the Employers Agent.

The Employer's Agent will supply only potable water to the Sub-contractor's yard for human consumption. The Contractor must make arrangements for its own water distribution required in the performance of its duties.

PS 5. FACILITIES PROVIDED BY CONTRACTOR FOR WORKS

PS5.1 Electrical Power and Distribution

The Contractor shall make his own arrangements to provide his own power supply.

Failure or interruption of the power supply shall not relieve the Contractor of any of his obligations under the Contract.

PS5.2 Water Supplies

The Contractor shall be responsible for making his own arrangements for the supply of water that they may require for their purposes. Water quality shall be as per clause CWD23.3.2. Subject to quality, water can be abstracted from the Olifants River. A record of abstraction must be kept on a daily basis and must be submitted on a monthly basis with Contractor's returns.

Failure or interruption of any source of water shall not relieve the Contractor of any of his obligations under the Contract.

PS5.3 Communications

The Contractor shall make his own arrangement with regards to his required communication requirements.

PS5.4 Accommodation and Site Facilities

The Contractor must supply his own offices, storage facilities and workshop. The Employer's Agent will indicate available area for site establishment.

The Contractor shall make his own arrangements for accommodation for his staff. No accommodation is allowed on the site in terms of the Environmental EMP. (Will be provided in electronic format)

PS5.5 Storing of Explosives

No explosives may be stored on site.

PS5.6 Resting and eating areas

The Contractor shall provide sufficient and suitably positioned areas for use by his workers on site during resting and eating periods. Sufficient refuge bins, tables and seating must be provided. Existing and new permanent structures for the raised dam wall may not be used as resting and eating areas.

PS5.7 Sanitation and cleaning

The Contractor shall provide at or within 200m of each work place (As per EMP) chemical toilet facilities with toilet paper, potable water, soap and towels together with industrial soaps and barrier creams as appropriate. The Contractor shall maintain all toilet facilities in a clean and sanitary condition and shall take all necessary precautions to prevent pollution of the Site. The sewage will be disposed of at a registered disposal facility and the disposal certificate will be kept on record.

The Contractor shall ensure that there are adequate and sufficient refuse bins in and around the working area and that these shall be emptied frequently. All refuse bins shall be placed on a concrete base, which shall, from time to time, be sprayed with insecticide. All refuse collection, removal and disposal

on site shall be the responsibility of the Contractor. All refuse shall be disposed of at a licensed landfill site only, and certificates of receipt shall be kept on record.

The Contractor shall clear away and remove all traces of the toilets and restore the sites to their original condition as soon as the toilets are no longer required

PS5.8 Access control and security

The Employer's Agent will be responsible for access control and security for the site. The Contractor will abide by the access control measures. The Contractor is responsible for the safeguarding and protection of their own Contractor's yard, equipment and plant on site. The Employer's Agent does not take any liability for the Contractor in terms of security what so ever.

PS 6. WORKING TIMES

PS 6.1 Standard Official Working Times

Normal Working hours for the Employer's Agent is:

October – March (Summer time)

Monday to Thursdays: 06:30 am – 16:15, and

Friday's : 06:30 – 15:00

April – September (Winter time)

Monday to Thursday: 7:00 to 16:45, and

Friday 7:00 to 15:30

PS 6.2 Work at Night

No work will be permitted at night, whoever, the Contractor could be requested to perform work at night, with written permission. Responsible and qualified supervisory staff shall always be present and sufficient light must be available to conduct the work safely.

PS 6.3 Sunday Working

Sunday work shall not be permitted except for necessary maintenance, repairs and emergencies and shall only be undertaken with the prior written approval of the Employers Agent.

PS 6.4 Last Friday of Month

The last Friday of the month is regarded as the pay day of the Employer's Agent personnel. This is a non-working weekend for Employer's Agent personnel, and the Contractor will only be allowed to work with special permission on this day.

PS 7. CLIMATIC CONDITIONS

PS7.1 Rainfall data

The rainfall data to be used for extension of time arising from abnormal rainfall is presented in the below table: rainfall record.

Table: Rainfall Record

Rainfall Station No:00846710 Clanwilliam Period: 1992-2012

Month	AVE	STD DEV	N DAY RAIN	NUM MON	MAX R DAY	MAX RAIN DATE
January	0,0	0.26	0,05	19	13,8	5/1/2004
February	0,25	0.53	0.11	20	10,8	23/2/2010
March	0,45	0.89	0.14	20	29	26/3/1997
April	0,85	1.38	0.33	20	21.4	26/4/2007
May	2,05	3.05	0.76	19	25	8/5/1998
June	3,03	3.98	1.35	18	54.5	8/6/1997
July	2,67	3.23	1.05	18	29.4	26/7/2007
August	2,03	2.80	0.58	18	27.8	18/8/2003
September	0,95	1.35	0.37	18	11.5	12/9/1996
October	0,52	0.91	0.22	18	12.6	19/10/2011
November	0,67	1.16	0.21	18	29.4	8/11/2009
December	0,52	1.11	0.21	18	19.6	24/12/2007

Explanation of headings:

'AVE' represents the average rainfall for the month = Rn

STD DEV' represents the standard deviation from the normal

'N DAY RAIN' represents the average number of rain days per month exceeding 10 mm = Nn

'NUM MON' represents the number of months used in the calculation

'MAX R DAY' represents the maximum rainfall that occurred over a 24-hour period (08:00-08:00)

'MAX RAIN DATE' represents the date on which the maximum 24 hour rainfall occurred

PS7.2 Extension of time arising from abnormal rainfall

Extension of time in terms of the Conditions of Contract arising from abnormal rainfall shall be calculated separately for each calendar month or part thereof in accordance with the formula given below. It shall be calculated for the whole period until completion of the contract including any extension thereof:

$$V = (N_W - N_n) + \left(0{,}050 \times (R_w - R_n)\right)$$

If V is negative and it absolute value exceeds Nn then V shall be taken as equal to minus Nn.

The symbols shall have the following meanings:

V = Extension of time in calendar days in respect of calendar month under consideration.

Nw = Actual number of days during the calendar month on which a rainfall of 10 mm or more has been recorded.

Rw = Actual rainfall in mm for the calendar month under consideration.

Nn = Average number of days, as derived from existing rainfall records provided in Table 1.12.1, on which a rainfall of 10 mm or more has been recorded for the calendar month.

Rn = Average rainfall in mm for the calendar month, as derived from the rainfall records supplied in Table 1.12.1

The total extension of time shall be the algebraic sum of the monthly totals for the period under consideration. Extensions of time for part of a month shall be calculated using pro rata values of Nn and Rn.

The factor (Nw - Nn) shall be considered to represent a fair allowance for variations from the average number of days during which rainfall exceeds 10 mm.

The factor 0,050 (Rw - Rn) shall be considered to represent a fair allowance for variations from the average in the number of days during which the rainfall does not exceed 10 mm but wet conditions prevented or disrupted work.
Accurate rain gauging shall be taken at the weather station to be supplied by the Employer's Agent at a suitable point on Site.

PS 8. PROGRAMMING REQUIREMENTS

PS 8.1 Preliminary Tender Program

The Tenderer shall submit a preliminary programme in the form of a Gant chart with the tender. As per requirement in T2 – returnable schedules, Annexure M (for drilling& blasting) & Annexure N (for rock support).

A detailed program will be provided to the Tenderers at the compulsory site briefing session. (Will be provided in electronic format.)

PS 8.2 Contract Programme Maintenance and Progress Monitoring

A detail Contract Programme shall be developed using the latest version of Construction Computer Software for Windows or Microsoft Project for Windows or equal.

Five working days before the monthly progress meeting the Contractor shall submit to the Employers Agent a programme update that reflects the actual progress against current programmes and the effect on future activities.

The Contractor shall also submit a narrative report with each monthly update including a description of current and anticipated programme related problem areas, current and anticipated delaying factors and their impact, and an explanation of corrective actions taken or proposed.

All variances from the Contract Programme shall be promptly reported and the future impact of such variations shall be determined and analysed by the Sub-Contractor and necessary corrective measures established, subject to the approval of the Employer.

PS 8.3 Progress Meetings

The Contractor will be required to attend regular site meetings with the Employers Agent where the progress of construction will be reviewed. Such meetings will normally be held monthly. The Contractor shall also attend weekly meetings with the Employers Agent and provide, prior to each meeting as required by the Employers Agent, detailed programmes showing separately the various activities of the Contractor anticipated over the forthcoming two-week period.

PS 9. CONSTRUCTION MATTERS

PS9.1 General Responsibilities

The Site and all services are under the control of the Employer's Agent and therefore the Employer expects the Contractor to liaise regularly with the Employer's Agent in order to ensure smooth execution and integration of activities with the Employer's Agent's activities.

Non-performance of the Employer's Agent shall not relieve the Contractor of any of his obligations under the Contract.

Due to the specialised nature of the Works the Employer's Agent shall ensure that qualified technical staff is available on site to carry out the necessary calculations for setting out of blasting pattern and rock support. The Contractor must liaise in time with the Employer's Agent on his requirements.

The Construction Permit has been issued for the project in the Departments name and is thus not necessary for Contractor to apply for it.

PS9.2 Contractors Methods and Materials

It is a requirement of this contract that final work procedures must be approved before the commencement of work. Blasting design to be submitted for approved 14 days before each blast, as well as method statement for that blast to the Employers Agent, unless if otherwise instructed. Other method statements with full details concerning the methods, equipment and materials will be required for the following but not limited to:

- Drilling and Blasting
- Rock Support

The Tenderer shall submit a preliminary Method Statement (including, project program, equipment to be used, methodology to be followed, quality management plan, environmental, health and safety, but not limited to), with the tender. As per requirement in T2 – returnable schedules, Annexure M (for drilling& blasting) & Annexure N (for rock support).

PS9.3 Quality Management

The Contractor shall be responsible under the Contract for the quality and testing of materials, workmanship and production processes in fulfilment of the Contract. The Contractor shall have a Quality Management system in place which details the following in order to satisfy the Specification relevant to each operation to the works in accordance with the Contract:

- Quality control procedures
- Personnel responsibilities
- Testing procedures, both on and off-site
- Equipment and calibration
- Frequency of testing, calibration, etc.
- Hold points in production for inspection
- Rejection and rectification procedures
- Documentation and communication
- Drawing issue procedures
- Drawing register.

As much of the testing as is practicable shall be carried out on Site, including trial, acceptance and routine testing which is the responsibility of the Contractor, and any other tests as instructed by the Employers Agent for any additional investigations required from time to time during the course of the Contract.

PS9.4 Competence of Workmen

The Contractor shall ensure that only competent personnel are employed in operations involving particular skills affecting the quality of the works. Should the competence of any member of the Contractor's workforce be in doubt, the Employers Agent may order that the member be sent for additional training at the Contractor’s account and/or that member be replaced with a competent person to perform that work**.**

PS9.5 Contractor’s Returns

Records and returns shall be reported to the Employers Agent in an agreed format:

a) Weekly

The Contractor shall keep accurate daily records detailing work carried out on the works and shall submit them to the Employers Agent prior to the weekly progress meeting or at such other times as the Employers Agent may require. The records shall include the following for each Portion of the Works separately and in sufficiently detail to establish the person- hours and equipment hours expended:

- Extent of work done;
- The numbers of each category of workmen and supervising staff;
- The numbers and types of Contractor's Equipment used;
- The time and duration of any significant delays or breakdowns of any Contractor's Equipment; and
- Any other events relevant to progress of the works.

The Contractor shall also provide such further information as may be requested by the Employers Agent.

b) Day work and Similar Records

Records shall be kept daily of labour, materials and equipment where there is an agreement to pay by day works. Such records shall be valid only when signed by both parties.

In cases where there is any dispute or uncertainty on payment procedure, sheets shall be signed daily by both parties as an agreed record of work done but shall not imply any commitment concerning payment. These sheets shall be annotated "For record purposes only".

PS 10. LOCAL SOCIO-ECONOMIC DEVELOPMENT PARTICIPATION OBJECTIVES

The following shall be applicable to this Contract as per particular specification CWD 68:

The Department of Water and Sanitation (DWS, also referred to as the “Employer”) is committed to transformation within the construction industry and water sector through the optimisation of socio-economic benefits within its sphere of business influence in terms of the Broad-Based Black Economic Empowerment Act, (Act No. 53 of 2003). The general principles, upon which the implementation of the Olifants-Doorn River Water Resources Project (ODRWRP) is based, are:

1. Contribute to local and regional economic development by optimising the use of locally available skills, materials and resources - Local Socio-Economic Participation and Development (LSEPD);
2. Promote transformation, technology and skills transfer within the infrastructure development industry through employment creation, preferential procurement, enterprise development, training and skills development objectives - Socio-Economic Empowerment (SEE);
3. Ensure the project is implemented in a socially responsible and sustainable manner, and
4. Ensure economic access for Black people living in rural areas by incorporating them into the mainstream economy.

The Contractor must adhere to the minimum requirements and to report monthly on the implementation and compliance of the performance monitoring criteria of this specification (CWD68). The Employer will audit the Contractor’s compliance to this specification and notify the Employer’s Agent to direct the Contractor on any non-compliance.

The cost for all personnel recruitment/administration and training in respect to compliance of this specification shall form part of the SAFCEC rates.

PS 10.1 Appointment of Labour

The Labour Desk which will be established by the Employer will be responsible for the recruitment of local labour. The Contractor shall advise the labour desk or CLC – Community liaison Committee in writing of the numbers of each category of temporary workers, which is required, and the period for which they are required.

The Contractor shall pay his employees and shall ensure that his Sub-contractors pay their employees rates of remuneration not less than prescribed by legislation and applicable to the area of the Works and shall observe conditions of employment which are no less favourable than those which are customary in the area in which the works are to be constructed for those trades and occupations involved in the fulfilment by the Sub-Contractor of his obligations under the Contract. The Sub-Contractor shall also practice and ensure that his Sub-contractors practice a policy of equal remuneration, conditions of employment and benefits for people of equal skills and productivity.

Local employment targets for local labour from designated groups to be comply with, as per CWD 68 (Table CWD68.4.1), is as follow:

Designated Groups	Skilled or permanent staff target (%)	Local labour minimum target (%)
Black people	75	90
Women	10	15
Youth	5	20
People with disabilities	2	1

PS 10.2 Local Procurement

The Contractor is to support Enterprises and Business in the local Clanwilliam Town and in Municipality area, including the township and rural areas, for goods or services.

PS 10.3 Training and Skills Development

The Employer is committed to the development of labour from the local area as well as elsewhere in SA. To achieve this objective, the Contractor shall implement a formal skills plan by following accredited SETA training programmes.

The Contractor is required to invest a minimum of 0,5% of the accepted Tender Amount on accredited SETA site training and development programmes.

NOTE: The Tenderer should acquaint themselves with the requirements of particular specification CWD 68. The Contractor will adhere to these requirements at all times thorough out the contact period.

PS 11. HEALTH AND SAFETY

PS 11.1 General

For this contract, the Employer's Agent will be the mandatory of the Employer (Client), as defined in the Act (OHSA 1993), which means that the Contractor, as an employer in his own right in respect of the contract, will be responsible for all the duties and obligations of an employer as set out in the Act (OHSA 1993) and the Construction Regulations 2003. Furthermore, the Contractor shall comply with any additional current statutory requirements of any relevant Government Departments regarding health and safety and specifically environmental health issues.

All work is to be carried out in accordance with the Occupational Health and Safety Act and Regulations (Act 85 of 1993) (a copy of which must be kept on site), the explosive Material Act (Act 26 of 1956), the Minerals Act (Act of 1991), the Factories Machinery and Building Work Act (No 22 of 1941) and the Labour Act 1992.

Nothing specified in this document shall relieve the Contractor of any obligations or responsibilities with regard to health and safety responsibilities.

Where safety precautions are not being observed, the Employer's Agent may order the Contractor to comply with minimum safety requirements at the Contractor's expense, and compliance with such an order will not absolve the Contractor from any of his responsibilities and obligations under the Contract.

All Covid-19 related regulatory specification needs to be implemented and adhered to by the Contractor.

Before commencement of work under the contract the Contractor shall:

1. Enter into an agreement with the Employer's Agent to confirm his status as mandatory (employer) for the contract under consideration.
2. Submit a Health and Safety Plan to the Employer within 28 days after the Commencement Date. The Contractor shall immediately implement the policy and any amendments and keep it in operation for the full duration of the Contract.

Full health and safety file to be submitted before any work will commence on site (including but not limited to):

- Details of Company Director & Contact Details
- Full-Time Supervisor Appointment Letter
- Safety Officer / Representative
- First Aiders Appointment + competent certificates
- Risk Assessor Appointment+ competent certificates
- Identification of the risks and hazards;
  (ii) Analysis and evaluation of the risks and hazards identified;
  (iii) A documented plan of safe work procedures;
  (iv) A monitoring plan; and
  (v) A review plan.

- Registration with Department of Labour (DOL)
- Valid Letter of Good standing with Compensation Commissioner
- Valid Letter of Good standing with Department of Employment and Labour
- Copy Risk Assessment / method statements
- Copy of Site Safety Inspection Document / Sheet
- Health and safety plan
- OHS Act Section 37(2) Mandatory agreements (signed by Company Director)
- Contractor appointment letter CR7(1)(c)(v)
- Medical fitness certificates of all staff
- All staff ID documents
- CV's of all relevant personal
- Safe working procedures
- Emergency procedures
- Registers
- Toolbox talks
- Blasting:
    - Blasters Registration -manager (ER12(6)(c),
    - Registration of blasting company (ER4(8)/ER13(6)(a))
    - CV of appointed blaster & blaster manager
    - Schedule license for blasting – ER 12(1)
    - Blasting permits (ER4(5))
    - Blasting Method Statement
    - Blasting employee's competent certificates
    - Blasting plan
    - Pre-blasting report (photographic report)
    - Example of Blasting notification to members of the public (ER12(4)(a)(i)
- Explosives:
    - Certification of registration from SAPS
    - Permit to transport explosives (Temporary transport permit)
    - Safe handling of explosives
    - Explosives licence (ER4(1))
    - Schedule licence for explosives (ER 4(3)(a))
    - Explosives manager appointment
    - Risk Assessment - Explosives (transport & usage) and blasting process

All vehicles and plant to be operated and maintained according to Construction Regulations 23.

The Contractor is required to keep health and safety records (which shall include audit reports) on site in an orderly filing system which shall be handed over to the Employer's Agent on completion of construction.

Failure by the Contractor to comply with safety requirements will entitle the Employer's Agent to reduce payment of the relevant Bill of Quantity items and/or order a temporary halt of work within the affected areas until the specified requirements are met, without any extension of time being granted and without any additional payment

Refer to CWD01 HS Health and Safety Specification in the Particular Specification Document.

A Pro-Forma Health and Safety plan together with required listed documentation must be submitted with the Tender as per requirement in T2 returnable schedule (Annexure M- Drilling & Blasting and Annexure N – Rock Support).

PS 11.2 Audits

The Contractor shall arrange for health and safety audits at monthly intervals to be carried out. The results and details of these audits shall be submitted to the Employer's Agent within the first week of the next month.

The Employer will monitor compliance by the Contractor with the Health and Safety Policy by means of Audits, and may give instructions for improvements.

The Contractor shall note that independent health and safety audits (or if considered suitable by the Employer combined audits with the Contractor's auditor) will be carried out as considered necessary by the Employer.

PS 11.3 Works Health and Safety Committee

For the purpose of implementing and monitoring the Health and Safety Plan the Contractor shall put in place a Health and Safety Committee.

The Committee shall meet at least at monthly intervals. Minutes of the meeting shall be kept by the Contractor and copied to Employer within 7 days of the meeting.

PS 11.4 Health and Safety Officers

The Contractor shall appoint a full-time permanent Health and Safety Officer on the commencement of the works. On the commencement of shift working, the Contractor shall appoint at least one deputy with the same duties. The Health and Safety Officer and the deputy (or deputies) shall be employed exclusively on health and safety matters, and at least one of them shall always be available on Site so that Health and Safety matters receive 24-hour coverage for the full duration of the Contract. The Health and Safety Officer or his deputy shall carry out regular and random checks of all parts of the Site where work is taking place.

PS 11.5 First Aid Provisions

The Contractor shall provide a first aid station. The Contractor shall institute and operate a basic first aid training program to ensure that at least each foreman or work crew leader is trained in first aid and possesses a valid certificate to that effect issued by the Red Cross Society of South Africa, or equivalent qualification within 3 months of his appointment. There shall be a person certified in first aid in each work crew.

PS 11.6 Accident Reporting

The Contractor, through the Health and Safety Officer or his deputy, shall keep the Employer's Agent informed at the time, or as soon thereafter as is practical but not later than 12 hours, of any occurrence during the course of work, whether on or off the Site, if the said occurrence affected or may have affected the health or safety of any person employed on the Site or of any member of the public. The Contractor shall submit to the Employer at the end of each month reports and statistics in spreadsheet format approved by the Employer on all accidents involving any person employed on or visiting the works.

PS 11.7 Workman's Compensation Act

By accepting the Contract, the Contractor warrants that all his and his Sub-Contractor's workmen are covered in terms of the Compensation for Occupational Injuries and Diseases Act (Act no 130 of 1993) which covers shall remain in force whilst any workman is present on the Site.

PS 12. ENVIRONMENTAL REQUIREMENTS

The Contractor shall take full responsibility for protecting the natural environment and eliminating or minimising the negative impacts of construction on the environment during construction.

PS 12. 1 General

The main project, Raising of Clanwilliam Dam, has been environmentally authorised under a Record of Decision (ROD)/ Environmental Authorization. The ROD requires that all activities conducted by the

Employer's Agent and Contractors/Sub-contractors are within the framework of the Environmental Management Plan (EMP) and Rehabilitation Specifications (RS).

The Contractor and his staff must be familiar with the *EMP & RS and* execute the project in such a way that it complies with the requirements of the EMP and RS. The Employers Agent will regularly inspect the Contractor's site. In the event that the Contractor does not comply with the requirements the deviation must be rectified as recommended by the Employers Agent at the Contractor's cost.

The Contractor shall construct and/or implement all the necessary environmental protection measures in each area before any production work will be allowed to proceed. The Employer may suspend the works at any time should the Contractor, fail to implement, operate or maintain any of the environmental protection measures adequately. The costs of such suspension shall be to the Contractor's account.

The Contractor shall submit a Method Statement containing details of all site layouts and environmental protection measures proposed to the Employer for review and approval.

These shall include:

- Pollution prevention measures;
- Settlement pond design and location; and
- Design of access roads outside the works area.

Full Environmental file to be submitted before any work will commence on site (including but not limited to):

- Copy of Site Environmental Inspection Documents / Sheet

PS 12. 2 Temporary Services and Facilities

All fuel storage tanks shall be bunded to 110 % of the total storage capacity. Fuel dispensing areas and workshop areas shall be provided with concrete slabs draining to oil separators. This will also apply to other areas with pollution potential.

Vehicle cleaning shall be undertaken in designated wash bays, which have an impermeable floor and are bunded to contain runoff and direct in onto a sump. Oil and diesel will be skimmed off the sump water and recycled or disposed of in the correct manner. The design and layout of this sump shall be submitted to the Employer for approval before construction commences.

When refuelling of vehicles and plant it needs to be done in a banded area, and or if not possible, needs to be done over a secured drip tray.

Vehicles worked on outside the wash bays will have portable drip trays placed under them to catch oil and diesel which may leak from the vehicles.

PS 12. 3 Protection of Rivers, Streams and Watercourses

All rivers, streams and watercourses shall be protected from direct or indirect spills of pollutants such as garbage, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and waste water or organic material resulting from the Contractor's activities. In the event of a spill prompt action shall be taken to clear polluted or affected areas.

The Contractor shall not work within streams, watercourses and wetlands without the written approval or as required for the execution of the work.

PS 12. 4 Refuse and Waste Control

The management of solid waste on site shall be strictly controlled and monitored. The Contractor shall adhere to and implement the following:

- Labelled recycling bins shall be used and waste separated where possible. In addition, a recycled-material collection schedule shall be established and the bins shall be collected regularly;

- Eating areas for the construction staff shall be designated and supplied with waste bins to control litter;
- No on-site burying or dumping or unauthorised burning of any waste materials, vegetation, litter or refuse shall occur;

Solid waste shall be disposed of off site, at an approved landfill site. The Contractor shall supply the Employer with a certificate of disposal; and waste shall be separated into recycling, domestic waste, building/construction rubble, scrap metal, oil and grease and hazardous waste and dealt with in the following manner:

a) Recycling
Suitable recycling bins, all with lids, shall be provided by the Contractor for his own buildings. Recycling shall be collected and removed from all facilities on the Site at least twice per week. Recycling waste shall be transported to the approved refuse disposal site off site in covered containers or covered trucks.

b) Domestic waste

Suitable refuse bins, all with lids, shall be provided by the Contractor for his own buildings. Refuse shall be collected and removed from all facilities on the Site at least twice per week. Domestic waste shall be transported to the approved refuse disposal site off site in covered containers or covered trucks.

b) Organic waste

Refuse from food preparation and eating areas shall be collected and removed daily. Organic waste shall be disposed of as per Domestic waste.

c) Building/Construction waste

Inert building/construction rubble shall be disposed of by burying in the dam basin in borrow pits, at a site and in such a way as approved by the Employer.

d) Scrap metal

Scrap metal shall be disposed of offsite.

e) Used oil and grease

Used oil and/or grease shall be removed from site and sold to an approved used oil recycling company. The certificated thereof shall be placed on file on site.

f) Hazardous waste

All hazardous waste shall be disposed of in an approved hazardous waste disposal site and a disposal certificate supplied to the Employer. The certificated thereof shall be placed on file on site.

PS 12. 5 Protection of Flora

The removal, damage and disturbance of indigenous flora is prohibited. The Contractor shall request permission before removal of any vegetation on the designated work area and undertake to demarcate and protect flora outside the designated work area.

PS 12. 6 Protection of the Fauna

The Contractor shall protect fauna living within the Site and shall ensure that fishing, hunting, snaring, poisoning, shooting, nest raiding or egg-collecting and disturbance does not occur. The Contractor is to ensure that his employees are instructed not to feed wild animals and no domestic pets or livestock are permitted on site.

The use of pesticides is prohibited unless approved by the Employer.

PS 12. 7 Preservation of Topsoil

The Contractor shall get approval from the Employer before the removal of any topsoil. The top soils will be stored in designated areas.

PS 12. 8 Erosion Control and Storm water Management

The Contractor shall include in his/hers works layout of the site works measures to prevent erosion resulting from his actions on the site. The Contractor shall take appropriate and active measures to prevent erosion resulting from his works, operations and activities which shall be agreed with the Employer even when such potential erosion may take place or occur beyond the limits of the Site because of the actions of the Contractor.

Refer to EMP and CWD 67 Particular Specification Documents.

A Pro-Forma Environmental plan together with required listed documentation must be submitted with the Tender as per requirement in T2 returnable schedule (Annexure M- Drilling & Blasting and Annexure N – Rock Support).

PS 13. INFORMATION TO BE SUBMITTED BY CONTRACTOR

To be submitted as required in T2 – returnable schedules / documents.

C3.3 PARTICULAR SPECIFICATIONS

Note: Particular Specifications for blasting are specified in;

(a) Particular Specification **CWD20 – "EXCAVATION AND BACKFILL FOR DAMS AND WATERWAYS".** A copy of the document will be provided during the Compulsory Site Briefing session.

(b) Civil Project Specifications (Vol 2.1) PS 20.2.

The specific Project, Particular Specifications, Drawings and other documents (as listed below) will be provided in a electronic format.

Particular Specifications applicable are:

CWD 01SC	General
CWD 09	Blasting
CWD 20	Excavation and Backfill
CWD 23	Drilling
CWD 24	Water Testing and Boreholes (Where applicable for Rock Support)
CWD 25	Grouting of Dam Foundations (Where applicable for Rock Support grouting)
CWD 27	Rock Support
CWD 32	Conventional Concrete for Dams (Where applicable for Rock Support)
CWD 65	Occupational Health and Safety Specifications
CWD 67	Environmental
CWD 68	Local Socio – Economic Participation and Development
EMP	Environmental Management Plan
Geologist reports	
Tender Drawings	

C3.3 PARTICULAR SPECIFICATIONS

CONTENT

PS 1. BLASTING
PS 1.1 General
PS 1.2 Preparation
PS 1.3 Notice to Blast
PS 1.4 Care of the Works
PS 1.5 Control of Blasting
PS 1.6 Safety Measures
PS 1.7 Monitoring and Designing for Blasting Vibrations
PS 1.8 Perimeter Blasting
PS 1.9 Blasting Adjacent or Near to Structures
PS 1.10 Foundation Requirements and Secondary Excavations
PS 1.11 Excavation of Dam Foundations

PS 1 BLASTING

PS 1.1 General (CWD20.5.4.1)

The Contractor shall submit to the Employers Agent for his approval full details of his proposed methods for blasting and excavating. This submission shall include full details of the plant, materials, proposed hole sizes, depths and layouts, detonating sequences and delays, and charge levels together with a clear statement of his planned procedures. Due cognisance shall be taken of the requirements of Clause CWD20.5.4.9. These details shall be submitted 14 days prior to the Contractor's intended start date for blasting a particular section. For each section, the Contractor shall consult with the Employers Agent regarding the lines and levels required.

All accidents, injury to persons or damage to property or the Works shall be reported in detail and in writing to the Employers Agent as soon as possible after the event.

PS 1.2 Preparation (CWD20.5.4.2)

The Contractor shall completely remove all overburden and weathered rock from above the area to be blasted for a suitable distance beyond the drilling limits.

This area shall be kept clear of all loose material until after the blast.

PS 1.3 Notice to Blast (CWD20.5.4.3)

The Contractor shall give the Employers Agent fourteen (14) days written notice of his intention to carry out a particular blast for the first five (5) blasts. Thereafter Contractor shall give the Employers Agent 48hours written notice of his intention to carry out a particular blast for the rest of the contract, except if instructed otherwise. This notice shall include details of the location of the blast, the detonating sequences and delays, the alignment, depth and size of drilled holes, the size and characteristics of the charges, the volume to be dislodged and the proposed time of the blast. If this information differs from that given under Clause CWD20.5.4.1, the Contractor shall include the reasons for the change.

PS 1.4 Care of the Works (CWD20.5.4.4)

The design of the blast shall ensure that there is no unnecessary shattering of the rock and the Contractor shall accept full responsibility for the quality of the remaining rock after a blast and shall make good at his own expense and as directed by the Employers Agent, any over-excavation necessitated by such fracturing or displacement of the rock.

PS 1.5 Control of Blasting (CWD20.5.4.5)

The explosives shall be of such quality and power and shall be used in a manner which will achieve the desired result. The layout, depths and sizes of the holes and the magnitude, distribution and delays and detonation sequences of the charges shall be such as to ensure that there is no damage to the rock at or below the final or founding level and that there is no excessive overbreak. The firing systems shall be controlled by the use of delay detonators except when used for presplitting or smooth blasting. (See Clause CWD20.5.4.8). All charges shall be accurately made up and inserted into the holes at the correct spacing. All holes shall be properly stemmed and wired in the correct sequence to ensure the stated blast pattern and to eliminate the possibility of live charges remaining after detonation.

If, in the opinion of the Employers Agent, the Contractor's method of drilling and blasting is considered or proved to be inappropriate to produce the results required, the Employers Agent reserves the right to order the Contractor to modify his procedures.

Whenever, in the opinion of the Employers Agent, the results of a blast are unsatisfactory and further blasting might cause damage to the rock on or against which concrete or embankment material is to be placed, the Contractor shall complete the excavation using wedging, barring, jackhammers or similar methods.

PS 1.6 Safety Measures (CWD20.5.4.6)

The Contractor shall in accordance with all the statutory requirements agree with the Employers Agent his proposed method of warnings, and movement of personnel prior to and after blasting. He shall ensure that this system is explained fully to all personnel on Site prior to commencing the first blast.

The Contractor shall use mats or other types of cover to ensure that flying rock fragments are kept to an absolute minimum at all times.

PS 1.7 Monitoring and Designing for Blasting Vibrations (CWD20.5.4.7)

The Contractor shall supply and operate two approved recording tri-axial particle velocity meters which shall be used as and where directed by the Employers Agent. The Contractor shall design his blasting operations such as to ensure that the peak particle velocity does not exceed potentially damaging values in any permanent structure, as approved or directed by the Employers Agent.

NB: Also see Civil Project Specifications (Vol 2.1) - PS 20.2.

Blasting Adjacent or near to Structures - Blasting to be carried out within 100m of any concrete and/or grouting regardless of age, shall be done by means of Gas-Induced Fracture Technology (GIFT) using None, or by means of controlled blasting techniques, to the approval of the Employers Agent. All such blasting shall be designed to keep peak particle velocities (PPV) to below 12.7 mm/s and the frequency above 10 Hz.

PS 1.8 Perimeter Blasting (CWD20.5.4.8)

The Contractor shall submit to the Employers Agent for his approval, full details of his proposed method for presplitting or smooth blasting.

The Contractor shall perform a trial section of presplitting or smooth blasting at a location agreed with the Employers Agent. The trial shall comprise a 10 m length of excavation and at least 2 m deep.

The length of any one section to be presplit or smooth blasted shall not exceed 25 m, unless otherwise approved by the Employers Agent. Drilling shall only commence after previously presplit or smooth blasted holes have been exposed to confirm the quality of the surface.

The holes drilled for presplitting or smooth blasting shall be not greater than 65 mm diameter. The Contractor shall limit the hole depths and employ experienced personnel and suitable drilling equipment to ensure that no hole shall deviate from the plane of the proposed slope nor shall any hole deviate in the plane of the slope by more than one-third of the planned horizontal spacing of the holes.

The layout of the holes shall be determined to provide a uniform shear face between the holes. The magnitude and distribution of the charges shall not cause overbreak or shatter the surface or otherwise damage the rock behind the excavated surface, but in general the charge level shall not exceed 500 gm/m2. All charges within the pattern shall be detonated simultaneously using detonating cord.

PS 1.9 Blasting Adjacent or Near to Structures (CWD20.5.4.9)

No blasting shall be carried out within 100 m of ground anchors, and/or of grout, and/or of concrete, which is less than 7 days old, and/or within 50 m of any concrete regardless of age, unless otherwise approved by the Employers Agent. The Contractor shall take due cognizance of these limitations when programming his operations and shall at all times ensure that his blasts are designed so as not to cause damaging ground vibrations.

PS 1.10 Foundation Requirements and Secondary Excavations (CWD20.5.5)

As a consequence of possible variations of the anticipated founding conditions, the dimensions and founding levels specified or shown on the Drawings may possibly have to be varied during construction.

The Contractor shall not be entitled to any additional payment for any such variation in the dimensions or founding depths over and above that provided in Clause CWD20.8.3, irrespective of the stage of construction at which the instruction to alter the dimensions of founding depths is given. However, if in consequence of such order to alter the Contractor is compelled to substitute other machines and equipment for machines and equipment for successfully completing the work, the Employers Agent may reimburse the Contractor at a fair price for incidentals incurred, provided that the original machines and equipment had been suitable for the work required prior to the order to alter having been issued.

PS 1.11 Excavation of Dam Foundations (CWD20.5.5.1)

Wherever possible the dam foundations shall be excavated from the top to the bottom of the excavation. If for programme reasons the excavation has to be commenced at two different levels the Contractor shall take the necessary steps to protect the lower excavation from rock falls, or the upper excavation from undercutting.

The Employers Agent may permit excavations to be undertaken as the embankment dam progresses if he is satisfied that an acceptable foundation will be achieved and that contamination of the various zones of the embankment will be kept to a negligible minimum.

The Contractor's work shall be programmed so as to minimise excavation by blasting adjacent to previously constructed parts of the Works. The Employers Agent will not approve a programme in which, in his opinion, blasting may cause damage to existing works or their foundation. Where in the opinion of the Employers Agent it would be impracticable to avoid damage to rock or adjoining works if explosives were used, the Employers Agent may require the Contractor to continue excavating by line drilling as specified in Clause CWD20.5.4, using a hydraulic breaker, barring and wedging, chemical blasting or other approved non-explosive methods.

Irregularities, steps and overhangs shall be removed by light blasting, barring, wedging, using breakers or other effective means. Steps less than 0.3 m in height and up to 1 m in length may, where approved by the Employers Agent, remain without further treatment. Higher steps shall be cut back to a slope of 1:2,0 or backfilled with dental concrete.

Rock wedges on rock slopes which are not removed shall be anchored to sound rock as directed by the Employers Agent.

C3.4 VARIATIONS AND ADDITIONS TO SPECIFICATIONS

General

The variations and addition to clauses in Section C2.1, C2.2 and C2.3 are lettered and numbered using the alphabetic identification of the applicable standardised specifications or the numeric identification of the applicable particular specifications. The number of the clauses is prefixed with the letter PS.

For example, variations and addition clauses are numbered as follows:

- For SABS 1200 A specification the clauses are lettered PSA.
- For specification CWD 23 the clauses are lettered PS23.

PS 01-SC PARTICULAR SPECIFICATION CWD01-SC GENERAL

CWD 01 SC 5.3 –

5.3.3 – as determine by client

5.3.4 - as determine by client

PS 09 PARTICULAR SPECIFICATION CWD09 - BLASTING

CWD 09.3

No explosives of any kind shall be stored on site.

DEPARTMENT OF WATER AND SANITATION

DWS DWS08 - 1022 (WTE)

THE DRILLING AND BLASTING FOR DAM FOUNDATION EXCAVATION AND SLOPE PROTECTION FOR THE CLANWILLIAM DAM IN THE WESTERN CAPE PROVINCE

C4: SITE INFORMATION

CONTENTS

C4.1: TENDER DRAWINGS

C4.1 TENDER DRAWINGS

The tender drawings listed below are for **tender purposes only**. All work shall be done in accordance to the final approved construction drawings, that will be issued after signing of the contract.

The list of drawings annexure to this document is as follows:

Number	Drawing Title	CWD Reference number	Revision
4.1.1	Final Layout of Raised Dam Wall	CWD 0052	00
4.1.2	Schematic Layout of Raised Dam Wall	CWD 0102	00
4.1.3	Approach Channel and Coffer Dam, Excavation, Phase 1	CWD 1301	03
4.1.4	Approach Channel and Coffer dam, Excavation, Phase 2	CWD 1302	03
4.1.5	Approach Channel and Coffer Dam, Excavation, Sections	CWD 1303	03
4.1.6	Approach Channel and Coffer Dam, Excavation, Sections	CWD 1304	03
4.1.7	Approach Channel and Coffer Dam, Excavation, Sections	CWD 1305	03
4.1.8	RCC Coffer Dam, Drainage and Left Bank Cladding, Sections	CWD 1005	00
4.1.9	Left Bank Pipe Encasement, Excavation, Plan	CWD 1311	00
4.1.10	Outlet Valve Control Room, Layout	CWD 4241	01
4.1.11	Left Bank NOC Excavation, Plan View	CWD 1341	00
4.1.12	Left Bank NOC Excavation, Downstream Elevation	CWD 1342	00
4.1.13	Left Bank NOC Excavation, Section 01 - 01	CWD 1343	00
4.1.14	Left Bank NOC Excavation, Section 02 - 02	CWD 1344	00
4.1.15	Left Bank NOC Excavation, Section 03 - 03	CWD 1345	00
4.1.16	Left Bank NOC Excavation, Section 04 - 04	CWD 1346	00
4.1.17	Excavation: Parapet Slabs, Key Plan	CWD 1321	01
4.1.18	Excavation: Parapet Slab A & B Details	CWD 1322	00
4.1.19	Excavation: Parapet Slab C – F Detail	CWD 1323	00
4.1.20	Left Bank NOC, Plan view	CWD 2201	01

4.1.21	Outlet Works, Section on centreline of right hand river and river outlet pipe	CWD 4002	00
4.1.22	Left bank outlet works, section along centreline of the Tunnel	CWD 4142	01
4.1.23	Right Bank NOC, Excavation Details, Plan view	CWD 1351	01
4.1.24	Right Bank NOC, Excavation Details, Long Section	CWD 1352	01
4.1.25	Right Bank NOC, Excavation Details, Section 02-02	CWD 1353	01
4.1.26	Right Bank NOC, Excavation Details, Section 03-03	CWD 1354	01
4.1.27	Right Bank NOC, Excavation Details, Section 04-04 and Section 05-05	CWD 1355	01
4.1.28	Right Bank NOC, Stepped Concrete Infill Details	CWD 2234	00
4.1.29	Spillway Excavation, Downstream elevation	CWD 1371	02
4.1.30	Spillway, Excavation Drawings, Section 01-01	CWD 1372	01
4.1.31	Spillway, Excavation Drawings, Section 02-02	CWD 1373	01
4.1.32	Spillway, Excavation Drawings, Section 03-03	CWD 1374	01
4.1.33	Spillway, Excavation Drawings, Section 04-04	CWD 1375	01
4.1.34	Spillway, Excavation Drawings, Excavation Plan view and Setting out Details	CWD 1376	01
4.1.35	Geological Drawings, Borehole Positions, Layout	CWD 0401	00
4.1.36	Geological Section 01-01, Sheet 1 of 3	CWD 0402	00
4.1.37	Geological Section 01-01, Sheet 2 of 3	CWD 0403	00
4.1.38	Geological Section 01-01, Sheet 3 of 3	CWD 0404	00
4.1.39	Section 02-02, Sheet 1 of 3	CWD 0405	00
4.1.40	Section 02-02, Sheet 2 of 3	CWD 0406	00
4.1.41	Geological Section 02-02, Sheet 3 of 3	CWD 0407	00
4.1.42	Geological Drawing Section 03-03, Sheet 1 of 1	CWD 0408	00
4.1.43	Geological Section 04-04, Sheet 1 of 1	CWD 0409	00

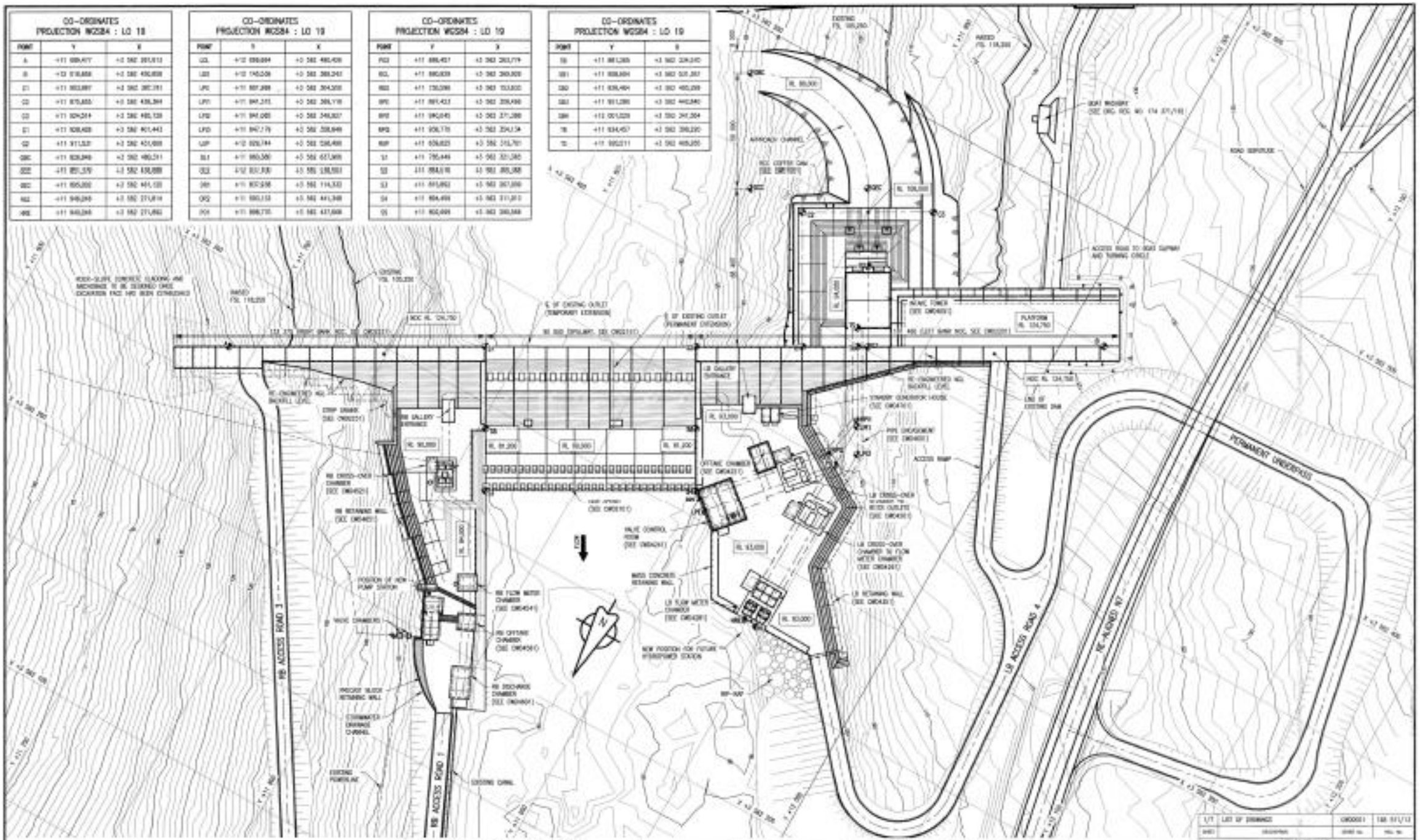
Note: (Will be provided in electronic format.)

