THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

MINISTRY OF AGRICULTURE, LIVESTOCK, LANDS AND IRRIGATION

PROJECT MANAGEMENT UNIT

Integrated Watershed & Water Resources Management Project

PROCUREMENT OF WORKS UNDER OPEN COMPETITIVE BIDDING - NATIONALLY

Bidding Documents

for

Rehabilitation of Thannimurippu Tank

Contract No: LK-MOMDE-465695-CW-RFB

Issued: 30th June 2025

Bidder Number	
Name	
Address	

For Reference Only

For Reference Only

Section - 1

Instructions to Bidders (ITB)

Available in ICTAD Publication Number ICTAD/SBD/02
Second Edition January 2007

Instruction to Bidders shall be read in conjunction with Bidding Data under Section 2

For Reference Only

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Section - 2

Bidding Data

Available in ICTAD Publication Number ICTAD/SBD/02
Second Edition January 2007

This section shall be read in conjunction with Section 1 – Instructions to Bidders, and is intended to provide specific information in relation to the corresponding clauses in Section 1. Whenever there is a discrepancy, the provisions in Section 2- Bidding Data shall supersede these provided in the Section 1 – Instruction to Bidders

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Section 2 - Bidding Data

Instructions to Bidders Clause Reference	Entry
1.1	**Employer's Name and Address** Name : ***Project Director,*** ***Integrated Watershed & Water Resources Management Project*** Address: ***2nd Floor, No.96, Ananda Coomaraswamy Mawatha, Colombo 07.***
1.1	**Scope of Works** The works consists of ***Rehabilitation of Thannimurippu Tank under Integrated Watershed & Water Resource Management Project (IWWRMP)*** which including i. Improvements to Tank Bund ii. Construction of LB Sluice Inlet Canal iii. Construction of Concrete Bund Access Road Located at ***Thannimurippu Tank*** *in* ***Mullaitivu*** *District*
1.2	**Time for Completion** The Time for Completion for the whole of works **shall be** ***365 Calendar Days***
2.1	**Source of funds** The source of funds is ***International Development Association (IDA)*** **– World Bank**
3	Substitute by the following: 3.1 The World Bank requires that the Government of Sri Lanka (including beneficiaries of World Bank financing); bidders (applicants/proposers), consultants, contractors and suppliers; any sub-contractors, sub-consultants, service providers or suppliers; any agents (whether declared or not); and any of their personnel, observe the highest standard of ethics during the procurement process, selection and contract execution of World Bank-financed contracts, and refrain from Fraud and Corruption. 3.2 The World Bank requires compliance with its policy in regard to corrupt and fraudulent practices as set forth below. 3.3 In pursuance to this policy, The World Bank: a. Defines, for the purposes of this provision, the terms set forth below as follows: i. "corrupt practice" is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party; ii. "fraudulent practice" is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain financial or other benefit or to avoid an

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obligation;

iii. "collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;

iv. "coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;

v. "obstructive practice" is:

a. deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a World Bank investigation into allegations of a corrupt, fraudulent, coercive, or collusive practice; and/or threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or

b. acts intended to materially impede the exercise of the World Bank's inspection and audit rights provided for under paragraph 3.4 below.

b. rejects a proposal for award if the World Bank determines that the firm or individual recommended for award, any of its personnel, or its agents, or its subconsultants, sub-contractors, service providers, suppliers and/ or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;

c. In addition to the legal remedies set out in the relevant Legal Agreement, may take other appropriate actions, including declaring mis-procurement, if the World Bank determines at any time that representatives of the Government of Sri Lanka or of a recipient of any part of the proceeds of the loan engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the procurement process, selection and/or execution of the contract in question, without taking timely and appropriate action satisfactory to the World Bank to address such practices when they occur, including by failing to inform the World Bank in a timely manner at the time they knew of the practices;

d. Sanctions, pursuant to the World Bank's Anti-Corruption Guidelines and in accordance with its prevailing sanctions policies and procedures as set forth in the WBG's Sanctions Framework any firm or individual – determined at any time by the World Bank to have engaged in Fraud and Corruption in connection with the procurement process, selection and/or execution of a World Bank-financed contract;

e. Requires that, for World Bank-financed operations to be implemented utilizing national procurement arrangements, as well as PPPs, agreed by the World Bank, bidders (applicants/proposers) and consultants submitting bids/proposals will be required to accept the application of, and agree to comply with, the Anti-Corruption Guidelines during the procurement process, selection and/or contract execution, including the World Bank's right to sanction as set forth in paragraph 2.2 d., and the World Bank's inspection and audit rights as set forth in paragraph 3.4. The Employer shall consult and apply the World Bank Group's lists of firms and individuals suspended or debarred. In the event the Employer signs a contract with a firm or an individual suspended or

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	debarred by the World Bank Group, the World Bank does not finance the related expenditures and may apply other remedies as appropriate; and g. Requires that, when a United Nations (UN) agency is selected to provide goods, works, non-consulting services and technical assistance, the above provisions regarding sanctions on Fraud and Corruption shall apply in their entirety to all contractors, consultants, sub-contractors, sub-consultants, service providers, suppliers, and their employees, that signed contracts with the UN agency. 3.4 In further pursuance of this policy, Bidders shall permit and shall cause its agents (whether declared or not), sub-contractors, sub-consultants, service providers, or suppliers and any personnel thereof, to permit the World Bank to inspect all accounts, records and other documents relating to any prequalification process, bid submission, and contract performance (in the case of award), and to have them audited by auditors appointed by the World Bank.
4.1	**Qualification Information** The following information shall be provided in Section 9 - Schedules: • ICTAD registration Registration number …… Grade …… Specialty …… Expiry date …… • VAT registration number …….. • Attach construction program • Attach legal status (Sole proprietor, Partnership, Company etc.) • Attach authentication for signatory • Total monetary value of construction work performed for each of the last five years • Experience in works of a similar nature and size for each of the last five years • Construction equipment • Staffing • Attach Work plan and methods;
4.2 (a)	**CIDA registration required.** **The registration required;** **Specialty:** ***Irrigation and Drainage Canals*** **Grade:** ***C 3 or above***
4.2 (b)	**Average annual volume of construction work performed in last 5 years** Average annual volume of construction work performed in last five years shall be at least ***Rs. 865.00 Million***
4.2 (c)	Experience in works of a similar nature and site for each of the last five years shall be at least **Rs. 390.00** Million (Excluding VAT)

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4.2 (d) **Essential equipment**

Proposals for the timely acquisition (own, lease, hire, etc.) of the following essential equipment **shall be;**

No.	Equipment Type and Characteristics	Min. Number Required
1	Crawler excavator - 120 HP, Bucket capacity 1.0 m^3	3
2	Loader backhoe	2
3	Dozer D4D, D6	3
4	Concrete mixers 1 m^3	1
5	Tractor with trailers	10
6	Porker vibrators	1
7	Transport equipment / Tipper	20
8	Water Bowser with sprinkler 5000 L Capacity	5
9	Mobile Generator	2
10	Plate Compactor	2
11	Rammer	3
12	Baby Dozer	1
13	Vibrating Sheep foot roller not less than 10 Ton	3
14	Water pump 3 inch dia	1

4.2 (e) **Qualifications and experience of the Project Manager and other Key personnel**

Key personnel	Qualifications	No. of Position	Experience	Similar work Experience
1. Project Manager	Engineering Degree or equivalent qualification in Relevant field	1	07 yrs	03 yrs
2. Site Engineer	B.Sc. (Civil Engineering) degree or equivalent	1	05yrs	03yrs
3. Environmental and Social Officer	Degree or equivalent qualification in Relevant field	1	03 yrs	01 yr
4. Health and Safety Officer	Degree or equivalent qualification in Relevant field	1	03 yrs	01 yr
5.Engineering Assistant (Civil)	NDT or equivalent	2	03 yrs	01 yr
6. Draughtsman	National Certificate in Engineering Draftsmanship-NVQ IV	1	03 yrs	01 yr

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	7.Quality control Officer	NCT - Civil	2	03 yrs	01 yr
	6. Work Supervisor	NCT - Civil	4	03 yrs	01 yr

The Bidder must demonstrate that it will have suitably qualified Project Manager and suitably qualified other key personnel in adequate numbers, as described in the table above.

4.2 (f)

Liquid assets and/or credit facilities required.

The minimum amount of liquid assets and/or credit facilities, net of other contractual commitments and exclusive of any advance payments which may be made under the Contract**, shall be not less than Rs. 144.0 million**

8.3

The employer may conduct a site visit concurrently with the pre-bid meeting referred to in Clause 19.

The site visit will be conduct as follow.

Date & Time: **09th July 2025 @ 10.00 am.**
Commencing Venue: **Office of the Deputy Director of Irrigation, Mullaitivu Range, A9 Road, Mankulam, Mullaivu**

10.1

Clarification of Bidding Documents

Employer's address for clarification of bidding documents is:

Name of Officer: **Project Director, IWWRMP**
Address: **2nd Floor, Mahaweli Centre Building,**
No. 96, Ananda Coomaraswamy Mawatha, Colombo 07.
Phone: **0112691163**
Facsimile: **0112691163**
E-mail: iwwrmp@sltnet.lk

13.1(A) (j)
13.1(B) (d)

The Bidder shall submit the following additional documents in its Bid:

Code of Conduct (ESHS)

The Bidder shall submit its Code of Conduct that will apply to Contractor's Personnel (as defined in Sub-clause 1.1.2.7 of the GC), to ensure compliance with its Environmental, Social, Health and Safety (ESHS) obligations under the contract. *[Note: Complete and include the risks to be addressed by the Code in accordance with Schedule 10, e.g. risks associated with: labor influx, spread of communicable diseases, sexual harassment, gender-based violence, sexual exploitation and abuse, illicit behavior and crime, and maintaining a safe environment etc.]*

In addition, the Bidder shall detail how this Code of Conduct will be implemented. This will include: how it will be introduced into conditions of employment/engagement, what training will be provided, how it will be monitored and how the Contractor proposes to deal with any breaches.

The Contractor shall be required to implement the agreed Code of Conduct.

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	Management Strategies and Implementation Plans (MSIP) to manage the (ESHS) risks The Bidder shall submit Management Strategies and Implementation Plans (MSIP) to manage the following key Environmental, Social, Health and Safety (ESHS) risks. The Contractor shall be required to submit for approval, and subsequently implement, the Contractor's Environment and Social Management Plan (C-ESMP), in accordance with the Particular Conditions of Contract Sub-Clause 4.1, that includes the agreed Management Strategies and Implementation Plans described here. *[**Note:** The extent and scope of these requirements should reflect the significant ESHS risks or requirements set out in Schedule 10 as advised by Environmental/Social specialist/s. The key risks to be addressed by the Bidder should be identified by Environmental/Social specialist/s, for example, from the Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plan (ESMP), Resettlement Action Plan (RAP), and/or Consent Conditions (regulatory authority conditions attached to any permits or approvals for the project), up to a maximum of four. The risks may arise during mobilization or construction phases, and may include construction traffic impacts on the community, pollution of drinking water, depositing on private land and impacts on rare species etc. The management strategies and/or implementation plans to address these could include, as appropriate: mobilization strategy, strategy for obtaining consents/permits, traffic management plan, water resource protection plan, bio-diversity protection plan and a strategy for marking and respecting work site boundaries etc.]*
14.4	**Adjustments for change in cost** The Contract **is subjected** to price adjustment
15.1	**Currency of Bid** Rates and prices shall be quoted by the bidders entirely in ***Sri Lankan rupees***.
16.1	**Period of Bid validity:** **The Bid shall be valid up to 175** days from the bid submission deadline date**.** **21st January 2026**
17.1	**Amount of Bid security:** The amount of Bid Security is Sri Lanka Rupees: **Seven Million Three Hundred Thirty Thousand Sri Lanka Rupees (LKR 7,330,000.00)** The Bid security shall, be in the form of an unconditional bank guarantee issued from a reputed **bank recognized by the Central Bank of Sri Lanka** bank located in Sri Lanka. The format of the bid security should be in accordance with the specimen form of bid security included in the bidding documents (Section 11).
17.2	**Validity of Bid Security** The Bid Security shall be valid up to **203** days from the date of closing of the bids. **18th February 2026**.
17.5	The bid security of the successful bidder will be returned when the bidder has signed the Agreement and furnished the required Performance Securities including the

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	Environmental, Social, Health and Safety (ESHS) Performance Security pursuant to ITB 35.1.
17.6 (c) (ii)	Furnish the required Performance Securities including the Environmental, Social, Health and Safety (ESHS) Performance Security pursuant to ITB 35.1.
19.1	**Pre-Bid meeting** Pre-Bid meetings ***will be held*** Venue, time, and date of the pre-bid meeting are as follows. **Date:** 14th July 2025 **Time:** 2.00 pm **Venue:** PMU Conference room, *Integrated Watershed & Water Resources Management Project* *2nd Floor, Mahaweli Centre Building,* *No.96, Ananda Coomaraswamy Mawatha, Colombo 07.*
21.2 (a)	**Employer's Address for Bid Submission** Employer's Address for the purpose of bid submission is: ***Project Director*** ***Integrated Watershed & Water Resources Management Project*** ***2nd Floor, Mahaweli Centre Building,*** ***No.96, Ananda Coomaraswamy Mawatha,*** ***Colombo 07.***
21.2 (b)	**Identification number of Contract** Identification Number of the Contract is: **LK-MOMDE-465695-CW-RFB**
22.1	**Deadline for submission of Bids** Deadline for submission of Bids**: 30th July 2025** Time: **14:00 hrs**
25.1	**Bid opening.** **Venue, time, and date of bid opening.** ***Venue:*** *PMU Conference Room, IWWRM Project,* *2nd Floor, Mahaweli Centre Building,* *No.96, Ananda Coomaraswamy Mawatha, Colombo 07.* **Time: 14:00 hrs** **Date: 30th July 2025**
31.1	**Preference for Domestic Bidders: Not Applicable**
32	**If the Procurement is within the authority limit of a MPC:**

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	After evaluation of Bids in accordance with the procedures described under Clauses 28, 29, 30 and 31, the Employer will inform to all the bidders in writing the selection of the successful bidder and the intention of contract award to such bidder. The unsuccessful bidders if they so wish, within one week of such notice may make representation to the Secretary to the Line Ministry at the address given below. Such representation shall be self-contained to enable the Secretary to arrive at a conclusion and a cash deposit to amount given below shall be made. The Employer may request the bidder who had made representation to submit further evidence during the investigation of such representation. The cash deposit will be forfeited unless the Employer has changed the original contract award decision in favour of the bidder who has made such representation. **Address: ……...** **Cash Deposit: Rupees 25,000/=** **If the Procurement is within the authority limit of PPC:** After evaluation of Bids in accordance with the procedures described under Clauses 28, 29, 30 and 31, the Employer will inform to all the bidders in writing the selection of the successful bidder and the intention of contract award to such bidder. The unsuccessful bidders if they so wish, within one week of such notice may make representation to the Secretary to the Line Ministry at the address given below. Such representation shall be self-contained to enable the Secretary to arrive at a conclusion and a cash deposit to amount given below shall be made. The Employer may request the bidder who had made representation to submit further evidence during the investigation of such representation. The cash deposit will be forfeited unless the Employer has changed the original contract award decision in favour of the bidder who has made such representation. **Address: …….** **Cash Deposit: Rupees 10,000/=**
35.1	**Amount of Performance Security** The Standard Form of Performance Security acceptable to the Employer shall be a Guarantee from an Agency accepted and stated in the Procurement Guidelines. The amount of the Performance Security is ***7%*** of the Initial Contract Price. The Performance Security shall be valid until 28 Days beyond the Time for

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	Completion …… ***(date)***. In addition, the successful Bidder ***shall*** submit an Environmental, Social, Health and Safety (ESHS) Performance Security within 14 Days of receipt of the Letter of Acceptance. The amount of the Environmental, Social, Health and Safety (ESHS) Performance Security is ***3%*** of the initial Contract Price. The Environmental, Social, Health and Safety (ESHS) Performance Security shall be valid until 28 days beyond the defects liability period …… ***(date).*** Performance Guarantee shall only be an unconditional guarantee issued by a bank recognized by the Central Bank of Sri Lanka in accordance with the format given. Additionally Performance Guarantees will be Added up to 10% on the Situation Where the Evaluated Price Having Considerable Gap, Which Would be Decided by PE.
37	Fees and types of reimbursable expenses to be paid to the Adjudicator shall be on a case to case basis and shall be shared equally by the Contractor and the Employer.

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Section - 3

Conditions of Contract

Available in ICTAD Publication Number ICTAD/SBD/02
Second Edition January 2007

Condition of Contract shall be read in conjunction with the
Section 4 – Contract Data

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Section - 4

Contract Data

This section shall be read in conjunction with Section 3 – Condition of Contract, and is intended to provide specific information in relation to corresponding clauses in Section 3. Whenever there is a discrepancy, the provisions in Section 4 - Contract Data shall supersede these provided in the Section 3 – Condition of Contract

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Section 4 – Contract Data

Conditions of Contract Clause Number/s		
(*) 1.1.2.2 & 1.3	Employer's name and address	Name : Project Director, Integrated Watershed & Water Resources Management Project Address : 2nd Floor, Mahaweli Centre Building, No.96, Ananda Coomaraswamy Mawatha, Colombo 07.
1.3	Contractor's name and address	Name: ……. Address: …….
(*) 1.1.2.4 & 1.3	Engineer's name and address	Name: Deputy Director of Irrigation, Mullaitivu Range Address: Deputy Director's office, Mullaitivu Range, A9 Road, Mankulam Mullaitivu
	Engineer's Representative name and address	Name: Divisional Irrigation Engineer, Muththuiyankaddu Division. Address: Divisional Irrigation Engineer's Office, Muththuiyankaddu Division, Oddusuddan Mullaitivu
1.1.2.5 **Contractor's Personnel**	**Key Personnel** The following is added at the end of the sub-clause: "Contractor's Personnel includes Key Personnel as named in the Contract."	
1.1.2.5 Contractor's Representative	Name:……. Address:……	
1.1.2.9	**Replace existing Clause 1.1.2.9 with following:** "Dispute Adjudication Board" (DAB) means three persons appointed under Sub-Clause 19.2 [Appointment of the Dispute Adjudication Board] or Sub-Clause 19.3 [Failure to Agree on the Composition of the Dispute Adjudication Board] of the Conditions of Contract.	
(*) 1.1. 3.3	Time for Completion of the Works	Time for Completion is **365** ***calendar Days from the commencement date.***
(*) 1.1.3.7	Defects Notification Period	Defects Notification Period is **365** Days

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1.1.6.8	The following is added after Sub-Clause 1.1.6.7 "ESHS" means environmental, social (including sexual exploitation and abuse (SEA) and gender-based violence (GBV)), health and safety.	
(*) 2. 1	Right to access to the Site	14 Days after Letter of Acceptance
(*) 3.1	Engineer's Duties and Authority	The Engineer shall obtain the specific approval of the Employer before taking action under the following Sub-Clauses of these Conditions: (a) Clause 13, where the final effect of the aggregated variations exceeds 5% of the Contract Price
4.1 Contractor's General Obligations	Insert in the fifth paragraph after the words "*The Contractor shall, whenever required by the Engineer, submit details of the arrangements and methods which the Contractor proposes to adopt for the execution of the Works.*" "Notwithstanding Sub-Clause 8.1, the Contractor shall not carry out any Works, including mobilization and/or pre-construction activities (e.g. limited clearance for haul roads, site accesses and work site establishment, geotechnical investigations or investigations to select ancillary features such as quarries and borrow pits), unless the Engineer is satisfied that appropriate measures are in place to address environmental, social, health and safety risks and impacts. At a minimum, the Contractor shall apply the Management Strategies and Implementation Plans and Code of Conduct, submitted as part of the Bid and agreed as part of the Contract. The Contractor shall submit, on a continuing basis, for the Engineer's prior approval, such supplementary Management Strategies and Implementation Plans as are necessary to manage the ESHS risks and impacts of ongoing works. These Management Strategies and Implementation Plans collectively comprise the Contractor's Environmental and Social Management Plan (C-ESMP). The C-ESMP shall be approved prior to the commencement of construction activities (e.g. excavation, earth works, bridge and structure works, stream and road diversions, quarrying or extraction of materials, concrete batching and asphalt manufacture). The approved C-ESMP shall be reviewed, periodically (but not less than every six (6) months), and updated in a timely manner, as required, by the Contractor to ensure that it contains measures appropriate to the Works activities to be undertaken. The updated C-ESMP shall be subject to prior approval by the Engineer.	

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(*) 4.2	Amount of Performance Security	7% of the Initial Contract Price, in the currencies and proportions in which the Contract Price is payable. The acceptable form is Unconditional Guarantee. **Performance Security shall only be an unconditional guarantee issued by a bank recognized by the Central Bank of Sri Lanka in accordance with the format given including construction period, Defect Liability period and additional 28 days.** 3% of the Initial Contract Price The ESHS Performance Security will be in the form of a "*demand guarantee"* in the amount(s) of 3% percent of the Accepted Contract Amount and in the same currency (ies) of the Accepted Contract Amount **including construction period, Defect Liability period and additional 28 days.**
4.2 Performance Security	Add the following. The Contractor shall obtain (at his cost) Environmental, Social, Safety and Health (ESHS) Performance Security for compliance with the Contractor's ESHS obligations, for 3% of Initial Contract Price. The Contractor shall deliver ESHS Performance Security to the Employer within 14 days after receiving the Letter of Acceptance and shall send a copy to the Engineer. The ESHS Performance Security shall be issued by a reputable bank selected by the Contractor and shall be in the form annexed to the Particular Conditions, as stipulated by the Employer in the Contract Data, or in another form approved by the Employer. The Contractor shall ensure that the ESHS Performance Security is valid and enforceable until the Contractor has executed and completed the Works and remedied any defects. If the terms of the ESHS Performance Security specify its expiry date, and the Contractor has not become entitled to receive the Performance Certificate (which, if applicable, includes satisfactory performance of the ESHS obligations), by the date 28 days prior to the expiry date, the Contractor shall extend the validity of the ESHS Performance Security until the Works have been completed and any defects have been remedied. The Employer shall return the ESHS Performance Security to the Contractor within 21 days after receiving a copy of the Performance Certificate.	

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4.14 **Progress Reports**	Sub-Clause 4.21 (g) is replaced by the following: **"4.14 (g)** the Environmental, Social, Health and Safety (ESHS) metrics set out in Appendix B" At the end of, and as part of Sub-Clause 4.14 add a new paragraph as follows: "The Contractor shall provide immediate notification to the Engineer of incidents in the following categories. Full details of such incidents shall be provided to the Engineer within the timeframe agreed with the Engineer. (a) confirmed or likely violation of any law or international agreement; (b) any fatality or serious (lost time) injury; (c) significant adverse effects or damage to private property (e.g. vehicle accident, damage from fly rock, working beyond the boundary) (d) major pollution of drinking water aquifer or damage or destruction of rare or endangered habitat (including protected areas) or species; or (e) any allegation of gender-based violence (GBV), sexual exploitation or abuse, sexual harassment or sexual misbehavior, rape, sexual assault, child abuse, or defilement, or other violations involving children.

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6.8 Contractor's Personnel

Key Personnel

Key personnel	Qualifications	No. of Position	Experience	Similar work Experience
1. Project Manager	Engineering Degree or equivalent qualification in Relevant field	1	07 yrs	03 yrs
2. Environmental and Social Officer	Degree or equivalent qualification in Relevant field	1	03 yrs	01 yr
3. Health and Safety Officer	Degree or equivalent qualification in Relevant field	1	03 yrs	01 yr
4. Site Engineer	B.Sc. (Civil Engineering) degree or equivalent	1	05yrs	03yrs
5.Engineering Assistant (Civil)	NDT or equivalent	2	03 yrs	01 yr
6. Draughtsmen	National Certificate in Engineering Draftsmanship-NVQ IV	1	03 yrs	01 yr
7. Quality Control Officer	NCT - Civil	2	03 yrs	01 yr
8. Work Supervisor	NCT - Civil	2	03 yrs	01 yr

Sub-Clauses 6.8 (d) is amended by inserting "or" at the end:

"6.9 (d)……; or"

Sub-Clauses 6.8 (e) is inserted as follows:

"6.9 (e) undertakes behavior which breaches the Code of Conduct (ESHS) (e.g. spreading communicable diseases, sexual harassment, gender-based violence, (GBV), sexual exploitation or abuse, illicit activity or crime)."

After the sentence: "*If appropriate, the Contractor shall then appoint (or cause to be appointed) a suitable replacement person.*" the following is added as a new paragraph:

"The Contractor's Personnel includes Key Personnel. If the Contractor intends to replace a Key Personnel, the Contractor shall, not less than 30 days before the intended date of replacement, give notice to the Engineer, the name, address, academic qualifications and relevant experience of the intended replacement Key Personnel. The Contractor shall not, without the prior consent of the Engineer, revoke the appointment of the Key Personnel or appoint a replacement."

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<table>
<tr><td>(*) 8.7</td><td>Liquidated damages for the Works</td><td>0.05 % of the Initial Contract Price per Day</td></tr>
<tr><td>(*) 8.7</td><td>Maximum amount of liquidated damages</td><td>5 % of the Initial Contract Price</td></tr>
<tr><td>12.2 (b)</td><td>Method of Measurement</td><td>The Method of Measurement shall be joint measurement and annexed in Section 8</td></tr>
<tr><td>13.3 Variation procedure</td><td colspan="2">Sub-Clause 13.3. (a) is replaced with the following:

“(a) a description of the proposed work to be performed, a programme for its execution and sufficient ESHS information to enable an evaluation of ESHS risks and impacts;”</td></tr>
<tr><td>(*) 13.4(b)</td><td>Percentage for adjustment of Provisional Sums</td><td>10 %</td></tr>
<tr><td>13.7 Adjustment for changes in Cost</td><td colspan="2">Last paragraph “The weightings for each of the inputs of cost ……” shall be substituted by the following:

“The weightings for each of the inputs of cost given in this Clause shall be adjusted only if they have been rendered unreasonable, unbalanced or inapplicable, as a result of Variations.”</td></tr>
<tr><td>13.7</td><td>Weightings of Inputs</td><td>
<table>
<tr><th>Indices No</th><th>Input Name</th><th>Input Percentage</th></tr>
<tr><td>M6</td><td>Rubble</td><td>36.59</td></tr>
<tr><td>M45</td><td>Earth</td><td>10.14</td></tr>
<tr><td>M54</td><td>Polyfelt Geosynthetics</td><td>11.2</td></tr>
<tr><td>L3</td><td>Un skilled Labour</td><td>9.92</td></tr>
<tr><td>P1</td><td>Small equipment</td><td>1.47</td></tr>
<tr><td>P2</td><td>Heavy equipment</td><td>15.05</td></tr>
<tr><td>P3</td><td>Fuel</td><td>5.63</td></tr>
<tr><td colspan="2">Total</td><td>90%</td></tr>
</table>
Nonadjustable element shall be:
All Psum & Lsum items
</td></tr>
</table>

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(*) 14.2	Total Advance Payment	Payment, equivalent to 20% of the Initial Contract Price (excluding provisional sums and contingencies), will be made upon the submission of the "Un conditional On Demand" Advanced Guarantee which is obtained from the Bank registered under Central Bank, Sri Lanka. Further, the payment is subjected to the Engineer's Recommendation.
(*) 14.3(c)	Percentage of retention	*10 %*
(*) 14.3(c)	Limit of Retention Money	5% of the Initial Contract Price
14.5	Minimum amount of Interim Payment Certificates.	5% of the Initial Contract Price
(*) 14.5 Issue of Interim Payment Certificate	The following is added to the third paragraph as (c): i. if the Contractor was, or is, failing to perform any ESHS obligations or work under the Contract, the value of this work or obligation, as determined by the Engineer, may be withheld until the work or obligation has been performed, and/or the cost of rectification or replacement, as determined by the Engineer, may be withheld until rectification or replacement has been completed. Failure to perform includes, but is not limited to the following: a) failure to comply with any ESHS obligations or work described in the Works' Requirements which may include: working outside site boundaries, excessive dust, failure to keep public roads in a safe usable condition, damage to offsite vegetation, pollution of water courses from oils or sedimentation, contamination of land e.g. from oils, human waste, damage to archeology or cultural heritage features, air pollution as a result of unauthorized and/or inefficient combustion; b) failure to regularly review C-ESMP and/or update it in a timely manner to address emerging ESHS issues, or anticipated risks or impacts; c) failure to implement the C-ESMP e.g. failure to provide required training or sensitization; d) failing to have appropriate consents/permits prior to undertaking Works or related activities; e) failure to submit ESHS report/s (as described in Appendix B), or failure to submit such reports in a timely manner; f) Failure to implement remediation as instructed by the Engineer within the specified timeframe (e.g. remediation addressing non-compliance/s).	

For Reference Only

<table>
<tr><td>(*)14.8</td><td>Alternative method for Payment of Retention</td><td>On reaching the limit of retention, stated in the Contract Data under Sub-Clause 14.3, the Contractor may substitute full retention money with an unconditional guarantee acceptable to the Employer to a value equal to the full retention money, and valid up to 28 Days beyond the end of Defect Notification Period. On receipt of such guarantee the Employer shall repay the full retention money. The guarantee will be released to the Contractor upon the certification of the Engineer that all Defects notified by the Engineer to the Contractor before the end of this period have been corrected.</td></tr>
<tr><td>(*) 18.2</td><td>Third Party Insurance</td><td>This Amount of insurance per occurrence is:
<table>
<tr><td></td><td>Minimum Insurance Amount</td><td>Maximum Deductible</td></tr>
<tr><td>(a) for the works, Plant and materials:</td><td>110% of the contract Price</td><td>Rs 50,000/-</td></tr>
<tr><td>(b) For loss or damage to equipment</td><td>Replacement value of the Equipments</td><td>Rs 50,000/-</td></tr>
<tr><td>(c) for losses or damage to property (except the works, plant, Materials, and Equipment) in connection with Contract</td><td>Rs 1.0 million</td><td>Rs 50,000/-</td></tr>
<tr><td>(d) for personal injury or death: (i) of the Contractor’s employees per event</td><td>Rs 1,000,000 per employee</td><td>No Deductible</td></tr>
<tr><td>(ii) of other people per event</td><td>Rs 1,000,000 per person</td><td>No Deductible</td></tr>
</table></td></tr>
</table>

For Reference Only

	<u>Clause 19.0 Claims, Disputes and Arbitration</u> ***Delete existing sub-clause 19.2 (Dispute Resolution),*** ***Delete existing sub-clause 19.3 (Procedure for Adjudication),*** ***Delete existing sub-clause 19.4 (Replacement of Adjudicator),*** ***Delete existing sub-clause 19.5 (Arbitration), and insert the following new sub-clauses;*** *19.2 Appointment of the Dispute Adjudication Board* *19.3 Failure to Agree on the Composition of the Dispute Adjudication Board* *19.4 Obtaining Dispute Adjudication Board's Decision* *19.5 Failure to Comply with Dispute Adjudication Board's Decision* *19.6 Expiry of Dispute Adjudication Board's Appointment* *19.7 Arbitration*

For Reference Only

19.2	Appointment of the Dispute Adjudication Board	Any dispute of whatever nature arising out of or in relation to this agreement shall in the first instance be referred to a Dispute Adjudication Board (DAB) for decision in accordance with Sub-Clause 19.4 [Obtaining Dispute Adjudication Board's Decision]. The Parties shall appoint a DAB within 28 Days from the Commencement Date. The DAB shall comprise, three suitably qualified persons ("the members"), who shall be professionals experienced in the type of construction involved in the Works and with the interpretation of contractual documents, one of whom shall serve as chairman. Within 28 Days from the Commencement Date each of the Parties shall appoint one member to serve on the Dispute Adjudication Board (DAB). The Parties shall consult both these members and shall agree upon the third member, who shall be appointed to act as the chairman. The agreement between the Parties and each of the three members shall incorporate by reference the General Conditions of Dispute Adjudication Agreement contained in the Appendix to these Contract Data, with such amendments as are agreed between them. The terms of the remuneration of the three members, including the remuneration of any expert whom the DAB consults, shall be mutually agreed upon by the Parties when agreeing the terms of appointment of the member or such expert (as the case may be). Each Party shall be responsible for paying one-half of this remuneration If a member declines to act or is unable to act as a result of death, disability, resignation or termination of appointment, a replacement shall be appointed in the same manner as the replaced person was required to have been nominated or agreed upon, as described in this Sub-Clause. The appointment of any member may be terminated by mutual agreement of both Parties, but not by the Employer or the Contractor acting alone. Unless otherwise agreed by both Parties, the appointment of the DAB (including each member) shall expire when the discharge referred to in Sub-Clause 14.11 [Discharge] shall have become effective.

For Reference Only

19.3	Failure to Agree on the Composition of the Dispute Adjudication Board	If any of the following conditions apply, namely: (a) either Party fails to nominate a member of a DAB by such date, (b) the Parties fail to agree upon the appointment of the third member (to act as chairman) of the DAB by such date, or (c) the Parties fail to agree upon the appointment of a replacement person within 42 Days after the date on which the one of the three members declines to act or is unable to act as a result of death, disability, resignation or termination of appointment, Then Institute for Construction Training and Development (ICTAD) shall, upon the request of either or both of the Parties and after due consultation with both Parties, appoint this member of the DAB. This appointment shall be final and conclusive. Each Party shall be responsible for paying one-half of the expenses / disbursements incurred by ICTAD.
19.4	Obtaining Dispute Adjudication Board's Decision	If a dispute (of any kind whatsoever) arises between the Parties in connection with, or arising out of, the Contract or the execution of the Works, including any dispute as to any certificate, determination, instruction, opinion or valuation of the Engineer, either Party may refer the dispute in writing to the DAB for its decision, with copies to the other Party and the Engineer. Such reference shall state that it is given under this Sub-Clause. The DAB shall be deemed to have received such reference on the date when it is received by the chairman of the DAB. Both Parties shall promptly make available to the DAB all such additional information, further access to the Site, and appropriate facilities, as the DAB may require for the purposes of making a decision on such dispute. The DAB shall be deemed to be not acting as arbitrator(s).

For Reference Only

		Within 84 Days after receiving such reference, or within such other period as may be proposed by the DAB and approved by both Parties, the DAB shall give its decision, which shall be reasoned and shall state that it is given under this Sub-Clause. The decision shall be binding on both Parties, who shall promptly give effect to it unless and until it shall be revised in an amicable settlement or an arbitral award as described below. Unless the Contract has already been abandoned, repudiated or terminated, the Contractor shall continue to proceed with the Works in accordance with the Contract. If either Party is dissatisfied with the DAB's decision, then either Party may, within 28 Days after receiving the decision, give notice to the other Party of its dissatisfaction and intention to commence arbitration. If the DAB fails to give its decision within the period of 84 Days (or as otherwise approved) after receiving such reference, then either Party may, within 28 Days after this period has expired, give notice to the other Party of its dissatisfaction and intention to commence arbitration. In either event, this notice of dissatisfaction shall state that it is given under this Sub-Clause and shall set out the matter in dispute and the reason(s) for dissatisfaction. Except as stated in Sub-Clause 19.5 [Failure to Comply with Dispute Adjudication Board's Decision] and Sub-Clause 19.6 [Expiry of Dispute Adjudication Board's Appointment], neither Party shall be entitled to commence arbitration of a dispute unless a notice of dissatisfaction has been given in accordance with this Sub-Clause. If the DAB has given its decision as to a matter in dispute to both Parties, and no notice of dissatisfaction has been given by either Party within 28 Days after it received the DAB's decision, then the decision shall become final and binding upon both Parties.
19.5	Failure to Comply with Dispute Adjudication Board's Decision	In the event that a Party fails to comply with a DAB decision which has become final and binding, then the other Party may, without prejudice to any other rights it may have, refer the failure itself to arbitration under Sub-Clause 19.7 [Arbitration]. Sub-Clause 19.4 [Obtaining Dispute Adjudication Board's Decision] shall not apply to this reference.

For Reference Only

19.6	Expiry of Dispute Adjudication Board's Appointment	If a dispute arises between the Parties in connection with, or arising out of, the Contract or the execution of the Works and there is no DAB in place, whether by reason of the expiry of the DAB's appointment or otherwise: (a) Sub-Clause 19.4 [Obtaining Dispute Adjudication Board's Decision] shall not apply, and (b) the dispute may be referred directly to arbitration under Sub-Clause 19.7 [Arbitration].
19.7	Arbitration	(a) Any dispute of whatever nature arising from, out of or in connection with this agreement, on the interpretation thereof, or the rights, duties, obligations or liabilities of any Party, or the operation, breach, termination, abandonment, foreclosure or invalidity thereof, shall be referred to by either Party to arbitration for final settlement, in accordance with the Arbitration Act No. 11 of 1995, or any amendment thereof, (b) Pending the award in any arbitration proceedings hereunder, (i) this Contract and the rights and obligations of the Parties shall remain in full force and effect and (ii) each of the Parties shall continue to perform their respective obligations under this Contract. The termination of this Contract shall not result in the termination of any arbitration proceedings pending at the time of such termination nor otherwise affect the rights and obligations of the Parties under or with respect to such pending arbitration. (c) Any award rendered by the arbitral tribunal shall determine the extent to which the cost of arbitration is to be borne by each Party. The arbitration centre charges and the compensation to the arbitrator shall be equally shared by the Parties initially.

For Reference Only

		Composition of the Arbitral Tribunal : The arbitral tribunal shall consist of a sole arbitrator who shall be appointed in the manner provided in the Selection Procedure as given below. **Selection Procedure :** The Party desiring arbitration shall nominate three arbitrators out of which one to be selected by the other Party within 21 Days of the receipt of such nomination. If the other Party does not select one to serve as Arbitrator within the stipulated period then the Arbitrator shall be appointed in accordance with the Arbitration Act No. 11 of 1995, or any amendments thereof. **Venue & Language :** The venue of arbitration shall be in Sri Lanka. Unless otherwise agreed to by the Parties the proceedings shall be conducted and the award shall be rendered in the English language.
	In the following sub-clauses the term "Performance Security" is replaced with: "Performance Security and, if applicable, an Environmental, Social, Health and Safety (ESHS) Performance Security": 2.1- Right of Access to the Site 14.2- Advance Payment 14.5- Issue of Interim Payment Certificate 14.11- Discharge 15.5- Employer's Entitlement to Termination for Convenience 16.4(a)- Payment on termination"	

For Reference Only

APPENDIX TO CONTRACT DATA

APPENDIX A

A General Conditions of Dispute Adjudication Agreement

1. Definitions

Each "Dispute Adjudication Agreement" is a tripartite agreement by and between:

(a) the "Employer";

(b) the "Contractor"; and

(c) the "Member" who is defined in the Dispute Adjudication Agreement as being one of the three persons who are jointly called the "DAB" (or "Dispute Adjudication Board") and, where this is the case, the other two persons are called the "Other Members."

The Employer and the Contractor have entered (or intend to enter) into a contract, which is called the "Contract" and is defined in the Dispute Adjudication Agreement, which incorporates this Appendix. In the Dispute Adjudication Agreement, words and expressions which are not otherwise defined shall have the meanings assigned to them in the Contract.

2. General Provisions

Unless otherwise stated in the Dispute Adjudication Agreement, it shall take effect on the latest of the following dates:

(a) the Commencement Date defined in the Contract,

(b) when the Employer, the Contractor and the Member have each signed the Dispute Adjudication Agreement, or

(c) when the Employer, the Contractor and each of the Other Members have respectively each signed a Dispute Adjudication Agreement.

This employment of the Member is a personal appointment. At any time, the Member may give not less than 70 Days notice of resignation to the Employer and to the Contractor, and the Dispute Agreement shall terminate upon the expiry of this period.

3. Warranties

The Member warrants and agrees that he/she is and shall be impartial and independent of the Employer, the Contractor and the Engineer. The Member shall promptly disclose, to each of them and to the Other Members, any fact or circumstance which might appear inconsistent with his/her warranty and agreement of impartiality and independence.

When appointing the Member, the Employer and the Contractor relied upon the Member's representations that he/she is:

(a) experienced in the work which the Contractor is to carry out under the Contract,

(b) experienced in the interpretation of contract documentation, and

(c) fluent in the language for communications defined in the Contract.

For Reference Only

4. General Obligations of the Member

The Member shall:

(a) have no interest financial or otherwise in the Employer, the Contractor or Engineer, nor any financial interest in the Contract except for payment under the Dispute Adjudication Agreement;

(b) not previously have been employed as a consultant or otherwise by the Employer, the Contractor or the Engineer, except in such circumstances as were disclosed in writing to the Employer and the Contractor before they signed the Dispute Adjudication Agreement;

(c) have disclosed in writing to the Employer, the Contractor and the Other Members, before entering into the Dispute Adjudication Agreement and to his/her best knowledge and recollection, any professional or personal relationships with any director, officer or employee of the Employer, the Contractor or the Engineer, and any previous involvement in the overall project of which the Contract forms part;

(d) not, for the duration of the Dispute Adjudication Agreement, be employed as a consultant or otherwise by the Employer, the Contractor or the Engineer, except as may be agreed in writing by the Employer, the Contractor and the Other Members;

(e) comply with the annexed procedural rules and with Sub-Clause 19.4 (Obtaining Dispute Adjudication Board's Decision) of the Conditions of Contract;

(f) not give advice to the Employer, the Contractor, the Employer's Personnel or the Contractor's Personnel concerning the conduct of the Contract, other than in accordance with the annexed procedural rules;

(g) not while a Member enter into discussions or make any agreement with the Employer, the Contractor or the Engineer regarding employment by any of them, whether as a consultant or otherwise, after ceasing to act under the Dispute Adjudication Agreement;

(h) ensure his/her availability for all site visits and hearings as are necessary;

(i) become conversant with the Contract and with the progress of the Works (and of any other parts of the project of which the Contract forms part) by studying all documents received which shall be maintained in a current working file;

(j) treat the details of the Contract and all the DAB's activities and hearings as private and confidential, and not publish or disclose them without the prior written consent of the Employer, the Contractor and the Other Members; and

(k) be available to give advice and opinions, on any matter relevant to the Contract when requested by both the Employer and the Contractor, subject to the agreement of the Other Members.

5. General Obligations of the Employer and the Contractor

The Employer, the Contractor, the Employer's Personnel and the Contractor's Personnel shall not request advice from or consultation with the Member regarding the Contract, otherwise than in the normal course of the DAB's activities under the Contract and the Dispute Adjudication Agreement. The Employer and the Contractor shall be responsible for compliance with this provision, by the Employer's Personnel and the

For Reference Only

Contractor's Personnel respectively.
The Employer and the Contractor undertake to each other and to the Member that the Member shall not, except as otherwise agreed in writing by the Employer, the Contractor, the Member and the Other Members:

(a) be appointed as an arbitrator in any arbitration under the Contract;

(b) be called as a witness to give evidence concerning any dispute before arbitrator(s) appointed for any arbitration under the Contract; or

(c) be liable for any claims for anything done or omitted in the discharge or purported discharge of the Member's functions, unless the act or omission is shown to have been in bad faith.

The Employer and the Contractor hereby jointly and severally indemnify and hold the Member harmless against and from claims from which he is relieved from liability under the preceding paragraph.

Whenever the Employer or the Contractor refers a dispute to the DAB under Sub-Clause 19.4 (Obtaining Dispute Adjudication Board's Decision) of the Conditions of Contract, which will require the Member to make a site visit and attend a hearing, the Employer or the Contractor shall provide appropriate security for a sum equivalent to the reasonable expenses to be incurred by the Member. No account shall be taken of any other payments due or paid to the Member.

6. Payment

The Member shall be paid as follows:

(a) a retainer fee per calendar month, which shall be considered as payment in full for:

(i) being available on 28 Days notice for all site visits and hearings;

(ii) becoming and remaining conversant with all project developments and maintaining relevant files;

(iii) all office and overhead expenses including secretarial services, photocopying and office supplies incurred in connection with his duties; and

(iv) all services performed hereunder except those referred to in sub-paragraphs (b) and (c) of this Clause.

The retainer fee shall be paid with effect from the last day of the calendar month in which the Dispute Adjudication Agreement becomes effective; until the last day of the calendar month in which the Taking-Over Certificate is issued for the whole of the Works.

With effect from the first day of the calendar month following the month in which the Taking-Over Certificate is issued for the whole of the Works, the retainer fee shall be reduced by 50%. This reduced fee shall be paid until the first day of the calendar month in which the Member resigns or the Dispute Adjudication Agreement is otherwise terminated.

For Reference Only

(b) a daily fee which shall be considered as payment in full for:

(i) each day or part of a day up to a maximum of two Days travel time in each direction for the journey between the Member's home and the site, or another location of a meeting with the Other Members;

(ii) each working day on Site visits, hearings or preparing decisions; and

(iii) each day spent reading submissions in preparation for a hearing.

(c) all reasonable expenses including necessary travel expenses (hotel and subsistence and other direct travel expenses) incurred in connection with the Member's duties, as well as the cost of telephone calls, courier charges, and faxes: a receipt shall be required for each item in excess of five percent of the daily fee referred to in sub-paragraph (b) of this Clause.

The retainer and daily fees shall be as specified in the Dispute Adjudication Agreement. Unless it specifies otherwise, these fees shall remain fixed for the entire duration of the Contract.

The Member shall submit invoices for payment of the monthly retainer quarterly in advance. Invoices for other expenses and for daily fees shall be submitted following the conclusion of a site visit or hearing. All invoices shall be accompanied by a brief description of activities performed during the relevant period and shall be addressed to the Contractor.

The Contractor shall pay each of the Member's invoices in full within 56 calendar days after receiving each invoice and shall apply to the Employer (in the Statements under the Contract) for reimbursement of one-half of the amounts of these invoices. The Employer shall then pay the Contractor in accordance with the Contract.

If the Contractor fails to pay to the Member the amount to which he/she is entitled under the Dispute Adjudication Agreement, the Employer shall pay the amount due to the Member and any other amount which may be required to maintain the operation of the DAB; and without prejudice to the Employer's rights or remedies. In addition to all other rights arising from this default, the Employer shall be entitled to reimbursement of all sums paid in excess of one-half of these payments, plus all costs of recovering these sums and financing charges calculated at the rate specified in Sub-Clause 14.7 of the Conditions of Contract.

If the Member does not receive payment of the amount due within 70 days after submitting a valid invoice, the Member may (i) suspend his/her services (without notice) until the payment is received, and/or (ii) resign his/her appointment by giving notice under Clause 7.

7. Termination

At any time: (i) the Employer and the Contractor may jointly terminate the Dispute Adjudication Agreement by giving 42 Days notice to the Member; or (ii) the Member may resign as provided for in Clause 2.

For Reference Only

If the Member fails to comply with the Dispute Adjudication Agreement, the Employer and the Contractor may, without prejudice to their other rights, terminate it by notice to the Member. The notice shall take effect when received by the Member.

If the Employer or the Contractor fails to comply with the Dispute Adjudication Agreement, the Member may, without prejudice to his other rights, terminate it by notice to the Employer and the Contractor. The notice shall take effect when received by them both.

Any such notice, resignation and termination shall be final and binding on the Employer, the Contractor and the Member. However, a notice by the Employer or the Contractor, but not by both, shall be of no effect.

8. Default of the Member

If the Member fails to comply with any of his obligations under Clause 4 (a) - (d) above, he shall not be entitled to any fees or expenses hereunder and shall, without prejudice to their other rights, reimburse each of the Employer and the Contractor for any fees and expenses received by the Member and the Other Members, for proceedings or decisions of the DAB which are rendered void or ineffective by the said failure to comply.

If the Member fails to comply with any of his obligations under Clause 4 (e) - (k) above, he shall not be entitled to any fees or expenses hereunder from the date and to the extent of the non-compliance and shall, without prejudice to their other rights, reimburse each of the Employer and the Contractor for any fees and expenses already received by the Member, for proceedings or decisions of the DAB which are rendered void or ineffective by the said failure to comply.

9. Disputes

Any dispute or claim arising out of or in connection with this Dispute Adjudication Agreement, or the breach, termination or invalidity thereof, shall be finally settled in accordance with Arbitration Act No 11, 1995 of Sri Lanka with a sole Arbitrator..

For Reference Only

PROCEDURAL RULES

1. Unless otherwise agreed by the Employer and the Contractor, the DAB shall visit the site at intervals of not more than 70 days, including times of critical construction events, at the request of either the Employer or the Contractor. Unless otherwise agreed by the Employer, the Contractor and the DAB, the period between consecutive visits shall not be less than 35 days, except as required to convene a hearing as described below.

2. The timing of and agenda for each site visit shall be as agreed jointly by the DAB, the Employer and the Contractor, or in the absence of agreement, shall be decided by the DAB. The purpose of site visits is to enable the DAB to become and remain acquainted with the progress of the Works and of any actual or potential problems or claims, and, as far as reasonable, to endeavour to prevent potential problems or claims from becoming disputes.

3. Site visits shall be attended by the Employer, the Contractor and the Engineer and shall be co-ordinated by the Employer in co-operation with the Contractor. The Employer shall ensure the provision of appropriate conference facilities and secretarial and copying services. At the conclusion of each site visit and before leaving the site, the DAB shall prepare a report on its activities during the visit and shall send copies to the Employer and the Contractor.

4. The Employer and the Contractor shall furnish copy each to the members of the DAB all documents which the DAB may request, including Contract documents, progress reports, variation instructions, certificates and other documents pertinent to the performance of the Contract. All communications between the DAB and the Employer or the Contractor shall be copied to the other Party.

5. If any dispute is referred to the DAB in accordance with Sub-Clause 19.4 (Obtaining Dispute Adjudication Board's Decision) of the Conditions of Contract, the DAB shall proceed in accordance with Sub-Clause 19.4 (Obtaining Dispute Adjudication Board's Decision) and these Rules. Subject to the time allowed to give notice of a decision and other relevant factors, the DAB shall:

   (a) act fairly and impartially as between the Employer and the Contractor, giving each of them a reasonable opportunity of putting his case and responding to the other's case, and

   (b) adopt procedures suitable to the dispute, avoiding unnecessary delay or expense.

6. The DAB may conduct a hearing on the dispute, in which event it will decide on the date and place for the hearing and may request that written documentation and arguments from the Employer and the Contractor be presented to it prior to or at the hearing.

7. Except as otherwise agreed in writing by the Employer and the Contractor, the DAB shall have power to adopt an inquisitorial procedure, to refuse admission to hearings or audience at hearings to any persons other than representatives of the Employer, the Contractor and the Engineer, and to proceed in the absence of any party who the DAB is satisfied received notice of the hearing; but shall have discretion to decide whether and to what extent this power may be exercised.

8. The Employer and the Contractor empower the DAB, among other things, to:

   (a) establish the procedure to be applied in deciding a dispute,

   (b) decide upon the DAB's own jurisdiction, and as to the scope of any dispute referred to it,

   (c) conduct any hearing as it thinks fit, not being bound by any rules or procedures other than those contained in the Contract and these Guidelines,

For Reference Only

(d) take the initiative in ascertaining the facts and matters required for a decision,

(e) make use of its own specialist knowledge, if any,

(f) decide upon the payment of financing charges in accordance with the Contract,

(g) decide upon any provisional relief such as interim or conservatory measures, and

(h) open up, review and revise any certificate, decision, determination, instruction, opinion or valuation of the Engineer, relevant to the dispute.

9. The DAB shall not express any opinions during any hearing concerning the merits of any arguments advanced by the Parties. Thereafter, the DAB shall make and give its decision in accordance with Sub-Clause 19.4 (Obtaining Dispute Adjudication Board's Decision), or as otherwise agreed by the Employer and the Contractor in writing. The DAB:

(a) shall convene in private after a hearing, in order to have discussions and prepare its decision;

(b) shall endeavor to reach a unanimous decision: if this proves impossible the applicable decision shall be made by a majority of the Members, who may require the minority Member to prepare a written report for submission to the Employer and the Contractor; and

(c) Member fails to attend a meeting or hearing, or to fulfill any required function, the other two Members may nevertheless proceed to make a decision, unless:

(i) either the Employer or the Contractor does not agree that they do so, or

(ii) the absent Member is the chairman and he/she instructs the other Members to not make a decision.

For Reference Only

DISPUTE ADJUDICATION AGREEMENT

[for each member of a three - person DAB]

Name and details of Contract
Name and address of Employer
Name and address of Contractor
Name and address of Member

Whereas the Employer and the Contractor have entered into the Contract and desire jointly to appoint the Member to act as one of the three persons who are jointly called the Dispute Adjudication Board (DAB) *[and desire the Member to act as chairman of the* DAB*]*

The Employer, Contractor and Member jointly agree as follows:

1. The conditions of this Dispute Adjudication Agreement comprise the "General Conditions of Dispute Adjudication Agreement" which is appended to the General Conditions of the "Standard Bidding Document, Procurement of Works, Major Contracts - Second Edition, January 2007" and the following provisons. In these provisions, which include amendments and additions to the General Conditions of Dispute Adjudication Agreement, words and expressions shall have the same meanings as are assigned to them in the General Conditions of Dispute Adjudication Agreement.

2. *[Details of amendments to the General Conditions of Dispute Adjudication Agreement, if any*

   For example:

   In the procedural rules annexed to the General Conditions of Dispute Adjudication Agreement, Rule_____ is deleted and replaced by: "……."*]*

3 In accordance with Clause 6 of the General Conditions of Dispute Adjudication Agreement the Member shall be paid as follows:

   A retainer fee of _____ per calendar month,

   plus a daily fee of _____ per day.

4 In consideration of these fees and other payments to be made by the Employer and the Contractor in accordance with Clause 6 of the General Conditions of Dispute Adjudication Agreement, the Member undertakes to serve, as described in this Dispute Adjudication Agreement, as one of the three persons who are jointly to act as the DAB.

5 The Employer and the Contractor jointly and severally undertake to pay the Member, in consideration of the carrying out of these services, in accordance with Clause 6 of the General Conditions of Dispute Adjudication Agreement.

6 This Dispute Adjudication Agreement shall be governed by the law of _____

SIGNED by:_____	SIGNED by:_____	SIGNED by:_____
for and on behalf of the employer in the presence of	for and on behalf of the Contractor in the presence of	the Member in the presence of
Witness:_____	Witness: _____	Witness : _____
Name: _____	Name: _____	Name : _____
Address:_____	Address: _____	Address : _____
Date: _____	Date: _____	Date: _____

For Reference Only

APPENDIX B

Environmental, Social, Health and Safety (ESHS)

Metrics for Progress Reports

Metrics for regular reporting:

a. *environmental incidents or non-compliances with contract requirements, including contamination, pollution or damage to ground or water supplies;*

b. *health and safety incidents, accidents, injuries and all fatalities that require treatment;*

c. *interactions with regulators: identify agency, dates, subjects, outcomes (report the negative if none);*

d. *status of all permits and agreements:*

   i. work permits: number required, number received, actions taken for those not received;

   ii. status of permits and consents:

   - *List areas/facilities with permits required (quarries, asphalt & batch plants), dates of application, dates issued (actions to follow up if not issued), dates submitted to resident engineer (or equivalent), status of area (waiting for permits, working, abandoned without reclamation, decommissioning plan being implemented, etc.);*
   - *list areas with landowner agreements required (borrow and spoil areas, camp sites), dates of agreements, dates submitted to resident engineer (or equivalent);*
   - *identify major activities undertaken in each area in the reporting period and highlights of environmental and social protection (land clearing, boundary marking, topsoil salvage, traffic management, decommissioning planning, decommissioning implementation);*
   - *for quarries: status of relocation and compensation (completed, or details of activities and current status in the reporting period).*

e. *health and safety supervision:*

   i. safety officer: number days worked, number of full inspections & partial inspections, reports to construction/project management;

   ii. number of workers, work hours, metric of PPE use (percentage of workers with full personal protection equipment (PPE), partial, etc.), worker violations observed (by type of violation, PPE or otherwise), warnings given, repeat warnings given, follow-up actions taken (if any);

f. *worker accommodations:*

   i. number of expats housed in accommodations, number of locals;

For Reference Only

ii. date of last inspection, and highlights of inspection including status of accommodations' compliance with national and local law and good practice, including sanitation, space, etc.;

iii. actions taken to recommend/require improved conditions, or to improve conditions.

g. HIV/AIDS: provider of health services, information and/or training, location of clinic, number of non-safety disease or illness treatments and diagnoses (no names to be provided);

h. gender (for expats and locals separately): number of female workers, percentage of workforce, gender issues raised and dealt with (cross-reference grievances or other sections as needed);

i. training:

i. number of new workers, number receiving induction training, dates of induction training;

ii. number and dates of toolbox talks, number of workers receiving Occupational Health and Safety (OHS), environmental and social training;

iii. number and dates of HIV/AIDS sensitization and/or training, no. workers receiving training (in the reporting period and in the past); same questions for gender sensitization, flag person training.

iv. number and date of GBV /SEA sensitization and/or training, number of workers receiving training on code of conduct (in the reporting period and in the past), etc.

j. environmental and social supervision:

i. environmentalist: days worked, areas inspected and numbers of inspections of each (road section, work camp, accommodations, quarries, borrow areas, spoil areas, swamps, forest crossings, etc.), highlights of activities/findings (including violations of environmental and/or social best practices, actions taken), reports to environmental and/or social specialist/construction/site management;

ii. sociologist: days worked, number of partial and full site inspections (by area: road section, work camp, accommodations, quarries, borrow areas, spoil areas, clinic, HIV/AIDS center, community centers, etc.), highlights of activities (including violations of environmental and/or social requirements observed, actions taken), reports to environmental and/or social specialist/construction/site management; and

iii. Community liaison person(s): days worked (hours community center open), number of people met, highlights of activities (issues raised, etc.), reports to environmental and/or social specialist /construction/site management.

k. Grievances: list new grievances (e.g. allegations of GBV / SEA) received in the reporting period and unresolved past grievances by date received, complainant, how received, to whom referred to for action, resolution and date (if completed), data resolution reported to complainant, any required follow-up (Cross-reference other sections as needed):

i. Worker grievances;

For Reference Only

ii. Community grievances

l. Traffic and vehicles/equipment:

i. traffic accidents involving project vehicles & equipment: provide date, location, damage, cause, follow-up;

ii. accidents involving non-project vehicles or property (also reported under immediate metrics): provide date, location, damage, cause, follow-up;

iii. overall condition of vehicles/equipment (subjective judgment by environmentalist); non-routine repairs and maintenance needed to improve safety and/or environmental performance (to control smoke, etc.).

m. Environmental Mitigation and issues (what has been done):

i. dust: number of working bowsers, number of waterings/day, number of complaints, warnings given by environmentalist, actions taken to resolve; highlights of quarry dust control (covers, sprays, operational status); % of rock/spoil lorries with covers, actions taken for uncovered vehicles;

ii. erosion control: controls implemented by location, status of water crossings, environmentalist inspections and results, actions taken to resolve issues, emergency repairs needed to control erosion/sedimentation;

iii. quarries, borrow areas, spoil areas, asphalt plants, batch plants: identify major activities undertaken in the reporting period at each, and highlights of environmental and social protection: land clearing, boundary marking, topsoil salvage, traffic management, decommissioning planning, decommissioning implementation;

iv. blasting: number of blasts (and locations), status of implementation of blasting plan (including notices, evacuations, etc.), incidents of off-site damage or complaints (cross-reference other sections as needed);

v. spill cleanups, if any: material spilled, location, amount, actions taken, material disposal (report all spills that result in water or soil contamination;

vi. waste management: types and quantities generated and managed, including amount taken offsite (and by whom) or reused/recycled/disposed on-site;

vii. details of tree plantings and other mitigations required undertaken in the reporting period;

viii. details of water and swamp protection mitigations required undertaken in the reporting period.

n. compliance:

i. compliance status for conditions of all relevant consents/permits, for the Work, including quarries, etc.): statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance;

ii. compliance status of C-ESMP/ESIP requirements: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance

For Reference Only

iii. compliance status of GBV/SEA prevention and response action plan: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance

iv. compliance status of Health and Safety Management Plan re: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance

v. other unresolved issues from previous reporting periods related to environmental and social: continued violations, continued failure of equipment, continued lack of vehicle covers, spills not dealt with, continued compensation or blasting issues, etc. Cross-reference other sections as needed.

For Reference Only

For Reference Only

For Reference Only

Section - 5

Standard Forms (Contract)

- Letter of Acceptance
- Agreement
- Performance Security
- ESHS Performance Security
- Advance Payment Security
- Retention Money Guarantee
- ESHS Declaration

Notes on Form of Letter of Acceptance

The Letter of Acceptance will be the basis for formation of the Contract as described in Clause 34 of the Instructions to Bidders. This Form of Letter of Acceptance should be filled in and sent to the successful bidder only after evaluation of Bids and after obtaining approval from the relevant authority.

FORM OF LETTER OF ACCEPTANCE

[Letter heading paper of the procuring entity]

…… *[date]*

To: ---------- *[name and address of the Contractor]* ---------

This is to notify you that your bid dated ---------- *[insert date]* for the construction and remedying defects of the ***Rehabilitation of Thannimurippu Tank*** **LK-MOMDE-465695-CW-RFB** for the Contract price of ----------[*name of currency]*----------[*amount in figures and words]* as corrected in accordance with Instructions to Bidders and/ or modified by a Memorandum of Understanding , is hereby accepted.

You are hereby instructed to proceed with the execution of the said Works in accordance with the Contract documents.

The Commencement Date shall be: …… *(fill the date as per Clause 8.1 of Conditions of Contract).*

The amount of Performance Security is *:* …… *(fill the amount as per Clause 4.2 of Conditions of Contract).*

The Performance Security shall be submitted on or before ……... *(fill the date as per Clause 4.2 of Conditions of Contract).*

Authorized Signature : ……

Name and title of Signatory : …….

For Reference Only

FORM OF AGREEMENT

This Agreement made the ……. *[day]* of …… *[month]* 20….. *[year]*, between …….. *[name and address of Employer]* (hereinafter called and referred to as "the Employer"), of the one part, and …….. *[name and address of Contractor*] (hereinafter called and referred to as "the Contractor"), of the other part:

Whereas the Employer desires that the Contractor execute ***Rehabilitation of Thannimurippu Tank*** **LK-MOMDE-465695-CW-RFB** *(hereinafter called and referred to as "the Works")* and the Employer has accepted the Bid by the Contractor for the execution and completion of such Works and remedying of any defects therein.

The Employer and the Contractor agree as follows::

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract.

2. In consideration of the payments to be made by the Employer to the Contractor as indicated in this Agreement, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.

3. The Employer hereby covenants to pay the Contractor in consideration of the execute and complete the Works and remedy any defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

In Witness whereof the parties hereto have caused this Agreement to be executed the day and year aforementioned in accordance with laws of Sri Lanka.

……..	……..
Authorized signature of Contractor	**Authorized signature of Employer**
COMMON SEAL	COMMON SEAL

In the presence of
Witnesses :

1. Name and NIC No. …….
   Signature …….
   Address ……

2. Name and NIC No. ……..
   Signature ……..
   Address …….

For Reference Only

FORM OF PERFORMANCE SECURITY
(Unconditional)

---------- *[Issuing Agency's Name, and Address of Issuing Branch or Office]* ----------

Beneficiary: ---------- *[Name and Address of* Employer*]*

Date: ----------

PERFORMANCE GUARANTEE No.: ----------

We have been informed that ---------- *[name of Contractor]* (hereinafter called "the Contractor") has entered into Contract No. **LK-MOMDE-465695-CW-RFB** dated ---------- with you, for the ---------- *[insert "construction"]* of ***Rehabilitation of Thannimurippu Tank*** (hereinafter called "the Contract").

Furthermore, we understand that, according to the Conditions of the Contract, a performance guarantee is required.

At the request of the Contractor, we ---------- *[name of Agency]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of ---------- *[amount in figures]* (----------) *[amount in words]*, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire, no later than the …. day of ……, 20.. *[insert date, 28 days beyond the Time for Completion]* and any demand for payment under it must be received by us at this office on or before that date.

_____
[signature(s)]

For Reference Only

Form of Environmental, Social, Health and safety (ESHS) Performance Security

ESHS Demand Guarantee

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: *[insert name and Address of* Employer*]*

Date: _ *[Insert date of issue]*

ESHS PERFORMANCE GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that _____ (hereinafter called "the Applicant") has entered into Contract No. _____ dated _____ with the Beneficiary, for the execution of _____ (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of _____ (_____),[1] such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its Environmental and/or Social and/or Health and/or Safety (ESHS) obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire, no later than the …. Day of ……, 2… [2], and any demand for payment under it must be received by us at this office indicated above on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

For Reference Only

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[1] *The Guarantor shall insert an amount representing the percentage of the Accepted Contract Amount specified in the Letter of Acceptance, less provisional sums, if any, and denominated either in the currency (cies) of the Contract or a freely convertible currency acceptable to the Beneficiary.*

[2] *Insert the date twenty-eight days after the expected completion date as described in GC Clause 11.9. The Employer should note that in the event of an extension of this date for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months] [one year], in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."*

_____

[signature(s)]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

For Reference Only

FORM OF ADVANCE PAYMENT SECURITY

---------- *[Name and address of Agency, and Address of Issuing Branch or Office]* ------

Beneficiary: ---------- *[Name and Address of* Employer*]*

Date: ----------

ADVANCE PAYMENT GUARANTEE No.: ----------

We have been informed that ---------- *[name of Contractor]* (hereinafter called "the Contractor") has entered into Contract No. **LK-MOMDE-465695-CW-RFB** dated ---------- with you, for the ---------- construction of ***Rehabilitation of Thannimurippu Tank.*** (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum ---------- *[amount in figures]* (----------) *[amount in words]* is to be made against an advance payment guarantee.

At the request of the Contractor, we ---------- *[name of issuing agency]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of ---------- *[amount in figures]* (----------) *[amount in words]* upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation in repayment of the Advance Payment under the Contract.

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor.

This guarantee shall expire on ……. [*Insert the date, 28 days beyond the Time of Completion]*

Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

_____

[signature(s)]

For Reference Only

FORM OF RETENTION MONEY GUARANTEE

---------- *[Issuing Agency's Name, and Address of Issuing Branch or Office]* ----------

Beneficiary: ---------- *[Name and Address of* Employer*]* ----------

Date: ----------

RETENTION MONEY GUARANTEE No.: ----------

We have been informed that ---------- *[name of Contractor]* (hereinafter called "the Contractor") has entered into Contract No. **LK-MOMDE-465695-CW-RFB** *[reference number of the contract]* dated ---------- with you, for the execution of **Rehabilitation of Thannimurippu Tank** (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, when the works have being taken over and the first half of the Retention Money has been certified for payment, payment of the second half of the Retention Money may be made against a Retention Money guarantee.

At the request of the Contractor, we ---------- *[name of agency]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of ----------*[amount in figures]* (----------) *[amount in words]* upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor has not attended to the defects in accordance with the Contract..

This guarantee shall expire, at the latest, ---------- [*insert 28 Days after the end of the Defects Liability Period*]. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

_____

[signature(s)]

For Reference Only

Form of ESHS Declaration

Date: _____
Bid No.: _____

To: _____
We, the undersigned, declare that civil work contracts *have/ have not been* suspended or terminated and/or performance security called by an employer for reasons related to the non-compliance of any environmental, or social, (including sexual exploitation and abuse (SEA) and gender based violence (GBV)), or health or safety requirements or safeguard in the past five years.

(Note: If suspended, terminated or Performance Security is called give details)

Year	**Suspended or terminated portion of contract**	**Contract Identification**	**Total Contract Amount (current value, currency, exchange rate and US$ equivalent)**
[insert year]	*[insert amount and percentage]*	Contract Identification: *[indicate complete contract name/ number, and any other identification]* Name of Employer: *[insert full name]* Address of Employer: *[insert street/city/country]* Reason(s) for suspension or termination: *[indicate main reason(s) e.g. for GBV/ SEA breaches]*	*[insert amount]*
…	…	*[list all applicable contracts]*	…
Performance Security called by an employer(s) for reasons related to ESHS performance			
Year	Contract Identification		Total Contract Amount (current value, currency, exchange rate and US$ equivalent)
[insert year]	Contract Identification: *[indicate complete contract name/ number, and any other identification]* Name of Employer: *[insert full name]* Address of Employer: *[insert street/city/country]* Reason(s) for calling of performance security: *[indicate main reason(s) e.g. for GBV/ SEA breaches]*		*[insert amount]*

Signed: _____
In the capacity of _____
Name: _____
Duly authorized to sign the bid for and on behalf of: _____
Dated on _____ day of _____, _____ _____

Corporate Seal (where appropriate)

For Reference Only

For Reference Only

Section - 6

Specifications

For Reference Only

Specifications

Technical Specifications relevant to this contract consist of two parts.

Part 1 - General Technical Specifications

CIDA/SP/102 [1st Edition – January 2017] – 'Specifications for Irrigation and Drainage Works', ICTAD Publication No. SCA/4/1 **[3rd Edition (Revised)]** – '**Specifications for Building Works - Volume I**', are applicable as the general specifications for the Civil Works of this Contract.

These publications are not issued with the Bidding Document package and the Bidder/Contractor should obtain them from a suitable source.

Part 2 - Particular Technical Specifications

Particular Technical Specifications includes project specific specifications and conditions of particular specification which includes modifications and amplifications to the Standard Specifications given in General Technical Specifications.

1. Introduction

The following Particular Technical Specifications are part of the requirements for the work related to the Civil Works which are to be provided according to the stipulation of the Contract. Hence, the instructions given herein form an integral part of the, and are applicable to, all technical and Contract documents issued for Works. Addenda to these specifications may be issued as required during construction phase with both party agreements.

These Particular Technical Specifications shall be read in conjunction with the General Technical Specifications (ICTAD), the Conditions of Contract and the Bidding Drawings. The Contractor shall comply with all provisions contained within Contract documents.

The General Technical specifications and the Particular Technical Specifications in conjunction with the Bidding drawings define the technical standard and quality to be achieved during construction.

The Particular Technical Specifications relevant to this contract are given in the following Sub Sections.

Sub-Sections	Page No
Contractor's submittals and Engineer's approval	3
Contractor's Quality Assurance System	3
Site installation, Services, and environmental obligations	4
Safety and health precautions	8
Design documents, Construction and As Built Drawings	10
Site supervision, Construction Schedule, and reporting	12
Preparation of As-built drawings	11
Dealing with Water	14
Care of water	15
Setting Out Works	17
Surface excavation	18
Miscellaneous fill works and rehabilitation measures for embankments	21
Environmental and Social Management Plan	35

It is the intent of these Specifications, together with other relevant documents issued as part of the Contract Documents or to follow later on, to provide the Contractor with complete and detailed information and subsequent instructions necessary to enable him to carry out the design, where and when required, and to execute properly the work prescribed.

It is the intent of these Particular Specifications to establish acceptable standards of quality. On the other hand, they shall also allow the construction of the Works in an efficient and economical way. Minor

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deviations in details due to selected work procedures and due to the manufacturer's standard shop process will be considered for acceptance provided that, in the opinion of the Engineer, the proposed substitutions are equal in quality to those specified.

The Drawings available shall serve as a basis for detail design drawings to be produced by the Contractor. All work shall be executed according to the Drawings and requirements released for construction, in a professional and diligent manner, and all supplies and work shall comply with the quality requirements defined in the relevant Sections of these Specifications and other Contract Documents. The Contractor shall provide all necessary efforts to comply with the intent of the General and Particular Specifications to the satisfaction of the Engineer.

CONTRACTOR'S SUBMITTALS AND ENGINEER'S APPROVAL

The Contractor shall provide the Engineer with all submittals as requested in these Specifications and other Contract Documents. Although their extent shall be to the discretion of the Contractor, they shall be complete enough to illustrate adequately their intent and facilitate full for the understanding of the Engineer.

At any time, the Engineer may call for additional information, completion of the submittals. The Contractor shall submit these documents to the Engineer so that, even if not specifically expressed, reasonable time will be given to the Engineer to comment or approve the submittals.

The approval of the Engineer shall always be given in written form prior to the commencement of any work under this Contract and the Contractor shall not be paid for any work that is performed without the express written approval or instruction by the Engineer.

CONTRACTOR'S QUALITY ASSURANCE SYSTEM

As per Clause 4.17 General Conditions of Contract, the Contractor shall institute a quality assurance system to demonstrate that the Works are being carried out in compliance with the requirements of the Contract. The Contractor shall, within 28 days from the receipt of Letter of Acceptance, submit the quality assurance system he is proposing to adopt in the Contract.

The Contractor shall build the quality assurance system for all his activities from the commencement to completion of the Contract. The system shall include but not limited to the following.

- Contractors site management
- Topographic surveys and setting out
- Construction Drawings
- Safety measures adopted
- Environmental Management
- Traffic Management
- Maintenance of Roads
- Construction Methods adopted
- Quality Control
- Progress monitoring
- Monthly Bills

The quality assurance system instituted by the Contractor is a requirement under the Contract and no payment will be made to the Contractor for this work.

For Reference Only

SITE INSTALLATION, SERVICES AND ENVIRONMENTAL OBLIGATIONS

Scope of work

The Contractor shall be responsible for providing plant, equipment, materials and labour for the provision of all necessary site installations, temporary works and services adequate for the realization of the works under this Contract.
The Contractor shall design, furnish, install, maintain and operate all site installations, temporary works and Contractor's equipment for his own use and for the use of the Engineer and Subcontractors, and as required for third parties, including workshops, warehouses, storage and assembly areas, all machinery, vehicles, scaffolding, equipment, water and power supply, etc.
Site installations, temporary works and services provided by the Contractor for his own use as well as for that of the Engineer or for third parties shall conform to the applicable standards, codes and sanitary requirements set down by the Sri Lankan authorities for such purpose.
The construction, operation and maintenance of the Contractor's site installations, temporary works and services shall be subject to inspection and written consent by the Engineer.

The scope of the works includes but is not limited to following site installation parts:

a) All temporary structures required for the performance of the works such as access roads, temporary construction roads or temporary working platforms.
b) Stores, Warehouses, Materials Yards.
c) Materials testing laboratory.
d) Construction equipment.
e) Power supply and illumination.
f) Water supply.
g) Sanitation, sewerage and waste disposal.
h) Communication System.
i) Site security

All installations of any Subcontractors shall comply with these Specifications.

Submittals

Within 30 days from the date of contract award the Contractor shall submit to the Engineer updated layout plans showing, at adequate scale, the locations and arrangement of all site installations. These plans shall be consistent with the plan submitted by the Contractor with his Bid as well as with any amendments and additions.

Within 14 days from the date of contract award the Contractor shall submit to the Engineer an updated project schedule showing all the activities he intends to perform to meet his obligations in is contract and to complete the works within its stipulated time for completion. This baseline schedule will be used for monitoring progress each month and for evaluating the impacts of any departures from the baseline schedule.

Prior to construction works

The Contractor shall carry out all necessary surveying work required for the approved performance of the works and shall ensure that the position and elevation of all works thus constructed are correct. The measuring methods and devices used must meet the standard of accuracy required for this purpose.

ACCESS WORKS

The construction and maintenance of permanent and temporary access roads or access ramps from public roads to the sites, including crossings, shall be the Contractor’s responsibility to the approval of the Engineer.

For Reference Only

In general, all roads within the site area shall be the Contractor responsibility, construction and maintenance, during the works until final handover to the Engineer.
Proper maintenance of all roads being used by the Contractors during the entire construction period, both permanent existing ones as well as temporary roads, shall be the Contractor's responsibility.
Additional roads and ramps which have to be built to transport equipment and materials shall be constructed by the Contractor at his own expense and with the Engineer's prior approval, and the maintenance of such roads during the construction period shall also be at the Contractor's expense. The same applies for existing public roads and bridges used by the Contractor in the vicinity of the site for the execution of the works.
Any work, improvement or modification at the existing access roads made by the Contractor, for his own convenience, and without being ordered by the Engineer, shall be at the Contractor's own risk and expense.
If any damage or pollution occurs during the execution of the works, the Contractor must restore and clean the roads immediately at his own cost.
After completion of the Contract and before delivering the work to the Engineer (final takeover), all temporary structures shall be removed to the satisfaction of the Engineer.

ROAD ACCESS TO THE SITE

Transport of Materials

Prior to moving any heavy construction traffic onto highways, roads and bridges, the Contractor shall make suitable arrangements with the appropriate Government Authorities and obtain their approval for the passage of such traffic.

Special Protection

Where Government Authorities require and specify any special protection or strengthening of highways, roads and bridges. The Contractor shall submit to the Engineer his proposals for such work after their approval by the authority concerned and shall carry-out this work as directed.

Tracked Vehicles

The Contractor shall not travel tracked vehicles or plant on any bituminous sealed road surface. Rubber-tyred vehicles conforming to applicable load restrictions will be permitted to use bituminous sealed roads.

CONSTRUCTION OF ADDITIONAL ROADS

The Contractor shall design, construct, and maintain all temporary access and haul roads to, in, and around his camp area, the various working sites and designated borrow and disposal areas, required for the Works. These roads shall include all associated drainage and stream crossing facilities. The location of these roads shall be in accordance with the Contractor's proposals submitted with his Tender.
During the period of the Contract, the Contractor shall allow the Employer and such other parties free and unrestricted use of all access and haul roads and shall not restrict the access of authorized persons to these roads, look-outs or viewing points as may be instructed.

CONTRACTOR'S OFFICES, CAMP AND FACILITIES

General

The Contractor shall provide a main office and site offices for his staff. The main office shall be located in the vicinity of the dam site. Site offices may be mobile field offices so that, when work at one site is complete, the office may be moved to another site. The Engineer will allocate a portion of the Works area at the dam site where the Contractor shall provide and maintain such offices, stores, workshops, housing and adequately fenced store and delivery compounds as are necessary for the execution of the Works, including all necessary services for water supply, drainage, lighting, roads, paths, parking places, sewerage and garbage disposal.

For Reference Only

Construction Camp

The Contractor shall set up his camp as proposed in his Tender for housing, camps and for other required facilities and amenities for his employees and for the employees of his sub-contractors.
The Contractor shall be deemed to have inspected these sites and made his own evaluation as to their adequacy and suitability for the development of the required camp facilities.
The Contractor shall appoint a Camp Manager who shall be responsible for the administration ad maintenance, and for all matters relating to the allocation of space, discipline and use of buildings and facilities.
All buildings shall always be open to inspection by the Engineer. Any instruction given by the Engineer for the proper cleaning, disinfection and general maintenance of any building in the sanitary and hygienic condition of any building must be forthwith carried-out by the Contractor. Before any buildings are occupied the Contractor shall draw up a code of rules and regulations for their control which shall be approved by the Engineer.

Stores, warehouse, workshops, and material yards

The Contractor shall provide and equip, for his own and his Subcontractors' use, warehouses, materials storage areas and fuel storage areas, all of which shall be maintained in good condition until the completion of works.

Listed hereunder are the buildings, workshops and warehouses expected to be constructed and equipped by the Contractor for use in the performance of the work under this Contract, in addition to facilities explicitly specified elsewhere in these specifications:

a) Workshop and service facilities for vehicles and construction equipment
b) Main warehouse and parts store
c) Storage facilities for all materials applied within the conduction of the rehabilitation works

TEMPORARY WORKS

General

The Contractor shall execute, erect, maintain and remove upon completion of the Works, all Temporary Works in accordance with the proposals submitted with the Tender or with such modifications as approved by the Engineer from time to time.

Approval of Temporary Works

The Contractor shall submit to the Engineer for approval drawings and full particulars of all Temporary Works which he intends to construct at least 30 days before he desire to commence constructing such works.
The submission to, or approval by, the Engineer of any such proposals by the Contractor shall not relieve the Contractor of any of his responsibility for the sufficiency of the Temporary Works for their intended purpose.
The Contractor shall also obtain any necessary approval from local statutory or other Government authorities before commencing construction. Such work shall not be started without prior approval.

CONTRACTOR'S EQUIPMENT

The Contractor shall supply, install, operate, maintain, and subsequently remove all the Contractor's equipment required for the execution of the Works. In particular, the Contractor shall supply all those items listed on the Technical Proposal in the Contract at the time stated therein or at such other time as may be deemed necessary in the opinion of the Engineer.
The Contractor's equipment shall not be removed from the Site without the written approval of the Engineer. If during the execution of the Works any item of the Contractor's equipment in the opinion of the Engineer, is unsuitable so as to fail to perform the services required in the execution of the Works, the Contractor shall replace such construction equipment with another suitable one at his own cost.
The Engineer may, if he considers it necessary for the execution of the Works in accordance with the Contract, order the Contractor to supply additional items of Contractor's equipment or extend the period

For Reference Only

for which the Contractor's equipment is required. The Contractor shall supply and stock all essential spare parts for his equipment to ensure the efficient execution of the Works.

The Contractor shall submit a Monthly Equipment Report, which lists the following information about the Contractor's equipment.

a. List of all equipment located at the Site.
b. Daily working and operation record of each item of equipment.
c. Inspection, repair and maintenance records.
d. Quality of work.
e. Quantities of fuel, lubricant, oil and tires consumed.
f. Overhauling record.
g. Accident report.
h. List of unserviceable equipment and action being taken to put back in operation

UTILITIES

Power supply and illumination

The Contractor shall supply, install, operate and maintain an adequate power supply system and illumination for running the site and other site installation facilities during the whole construction period. The concept shall be approved by the Engineer.

Water supply

The Contractor shall provide, install, operate and maintain adequate and suitable water supplies for the works within the contract including storage for drinking purposes, sanitation, construction, cleaning, testing and commissioning of the various equipment items and plant components of the construction lot.

The water supplies shall be continuously available during working hours and rated to meet the maximum demand required during construction on the basis of 'firm supply' and shall supply all temporary installations.

The drinking water provided shall at all times meet the criteria of the local health authority.

Sanitation, sewerage, and waste disposal

The installations shall meet the requirements of the local health authorities and environmental regulations.

The Contractor shall collect waste material and garbage from the site on a daily basis and transport it to an approved area where it shall be treated and disposed of in accordance with local environmental requirements.

The Site shall be always kept clean and free of refuse. No waste shall be dumped in areas other than those approved by the Engineer for waste disposal. No waste of any kind shall be deposited in any water courses.

DEMOBILIZATION/ REMOVAL OF TEMPORARY WORKS

On completion of the Works, all Temporary Works constructed by the Contractor or handed over to the Contractor by the Engineer, unless otherwise specified or instructed by the Engineer, shall be removed from the Site, as approved by the Engineer.

The Contractor shall make safe all areas affected by Temporary Works and reinstate natural drainage. The Contractor shall finish, reinstate, clean up and relinquish parts of the Site at the end of the Defects Liability Period or such earlier times as instructed by the Engineer.

For Reference Only

ENVIRONMENTAL OBLIGATIONS

The Contractor shall, during the whole period of the works comply fully with all national Sri Lankan laws and regulations relating to environmental protection, mitigating measures for reducing environmental impacts and remedial works on completion of the works. This obligation shall extend to the construction sites themselves and all of the Contractor's site installations.

Notwithstanding any specific obligations as these may be specified in prevailing Sri Lankan laws and regulations, the Contractor shall at all times comply with the following particular requirements for the protection of the environment, the local population and the workers at the construction site:

Collect, treat, remove from site and dispose of in accordance with the regulations and to the satisfaction of the Engineer all domestic and industrial waste and excess construction materials (both solid and liquid), fuel, chemicals and other matter.

All excavated areas shall be filled, graded, and dressed in a clean and orderly condition acceptable to the Engineer. As far as possible such areas should conform to the natural appearance of the landscape.

- Make every effort to minimize the harmful effects of transport to and from the site, in particular vehicle emissions and noise and the control of dust on roads.
  The Contractor shall maintain close contact with local representatives and government institutions in addressing issues arising from the construction activities. Such issues needing particular attention are the following.
- Pollution caused by construction work.
- Disruption to the local community
- Disputes related to the use of land for construction activities and/or site installations etc.
- Disputes arising from traffic congestion and restrictions on the use of the main project access road and roads in the project area.
- All matters relating to road safety and the reduction to a minimum of the risk of traffic accidents.

SOCIAL OBLIGATIONS

As far as may be reasonably practicable, the Contractor shall recruit his unskilled labour from those persons from the local community who may apply for work. Suitably skilled workers in the local community should also be recruited wherever practicable.

SAFETY AND HEALTH PRECAUTIONS

General

This section covers the precautions that have to be taken for the health and safety of all personnel on Site that the Contractor and his Sub-Contractors shall apply in all civil construction and equipment erection works during the construction time.

Safety precautions

SAFETY PROGRAMME AND ITS IMPLEMENTATION

A safety program shall detail policies, procedures, and plans which the Contractor intends to implement to ensure the safety and health of his employees. It shall comply with the standards and regulations in force in the country of the works applicable to construction safety.

The Contractor shall designate a competent employee specially trained and experienced to act as Safety Officer, who will administer and be responsible for the implementation of the safety program. He shall carry out frequent and regular safety inspections of the working areas, materials, and equipment. The name and qualifications of the Safety Officer shall be submitted for approval to the Engineer prior to his appointment.

The Contractor shall be responsible for the implementation of health and safety provisions for his subcontractors employed at Site.

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All serious and fatal injuries and diseases caused by the progress of work shall be immediately investigated by the Contractor and a comprehensive report shall be submitted to the Engineer.
In case of a fatal accident, only rescue and emergency teams and operations shall be permitted at the place of the occurrence until the Engineer gives permission to resume normal operations.

SAFETY STANDARDS

In addition to the requirements of the following specified herein, the Contractor shall comply with all currently applicable safety documents and/or organizations:

SAFETY OF PERSONNEL

The Contractor shall be responsible for the safety of all personnel on the Site and shall provide his employees and his sub-contractors employees working on the Site, the Engineer's staff and all visitors to the Site with safety equipment appropriate to the tasks upon which they are engaged, including helmets, high visibility vests or jackets, safety footwear and, where required, gloves, lamps, waterproof clothing, dust masks and/or safety belts. The use of such safety equipment shall be compulsory, as deemed necessary by the Engineer.

During drilling works and in areas where the personnel are exposed to harmful noise levels and dust, ear protectors and masks shall be furnished and required to wear.

Employees engaged in work having an inherent danger of eye or face injury shall be furnished and required to wear protective glasses, goggles or masks. Where irritant or toxic substances may come in contact with the skin or clothing, employees shall be wearing protective clothing or shall be required to apply a protective ointment by a competent physician.

Personnel working on steep slopes or otherwise subject to possible falls from levels not protected by fixed guardrails or safety nets, shall be secured by safety belts and lifelines.

Portable ladders shall be wooden or steel ladders sufficiently strong and of suitable size for the use intended. Wooden ladders shall have the steps fixed to the longitudinal posts by assembly. The use of ladders with steps nailed or wired along the longitudinal posts is not permitted.

SECURITY OF PERSONNEL AND WORKING AREAS

The Contractor shall always take the necessary measures to ensure the safety and security of all persons, work, and property. This shall include but not be limited to the following:
- Access control to all areas related to the works
- Installation of fences
- Security patrols

MAINTENANCE OF TRAFFIC AND SAFETY ON ROADS AND SITE

The Contractor shall be responsible for the safety on the roads related to the Site. He shall take all necessary precautions for the protection of the work and the safety of the public on the roads affected by his activities. Where the work will be carried out at the site of, or close to an existing road, the Contractor shall maintain the vehicular and pedestrian traffic safe at all times. If his operations can cause traffic hazards, he shall repair or fence or take other measures for ensuring safety which are satisfactory to the Engineer.

Roads subjected to interference with the work shall be kept open or suitable detours shall be provided and maintained by the Contractor, who shall provide, erect, and maintain all necessary barricades, suitable and sufficient flashlights, flagmen, danger signals, and signs.
Roads which will be closed to traffic shall be protected by effective barricades on which acceptable warning and detour signs shall be placed. All barricades and all lights shall be kept burning from sunset to sunrise.

The Contractor shall provide all necessary signs for the Works. These shall include, but not be limited to;
- Standard road signs
- Warning signs

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- Danger signs
- Safety signs
- Control signs; and
- Direction signs

Wording on all signs shall be in the English, Tamil and Sinhalese languages. The size, colour, lettering and location of all signs will be subject to approval of the Engineer and the international sign convention shall, where applicable, be followed.

The Contractor shall maintain all signs placed by himself as well as those placed by the Employer.
The Contractor shall submit his weekly activities schedule and the locations of his work along the existing public roads to the authorities concerned and obtain all necessary approvals prior to commencement of the respective work.

The Contractor shall provide temporary passes and bridges to give an access to the existing villages, houses, etc., to the satisfaction of the Engineer and the authorities concerned whenever he disturbs such existing ways during the execution of the works.

WEATHER PRECAUTIONS

In order that the works may proceed according to the programme, the Contractor is to undertake at his expense all necessary precautions for protection against inclement weather, which shall be subject to the approval of the Engineer.

Health precautions

FIRST AID

Prior to the commencement of construction, the Contractor shall organize and train a first aid team composed of his employees. This team shall be capable of rendering help after accidents.

The first aid team shall be organized in such a way that sufficient number of members will be ready for action at any time until the completion of the work.
The team members shall be instructed and trained for their task by a qualified and experienced person. Each team member shall be skilled in giving first aid, dealing with appliances for artificial respiration, and firefighting equipment and shall possess a good local knowledge. Adequate equipment for reaching even the remotest working area shall be at their disposal.

The Contractor shall submit the details of the proposed first aid team organization to the Engineer for approval.

NOISE CONTROL

The Contractor shall take the provisions required to assure that noise from his construction activities and from the operations of any plants are within the limits established by the WHO for the health of his personnel or shall provide his personnel with ear protectors. Ear protectors shall be provided to all personnel subject to noise levels above 85 dB on a continuous basis during work shifts.

DESIGN DOCUMENTS AND CONSTRUCTION DRAWINGS

Contract Documents

The Contractor will be provided with one set of the Contract Documents for his own use. A complete set of Contract Documents supplied by the Employer and all further instructions issued by him shall be always kept by the Contractor on the Site and made available to the Engineer and his staff.

Construction Drawings

Based on the Bidding drawings assigned design engineers shall develop designs and prepare associated design documents and construction drawings to be approved by the Engineer. The Contractor shall ensure that design work is only allocated to personnel with adequate qualifications and relevant experience to perform the required tasks whereby drawings and calculations shall be signed by qualified personnel

For Reference Only

responsible for the design. All drawings and calculations submitted for approval shall be signed, checked, and signed by the Contractor prior to submission.

All Contractor's working drawings and shop drawings required to be submitted for approval in accordance with the Specification, shall be provided in electronic format (AutoCAD computer software) and 03 printed copies, plus copies of design calculations where required, specification and parts catalogues in duplicate. Within 30 days after receiving such designs, design calculations, parts catalogues, specifications and detailed drawings, the Engineer shall give his approval or request modifications. The Contractor shall modify the design and drawings as may be required by the Engineer. The Contractor will be responsible for the control of the design activities performed as well as their verification. The Contractor shall control and document any revised information in the same manner as drawings and specifications, to assure correct communication through the design interfaces.

The work shall be constructed in accordance with the approved drawings, and a copy of such drawings shall be kept on the Site at all times until the completion of the Contract. All drawings on which changes are made shall have the revisions clearly marked.

Construction, fabrication or manufacture of any portion of the Works shall not commence until the design and drawings have been approved in writing by the Engineer and thereafter no change shall be made to any drawings so approved without the permission of the Engineer. Permission to make such changes shall be requested by sending 01 electronic copy and 01 print of each revised drawing to the Engineer for approval.

As-built Drawings

The Contractor shall submit the 4 copies of "As-built Drawings" on a format agreed between the Contractor and Engineer.

During the construction and commissioning period any variations between the "Construction Drawings" and the "As-built Drawings" shall be agreed between the Contractor and Engineer at site. These As-built drawings shall be prepared from the Construction drawings incorporating any authorized changes carried out during construction. Once completed these drawings shall become the property of the Employer and shall be submitted before issue of the Taking -over certificate.

All agreed modifications will be marked up by the Contractor's draughtsman and included on the originals at site. A complete set of these mark ups shall remain at site. The Contractor shall allow for the provision of a draughtsman as required at site to co-ordinate and include all modifications on the drawings. The originals shall then be returned to the Contractor's head office, and these shall form the basis of the "As-built Drawings".

The Contractor shall submit to the Engineer all final revisions of all original drawings depicting the "As-built" situation for the works. All drawings and documents prepared exclusively for the project shall become the property of the Engineer.

Final drawing prints shall be size A1 or smaller. Reproducible of the final drawings shall be supplied as follows:

- 4 prints of each drawing to the Engineer.
- 4 CDs with original AutoCAD drawing files to the Engineer.

Where drawings are reduced, an appropriate scale shall be included on the reduced print. To accompany the drawings, the Contractor shall provide a Master Schedule of "As Built" drawings.

For Reference Only

SITE SUPERVISION, CONSTRUCTION PROGRAMME AND REPORTS

Site supervision

The Contractor is responsible for providing proper supervision of his site activities by employing suitably qualified and experienced site management and supervisory personnel so that he can carry out his obligations under the Contract.

For the Contractor's information, the Engineer has issued a Construction Supervision Manual, which is intended for use by the Engineer and his staff for the supervision of the works. This manual includes standard forms which will be used during construction for control of the work. It is available to view in the office of the Engineer.

Construction and Contractual Program

a. Within 01 month of the award of Contract, the Contractor shall submit a revision of the construction program attached to the Tender, for approval.

- ✓ The construction program shall be prepared using the latest computer software such as MS Project or other similar software approved by the Engineer. This program in Gantt chart form shall outline the Contractor's activities necessary to complete the Works within the stipulated time period. The program shall show the following minimum details:
- ✓ The duration, sequence and logic links between major activities and any other activities or group of activities which comprise the Works, necessary to define the critical path and logic of the program required for completion and to achieve the Time for Completion. For the purpose of this clause, major activities are those which are greater than one percent of the Contract Price;
- ✓ The planned dates for start and completion of the Works and each Section of the Works;
- ✓ The critical path(s) for the Works and each Section of the Works;
- ✓ Information on shutdown periods, vacation days and other non-working time periods;
- ✓ The estimated value of work to be done each month;
- ✓ Reasons for any changes to timing, work order, method, or resources from the program submitted at the time of tender, or if submitting an updated construction program, reasons for such changes from the previously submitted program.

The construction program submitted in accordance with the provisions of this clause shall in the opinion of the Engineer be reasonable in all respects. The Contractor's program, when approved, shall be known as the Contractual Program.

b. Whenever the Contractor proposes to change the Contractual Program, he shall immediately advise the Engineer in writing and if the Engineer considers the change is a major one, the Contractor shall submit a revised program for approval. If such a change in the program affects the Engineer's design and the drawing approval program, the Employer will not be responsible for the consequences of the late issue of any drawings, which are attributable to that change.

c. If the Contractor falls behind the revised Contractual Program be shall, within 14 days of the date of such default, submit for approval a revision of the program showing the proposed measures, including additional plant, labour and material resources, to complete the Permanent Works on time.

For Reference Only

d. When instructed, the Contractor shall promptly furnish a detailed sub-program of the Contractual Program for particular sections of the Permanent Works.

e. The Contractor shall also attend weekly meetings with the Engineer and provide, not less than 2 days prior to each meeting as required by the Engineer, detailed programs showing separately the various activities of the Contractor anticipated over the forthcoming two-week period as well as the progress achieved over the preceding week relative to the program applicable to that period.

Monthly Progress Report

Before the tenth day of each month, the Contractor shall submit three copies of a monthly progress report in a form acceptable to the Engineer detailing the progress during the preceding month. The monthly progress report shall show the amount of work completed, materials actually used, materials in storage and the cumulative results of all operations completed or in progress and shall be summarized in terms of percentage of completion referenced to the approved programme for the works.

The monthly progress report shall include at least the following:

- ✓ Total percentage of work completed, and total percentage programmed to be completed by the end of the reporting period.
- ✓ Actual percentage of each main work items completed including temporary works, as well as their scheduled percentage, both total and for the reporting period together with the estimated quantities.
- ✓ List of manpower by trade and by position for the reporting period.
- ✓ List of equipment and operational days for the reporting period and materials on site at the end of the period.
- ✓ Description of weather conditions for the period including records of each rainfall duration and recorded water levels of the Tank.
- ✓ List of any accident except of minor nature and any damage that occurred.
- ✓ Any matter which affected or may affect the progress of the work, problems encountered and proposed remedial measures.
- ✓ Colour photographs with imprinted date, not smaller than 100 mm by 150 mm of the work progress during the period for all major components of the Works. The Contractor shall also provide digital versions as well as 5 sets of hard copies of these photographs in albums with titles.

Further the Contractor shall submit financial statements, purchasing and expediting reports, shipping reports, and any other data which the Engineer may reasonably ask for. Additional to the photographs included in the progress reports, the Contractor shall arrange for the taking of progress colour photographs every month, covering all aspects of the work. Two copies of such photographs, suitably dated and captioned, shall be submitted to the Engineer, plus a CD with all relevant files.

The Contractor shall submit the final report not later than one month after completion of the work. This report shall include all relevant information related to the works in a format approved by the Engineer. The Contractor shall submit to the Engineer one copy of the draft report. The final report shall be submitted in triplicate. The final report shall also be made available electronically in pdf format or alternative approved format. The submission of the final report shall follow within one week of acceptance of the draft report.

For Reference Only

DEALING WITH WATER

General

Where it is required that construction shall proceed with flow of water in streams and/or issue of irrigation water to canals, it shall be necessary to isolate the site of the structure to be constructed from the flow of water by the construction of suitable cofferdams, canals, flumes, drains, swamps and/or other temporary diversion and protective works without interruption or interference with the flow of water in the streams and/or issue in the canal. The contractor shall construct sufficient temporary works as described above to deal adequately with surface and ground water sources to enable the construction of the permanent works to the satisfaction of the Engineer.

The Contractor shall submit for the approval of the Engineer the location, size and other relevant details including the materials proposed for the construction of the temporary works described above. The contractor shall protect the works during the entire construction period from damage due to rains, surface run-off, floods, etc. and from failure of the temporary protective works constructed by him. Any damage to the works or delay to his operations from such events, whether due to his failure to adequately take such factors into consideration or not shall be corrected by the contractor and will not constitute a basis for claims for additional payment or extension of time. The Contractor shall furnish, maintain, and operate all necessary pumps and other equipment for removal of water from the various parts of the works free from water as required for construction. After having served their purpose, all temporary protective works, unless otherwise directed, shall be removed, or levelled to give a sightly appearance, so as not to interfere with the operation of the other related works.

Unless specifically provided for in the Bill of Quantities, no separate payment will be made for dealing with water. The cost of all operations required for dealing with water shall be included in the respective items of work for which dealing with water is required.

APPROVAL OF PROPOSALS FOR DEALING WITH WATER

Prior to commencement of any works, the Contractor shall submit a Plan for Dealing with Water with full details of the construction, operation, maintenance, and removal of the temporary protective works.

Right of Use water in the reservoir for cultivation

The farmers will cultivate both Maha and Yala during construction period without foregoing any season. The contractor shall prepare the construction program based on the cultivation pattern and the instruction given by the engineer to Contract. Irrigators and farmers shall have the right to use, without charge, the reservoir water for cultivation as per the cultivation meeting decisions and the access facilities of which the Engineer has given possession to the Contractor or which have been constructed or acquired by the Contractor for use in constructing the Works.

Reducing water level in Reservoir for the work

The water level in the reservoir shall not be reduced before completion of Yala cultivation for the upstream work of the embankment. Once the Yala cultivation is completed water level can be reduced with the approval of the Engineer until the commencement of next monsoonal rain or next Maha cultivation which comes early.

REMOVAL OF WATER FROM FOUNDATIONS

The Contractor's method of removal of water from foundation excavations shall be subject to the approval of the Engineer. Where the excavation for foundations extends below the water table in common material, the portion below the water table shall be de-watered in advance of excavation. The de-watering shall be accomplished in a manner that will maintain the stability of the excavated slopes and the bottom of the excavation and will result in all construction operations being performed in the dry.

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The Contractor shall be required to ensure that the bottom of the excavation is free of water prior to placement of concrete or filling material. Such control may require supplementing approved de-watering methods by the use of perforated pipe under-drains leading to sums from which the water shall be pumped. The pipe drains shall be of uniform diameter for each run and provided with grout connections and returns at about 15-meter intervals and shall be embedded in reasonable well graded gravel or similar filter material.

During the placing and compacting of fill material in an excavated cut off trench, the water level at every point in the cut off trench shall be maintained below the bottom of the cut off trench until the compacted fill in the cut off trench at the point has reached a height of 3 meters. Therefore, the water level shall be maintained at 1.5 meters below the top of the compaction fill. When the fill has reached an elevation which will permit the de-watering systems to maintain the water level at or below the designated elevations as determined to the Engineer, the pipe drains, if any, and surrounding filer material shall be filled with approved grout composed of water and cement or clay.

CARE OF WATER

Scope of work

The Contractor shall provide all methods, procedures, labour and materials necessary to protect all existing works under construction and all personnel and equipment. Further he shall design, build, install, operate, maintain, and dismantle any temporary dewatering facilities required to remove service water and natural surface flow or groundwater seepage from the working areas.

Submittals

After the date of issue of the Notice to Commence, the Contractor shall present the Engineer with conceptual details, designs, method statements, procedures and emergency plans for all required protection and dewatering systems.

Extent of the works

The work under “Care of Water” to be performed under this Contract shall include but not be limited to:

- Construction and maintenance of temporary cofferdams, drains and other protective works;
- Supply and installation, operation and maintenance of pumping systems for dewatering;
- Control and drainage of the water inflows on surfaces against which concrete shall be poured; and
- Handling of the water supply to areas downstream of the dam during construction.

Care of water during construction comprises all necessary measures to protect the works from the effects of water from any source during the construction period. The Contractor shall be fully responsible for the care of water during the construction of the works, including the construction of the upstream and downstream cofferdams, the sealing of their foundation and the handling of the water supply during construction.

The Contractor shall submit with his Tender his proposal and method statement for taking care of water during construction including quantity, type, capacity, arrangement, location, etc., of all required equipment.

The Contractor shall also submit with his Tender his proposal and method statement for the design and construction of the cofferdams and the handling of the water supply for the downstream users during construction.

All works shall be executed in accordance with the specifications of this Contract and in agreement with the Engineer. The approval given by the Engineer shall not relieve the Contractor from being fully responsible for the protection of the works.

For Reference Only

Execution

DRAINAGE AND DEWATERING SYSTEMS

The Contractor shall design, furnish, construct and install, operate and maintain all care of water facilities, including cofferdams, drainage systems etc. necessary to maintain all work areas as free as possible form water during construction. This shall include all necessary labour, materials, equipment, power supplies and auxiliary works as required for a safe and dry construction of the works.

The water inflow existing on surfaces or against which concrete shall be poured shall be collected through steel and/or plastic pipes or other approved methods and conveyed to drainage ditches and pits. These water collectors shall be sufficient to drain all concentrated water inflows and also possible scattered water inflow that can affect the quality of concrete at the moment of pouring.

The Engineer's approval of any care of water facility under the Contractor's responsibility shall not relieve the Contractor of the full responsibility for any adverse event which may result from the inadequacy of failure of the protective structures.

DEWATERING

General

The Contractor shall furnish, operate and maintain all necessary pumps, pipes and other dewatering devices as necessary for keeping all work areas free from water. The Contractor shall be held liable for any damage caused by the failure of the drainage and dewatering systems.

The Contractor shall prepare and submit to the Engineer the design of all temporary drainage and dewatering systems and all auxiliary works required for safe and continuous operation of the drainage and dewatering system throughout the period of the works.

The design and installation shall be such that alterations and extensions of the system during operation are possible.

Diverted or pumped water shall be discharged at locations from which it cannot re-enter the work areas and in a manner which does not cause erosion, pollution, or nuisance to other persons within or adjacent to the site.

Duration of drainage and dewatering

Drainage and dewatering shall continue until construction works are completed to a stage where drainage and dewatering are no longer necessary to prevent damage to the works or neighboring works whether from flooding, hydrostatic pressures, flotation or by any other means to prevent hindrances of any kind.
The ceasing of drainage and dewatering measures requires the approval of the Engineer. The removal of dewatering systems and the abandoning, removal or closing of drainage systems requires the express permission of the Engineer.

Pumping systems and power supply

To remove water from various sections of the work and to handle the water supply to areas downstream of the site, pumping systems of sufficient capacity shall be provided. This shall include the supply, installation, operation and maintenance of all items comprising the pumping system.

The Contractor shall seize his power supply and distribution system to have sufficient standby capacity to continue necessary dewatering work in case of failure of his main generating system.

Ready for service condition

The Contractor shall maintain ready for service and regularly clean all dewatering equipment and accessories and shall keep all accesses clear so that they can safely be used without the risk of accidents.

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COFFERDAMS

All cofferdams shall be designed, constructed, and maintained by the Contractor. The complete design of the cofferdams including all calculations, specifications of materials, proposed construction procedures, provisions for protection of existing or already completed works, provisions for protection against erosion, any necessary support work shall be submitted for the approval of the Engineer prior to the commencement of the work. No work shall be started without the written approval of the Engineer.
The Contractor shall be entirely responsible for the water tightness and maintenance of the cofferdams, care of water as well as safety of the works including sole liability for damages due to erosion and/or piping inside the cofferdam.

Where required by the different phases of the work, the Contractor shall modify, remove, or dismantle and reconstruct the cofferdams as approved or directed by the Engineer.

On completion of the works, the Contractor shall remove or dismantle all cofferdams as approved or directed by the Engineer. The materials shall be brought to the approved location and according to the requirements of paragraph 3 of this specification.

Setting out Works

Existing Survey Date

The Tender drawings included in the bidding document are prepared based on the surveys carried-out by the Engineer during the design stage.

Responsibility for Setting Out

The Contractor shall be solely responsible for the correct setting-out of the Works and shall employ experienced qualified surveyors acceptable to the Engineer for this purpose.

The Contractor shall furnish all materials, labor and equipment including stakes, templates, patterns, platforms and special labor that may be required by the Contractor in setting out any part of the Works.

The Contractor shall give the Engineer not less than 24 hours' notice of his intention to set out, survey or give levels for any part of the Works in order that arrangements can be made for checking the accuracy of the setting out, survey or levels. In order that the Engineer can expedite such checking the Contractor shall as soon as practical supply the Engineer with records in an approved form relating to all reference pegs and benchmarks in connection to the set out, survey or levels for any part of the Works which are required to be checked.

Contractor's Site Staff

The Contractor shall provide competent qualified survey technicians and the necessary support teams to carry-out all survey necessary to set out the Works in a neat and workmanlike manner.

Survey Operatives for the Engineer

The Contractor shall supply chainmen and laborers as required by the Engineer who are well experienced in such work. Chainmen shall be experienced in assisting Engineer in survey work.

It shall be the discretion of the Engineer to select chainmen and laborers whom he considers reliable and suitable, and the Contractor shall maintain the continuity of this staff.

Permanent Survey Pillars

Using the existing temporary benchmarks shown on the Drawings the Contractor shall establish permanent survey pillars sufficient to define the control survey and as directed. The permanent survey pillars shall be linked to the national map grid and their coordinates shall be shown on the As-Built Drawings.

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Establishment of these permanent survey pillars shall be undertaken before any of the existing survey point markers are destroyed by the Contractor's operations.

Detailed Survey

The Contractor shall perform all calculations, surveying and setting out necessary to establish the accurate location of the structures to be constructed.

The Contractor shall submit for the review of the Engineer the methods he intends to employ and the precision he will attain for the setting-out of the Works.

The Contractor shall, under guidance and in the presence of the Engineer, carry out surveys and measurements for record and payment purposes in accordance with the Conditions of Contract.
In the Engineer's own surveying for checking the Contractor's survey results, the Contractor shall render the Engineer all necessary assistance and services for such check surveys.

SURFACE EXCAVATION

Scope of work

This section covers all surface excavation work to be performed under this Contract, which shall consist of removing all existing material of whatever nature to the lines and grades shown on the drawings or as otherwise directed by the Engineer in writing. This work shall include excavating, ripping, loading, hauling, double handling and disposal of materials in designated spoil or stockpile areas, according to these Specifications.

Submittals

Prior to the commencement of any surface excavation, the Contractor shall submit in writing to the Engineer details of the proposed excavation methods and sequences, including necessary safety precautions. Prior to dumping or stockpiling any material, the Contractor shall submit in writing the layout of spoil or stockpile areas to the Engineer and wait the approval in writing. All pertinent data of working methods and provisions for the security, stability and temporary and permanent drainage of the areas shall be included by the Contractor. Details of volumes, material types, heights and grades shall be provided.

Lines and grades

The final excavation grades shall in general bed rock of specified quality. However, where the final excavation grades are defined by line and grade, the Contractor shall take every precaution and use the most appropriate method of excavation, to avoid the loosening of material or the breaking of rock beyond the lines and grades shown on the drawings. Loose weathered rock shall be removed.

The bottoms of all excavations shall be trimmed to line and grade to the satisfaction of the Engineer.
If, for any reason, excavation is carried out beyond the lines and grades shown on the drawings, the Contractor shall remove the excess material and take the necessary measures to restore the required lines and grades with approved backfill or concrete, at his own expense.

Should the Contractor wish to excavate beyond the limits given on the drawings for his own convenience, he may do so, at his own expense but only with the prior written approval of the Engineer.

Slopes, slides, geological overbreak and unsuitable foundations

If geological conditions during the performance of the work do not permit excavation of slopes as shown on the drawings, or where the material is unsuited to forming a firm foundation for the structures, the Contractor shall modify the drawings accordingly or issue a direct request to the Engineer to change the grades. The prior written approval of the Engineer is mandatory.

If, in the Contractor's opinion the slopes as shown on the drawings are objectionable, and in his opinion should be changed, he shall obtain the written agreement of the Engineer prior to starting the work on such modified excavation.

For Reference Only

If overbreak, slides or rock falls occur, which are due to improper working methods or negligence by the Contractor, and the effective excavated surfaces are beyond the excavation lines shown on the drawings, the Contractor shall remove all excessive material and place suitable and approved backfill material in the excavated voids. This work and material shall not be paid.

Execution

The surface excavation shall be performed by any approved method using any excavating and hauling equipment suitable for the work in accordance with the submitted detailed plans and time schedule or approved modifications thereof. The work areas shall be kept dry and drained.

The work areas shall be kept dry and drained at all times during construction. All final or remaining surfaces shall be protected against damage by erosion and travel of the construction equipment with methods proposed by the Contractor and approved by the Engineer in writing. Any damage caused shall be repaired by the Contractor.

The Contractor shall exercise particular care when excavating in the vicinity of existing structures or those under construction. He shall reinstate any damage to structures or equipment caused by his operations, at his own cost.

The Contractor shall protect the subsoil and particularly the ground water from contamination by fuel or oil from his equipment.

CLEARING AND GRUBBING.

Clearing means the removal, transport and appropriate disposal of all trees, brush, stumps, fences, existing structures, spoil, debris and other obstructions in the areas to be occupied by the Permanent works, surfaces of borrow and quarry areas, spoil and stockpile areas, and where interfering with the procedure or functioning of the work.

Grubbing means the removal, transport and disposal of all roots, buried logs, foundations of structures (except concrete or masonry in mortar) and other materials foreign to the natural topsoil in the areas to be occupied by Permanent works and surfaces of borrow and quarry areas.

Clearing and grubbing work shall be performed either manually or with mechanical equipment. The Contractor shall make every reasonable effort to salvage such material which may be put to beneficial use.

All materials from clearing and grabbing work shall remain the Employer's property but the Contractor may, subject to written approval from the Engineer, retain any material for his use. Materials which the Contractor does not wish to use shall be disposed of in an approved manner.

Materials to be burnt shall be piled neatly in such a manner and in such locations as to not cause any fire risk and shall be burnt completely so that all material is reduced to ashes.

The Contractor shall have suitable equipment and supplies for fighting fire during the burning of material and shall take all necessary precautions to prevent fire from spreading. Toxic materials such as tyres etc. shall not be burnt but disposed of in the approved manner.

STRIPPING AND LOOSE EXCAVATION

Stripping consists of removing all rubbish, humus, vegetable material and all or part of the organic topsoil in the areas and to the depth as indicated on the drawings or as otherwise directed by the Engineer.

Loose Excavation means general excavation of material such as organic topsoil, clay, silt, sand, gravel, and boulders of up to 75mm thickness and soft or disintegrated rock, which can be removed by common earth moving equipment without ripping or blasting.

Stripping and loose excavation shall be accomplished by proper excavation and hauling equipment suitable for the work which allows for an efficient work progress adapted to the soil conditions encountered.

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ROCK EXCAVATION BY RIPPING.

Rippable material is defined as rock which can be loosened or broken down by a bulldozer capable of developing 220 kW (300 PS) of continuous power equipped with a single shank rear-mounted, heavy-duty rock ripper, operating in low gear.

Material which in the opinion of the Contractor should be removed by ripping shall be exposed, and the Engineer notified before proceeding further.

The top of the rock surface shall be surveyed by the Contractor. The survey and classification is subject to the written approval of the Engineer.

The contractor's failure to follow the procedure outlined above will forfeit his right to claim any classification other than that allowed by the Engineer, who, in such case, will classify the excavated quantities.

Ripping shall be performed in such manner that the ripper tooth does not damage the material lying beyond the final excavation lines. Any material remaining to the final excavation lines shall be removed by wedging, barring, broaching or other suitable methods approved by the Engineer.

Excavated materials

All suitable materials from the excavations shall be utilized to the fullest extent practicable as construction materials in permanent and temporary works, subject to the written approval of the Engineer.

The Contractor's excavating techniques shall be such, that as much as practicable, construction materials will be yielded.

The suitable material shall be stockpiled. If the moisture content of excavated materials suitable for embankments or backfill is too high after excavation, the material shall be drained and dried in the stockpile until the moisture content is sufficiently reduced to allow placement, or vice versa moistened if too dry.

Disposal of excavated materials

Excavated material, which is not suitable for, or are in excess of the construction requirements shall be disposed of in the spoil area as directed or approved by the Engineer.

The spoil tips shall be located where they will not interfere with the natural flow of streams or rivers or other works. No rock material may be dumped into the river bed.

The Contractor shall shape and trim the stockpiles to the lines and grades as directed. Adequate diversion of water courses in such areas and proper drainage shall be provided as proposed by the Contractor and approved by the Engineer. The Contractor shall be liable for any damage to the works or to the property of third parties caused by poor drainage in the spoil or stockpile areas.

Particular excavation applications

EXCAVATION OF PARTS OF AN EXISTING EMBANKMENT

The excavation of part of an existing embankment such as the removal of a distinct part of the crest requires special care to be taken by the Contractor. In this respect the Contractor has to take all precautions to avoid the following:

- To destroy the existing structure to a larger extent than required;
- To demolish the function of any detail of the structure; and
- To be able to re-construct the particular part.

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Prior to the start of any work the Contractor shall submit to the Engineer for written approval a method statement describing the procedure required to carry out the specific excavation. The method statement shall include but not be limited to the following:

- Excavation method (including the applied equipment, materials etc.).
- Storage procedure for the excavated materials and details regarding the protection of these.
- Description of all temporary support measures to ensure that the remaining embankment is kept unchanged, if applicable.
- Preparatory works (such as shaping of the slope) required for the reconstruction of the excavated part of the embankment.
- Reconstruction procedure in respect to the different material to be backfilled.

EXCAVATION OF TRENCHES IN EXISTING EMBANKMENTS

The excavation of trenches such as for the removal and/or reconstruction of sluices barrels require special consideration and attention.

The excavation shall be wide enough to allow for backfill compaction parallel to the structure using heavy rolling compaction equipment. The inclination of the embankment slopes shall be as flat as possible to reduce differential strain. The final slope inclinations shall be determined by the Contractor. He shall provide evidence to the Engineer that the inclination he intends to use is sufficiently stable. No work shall start before the Contractor receives the written approval of the Engineer.

The embankment material of the previously excavated slopes shall be cut back to well-compacted material that has not been affected by wetting or drying.

Excavation shall extend to rock foundation, where line, grade and density are uniform. Rocks and/or irregularities at the foundation contact that might create stress concentration should be removed. Cleaning and backfilling should treat existing defects such as soft or pervious soil filling in the rock, fault gouges, fractures, erosion channels or solution cavities that cannot be removed. These defects require removal to an adequate depth and replacement with lean concrete slush grout, dental concrete or specially compacted earth fill as specified or directed by the Engineer.

MISSCELLANEOUS FILL WORKS AND REHABILITATION MEASURES FOR EMBANKMENTS

General

The following paragraph deals with general requirements governing the execution of miscellaneous fill works and rehabilitation measures for embankment structures. The rehabilitation works for the embankment structure shall include but not be limited to the following:

- Reconstruction of existing layers of an embankment (particularly after the performance of other remedial measures).
- Backfilling of construction trenches
- Filling of existing cracks.
- Other remedial measures within this context as directed by the Engineer.

Standards and codes

Except as otherwise specified in this Specification, all materials and workmanship shall comply in all respects with the requirements of the appropriate standard of code issued by the British Standards Institution, American Society of Testing and Materials, US Corps of Engineers, Technical Methods for Highways, or such other standard as the Engineer may approve, current at the date of Invitation to

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Tender. If, after the date of Invitation to Tender, there is an amendment to a standard relevant to the Contract, the Engineer will direct whether the amendment is to apply.

The Contractor shall have available in his site office at all times at least one copy of every standard or code referred to in this Specification, and any additional standard or code which may be referred to therein and shall make these available for reference by the Engineer upon request.

The work included in this section shall comply with the requirements of the following standards and codes, except where this specification differs from these standards and codes, in which case the requirements of the Specification shall take precedence:

- Earth Manual of "Bureau of Reclamation" – US Department of the Interior.
- All standards of the American Society for Testing and Materials (ASTM)
- British Standards (BS)
- US Corps of Engineers
- Technical methods for highways

Submittals

Prior to the start of any works described herein, the Contractor shall submit to the Engineer details of the proposed excavation methods, placement procedures and main equipment for all fill materials. Daily report forms in agreed format detailing the activities shall be submitted to the Engineer for signature.

Sources of Fill Material, Stockpiling and Disposal To Spoil

BORROW AREAS AND QUARRIES

The Contractor shall explore, locate, investigate, and develop such borrow areas and quarries that he may require to meet the requirements under the Contract. Such development shall include, where applicable, construction, operation and maintenance of the required access roads and haulage arrangements, removal and stockpiling of unsuitable material, processing, stockpiling and transport of suitable material and all related material handling operations including testing.

The Contractor shall be fully responsible for the provision of the fill materials as specified and required for the Works in accordance with the Contract, as well as for the selection of all borrow areas and quarries which may be necessary to satisfy that requirement. The location and extent of the selected borrow areas and quarries for the provision of selected fill material in accordance with the requirements of this Section shall be subject to the approval of the Engineer. The Contractor may develop and/or use the borrow areas and quarries or, subject to the prior approval of the Engineer, develop and/or use other borrow areas and quarries or other sources of excavation materials to meet the requirement of this Specification. Not later than 14 days prior to the commencement of any work for the development of a borrow area or quarry and the provision of fill material from that location the Contractor shall submit details to the Engineer for his approval including the results of field investigations and laboratory tests, if relevant, on the proposed material together with a detailed method statement of all activities required for achieving access to and developing and excavating from the borrow area or quarry. The Contractor shall not commence any work necessary for the development of the area or obtaining the material prior to receiving this approval. Together with his approval of the Contractor's proposed details of any borrow area the Engineer shall notify the Contractor whether that borrow area will have to be backfilled after use for construction. Borrow areas which are not required to be backfilled and which are no longer required, or else within which the supply of suitable fill material has become exhausted, shall be immediately cleared of all debris, and graded and finished, and if required grassed. Unless otherwise agreed by the Engineer, final profiles within each borrow area and associated spoil tips shall be such that in the finished borrow area ponding of water cannot occur, no vertical faces remain, and all slopes are shaped to a finished angle to the horizontal of not greater than 25°.

The cost of all requirements and work specified herein for borrow areas and quarries is deemed to be included in the rates and prices in the Bill of Quantities.

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TESTS FOR BORROW AREAS AND QUARRIES

General

All borrow areas and quarries where materials are to be used for permanent construction works shall be subjected to approval of the Engineer. The Engineer may cause any or all of the under-mentioned tests to be done in the Contractor's Laboratory with the supervision of Engineer and/or in the Engineer's Laboratory of the Irrigation Department-Eastern Province.

Tests on Soils

From areas approved out for exploitation the following tests (ASTM or BS) shall be conducted on a sample from the quantum that would be required for exploitation from such areas for placement in different parts of the embankment regularly as determined by the Engineer.

(i) In-situ Moisture Content

(ii) Atterberg Limits

(iii) Sieve Analysis, and

(iv) Standard Proctor Compaction

The particle size grading for the fill materials is generally specified by limiting the range of the grading results obtained for each sieve. Material outside the limits will be accepted or rejected at the Engineer's discretion according to the location on the embankment where the material is to be placed, volume required and the nature of the circumstances for the use of such material.

Tests on Gravel

Materials from approved gravel quarries shall be tested periodically for the following characteristics:

(i) In-situ Moisture Content
(ii) Atterberg Limits
(iii) Sieve Analysis, and
(iv) Standard Proctor Compaction
(v) Field Compaction (Required degree of compaction more than 90)

Tests on Sand

Materials from approved sand quarries shall be tested periodically for the following characteristics:

(i) Sieve Analysis
(ii) Specific Gravity, and
(iii) Organic Content

Tests on Rock/Boulders

Rock samples from approved quarries shall be tested periodically for the following characteristics:

(i) Sieve Analysis
(ii) Specific Gravity
(iii) Los Angeles Abrasion Test, and
(iv) Sodium or Magnesium Sulphate Soundness Test

Material

Before the final selection of the appropriate borrow areas and quarried the Contractor shall make any tests required to demonstrate to the Engineer the suitability of the material.

Prior to the placement of any embankment material at least 2 series of material tests as determined by the Engineer shall be performed.

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Testing shall be performed in continuous intervals to reflect the rate of the various materials placed. The schedule of material testing presented by the Contractor shall be approved by the Engineer.

Material for the rehabilitation of embankments shall be equivalent to the existing surrounding material, unless agreed otherwise by the Engineer.

Material to be double handed shall be investigated carefully in regard to possible contamination during the time of storage. If the material is considered to be inappropriate for further use, the Contractor shall propose to the Engineer details of the material he intends to use. In both cases, either the reinstatement or use of new material, the Contractor shall not be allowed to carry out any work prior to the written approval of the Engineer.

All applied materials shall be well graded. Material re-excavated for placement in the embankment will be subject to the same inspection as materials obtained directly from the quarry or excavation.

Preparation required to produce the materials shall include but not be limited to the combination of sieving, crushing, washing, separation and remixing of materials.

Materials shall be obtained, prepared, processed and stockpiled in such a manner that the rehabilitation works shall proceed without delay. The Contractor shall organize his operations taking into account all factors that may delay the work so that the approved schedule of the works is kept.

All applied material shall be well graded and shall be processed to be within the limits of the existing materials, unless otherwise approved by the Engineer.

The tabulation below is a guide for the selection of materials for an embankment.

Grading and Plasticity Limits for Earth Embankments

Zone	Characteristics	Absolute Minimum (%)	Absolute Maximum (%)
Low Permeability	Passing 75 micron sieve	30	70
	Liquid Limit	20	50
	Plasticity Index	8	30
Medium or High Permeability	Passing 75 micron sieve	-	70
	0.355 mm sieve	8	-
	2.36 mm sieve	50	-
	25.0 mm sieve	100	100
	Liquid Limit	0	50
	Plasticity Index	0	30

Stockpiling of Materials

Materials obtained from excavations for the Works and from borrow areas intended for subsequent use as fill in the Works, and which cannot be used immediately, shall be placed in temporary stockpiles nearby. The manner of stockpiling shall be such as to avoid segregation and damage to the materials, and the areas on which the material is stockpiled shall be cleaned and levelled in order to avoid contamination of stockpiled materials as well as any mixing of different materials which are to be stockpiled separately.

Excavated materials with similar characteristics shall be stored, wherever practical, in the same place and separately from those with different characteristics, except where different materials are being specifically placed together to obtain a required mix of different materials. The temporary stockpiles shall be clearly signed to indicate the type of material, its source and designated use.

The material shall not be placed in the stockpiles at a density greater than that required subsequently as fill in the Permanent Works.

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PLACING FILL

GENERAL

The Contractor shall not commence or perform any fill work using equipment or working methods which deviate in any way from the equipment and methods of execution which have already been approved in writing by the Engineer.

All vegetation, topsoil and any other unsuitable overburden shall be removed from areas on which fill is to be placed. Following the preparation of the commencing surface as specified the surface levels shall be surveyed and the results of the survey including drawings submitted to the Engineer for agreement. The Contractor shall not begin to place filling material until the Engineer has approved the preparation of the commencing surface and the survey results.

If filled areas contain material which is susceptible to deterioration due to the excessive absorption or loss of water, it may be necessary to protect such areas by covering with further Permanent Works construction or else with a temporary layer of fill of sufficient thickness to prevent penetration of water into or loss from the permanent fill. Alternatively, a suitable impermeable membrane may be used to protect the permanent fill. Where fill is to be placed in trenches, pits and other places the sides of which are supported, those supports which are to be removed shall as far as practicable be withdrawn ahead of the layer of fill to be compacted and all voids left by the supports shall be filled with fully compacted material.

PLACING, MOISTURE CONTROL AND COMPACTION

The fill shall be placed in uniform layers across the full width and length of the area to be filled so that the area is built up evenly and shall be compacted as soon as practicable after deposition. The width of an embankment layer shall not be extended by means of the deposition of loose materials from the top of the embankment. Materials of differing characteristics shall not be mixed in any one layer and each layer shall be free from lenses and pockets of such material. Fill material shall be deposited in such a manner that does not cause segregation.

The fill shall be placed so that the surface is sufficiently even, and the surface shall be graded generally level before compaction operations commence while still having sufficient camber to shed surface water and to avoid ponding. The surface on which fill is to be placed shall be scarified if it is too smooth for proper bonding with the layer of fill to be placed. The moisture content of embankment fill material shall be adjusted by suitable conditioning to be within a range of the optimum moisture content required by this Specification or determined by the Engineer, depending on the characteristics of the material, and then compacted.

Compaction equipment shall be capable of achieving the required compaction without having any detrimental effects on the fill material. The equipment shall be carefully checked to ensure that all areas are uniformly compacted for their full width and depth.

BACKFILLING

Unless otherwise shown on the Drawings or specified or instructed by the Engineer, excavations which are to be backfilled shall be filled with suitable material, as defined obtained from the excavations or from approved borrow areas.

When placing fill as backfill the Contractor shall make do allowance for settlement and shall ensure that the final lines and levels are as shown in the Drawings. Any areas which subside shall be made good without delay up to the end of the Defects Notification Period. Suitable measures shall be taken to minimize erosion of the refilled excavations during wet weather, including sufficient specific measures to shed runoff water to the downslope side of trenches and avoid the formation of waterways along or parallel to the trenches. No payment will be made for making good any deficiency in refilling or banking material due to the negligence of the Contractor.

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REFILLING OR BANKING AGAINST STRUCTURES

The Contractor shall, before the work of backfilling to structures commences, obtain the approval of the Engineer for the material to be used and the methods of the work execution. Prior to the commencement of placing backfilling materials adjacent to structures the location shall be cleared of all remaining concrete forms and other temporary works and shall be subject to the approval of the Engineer. Unless otherwise instructed by the Engineer, backfilling to structures shall not commence until at least 14 days have elapsed after concrete work has been completed. Refilling or banking against water retaining structures will only be permitted after completing testing of the water tightness of the structure to the satisfaction of the Engineer. Wherever practicable backfill shall be placed and compacted evenly on all sides of Permanent Works structures to minimize unbalanced loads on the structures. Such fill shall not contain boulders or any other hard material of a size which in the opinion of the Engineer may result in damage to the structures or incomplete compaction of the fill. The suitable depth of each layer of backfill shall be subject to agreement by the Engineer and shall be dependent on the material source, the placement location and the type of compaction equipment to be used. The moisture content shall be adjusted by suitable conditioning to be within the range + 2% to - 2% of the optimum moisture content, or else within some other range determined by the Engineer depending on the characteristics of the material and compacted to not less than 98% of the maximum dry density "Standard Proctor" (using Method 3.3 or Method 3.4 of Part 4 of BS 1377). Compaction of backfilling materials above structures shall not be permitted with vibrating rollers within 500 mm vertically of the surface of the concrete except with the prior approval of the Engineer. Backfilling materials shall be placed in such a manner that ensures that they can be satisfactorily compacted without damage to the structures.

REFILLING OF TRENCHES

Refilling around pipes is to be carried out as pipe laying proceeds, however no material shall be filled in over the joints or around specials until these have been inspected, tested and approved by the Engineer and permission has been given by him for this refilling to commence. Specially selected soft material without stones shall be used for filling in around the pipework and to a height of at least 150 mm above the top of the pipe, and this material shall be thoroughly and evenly compacted to 98% of the maximum dry density "standard Proctor" (using Method 3.3 or Method 3.4 of Part 4 of BS 1377) unless otherwise required in the Technical Specification or instructed by the Engineer. Unless otherwise specified, in open country away from roads, accesses or built-up areas or where approved by the Engineer the Contractor may then refill the remainder of an excavation from 150 mm above the top of the pipe to the surface of the ground with light compaction. On completion of backfilling the excavation shall be banked to a height of up to 500 mm above the general ground level to allow for settlement, and the Contractor shall be responsible for making good in any area where the back filling subsides below ground level when called upon to do so at any time up to the expiry of the Defects Notification Period without additional payment. Where selected fill is to be placed below the required grade of the underside of the pipe, the amount of selected suitable fill must be sufficient for a layer slightly thicker than that specified to remain after compaction so that after trimming the pipe can be laid true to line and level.

Compaction of Fill

DEFINITIONS

The specified thickness of a layer of fill is the thickness after compaction has been completed. Unless otherwise instructed by the Engineer:
(i) the maximum dry density (MDD) "standard Proctor" and the optimum moisture content at which this density is achieved are the values obtained by BS 1377: Part 4 – Methods 3.3 or 3.4; and
The field density tests called for in the Specification are those described under BS 1377: Part 9 – Methods 2.1, 2.2, or 2.4.

GENERAL REQUIREMENTS

Suitable fill shall be compacted to a dry density not less than 98% maximum dry density "modified Proctor", or else as indicated on the Drawings or directed by the Engineer, expressed as a fraction of the maximum dry density and measured by field density tests. If fill has a moisture content too low to permit

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the specified dry density to be achieved, the Contractor shall incorporate sufficient water by a method acceptable to the Engineer to permit compliance with the Specification. Such operations shall be included in the Contractor's rates. If fill becomes sufficiently wet to cause serious rutting by construction traffic or heaving under compaction plant and to an extent that the required dry density cannot be obtained, placing and compaction shall forthwith cease and shall not be resumed until the Contractor has taken whatever action may be necessary in accordance with Sub-Clause 1.5.4.3 to restore the fill to a proper condition for compaction.

COMPACTING EFFORT

The fill shall be compacted using the approved type of equipment (Such as Sheet foot Roller), the depth of layer and the number of passes determined in accordance with this Technical Specification provided that the required dry density is obtained. If the dry density is not obtained, the depth of layer shall be decreased or the number of passes shall be increased, or the type of equipment shall be changed until the required dry density is achieved.

COMPACTING EQUIPMENT

The type of compact equipment used for embankments, fills and backfills shall be proposed by the Contractor and approved in writing by the Engineer. Only after compaction tests have demonstrated the effectiveness of the equipment, it will be approved by the Engineer.

Compaction of material in areas where it is impracticable to use large equipment shall be performed by approved suitably sized small rollers, vibrating plates or hand power tampers. Vibrating plate mechanical tampers weighing 600 – 800 kg will be required for compacting fills not accessible to the larger equipment. The tampers shall be capable of compacting layer thicknesses up to 50 cm.

Spreading and grading equipment

The Contractor shall provide and maintain in perfect working condition adequate equipment for spreading and grading of all fill materials in accordance with the specifications.

The number and capacity of the equipment shall be sufficient to fulfill the construction schedule requirements.

Water supply and sprinkling equipment

The Contractor shall provide and maintain in perfect working condition suitable equipment such as pumps, tanks, hoses, etc. to provide water for dust prevention, for adjusting the water content of the materials and to wash in any material into cracks amounting up to 200 l per m3 of fill placed or as directed by the Engineer.

Testing of Materials and Field Control of Compaction

Testing of embankment and backfill material before it is used in construction, and control tests during construction, shall be carried out by the Contractor using his own Site laboratory or an independent laboratory approved by the Engineer. The Contractor shall ensure that the Engineer is informed sufficiently in advance of any tests to be carried out on embankment and backfill material such that the Engineer has the opportunity to witness the test. If so directed by the Engineer, the Contractor shall, in the presence of the Engineer, carry out field density tests at the bottom of excavations for structures in order to investigate the suitability of the foundation material before any concrete works commence. The hole left by the excavation of the sample shall be backfilled with suitable material and compacted to a density no less than the surrounding material, or else shall be backfilled with soil-cement. Laboratory test results of any material that the Contractor proposes to use in the Works shall be submitted to the Engineer for his review and approval before such material is used in the Works. The tests to be carried out by the Contractor, the standard test methods to be used and the testing frequency for materials used during construction and upon completion shall be as detailed in the table below unless an abnormal variability of the results requires a higher frequency. Tests for the maximum dry density and optimum moisture content, the Atterberg limits and particle size analysis shall be made when the placing of fill commences and subsequently in accordance with the minimum test frequencies stipulated in the table below. As a

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general requirement in addition to the minimum test frequencies given in the table below, not less than three tests of each type shall be performed at each separate fill area.

Test	Test Standard	Minimum Test Frequency
Moisture content	ASTM D 2216	1. Before filling material from any source is used. 2. Thereafter, whichever of the following occurs first: (i) for every 1000 m³ placed, or (ii) for every 100 m compacted length (iii) at each change of borrow pit source, or (iv) at each change of material, or (v) 21 days after the last test conducted (where the fill location is still active).
Grain size distribution	ASTM D 422	
Specific gravity & absorption	ASTM C 127	
Specific gravity of soils	ASTM D 854	
Atterberg's limits	ASTM D 4318	
Standard Proctor Compaction Test	BS 1377-4	
	ASTM D 698	
Field density test	USBR Earth Manual E-24/ BS 1377-9 Method 2.1, 2.2 or 2.4	Twice each day (morning and afternoon) at each work location, but at least once for every 100 m³ placed or in each layer, whichever is more frequent. If directed by the Engineer, at the bottom of excavations for structures.
California Bearing Ratio (CBR)	BS 1377-4	Road subgrade: once for every 1 km of road alignment constructed, or at least once for each section of road. Granular subbase/ base/ wearing courses: (i) for every new source of material, and (ii) (ii) at least once a month.

COSTS

The tests required by the Technical Specifications or by the Engineer will be carried out by the Contractor in the either Material Testing Laboratory or in other Laboratories proposed by the Contractor and approved by the Engineer. The cost of such tests, including the preparation and transportation of the samples shall be borne by the contractor if not stated otherwise.

FACILITIES FOR ENGINEER TO TAKE SAMPLES

The Contractor shall provide facilities for the Engineer to take samples for testing of any of the fill, concrete or other materials to be incorporated in the Works. Such samples may be taken before or after incorporation into the Works or at any stage during construction at the discretion of the Engineer.

Rehabilitation of cracks in the existing embankment

The Contractor shall with the Engineer investigate all existing cracks in the embankment. He shall document the findings of this investigation and submit them to the Engineer. During a site investigation the Contractor shall present all observed deficiencies to the Engineer and explain the rehabilitation methods to be applied. These measures shall be subject to the written approval of the Engineer.

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The method statement proposed by the Contractor shall include but not be limited to the following:

- **Removal of any loose or foreign material**: With respect to the location and the extent of the affected area, "removal" of material will refer to any measures starting from cleaning of the crack surface up to the excavation of parts of the embankment (e.g. in case the deficiency is caused by an instability of the slope).
- **Re-profiling of the temporary slope**: In the case that parts of the embankment must be removed, the Contractor shall prepare the temporary construction slope by appropriate methods such as cut steps in the remaining embankment material to improve proper compaction.
- **Re-grading of the affected embankment area** with approved methods independent of the extent of the relevant area.
- **Re-construction of the slope protection layer**.

The material to be applied shall conform to the materials used during initial construction. The filter criteria must be maintained for all materials to be applied. It is the Contractor's responsibility to carry out the required measurements and calculations and present these to the Engineer for approval.

No material shall be placed in any section until the foundation of this section has been dewatered (if required) and the temporary construction slope has been adequately prepared and approved by the Engineer.

Methods for re-profiling of the embankment shall be presented by the Contractor for the approval of the Engineer. Various methods may apply. For smaller cracks or openings, "washing-in" of approved material carried out under controlled conditions might apply. In that respect, the Contractor shall take all precautions not to cause any harm to the existing dam structure. Any destruction caused by the works must be repaired at the expense of the Contractor.

Reconstruction of embankment layers after performance of remedial measures

GENERAL

The Contractor shall propose methods and procedures how he intends to carry out the required remedial measures prior to the commencement of any work. The work shall not be started without the written approval of the Engineer.

Any works to be carried out for the reconstruction of the embankment shall be conducted also under the provisions presented in the relevant technical specification. The Contractor shall consider all methods and requirements described herein.

MATERIAL

All materials the Contractor intends to use shall conform to the specification presented in this section. Any material to be applied throughout the works shall be approved in writing by the Engineer.

The material used to reconstruct the embankment shall be well graded, have a maximum particle size not larger than 5 cm including earth clods and a minimum of 40 percent by weight passing a no. 200 sieve. The Engineer may change the range of acceptable gradation without any extra compensation to the Contractor to suit the material found at site.

Throughout the works the Contractor shall take strict precautions to avoid any contamination of any material to be used. The material shall be free from injurious amounts of brush, sod, roots or any other unsuitable material. Material which is unsuitable in the opinion of the Engineer shall be removed.

If the natural moisture content deviates more than ±3 % of the optimum moisture content, moisture correction measures shall be performed on the stockpiles.

EXECUTION

No embankment shall be reconstructed until that portion has been inspected and approved in writing by the Engineer.

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The thickness of the layers to be placed and the compaction required shall be determined by the Contractor and approved by the Engineer.

The placing of embankment material shall be such as to guarantee a homogeneous fill. The material shall be placed in layers having a thickness of about 30 cm and compacted with adequate equipment.

Careful control shall be exercised over the water content of the material by means of regular testing by the Contractor to ensure that adequate compaction is attainable. Water content limits shall be established as part of the field and laboratory testing both prior to and during construction.

100% of all densities of the material in place after compaction shall have a dry density equal or above 98% of the maximum Proctor Standard dry density value (ASTM D698). The maximum water content of the material in place after compaction shall be within a range of ± 3% of the optimum Proctor Standard moisture content. The placed layers may have to be scarified to guarantee a good bond with the next layer.

Particular attention shall be given to spreading and compacting of material in the vicinity of concrete structures, instrumentation, or other equipment. Spreading and compaction shall be performed with adequate equipment and in such a manner that no damage occurs to concrete, instrumentation or other structures. Any damage shall be repaired by the Contractor at his own expense.

When directed by the Engineer, the Contractor shall remove and dispose of unsuitable material placed in the reconstruction area and material rendered unsuitable after being placed.

RIP RAP PROTECTION FOR DAM EMBANKMENTS

GENERAL

Rip-rap required for protection of embankment shall consist of selected hard, durable rock fragments from quarried rock obtained from approved quarries ad excavations, and individual stone having any one dimension not less than as specified on the drawings and/or as directed by the Engineer. Rip-rap shall consist of individual rock fragments, dense, sound, unweathered (only materials not susceptible to weathering shall be accepted), resistant to abrasion and free of cracks, seams and other defects that would tend to increase unduly their susceptibility to destruction by water action. Angular rock fragments shall preferably be used. Well-rounded cobbles and boulders will not be accepted except on very flat slopes. The minimum dimension of any single rock shall not be less than one-third to one-fourth of its maximum dimension.

PARTICLE SIZE DISTRIBUTION

Rip-rap shall be roughly graded to the specified thickness in such a way to ensure that larger rock fragments are uniformly distributed with the smaller rocks filling the remaining spaces. Pockets of small stones shall be removed and replaced with larger material. Riprap shall be reasonably graded. Sand and rock dust may not exceed 5% of the total weight of the rip-rap material. The maximum size of the boulder shall be limited to the nominal thickness of the riprap. The size of Rubbles in the specified thickness (450 mm) of rip-rap shall be reasonably well grades with passing d15 – 175mm to 250 mm, d50 – 275mm – 350 mm & d85 – 375 mm – 450mm.

QUALITY OF BOULDERS/ RUBBLES

The Rip-rap material shall have specific gravity (saturated surface dry) greater than 2.60. Soundness (sodium sulphate method) less than 5% loss by weight after 5 cycles and Abrasion (Los Angeles Abrasion using grading A) less than 60% loss by weight after 500 revolutions.

TESTING OF MATERIALS

The particle size distribution of rockfill and rip rap material shall be tested in a manner agreed by the Engineer.

The determination of the bulk density of rockfill material after placement and compaction shall be by re-excavating a sample of not less than 3 m^3 as directed by the Engineer, determining the volume of the hole, and then weighing the excavated material.

For Reference Only

FREQUENCY OF TESTING

The testing specified below shall be performed by the Contractor for his routine quality assurance for the slope protection works prior to placing. The volume of material to be sampled for testing shall be appropriate and sufficient for the respective type of test to be performed. The minimum number of samples which are to be tested shall be one representative sample for each volume of material as stipulated below for each type of test:

Test	Standard	Test frequency
Particle size distribution immediately prior to placement	Visual Inspection	Continuously
Bulk density after placement and compaction	As proposed above	For each 500 m3
Particle mass distribution	ASTM D 422	For each 500 m3 or at every location where the material quality is considered doubtful by the engineer
Sodium Sulphate Soundness	ASTM C88	
Los Angels Abrasion Value	ASTM C535	
Porosity, Water absorption, Specific Gravity	ASTM C 127	

Rip Rap shall be placed to the full layer thickness in one operation starting from the bottom of the slope and progressing to the top. Rip-Rap shall be placed in a such manner as to minimize segregation and avoid displacing the underlying filter or transition/bedding material. The finished layer shall be free from pockets of small stones, clusters of large stones, and excessive voids.

Rip-rap shall be well keyed uniform, and dense and stable mass with adjacent stones in close contact but without alignment of longer faces so that open joints are formed. Stones shall have their greatest dimension across the slope and the smaller spaces between stones shall be left open. End tipping from lorries or dumpers is not permitted.

Prior to the following filling works, the contractor shall close all existing voids on the horizontal surface of the upper boulder layer by hand placing smaller rocks with a maximum diameter of 100mm.

PLACEMENT OF BOULDERS BELOW MINIMUM WATER LEVEL

If placement of material below the minimum water level is required, the Contractor shall place boulders with a diameter of 500 to 700 mm by carefully dumping the material into the water. Placement of boulders shall continue up to 50 cm above the minimum water level. Prior to the following filling works, the Contractor shall close all existing voids on the horizontal surface of the upper boulder layer by hand placing smaller rocks with a maximum diameter of 100 mm.

FILTER AND TRANSITION MATERIALS.

GENERAL

The construction of the filter and transition zones within the dam embankment shall consist of either quarried and crushed rock, treated where necessary by sieving and separating, or graded mixtures of natural gravels and sands.

Sand shall be obtained from natural deposits in approved locations and crushed and rubble from approved excavations and/or quarries. The gradation of the sand, crushed stone and the rubble will depend upon the gradation of the material against which each component is placed. Rock fragments shall conform to the requirements specified for Rip Rap.

PARTICLE SIZE DISTRIBUTION

Graded zones of the filter shall be constructed to the lines, grades and dimensions as shown on the drawings or as established by the Engineer. The filter shall consist of a zone of sand varying from 6 mm maximum particle size with 85% material greater than 0.075 mm, a zone gravel type I varying greater than or equal 15 of CBR.

For Reference Only

The Engineer may agree to an alternative grading for the filter and transition materials of the dam embankment, provided that the Contractor can demonstrate to the Engineer's satisfaction that the handling methods to be used will not result in any segregation of the particle sizes and that the required filter sizing rules with respect to the grading of the adjacent layers of the material size distribution are fully satisfied by the proposed grading.

PLACEMENT OF FILTER MATERIAL AND TRANSITION MATERIAL

Filter material and transition material/ Bedding material for riprap shall consist of gravel (Type I) placed adjacent to the layer of fill material of the embankment. Gravel (type I) varying greater than or equal 15 CBR with minimal clay content. The bedding material shall be placed on the embankment slope as obtained from the Engineer approved source in uniform layers of specified thickness in the BOQ. Compaction by equipment is not required but the bedding material may be densified by wetting if required by the Engineer. Rip-rap shall then be placed on the bedding material as described above.

QUALITY OF FILTER MATERIAL AND TRANSITION MATERIAL

The filter and transition materials of the dam embankment shall consist of dense, sound, and hard particles which are sufficiently durable and resistant to abrasion to withstand both the procedures involved in supplying and placing them and the normal weathering processes as prevail in the area of the Works.
Material which has undergone any degree of weathering or is to any extent friable shall not be used. The filter and transition material shall contain no deleterious matter such as clay, silt or organic material. Material which has been contaminated in any way such as by oil, grease, chemicals, cement, and the like shall not be used.

FREQUENCY OF TESTING

The testing specified below shall be performed by the Contractor for his routine quality assurance for the slope protection works prior to placing. The volume of material to be sampled for testing shall be appropriate and sufficient for the respective type of test to be performed. The minimum number of samples which are to be tested shall be one representative sample for each volume of material as stipulated below for each type of test:

Test	Standard	Test frequency
Complete Particle Size Distribution	ASTM D 422	For each 500 m3 or at every location where the material quality is considered doubtful by the engineer
Soundness	ASTM C88	
Los Angels Abrasion Test	ASTM C535	
Porosity, Water absorption, Specific Gravity	ASTM C 127	
Organic Impurities		

ROCKFILL – TOE DRAIN/ STILLING BASIN

SCOPE

The work consists of the construction of rockfill zones of embankments and other rockfills required by the drawings and specifications, including bedding where specified.

MATERIAL

Material for rockfill and bedding shall be obtained from the specified sources unless otherwise specified in this specification. The material shall be excavated, selected, processed, and handled as necessary to conform to the specified graduation requirements.

MATERIAL GRADATION

a zone of rubble varying from 225 mm to 300 mm size with 75% of material greater than 225 mm and other rockfills required by the drawings and specifications, including bedding where specified.

For Reference Only

FOUNDATION PREPARATION

Foundations for rockfill shall be stripped to remove vegetation and other unsuitable material or shall be excavated as specified.

Except as otherwise specified, earth foundation surfaces shall be graded to remove surface irregularities, and test pits or other cavities shall be filled with compacted earth fill of approximately the same kind and density as the adjacent foundation material.

Rock foundation surfaces shall be cleared of all loose material not conforming to the specifications for the rockfill.

Rockfill and/or bedding shall not be placed until the foundation preparation is completed and the foundation and excavations have been inspected and approved by the Engineer.

BEDDING

When a bedding layer beneath rockfill is specified, the bedding material shall be spread uniformly on the prepared subgrade surfaces to the depth indicated. Compaction of the bedding material shall be as specified in this specification.

PLACEMENT

Method 1—The rock shall be dumped and spread into position in approximately horizontal layers not to exceed 2 feet in thickness. It shall be placed to produce a reasonably homogeneous stable fill that contains no segregated pockets of large or small fragments or large unfilled spaces caused by bridging of the larger rock fragments.

Method 2—The rock shall be dumped and spread into position in approximately horizontal layers not to exceed 2 feet in thickness. The rock shall be placed so that the completed fill shall be graded with the smaller rock fragments placed in the inner portion of the embankment and the larger rock fragments placed on the outer slopes. Rock shall be placed to produce a stable fill that contains no large unfilled spaces caused by bridging of the larger fraction.

COMPACTION OF ROCKFILL

Rockfill shall be compacted as described below for the class of compaction specified or by an approved equivalent method.

Class I compaction—Each layer of fill shall be compacted by at least four passes over the entire surface with a steel-drum vibrating roller that weighs at least 5 tons and exerting a vertical vibrating force of not less than 20,000 pounds at a frequency not less than 1,200 times per minute.

Class II compaction—Each layer of fill shall be compacted by at least four passes over the entire surface by a track of a crawler-type tractor weighing at least 20 tons.

Class III compaction—No compaction is required beyond that resulting from the placing and spreading operations.

Heavy equipment shall not be operated within 500mm of any structure. Vibrating rollers shall not be operated within 1.5 m of any structure. Compaction by means of drop weights operating from a crane, hoist, or similar equipment is not permitted.

When compaction other than Class III compaction is specified, rockfill placed in trenches or other locations inaccessible to heavy equipment shall be compacted by manually controlled pneumatic or vibrating tampers or by equivalent methods approved by the engineer.

COMPACTION OF BEDDING LAYER

Bedding layer shall be compacted according to the following requirements for the Class of compaction specified:

Class A compaction—Each layer of bedding shall be compacted to a relative density of not less than 70 percent as determined by ASTM Method D 4254.

For Reference Only

Class I compaction—Each layer of bedding shall be compacted by at least two passes over the entire surface with a steel-drum vibrating roller weighing at least 5 tons and exerting a vertical vibrating force not less than 20,000 pounds at a frequency not less than 1,200 times per minute, or an approved equivalent method.

Class II compaction—Each layer of bedding shall be compacted by one of the following methods or by an equivalent method approved by the engineer:

a. At least two passes over the entire surface with a pneumatic rubber-tired roller exerting a minimum pressure of 75 pounds per square inch. A pass is defined as at least one passage of the roller wheel, track, tire, or drum over the entire surface of the bedding layer.
b. At least four passes over the entire surface with the track of a crawler-type tractor weighing a minimum of 20 tons.
c. Controlled movement of the hauling equipment so that the entire surface is traversed by a minimum of one tread track of the loaded equipment.

Class III compaction—No compaction is required beyond that resulting from the placing and spreading operations.

Heavy equipment shall not be operated within 500mm of any structure. Vibrating rollers shall not be operated within 1.5 m of any structure. Compaction by means of drop weights operating from a crane, hoist, or similar equipment is not permitted.

When compaction other than Class III is specified, bedding placed in trenches or other locations inaccessible to heavy equipment shall be compacted by manually controlled pneumatic or vibrating tampers or by equivalent methods approved by the engineer.

QUALITY OF BOULDERS/ RUBBLES

The material shall have specific gravity (saturated surface dry) greater than 2.60. Soundness (sodium sulphate method) less than 5% loss by weight after 5 cycles and Abrasion (Los Angeles Abrasion using grading A) less than 60% loss by weight after 500 revolutions.

TESTING OF MATERIALS

The particle size distribution of rockfill material shall be tested in a manner agreed by the Engineer.
The determination of the bulk density of rockfill material after placement and compaction shall be by re-excavating a sample of not less than 3 m^3 as directed by the Engineer, determining the volume of the hole, and then weighing the excavated material.

FREQUENCY OF TESTING

The testing specified below shall be performed by the Contractor for his routine quality assurance for the slope protection works prior to placing. The volume of material to be sampled for testing shall be appropriate and sufficient for the respective type of test to be performed. The minimum number of samples which are to be tested shall be one representative sample for each volume of material as stipulated below for each type of test:

Test	Standard	Test frequency
Particle size distribution immediately prior to placement	Visual Inspection	Continuously
Bulk density after placement and compaction	As proposed above	For each 500 m3
Particle mass distribution	ASTM D 422	For each 500 m3 or at every

For Reference Only

Sodium Sulphate Soundness	ASTM C88	location where the material quality is considered doubtful by the engineer
Los Angels Abrasion Value	ASTM C535	
Porosity, Water absorption, Specific Gravity	ASTM C 127	

Rock fill shall be placed in a such manner as to minimize segregation and avoid displacing the underlying filter or transition/bedding material. The finished layer shall be free from pockets of small stones, clusters of large stones, and excessive voids.

ENVIRONMENT AND SOCIAL MANAGEMENT PLAN (ESMP)

The Contractor shall comply with the provisions in the **Environment and Social Management Plan (ESMP)** annexed in this section without any cost to Employer.

Environmental Control

The Contractor shall:-

- Comply with the provisions of this Section and other environmental protection provisions in the Contract and with the requirements of any statute, by-law, standard and the like related to environmental protection.
- Arrange all work to cause the least possible disturbance to the environment.
- Submit proposals for traffic movement, temporary structures, cleaning up, storage of materials, demolition and the like. Observe the agreed proposals.
- Dispose of all spoil and unsuitable material in accordance with the provisions given in EMP.

Monitoring

The Contractor shall monitor the environmental aspects of the construction and the control measures implemented to minimize any adverse environmental impact. Should the control measures put in place be found to be unsatisfactory as a result of the monitoring then the Contractor shall amend the control measures to provide a satisfactory result.

Environmental Complaints

The Contractor shall maintain a register of all environmental complaints received and shall notify the Engineer of each complaint. Complaints received by the Engineer and referred to the Contractor shall also be recorded in the register.

The Contractor shall investigate all environmental complaints received and where necessary, undertake measures to address the complaint. All measures undertaken to address complaints shall be detailed in the register.

ENVIRONMENTAL INCIDENTS

Should an environmental incident (being environmental nuisance, medium environmental harm, or serious environmental harm) occur during any construction phase, the Contractor shall immediately take the appropriate action to minimize any impact and inform the Engineer. The Contractor shall carry out any instructions received from the Engineer.

The Contractor shall be responsible for the cleanup of any contamination caused by the construction works and no additional payment will be made in this regard.

ENVIRONMENTAL TRAINING

The Contractor shall be responsible for ensuring that all employees (including subcontractors) have received training in relation to the Contractor's environmental operating guidelines.

The Contractor shall ensure that any machinery on site is operated within the appropriate guidelines so as to minimize environmental impact in relation to noise, air and water quality, waste control and contamination. All construction materials used on site shall be utilized in a manner to similarly limit environmental impact.

For Reference Only

No additional payment shall be paid to the Contractor and the cost of environmental control measures shall be deemed to have been included in the rates tendered for the Works.

Standard Procedure for Ensuring Occupational Health and Safety When working in Wildlife Area

The Contractor shall comply with the provisions in the Standard Procedure for Ensuring **Occupational Health and Safety When working in Wildlife Area** annexed in this section without any cost to Employer.

Standard Procedure for Assessing the Requirement of Tree Removals

The Contractor shall comply with the provisions in the **Standard Procedure for Assessing the Requirement of Tree Removals** annexed in this section without any cost to Employer.

LABOR MANAGEMENT PLAN (INCLUDING SITE MANAGEMENT AND CAMP MANAGEMENT MEASURES)

The Contractor shall comply with the provisions in the **Labor Management Plan (Including site management and camp management measures)** annexed in this section without any cost to Employer.