CO-ORDINATES PROJECTION WGS84 : LO 18		
POINT	Y	X
A	+11 699,477	+3 382 351,613
B	+12 016,858	+3 382 456,858
C1	+11 883,897	+3 382 287,351
C2	+11 875,855	+3 382 436,364
C3	+11 924,264	+3 382 480,728
C1	+11 928,408	+3 382 401,443
C2	+11 911,531	+3 382 451,699
QBC	+11 828,849	+3 382 480,211
QCE	+11 851,376	+3 382 438,888
QBC	+11 695,202	+3 382 441,133
RE2	+11 948,249	+3 382 271,818
RE	+11 940,249	+3 382 271,892

CO-ORDINATES PROJECTION WGS84 : LO 19		
POINT	Y	X
LC2	+12 056,694	+3 382 480,406
LB3	+12 145,508	+3 382 388,240
LP2	+11 897,988	+3 382 304,200
LP21	+11 847,335	+3 382 289,118
LP22	+11 841,065	+3 382 346,827
LP23	+11 842,178	+3 382 358,849
LSP	+12 026,784	+3 382 536,486
SL1	+11 960,366	+3 382 457,969
SC2	+12 031,930	+3 382 138,583
SR1	+11 837,638	+3 382 114,332
OP2	+11 850,153	+3 382 441,348
PO1	+11 896,730	+3 382 437,668

CO-ORDINATES PROJECTION WGS84 : LO 19		
POINT	Y	X
PC2	+11 886,457	+3 382 283,779
BCL	+11 880,839	+3 382 369,809
BC2	+11 730,396	+3 382 353,830
BP2	+11 881,423	+3 382 359,498
BP3	+11 890,845	+3 382 371,388
BP4	+11 908,776	+3 382 354,534
BSP	+11 656,823	+3 382 315,761
S1	+11 795,446	+3 382 321,380
S2	+11 884,616	+3 382 385,388
S3	+11 845,852	+3 382 367,656
S4	+11 806,499	+3 382 311,810
S5	+11 802,499	+3 382 340,568

CO-ORDINATES PROJECTION WGS84 : LO 19		
POINT	Y	X
T6	+11 861,265	+3 382 334,240
QB1	+11 838,884	+3 382 331,287
QB2	+11 839,484	+3 382 460,268
QB3	+11 931,286	+3 382 442,840
QB4	+11 910,529	+3 382 241,264
T8	+11 934,457	+3 382 356,230
T9	+11 992,011	+3 382 468,205



FINAL LAYOUT OF DAM

SCALE 1:750

SCALE 1:750

0 10 20 30 40 50 100 m

LIT	LIST OF DRAWINGS	CWD0051	168 591/15
AMD	DESCRIPTION	DRWG No.	YELL No.

LIST OF DRAWINGS

REVISION				
REV. No.	DATE	DESCRIPTION	PCR	APP.

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA

HEAD OFFICE
ENGINEERING SERVICES
PRIVATE BAG X313
PRETORIA 0001

SOUTHERN BUILDING
159 FRANCES BAARD STREET
PRETORIA
OFFICE 230-7500

DRAWN: DAM DESIGN
DESIGN: DRAWING SERVICES
CHECKED:
APPROVED:
DIRECTOR:

OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

FINAL LAYOUT OF RAISED DAM WALL

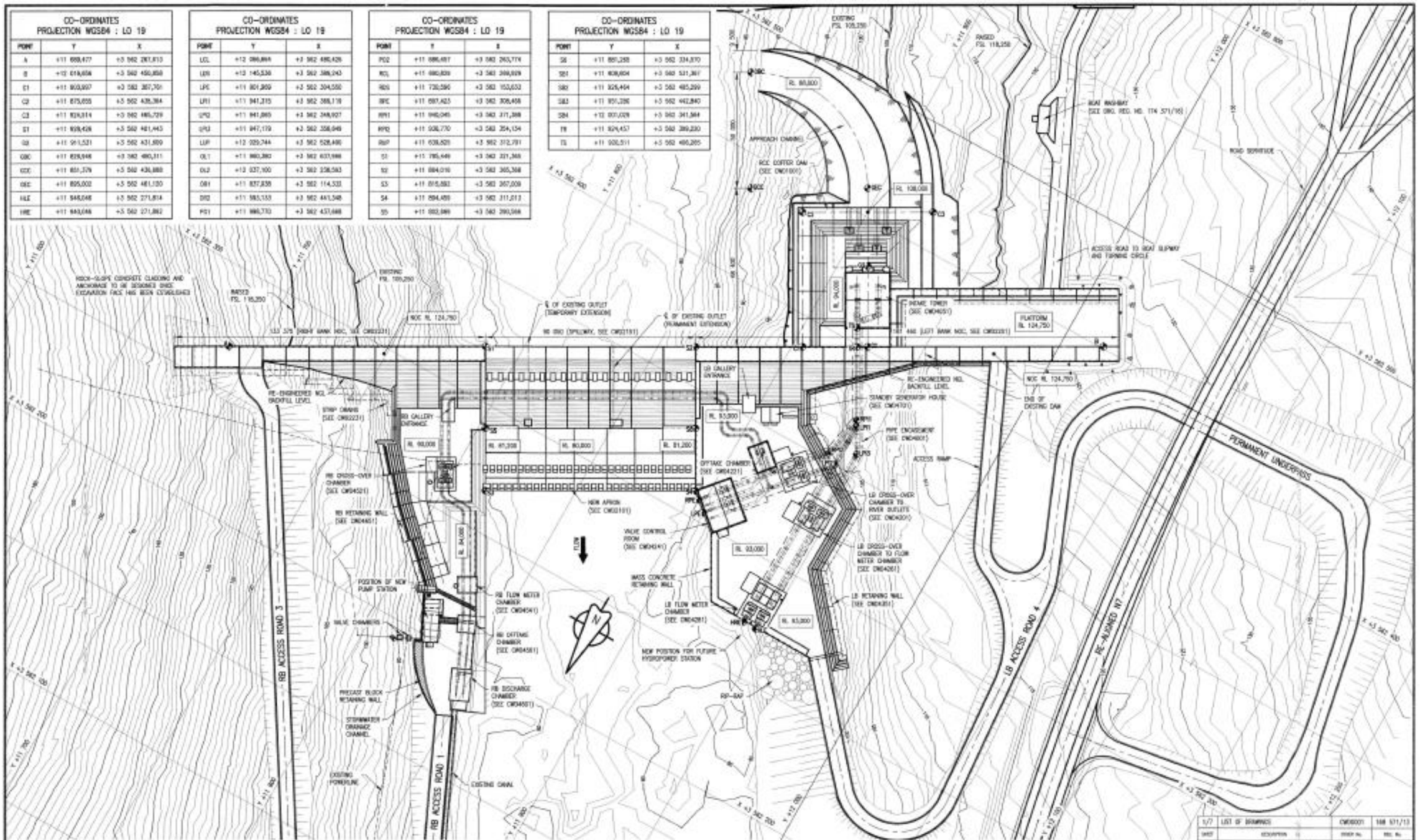
PROJECT: WESTERN CAPE	WORKS: CLANWILLIAM	DRAWING: DAL	LIT	PCH	-	-	DRAWING NUMBER: CWD0052
CONTRACT No.: C 600-03	TENDER/SURVEY No.: -	SHEET: 1 of 1	YELL No.: 168 589/15				REV: 00
DESIGNATION: 2D/3/3100-40/3/1/1/1							

CO-ORDINATES PROJECTION WGS84 : LO 19		
POINT	Y	X
A	+11 668,477	+3 562 287,813
B	+12 018,658	+3 562 450,858
C1	+11 903,997	+3 562 357,701
C2	+11 875,055	+3 562 435,384
C3	+11 924,514	+3 562 465,729
D1	+11 928,426	+3 562 481,443
D2	+11 911,521	+3 562 431,899
DBC	+11 828,948	+3 562 460,311
DCC	+11 851,376	+3 562 436,880
DEC	+11 895,002	+3 562 461,120
HLE	+11 948,048	+3 562 271,814
HRE	+11 943,046	+3 562 271,862

CO-ORDINATES PROJECTION WGS84 : LO 19		
POINT	Y	X
LCL	+12 086,864	+3 562 486,426
LEN	+12 145,536	+3 562 386,243
LPC	+11 801,869	+3 562 394,550
LP1	+11 941,215	+3 562 588,178
LP2	+11 941,865	+3 562 348,927
LP3	+11 947,179	+3 562 356,949
LUP	+12 029,744	+3 562 528,496
OL1	+11 860,382	+3 562 437,986
OL2	+12 037,100	+3 562 336,563
OR1	+11 837,838	+3 562 114,533
OR2	+11 983,133	+3 562 441,548
PS1	+11 986,770	+3 562 437,668

CO-ORDINATES PROJECTION WGS84 : LO 19		
POINT	Y	X
PS2	+11 886,497	+3 562 263,774
RCL	+11 880,839	+3 562 269,829
RDS	+11 720,596	+3 562 153,632
RPE	+11 897,423	+3 562 306,458
RP1	+11 946,045	+3 562 371,388
RP2	+11 936,770	+3 562 354,154
RUP	+11 838,621	+3 562 312,781
S1	+11 785,649	+3 562 321,365
S2	+11 884,016	+3 562 365,368
S3	+11 915,881	+3 562 357,209
S4	+11 894,489	+3 562 311,013
S5	+11 882,989	+3 562 290,566

CO-ORDINATES PROJECTION WGS84 : LO 19		
POINT	Y	X
S6	+11 881,258	+3 562 334,870
SB1	+11 908,804	+3 562 531,367
SB2	+11 925,464	+3 562 485,299
SB3	+11 951,286	+3 562 442,840
SB4	+12 001,028	+3 562 341,364
TB	+11 929,457	+3 562 289,230
TS	+11 930,511	+3 562 486,265



SCHEMATIC LAYOUT OF DAM

SCALE 1:750

SCALE 1:750 0 15 30 45 60 75 150 m

REVISION				
WDC No.	DATE	DESCRIPTION	TCR	DWC

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA

HEAD OFFICE
ENGINEERING SERVICES
PRIVATE BAG X313
PRETORIA 0001

SEDIBENG BUILDING
185 FRANCIS BAARD STREET
PRETORIA
(012) 336-7500

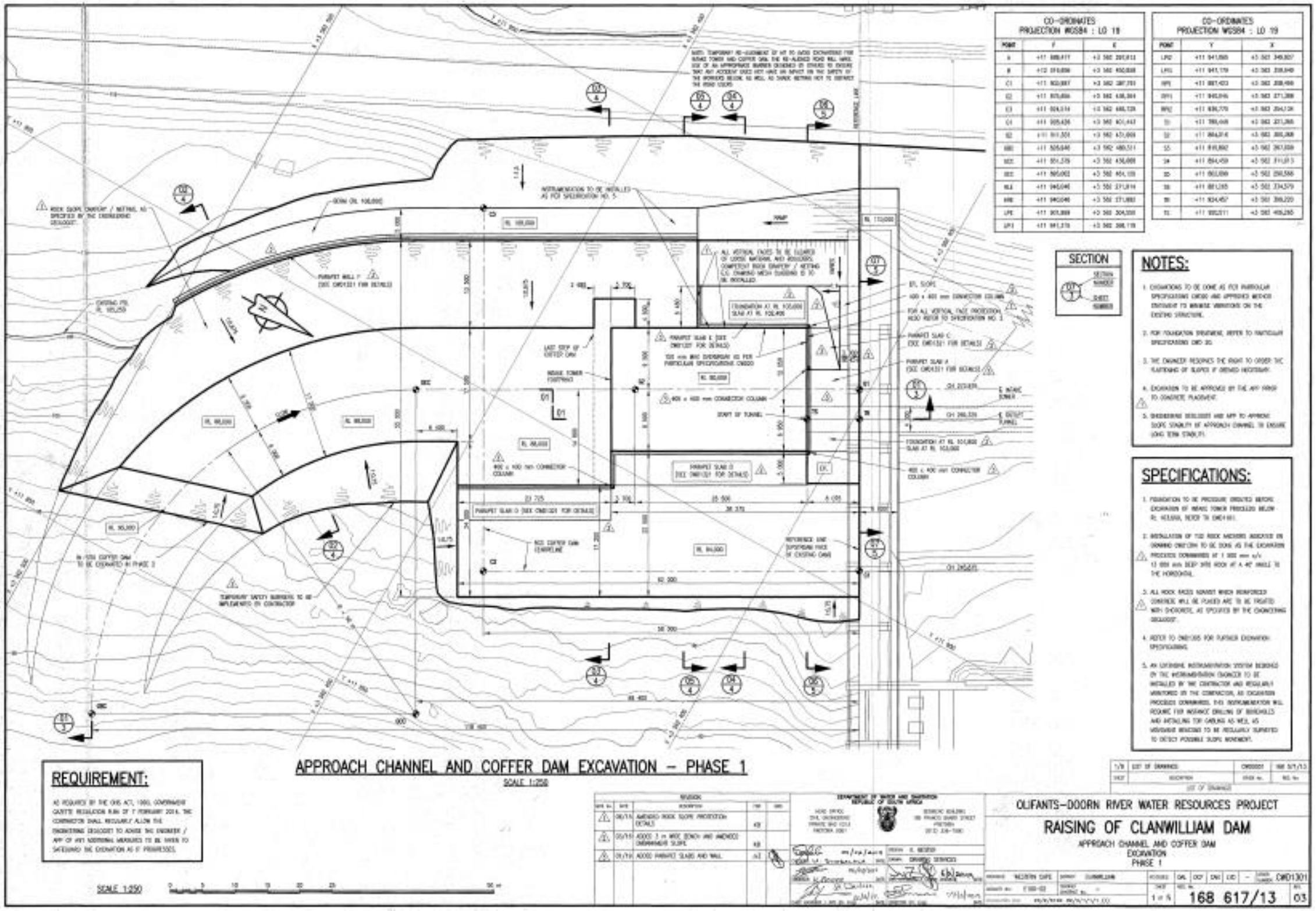
DESIGN: DAM DESIGN
DRAWN: DRAWING SERVICES

OLIFANTS–DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

SCHEMATIC LAYOUT OF RAISED DAM WALL

PROVINCE	WESTERN CAPE	DISTRICT	CLANWILLIAM	DESIGNED	DSH	DAL	LIT	PNL	–	DRAWING NUMBER	CWD0102
LOCALITY No.	E130-02	SUNDRY CONTRACT No.	–	SHEET	REG. No.						
EXCAVATION No(s)	20/2/E130-02/E/1/1/1			1 of 1	169 067/17						REV 00

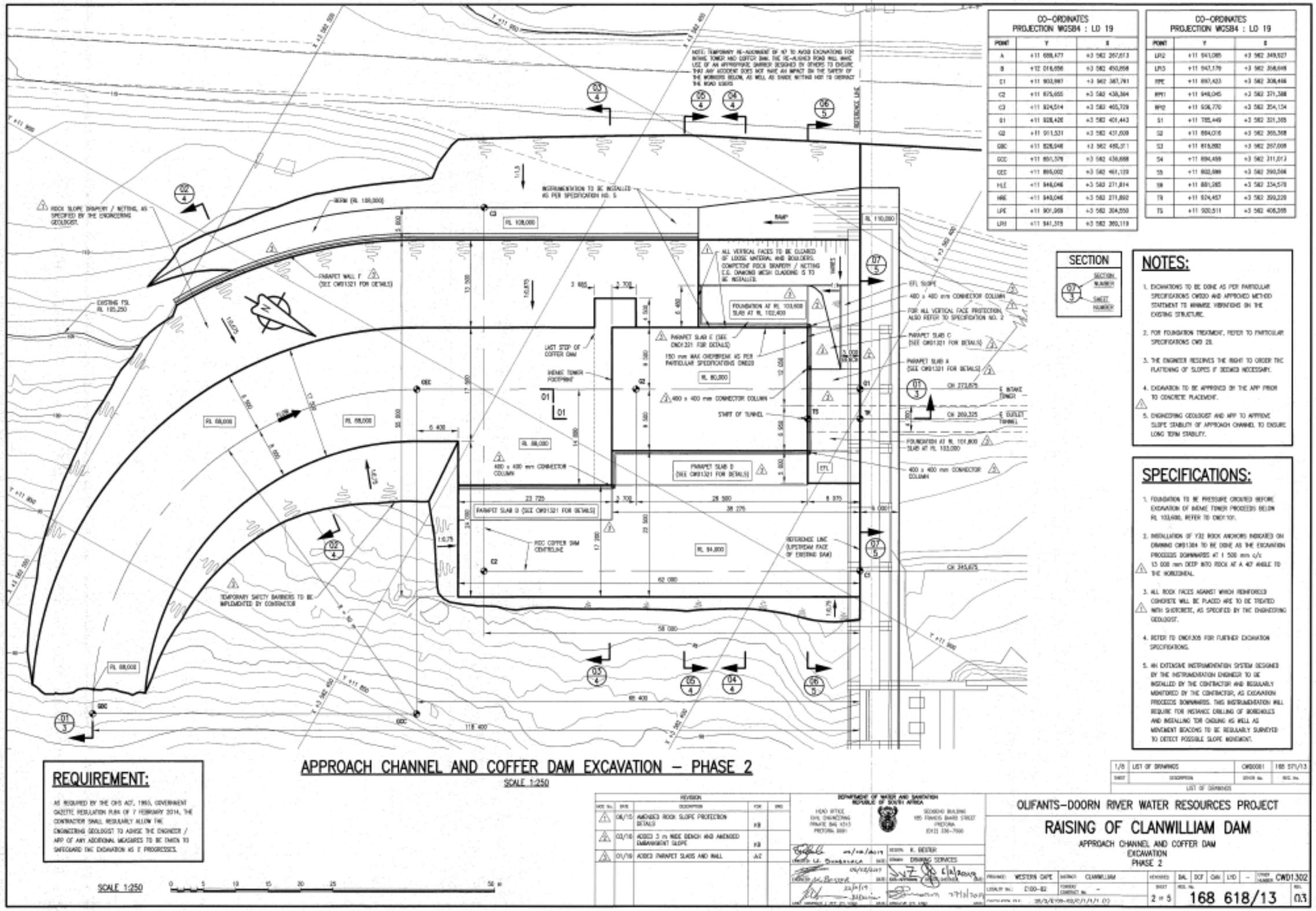


CO-ORDINATES
PROJECTION WGS84 : LO 19

POINT	Y	X
A	+11 888.877	+3 582 297.813
B	+12 019.899	+3 582 402.068
C1	+11 922.887	+3 582 287.751
C2	+11 870.896	+3 582 436.364
C3	+11 924.514	+3 582 485.729
C4	+11 935.436	+3 582 401.443
C5	+11 911.301	+3 582 473.069
BBC	+11 926.646	+3 582 480.511
BCC	+11 901.270	+3 582 436.668
BDC	+11 865.002	+3 582 454.139
BLE	+11 940.646	+3 582 271.814
BRE	+11 940.646	+3 582 271.882
LPE	+11 901.869	+3 582 304.200
LP1	+11 941.270	+3 582 288.119

CO-ORDINATES
PROJECTION WGS84 : LO 19

POINT	Y	X
LP2	+11 941.565	+3 582 349.807
LP1	+11 941.179	+3 582 338.949
RPE	+11 887.403	+3 582 338.498
RP1	+11 940.846	+3 582 271.388
RP2	+11 836.770	+3 582 264.126
S1	+11 780.448	+3 582 271.266
S2	+11 864.814	+3 582 355.268
S5	+11 818.892	+3 582 267.558
S4	+11 884.459	+3 582 311.813
S3	+11 863.099	+3 582 258.586
S6	+11 881.265	+3 582 334.579
S7	+11 934.457	+3 582 359.220
S8	+11 932.511	+3 582 409.295



CO-ORDINATES
PROJECTION WGS84 : LO 19

POINT	Y	X
A	+11 658,477	+3 582 267,613
B	+12 018,656	+3 582 490,858
C1	+11 903,987	+3 582 387,791
C2	+11 875,655	+3 582 438,364
C3	+11 824,514	+3 582 465,729
D1	+11 828,426	+3 582 401,443
D2	+11 911,531	+3 582 431,608
DBC	+11 828,946	+3 582 468,371
DCC	+11 851,579	+3 582 436,668
DEC	+11 895,002	+3 582 461,129
HLE	+11 948,046	+3 582 271,814
HRE	+11 949,046	+3 582 271,892
LPE	+11 901,969	+3 582 304,550
LPH	+11 941,315	+3 582 369,119

CO-ORDINATES
PROJECTION WGS84 : LO 19

POINT	Y	X
LP12	+11 941,085	+3 582 349,927
LP13	+11 947,179	+3 582 358,648
RPE	+11 897,423	+3 582 308,446
RP11	+11 948,045	+3 582 371,388
RP12	+11 936,770	+3 582 354,154
S1	+11 785,449	+3 582 321,355
S2	+11 884,016	+3 582 365,358
S3	+11 818,882	+3 582 267,009
S4	+11 894,459	+3 582 311,013
S5	+11 802,089	+3 582 290,566
S6	+11 881,285	+3 582 334,578
TR	+11 924,457	+3 582 399,228
TS	+11 920,511	+3 582 406,265

APPROACH CHANNEL AND COFFER DAM EXCAVATION – PHASE 2

SCALE 1:250

REVISION				
MOD No.	DATE	DESCRIPTION	FOR	DRG
1	06/15	AMENDED ROCK SLOPE PROTECTION DETAILS	KB	
2	03/16	ADDED 3 m WIDE BENCH AND AMENDED EMBANKMENT SLOPE	KB	
3	01/19	ADDED PARAPET SLABS AND WALL	AZ	

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA
HEAD OFFICE
DWS ENGINEERING
PRIVATE BAG X313
PRETORIA 0001
SEDIBENG BUILDING
185 FRANCIS BAARD STREET
PRETORIA
(012) 336-7500

DESIGN:	K. BESTER		
DRAWN:	DRAWING SERVICES		
CHECKED:	K. Bester	DATE:	22/1/19
APPROVED:		DATE:	

OLIFANTS–DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

APPROACH CHANNEL AND COFFER DAM EXCAVATION PHASE 2

PROJECT:	WESTERN CAPE	DISTRICT:	CLANWILLIAM	REVISIONS	BAL	DCT	CHN	LYD	–	OTHER NUMBER	CWD1302
LOCALITY No.:	D100-82	FOREIGN CONTRACT No.:	–	SHEET	REG. No.						
CAD/DRAWING No.:	28/3/B100-82/C/1/1/1.01			2 of 5	168 618/13						03

1/8 LIST OF DRAWINGS CWD0001 168 571/13
SHEET DESCRIPTION OTHER No. REG. No.
LIST OF DRAWINGS

ABBREVIATIONS:

EFL: ESTIMATED FOUNDATION LEVEL

REQUIREMENT:

AS REQUIRED BY THE OHS ACT, 1993, GOVERNMENT GAZETTE REGULATION R.84 OF 7 FEBRUARY 2014, THE CONTRACTOR SHALL REGULARLY ALLOW THE ENGINEERING GEOLOGIST TO ADVISE THE ENGINEER / APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SAFEGUARD THE EXCAVATION AS IT PROGRESSES.

SPECIFICATIONS:

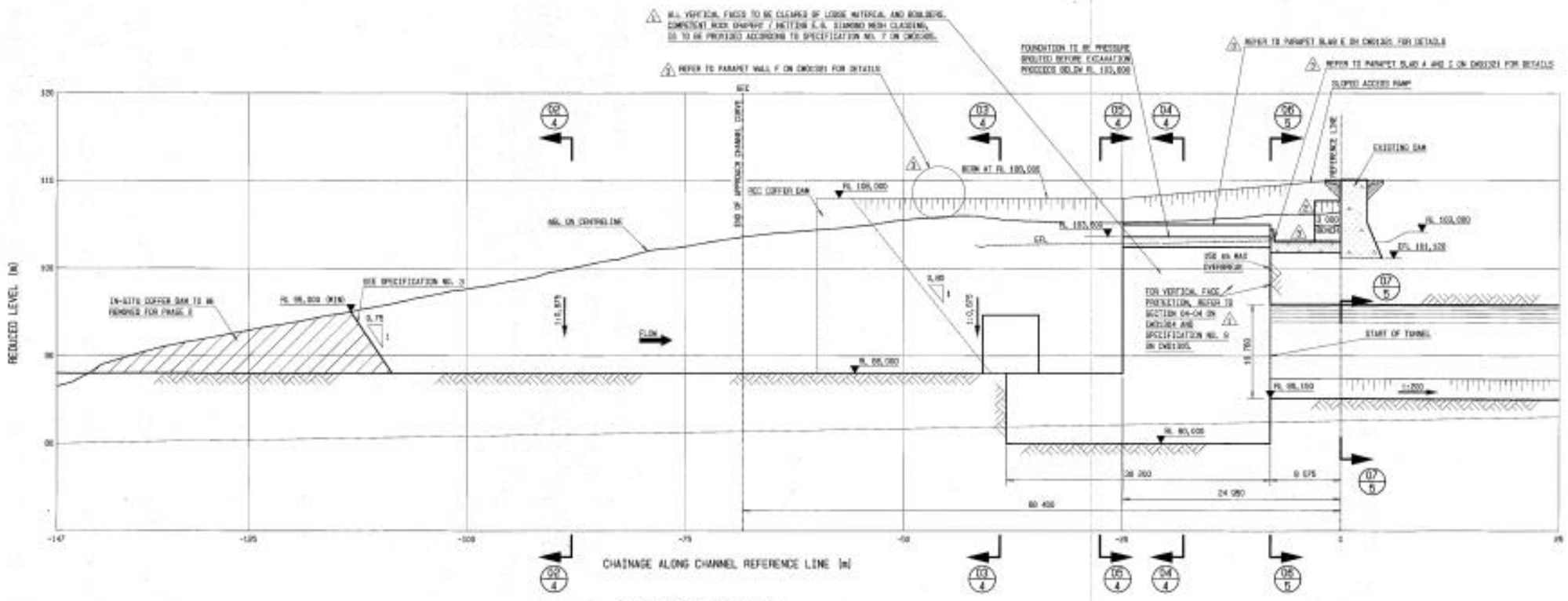
1. FOUNDATION TO BE PRESSURE GROUTED BEFORE EXCAVATION OF INTAKE TOWER PROCEEDS BELOW RL 103,000. REFER TO CWD0131.
2. INSTALLATION OF Y32 ROCK BOLTS INDICATED ON CWD4055 TO BE DONE AS THE EXCAVATION PROCEEDS DOWNWARDS @ 1 500 mm c/c 13 000 mm DEEP INTO ROCK. ⚠2
3. POSITION OF IN-SITU COFFER DAM WALL BE DETERMINED BY THE DAM WATER LEVEL.
4. REFER TO CWD1305 FOR FURTHER SPECIFICATIONS.

NOTES:

1. EXCAVATIONS TO BE DONE AS PER PARTICULAR SPECIFICATIONS CWD 20 AND APPROVED METHOD STATEMENT TO REDUCE VIBRATIONS ON THE EXISTING STRUCTURE.
2. FOR FOUNDATION TREATMENT, REFER TO PARTICULAR SPECIFICATIONS CWD 20.
3. THE ENGINEER RESERVES THE RIGHT TO ORDER THE FLATTENING OF SLOPES IF DEEMED NECESSARY.
4. EXCAVATIONS TO BE APPROVED BY THE APP PRIOR TO CONCRETE PLACEMENT.

SECTION

SECTION NUMBER (07) / SHEET NUMBER (3)



SECTION 01-01

SCALE 1:250

SCALE 1:250 0 5 10 15 20 25 50 m

REVISION				
REV NO.	DATE	DESCRIPTION	TECH	DRAW
⚠1	02/15	AMENDED ROCK SLOPE PROTECTION DETAILS	KD	
⚠2	03/15	ADDED 3 m WIDE BENCH	KD	
⚠3	01/19	AMENDED DETAILS	JHZ	

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA

HEAD OFFICE
CIVIL ENGINEERING
PRIVATE BAG X313
PRETORIA 0001

SEDIBENG BUILDING
255 FRANCIS BAARD STREET
PRETORIA
(012) 336-7500

Checked: M. BESTER
Drawn: DRAWING SERVICES

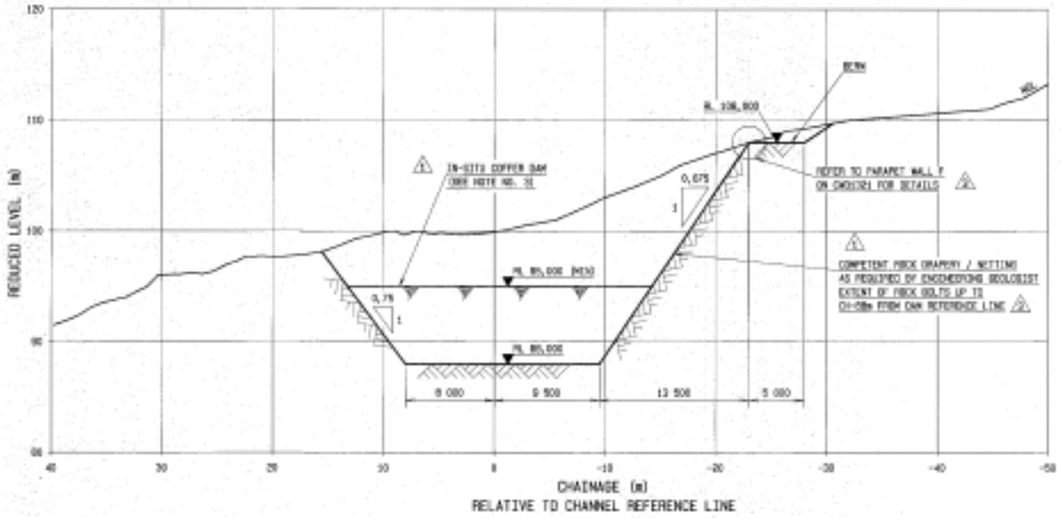
LIST OF DRAWINGS			
SHEET	DESCRIPTION	DRAWING NO.	REVISION NO.
1/29	LIST OF DRAWINGS	CWD0001	168 571/19

OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

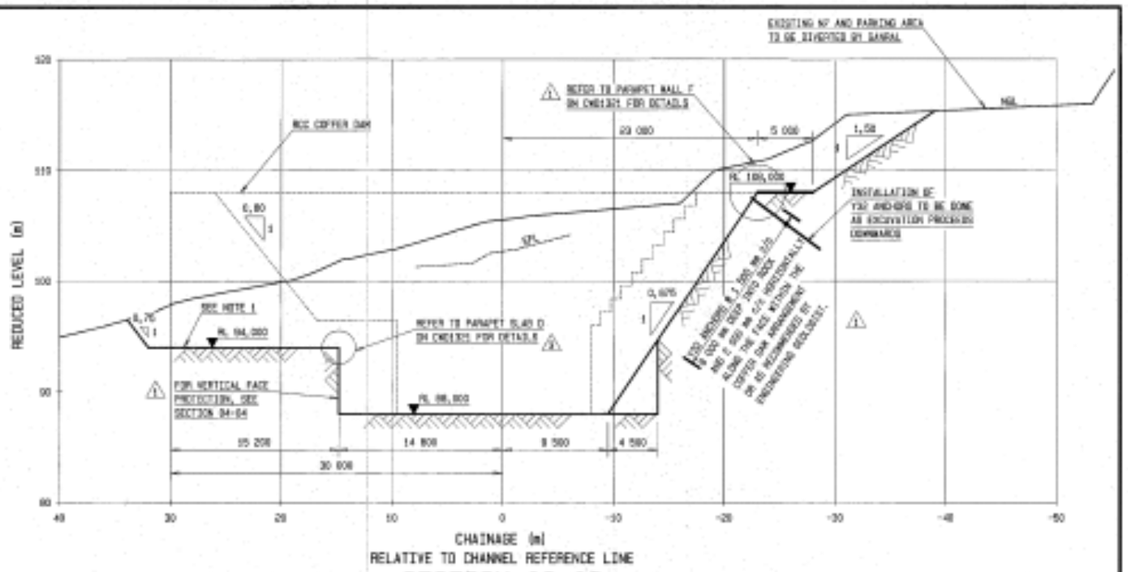
APPROACH CHANNEL AND COFFER DAM
EXCAVATION
SECTIONS

PROVINCE: WESTERN CAPE	DISTRICT: CLANWILLIAM	REVISIONS: CHK	CHK	DRW	DES			DRAWING SYMBOL: CWD1303
LOCALITY No.: E108-BD	DRAWN DISTRICT No.	SHEET	REG. No.					REV.
DRAWING FILE: 28/2/E108-BD/C/1/1/1 (3)		3 of 5	168 619/13					03



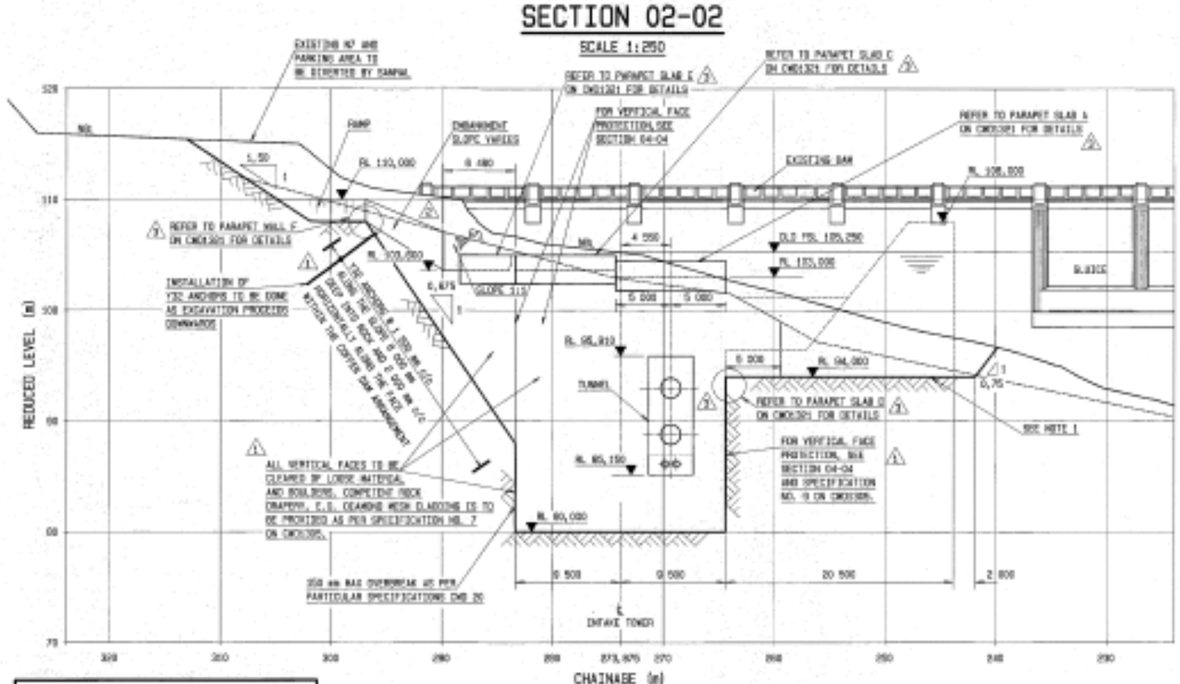
SECTION 02-02

SCALE 1:250



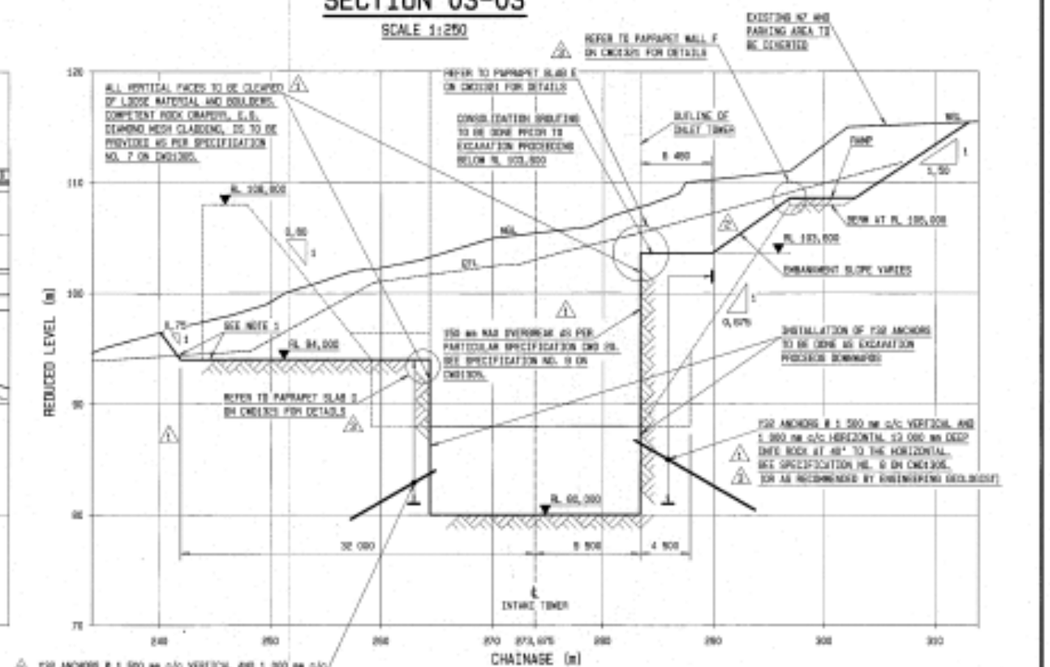
SECTION 03-03

SCALE 1:250



SECTION 05-05

SCALE 1:250



SECTION 04-04

SCALE 1:250

Y32 ANCHORS @ 3 500 mm c/c VERTICAL AND 3 000 mm c/c HORIZONTAL, 13 000 mm DEEP INTO ROCK AT 40° TO HORIZONTAL. SEE SPECIFICATION NO. 8 ON CW03305. (OR AS RECOMMENDED BY ENGINEERING GEOLOGIST)

Y32 ANCHORS @ 3 500 mm c/c VERTICAL AND 3 000 mm c/c HORIZONTAL, 13 000 mm DEEP INTO ROCK AT 40° TO HORIZONTAL. SEE SPECIFICATION NO. 8 ON CW03305. (OR AS RECOMMENDED BY ENGINEERING GEOLOGIST)

NOTES:

1. IF SUITABLE ROCK IS FOUND (EFL) ABOVE RL 85,000 THEN IT CAN BE UTILIZED AS THE AMENDED FOUNDATION LEVEL OF THE COFFER DAM WALL PERPENDICULAR TO THE EXISTING DAM.
2. ALL FOUNDATIONS ARE TO BE APPROVED BY THE APP.
3. POSITION OF IN-SITU COFFER DAM WILL BE DETERMINED BY THE DAM WATER LEVEL.
4. REFER TO CW03305 FOR SPECIFICATIONS.

REQUIREMENT:

AS REQUIRED BY THE OHS ACT, 1993, GOVERNMENT GAZETTE REGULATION R.84 OF 7 FEBRUARY 2014, THE CONTRACTOR SHALL REGULARLY ALLOW THE ENGINEERING GEOLOGIST TO ADVISE THE ENGINEER / APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SAFEGUARD THE EXCAVATION AS IT PROGRESSES.

ABBREVIATIONS:

EFL – ESTIMATED FOUNDATION LEVEL

SCALE 1:250 0 5 10 15 20 25 50 m

REVISION				
REV. No.	DATE	DESCRIPTION	FOR	CHK
1	05/15	AMENDED SPECIFICATIONS AND ADDED ROCK ANCHOR DETAILS	RB	
2	03/15	ADDED 3 m WIDE BENCH AND AMENDED EMBANKMENT SLOPE	RB	
3	01/15	AMENDED SPECIFICATIONS AND DETAILS	JVZ	

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA
HEAD OFFICE, CIVIL ENGINEERING, PRIVATE BAG X313, PRETORIA, 0001
WOODHEAD BUILDING, 185 FRANCES BAARD STREET, PRETORIA, 0183, 336-7500

DESIGN: P. BARNARD/K. DEGTER
DRAWN: DRAKING SERVICES
CHECKED: M. Swanepoel
APPROVED: A. Bester
CHIEF ENGINEER / APP (Pr. Eng.)
DIRECTOR (Pr. Eng.)

OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

APPROACH CHANNEL AND COFFER DAM
EXCAVATION
SECTIONS

PROVINCE: WESTERN CAPE | SUBURB: CLANWILLIAM | CONTRACT: EAL DAM SEC - - | OTHER NUMBER: CWD1304
CONTRACT No.: E100-08 | SHEET: 4 of 5 | REG. No.: 168 620/13 | REV.: 03
CALCULATION FILE: 20/A/W100-08/C/1/1/1 (1)

S/B	LIST OF DRAWINGS	CW03301	168 571/13
SHEET	DESCRIPTION	OTHER No.	REG. No.

LIST OF DRAWINGS

REQUIREMENT:

AS REQUIRED BY THE OHS ACT, 1993, GOVERNMENT GAZETTE REGULATION 11/64 OF 7 FEBRUARY 2014, THE CONTRACTOR SHALL REGULARLY ALLOW THE ENGINEERING GEOLOGIST TO ADVISE THE ENGINEER / APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SAFEGUARD THE EXCAVATION AS IT PROGRESSES.

ABBREVIATIONS:

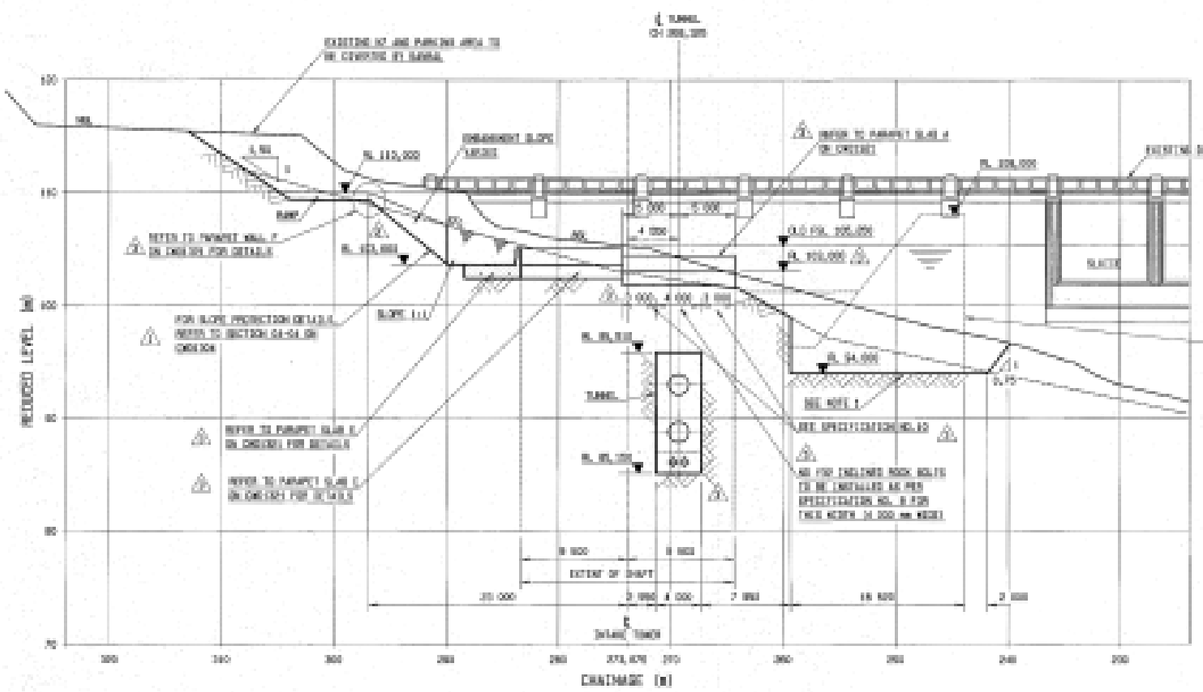
EFL - ESTIMATED FOUNDATION LEVEL
CJ - CONSTRUCTION JOINT

NOTES:

1. IF SUITABLE ROCK IS FOUND STILL ABOVE RL 88,000 THEN IT CAN BE UTILISED AS THE LOWERED FOUNDATION LEVEL OF THE COFFER DAM WALL PERPENDICULAR TO THE EXISTING DAM.
2. ALL FOUNDATIONS ARE TO BE APPROVED BY THE APP.
3. POSITION OF ON-SITE COFFER DAM WILL BE DETERMINED BY THE DAM WATER LEVEL.