For Reference Only

Environmental and Social Screening Report & Environment and Social Management Plan (ESMP)

Thannimurippu Tank Bund Development and Improvement of Sluice

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Integrated Watershed and Water Resources Management Project (IWWRMP)

For Reference Only

May 2025

Northern Provincial Irrigation Department (NPC-ID)

6 -Environment and Social Screening Checklist

Table 1: Environmental and Social Screening Checklist

	Screening question	Yes	No	Significance of the effect	Remarks
Project Design					
a.	**General**				
1	Will the sub project include any physical construction work?	√		High	Proposed rehabilitation works including bund clearing, tree removals, maintain and re-establish upstream slope, laying rip-rap (at 0+750 to 0+895, 0+925 to 1+0125 and 1+0195 to 2+0725) and rehabilitate the sluice.
2	Does the project include upgrading or rehabilitation of existing physical facilities?	√		High	-DO-
b.	**Rehabilitation of dam head works, and laying rip rap and rehabilitate the sluice**				
3	Will improvements to tank bund including the headworks and rip rap structures require the water level in the reservoir to be artificially drawn down?	√		Moderate	The headworks work will be carried out during the dry season when water levels are naturally low. Hence the planned work may not require significant additional lowering of water. The NPCID planned to maintain the water level at 04 feet as a dead storage. However, if the works go beyond the dry season, lowering of water level would be required.
4(i)	If yes, can this lead to any alteration of water flows in surface as well as groundwater sources, especially in the dry season?		√		Construction is planned during the dry season when the water tables are low. Therefore, no alterations in water flows are anticipated to be caused by this activity. Hence the absence of settlements of the area and dug wells, ground water issue will not arise. A tube well has been established at the fishing hut side and it is function well.
4(ii)	Will the water draw down affect the ecology of the tank and other important wetlands that depend on the main lake and canal system to maintain water level?		√		Construction works has been planned for dry season. Normally in dry season, the water level of the tank is low and that water level provide habitats for water birds (specially for Pelicans). The NPCID has planned to maintain a dead storage. Therefore, no impact on biodiversity and ecosystem anticipated,

For Reference Only

	Screening question	Yes	No	Significance of the effect	Remarks
5	Will repairs to tank bund and sluice irrigation canals require temporary suspension of water issuance in order to facilitate civil works? Can this lead to diminishing of other downstream water uses that can result in social issues.	√		Moderate	Rehabilitation works have been planned during the dry season and the tank is not used for bathing or supply drinking water. Therefore, no significant social impact on proposed interventions. However, fulltime fishermen will affect on the proposed work and the IA planned to provide an opportunity to them work as labour under the contractor company as livelihood assistance. (Pl. refer LIMP in Annex -7)
6	Will civil works lead to diminishing of other downstream water uses as a result of water quality impairment?		√		Civil works planned to carry out in dry season and the tank is not using for bathing or drinking water supply. However, the proposed construction will lead to soil erosion. Therefore, soil conservation measures need to apply at the site.
7	Will there be changes to original design levels of the head works that will result in inundation of new land in the catchment		√		There will be no changes to design levels of the dam crest, spill crest or any other structure. Therefore, no new inundation.
8	Will the rehabilitated scheme serve new areas of paddy under its command?		√		No, the extent of paddy cultivation in the command area will remain the same. Only support to dam safety and water conservation.
c.	**Additional supplementary facilities**				
9	Will there be construction of new irrigation or drainage canals or widening of existing canals?		√		
9(i)	If yes, will new/modified canal trace/alignments interfere with existing land uses (habitats, home gardens) in a negative way?		N/A		No
9(ii)	If yes, will the trace interfere with other sensitive infrastructure such as roads, pedestrian paths, schools and temples?		√		No
Project Construction					

For Reference Only

	Screening question	Yes	No	Significance of the effect	Remarks
10	Will construction and operation of the Project involve actions which will cause physical changes in the locality (topography, land use, changes in waterbodies, etc)		√		No significant physical changes occurred under the proposed intervention. But large trees located in upstream will be removed due to the engineering reasons.
11	Will construction of the project cause soil erosion within the site due to steep grade or soil content?	√		Low	Soil erosion may occur at the land clearance, maintaining slops and tree removal activities. Hence the construction works planned to carry out in dry season soil erosion may reduced and manageable.
12	Will the Project involve dredging and disposal of dredge material as well as other solid wastes during construction?	√		Low	No dredging is identified for the rehabilitation work, however, bund earth work will generate excavated soils. Most of the excavated soil can be reused and final disposal materials planned to disposed to approved site.
13	Will the Project release pollutants or any hazardous, toxic or noxious substances to air?		√	Low	There will be no hazardous, toxic or noxious substances released into the air, other than fumes emanated by a few construction vehicles. Further, construction activities that would produce airborne dust are temporary and limited to short durations and will be restricted to a small area.
14	Will the Project cause noise and vibration or release of light, heat energy or electromagnetic radiation?	√		Low	Noise and vibration is expected to be very low due to the small-scale and geographically widespread nature of construction activities and the largely rural setting. There can be insignificant levels of noise produced during material transportation and construction work, but due to heavy machinery there may be temporary disturbances to the animals (especially water birds). inhabiting the tank area.
15	Will the Project lead to risks of contamination of land or water from releases of pollutants onto the ground or into surface waters, groundwater?	√		Low	Mainly, fuel and lubricants can be contaminated with soil and then after mix with water but this is insignificant and can be manageable.

For Reference Only

	Screening question	Yes	No	Significance of the effect	Remarks
16	Will the project cause localized flooding and poor drainage during construction? Is the project area located in a flooding location?		√		No
17	Are there any areas or features of high landscape or scenic value on or around the location which could be affected by construction activity?		√		No
18	Are there any other areas on or around the location which are important or sensitive for reasons of their ecology e.g. wetlands, watercourses or other waterbodies, the coastal zone, mountains, forests which could be affected by the project?	√		Moderate	Main access and supply road running through the forest reserve (08km). The forest area is rich in fauna and flora. Therefore, safety measures need to apply for the wildlife.
19	Are there any areas on or around the location which are used by protected, important or sensitive species of fauna or flora e.g. for breeding, nesting, foraging, resting, migration, which could be affected by the project?	√		High	The forest reserve where the supply road running through is provide habitats for various wildlife including wild elephants. There are few elephant crossing sections in between the supply road. The civil work site is within close proximity to the Anandakulam Forest Reserve (200m at closest point).
20	Will any part of the project's construction activities be located in a previously undeveloped area where there will be loss of greenfield land?		√		No. This is a rehabilitation project, hence no new areas will be cleared.
d.	**Land related impacts**				
21	Will the sub-project require acquisition of land and or other assets?		√		
22	Is land for material mobilization or transport for the civil work available within the identified work site / Right of way?	√		Low	Materials required for civil works will be transported along the Pradeshiya Sabha road, and permission will be obtained

For Reference Only

	Screening question	Yes	No	Significance of the effect	Remarks
					accordingly. Material will be stored within the NPCID land areas near the civil works sites.
23	Is the site chosen for this work free from any encumbrances (e.g. squatters, encroachers)?	√		Low	Site belongs to the NPCID.
24(i)	If the land parcel is to be acquired, is the actual plot size and ownership status known? If so, how much?		√		No acquisition will take place under this project.
24(ii)	Will the affected land/structure owners likely to lose less than 10% of their land/structures area?		N/A		
24(iii)	If any land required for the work is privately owned, will this be purchased or obtained through voluntary donation?		N/A		
24(iv)	Are the land/structure owners willing to voluntarily donate the required land for this sub- project?		N/A		
25	Is the project likely to cause partially or fully damage to, or loss of housing, shops, or other resource use?		√		The project does not require any land acquisition or damage to the physical structures.
26	Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the project?	√		Low	Normally, the tank bund is not using as an access road. But there are some alternative roads around the location.
e.	**Livelihoods Related Impacts**				
27	Are there any non-titled people (squatters) who are living/ or doing business who may be partially or fully affected because of the civil works?		√		
28	Will there be damage to agricultural lands, standing crops, trees, etc.?	√			No damage to the agricultural lands but …. Trees identified to be removed.

For Reference Only

	Screening question	Yes	No	Significance of the effect	Remarks
29	Will there be any permanent or temporary loss of income and livelihoods as a result of the civil works? If so, for what period?	√		Moderate	Temporary income losses for fishermen can be occurred due to the artificial water drawdown.
29(i)	Have these people/ businesses who may suffer temporary loss of incomes or livelihoods been surveyed and identified for payment of any financial assistance?	√		Moderate	Under the community consultations 91 fulltime fishermen identified as affected group. The IA suggested to provide and opportunity to them work as labors for the contractor. It was clear after the discussions held with IE – Mullaitivu, NAQDA Officers and Fishermen that the fishery in the tank would be affected temporarily due to possible dewatering and construction activities. In order to assure the sustenance of the livelihoods of the affected fishermen during the construction period, plan to provide them opportunities to work as construction laborers under the contractor as livelihood assistance and this is included in the LIMP in Annex -7
29(ii)	Are there any vulnerable households affected?		√		
29(iii)	Will people permanently or temporarily lose access to facilities, services, or natural resources?		√		No.
f.	**Impacts on community resources, public services, cultural/historical sites, etc**				
30	Are there any areas on or around the location which are densely populated or built-up, which could be affected by the project?		√		The project site located in remote area.
31	Are there any areas or features of historic or cultural importance on or around the location which could be affected by the project?		√		No such places are found within the impact area.
32	Are there any areas on or around the location which are occupied by sensitive land uses e.g. hospitals, schools, places of worship, community facilities, which could be affected by the project		√		One Hindu kovil located nearly 01 km away from the project site and no disturbance for the pilgrims. Also, there is a fishing community center close to the proposed site for labour camp. But no impact for the center.

For Reference Only

	Screening question	Yes	No	Significance of the effect	Remarks
33	Are there any areas on or around the location which are already subject to pollution or environmental damage e.g. where existing legal environmental standards are exceeded, which could be affected by the project?		√		No
34	Will the project cause the removal of trees in the locality?	√			15 trees identified to be removed. However, during the construction time few trees can be saved by using engineering solutions. So, it will be revisited. In addition, the 15 trees above, juvenile Teak trees – (*Tectona grandis*) and Ahela trees – (*Cassia fistula*) grown in the form of bushes on the thank bund (GBH less than 50 cm). These juvenile trees have also been identified for removal under the land clearance. Refer Annex 03 for the full list of trees that have been selected to be removed with their respective GBH.
35	Are there existing land uses or socio-economic activities on or around the location which could be affected by the project?		√		
35(i)	Are there bathing spots that will be unusable during the construction period?		√		The tank is not used for bathing.
35(ii)	Is there subsistence fishing taking that will get disturbed due to tank rehabilitation		√		When the tank has only dead storage fishing will be disturbed.
35(iii)	Are there any home gardening and other industrial, agricultural activities that will get disturbed due to construction activity		√		No. Project site located in remote area.
35(iv)	Are there drinking water supply sources located in the project are that may be rendered unusable during construction period?		√		No.
35(v)	Are there tourism activities taking place in the project area that will get disturbed by construction activity?		√		No.

For Reference Only

	Screening question	Yes	No	Significance of the effect	Remarks
g.	**Construction related impacts (labor influx, community health and safety, etc)**				
36	Will there be any risks and vulnerabilities to public safety due to physical hazards during construction of the Project?	√		Low	Tank bund clearance, sloping and laying rip-rap may use heavy machines. Also, vehicle used for material transport may create risk for public/ fishermen or workers. But the project site is very remote. Therefore, the impact on public is low.
37	Are there local village roads that will become unsafe due to contractor's usage	√		Moderate	Transportation route from Nedunkerny to Tank site is passing semi urban and rural settings. Under this section impact may occur to the village road.
38	Are there any transport routes on or around the location which are susceptible to congestion or which cause social and environmental problems, which could be affected due to construction work?	√		Moderate	Material transport route is running through the jungle area and may moderately affect to the wildlife and the dust emission may create dust deposit on the trees beside the road.
39	Will the project require significant number of workers (skilled and unskilled)	√		Low	
39(i)	Will the project attract significant number of migrant workers to the area?	√		Low	
40	Will construction activity lead to burrowing of earth, gravel and sand? And/or quarrying for rock?	√		Moderate	Some burrow sites are identified at the tank bed under the preview of NPCID. Other requirement planned to obtain from contractor through licensed suppliers.
41	Will the project increase the risk of introduction of alien invasive species to the locality	√		Low	The tank bund already invaded by the IAS. The IAS need to manage properly.
Operational Impacts					
42	Will the project lead to stagnant water and drainage problems causing increased mosquito breeding		√		
43	Will the project involve removal and disposal of aquatic invasive species?		√		
44	Will the project involve regular maintenance dredging of the tank bed		√		

For Reference Only

	Screening question	Yes	No	Significance of the effect	Remarks
45	Will the tank after rehabilitation serve a larger command area?		√		Command area will remain same. Dam safety and water use efficiency will increase.

Significance of impact = Low, Moderate, High

For Reference Only

8 Environmental and Social Management Plan

Based on the potential social and environmental impacts identified, an Environmental and Social Management Plan (ESMP) (Table 11) has been prepared in accordance with the national regulations, World Bank's safeguards policies triggered for the Project, and the ESMF and the RPF prepared for the IWWRMP.

This ESMP and relevant guidelines will be included as a Special Condition in the Bid Document; and ESMP will be attached to contract to form part of the contract requirement. Adherence to the ESMP will be mandatory for the contractor and, it will also be equally applicable to sub-contractors including nominated sub-contractors if any. However, the Contractor shall hold full responsibility for the compliance for the requirements of the ESMP. The "Irrigation Engineer" on behalf of the Employer / Project Proponent (PP) will monitor the compliance of the ESMP by the Contractor.

The bidders have to be well instructed to consider the ESMP requirements carefully during the bid preparation and pricing the items of work and during all construction stages. In particular, prior to bidding the associated costs is to be provided as a provisional sum and/or as part of the engineering cost. The prescriptions and clauses detailed in the ESMP stand as integral components of the specifications for relevant item of work unless separate items are included in the Bill of Quantities. Thus, separate payments will not be made in respect to compliance with the ESMP.

The Contractor shall appoint an Environmental and Social Officer in order to assist the "Irrigation Engineer" to conduct his/her duties as required in the ESMP implementation by:

a) maintaining up to date records on actions taken by the contractor with regard to the implementation of ESMP recommendations,
b) submitting the reports with accurate information and data to the employer through the Engineer timely,
c) participating the meetings convened by the irrigation Engineer or any other relevant line agency and,
d) providing any other assistance requested by the "Irrigation Engineer".
e) Ensuring all mitigations identified in the ESMP are adopted.
f) Ensuring all OHS guidelines are followed at all times.

In case the Contractor or the sub-contractor/s fails to implement the actions specified in the ESMP, the contractor shall be informed in writing as soon as possible to take necessary corrective actions. If corrective actions are still not taken, the Engineer will have to take whatever necessary actions deemed necessary to ensure that the ESMP is properly implemented by the contractor.

The Environment and Social Management plan for Thannimurippu is illustrated in table 2.

For Reference Only

Table 2: Environment and Social Management Plan (ESMP)

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
		Design Stage			
1	**Incorporation of Environmental Design Recommendations**	▪ The following will be maintained at minimum for flow structures: ○ For culverts designs will be considered to allow overland flow and sheet flow from paved areas, cross drainage without any blocking ○ For bridges designs will be considered to allow overland flow and cross waterways without any blockage ○ For leader ways, designs will be considered for smooth flow without any obstruction to the flow ○ For silt traps designs will be considered for trapping of silt in proper manner with facilities for easy removal of silt, if any. ○ For catch pits appropriate designs will be considered in order to drain out rain water without blocking / flooding ○ Designed drainage facilities will be made capable of disposing of the runoff generated in a given water catchment without inundating the surrounding land for a selected rainfall event.	Design Cost	IA the Site in collaboration with the IA/PMU	IA/PMU
2	**Design Considerations for conservation of habitats**	▪ Design rehabilitation work to minimize the removal of large trees. As much as possible. ▪ Identification of areas and suitable species for compensatory replanting of trees.	Design Cost	IA the Site in collaboration with the IA/PMU	IA/PMU

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
3	**Incorporation of Green Design**	▪ Green infrastructure guidelines will be followed in designing and construction whenever possible. ▪ The use of natural material sourced from sustainable sources, such as natural rocks, choir, soil strengthening grasses etc. may be used for design of bank protection infrastructure and will be used where suitable. ▪ No material will be sourced from within any protected area. ▪ Structures built will incorporate earthy and natural colors that will mingle in with the natural scape and not hinder the aesthetic value of the area. ▪ Where possible the use of alternate energy sources will be explored.	Design Cost	IA the Site in collaboration with the IA/PMU	IA/PMU
Pre-Construction/Site preparation phase					
1	**Site Access Closure**	▪ All public access to the site will be prohibited or controlled via (especially the bund road) adequate fencing and signage (including night signals) in order to avoid risk to the public. ▪ The site entrance will include adequate signage indicating the details of the proposed subproject, implementing agencies etc as well as safety signage to keep public away. ▪ A fence shall be erected to cover the working area, where possible, using cost effective fence materials consisting of chain link fence fabric, concrete post, etc. in order to ensure, animals and public are unable to freely access the site. ○ To avoid land disturbance and movement, the fence shall generally follow the contour of the ground. ○ Grading shall be performed where necessary to provide a neat appearance.	Engineering Cost	IA the Site in collaboration with the IA/PMU	IA/PMU

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
2	**Material Sourcing**	▪ The contractor is required to ensure that all construction materials, including gravel, and earth is sourced from the identified sites. Any change to these sites and the identification of new sites will require prior safeguards approval via the engineer. ▪ Quarry material and sand shall be purchased from licensed operators, if the contractor will operate his own quarry site he will be required to obtain all licenses. ▪ The contractor is required to maintain the necessary licenses and environmental clearances for all burrow and quarry material they are using –including soil, fine aggregate and coarse aggregate. ▪ Sourcing of any material from protected areas and/or designated natural areas, including tank beds, are strictly prohibited. ▪ If the contractor uses a non-commercial burrow/quarry sites, the sites will be developed and remediated per the guidance provided in this ESMP. ▪ The contractor is required to submit in writing all the relevant copies, numbers and relevant details of all pre-requisite licenses etc. and report of their status to the engineer on a quarterly basis. ▪ Burrow site operated at tank bed should maintained well and do not excavate deeply.	Engineering Cost	Contractor	IA/PMU
3	**Coffer Dams**	▪ The contractor will prepare the method statement for coffer damming (if decided) where relevant and have it approved by the engineer prior to commencement or work or use the method statement provided by the project proponent with designs.			

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
4	**Work Site Management**	▪ The contractor will identify an area onsite to store construction materials and equipment which will be approved by the engineer and demarcated for material storage as per the site plan. Minimum safeguards protection such as covering, fencing of material storage areas would be required. ▪ Parking, repairing vehicles, machinery and equipment shall be done stationed only at the work site and/or in any other designated areas by the engineer. ▪ The contractor will provide instruction and advice will be given to drivers and operators (both company-owned and hired) to park vehicles and store equipment at this designated area.	Engineering Cost	Contractor	IA/PMU
5	**Labor Camps**	▪ The location, layout and basic facility provision of labor camps, site offices and resting facilities to be set up will be submitted to the Engineer prior to establishment. ▪ The establishment of labor camps will commence only upon the written approval of the Engineer. ▪ Building selected for labour camp will be renovated properly and all unsafe structures, should remove from the selected building. ▪ Contractor will be obtained safety certification for the site engineer about the safety condition of labour camp. ▪ Resting and sanitary facilities will be provided separately for both men and women laborers. ▪ The contractor will maintain necessary living accommodation and ancillary facilities in functional and hygienic manner and as approved by the Engineer.	Engineering Cost	Contractor	IA/PMU Remark: The NPCID propose to house all workers in the designated camp site at the near the LB sluice. (Since this construction site is situated in a very rural setting).

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
		▪ All temporary accommodation will be established and maintained in such a fashion that uncontaminated water is available for drinking, cooking and washing. ▪ The sewage system for the camp, if not available, will be planned & implemented with concurrence from the Local Public Health Officer (PHI) ▪ Contractor will be established mobile electrical fence around the labour camp and maintain.			
6	**Labor Training and Code of Conduct**	▪ The contractor will be required to develop a labor code of conduct and translated it in to local languages upon clearance from the Engineer. The code of conduct must be made available to all staff and displayed in the work site in local languages. ▪ Labor awareness programs to educate the laborers about the code of conduct, general conduct, the Environmental and Social Management Plan, Occupational Health and Safety etc. will be conducted throughout the contract period as agreed in the contracts Environmental and Social Management Plan. ▪ No labor under the age of 18 will be hired for work under this contract.	Engineering Cost	Contractor	IA/PMU
7	**Tree Removal**	▪ Only trees required to be removed along the dam and close to the anicut structures where deemed necessary and justified via the technical design will be removed. ▪ Contractor will adhere to the guidelines and recommendations made by the safeguards staff of the project and the CEA/Divisional Secretariat, if any, with regard to felling of trees and removal of vegetation. ▪ The following will be conducted at minimum:	Engineering Cost	Contractor	IA/ Divisional Secretariat of Oddusudhan/Maritimepattu /PMU

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
		○ Contractor will make every effort to avoid removal and/or destruction of trees of religious, cultural and aesthetic significance. ○ If such action is unavoidable, the Engineer will be informed in advance and carry out public consultation and report on the same will be submitted to the Engineer. ○ Trees will be removed from the construction sites before commencement of construction with prior permission from Divisional Secretariat of Oddusudhan/ Maritimepattu followed by respective Grama Niladhari depending on the location. ○ During removing, attention will be paid to maintaining minimum disturbances to soil cover and also care will be taken not to damage adjoining trees. ○ Masonry tree guards, Low level RCC tree guards, Circular Iron Tree Guard with Bars, use of plate compactors near trees may also be considered where necessary ○ The following procedure will be followed: Remove the logs, branches of trees; Stack them properly until removal; Remove roots and rehabilitate the bund and toe areas where tree were uprooted. ○ The easily decomposable vegetation could either be utilized as a soil conditioner after drying or be composted in a proper manner. Large vegetation parts could be sold or else be used as firewood. ○ Removed trees of economic value will be handed over to the Timber Corporation. ▪ Compensatory Planting			

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
		○ Compensatory plantation by way of Re-plantation of at least twice the number of trees cut will be carried out in the project area. The location of replanting sites will be worked out in close collaboration with the safeguards team of the PMU. ○ All planted trees will be native species to match removed ones where possible. ○ Growth and survival of trees planted shall be ensured and monitoring done at least for a period of 3 years. ○ Survival status shall be reported on monthly basis to Engineer in charge. ■ Additional Tree Removal ○ Additional trees and vegetation will be felled/removed only if that impinges directly on the permanent works or necessary temporary works. In all such cases contractor shall take prior approval from the Engineer and the PMU safeguards team by providing strong engineering justifications. ○ If any trimming/pruning of roots of existing trees anticipated during construction, it will be consulted with the Engineer and the safeguards team of the PMU, prior to undertaking the identified trimming of roots. ○ This will be to ensure that the health and stability of the tree will not be impacted from trimming.			
8	**Removal of Utilities**	■ The common utilities to be affected by project activities such as: telephone cables, electric cables, electric poles, water pipelines, public water taps, etc (if any). will be identified prior.	Engineering Cost	Contractor	IA/PMU/CEB/ Water Board/Sri Lanka Tele Com.

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
		▪ Affected utilities shall be relocated with prior approval of the concerned agencies before construction starts in collaboration with the agencies ▪ All efforts will be made to ensure that there will be no/or minimal disruption to services during this process. ▪ Ensure community consensus and minimum impact to common utilities like telephone cable, electric cables, electric poles, water taps and etc., ▪ The contractor will take all measures to inform the effected public of the process prior to commencing work. ▪ Proper clearance will have obtained from the concerned authorities and sent to the PMU before commencement of works.			
9	**Information Disclosure among Stakeholders**	▪ Discussions will be conducted with the residents who reside along the vicinity of the project site o Residents will be briefed of the project, purpose and design and outcomes via a documented community consultation session o This will be done immediately once the contractor is mobilized. o The contractor will take note of all impacts, especially safety hazards that will be of concern to the residents and take necessary measures as stipulated in the ESMP to mitigate them. ▪ The contractor will maintain a log of any grievances/complains and actions taken to resolve them. ▪ A copy of the ESMP will be available always at the project supervision office on site.	Engineering Cost	Contractor/IA/ IA/PMU	IA/PMU

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
10	**Actions and site readiness to avoid unnecessary delays of construction works**	▪ Obtain all necessary approvals and clearance before commence the rehabilitation works. ▪ Identify the required labour force and make arrangements to fulfil the requirement. ▪ Identify quarry sites/ suppliers and other required facilities or machineries. ▪ Start primary readiness works before water drawdown (establish labour camps/ stie clearance/ material stockpiling etc) ▪ Check the working conditions of vehicles and repair the required vehicles.	Engineering Cost	Contractor/IA	IA/PMU
Construction/Intervention Phase					
1.	**Site Clearance and Land Development**	▪ Prevention of removal of trees will be maintained as far as possible. ▪ During removing, attention will be paid to maintaining minimum disturbances to soil cover and also care will be taken not to damage adjoining trees. ▪ Trees removed will need to be compensated at the minimum of a 1:2 at basis. Planting locations could be either onsite or in the tank catchment, as practical and suitable. ▪ Water spraying will be done at a regular interval to avoid dust generation due to site clearance	Engineering Cost	Contractor	IA/PMU
2	**Disposal of Debris and Spoil**	▪ All debris and residual spoil material including any left earth shall be disposed only at locations approved by the engineer for such purpose and subjected to the following clauses: ▪ The contractor shall obtain the approval from the relevant Local Authority for disposal of spoil at the specified location, as directed by the Engineer	Engineering Cost	Contractor	IA/PMU

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring

		▪ Private land that will be selected for disposal will also require written consent from the land owner
		▪ The debris and spoil shall be disposed in such a manner that;
		  ○ waterways and drainage paths are not blocked
		  ○ the disposed material will not be washed away by runoff and
		  ○ will not be a nuisance to the public
		▪ All material that is reusable or recyclable shall be used for such purposes either by the contractor or through dealers.
		▪ The debris and residual spoil material including any left earth shall be used, to refill the burrow areas as directed by the engineer, subjected to laying of topsoil as per recommendations for conservation and reuse of top soil provided below.
		▪ Excavated earth materials and all debris materials shall be disposed immediately without allowing to stockpile at identified locations for debris disposal, recommended by the engineer. During transportation, dispose materials will be covered with tarpaulin.
		▪ If approved by the engineer, contractor can dispose the debris and spoil as a filling material provided that the contractor can ensure that such material is used for legally acceptable purposes with disposed in an environmentally acceptable manner.			

3	**Conservation and Reuse of Topsoil**	▪ Top soil of productive areas where it must be removed for the purpose of this project shall be stripped to a specified depth of 50mm and stored in stockpiles of height not exceeding 2m, if directed by the engineer. If the contractor is in any doubt on whether to conserve	Engineering Cost	Contractor	IA/PMU

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
		the topsoil or not for any given area he/she shall obtain the direction from the engineer in writing ▪ Removed top soil could be used as a productive soil when replanting/establishing vegetation ▪ Stockpiled topsoil must be returned to cover the areas where the topsoil has been removed due to project activities. Residual topsoil must be distributed on adjoining/proximate barren areas as identified by the engineer in a layer of thickness of 75mm – 150mm. ▪ Topsoil thus stockpiled for reuse shall not be surcharged or overburdened. As far as possible multiple handling of topsoil stockpiles will be kept to a minimum.			
4	**Transport and Storage of construction materials**	▪ The contractor will avoid over loading trucks that transport material to construction sites. ▪ During transportation, materials will be covered with tarpaulin. ▪ Peak hours in roads with moderate to high traffic will be avoided. ▪ The contractor shall minimize possible public nuisance due to dust, traffic congestion, air pollution, etc., due to such haulage; ▪ If local roads are used, routes are to be selected based on the truck load; loads will be divided to prevent damages to local roads and bridges. ▪ Speed limits as nationality stipulated for haulage must be maintained. ▪ The contractor should deploy flagmen and traffic control measures as necessary depending on the route taken for transport of material. ▪ All vehicles used for haulage will be in good condition.	Engineering Cost	Contractor	IA/PMU

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
		▪ If there are damages to local roads and other utilities due to hauling in roads caused by the contractor. The contractor shall attend to repair all damaged infrastructure/ roads, if needed through relevant authorities			
5	**Emission of Dust during cover application and construction.**	▪ All construction materials such as sand, soil, metal, etc. will be transported under cover to the site and stored under cover at the sight. ▪ Plastic sheeting (of about 6 mm minimum thickness) can be used and held in place with weights, such as cinder blocks, with the edges of the sheeting buried, or by the use of other anchoring systems, in order to minimize the levels of airborne dust. ▪ Mud patches caused by material transporting vehicles in the access road will be cleaned immediately. ▪ Continual water sprinkling will be carried out in the work and fill areas and the access road if dust stir is observed. ▪ Water sprinkling will be done more frequently on days that are dry and windy (at least four time's day) as the levels of dust can be elevated during dry periods. ▪ Dust masks will be provided to all laborers for the use at required times	Engineering Cost	Contractor	IA/PMU
6	**Prevention of soil erosion during site preparation**	▪ Debris material shall be disposed in such a manner that waterways, drainage paths would not get blocked. ▪ Drainage paths associated with the infrastructure will be improved / erected to drain rain water properly. ▪ Silt traps will be constructed to avoid siltation into water ways where necessary. ▪ To avoid siltation, drainage paths will not be directed to any waterway directly and they will be separated.	Engineering Cost	Contractor	IA/PMU

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
		▪ Barricades such as humps will be erected at excavated areas for culverts, silt traps, toe walls, filling and lifting with proper sign boards, (all work will be carried out during the dry season). To prevent soil erosion in these excavated areas, proper earth drain system will be introduced. ▪ Night time signaling system need to be stablished at the necessary places. ▪ Embankment slopes, slopes of cuts, etc. shall not be unduly exposed to erosive forces. These exposed slopes shall be graded and covered by grass or other suitable materials per the specifications. ▪ All fills, back fills and slopes will be compacted immediately to reach the specified degree of compaction and establishment of proper mulch. ▪ All work will be carried out during the dry season. If such activities need to be continued during rainy season prior approval must be obtained from the Engineer by submitting a proposal on actions that will be undertaken by the contractor to prevent erosion. ▪ The work, permanent or temporary shall consist of measures as per design or as directed by the engineer to control soil erosion, sedimentation and water pollution to the satisfaction of the engineer. Typical measures include the use of berms, dikes sediment basins, fiber mats, mulches, grasses, slope drains and other devices. All sedimentation and pollution control works and maintenance thereof are deemed, as incidental to the earthwork or other items of work and no separate payment will be made for their implementation.			

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
7	**Burrowing of Earth and Management of Self Operated Burrow Sites**	▪ In the event the contractor will use a self-operated burrow site: ▪ Approval from the Geological Survey and Mines Bureau will have to be sought for extraction and transport. Burrow areas shall not be opened without having a valid mining license from the Geological Survey and Mines bureau (GSMB). ▪ Burrow sites and gravel pits have been identified for this project, any change in the sites will have to be informed to the project Engineer and identification of new areas will need to be reviewed by the safeguards staff. ▪ A site operational plan for opening and closing the burrow site, for any burrow site, will be prepared and submitted to the engineer for clearance. Refer guidelines for burrow site provided in the ESMF or in the attached at the bottom of table 7. ▪ The contractor shall comply with the environmental requirements/guidelines issued by the Central Environmental Authority (CEA) and the respective local authorities with respect to locating new burrow areas (in addition to what has been identified) and with regard to all operations related to excavation and transportation of earth from such sites. ▪ No burrow-sites be used (current approved) or newly established within areas protected under Fauna and Flora Protection Ordinance (FFPO) and Forest Ordinance (FO) ▪ The location, depth of excavation and the extent of the pit or open cut area shall be as approved by the engineer. ▪ All burrow pits/areas will be rehabilitated at the end of their use by the contractor in accordance with the requirements/guidelines issued by the CEA and the	Engineering Cost	Contractor	IA/PMU

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
		respective local authority and guidelines presented in the ESMF. ▪ Establishment of burrow pits/areas and its operational activities shall not cause any adverse impact to the near-by properties and people. ▪ Contractor shall take all steps necessary to ensure the stability of slopes including those related to temporary works and burrow pits. ▪ The burrow sites will be temporarily fenced off using an inexpensive material to ensure that wild animals will not stray in and fall.			
8	**Quarry Operations and Management of Self Operated Quarry Sites**	▪ In the event the contractor manages a self-owned existing quarry sites available in the project area the following will be followed: o A site operational plan for opening and closing the quarry site, for any new quarry site, will be prepared and submitted to the engineer for clearance. o This will be approved by GSMB with valid Environmental Protection License (EPL) and Industrial Mining Licenses; o Prior approval will be obtained from GSMB, CEA and local authorities such as Pradeshiya Sabha. ▪ Selected quarry sites will have proper safety measures such as warnings, safety nets etc., and third party insurance cover to protect external parties that may be affected due to blasting. ▪ Quarry sites will not be established within protected sites identified under the FFPO and FO. ▪ It is recommended not to seek material from quarries that have ongoing disputes with community.	Engineering Cost	Contractor	IA/PMU

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
		▪ The maintenance and rehabilitation of the access roads in the event of damage by the contractor's operations shall be a responsibility of the contractor. ▪ Copies of all relevant licenses will be maintained by the contractor for review and documentation by the engineer			
9	**Machinery Operation**	▪ Only experienced and well trained workers will be used for the handling of machinery, equipment and material processing plants.	Engineering Cost	Contractor	IA/PMU
10	**Noise from vehicles, machinery, equipment and construction activities.**	▪ Noise generating work will be limited to day time (6:00AM to 6:00PM). No work that generates excessive noise will be carried out during night hours (from 6:00PM to 6:00AM on the following day). ▪ All equipment and machinery will be operated at noise levels that do not exceed the permissible level of 75 dB[1] (during construction) for the day time. ▪ For all construction activities undertaken during the night time, the noise level will be maintained at below 50 dB as per the CEA noise control regulations ▪ All equipment will be in good serviced condition. Regular maintenance of all construction vehicles and machinery to meet noise control regulations stipulated by the CEA in 1996 (Gazette Extra Ordinary, No 924/12) must be conducted for vehicles/machinery that will be used in construction on site and for transport. ▪ Ideally noise generating work will not be carried out during public holidays and religious days. ▪ Laborers will be advised to work with minimum noise. Strict labor supervision will be undertaken in this respect.	Engineering Cost	Contractor	IA/PMU

For Reference Only

[1] dB-Decibels

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
		▪ No night time residency of laborers on site will be encouraged, post work hours. ▪ Idling of temporary trucks or other equipment will not be permitted during periods of loading / unloading or when they are not in active use. This practice will be ensured especially near residential and sensitive areas. ▪ Stationary construction equipment will be kept at least 100m from the site periphery, which has proximity to households. All possible and practical measures to control noise emissions during drilling shall be employed. ▪ Contractor will submit the list of high noise/vibration generating machinery & equipment to the engineer for approval. ▪ Servicing of all construction vehicles and machinery must be done regularly and during routine servicing operations, the effectiveness of exhaust silencers will be checked and if found defective will be replaced. ▪ Maintenance of vehicles, equipment and machinery will be regular and up to the satisfaction of the Engineer to keep noise levels at the minimum.			
11	**Pollution of Soil and Water via Fuel and Lubricants**	▪ The contractor will ensure that all construction vehicle parking locations, fuel/lubricants storage sites, vehicle, machinery and equipment maintenance and refueling site shall be located away from the tank or drainage paths that is adjacent to the site by least 200m away. ▪ Contractor will ensure that all vehicle/machinery and equipment operation, maintenance and refueling will be carried out in such a fashion that spillage of fuels and lubricants does not further contaminate the ground. ▪ Contractor will arrange for collection, storing and disposal of oily wastes to the pre-identified disposal sites	Engineering Cost	Contractor	IA/PMU

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
		(list to be submitted to Engineer) and approved by the Engineer. ▪ All spills and collected petroleum products will be disposed of in accordance with standards set by the CEA/MMDE[2]. ▪ Engineer will certify that all arrangements comply with the guidelines of CEA/MMDE or any other relevant laws.			
12	**Preventing loss of minor water sources and disruption to water users**	▪ The Contractor will make employees aware on water conservation and waste minimization in the construction process by: ○ Arrange adequate supply of water for the project purpose throughout the construction period. ○ Not obtain water for project purposes, including for labor camps, from public or community water supply schemes without a prior approval from the relevant authority. ○ Not extract water from ground water or surface water bodies without the permission from engineer & relevant authority. ○ Obtain the permission for extracting water prior to the commencing of the project, from the relevant authority. ○ Apply best management practices to control contamination of run-off water during maintenance & operation of equipment. ○ Maintain adequate distance between stockpiles & water bodies to control effects to natural drainage paths. ▪ Contractor will protect sources of water (potable or otherwise) such as water sources used by the community	Engineering Cost	Contractor	IA/PMU

[2] MMDE-Ministry of Mahaweli Development and Environment

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
		so that continued use of these water sources will not be disrupted by the work. In case closure of such sources is required on temporary basis, the contractor will provide alternative arrangement for supply (this may be necessary during the rehabilitation of the bathing steps). Alternative sources such as wells thus provided will be within acceptable distance to the original sources and accessible to the affected community. ■ In case the contractor's activities adversely affect the quantity or quality of water, the contractor will serve notice to the relevant authorities and downstream users of water sufficiently in advance.			
13	**Preventing siltation into water bodies**	■ Contractor will take measures to prevent siltation of water bodies because of construction work including, construction of temporary / permanent devices to prevent water pollution due to siltation and increase of turbidity. These shall include the measures against erosion highlighted in this ESMP ■ Construction materials containing small / fine particles will be stored in places not subjected to flooding and in such a manner that these materials will not be washed away by runoff. ■ Temporary soil dumps will be placed at least 200m away from all water bodies ■ If temporary soil piles are left at the site for a long time those piles will be covered with thick polythene sheets ■ All fills, back fills and slopes will be compacted immediately to reach the specified degree of compaction and establishment of proper mulch	Engineering Cost	Contractor	IA/PMU
14	**Preventing contamination of**	■ Measures as stipulated in this ESMP shall be taken to prevent the wastewater produced in construction from	Engineering Cost	Contractor	IA/PMU

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
	water from construction wastes	entering the water bodies or the irrigation systems directly. ▪ The discharge standards promulgated under the National Environmental Act shall be strictly adhered to.			
15	**Managing alteration of drainage paths**	▪ Contractor shall not close or block existing canals and streams permanently. If diversion or closure or blocking of canals and streams is required for the execution of work (e.g. for construction of bypass), contractor must first obtain the Engineers approval in writing. ▪ Contractor shall carry out an investigation and report to the Engineer, if an investigation is requested by the Engineer. ▪ Contractor shall also obtain the approval from the relevant agencies such as EPCID/ /Divisional Secretary prior to such action is taken. ▪ Contractors shall restore the drainage path back to its original status once the need for such diversion or closure or blockage is no longer required. ▪ All work will only be undertaken during the dry season.	Engineering Cost	Contractor	IA/PMU
16	**Public Safety**	▪ At all times the site will restrict the entry of public on to the site. ▪ Safety signboards and signboards prohibiting entrance and risks, will be displayed including night signals at all necessary locations. ▪ The contractor will obtain a Third-party insurance to compensate any damages, injuries caused to the public or laborers during the construction period. ▪ All construction vehicles will be operated by experienced and trained operators under supervision. ▪ Material loading and unloading will be done only within the project site.	Engineering Cost	Contractor	IA/PMU

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
		▪ When the authorized public enter to the work site, they should use PPEs properly and should visit only the authorized location with supervision of safety officer. ▪ Nighttime signals should be established at necessary locations and maintained.			
17	**Safety of Workers**	▪ Contractor will comply with the requirements for safety of the workers as per the ILO Convention No. 62 and Safety & Health Regulations of the Factory Ordinance of Sri Lanka to the extent that those are applicable to this contract. ▪ The contractor will supply all necessary safety measures at site- including provision of first aid kits and fire extinguishers. ▪ Signage providing instructions on first aid management, emergency contact and emergency operational procedures in local languages will be displayed at the site office. ▪ Basic onsite safety training will be conducted for all laborers during the ESMP training prior to the start of the construction activities. ▪ The training to laborers will also include a brief on the risks of working on a dam rehabilitation site. ▪ The contractor will obtain a Third-party insurance to compensate any damages, injuries caused to laborers during the construction period. ▪ Protective footwear and protective goggles will be provided to all workers employed on mixing of materials like cement, concrete etc. ▪ Welder's protective eye-shields will be provided to workers who are engaged in welding works.	Engineering Cost	Contractor	IA/PMU

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
		▪ Earplugs will be provided to workers exposed to loud noise, and workers working in crushing, compaction, or concrete mixing operation. ▪ The contractor shall supply all necessary safety equipment such as safety goggles, helmets, safety belts, ear plugs, mask etc. to workers and staff. ▪ In addition, the contractor shall maintain in stock at the site office, gloves, ear muffs, goggles, dust masks, safety harness and any other equipment considered necessary. ▪ A safety inspection checklist will be prepared taking into consideration what the workers are supposed to be wearing and monitored monthly and recorded. ▪ Without supervision of safety officer works should no conduct at site (including public holidays). ▪ Safety officer shall ensure the use of PPEs by workers at site. ▪ According to the received information (not confirmed) the downstream area of the Thannimurippu tank has a risk of land mines which were laid in past conflict period and some are still live. Therefore, it is advised to not move to downstream jungle area.			
18	**Prevention of accidents**	▪ Prevention of accidents involving human beings or vehicles or accidents during construction period will be done via adequate training and guidance to all workers. ▪ A readily available first aid unit including an adequate supply of sterilized dressing materials and first aid supplies will always be available at the site office . ▪ Availability of suitable transport always to take injured or sick person(s) to the nearest hospital will also be insured. ▪ Names and contact information for emergency services such as Ambulance services, hospitals, police and the fire	Engineering Cost	Contractor	IA/PMU

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
		brigade will be prepared as a sign board and displayed at the work site. ▪ Details of the nearest hospital, nearest route to the hospital, on-duty drivers name and contact numbers should be displayed clearly (including holidays).			
18 (i)	**Prevention of Wildlife related accidents**	▪ Contractor shall facilitate to conduct a special training to his/her staff and workers on possible wildlife related accidents and how to avoid them. ▪ Contractor shall adhere to the guideline on "working in Wildlife Area" that prepared by the PMU which has been attached to the contact documents. ▪ Contractor shall establish a rapid response mechanism to deal with wildlife related accidents. ▪ Contractor shall obtain necessary support / equipment for the DWLC. ▪ Contractor shall appoint a person to be vigilant at the working site/labor site at all times throughout the contract period.	Engineering Cost	Contractor	IA/PMU
19	**Operation of labor camps**	▪ A supply of sufficient quantity of potable water will be provisioned for in every workplace/labor camp site at suitable and easily accessible places, and regular maintenance of such provisions will be carried out. ▪ The sewage system for the offsite labor camp, if newly established, will be designed, built and operated in such a fashion that no health hazards occurs and no pollution to the air, ground water or adjacent water courses take place. ▪ Adequate water supply will be provided in all toilets and urinals.	Engineering Cost	Contractor	IA/PMU

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
		▪ Contractor will provide garbage bins in the camps and ensure that these are regularly emptied and disposed of in a hygienic manner.			
20	**Handling of environmental and social issues during construction**	▪ The Contractor will appoint a suitably qualified Environmental officer and Social and Safety Officer following the award of the contract. The proposed officers will be the primary point of contact for assistance with all environmental issues during the pre-construction and construction phases. Environmental officer and Social and Safety Officer will be responsible for ensuring the implementation of ESMP. ▪ The Contractor will appoint a person responsible for community liaison and to handle public complaints regarding environmental/ social related matters. All public complaints will be entered into the Complaints Register. The Environmental Officer will promptly investigate and review environmental complaints and implement the appropriate corrective actions to arrest or mitigate the cause of the complaints. A register of all complaints is to be passed to the Engineer within 24 hrs. They are received, with the action taken by the Environmental Officer on complains thereof. ▪ Contractor shall prepare detailed Environmental Method Statement (EMS) clearly stating the approach, actions and way the ESMP is implemented. The EMS shall be updated regularly and submit for Engineers review.	Engineering Cost	Contractor	IA/PMU

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
21	**Management of chance find of Archeological Property/ un identified objects (berried below the surface)**	▪ All fossils, coins, articles of value of antiquity and structures and other remains or things of geological or archaeological interest etc. discovered on the site and/or during construction work shall be the property of the Government of Sri Lanka, and shall be dealt with as per provisions of Antiquities Ordinance of 1940 (Revised in 1956 & 1998) ▪ The contractor shall take reasonable precaution to prevent his workmen or any other persons from removing and damaging any such article or thing and shall, immediately upon discovery thereof and before removal acquaint the Engineer of such discovery and carry out the Engineer's instructions for dealing with the same, awaiting which all work shall be stopped within 100m in all directions from the site of discovery. ▪ If directed by the Engineers, the Contractor will obtain advice and assistance from the Department of Archaeological of Sri Lanka on conservation measures to be taken with regard to the artifacts prior to recommencement of work in the area. ▪ Contractor shall follow the same actions if unidentified articles such as land mines, antipersonnel mines, arms, amunution etc.	Engineering Cost	Contractor	IA/PMU
22	**Chance find of important Flora/Fauna**	▪ Flora ○ While any rare/threatened/endangered flora species will be identified and removed prior to construction, during construction if by chance such species are found, it shall be immediately informed to the PMU by the contractor. ○ All activities that could destroy such flora and/or its habitat shall be stopped with immediate effect. Such	Engineering Cost	Contractor	IA/PMU

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
		activities shall be started only after obtaining the Engineer's approval. Contractor shall carry out all activities and plans that the Engineer instructed him to undertake to conserve such flora and/or its habitat. ▪ Fauna ○ All works shall be carried out in such a manner that the destruction or disruption to the fauna and their habitats is minimum. ○ Construction workers shall be instructed to protect fauna including birds and aquatic life as well as their habitats. ○ Chance found important Fauna ○ During construction, if any faunal species is found, it shall be immediately informed to the PMU by the contractor. All activities that could destroy such fauna and/or its habitat shall be stopped with immediate effect. Such activities shall be started only after obtaining the Engineer's approval. Contractor shall carry out all activities and plans that the Engineer instructed him to undertake to conserve such fauna and/or its habitat.			
23	**Site Closure and Demobilization**	▪ The contractor will remove all excess material, equipment, vehicles from the project site prior to completing demobilization from the site. ▪ Coffer dams, if erected need to be completely removed and associated debris has to be cleared from the. ▪ All temporary site offices will be dismantled and removed from the site. ▪ If the parking site has been dilapidated in any way as per the evaluation of the engineer, the contractor will	Engineering Cost	Contractor	IA/PMU

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
		reinstate it to the original condition prior to demobilization.			
24	**Prevention of issues (e.g. GBV) related to labour influx**	▪ Avoid or reduce labour influx where possible ▪ Contractors to implement robust measures to prevent sexual harassment, gender-based violence (GBV) ▪ training of workforce – on unacceptable conduct ▪ informing workers about national laws ▪ Worker Code of Conduct as part of the employment contract ▪ introduce sanctions for non-compliance (e.g., termination) ▪ cooperation with law enforcement agencies			
Post Construction/Operation and Maintenance Phase					
1	**Greening and maintenance of earthen embankment**	▪ Only native species of plants may be used for the planting process- Vetiver grass is recommended as a suitable species that grows well on sandy loam soils and toxic conditions and has good potential to control soil erosion. ▪ Attempts will be made to also identify suitable "living filter" plant species that are known to minimize the amounts of toxins in a given environment. ▪ A supply of water will be available for the routine maintenance of the vegetation until it succeeds naturally. ▪ Routine maintenance of planted species will be conducted to identify issues with establishment on site. ▪ Replacement planting will be conducted as appropriate.	Operational Cost	Facility Operator	IA, CEA
2	**Flood management infrastructure**	▪ Routine desilting and clearing of sediment traps, waste traps and silt traps will be included in the operations and maintenance plan for the sites and conducted as per the guidelines of the Central Environmental Authority.	Operational Cost	Facility Operator	IA, CEA

For Reference Only

No	Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
				Implementation	Monitoring
3	**Income generation for beneficiaries during construction periods**	▪ Providing labor and other services for construction units can be allocated to local communities after providing required training to ensure enough income for local communities.	Operational cost	Contractor	IA, PMU
4	**Provide adequate support for social organizations of the community**	▪ To maintain the goodwill of the community and to pursue undisturbed operations during construction, it is recommended to provide some beneficiary services to community organizations through cooperate social responsibility budgets	Operational cost	Contractor	IA, PMU

For Reference Only

12. Special Information

12.1 Required Officers for the Work Site for Maintain Environmental and Social Safeguard

No	Officer's Designation	Service arrangement
01	Environmental and Social Officer	Full time
02	Safety Officer	Full time

The environmental and Social responsible for maintain environmental and social safeguard measures of the work site and maintain grievances and maintain and update record books. Also, he/she responsible to conduct environmental and social monthly monitoring and timely report to the PMU. (Monthly monitoring format will be provided by the PMU)

The Safety Officer is responsible to maintain labour safety and maintain Occupational Health and Safety (OHS) throughout the project period and ensure the safety of officers/visitors and the community who are living adjacent project sites.

12.2 Important Documents Should Maintain at the Work Site

- Environment and Social Management Plan (ESMP)
- Relevant guidelines including emergency plan
- Tree Removal Guideline
- Labour Camp Guideline
- Guideline on Occupational Health and Safety and Working in Wildlife Area
- Signed Code of Conducts
- Log Book
- Complain / Grievances Record Book
- Accident Record Book
- Borrow Material Licenses

12.3 Special Approvals

Contractor/IA should obtain necessary approvals from Central Environmental Authority.

For Reference Only

13 Budget

Most of the mitigation measures described in the ESMP are deemed as incidental to construction work and included in the contract. However, the costs provided in the ESMP need to be considered as specific mitigation costs

Description	Cost (Rs)
Safety Officer for 06 months	600000
Environment and Social Officer for 06 months	600000
General mitigation works (including safety measures, signage , operational expenses for the GRM etc.)	400,000
Total	**1,600,000**

For Reference Only

For Reference Only

Integrated Watershed and Water Resources Management Project (IWWRMP)

Standard Procedure for Ensuring Occupational Health and Safety When working in Wildlife Area

For Reference Only

February, 2025

Content

1. Purpose
2. Common hazards may occur when working in Wildlife areas
3. Planning for Occupational Health and Safety (OHS).
4. Safe Operating Procedure

4.1 General procedures

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5. Common actions to be followed
6. Precautional actions

6.1 Precautions against bees/ wasp stings/bites

6.2 Precautions against large mammals

6.3 Precautions against snake bites

6.4 Precautions against crocodiles attacks

7. General conditions of workers
8. Personal Protective Equipment needed

For Reference Only

1. Purpose

Workers who are working in wildlife or forest areas can be exposed to wildlife threats. Therefore, persons working in these areas need to strictly follow the guidelines and regulations given by the relevant authority. To fulfill this requirement, contractors and workers will have to follow the occupational health and safety guideline covered in this document during their working period in the wildlife/ forest areas.

2. Common hazards that may occur when working in Wildlife areas

1. Infectious diseases transmission from mosquito or small animal bites.
2. Swelling, mild or severe allergic reactions from stinging insects.
3. Swelling, mild or severe allergic reactions or death from snake bites.
4. Serious injury or death from contact with large mammals or reptiles.

3. Planning for Occupational Health and Safety (OHS).

1. Review identified area, its nature, jurisdiction, conservation status and relevant authority.
2. Plan to get relevant authorization and get clear idea about given conditions and required OHS measures.
3. Purchasing of relevant safety equipment. (Example – Personal Protective Equipment)
4. Provide necessary trainings to staff. (Example – First Aid, emergency protocols)
5. Appoint a person to supervise OHS.

4. Safe Operating Procedure

4.1 General procedures

4.1.1 Obtain conditional approval from authorized agency (Example – Department of Wildlife Conservation / Forest Department).

4.1.2 Understand the given conditions and take action to aware all workers (including drivers and supporting staff) on the given conditions.

4.13 Obtain the service of 01 or 02 officers from relevant authorized agency and always accompany them to relevant sites and work under their supervision and guidance.

4.1.4 If any risks or danger is anticipated , felt or identified in the area of work, immediately take action to inform authorized persons and get their direction.

For Reference Only

4.2 Common preparedness

4.2.1 Be aware of working area and current conditions and history. (Example –elephant attacks / crocodile attacks)

4.2.2 Always carry a mobile phone or some communication system. (In some protected areas of Sri Lanka, there is no mobile phone coverage).

4.2.3 Select suitable vehicles, at least two vehicles should be mobilized (good condition,4-wheel, toolbox, tore ropes and winch, etc.). Persons will not engage in any activities alone.

4.2.4 Always bring a first aid box/ stretcher.

4.2.5 Be aware of nearest hospital and nearest route.

4.2.6 Be equipped with enough clean drinking water for workers.

5. Common protocol to follow

1. Be aware of your surroundings, and note any wild or suspicious acting animals in your working area.
2. Identify and be aware about wild animal active times and try to avoid those times.
3. Avoid reaching or stepping into or over hidden areas that may contain wildlife.
4. Be aware of signs that indicate above or below ground animal nests. Also take appropriate action to prevent contaminations of these areas.
5. Avoid direct contact with birds, bats, or other animal droppings.
6. Avoid direct contact with animal blood. If contact cannot be prevented, wear rubber gloves and dispose properly.
7. Do not feed any wild animal.
8. Do not capture / harm wild life or plant species and do not collect any thing from protected area. (Example fallen animal horns, bones, tusks (ivory), etc).
9. Set fire under (if necessary) should do under supervision of wildlife officers and after use take action to completely extinguish it.

10 Allocate one person to be on guard/vigilance while other workers are at work

For Reference Only

6. Precautional actions

6.1 Precautions against bees/ wasp stings/bites

6.1.1 Awareness about working areas and presence of bee hives or wasp nests .

6.1.2 Do not wear perfumes, colognes, scented soaps or powders.

6.1.3 Tuck pants into your socks or working boots.

6.1.4 Wear safety hats with face protecting net.

6.1.5 Do not make more noise than necessary when working.

6.1.6 Establish safety cage with enough space. (If possible)

6.1.7 Provide safety kit for workers

6.1.8 If you decided to remove bee/ wasp nest from working site, the authorized agency (example Department of Wildlife Conservation -DWLC) should be informed and their concurrence and assistance should be sought prior to implementation.

6.1.9 Always consult and take a service from qualified pest-removal expert. (Example – Bee conservation Society of Sri Lanka)

6.2 Precautions against large mammal attacks

6.2.1 Be aware of working site, access routes etc.

6.2.2 Be aware on animal movement routes, times, nature of the animals etc.

6.2.3 Try to avoid contact with wild animals. (Example – use an alternative route)

6.2.4 Request wildlife officers to bring/provide safety equipment (Example - Thunder-flashes).

6.3 Precautions for prevention of snake bites

6.3.1 Be vigilant and aware of working area.

6.3.2 Always wear safety boots.

6.3.3 Do not put hands or legs into hidden holes, anthills or any hidden spots.

6.3.4 Do not touch dead or live snakes.

For Reference Only

6.4 Precautions for prevention of crocodile attacks

6.4.1 Be vigilant and aware of working area on crocodile signs (Example – foot prints, scats, hiding holes etc) and if those signs are available immediately inform to authorized officials and get their advises.

6.4.2 Do not put your hands or legs in to crocodile hiding holes / do not enter into crocodile hiding holes.

6.4.3 Do not enter into unsafe water.

6.4.4 If you need to work in open waters, establish protective cages.

6.4.5 Observe the working area thoroughly before entering in to open waters or protective cages.

7. General Conditions of workers

1. Workers should be in good health condition.
2. Should agree to follow given conditions and safety measures given from time to time and unexpected conditions.
3. Do not consume alcohol while working.
4. Always pay attention to surroundings.
5. Always stay as a group.
6. Do not litter.
7. Aware of all Do's and Don'ts. (contractor and supervision officers are responsible for this).
8. Establish temporary signboards on Do's and Don'ts at working sites.

8.Personal Protective Equipment need to used

1. Insect repellant
2. Long-sleeved shirts and pants (Jungle green/ dark colour)
3. Safety boots
4. Insect spray designed for bees/wasps/hornets
5. Safety hats with face protector (specially protect from bees and wasps)
6. Life jackets/ raincoats.
7. Life saving equipment for working in water.
8. Re-chargeable torches / lighting equipment.

For Reference Only

For Reference Only

For Reference Only

Integrated Watershed and Water Resources Management Project (IWWRMP)

Standard Procedure for Assessing the Requirement of Tree Removals

For Reference Only

February, 2025

Standard Procedure for Assessing the Requirement of Tree Removals

1. Planning Stage

1.1 Consultancy teams should be appraised by the PMU to pay attention and document the requirement of tree removals at each site.

1.2 Consultancy team should discuss with officials of relevant implementing agency on proposed tree removals to identify exact requirement and alternatives explored.

1.3 Ground verification on tree removals should be done by team of IA and PMU. Officials from implementing agency and representatives from community organizations shall also participate and records with attendance list be taken. All trees identified for removal should be measured for their Diameter at Breast Height (DBH).

1.4 Special attention shall be given if any of the selected trees are considered rare, endemic, religiously, historically or culturally important, or are in roosting/ nesting sites etc. The removal of these trees should be avoided and alternatives sought. Unavoidable removals shall be supported with sufficient justification.

1.5 Proposed unavoidable tree removal identified and confirmed at ground verification should be declared and requirement explained to the public at community consultative meetings. The removal should be comprehensive justified with scientific/ engineering support. Sufficient time for community public feedback shall be provided. All suggestions provided shall be given due consideration.

1.6 If public raise key concerns/questions/ protests/ alternatives, the proposed list of tree removal shall be revisited with the relevant implement agency.

1.7 Include finalized tree list in to draft ESMP (scientific justification need for each tree which has identified to be removed). All mitigations and compensatory tree planting activities shall be presented explicitly in the ESMP.

1.8 Submit draft ESMP to PMU with all required information and photos on proposed tree removals.

2. Reviewing Stage

2.1 ESMPs shall be reviewed by PMU and further discussion with consultancy team will be conducted if necessary.

For Reference Only

2.2 Field visit will be conducted by the PMU further verify of the requirement of proposed tree removals with officials of relevant implementing agency and representatives of community organizations.

2.3 The proposed tree removal list in the ESMP will be revisited post field visit and any necessary amendments will be made if necessary in concurrence with the implementing agency.

2.4 The final stage shall be to obtain the recommendations of DSRP (SPELL OUT) on tree removals and further amend list according to the recommendations of DSRP

3. Obtaining Clearance / approvals (responsibility of Implement Agency)

3.1 The finalized tree removal list shall be shared with relevant approving officers/ agencies like Grama Niladhari, Divisional Secretariat, District Secretariat, Forest Department, State Timber Corporation, Central Environment Authority/ Provincial Environmental Authority etc. The obtaining of the clearances, where required, will be the responsibility of the implementing agency will be done prior to any removal of trees.

3.2 All clearances shall be shared with the PMU and endorsed before the tree removal activities are commenced. If any conflicts arise, the PMU will bring it to the notice of the World Bank E&S team immediately.

4. Awareness program (Implementation Agency / PMU)

4.1 Awareness programs for selected contractors shall be conducted on environmental and social impact mitigation measures with special attention on tree protection/removal guidelines.

4.2 Contractors shall be strictly adviced not to remove trees unless essential. They shall be instructed to follow the ESMP strictly and any deviations shall be notified to the implementing agency and the PMU in advance for necessary action.

4.3 The removal of trees will be presented at the project introductory meeting and any other community level meetings.

4.4 Continuous field inspection and monitoring shall be conducted with a more concerted focus during land preparation and tree removal period.

4.5 Public complaints shall be attended to without delay adopting the protocols in place for GRM

For Reference Only

5. Ecosystem restoration (Contractor)

5.1 Contractor shall carry out recommendations provided in the ESMP on remedial mitigation involving planting and maintenance of suitable tree species (as identified in the ESMP).

6. Monitoring and Evaluation (PMU/ Implementing agency)

6.1 Field inspection and monitoring will be carried out at regular intervals by the implementing agency and the PMU. Photographic evidence will be recorded for al tree removal activities.

6.2 Upon completion of required tree removal activities, site shall be evaluated to ensure that no further destruction has occurred. If satisfied, final clearance to proceed will be granted by the PMU.

6.2 If not satisfied, the contractor will be directed to utilize retention fund to carry out ecosystem restoration to the satisfaction of the implementing agency and the PMU. The WB E&S team shall also be notified under such circumstances.

For Reference Only

Integrated Watershed and Water Resources Management Project (IWWRMP)

Checklist for Tree Removals.

Name of the Site ……

Date ……

No	Item/ Activity	YES	NO	Remarks
1	Tree removal has been identified in ESMP			
2	List of tree removals with justification has been included in to ESMP (approved by WB			
3	Ground verification done by PMU			
4	Ground verification done by DSRP			
5	According to no 3 &4, Amendments included in to final tree removal list			
6	Conduct final community consultancy and briefing on tree removals by IA/PMU			
7	According to no 6, Any disagree / not at			
8	If disagree, did any change in the list			
9	Obtained necessary clearance			
	GN Di.S DS FD CEA P.EA A.Dep.			
10	Written inform to authorized officers/institutes			
	GN Di.S DS FD CEA P.EA A.Dep.			
11	IA agreed to closely monitor of tree removals (in written)			
12	Awareness on tree removals carried out for contractor to the satisfaction of PMU.			

GN- Grama Niladhari, Di.S – Divisional Secretary, DS – District Secretary, FD – Forest Department, CEA- Central Environment Authority, P.EA- Provincial Environment Authority, A.Dep. – Archelogy Department, IA- Implementing Agency, PMU – Project management Unit. (Use "√" mark in relevant box)

……
Signature / Date
Environment Specialist (IWWRMP)

According to the checklist, proposed tree removal is in order.

……..
Signature /Date
Project Director (IWWRMP)

Declaration of Implementing Agency

I hereby certify that, proposed tree removal will be done under my direct supervision and responsible to maintain and follow required condition given by authorized / approving agencies.

……

Signature /Date

Officer In-charge/ IA

For Reference Only

For Reference Only

Integrated Watershed and Water Resources Management Project (IWWRMP)

Ministry of Irrigation

Labor Management Plan

(Including site management and camp management measures)

For Reference Only

February, 2025

Abbreviations

IA	-	Implementing Agency
IWWRMP	-	Integrated Watershed and Water Resources Management Project
LMP	-	Labor Management Plan
PMU	-	Project Management Unit
PHI	-	Public Health Inspector
GBV	-	Gender Based Violence

For Reference Only

Introduction

Labor Management Plan (LMP) of the Integrated Watershed and Water Resources Management Project (IWWRMP) provides basic guidance to contractors to smoothly operate project activities without creating harm to workers and communities. Selected contractors shall follow this plan including relevant national labor management laws, regulations and practices. The labor management plan consists of site management measures and camp management measures which outlines a range of mitigation measures designed to avoid or reduce undesired labor management, site management and camp management impacts during construction.

The plan has been prepared by structuring relevant major subject areas that need to be paid attention to and providing mitigation measures including details of responsible entities for implementation and frequency of monitoring to the identified risks and potential impacts.

Objectives of the plan

The objectives of the labor management Plan are:

- Avoid or reduce negative impacts on environment due to establishment of project sites.
- Establish standards on worker welfare and living conditions at the camps that provide a healthy, safe and comfortable environment.
- Avoid or reduce negative impact on community and maintain constructive relationships between local communities and workers' camps.

Roles and responsibilities

- Contractor shall ensure sufficient resources are allocated on an ongoing basis to meet the requirements of this Plan.
- Contractor shall strictly adhere to national labor acts, rules and regulations pertaining to terms and conditions of employment and labor management.
- The Contractor shall pay attention to implement labor management plan monitor the progress.
- Contractor shall facilitate to PMU or IA to monitor the progress of LMP.
- Contractor shall comply to make necessary amendments to the LMP after the site inspections of PMU, IA or authorized entity.
- Contractor shall comply to ensure that all workers sign the GBV Code of Conduct (CoC), provide necessary awareness and trainings to laborers about rules and regulations, guidelines and general information time to time.

For Reference Only

No	Major field	Sub field	Mitigation and management measures	Responsibility	Monitoring frequency
1	Plan basic arrangements of worksite management	Site identification and demarcation	Contractor should identify the exact area of work site before start project activities.	Site engineer & Contractor	-
			Contractor should plan the work site to identify appropriate places for site office, labor camps, yards, stores, parking areas etc.	Site engineer & Contractor	-
			Contractor should obtain relevant approvals form IA and site engineer.	Contactor	-
			Fence or protective measure should be placed around the work site.	Contactor	-
		Control public access to work site	All public access to the work site should be prohibited or controlled to avoid risk to the public.	Contactor	Monthly
			Signboards should be displayed at all entry points which indicating “Authorized entries only” or “prohibited to public entrance”.	Contactor	Monthly
			Contractor shall take action to establish a temporary security point at the entrance and assigned a person to duty for 24 hrs. for security of the site and monitor vehicle and monitoring transfer of goods into and out of camps.	Contactor	Weekly
			A register shall be maintained at the security point to register all labors/ officers/vehicles which enter / departure to/from the work site.	Contactor	Weekly
		Disclose of basic information to workers and interest groups	Contractor should established signboards at the main entry point to display detailed information of the proposed project.	Contactor	Monthly
			Safety signs should be displayed at the entrance and other necessary places at the work site.	Contactor	Monthly
			Contractor should established a notice boards at the work site and necessary information should be displayed in time to time.	Contactor	Monthly
			Contractor should establish a notice board on COVID 19 health guideline at the entrance.	Contactor	Monthly
		Establishment of site office	Contractor should established a site office according to the site plan and should maintain appropriate working condition.	Contractor/ Site engineer	-

For Reference Only

No	Major field	Sub field	Mitigation and management measures	Responsibility	Monitoring frequency
			Necessary documents (guidelines, ESMP, copy of approvals etc.) should be placed at the site office.	Contactor	Monthly
			First aid box with essential drugs should be placed at the site office.	Contactor	weekly
			Fire protection equipment should be placed at the site office.	Contactor	Monthly
			Contractor should maintain an extra stock of safety equipment at site office to issue when necessary.	Contactor	Monthly
			Hazards, explosives or any harmful chemicals should not stock in the site office.	Contactor	weekly
2	Plan work site arrangement	Readiness for emergency response	Contractor shall develop an emergency response plan that meets requirements of emergency situation.	Contractor	-
		Ensure the safety of workers	Contractor should be placed temporary fences/ barricade tapes or protective measures to identify working areas, heavy machinery operating areas and areas where having deep excavations and activities of hazardous nature for the workers.	Contractor	Every 2 weeks
			Specific area in the site should be reserved to store construction materials.	Contractor	Monthly
			Specific area /place/ rooms should be reserved for store Hazards, explosives or harmful materials or chemicals.	Contractor	Weekly
			Materials should stock pilled without exceeding approved height.	Contractor	Monthly
			Areas should be demarcated to park vehicles/ heavy machines or vehicle repairing and relevant sign boards should be displaced.	Contractor	Monthly
			All vehicles used by any contractor for the purpose of the project will have valid registration, insurance and road worthiness.	Contractor	Daily
			Fire protection equipment should be established in the work site at most essential places.	Contractor	Every 2 weeks
			The contactor shall take action to strictly follow the COVID 19 operational guideline declared by the Ministry of Health at work site.	Contractor	Once a week

For Reference Only

No	Major field	Sub field	Mitigation and management measures	Responsibility	Monitoring frequency
			Workshops, Stores, should establish according to the approved site plan.	Contactor	-
			Equipment (including power tools) should store properly, listed and assigned a person to issuing and receiving.	Contractor	Weekly
3	Establishment of Pollution Control measures	Control of Dust and emission,	Stock pilled materials should be covered with appropriate cover or sprinkling water to control dust emission.	Contractor / Site engineer	Daily
			Dust emission form earth works (when operating) should controlled by sprinkling water.	Contractor / Site engineer	Daily
			Contractor should take action to transport excavated debris to approved dumping sites and should not store at work site.	Contractor / Site engineer	Daily
		Control of noise and vibration	Contractor shall adhere to strictly follow given condition for noise limits and vibration limits. (far day and night)	Contractor / Site engineer	Daily
		Control of water pollution	Silt traps should be established in relevant places.	Contractor / Site engineer	Monthly
			Proper solid waste management mechanism should be established in the work site.	Contractor / Site engineer	Daily
			Precautions should be established to avoid oil, fuel or lubricant contamination.	Contractor / Site engineer	Daily
		Final clearance and restoration of worksite	After the completion of project activities contractor shall carefully remove all temporary buildings, huts, stocked pilled materials, temporary blocks of streams etc. form the work site and follow up the approved site restoration actions.	Contractor / Site engineer/PMU	-
4C	Labor management measures	Adhere to laws and regulations	No labor under the age of 18 will be hired for work under this contract.	Contractor	Daily
			Contractor shall strictly follow relevant national labor laws and acts related to terms and conditions of employment (i.e. related to salary payments, working hours, leave etc.) and issue employment letters/contracts to workers with details of the employment terms/conditions.	Contractor	-
			Contractor shall obtain necessary approval when increased the number of workers in labor camps	Contractor	-

For Reference Only

No	Major field	Sub field	Mitigation and management measures	Responsibility	Monitoring frequency
			Contractor shall maintain a log of any grievances/complains and actions taken to resolve them.	Contractor	Weekly
			Any complaints related to sexual harassment / gender based violence should be immediately reported to the PMU who in turn will report to World Bank for necessary guidance on the actions to be taken.	Contractor	
			Workers shall abide by camp rules which includes a disciplinary process.	Contractor	Daily
			Contractor shall limit workers interaction with community when outside the camp.	Contractor	Daily
			Contractor's personnel shall not engage in any discrimination or harassing behavior.	Contractor	Daily
		Arrangement for conduct basic awareness for workers	Contractor shall take action to develop a labor code of conduct and translated it in to local languages upon clearance from the Engineer. The code of conduct must be made available to all staff and displayed in the work site in local languages. All workers will required to sign the Code of Conduct.	Contactor	Monthly
			Contractor shall give necessary advices and instructions to all labors and drivers of the site to follow code of conducts.	Contractor/Site engineer/IA/PMU	When necessary
			Contractor shall take action to conduct labor awareness programs to educate the laborers about the code of conduct, general conduct, the Environmental and Social Management Plan, Occupational Health and Safety etc.	Contractor/Site engineer/IA/PMU	When necessary
		Labor safety and welfare facilities	Contractor shall provide sufficient safety gears to labors and need to monitor the utilization.	Contractor/ Site engineer	Daily
			Contractor shall take action to follow safety measures specially in handling of explosives, hazard chemicals, electricity etc.	Contractor/ Site engineer	Daily
			Contractor shall provide equal facilities / standards for all labor camps in the site and do not make any differences on worker's race, gender or nationality.	Contractor/ Site engineer	Daily
			Contractor, as appropriate, shall provide adequate recreation facilities for workers to reduce incentive for leaving camps during leisure time.	Contractor/ Site engineer	Monthly

For Reference Only

No	Major field	Sub field	Mitigation and management measures	Responsibility	Monitoring frequency
			Contractor shall pay more attention and provide better quality safety equipment to the workers who are engaging with danger/ risk activities.	Contractor	Daily
		Recognition of cultural, nationality, religion rights.	Contractor may provide prayer rooms and other facilities, as necessary and to the extent practicable, to satisfy the religious needs and customs of its workforce. (if necessary)	Contractor	Monthly
5	Labor Camp management	Planning of Labor camps	Labor camps shall be established according to the approved site plan.	Contractor/ Site engineer	-
		Address community grievances	PMU or IA may request that camp related activities/operations be amended to address community grievances. Contractor shall comply with these requests.	Contractor	-
			Establishment of labor camps shall be commenced only upon the written approval of the Engineer.	contractor	-
			IA/ PMU may request that camp related activities/operations be amended to address community grievances. Contractor shall comply with these requests.	Contractor	-
		Maintain health condition	Contractor shall comply with the minimum health requirements for project execution and the community Health and Safety Management Plan which set out requirements and management measures on controlling communicable diseases within camps and to outside communities.	Contractor	Daily
			Contractor shall routinely monitor the quality and supply of water and other health related facilities.	contractor	Monthly
		Maintain Living and hygienic conditions	Contractor shall be maintained necessary living accommodation and ancillary facilities in functional and hygienic manner and as approved by the Engineer.	Contractor	Monthly
			Contractor should provide separate resting and sanitary facilities for both men and women laborers.	Contractor	Monthly
			All temporary accommodation should be established and maintained in such a fashion that uncontaminated water is available for drinking, cooking and washing.	Contractor	Monthly
			Washrooms should have sufficient and proper water supply.	Contractor	Weekly

For Reference Only

No	Major field	Sub field	Mitigation and management measures	Responsibility	Monitoring frequency
			Drinking water facility should be provided to labor camps.	Contractor	Daily
			COVID-19 health guideline shall be applied at the labor camps and throughout the work site.	Contractor	Daily
			Adequate Personal protective equipment (PPE) will be provided to workers, including: Facemasks, gloves, etc., if possible, to prevent COVID-19 spread	Contractor	Daily
		Application of Waste management measures	The sewage system for the camp, if not available, shall be planned & implemented with concurrence from the Local Public Health Officer (PHI).	Contractor/ Site engineer	-
			Proper solid waste management system (waste collection method/ separation method and final disposal method) should be established at labor camps.	Contractor	Weekly
			Waste water (from kitchen, washrooms, canteen etc.) should not release into open water bodies or streams.	Contractor	Weekly
		Final clearance and camp demolishing	After the completion of project activities contractor shall carefully remove all temporary buildings, huts, labor camps, toilets form the work site. Temporary toilet pits should treat and demolish accordance to approved health guidelines. Approved site restoration actions should implement.	Contractor/IA/ PMU	-

For Reference Only

Sample Code of Conduct

Individual Code of Conduct

Implementing ESHS and OHS Standards

Preventing Gender Based Violence

I, _____, acknowledge that adhering to environmental, social, health and safety (ESHS) standards, following the project's occupational health and safety (OHS) requirements, and preventing Gender Based Violence (GBV) is important. The Company considers that failure to follow ESHS and OHS standards, or to partake in activities constituting GBV—be it on the work site, the work site surroundings, at workers' camps, or the surrounding communities—constitute acts of gross misconduct and are therefore grounds for sanctions, penalties or potential termination of employment. Prosecution by the Police of those who commit GBV may be pursued if appropriate.

I agree that while working on the project I will:

1. Consent to Police background check.
2. Attend and actively partake in training courses related to ESHS, OHS, and GBV as requested by my employer.
3. Will wear my personal protective equipment (PPE) at all times when at the work site or engaged in project related activities.
4. Take all practical steps to implement the contractor's environmental and social management plan (C-ESMP).
5. Implement the OHS Management Plan.
6. Adhere to a zero-alcohol policy during work activities, and refrain from the use of narcotics or other substances which can impair faculties at all times.
7. Treat women, children (persons under the age of 18), and men with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
8. Not use language or behavior towards women, children or men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
9. Not sexually exploit or abuse project beneficiaries and members of the surrounding communities.

For Reference Only

10. Not engage in sexual harassment of work personnel and staff —for instance, making unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature is prohibited. E.g. looking somebody up and down; kissing, howling or smacking sounds; hanging around somebody; whistling and catcalls; in some instances, giving personal gifts.
11. Not engage in sexual favors —for instance, making promises of favorable treatment (e.g. promotion), threats of unfavorable treatment (e.g. loss of job) or payments in kind or in cash, dependent on sexual acts—or other forms of humiliating, degrading or exploitative behavior.
12. Not use prostitution in any form at any time.
13. Not participate in sexual contact or activity with children under the age of 18—including grooming, or contact through digital media. Mistaken belief regarding the age of a child is not a defense. Consent from the child is also not a defense or excuse.
14. Unless there is the full consent[1] by all parties involved, I will not have sexual interactions with members of the surrounding communities. This includes relationships involving the withholding or promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex (including prostitution). Such sexual activity is considered "non-consensual" within the scope of this Code.
15. Consider reporting through the GRM or to my manager any suspected or actual GBV by a fellow worker, whether employed by my company or not, or any breaches of this Code of Conduct.

With regard to children under the age of 18:

16. Bring to the attention of my manager the presence of any children on the construction site or engaged in hazardous activities.
17. Wherever possible, ensure that another adult is present when working in the proximity of children.
18. Not invite unaccompanied children unrelated to my family into my home, unless they are at immediate risk of injury or in physical danger.
19. Not use any computers, mobile phones, video and digital cameras or any other medium to exploit or harass children or to access child pornography (see also "Use of children's images for work related purposes" below).
20. Refrain from physical punishment or discipline of children.
21. Refrain from hiring children for domestic or other labor below the minimum age of 14 unless national law specifies a higher age, or which places them at significant risk of injury.

For Reference Only

[1] **Consent** is defined as the informed choice underlying an individual's free and voluntary intention, acceptance or agreement to do something. No consent can be found when such acceptance or agreement is obtained using threats, force or other forms of coercion, abduction, fraud, deception, or misrepresentation. In accordance with the United Nations Convention on the Rights of the Child, the World Bank considers that consent cannot be given by children under the age of 18, even if national legislation of the country into which the Code of Conduct is introduced has a lower age. Mistaken belief regarding the age of the child and consent from the child is not a defense.

22. Comply with all relevant local legislation, including labor laws in relation to child labor and World Bank's safeguard policies on child labor and minimum age.

Use of children's images for work related purposes

When photographing or filming a child for work related purposes, I must:

23. Before photographing or filming a child, assess and endeavor to comply with local traditions or restrictions for reproducing personal images.
24. Before photographing or filming a child, obtain informed consent from the child and a parent or guardian of the child. As part of this I must explain how the photograph or film will be used.
25. Ensure photographs, films, videos and DVDs present children in a dignified and respectful manner and not in a vulnerable or submissive manner. Children should be adequately clothed and not in poses that could be seen as sexually suggestive.
26. Ensure images are honest representations of the context and the facts.
27. Ensure file labels do not reveal identifying information about a child when sending images electronically.

Sanctions

I understand that if I breach this Individual Code of Conduct, my employer will take disciplinary action which could include:

1. Informal warning.
2. Formal warning.
3. Additional Training.
4. Loss of up to one week's salary.
5. Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.
6. Termination of employment.
7. Report to the Police if warranted.

I understand that it is my responsibility to ensure that the environmental, social, health and safety standards are met. That I will adhere to the occupational health and safety management plan. That I will avoid actions or behaviors that could be construed as GBV. Any such actions

For Reference Only

will be a breach this Individual Code of Conduct. I do hereby acknowledge that I have read the foregoing Individual Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to ESHS, OHS, GBV issues. I understand that any action inconsistent with this Individual Code of Conduct or failure to act mandated by this Individual Code of Conduct may result in disciplinary action and may affect my ongoing employment.

Signature: _____

Printed Name: _____

Title: _____

Date: _____

For Reference Only

For Reference Only

For Reference Only

Section - 7

Form of Bid

Section 7 - FORM OF BID

Name of Contract: ***Rehabilitation of Thannimurippu Tank***
Contract No.: ***LK-MOMDE-465695-CW-RFB***

To: Project Director, Integrated Watershed & Water Resources Management Project

Gentlemen:

1. Having examined the Standard Bidding Document - Procurement of Works – Major Contracts [ICTAD/SBD/02 - Second Edition, January 2007], Specifications, Drawings and Bills of Quantities and Addenda for the execution of the above-named Works, we the undersigned, offer to execute and complete such Works and remedy any defect therein in conformity with the aforesaid Conditions of Contract, Specifications, Drawings, Bills of Quantities and addenda for the sum of Sri Lankan Rupees .... (LKR .....) or such other sums as may be ascertained in accordance with the said Conditions.

2. We acknowledge that the Contract Data forms part of our Bid.

3. We undertake, if our Bid is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Engineer's notice to commence, and to complete the whole of the Works comprised in the Contract within the time stated in the Contract Data.

4. We agree to abide by this Bid until the date specified in ITB Clause 16 …… *[insert date]*, and it shall remain binding upon us and may be accepted at any time before that date.

5. Unless and until a formal Agreement is prepared and executed this Bid, together with your written acceptance thereof, shall constitute a binding Contract between us.

6. We understand that you are not bound to accept the lowest or any bid you may receive.

7. We declare that civil work contracts *have/ have not been* suspended or terminated and/or performance security called by an employer for reasons related to the non-compliance of any environmental, or social, (including sexual exploitation and abuse (SEA) and gender based violence (GBV)), or health or safety requirements or safeguard in the past five years.
(Note: If suspended, terminated or Performance Security is called give details)

Year	**Suspended or terminated portion of contract**	**Contract Identification**	**Total Contract Amount (current value, currency, exchange rate and US$ equivalent)**
[insert year]	*[insert amount and percentage]*	Contract Identification: *[indicate complete contract name/ number, and any other identification]* Name of Employer: *[insert full name]* Address of Employer: *[insert street/city/country]* Reason(s) for suspension or termination: *[indicate main reason(s) e.g. for GBV/ SEA breaches]*	*[insert amount]*
…	…	*[list all applicable contracts]*	…

For Reference Only

Performance Security called by an employer(s) for reasons related to ESHS performance		
Year	**Contract Identification**	**Total Contract Amount (current value, currency, exchange rate and US$ equivalent)**
[insert year]	Contract Identification: *[indicate complete contract name/ number, and any other identification]* Name of Employer: *[insert full name]* Address of Employer: *[insert street/city/country]* Reason(s) for calling of performance security: *[indicate main reason(s) e.g. for GBV/ SEA breaches]*	*[insert amount]*

8. We certify/confirm that we comply with the eligibility requirements as per ITB Clause 3 of the bidding documents.

Dated this ……... day of……..20……...…

Signature …….. in the capacity of ……...…….….

duly authorized to sign bids for and on behalf of ……..
[in block capitals or typed]

Address: ……..…

Witness: ……..…….

For Reference Only

For Reference Only

Section – 8

Bill of Quantities

For Reference Only

Schedules

Preamble to the Bill of Quantities
Description of Items and Measurement Methods
Bill of Quantities

For Reference Only

Preamble to the Bill of Quantities

1.1 The Bill of Quantities shall be read in conjunction with all parts of this entire Bidding Document; the Instructions to Bidders, General and Particular Conditions of Contract, Technical Specifications, Drawings, and supplementary information.

1.2 The Bill of Quantities includes lump sum items, unit price items and provisional sum items. The lump sum price quoted will be deemed to be full compensation for completion of work items and paid in full when the work is completed. The quantities given in the Bill of Quantities for the unit price items are estimated and provisional, and are given to provide a common basis for bidding. They are not intended to be the maximum or minimum quantities for payment. The unit prices will be considered full compensation for those work items. The basis of payment will be the actual quantities of work carried out under the provisions of the Contract, measured and valued at the applicable rates and prices in the priced Bill of Quantities.

1.3 The rates and prices in the priced Bill of Quantities shall, except as otherwise provided under the Contract, include all construction plant, equipment, labour, supervision, materials, transport, erection, maintenance, testing, insurance, overheads, profit, taxes, and duties, together with all general risks, liabilities, and obligations set out or implied in the Contract.

1.4 A rate or price shall be entered against each item in the priced Bill of Quantities, whether quantities are stated or not. The cost of items against which the Contractor has failed to enter a rate or price shall be deemed to be covered by other rates and prices entered in the Bill of Quantities.

1.5 The rates and prices entered in the Bill of Quantities shall be full compensation for completed work and shall have taken full account of all requirements and obligations, covered by all parts of the contract, including but not limited to, the following, unless expressly stated otherwise:

a. All setting out and survey works including Pre and Post Construction Surveys.
b. All additional site surveys and investigations, preparation of field amendment drawings, shop drawings and As-Built drawings.
c. Mobilization and Demobilization of labour, all construction plant and equipment.
d. Establishment, Maintenance and Removal of all temporary facilities (Contractor's and Engineer's) including offices, workshops, houses, labour camps construction and storage yards, Laboratory facilities and Equipment, Transport for staff and labour etc.
e. Labour and all costs in connection therewith, including but not limited to social charges or fringe benefits.
f. The supply of material and goods, storage and costs in connection therewith including delivery to site and handling material within the site/sites.
g. Taking delivery of materials and goods supplied by others, unloading, storage, handling materials within site, and costs in connection therewith.
h. Construction Plant & Equipment and all costs in connection therewith.

For Reference Only

i. Fixing, erecting and installing or placing of materials and goods in position, including usual auxiliary material etc.
j. Temporary Works.
k. Complying with any limitations and constraints on the use of the site/sites including coordinating with other Contractor's, with regard to site access, security etc., maintenance of access to households and other users, maintenance of existing roads, waterways etc.
l. Dealing with the existing flow of water from any source including irrigation flow requirement, rainfall and surface runoff, groundwater, wave action and the like. This includes all and any dewatering operations necessary for the execution of the Works as well as coffer damming if required.
m. General obligations, liabilities and risks involved in the execution of the Works set forth or reasonably implied in the documents on which the tender is based.
n. Overheads and profit.
o. Waste of material.
p. Attendance and transport for surveys including provision of boats and survey instruments, sampling and testing carried out by the Engineer.
q. Performing all sampling and testing which are required to be carried out by the Contractor, and supplying results of such tests.
r. Providing required material delivery certificates.
s. Coordination with Regulatory Institutes & all stake holders.
t. Disposal of all waste material.
u. Complying with all requirements in Specifications and Conditions of Contract where separate items have not been provided.

1.6 Where Bill of Quantities items describe the replacement of existing equipment or components, including mechanical and electrical equipment, the equipment removed remains the property of the Employer, unless stated otherwise in the contract documents. The rates entered shall include for delivery of such equipment to the Employer or for disposal if so directed by the Employer.

1.7 The whole cost of complying with the provisions of the Contract (excluding VAT) shall be included in the Items provided in the priced Bill of Quantities, and where no Items are provided, the cost shall be deemed to be distributed among the rates and prices entered for the related Items of Work.

1.8 General directions and descriptions of work and materials are not necessarily repeated nor summarized in the Bill of Quantities. References to the relevant sections of the Contract documentation shall be made before entering prices against each item in the priced Bill of Quantities.

1.9 Provisional Sums included and so designated in the Bill of Quantities shall be expended in whole or in part or not at all at the direction and discretion of the Engineer and in accordance with the Conditions of Contract. Where the expenditure against a Provisional Sum is made in the form of a Variation, the payment for the work will be made in accordance with Clause 37 of the Conditions of Contract.

For Reference Only

1.10 The method and unit of measurement of completed work for payment shall be in accordance with the method described in the specifications for each item or in the Bill of Quantities.

For Reference Only

Descriptions of Items and Measurement Methods

INTRODUCTION

The descriptions of the different items in the Bills of Quantities and the method adopted for measurements are indicated in the following paragraphs.

The quantities shall be computed using dimensions from the drawings based on the pre-construction surveys or as varied by the Engineer, except where clearly stated otherwise under the following individual items. No allowance shall be made for settlement, bulking, shrinkage, or waste.

Bill No 1 - Preliminaries

1.1 Insurances and Securities

Sub Item 1.1.1 Provisional Sum for Providing a Performance Security and Advance Payment Security

The item provides for the provision of Performance Security as specified in Clause 4.2 of the Conditions of Contract.

Payments for the item will be certified based on the actual invoice given by the bank including 5% overhead when the Performance Security and Advance Payment Security in the specified format has been provided and accepted by the Employer.

Sub Item 1.1.2 Provisional Sum for Insurance of works, Machinery & Equipment, Plant, Materials, third party persons & property and Employer's personal & property at site and Insurance against accidents and injury to contractor's personal as per the contract as per contract

The sub items provide for the provision of the different types of insurances as specified in Clause 18 of the Conditions of Contract.

Payment for each type of insurance will be certified when the respective insurance policies from acceptable insurance companies together with full payment of the premium including 5% overhead has been submitted to and accepted by the Employer.

1.2 Engineer's Facilities

Sub Item 1.2.1 Provisional Sum for constructing maintaining, dismantling and removal on completion of the Works, temporary building for Engineer's office in conformity with the plans provided for Engineer's requirements, including necessary furniture and fittings, furnishing, electricity, water and sanitary facilities (list facilities required) minimum floor area - 22.00m2

The sub item provides for the provision for Construction of Engineer's site office, sanitary facilities, installation and supplying of electricity & water facilities of Project Manager's offices for the duration of the Contract as a Provisional sum item. The Engineer shall order

For Reference Only

the supply of items or the work items to be carried out under this provisional sum item. All items procured or established under this sub item shall remain the property of the Employer and shall be handed over to the Employer at the end of the Contract.

Payment Structure:

60% of the Provisional Sum: This portion will be certified and paid upon the successful establishment of all planned facilities. This means that once the facilities are set up as per the submitted plans and are ready for use, half of the agreed amount for this item will be paid.

30% for Maintenance: This portion is intended for the ongoing upkeep and maintenance of the facilities from the time they are established until the completion of the work. Maintenance costs should be included in the monthly payment certificates.

10% for Removal and Site Clean-up: The remaining amount will be paid once all facilities have been removed and the site has been cleaned up upon completion of the project.

Sub Item 1.2.2 Allow lump sum for providing and maintenance, rental, consumption charges etc. for telephone and facsimile facilities, electrical computer with internet facilities, photocopy & printing facilities, for the Engineer's site office for their use in connection with the Works as directed.

The sub items provide for providing and maintenance, rental, consumption charges etc. for telephone and facsimile facilities, electrical computer with internet facilities, photocopy & printing facilities, for the Engineer's site office for their use in connection with the Works as directed.

Payments for the item will be certified based on the actual invoice given by the contractor and will be paid on the completion of work and accepted by the Engineer.

Sub Item 1.2.3 Allow lump sum for Hiring of Double cab with fuel and driver

The sub items provide for the Hiring of Double cab with fuel and driver for inspection work and attend meeting in other district (Engine Capacity 2500cc, 4WD, mileage less than 300,000km, should be Brand New or register after 01-01-2013) running shall be 06 days per week and 12 hours per day. Air conditioner with rear A/C vent minimum seating including driver shall be five (Wet Lease basis with driver). The maximum allowable mileage under this provision is 30,000 km.

Payments for the item will be certified based on the submission of running chart certified by the respective staff and approved by the Engineer. Payment will be received against actual progress.

On the absence of such provision, Engineer shall declare the actual progress against to the vehicle provision.

For Reference Only

1.3 Contractors Requirements

Sub Item 1.3.1 Allow lump sum for constructing maintaining, dismantling and removal on completion of the Works, a temporary site office

The sub items provides for constructing maintaining, dismantling and removal on completion of the Works, a temporary site office of adequate size including staff rest room and toilets and other facilities for the Contractor's site management staff in accordance with the plans prepared by the Contractor and concurred by the Engineer.

60 % of the L.sum under this item will be certified on establishment of all planned facilities balance of 30% for maintenance and the balance of 10% for when they have been removed and site cleaned on completion of the work. All items established under this item will remain the property of the Contractor.

Payments for maintenance under this item shall be included in the part payment certificates from the time the facilities have been established until completion.

Sub Item 1.3.2 Allow lump sum for constructing maintaining, dismantling and removal on completion of the Works, buildings to be used as workshops and stores

The sub item provides for constructing maintaining, dismantling and removal on completion of the Works, buildings to be used as workshops and stores for perishable materials. Buildings shall be constructed in accordance with the drawings prepared by the Contractor and concurred by the Engineer. The lump sum shall also include for altering, modifying, or dismantling and re-erecting within the site all temporary buildings/structures if required.

60 % of the L.sum under this item will be certified on establishment of all planned facilities balance of 30% for maintenance and the balance of 10% for when they have been removed and site cleaned on completion of the work. All items established under this item will remain the property of the Contractor.

Payments for maintenance under this item shall be included in the part payment certificates from the time the facilities have been established until completion

1.4 Setting Out

Sub Item 1.4.1 Allow lump sum for setting out of works

The sub item provides for setting out of works in accordance with drawings and other written information given by the Engineer.

Payments under this item will be certified once the all setting out have been completed and accepted by the Engineer at site

For Reference Only

1.5 Quality, Standards and Progress

Sub Item 1.5.1 Allow lump sum Providing of progress reports

The sub item is provided as lump sum basis for Provision of monthly progress reports including photographic records and other schedules included in the ICTAD publication - Guidelines for effective Construction Management. (ICTAD/CM/01), relevant to contract administration as directed by Engineer.

Payments will be certified on submission and acceptance of the required progress reports. Payment will be received against actual progress.

Sub Item 1.5.2 Provisional sum for all cost in connection with testing of Materials, Goods etc

The sub item is provided as a provisional sum item for the reimbursement of preparing samples for testing, making arrangements for testing of materials, goods etc. in addition to the specification, obtaining test reports and submitting the same to the Engineer on his request. (all other stipulated test are including in the rate)

Payments under this item will be certified on production of the relevant documents of proof of payment and approved by the Engineer.

Sub Item 1.5.3 Allow Provisional Sum for carryout soil testing such as borehole investigation to determine soil stratigraphy, shear test & permeability test and any other tests directed by Engineer

The sub item is provided as a provisional sum item for the reimbursement of bore hole testing, making arrangements for testing of materials, goods etc.

Payments under this item will be certified on production of the relevant documents of proof of payment and approved by the Engineer.

Sub Item 1.5.4 Allow Provisional Sum for Supplying and Installation of Dam Safety instrumentation such as Piezometer as directed by engineer

The sub item is provided on a Provisional sum basis for the payment for Installing Dam Safety instrument such as Piezometer as direct by Engineer.

Payments will be certified on submission of the required documentation, accepted by the Engineer

For Reference Only

Sub Item 1.5.5 Allow lump sum for providing of 4 sets of (hard copies and soft copies) as-built drawing of all services, O & M manual (hard copies and soft copies) for Engineer's approval.

The sub item is provided on a lump sum basis for the submission of As-Built Drawings, Quality Assurance reports and O & M Manual etc. as specified in the Contract and requested by the Engineer.

Payments will be certified on submission and acceptance of the required drawings and documents.

1.6 Health and Safety

Sub Item 1.6.1 Allow lump sum for providing and maintaining health, safety & Environment

The Contractor shall provide and maintain Health, Safety, and Environmental (HSE) measures throughout the contract period in accordance with the Environmental and Social Management Plan (ESMP). This shall include, but is not limited to:

Implementation of site safety protocols as per national and project-specific regulations.

Providing personal protective equipment (PPE) to all workers.

Conducting safety training and awareness programs for site personnel.

Ensuring proper waste management and pollution control measures.

Maintaining first aid facilities and emergency response plans.

Regular environmental monitoring and compliance reporting.

All HSE provisions must be documented and approved by the Engineer before and during implementation.

Payments will be certified on compliance and acceptance of Engineer and the submission of necessary report and documents as per agreement and regulations.

1.7 Services and Facilities

Sub Item 1.7.1 Allow lump sum for supplying temporary electricity for the works

The sub item is provided on a lump sum basis for supplying temporary electricity for the works including connection, distribution system for the works, internal arrangements and all payments to the authorities for consumption.

Payments will be made on the completion of work on acceptance of the engineer.

For Reference Only

1.8 Miscellaneous

Sub Item 1.8.1 Allow lump sum for Fabricating, installing and maintaining a project name board,

The sub item is provided for Fabricating, installing and maintaining a project name board,(size 1500mmx1200mm) made out of 26 gauge Zn-Al sheet 50mm G.I Pipe post (2Nos)with fixed with the help of 25mm box bar frame with & necessary bold & nuts and reverts rate including lettering in digital print affixing on Zn-Al sheet with the help of 25x25 Aluminium "L" bar with required details, fixing firmly in ground on concrete base with minimum 1500mm (bottom level of the board) above the ground level, as per dwg.

Payments will be certified upon the successful erection of the Notice Board approved by the engineer.

Sub Item 1.8.2 Allow Provisional Sum for Employer's share for Adjudicator's fee

This sub item provides for a provisional sum intended to cover the Employer’s share of the fees and expenses paid to the Adjudicator by the Contractor. Payments will be certified upon the submission and acceptance of the required documentation by the Engineer.

Bill No 2: IMPROVEMENTS TO TANK BUND FROM (0+250 - 3+600)

Sub Item 2.1 - Shrup and thorny, secondary growth jungle clearing

The sub item provides for Shrup and thorny, scoundary growth jungle clearing along the tank bund and reservations wherever necessary including uprooting and removing outside and burning to ashes as directed

The measurement for payment shall be the actual area of Secondary growth jungle clearing measured from the construction drawings approved by the Engineer.

Sub Item 2.2 - Felling isolated trees (Girth up to 0.50 - 1.0 m)

The sub item provides for Felling isolated trees (Girth up to 0.50 - 1.0 m) and cutting branches along the reservation including cutting uproots and heaping on places outside the reservation approved by the Engineer and when dry, burnt completely to ashes and waste to be deposited as directed.

The measurement for payment shall be the actual number of trees (Girth up to 0.50 - 1.0 m) approved by the Engineer.

Sub Item 2.3 - Felling isolated trees (Girth above 1.00)

The sub item provides for Felling isolated trees (Girth above 1.00) and cutting branches along the reservation including cutting uproots and heaping on places outside the reservation

For Reference Only

approved by the Engineer and when dry, burnt completely to ashes and waste to be deposited as directed.

The measurement for payment shall be the actual number of trees (Girth > 1.0 m) approved by the Engineer.

Sub Item 2.4 - Removing sand bags

The sub item provides for Removing sand bags from upstream of the bund and spoil to be disposed

The measurement for payment shall be the actual volume removed from upstream of the bund which measured from construction drawing approved by the Engineer.

Sub Item 2.5 - Removal of existing collapsed Rip Rap rubble

The sub item provides for Removal of existing collapsed Rip Rap rubble and stock piling for measurement & reuse as directed by the Engineer.

The measurement for payment shall be the actual volume measured from the stock pile approved by the Engineer.

Sub Item 2.6 - Removing Existing Gravel from rip-rap bedding

The sub item provides for Removing Existing Gravel from rip-rap bedding and to be disposed outside the reservation as directed.

The measurement for payment shall be the actual volume of gravel removed measured from construction drawing approved by the Engineer.

Sub Item 2.7 - Stripping top soil

The sub item provides for Stripping top soil along the upstream slope, downstream slope and top of the bund to a thickness of 0.075 meters in order to receive new earth and spoils to be disposed outside the reservation as directed

The measurement for payment shall be the actual volume of striped soil measured and calculated from construction drawing approved by the Engineer.

Sub Item 2.8 - Borrowing earth from identified borrow areas

The sub item provides for Borrowing earth from identified borrow areas including transport, benching, placing in layers average thickness not more than 225mm as earth filling in existing bund embankment and picking roots, watering as directed, compacting by vibrating sheep foot roller (degree of Compaction 98 % - 100%) and conducting any specified or directed material testing.

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The rate also includes stripping and removing topsoil from the borrow areas and reinstating it as directed by the Engineer. Additionally, the rate encompasses all associated charges, levies, license fees, and other costs related to borrowing and transporting the fill material.

The measurement for part payment will be based on the volume of earth fill, measured from the levels established by pre-construction surveys and construction drawings. and measurement for payment for the final bill shall be the actual volume of compacted earth measured from construction drawing approved by the Engineer.

Sub Item 2.9 - Supplying and laying Polyfelt Geosynthetics

The sub item provides for Supplying and laying Polyfelt Geosynthetics 2.5mm thick sheet upstream wherever necessary.

The measurement for payment shall be the actual area of Polyfelt Geosynthetics laid, measured from construction drawing approved by the Engineer.

Sub Item 2.10 - Furnishing and placing 0.15m thick gravel bedding

The sub item provides for Furnishing, placing and densified by wetting 0.15m thick gravel bedding for placement of Rip rap as directed.

The measurement for payment shall be the volume of densified gravel in position measured from the construction drawings approved by the Engineer.

Sub Item 2.11 Supplying and heaping 300 - 450 mm rubble for rip rap

The sub item provides for Placing Rip Rap with rubble of a minimum average size of 450 mm on U/S slope of bund as Directed by Engineer. Rip-rap has to be placed manually in position, in compact, dense and uniform layer on the upstream slope of the dam. Rate also includes cost of obtaining rubble from approved sources, transport, loading, unloading and internal transport

The measurement for part payment shall be the 50% of tipper load for heaped rubble and the measurement for final payment shall be calculated by deducting the Qty certified under Item 2.5 from the Qty certified under Item 2.13

Sub Item 2.12 Excavation for trench at the U/S bund toe

The sub item provides Excavation for trench at the U/S bund toe and Spoil to waste/reused by machinery for riprap cutoff wall including dewatering as directed.

The measurement for payment shall be the volume of excavated soil measured from the levels established by the pre-construction surveys and construction drawings.

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Sub Item 2.13 Placing Rip-Rap

The sub item provides Placing Rip-Rap from the existing piling re-usable rubble from sub item 2.5 and newly supplied rubble from sub item 2.11 of a minimum average thickness of 600 mm on U/S slope of bund as Directed by Engineer. Rip-rap has to be placed manually in position, in compact, dense and uniform layer on the upstream slope of the dam. Rate also includes cost of obtaining rubble from approved sources, transport, loading, unloading and internal transport

The measurement for payment shall be the volume of rip-rap placed in position up to a thickness of 600 mm from the construction drawings approved by the Engineer.

Sub Item 2.14 Scarifying top soil along the, downstream slope and top of the bund

The sub item provides Scarifying top soil along the, downstream slope and top of the bund to a thickness of 0.025 meters in order to receive new gravel or turf and spoils to be disposed outside the reservation as directed.

The measurement for payment shall be the area of scarified top soil along the, downstream slope and top of the bund from the construction drawings approved by the Engineer.

Sub Item 2.15 - Supplying turf sods

The sub item provides for Supplying turf sods to site, preparation and dressing of surface, firmly placing and full turfing to new fill and watering and kept moist till grass root up as directed by the Engineer.

The measurement for payment shall be the actual area of grass root up measured approved by the Engineer

Sub Item 2.16 Furnishing, transporting, placing and spreading of gravel on the bund

The sub item provides for Furnishing, placing, spreading, watering and compaction. (degree of Compaction 98 % - 100%) of 0.15 m thick gravel on Bund Top including preparation of surfaces to receive new fill. The rate also includes cost for identifying suitable borrow areas, removal of overburden, extraction of well graded gravel, transport to site, reinstatement of borrow areas.

The measurement for payment shall be the volume of compacted gravel placed in position measured from the construction drawings approved by the Engineer.

Sub Item 2.17 Casting and placing chainage post

The sub item provides for Casting and placing chainage post (with 1:11/2:3 (20mm) r/f ct.concrete with 2 nos 10mm dia tor steel and 3nos 6mm dia stirrups for reinforcement) along the tank bund at 100 m interval and fixing firmly in ground on 1:3:6(40) concrete base (600x600x400mm) rate including for loading, unloading and local transport and white

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washing and marking identification Chainage with yellow and black enamel paint and as directed by engineer.

The measurement for payment shall be the actual no of chainage post fixed approved by the Engineer

Sub Item 2.18 Casting and placing level block

The sub item provides for Casting and placing level block (with 1:11/2:3 (20mm) r/f ct. concrete along the tank bund at 100 m interval and fixing firmly in ground on 1:3:6(40) concrete base (500x500x200mm) rate including for loading, unloading and local transport and marking identification level with yellow and black enamel paint and as directed by engineer.

The measurement for payment shall be the actual no of level blocks fixed approved by the Engineer

Bill No 3: CONSTRUCTION OF SLUICE INLET CANAL

Sub Item 3.1.1 Earth cutting in canal

The sub item provides for Earth cutting in canal and spoil to waste as directed

The measurement for payment shall be the volume of earth measured from the levels established by the pre-construction surveys and construction drawings approved by the Engineer

Sub Item 3.1.2 Earth Excavation in foundation and back filling

The sub item provides for Earth Excavation in foundation and back filling / spoil to waste / dump including watering and compaction

The measurement for payment shall be the volume of excavated earth measured from the construction drawings approved by the Engineer

Sub Item 3.1.3 Supplying & laying 1:3:6(40) Ct. sand concrete

The sub item provides for Supplying & laying 1:3:6(40) Ct. sand concrete compacting with porker vibrator including curing without form work (mixing by mixture) Rate includes cost of dewatering of foundations, placing, compacting and curing of concrete including filling of over-excavations.

The measurement for payment shall be the volume of concrete measured from the construction drawings approved by the Engineer.

For Reference Only

Sub Item 3.1.4 Supplying & laying 1:2:4(20) Ct. sand concrete

The sub item provides for 1:2:4(20mm) concrete compacting with porker vibrator including curing without formwork (mixing by mixture). Rate includes cost of dewatering of foundations, placing, compacting and curing of concrete including filling of over-excavations.

The measurement for payment shall be the volume of concrete measured from the construction drawings approved by the Engineer.

Sub Item 3.1.5 Furnishing and making of form work made out 20mm thick plywood

The sub item provides for Furnishing and making of form work made out 20mm thick plywood with necessary frame and supports including fixing and removing as directed

The measurement for payment shall be the area of form work measured from the construction drawings approved by the Engineer.

Sub Item 3.1.6 Furnishing, cutting, bending & placing rib bar reinforcement

The sub item provides for Furnishing, cutting, bending & placing rib bar reinforcement as providing in drawing.

The measurement for payment shall be the weight of QT rib bar reinforcement measured from the construction drawing and calculated from bar schedule approved by the Engineer.

Sub Item 3.1.7 Expansion joints in concrete base & wall

The sub item provides for Expansion joints in concrete base & wall with bitumen and sand mix (to full depth of concrete) as directed by engineer.

The measurement for payment shall be the area of Expansion joints measured at site approved by the Engineer.

Sub Item 3.1.8 Provisional Sum for Repairing for LB Sluice

The sub item provides the provisional sum for Repairing for LB Sluice as directed by Engineer.

Payments will be certified on submission of the required documentation, accepted by the Engineer.

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Bill No 4: CONSTRUCTION OF CONCRETE BUND ACCESS ROAD (0+000 – 0+300m)

Sub Item 4.1 Lump Sum for Demolishing of existing Concrete Road D/S

The sub item provides Demolishing of existing Concrete Road D/S and disposal as directed by the Engineer.

The payment for this L.Sum Item shall be on completion of demolishing of existing Concrete Road D/S and disposal and leaving all in good order.

Sub Item 4.2 Cutting, Trimming and camparing road way

The sub item provides Cutting, Trimming and camparing road way by Machinery.

The measurement for payment shall be the area of cut and trimmed roadway measured from the construction drawings approved by the Engineer.

Sub Item 4.3 Earth excavation in foundation and part refill

The sub item provides Earth excavation in foundation and part refill including placing, watering and compacting by manual.

The measurement for payment shall be the volume of excavated earth in foundation measured from the construction drawings approved by the Engineer.

Sub Item 4.4 Earth Excavation from borrow and forming Road way

The sub item provides Earth Excavation from borrow and forming Road way, transporting placing and spreading of earth to the designed profile including watering and compaction

The measurement for payment shall be the volume of compacted earth measured from the construction drawings approved by the Engineer.

Sub Item 4.5 Furnishing, transporting, placing and spreading of gravel on the road way & shoulder

The sub item provides Furnishing, transporting, placing and spreading of gravel on the road way & shoulder including watering and compaction

The measurement for payment shall be the volume of gravel measured from the construction drawings approved by the Engineer.

Sub Item 4.6 Supplying & laying 1:2:4 (20mm) ct. concrete

The sub item provides Supplying & laying 1:2:4 (20mm) ct. concrete excluding form work (mixing by mixture)

For Reference Only

The measurement for payment shall be the volume of concrete measured from the construction drawings approved by the Engineer.

Sub Item 4.7 Furnishing, cutting, bending and placing high yield steel as reinforcement

The sub item provides for Furnishing, cutting, bending & placing rib bar reinforcement as providing in drawing.

The measurement for payment shall be the weight of QT rib bar reinforcement measured from the construction drawing and calculated from bar schedule approved by the Engineer.

Sub Item 4.8 Furnishing and making formwork using 20mm thick plywood

The sub item provides for Furnishing and making of form work made out 20mm thick plywood with necessary frame and supports including fixing and removing as directed

The measurement for payment shall be the area of form work measured from the construction drawings approved by the Engineer.

Sub Item 4.9 supply & laying 0.125 mm polythene sheet

The sub item provides Separation membrane, supply & laying 0.125 mm polythene sheet to be used for separation membrane with 300 mm overlapping. (1000 Gauge)

The measurement for payment shall be the actual area measured at site approved by the Engineer.

Sub Item 4.10 Supplying & placing 20mm thk Rigid foam sheets for expansion joints

The sub item provides Supplying & placing 20mm thk, Rigid foam sheets for expansion joints and removal of rigid foam and filling with suitable bitumen sealant for expansion joint (Bitumen Emulsion: sand = 1:8, as directed.)

The measurement for payment shall be the actual length of expansion joint measured from the site approved by the Engineer.

Sub Item 4.11 Supplying turf sods to site, preparation and dressing of surface, firmly placing and full turfing

The sub item provides Supplying turf sods to site, preparation and dressing of surface, firmly placing and full turfing to new fill and watering and kept moist till grass root up as directed by the Engineer

The measurement for payment shall be the area of turf or grass root up measured at site approved by the Engineer.

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Sub Item 4.12 Rubble pitching work in 1:5 cement sand motor,

The sub item provides Rubble pitching work in 1:5 cement sand motar, paving to be done with selected rubble having a flat top surface

The measurement for payment shall be the volume of rubble pitching measured from the as built drawings approved by the Engineer.

For Reference Only

Bill of Quantities

No	Description	Amount
1	Preliminaries	
2	Improvements to Tank Bund	
3	Construction of LB sluice inlet canal	
4	Construction of Concrete Bund Access Road	
A	**Total Civil Cost (1+2+3+4)**	
B	Ddt. Provisional Sums	**8,170,000.00**
C	**Sub Total 2 (A-B)**	
D	Discount (if any)	
E	**Sub Total (C-D+B)**	
F	Physical Contingencies [10% of (E)]	
G	Price Contingencies [12% of (E)]	
H	**TOTAL BID PRICE CARRIED TO LETTER OF BID (E+F+G)**	
Total Bid Price (Amount in words)		
I	VAT (18% of H)	
Total Estimate Cost (H+I)		
J	Total for Day Works	
Bid Price with Day Works (H+J) (Will be considered only for Evaluation Purpose)		

Total amount excluding VAT in words……

……

……

Signature of Bidder :-……..

For Reference Only

Bill of Quantities

	A - NOTES
	This Bill of Quantities contains pages numbered **1 - 9** consecutively. Please check to see that no page is missing, nor any in duplicate and that all TRADES are carried to SUMMARY at the end of this Bill of Quantities.
	All temporary works shall be dismantled and cleared away from the site on completion of the work.
	Mechanical plant and equipment which emits obnoxious liquids, gases etc., will not be allowed to be used on the site, without the prior approval from the Employer and the Engineer.
	The Engineer has the final decision as and when he deems it necessary for the Contractor to take precautions, maintain or repair such plant and equipment or order their removal from the site.
	The contractor shall be responsible for any loss or damage to the works, existing structures, adjoining structures and unfixed materials.
	The Contractor shall be responsible for necessary lighting, watchman and other suitable measures during construction until handing over.
	Contractor shall be responsible for erection, shifting and maintaining of necessary protective netting, fencing, hording, screens at site and other precautions to the required standard and satisfaction of the Engineer.
	The Contractor shall forthwith and as a condition precedent to the commencement of any works under this contract, take out an insurance policy from a company or companies approved by the Engineer in writing on all risk insurance policy or policies indemnifying the contractor, the Engineer's and the Employer's staff at the site from all liabilities including claims by any and every workman employed in and for the performance of this contract for payment of the Workmen's Compensation Legislation and from all costs and expenses incidental or consequential thereto.
	Extent of work :-
	The extent of work as provided for in this Bill of Quantities consists of:- Preliminaries, Improvement to Tank Bund, Sluice repairs,Inlet canal cutting Concrete road & Miscellaneous
	Specifications:-
	All items of work are to be strictly as shown in drawings and in accordance with and read in conjunction with the Sri Lanka specification for Irrigation and Land Drainage. (CIDA Publications.)
	Drawings :-
	The following drawings listed hereunder and any other detail drawings referred to throughout this Bill of Quantities will form part of the contract documents.

For Reference Only

	Inspection of site
	Tenderers are requested to visit the site and acquaint themselves with all existing conditions and with the nature and extent of work to be done under this contract.
	The bidder is advised to visit the site of the proposed work, as it is his responsibility to ascertain the Conditions, governing access to the site, the external working space, storage area,etc
	Existing roads & culverts cannot take the passage of heavy vehicle or such in adequate areas to be strengthen by the successful bidder, before make use
	Any existing services, roads, culverts and approaches damaged during the construction to be reinstated without any charge to the employer.
	As no extras will be allowed on the plea of want of information due to neglect on their part in this regard.
	River Sand & granite metal to be used for all concrete works
	Method of Measurement :-
	This Bill of Quantities has been prepared generally in accordance with the principles of the Civil Engineering Standard Method of Measurement Sri Lanka (CESMM-SL: 1ST EDITION, JANUARY 2017)
	Rates for all items shall be inclusive of the following :-
	(a) All supply of materials labour, plant, scaffolding, waste, incidental materials, Fixing media, Cartage, Hoisting, Fitting and fixing complete.
	(b) Providing holes, chasings etc. as directed for electrical installation and all other services and making good the same as and when such installations are provided.
	c) Providing samples, Specimens etc. for such items of work as required.
	d) All overheads / preliminary expenses and profits except where otherwise stated.
	e) lab length & wastage of material inculding to reinforcement rate
	f) Testing of all materials.
	e) The rates and prices entered in the Bill of Quantities shall be full compensation for completed work and shall have taken full account of all requirements and obligations, covered by all parts of the contract, including but not limited to, the following, unless expressly stated otherwise: a. All setting out and survey works including Pre and Post Construction Surveys. b. To be maintained the Centre line of the bund during the construction period. It can't be changed time to time. c. Submission of all additional site surveys and investigations, preparation of field amendment drawings, shop drawings and As-Built drawings. d. Transport for surveyor including provision of survey instruments.

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	e. Performing all sampling and testing which are required to be carried out by the Contractor, and supplying results of such tests. f. The degree of compaction should be minimum 98% and the compacted volume will be taken for measurement.
	Measurements :-
	Tenderers are to note that the measurements are taken absolutely nett, unless otherwise stated and they must, therefore, allow in their prices for all straight cutting, lap length and waste etc. throughout even though not specifically mentioned.
	The all measurement should be joint measurement.
	Discrepancies :-
	Any discrepancies in Drawings, Specifications, Bills of Quantities or any other documents shall be brought to the notice of the employer before bidding.
	Payments :-
	Payments shall be made on actual quantity of work carried out at the site as per contract. The quantities set out in the Bill of Quantities are provisional and Cover the approximate scope of the work, which is anticipated to be performed by the Contractor. The actual quantities used for final measurement purposes will be determined by the Engineer by measurement of the work completed by the Contractor.
	The attention of the tenderer is drawn to the requirements of the contract, the specifications and any other particulars of the tender. It is the tenderers responsibility to see that his prices include for complying with all the requirements of the conditions of contract and any other documents whether specifically referred to in the Bill of Quantities or not.
	The attention of the tenderer is drawn to the use of the CIDA conditions of contract, the specifications and any other particulars of tender.
	It is the tenderers responsibility to see that his prices include for complying with all the requirements of the conditions of contract and other documents.
	The tenderer is advised to visit the site of the proposed work and is the responsibility of the tenderer to as certain the condition covering the access to the site, the extent of working space area etc.
	In the Execution of Specialized work under provisional sum the applicable attendance fee factor shall be minimum 10%
	No work in any trade shall be carried out in such a manner as to cause any nuisance to adjacent owners or the public
	Preliminaries
	The Engineer / Consultant may modify or amended any item, or add new item/s, or delete inappropriate item/s, depending the nature of the proposed work

For Reference Only

	Any other preliminary items not listed below but deemed to be included in the bid rates, as no extras would be made.	
	Mode of Payment are as below	
	Mode of Payment	**Category**
	Reimbursement of actual cost on submission of the relevant documents acceptable to the Engineer plus **5%** of the actual cost of obtaining the insurance policies and Securities	**A**
	To be paid on Signing of the formal Contract Agreement	**B**
	60% on Completion of temporary buildings or structures. 30% in equal instalments over the contract period and balance 10% on dismantling and removal on completion	**C**
	Paid on Satisfactorily completion of the item	**D**
	In equal instalments over the contract period	**E**
	Mode of payment to be mutually agreed between Contractor and the Employer at the Commencement of contract in relation to the programme of work	**F**
	On the Completion of works	**G**
	Payment will be received against actual progress	**H**

For Reference Only

S.No	Description	Mode of Payment	Unit	Qty	Rate	Amount LKR	Rate in Words LKR
Bill No 1: Preliminaries							
1.1	**Insurances and Securities**						
1.1.1	Provisional Sum for Providing a Performance Security and Advance Payment Security	A	Item	Allow	P.Sum	1,161,000.00	
1.1.2	Provisional Sum for Insurance of works, Machinery & Equipment, Plant, Materials, third party persons & property and Employer's personal & property at site and Insurance against accidents and injury to contractor's personal as per the contract as per contract	A	Item	Allow	P.Sum	1,935,000.00	
1.2	**Engineer's Facilities**						
1.2.1	Provisional sum for constructing maintaining, dismantling and removal on completion of the Works, temporary building for Engineer's office in conformity with the plans provided for Engineer's requirements, including necessary furniture and fittings, furnishing, electricity, water and sanitary facilities (list facilities required)	C	Item	Allow	P.Sum	1,000,000.00	
1.2.2	Allow lump sum for providing and maintenance, rental, consumption charges etc. for telephone and facsimile facilities, electrical computer with internet facilities, photocopy & printing facilities, for the Engineer's site office for their use in connection with the Works as directed.	G	Item	Allow	L.Sum		
1.2.3	Allow lump sum for Hiring of Double cab with fuel and driver for inspection work and attend meeting in other district (Engine Capacity 2500cc, 4WD, mileage less than 300,000km, should be Brand New or register after 01-01-2013) running shall be 06 days per week and 12 hours per day. Air conditioner with rear A/C vent minimum seating including driver shall be five (Wet Lease basis with driver). The maximum allowable mileage under this provision is 30,000 km.	H	Item	Allow	L.Sum		

For Reference Only

S.No	Description	Mode of Payment	Unit	Qty	Rate	Amount LKR	Rate in Words LKR
1.3	**Contractors Requirements**						
1.3.1	Allow lump sum for constructing maintaining, dismantling and removal on completion of the Works, a temporary site office of adequate size including staff rest room and toilets and other facilities for the Contractor's site management staff in accordance with the plans prepared by the Contractor and concurred by the Engineer.	C	Item	Allow	L.Sum		
1.3.2	Allow lump sum for constructing maintaining, dismantling and removal on completion of the Works, buildings to be used as workshops and stores for perishable materials. Buildings shall be constructed in accordance with the drawings prepared by the Contractor and concurred by the Engineer. The lump sum shall also include for altering, modifying, or dismantling and re-erecting within the site all temporary buildings/structures if required.	C	Item	Allow	L.Sum		
1.4	**Setting Out**						
1.4.1	Allow lump sum for setting out of works in accordance with drawings and other written information given by the Engineer.	F	Item	Allow	L.Sum		
1.5	**Quality, Standards and Progress**						
1.5.1	Allow lump sum for Providing of progress reports including photographic records and other schedules included in the CIDA publication Guidelines for Effective Construction Management, relevant to contract administration as directed by the Engineer	H	Item	Allow	L.Sum		
1.5.2	Provisional sum for all cost in connection with preparing samples for testing, making arrangements for testing of Materials, Goods etc, in addition to the specification, obtaining test reports and submitting the same to the Engineer on his request (all other stipulated test are include in the rate)	D	Item	Allow	P.Sum	774,000.00	

For Reference Only

S.No	Description	Mode of Payment	Unit	Qty	Rate	Amount LKR	Rate in Words LKR
1.5.3	Provisional sum for carryout soil testing such as borehole investigation to determine soil stratigraphy, shear test & permiability test and any other tests directed by Engineer	D	Item	Allow	P.Sum	1,000,000.00	
1.5.4	Provisional sum for supplying and Installation of Dam Saftey instrumentation such as Piezometer as directed by engineer	G	Item	Allow	P.Sum	500,000.00	
1.5.5	Allow lump sum for providing of 4 sets of (hard copies and soft copies) as-built drawing of all services, O & M manual (hard copies and soft copies) for Engineer's approval.	D	Item	Allow	L.Sum		
1.6	**Health and Safety**						
1.6.1	Allow lump sum for providing and maintaining health, safety & Environment throughout the period of construction as directed by the Engineer.	H	Item	Allow	L.Sum		
1.7	**Services and Facilities**						
1.7.1	Allow lump sum for supplying temporary electricity for the works including connection, distribution system for the works, internal arrangements and all payments to the authorities for consumption.	G	Item	Allow	L.Sum		
1.8	**Miscellaneous**						
1.8.1	Allow lump sum Fabricating, installing and maintaining a project name board,(size 1500mmx1200mm) made out of 26 gauge Zn-Al sheet 50mm G.I Pipe post (2Nos)with fixed with the help of 25mm box bar frame with & necessary bold & nuts and reverts rate including lettering in digital print affixing on Zn-Al sheet with the help of 25x25 Aluminum "L" bar with required details, fixing firmly in ground on concrete base with minimum 1500mm (bottom level of the board) above the ground level, as per dwg.	G	Item	Allow	L.Sum		
1.8.2	Employer's share for Adjudicator's fee	F	Item	Allow	P.Sum	1,000,000.00	
Total for Bill No 1 (Carried to Summary of Bills)							

For Reference Only

S.No	Description	Unit	Qty	Rate LKR	Amount LKR	Rate in Words
2	**IMPROVEMENTS TO TANK BUND (0+250 - 3+600)** **DWG NO :- IWWRMP/2025/MUL/MIK/THANNI/BUND/LS/01**					
2.1	Shrub and thorny, secondary growth jungle clearing along the Tank bund and reservations where ever necessary including uprooting stumps removing outside and burning to ashes as directed.	Ha	18.00			
2.2	Felling isolated trees (Girth up to 0.50 - 1.0 m) and cutting branches along the reservation including cutting uproots and heaping on places outside the reservation approved by the Engineer and when dry, burnt completely to ashes and waste to be deposited as directed.	Nos	20.00			
2.3	Felling isolated trees (Girth above 1.00) and cutting branches along the reservation including cutting uproots and heaping on places outside the reservation approved by the Engineer and when dry, burnt completely to ashes and waste to be deposited as directed.	Nos	15.00			
2.4	Removing sand bags from upstream and spoil to be disposed	m^3	426.00			
2.5	Removal of existing collapsed Rip Rap rubble and stock piling for measurement & reuse as directed by the Engineer.	m^3	3,848.00			
2.6	Removing existing gravel from rip-rap bedding and to be disposed outside the reservation as directed	m^3	855.00			
2.7	Stripping top soil along the upstream slope and top of the bund to a thickness of 0.075 meters in order to receive new earth and spoils to be disposed outside the reservation as directed	m^3	5,945.00			

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S.No	Description	Unit	Qty	Rate	Amount	Rate in Words
				LKR	LKR	
2.8	Borrowing earth from identified borrow areas including transport, benching, placing in layers average thickness not more than 225mm as earth filling in existing bund embankment and picking roots, watering as directed, compacting by vibrating compactor (degree of Compaction 98 % - 100%)	m^3	108,258.00			
2.9	Supplying and laying Polyfelt Geosynthetics 2.5mm thick sheet upstream wherever necessary	m^2	57,737.00			
2.10	Furnishing, placing and densified by wetting 0.15m thick gravel bedding for placement of Rip rap as directed	m^3	8,716.00			
2.11	Supplying and heaping 300 - 450 mm rubble for rip rap	m^3	33,653.00			
2.12	Excavation for trench at U/S bund toe and spoil to waste/reused by machinery for riprap cutoff wall as directed.	m^3	1,505.00			
2.13	Placing Rip-Rap with using re-usable rubble from existing piled stock and newly supplied rubble to an average thickness of 600 mm on upstream slope of bund as directed by the Engineer. (Rate includes the necessary internal transport and loading, unloading)	m^3	36,731.00			
2.14	Scarifying top soil along the, downstream slope and top of the bund where ever necessary to a thickness of 0.025 meters in order to receive new gravel, turf and spoils to be disposed outside the reservation as directed	m^2	15,600.00			
2.15	Supplying turf sods to site, preparation and dressing of surface, firmly placing and full turfing to new fill and watering and kept moist till grass root up as directed by the Engineer.	m^2	38,688.00			
2.16	Furnishing, transporting, placing and spreading of gravel on the bund including watering and compaction by machinery	m^3	2,223.75			

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S.No	Description	Unit	Qty	Rate LKR	Amount LKR	Rate in Words
2.17	Casting and placing chainage post (with 1:11/2:3 (20mm) r/f ct.concrete with 2 nos 10mm dia tor steel and 3nos 6mm dia stirrups for reinforcement) along the tank bund at 100 m interval and fixing firmly in ground on 1:3:6(40) concrete base (600x600x400mm) rate including for loading,unloding and local transport and white washing and marking identification Chainage with yellow and black enamel paint and as directed by engineer (DWG NO: IWWRMP/2025/MUL/MIK/THANNI/CHAIN, LEVEL/BLOCK/01	Nrs	40.00			
2.18	Casting and placing level block (with 1:11/2:3 (20mm) r/f ct.concrete along the tank bund at 100 m interval and fixing firmly in ground on 1:3:6(40) concrete base (500x500x200mm) rate including for loading,unloding and local transport and marking identification level with yellow and black enamel paint and as directed by engineer (DWG NO: IWWRMP/2025/MUL/MIK/THANNI/CHAIN, LEVEL/BLOCK/01	Nrs	8.00			
	Sub Total					
3	**CONSTRUCTION OF SLUICE INLET CANAL DWG NO :- IWWRMP/2025/MUL/MIK/THANNI/LB SLUICE/INLET CANAL/01**					
3.1.1	Earth cutting in canal and spoil to waste as directed	m^3	3,224.50			
3.1.2	Earth Excavation in foundation and back filling / spoil to waste / dump including watering and compaction	m^3	6.44			
3.1.3	Supplying & laying 1:3:6(40) Ct. sand concrete compacting with porker vibrator including curing without form work (mixing by mixture)	m^3	31.00			

For Reference Only

S.No	Description	Unit	Qty	Rate LKR	Amount LKR	Rate in Words
3.1.4	Supplying & laying 1:2:4(20) Ct. sand concrete using compacting with porker vibrator including curing without form work (mixing by mixture)	m^3	61.70			
3.1.5	Furnishing and making of form work made out 20mm thick plywood with necessary frame and supports including fixing and removing as directed	m^2	289.00			
3.1.6	Furnishing, cutting, bending & placing rib bar reinforcement as providing in drawing.	Kg	187.00			
3.1.7	Expansion joints in concrete base & wall with bitumen and sand mix (to full depth of concrete) as directed by engineer.	m^2	9.05			
3.1.8	Repairing for LB Sluice as directed by Engineer	Item	Allow	P.Sum	800,000.00	
	Sub Total					
4	**CONSTRUCTION OF CONCRETE BUND ACCESS ROAD (0+000 - 0+300m)** **DWG NO :- IWWRMP/2025/MUL/MIK/THANNI/ ACCESS ROAD/CONCRETE/01**					
4.1	Demolising of existing concrete access road and disposed outside the reservation as directed by the Engineer.	Item	Allow			
4.2	Cutting, Trimming and camparing road way by Machinery.	m^2	1,800.00			
4.3	Earth excavation in foundation and part refill including placing, watering and compacting by manual.	m^3	3.60			
4.4	Earth Excavation from borrow and forming Road way, transporting placing and spreading of earth to the designed profile including watering and compaction	m^3	347.70			
4.5	Furnishing, transporting, placing and spreading of gravel on the road way & shoulder including watering and compaction	m^3	386.90			
4.6	Supplying & laying 1:2:4 (20mm) ct. concrete excluding form work (mixing by mixture)	m^3	238.60			

For Reference Only

S.No	Description	Unit	Qty	Rate	Amount	Rate in Words
				LKR	LKR	
4.7	Furnishing, cutting, bending & placing rib bar reinforcement as providing in drawing.	kg	1,193.00			
4.8	Furnishing and making formwork using 20mm thick plywood for concrete with necessary timber supports at required interval	m^2	111.00			
4.9	Separation membrane, supply & laying 0.125 mm polythene sheet to be used for Separation membrane with 300 mm overlapping. (1000 Gauge)	m^2	1,535.00			
4.10	Supplying & placing 20mm thk, regiform sheets for expansion joints and removal of regiform and filling with suitable bitumen sealant for expansion joint(Bitumen Emulsion : sand = 1:8, as directed.)	m	300.00			
4.11	Supplying turf sods to site, preparation and dressing of surface, firmly placing and full turfing to new fill and watering and kept moist till grass root up as directed by the Engineer	m^2	615.00			
4.12	Rubble pitching work in 1:5 cement sand motar, Paving to be done with selected rubble having a flat top surface	m^3	5.30			
	Sub Total					

For Reference Only

BILL NO 5: DAYWORKS SCHEDULE

Item No	Description	Unit	Nominal Quantity	Rate (LKR)	Amount (LKR)	Rate in Words
5.1	Labour					
5.1.1	Skilled labour	hr	80.00			
5.1.2	Unskilled labour	hr	100.00			
5.1.3	Mason	hr	30.00			
5.1.4	Carpenter	hr	30.00			
5.1.5	Plumber, Electrician	hr	20.00			
5.1.6	Mechanic	hr	20.00			
5.1.7	Welder, Fitter	hr	20.00			
5.1.8	Steelfixer	hr	20.00			
5.1.9	Driver	hr	40.00			
	Total for Labour					
5.2	Material					
5.2.1	Cement (50 Kg bags)	Nos	30.00			
5.2.2	Sand	m^3	15.00			
5.2.3	Mild steel reinforcement	t	0.20			
5.2.4	Tor steel reinforcement	t	0.20			
5.2.5	Timber Ply Sheet 12mm	m^2	10.00			
	Total for Material					
5.3	Equipment					
5.3.1	Backhoe/Loader 100 HP	hr	20.00			
5.3.2	Dump truck / Tipper 20T	hr	10.00			
5.3.3	Tractor/Trailer 100HP	hr	10.00			
5.3.4	Concrete Mixer 1 m3	hr	5.00			
5.3.5	Air Compressor 3-Tool	hr	3.00			
5.3.6	Welding Set 10KVA	hr	5.00			
5.3.7	Diesel Generator 20KVA	hr	10.00			
5.3.8	Water Pumps 50mm	hr	20.00			
	Total for Equipment					
Total for Day works (Carried to Summary of Bills)						

For Reference Only

For Reference Only

Technical Proposal

Forms for personnel
Forms for equipment
Site organisation
Method statements
Mobilisation and construction schedule

For Reference Only

Forms for Personnel

Form PER – 1: Proposed Personnel

Bidders should provide the names of suitably qualified personnel to meet the specified requirements for each of the positions listed in Section III (Evaluation and Qualification Criteria). The data on their experience should be supplied using the form below for each candidate.

1.	**Title of position** **Name**
2.	**Title of position** **Name**
3.	**Title of position** **Name**
4.	**Title of position** **Name**
5.	**Title of position** **Name**
6.	**Title of position** **Name**
etc.	**Title of position** **Name**

For Reference Only

Form PER – 2: Resume of Proposed Personnel

The Bidder shall provide all the information requested below. Fields with asterix (*) shall be used for evaluation.

Position*		
Personnel information	**Name**	**Date of birth**
	Professional qualifications	
Present employment	**Name of Employer**	
	Address of Employer	
	Telephone	**Contact (manager / personnel officer)**
	Fax	**E-mail**
	Job title	**Years with present Employer**

Summarize professional experience over the last five years, in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

From*	To*	Company, project ,position, and relevant technical and management experience*

For Reference Only

Forms for Equipment

The Bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed in Section III (Evaluation and Qualification Criteria). A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Bidder. The Bidder shall provide all the information requested below, to the extent possible. Fields with asterisk (*) shall be used for evaluation.

Type of Equipment*		
Equipment Information	**Name of manufacturer**	**Model and power rating**
	Capacity*	**Year of manufacture***
Current Status	**Current location**	
	Details of current commitments	
Source	**Indicate source of the equipment** ☐ **Owned** ☐ **Rented** ☐ **Leased** ☐ **Specially manufactured**	

The following information shall be provided only for equipment not owned by the Bidder.

Owner	**Name of owner**	
	Address of owner	
	Telephone	**Contact name and title**
	Fax	**Telex**
Agreements	**Details of rental / lease / manufacture agreements specific to the project**	

For Reference Only

Site Organisation

The Bidder shall provide a personnel chart for the proposed site organization, indicating the key positions as given in Section III (Evaluation and Qualification Criteria) and other positions, with names of personnel proposed and a description of the tasks assigned for such positions.

For Reference Only

Method Statements

The Bidder shall provide a method statement describing the methodology proposed to be adopted in the execution of the contract.

For Reference Only

Mobilisation and Construction Schedule

The Bidder shall provide a detailed mobilization and construction schedule indicating the sequence of all main operations and identifying critical activities.

For Reference Only

For Reference Only

Section 9 - Schedules

Schedule 1 – General Information

(i) If pre-qualification is done the bidders are required to include information subsequent to that submitted with the pre-qualification application.
(ii) For joint ventures, each joint venture partner shall furnish information separately.

ITB Clause reference	Description	Information *(to be filled by the Bidder)*	Remarks
4.1 (a)	**Legal Status**		*Provide certified copies of Registration*
	Written power of attorney of the signatory to the Bid	*Provide original or certified copy of the power of Attorney attested by a Notary and label as attachment to Clause 4.1(a)*	
	If a Joint Venture, names and addresses of Joint Venture Partners	1. …… 2. …….. 3. ……	*Provide a draft copy of the Joint Venture Agreement or alternatively the memorandum of understanding*
	If a Joint Venture, name of Lead Partner		
	For joint ventures, each joint venture partner shall furnish Legal Status separately		
	Name (Lead partner)		*Provide certified copies and label as attachment to Clause 4.1(a)*
	Legal status		
	Place of registration		
	Principle place of business		
	Written power of attorney of the signatory to the Bid	*Provide original or certified copy of the power of attorney attested by a Notary and label as attachment to Clause 5.1*	
	VAT Registration Number		
	Name (Partner 2)		*Provide certified copies and label as attachment to Clause 4.1 (a)*
	Legal status		
	Place of registration		
	Principle place of business		

For Reference Only

	Written power of attorney of the signatory to the Bid	*Provide original or certified copy of the power of attorney attested by a Notary and label as attachment to Clause 4.1 (a)*	
	VAT Registration Number		
	Name (Partner 3)		*Provide certified copies and label as attachment to Clause 4.1 (a)*
	Legal status		
	Place of registration		
	Principle place of business		
	Written power of attorney of the signatory to the Bid	*Provide original or certified copy of the power of attorney attested by a Notary and label as attachment to Clause 4.1 (a)*	
	VAT Registration Number		
4.2 (a)	**ICTAD Registration**		*Provide certified copies and label as attachment to Clause 4.2(a)*
	Registration number		
	Grade		
	Specialty		
	Expiry Date		

For Reference Only

Schedule 2 – Annual Turn-over Information (Construction only – Last five years)

(i) If pre-qualification is done the bidders are required to include information subsequent to that submitted with the pre-qualification application.

(ii) For joint ventures, each joint venture partner shall furnish information separately.

Year	Turn-over	Remarks
1		*Attach audited reports and label as attachment to Clause 4.2*
2		
3		
4		
5		

Schedule 3 – Adequacy of Working Capital

If pre-qualification is done the bidders are required to include information subsequent to that submitted with the pre-qualification application

Source of credit line	Amount	Remarks
		Provide documentary evidence and label as attachment to Clause 4.2
Total		

For Reference Only

Schedule 4 – Construction Experience in last five years

(i) If pre-qualification is done the bidders are required to include information subsequent to that submitted with the pre-qualification application.

(ii) For joint ventures, each joint venture partner shall furnish information separately.

Year	Employer	Description of Works	Amount	Contractor's Responsibility (%)
		Total		

- *Provide documentary evidence and label as attachment to Clause 4.2*

For Reference Only

Schedule 5 – Major Items of Construction Equipment Proposed	
Type	**Capacity**

For Reference Only

Schedule 6 – Construction Management Staff		
A. Key Professionals		
Name	**Position**	**Task**
B. Support Staff		
Name	**Position**	**Task**

For Reference Only

Schedule 7 – Time Schedule for Key Staff														
			Months (in the form of a Bar Chart)											
Name	**Position**	**Activities**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**Number of Months**

Full-time: _____ Part-time:……

For Reference Only

Schedule 8 – Work Programme

Sheet 1 of ……

	[1st, 2nd, etc. are months from the Start Date.]											
Construction Activity	**1st**	**2nd**	**3rd**	**4th**	**5th**	**6th**	**7th**	**8th**	**9th**	**10th**	**11th**	**12th**

For Reference Only

Schedule 9 – Input percentages for Price Adjustment Formula		
Input Name *(Include major materials below the list, together with percentages for all inputs)*	**ICTAD Reference for Indices**	**Percentage** *(percentages listed should added to 90.0)*
Total		

Non-adjustable element shall be:
All P.Sum & L.Sum items

For Reference Only

Schedule 10 - Works in Hand

Contract	Name of the Employer	Description of work (attach a copy of letter of award)	Date of award of contract	Value of contract (Rs.)	Contract period	Whether extension of time has been granted	Percentage completion as at present
Contract 1							
Contract 2							
Contract 3							
Contract 4							
Contract 5							

For Reference Only

Schedule 11: ESHS Management Strategies and Implementation Plans

(ESHS-MSIP)

The Bidder shall submit comprehensive and concise Environmental, Social, Health and Safety Management Strategies and Implementation Plans (ESHS-MSIP) as required by ITB 13.1 A (j) and 13.1 B (d). These strategies and plans shall describe in detail the actions, materials, equipment, management processes etc. that will be implemented by the Contractor, and its subcontractors.

Code of Conduct: Environmental, Social, Health and Safety (ESHS)

The Bidder shall submit the Code of Conduct that will apply to the Contract Manger and other key personnel as required by ITB 13.1 A (j) and 13.1 B (d) and subcontractors. The Code of Conduct shall ensure compliance with the ESHS provisions of the Contract.
In addition, the Bidder shall submit an outline of how this Code of Conduct will be implemented. This will include: how it will be introduced into conditions of employment/engagement, what training will be provided, how it will be monitored and how the Contractor proposes to deal with any breaches.

Environmental, social, health and safety requirements

The Employer should use the services of a suitably qualified environmental, social, health and safety specialist/s to prepare the specifications for ESHS working with a procurement specialist/s.

The Employer should attach or refer to the Employer's environmental, social, health and safety policies that will apply to the project. If these are not available, the Employer should use the following guidance in drafting an appropriate policy for the Works.

SUGGESTED CONTENT FOR AN ENVIRONMENTAL AND SOCIAL POLICY (STATEMENT)

The Works' policy goal, as a minimum, should be stated to integrate environmental protection, occupational and community health and safety, gender, equality, child protection, vulnerable people (including those with disabilities), sexual harassment, gender-based violence (GBV), sexual exploitation and abuse (SEA), HIV/AIDS awareness and prevention and wide stakeholder engagement in the planning processes, programs, and activities of the parties involved in the execution of the Works. The Employer is advised to consult with the World Bank to agree the issues to be included which may also address: climate adaptation, land acquisition and resettlement, indigenous people, etc. *The policy should set the frame for monitoring, continuously improving processes and activities and for reporting on the compliance with the policy.*

The policy shall include a statement that, for the purpose of the policy and/or code of conduct, the term "child" / "children" means any person(s) under the age of 18 years.

The policy should, as far as possible, be brief but specific and explicit, and measurable, to enable reporting of compliance with the policy in accordance with the Particular Conditions of the Contract Sub-Clause 4.21 and Appendix C to the General Conditions of Contract.

For Reference Only

As a minimum, the policy is set out to the commitments to:

1. *apply good international industry practice to protect and conserve the natural environment and to minimize unavoidable impacts;*
2. *provide and maintain a healthy and safe work environment and safe systems of work;*
3. *protect the health and safety of local communities and users, with particular concern for those who are disabled, elderly, or otherwise vulnerable;*
4. *ensure that terms of employment and working conditions of all workers engaged in the Works meet the requirements of the ILO labour conventions to which the host country is a signatory;*
5. *be intolerant of, and enforce disciplinary measures for illegal activities. To be intolerant of, and enforce disciplinary measures for GBV, inhumane treatment, sexual activity with children, and sexual harassment;*
6. *incorporate a gender perspective and provide an enabling environment where women and men have equal opportunity to participate in, and benefit from, planning and development of the Works;*
7. *work co-operatively, including with end users of the Works, relevant authorities, contractors and local communities;*
8. *engage with and listen to affected persons and organizations and be responsive to their concerns, with special regard for vulnerable, disabled, and elderly people;*
9. *provide an environment that fosters the exchange of information, views, and ideas that is free of any fear of retaliation, and protects whistleblowers;*
10. *minimize the risk of HIV transmission and to mitigate the effects of HIV/AIDS associated with the execution of the Works;*

The policy should be signed by the senior manager of the Employer. This is to signal the intent that it will be applied rigorously.

MINIMUM CONTENT OF ESHS REQUIREMENTS

In preparing detailed specifications for ESHS requirements, the specialists should refer to and consider:

- *project reports e.g. ESIA/ESMP*
- *consent/permit conditions*
- *required standards including World Bank Group EHS Guidelines*
- *relevant international conventions or treaties etc., national legal and/or regulatory requirements and standards (where these represent higher standards than the WBG EHS Guidelines)*
- *relevant international standards e.g. WHO Guidelines for Safe Use of Pesticides*
- *relevant sector standards e.g. EU Council Directive 91/271/EEC Concerning Urban Waste Water Treatment*
- *Grievance redress mechanism including types of grievances to be recorded and how to protect confidentiality e.g. of those reporting allegations of GBV/SEA.*

For Reference Only

- *GBV/SEA prevention and management.*
- *The detail specification for ESHS should, to the extent possible, describe the intended outcome rather than the method of working*

The ESHS requirements should be prepared in manner that does not conflict with the relevant General Conditions of Contract and Particular Conditions of Contract, and in particular:

General Conditions of Contract

Sub-clause 1.13	*Compliance with Laws*
Sub-clause 2.2	*Permits, Licenses and Approvals*
Sub-clause 4.1	*Contractor's General Obligations*
Sub-clause 4.4	*Subcontractors*
Sub-clause 4.8	*Safety Procedures*
Sub-clause 4.19	*Avoidance of Interference*
Sub-clause 4.13	*Protection of the Environment*
Sub-clause 4.15	*Contractor's Operations on the Site*
Sub-clause 4.16	*Fossils*
Section 6	*Staff and Labour (includes health and safety)*
Sub-clause 7.1	*Manner of Execution*
Sub-clause 10	*Clearance of Site*
Sub-clause 12.3	*Evaluation (reference ITB 14.2 "Items against which no rate or price is entered by the Bidder shall be deemed to be covered by the rates for other items in the Bill of Quantities and will not be paid separately by the Employer.")*

MINIMUM REQUIREMENTS FOR THE BIDDER'S CODE OF CONDUCT

[A minimum requirement for the Code of Conduct should be set out by the Employer, taking into consideration the issues, impacts, and mitigation measures identified, for example, in:

- *project reports e.g. ESIA/ESMP*
- *any particular GBV/SEA requirements*
- *consent/permit conditions (regulatory authority conditions attached to any permits or approvals for the project)*
- *required standards including World Bank Group EHS Guidelines*
- *relevant international conventions, standards or treaties, etc., national legal and/or regulatory requirements and standards (where these represent higher standards than the WBG EHS Guidelines)*
- *relevant standards e.g. Workers' Accommodation: Process and Standards (IFC and EBRD)*
- *relevant sector standards e.g. workers' accommodation*

For Reference Only

- *Grievance redress mechanisms.*

The types of issues identified could include. Risks associated with: labor influx, spread of communicable diseases, sexual harassment, gender based violence, illicit behavior and crime, and maintaining *a safe environment etc.*

[Amend the following instructions to the Bidder taking into account the above considerations.]

A satisfactory code of conduct will contain obligations on all Contractor's Personnel project staff (including sub-contractors and day workers) that are suitable to address the following issues, as a minimum. Additional obligations may be added to respond to particular concerns of the region, the location and the project sector or to specific project requirements. The code of conduct shall contain a statement that the term "child" / "children" means any person(s) under the age of 18 years.

The issues to be addressed include:

1. Compliance with applicable laws, rules, and regulations
2. Compliance with applicable health and safety requirements to protect the local community (including vulnerable and disadvantaged groups), the Employer's Personnel, and the Contractor's Personnel (including wearing prescribed personal protective equipment, preventing avoidable accidents and a duty to report conditions or practices that pose a safety hazard or threaten the environment)
3. The use of illegal substances
4. Non-Discrimination in dealing with the local community (including vulnerable and disadvantaged groups), the Employer's Personnel, and the Contractor's Personnel (for example on the basis of family status, ethnicity, race, gender, religion, language, marital status, age, disability (physical and mental), sexual orientation, gender identity, political conviction or social, civic, or health status)
5. Interactions with the local community(ies), members of the local community (ies), and any affected person(s) (for example to convey an attitude of respect, including to their culture and traditions)
6. Sexual harassment (for example to prohibit use of language or behavior, in particular towards women and/or children, that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate)
7. Violence, including sexual and/or gender based violence (for example acts that inflict physical, mental or sexual harm or suffering, threats of such acts, coercion, and deprivation of liberty
8. Exploitation including sexual exploitation and abuse (for example the prohibition of the exchange of money, employment, goods, or services for sex, including sexual favors or other forms of humiliating, degrading behavior, exploitative behavior or abuse of power)
9. Protection of children (including prohibitions against sexual activity or abuse, or otherwise unacceptable behavior towards children, limiting interactions with children, and ensuring their safety in project areas)
10. Sanitation requirements (for example, to ensure workers use specified sanitary facilities provided by their employer and not open areas)
11. Avoidance of conflicts of interest (such that benefits, contracts, or employment, or any sort of preferential treatment or favors, are not provided to any person with whom there is a financial, family, or personal connection)

For Reference Only

12. Respecting reasonable work instructions (including regarding environmental and social norms)
13. Protection and proper use of property (for example, to prohibit theft, carelessness or waste)
14. Duty to report violations of this Code
15. Non retaliation against workers who report violations of the Code, if that report is made in good faith.

The Code of Conduct should be written in plain language and signed by each worker to indicate that they have:

- received a copy of the code;
- had the code explained to them;
- acknowledged that adherence to this Code of Conduct is a condition of employment; and
- Understood that violations of the Code can result in serious consequences, up to and including dismissal, or referral to legal authorities.

A copy of the code shall be displayed in a location easily accessible to the community and project affected people. It shall be provided in languages comprehensible to the local community, Contractor's Personnel, Employer's Personnel, and affected persons.

PAYMENT FOR ESHS REQUIREMENTS

The Employer's ESHS and procurement specialists should consider how the Contractor will cost the delivery of the ESHS requirements. In the majority of cases, the payment for the delivery of ESHS requirements shall be a subsidiary obligation of the Contractor covered under the prices quoted for other Bill of Quantity items. For example, normally the cost of implementing work place safe systems of work, including the majors necessary for ensuring traffic safety, shall be covered by the Bidder's rates for the relevant works. Alternatively, provisional sums could be set aside for discrete activities for example for HIV counselling service, and, GBV/SEA awareness and sensitization or to encourage the contractor to deliver additional ESHS outcomes beyond the requirement of the Contract.