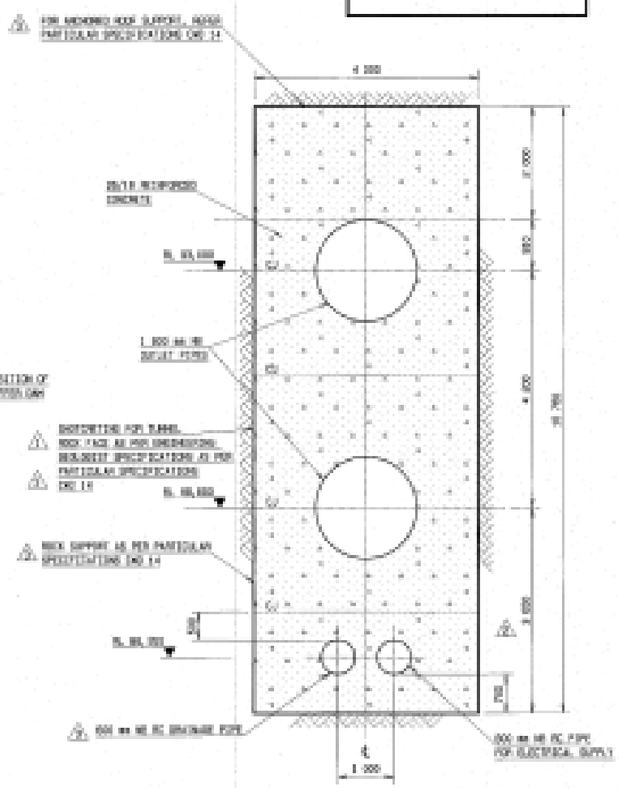
SPECIFICATIONS:

1. ALL FOUNDATIONS, EXCAVATED SLOPES AND SLOPE PROTECTION TO BE APPROVED BY THE ENGINEERING GEOLOGIST.
2. THE CONTRACTOR SHALL FIRST PERFORM TRIAL BLASTING IN ORDER TO BE ABLE TO COMPILE A SPECIFICATION FOR MAXIMUM VIBRATIONS RECORDED AT THE DAM WALL. HE SHALL OBTAIN THE SERVICES OF A BLASTING SPECIALIST TO ASSIST FOR APPROVAL BY DWS. A TRIAL BLASTING PROGRAM WILL BE INDICATED BY THE MAIN CONTRACTOR.
3. BLASTING TO BE CARRIED OUT WITHIN 100 m OF ANY CONCRETE AND/OR GROUTING REGARDLESS OF AGE, SHALL BE DONE BY MEANS OF NON-EXPLOSIVE METHODS, OR BY MEANS OF CONTROLLED BLASTING TECHNIQUES, AS PER METHOD STATEMENT SUBMITTED FOR THE APPROVAL OF THE APPOINTED PROFESSIONAL PERSON. ALL SUCH BLASTING SHALL BE DESIGNED TO KEEP A RECOMMENDED PEAK PARTICLE VELOCITIES (PPV) TO BELOW 10,7 mm/s AND THE FREQUENCY ABOVE 10 Hz OR AS OTHERWISE SPECIFIED BY THE BLASTING SPECIALIST TO BE APPROVED BY APP.
4. ROCK SUPPORT FOR ALL EXCAVATIONS SHALL BE DONE IN ACCORDANCE WITH PARTICULAR SPECIFICATION CMD 07: ROCK SUPPORT, AND SHALL OVER-AND-ABOVE THE ROCK ANCHORING AS SPECIFIED BY THE ENGINEERING GEOLOGIST, ALLOW FOR ROCK ANCHOR MESH REINFORCEMENT AS PER SUB-CLAUSE 07.12.2.4
5. THE SUPPLY, DELIVERY, UNROLLING, FIXING AND LACING OF THE MODIFIED HEXAGONAL MESH SHALL ALSO INCLUDE THE DRILLING AND GROUTING OF THE TOP AND BOTTOM ANCHORS INTO THE BLASTED ROCK FACE. THE MESH USED WILL BE A DOUBLE TWISTED HEXAGONAL WIRE MESH TO SANS 1200/2008 AND SHALL BE A MESH TYPE 80 WITH 2,7 mm, CLASS A GALVANISED WIRE. (MACCAFERRI OR EQUAL PRODUCT)
6. EXCAVATED SURFACES THAT WILL REMAIN PERMANENTLY EXPOSED ON COMPLETION OF THE WORKS SHALL BE CLEARED OF ALL LOOSE MATERIAL, PIECES OF ROCK, DEBRIS AND RUBBISH. REFER TO PARTICULAR SPECIFICATION CMD 20 FOR ALL OTHER EXCAVATION SPECIFICATIONS AND PERMISSIBLE DEVIATIONS.
7. COMPETENT ROCK DRAPERY, 3,15 DIAMOND MESH CLADDING TO BE PROVIDED FOR ALL VERTICAL FACES AS WELL AS OTHER SLOPES AS REQUIRED BY THE ENGINEERING GEOLOGIST.
8. INSTALLATION OF TOP ROCK ANCHORS TO BE DONE AS EXCAVATION PROCEEDS DOWNWARDS.
9. ALL ROCK FACES AGAINST WHICH REINFORCED CONCRETE WILL BE PLACED, TO BE TREATED WITH SHOTCRETE TO PREVENT AMOUT \u200b. SHOTCRETING TO MAKE ALLOWANCE FOR DRAINAGE.
10. LENGTH OF THE ROCK BOLTS FOR THE TWO 3 000 mm WIDE ZONES INTO VERTICAL FACE TO BE CALCULATED NOT TO BE BELOW THE LEVEL OF THE TUNNEL ROOF.



SECTION 06-06

SCALE 1:250



SECTION 07-07

SCALE 1:50

SCALE 1:50 0 0,5 1 2 3 4 5 10 m

SCALE 1:250 0 5 10 15 20 25 50 m

REVISION			
NO.	DATE	DESCRIPTION	TYP
1	08/18	AMENDED SPECIFICATIONS	RD
2	03/19	ADDED 3 m ROW BEACH, AMENDED EMBANKMENT SLOPE AND DIMENSIONS	RD
3	03/19	AMENDED SPECIFICATIONS AND DETAILS	JvZ

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA

DESIGN: P. BURGARDT, PRETORIA
DRAWN: S. [illegible]
CHECKED: [illegible]

OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

APPROACH CHANNEL AND COFFER DAM
EXCAVATION
SECTIONS

PROGRAMME: MOTTON CAPE	SUBPROGRAMME: CLANWILLIAM	DRAWING NO.: CWD1305					
CONTRACT No.: 0000-00	DRAWN:						
CONTRACT NAME: 28/0/0/100-00/0/0/1/1/1 (1)	SHEET: 5 of 5	REV. No.: 168 621/13	REV.: 03				

L/D	LIST OF DRAWINGS	CWD0001	168 571/13
SHEET	DESCRIPTION	OTHER No.	REV. No.

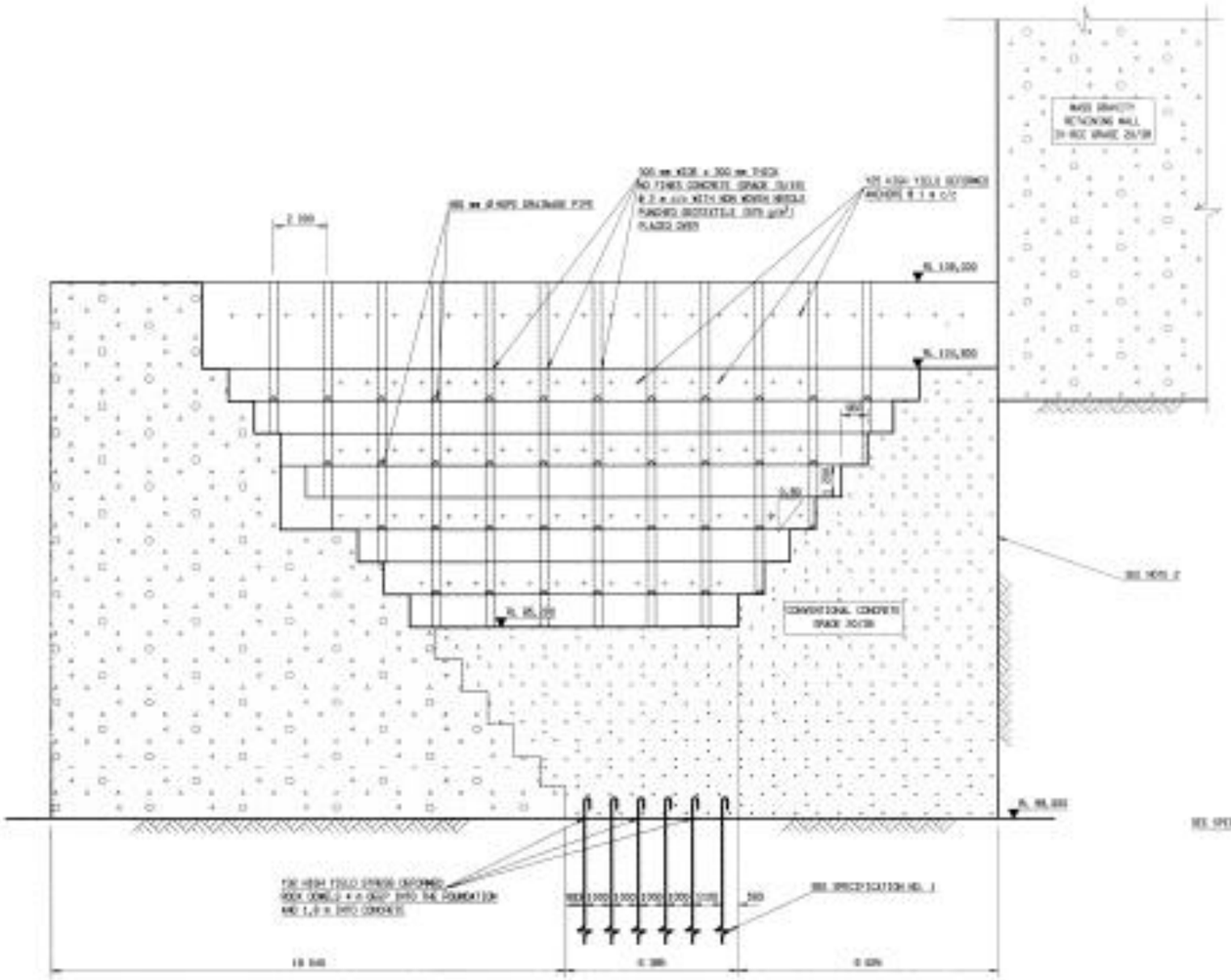
LIST OF DRAWINGS

NOTES:

1. CONSTRUCTION OF LEFT BANK CLADDING TO BE DONE AFTER THE COMPLETION OF COFFER DAM ARRANGEMENT.
2. FOR ROCK ANCHOR AND ROCK FACE PROTECTION, SEE EXCAVATION DRAWINGS CWD1201 TO CWD1205.

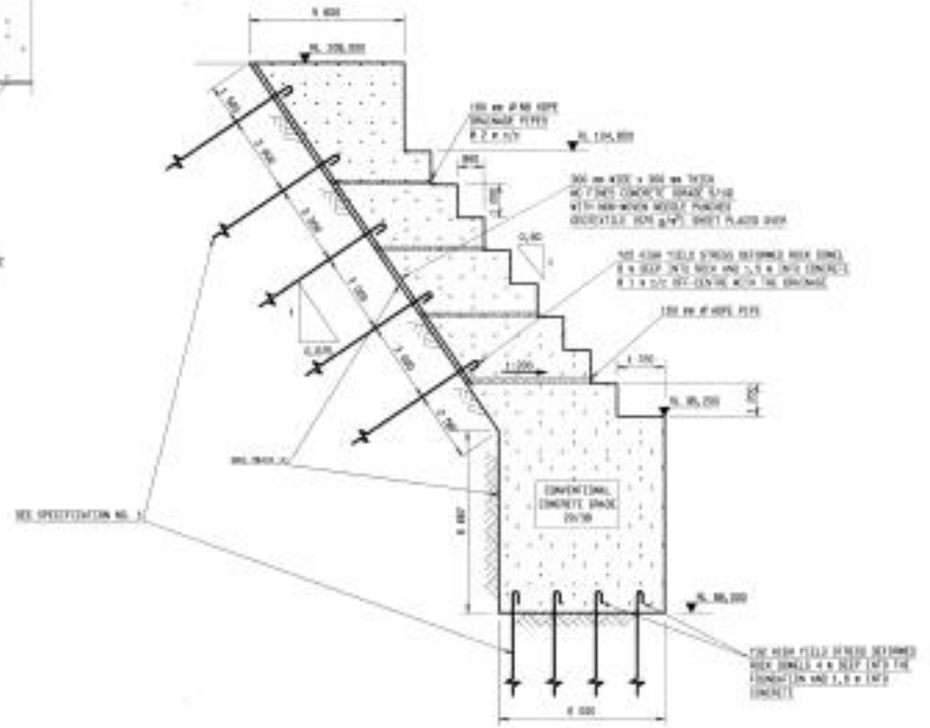
SPECIFICATIONS:

1. THE Y20 AND Y25 DOWELS ARE TO BE FACTORY PAINTED WITH A TWO PART EPOXY PROTECTIVE COATING USING STANDARD NON DF EQUAL.



SECTION 06-06

SCALE 1:500



TYPICAL SECTION OF LEFT BANK CLADDING

SCALE 1:100

SCALE 1:10

SCALE 1:100

REVISION			

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA

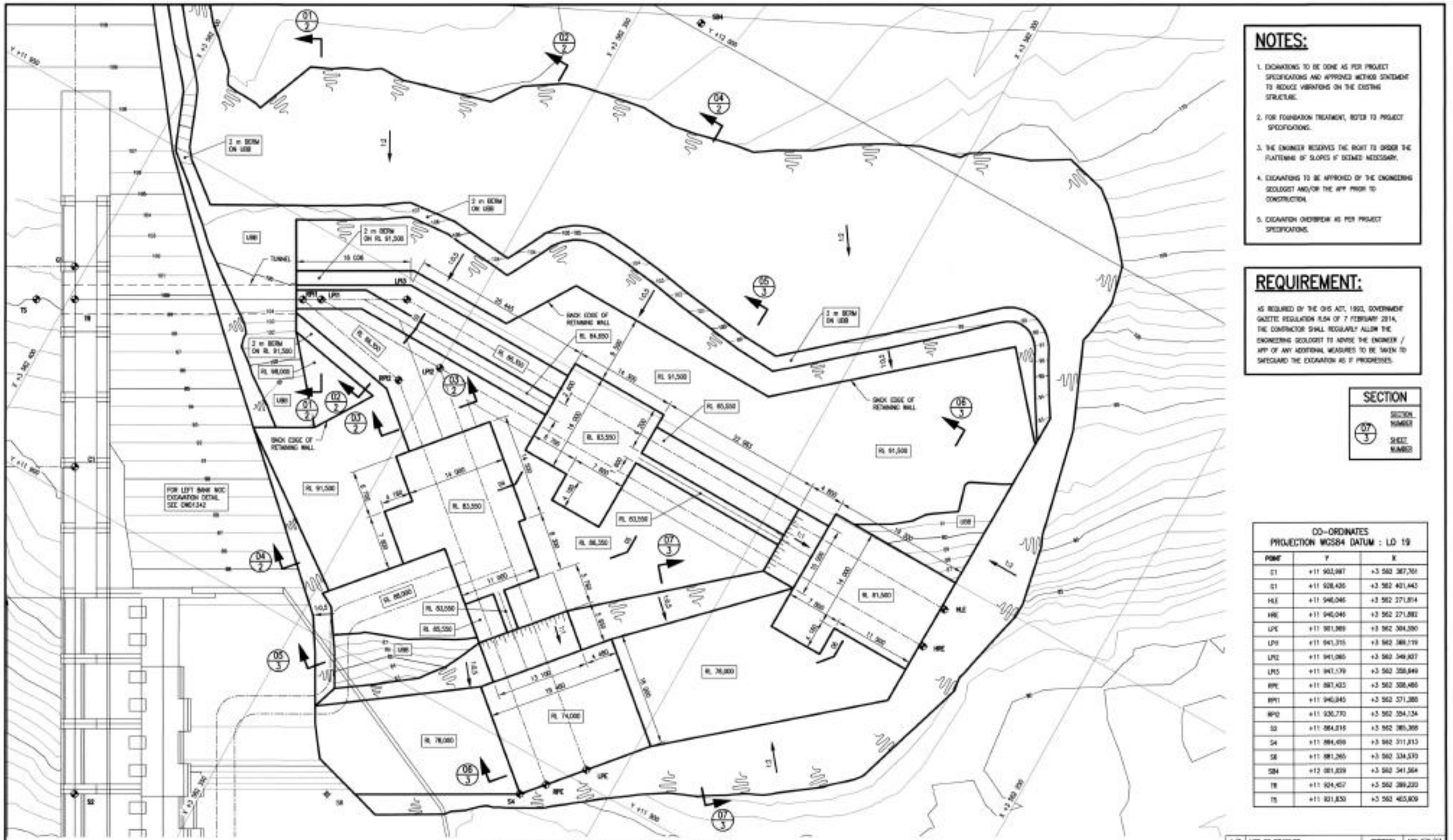
ARRANGEMENT AND CROSSINGS

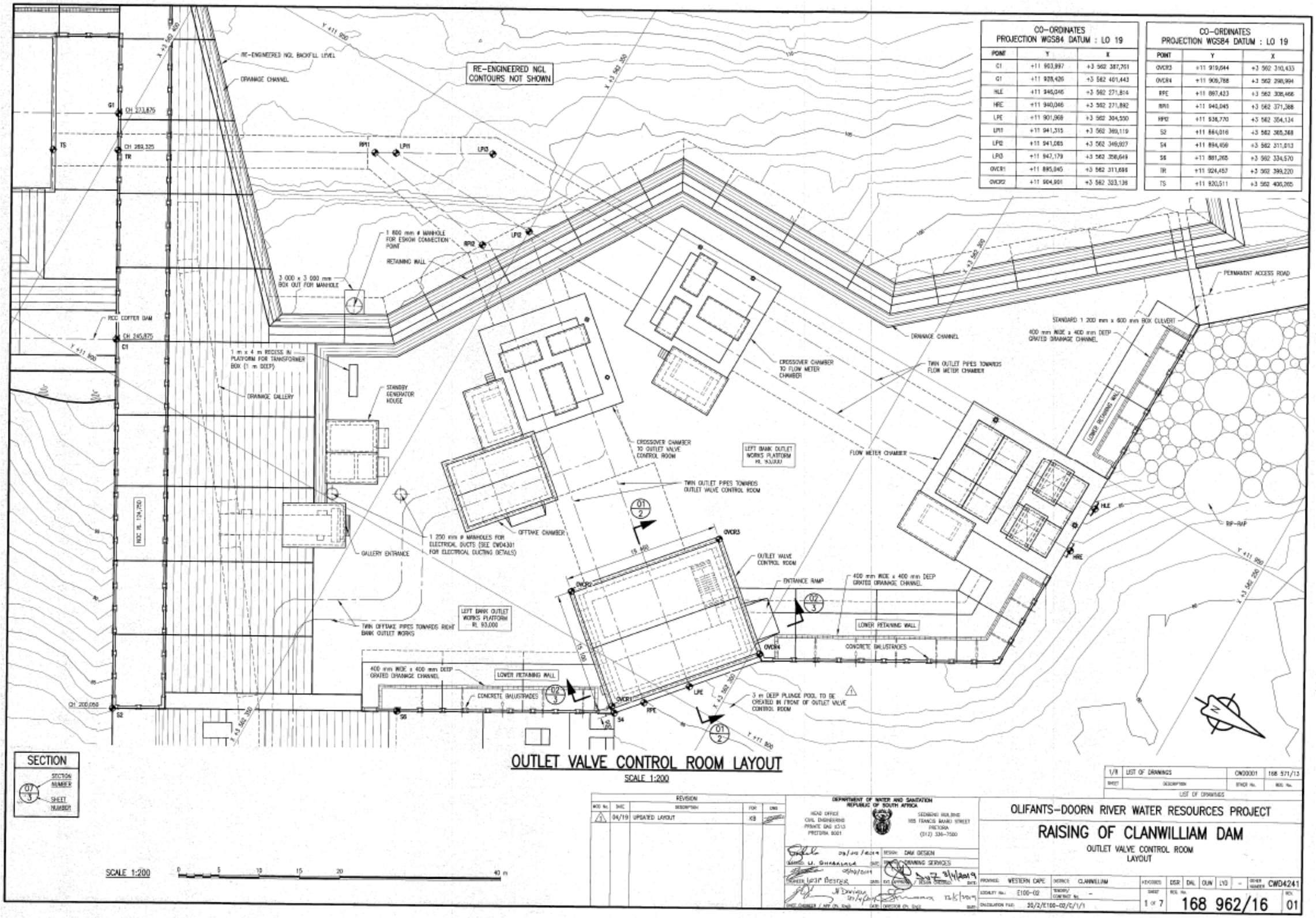
OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

MCC COFFER DAM
DRAINAGE AND LEFT BANK CLADDING
SECTIONS

PROVINCE: WESTERN CAPE | DISTRICT: CLANWILLIAM | DRAWING NO: CWD1005 | SHEET NO: 5 of 7 | 168 609/13 | REV: 00


NOTES:
1. EXCAVATIONS TO BE DONE AS PER PROJECT SPECIFICATIONS AND APPROVED METHOD STATEMENT TO REDUCE VIBRATIONS ON THE EXISTING STRUCTURE.
2. FOR FOUNDATION TREATMENT, REFER TO PROJECT SPECIFICATIONS.
3. THE ENGINEER RESERVES THE RIGHT TO ORDER THE FLATTENING OF SLOPES IF DEEMED NECESSARY.
4. EXCAVATIONS TO BE APPROVED BY THE ENGINEERING GEOLOGIST AND/OR THE APP PRIOR TO CONSTRUCTION.
5. EXCAVATION OVERBREAK AS PER PROJECT SPECIFICATIONS.
REQUIREMENT:
AS REQUIRED BY THE OHS ACT, 1993, GOVERNMENT GAZETTE REGULATION R.84 OF 7 FEBRUARY 2014, THE CONTRACTOR SHALL REGULARLY ALLOW THE ENGINEERING GEOLOGIST TO ADVISE THE ENGINEER / APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SAFEGUARD THE EXCAVATION AS IT PROGRESSES.
SECTION
SECTION NUMBER
SHEET NUMBER
2 m BERM ON U88
2 m BERM ON RL 91,500
TUNNEL
10 CORE
BACK EDGE OF RETAINING WALL
RL 84,650
RL 91,500
RL 85,500
RL 83,550
RL 86,550
RL 88,000
RL 78,000
RL 74,000
FOR LEFT BANK MOC EXCAVATION DETAIL SEE CWD1342
CO-ORDINATES
PROJECTION WGS84 DATUM : LO 19
POINT | Y | X
G1 | +11 902,987 | +3 562 387,761
G1 | +11 928,435 | +3 562 401,445
HLE | +11 946,046 | +3 562 271,814
HRE | +11 946,046 | +3 562 271,882
LPE | +11 901,369 | +3 562 304,390
LP0 | +11 941,315 | +3 562 369,119
LP02 | +11 941,065 | +3 562 349,837
LP05 | +11 947,179 | +3 562 358,849
RPE | +11 897,425 | +3 562 308,466
RP01 | +11 940,845 | +3 562 371,388
RP02 | +11 930,770 | +3 562 354,134
S3 | +11 884,815 | +3 562 385,368
S4 | +11 884,490 | +3 562 311,813
S5 | +11 881,265 | +3 562 334,570
SB4 | +12 001,839 | +3 562 341,564
T8 | +11 924,457 | +3 562 389,220
T5 | +11 931,830 | +3 562 465,809
ENCASEMENT EXCAVATION PLAN
SCALE 1:250
SCALE 1:250
1/7 | LIST OF DRAWINGS | CWD0001 | 168 571/13
LIST OF DRAWINGS
REVISION
DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA
D. MASHITISHO
DIRECTOR GENERAL
DESIGN: DAM DESIGN
DRAWING: DRAWING SERVICES
OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT
RAISING OF CLANWILLIAM DAM
LEFT BANK PIPE ENCASEMENT
EXCAVATION
PLAN
PROVINCE: WESTERN CAPE
DISTRICT: CLANWILLIAM
GROUP No.: E13B-02
CALCULATION FILE: 30/2/E13B-02/E/1/1/1 (1)
SHEET: 1 of 3
REG. No.: 168 622/14
REV: 00
OTHER NUMBER: CWD1.311



CO-ORDINATES PROJECTION WGS84 DATUM : LO 19		
POINT	Y	X
C1	+11 993,897	+3 562 387,701
G1	+11 928,426	+3 562 401,443
HLE	+11 946,046	+3 562 271,814
HRE	+11 940,046	+3 562 271,882
LPE	+11 901,968	+3 562 304,550
LPI1	+11 941,515	+3 562 369,119
LPI2	+11 941,085	+3 562 349,927
LPI3	+11 947,179	+3 562 358,649
OVCR1	+11 895,045	+3 562 311,698
OVCR2	+11 904,901	+3 562 323,138

CO-ORDINATES PROJECTION WGS84 DATUM : LO 19		
POINT	Y	X
OVCR3	+11 919,644	+3 562 310,433
OVCR4	+11 909,788	+3 562 298,994
RPE	+11 867,423	+3 562 338,466
RPI1	+11 940,045	+3 562 371,388
RPI2	+11 936,770	+3 562 354,134
S2	+11 864,016	+3 562 365,268
S4	+11 894,459	+3 562 311,013
S5	+11 881,265	+3 562 334,570
TR	+11 924,457	+3 562 399,220
TS	+11 920,511	+3 562 400,265

OUTLET VALVE CONTROL ROOM LAYOUT

SCALE 1:200

REVISION				
MOD No.	DATE	DESCRIPTION	FOR	DWG
1	04/19	UPDATED LAYOUT	KB	

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA
HEAD OFFICE, CIVIL ENGINEERING, PRIVATE BAG X313, PRETORIA 0001
SEDIBENG BUILDING, 185 FRANCIS BAARD STREET, PRETORIA, (012) 336-7500

DESIGNED: U. GHARAGOLA — DATE: 05/04/2019 — WORK: DAM DESIGN
DRAWN: LEOP PRETORIUS — DATE: 05/04/2019 — WORK: DRAWING SERVICES
CHECKED: J.N. Davidson — DATE: 12/4/2019
DIRECTOR (Pr. Eng.) — DATE: 12/5/2019
CHIEF DRAUGHT / ART (Pr. Eng.) — DATE: 31/4/2019

OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

OUTLET VALVE CONTROL ROOM LAYOUT

PROVINCE: WESTERN CAPE — DISTRICT: CLANWILLIAM — KEYWORDS: DSR, DAL, OUN, LYD, -
QUALITY No.: E100-02 — TENDER/CONTRACT No.: -
CALCULATION FILE: 30/2/E100-02/C/1/1
SHEET: 1 OF 7 — REG. No.: 168 962/16 — REV.: 01
OTHER NUMBER: CWD4241

LIST OF DRAWINGS			
SHEET	DESCRIPTION	OTHER No.	REG. No.
1/8	LIST OF DRAWINGS	CWD0001	168 571/13

LIST OF DRAWINGS

CO-ORDINATES
PROJECTION WGS84 : LO 19

POINT	Y	X
LNDC1	+11 861,839	+3 562 367,845
LNDC2	+11 914,532	+3 562 350,040
LNDC3	+11 938,810	+3 562 317,702
LNDC4	+11 970,269	+3 562 279,860
LNDC5	+11 948,149	+3 562 194,087
LNDC6	+11 917,810	+3 561 961,158
LNDC7	+11 970,388	+3 561 469,550
LNDC8	+11 981,004	+3 561 411,000
LNDC9	+11 955,000	+3 561 401,000
LNDC10	+12 073,997	+3 561 411,734
LNDC11	+12 090,004	+3 561 418,510
LNDC12	+11 090,900	+3 562 470,000
LNDC13	+11 950,810	+3 561 412,505
LNDC14	+11 976,004	+3 561 407,404
LNDC15	+11 941,000	+3 562 411,760
LNDC16	+11 957,710	+3 562 459,810

CO-ORDINATES
PROJECTION WGS84 : LO 18

POINT	Y	X
A	+11 986,477	+3 562 347,973
B	+12 095,894	+3 561 488,858
C1	+11 905,097	+3 562 347,781
C2	+11 915,893	+3 562 430,484
C3	+11 924,574	+3 562 485,729
D1	+11 925,430	+3 561 401,443
D2	+11 913,573	+3 562 417,680
LB1	+11 933,646	+3 562 486,311
LB2	+11 889,310	+3 562 446,898
LB3	+11 966,007	+3 562 411,129
WL2	+11 946,048	+3 562 371,814
WL1	+11 940,048	+3 562 371,852

CO-ORDINATES
PROJECTION WGS84 : LO 18

POINT	Y	X
TCL	+12 380,964	+3 532 466,429
LB1	+12 145,558	+3 561 586,342
LB2	+11 889,266	+3 562 324,856
LB3	+11 947,270	+3 562 192,110
LB4	+11 941,081	+3 562 380,527
LB5	+11 947,215	+3 562 559,649
LB6	+12 009,734	+3 562 375,460
BL1	+11 960,980	+3 562 477,699
DL2	+12 007,100	+3 561 598,091
DB1	+11 897,008	+3 562 115,532
DB2	+11 900,132	+3 562 141,248
WL4	+11 882,770	+3 562 497,604

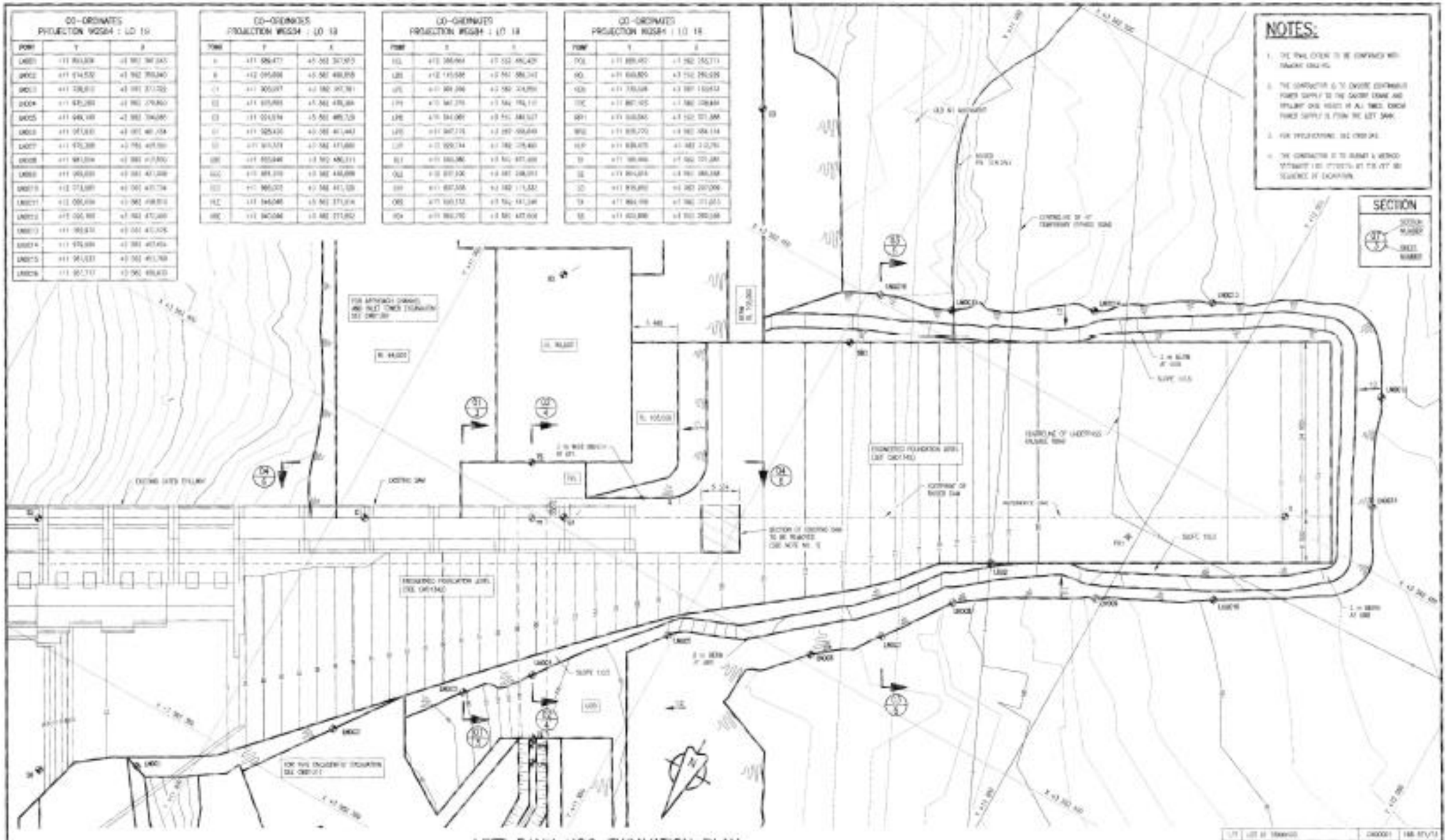
CO-ORDINATES
PROJECTION WGS84 : LO 18

POINT	Y	X
TCL	+11 889,492	+3 562 350,731
BD	+11 868,809	+3 562 390,928
CD1	+11 730,648	+3 561 160,612
CD2	+11 867,105	+3 562 338,844
BD1	+11 868,840	+3 562 391,388
WL2	+11 838,770	+3 562 484,114
WL1	+11 838,670	+3 562 312,761
TI	+11 966,466	+3 562 331,280
T2	+11 964,814	+3 562 388,568
T3	+11 936,892	+3 562 297,006
T4	+11 864,199	+3 562 371,651
T5	+11 833,888	+3 562 380,568

NOTES:

1. THE FINAL CUTOFF TO BE CONFIRMED WITH ENGINEER ONSITE.
2. THE CONTRACTOR IS TO ENSURE CONTINUOUS POWER SUPPLY TO THE DAVIDSON CRANE AND EFFLUENT DIVERSION PUMPS AT ALL TIMES. DIESEL POWER SUPPLY IS FROM THE LEFT BANK.
3. FOR SPECIFICATIONS SEE CWD 1341.
4. THE CONTRACTOR IS TO SUBMIT A METHOD STATEMENT FOR CUTOFFS AT THE LEFT BANK SEQUENCE OF EXCAVATION.

SECTION


EXISTING GATES SILLWAY
EXISTING DAM
FOR APPROACH CHANNEL AND INLET TOWER EXCAVATION SEE CWD1331
R. 44,000
EL. 50,000
EL. 105,000
FOR TWIN ENGINEERED EXCAVATION SEE CWD1331
ENGINEERED FOUNDATION LEVEL SEE CWD1342
SECTION OF EXISTING DAM TO BE REMOVED SEE NOTE NO. 3
EL. 730,000
EL. 725,000
EL. 720,000
EL. 715,000
EL. 710,000
EL. 705,000
EL. 700,000
EL. 695,000
EL. 690,000
EL. 685,000
EL. 680,000
EL. 675,000
EL. 670,000
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EL. -80,000
EL. -85,000
EL. -90,000
EL. -95,000
EL. -100,000
EL.

REQUIREMENT:

AS REQUIRED BY THE OHS ACT, 1993, GOVERNMENT GAZETTE REGULATION R.84 OF 7 FEBRUARY 2014, THE CONTRACTOR SHALL REGULARLY ALLOW THE ENGINEERING GEOLOGIST TO ADVISE THE ENGINEER / APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SAFEGUARD THE EXCAVATION AS IT PROGRESSES.

NOTES:

1. THE CONTRACTOR IS TO SUBMIT A METHOD STATEMENT FOR APPROVAL BY THE APP FOR SEQUENCE OF EXCAVATION AND TOE CONCRETE PLACEMENT. THE EXCAVATION AND BACKFILLING WITH TOE CONCRETE FOR THE BLOCK IMMEDIATELY ABOVE THE TUNNEL AND THE BLOCKS ON EITHER SIDE OF THAT BLOCK, SHALL BE DONE PRIOR TO TUNNEL EXCAVATION.

SECTION

SECTION NUMBER

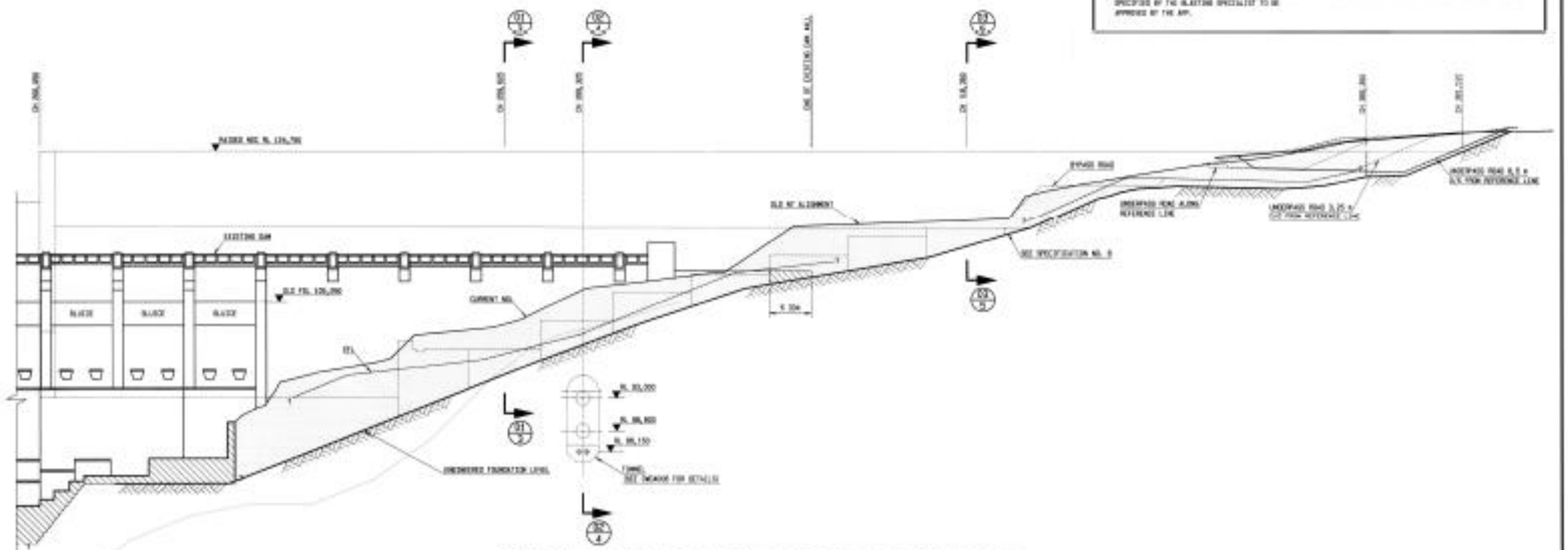
SHEET NUMBER

LEGEND:

- : ABS. NATURAL GROUND LEVEL
- : ENGINEERED FOUNDATION LEVEL. FOUNDATION LEVEL PROPOSED BY DESIGN ENGINEER FOR CONSTRUCTION PURPOSES
- : EPL. ESTIMATED FOUNDATION LEVELS / RMR = XX (RMR = ROCK MASS RATING (AFTER BIENIAWSKI, 1976))
- : TO BE SUPPORTED (SHOTCRETE)
- : TO BE EXCAVATED
- : TO BE REMOVED

SPECIFICATIONS:

1. ALL FOUNDATIONS, EXCAVATED SLOPES AND SLOPE PROTECTION TO BE APPROVED BY THE APP IN CONJUNCTION WITH THE ENGINEERING GEOLOGIST.
2. DETAILED METHOD STATEMENTS MUST BE SUBMITTED PRIOR TO EXCAVATION COMMENCEMENT, TO THE APP FOR APPROVAL.
3. THE CONTRACTOR SHALL FIRST PERFORM TRIAL BLASTING IN ORDER TO BE ABLE TO COMPILE A SPECIFICATION FOR MATERIAL FRAGMENTATION RECORDED AT THE CMA MILL. HE SHALL OBTAIN THE SERVICES OF A BLASTING SPECIALIST TO ASSIST FOR APPROVAL BY DWS. A TRIAL BLASTING POSITION MILL BE INDICATED BY THE MAIN CONTRACTOR.
4. BLASTING TO BE CARRIED OUT WITHIN 100 m OF ANY CONCRETE AND/OR GROUTING REHABILITATION OF ARS, SHALL BE DONE BY MEANS OF NON-EXPLOSIVE BLASTING TECHNIQUES, OR BY MEANS OF SPECIALLY DESIGNED CONTROLLED BLASTING TECHNIQUES, TO THE APPROVAL OF THE APP. ALL SUCH BLASTING SHALL BE DESIGNED TO KEEP RECOMMENDED PEAK PARTICLE VELOCITIES (PPV) TO BELOW 12,7 mm/s AND THE FREQUENCY ABOVE 40 Hz OR AS OTHERWISE SPECIFIED BY THE BLASTING SPECIALIST TO BE APPROVED BY THE APP.
5. ROCK SUPPORT FOR ALL EXCAVATIONS SHALL BE DONE IN ACCORDANCE WITH PARTICULAR SPECIFICATION CWD 27: ROCK SUPPORT, AND SHALL CONSIST MAINLY OF THE ROCK ANCHORING AS SPECIFIED BY THE ENGINEERING GEOLOGIST, ALONG WITH WIRE MESH REINFORCEMENT AS PER SUB-CLAUSE 27.5.2.4
6. THE SUPPLY, DELIVERY, UNROLLING, FIXING AND LACING OF THE PROPOSED REINFORCEMENT MESH SHALL ALSO INCLUDE THE DRILLING AND EPOXY GROUTING OF THE TOP AND BOTTOM ANCHORS ONTO THE BLASTED ROCK FACE. THE MESH USED WILL BE A DOUBLE TWISTED HEXAGONAL WIRE MESH TO SANS 1200:2013 AND SHALL BE A MESH TYPE 8X MESH WITH 2,2 mm, CLASS A GALVANISED WIRE. (MACCAFERRI OR EQUAL PRODUCT)
7. EXCAVATED SURFACES THAT WILL REMAIN PERMANENTLY EXPOSED ON COMPLETION OF THE WORKS SHALL BE CLEARED OF ALL LOOSE MATERIAL, PIECES OF ROCK, DEBRIS AND RUBBISH. REFER TO PARTICULAR SPECIFICATION CWD 30 FOR ALL OTHER EXCAVATION SPECIFICATIONS AND PERMISSIBLE DEVIATIONS.
8. FOR PREPARATION AND TREATMENT OF EXCAVATED FOUNDATIONS TO RECEIVE CONCRETE, REFER TO PARTICULAR SPECIFICATIONS CWD 26 AND CWD 32.



DOWNSTREAM ELEVATION OF LEFT BANK NOC EXCAVATION

SCALE 1:250

REVISION				
NO.	DATE	DESCRIPTION	TECH	DRG

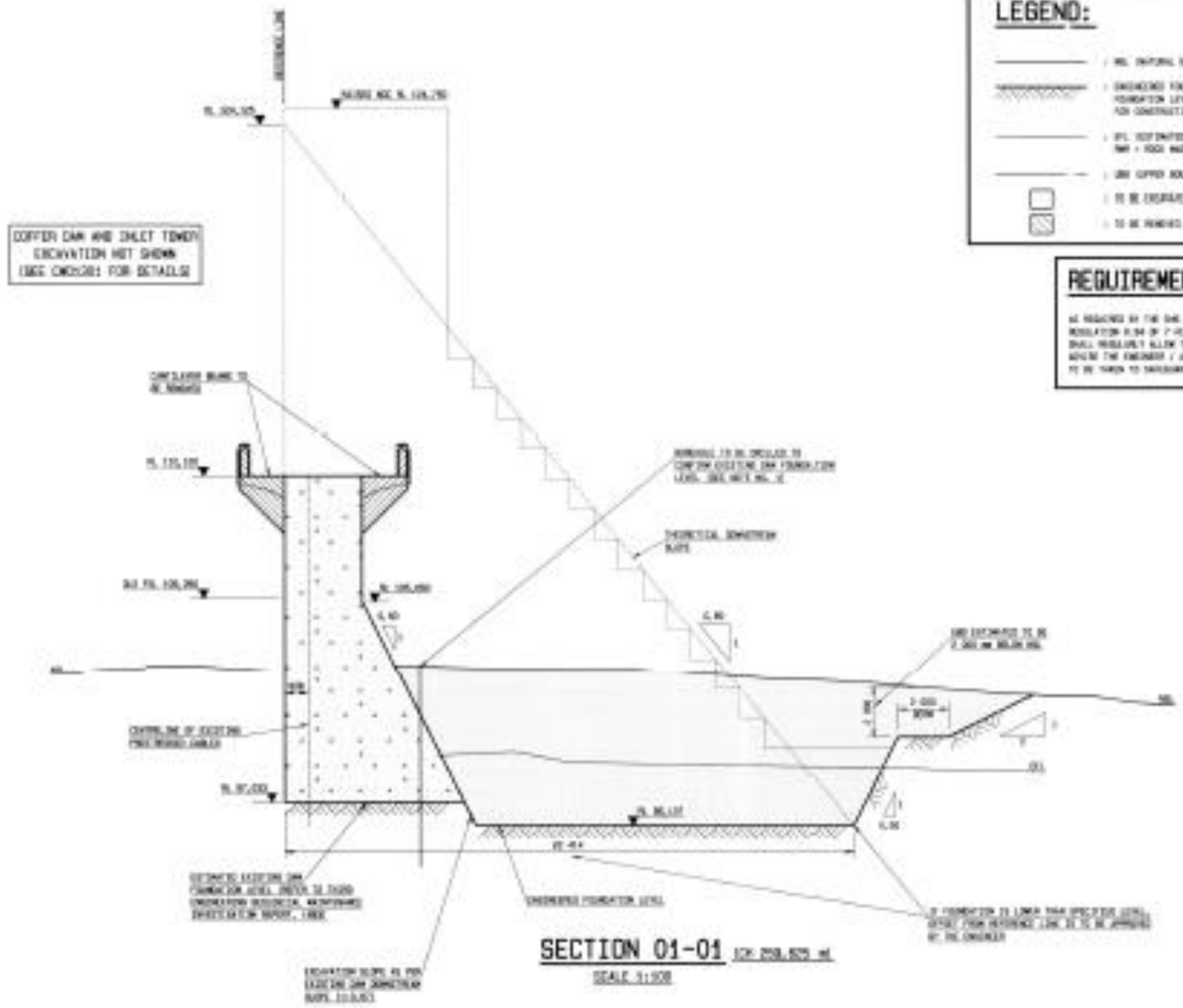
DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA

DESIGNED: S. MEINTJES
DRAWN: A. MEINTJES
CHECKED: 09/06/2016
APPROVED: 07/06/2017

OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM
LEFT BANK NOC EXCAVATION
DOWNSTREAM ELEVATION

PROJECT: WESTERN CAPE | DISTRICT: CLANWILLIAM | DRAWING NO: 168 767/16 | REV: 00



SECTION 01-01

SCALE 1:100

SCALE 1:100 0 1 2 3 4 5 10 20 m

LEGEND:

- EXISTING FOUNDATION LEVEL
- EXCAVATED FOUNDATION LEVEL
- ZONE CLIPPED BOUNDARY
- TO BE EXCAVATED
- TO BE REMOVED

NOTES:

1. DIAMOND DRILLING EITHER AT THE SITE TOE OR AT APPROXIMATELY 1 000 mm DOS OF NOC ℄ OF EVEN SEGING BLOCK TO CONFIRM THE EFL OF THE EXISTING DAM. CORE SAMPLES TO BE EXAMINED BY AN ENGINEERING GEOLOGIST AND SENT TO THE UNIVERSITY OF CAPE TOWN LICTS FOR ALKALI AGGREGATE REACTION SLAKE TESTING.
2. FOR PREPARATION OF FIXED JOINT SURFACES (SEE SPECIFICATION NO. C2 ON DRAWING)
   - 2.1 FIXED JOINT SURFACES FOR NOC
   - 2.2 FIXED JOINT SURFACES FOR SPILLWAY

REQUIREMENT:

AS REQUIRED BY THE DAM ACT, 1965, GOVERNMENT GAZETTE REGULATION R.64 OF 7 FEBRUARY 2014, THE CONTRACTOR SHALL REGULARLY ALLOW THE ENGINEERING GEOLOGIST TO ADVISE THE ENGINEER (APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SAFEGUARD THE EXCAVATION AS IT PROGRESSES.

SPECIFICATIONS:

1. ALL FOUNDATIONS, EXCAVATED SLOPES AND SLOPE PROTECTION TO BE APPROVED BY THE APP IN CONJUNCTION WITH THE ENGINEERING GEOLOGIST.
2. DETAILED METHOD STATEMENTS MUST BE SUBMITTED PRIOR TO EXCAVATION COMMENCEMENT, TO THE APP FOR APPROVAL.
3. BLASTING (IN ORDER TO BE ABLE TO COMPLY A SPECIFICATION FOR MAXIMUM VIBRATIONS REQUIRED AT THE DAM WALL. WE SHALL OBTAIN THE SERVICES OF A BLASTING SPECIALIST TO ASSIST FOR APPROVAL BY DWS. A TRIAL BLASTING POSITION WILL BE CHOSEN BY THE MAIN CONTRACTOR.
4. BLASTING TO BE CARRIED OUT WITHIN 100 m OF ANY CONCRETE AND/OR GROUTING REGARDLESS OF AGE, SHALL BE DONE BY MEANS OF NON-EXPLOSIVE BLASTING TECHNIQUES, OR BY MEANS OF SPECIALLY DESIGNED CONTROLLED BLASTING TECHNIQUES, TO THE APPROVAL OF THE APP. ALL SUCH BLASTING SHALL BE DESIGNED TO KEEP RECOMMENDED PEAK PARTICLE VELOCITIES (PPV) TO BELOW 25,7 MM/S AND THE FREQUENCY ABOVE 20 Hz OR 25 OTHERWISE SPECIFIED BY THE BLASTING SPECIALIST TO BE APPROVED BY THE APP.
5. ROCK SUPPORT FOR ALL EXCAVATIONS SHALL BE DONE IN ACCORDANCE WITH PARTICULAR SPECIFICATIONS CMD 27: ROCK SUPPORT, AND SHALL OVER-AND-ABOVE THE ROCK ANCHORING AS SPECIFIED BY THE ENGINEERING GEOLOGIST, ALLOW FOR MORE MESH REINFORCEMENT AS PER CLAUSE 27.5.3.4
6. THE SUPPLY, DELIVERY, INSTALLING, FIXING AND LACING OF THE FOOTFALL NETTING/WIRE MESH (MW), HOLE DRILLING THE DRILLING AND GROUT GROUTING OF THE TOP ANCHORS INTO THE BLASTED ROCK FACE. THE MESH USED WILL BE A DOUBLE TWISTED HEXAGONAL HOCK MESH TO SANS 2280:2012 AND SHALL BE A MESH TYPE 80 WITH 2,7 mm GAUGE GALVANIZED WIRE. (MANUFACTURED OR EQUAL PRODUCT)
7. EXCAVATED SURFACES THAT WILL REMAIN PERMANENTLY EXPOSED ON COMPLETION OF THE WORKS SHALL BE CLEARED OF ALL LOOSE MATERIAL, PIECES OF ROCK, BOULDERS AND RUBBISH. REFER TO PARTICULAR SPECIFICATION CMD 20 FOR ALL OTHER EXCAVATION SPECIFICATIONS AND PERMISSIBLE DEVIATIONS.
8. FOR PREPARATION AND TREATMENT OF EXCAVATED FOUNDATIONS TO RECEIVE CONCRETE, REFER TO PARTICULAR SPECIFICATIONS CMD 25 AND CMD 30.

REVISION				
NO.	DATE	DESCRIPTION	CHK	APP

DEPARTMENT OF WATER AFFAIRS REPUBLIC OF SOUTH AFRICA

PRIVATE BAG X313 PRETORIA 0001 REPUBLIC OF SOUTH AFRICA

DIRECTOR: K. MEEVIS

DEPUTY DIRECTOR: K. MEEVIS

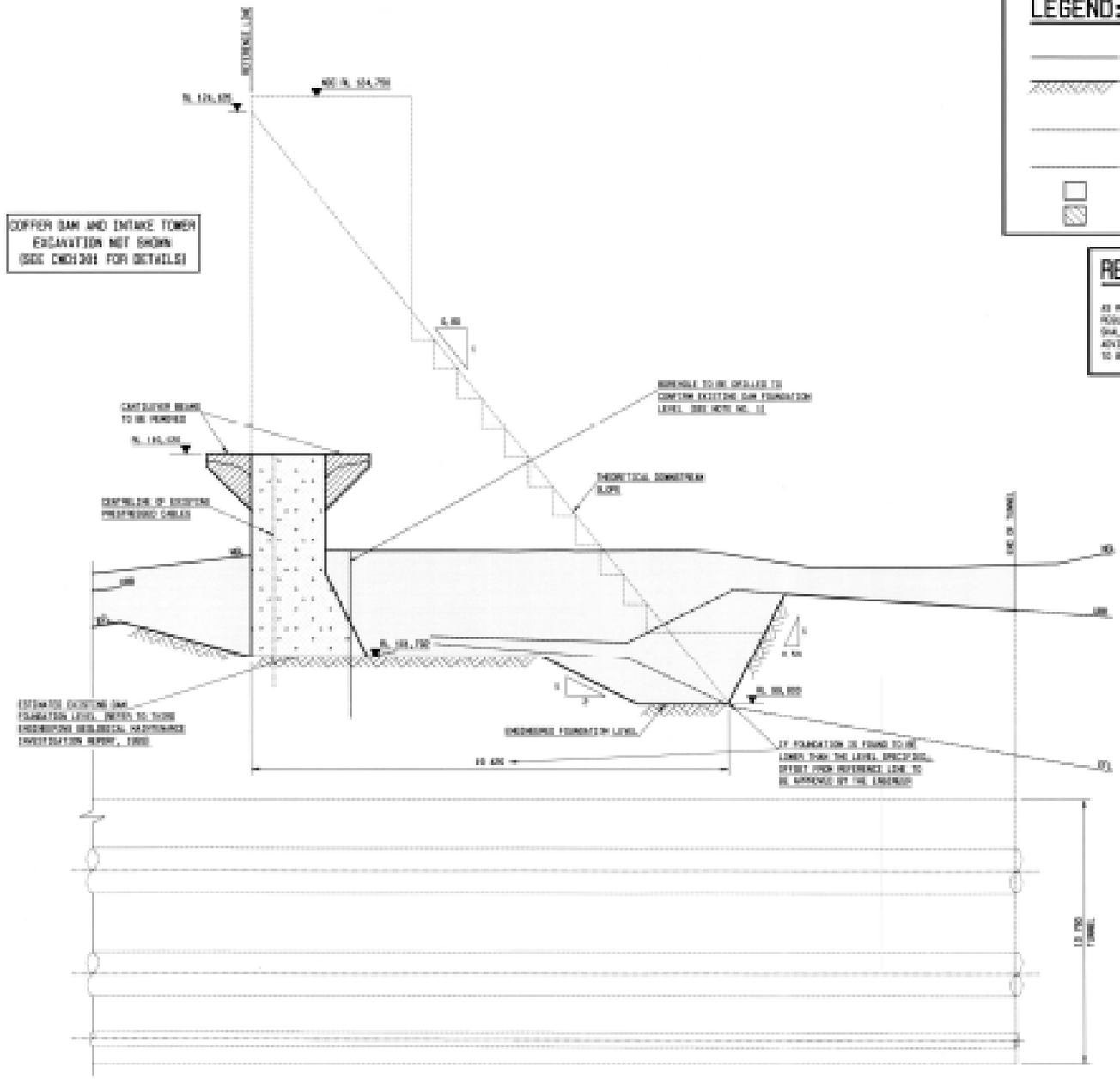
OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

LEFT BANK NOC EXCAVATION

SECTION 01-01

PROJECT: MISSION DAM	SECTION: CLANWILLIAM	DRAWING NO.	CWD1343
SCALE: 1 : 0		166 766/16	00



SECTION 02-02 (CH 206,325 m)

SCALE 1:100

SCALE 1:100

LEGEND:

- NGL (NATURAL GROUND LEVEL)
- ENGINEERED FOUNDATION LEVEL FOUNDATION LEVEL PROPOSED BY DESIGN ENGINEER FOR CONSTRUCTION PURPOSES
- EFL (ESTIMATED FOUNDATION LEVEL) / RMR = 40 RMR = ROCK MASS RATING (AFTER BIENIAWSKI, 1976)
- DAM SUPPER BOUNDARY BEDROCK
- TO BE EXCAVATED
- TO BE REMOVED

NOTES:

1. DIAMOND DRILLED EITHER AT THE D/S TOE OR AT APPROXIMATELY 1 000 mm D/S OF NOC (E OF EVERY SECOND BLOCK TO CONFIRM THE EFL OF THE EXISTING DAM. CORE SAMPLES TO BE DESCRIBED BY AN ENGINEERING GEOLOGIST AND SENT TO THE LABORATORY OF DAM TOWN (NOTE FOR BLOCK) AGGREGATE REACTION (AAR) TESTING.
2. FOR PREPARATION OF FIXED JOINT SURFACES (SEE SPECIFICATION NO. 03 ON DRAWING):
   - 2.1. FIXED JOINT SURFACES FOR NOC
     CREST OF EXISTING NOC, D/S VERTICAL FACE OF EXISTING NOC AND SLOPING FACE OF EXISTING NOC BELOW LEVEL OF GALLERY FLOOR, UNLESS OTHERWISE INDICATED.
   - 2.2. FIXED JOINT SURFACES FOR SPILLWAY
     D/S SLOPE OF EXISTING SPILLWAY FROM THE REFERENCE LINE DOWNWARDS TO THE POSITION OF THE CURRENT ROBERTS SPLITTERS (THAT NEED TO BE DEMOLISHED) AND D/S SLOPE OF EXISTING SPILLWAY BELOW THE LEVEL OF PROPOSED GALLERY FLOOR.

REQUIREMENT:

AS REQUIRED BY THE OHS ACT, 1993, GOVERNMENT GAZETTE REGULATION 9.2.3A OF 7 FEBRUARY 2014, THE CONTRACTOR SHALL REGULARLY ALLOW THE ENGINEERING GEOLOGIST TO ADVISE THE ENGINEER / APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SAFEGUARD THE EXCAVATION AS IT PROGRESSES.

SPECIFICATIONS:

1. ALL FOUNDATIONS, EXCAVATED SLOPES AND SLOPE PROTECTION TO BE APPROVED BY THE APP IN CONJUNCTION WITH THE ENGINEERING GEOLOGIST.
2. DETAILED METHOD STATEMENTS MUST BE SUBMITTED PRIOR TO EXCAVATION COMMENCEMENT, TO THE APP FOR APPROVAL.
3. THE CONTRACTOR SHALL FIRST PERFORM TRIAL BLASTING IN ORDER TO BE ABLE TO COMPLY WITH SPECIFICATION FOR MAXIMUM VIBRATIONS RECORDED AT THE DAM WALL. HE SHALL EITHER EMPLOY THE SERVICES OF A BLASTING SPECIALIST TO ASSIST FOR APPROVAL BY DWS. A TRIAL BLASTING POSITION WILL BE INDICATED BY THE MAIN CONTRACTOR.
4. BLASTING TO BE CARRIED OUT WITHIN 200 m OF ANY CONCRETE AND/OR GROUTED FOUNDATIONS REGARDLESS OF AGE, SHALL BE DONE BY MEANS OF NON-EXPLOSIVE BLASTING TECHNIQUES, OR BY MEANS OF SPECIALLY DESIGNED CONTROLLED BLASTING TECHNIQUES, TO THE APPROVAL OF THE APP. ALL SUCH BLASTING SHALL BE DESIGNED TO KEEP RECOMMENDED PEAK PARTICLE VELOCITIES (PPV) TO BELOW 50,7 MM/S AND THE FREQUENCY ABOVE 10 Hz OR AS OTHERWISE SPECIFIED BY THE BLASTING SPECIALIST TO BE APPROVED BY THE APP.
5. ROCK SUPPORT FOR ALL EXCAVATIONS SHALL BE DONE IN ACCORDANCE WITH PARTICULAR SPECIFICATION CME 27: ROCK SUPPORT, AND SHALL OVER-AND-ABOVE THE ROCK ANCHORING AS SPECIFIED BY THE ENGINEERING GEOLOGIST, ALLOW FOR WIRE MESH REINFORCEMENT AS PER SUB-CLAUSE 27.5.2.4
6. THE SUPPLY, DELIVERY, UNROLLING, FIXING AND LACING OF THE ROCKFALL NETTING/WIRE MESH SHALL ALSO INCLUDE THE DRILLING AND EPOXY GROUTING OF THE TOP AND BOTTOM ANCHORS INTO THE BLASTED ROCK FACE. THE MESH USED WILL BE A DOUBLE TWISTED HEXAGONAL WIRE MESH TO SANS 2280:2013 AND SHALL BE A MESH TYPE 8X10 WITH 2,7 MM, CLASS A GALVANISED WIRE. (MACCAFERRI OR EQUAL PRODUCT)
7. EXCAVATED SURFACES THAT WILL REMAIN PERMANENTLY EXPOSED ON COMPLETION OF THE WORKS SHALL BE CLEARED OF ALL LOOSE MATERIAL, PIECES OF ROCK, DEBRIS AND RUBBISH. REFER TO PARTICULAR SPECIFICATION CME 05 FOR ALL OTHER EXCAVATION SPECIFICATIONS AND PERMISSIBLE DEVIATIONS.
8. FOR PREPARATION AND TREATMENT OF EXCAVATED FOUNDATIONS TO RECEIVE DENTAL CONCRETE, REFER TO PARTICULAR SPECIFICATIONS CME 05 AND CME 30.

REVISION				
NO.	DATE	DESCRIPTION	BY	CHK

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA

DESIGNED: K. DEXTER
DRAWN: K. DEXTER

OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

LEFT BANK NOC EXCAVATION
SECTION 02-02

REGION: WESTERN CAPE	DISTRICT: CLANWILLIAM	AUTHOR: DSR	CHK: DAL
QUALITY No.: 01000-00	SUBJECT: CONTRACT No.:	SHEET: 4 - 6	REV. NO.: 00
DRAWING FILE: 05/01/01000-00(01)(1)			

DRG. NO.: 168 769/16

LIST OF DRAWINGS: CWD0001 | CWD1344

LEGEND:

- : NGL (NATURAL GROUND LEVEL)
- : ENGINEERED FOUNDATION LEVEL FOUNDATION LEVEL PROPOSED BY DESIGN ENGINEER FOR CONSTRUCTION PURPOSES.
- : EFL (ESTIMATED FOUNDATION LEVEL) / RMR + 40 RMR = ROCK MASS RATING (AFTER BIENIAWSKI, 1976)
- : ABR (UPPER BOUNDARY REMOVAL)
- : TO BE EXCAVATED
- : TO BE REMOVED

NOTES:

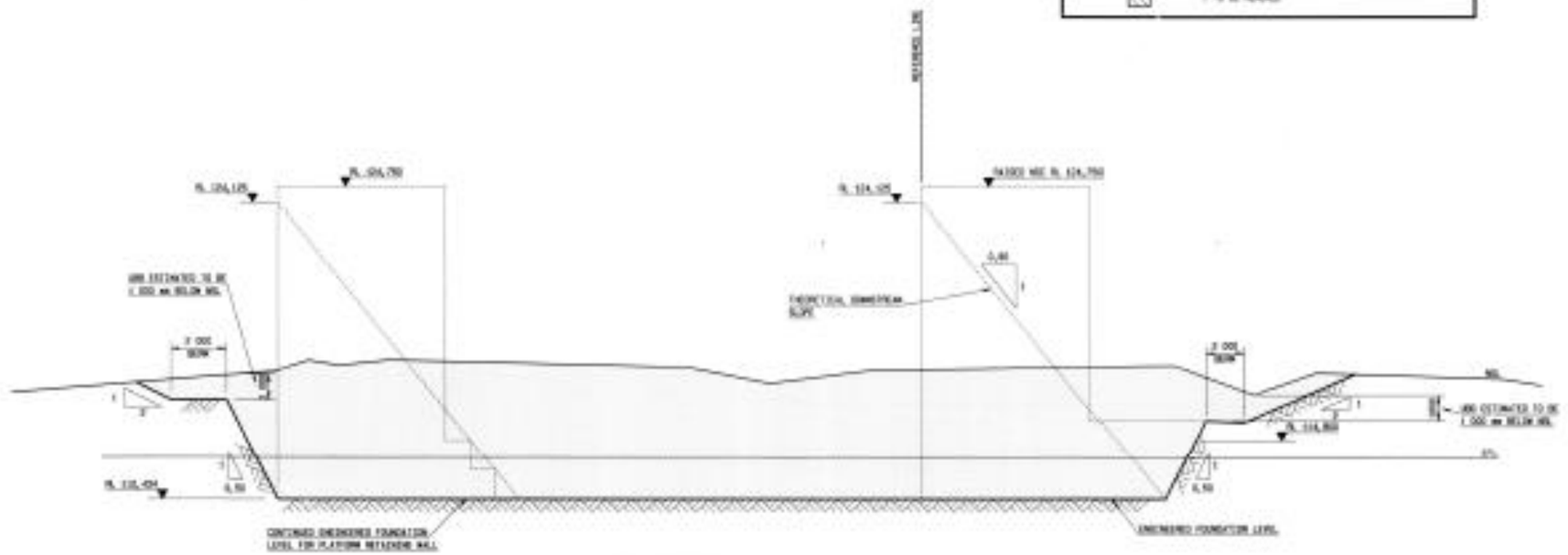
1. DIAMOND DRILLING EITHER AT THE 10:1 TOE OR AT APPROXIMATELY 1 000 mm O/S OF NOC Ø OF EVERY SECOND BLOCK TO CONFIRM THE EFL OF THE EXISTING DAM. CORE SAMPLES TO BE DESCRIBED BY AN ENGINEERING GEOLOGIST AND SENT TO THE UNIVERSITY OF CAPE TOWN (UCT) FOR ALKALI AGGREGATE REACTION (AAR) TESTING.
2. FOR PREPARATION OF FIXED JOINT SURFACES (SEE SPECIFICATION NO. 02 ON DRAWING) SHEET OF EXISTING NOC, 0,75 VERTICAL FACE OF EXISTING NOC AND SLOPING FACE OF EXISTING NOC BELOW LEVEL OF GALLERY FLOOR, UNLESS OTHERWISE INDICATED.

REQUIREMENT:

AS REQUIRED BY THE OHS ACT, 2003, GOVERNMENT GAZETTE REGULATION 10.64 OF 7 FEBRUARY 2014,THE CONTRACTOR SHALL REGULARLY ALLOW THE ENGINEERING GEOLOGIST TO ADVISE THE ENGINEER / APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SAFEGUARD THE EXCAVATION AS IT PROGRESSES.

SPECIFICATIONS:

1. ALL FOUNDATIONS, EXCAVATED SLOPES AND SLOPE PROTECTION TO BE APPROVED BY THE APP IN CONJUNCTION WITH THE ENGINEERING GEOLOGIST.
2. DETAILED METHOD STATEMENTS MUST BE SUBMITTED PRIOR TO EXCAVATION COMMENCEMENT, TO THE APP FOR APPROVAL.
3. THE CONTRACTOR SHALL FIRST PERFORM TRIAL BLASTING IN ORDER TO BE ABLE TO COMPILE A SPECIFICATION FOR MAXIMUM VIBRATIONS RECORDED AT THE DAM WALL. HE SHALL OBTAIN THE SERVICES OF A BLASTING SPECIALIST TO ADJUST FOR APPROVAL BY DWS. A TRIAL BLASTING POSITION WILL BE INDICATED BY THE MAIN CONTRACTOR.
4. BLASTING TO BE CARRIED OUT WITHIN 300 M OF ANY CONCRETE AND/OR GROUTING REGARDLESS OF AGE, SHALL BE DONE BY MEANS OF NON-EXPLOSIVE BLASTING TECHNIQUES, OR BY MEANS OF SPECIALLY DESIGNED CONTROLLED BLASTING TECHNIQUES, TO THE APPROVAL OF THE APPROVED PROFESSIONAL PERSON. ALL SUCH BLASTING SHALL BE DESIGNED TO KEEP A RECOMMENDED PEAK PARTICLE VELOCITIES (PPV) TO BELOW 12,7 mm/s AND THE FREQUENCY ABOVE 10 Hz OR AS OTHERWISE SPECIFIED BY THE BLASTING SPECIALIST TO BE APPROVED BY APP.
5. ROCK SUPPORT FOR ALL EXCAVATIONS SHALL BE DONE IN ACCORDANCE WITH PARTICULAR SPECIFICATION CW3021 ROCK SUPPORT, AND SHALL CWDM-GND-ABOVE THE ROCK ANCHORING AS SPECIFIED BY THE ENGINEERING GEOLOGIST, ALLOW FOR WIRE MESH REINFORCEMENT AS PER SUB-CLAUSE 27.6.2.4
6. THE SUPPLY, DELIVERY, UNROLLING, FIXING AND LACING OF THE ROCKFALL MATTRESS/WIRE MESH SHALL ALSO INCLUDE THE DRILLING AND EPOXY GROUTING OF THE TOP AND BOTTOM ANCHORS INTO THE BLASTED ROCK FACE. THE MESH USED WILL BE A DOUBLE TWISTED HEXAGONAL WIRE MESH TO SANS 3390-0001 AND SHALL BE A MESH TYPE 80 WITH 2,7 mm. CLASS A GALVANIZED WIRE. (MACCAFERRI OR EQUAL PRODUCT)
7. EXCAVATED SURFACES THAT WILL REMAIN PERMANENTLY EXPOSED ON COMPLETION OF THE WORKS SHALL BE CLEARED OF ALL LOOSE MATERIAL, PIECES OF ROCK, DEBRIS AND RUBBISH. REFER TO PARTICULAR SPECIFICATION CW3001 FOR ALL OTHER EXCAVATION SPECIFICATIONS AND PERMISSIBLE DEVIATIONS.
8. FOR PREPARATION AND TREATMENT OF EXCAVATED FOUNDATIONS TO RECEIVE CONCRETE, REFER TO PARTICULAR SPECIFICATIONS CW3 21 AND CW3 32.



SECTION 03-03 (CH 318,380 m)

SCALE 1:100

SCALE 1:100 0 1 2 3 4 5 10 20 m

REVISION				
REV No.	DATE	DESCRIPTION	TYPE	DRAWN

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA

HEAD OFFICE
CIVIL ENGINEERING
PROJECTS AND DAMS
PRETORIA 0001

REGIONAL BUILDING
129 FRANCIS BAARD STREET
PRETORIA
0001 P.O. BOX 1018

MANAGEMENT AND SUPERVISION
DESIGN BUREAU

DESIGNED: K. BESTER
DRAWN: K. BESTER
CHECKED:
APPROVED:

1/7	LIST OF DRAWINGS
SHEET	DESCRIPTION

LIST OF DRAWINGS

OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

LEFT BANK NOC EXCAVATION

SECTION 03-03

REGION: WESTERN CAPE	TOWN: CLANWILLIAM	DRAWN: ESH	DAL	CHK:	GLO:
SCALE: 1:100	DRAWING:	SHEET: 5 of 8	DWG. No.: 168 770/16		REV.: 00
DESIGNATION: 20/370100-03/C/1/1/1					CWD6345

SECTION

REQUIREMENT:

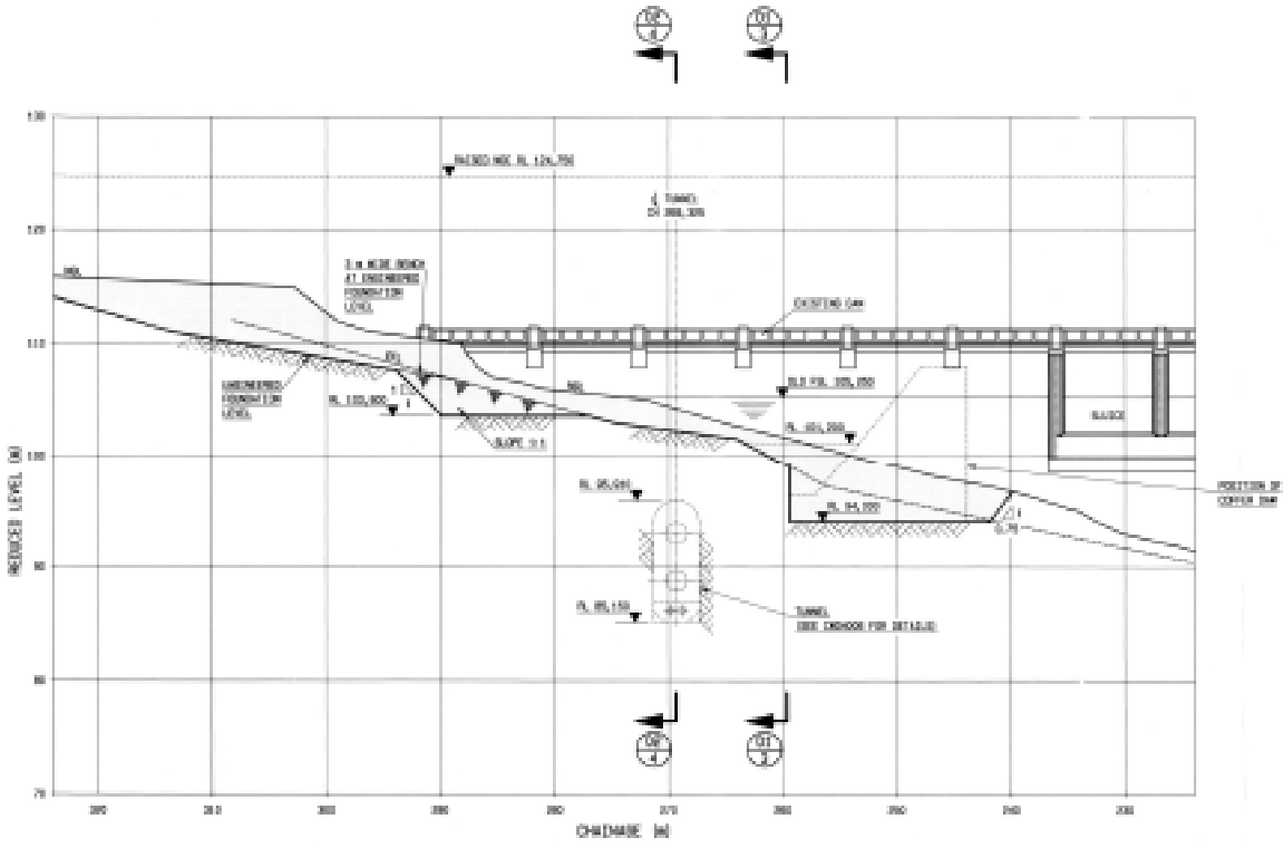
AS REQUIRED BY THE OHS ACT, 1993, GOVERNMENT GAZETTE REGULATION R.84 OF 7 FEBRUARY 2014, THE CONTRACTOR SHALL REGULARLY ALLOW THE ENGINEERING GEOLOGIST TO ADVISE THE ENGINEER / APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SAFEGUARD THE EXCAVATION AS IT PROGRESSES.

NOTES:

1. THE CONTRACTOR IS TO SUBMIT A METHOD STATEMENT FOR APPROVAL BY THE APP FOR SEQUENCE OF EXCAVATION AND TOE CONCRETE PLACEMENT. THE EXCAVATION AND BACKFILLING WITH TOE CONCRETE FOR THE BLOCK IMMEDIATELY ABOVE THE TUNNEL AND THE BLOCKS ON EITHER SIDE OF THAT BLOCK, SHALL BE DONE PRIOR TO TUNNEL EXCISION.

LEGEND:

- : NSL (NATURAL GROUND LEVEL)
- : ENGINEERED FOUNDATION LEVEL
  FOUNDATION LEVEL PROPOSED BY DESIGN ENGINEER FOR CONSTRUCTION PURPOSES
- : EFL (ESTIMATED FOUNDATION LEVEL) (RMR = 40)
  RMR = ROCK MASS RATING (AFTER BIENIAWSKI, 1989)
- : UBB (UPPER BOUNDARY BLASTING)
- : TO BE EXCAVATED
- : TO BE REMOVED



SECTION 04-04

SCALE 1:250

SPECIFICATIONS:

1. ALL FOUNDATIONS, EXCAVATED SLOPES AND SLOPE PROTECTION TO BE APPROVED BY THE APP IN CONJUNCTION WITH THE ENGINEERING GEOLOGIST.
2. DETAILED METHOD STATEMENTS MUST BE SUBMITTED PRIOR TO EXCAVATION COMMENCEMENT, TO THE APP FOR APPROVAL.
3. THE CONTRACTOR SHALL LIMIT VIBRATION FROM BLASTING IN ORDER TO BE ABLE TO COMPLY WITH SPECIFICATION FOR MAXIMUM VIBRATIONS RECORDED AT THE DAM WALL. HE SHALL EMPLOY THE SERVICES OF A BLASTING SPECIALIST TO ASSIST FOR APPROVAL BY ENGR. A TRIAL BLASTING POSITION WILL BE INDICATED BY THE MAIN CONTRACTOR.
4. BLASTING TO BE CARRIED OUT WITHIN 100 m OF ANY CONCRETE AND/OR GROUTING REGARDLESS OF AGE, SHALL BE DONE BY MEANS OF NON-EXPLOSIVE BLASTING TECHNIQUES, OR BY MEANS OF SPECIALLY DESIGNED CONTROLLED BLASTING TECHNIQUES, TO THE APPROVAL OF THE APP. ALL SUCH BLASTING SHALL BE DESIGNED TO NOT EXCEED RECOMMENDED PEAK PARTICLE VELOCITIES (PPV) TO BELOW 12,7 mm/s AND THE FREQUENCY ABOVE 10 Hz OR AS OTHERWISE SPECIFIED BY THE BLASTING SPECIALIST TO BE APPROVED BY THE APP.
5. ROCK SUPPORT FOR ALL EXCAVATIONS SHALL BE DONE IN ACCORDANCE WITH PARTICULAR SPECIFICATION CND (F) ROCK SUPPORT, AND SHALL OVER-AND-ABOVE THE ROCK ANCHORING AS SPECIFIED BY THE ENGINEERING GEOLOGIST, ALLOW FOR WORK WITH REINFORCEMENT AS PER SUB-CLAUSE 17.8.2.4
6. THE SUPPLY, DELIVERY, UNROLLING, FIXING AND LACING OF THE ROCKFALL RETTENSIVE MESH SHALL ALSO INCLUDE THE DRILLING AND EPOXY GROUTING OF THE TOP AND BOTTOM ANCHORS INTO THE BLASTED ROCK FACE. THE MESH USED WILL BE A DOUBLE TWISTED HEXAGONAL WIRE MESH TO SANS 10001:2000 AND SHALL BE A MESH TYPE NO MESH 8.0 MM, CLASS A GALVANIZED WIRE. (MACMAHON OR EQUAL PRODUCT)
7. EXCAVATED SURFACES THAT WILL REMAIN PERMANENTLY EXPOSED ON COMPLETION OF THE WORKS SHALL BE CLEARED OF ALL LOOSE MATERIAL, PIECES OF ROCK, DEBRIS AND RUBBISH. REFER TO PARTICULAR SPECIFICATION CND (E) FOR ALL OTHER EXCAVATION SPECIFICATIONS AND NON-EXCISABLE EXCAVATIONS.
8. FOR PREPARATION AND PLACEMENT OF EXCAVATED FOUNDATIONS TO RECEIVE CONCRETE, REFER TO PARTICULAR SPECIFICATIONS CND (E) AND CND (G).

LIST	LIST OF DRAWINGS	CWD0001	168 771/13
SHEET	DESCRIPTION	OTHER No.	REV. No.

LIST OF DRAWINGS

REVISION			
REV. No.	DATE	DESCRIPTION	INIT.

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA

	DESIGNED: G. BESTER
03/04/2015	DRAWN: G. CHABALALA
	CHECKED:
	APP:

OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

LEFT DAMK NOC EXCAVATION

SECTION 04-04

PROJECT: WESTERN CAPE	SUBPROJECT: CLANWILLIAM	PACKAGE: DAM CAL LEC NOC		OTHER NUMBER: CWD1346	
LOCALITY No.: E100-02	ISSUED TO CONTRACT No.:	UNIT: M - D	DRG. No.: 168 771/16	REV. No.: 00	
DRAWING FILE: 3D\E\E100-02\C1\A1					

CO-ORDINATES PROJECTION WGS84 : LO 19		
POINT	Y	X
C1	+11 901.897	+3 582 397.791
C2	+11 875.855	+3 582 436.364
C3	+11 824.214	+3 582 465.729
B1	+11 825.835	+3 582 401.442
B2	+11 811.572	+3 582 429.466
BE1	+11 866.003	+3 582 461.125
BP1	+11 842.040	+3 582 371.888
T6	+11 [illegible]	+3 582 [illegible]
T5	+11 824.857	+3 582 384.330
T3	+11 809.241	+3 582 406.265

REQUIREMENT:

[illegible] REQUIRED BY THE OHS ACT, 1993, CONSTRUCTION REGS'S, REGULATION R.84 OF 7 FEBRUARY 2014,THE CONTRACTOR SHALL REGULARLY ALLOW THE ENGINEERING GEOLOGIST TO ADVISE THE ENGINEER / APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SAFEGUARD THE EXCAVATION AS IT PROGRESSES.

SPECIFICATIONS:

1. EXCAVATIONS TO BE DONE AS PER PARTICULAR SPECIFICATIONS CWD 1.0 AND APPROVED METHOD STATEMENT TO AVOID DAMAGING ON SAT EXISTING STRUCTURE.
2. FOR FOUNDATION TREATMENT, REFER TO PARTICULAR SPECIFICATIONS CWD 15.
3. THE ENGINEER RESERVES THE RIGHT TO ORDER THE FLATTENING OF SLOPES IF DEEMED NECCESSARY.
4. EXCAVATIONS TO BE APPROVED BY THE APP AND THE ENGINEERING GEOLOGIST PRIOR TO CONSTRUCTION.

SECTION

PARAPET SLABS KEY PLAN
SCALE 1:200

SCALE 1:200

REVISION				
NO.	DATE	DESCRIPTION	FOR	CHK
A	04/18	ISSUED FOR CONSTRUCTION	–	
B	08/18	SLAB D RE-NUMBERED	Eng	

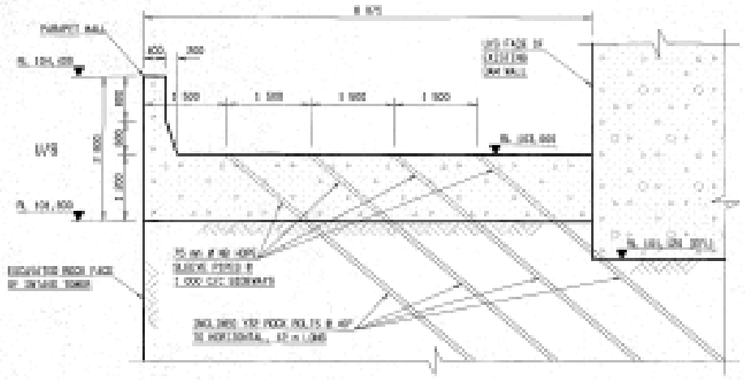
DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA

OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

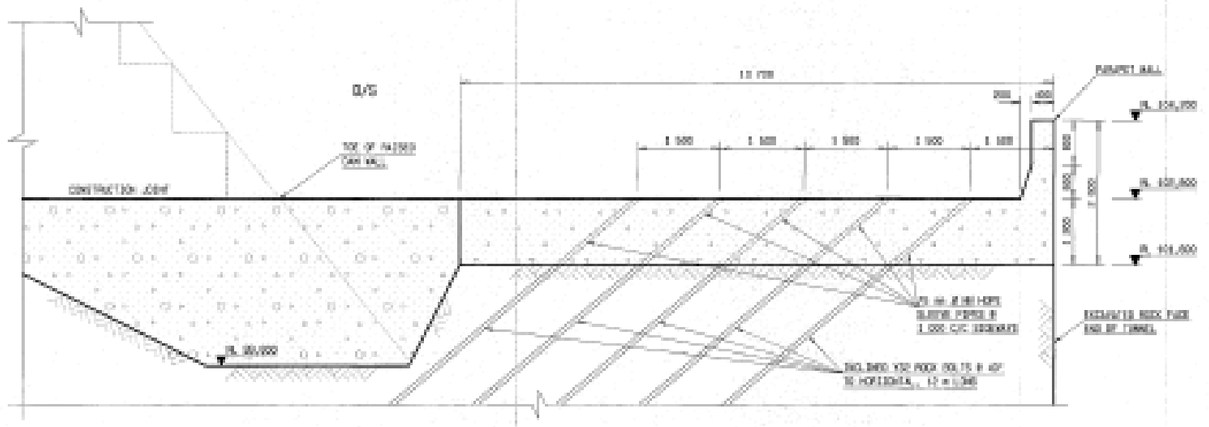
EXCAVATION: PARAPET SLABS
KEY PLAN

PROJECT: WESTERN CAPE	DISTRICT: CLANWILLIAM	DESIGNED	CHD	DA	TNG	LVS	–	DRAWING NUMBER: CWD1321
CONTRACT NO.: D100-00	SCALES: APPROVED BY: –	DRAWN						
DATAPAC FILE: 00/0/0100-00/C/1/1		SHEET 1 OF 3	REC. No. 175 402/18					REV. 01



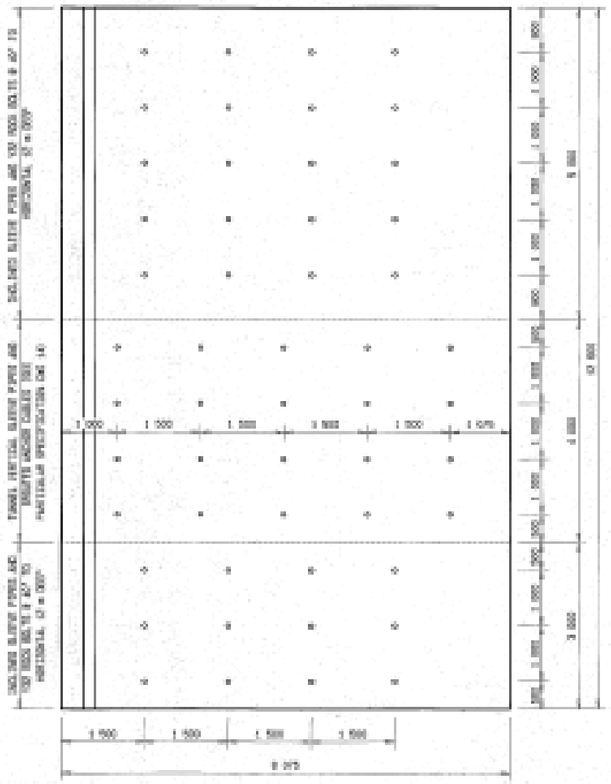
TYPICAL CROSS-SECTION PARAPET SLAB A

(VERTICAL SLEEVE PIPES NOT SHOWN)
SCALE 1:50



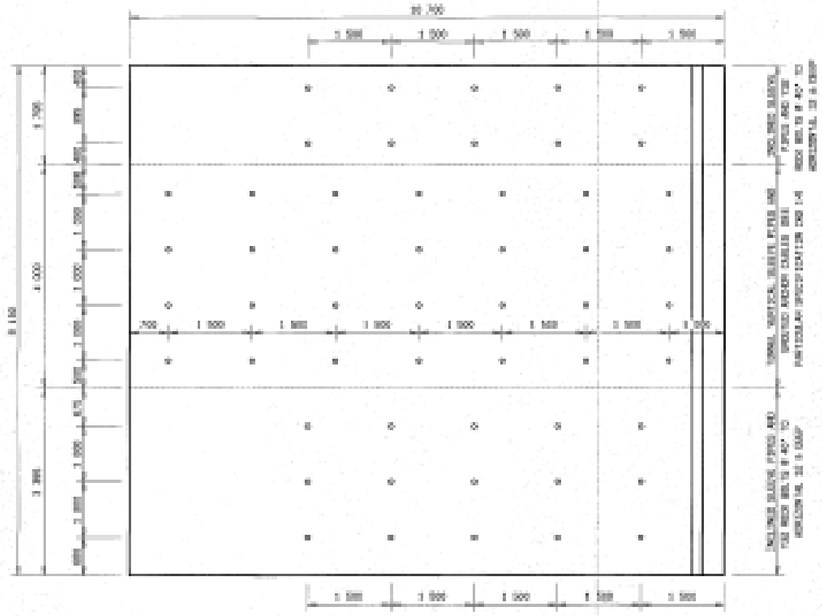
TYPICAL CROSS-SECTION PARAPET SLAB B

(VERTICAL SLEEVE PIPES NOT SHOWN)
SCALE 1:50



PLAN VIEW PARAPET SLAB A

SCALE 1:50



PLAN VIEW PARAPET SLAB B

SCALE 1:50

NOTES:

1. REFER PARTICULAR SPECIFICATION CWD 33 FOR VERTICAL SLEEVES IN A 6 METRE TUNNEL SECTION FOR GROUTED CABLE ANCHORS.
2. T32 ROCK BOLTS ARE ON BOTH SIDES OUTSIDE THE 6 m TUNNEL WIDTH AS SHOWN ON THE PLAN VIEWS.
3. TOLERANCES TO ALLOW FOR MAXIMUM OVERBREAK OF 150 mm, REFER PARTICULAR SPECIFICATION CWD 33.
4. CONCRETE GRADE 25/19.
5. FOR REINFORCEMENT DETAILS, REFER TO DRAWING .