For Reference Only

For Reference Only

S.I NO	DESCRIPTION	DRAWING NO	NO OF SHEETS
1	Bund Ls (-0+000 – 0+675)	IWWRMP/2025/MUL/MIK/THANNI/BUND/LS/01	01 of 75
2	Bund Ls (-0+675 – 1+350)	IWWRMP/2025/MUL/MIK/THANNI/BUND/LS/02	02 of 75
3	Bund Ls (-1+350 – 2+025)	IWWRMP/2025/MUL/MIK/THANNI/BUND/LS/03	03 of 75
4	Bund Ls (-2+025 – 2+700)	IWWRMP/2025/MUL/MIK/THANNI/BUND/LS/04	04 of 75
5	Bund Ls (-2+700 – 3+375)	IWWRMP/2025/MUL/MIK/THANNI/BUND/LS/05	05 of 75
6	Bund Ls (-3+375 – 3+600)	IWWRMP/2025/MUL/MIK/THANNI/BUND/LS/06	06 of 75
7	Bund Typical Section	IWWRMP/2025/MUL/MIK/THANNI/BUND/TYPE/01	07 of 75
8	Bund Typical Section	IWWRMP/2025/MUL/MIK/THANNI/BUND/ BENCHING/TYPE/01	08 of 75
9	Bund CSS (0+250 - 0+275)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/01	09 of 75
10	Bund CSS (0+300 - 0+325)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/02	10 of 75
11	Bund CSS (0+350 - 0+375)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/03	11 of 75
12	Bund CSS (0+400 - 0+425)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/04	12 of 75
13	Bund CSS (0+450 - 0+475)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/05	13 of 75
14	Bund CSS (0+500 - 0+525)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/06	14 of 75
15	Bund CSS (0+550 - 0+575)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/07	15 of 75
16	Bund CSS (0+600 - 0+625)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/08	16 of 75
17	Bund CSS (0+650 - 0+675)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/09	17 of 75
18	Bund CSS (0+700 - 0+725)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/10	18 of 75
19	Bund CSS (0+750 - 0+775)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/11	19 of 75
20	Bund CSS (0+800 - 0+825)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/12	20 of 75
21	Bund CSS (0+850 - 0+875)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/13	21 of 75
22	Bund CSS (0+895 - 0+925)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/14	22 of 75
23	Bund CSS (0+950 - 0+975)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/15	23 of 75
24	Bund CSS (1+000 - 1+025)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/16	24 of 75
25	Bund CSS (1+050 - 1+075)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/17	25 of 75
26	Bund CSS (1+100 - 1+125)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/18	26 of 75

For Reference Only

27	Bund CSS (1+195 - 1+200)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/19	27 of 75
28	Bund CSS (1+225 - 1+250)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/20	28 of 75
29	Bund CSS (1+275 - 1+300)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/21	29 of 75
30	Bund CSS (3+325 - 1+350)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/22	30 of 75
31	Bund CSS (1+375 - 1+400)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/23	31 of 75
32	Bund CSS (1+425 - 1+450)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/24	32 of 75
33	Bund CSS (1+475 - 1+500)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/55	33 of 75
34	Bund CSS (1+525 - 1+050)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/26	34 of 75
35	Bund CSS (1+575 - 1+600)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/27	35 of 75
36	Bund CSS (1+625 - 1+650)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/28	36 of 75
37	Bund CSS (1+675 - 1+700)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/29	37 of 75
38	Bund CSS (1+725 - 1+750)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/30	38 of 75
39	Bund CSS (1+775 - 1+800)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/31	39 of 75
40	Bund CSS (1+825 - 1+850)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/32	40 of 75
41	Bund CSS (1+875 - 1+900)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/33	41 of 75
42	Bund CSS (1+925 - 1+950)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/34	42 of 75
43	Bund CSS (1+975 - 2+000)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/35	43 of 75
44	Bund CSS (2+025 - 2+050)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/36	44 of 75
45	Bund CSS (2+075 - 2+100)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/37	45 of 75
46	Bund CSS (2+125 - 2+150)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/38	46 of 75
47	Bund CSS (2+175 - 2+200)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/39	47 of 75
48	Bund CSS (2+225 - 2+250)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/34	48 of 75
49	Bund CSS (2+275 - 2+300)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/41	49 of 75
50	Bund CSS (2+325 - 2+350)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/42	50 of 75
51	Bund CSS (2+375 - 2+400)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/43	51 of 75
52	Bund CSS (2+425 - 2+450)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/44	52 of 75
53	Bund CSS (2+475 - 2+500)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/45	53 of 75
54	Bund CSS (2+525 - 2+550)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/46	54 of 75
55	Bund CSS (2+575 - 2+600)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/47	55 of 75

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56	Bund CSS (2+625 - 2+650)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/48	56 of 75
57	Bund CSS (2+675 - 2+700)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/49	57 of 75
58	Bund CSS (2+725 - 2+775)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/50	58 of 75
59	Bund CSS (2+800 - 2+825)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/51	59 of 75
60	Bund CSS (2+850 - 2+875)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/52	60 of 75
61	Bund CSS (2+900 - 2+925)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/53	61 of 75
62	Bund CSS (2+950 - 2+975)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/54	62 of 75
63	Bund CSS (3+000 - 0+025)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/55	63 of 75
64	Bund CSS (3+050 - 3+075)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/56	64 of 75
65	Bund CSS (3+100 - 3+125)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/57	65 of 75
66	Bund CSS (3+150 - 3+175)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/58	66 of 75
67	Bund CSS (3+200 - 3+225)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/59	67 of 75
68	Bund CSS (3+250 - 3+275)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/60	68 of 75
69	Bund CSS (3+300 - 3+325)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/61	69 of 75
70	Bund CSS (3+350 - 3+375)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/62	70 of 75
71	Bund CSS (3+400 - 3+425)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/63	71 of 75
72	Bund CSS (3+450)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/64	72 of 75
73	LB Sluice Inlet Canal Details	IWWRMP/2025/MUL/MIK/THANNI/LB SLUICE/INLET CANAL/01	73 of 75
74	Access Road Details	IWWRMP/2025/MUL/MIK/THANNI/ACCESS ROAD/CONCRETE/01	74 of 75
75	Details of Bund Chainage , Level block details	IWWRMP/2025/MUL/MIK/THANNI/CHAIN,LEVEL/ BLOCK/01	75 of 75

For Reference Only

For Reference Only

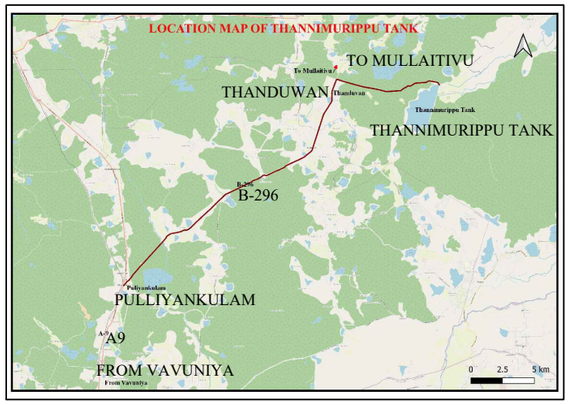
REHABILITATION OF HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION IN MULLAITIVU RANGE UNDER IWWRMP-2025

For Reference Only

THANNIMURIPPU TANK FROM GOOGLE MAP
DRAWING DETAILS

S.I NO	DESCRIPTION	DRAWING NO	NO OF SHEETS
1	Bund Ls (-0+000 – 0+675)	IWWRMP/2025/MUL/MIK/THANNI/BUND/LS/01	01 of 75
2	Bund Ls (-0+675 – 1+350)	IWWRMP/2025/MUL/MIK/THANNI/BUND/LS/02	02 of 75
3	Bund Ls (-1+350 – 2+025)	IWWRMP/2025/MUL/MIK/THANNI/BUND/LS/03	03 of 75
4	Bund Ls (-2+025 – 2+700)	IWWRMP/2025/MUL/MIK/THANNI/BUND/LS/04	04 of 75
5	Bund Ls (-2+700 – 3+375)	IWWRMP/2025/MUL/MIK/THANNI/BUND/LS/05	05 of 75
6	Bund Ls (-3+375 – 3+600)	IWWRMP/2025/MUL/MIK/THANNI/BUND/LS/06	06 of 75
7	Bund Typical Section	IWWRMP/2025/MUL/MIK/THANNI/BUND/TYPE/01	07 of 75
8	Bund Typical Section	IWWRMP/2025/MUL/MIK/THANNI/BUND/ BENCHING/TYPE/01	08 of 75
9	Bund CSS (0+250 - 0+275)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/01	09 of 75
10	Bund CSS (0+300 - 0+325)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/02	10 of 75
11	Bund CSS (0+350 - 0+375)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/03	11 of 75
12	Bund CSS (0+400 - 0+425)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/04	12 of 75
13	Bund CSS (0+450 - 0+475)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/05	13 of 75
14	Bund CSS (0+500 - 0+525)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/06	14 of 75
15	Bund CSS (0+550 - 0+575)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/07	15 of 75
16	Bund CSS (0+600 - 0+625)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/08	16 of 75
17	Bund CSS (0+650 - 0+675)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/09	17 of 75
18	Bund CSS (0+700 - 0+725)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/10	18 of 75
19	Bund CSS (0+750 - 0+775)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/11	19 of 75
20	Bund CSS (0+800 - 0+825)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/12	20 of 75
21	Bund CSS (0+850 - 0+875)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/13	21 of 75
22	Bund CSS (0+895 - 0+925)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/14	22 of 75
23	Bund CSS (0+950 - 0+975)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/15	23 of 75
24	Bund CSS (1+000 - 1+025)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/16	24 of 75
25	Bund CSS (1+050 - 1+075)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/17	25 of 75
26	Bund CSS (1+100 - 1+125)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/18	26 of 75
27	Bund CSS (1+195 - 1+200)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/19	27 of 75
28	Bund CSS (1+225 - 1+250)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/20	28 of 75
29	Bund CSS (1+275 - 1+300)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/21	29 of 75
30	Bund CSS (3+325 - 1+350)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/22	30 of 75
31	Bund CSS (1+375 - 1+400)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/23	31 of 75
32	Bund CSS (1+425 - 1+450)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/24	32 of 75
33	Bund CSS (1+475 - 1+500)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/55	33 of 75
34	Bund CSS (1+525 - 1+050)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/26	34 of 75
35	Bund CSS (1+575 - 1+600)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/27	35 of 75
36	Bund CSS (1+625 - 1+650)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/28	36 of 75
37	Bund CSS (1+675 - 1+700)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/29	37 of 75
38	Bund CSS (1+725 - 1+750)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/30	38 of 75
39	Bund CSS (1+775 - 1+800)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/31	39 of 75
40	Bund CSS (1+825 - 1+850)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/32	40 of 75
41	Bund CSS (1+875 - 1+900)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/33	41 of 75
42	Bund CSS (1+925 - 1+950)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/44	42 of 75
43	Bund CSS (1+975 - 2+000)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/35	43 of 75
44	Bund CSS (2+025 - 2+050)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/36	44 of 75
45	Bund CSS (2+075 - 2+100)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/37	45 of 75
46	Bund CSS (2+125 - 2+150)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/38	46 of 75
47	Bund CSS (2+175 - 2+200)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/39	47 of 75
48	Bund CSS (2+225 - 2+250)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/34	48 of 75
49	Bund CSS (2+275 - 2+300)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/41	49 of 75
50	Bund CSS (2+325 - 2+350)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/42	50 of 75
51	Bund CSS (2+375 - 2+400)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/43	51 of 75
52	Bund CSS (2+425 - 2+450)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/44	52 of 75
53	Bund CSS (2+475 - 2+500)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/45	53 of 75
54	Bund CSS (2+525 - 2+550)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/46	54 of 75
55	Bund CSS (2+575 - 2+600)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/47	55 of 75
56	Bund CSS (2+625 - 2+650)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/48	56 of 75
57	Bund CSS (2+675 - 2+700)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/49	57 of 75
58	Bund CSS (2+725 - 2+775)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/50	58 of 75
59	Bund CSS (2+800 - 2+825)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/51	59 of 75
60	Bund CSS (2+850 - 2+875)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/52	60 of 75
61	Bund CSS (2+900 - 2+925)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/53	61 of 75
62	Bund CSS (2+950 - 2+975)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/54	62 of 75
63	Bund CSS (3+000 - 0+025)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/55	63 of 75
64	Bund CSS (3+050 - 3+075)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/56	64 of 75
65	Bund CSS (3+100 - 3+125)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/57	65 of 75
66	Bund CSS (3+150 - 3+175)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/58	66 of 75
67	Bund CSS (3+200 - 3+225)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/59	67 of 75
68	Bund CSS (3+250 - 3+275)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/60	68 of 75
69	Bund CSS (3+300 - 3+325)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/61	69 of 75
70	Bund CSS (3+350 - 3+375)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/62	70 of 75
71	Bund CSS (3+400 - 3+425)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/63	71 of 75
72	Bund CSS (3+450)	IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/64	72 of 75
73	LB Sluice Inlet Canal Details	IWWRMP/2025/MUL/MIK/THANNI/LB SLUICE/INLET CANAL/01	73 of 75
74	Access Road Details	IWWRMP/2025/MUL/MIK/THANNI/ACCESS ROAD/CONCRETE/01	74 of 75
75	Details of Bund Chainage , Level block details	IWWRMP/2025/MUL/MIK/THANNI/CHAIN,LEVEL/ BLOCK/01	75 of 75

THANNIMURIPPU TANK
LOCATION MAP



THANNIMURIPPU TANK
HYDRO DATA

HYDRO DATA - EXISTING	
GENERAL	
NAME OF TANK	THANNIMURIPPUKULAM
DDI RANGE	MULLAITIVU
IE DIVISION	MUTHTHUIYANKADDU
DISTRICT	MULLAITIVU
DIV. SECRETARY	MARITIMEPATTU
LOCATION/CO-ORDINATE	D/1 (2.25 X 7.90)
FEEDING STREAM	THANIKALARU
HYDROLOGICAL DATA	
CATCHMENT AREA(SQ.MILES)	52.888
CATCHMENT SLOPE	0.4%
CATCHMENT DETENTION (AC.FT)	9,000
LONG WATER COURSE (MILES)	9.96
RAINFALL NEM (INCHES)	44.4
RAINFALL SWM (INCHES)	10.4
EFFECTIVE YIELD NEM (AC.FT)	77,700
EVAPORATION STATION	IRANAMADU
AGRO. ECO. REGION	DL1
HYDROLOGICAL ZONE	1
RESERVOIR DATA	
CAPACITY, GROSS(AC.FT)	20,231
CAPACITY, NETT(AC.FT)	17,570
FSL(FT.BOVE MSL)	78
HFL(FT.ABOVE MSL)	83
AREA AT FSL (ACRES)	1,725
AREA AT HFL (ACRES)	2,150
FULL. SUPPLY DEPTH(FT)	21
BUND	
LENGTH(FT)	13,560
BUND TOP LEVEL (FT ABOVE MSL)	91
TOP WIDTH(FT)	10
MAXIMUM HEIGHT(FT)	35
FREE BOARD(FT)	9
SIDE SLOPE, U/S	1 : 3
SIDE SLOPE, D/S	1 : 2
SPILL	
LOCATION	RB
TYPE	CO
LENGTH(FT)	540
CREST LEVEL (FT.ABOVE MSL)	78
HFL(FT. ABOVE MSL)	83
D/S TAIL CHANNEL GRADIENT	1:1000
NO. AND TYPE OF GATE	3 RADIAL GATES (15'X 8')
SLUICE	
LOCATION	LB
TYPE	BOX TYPE
SIZE OF OPENING	3.5' X 3'
SILL LEVEL (FT.ABOVE MSL)	57
AFFLUX (FT)	5
HEAD OF WATER(FT)	21
LENGTH OF BARRELS (FT)	115
NO. OF BARRELS	1
MAXIMUM DISCHARGE	104.61
COMMAND AREA (ACRES)	2,406
CANALS	LB
LENGTH OF MAIN CANAL(FT)	2,200
LENGTH OF BRANCH CANAL(FT)	46,660
LENGTH OF FEEDER CANAL(FT)	174,780
LENGTH OF DISTRIBUTION CANAL(FT)	27,890
	GI
IRRIGABLE AREA (ACRES)	2,406
ROAD	TARRED, GRAVEL, CART TRACT
ACCESS ROAD (FT)	29,400

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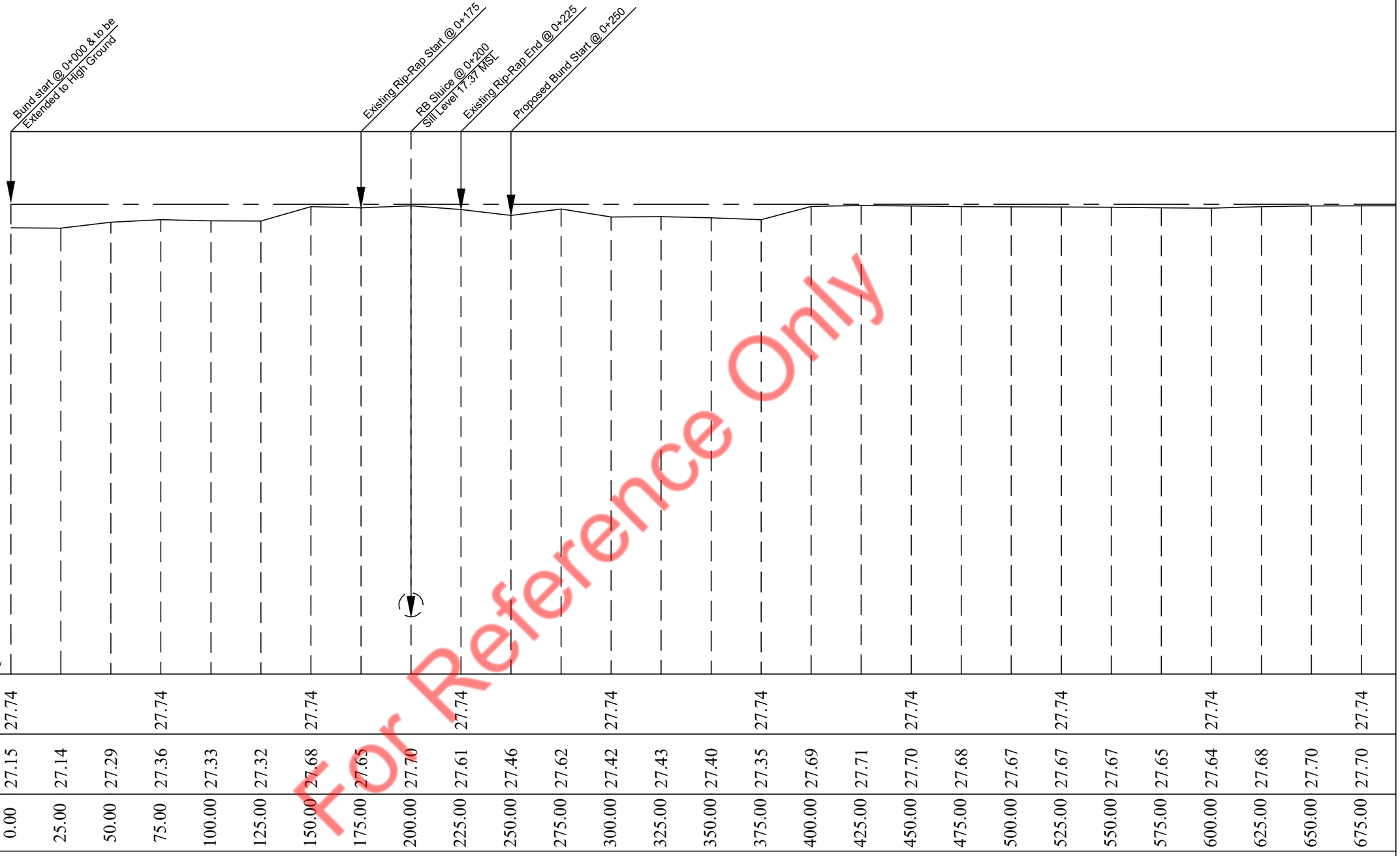

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THANNIMURIPPU TANK BUND LONGITUDINAL SECTION

Scale :- V - 1:100
H - 1:2000

Bund Design Level	————————
Bund Existing Level	————————

PROJECT :- INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)	**IMPLEMENT AGENCY :-** MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT	**PROJECT TITLE :-** REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE	AT IE's Office	AT DDI's Office
	EXECUTIVE AGENCY :- IRRIGATION DEPARTMENT NORTHERN PROVINCE	**WORK DETAILS & LOCATION :-** BUND LS (-0+000 - 0+675)	Surveyed & Drawn By:- ..... T.Pratheep,T.O	Drawn Checked BY:- ..... K.Vithusan,D'man
FUND BY:- WORLD BANK	**SCHEME :-** THANNIMURIPPU TANK	**DRAWING NO :-** IWWRMP/2025/MUL/MIK/THANNI/BUND/LS/01	Drawn Checked By:- ..... T.Pavulraj, D'Man	Reviewed By:- .....
		SHEET NO :- 01 of 75 **SCALE :-** 1:100 **DATE :-** 10.01.2025	Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE	Approved By:- ..... Eng.S.Vihirthan,DDI

Distance in m	Existing Levels	Design Levels
675.00	27.70	27.74
700.00	27.70	
725.00	27.72	
750.00	27.73	27.74
775.00	27.72	
800.00	27.67	
825.00	27.68	27.74
850.00	27.48	
875.00	27.62	
895.00	27.59	27.74
925.00	27.60	
950.00	27.64	
975.00	27.73	27.74
1000.00	27.72	
1025.00	27.70	
1050.00	27.72	27.74
1075.00	27.56	
1100.00	27.56	
1125.00	27.65	27.74
1195.00	27.70	27.74
1200.00	27.68	
1225.00	27.70	
1250.00	27.84	
1275.00	27.80	27.74
1300.00	27.78	
1325.00	27.78	
1350.00	27.78	27.74

For Reference Only

THANNIMURIPPU TANK BUND LONGITUDINAL SECTION

Scale :- V - 1:100
H - 1:2000

Bund Design Level	————————
Bund Existing Level	————————

PROJECT :-
INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)

IMPLEMENT AGENCY :-
MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT

EXECUTIVE AGENCY :-
IRRIGATION DEPARTMENT NORTHERN PROVINCE

FUND BY:-
WORLD BANK

SCHEME :-
THANNIMURIPPU TANK

PROJECT TITLE :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**

WORK DETAILS & LOCATION :-
BUND LS (-0+675 - 1+350)

DRAWING NO :- IWWRMP/2025/MUL/MIK/THANNI/BUND/LS/01

SHEET NO :- 02 of 75 | **SCALE :-** 1:100 | **DATE :-** 10.01.2025

AT IE's Office	AT DDI's Office
Surveyed & Drawn By:- ..... T.Pratheep,T.O	Drawn Checked BY:- ..... K.Vithusan,D'man
Drawn Checked By:- ..... T.Pavulraj, D'Man	Reviewed By:- .....
Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE	Approved By:- ..... Eng.S.Vihirthan,DDI

Datum 16.00 MSL																															
Design Levels	27.74			27.74			27.74			27.74			27.74			27.74			27.74			27.74			27.74			27.74			27.74
Existing Levels	27.78	27.79	27.75	27.63	27.63	27.52	27.56	27.57	27.59	27.65	27.65	27.55	27.54	27.63	27.68	27.70	27.55	27.62	27.67	27.73	27.69	27.72	27.69	27.72	27.68	27.65	27.76	27.83			
Distance in m	1350.00	1375.00	1400.00	1425.00	1450.00	1475.00	1500.00	1525.00	1550.00	1575.00	1600.00	1625.00	1650.00	1675.00	1700.00	1725.00	1750.00	1775.00	1800.00	1825.00	1850.00	1875.00	1900.00	1925.00	1950.00	1975.00	2000.00	2025.00			

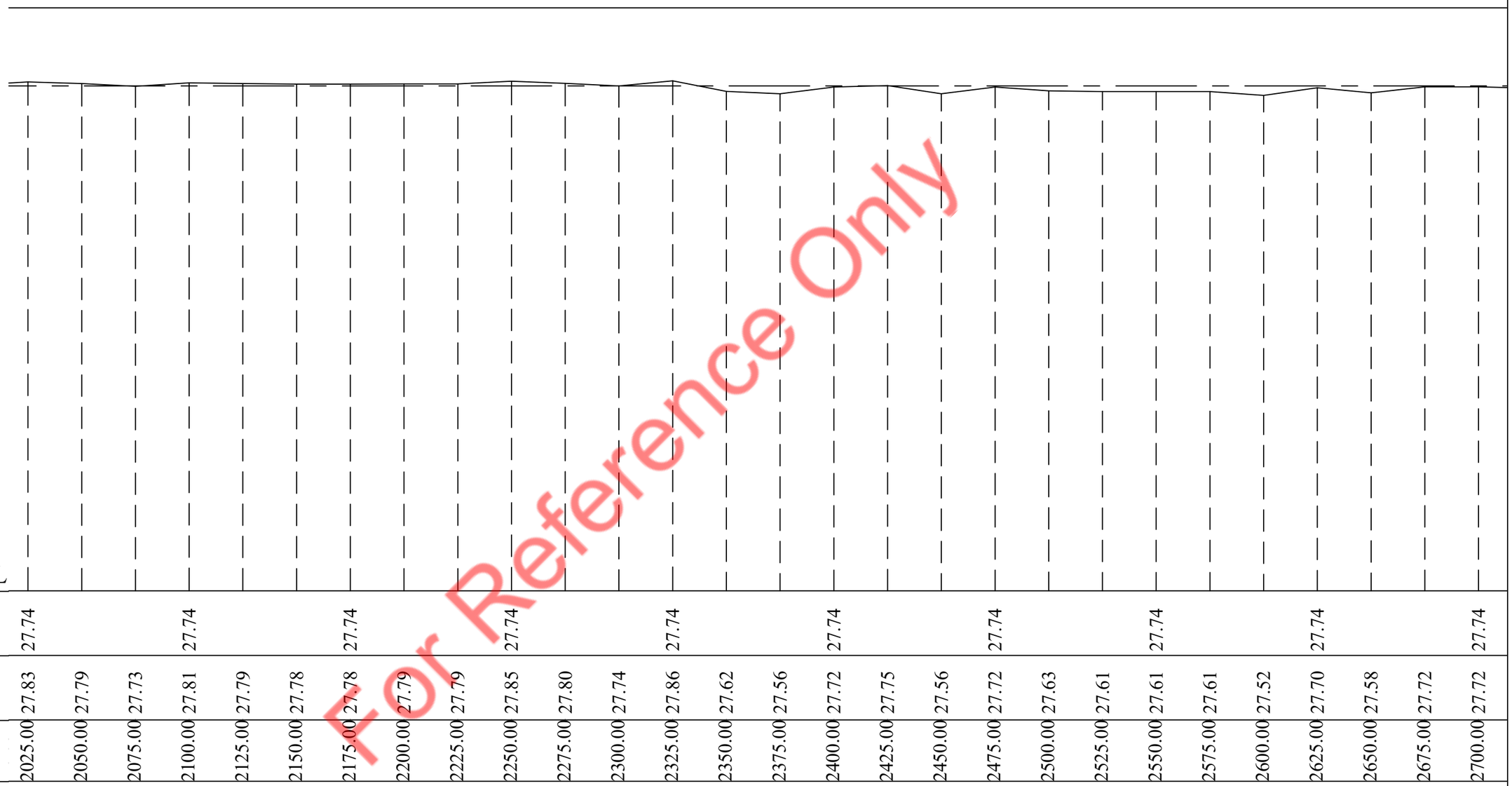
For Reference Only

THANNIMURIPPU TANK BUND LONGITUDINAL SECTION

Scale :- V - 1:100
H - 1:2000

Bund Design Level	————————
Bund Existing Level	————————

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office Surveyed & Drawn By:- T.Pratheep,T.O	AT DDI's Office Drawn Checked BY:- K.Vithusan,D'man
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- BUND LS (-1+350 - 2+025)	Drawn Checked By:- T.Pavulraj, D'Man	Reviewed By:-
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/LS/01 **SHEET NO** :- 03 of 75 | **SCALE** :- 1:100 | **DATE** :- 10.01.2025	Submitted By:- Eng.Mrs.M.Joyeskumar,IE	Approved By:- Eng.S.Vihirthan,DDI



Datum 16.00 MSL																												
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Existing Levels	27.83	27.79	27.73	27.81	27.79	27.78	27.78	27.79	27.79	27.85	27.80	27.74	27.86	27.62	27.56	27.72	27.75	27.56	27.72	27.63	27.61	27.61	27.61	27.52	27.70	27.58	27.72	27.72
Distance in m	2025.00	2050.00	2075.00	2100.00	2125.00	2150.00	2175.00	2200.00	2225.00	2250.00	2275.00	2300.00	2325.00	2350.00	2375.00	2400.00	2425.00	2450.00	2475.00	2500.00	2525.00	2550.00	2575.00	2600.00	2625.00	2650.00	2675.00	2700.00

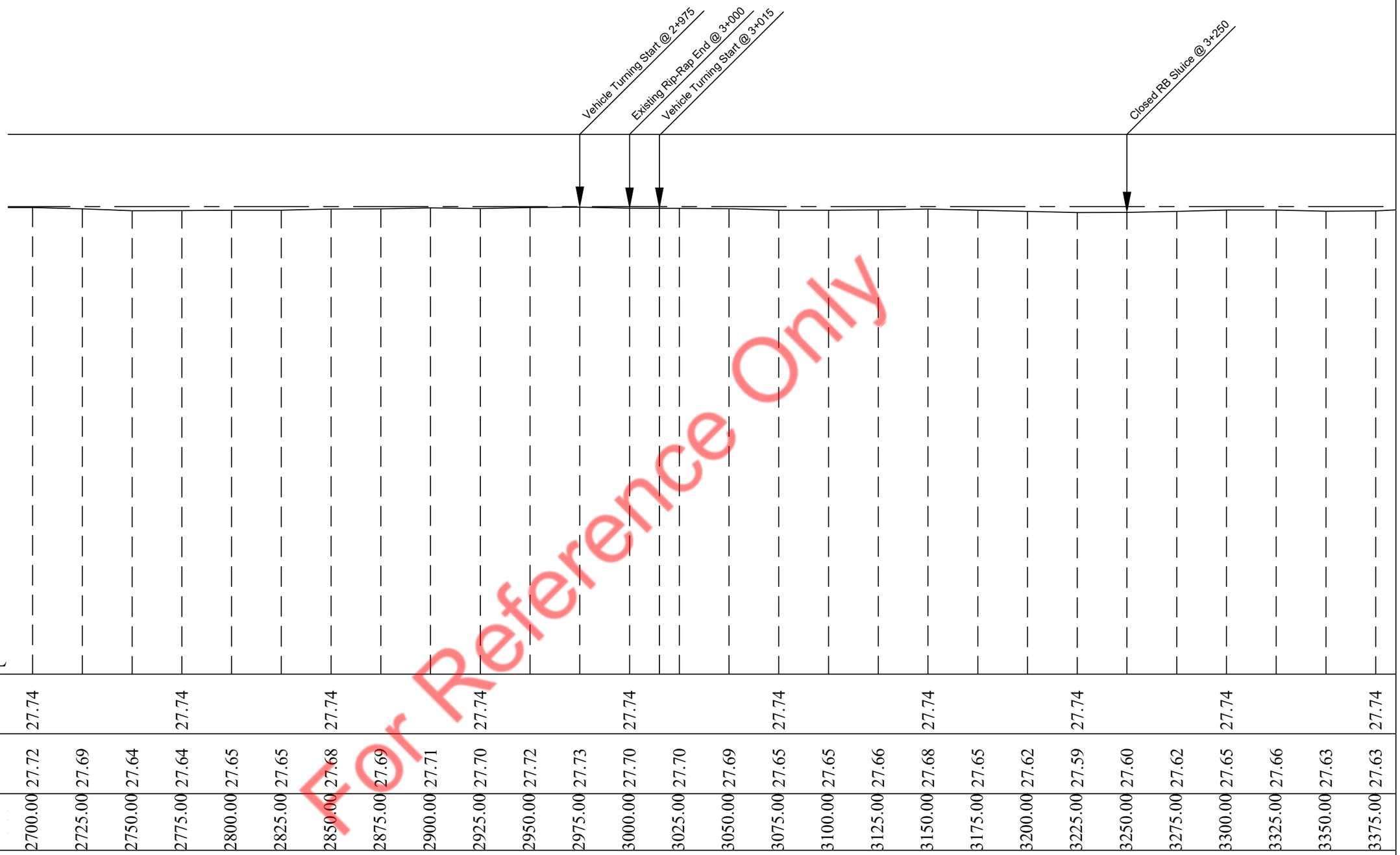
For Reference Only

THANNIMURIPPU TANK BUND LONGITUDINAL SECTION

Scale :- V - 1:100
H - 1:2000

Bund Design Level	————————
Bund Existing Level	————————

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office Surveyed & Drawn By:- T.Pratheep,T.O	AT DDI's Office Drawn Checked BY:- K.Vithusan,D'man
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- BUND LS (-2+025 - 2+700)	Drawn Checked By:- T.Pavulraj, D'Man	Reviewed By:-
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/LS/01 **SHEET NO** :- 04 of 75 · **SCALE** :- 1:100 · **DATE** :- 10.01.2025	Submitted By:- Eng.Mrs.M.Joyeskumar,IE	Approved By:- Eng.S.Vihirthan,DDI



For Reference Only

THANNIMURIPPU TANK BUND LONGITUDINAL SECTION

Scale :- V - 1:100
H - 1:2000

Bund Design Level	————————
Bund Existing Level	————————

PROJECT :-
INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)

IMPLEMENT AGENCY :-
MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT

EXECUTIVE AGENCY :-
IRRIGATION DEPARTMENT NORTHERN PROVINCE

FUND BY:-
WORLD BANK

SCHEME :-
THANNIMURIPPU TANK

PROJECT TITLE :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**

WORK DETAILS & LOCATION :-
BUND LS (-2+700 - 3+375)

DRAWING NO :- IWWRMP/2025/MUL/MIK/THANNI/BUND/LS/01

SHEET NO :- 05 of 75 | **SCALE :-** 1:100 | **DATE :-** 10.01.2025

AT IE's Office	AT DDI's Office
Surveyed & Drawn By:- ..... T.Pratheep,T.O	Drawn Checked BY:- ..... K.Vithusan,D'man
Drawn Checked By:- ..... T.Pavulraj, D'Man	Reviewed By:- .....
Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE	Approved By:- ..... Eng.S.Vihirthan,DDI

For Reference Only

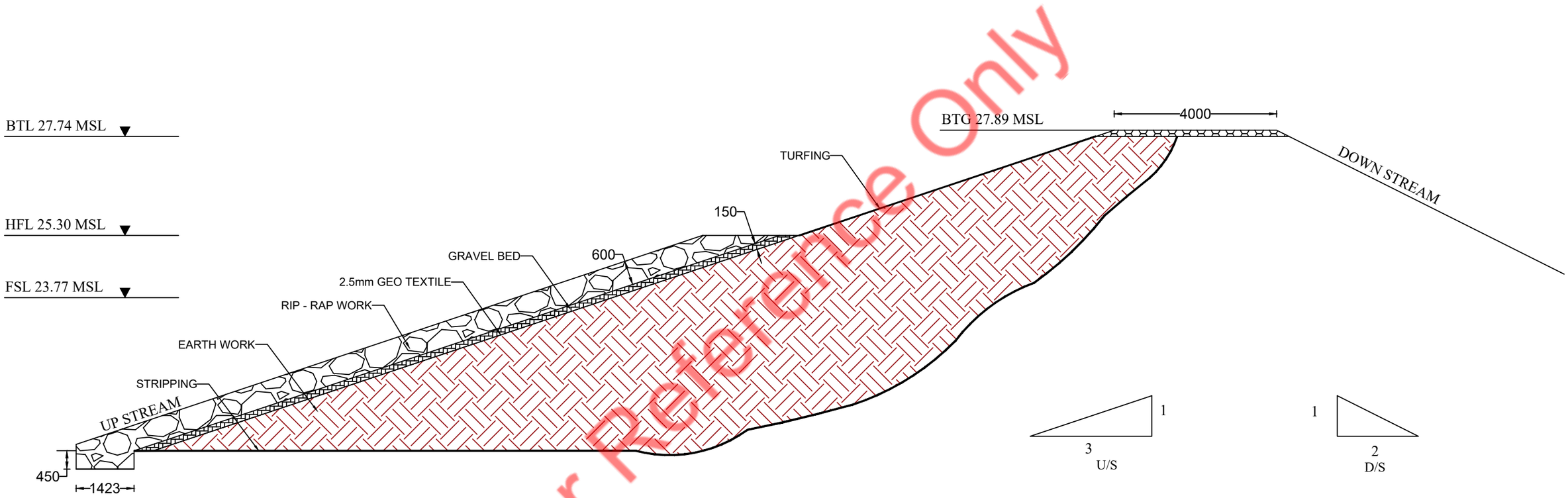
THANNIMURIPPU TANK BUND LONGITUDINAL SECTION

Scale :- V - 1:100
H - 1:2000

Bund Design Level	————————
Bund Existing Level	————————

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office Surveyed & Drawn By:- T.Pratheep,T.O	AT DDI's Office Drawn Checked BY:- K.Vithusan,D'man
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- BUND LS (-3+375 - 3+600)	Drawn Checked By:- T.Pavulraj, D'Man	Reviewed By:-
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/TYPE/01	Submitted By:- Eng.Mrs.M.Joyeskumar,IE	Approved By:- Eng.S.Vihirthan,DDI
		SHEET NO :- 06 of 75 **SCALE** :- 1:100 **DATE** :- 10.01.2025		

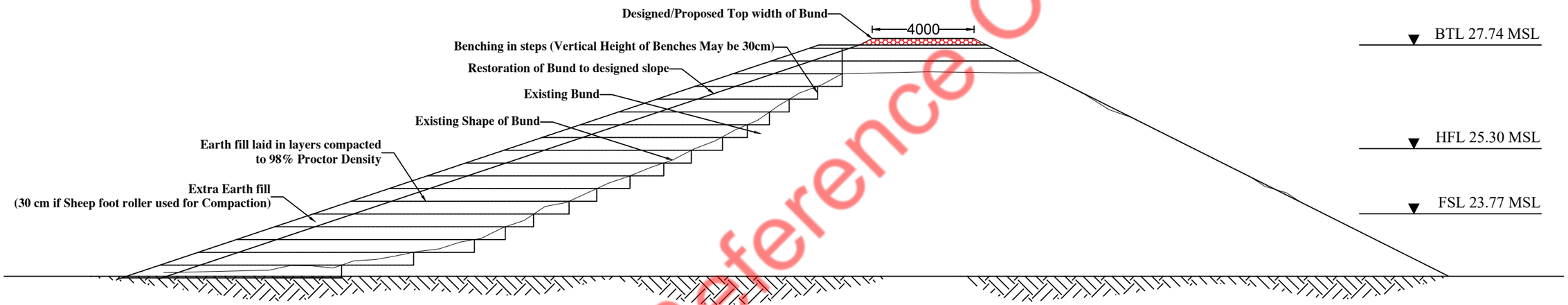
Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	



TANK BUND TYPICAL SECTION (scale 1:50)

For Reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE :-** **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**		AT IE's Office	AT DDI's Office
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION :-** BUND TYPICAL SECTION (-0+250 - 3+450)		Surveyed & Drawn By:- ..... T.Pratheep,T.O	Drawn Checked BY:- ..... K.Vithusan,D'man
				Drawn Checked By:- ..... T.Pavulraj, D'Man	Reviewed By:- .....
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO :-** IWWRMP/2025/MUL/MIK/THANNI/BUND/TYPE/01		Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE	Approved By:- ..... Eng.S.Vihirthan,DDI
		SHEET NO :- 07 of 75	**SCALE :-** 1:100	**DATE :-** 10.01.2025	



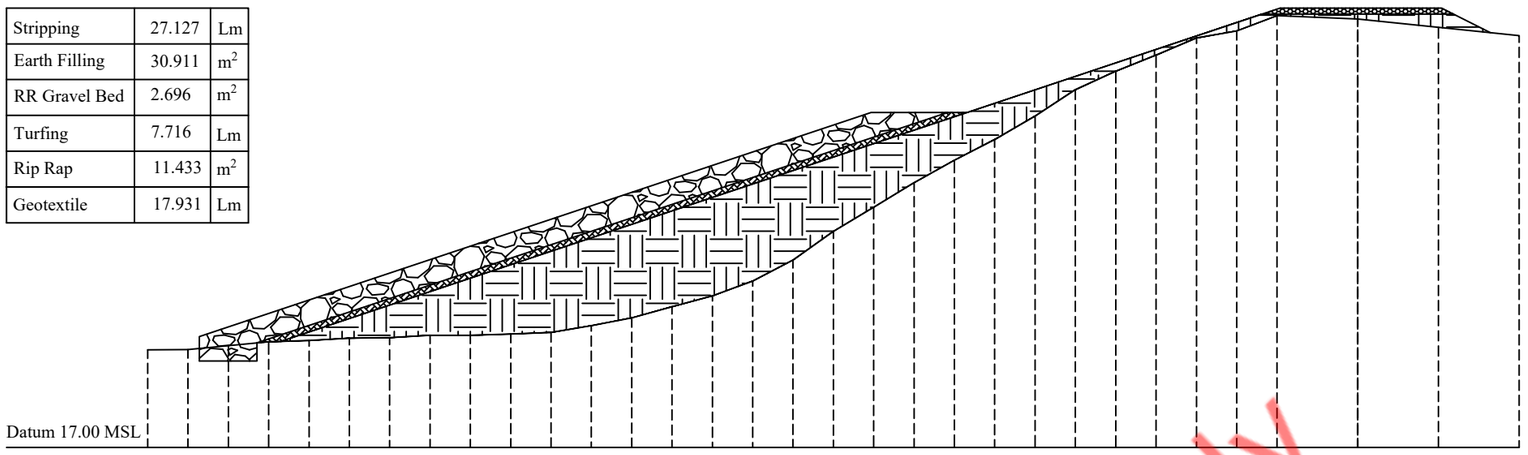
TYPICAL SECTION OF TANK BUND BENCHING

For Reference Only

PROJECT :- INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)	**IMPLEMENT AGENCY :-** MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT	**PROJECT TITLE :-** REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE	AT IE's Office	AT DDI's Office
	EXECUTIVE AGENCY :- IRRIGATION DEPARTMENT NORTHERN PROVINCE	**WORK DETAILS & LOCATION :-** TYPICAL SECTION OF TANK BUND BENCHING (-0+250 - 3+450)	Surveyed & Drawn By:- ..... T.Pratheep,T.O	Drawn Checked BY:- ..... K.Vithusan,D'man
FUND BY:- WORLD BANK	**SCHEME :-** THANNIMURIPPU TANK	**DRAWING NO :-** IWWRMP/2025/MUL/MIK/THANNI/BUND/BENCHING/TYPE/01	Drawn Checked By:- ..... T.Pavulraj, D'Man	Reviewed By:- .....
		SHEET NO :- 08 of 75 **SCALE :-** 1:100 **DATE :-** 10.01.2025	Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE	Approved By:- ..... Eng.S.Vihirthan,DDI

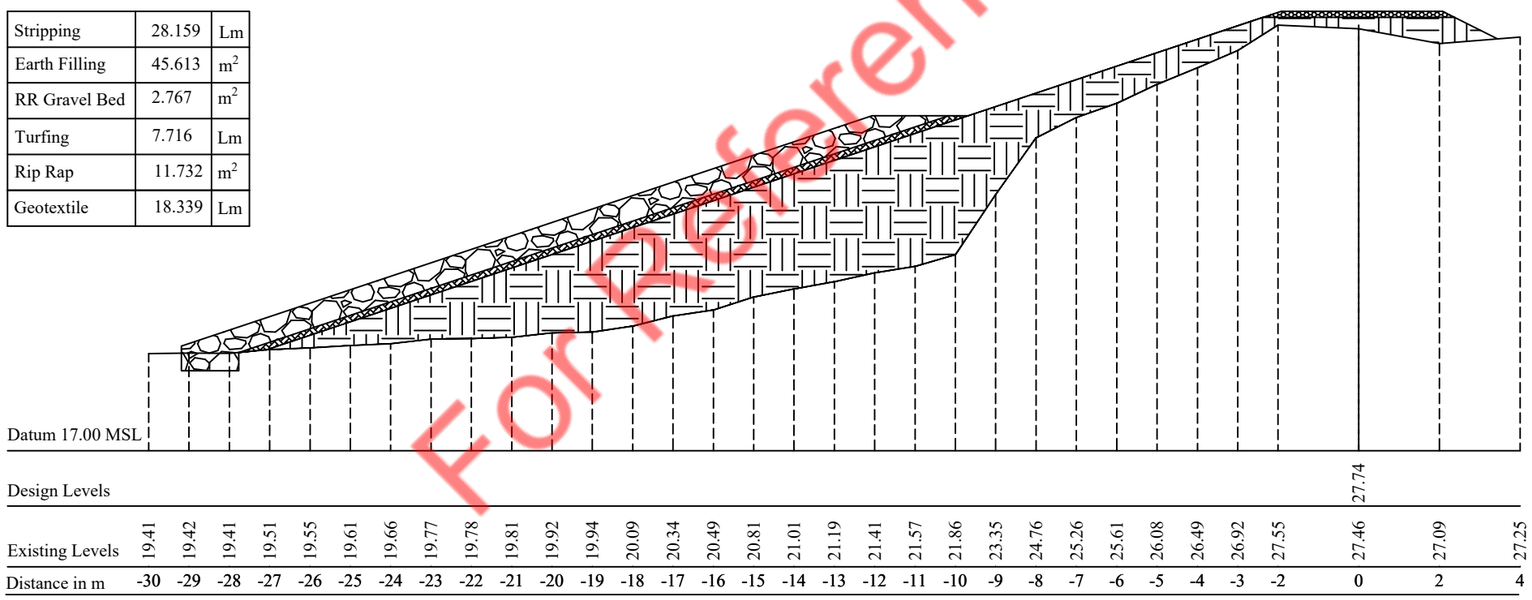
Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

Stripping	27.127	Lm
Earth Filling	30.911	m^2
RR Gravel Bed	2.696	m^2
Turfing	7.716	Lm
Rip Rap	11.433	m^2
Geotextile	17.931	Lm



CS at 275.00 m

Stripping	28.159	Lm
Earth Filling	45.613	m^2
RR Gravel Bed	2.767	m^2
Turfing	7.716	Lm
Rip Rap	11.732	m^2
Geotextile	18.339	Lm



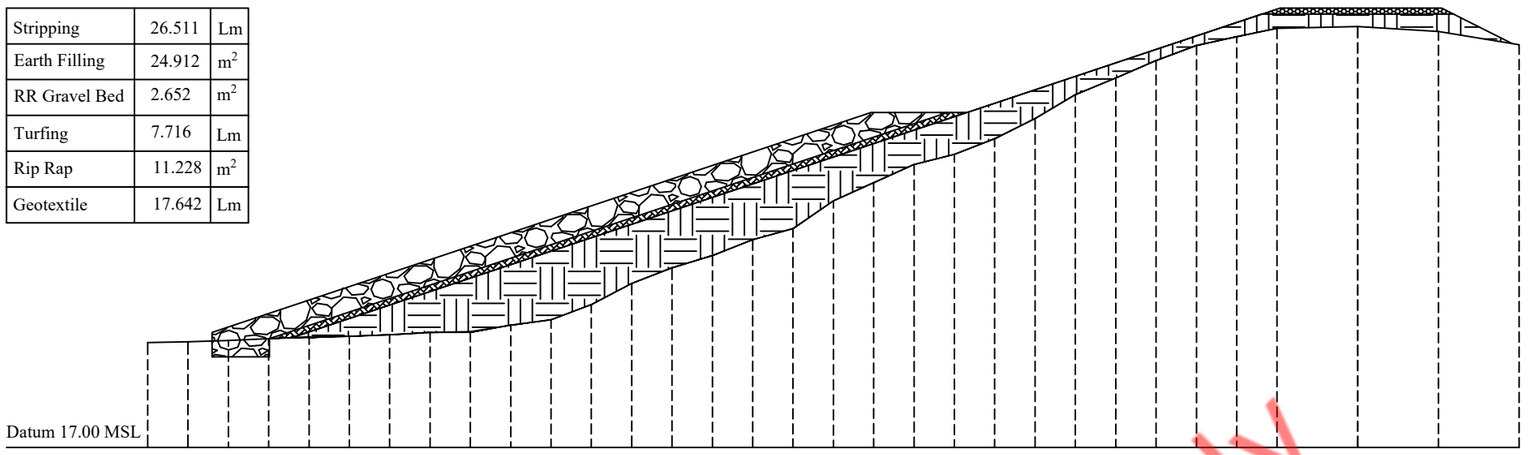
CS at 250.00 m

For Reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office / AT DDI's Office
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- **Bund CSS (0+250 - 0+275)**	Surveyed & Drawn By:- T.Pratheep,T.O / Drawn Checked BY:- K.Vithusan,D'man
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/01	Drawn Checked By:- T.Pavulraj, D'Man / Reviewed By:-
		SHEET NO :- 09 of 75 / **SCALE** :- 1:150 / **DATE** :- 10.01.2025	Submitted By:- Eng.Mrs.M.Joyeskumar,IE / Approved By:- Eng.S.Vihirthan,DDI

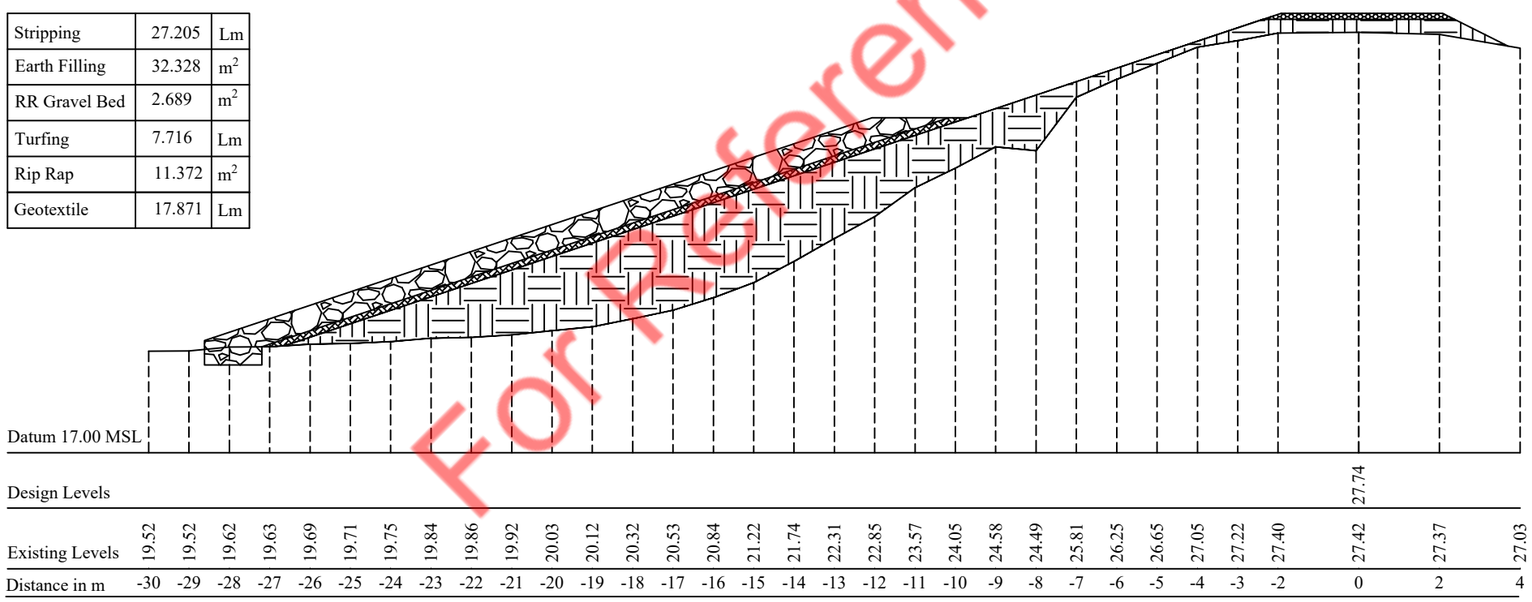
Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

Stripping	26.511	Lm
Earth Filling	24.912	m^2
RR Gravel Bed	2.652	m^2
Turfing	7.716	Lm
Rip Rap	11.228	m^2
Geotextile	17.642	Lm



CS at 325.00 m

Stripping	27.205	Lm
Earth Filling	32.328	m^2
RR Gravel Bed	2.689	m^2
Turfing	7.716	Lm
Rip Rap	11.372	m^2
Geotextile	17.871	Lm



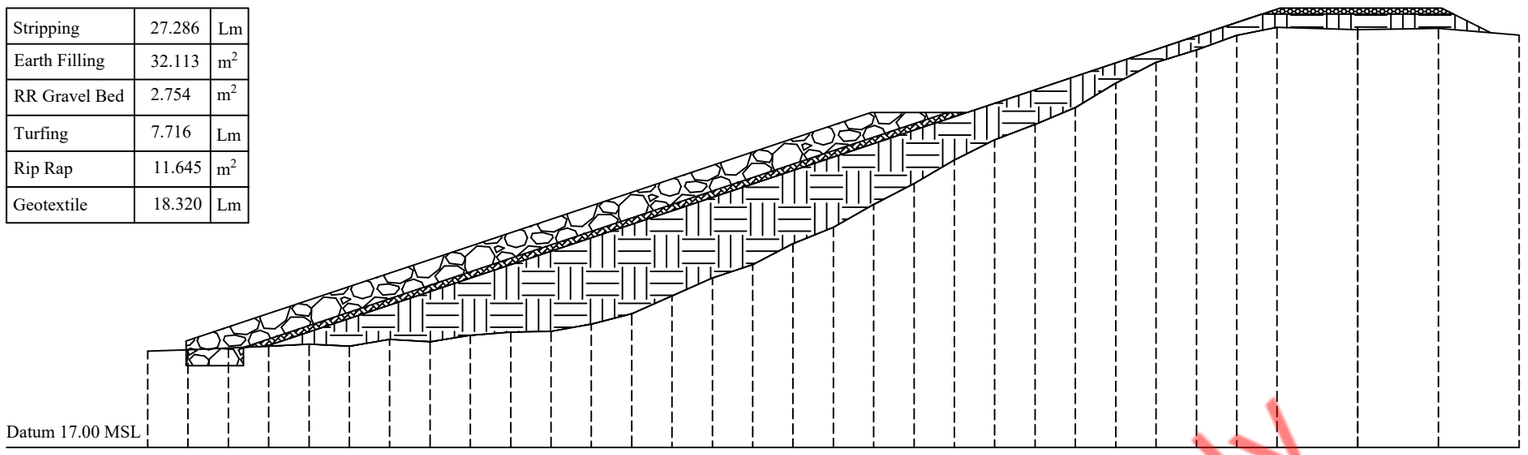
CS at 300.00 m

For Reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office: Surveyed & Drawn By:- ..... T.Pratheep,T.O AT DDI's Office: Drawn Checked BY:- ..... K.Vithusan,D'man
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- **Bund CSS (0+300 - 0+325)**	Drawn Checked By:- ..... T.Pavulraj, D'Man Reviewed By:- .....
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/02 **SHEET NO** :- 10 of 75 | **SCALE** :- 1:150 | **DATE** :- 10.01.2025	Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE Approved By:- ..... Eng.S.Vihirthan,DDI

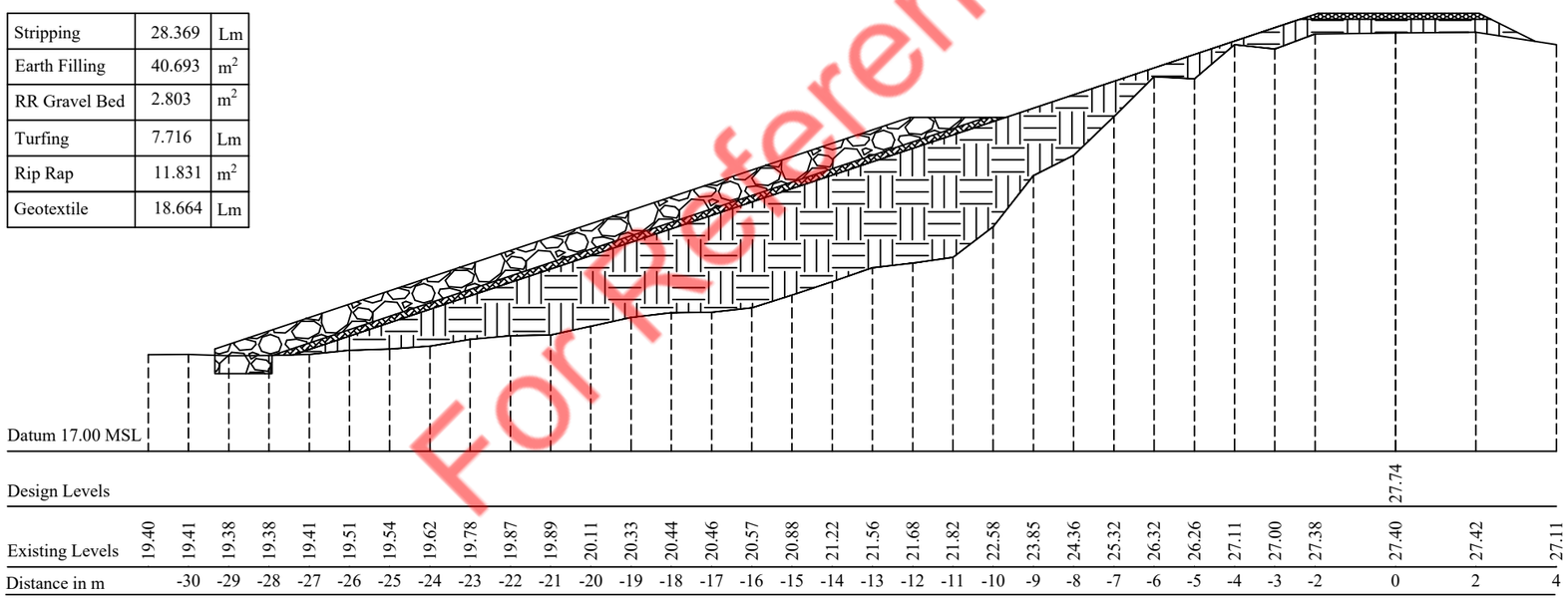
Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

Stripping	27.286	Lm
Earth Filling	32.113	m^2
RR Gravel Bed	2.754	m^2
Turfing	7.716	Lm
Rip Rap	11.645	m^2
Geotextile	18.320	Lm



CS at 375.00 m

Stripping	28.369	Lm
Earth Filling	40.693	m^2
RR Gravel Bed	2.803	m^2
Turfing	7.716	Lm
Rip Rap	11.831	m^2
Geotextile	18.664	Lm



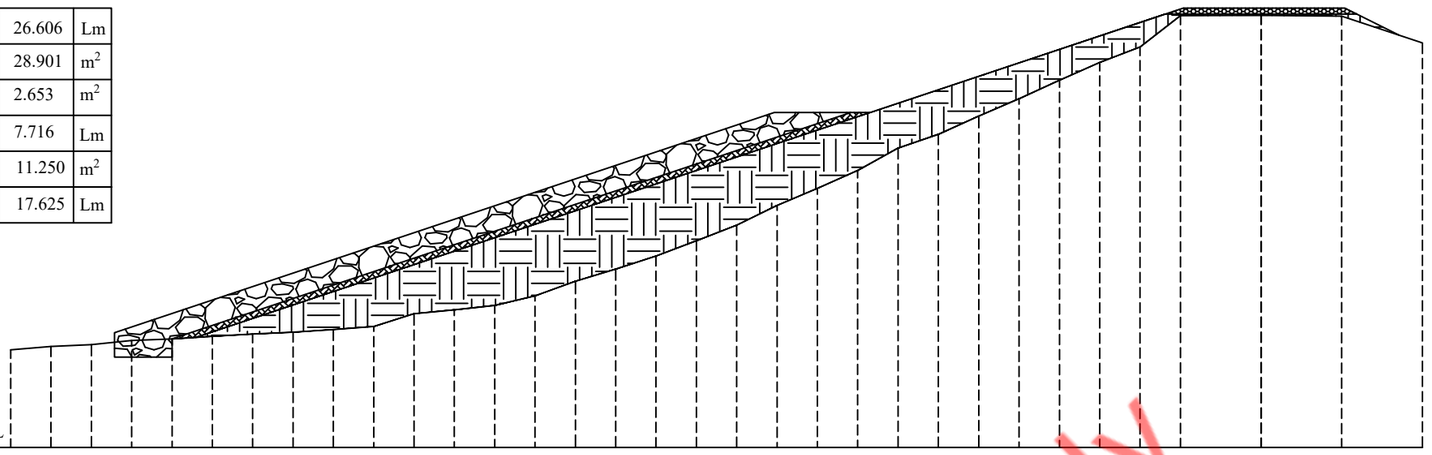
CS at 350.00 m

For Reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office: Surveyed & Drawn By:- ..... T.Pratheep,T.O / AT DDI's Office: Drawn Checked BY:- ..... K.Vithusan,D'man
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- **Bund CSS (0+350 - 0+375)**	Drawn Checked By:- ..... T.Pavulraj, D'Man / Reviewed By:- .....
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/03	Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE / Approved By:- ..... Eng.S.Vihirthan,DDI
		SHEET NO :- 11 of 75 / **SCALE** :- 1:150 / **DATE** :- 10.01.2025	

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

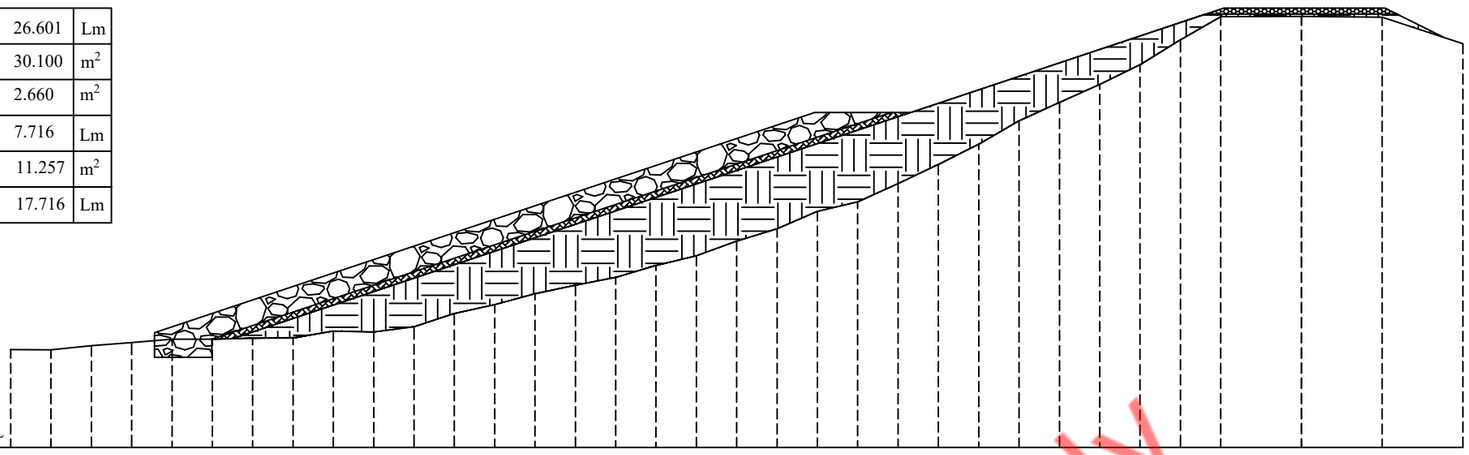
Stripping	26.606	Lm
Earth Filling	28.901	m^2
RR Gravel Bed	2.653	m^2
Turfing	7.716	Lm
Rip Rap	11.250	m^2
Geotextile	17.625	Lm



| | | |

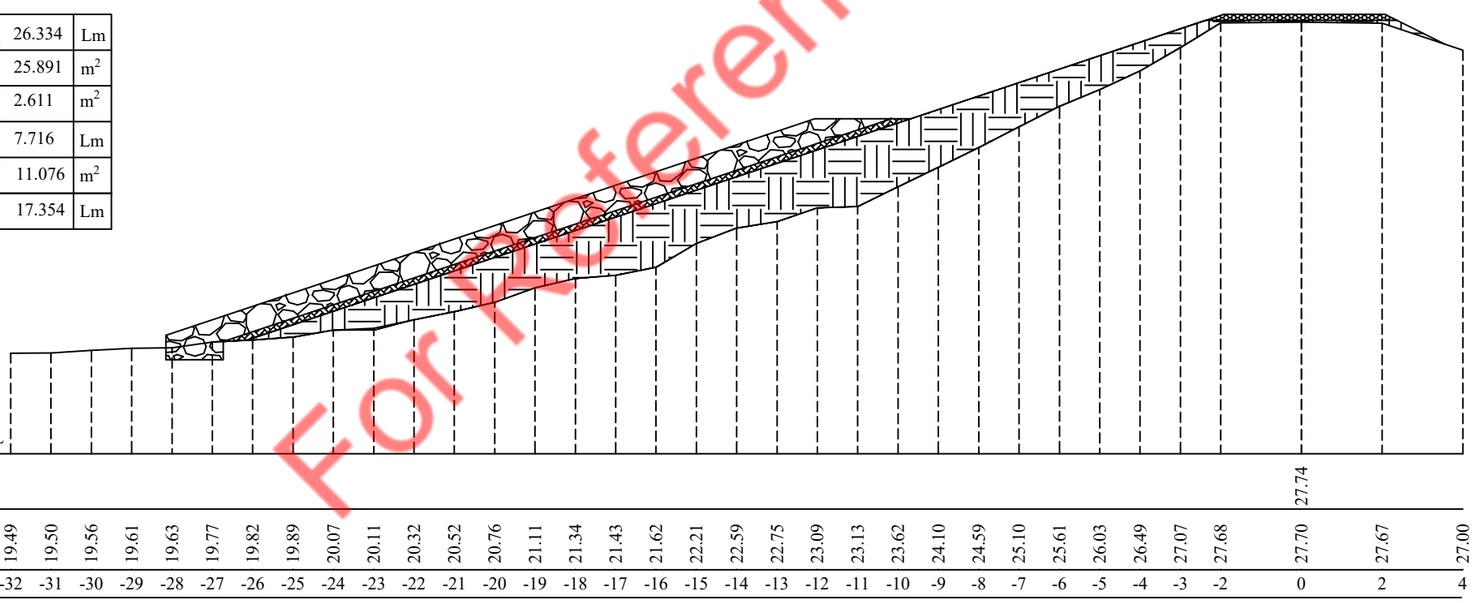
Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

Stripping	26.601	Lm
Earth Filling	30.100	m^2
RR Gravel Bed	2.660	m^2
Turfing	7.716	Lm
Rip Rap	11.257	m^2
Geotextile	17.716	Lm



CS at 475.00 m

Stripping	26.334	Lm
Earth Filling	25.891	m^2
RR Gravel Bed	2.611	m^2
Turfing	7.716	Lm
Rip Rap	11.076	m^2
Geotextile	17.354	Lm



CS at 450.00 m

For Reference Only

PROJECT :-
INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)

IMPLEMENT AGENCY :-
MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT

EXECUTIVE AGENCY :-
IRRIGATION DEPARTMENT NORTHERN PROVINCE

FUND BY:-
WORLD BANK

SCHEME :-
THANNIMURIPPU TANK

PROJECT TITLE :-
REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE

WORK DETAILS & LOCATION :-
Bund CSS (0+450 - 0+475)

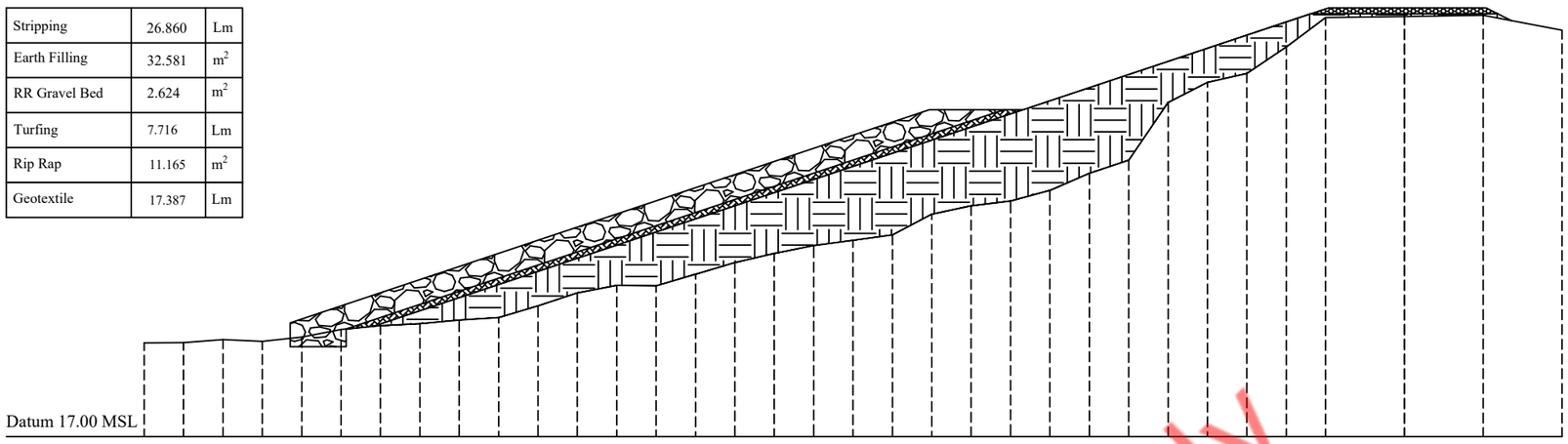
DRAWING NO :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/05

SHEET NO :- 13 of 75 | **SCALE** :- 1:150 | **DATE** :- 10.01.2025

AT IE's Office	AT DDI's Office
Surveyed & Drawn By:- ..... T.Pratheep,T.O	Drawn Checked BY:- ..... K.Vithusan,D'man
Drawn Checked By:- ..... T.Pavulraj, D'Man	Reviewed By:- .....
Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE	Approved By:- ..... Eng.S.Vihirthan,DDI

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

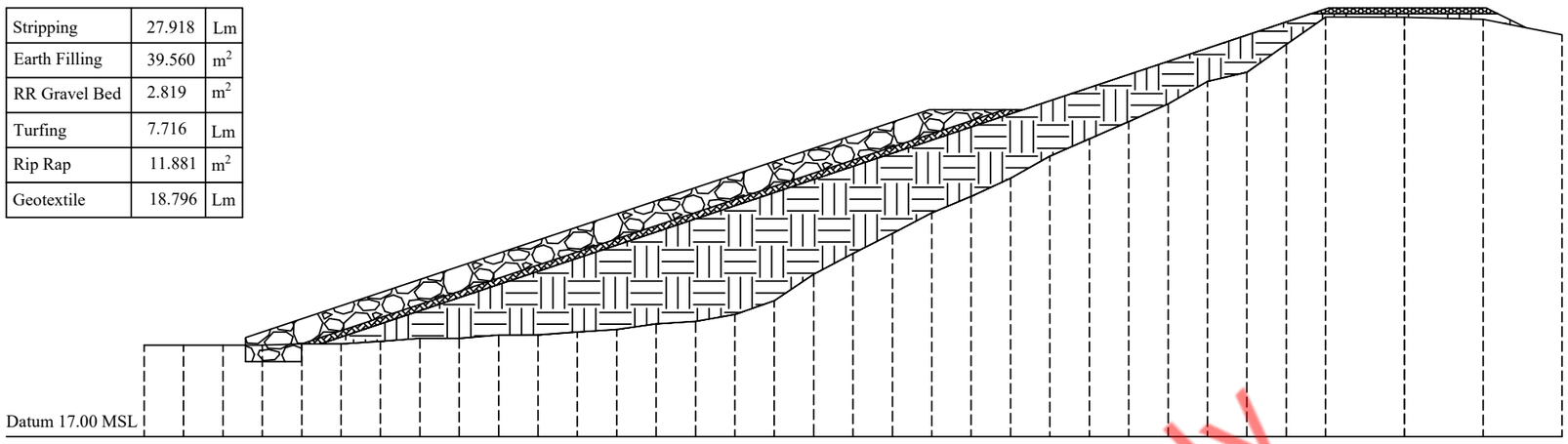
Stripping	26.860	Lm
Earth Filling	32.581	m^2
RR Gravel Bed	2.624	m^2
Turfing	7.716	Lm
Rip Rap	11.165	m^2
Geotextile	17.387	Lm



| | | |

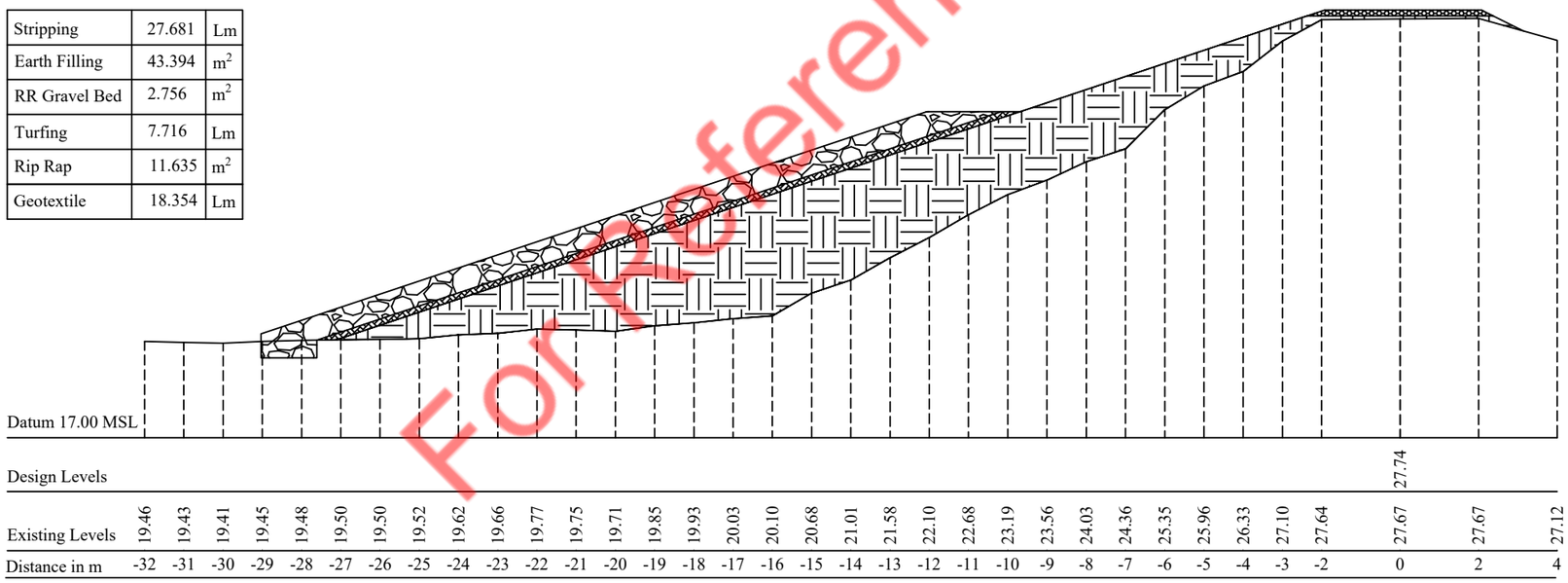
Stripping	27.918	Lm
Earth Filling	39.560	m^2
RR Gravel Bed	2.819	m^2
Turfing	7.716	Lm
Rip Rap	11.881	m^2
Geotextile	18.796	Lm

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	



CS at 575.00 m

Stripping	27.681 Lm
Earth Filling	43.394 m^2
RR Gravel Bed	2.756 m^2
Turfing	7.716 Lm
Rip Rap	11.635 m^2
Geotextile	18.354 Lm



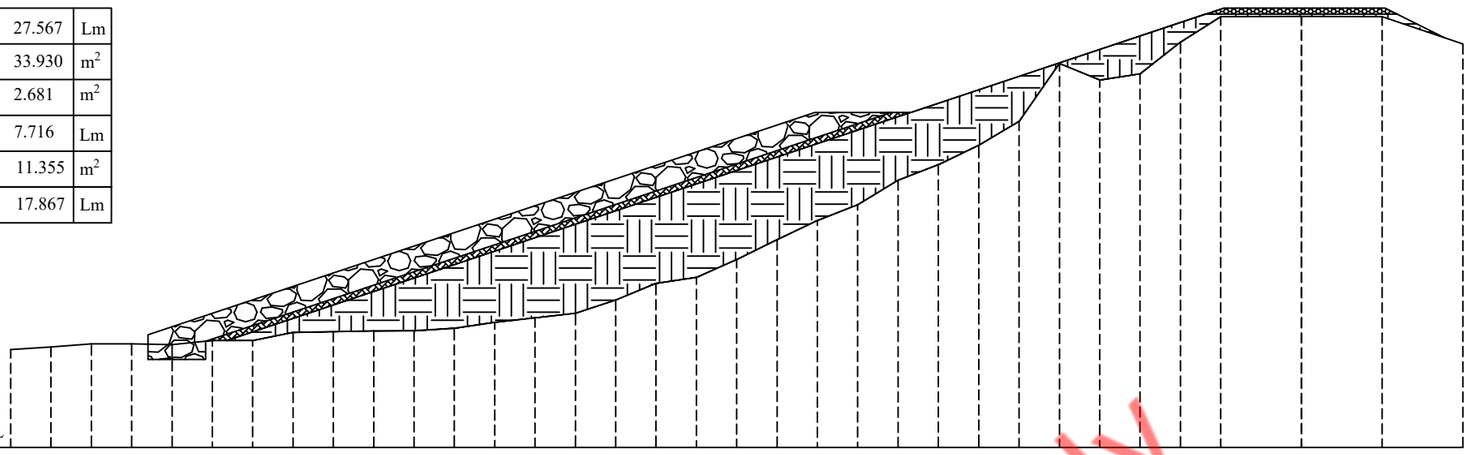
CS at 550.00 m

For Reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office: Surveyed & Drawn By:- ..... T.Pratheep,T.O / AT DDI's Office: Drawn Checked BY:- ..... K.Vithusan,D'man
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- **Bund CSS (0+550 - 0+575)**	Drawn Checked By:- ..... T.Pavulraj, D'Man / Reviewed By:- .....
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/07	Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE / Approved By:- ..... Eng.S.Vihirthan,DDI
		SHEET NO :- 15 of 75 / **SCALE** :- 1:150 / **DATE** :- 10.01.2025	

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

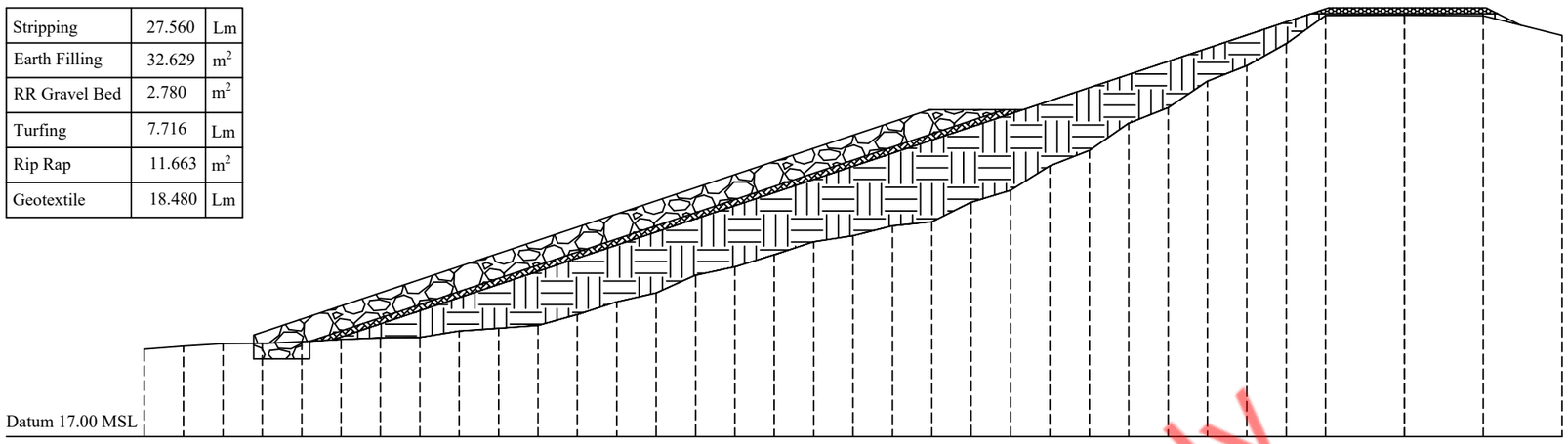
Stripping	27.567	Lm
Earth Filling	33.930	m^2
RR Gravel Bed	2.681	m^2
Turfing	7.716	Lm
Rip Rap	11.355	m^2
Geotextile	17.867	Lm



| | | |

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

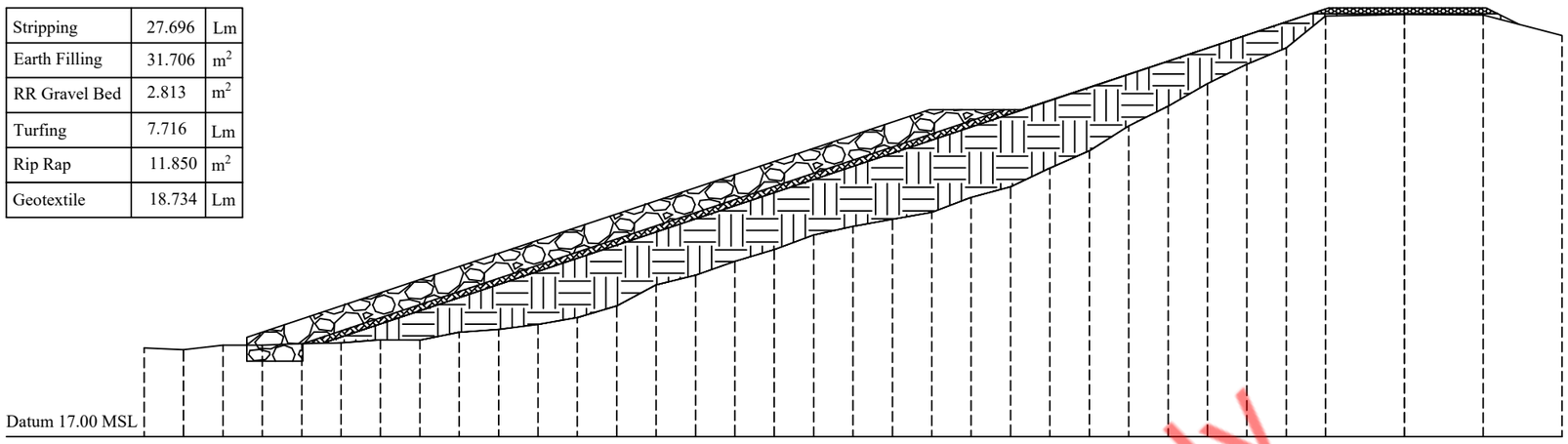
Stripping	27.560	Lm
Earth Filling	32.629	m^2
RR Gravel Bed	2.780	m^2
Turfing	7.716	Lm
Rip Rap	11.663	m^2
Geotextile	18.480	Lm



| | | |

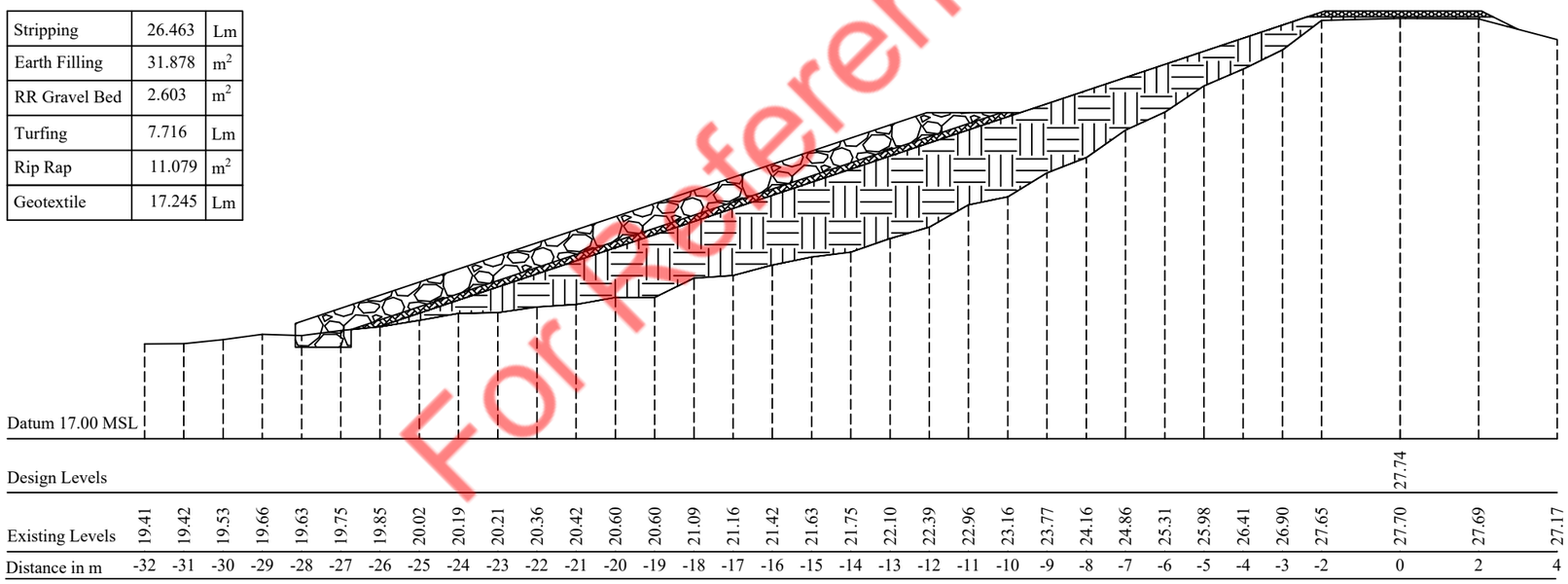
Stripping	27.696	Lm
Earth Filling	31.706	m^2
RR Gravel Bed	2.813	m^2
Turfing	7.716	Lm
Rip Rap	11.850	m^2
Geotextile	18.734	Lm

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	



CS at 725.00 m

Stripping	26.463	Lm
Earth Filling	31.878	m^2
RR Gravel Bed	2.603	m^2
Turfing	7.716	Lm
Rip Rap	11.079	m^2
Geotextile	17.245	Lm



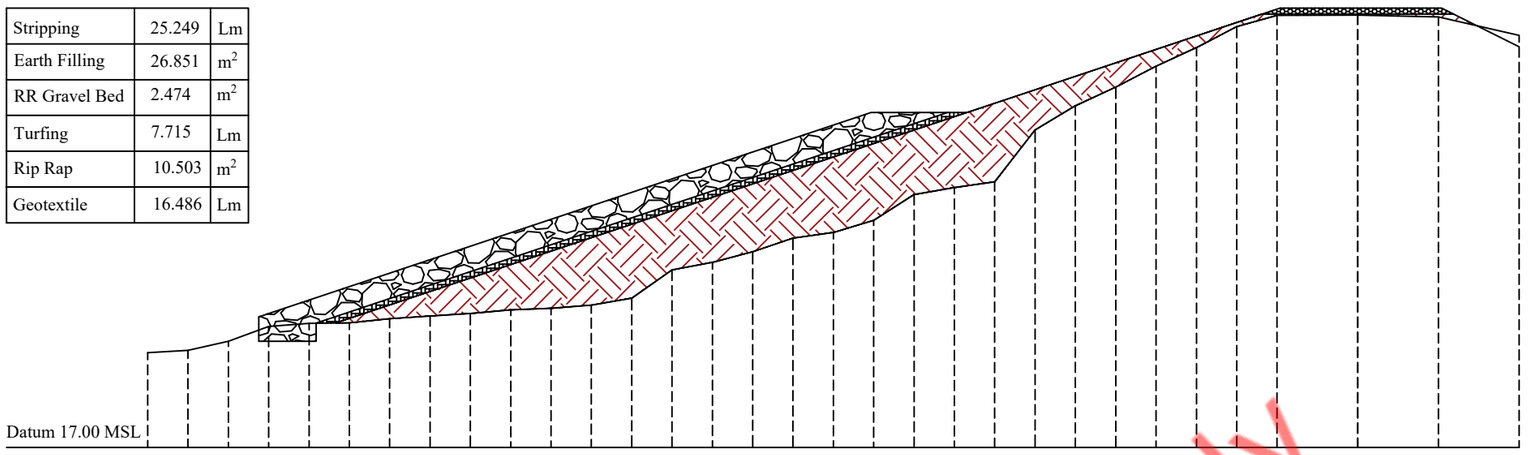
CS at 700.00 m

For Reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office: Surveyed & Drawn By:- ..... T.Pratheep,T.O / AT DDI's Office: Drawn Checked BY:- ..... K.Vithusan,D'man
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- **Bund CSS (0+700 - 0+725)**	Drawn Checked By:- ..... T.Pavulraj, D'Man / Reviewed By:- .....
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/10	Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE / Approved By:- ..... Eng.S.Vihirthan,DDI
		SHEET NO :- 18 of 75 / **SCALE** :- 1:150 / **DATE** :- 10.01.2025	

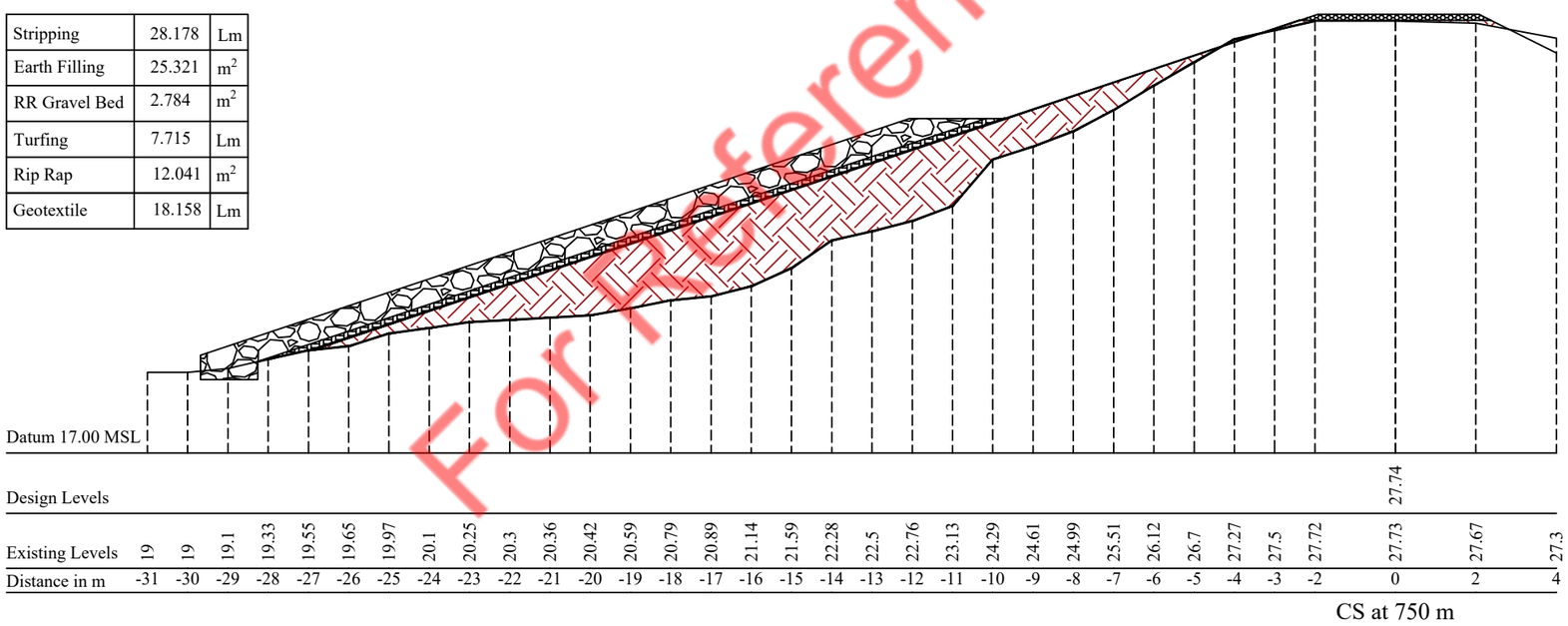
Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

Stripping	25.249	Lm
Earth Filling	26.851	m^2
RR Gravel Bed	2.474	m^2
Turfing	7.715	Lm
Rip Rap	10.503	m^2
Geotextile	16.486	Lm



CS at 775 m

Stripping	28.178	Lm
Earth Filling	25.321	m^2
RR Gravel Bed	2.784	m^2
Turfing	7.715	Lm
Rip Rap	12.041	m^2
Geotextile	18.158	Lm



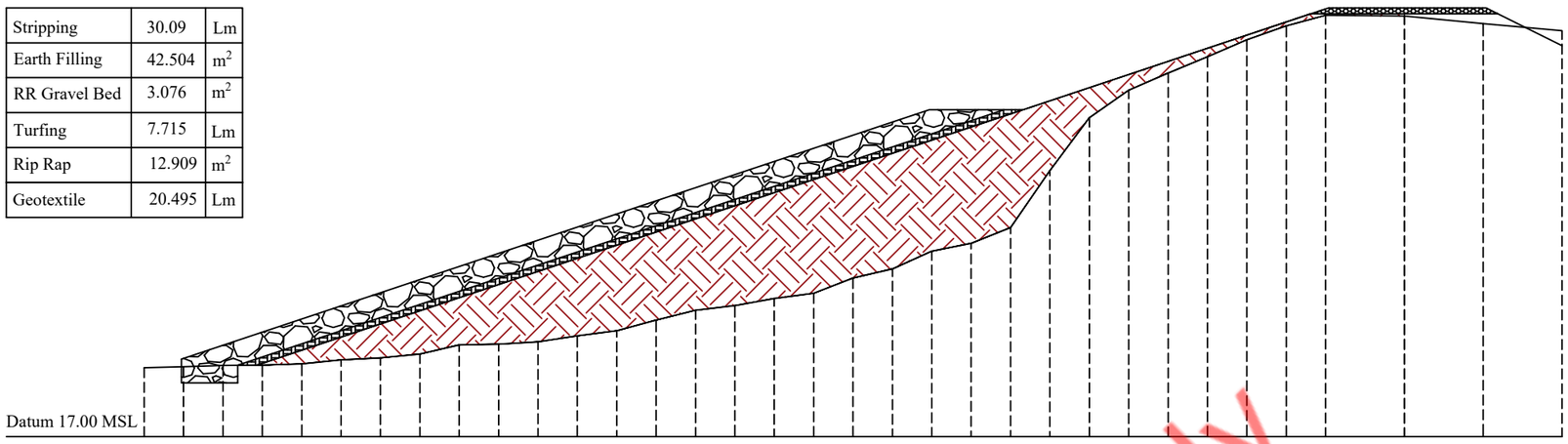
CS at 750 m

For Reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office: Surveyed & Drawn By:- ..... T.Pratheep,T.O / AT DDI's Office: Drawn Checked BY:- ..... K.Vithusan,D'man
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- **Bund CSS (0+750 - 0+775)**	Drawn Checked By:- ..... T.Pavulraj, D'Man / Reviewed By:- .....
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/11	Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE / Approved By:- ..... Eng.S.Vihirthan,DDI
		SHEET NO :- 19 of 75 / **SCALE** :- 1:150 / **DATE** :- 10.01.2025	

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

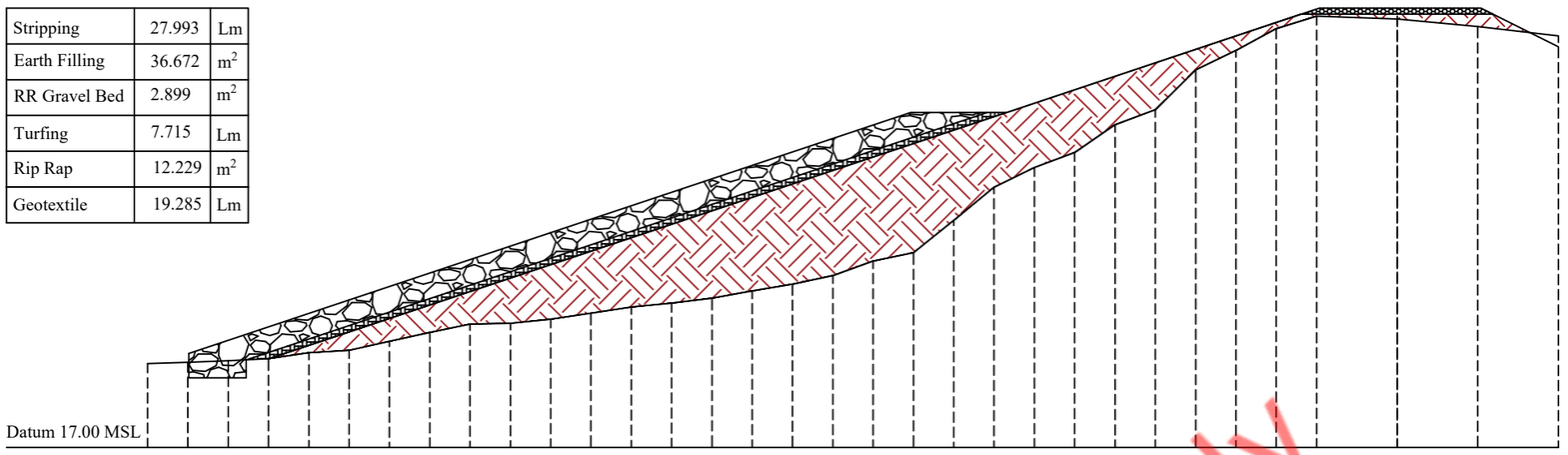
Stripping	30.09	Lm
Earth Filling	42.504	m^2
RR Gravel Bed	3.076	m^2
Turfing	7.715	Lm
Rip Rap	12.909	m^2
Geotextile	20.495	Lm



| | | |

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

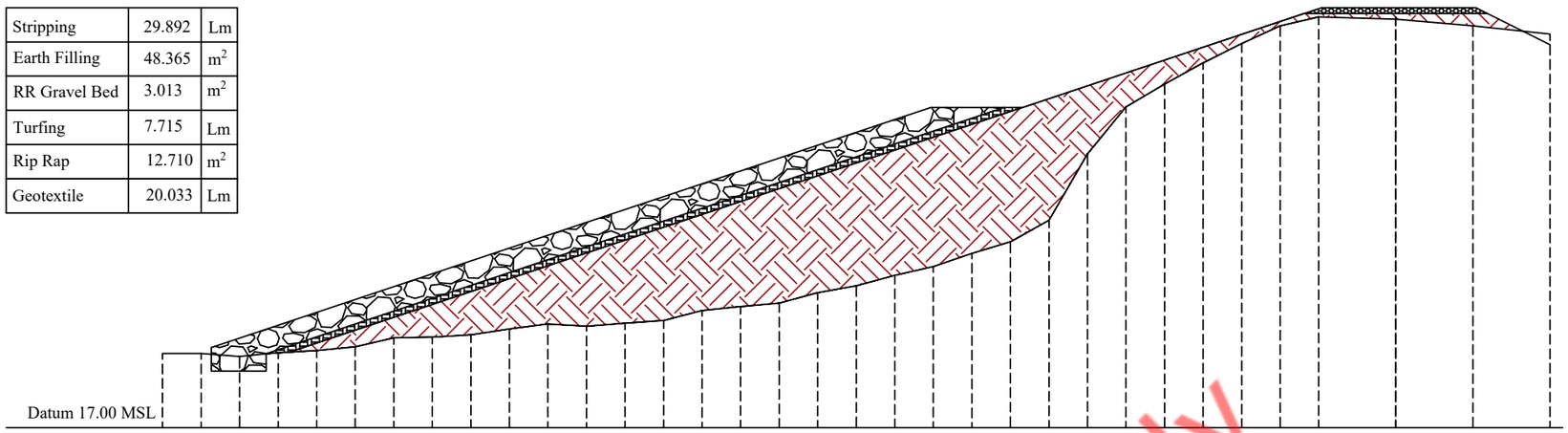
Stripping	27.993	Lm
Earth Filling	36.672	m^2
RR Gravel Bed	2.899	m^2
Turfing	7.715	Lm
Rip Rap	12.229	m^2
Geotextile	19.285	Lm



| | | |

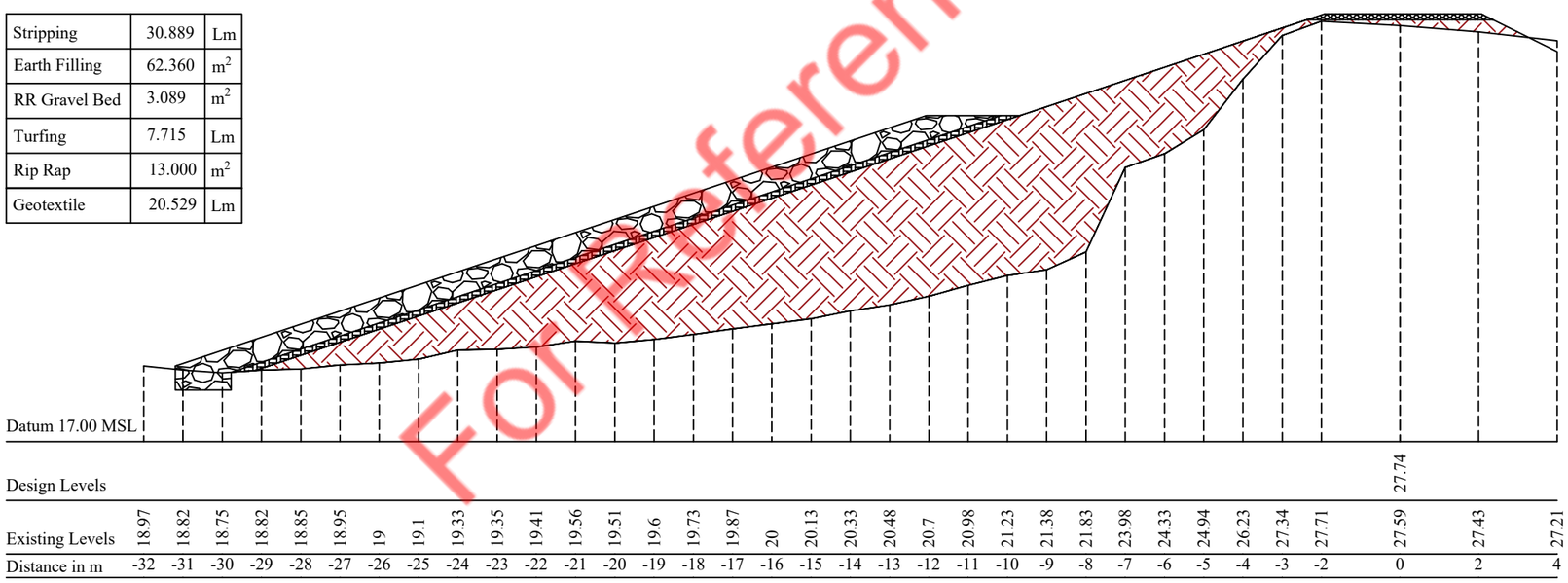
Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

Stripping	29.892	Lm
Earth Filling	48.365	m^2
RR Gravel Bed	3.013	m^2
Turfing	7.715	Lm
Rip Rap	12.710	m^2
Geotextile	20.033	Lm



CS at 925 m

Stripping	30.889	Lm
Earth Filling	62.360	m^2
RR Gravel Bed	3.089	m^2
Turfing	7.715	Lm
Rip Rap	13.000	m^2
Geotextile	20.529	Lm



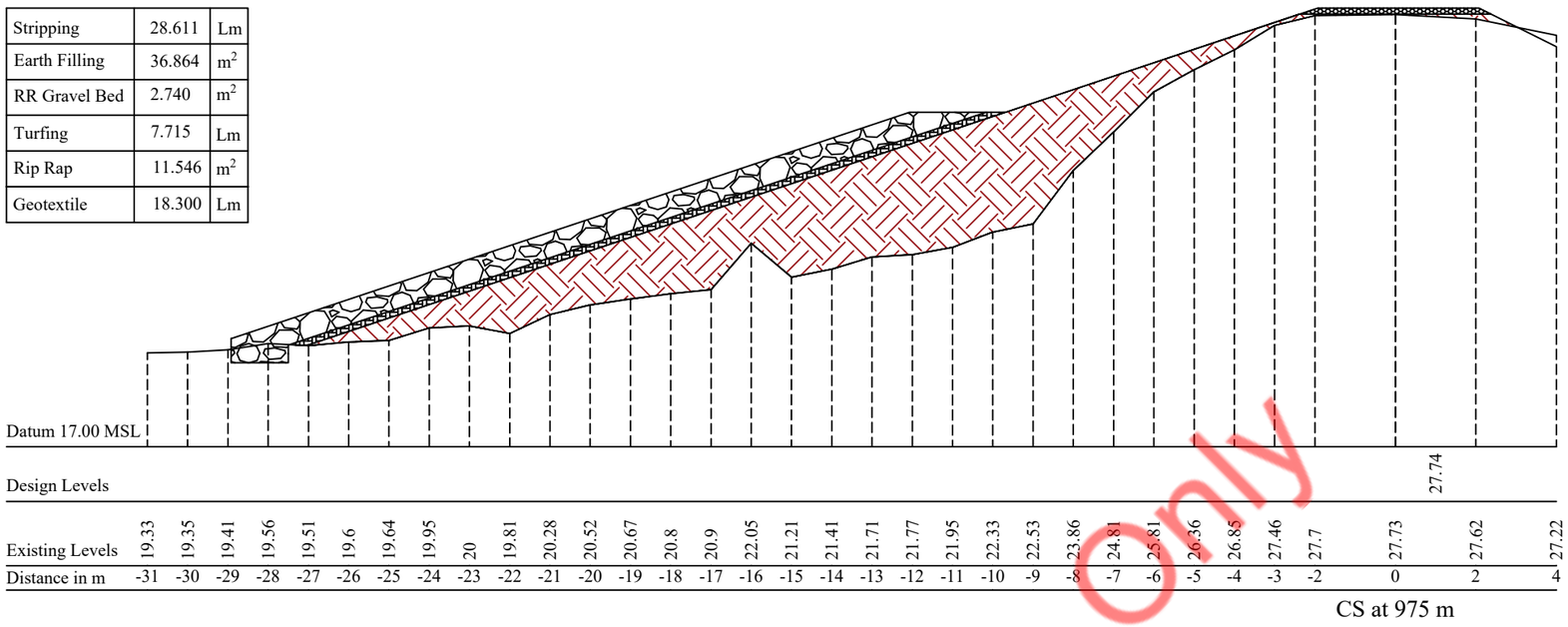
CS at 895 m

For Reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office: Surveyed & Drawn By:- ..... T.Pratheep,T.O / AT DDI's Office: Drawn Checked BY:- ..... K.Vithusan,D'man
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- **Bund CSS (0+895 - 0+925)**	Drawn Checked By:- ..... T.Pavulraj, D'Man / Reviewed By:- .....
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/14	Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE / Approved By:- ..... Eng.S.Vihirthan,DDI
		SHEET NO :- 22 of 75 / **SCALE** :- 1:150 / **DATE** :- 10.01.2025	

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

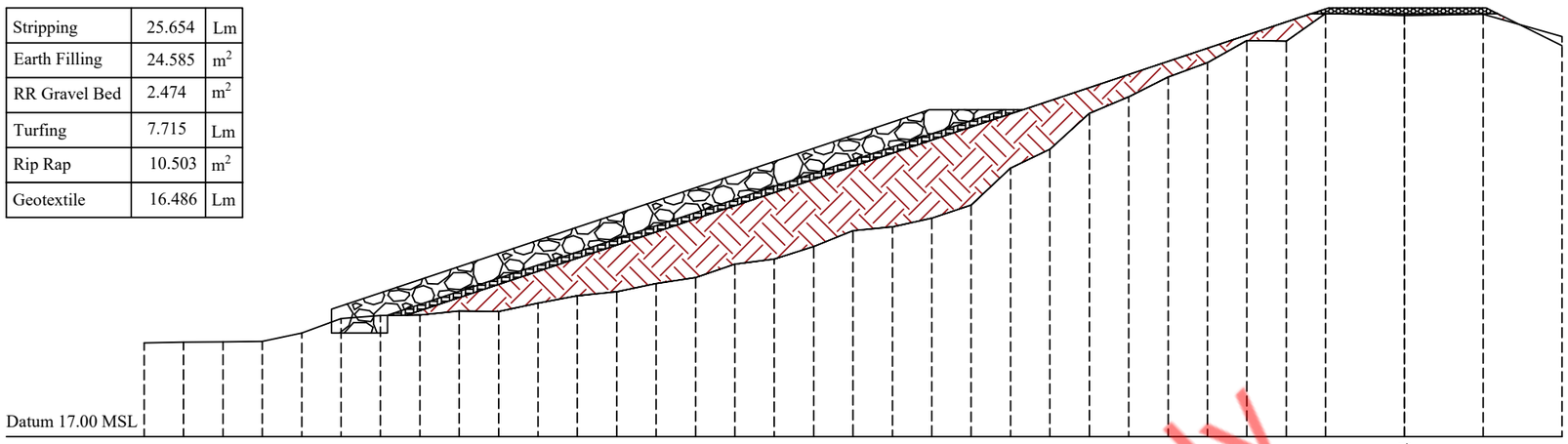
Stripping	28.611	Lm
Earth Filling	36.864	m^2
RR Gravel Bed	2.740	m^2
Turfing	7.715	Lm
Rip Rap	11.546	m^2
Geotextile	18.300	Lm



| Design Levels | | |

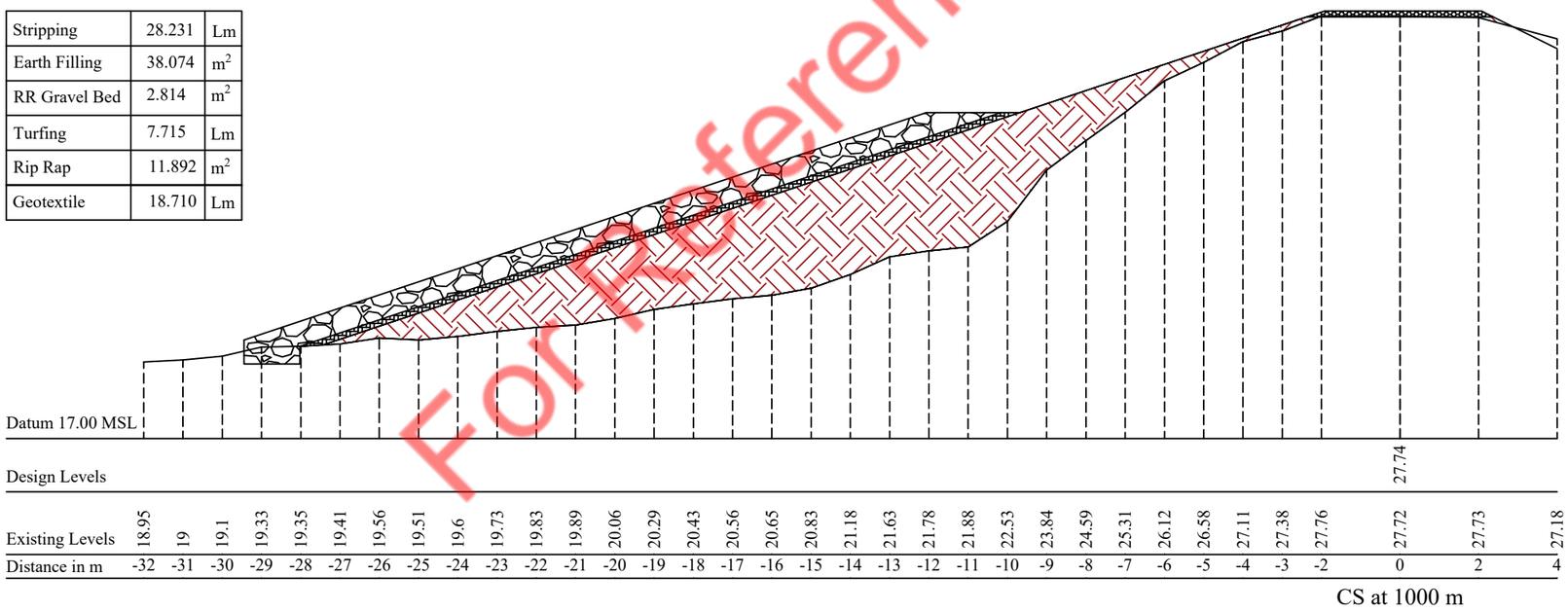
Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

Stripping	25.654	Lm
Earth Filling	24.585	m^2
RR Gravel Bed	2.474	m^2
Turfing	7.715	Lm
Rip Rap	10.503	m^2
Geotextile	16.486	Lm



CS at 1025 m

Stripping	28.231	Lm
Earth Filling	38.074	m^2
RR Gravel Bed	2.814	m^2
Turfing	7.715	Lm
Rip Rap	11.892	m^2
Geotextile	18.710	Lm



CS at 1000 m

For Reference Only

PROJECT :-
INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)

IMPLEMENT AGENCY :-
MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT

EXECUTIVE AGENCY :-
IRRIGATION DEPARTMENT NORTHERN PROVINCE

FUND BY:-
WORLD BANK

SCHEME :-
THANNIMURIPPU TANK

PROJECT TITLE :-
REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE

WORK DETAILS & LOCATION :-
Bund CSS (1+000 - 1+025)

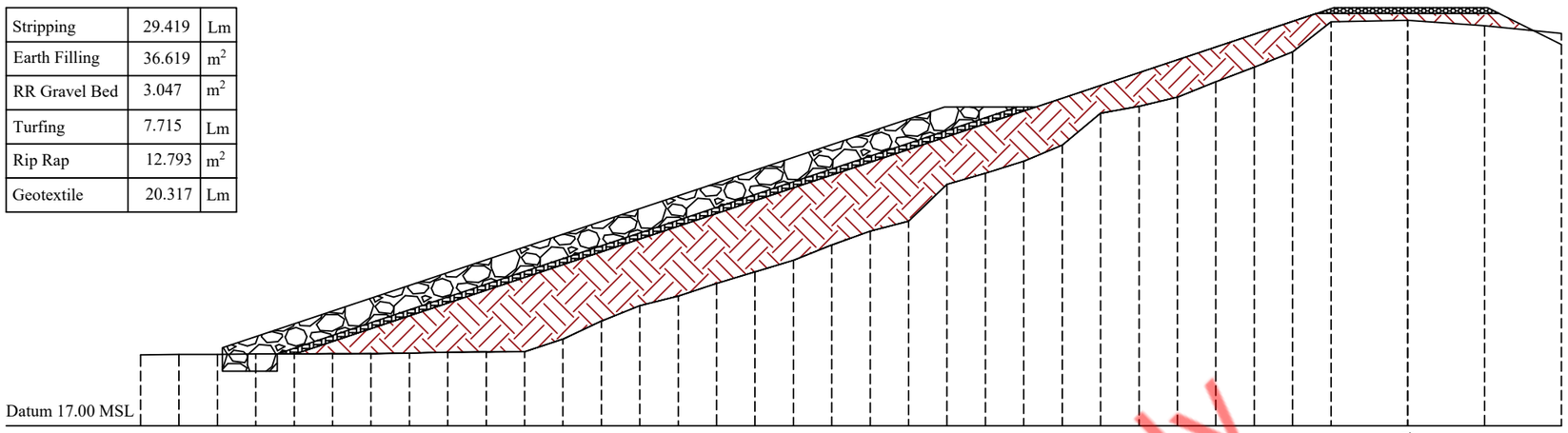
DRAWING NO :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/16

SHEET NO :- 24 of 75 | **SCALE** :- 1:150 | **DATE** :- 10.01.2025

AT IE's Office	AT DDI's Office
Surveyed & Drawn By:- ..... T.Pratheep,T.O	Drawn Checked BY:- ..... K.Vithusan,D'man
Drawn Checked By:- ..... T.Pavulraj, D'Man	Reviewed By:- .....
Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE	Approved By:- ..... Eng.S.Vihirthan,DDI

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

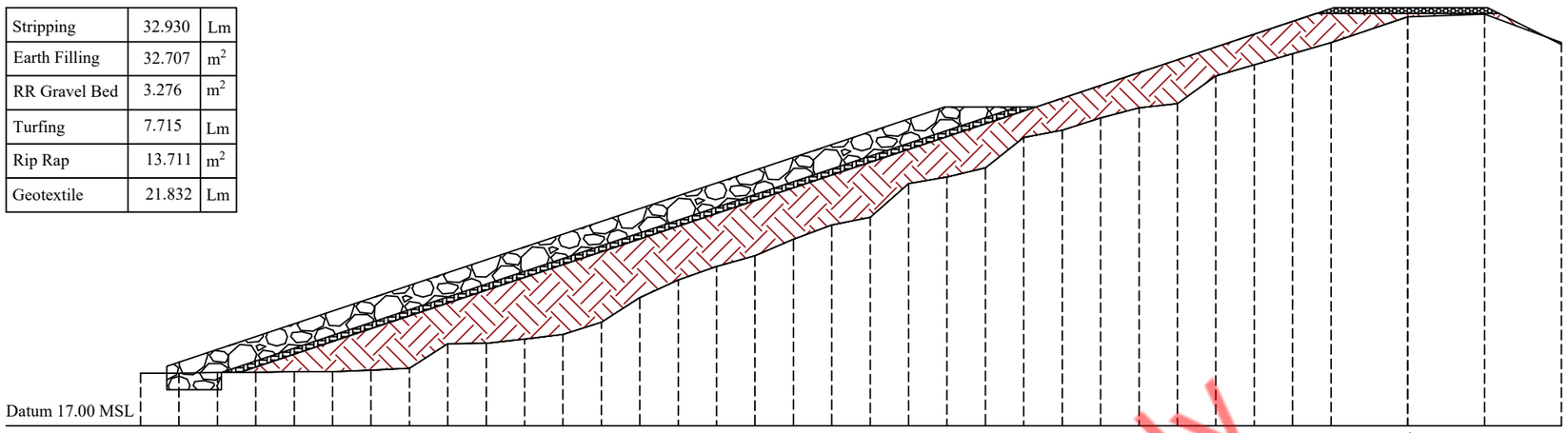
Stripping	29.419	Lm
Earth Filling	36.619	m^2
RR Gravel Bed	3.047	m^2
Turfing	7.715	Lm
Rip Rap	12.793	m^2
Geotextile	20.317	Lm



| | | |

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

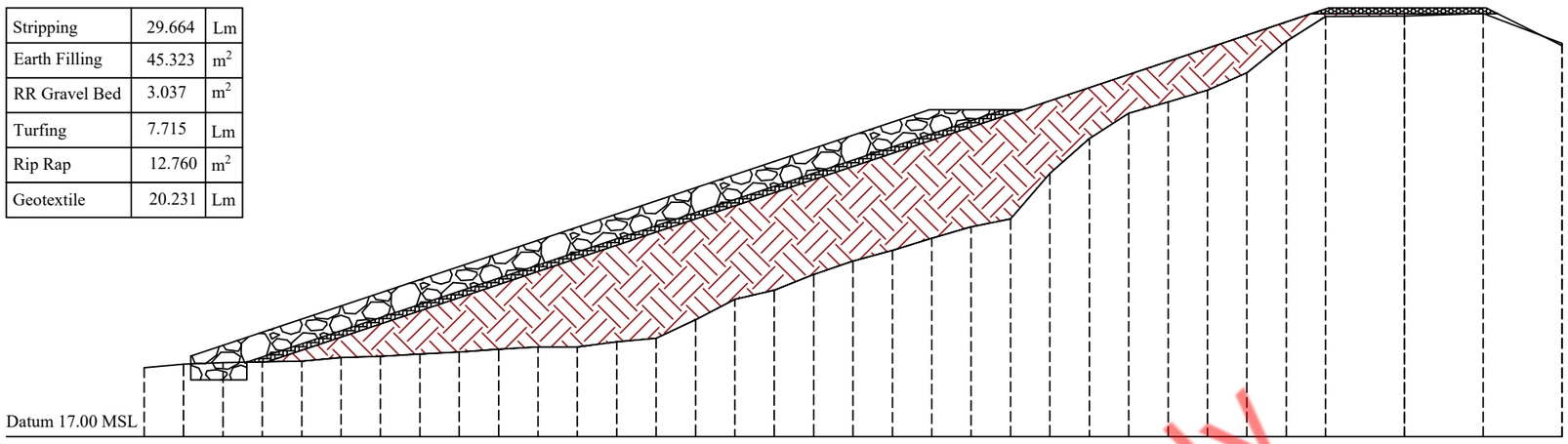
Stripping	32.930	Lm
Earth Filling	32.707	m^2
RR Gravel Bed	3.276	m^2
Turfing	7.715	Lm
Rip Rap	13.711	m^2
Geotextile	21.832	Lm



| | | |

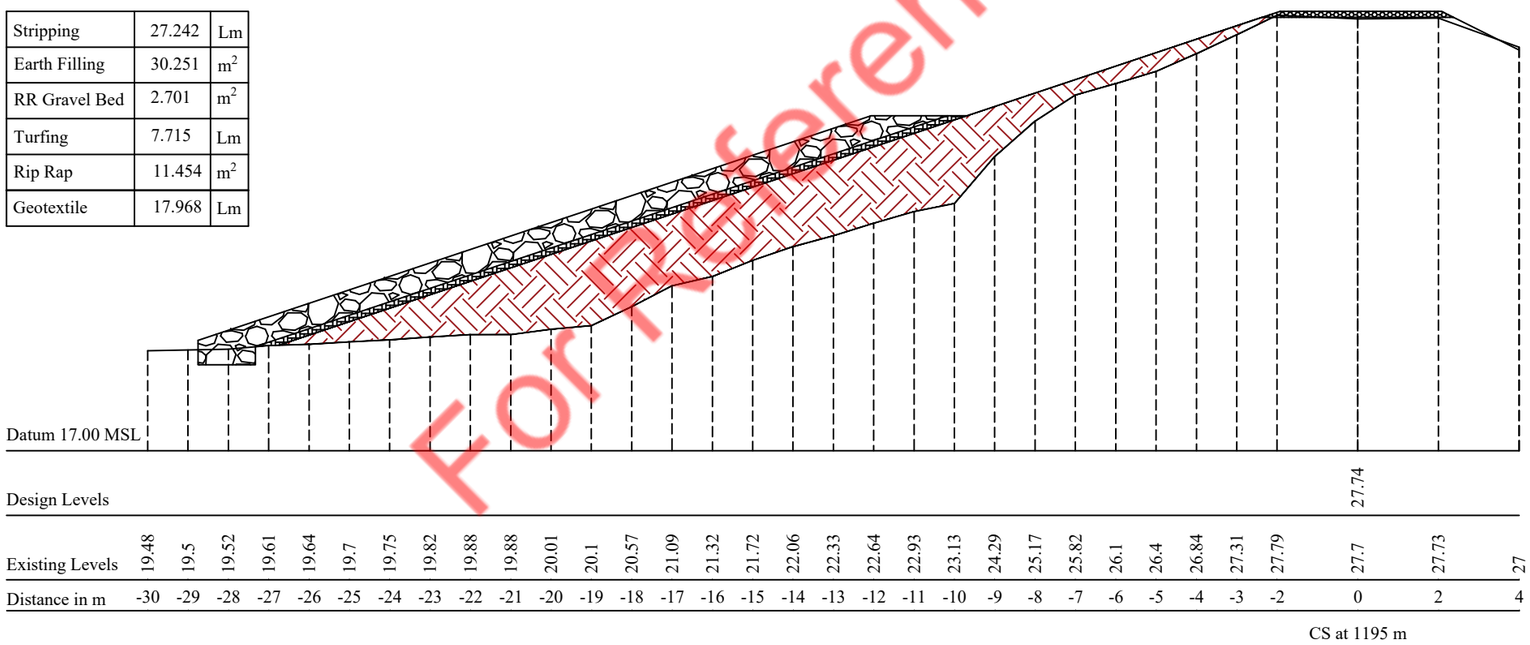
Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

Stripping	29.664	Lm
Earth Filling	45.323	m^2
RR Gravel Bed	3.037	m^2
Turfing	7.715	Lm
Rip Rap	12.760	m^2
Geotextile	20.231	Lm



CS at 1200 m

Stripping	27.242	Lm
Earth Filling	30.251	m^2
RR Gravel Bed	2.701	m^2
Turfing	7.715	Lm
Rip Rap	11.454	m^2
Geotextile	17.968	Lm



CS at 1195 m

For Reference Only

PROJECT :-
INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)

IMPLEMENT AGENCY :-
MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT

EXECUTIVE AGENCY :-
IRRIGATION DEPARTMENT NORTHERN PROVINCE

FUND BY:-
WORLD BANK

SCHEME :-
THANNIMURIPPU TANK

PROJECT TITLE :-
REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE

WORK DETAILS & LOCATION :-
Bund CSS (1+195 - 1+200)

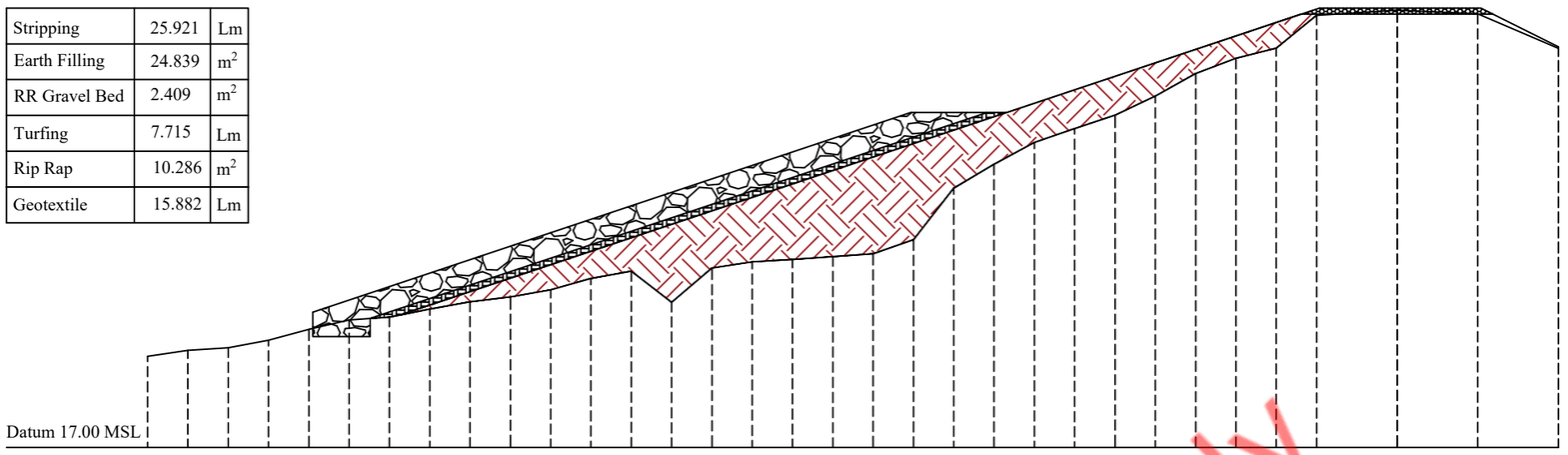
DRAWING NO :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/19

SHEET NO :- 27 of 75 | **SCALE** :- 1:150 | **DATE** :- 10.01.2025

AT IE's Office	AT DDI's Office
Surveyed & Drawn By:- ..... T.Pratheep,T.O	Drawn Checked BY:- ..... K.Vithusan,D'man
Drawn Checked By:- ..... T.Pavulraj, D'Man	Reviewed By:- .....
Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE	Approved By:- ..... Eng.S.Vihirthan,DDI

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

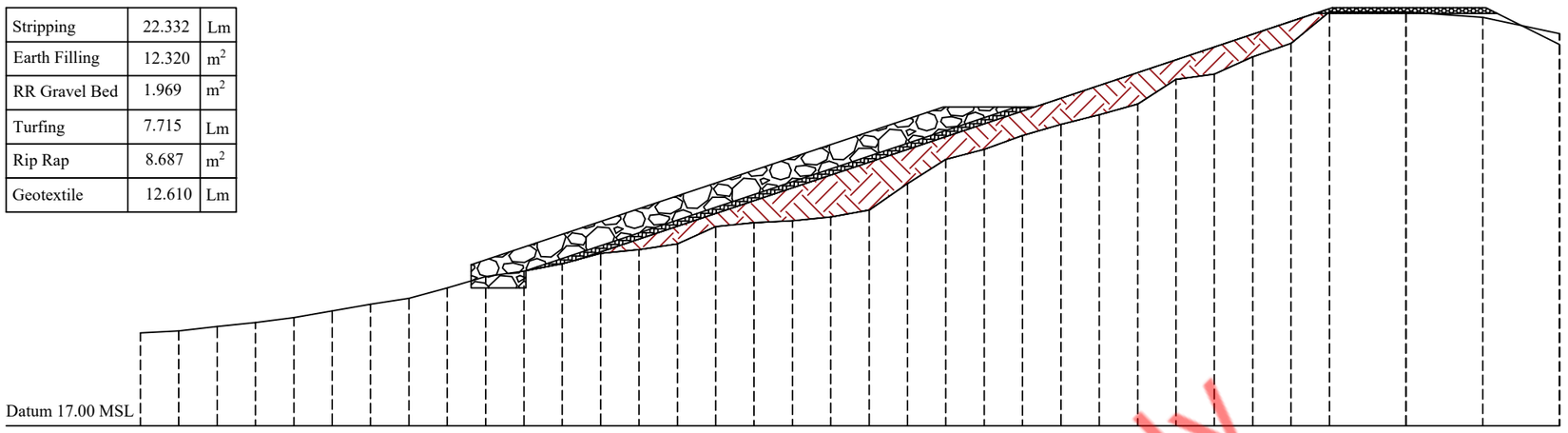
Stripping	25.921	Lm
Earth Filling	24.839	m^2
RR Gravel Bed	2.409	m^2
Turfing	7.715	Lm
Rip Rap	10.286	m^2
Geotextile	15.882	Lm



| | | |

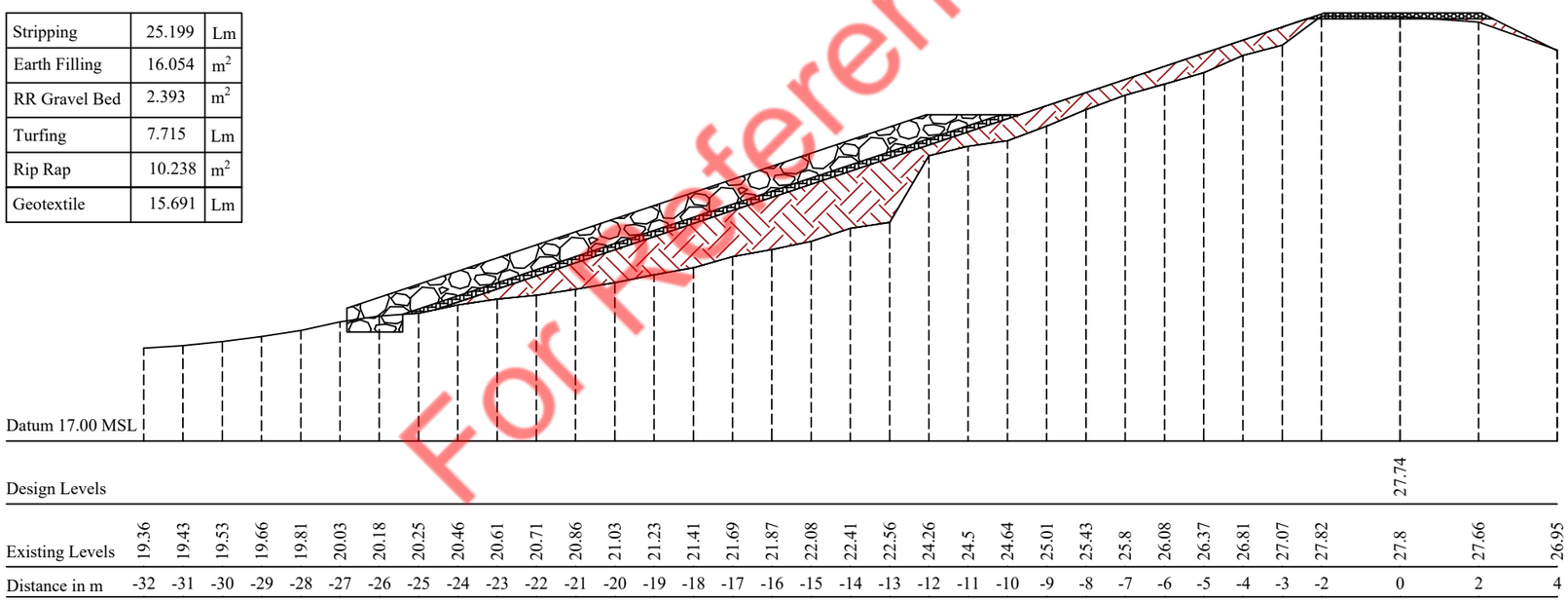
Stripping	22.332	Lm
Earth Filling	12.320	m^2
RR Gravel Bed	1.969	m^2
Turfing	7.715	Lm
Rip Rap	8.687	m^2
Geotextile	12.610	Lm

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	



CS at 1300 m

Stripping	25.199	Lm
Earth Filling	16.054	m^2
RR Gravel Bed	2.393	m^2
Turfing	7.715	Lm
Rip Rap	10.238	m^2
Geotextile	15.691	Lm



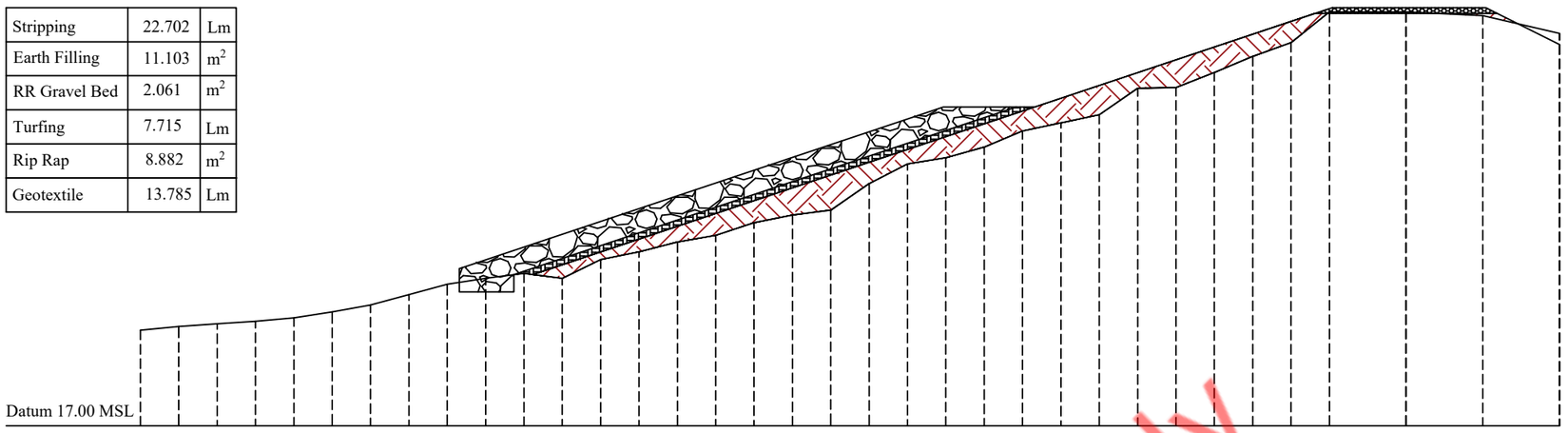
CS at 1275 m

For Reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office: Surveyed & Drawn By:- ..... T.Pratheep,T.O AT DDI's Office: Drawn Checked BY:- ..... K.Vithusan,D'man
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- **Bund CSS (1+275 - 1+300)**	Drawn Checked By:- ..... T.Pavulraj, D'Man Reviewed By:- .....
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/21 **SHEET NO** :- 29 of 75 | **SCALE** :- 1:150 | **DATE** :- 10.01.2025	Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE Approved By:- ..... Eng.S.Vihirthan,DDI

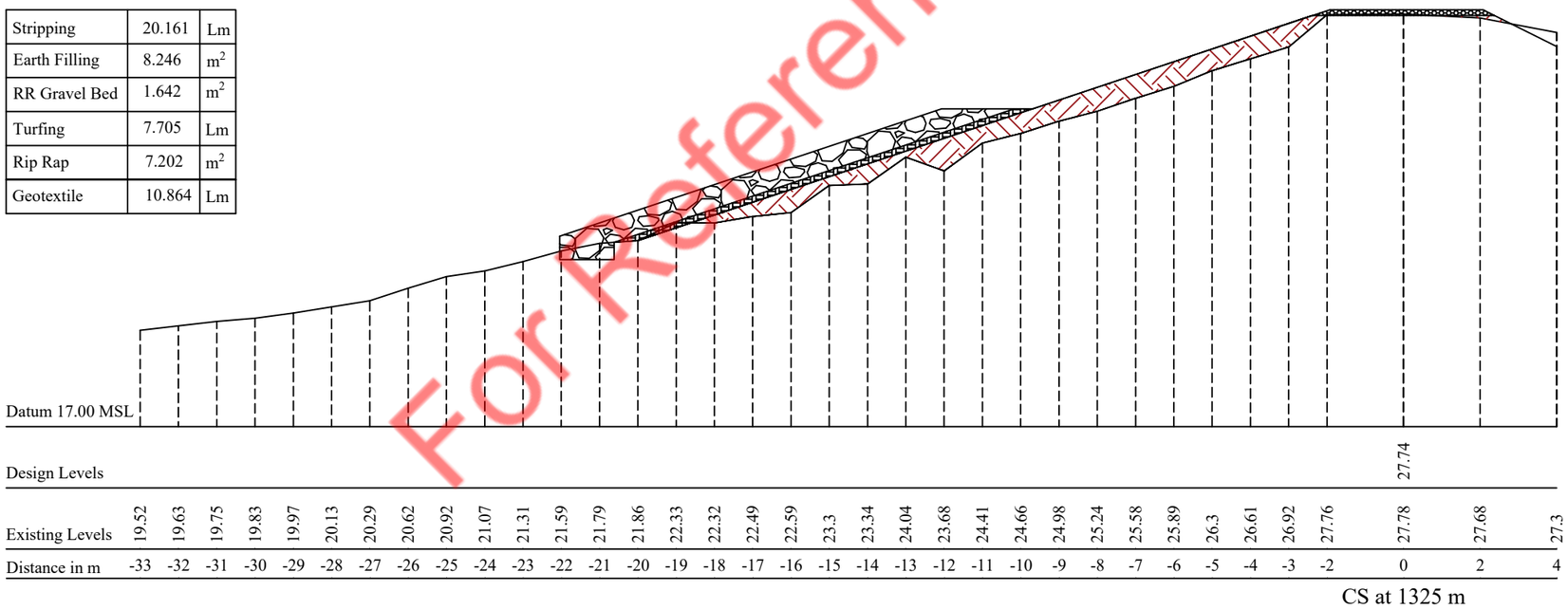
Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

Stripping	22.702	Lm
Earth Filling	11.103	m^2
RR Gravel Bed	2.061	m^2
Turfing	7.715	Lm
Rip Rap	8.882	m^2
Geotextile	13.785	Lm



CS at 1350 m

Stripping	20.161	Lm
Earth Filling	8.246	m^2
RR Gravel Bed	1.642	m^2
Turfing	7.705	Lm
Rip Rap	7.202	m^2
Geotextile	10.864	Lm



CS at 1325 m

For Reference Only

PROJECT :-
INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)

IMPLEMENT AGENCY :-
MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT

EXECUTIVE AGENCY :-
IRRIGATION DEPARTMENT NORTHERN PROVINCE

FUND BY:-
WORLD BANK

SCHEME :-
THANNIMURIPPU TANK

PROJECT TITLE :-
REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE

WORK DETAILS & LOCATION :-
Bund CSS (3+325 - 1+350)

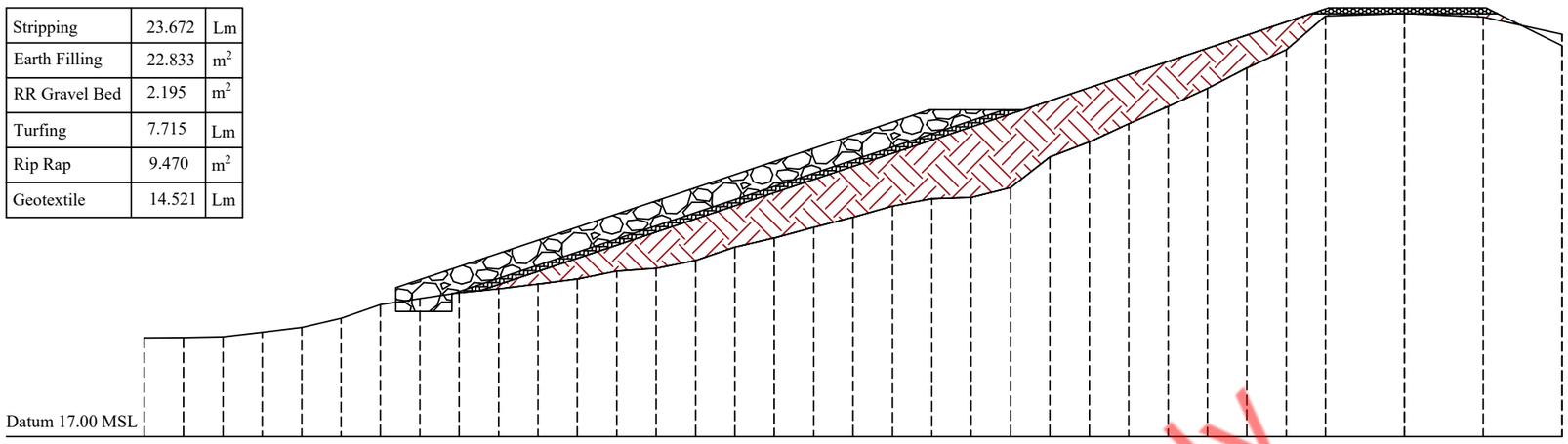
DRAWING NO :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/22

SHEET NO :- 30 of 75 | **SCALE :-** 1:150 | **DATE :-** 10.01.2025

AT IE's Office	AT DDI's Office
Surveyed & Drawn By:- ..... T.Pratheep,T.O	Drawn Checked BY:- ..... K.Vithusan,D'man
Drawn Checked By:- ..... T.Pavulraj, D'Man	Reviewed By:- .....
Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE	Approved By:- ..... Eng.S.Vihirthan,DDI

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

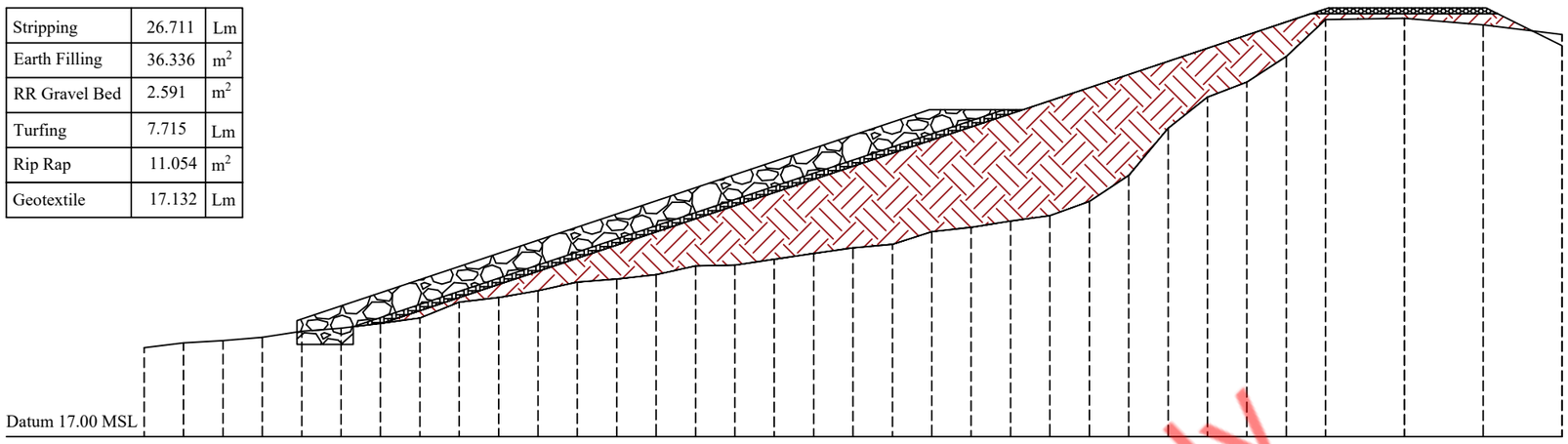
Stripping	23.672	Lm
Earth Filling	22.833	m^2
RR Gravel Bed	2.195	m^2
Turfing	7.715	Lm
Rip Rap	9.470	m^2
Geotextile	14.521	Lm



| | | |

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

Stripping	26.711	Lm
Earth Filling	36.336	m^2
RR Gravel Bed	2.591	m^2
Turfing	7.715	Lm
Rip Rap	11.054	m^2
Geotextile	17.132	Lm



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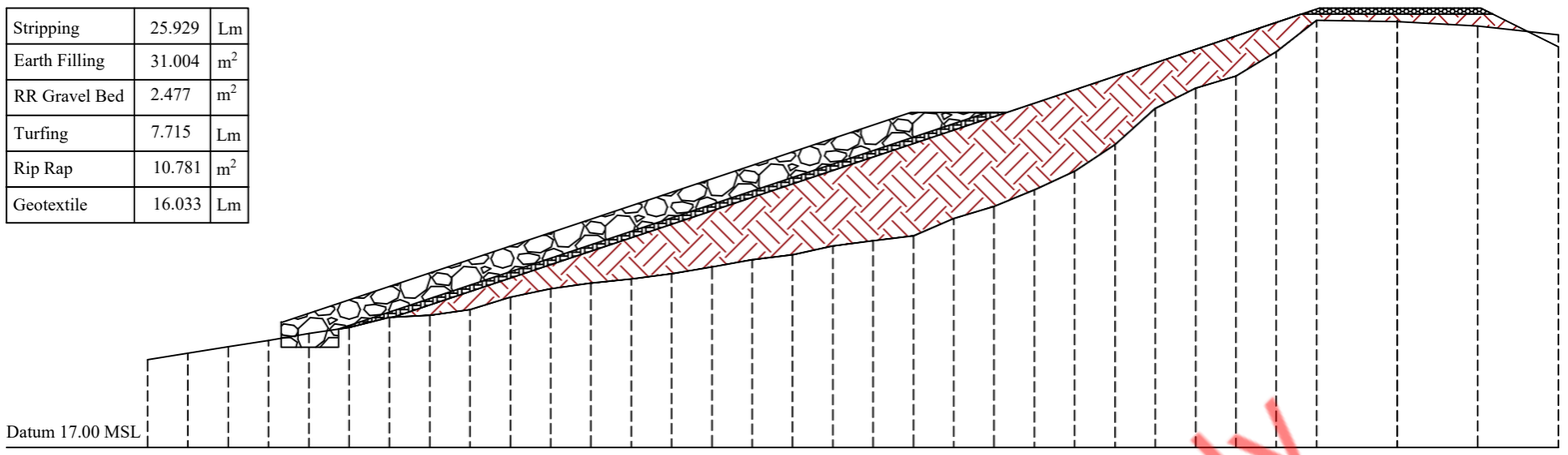
Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

Stripping	25.929	Lm
Earth Filling	31.004	m^2
RR Gravel Bed	2.477	m^2
Turfing	7.715	Lm
Rip Rap	10.781	m^2
Geotextile	16.033	Lm



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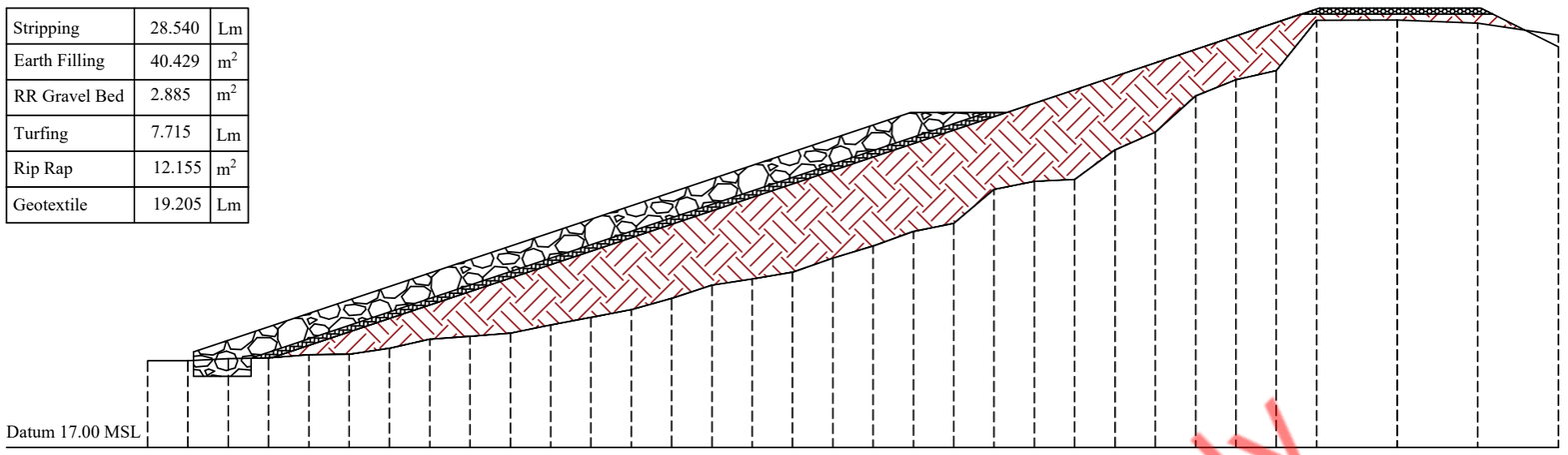
Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

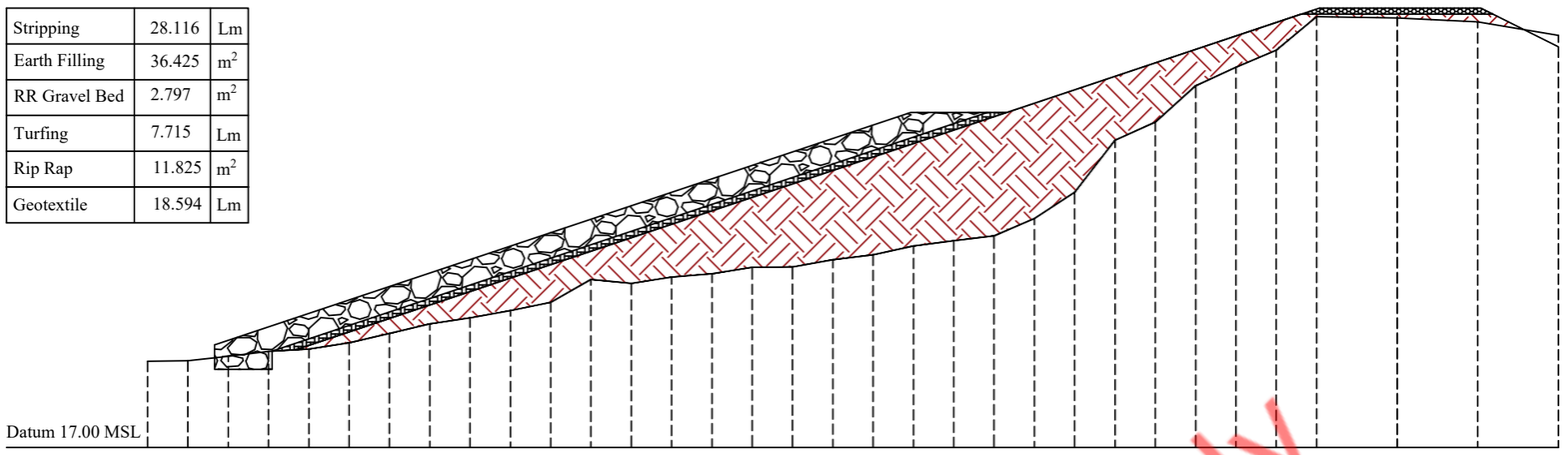
Stripping	28.540	Lm
Earth Filling	40.429	m^2
RR Gravel Bed	2.885	m^2
Turfing	7.715	Lm
Rip Rap	12.155	m^2
Geotextile	19.205	Lm



| | | |

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

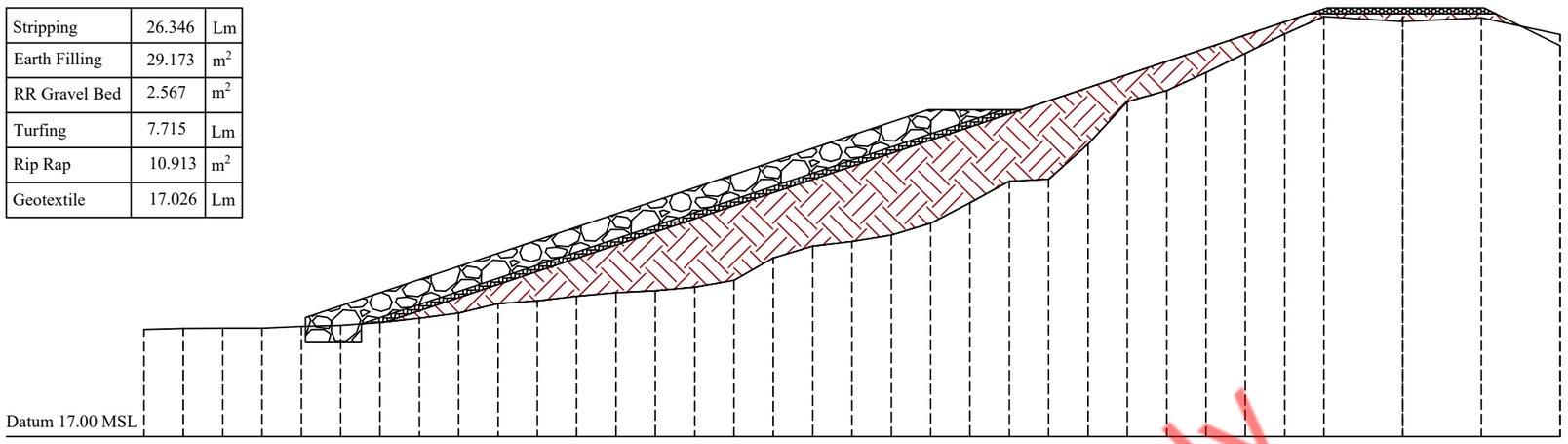
Stripping	28.116	Lm
Earth Filling	36.425	m^2
RR Gravel Bed	2.797	m^2
Turfing	7.715	Lm
Rip Rap	11.825	m^2
Geotextile	18.594	Lm



| | | |

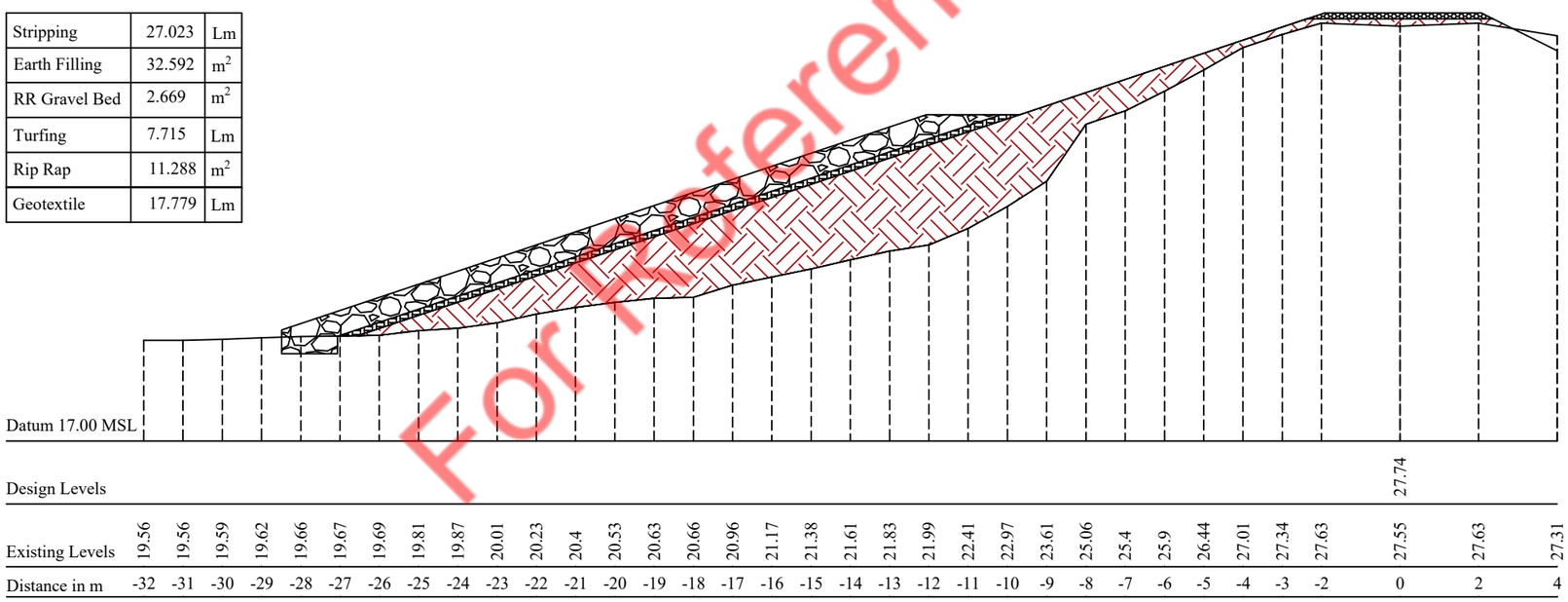
Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

Stripping	26.346	Lm
Earth Filling	29.173	m^2
RR Gravel Bed	2.567	m^2
Turfing	7.715	Lm
Rip Rap	10.913	m^2
Geotextile	17.026	Lm



CS at 1650 m

Stripping	27.023	Lm
Earth Filling	32.592	m^2
RR Gravel Bed	2.669	m^2
Turfing	7.715	Lm
Rip Rap	11.288	m^2
Geotextile	17.779	Lm



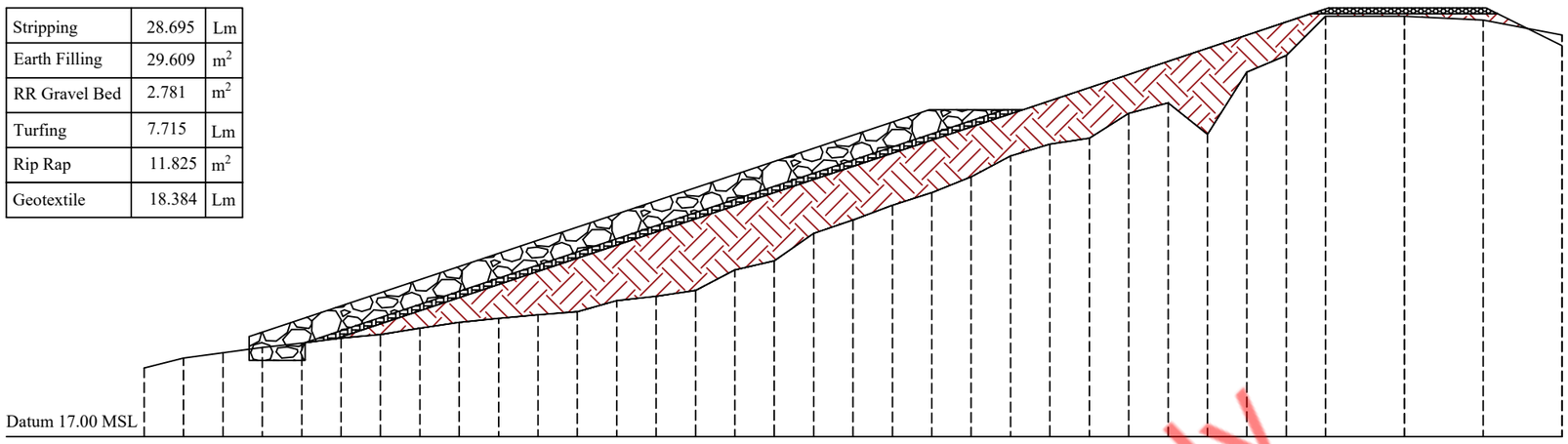
CS at 1625 m

For Reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office: Surveyed & Drawn By:- ..... T.Pratheep,T.O / AT DDI's Office: Drawn Checked BY:- ..... K.Vithusan,D'man
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- **Bund CSS (1+625 - 1+650)**	Drawn Checked By:- ..... T.Pavulraj, D'Man / Reviewed By:- .....
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/28	Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE / Approved By:- ..... Eng.S.Vihirthan,DDI
		SHEET NO :- 36 of 75 / **SCALE** :- 1:150 / **DATE** :- 10.01.2025	

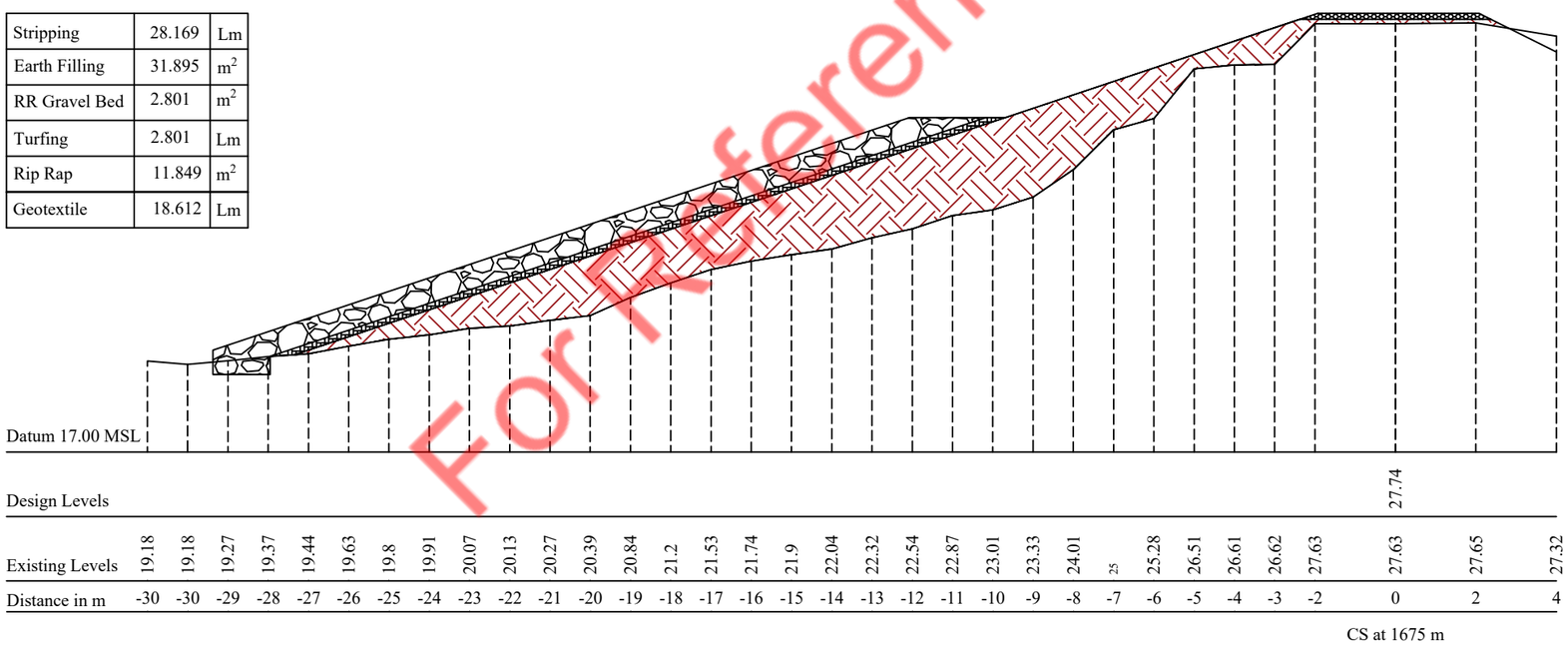
Stripping	28.695	Lm
Earth Filling	29.609	m^2
RR Gravel Bed	2.781	m^2
Turfing	7.715	Lm
Rip Rap	11.825	m^2
Geotextile	18.384	Lm