SCALE 1:50

REVISION			
NO.	DATE	DESCRIPTION	CHK
A	04/18	ISSUED FOR CONSTRUCTION	AJC

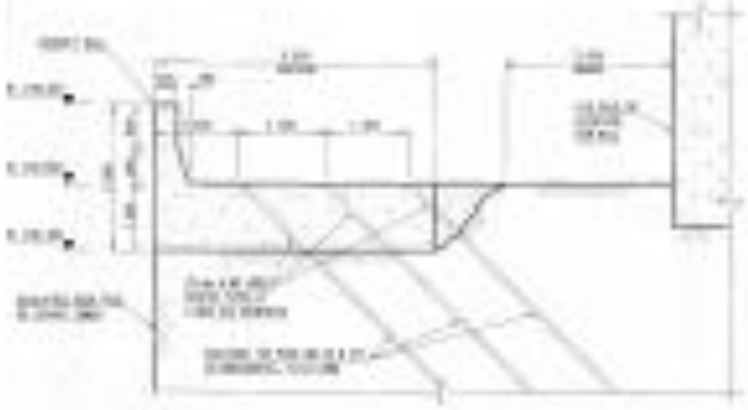
DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA

OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

EXCAVATION: PARAPET SLAB A & B DETAILS

PROVINCE: WESTERN CAPE	DISTRICT: CLANWILLIAM	DRAWN:	CAL	CDN	DRT	REV	TWO	DRAWING NO.: CWD1322	
LOCALITY No.: B 000-00	SERIES:	SHEET No.: 2 of 3	REV. No.: 175 403/18						00
EXCAVATION FILE: CDN\DRAWINGS\									



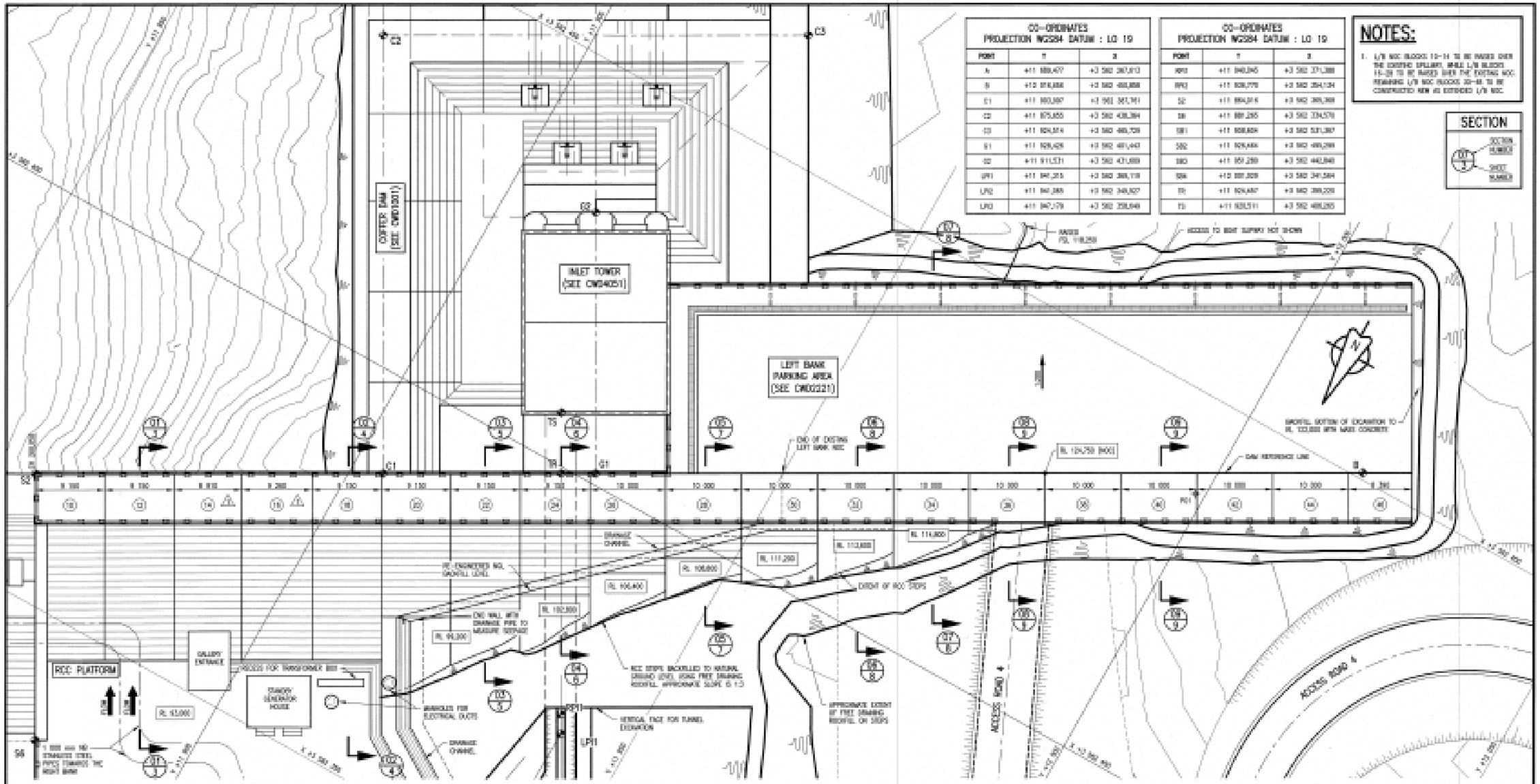
TYPICAL CROSS SECTION PARAPET SLAB C

TYPICAL CROSS SECTION PARAPET SLAB D

NOTES:

TYPICAL CROSS SECTION PARAPET SLAB E

TYPICAL CROSS SECTION PARAPET WALL F


CO-ORDINATES
PROJECTION WG2284 DATUM : LO 19
POINT | Y | X
A | +11 888,477 | +3 582 367,613
B | +12 818,656 | +3 582 450,858
C1 | +11 883,897 | +3 582 567,741
C2 | +11 875,855 | +3 582 438,384
C3 | +11 826,814 | +3 582 466,726
G1 | +11 926,426 | +3 582 481,443
G2 | +11 911,531 | +3 582 431,659
LP1 | +11 841,215 | +3 582 369,119
LP2 | +11 841,085 | +3 582 349,827
LP3 | +11 847,179 | +3 582 358,849
CO-ORDINATES
PROJECTION WG2284 DATUM : LO 19
POINT | Y | X
RP1 | +11 840,845 | +3 582 271,388
RP2 | +11 838,779 | +3 582 264,134
S2 | +11 864,816 | +3 582 365,368
S8 | +11 881,285 | +3 582 334,576
SB1 | +11 868,804 | +3 582 531,387
SB2 | +11 926,464 | +3 582 469,289
SB3 | +11 951,288 | +3 582 442,848
SB4 | +12 881,809 | +3 582 341,584
T1 | +11 926,467 | +3 582 389,226
T2 | +11 928,511 | +3 582 469,280
NOTES:
1. L/B NOC BLOCKS 12~14 TO BE RAISED OVER THE EXISTING SPILLWAY, WHILE L/B BLOCKS 15~24 TO BE RAISED OVER THE EXISTING NOC. REMAINING L/B NOC BLOCKS 33~48 TO BE CONSTRUCTED NEW AS EXTENDED L/B NOC.
SECTION
SECTION NUMBER
SHEET NUMBER
OUTFALL DAM (SEE CWD1501)
INLET TOWER (SEE CWD4051)
LEFT BANK PARKING AREA (SEE CWD2221)
RCC PLATFORM
GALLERY ENTRANCE
STAIRWAY & MOTOR HOUSE
ACCESS ROAD 4
ACCESS ROAD 5
DRAINAGE CHANNEL
RE-ENGINEERED NOC BACKFILL LEVEL
CNC WALL WITH DRAINAGE PIPE TO MEASURE SEEPAGE
RCC STEPS BACKFILLED TO NATURAL GROUND LEVEL USING FREE DRAINING ROCKFILL APPROXIMATE SLOPE 0.1:1
VERTICAL FACE FOR TUNNEL EXCAVATION
APPROXIMATE EXTENT OF FREE DRAINING ROCKFILL ON STEPS
END OF EXISTING LEFT BANK NOC
EXTENT OF NOC STEPS
BACKFILL BOTTOM OF EXCAVATION TO EL 103,000 WITH MASS CONCRETE
DAM REFERENCE LINE
EL 124,750 (MOL)
EL 111,800
EL 112,600
EL 111,200
EL 108,800
EL 106,400
EL 102,800
EL 94,300
EL 93,000
LP11
RP11
TS
TR
G1
C1
C2
C3
S2
S6
S8
B
1 000 mm ND STAINLESS STEEL PIPES EMBEDDED IN RCC RIGHT BANK
MANHOLES FOR ELECTRICAL DUCTS
PROCESS FOR TRANSFORMER BAY
ABBREVIATIONS:
APP: APPROVED PROFESSIONAL PERSON
c/c: CENTRE TO CENTRE
CH: CHAINAGE
CJ: CONSTRUCTION JOINT
D/S: DOWNSTREAM
EFL: ESTIMATED FOUNDATION LEVEL
FSL: FULL SUPPLY LEVEL
ND: NOMINAL BORE
NGL: NATURAL GROUND LEVEL
NOC: NOB-OVERSPILL CREST
L/B: LEFT BANK
RL: RELATED LEVEL
SBB: LOWER BOUNDARY BOREHOLE
U/S: UPSTREAM
SCALE 1:250
0 5 10 15 20 25 30 m
LEFT BANK NOC PLAN VIEW
SCALE 1:250
REVISION
No. | DATE | DESCRIPTION | INT | DWG
01 | 01/21 | AMENDED SAW WALL BLOCKS | RAE | RC
DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA
DESIGN: DAM DESIGN
DRAWING: DRAWING SERVICES
OUTFALLS–DOORN RIVER WATER RESOURCES PROJECT
RAISING OF CLANWILLIAM DAM
LEFT BANK NOC
PLAN VIEW
PROVINCE: WESTERN CAPE
DISTRICT: CLANWILLIAM
DRAWING No.: CWD2201
SHEET No.: 1 of 9
168 753/16
REV: 01

SECTION

LEGEND:

- COMPACTED WEATHERED ROCKFILL
- MASS CONCRETE INFILL
- REINFORCED CONCRETE

REDUCED LEVEL (m)

CHAINAGE (m)	-36,875 / -34,875 / -27,375 / -21,875 / -13,625 / -5,375 / -5,000 / 0,000 / 33,000 / 66,300 / 73,600 / 85,100 / 89,750 / 105,148 / 170,848
OUTLET PIPE ℄ REDUCED LEVEL	86,804 / 86,804 / 86,804 / 86,804 / 86,804 / 86,474 / 86,474 / 86,474 / 86,474 / 87,851 / 87,848
DRAIN PIPE ℄ REDUCED LEVEL	84,150 / 85,972 / 84,094 / 84,051 / 84,094 / 84,112
ELECTRICAL DUCT ℄ REDUCED LEVEL	86,150 / 86,972 / 86,950 / 86,950 / 86,950

SECTION 01-01

(CENTRELINE OF RIGHT-HAND RIVER OUTLET PIPE)

SCALE 1:250

SCALE 1:250

REVISION

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA

DAM DESIGN
DRAWING SERVICES

OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

OUTLET WORKS

SECTION ON CENTRELINE OF RIGHT HAND RIVER OUTLET PIPE

PROVINCE: WESTERN CAPE | DISTRICT: CLANWILLIAM | LOCALITY No.: G10B-02 | DRAWING No.: CWD4002 | SHEET No.: 2 of 12 | 169 015/16 | REV. No.: 00

REQUIREMENT:

1. AS REQUIRED BY THE DAM SAFETY REGULATIONS GAZETTE REGULATION 4.(4) OF 7 FEBRUARY 2014, THE CONTRACTOR SHALL DESIGN, SUBMIT TO AND OBTAIN APPROVAL FROM THE ENGINEER AND DSI FOR ANY ADDITIONAL MEASURES TO BE TAKEN.

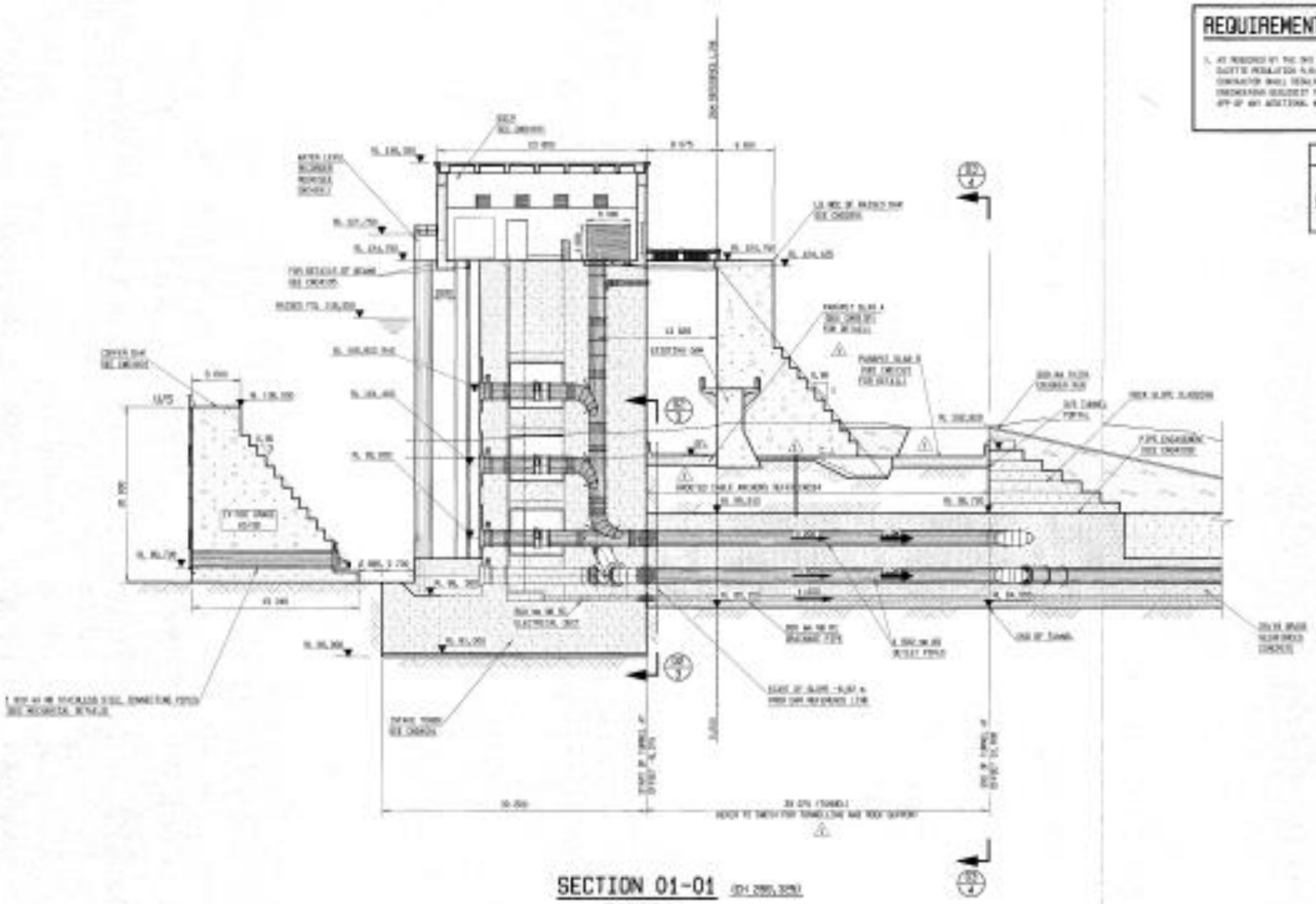
SPECIFICATIONS:

1. FOR SHOTCRETE OF THE TUNNEL REFER TO DRAWING CWD 4142.
2. CONTRACTOR TO SUBMIT A DETAILED METHOD STATEMENT FOR THE APPROVAL OF THE ENGINEER AND GEOLOGIST PRIOR TO GROUTING OPERATIONS.
3. PRE-CONTACT GROUTING TO BE DONE PRIOR TO TUNNEL EXCAVATION.
4. ROCK SUPPORT FOR ALL EXCAVATIONS SHALL BE DONE IN ACCORDANCE WITH PARTICULAR SPECIFICATION CWS 27 AND CWS 34.

SECTION

ABBREVIATIONS:

1. APP: APPROVED PROFESSIONAL ROCKER
2. C/C: CENTRE TO CENTRE
3. CON: CONSTRUCTION JOINT
4. CH: CHAINAGE
5. CTG: CONCRETING
6. EL: ELEVATION FOUNDATION LEVEL SHALL BE PER GEOLOGICAL APPROVED FOUNDATION CHAINAGES
7. FSL: FULL SUPPLY LEVEL
8. HDPE: HIGH DENSITY POLYETHYLENE
9. DIA: DIAMETER (DIA ROCK)
10. LOG: LIGHT HAND SIDE
11. NB: NOMINAL BORE
12. NGL: NATURAL GROUND LEVEL
13. NRCC: NON-REINFORCED CONCRETE
14. PVC: POLYVINYL CHLORIDE
15. RHS: RIGHT HAND
16. RL: REDUCED LEVEL
17. SI-RCC: EMBEDDED CONCRETE ROLLER COMPACTED CONCRETE
18. MPa: MEGA PASCAL UNIT
19. RL: REDUCED LEVEL
20. STR: STRUCTURE STEEL
21. UBC: OFFICE BUILDING
22. STR: STRUCTURE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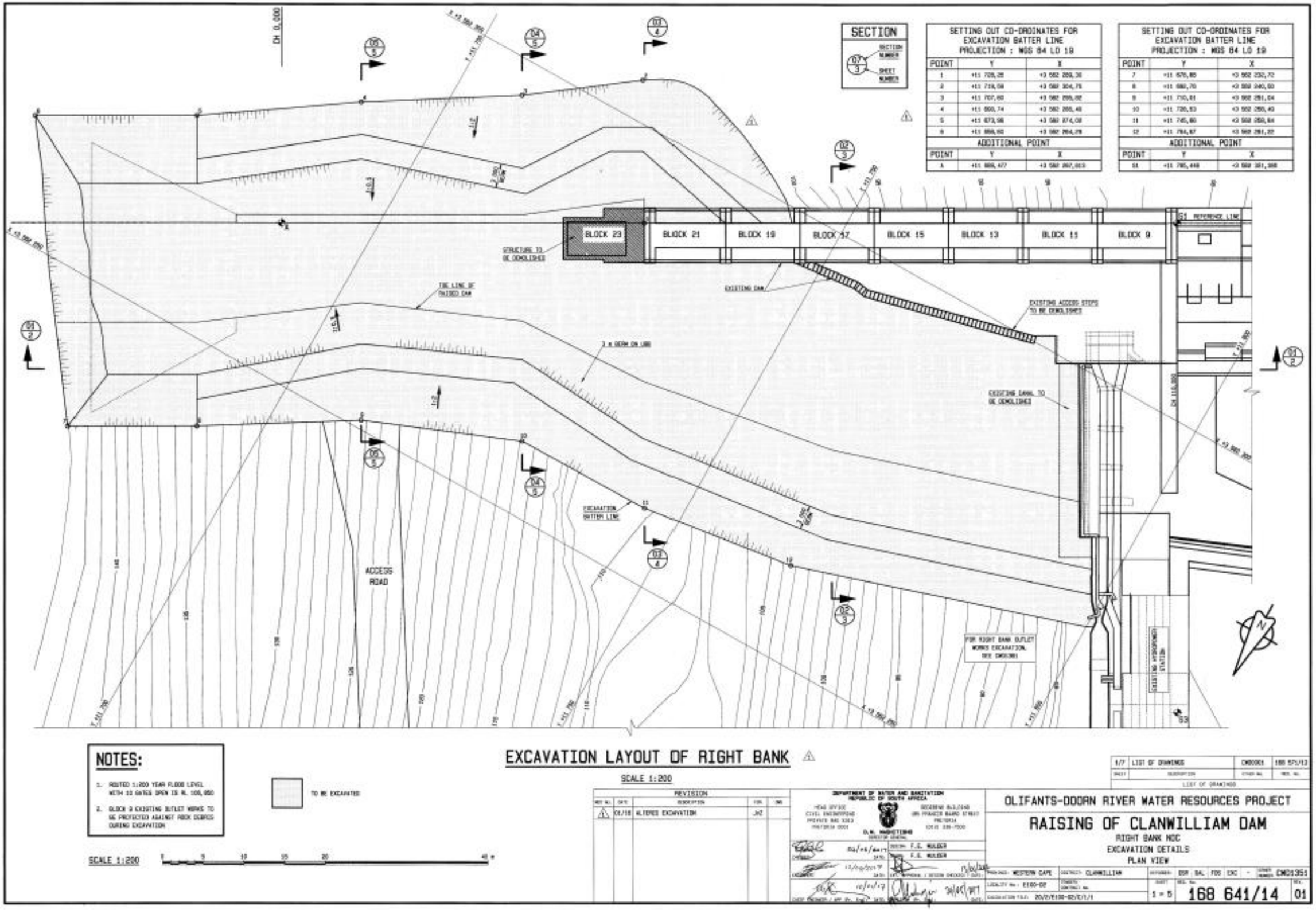

SECTION
SETTING OUT CO-ORDINATES FOR EXCAVATION BATTER LINE PROJECTION : WGS 84 LO 19
POINT | Y | X
1 | +11 709,28 | +3 562 269,38
2 | +11 716,58 | +3 562 304,75
3 | +11 707,60 | +3 562 295,82
4 | +11 660,74 | +3 562 285,48
5 | +11 673,98 | +3 562 274,08
6 | +11 668,60 | +3 562 264,78
ADDITIONAL POINT
A | +11 688,477 | +3 562 267,013
SETTING OUT CO-ORDINATES FOR EXCAVATION BATTER LINE PROJECTION : WGS 84 LO 19
7 | +11 670,85 | +3 562 232,72
8 | +11 680,70 | +3 562 240,50
9 | +11 710,81 | +3 562 281,04
10 | +11 720,53 | +3 562 255,40
11 | +11 745,80 | +3 562 250,64
12 | +11 764,67 | +3 562 281,22
ADDITIONAL POINT
B | +11 785,448 | +3 562 301,388
CH 0,000
BLOCK 23
BLOCK 21
BLOCK 19
BLOCK 17
BLOCK 15
BLOCK 13
BLOCK 11
BLOCK 9
S1 REFERENCE LINE
STRUCTURE TO BE DEMOLISHED
EXISTING DAM
EXISTING ACCESS STEPS TO BE DEMOLISHED
EXISTING DAMS TO BE DEMOLISHED
TOE LINE OF RAISED DAM
3 x DRAIN ON LINE
EXCAVATION BATTER LINE
ACCESS ROAD
FOR RIGHT BANK OUTLET WORKS EXCAVATION, SEE CWD1361
EXISTING HYDROMET STATION
NOTES:
1. ROUTED 1:200 YEAR FLOOD LEVEL WITH 10 GATES OPEN IS RL 108,050
2. BLOCK 9 EXISTING OUTLET WORKS TO BE PROTECTED AGAINST ROCK DEBRIS DURING EXCAVATION
TO BE EXCAVATED
SCALE 1:200
EXCAVATION LAYOUT OF RIGHT BANK
SCALE 1:200
REVISION
REV No. | DATE | DESCRIPTION | DES | CHK
1 | 01/18 | ALTERED EXCAVATION | JHZ
DEPARTMENT OF WATER AND SANITATION REPUBLIC OF SOUTH AFRICA
D.M. MAGHITSHE
DESIGN: F.E. MULDER
CHECKED: F.E. MULDER
1/7 | LIST OF DRAWINGS | CWD0001 | 168 571/13
LIST OF DRAWINGS
OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT
RAISING OF CLANWILLIAM DAM
RIGHT BANK NOC
EXCAVATION DETAILS
PLAN VIEW
PROVINCE: WESTERN CAPE
DISTRICT: CLANWILLIAM
LOCALITY No: E100-02
DRAWN: DSR
BAL
FDS
CHK
CWD1351
SHEET 1 = 5
REG. No. 168 641/14
REV. 01

REQUIREMENT:

AS PUBLISHED BY THE DHS ACT, 1993, GOVERNMENT GAZETTE REGULATION R.264 OF 7 FEBRUARY 2014, THE CONTRACTOR SHALL REGULARLY ALLOW THE ENGINEERING GEOLOGIST TO ADVISE THE ENGINEER / APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SAFEGUARD THE EXCAVATION AS IT PROGRESSES.

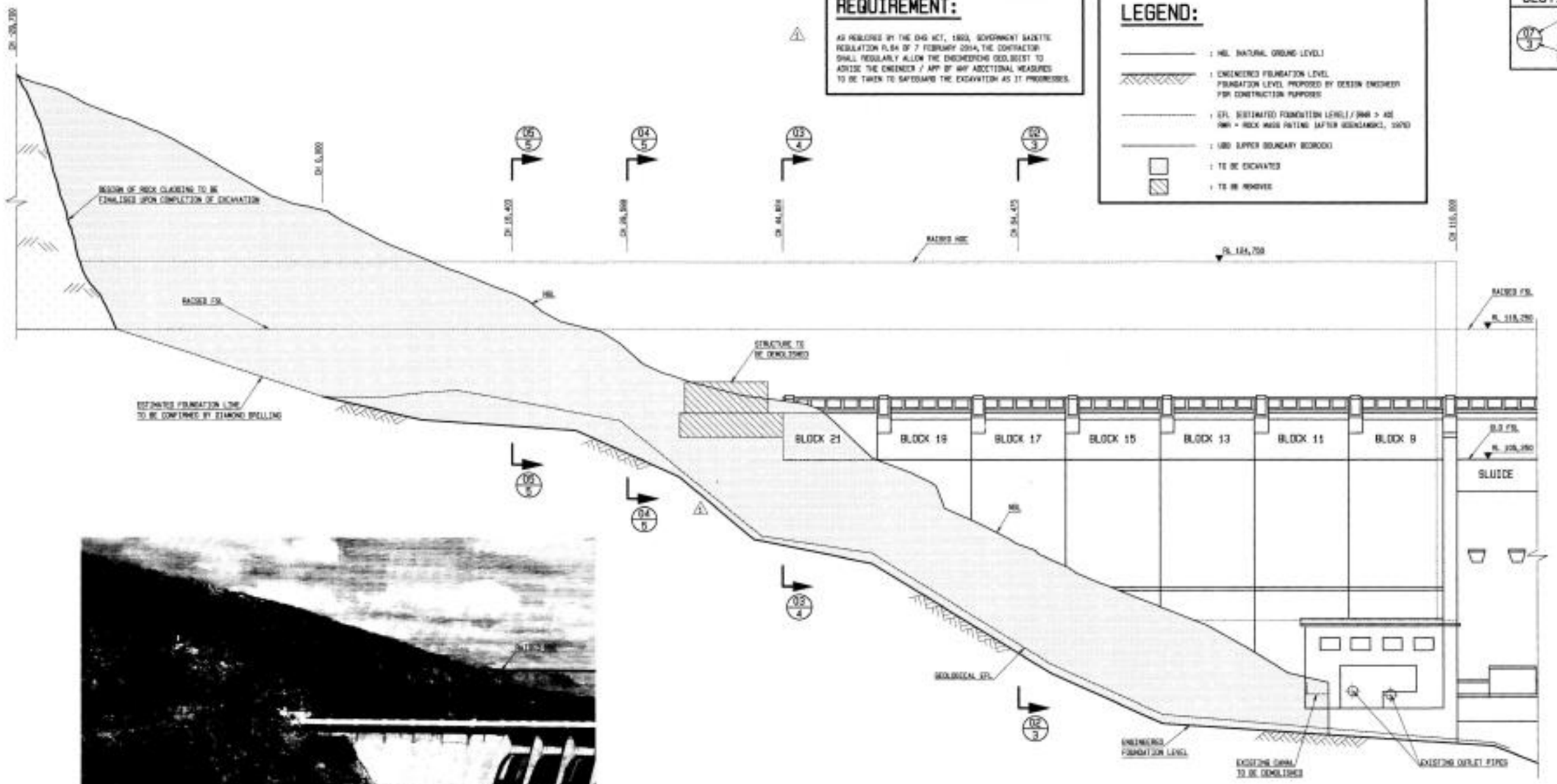
LEGEND:

- : NGL NATURAL GROUND LEVEL
- : ENGINEERED FOUNDATION LEVEL FOUNDATION LEVEL PROPOSED BY DESIGN ENGINEER FOR CONSTRUCTION PURPOSES
- : EFL ESTIMATED FOUNDATION LEVEL(/RMR > 65 RMR = ROCK MASS RATING (AFTER BIENIAWSKI, 1976))
- : UBD UPPER BOUNDARY BOREHOLE
- : TO BE EXCAVATED
- : TO BE REMOVED

SECTION

SECTION NUMBER / SHEET NUMBER

SCALE 1:200 0 5 10 15 20 40 m



DOWNSTREAM ELEVATION OF RIGHT BANK

SECTION 01-01
SCALE 1:200

REVISION				
NOC No.	DATE	DESCRIPTION	DSN	DRN
01/10		ALTERED EXCAVATION AND ADDED REQUIREMENT	JvZ	

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA
HEAD OFFICE, CIVIL ENGINEERING, PRIVATE BAG X313, PRETORIA 0001
SEDIBENG BUILDING, 185 FRANCIS BAARD STREET, PRETORIA, DX10 305-7500
D.N. MASHITENG
DESIGN: F.E. MALOBA
DRAWN: F.E. MALOBA
CHECKED: DATE:
APPROVAL / DESIGN CHECKED: DATE:
CHIEF ENGINEER / APP (Pr. Eng) DATE:

1/7	LIST OF DRAWINGS	DWD0001	168 571/13
SHEET	DESCRIPTION	DRAW NO.	REV. NO.

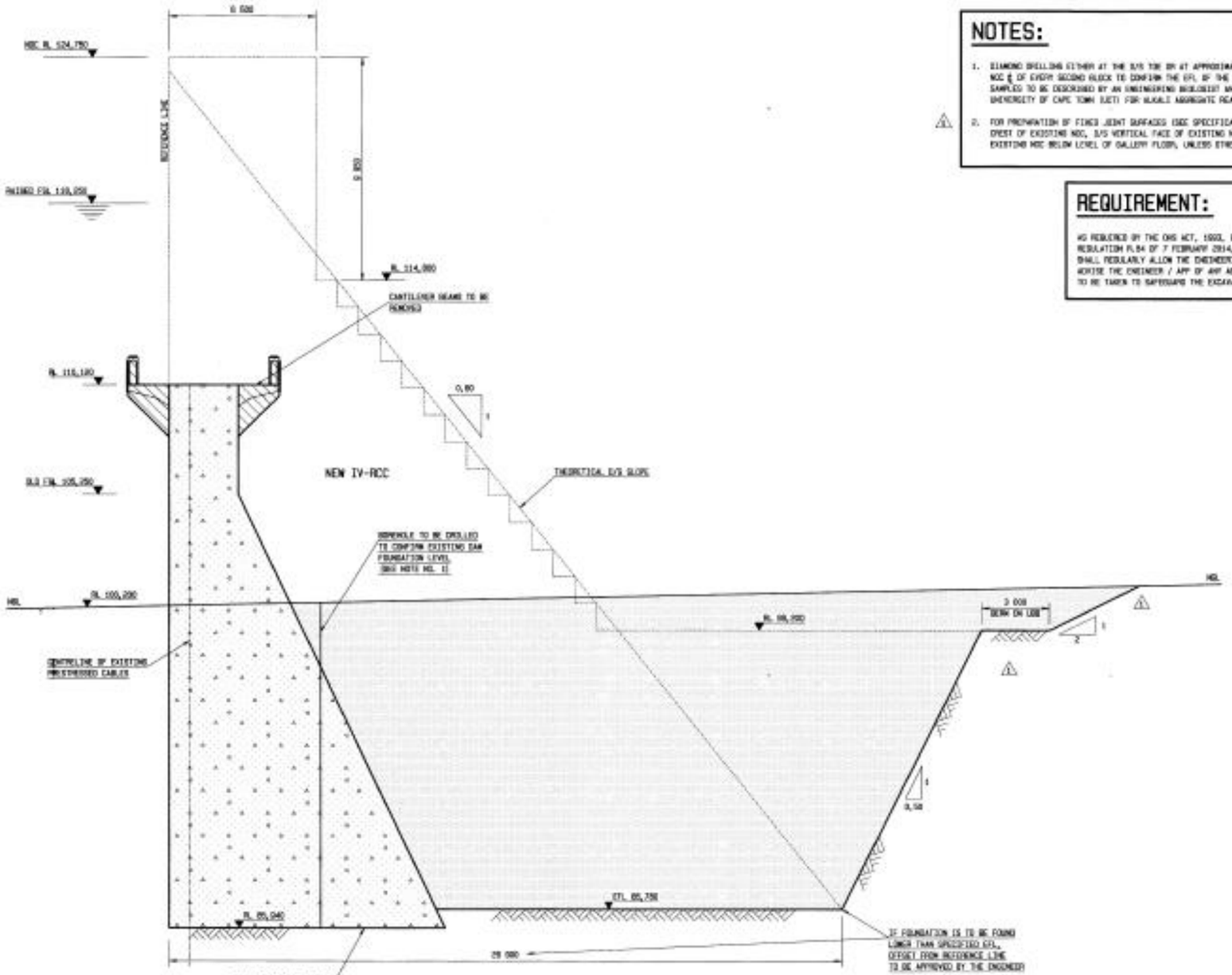
LIST OF DRAWINGS

OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

RIGHT BANK NOC
EXCAVATION DETAILS
LONG SECTION

PROVINCE: WESTERN CAPE | DISTRICT: CLANWILLIAM | DESIGNED: BSM | DRAWN: DAL | CHECKED: FBS | EXAMINED: EXC | APPROVED: - | OTHER NUMBERS: CWD1352
QUALITY NO.: 6300-GB | TENDER/CONTRACT No.: | SHEET: 2 of 5 | REG. NO.: 168 642/14 | REV.: 01
CALCULATION FILE: 00/0/6100-GD/C/1/1



NOTES:

1. DIAMOND DRILLING EITHER AT THE D/S TOE OR AT APPROXIMATELY 1 000 mm D/S OF NOC ℄ OF EVERY SECOND BLOCK TO CONFIRM THE EFL OF THE EXISTING DAM. CORE SAMPLES TO BE DESCRIBED BY AN ENGINEERING GEOLOGIST AND SENT TO THE UNIVERSITY OF CAPE TOWN (UCT) FOR ALKALI AGGREGATE REACTION (AAR) TESTING.
2. FOR PREPARATION OF FINISH JOINT SURFACES (SEE SPECIFICATION NO. 23 ON CWD0003) : CREST OF EXISTING NOC, D/S VERTICAL FACE OF EXISTING NOC AND SLOPING FACE OF EXISTING NOC BELOW LEVEL OF GALLERY FLOOR, UNLESS OTHERWISE INDICATED.

REQUIREMENT:

AS REQUIRED BY THE OHS ACT, 1993, GOVERNMENT GAZETTE REGULATION R.84 OF 7 FEBRUARY 2014, THE CONTRACTOR SHALL REGULARLY ALLOW THE ENGINEERING GEOLOGIST TO ADVISE THE ENGINEER / APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SAFEGUARD THE EXCAVATION AS IT PROGRESSES.

LEGEND:

- : NGL (NATURAL GROUND LEVEL)
- : ENGINEERED FOUNDATION LEVEL. FOUNDATION LEVEL PROPOSED BY DESIGN ENGINEER FOR CONSTRUCTION PURPOSES
- : EFL (ESTIMATED FOUNDATION LEVEL) / ERMR > 40) RMR = ROCK MASS RATING (AFTER BIENIAWSKI, 1976)
- : USO (UPPER BOUNDARY BEDROCK)
- : TO BE EXCAVATED
- : TO BE REMOVED

SPECIFICATIONS:

1. ALL FOUNDATIONS, EXCAVATED SLOPES AND SLOPE PROTECTION TO BE APPROVED BY THE APP IN CONJUNCTION WITH THE ENGINEERING GEOLOGIST.
2. DETAILED METHOD STATEMENTS MUST BE SUBMITTED PRIOR TO EXCAVATION COMMENCEMENT, TO THE APP FOR APPROVAL.
3. THE CONTRACTOR SHALL FIRST PERFORM TRIAL BLASTING IN ORDER TO BE ABLE TO COMPILE A SPECIFICATION FOR MAXIMUM VIBRATIONS RECORDED AT THE DAM WALL. HE SHALL OBTAIN THE SERVICES OF A BLASTING SPECIALIST TO ASSIST FOR APPROVAL BY ENG. & TRIAL BLASTING POSITION WILL BE INDICATED BY THE MAIN CONTRACTOR.
4. BLASTING TO BE CARRIED OUT WITHIN 100 m OF ANY CONCRETE AND/OR GROUTING REGARDLESS OF AGE, SHALL BE DONE BY MEANS OF NON-EXPLOSIVE BLASTING TECHNIQUES, OR BY MEANS OF SPECIALLY DESIGNED CONTROLLED BLASTING TECHNIQUES, TO THE APPROVAL OF THE APP. ALL SUCH BLASTING SHALL BE DESIGNED TO KEEP RECOMMENDED PEAK PARTICLE VELOCITIES (PPV) TO BELOW 12,7 mm/s AND THE FREQUENCY ABOVE 10 Hz OR AS OTHERWISE SPECIFIED BY THE BLASTING SPECIALIST TO BE APPROVED BY THE APP.
5. ROCK SUPPORT FOR ALL EXCAVATIONS SHALL BE DONE IN ACCORDANCE WITH PARTICULAR SPECIFICATION CWD 27: ROCK SUPPORT, AND SHALL EVEN-AND-AMONG THE ROCK ANCHORING AS SPECIFIED BY THE ENGINEERING GEOLOGIST, ALLOW FOR WIRE MESH REINFORCEMENT AS PER SUB-CLAUSE 27.8.2.4
6. THE SUPPLY, DELIVERY, UNROLLING, FIXING AND LACING OF THE ROCKFALL NETTING/WIRE MESH SHALL ALSO INCLUDE THE DRILLING AND EPOXY GROUTING OF THE TOP AND BOTTOM ANCHORS INTO THE BLASTED ROCK FACE. THE MESH USED WILL BE A DOUBLE TWISTED HEXAGONAL WIRE MESH TO SANS 1580:2010 AND SHALL BE A MESH TYPE 8X10 WITH 2,7 mm, CLASS A GALVANIZED WIRE. (MACCAFERRI OR EQUAL PRODUCT)
7. EXCAVATED SURFACES THAT WILL REMAIN PERMANENTLY EXPOSED ON COMPLETION OF THE WORKS SHALL BE CLEANED OF ALL LOOSE MATERIAL, PIECES OF ROCK, DEBRIS AND RUBBISH. REFER TO PARTICULAR SPECIFICATION CWD 20 FOR ALL OTHER EXCAVATION SPECIFICATIONS AND PERMISSIBLE DEVIATIONS.
8. FOR PREPARATION AND TREATMENT OF EXCAVATED FOUNDATIONS TO RECEIVE DENTAL CONCRETE, REFER TO PARTICULAR SPECIFICATIONS CWD 20 AND CWD 30.

REVISION				
NOC No.	DATE	DESCRIPTION	PSM	DWG
⚠1	31/10	ALTERED EXCAVATION AND ADDED NOTES	JvZ	

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA
HEAD OFFICE, CIVIL ENGINEERING, PRIVATE BAG X313, PRETORIA 0001
SEDIBENG BUILDING, 185 FRANCES BAARD STREET, PRETORIA, BLOCK 300-7000
E.N. MAHLANGU, DIRECTOR GENERAL
DESIGN: P.E. MALEBYE 22/08/2017
DRAWN: P.E. MALEBYE 22/08/2017
CHECKED: 13/09/2017
PROFESSIONAL / SENIOR CHECKED: 19/09/2017
DATE CHECKED / APP BY: 10/9/17
DATE APPROVED BY (DIR): 29/09/2017

OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

RIGHT BANK NOC
EXCAVATION DETAILS
SECTION 02-02

PROVINCE: WESTERN CAPE	COMPONENT: CLANWILLIAM	REVISIONS:	OSM	CIVIL	FIELD	EXEC	-	OTHER NUMBER: CWD1353
LOCALITY NO.: E100-02	TENDER/CONTRACT NO.	SHEET: 3 of 5	REG. NO.: 168 643/14					REV.: 01
DRAWING FILE: 20/2/E100-02/C/1/1								

1/7	LIST OF DRAWINGS	CWD0001	168 571/13
SHEET	DESCRIPTION	OTHER No.	REG. No.
	LIST OF DRAWINGS		

NOTES:

1. DIAMOND DRILLING EITHER AT THE CUT-TOE OR AT APPROXIMATELY 1 000 m OUT OF EVERY SECOND BLOCK TO CONFIRM THE ETL OF THE EXISTING DAM. CORE SAMPLES TO BE OBSERVED BY AN ENGINEERING GEOLOGIST AND SENT TO THE UNIVERSITY OF CAPE TOWN (UCT) FOR ALKALI AGGREGATE REACTION (AAR) TESTING.

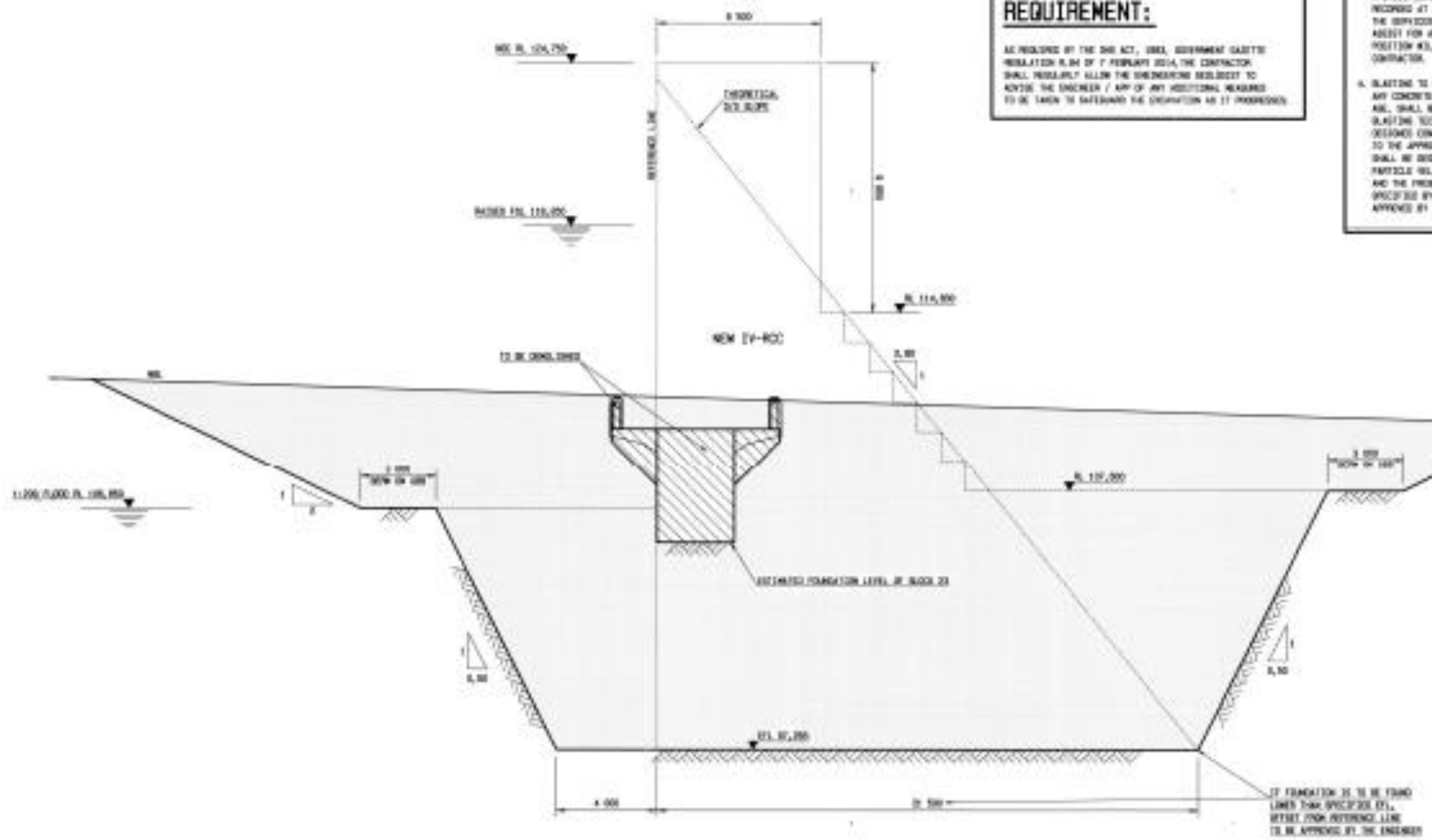
2. FOR PREPARATION OF FIXED JOINT SURFACES SEE SPECIFICATION NO. 20 ON UNDERSIDE-CREST OF EXISTING NOC, 0/S VERTICAL FACE OF EXISTING NOC AND SLOPING FACE OF EXISTING NOC BELOW LEVEL OF GALLERY FLOOR, UNLESS OTHERWISE INDICATED.

REQUIREMENT:

AS REQUIRED BY THE DAM ACT, 1965, GOVERNMENT GAZETTE REGULATION R.264 OF 7 FEBRUARY 2014, THE CONTRACTOR SHALL REGULARLY ALLOW THE ENGINEERING GEOLOGIST TO REVISE THE ENGINEER / APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SAFEGUARD THE EXCAVATION AS IT PROGRESSES.

SPECIFICATIONS:

1. ALL FOUNDATIONS, EXCAVATED SLOPES AND SLOPE PROTECTION TO BE APPROVED BY THE APP IN CONJUNCTION WITH THE ENGINEERING GEOLOGIST.
2. DETAILED METHOD STATEMENTS MUST BE SUBMITTED PRIOR TO EXCAVATION COMMENCEMENT, TO THE APP FOR APPROVAL.
3. THE CONTRACTOR SHALL FIRST PERFORM TRIAL BLASTING TA ORDER TO (IF ANY) TO COMPILE A SPECIFICATION FOR MAXIMUM VIBRATIONS RECORDED AT THE DAM WALL. HE SHALL OBTAIN THE SERVICES OF A BLASTING SPECIALIST TO ASSIST FOR APPROVAL OF ONE. A TRIAL BLASTING POSITION WILL BE INDICATED BY THE MAIN CONTRACTOR.
4. BLASTING TO BE CARRIED OUT WITHIN 100 m OF ANY CONCRETE AND/OR GROUTING REGARDLESS OF AGE, SHALL BE DONE BY MEANS OF NON-EXPLOSIVE BLASTING TECHNIQUES, OR BY MEANS OF SPECIALLY DESIGNED CONTROLLED BLASTING TECHNIQUES, TO THE APPROVAL OF THE APP. ALL SUCH BLASTING SHALL BE DESIGNED TO KEEP RECOMMENDED PEAK PARTICLE VELOCITIES (PPV) TO BELOW 13,7 mm/s AND THE FREQUENCY ABOVE 20 Hz OR AS OTHERWISE SPECIFIED BY THE BLASTING SPECIALIST TO BE APPROVED BY THE APP.
5. ROCK SUPPORT FOR ALL EXCAVATIONS SHALL BE DONE IN ACCORDANCE WITH PARTICULAR SPECIFICATION CMD 07: ROCK SUPPORT, AND SHALL ENCH-AND-ABOVE THE ROCK ANCHORING AS SPECIFIED BY THE ENGINEERING GEOLOGIST, ALLOW FOR MESH WITH REINFORCEMENT AS PER SUB-CLAUSE 07.5.2.4
6. THE SUPPLY, DELIVERY, UNROLLING, FIXING AND LACING OF THE HOOKALL NETTING/MESH SHALL ALSO INCLUDE THE DRILLING AND GROUT GRADUTING OF THE TOP AND BOTTOM ANCHORS INTO THE BLASTED ROCK FACE. THE MESH USED WILL BE A DOUBLE TWISTED HEXAGONAL WIRE MESH TO CLASS 2000-2010 AND SHALL BE A MESH TYPE 80 WITH 2,7 MM. CLASS A GALVANIZED WIRE, SHACKAFERME OR EQUAL PRODUCT.
7. EXCAVATED SURFACES THAT WILL REMAIN PERMANENTLY EXPOSED ON COMPLETION OF THE WORKS SHALL BE CLEARED OF ALL LOOSE MATERIAL, PIECES OF ROCK, DEBRIS AND RUBBISH, REFER TO PARTICULAR SPECIFICATION CMD 05 FOR ALL OTHER EXCAVATION SPECIFICATIONS AND PERMISSIBLE DEVIATIONS.
8. FOR PREPARATION AND TREATMENT OF EXCAVATED FOUNDATIONS TO RECEIVE CONCRETE, REFER TO PARTICULAR SPECIFICATIONS CMD 10 AND CMD 30.



SECTION 03-03 CH 44,624 m

BLOCK 23
SCALE 1:100

LEGEND:

- : NGL (NATURAL GROUND LEVEL)
- : ENGINEERS FOUNDATION LEVEL FOUNDATION LEVEL PROPOSED BY DESIGN ENGINEER FOR CONSTRUCTION PURPOSES
- : ETL (ESTIMATED FOUNDATION LEVEL) / DWR = NGL DWR = ROCK MASS RATING (AFTER BIENIAWSKI, 1976)
- : LINE SUPPER BOUNDARY INDICATED
- : TO BE EXCAVATED
- : TO BE REMOVED

SCALE 1:100 0 1 2 3 4 5 10 20 m

REVISION				
NO.	DATE	DESCRIPTION	SUR	DRG
1	01/16	ALTERED EXCAVATION AND ADDED NOTES	JHZ	

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA

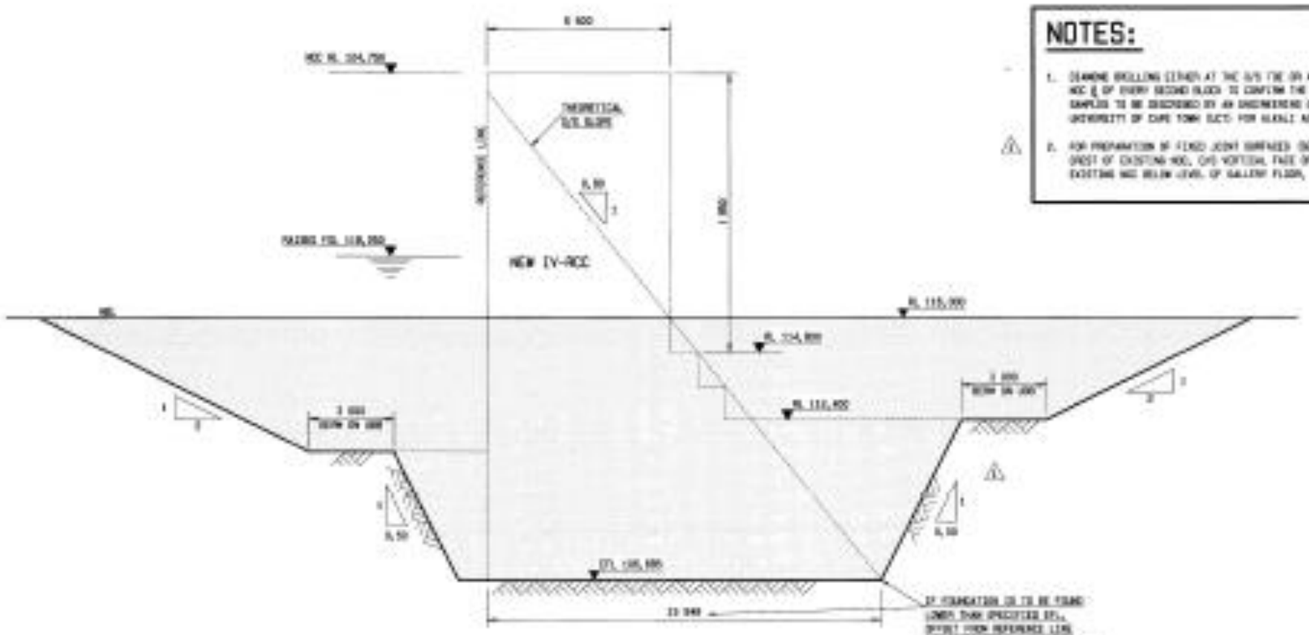
OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

RIGHT BANK NOC
EXCAVATION DETAILS
SECTION 03-03

PROJECT: WESTERN CAPE	CLANWILLIAM								CWD 1354
4 – 5									168 644/14	01

1/7	LIST OF DRAWINGS	D00001	168 571/13	



SECTION 04-04 (CH 20,500 m)

BLOCK 25
SCALE 1:100

NOTES:

1. DIAMOND DRILLING (START AT THE D/S TOE DTI AT APPROXIMATELY 1 000 mm C/S OF NOC Ø OF EVERY SECOND BLOCK TO CONFIRM THE DTI OF THE EXISTING CMA. CORE SAMPLES TO BE DESCRIBED BY AN ENGINEERING GEOLOGIST AND SENT TO THE UNIVERSITY OF CAPE TOWN (UCT) FOR ALKALI AGGREGATE REACTION (AAR) TESTING.
2. FOR PREPARATION OF FIXED JOINT SURFACES (SEE SPECIFICATION NO. 23 ON CHECKERS) CREST OF EXISTING NOC, CHS VERTICAL FACE OF EXISTING NOC AND SLOPING FACE OF EXISTING NOC BELOW LEVEL OF GALLERY FLOOR, UNLESS OTHERWISE INDICATED.

SPECIFICATIONS:

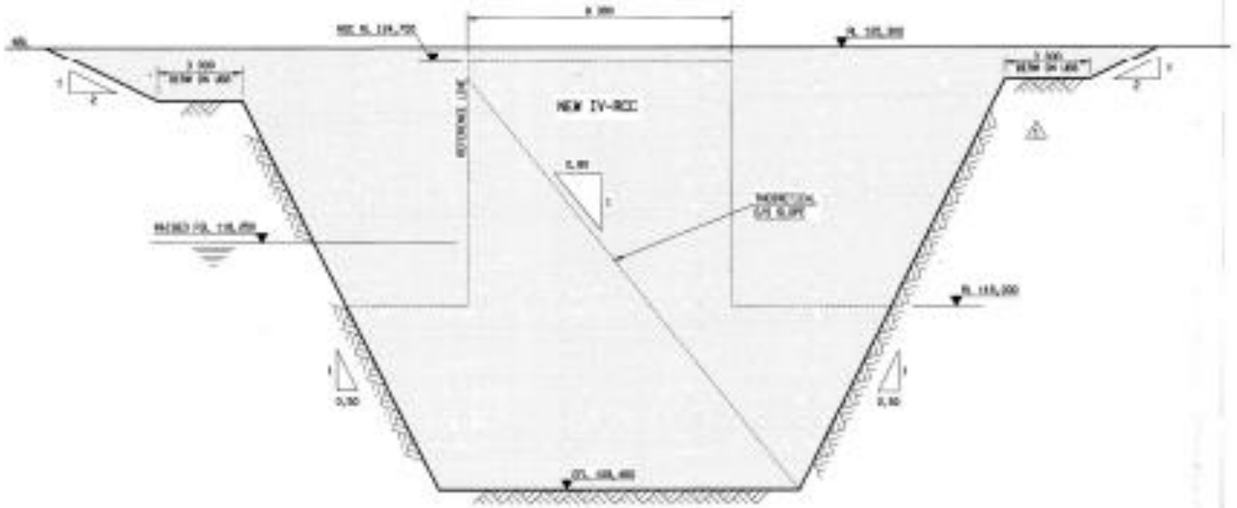
1. ALL FOUNDATIONS, EXCAVATED SLOPES AND SLOPE PROTECTION TO BE APPROVED BY THE APP IN CONJUNCTION WITH THE ENGINEERING GEOLOGIST.
2. DETAILED METHOD STATEMENTS MUST BE SUBMITTED PRIOR TO EXCAVATION COMMENCEMENT, TO THE APP FOR APPROVAL.
3. THE CONTRACTOR SHALL FIRST PERFORM TRIAL BLASTING ON BENCH TO BE ABLE TO COMPLY WITH SPECIFICATION FOR OVERBREAK TOLERANCE RECORDED AT THE CMA WALL. HE SHALL OBTAIN THE SERVICES OF A BLASTING SPECIALIST TO ASSIST FOR APPROVAL BY ENGR. A TRIAL BLASTING POSITION WILL BE INDICATED BY THE MAIN CONTRACTOR.
4. BLASTING TO BE CARRIED OUT WITHIN 100 m OF ANY CONCRETE AND/OR GROUTING REGARDLESS OF AGE, SHALL BE DONE BY MEANS OF NON-EXPLOSIVE BLASTING TECHNIQUES, OR BY MEANS OF SPECIALLY DESIGNED CONTROLLED BLASTING TECHNIQUES, TO THE APPROVAL OF THE APP. ALL SUCH BLASTING SHALL BE DESIGNED TO KEEP RECOMMENDED PEAK PARTICLE VELOCITIES (PPV) TO BELOW 12,7 mm/s AND THE FREQUENCY ABOVE 30 Hz OR AS OTHERWISE SPECIFIED BY THE BLASTING SPECIALIST TO BE APPROVED BY THE APP.
5. ROCK SUPPORT FOR ALL EXCAVATIONS SHALL BE DONE IN ACCORDANCE WITH PARTICULAR SPECIFICATION CMD 27: ROCK SUPPORT, AND SHALL CONSIST OF ROCK BOLTS AND/OR CABLE ANCHORS AS SPECIFIED BY THE ENGINEERING GEOLOGIST, ALONG WITH WIRE MESH REINFORCEMENT AS PER SUB-CLAUSE 27.8.3.4
6. THE SUPPLY, DELIVERY, INSTALLING, FIXING AND GROUTING OF THE REQUIRED REINFORCING MESH SHALL ALSO INCLUDE THE DRILLING AND EPOXY GROUTING OF THE TOP AND BOTTOM ANCHORS INTO THE SOLID ROCK FACE. THE MESH USED WILL BE A DOUBLE TWISTED HEXAGONAL WIRE MESH TO SANS 10063:2003 AND SHALL BE A MESH TYPE 80 WITH 2,7 mm, CLASS A GALVANIZED WIRE. (MACCAFERRI OR EQUAL PRODUCT)
7. EXCAVATED SURFACES THAT WILL REMAIN PERMANENTLY EXPOSED ON COMPLETION OF THE WORKS SHALL BE CLEARED OF ALL LOOSE MATERIAL, PIECES OF ROCK, DEBRIS AND RUBBISH. REFER TO PARTICULAR SPECIFICATION CMD 05 FOR ALL OTHER EXCAVATION SPECIFICATIONS AND PERMISSIBLE DEVIATIONS.
8. FOR PREPARATION AND TREATMENT OF EXCAVATED FOUNDATIONS TO RECEIVE CONCRETE, REFER TO PARTICULAR SPECIFICATIONS CMD 20 AND CMD 30.

REQUIREMENT:

AS REQUIRED BY THE OHS ACT, 1993, GOVERNMENT GAZETTE REGULATION 9.3(e) OF 7 FEBRUARY 2014, THE CONTRACTOR SHALL REGULARLY ALLOW THE ENGINEERING GEOLOGIST TO ADVISE THE ENGINEER / APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SATISFACTORILY EXCAVATE AS IT PROGRESSES.

LEGEND:

- NGL (NATURAL GROUND LEVEL)
- UNDERLAND FOUNDATION LEVEL FOUNDATION LEVEL PROPOSED BY DESIGN ENGINEER FOR CONSTRUCTION PURPOSES
- DTL (DETERMINED FOUNDATION LEVEL) (RMR > 40) RMR = ROCK MASS RATING (AFTER BIENIAWSKI, 1976)
- CMA (UPPER BOUNDARY SEGMENT)
- TO BE EXCAVATED
- TO BE REMOVED



SECTION 05-05 (CH 18,400 m)

BLOCK 27
SCALE 1:100

SCALE 1:100 0 1 2 3 4 5 10 20 m

REVISION				
NOC No.	DATE	DESCRIPTION	CHK	APP
1	15/11	ALTERED EXCAVATION AND ADDED NOTES	JVC	

DEPARTMENT OF WATER AND SANITATION REPUBLIC OF SOUTH AFRICA
HEAD OFFICE CIVIL ENGINEERING PRIVATE BAG X313 PRETORIA 0001
REGIONAL OFFICE (LIMPOPO) 185 FRANCIS BAARD STREET PRETORIA 0002
D.N. MOKOTEDI DIRECTOR: CIVIL
DESIGN: P.E. MILLER
DRAWN: P.E. MILLER
CHECKED:
APPROVED:
DATE:

OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

RIGHT BANK NOC
EXCAVATION DETAILS
SECTION 04-04 AND SECTION 05-05

PROVINCE: WESTERN CAPE	TOWN: CLANWILLIAM	DRAWING NO.: C168-02	DRAWING NO.: 05/G1/D/09-NO/1/1/1	SHEET: 5 of 5	DRAWING NO.: 168 579/14	REVISION: 01	CONTRACT NUMBER: CWD1355

LIST OF DRAWINGS			
SHEET	DESCRIPTION	CONTRACT NO.	DRAWING NO.
1/7	LIST OF DRAWINGS	CWD1355	168 579/13

LEGEND:

▨ - TO BE DEMOLISHED

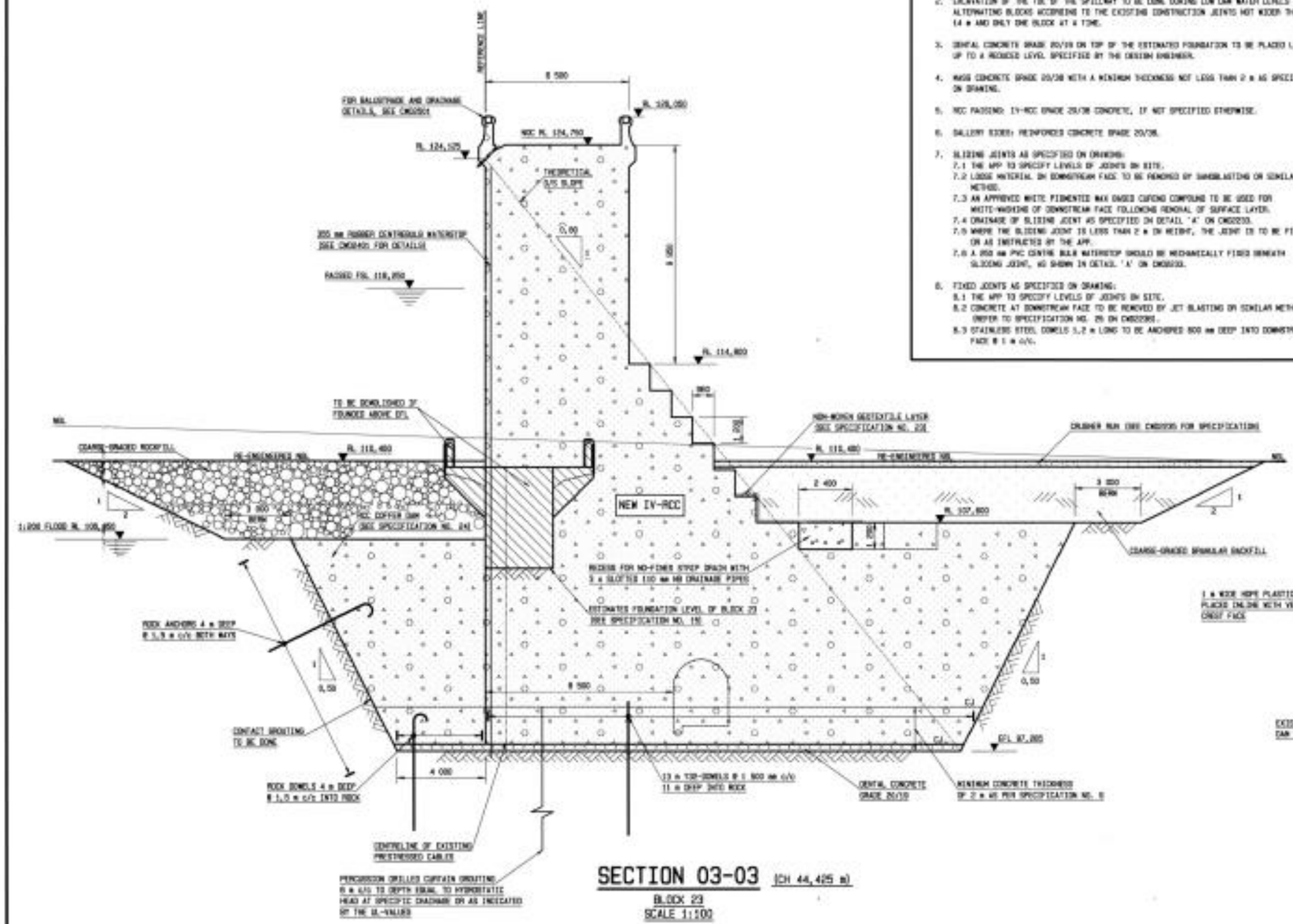
SPECIFICATIONS:

1. A DETAIL METHOD STATEMENT TO BE SUBMITTED FOR THE DEMOLITION AND DISPOSAL OF PIERS AND GIRDER DECK, BALUSTRADES AND CANTILEVERS AS WELL AS THE TEMPORARY STORAGE OF THE VERTICAL CREST GATES AND MECHANICAL EQUIPMENT IN ACCORDANCE WITH ALLOWABLE VIBRATION AND ENVIRONMENTAL REQUIREMENTS.
2. EXCAVATION OF THE TOE OF THE SPILLWAY TO BE DONE DURING LOW DAM WATER LEVELS IN ALTERNATING BLOCKS ACCORDING TO THE EXISTING CONSTRUCTION JOINTS NOT WIDER THAN 14 m AND ONLY ONE BLOCK AT A TIME.
3. DENTAL CONCRETE GRADE 20/19 ON TOP OF THE ESTIMATED FOUNDATION TO BE PLACED LEVEL UP TO A HORIZONTAL LEVEL SPECIFIED BY THE DESIGN ENGINEER.
4. MASS CONCRETE GRADE 20/38 WITH A MINIMUM THICKNESS NOT LESS THAN 2 m AS SPECIFIED ON DRAWING.
5. NOC PASSING: IV-RCC GRADE 20/38 CONCRETE, IF NOT SPECIFIED OTHERWISE.
6. GALLERY KERB: REINFORCED CONCRETE GRADE 20/38.
7. SLIDING JOINTS AS SPECIFIED ON DRAWING:
   7.1 THE APP TO SPECIFY LEVELS OF JOINTS ON SITE.
   7.2 LOOSE MATERIAL ON DOWNSTREAM FACE TO BE REMOVED BY SANDBLASTING OR SIMILAR METHOD.
   7.3 AN APPROVED WHITE PIGMENTED WAX BASED CURING COMPOUND TO BE USED FOR WHITE-WASHING OF DOWNSTREAM FACE FOLLOWING REMOVAL OF SURFACE LAYER.
   7.4 DRAINAGE OF SLIDING JOINT AS SPECIFIED ON DETAIL 'A' ON CWD2233.
   7.5 WHERE THE SLIDING JOINT IS LESS THAN 2 m ON HEIGHT, THE JOINT IS TO BE FIXED, OR AS INSTRUCTED BY THE APP.
   7.6 A 250 mm PVC CENTRE BULB WATERSTOP SHOULD BE MECHANICALLY FIXED BENEATH SLIDING JOINT, AS SHOWN IN DETAIL 'A' ON CWD2233.
8. FIXED JOINTS AS SPECIFIED ON DRAWING:
   8.1 THE APP TO SPECIFY LEVELS OF JOINTS ON SITE.
   8.2 CONCRETE AT DOWNSTREAM FACE TO BE REMOVED BY JET BLASTING OR SIMILAR METHOD UNDER TO SPECIFICATION NO. 25 ON CWD2300.
   8.3 STAINLESS STEEL DOWELS 1.2 m LONG TO BE ANCHORED 800 mm DEEP INTO DOWNSTREAM FACE @ 1 m c/c.
9. A MINIMUM CONCRETE THICKNESS OF 2 m IS REQUIRED, FOR NEW DAM FOOTPRINT, BEFORE GROUTING MAY COMMENCE.
10. PRESSURE GROUTING TO BE DONE AS INDICATED AND SPECIFIED ON GROUTING DRAWINGS.
11. POSITION OF Y32 DOWELS AS PER THE GROUTING HOLE LAYOUT (CWD3100).
12. EXISTING DRAINAGE HOLES IN DOWNSTREAM TOE: HOLES TO BE REDRILLED, CLEANED AND CLOSED OFF BEFORE PLACING OF CONCRETE. Y32 DOWELS TO BE FACTORY PAINTED 1 000 mm ON EACH SIDE OF THE ROCK/CONCRETE INTERFACE WITH A TWO PART EPOXY PROTECTIVE COATING (AKZO NOBEL SIGMADUR) OR EQUAL. THE COLOUR OF SIGMADUR COATING TO SPECIFICATION OF THE ENGINEER.
13. 400 mm WIDE HDPE DISPATED GEOSYNTHETIC DRAIN WITH A MINIMUM THICKNESS OF 40 mm, POSITIONED DOWNSTREAM OF ALL EXISTING ENGAGED JOINTS AS WELL AS IN THE CENTRE OF EACH BLOCK OF THE EXISTING DAM WALL ONLY WHERE A SLIDING JOINT WILL BE FORMED.
14. PROTECTION OF DISPATED DRAINAGE: NON-WOVEN NEEDLE PUNCHED GEOTEXTILE 575 g/m² OR EQUAL: 1 400 mm WIDE. SEE CWD2254 FOR DETAILS.
15. A METHOD STATEMENT IS REQUIRED FOR BOREHOLES TO BE DRILLED EITHER AT THE D/S TOE OR AT APPROXIMATELY 1 000 mm D/S OF NOC ℄ OF EACH BLOCK TO CONFIRM THE EFL OF EXISTING DAM. CORE SAMPLES TO BE DESCRIBED BY AN ENGINEERING GEOLOGIST AND SENT TO THE UNIVERSITY OF CAPE TOWN (UCT) FOR ALKALI AGGREGATE REACTION (AAR) TESTING.
16. THE ANGLE OF INCLINATION TO WHICH THE VERTICAL DRAINAGE HOLES ARE DRILLED WILL VARY WITH DRAINAGE AS WELL AS THE ANGLE AT WHICH THE HOLE IS DRILLED THROUGH THE TOP OF THE GALLERY.
17. A METHOD STATEMENT IS REQUIRED FOR ALL VERTICALLY INCLINED DRAINAGE HOLES TO BE DRILLED IN SUCH A MANNER THAT THE END POINT IS AT RL 110,525 AND OFFSET 6 000 mm FROM THE UPSTREAM REFERENCE LINE.
18. FOUNDATION TO BE INSPECTED AND APPROVED BY THE ENGINEERING GEOLOGIST AND THE APP PRIOR TO ANY PLACEMENT OF CONCRETE.
19. FOR WATERSTOP, CRACK INDUCER AND EARTHING SPECIFICATIONS AND LAYOUT DETAILS, SEE CWD2401.
20. THE EXPOSED SURFACE OF THE DOWNSTREAM STEPS OF THE NOC SHALL BE FINISHED TO THE FOLLOWING TOLERANCE (mm):

(i) FLATNESS OF PLANE SURFACE	15
(ii) ABRUPT CHANGES IN CONTINUOUS SURFACE	0

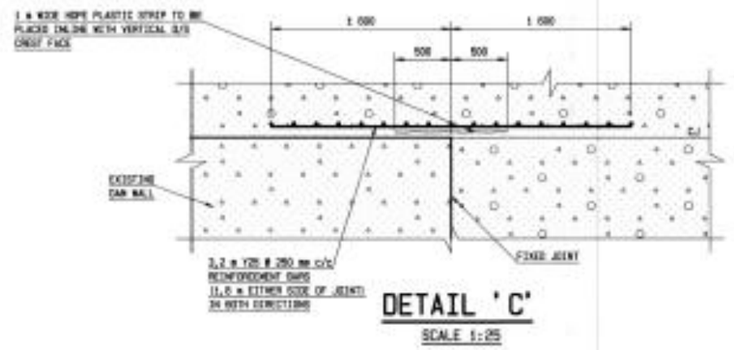
NOTE: ANY DEVIATION FROM FLATNESS OF A PLANE SURFACE OR ANY ABRUPT CHANGE IN CONTINUOUS SURFACE WILL BE MEASURED AS THE MAXIMUM DEVIATION OF THE SURFACE FROM ANY STRAIGHT LINE OF LENGTH 3 m JOINING TWO POINTS ON THE SURFACE.

21. SEE SPECIFICATION NO. 9 ON CWD2230, FOR REQUIRED SHOTTER FINISHES.
22. SEE CWD2051, FOR CURTAIN DRAINAGE DETAILS AND LAYOUT.
23. NOC NO-FINES TOE DRAIN TO BE COVERED WITH NON-WOVEN NEEDLE PUNCHED GEOTEXTILE 575 g/m² OR EQUAL: 7 000 mm WIDE.
24. COFFER DAM HEIGHT TO BE BASED ON THE 1:250 YEAR FLOOD OF 1 900 m³/s WITH 4 OF THE 15 GATES CLOSED.



SECTION 03-03 (CH 44,425 m)

BLOCK 23
SCALE 1:100



DETAIL 'C'

SCALE 1:25

SCALE 1:25 0 0,5 1 1,5 2 2,5 5 m

SCALE 1:100 0 1 2 3 4 5 10 20 m

1/7	LIST OF DRAWINGS	CWD2201	168 571/13
SHEET	DESCRIPTION	OTHER No.	PROJ. No.

LIST OF DRAWINGS

REVISION

NOC No.	DATE	DESCRIPTION	TCH	CHK

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA

HEAD OFFICE
CNR. CHRISTIAAN DE WET ROAD & PRETORIUS STREET
PRIVATE BAG X313
PRETORIA 0001

DESIGNING BUILDING
185 FRANCIS BAARD STREET
PRETORIA
0002 X30-7500

D.H. MASHITOANE
DIRECTOR GENERAL

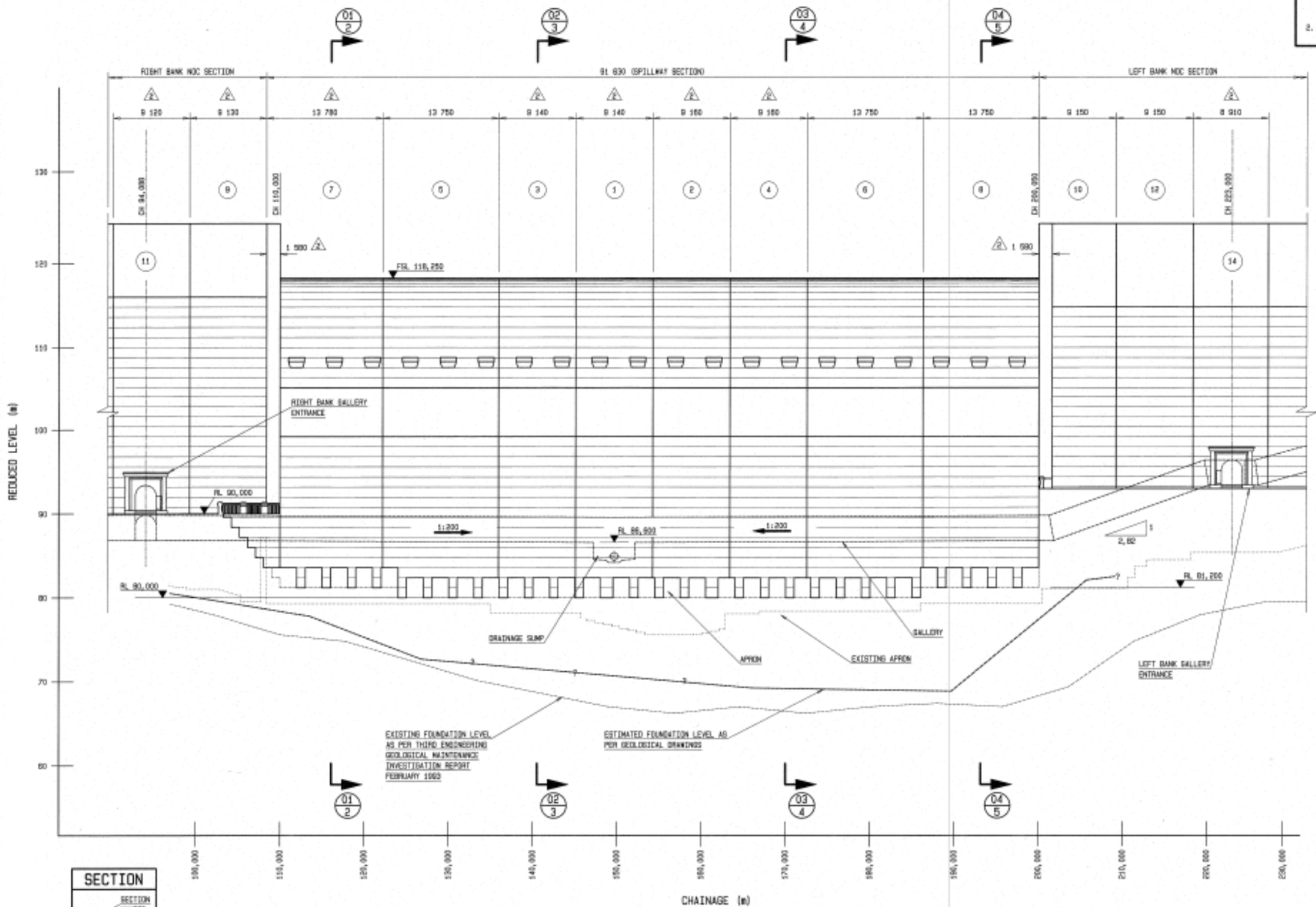
DESIGN: F.E. MULDER
DRAWN: F.E. MULDER
CHECKED:
ENGINEER:
SCIENTIST:
ENGINEER I/ART (PT. REG.):

OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

RIGHT BANK NOC
STEPPED CONCRETE INFILL DETAILS

PROVINCE: WESTERN CAPE	DISTRICT: CLANWILLIAM	REVISIONS:	DSR	DAL	SEC	DET	-	OTHER NUMBER: CWD2234
LOCALITY No.: E100-02	FORMER DISTRICT No.	SHEET No.	4 of 5	PROJ. No.	168 674/15			REV. 00
CALCULATION FILE: 20/2/E100-02/C/1/1								



NOTES:

1. DIAMOND DRILLING EITHER AT THE D/S TOE OR AT APPROXIMATELY 1 000 mm D/S OF NOC ℄ OF EVERY SECOND BLOCK TO CONFIRM THE EFL OF THE EXISTING DAM. CORE SAMPLES TO BE DESCRIBED BY AN ENGINEERING GEOLOGIST AND SENT TO THE UNIVERSITY OF CAPE TOWN (UCT) FOR ALKALI AGGREGATE REACTION (AAR) TESTING.
2. FOR EXISTING DOWNSTREAM SURFACE PREPARATION SEE CWD2152

SPECIFICATIONS:

1. ALL FOUNDATIONS, EXCAVATED SLOPES AND SLOPE PROTECTION TO BE APPROVED BY THE APP IN CONJUNCTION WITH THE ENGINEERING GEOLOGIST.
2. DETAILED METHOD STATEMENTS MUST BE SUBMITTED PRIOR TO EXCAVATION COMMENCEMENT, TO THE APP FOR APPROVAL.
3. THE CONTRACTOR SHALL FIRST PERFORM TRIAL BLASTING IN ORDER TO BE ABLE TO COMPILE A SPECIFICATION FOR MAXIMUM VIBRATIONS RECORDED AT THE DAM WALL. HE SHALL OBTAIN THE SERVICES OF A BLASTING SPECIALIST TO ASSIST FOR APPROVAL BY DWS. A TRIAL BLASTING POSITION WILL BE INDICATED BY THE MAIN CONTRACTOR.
4. BLASTING TO BE CARRIED OUT WITHIN 100 m OF ANY CONCRETE AND/OR GROUTING REGARDLESS OF AGE, SHALL BE DONE BY MEANS OF NON-EXPLOSIVE BLASTING TECHNIQUES, OR BY MEANS OF SPECIALLY DESIGNED CONTROLLED BLASTING TECHNIQUES, TO THE APPROVAL OF THE APPROVED PROFESSIONAL PERSON. ALL SUCH BLASTING SHALL BE DESIGNED TO KEEP A RECOMMENDED PEAK PARTICLE VELOCITIES (PPV) TO BELOW 12,7 mm/s AND THE FREQUENCY ABOVE 10 Hz OR AS OTHERWISE SPECIFIED BY THE BLASTING SPECIALIST TO BE APPROVED BY THE APP.
5. ROCK SUPPORT FOR ALL EXCAVATIONS SHALL BE DONE IN ACCORDANCE WITH PARTICULAR SPECIFICATION CWD27: ROCK SUPPORT, AND SHALL OVER-AND-ABOVE THE ROCK ANCHORING AS SPECIFIED BY THE ENGINEERING GEOLOGIST, ALLOW FOR WIRE MESH REINFORCEMENT AS PER SUB-CLAUSE 27.0.2.4
6. THE SUPPLY, DELIVERY, UNROLLING, FIXING AND LACING OF THE ROCKFALL NETTING/WIRE MESH SHALL ALSO INCLUDE THE DRILLING AND EPOXY GROUTING OF THE TOP AND BOTTOM ANCHORS INTO THE BLASTED ROCK FACE. THE MESH USED WILL BE A DOUBLE TWISTED HEXAGONAL WIRE MESH TO SABS 1580:2001 AND SHALL BE A MESH TYPE 8D WITH 2,2 mm, CLASS A GALVANIZED WIRE. (MACCAFERRI OR EQUAL PRODUCT)
7. EXCAVATED SURFACES THAT WILL REMAIN PERMANENTLY EXPOSED ON COMPLETION OF THE WORKS SHALL BE CLEANED OF ALL LOOSE MATERIAL, PIECES OF ROCK, DEBRIS AND RUBBISH. REFER TO PARTICULAR SPECIFICATION CWD20 FOR ALL OTHER EXCAVATION SPECIFICATIONS AND PERMISSIBLE DEVIATIONS.
8. FOR PREPARATION AND TREATMENT OF EXCAVATED FOUNDATIONS TO RECEIVE CONTAL CONCRETE, REFER TO PARTICULAR SPECIFICATIONS CWD 20 AND CWD 32.

REQUIREMENT:

AS REQUIRED BY THE OHS ACT, 1993, GOVERNMENT GAZETTE REGULATION R.84 OF 7 FEBRUARY 2014, THE CONTRACTOR SHALL REGULARLY ALLOW THE ENGINEERING GEOLOGIST TO ADVISE THE ENGINEER / APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SAFEGUARD THE EXCAVATION AS IT PROGRESSES.

SECTION
07 / 3
SECTION NUMBER
SHEET NUMBER

DOWNSTREAM ELEVATION

SCALE 1:250

SCALE 1:250 0 5 10 15 20 25 50 m

1/0	LIST OF DRAWINGS	CWD0001	168 571/13
SHEET	DESCRIPTION	OTHER No.	REG. No.

LIST OF DRAWINGS

REVISION				
MOD No.	DATE	DESCRIPTION	FOR	CHK
1	05/18	ADDED LABELS AND SPECIFICATIONS	HD	
2	12/20	AMENDED DAM WALL BLOCKS AND TRAINING WALLS	RdL	

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA
HEAD OFFICE, CIVIL ENGINEERING, PRIVATE BAG X313, PRETORIA 0001
SEDIBENG BUILDING, 185 FRANCIS BAARD STREET, PRETORIA, (012) 336-7500

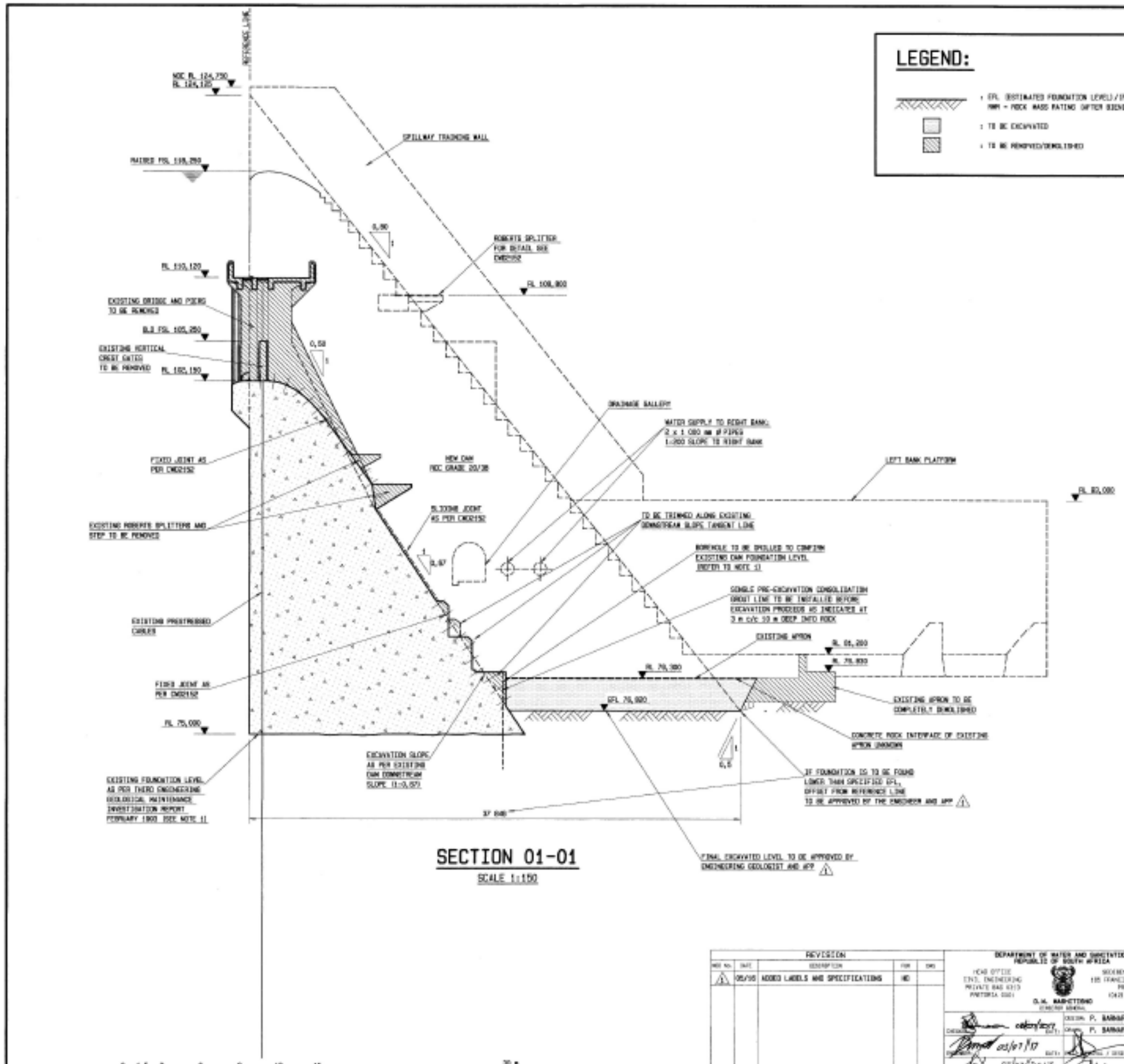
DESIGNED: P. BARNARD
DRAWN: P. BARNARD
CHECKED: R. de Lange 20/04/2021
ENGINEER: E. Lillie 21/05/2021
DEP. DIRECTOR: 1/09/21
DIRECTOR: 1/09/21

OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

SPILLWAY EXCAVATION
DOWNSTREAM ELEVATION

PROVINCE: WESTERN CAPE | DISTRICT: CLANWILLIAM | KEYBOARD: BLY PNL SMS | OTHER NUMBER: CWD1371
LOCALITY No.: E100-02 | TENDER/CONTRACT No.:
CALCULATION FILE: 20/2/E100-02/C/1/1/3
SHEET: 1 OF 8 | REG. No.: 168 677/15 | REV.: 02



SECTION 01-01

SCALE 1:150

LEGEND:

: EFL (ESTIMATED FOUNDATION LEVEL)/(RMR > 40)
RMR = ROCK MASS RATING (AFTER BIENIAWSKI, 1976)

: TO BE EXCAVATED

: TO BE REMOVED/DEMOLISHED

NOTES:

1. DIAMOND DRILLING EITHER AT THE D/S TOE OR AT APPROXIMATELY 1 000 mm D/S OF NOC ℄ OF EVERY SECOND BLOCK TO CONFIRM THE EFL OF THE EXISTING DAM. CORE SAMPLES TO BE DESCRIBED BY AN ENGINEERING GEOLOGIST AND SENT TO THE UNIVERSITY OF CAPE TOWN (UCT) FOR ALKALI AGGREGATE REACTION (AAR) TESTING.
2. FOR EXISTING DOWNSTREAM SURFACE PREPARATION SEE CWD0152

SPECIFICATIONS:

1. ALL FOUNDATIONS, EXCAVATED SLOPES AND SLOPE PROTECTION TO BE APPROVED BY THE APP IN CONJUNCTION WITH THE ENGINEERING GEOLOGIST.
2. DETAILED METHOD STATEMENTS MUST BE SUBMITTED PRIOR TO EXCAVATION COMMENCEMENT, TO THE APP FOR APPROVAL.
3. THE CONTRACTOR SHALL FIRST PERFORM TRIAL BLASTING IN ORDER TO BE ABLE TO COMPILE A SPECIFICATION FOR MAXIMUM VIBRATIONS RECORDED AT THE DAM WALL. HE SHALL OBTAIN THE SERVICES OF A BLASTING SPECIALIST TO ASSIST FOR APPROVAL BY DWS. A TRIAL BLASTING POSITION WILL BE INDICATED BY THE MAIN CONTRACTOR.
4. BLASTING TO BE CARRIED OUT WITHIN 100 m OF ANY CONCRETE AND/OR GROUTING REGARDLESS OF AGE, SHALL BE DONE BY MEANS OF NON-EXPLOSIVE BLASTING TECHNIQUES, OR BY MEANS OF SPECIALLY DESIGNED CONTROLLED BLASTING TECHNIQUES, TO THE APPROVAL OF THE APPROVED PROFESSIONAL PERSON. ALL SUCH BLASTING SHALL BE DESIGNED TO KEEP A RECOMMENDED PEAK PARTICLE VELOCITIES (PPV) TO BELOW 50,7 mm/s AND THE FREQUENCY ABOVE 10 Hz OR AS OTHERWISE SPECIFIED BY THE BLASTING SPECIALIST TO BE APPROVED BY THE APP.
5. ROCK SUPPORT FOR ALL EXCAVATIONS SHALL BE DONE IN ACCORDANCE WITH PARTICULAR SPECIFICATION CWD37: ROCK SUPPORT, AND SHALL CHAIN-AND-ABOVE THE ROCK ANCHORING AS SPECIFIED BY THE ENGINEERING GEOLOGIST, ALLOW FOR WIRE MESH REINFORCEMENT AS PER SUB-CLAUSE 27.6.2.4
6. THE SUPPLY, DELIVERY, UNROLLING, FIXING AND LACING OF THE ROCKFILL NETTING/MESH SHALL ALSO INCLUDE THE DRILLING AND EPOXY GROUTING OF THE TOP AND BOTTOM ANCHORS INTO THE BLASTED ROCK FACE. THE MESH USED WILL BE A DOUBLE TWISTED HEXAGONAL WIRE MESH TO SABS 1580:2004 AND SHALL BE A MESH TYPE 08 WITH 2,7 mm, CLASS A GALVANISED WIRE. (MACCAFERRI OR EQUAL PRODUCT)
7. EXCAVATED SURFACES THAT WILL REMAIN PERMANENTLY EXPOSED ON COMPLETION OF THE WORKS SHALL BE CLEARED OF ALL LOOSE MATERIAL, PIECES OF ROCK, DEBRIS AND RUBBISH. REFER TO PARTICULAR SPECIFICATION CWD0110 FOR ALL OTHER EXCAVATION SPECIFICATIONS AND PERMISSIBLE DEVIATIONS.
8. FOR PREPARATION AND TREATMENT OF EXCAVATED FOUNDATIONS TO RECEIVE DENTAL CONCRETE, REFER TO PARTICULAR SPECIFICATIONS CWD 120 AND CWD 320.