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	



CS at 1700 m

Stripping	28.169	Lm
Earth Filling	31.895	m^2
RR Gravel Bed	2.801	m^2
Turfing	2.801	Lm
Rip Rap	11.849	m^2
Geotextile	18.612	Lm



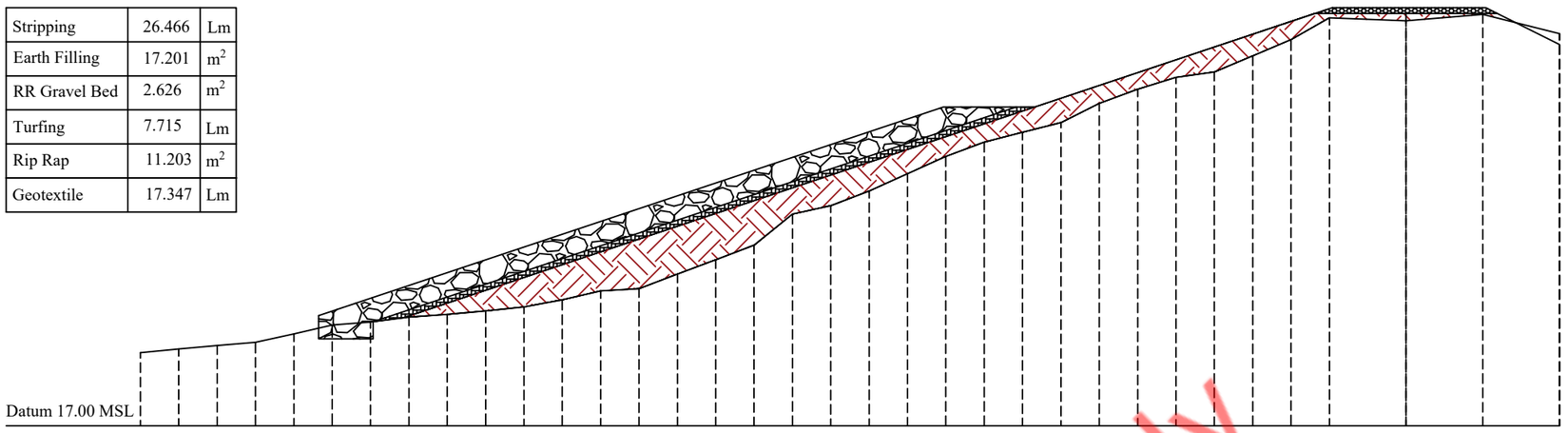
CS at 1675 m

For Reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office: Surveyed & Drawn By:- ..... T.Pratheep,T.O / AT DDI's Office: Drawn Checked BY:- ..... K.Vithusan,D'man
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- **Bund CSS (1+675 - 1+700)**	Drawn Checked By:- ..... T.Pavulraj, D'Man / Reviewed By:- .....
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/29	Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE / Approved By:- ..... Eng.S.Vihirthan,DDI
		SHEET NO :- 37 of 75 / **SCALE** :- 1:150 / **DATE** :- 10.01.2025	

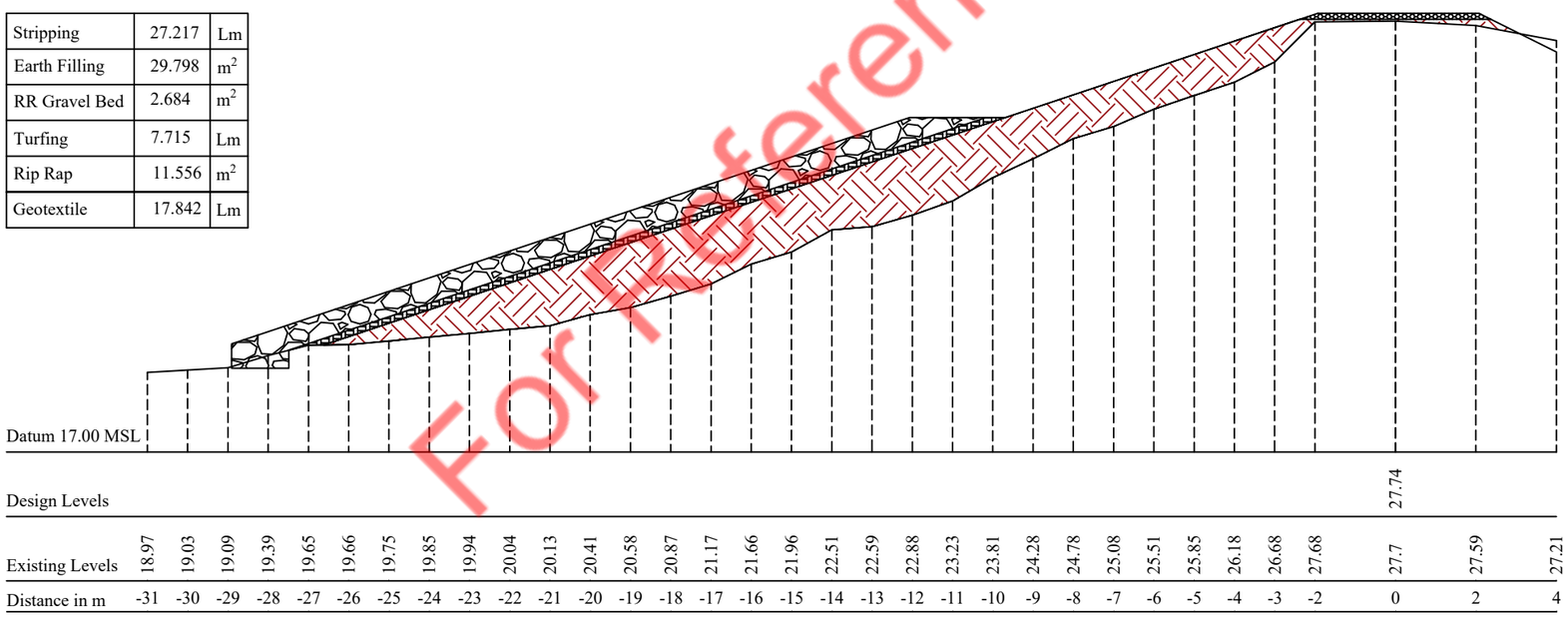
Stripping	26.466	Lm
Earth Filling	17.201	m^2
RR Gravel Bed	2.626	m^2
Turfing	7.715	Lm
Rip Rap	11.203	m^2
Geotextile	17.347	Lm

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	



CS at 1750 m

Stripping	27.217	Lm
Earth Filling	29.798	m^2
RR Gravel Bed	2.684	m^2
Turfing	7.715	Lm
Rip Rap	11.556	m^2
Geotextile	17.842	Lm



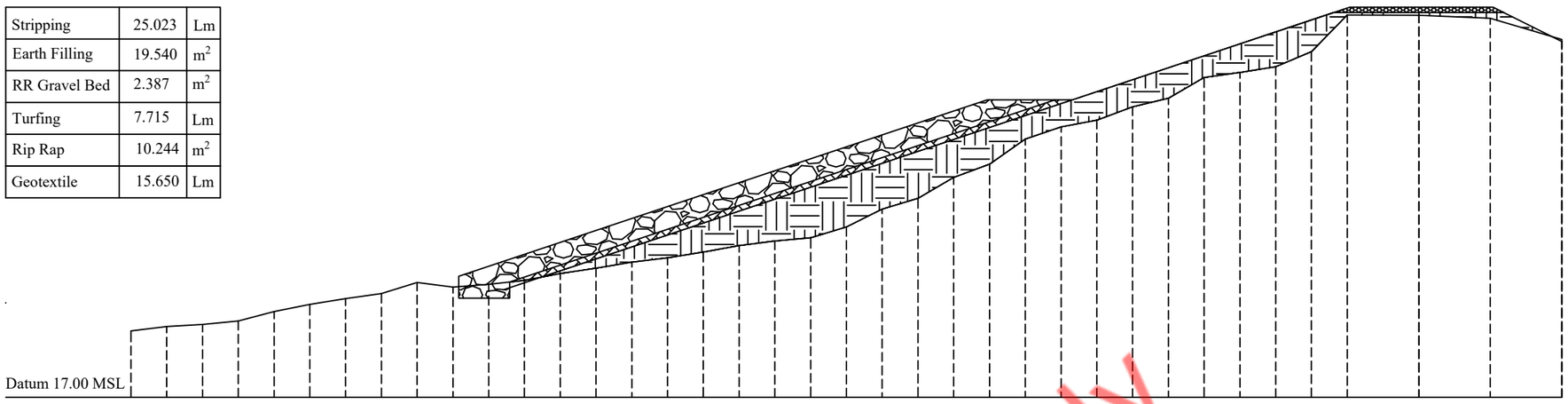
CS at 1725 m

For Reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office: Surveyed & Drawn By:- ..... T.Pratheep,T.O AT DDI's Office: Drawn Checked BY:- ..... K.Vithusan,D'man
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- **Bund CSS (1+725 - 1+750)**	Drawn Checked By:- ..... T.Pavulraj, D'Man Reviewed By:- .....
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/30 **SHEET NO** :- 38 of 75 / **SCALE** :- 1:150 / **DATE** :- 10.01.2025	Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE Approved By:- ..... Eng.S.Vihirthan,DDI

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

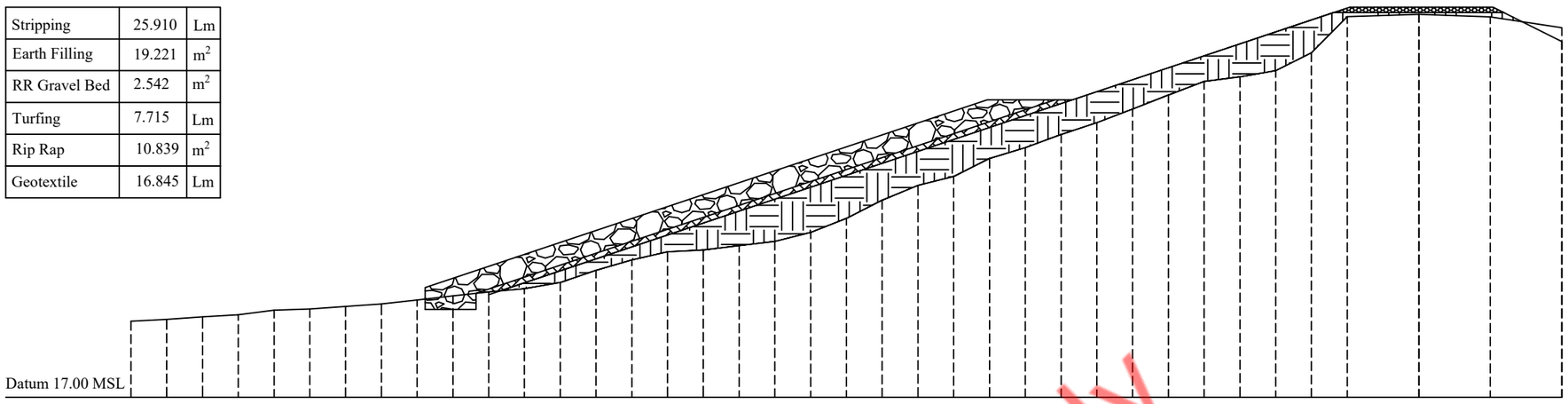
Stripping	25.023	Lm
Earth Filling	19.540	m^2
RR Gravel Bed	2.387	m^2
Turfing	7.715	Lm
Rip Rap	10.244	m^2
Geotextile	15.650	Lm



| | | |

Stripping	25.910	Lm
Earth Filling	19.221	m^2
RR Gravel Bed	2.542	m^2
Turfing	7.715	Lm
Rip Rap	10.839	m^2
Geotextile	16.845	Lm

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	



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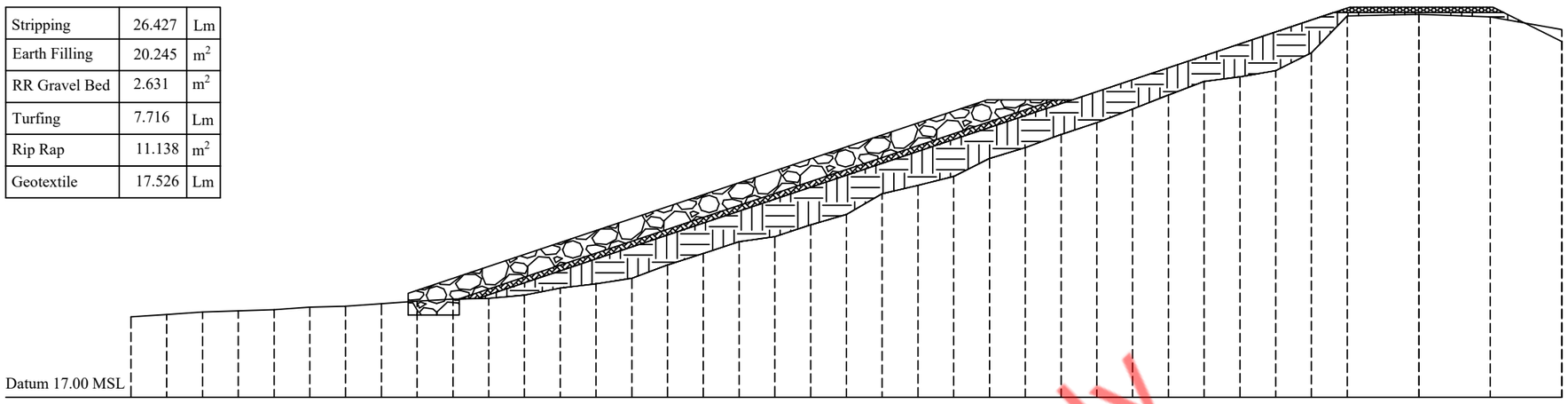
Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

Stripping	26.427	Lm
Earth Filling	20.245	m^2
RR Gravel Bed	2.631	m^2
Turfing	7.716	Lm
Rip Rap	11.138	m^2
Geotextile	17.526	Lm



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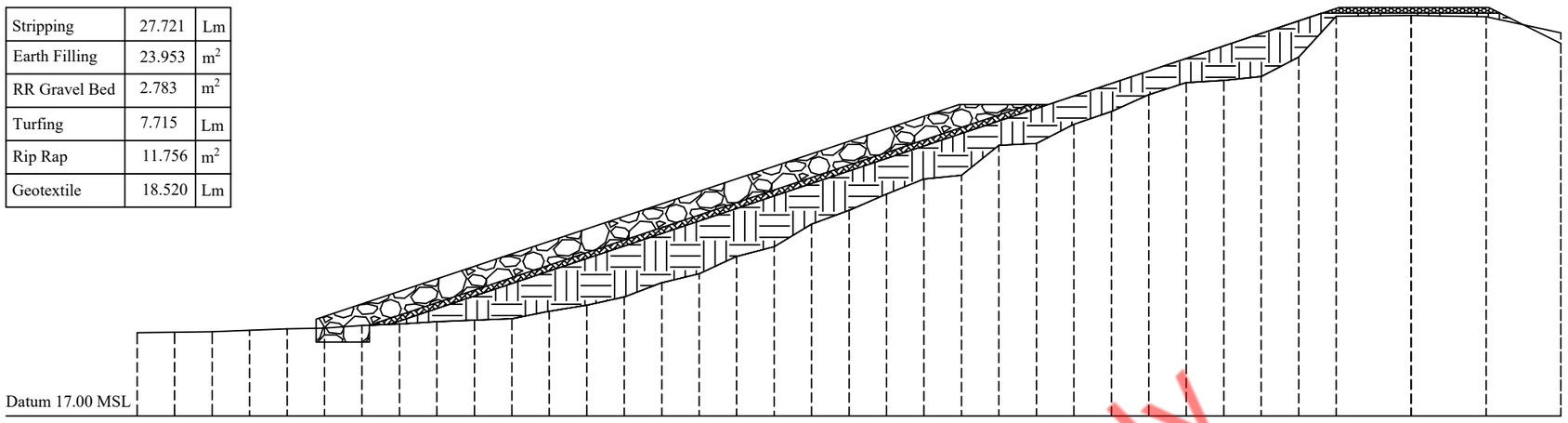
Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

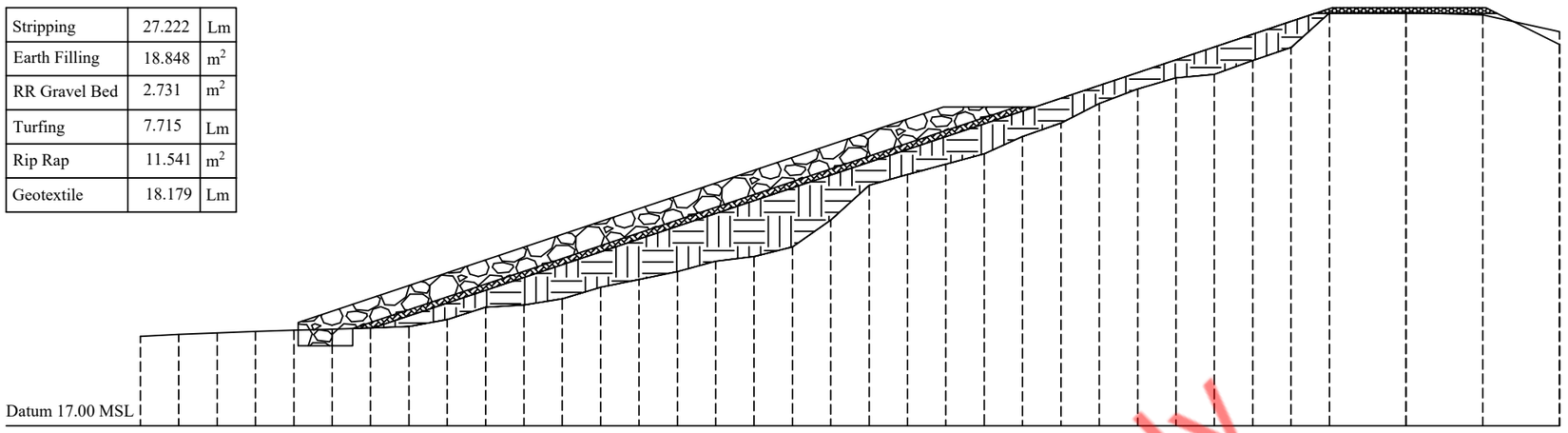
Stripping	27.721	Lm
Earth Filling	23.953	m^2
RR Gravel Bed	2.783	m^2
Turfing	7.715	Lm
Rip Rap	11.756	m^2
Geotextile	18.520	Lm



| | | |

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

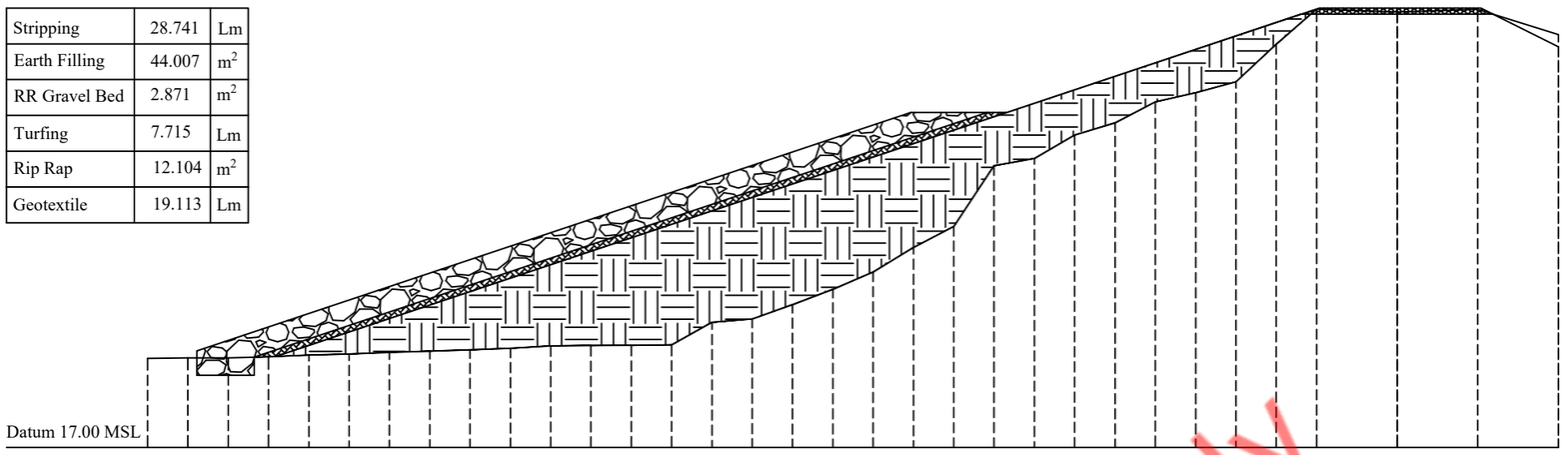
Stripping	27.222	Lm
Earth Filling	18.848	m^2
RR Gravel Bed	2.731	m^2
Turfing	7.715	Lm
Rip Rap	11.541	m^2
Geotextile	18.179	Lm



| | | |

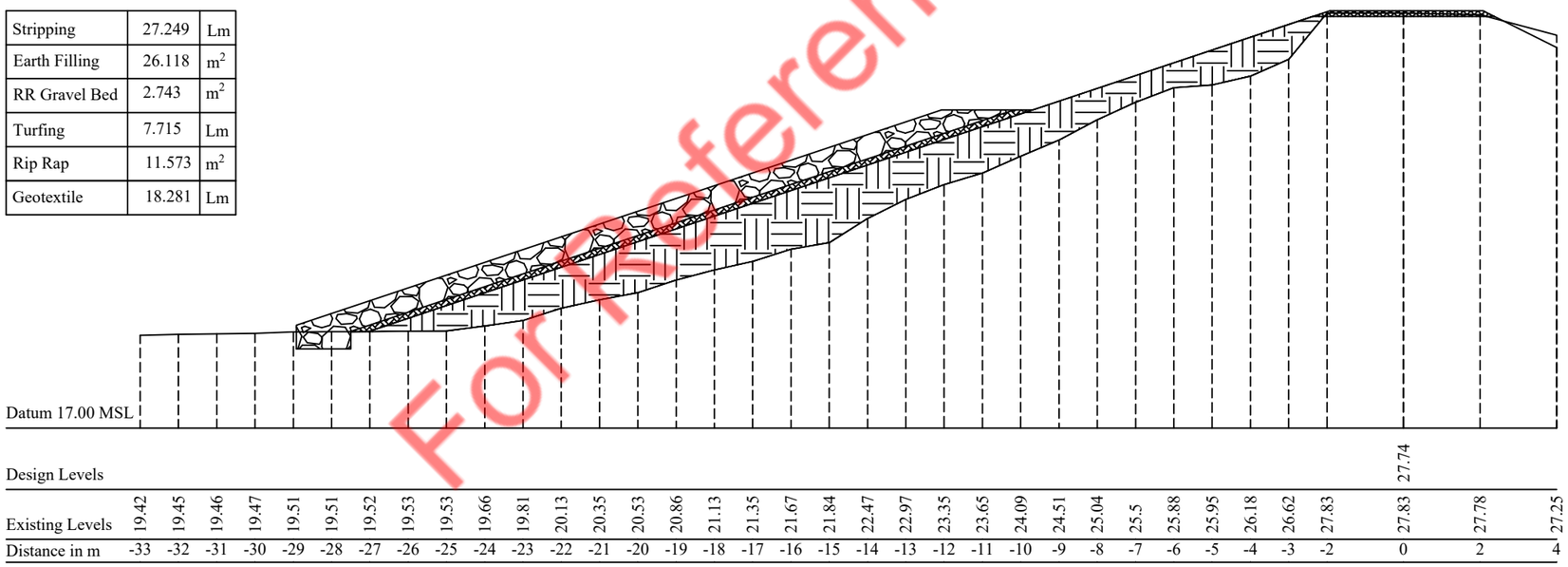
Stripping	28.741	Lm
Earth Filling	44.007	m^2
RR Gravel Bed	2.871	m^2
Turfing	7.715	Lm
Rip Rap	12.104	m^2
Geotextile	19.113	Lm

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	



CS at 2050 m

Stripping	27.249	Lm
Earth Filling	26.118	m^2
RR Gravel Bed	2.743	m^2
Turfing	7.715	Lm
Rip Rap	11.573	m^2
Geotextile	18.281	Lm



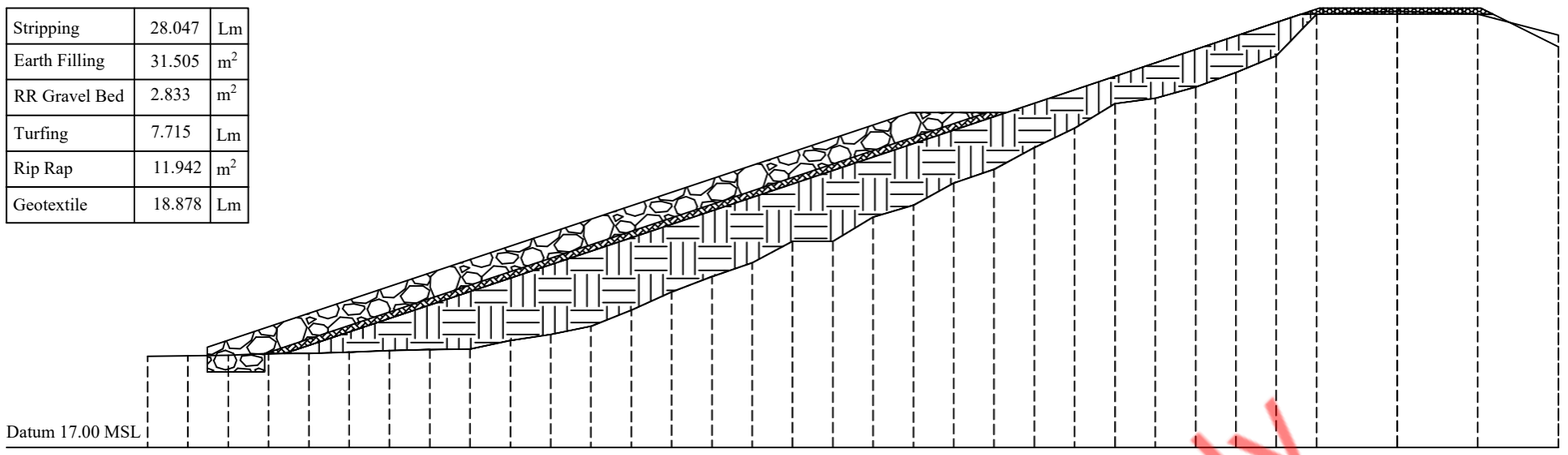
CS at 2025 m

For Reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office / AT DDI's Office
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- **Bund CSS (2+025 - 2+050)**	Surveyed & Drawn By:- T.Pratheep,T.O / Drawn Checked BY:- K.Vithusan,D'man
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/36	Drawn Checked By:- T.Pavulraj, D'Man / Reviewed By:-
		SHEET NO :- 44 of 75 / **SCALE** :- 1:150 / **DATE** :- 10.01.2025	Submitted By:- Eng.Mrs.M.Joyeskumar,IE / Approved By:- Eng.S.Vihirthan,DDI

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

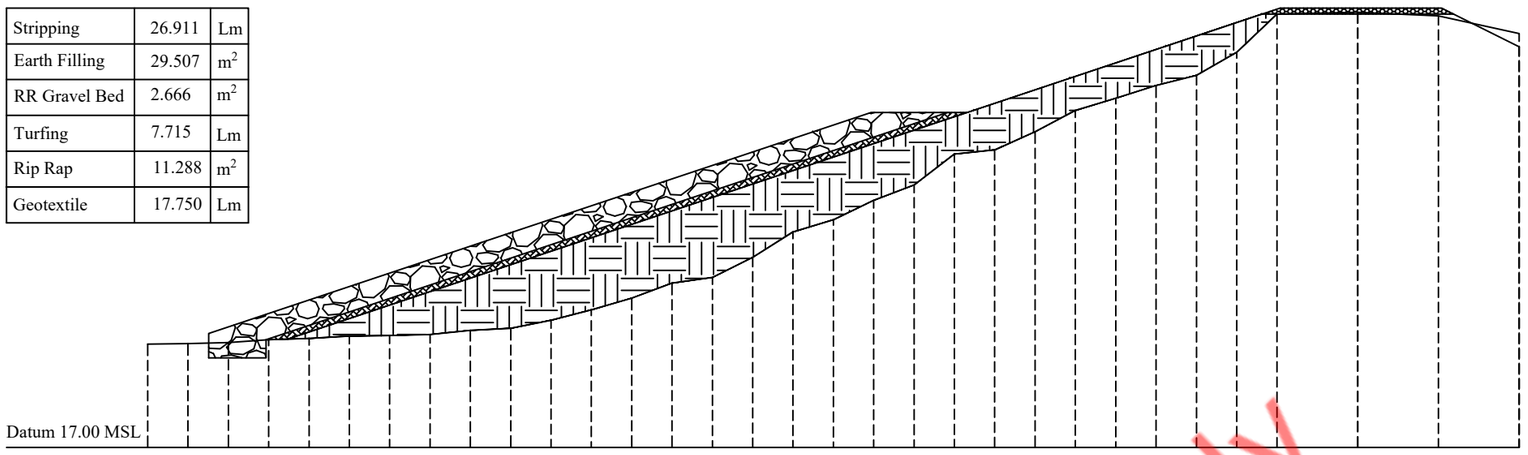
Stripping	28.047	Lm
Earth Filling	31.505	m^2
RR Gravel Bed	2.833	m^2
Turfing	7.715	Lm
Rip Rap	11.942	m^2
Geotextile	18.878	Lm



| | | |

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

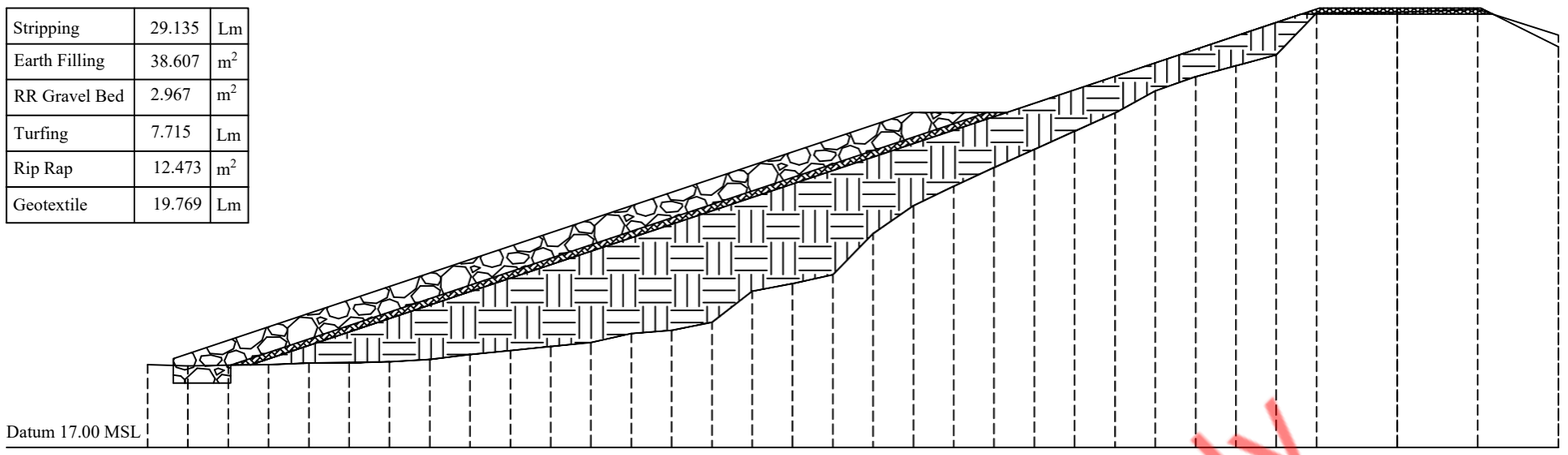
Stripping	26.911	Lm
Earth Filling	29.507	m^2
RR Gravel Bed	2.666	m^2
Turfing	7.715	Lm
Rip Rap	11.288	m^2
Geotextile	17.750	Lm



| | | |

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

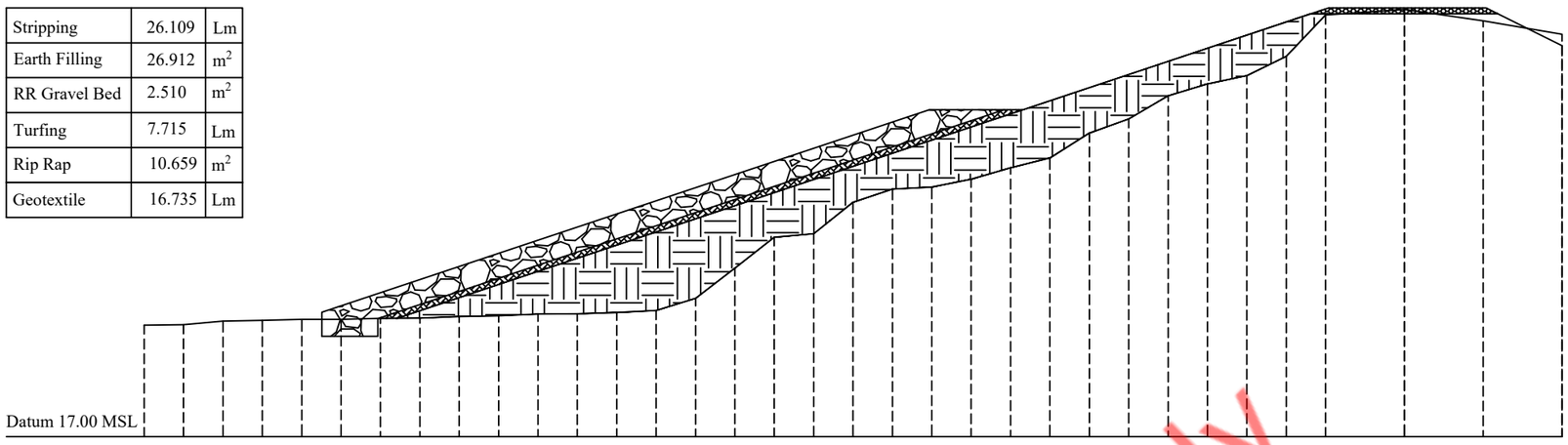
Stripping	29.135	Lm
Earth Filling	38.607	m^2
RR Gravel Bed	2.967	m^2
Turfing	7.715	Lm
Rip Rap	12.473	m^2
Geotextile	19.769	Lm



| | | |

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

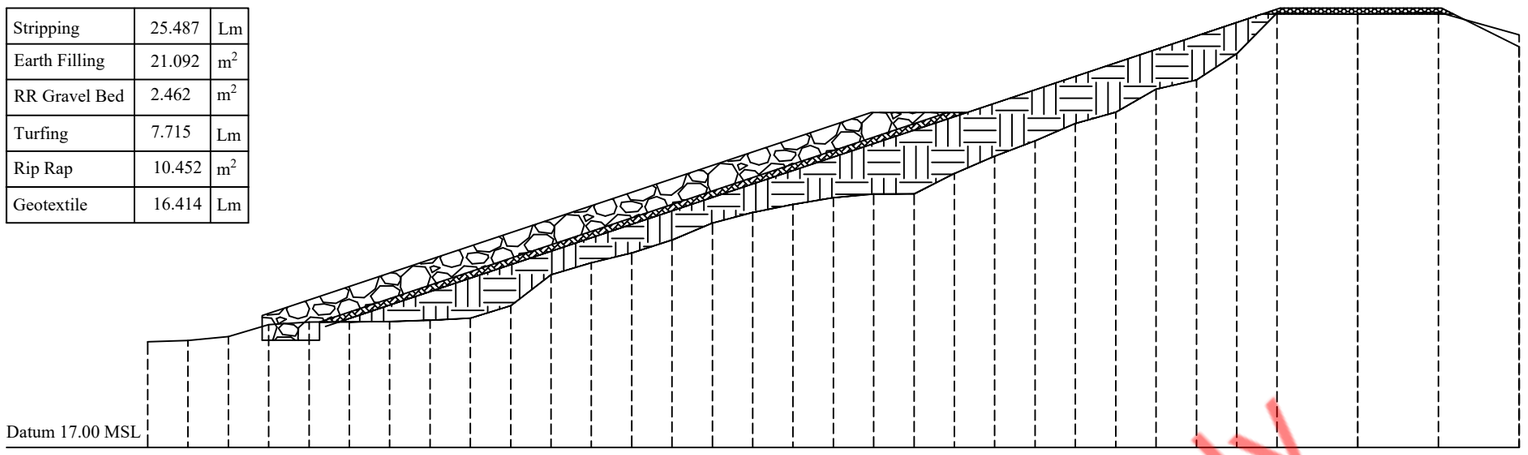
Stripping	26.109	Lm
Earth Filling	26.912	m^2
RR Gravel Bed	2.510	m^2
Turfing	7.715	Lm
Rip Rap	10.659	m^2
Geotextile	16.735	Lm



| | | |

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

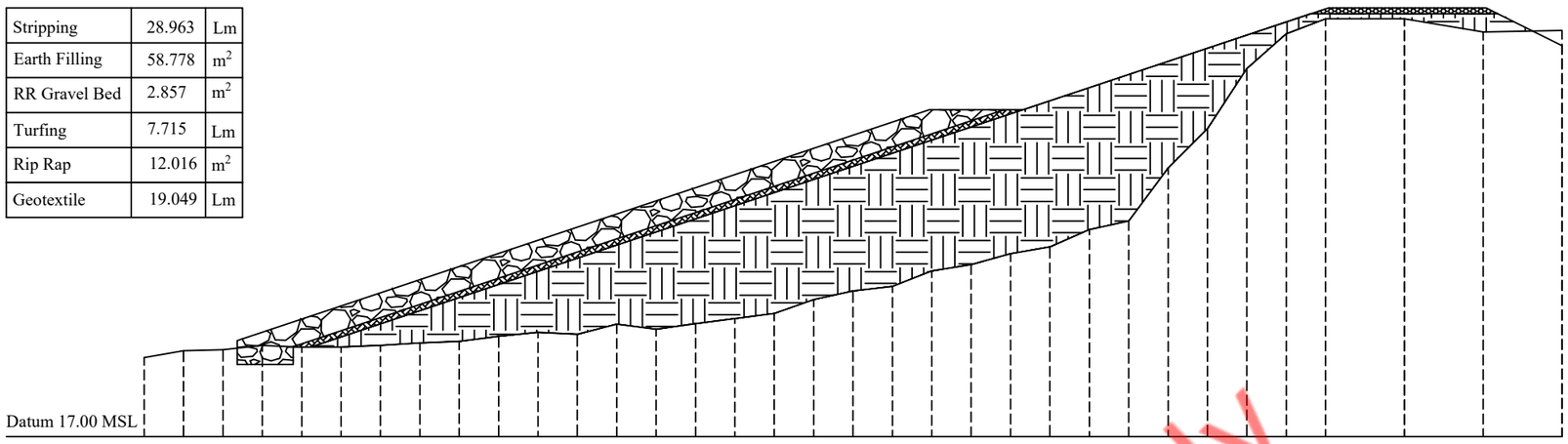
Stripping	25.487	Lm
Earth Filling	21.092	m^2
RR Gravel Bed	2.462	m^2
Turfing	7.715	Lm
Rip Rap	10.452	m^2
Geotextile	16.414	Lm



| | | |

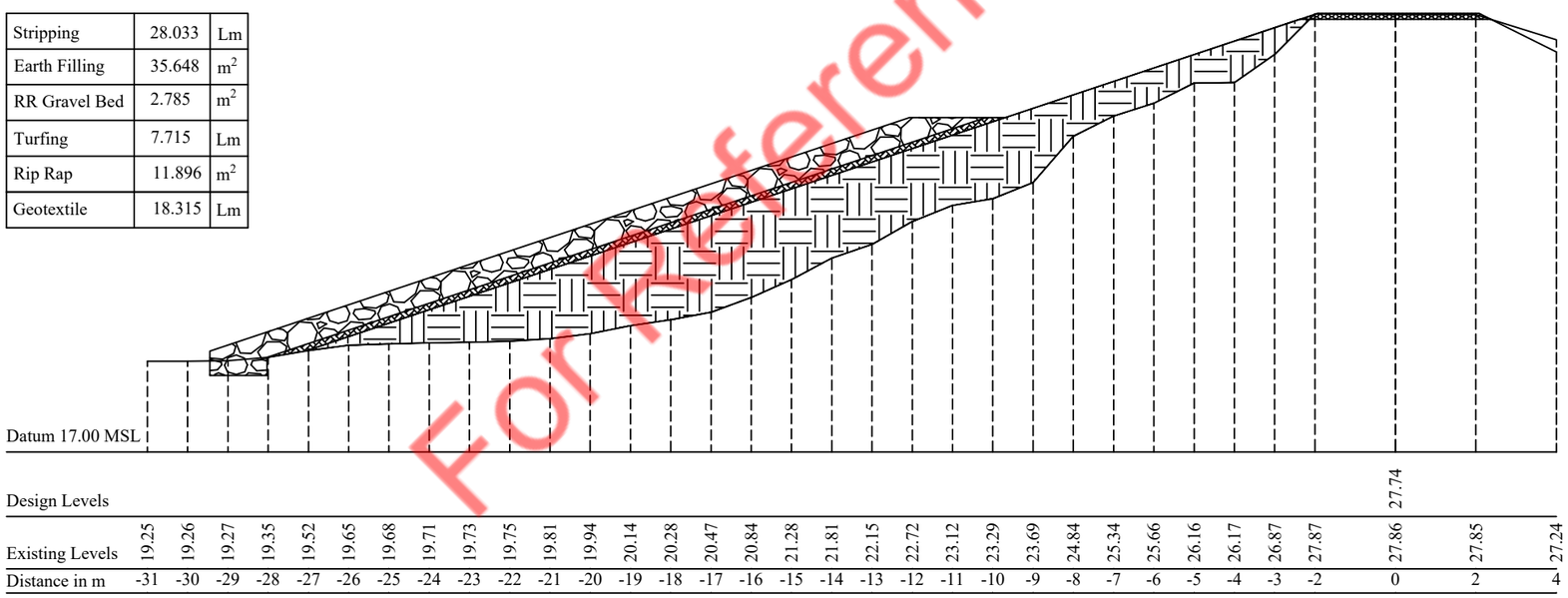
Stripping	28.963	Lm
Earth Filling	58.778	m^2
RR Gravel Bed	2.857	m^2
Turfing	7.715	Lm
Rip Rap	12.016	m^2
Geotextile	19.049	Lm

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	



CS at 2350 m

Stripping	28.033	Lm
Earth Filling	35.648	m^2
RR Gravel Bed	2.785	m^2
Turfing	7.715	Lm
Rip Rap	11.896	m^2
Geotextile	18.315	Lm



CS at 2325 m

For Reference Only

PROJECT :-
INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)

FUND BY:-
WORLD BANK

IMPLEMENT AGENCY :-
MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT

EXECUTIVE AGENCY :-
IRRIGATION DEPARTMENT NORTHERN PROVINCE

SCHEME :-
THANNIMURIPPU TANK

PROJECT TITLE :-
REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE

WORK DETAILS & LOCATION :-
Bund CSS (2+325 - 2+350)

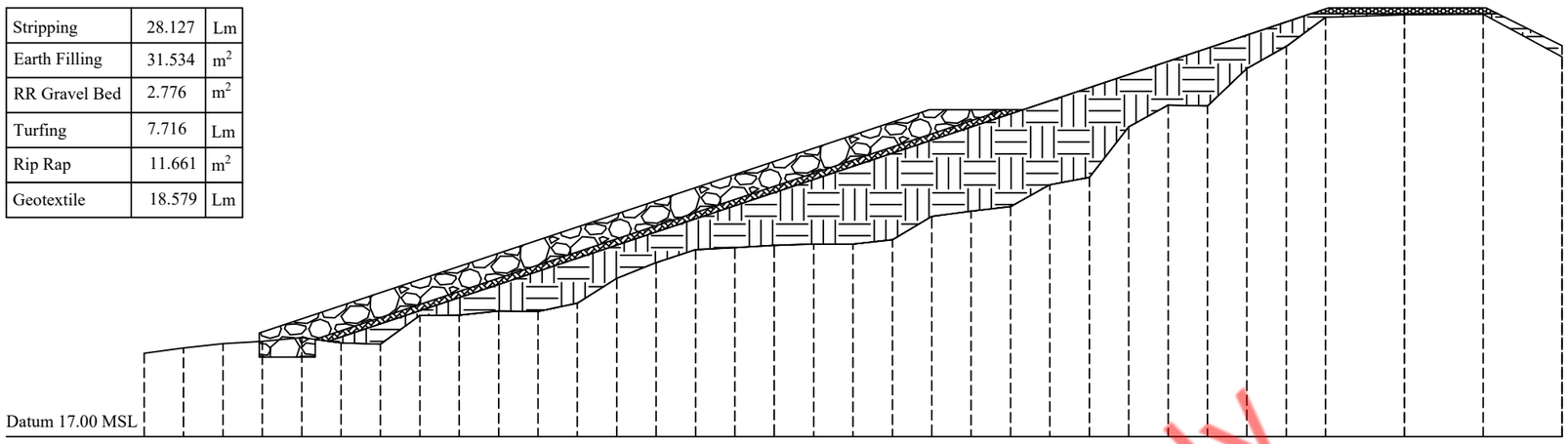
DRAWING NO :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/42

SHEET NO :- 50 of 75 | **SCALE :-** 1:150 | **DATE :-** 10.01.2025

AT IE's Office	AT DDI's Office
Surveyed & Drawn By:- ..... T.Pratheep,T.O	Drawn Checked BY:- ..... K.Vithusan,D'man
Drawn Checked By:- ..... T.Pavulraj, D'Man	Reviewed By:- .....
Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE	Approved By:- ..... Eng.S.Vihirthan,DDI

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

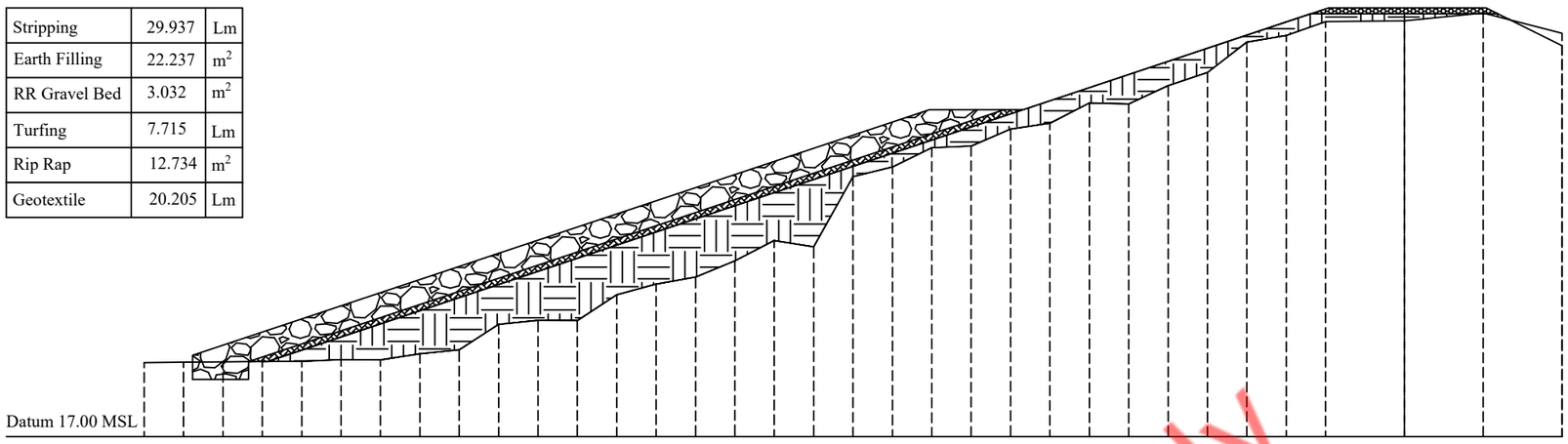
Stripping	28.127	Lm
Earth Filling	31.534	m^2
RR Gravel Bed	2.776	m^2
Turfing	7.716	Lm
Rip Rap	11.661	m^2
Geotextile	18.579	Lm



| | | |

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

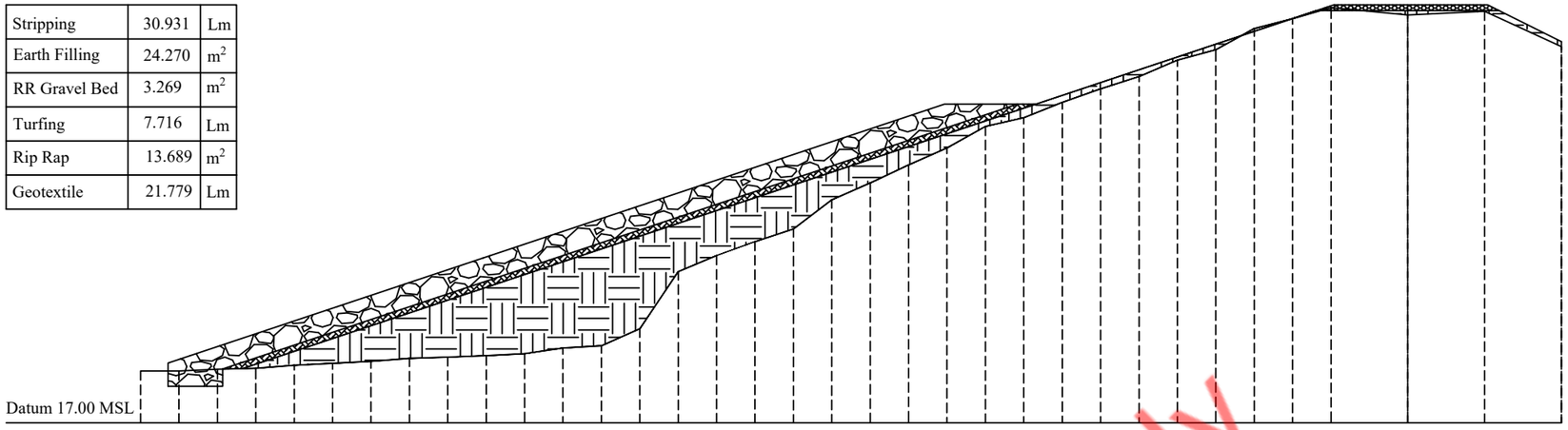
Stripping	29.937	Lm
Earth Filling	22.237	m^2
RR Gravel Bed	3.032	m^2
Turfing	7.715	Lm
Rip Rap	12.734	m^2
Geotextile	20.205	Lm



| | | |

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

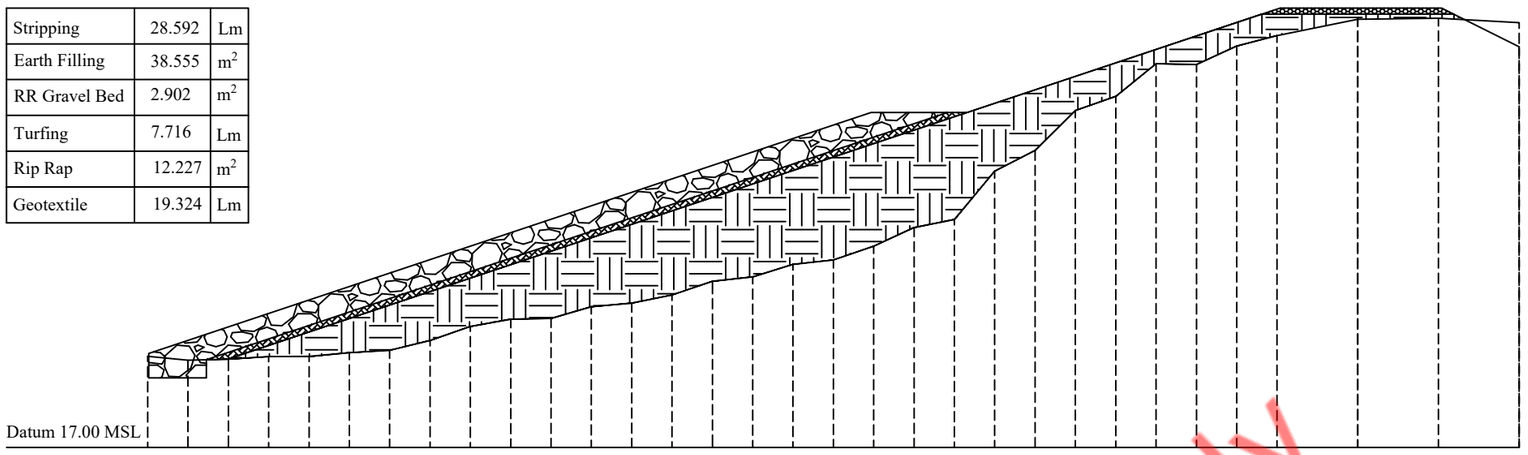
Stripping	30.931	Lm
Earth Filling	24.270	m^2
RR Gravel Bed	3.269	m^2
Turfing	7.716	Lm
Rip Rap	13.689	m^2
Geotextile	21.779	Lm



| | | |

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

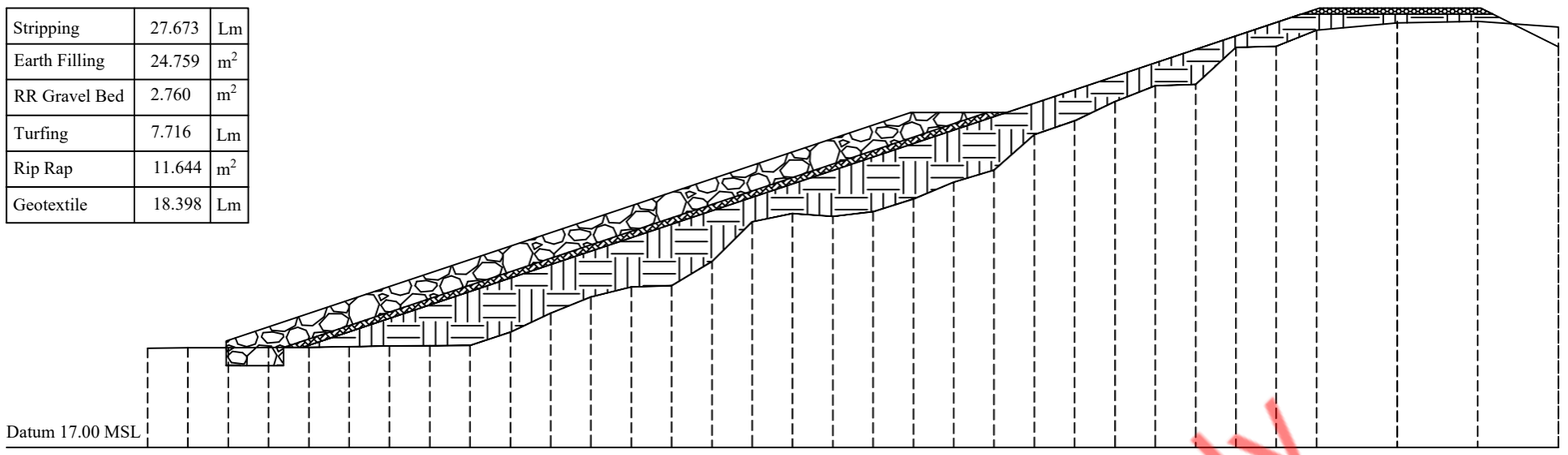
Stripping	28.592	Lm
Earth Filling	38.555	m^2
RR Gravel Bed	2.902	m^2
Turfing	7.716	Lm
Rip Rap	12.227	m^2
Geotextile	19.324	Lm



| | | |

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

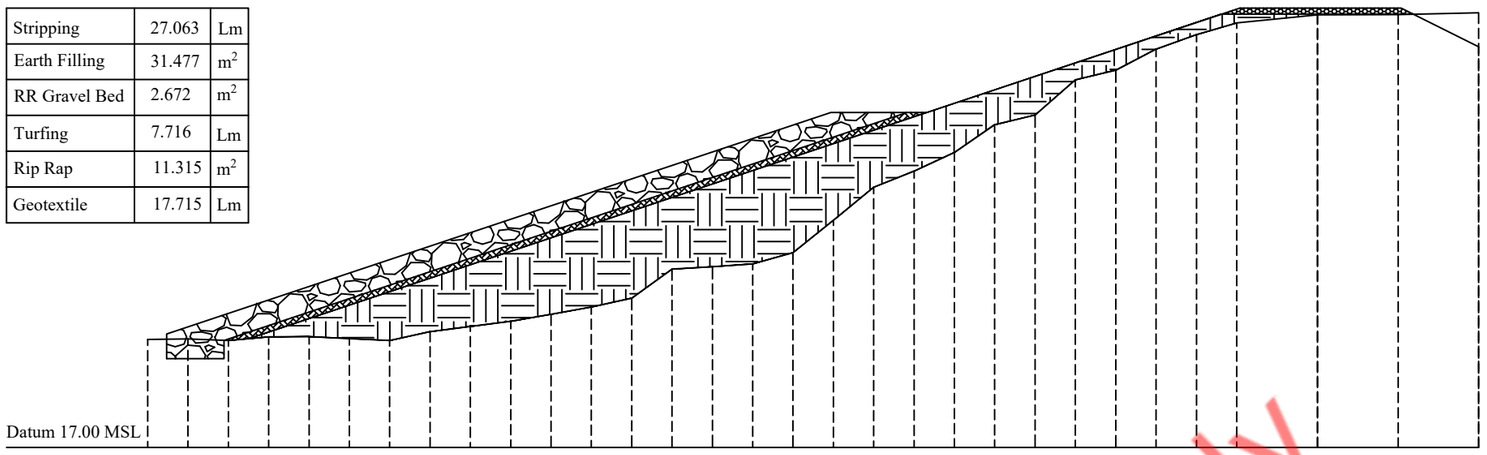
Stripping	27.673	Lm
Earth Filling	24.759	m^2
RR Gravel Bed	2.760	m^2
Turfing	7.716	Lm
Rip Rap	11.644	m^2
Geotextile	18.398	Lm



| | | |

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

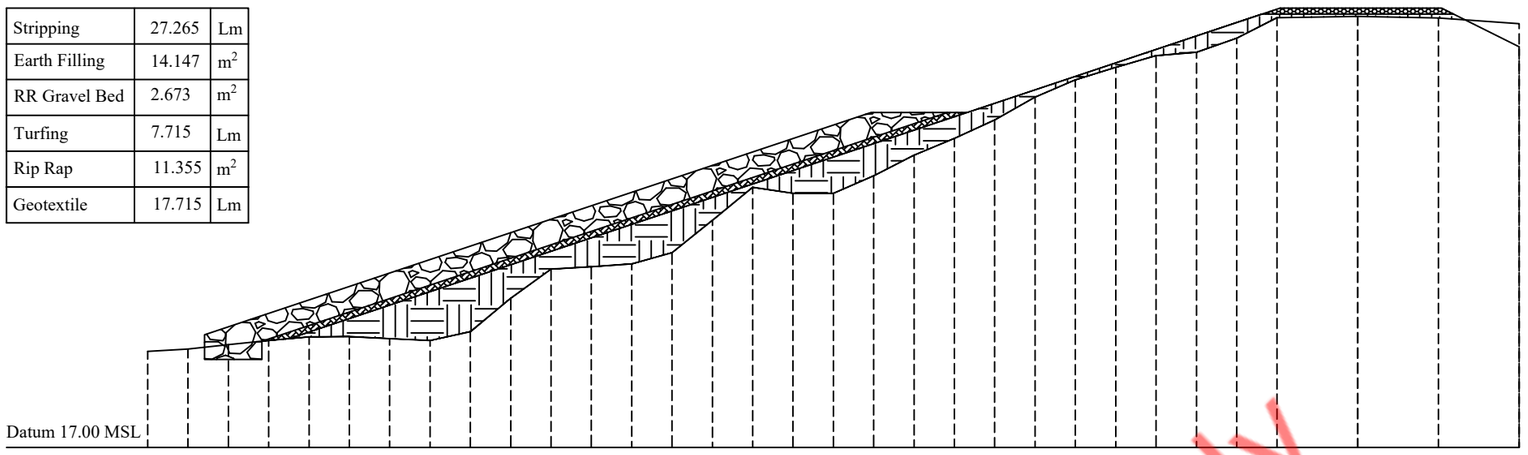
Stripping	27.063	Lm
Earth Filling	31.477	m^2
RR Gravel Bed	2.672	m^2
Turfing	7.716	Lm
Rip Rap	11.315	m^2
Geotextile	17.715	Lm



| | | |

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

Stripping	27.265	Lm
Earth Filling	14.147	m^2
RR Gravel Bed	2.673	m^2
Turfing	7.715	Lm
Rip Rap	11.355	m^2
Geotextile	17.715	Lm



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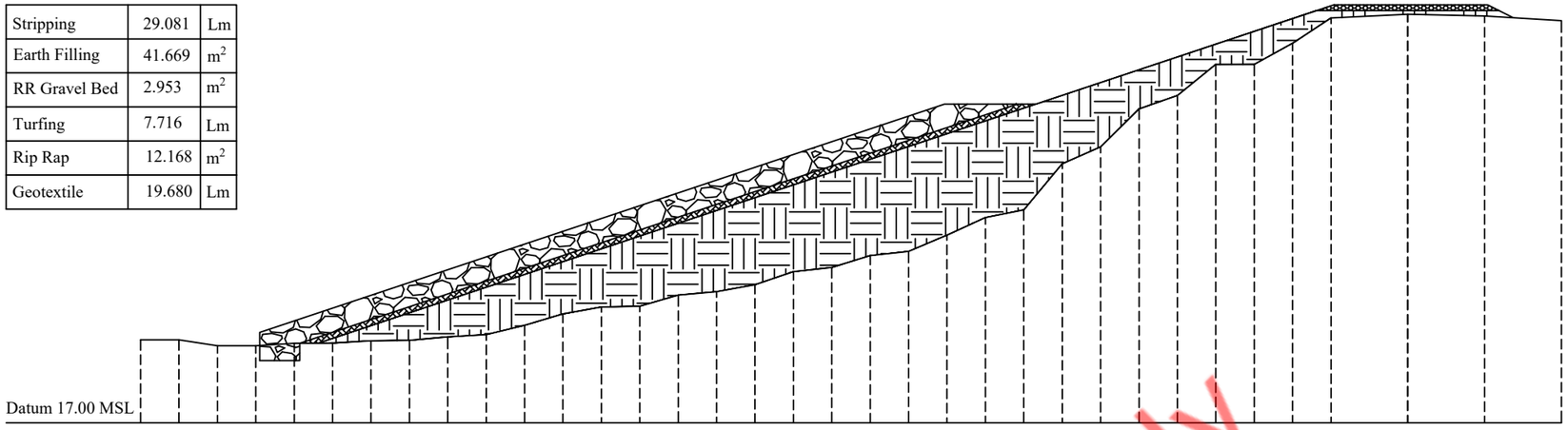
Stripping	29.081	Lm
Earth Filling	41.669	m^2
RR Gravel Bed	2.953	m^2
Turfing	7.716	Lm
Rip Rap	12.168	m^2
Geotextile	19.680	Lm

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	



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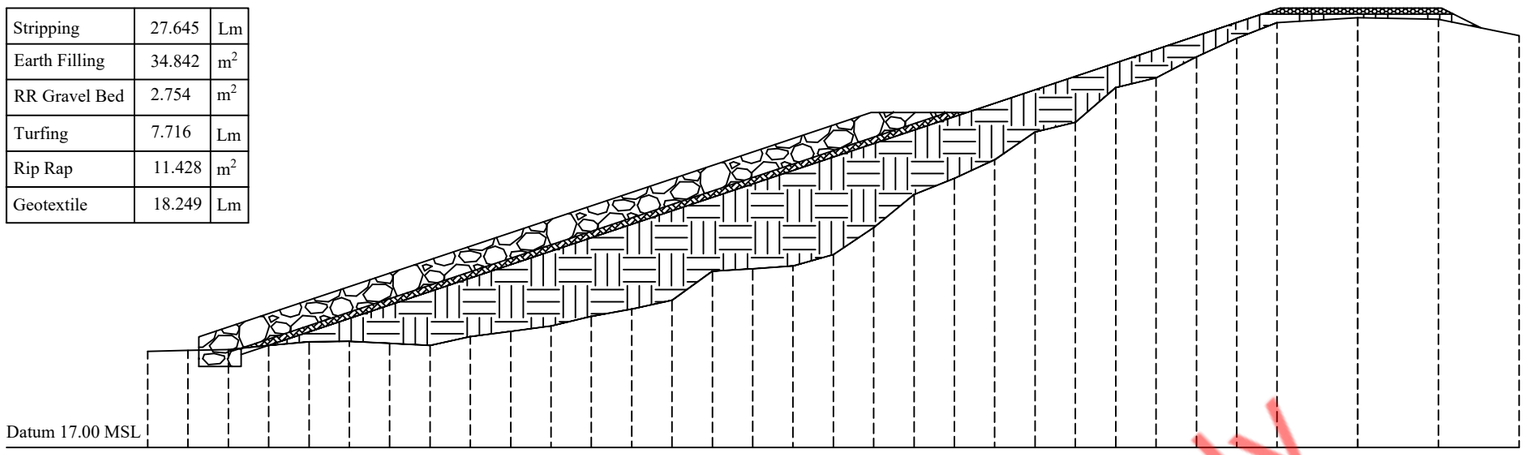
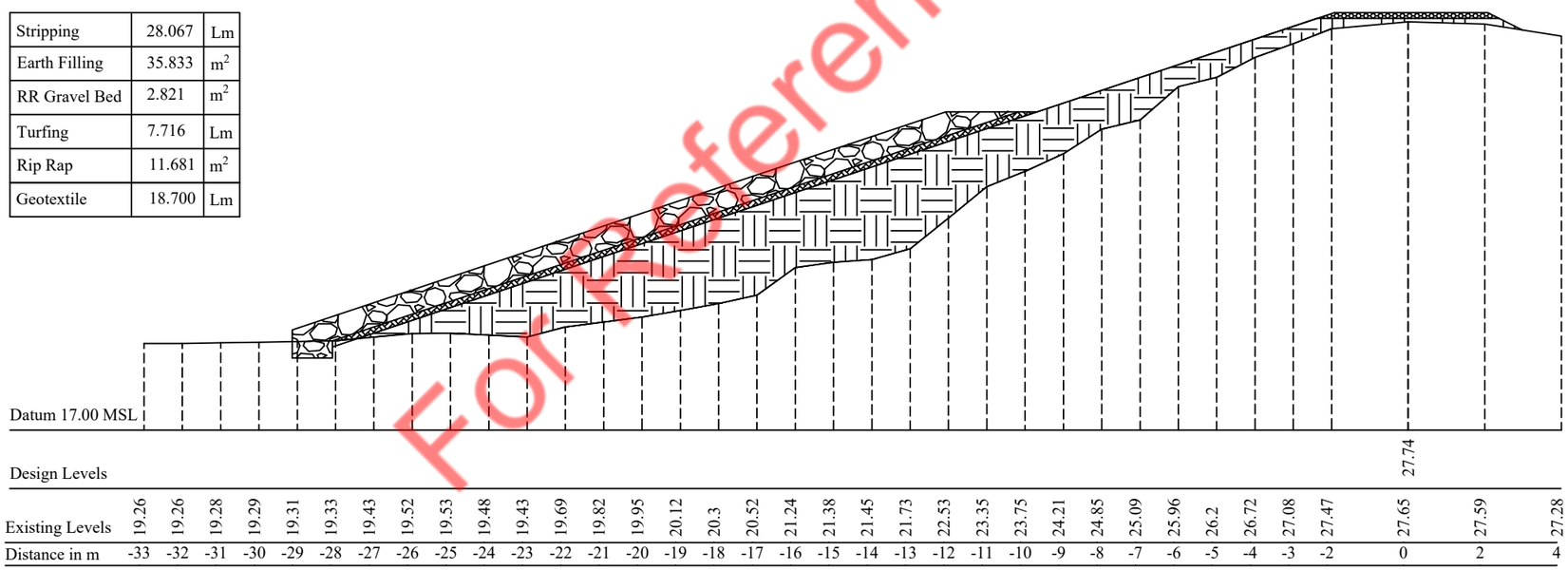
Stripping	27.645	Lm
Earth Filling	34.842	m^2
RR Gravel Bed	2.754	m^2
Turfing	7.716	Lm
Rip Rap	11.428	m^2
Geotextile	18.249	Lm

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	



CS at 2825 m

Stripping	28.067	Lm
Earth Filling	35.833	m^2
RR Gravel Bed	2.821	m^2
Turfing	7.716	Lm
Rip Rap	11.681	m^2
Geotextile	18.700	Lm



CS at 2800 m

For Reference Only

PROJECT :-
INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)

FUND BY:-
WORLD BANK

IMPLEMENT AGENCY :-
MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT

EXECUTIVE AGENCY :-
IRRIGATION DEPARTMENT NORTHERN PROVINCE

SCHEME :-
THANNIMURIPPU TANK

PROJECT TITLE :-
REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE

WORK DETAILS & LOCATION :-
Bund CSS (2+800 - 2+825)

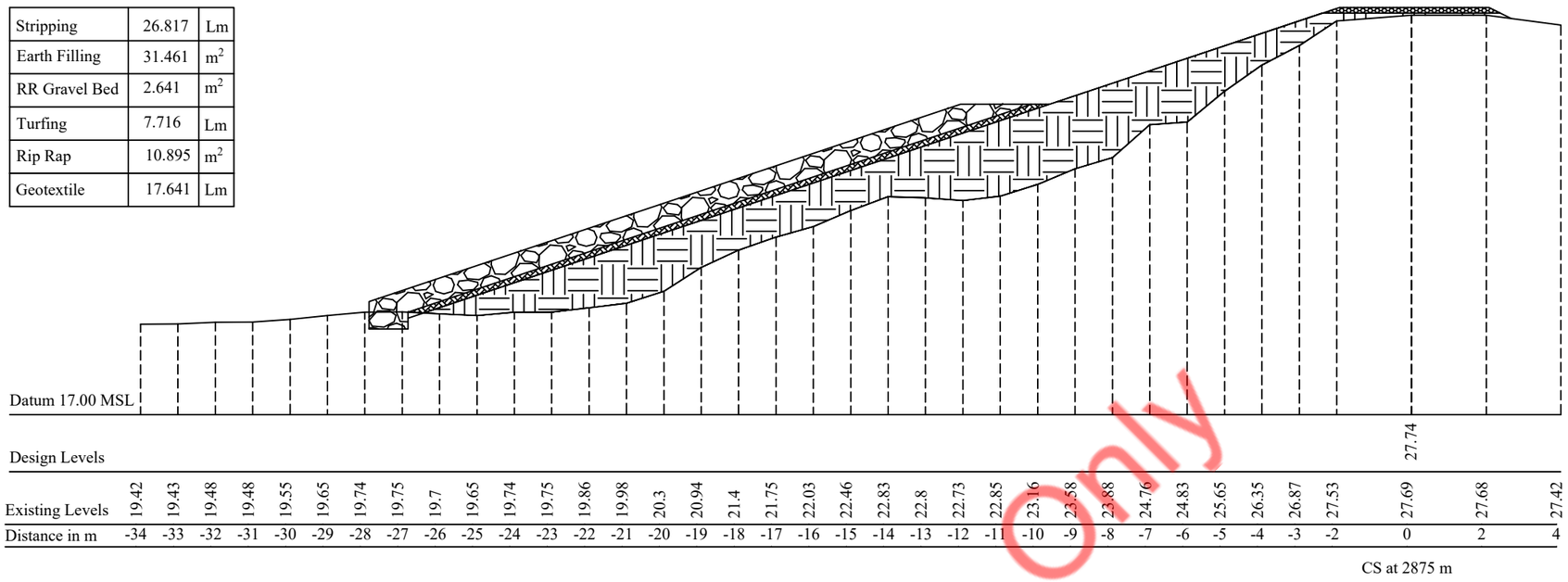
DRAWING NO :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/51

SHEET NO :- 59 of 75 | **SCALE :-** 1:150 | **DATE :-** 10.01.2025

AT IE's Office	AT DDI's Office
Surveyed & Drawn By:- ..... T.Pratheep,T.O	Drawn Checked BY:- ..... K.Vithusan,D'man
Drawn Checked By:- ..... T.Pavulraj, D'Man	Reviewed By:- .....
Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE	Approved By:- ..... Eng.S.Vihirthan,DDI

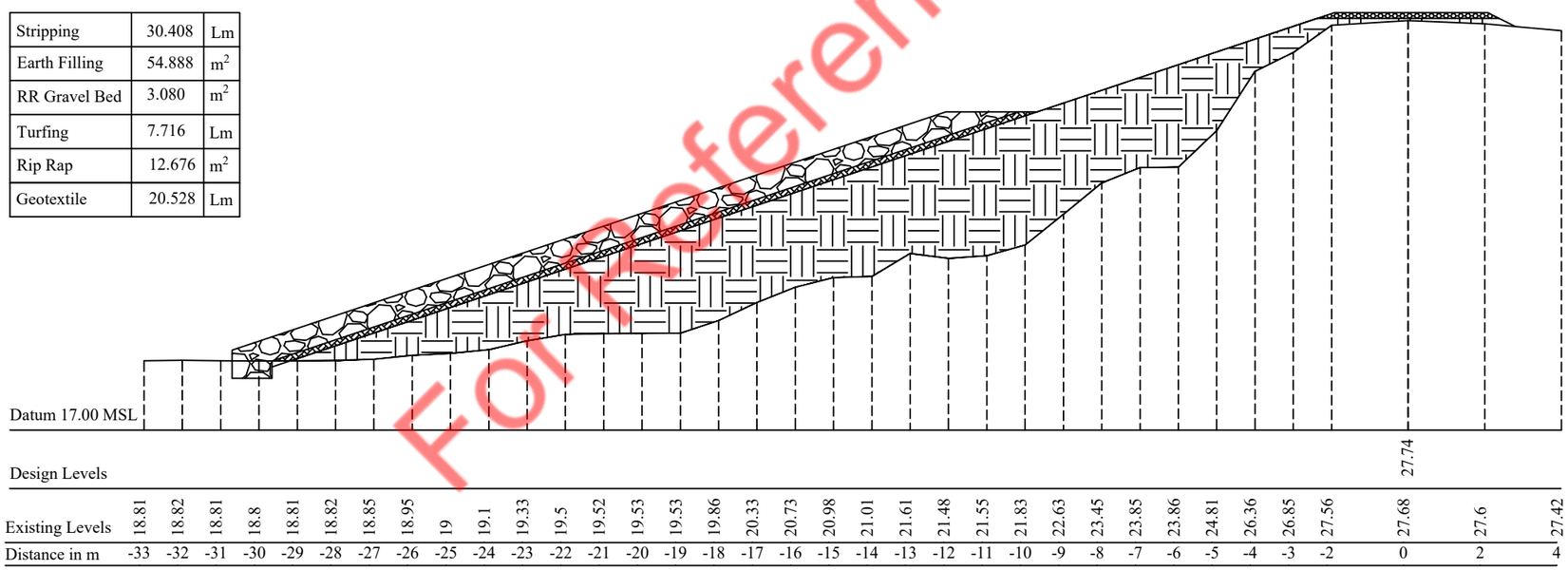
Stripping	26.817	Lm
Earth Filling	31.461	m^2
RR Gravel Bed	2.641	m^2
Turfing	7.716	Lm
Rip Rap	10.895	m^2
Geotextile	17.641	Lm

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	



CS at 2875 m

Stripping	30.408	Lm
Earth Filling	54.888	m^2
RR Gravel Bed	3.080	m^2
Turfing	7.716	Lm
Rip Rap	12.676	m^2
Geotextile	20.528	Lm



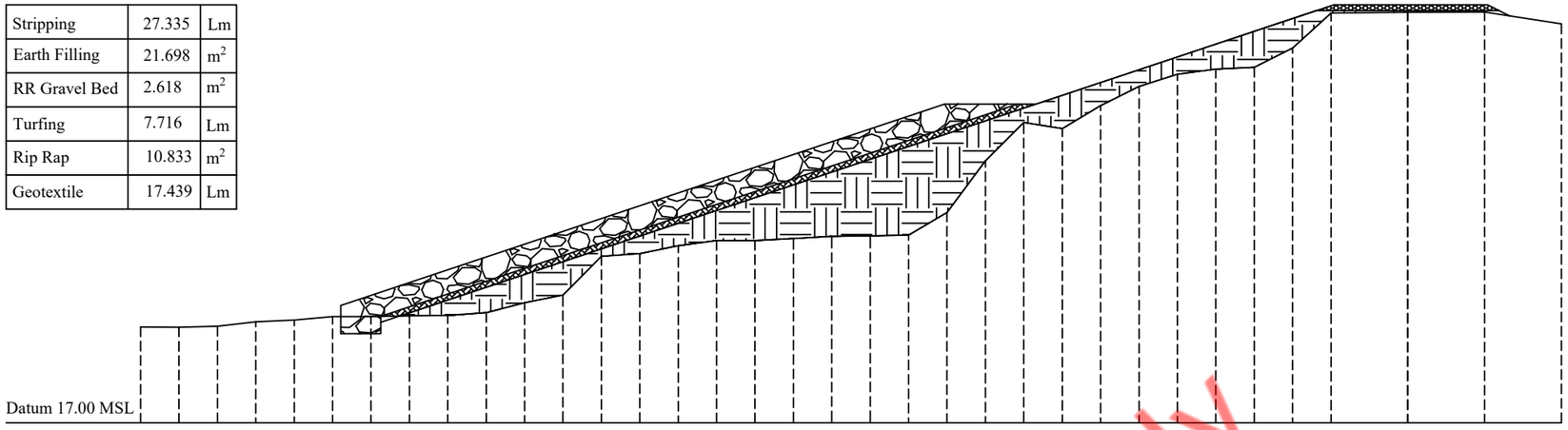
CS at 2850 m

For Reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office: Surveyed & Drawn By:- ..... T.Pratheep,T.O; Drawn Checked By:- ..... T.Pavulraj, D'Man; Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- **Bund CSS (2+850 - 2+875)**	AT DDI's Office: Drawn Checked BY:- ..... K.Vithusan,D'man; Reviewed By:- ..... ; Approved By:- ..... Eng.S.Vihirthan,DDI
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/52	
		SHEET NO :- 60 of 75 | **SCALE** :- 1:150 | **DATE** :- 10.01.2025	

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

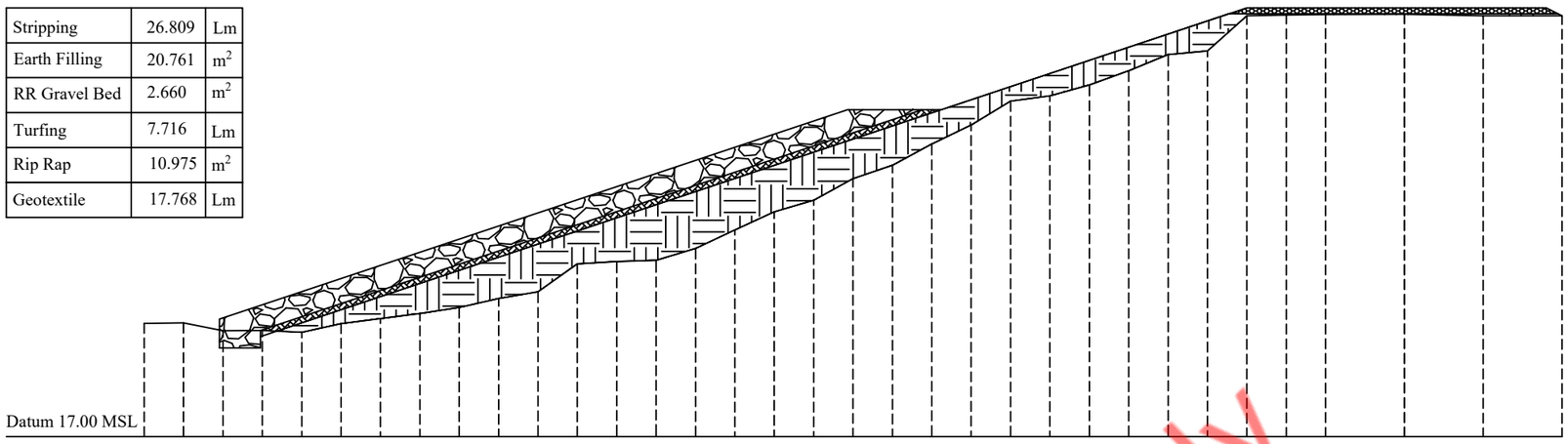
Stripping	27.335	Lm
Earth Filling	21.698	m^2
RR Gravel Bed	2.618	m^2
Turfing	7.716	Lm
Rip Rap	10.833	m^2
Geotextile	17.439	Lm



| | | |

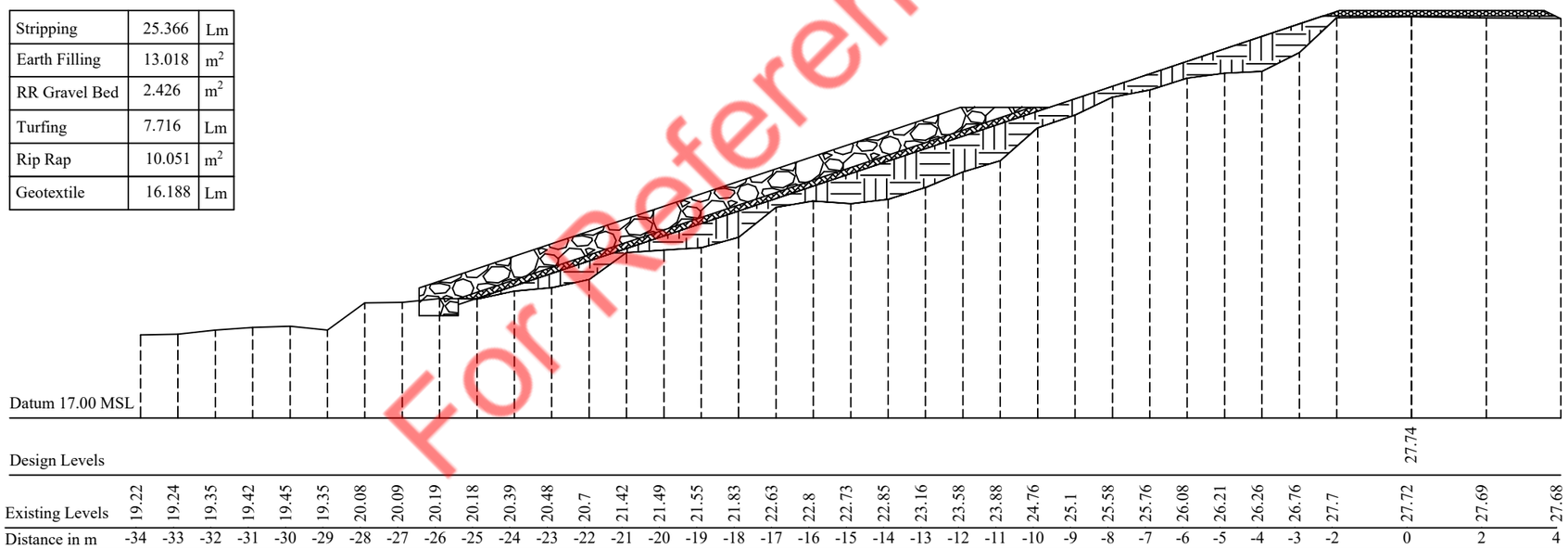
Stripping	26.809	Lm
Earth Filling	20.761	m^2
RR Gravel Bed	2.660	m^2
Turfing	7.716	Lm
Rip Rap	10.975	m^2
Geotextile	17.768	Lm

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	



CS at 2975 m

Stripping	25.366	Lm
Earth Filling	13.018	m^2
RR Gravel Bed	2.426	m^2
Turfing	7.716	Lm
Rip Rap	10.051	m^2
Geotextile	16.188	Lm



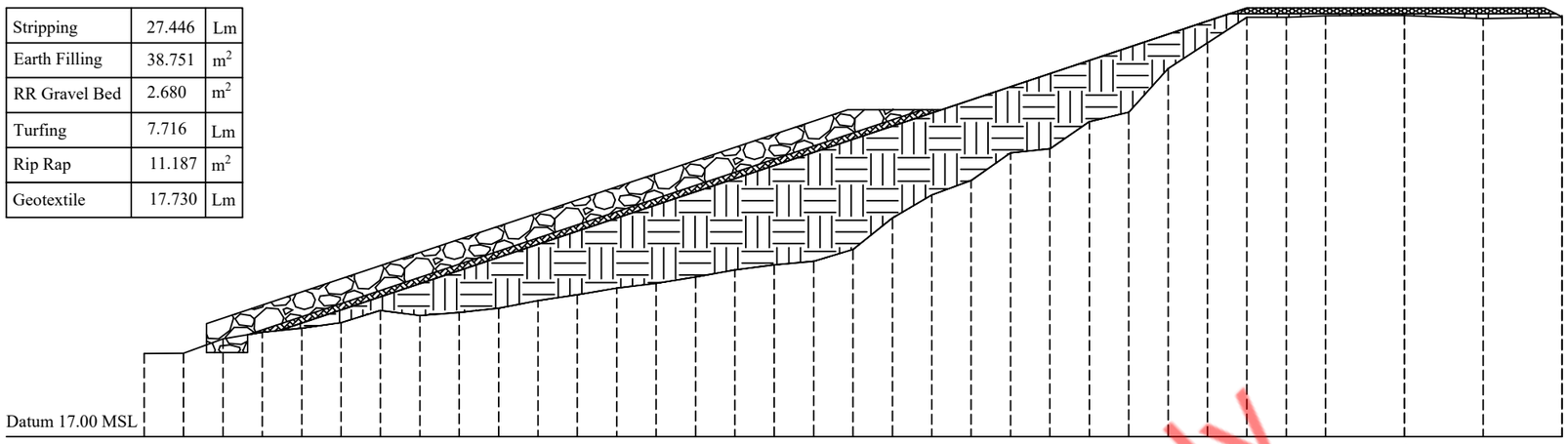
CS at 2950 m

For Reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office: Surveyed & Drawn By:- ..... T.Pratheep,T.O / AT DDI's Office: Drawn Checked BY:- ..... K.Vithusan,D'man
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- **Bund CSS (2+950 - 2+975)**	Drawn Checked By:- ..... T.Pavulraj, D'Man / Reviewed By:- .....
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/54	Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE / Approved By:- ..... Eng.S.Vihirthan,DDI
		SHEET NO :- 62 of 75 / **SCALE** :- 1:150 / **DATE** :- 10.01.2025	

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

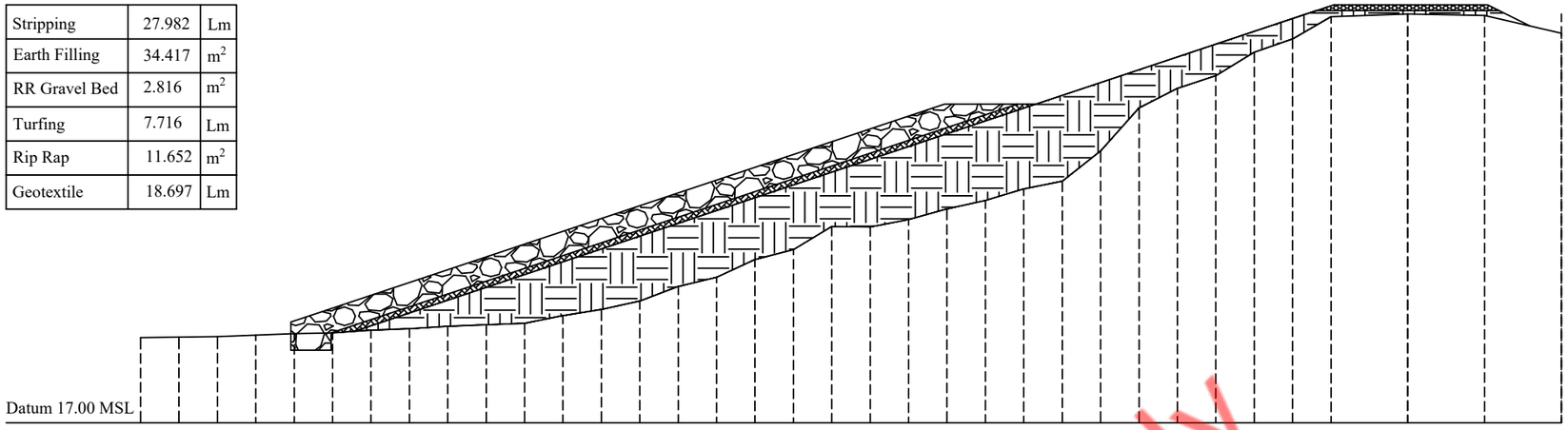
Stripping	27.446	Lm
Earth Filling	38.751	m^2
RR Gravel Bed	2.680	m^2
Turfing	7.716	Lm
Rip Rap	11.187	m^2
Geotextile	17.730	Lm



| | | |

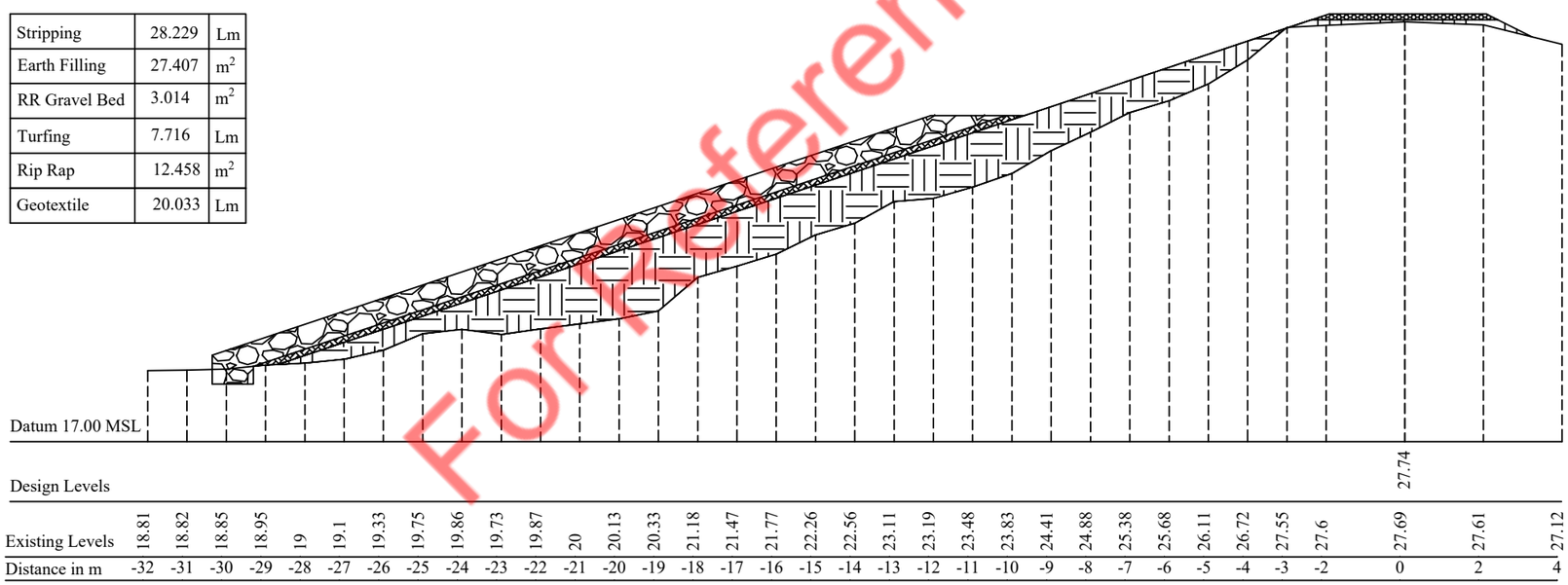
Stripping	27.982	Lm
Earth Filling	34.417	m^2
RR Gravel Bed	2.816	m^2
Turfing	7.716	Lm
Rip Rap	11.652	m^2
Geotextile	18.697	Lm

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	



CS at 3075 m

Stripping	28.229	Lm
Earth Filling	27.407	m^2
RR Gravel Bed	3.014	m^2
Turfing	7.716	Lm
Rip Rap	12.458	m^2
Geotextile	20.033	Lm



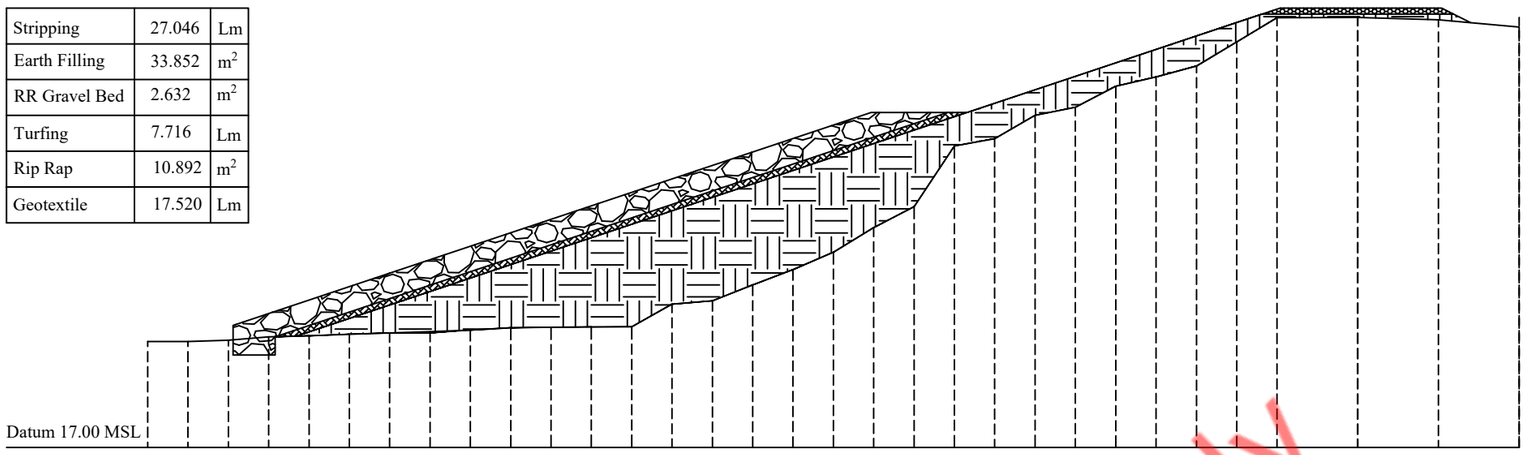
CS at 3050 m

For reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office: Surveyed & Drawn By:- ..... T.Pratheep,T.O AT DDI's Office: Drawn Checked BY:- ..... K.Vithusan,D'man
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- **Bund CSS (3+050 - 3+075)**	Drawn Checked By:- ..... T.Pavulraj, D'Man Reviewed By:- .....
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/56 **SHEET NO** :- 64 of 75 / **SCALE** :- 1:150 / **DATE** :- 10.01.2025	Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE Approved By:- ..... Eng.S.Vihirthan,DDI

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

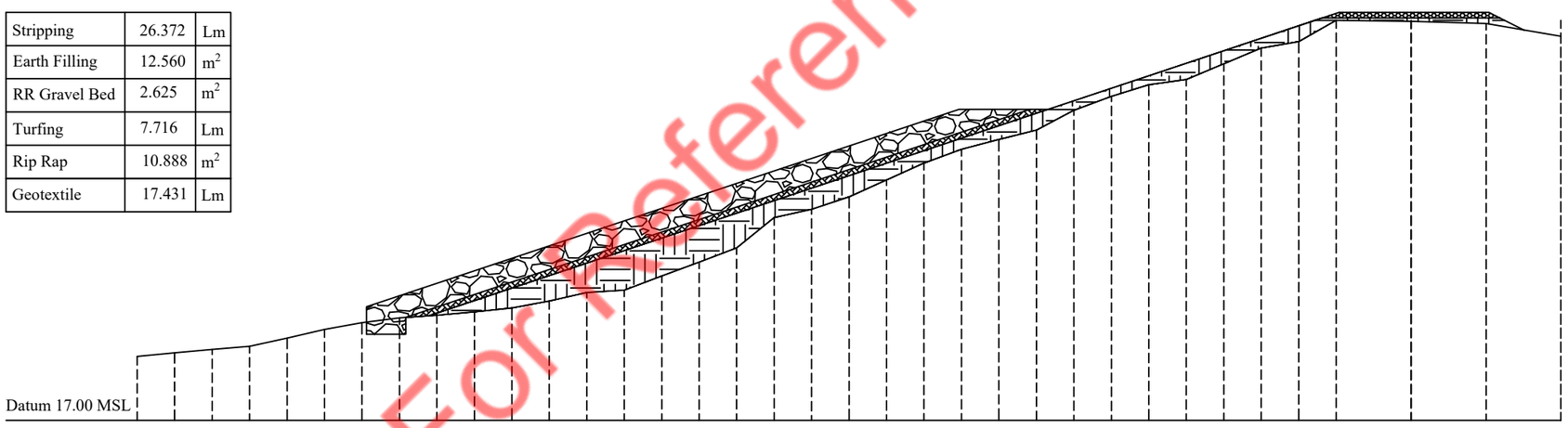
Stripping	27.046	Lm
Earth Filling	33.852	m^2
RR Gravel Bed	2.632	m^2
Turfing	7.716	Lm
Rip Rap	10.892	m^2
Geotextile	17.520	Lm



Design Levels																																		
Existing Levels	19.63	19.63	19.66	19.74	19.77	19.81	19.84	19.87	19.91	19.97	19.98	19.99	19.99	20.55	20.63	21.03	21.41	21.84	22.45	22.97	24.47	24.65	25.23	25.43	25.95	26.18	26.45	27.05	27.65	27.66		27.6		27.42
Distance in m	-30	-29	-28	-27	-26	-25	-24	-23	-22	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	0		2		4

CS at 3125 m

Stripping	26.372	Lm
Earth Filling	12.560	m^2
RR Gravel Bed	2.625	m^2
Turfing	7.716	Lm
Rip Rap	10.888	m^2
Geotextile	17.431	Lm



Design Levels																																		
Existing Levels	18.7	18.8	18.89	18.97	19.19	19.42	19.6	19.73	19.8	19.89	20	20.18	20.41	20.47	20.85	21.22	21.6	22.41	22.63	22.97	23.42	23.87	24.24	24.5	24.75	25.28	25.65	25.96	26.1	26.52	26.94	27.11	27.68	27.65		27.59		27.25
Distance in m	-34	-33	-32	-31	-30	-29	-28	-27	-26	-25	-24	-23	-22	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	0		2		4

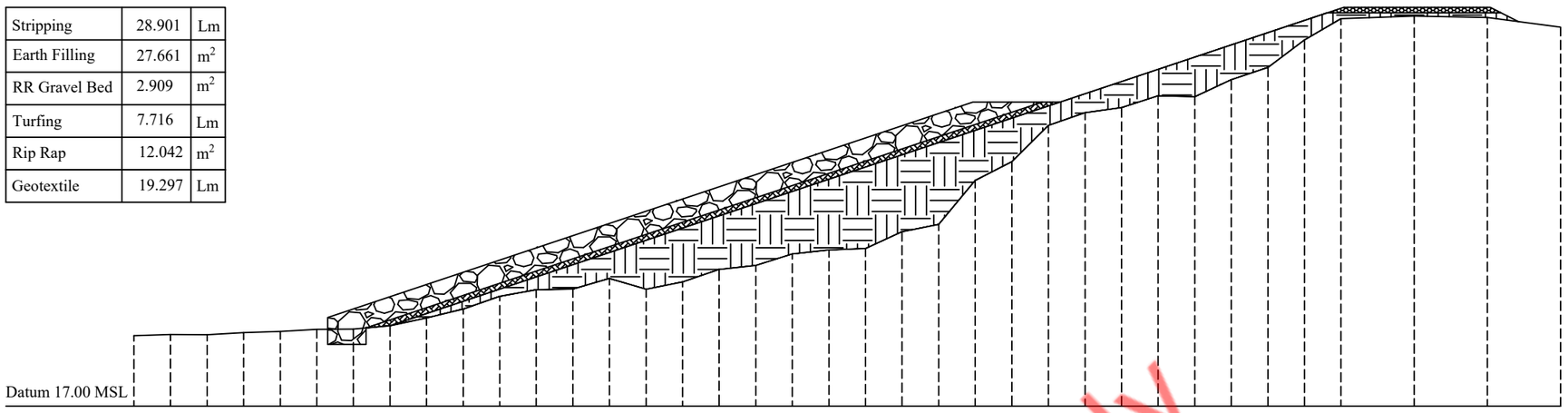
CS at 3100 m

For Reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office: Surveyed & Drawn By:- ..... T.Pratheep,T.O AT DDI's Office: Drawn Checked BY:- ..... K.Vithusan,D'man
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- **Bund CSS (3+100 - 3+125)**	Drawn Checked By:- ..... T.Pavulraj, D'Man Reviewed By:- .....
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/57 **SHEET NO** :- 65 of 75 | **SCALE** :- 1:150 | **DATE** :- 10.01.2025	Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE Approved By:- ..... Eng.S.Vihirthan,DDI

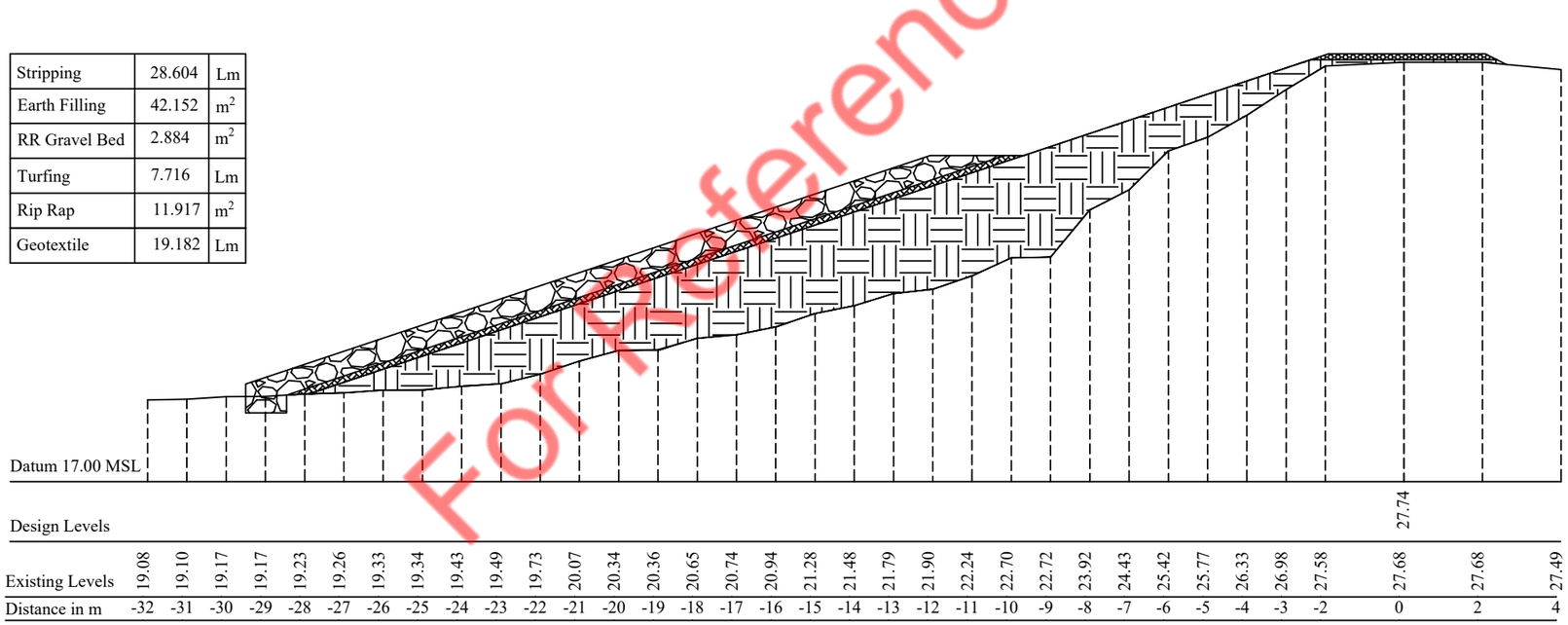
Stripping	28.901	Lm
Earth Filling	27.661	m^2
RR Gravel Bed	2.909	m^2
Turfing	7.716	Lm
Rip Rap	12.042	m^2
Geotextile	19.297	Lm

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	



CS at 3175 m

Stripping	28.604	Lm
Earth Filling	42.152	m^2
RR Gravel Bed	2.884	m^2
Turfing	7.716	Lm
Rip Rap	11.917	m^2
Geotextile	19.182	Lm



CS at 3150.00 m

For Reference Only

PROJECT :-
INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)

FUND BY:-
WORLD BANK

IMPLEMENT AGENCY :-
MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT

EXECUTIVE AGENCY :-
IRRIGATION DEPARTMENT NORTHERN PROVINCE

SCHEME :-
THANNIMURIPPU TANK

PROJECT TITLE :-
REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE

WORK DETAILS & LOCATION :-
Bund CSS (3+150 - 3+175)

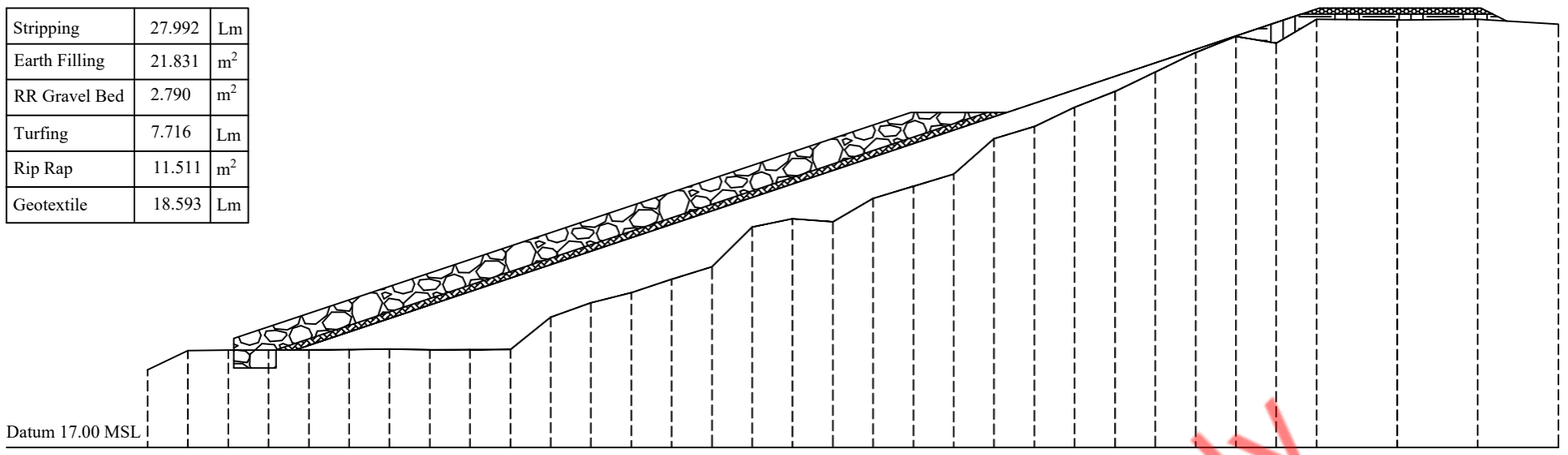
DRAWING NO :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/58

SHEET NO :- 66 of 75 | **SCALE :-** 1:150 | **DATE :-** 10.01.2025

AT IE's Office	AT DDI's Office
Surveyed & Drawn By:- ..... T.Pratheep,T.O	Drawn Checked BY:- ..... K.Vithusan,D'man
Drawn Checked By:- ..... T.Pavulraj, D'Man	Reviewed By:- .....
Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE	Approved By:- ..... Eng.S.Vihirthan,DDI

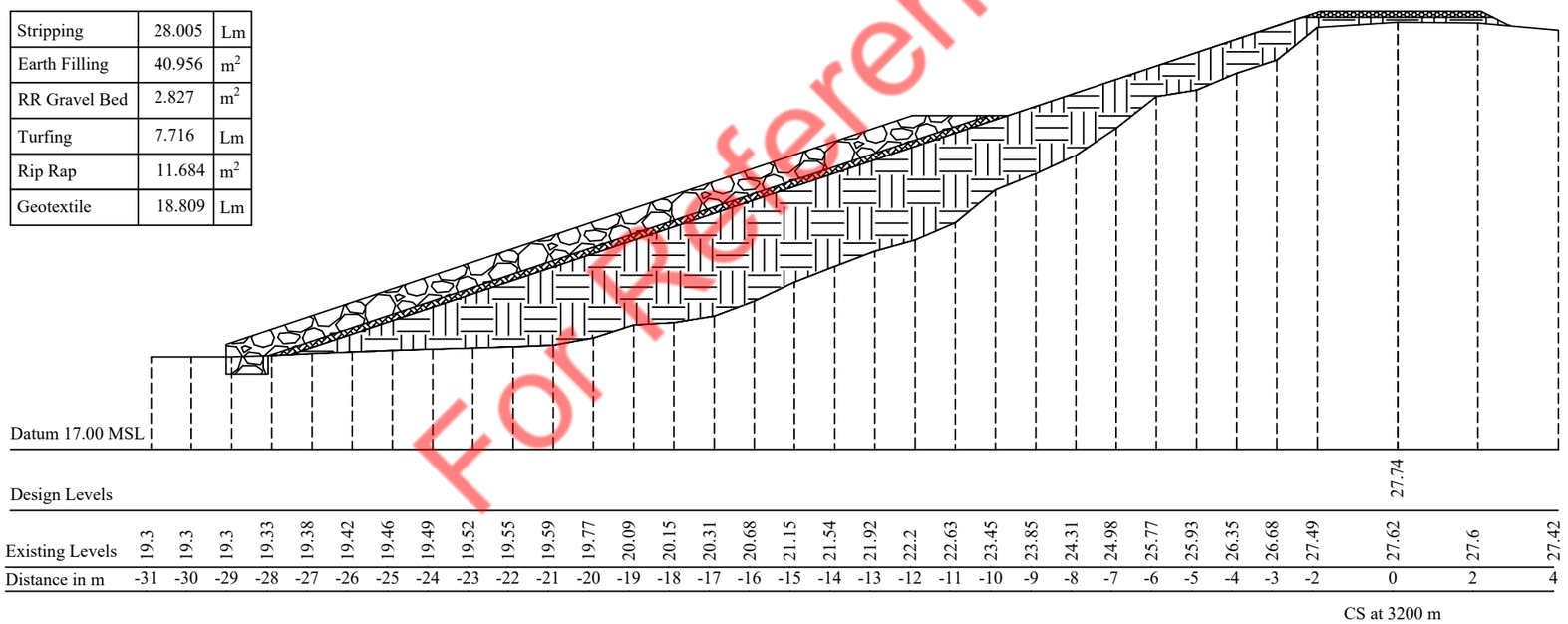
Stripping	27.992	Lm
Earth Filling	21.831	m^2
RR Gravel Bed	2.790	m^2
Turfing	7.716	Lm
Rip Rap	11.511	m^2
Geotextile	18.593	Lm

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	



CS at 3225 m

Stripping	28.005	Lm
Earth Filling	40.956	m^2
RR Gravel Bed	2.827	m^2
Turfing	7.716	Lm
Rip Rap	11.684	m^2
Geotextile	18.809	Lm



CS at 3200 m

For Reference Only

PROJECT :-
INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)

IMPLEMENT AGENCY :-
MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT

EXECUTIVE AGENCY :-
IRRIGATION DEPARTMENT NORTHERN PROVINCE

FUND BY:-
WORLD BANK

SCHEME :-
THANNIMURIPPU TANK

PROJECT TITLE :-
REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE

WORK DETAILS & LOCATION :-
Bund CSS (3+200 - 3+225)

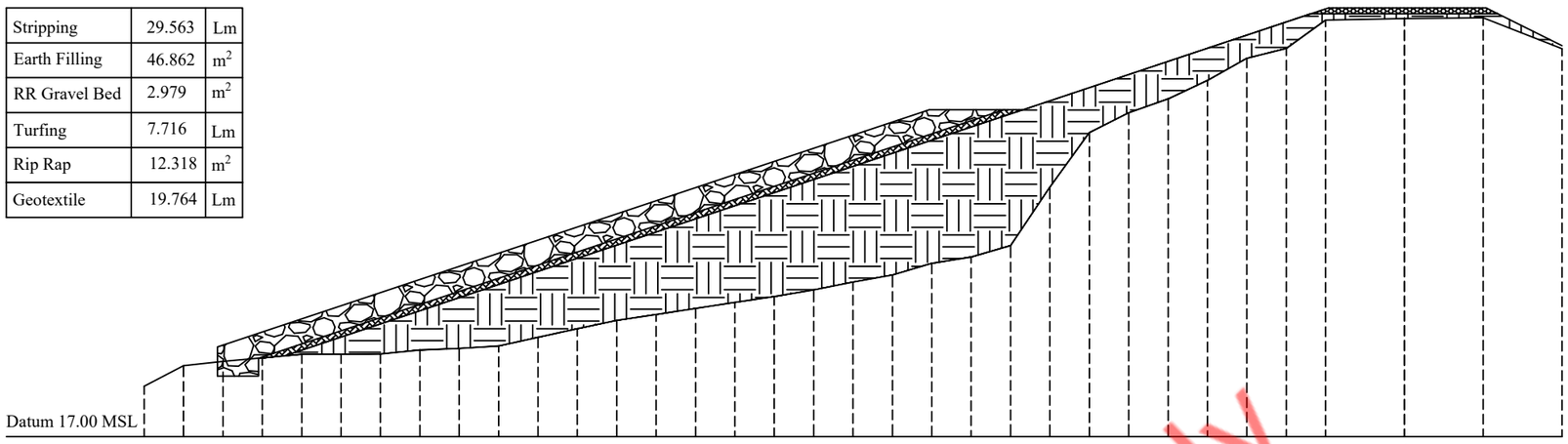
DRAWING NO :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/59

SHEET NO :- 67 of 75 | **SCALE** :- 1:150 | **DATE** :- 10.01.2025

AT IE's Office	AT DDI's Office
Surveyed & Drawn By:- ..... T.Pratheep,T.O	Drawn Checked BY:- ..... K.Vithusan,D'man
Drawn Checked By:- ..... T.Pavulraj, D'Man	Reviewed By:- .....
Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE	Approved By:- ..... Eng.S.Vihirthan,DDI

Stripping	29.563	Lm
Earth Filling	46.862	m^2
RR Gravel Bed	2.979	m^2
Turfing	7.716	Lm
Rip Rap	12.318	m^2
Geotextile	19.764	Lm

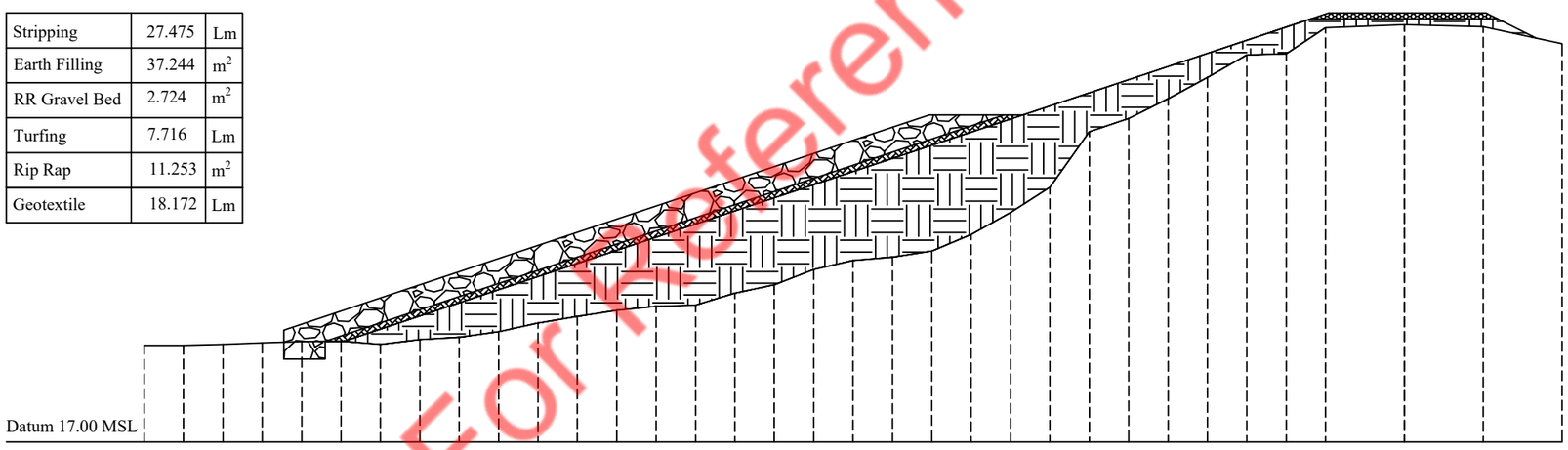
Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	



Design Levels																																		
Existing Levels	18.28	18.80	18.91	19.00	19.09	19.10	19.10	19.20	19.24	19.30	19.52	19.74	19.95	20.10	20.26	20.41	20.56	20.73	20.93	21.11	21.40	21.56	21.85	23.34	24.72	25.23	25.58	26.05	26.61	26.86	27.58	27.62	27.64	26.85
Distance in m	-32	-31	-30	-29	-28	-27	-26	-25	-24	-23	-22	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	0	2	4

CS at 3275.00 m

Stripping	27.475	Lm
Earth Filling	37.244	m^2
RR Gravel Bed	2.724	m^2
Turfing	7.716	Lm
Rip Rap	11.253	m^2
Geotextile	18.172	Lm



Design Levels																																		
Existing Levels	19.45	19.45	19.48	19.51	19.55	19.56	19.48	19.6	19.66	19.8	20.02	20.19	20.34	20.44	20.47	20.78	20.99	21.38	21.61	21.69	21.85	22.27	22.83	23.47	24.88	25.22	25.72	26.26	26.83	26.86	27.52	27.6	27.54	27.11
Distance in m	-32	-31	-30	-29	-28	-27	-26	-25	-24	-23	-22	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	0	2	4

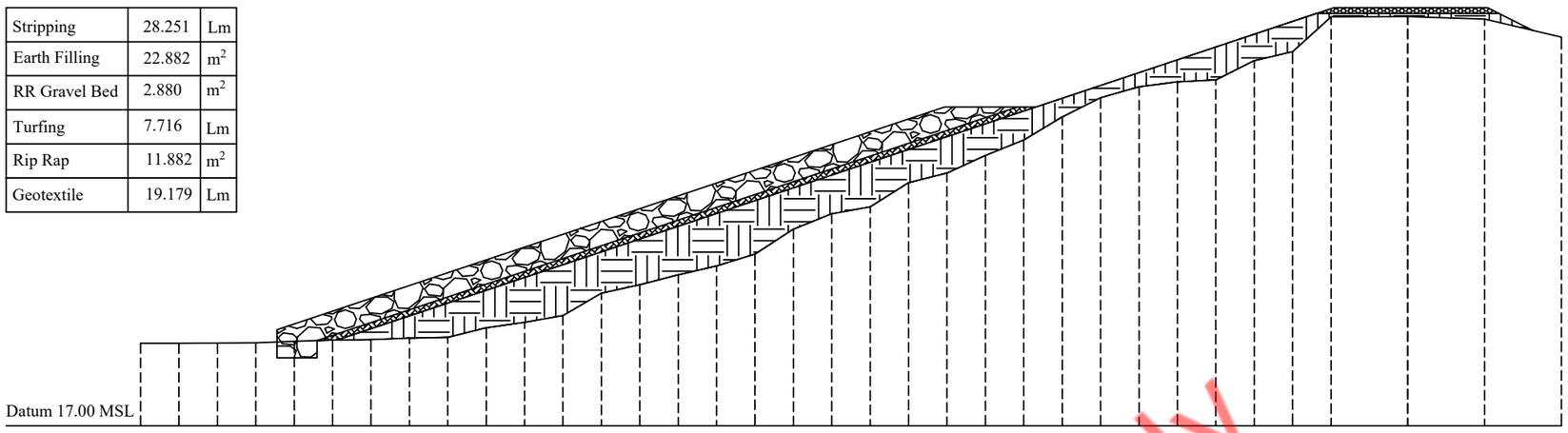
CS at 3250 m

For Reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office: Surveyed & Drawn By:- T.Pratheep,T.O; Drawn Checked By:- T.Pavulraj, D'Man; Submitted By:- Eng.Mrs.M.Joyeskumar,IE
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- **Bund CSS (3+250 - 3+275)**	AT DDI's Office: Drawn Checked BY:- K.Vithusan,D'man; Reviewed By:- ; Approved By:- Eng.S.Vihirthan,DDI
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/60	
		SHEET NO :- 68 of 75 | **SCALE** :- 1:150 | **DATE** :- 10.01.2025	

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

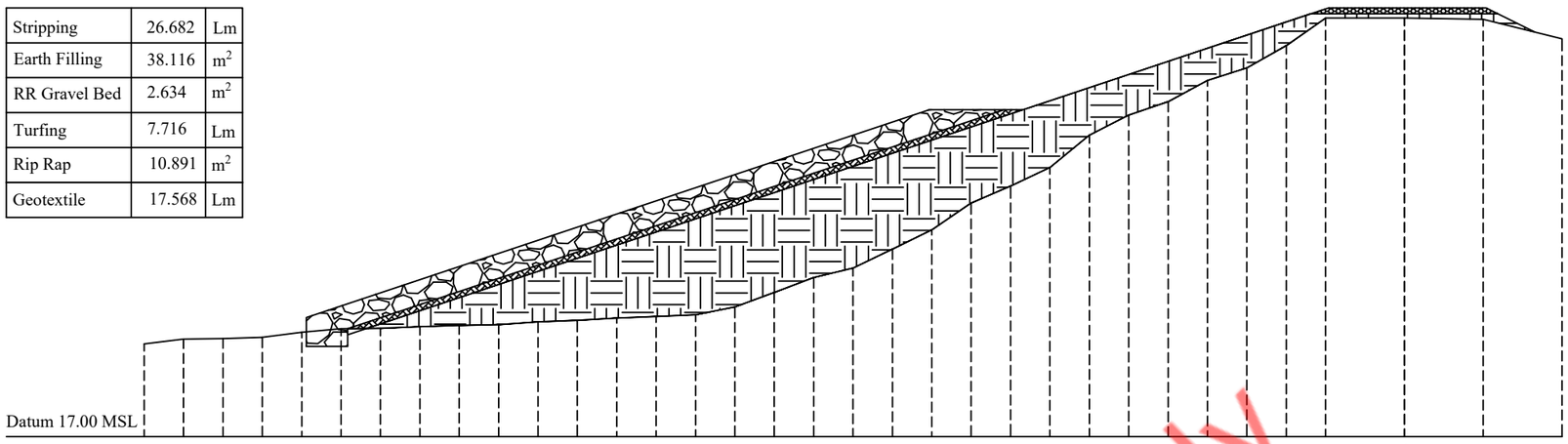
Stripping	28.251	Lm
Earth Filling	22.882	m^2
RR Gravel Bed	2.880	m^2
Turfing	7.716	Lm
Rip Rap	11.882	m^2
Geotextile	19.179	Lm



| | | |

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

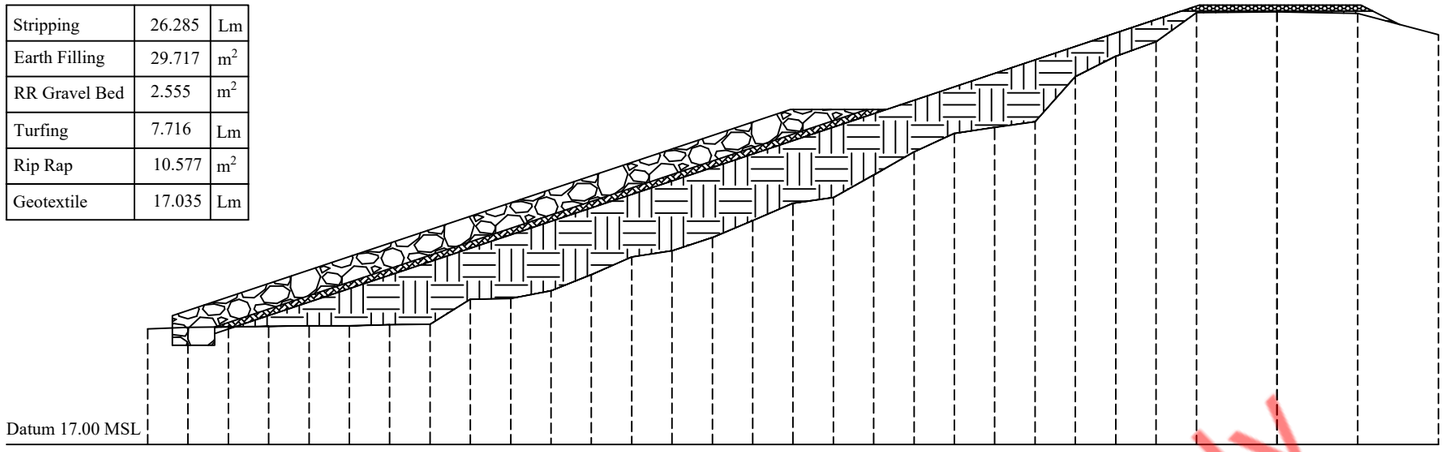
Stripping	26.682	Lm
Earth Filling	38.116	m^2
RR Gravel Bed	2.634	m^2
Turfing	7.716	Lm
Rip Rap	10.891	m^2
Geotextile	17.568	Lm



| Design Levels | | |

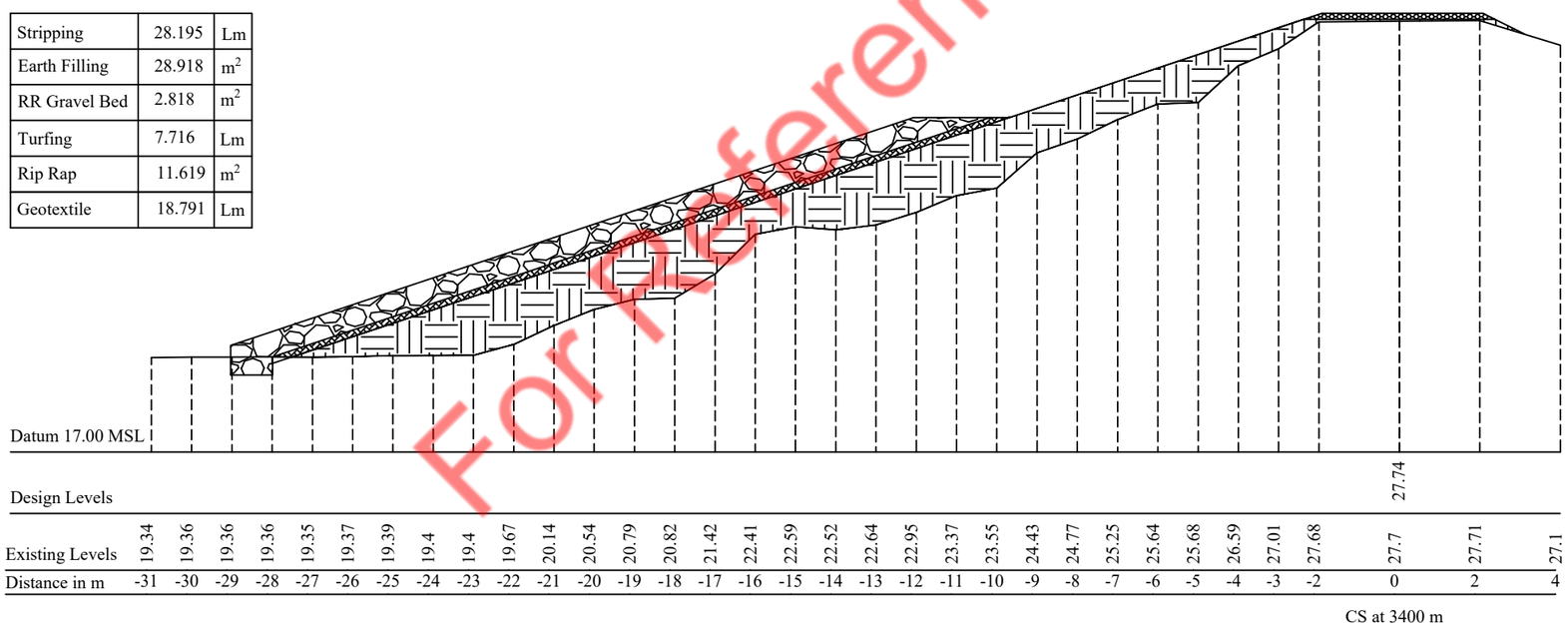
Stripping	26.285	Lm
Earth Filling	29.717	m^2
RR Gravel Bed	2.555	m^2
Turfing	7.716	Lm
Rip Rap	10.577	m^2
Geotextile	17.035	Lm

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	



CS at 3425 m

Stripping	28.195	Lm
Earth Filling	28.918	m^2
RR Gravel Bed	2.818	m^2
Turfing	7.716	Lm
Rip Rap	11.619	m^2
Geotextile	18.791	Lm



CS at 3400 m

For Reference Only

PROJECT :-
INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)

IMPLEMENT AGENCY :-
MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT

EXECUTIVE AGENCY :-
IRRIGATION DEPARTMENT NORTHERN PROVINCE

FUND BY:-
WORLD BANK

SCHEME :-
THANNIMURIPPU TANK

PROJECT TITLE :-
REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE

WORK DETAILS & LOCATION :-
Bund CSS (3+400 - 3+425)

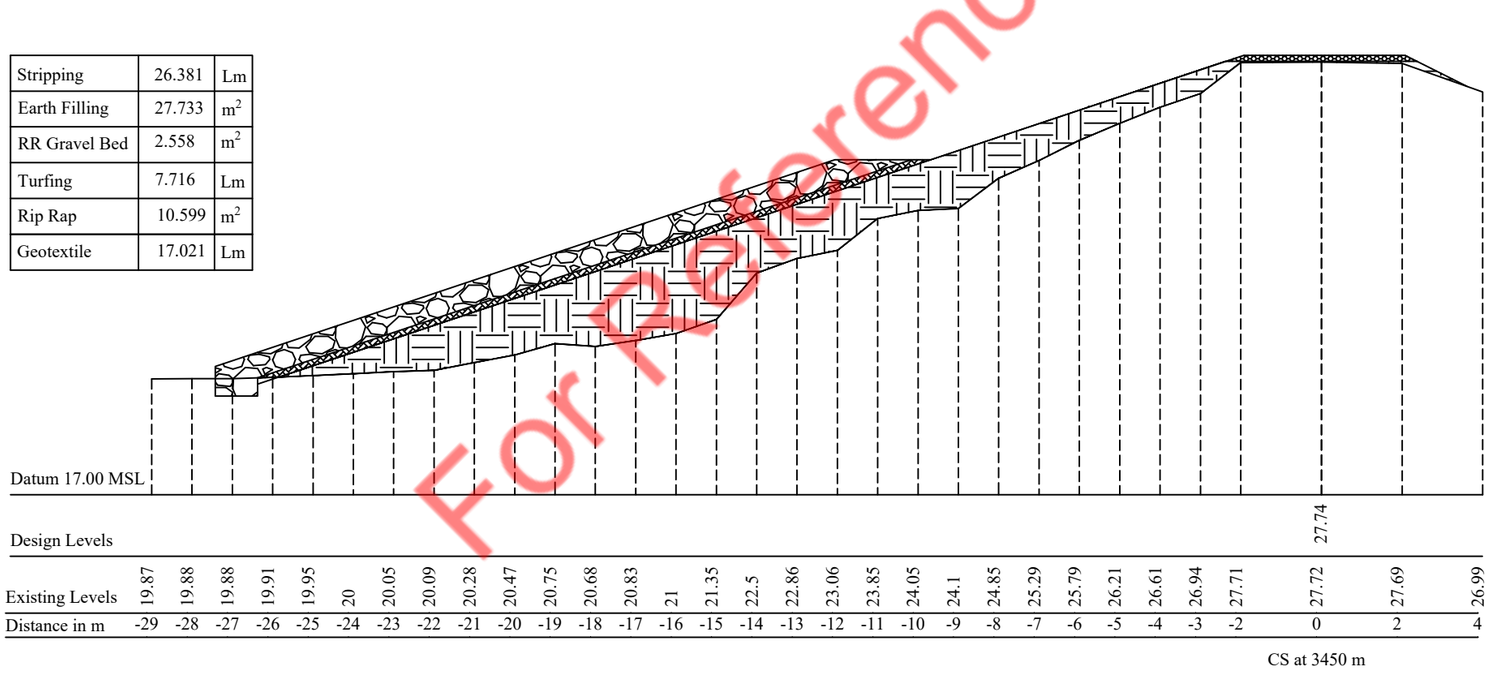
DRAWING NO :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/63

SHEET NO :- 71 of 75 | **SCALE :-** 1:150 | **DATE :-** 10.01.2025

AT IE's Office	AT DDI's Office
Surveyed & Drawn By:- ..... T.Pratheep,T.O	Drawn Checked BY:- ..... K.Vithusan,D'man
Drawn Checked By:- ..... T.Pavulraj, D'Man	Reviewed By:- .....
Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE	Approved By:- ..... Eng.S.Vihirthan,DDI

Earth Filling	
Gravel Bed for Rip-Rap	
Rip Rap Work	
Bund Top Gravel	
Geotextile	
stripping	
Turfing	

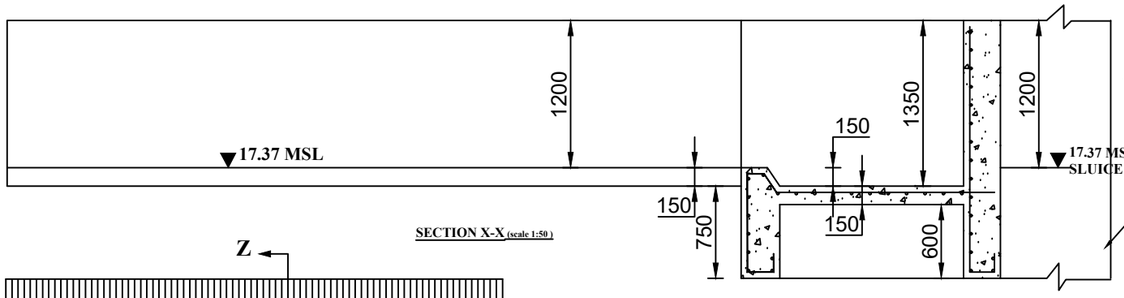
Stripping	26.381	Lm
Earth Filling	27.733	m^2
RR Gravel Bed	2.558	m^2
Turfing	7.716	Lm
Rip Rap	10.599	m^2
Geotextile	17.021	Lm



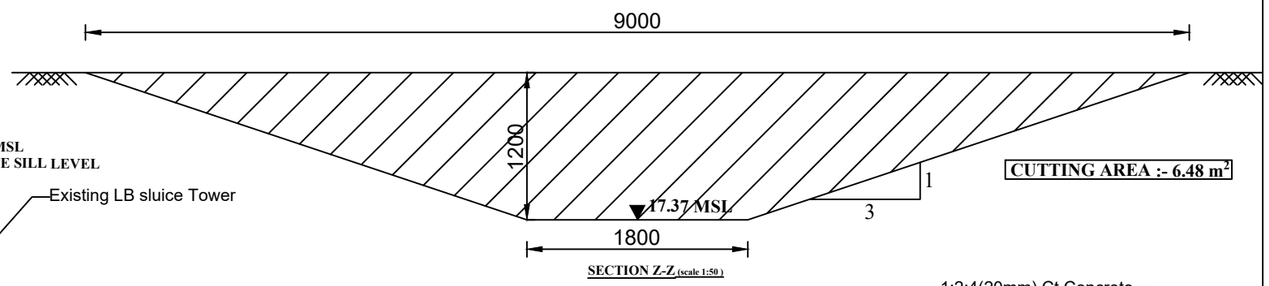
CS at 3450 m

For Reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office / AT DDI's Office
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- **Bund CSS (3+450)**	Surveyed & Drawn By:- T.Pratheep,T.O / Drawn Checked BY:- K.Vithusan,D'man
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/BUND/CSS/64	Drawn Checked By:- T.Pavulraj, D'Man / Reviewed By:-
		SHEET NO :- 72 of 75 / **SCALE** :- 1:150 / **DATE** :- 10.01.2025	Submitted By:- Eng.Mrs.M.Joyeskumar,IE / Approved By:- Eng.S.Vihirthan,DDI

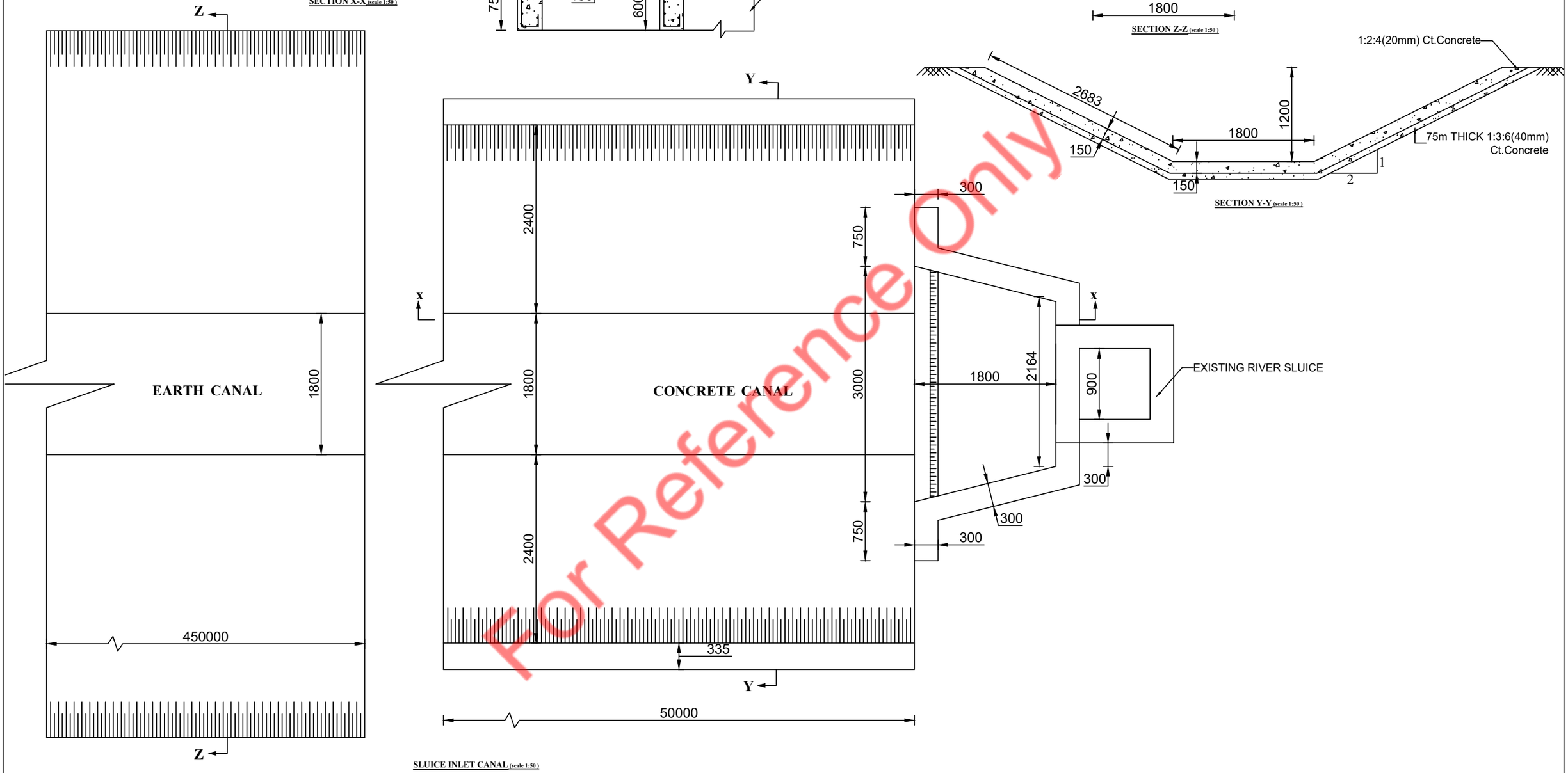


SECTION X-X (scale 1:50)



SECTION Z-Z (scale 1:50)

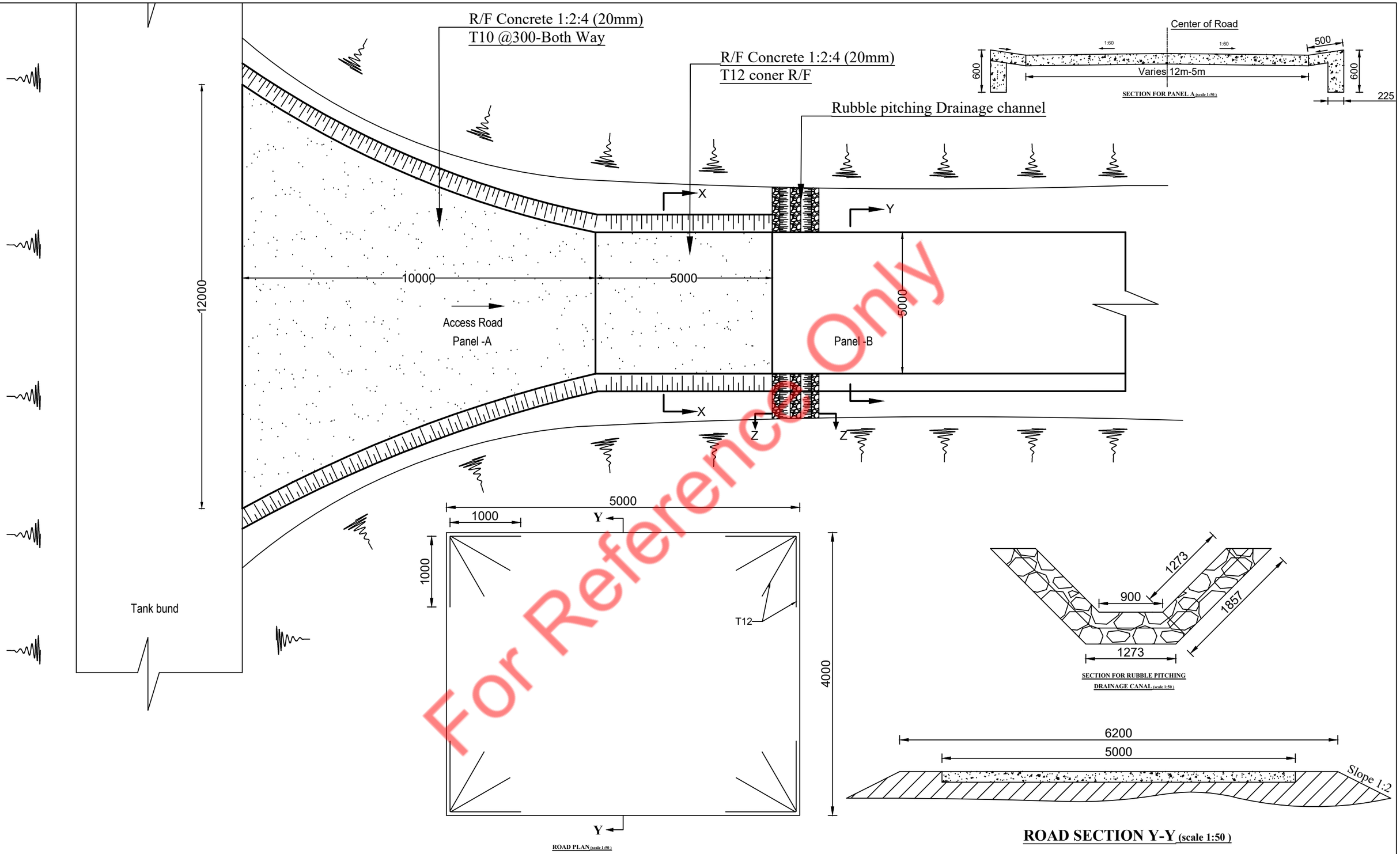
SECTION Y-Y (scale 1:50)



SLUICE INLET CANAL (scale 1:50)

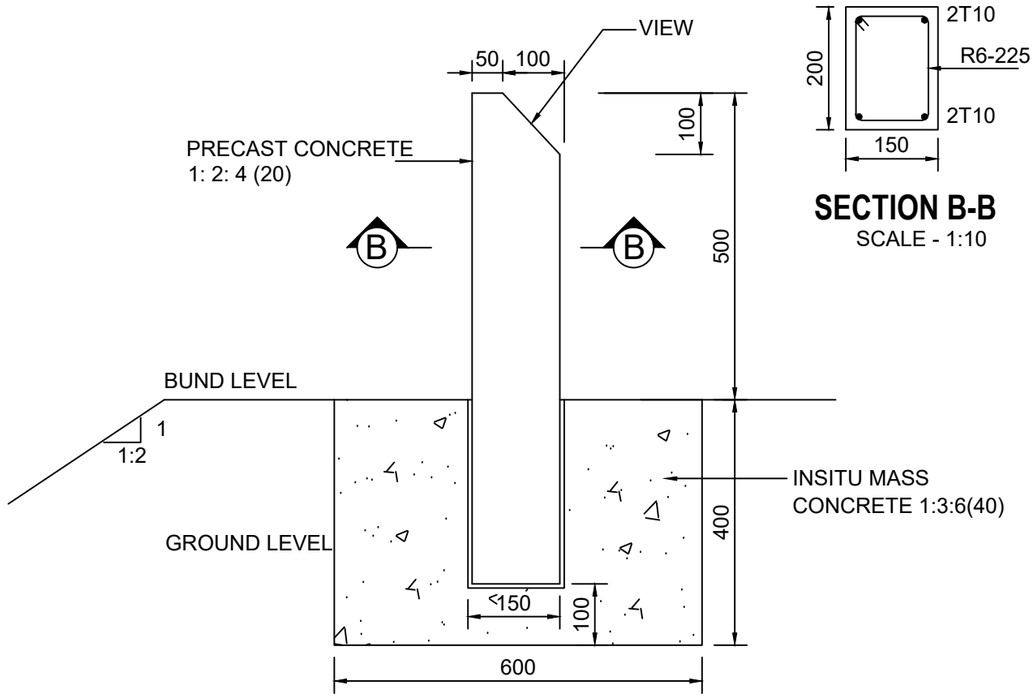
For Reference Only

PROJECT :- INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)	**IMPLEMENT AGENCY :-** MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT	**PROJECT TITLE :-** REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE	AT IE's Office	AT DDI's Office
	EXECUTIVE AGENCY :- IRRIGATION DEPARTMENT NORTHERN PROVINCE	**WORK DETAILS & LOCATION :-** LB SLUICE INLET CANAL DETAILS	Surveyed & Drawn By:- ..... T.Pratheep,T.O	Drawn Checked BY:- ..... K.Vithusan,D'man
FUND BY:- WORLD BANK	**SCHEME :-** THANNIMURIPPU TANK	**DRAWING NO :-** IWWRMP/2025/MUL/MIK/THANNI/LB SLUICE/INLET CANAL/01	Drawn Checked By:- ..... T.Pavulraj, D'Man	Reviewed By:- .....
		SHEET NO :- 73 of 75 **SCALE :-** 1:50 **DATE :-** 10.01.2025	Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE	Approved By:- ..... Eng.S.Vihirthan,DDI



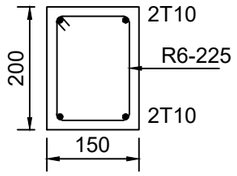
For Reference Only

PROJECT :- INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)	**IMPLEMENT AGENCY :-** MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT	**PROJECT TITLE :-** REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE	AT IE's Office	AT DDI's Office
	EXECUTIVE AGENCY :- IRRIGATION DEPARTMENT NORTHERN PROVINCE	**WORK DETAILS & LOCATION :-** CONSTRUCTION OF CONCRETE BUND ACCESS ROAD (0+000 - 0+300)	Surveyed & Drawn By:- ..... T.Pratheep,T.O	Drawn Checked BY:- ..... K.Vithusan,D'man
FUND BY:- WORLD BANK	**SCHEME :-** THANNIMURIPPU TANK	**DRAWING NO :-** IWWRMP/2025/MUL/MIK/THANNI/ ACCESS ROAD/CONCRETE/01	Drawn Checked By:- ..... T.Pavulraj, D'Man	Reviewed By:- .....
		SHEET NO :- 74 of 75 **SCALE :-** As shown **DATE :-** 10.01.2025	Submitted By:- ..... Eng.Mrs.M.Joyeskumar,IE	Approved By:- ..... Eng.S.Vihirthan,DDI



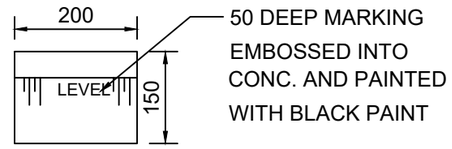
SECTION A-A

SCALE - 1:10



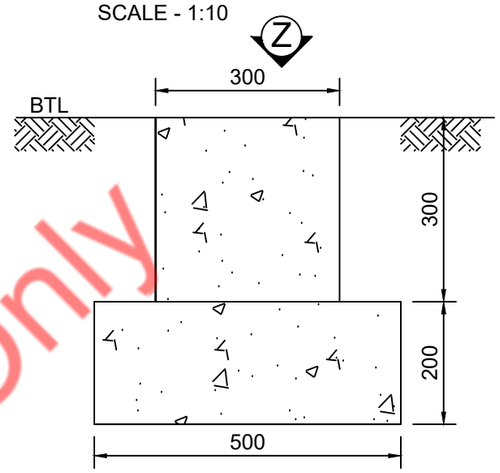
SECTION B-B

SCALE - 1:10



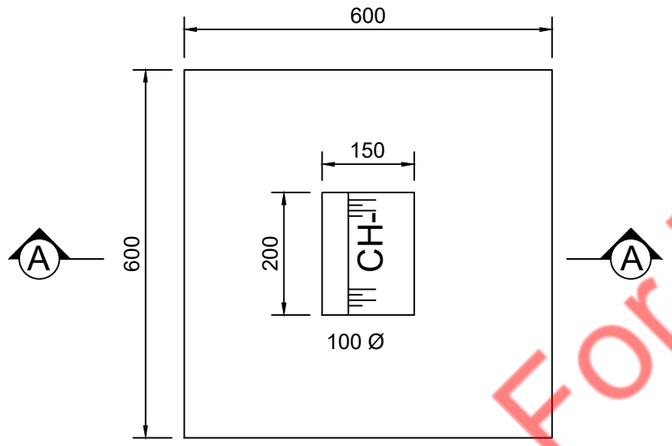
VIEW - Z

SCALE - 1:10



SECTION D-D

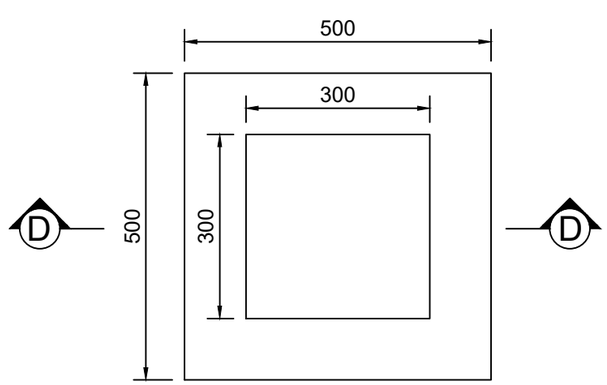
SCALE - 1:10



PLAN

SCALE - 1:10

DETAIL OF CHAINAGE BLOCK



PLAN

SCALE - 1:10

DETAIL OF BUND LEVEL BLOCK

For Reference Only

PROJECT :- **INTEGRATED WATERSHED & WATER RESOURCES MANAGEMENT PROJECT. (IWWRMP)**	**IMPLEMENT AGENCY** :- **MINISTRY OF MAHAWELI DEVELOPMENT & ENVIRONMENT**	**PROJECT TITLE** :- **REHABILITATION OF THANNIMURIPPU TANK HEAD WORKS AT THANNIMURIPPU TANK IN MUTHUIYANKADDU DIVISION, MULLAITIVU RANGE**	AT IE's Office Surveyed & Drawn By:- T.Pratheep,T.O	AT DDI's Office Drawn Checked BY:- K.Vithusan,D'man
	EXECUTIVE AGENCY :- **IRRIGATION DEPARTMENT NORTHERN PROVINCE**	**WORK DETAILS & LOCATION** :- DETAILS OF BUND CHAINAGE AND LEVEL BLOCKS	Drawn Checked By:- T.Pavulraj, D'Man	Reviewed By:-
FUND BY:- **WORLD BANK**	**SCHEME** :- **THANNIMURIPPU TANK**	**DRAWING NO** :- IWWRMP/2025/MUL/MIK/THANNI/CHAIN,LEVEL/BLOCK/01	Submitted By:- Eng.Mrs.M.Joyeskumar,IE	Approved By:- Eng.S.Vihirthan,DDI
		SHEET NO :- 75 of 75 / **SCALE** :- 1:10 / **DATE** :- 10.01.2025		

For Reference Only

Section - 11

STANDARD FORMS (BID)

For Reference Only

FORM OF BID SECURITY

[this Guarantee form shall be filled in accordance with the instructions indicated in brackets]

---------- [insert issuing agency's name, and address of issuing branch or office]

Beneficiary: ***Project Director***
Integrated Watershed & Water resources Management Project,
2nd Floor, Mahaweli Centre Building,
No. 96, Ananda Coomaraswamy Mawatha
Colombo 07.

Date: ---------- *[insert (by issuing agency) date]*

BID GUARANTEE No.: ---------- *[insert (by issuing agency) number]*
We have been informed that ---------- *[insert (by issuing agency) name of the Bidder]* (hereinafter called "the Bidder") has submitted to you its bid dated ---------- *[insert (by issuing agency) date]*(hereinafter called "the Bid") for the execution of '**Rehabilitation of Thannimurippu Tank**' under Invitation for Bids No. **LK-MOMDE-465695-CW-RFB** ("the IFB").

Furthermore, we understand that, according to your conditions, Bids must be supported by a Bid Guarantee.

At the request of the Bidder, we ---------- *[insert name of issuing agency]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of ---------- *[insert amount in figures]* ---------- *[insert amount in words]*) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder:

(a) has withdrawn its Bid during the period of bid validity specified; or

(b) does not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter "the ITB") of the IFB; or

(c) having been notified of the acceptance of its Bid by the Employer/Purchaser during the period of bid validity, (i) fails or refuses to execute the Contract Form, if required, or (ii) fails or refuses to furnish the Performance Security, in accordance with the ITB.

This Guarantee shall expire: (a) if the Bidder is the successful bidder, upon our receipt of copies of the Contract signed by the Bidder and of the Performance Security issued to you by the Bidder; or (b) if the Bidder is not the successful bidder, upon the earlier of (i) the successful bidder furnishing the performance security, otherwise it will remain in force up to ---------- *(insert date)*

Consequently, any demand for payment under this Guarantee must be received by us at the office on or before that date ----------

For Reference Only