REQUIREMENT:

AS REQUIRED BY THE OHS ACT, 1993, GOVERNMENT GAZETTE REGULATION R.84 OF 7 FEBRUARY 2014, THE CONTRACTOR SHALL REGULARLY ALLOW THE ENGINEERING GEOLOGIST TO ADVISE THE ENGINEER / APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SAFEGUARD THE EXCAVATION AS IT PROGRESSES.

1/7	LIST OF DRAWINGS	CWD0001	168 571/13
SHEET	DESCRIPTION	OTHER No.	REG. No.

LIST OF DRAWINGS

REVISION				
REV No.	DATE	DESCRIPTION	PAR	CHK
1	05/10	ADDED LABELS AND SPECIFICATIONS	MD	

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA

HEAD OFFICE
CNT. ENGINEERING
PRIVATE BAG X313
PRETORIA 0001

SOUTHERN OUTLOOK
185 FRANCIS BAARD STREET
PRETORIA
(012) 336-7500

D.N. MASHITENG
DIRECTOR GENERAL

DESIGN: P. BARNARD
DRAWN: P. BARNARD
CHECKED: 05/07/2017
PROFESSIONAL ENGINEER / SYSTEMS ENGINEER: 3/7/2017
CHIEF ENGINEER / APP: 05/07/2017
CHIEF ENGINEER / APP: 19/07/2017

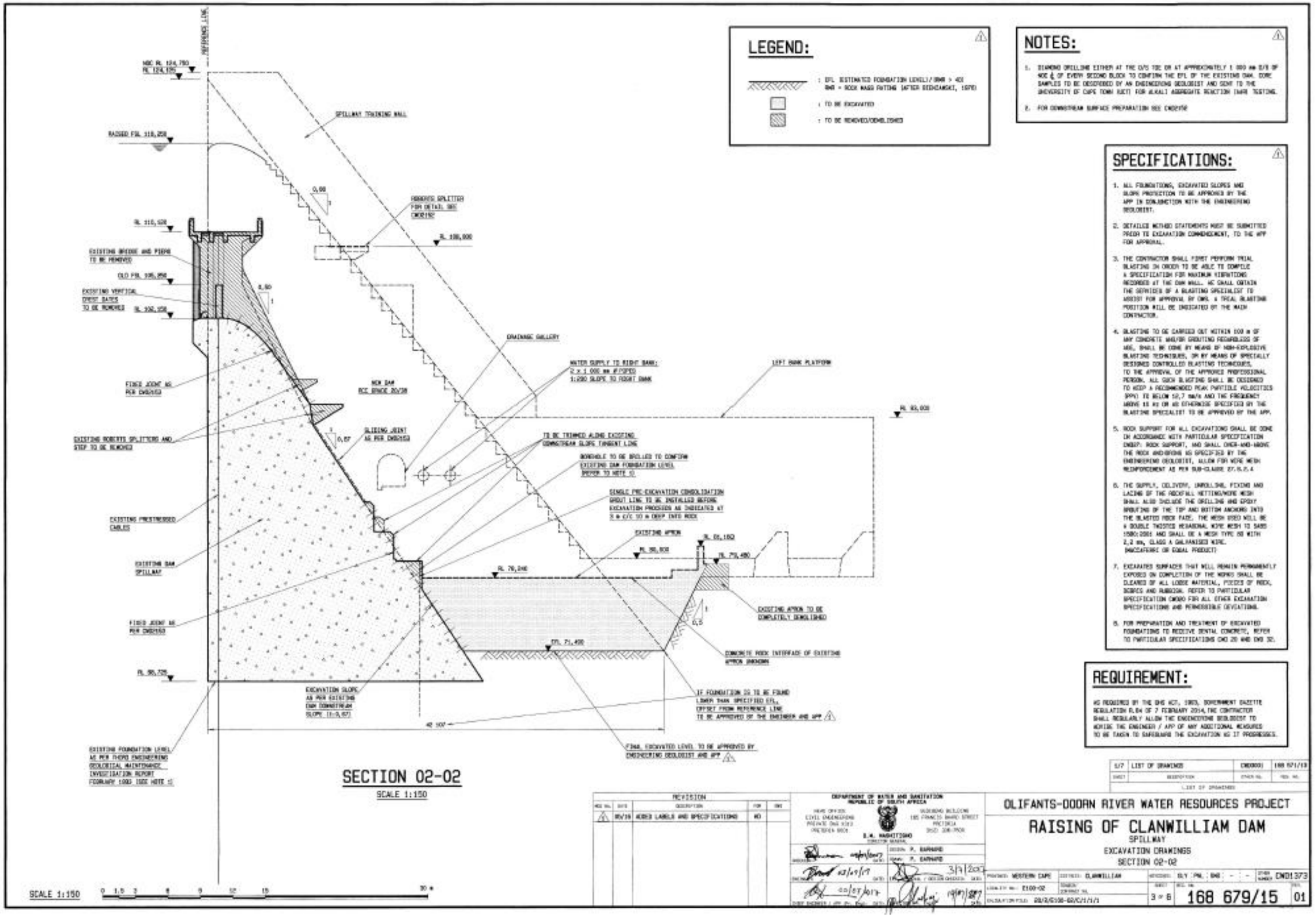
OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM

SPILLWAY
EXCAVATION DRAWINGS
SECTION 01-01

PROVINCE: WESTERN CAPE	DISTRICT: CLANWILLIAM	DESIGNED: BLF	PAN	DMS	-	-
LOCALITY No.: C100-02	SUBSET CONTRACT No.	SHEET No.: 2 of 8	REG. No.: 168 678/15			REV.: 01
CALCULATION FILE: 20/0/0/C100-02/C/1/1/1						

CWD1372



SECTION 02-02

SCALE 1:150

LEGEND:

: EFL ESTIMATED FOUNDATION LEVEL) / (RMR > 40 RMR = ROCK MASS RATING (AFTER BIENIAWSKI, 1976)

: TO BE EXCAVATED

: TO BE REMOVED/DEMOLISHED

NOTES:

1. DIAMOND DRILLING EITHER AT THE D/S TOE OR AT APPROXIMATELY 1 000 mm D/S OF NOC ℄ OF EVERY SECOND BLOCK TO CONFIRM THE EFL OF THE EXISTING DAM. CORE SAMPLES TO BE DESCRIBED BY AN ENGINEERING GEOLOGIST AND SENT TO THE UNIVERSITY OF CAPE TOWN (UCT) FOR ALKALI AGGREGATE REACTION (AAR) TESTING.
2. FOR DOWNSTREAM SURFACE PREPARATION SEE DWG0150

SPECIFICATIONS:

1. ALL FOUNDATIONS, EXCAVATED SLOPES AND SLOPE PROTECTION TO BE APPROVED BY THE APP IN CONJUNCTION WITH THE ENGINEERING GEOLOGIST.
2. DETAILED METHOD STATEMENTS MUST BE SUBMITTED PRIOR TO EXCAVATION COMMENCEMENT, TO THE APP FOR APPROVAL.
3. THE CONTRACTOR SHALL FIRST PERFORM TRIAL BLASTING IN ORDER TO BE ABLE TO COMPILE A SPECIFICATION FOR MAXIMUM VIBRATIONS RECORDED AT THE DAM WALL. HE SHALL OBTAIN THE SERVICES OF A BLASTING SPECIALIST TO ASSIST FOR APPROVAL BY DWA. A TRIAL BLASTING POSITION WILL BE INDICATED BY THE MAIN CONTRACTOR.
4. BLASTING TO BE CARRIED OUT WITHIN 500 m OF ANY CONCRETE AND/OR GROUTING REGARDLESS OF AGE, SHALL BE DONE BY MEANS OF NON-EXPLOSIVE BLASTING TECHNIQUES, OR BY MEANS OF SPECIALLY DESIGNED CONTROLLED BLASTING TECHNIQUES, TO THE APPROVAL OF THE APPROVED PROFESSIONAL PERSON. ALL SUCH BLASTING SHALL BE DESIGNED TO KEEP A RECOMMENDED PEAK PARTICLE VELOCITIES (PPV) TO BELOW 50,7 mm/s AND THE FREQUENCY ABOVE 15 Hz OR AS OTHERWISE SPECIFIED BY THE BLASTING SPECIALIST TO BE APPROVED BY THE APP.
5. ROCK SUPPORT FOR ALL EXCAVATIONS SHALL BE DONE IN ACCORDANCE WITH PARTICULAR SPECIFICATION ENG07: ROCK SUPPORT, AND SHALL CHECK-AND-ABOVE THE ROCK ANCHORING AS SPECIFIED BY THE ENGINEERING GEOLOGIST, ALLOW FOR WIRE MESH REINFORCEMENT AS PER SUB-CLAUSE 27.15.2.4
6. THE SUPPLY, DELIVERY, UNROLLING, FIXING AND LACING OF THE ROCKFALL NETTING/WIRE MESH SHALL ALSO INCLUDE THE DRILLING AND EPOXY GROUTING OF THE TOP AND BOTTOM ANCHORS INTO THE BLASTED ROCK FACE. THE MESH USED WILL BE A DOUBLE TWISTED HEXAGONAL WIRE MESH TO SANS 1580:2005 AND SHALL BE A MESH TYPE 80 WITH 2,2 mm, CLASS A GALVANISED WIRE. (MACCAFERRI OR EQUAL PRODUCT)
7. EXCAVATED SURFACES THAT WILL REMAIN PERMANENTLY EXPOSED ON COMPLETION OF THE WORKS SHALL BE CLEANED OF ALL LOOSE MATERIAL, PIECES OF ROCK, DEBRIS AND RUBBISH. REFER TO PARTICULAR SPECIFICATION CW3010 FOR ALL OTHER EXCAVATION SPECIFICATIONS AND PERMISSIBLE DEVIATIONS.
8. FOR PREPARATION AND TREATMENT OF EXCAVATED FOUNDATIONS TO RECEIVE DENTAL CONCRETE, REFER TO PARTICULAR SPECIFICATIONS CW3 20 AND CW3 30.

REQUIREMENT:

AS REQUIRED BY THE OHS ACT, 1993, GOVERNMENT GAZETTE REGULATION R.84 OF 7 FEBRUARY 2014, THE CONTRACTOR SHALL REGULARLY ALLOW THE ENGINEERING GEOLOGIST TO ADVISE THE ENGINEER / APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SAFEGUARD THE EXCAVATION AS IT PROGRESSES.

SJ7	LIST OF DRAWINGS	CW03001	168 971/13
SHEET	DESCRIPTION	OTHER No.	YES No.
	LIST OF DRAWINGS		

REVISION				
MOD No.	DATE	DESCRIPTION	FOR	CHK
A	05/19	ADDED LABELS AND SPECIFICATIONS	AD	

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA
HEAD OFFICE: CIVIL ENGINEERING, PRIVATE BAG X313, PRETORIA 0001
WORKING BUILDING, 185 FRANCIS BAARD STREET, PRETORIA, (012) 336-7500
E.M. MAHLATSHO, DIRECTOR GENERAL

DESIGN: P. BARNARD
DRAWN: P. BARNARD
CHECKED: 03/07/17
APPROVED: 3/7/2017
DIRECTOR: CIVIL ENGINEERING: 19/07/2017
DEPUTY DIRECTOR: 20/07/2017

OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

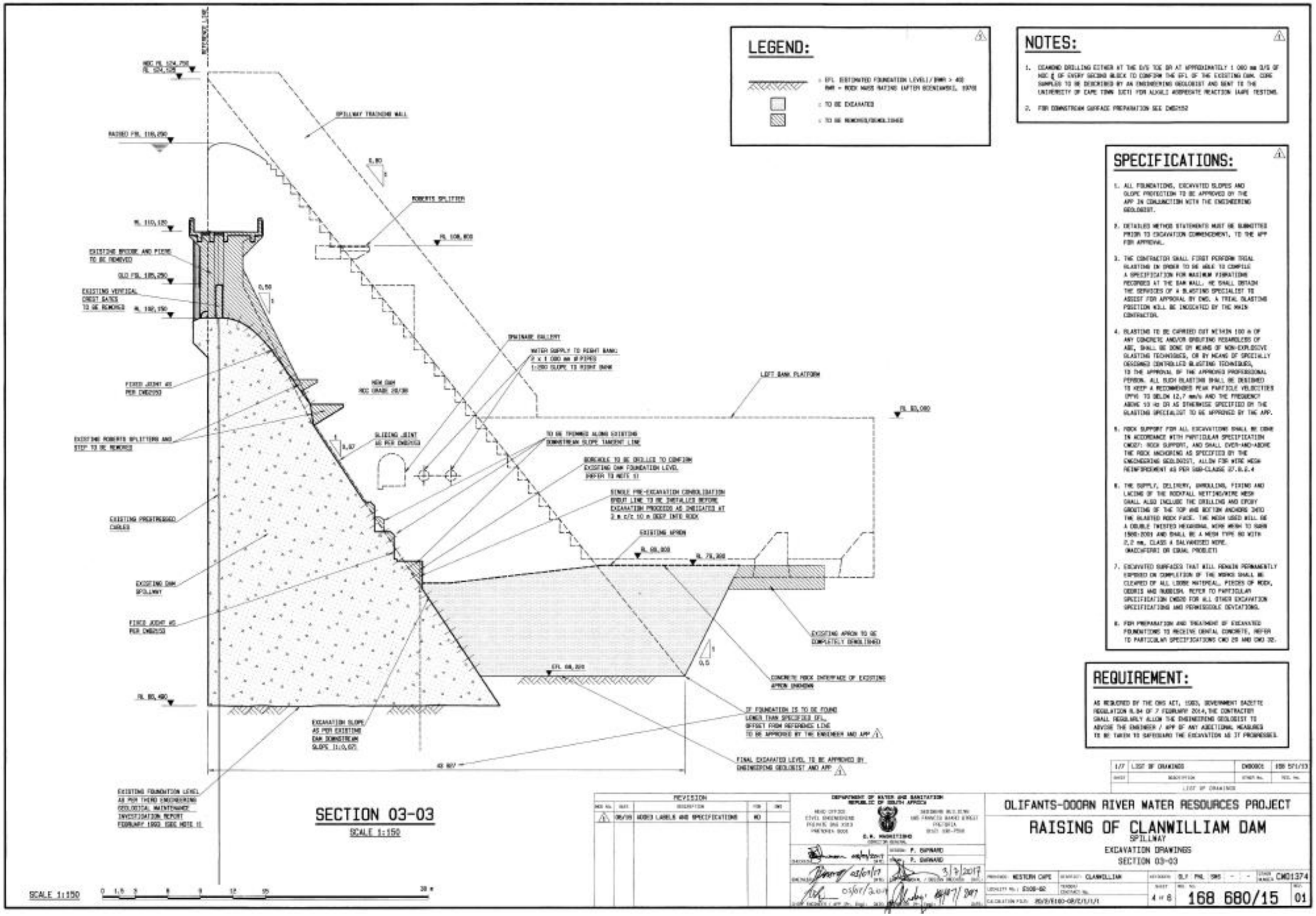
RAISING OF CLANWILLIAM DAM

SPILLWAY

EXCAVATION DRAWINGS

SECTION 02-02

PROVINCE: WESTERN CAPE	DISTRICT: CLANWILLIAM	ADVISORS: SLY / PNL / BHB	-	-	-	CW01373
LOCALITY No.: E100-02	DRAWING No.:	SHEET No.: 3 of 6	REV. No.: 168 679/15			01
EXCAVATION FILE: 03/2/E100-02/C/1/1/1						



SECTION 03-03

SCALE 1:150

LEGEND:

- EFL ESTIMATED FOUNDATION LEVEL / RMR > 40
  RMR = ROCK MASS RATING (AFTER BIENIAWSKI, 1976)
- TO BE EXCAVATED
- TO BE REMOVED/DEMOLISHED

NOTES:

1. DIAMOND DRILLING EITHER AT THE D/S TOE OR AT APPROXIMATELY 1 000 mm D/S OF HDC ℄ OF EVERY SECOND BLOCK TO CONFIRM THE EFL OF THE EXISTING DAM. CORE SAMPLES TO BE DESCRIBED BY AN ENGINEERING GEOLOGIST AND SENT TO THE UNIVERSITY OF CAPE TOWN (UCT) FOR ALKALI AGGREGATE REACTION (AAPE) TESTING.
2. FOR DOWNSTREAM SURFACE PREPARATION SEE DWG2052

SPECIFICATIONS:

1. ALL FOUNDATIONS, EXCAVATED SLOPES AND SLOPE PROTECTION TO BE APPROVED BY THE APP IN CONJUNCTION WITH THE ENGINEERING GEOLOGIST.
2. DETAILED METHOD STATEMENTS MUST BE SUBMITTED PRIOR TO EXCAVATION COMMENCEMENT, TO THE APP FOR APPROVAL.
3. THE CONTRACTOR SHALL FIRST PERFORM TRIAL BLASTING IN ORDER TO BE ABLE TO COMPILE A SPECIFICATION FOR MAXIMUM VIBRATIONS RECORDED AT THE DAM WALL. HE SHALL OBTAIN THE SERVICES OF A BLASTING SPECIALIST TO ASSIST FOR APPROVAL BY ENG. A TRIAL BLASTING POSITION WILL BE INDICATED BY THE MAIN CONTRACTOR.
4. BLASTING TO BE CARRIED OUT WITHIN 100 m OF ANY CONCRETE AND/OR GROUTING REGARDLESS OF AGE, SHALL BE DONE BY MEANS OF NON-EXPLOSIVE BLASTING TECHNIQUES, OR BY MEANS OF SPECIALLY DESIGNED CONTROLLED BLASTING TECHNIQUES, TO THE APPROVAL OF THE APPROVED PROFESSIONAL PERSON. ALL SUCH BLASTING SHALL BE DESIGNED TO KEEP A RECOMMENDED PEAK PARTICLE VELOCITIES (PPV) TO BELOW 12,7 mm/s AND THE FREQUENCY ABOVE 10 Hz OR AS OTHERWISE SPECIFIED BY THE BLASTING SPECIALIST TO BE APPROVED BY THE APP.
5. ROCK SUPPORT FOR ALL EXCAVATIONS SHALL BE DONE IN ACCORDANCE WITH PARTICULAR SPECIFICATION CW3021: ROCK SUPPORT, AND SHALL OVER-AND-ABOVE THE ROCK ANCHORING AS SPECIFIED BY THE ENGINEERING GEOLOGIST, ALLOW FOR WIRE MESH REINFORCEMENT AS PER SUB-CLAUSE 27.8.2.4
6. THE SUPPLY, DELIVERY, UNROLLING, FIXING AND LACING OF THE ROCKFALL NETTING/WIRE MESH SHALL ALSO INCLUDE THE DRILLING AND EPOXY GROUTING OF THE TOP AND BOTTOM ANCHORS INTO THE BLASTED ROCK FACE. THE MESH USED WILL BE A DOUBLE TWISTED HEXAGONAL MESH WOVEN TO SANS 1568:2001 AND SHALL BE A MESH TYPE 80 WITH 2,7 mm, CLASS A GALVANIZED WIRE. (MACCAFERRI OR EQUAL PRODUCT)
7. EXCAVATED SURFACES THAT WILL REMAIN PERMANENTLY EXPOSED ON COMPLETION OF THE WORKS SHALL BE CLEARED OF ALL LOOSE MATERIAL, PIECES OF ROCK, DEBRIS AND RUBBISH. REFER TO PARTICULAR SPECIFICATION CW3020 FOR ALL OTHER EXCAVATION SPECIFICATIONS AND PERMISSIBLE DEVIATIONS.
8. FOR PREPARATION AND TREATMENT OF EXCAVATED FOUNDATIONS TO RECEIVE CONCRETE, REFER TO PARTICULAR SPECIFICATIONS CW3 29 AND CW3 32.

REQUIREMENT:

AS REQUIRED BY THE OHS ACT, 1993, GOVERNMENT GAZETTE REGULATION R.84 OF 7 FEBRUARY 2014, THE CONTRACTOR SHALL REGULARLY ALLOW THE ENGINEERING GEOLOGIST TO ADVISE THE ENGINEER / APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SAFEGUARD THE EXCAVATION AS IT PROGRESSES.

REVISION				
REV No.	DATE	DESCRIPTION	TYP	INIT
1	05/09	ADDED LABELS AND SPECIFICATIONS	RO	

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA
MEAD OFFICE
CIVIL ENGINEERING
PRIVATE BAG X313
PRETORIA 0001
SUBURBAN BUILDING
185 FRANCIS BAARD STREET
PRETORIA
DIRECT 012-336-7500
C.B. MADHITHINO
DIRECTOR GENERAL
DESIGNED: P. BARNARD
DRAWN: P. BARNARD
CHECKED: 05/09/2017
ENGINEER: 3/9/2017
CLIENT: 05/09/2017
CLIENT ENGINEER / APP (Dir. Eng.): 6/9/2017
ENGINEER / DESIGN ENGINEER

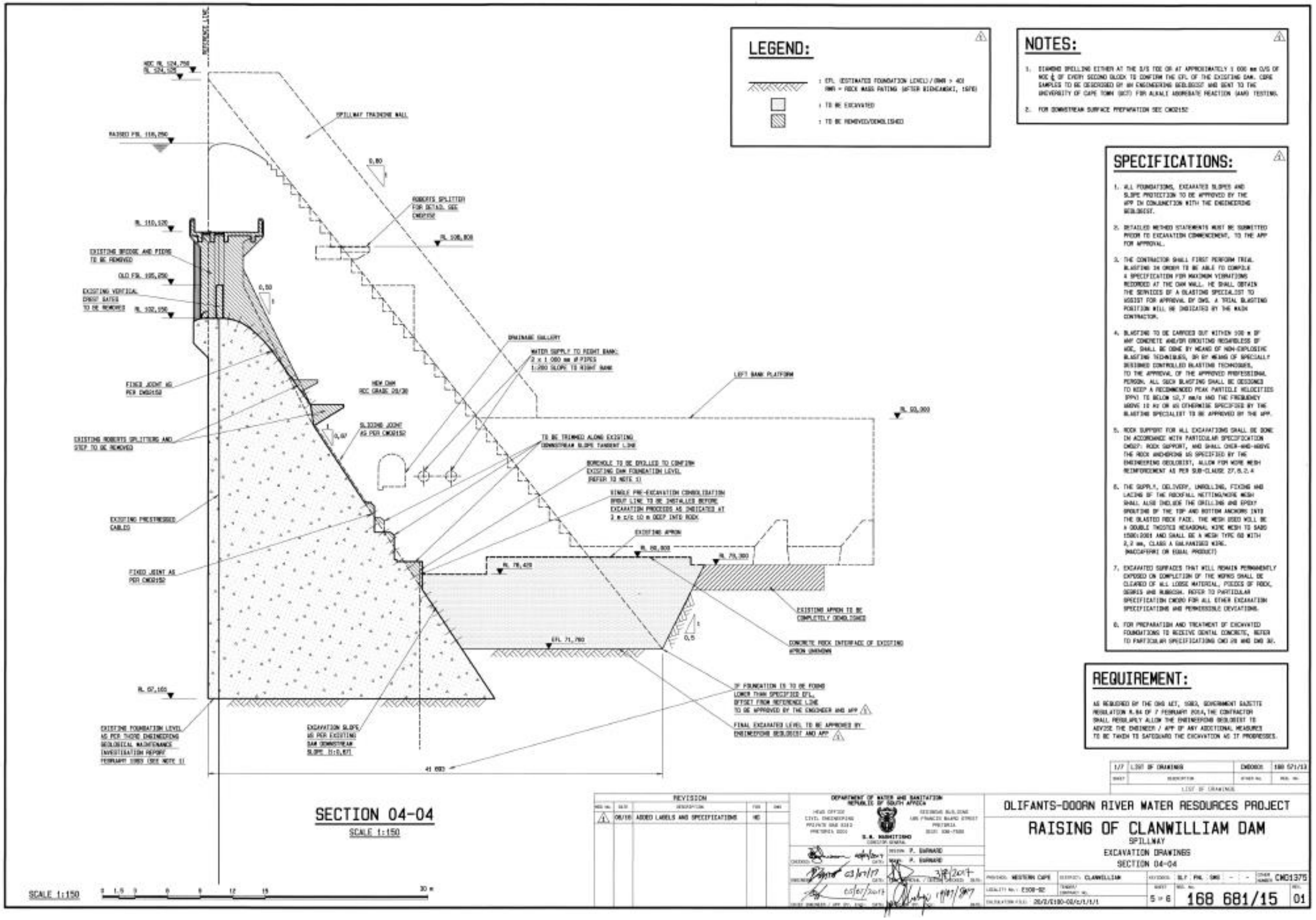
OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

RAISING OF CLANWILLIAM DAM
SPILLWAY

EXCAVATION DRAWINGS
SECTION 03-03

PROVINCE: WESTERN CAPE	MUNICIPALITY: CLANWILLIAM	DATUM: CLF	PRS: 1985	-	-
LOCALITY No.: E108-02	TENDER/CONTRACT No.	SHEET: 4 of 6	DRG No.: 168 680/15	REV.: 01	OTHER DRAWING No.: CWD1374
CALCULATION FILE: J05/0/E180-08/C/1/1/1					

LIST OF DRAWINGS			
SHEET	DESCRIPTION	OTHER No.	REV. No.
1/7	LIST OF DRAWINGS	DWG0001	168 571/13



SECTION 04-04

SCALE 1:150

LEGEND:

: EFL (ESTIMATED FOUNDATION LEVEL) / (RMR > 40)
RMR = ROCK MASS RATING (AFTER BIENIAWSKI, 1976)

: TO BE EXCAVATED

: TO BE REMOVED/DEMOLISHED

NOTES:

1. DIAMOND DRILLING EITHER AT THE D/S TOE OR AT APPROXIMATELY 1 000 mm D/S OF NOE & OF EVERY SECOND BLOCK TO CONFIRM THE EFL OF THE EXISTING DAM. CORE SAMPLES TO BE DESCRIBED BY AN ENGINEERING GEOLOGIST AND SENT TO THE UNIVERSITY OF CAPE TOWN (UCT) FOR ALKALI AGGREGATE REACTION (AAR) TESTING.
2. FOR DOWNSTREAM SURFACE PREPARATION SEE CW02152

SPECIFICATIONS:

1. ALL FOUNDATIONS, EXCAVATED SLOPES AND SLOPE PROTECTION TO BE APPROVED BY THE APP IN CONJUNCTION WITH THE ENGINEERING GEOLOGIST.
2. DETAILED METHOD STATEMENTS MUST BE SUBMITTED PRIOR TO EXCAVATION COMMENCEMENT, TO THE APP FOR APPROVAL.
3. THE CONTRACTOR SHALL FIRST PERFORM TRIAL BLASTING IN ORDER TO BE ABLE TO COMPILE A SPECIFICATION FOR MAXIMUM VIBRATIONS RECORDED AT THE DAM WALL. HE SHALL OBTAIN THE SERVICES OF A BLASTING SPECIALIST TO ASSIST FOR APPROVAL BY DWS. A TRIAL BLASTING POSITION WILL BE INDICATED BY THE MAIN CONTRACTOR.
4. BLASTING TO BE CARRIED OUT WITHIN 500 m OF ANY CONCRETE AND/OR GROUTING INCLUDING OF NOE, SHALL BE DONE BY MEANS OF NON-EXPLOSIVE BLASTING TECHNIQUES, OR BY MEANS OF SPECIALLY DESIGNED CONTROLLED BLASTING TECHNIQUES, TO THE APPROVAL OF THE APPROVED PROFESSIONAL PERSON. ALL SUCH BLASTING SHALL BE DESIGNED TO KEEP A RECOMMENDED PEAK PARTICLE VELOCITIES (PPV) TO BELOW 12,7 mm/s AND THE FREQUENCY ABOVE 10 Hz OR AS OTHERWISE SPECIFIED BY THE BLASTING SPECIALIST TO BE APPROVED BY THE APP.
5. ROCK SUPPORT FOR ALL EXCAVATIONS SHALL BE DONE IN ACCORDANCE WITH PARTICULAR SPECIFICATION CW027: ROCK SUPPORT, AND SHALL OVER-AND-ABOVE THE ROCK ANCHORING AS SPECIFIED BY THE ENGINEERING GEOLOGIST, ALLOW FOR WIRE MESH REINFORCEMENT AS PER SUB-CLAUSE 27.6.2.4
6. THE SUPPLY, DELIVERY, UNROLLING, FIXING AND LACING OF THE FACEFILL NETTING/WIRE MESH SHALL ALSO INCLUDE THE DRILLING AND EPOXY GROUTING OF THE TOP AND BOTTOM ANCHORS INTO THE BLASTED ROCK FACE. THE MESH USED WILL BE A DOUBLE TWISTED HEXAGONAL WIRE MESH TO SABS 1500:2001 AND SHALL BE A MESH TYPE 8X10 WITH 3,2 mm, CLASS A GALVANIZED WIRE. (MACCAFERRI OR EQUAL PRODUCT)
7. EXCAVATED SURFACES THAT WILL REMAIN PERMANENTLY EXPOSED ON COMPLETION OF THE WORKS SHALL BE CLEARED OF ALL LOOSE MATERIAL, PIECES OF ROCK, DEBRIS AND RUBBISH. REFER TO PARTICULAR SPECIFICATION CW3810 FOR ALL OTHER EXCAVATION SPECIFICATIONS AND PERMISSIBLE DEVIATIONS.
8. FOR PREPARATION AND TREATMENT OF EXCAVATED FOUNDATIONS TO RECEIVE CONCRETE, REFER TO PARTICULAR SPECIFICATIONS CW 210 AND CW 311.

REQUIREMENT:

AS REQUIRED BY THE OHS ACT, 1993, GOVERNMENT GAZETTE REGULATION R.84 OF 7 FEBRUARY 2014, THE CONTRACTOR SHALL REASONABLY ALLOW THE ENGINEERING GEOLOGIST TO ADVISE THE ENGINEER / APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SAFEGUARD THE EXCAVATION AS IT PROGRESSES.

REVISION				
NO.	DATE	DESCRIPTION	TECH	DRAFT
1	08/16	ADDED LABELS AND SPECIFICATIONS	MD	

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA
HEAD OFFICE
CIVIL ENGINEERING
PRIVATE BAG X313
PRETORIA 0001
SEVENDAL BUILDING
185 FRANCIS BAARD STREET
PRETORIA
DIRECTOR: P. BARNARD
MANAGER: P. BARNARD
DESIGNED / DRAWN / CHECKED

T/F	LIST OF DRAWINGS
SHEET	DESCRIPTION

LIST OF DRAWINGS

OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

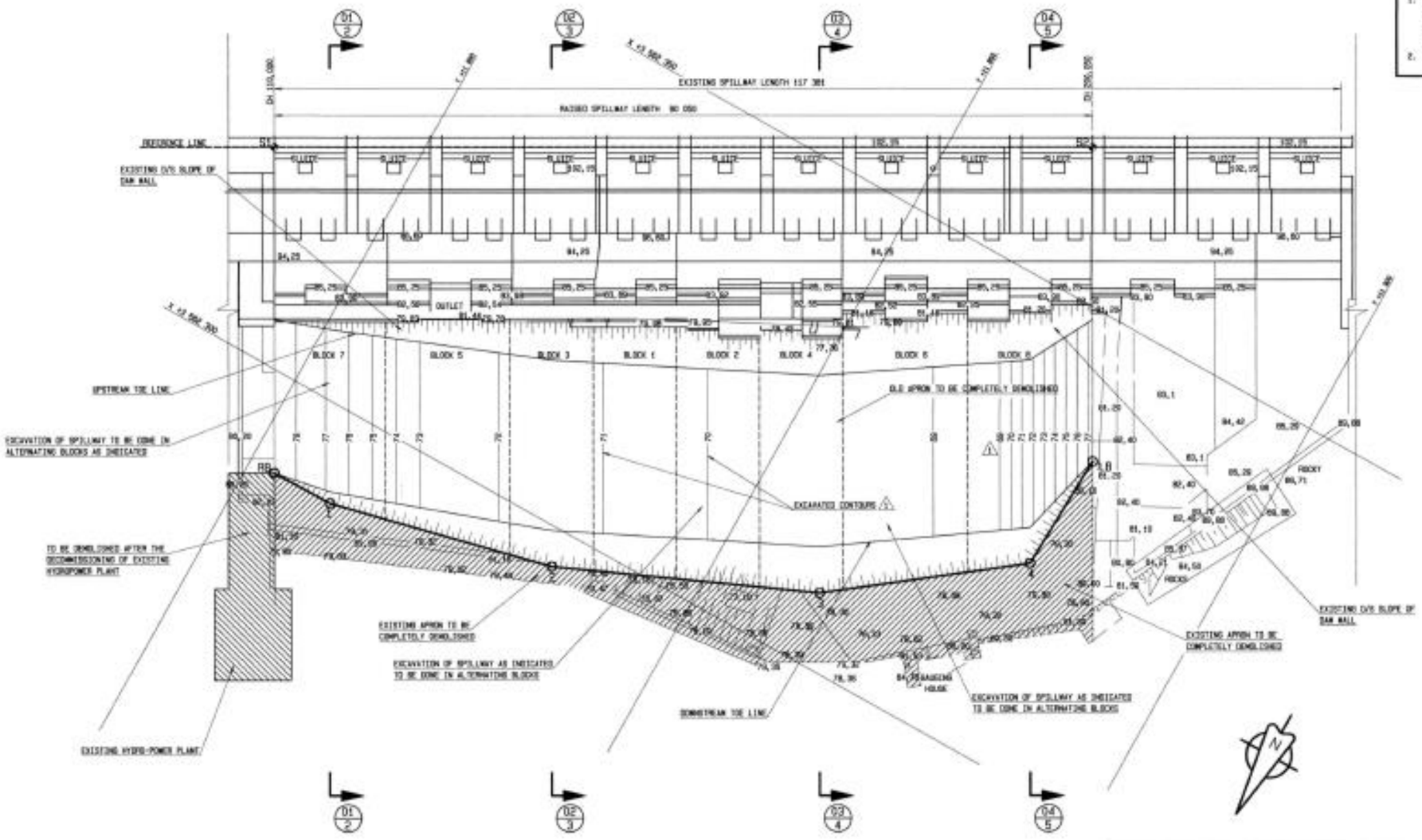
RAISING OF CLANWILLIAM DAM

SPILLWAY

EXCAVATION DRAWINGS

SECTION 04-04

PROVINCE: WESTERN CAPE	DISTRICT: CLANWILLIAM	DRAWING NUMBER: CWD1375	
LOCALITY No.: E308-02		SHEET No.: 5 of 6	REV. No.: 01
DRAWING FILE: 2D/2/E180-02/c/1/1/1			168 681/15



NOTES:

1. DIAMOND DRILLING EITHER AT THE D/S TOE OR AT APPROXIMATELY 1 000 m D/S OF NOC ℄ OF EVERY SECOND BLOCK TO CONFIRM THE EFL OF THE EXISTING DAM. CORE SAMPLES TO BE DESCRIBED BY AN ENGINEERING GEOLOGIST AND SENT TO THE UNIVERSITY OF CAPE TOWN (UCT) FOR ALKALI AGGREGATE REACTION (AAR) TESTING.
2. FOR EXISTING DOWNSTREAM SURFACE PREPARATION SEE DWG2552

SPECIFICATIONS:

1. ALL FOUNDATIONS, EXCAVATED SLOPES AND SLOPE PROTECTION TO BE APPROVED BY THE APP IN CONJUNCTION WITH THE ENGINEERING GEOLOGIST.
2. DETAILED METHOD STATEMENTS MUST BE SUBMITTED PRIOR TO EXCAVATION COMMENCEMENT, TO THE APP FOR APPROVAL.
3. THE CONTRACTOR SHALL FIRST PERFORM TRIAL BLASTING IN ORDER TO BE ABLE TO COMPILE A SPECIFICATION FOR MAXIMUM VIBRATIONS RECORDED AT THE DAM WALL. HE SHALL OBTAIN THE SERVICES OF A BLASTING SPECIALIST TO ASSIST FOR APPROVAL BY ENG. A TRIAL BLASTING POSITION WILL BE INDICATED BY THE MAIN CONTRACTOR.
4. BLASTING TO BE CARRIED OUT WITHIN 100 m OF ANY CONCRETE AND/OR GROUTING REGARDLESS OF AGE, SHALL BE DONE BY MEANS OF NON-EXPLOSIVE BLASTING TECHNIQUES, OR BY MEANS OF SPECIALLY DESIGNED CONTROLLED BLASTING TECHNIQUES, TO THE APPROVAL OF THE APPROVED PROFESSIONAL PERSON. ALL SUCH BLASTING SHALL BE DESIGNED TO KEEP A RECOMMENDED PEAK PARTICLE VELOCITIES (PPV) TO BELOW 12,7 mm/s AND THE FREQUENCY ABOVE 10 Hz OR AS OTHERWISE SPECIFIED BY THE BLASTING SPECIALIST TO BE APPROVED BY THE APP.
5. ROCK SUPPORT FOR ALL EXCAVATIONS SHALL BE DONE IN ACCORDANCE WITH PARTICULAR SPECIFICATION CW007: ROCK SUPPORT, AND SHALL OVER-AND-ABOVE THE ROCK ANCHORING AS SPECIFIED BY THE ENGINEERING GEOLOGIST, ALLOW FOR WIRE MESH REINFORCEMENT AS PER SUB-CLAUSE 27.8.2.4
6. THE SUPPLY, DELIVERY, UNROLLING, FIXING AND LACING OF THE ROCKFALL NETTING/WIRE MESH SHALL ALSO INCLUDE THE DRILLING AND EPOXY GROUTING OF THE TOP AND BOTTOM ANCHORS INTO THE BLASTED ROCK FACE. THE MESH USED WILL BE A DOUBLE TWISTED HEXAGONAL WIRE MESH TO SABS 1568:2001 AND SHALL BE A MESH TYPE 80 WITH 2,7 mm, CLASS A GALVANIZED WIRE. (MACCAFERRI OR EQUAL PRODUCT)
7. EXCAVATED SURFACES THAT WILL REMAIN PERMANENTLY EXPOSED ON COMPLETION OF THE WORKS SHALL BE CLEARED OF ALL LOOSE MATERIAL, PIECES OF ROCK, DEBRIS AND RUBBISH. REFER TO PARTICULAR SPECIFICATION CW005 FOR ALL OTHER EXCAVATION SPECIFICATIONS AND PERMISSIBLE DEVIATIONS.
8. FOR PREPARATION AND TREATMENT OF EXCAVATED FOUNDATIONS TO RECEIVE CONCRETE, REFER TO PARTICULAR SPECIFICATIONS CW6 26 AND CW6 30.

REQUIREMENT:

AS REQUIRED BY THE OHS ACT, 1993, GOVERNMENT GAZETTE REGULATION R.84 OF 7 FEBRUARY 2014, THE CONTRACTOR SHALL REGULARLY ALLOW THE ENGINEERING GEOLOGIST TO ADVISE THE ENGINEER / APP OF ANY ADDITIONAL MEASURES TO BE TAKEN TO SAFEGUARD THE EXCAVATION AS IT PROGRESSES.

LEGEND:

▨ : TO BE REMOVED/DEMOLISHED

SPILLWAY EXCAVATION PLAN VIEW AND SETTING OUT DETAILS

SCALE 1:250

SECTION
SECTION NUMBER / SHEET NUMBER

SETTING OUT COORDINATES, CHAINAGES AND OFFSETS FOR EXCAVATION BATTER LINE (WGS 84, LO19)

POINT	CHAINAGE	OFFSET FROM REFERENCE LINE	X - COORDINATE	Y - COORDINATE
1	118 000	30,198 m	+3 562 280,68	+11 605,52
2	148 525	46,152 m	+3 562 285,78	+11 634,21
3	178 000	45,054 m	+3 562 287,70	+11 661,32
4	183 575	45,783 m	+3 562 321,69	+11 676,63
RB	118 000	35,620 m	+3 562 289,78	+11 602,58
LB	200 050	34,588 m	+3 562 335,02	+11 680,43

SCALE 1:250 0 5 10 15 20 25 50 m

REVISION				
REV No.	DATE	DESCRIPTION	CHK	ENG
1	11/15	TITLE, CONTOURS AND SPECIFICATIONS	HB	

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA
HEAD OFFICE: CHIEF ENGINEERING, PRIVATE BAG X313, PRETORIA 0001
REGIONAL BUILDING: 185 FRANCIS BAARD STREET, PRETORIA, (012) 336-7500
D.M. MAHOTSHO, DIRECTOR GENERAL

DESIGNED:	P. BARNARD	03/07/17
CHECKED:	P. BARNARD	3/7/2017
ENGINEER:		03/07/17
APP:		14/07/2017

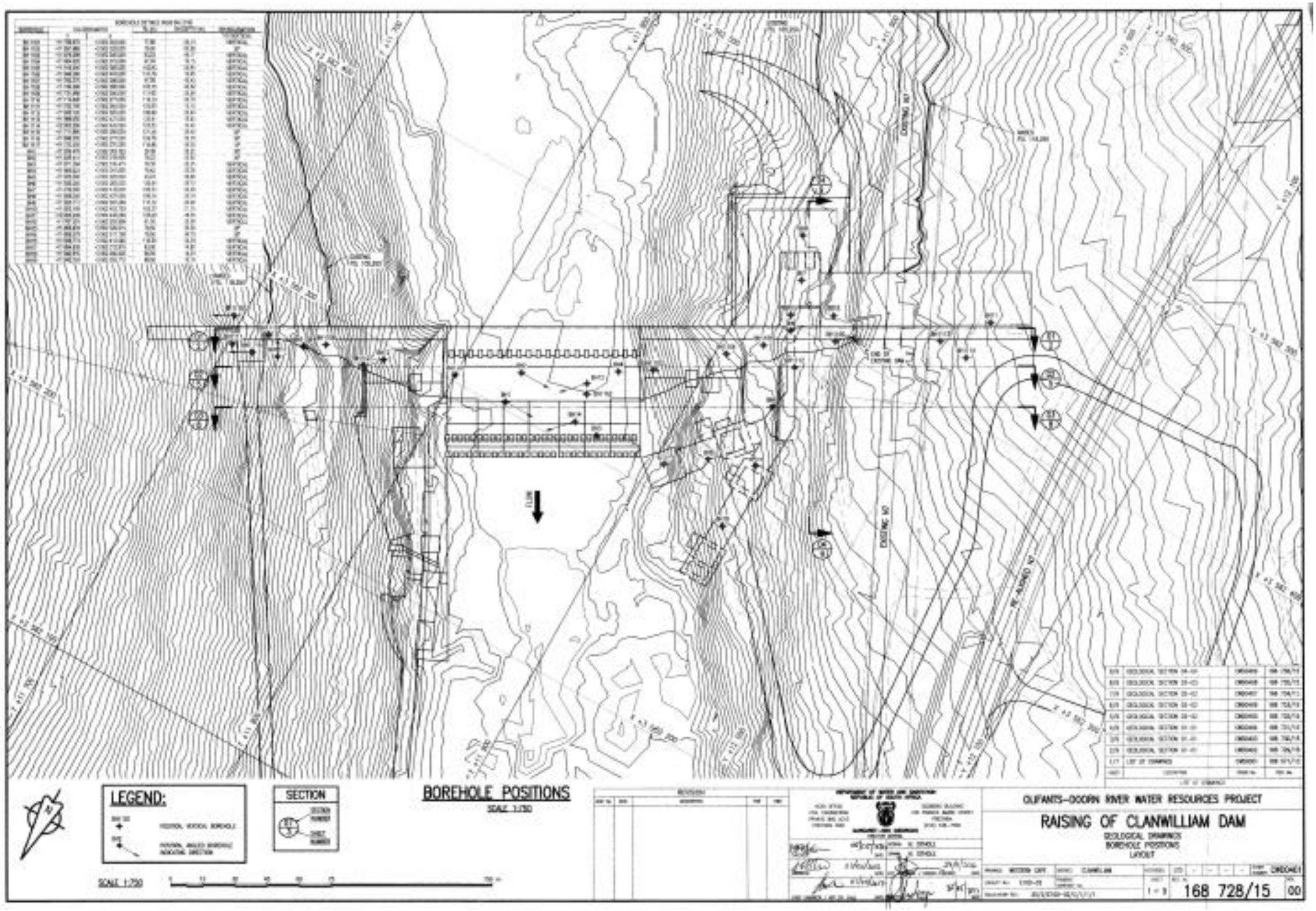
OLIFANTS-DOORN RIVER WATER RESOURCES PROJECT

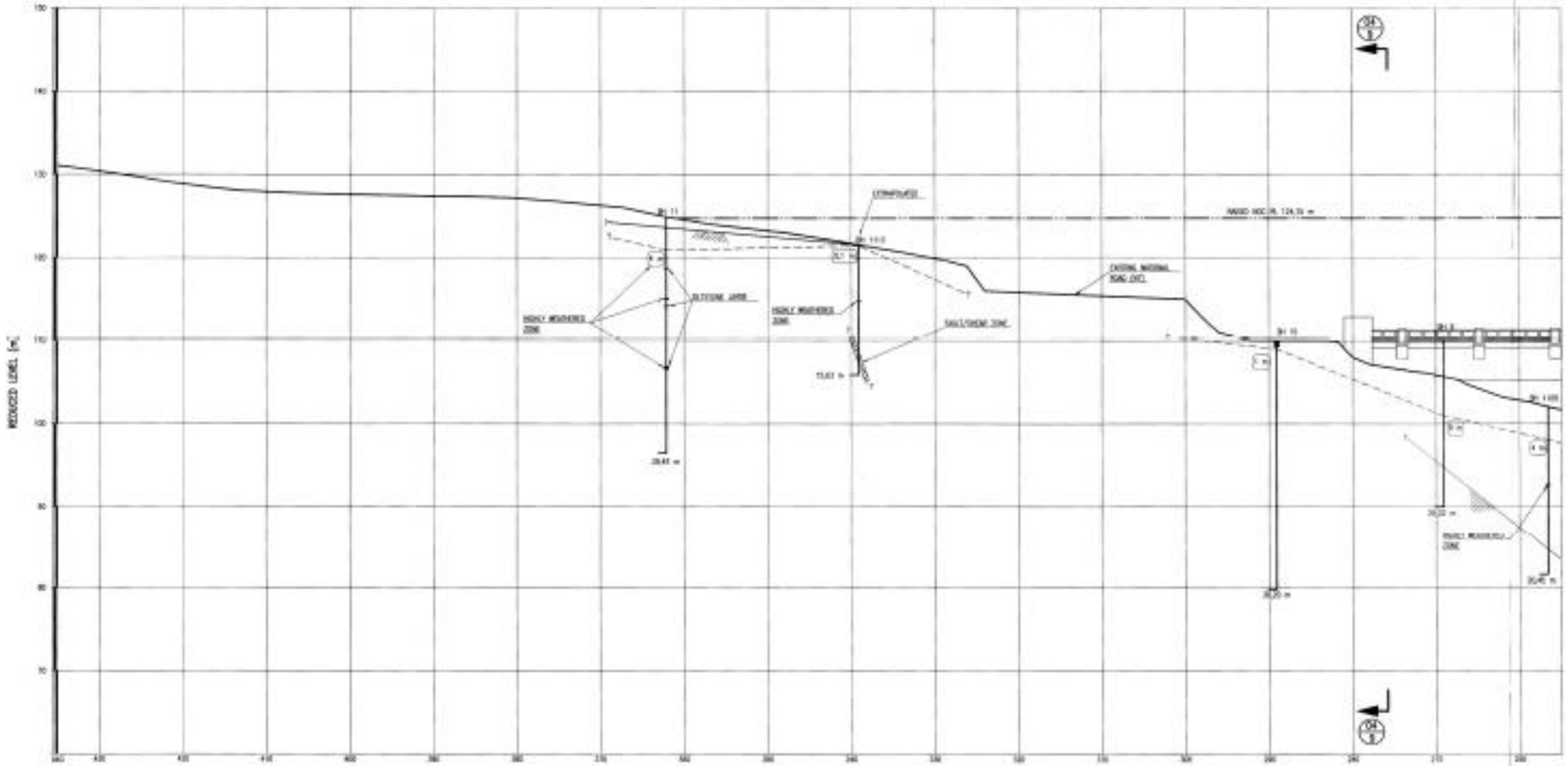
RAISING OF CLANWILLIAM DAM
SPILLWAY
EXCAVATION DRAWINGS
EXCAVATION PLAN VIEW AND SETTING OUT DETAILS

PROVINCE: WESTERN CAPE	DISTRICT: CLANWILLIAM	REFERENCE: G.L.: PNL: DRG: - : -	DRAWING NUMBER: CWD1376
LOCALITY No.: E100-02	TENDER/CONTRACT No.:	SHEET: 6 of 6	REG. No.: 168 682/15
EXCAVATION FILE: 28/2/E100-02/c/1/1/1			REV.: 01

1/7	LIST OF DRAWINGS	CWD0001	168 571/13
SHEET	DESCRIPTION	OTHER No.	REG. No.

LIST OF DRAWINGS


LEGEND:
SECTION
BOREHOLE POSITIONS
SCALE 1:750
SCALE 1:750
GEOLOGICAL DRAWINGS
BOREHOLE POSITIONS
LAYOUT
168 728/15
00



COMMENT:

1. IN SOME INSTANCES BOREHOLES HAVE BEEN PROJECTED ALONG THE CONTOUR AND OTHER INSTANCES PERPENDICULAR TO THE REFERENCE LINE, WHICHEVER IS THE SHORTEST DISTANCE.
2. FOR GEOLOGY DETAIL, REFER TO ENGINEERING GEOLOGICAL REPORT FOR DESIGN PURPOSES.

LEGEND:

- : NGL (NATURAL GROUND LEVEL)
- : USB (UPPER BOUNDARY WEATHERING)
- : EST. (ESTIMATED FOUNDING LEVEL)(ERMR > 40) RMR = ROCK MASS RATING (AFTER BIENIAWSKI, 1976)
- : RECOMMENDED EXCAVATION DEPTH (CORRESPONDING TO FOUNDING CRITERIA, E.G. RMR >40) MEASURED ALONG BOREHOLE
- : WATER LEVEL AT TIME OF DRILLING
- : FAULT / SHEAR ZONE

SCALE 1:250 0 5 10 15 20 25 30 m

SECTION 01–01 (LEFT BANK)

SCALE 1:250

REVISION				
NO.	DATE	DESCRIPTION	TD	CHK

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA
HEAD OFFICE
DPC ENGINEERING
PRIVATE BAG X313
PRETORIA 0001
SCIENCE BUILDING
120 FRANCIS BAARD STREET
HATFIELD
(012) 336-7500
WARKWORT–JAN DE NIJS/ROSS
DESIGN CONSULTANTS
DESIGNED: W. BOTHMAN
DRAWN: W. BOTHMAN
CHECKED: 24/5/2016
CONTRACT: 1:250mm (A1) 1:500mm (A3)
DATE
SENIOR: 16/5/2016
DATE

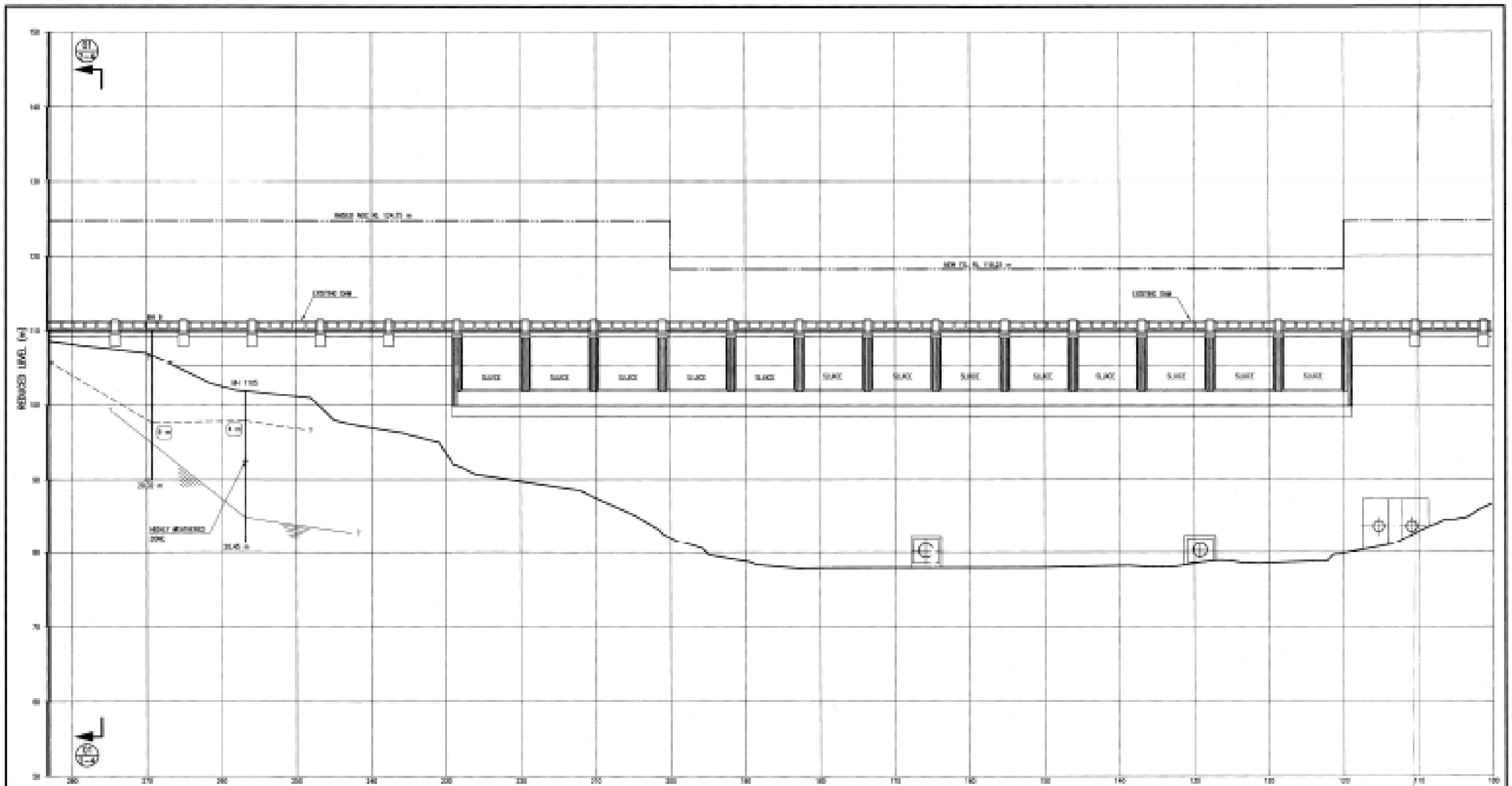
OLIFANTS–DOORN RIVER WATER RESOURCE PROJECT

RAISING OF CLANWILLIAM DAM

GEOLOGICAL SECTION 01–01

SHEET 1 OF 3

PROVINCE: WESTERN CAPE | AREA: CLANWILLIAM | PROJECT: CWD0402
CONTRACT No.: C105-02 | DRAWING No.: 2 OF 3 | DRG No.: 168 729/15 | REV: 00
LOCALITY No.: 0/2/3/E105-02/1/1/1/1



SECTION 01–01 (RIVER SECTION)

SCALE 1:250

LEGEND:

- : NGL (NATURAL GROUND LEVEL)
- : LBR (UPPER BOUNDARY BEDROCK)
- : EXL (ESTIMATED FOUNDING LEVEL)(CWR > 40) RMR = ROCK MASS RATING (AFTER BIENIAWSKI, 1976)
- : RECOMMENDED EXCAVATION DEPTH (CORRESPONDING TO FOUNDING CRITERIA, IE RMR ≥ 40) MEASURED ALONG BOREHOLE
- : WATER LEVEL AT TIME OF DRILLING
- : FAULT / CHEVR ZONES

COMMENT:

1. IN SOME INSTANCES BOREHOLES HAVE BEEN PROJECTED ALONG THE CONTOUR AND OTHER REFERENCES PERPENDICULAR TO THE REFERENCE LINE, WHICHEVER IS THE SHORTEST DISTANCE.
2. FOR GEOLOGY SEISMIC, REFER TO ENGINEERING GEOLOGICAL REPORT FOR DESIGN PURPOSES.

SCALE 1:250

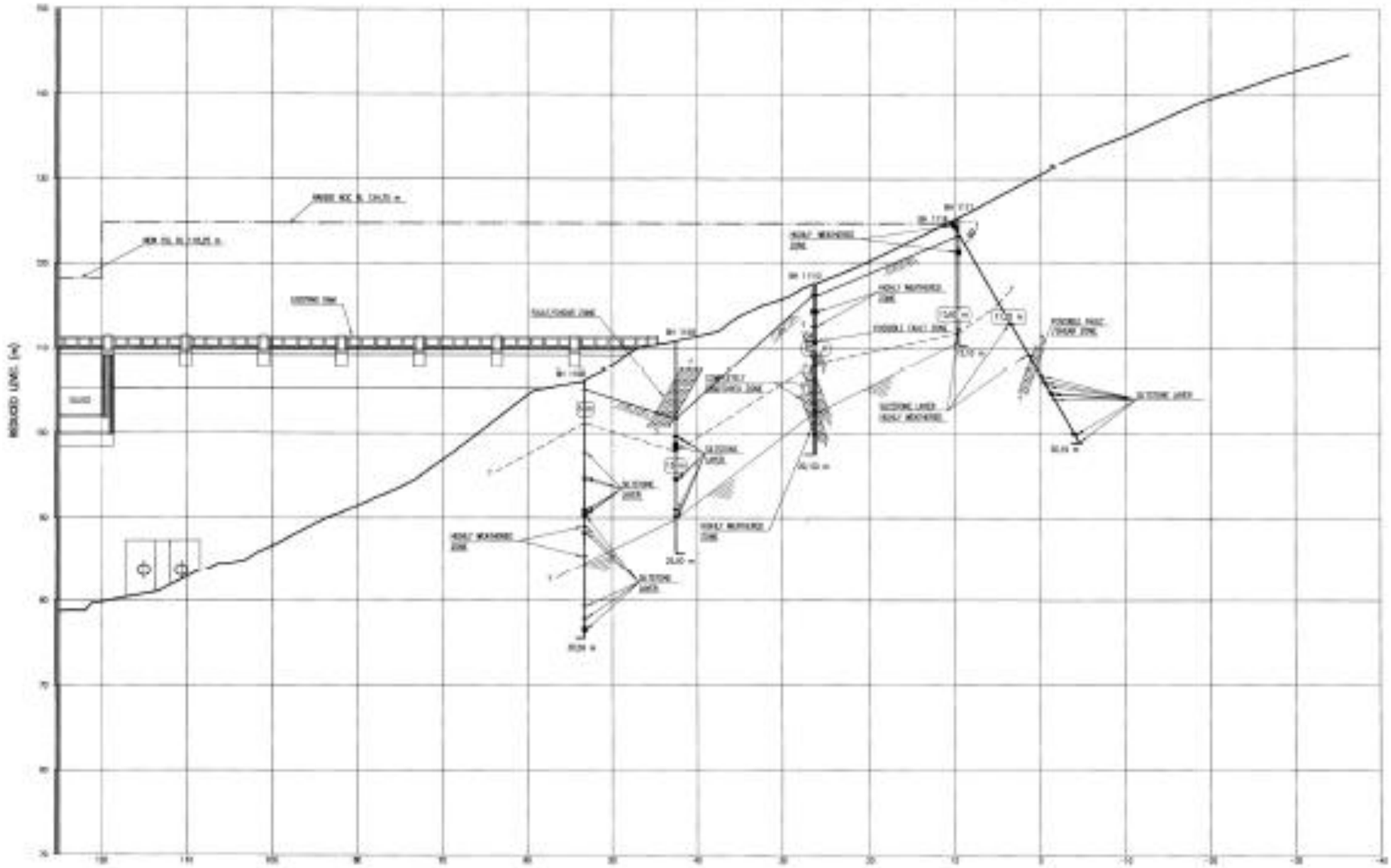
OLIFANTS–DOORN RIVER WATER RESOURCE PROJECT

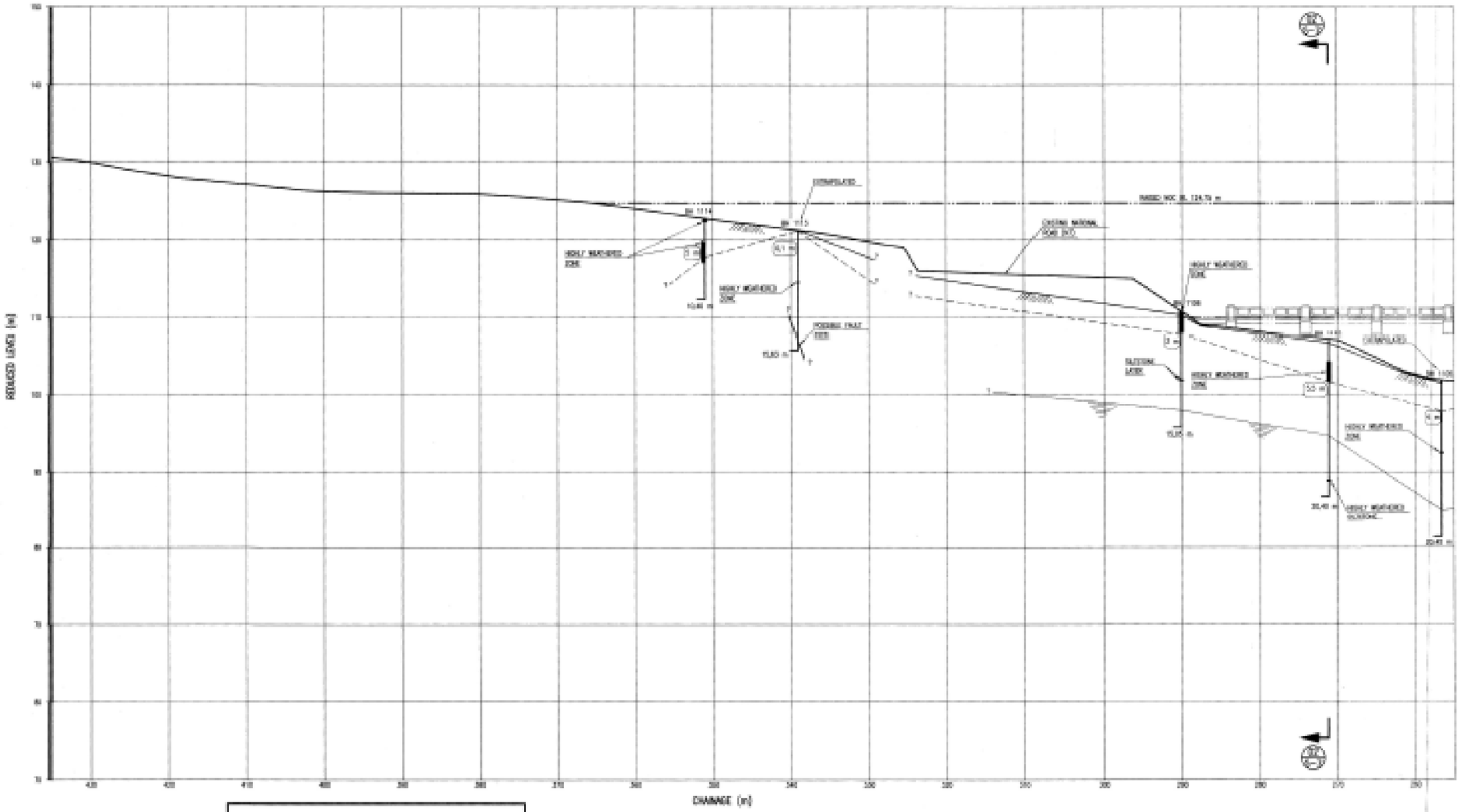
RAISING OF CLANWILLIAM DAM

GEOLOGICAL SECTION 01–01

SHEET 2 OF 3

PROVINCE: WESTERN CAPE	SURVEY: CLANWILLIAM	SCALES:	H: 1:250	V: 1:250	
DRAWN No.: 1720–02	PROJECT (CONTRACT) No.:	SHEET: 3 OF 3	DRG No.: 168 730/15	REV: 00	


RESERVOIR LEVEL (m)
EXISTING DAM
FAULT/SHEAR ZONE
HIGHLY WEATHERED ZONE
FOSSIL FAULT ZONE
FOSSIL FAULT/SHEAR ZONE
SILCRETE LAYER
HIGHLY WEATHERED/FRACTURED ZONE
HIGHLY WEATHERED ZONE
SILCRETE LAYER
HIGHLY WEATHERED ZONE
SILCRETE LAYER
SILCRETE LAYER
HIGHLY WEATHERED ZONE
SILCRETE LAYER
BH 1110
BH 1111
BH 1112
BH 1113
BH 1114
BH 1115
BH 1116
BH 1117
BH 1118
BH 1119
BH 1120
BH 1121
BH 1122
BH 1123
BH 1124
BH 1125
BH 1126
BH 1127
BH 1128
BH 1129
BH



COMMENT:

1. IN SOME INSTANCES BOREHOLES HAVE BEEN PROJECTED ALONG THE CONTOUR AND OTHER INSTANCES PERPENDICULAR TO THE REFERENCE LINE, WHICHEVER IS THE SHORTEST DISTANCE.
2. FOR GEOLOGY DETAIL, REFER TO ENGINEERING GEOLOGICAL REPORT FOR DESIGN PURPOSES.

LEGEND:

- : NGL (NATURAL GROUND LINE)
- : HBB (UPPER BOUNDARY BEDROCK)
- : EFL (ESTIMATED FOUNDING LEVEL)(RMR > 40) RMR = ROCK MASS RATING (AFTER BIENIAWSKI, 1976)
- : RECOMMENDED EXCAVATION DEPTH (CORRESPONDING TO FOUNDING CRITERIA, E RMR >40) MEASURED ALONG BOREHOLE
- : WATER LEVEL AT TIME OF DRILLING
- : FAULT / SHEAR ZONES

SCALE 1:250 0 5 10 15 20 25 50 m

REVISION				
REV. No.	DATE	DESCRIPTION	CHK	APP

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA

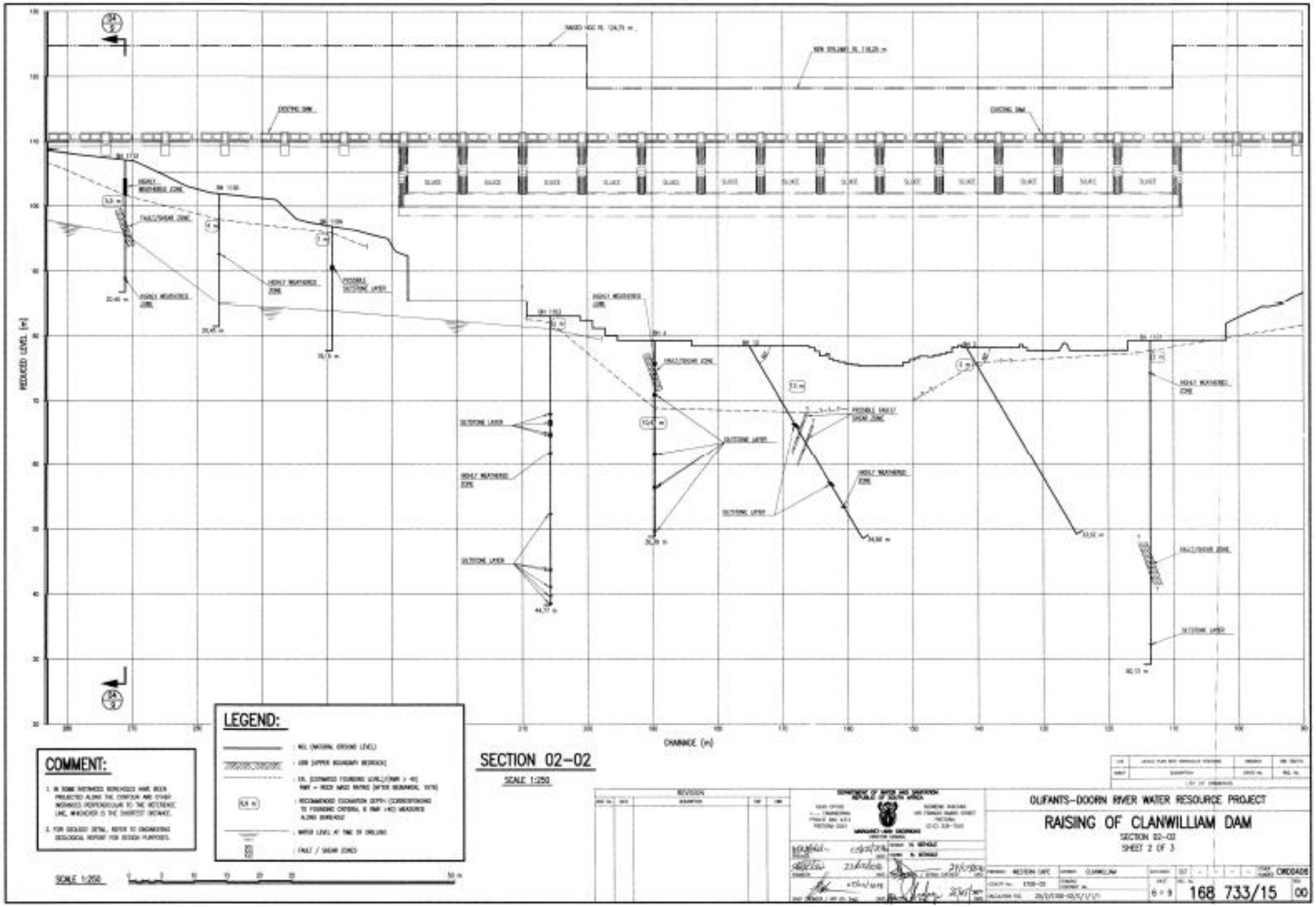
DESIGN No. BEHOLE
DRAWN No. BEHOLE

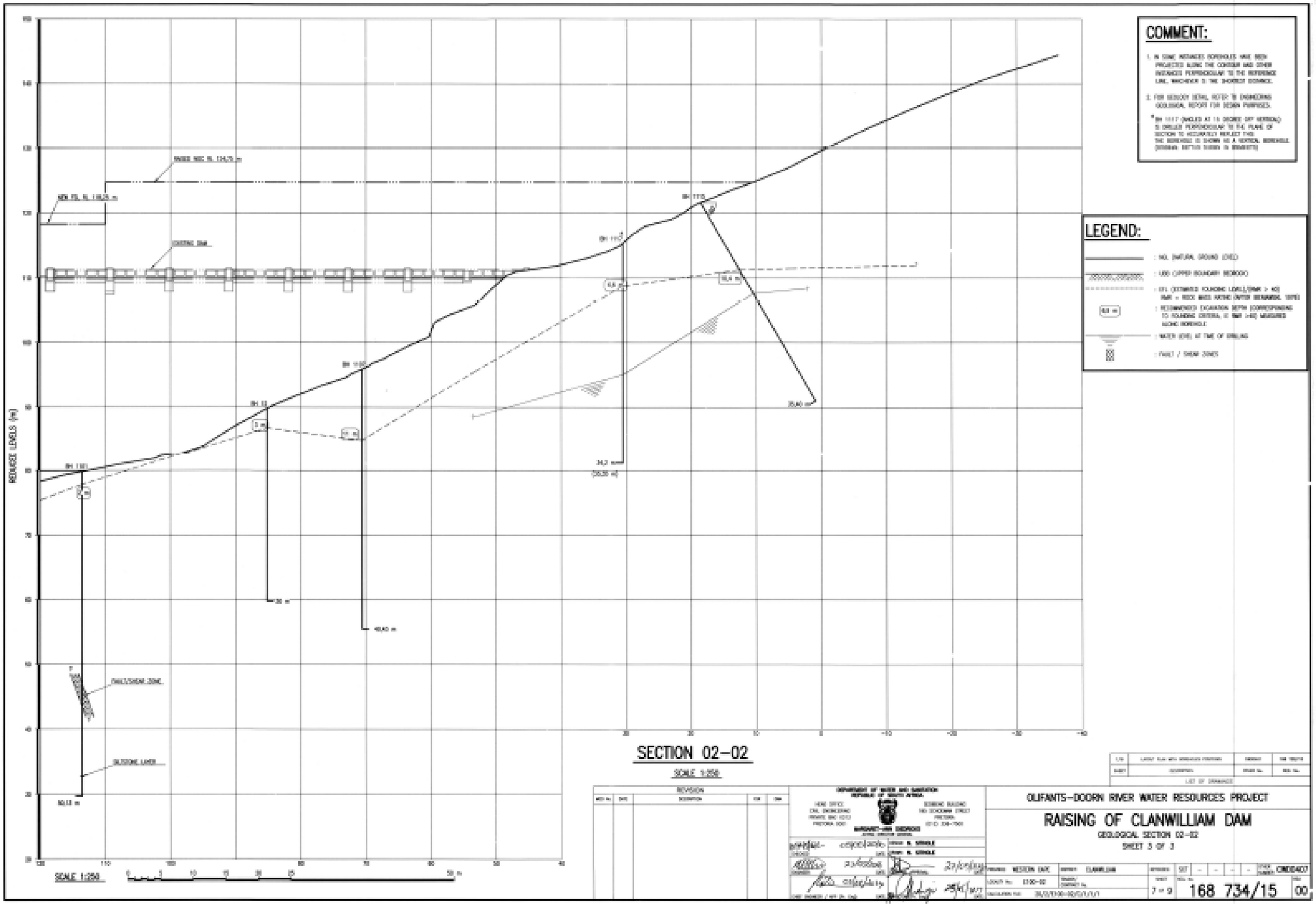
OLIFANTS-DOORN RIVER WATER RESOURCE PROJECT

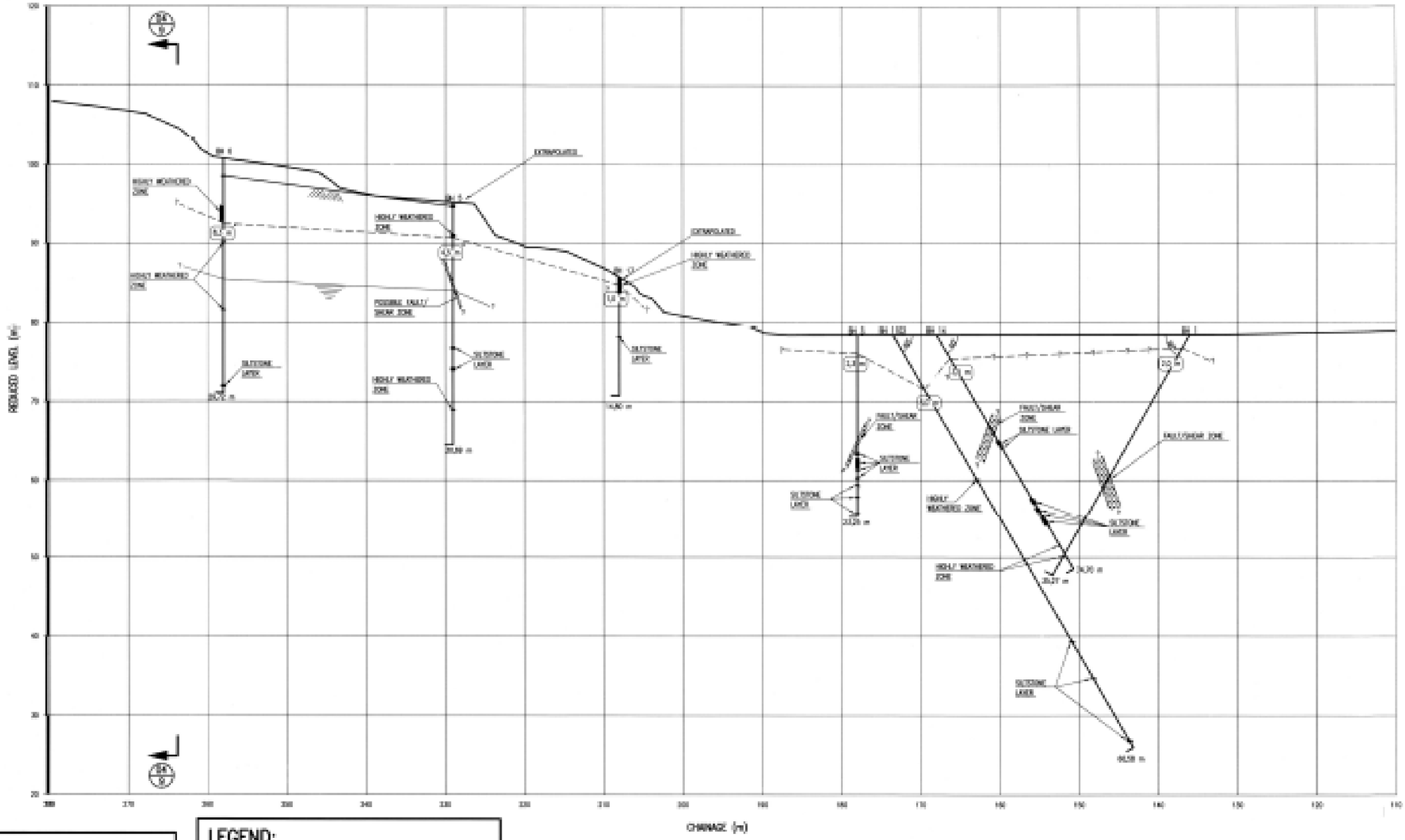
RAISING OF CLANWILLIAM DAM

SECTION 02-02
SHEET 1 OF 3

PROJECT: WESTERN CAPE | DISTRICT: CLANWILLIAM | CONTRACT: CWD0405
JOB No.: 2100-10 | DRAWING CONTRACT No.: | SHEET: 5 - 9 | DRG. No.: 168 732/15 | REV.: 00
DRAWING FILE: 05/2/2100-05/C/1/1/1


SECTION 02-02
SCALE 1:250
LEGEND:
COMMENT:
SCALE 1:250
DISTANCE (m)
REDUCED LEVEL (m)
OLIFANTS-DOORN RIVER WATER RESOURCE PROJECT
RAISING OF CLANWILLIAM DAM
SECTION 02-02
SHEET 2 OF 3
168 733/15


RESERVE LEVELS (m)
RWSS REC FL 114.75 m
MIN FS FL 110.25 m
EXISTING DAM
BH 111
BH 110
BH 11
BH 101
34.2 m
(30.00 m)
35.40 m
40.40 m
50.4 m
FAULT/SHEAR ZONE
SILTSTONE LAYER
50.13 m
SCALE 1:250
SECTION 02–02
SCALE 1:250
COMMENT:
1. IN SOME INSTANCES BOREHOLES HAVE BEEN PROJECTED ALONG THE CONTOUR AND OTHER INSTANCES PERPENDICULAR TO THE REFERENCE LINE, WHICHEVER IS THE SHORTEST DISTANCE.
2. FOR GEOLOGY DETAIL REFER TO ENGINEERING GEOLOGICAL REPORT FOR DESIGN PURPOSES.
* BH 111 (ANGLED AT 15 DEGREE OFF VERTICAL) IS DRILLED PERPENDICULAR TO FAULT PLANE OF SECTION TO ACCURATELY REFLECT THIS. THE BOREHOLE IS SHOWN AS A VERTICAL BOREHOLE. (DEPARTURE BETWEEN BOREHOLE BOTTOM AND BOREHOLE TOP)
LEGEND:
: NGL (NATURAL GROUND LEVEL)
: UBB (UPPER BOUNDARY BEDROCK)
: EFL (ESTIMATED FOUNDING LEVEL)(RMR > 40) RMR = BIENIAWSKI ROCK MASS RATING (AFTER BIENIAWSKI, 1979)
: RECOMMENDED EXCAVATION DEPTH (CORRESPONDING TO FOUNDING CRITERIA @ RMR >40) MEASURED ALONG BOREHOLE
: WATER LEVEL AT TIME OF DRILLING
: FAULT / SHEAR ZONES
REVISION
DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA
OLIFANTS–DOORN RIVER WATER RESOURCES PROJECT
RAISING OF CLANWILLIAM DAM
GEOLOGICAL SECTION 02–02
SHEET 3 OF 3
WESTERN CAPE
CLANWILLIAM
CWD 0407
7 – 9
168 734/15
00



SECTION 03–03

SCALE 1:250

COMMENT:

1. IN SOME INSTANCES BOREHOLES HAVE BEEN PROJECTED ALONG T-E CONTOUR AND OTHER INSTANCES PERPENDICULAR TO THE REFERENCE LINE, WHICHEVER IS THE SHORTEST DISTANCE.
2. FOR GEOLOGY DETAIL, REFER TO ENGINEERING GEOLOGICAL REPORT FOR DESIGN PURPOSES.
3. FINAL EXCAVATION DEPTHS ON FLANK WOULD BE DRIVEN BY DESIGN REQUIREMENTS OF OUTLET
4. ANGLED HOLES BH1 & BH4 HAVE BEEN ADJUSTED TO REFLECT NOT BEING DRILLED IN PLANE OF SECTIONAL ALL BOREHOLES DRILLED AT 90 DEGREE OFF HORIZONTAL

SCALE 1:250

LEGEND:

- : NGL (NATURAL GROUND LEVEL)
- : UBB (UPPER BOUNDARY BEDROCK)
- : EXT. ESTIMATED FOUNDING LEVEL(FOUNDING CRITERIA > RMR = ROCK MASS RATING (AFTER BIENIAWSKI, 1989))
- : RECOMMENDED EXCAVATION DEPTH (CORRESPONDING TO FOUNDING CRITERIA IE RMR >40) MEASURED ALONG BOREHOLE
- : WATER LEVEL AT TIME OF DRILLING
- : FAULT / SHEAR ZONES

REVISION

REV No.	DATE	DESCRIPTION	CHK	APP

DEPARTMENT OF WATER AND SANITATION
REPUBLIC OF SOUTH AFRICA

HEAD OFFICE
DWA, ENGINEERING
PRIVATE BAG X313
PRETORIA 0001

GEORGE REGIONAL
100 TRANCOIS BAARD STREET
PRETORIA
(012) 336-7500

APPROVED FOR DESIGNS

DESIGN: M. MPHAHLELE
CHECK: M. MPHAHLELE

OLIFANTS-DOORN RIVER WATER RESOURCE PROJECT

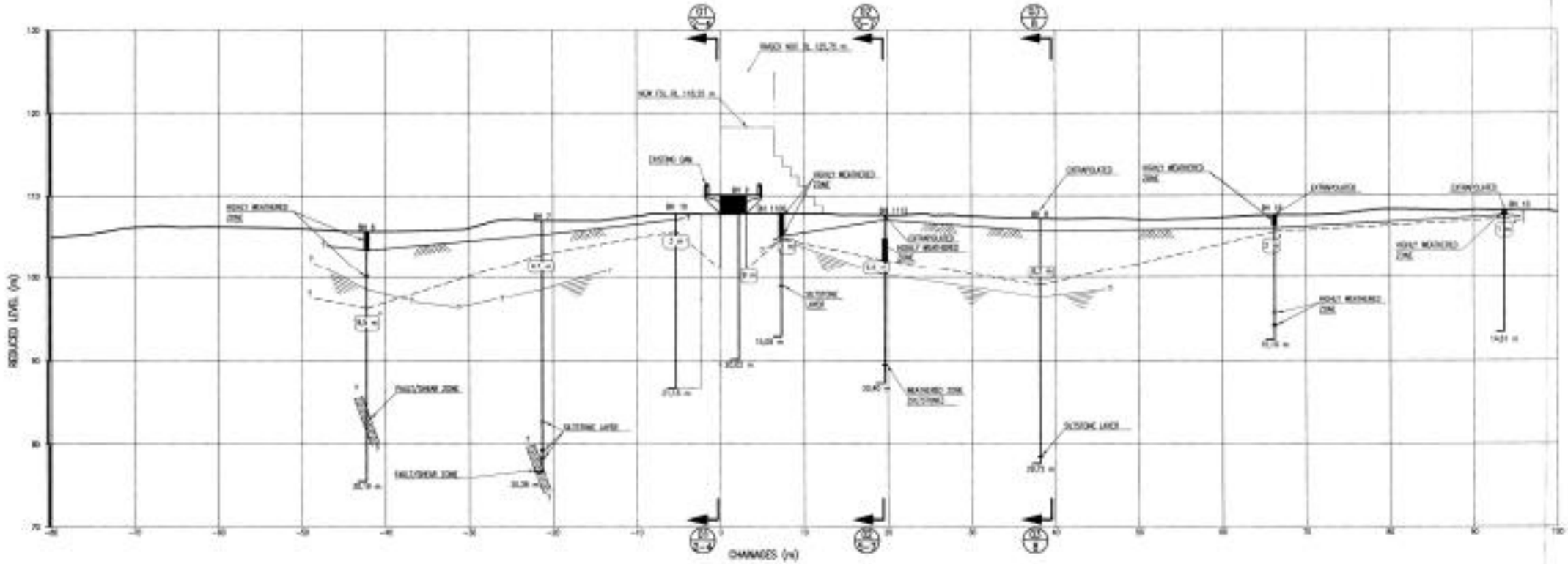
RAISING OF CLANWILLIAM DAM

GEOLOGICAL DRAWING SECTION 03-03
SHEET 1 OF 1

PROVINCE: WESTERN CAPE | DISTRICT: CLANWILLIAM | REVISION | DOT | -- | -- | -- | -- | DRAWING NUMBER: C7000/0408
LOCALITY No.: C7000-00 | TENDER | SHEET 8 of 9 | REV. No. 168 735/15 | REV. 00
CONTRACT No.: DWA/C/7/7/7/7 | CONTRACT No.

COMMENT:

1. IN SOME INSTANCES BOREHOLES HAVE BEEN PROJECTED ALONG THE CONTOUR AND OTHER INSTANCES PERPENDICULAR TO THE REFERENCE LINE, WHICHEVER IS THE SHORTEST DISTANCE.
2. FOR SOILCRETE DETAILS, REFER TO ENGINEERING GEOLOGICAL REPORT FOR DESIGN PURPOSES.

LEGEND:

- NGL (NATURAL GROUND LEVEL)
- UBB (UPPER BOUNDARY BEDROCK)
- EFL (ESTIMATED FOUNDING LEVEL)/(RMR = 40; RMR = ROCK MASS RATING (AFTER BIENIAWSKI, 1976))
- 6.0 m — RECOMMENDED EXCAVATION DEPTH (CORRESPONDS TO FOUNDING CRITERIA, IE RMR >40) MEASURED ALONG BOREHOLE
  *ACTUAL EXCAVATION DEPTHS TO BE DICTATED BY INSITU TUNNEL REQUIREMENTS, (NOT SHOWN HERE)
- WATER LEVEL AT TIME OF DRILLING
- FZ/SZ — FAULT / SHEAR ZONES