PAKISTAN
WATER AND POWER DEVELOPMENT AUTHORITY

DASU HYDROPOWER PROJECT

LOCAL AREA DEVELOPMENT PROGRAM

BIDDING DOCUMENT

NCB NO: DASU-LADP-RTR

PROCUREMENT OF SMALL WORKS

REHABILITATION AND IMPROVEMENT OF TAYAL ROAD

Volume 2

Section VII

WORKS REQUIREMENTS

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- Technical Specifications

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- Drawings

GENERAL MANAGER/ PROJECT DIRECTOR
DASU HYDROPOWER PROJECT
DASU, PAKISTAN
SEPTEMBER 2024

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GENERAL SPECIFICATIONS

DASU HYDROPOWER PROJECT

REHABILITATION AND IMPROVEMENT OF TAYAL ROAD

GENERAL SPECIFICATIONS

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Abbreviations

Wherever in these specifications or in other contract documents the following abbreviations and terms or pronouns in place of them are used, the intent and meaning shall be interpreted as follows:

AASHTO	American Association of State Highway and Transportation officials
ASTM	American Society for Testing of Materials
AWG	American Wire Gauge
AWPA	American Wood Preservers Association
CESMM	Civil Engineering Standard Method of Measurement
BS	British Standard Code of Practice
ACI	American Concrete Institute
FHWA	Federal Highway Administration
PCA	Portland Cement Association
Wt.	Weight
lb.	Pound
AWS	American Welding Society
Gallon	U.S. Gallon
In.	Inch
JMF	Job Mix Formula
ft.	Foot
Yd.	Yard
L	Litre
mm	Millimetre
cm	Centimetre
m	Meter
km	Kilometre
m^2	Square Meter
cm^2	Square Centimetre
m^3	Cubic Meter
ha	Hectare
kg	Kilogram
Ton	Metric Ton (1000 kg)
^oC	Degree Centigrade
^oF	Degree Fahrenheit

GENERAL SPECIFICATIONS

1. GENERAL

1.1 REFERENCE TO OTHER SPECIFICATIONS

Throughout the Specifications and Schedules references are occasionally made to other Sections. All such references are intended solely for the convenience of those using the documents, and the absence of a reference in no manner excludes the application of every other part in the Specifications which may, in the opinion of the Project Manager, have any bearing upon the point in question. The Contract Documents shall be read and applied as a whole.

2. SCOPE OF WORKS UNDER THE CONTRACT

The project is to construct the Rehabilitation and Improvement of Tayal Road in order to facilitate the local residents.

3. LOCATION AND ACCESS TO THE SITE

(1) Tayal village

Tayal road is started from Dasu near from Karakoram Highway (KKH) on the left bank of Indus River. This road is to facilitate the locals of Tayal village. It has the number of settlements throughout the road length [2.77 km].

Without limiting any of Contractor's obligations or responsibilities under the Contract, the Contractor will be deemed to have obtained all necessary information pertaining to and to have complied with all regulations and procedures governing the use of national and international facilities such as public transport, handling and storage facilities, including roads, and the like for the due fulfilment of the Contract.

4. FACILITIES PROVIDED BY THE EMPLOYER

The Contractor shall be fully responsible for extending, expanding or upgrading any facility provided by the Employer as the Contractor considers to be necessary, and subject to the Project Manager's consent, including any additional maintenance which this may require. This responsibility shall include liaison with the relevant authorities and bearing all respective charges without additional payment.

In all cases the Contractor shall take all necessary precautions to ensure that the facilities are used in a proper, controlled and orderly manner and that resources supplied are not wasted.

5. FACILITIES AND SERVICES PROVIDED BY THE CONTRACTOR

5.1 GENERAL

The Contractor shall provide in timely and maintain the facilities and services specified in this clause for the execution of the Contract.

If a facility is maintained and operated by the Contractor, all of the Contractor's charges for such maintenance and operation shall be deemed to be included in the rates and prices in the Bill of Quantities, unless otherwise provided for in the Contract. The Contractor shall at the end of the Contract, dismantle and remove from the Site all buildings and related facilities.

The Contractor shall then submit to the Project Manager for consent detailed drawings with supporting calculation, programmes and proposals for each of the facilities to be established by the Contractor under this Clause, at least twenty-eight (28) days before each such facility is to be established.

The Contractor shall be responsible for keeping all areas of the Site for which he is responsible, including temporary facilities, buildings, services, etc., in a neat, clean, sanitary and orderly condition and to the satisfaction of the Project Manager at all times.

After dismantling and removing from the Site all buildings and related facilities provided, which are no longer required as agreed by the Project Manager, the Contractor shall reinstate the ground to the satisfaction of the Project Manager.

The Contractor shall provide at his own expense all professional, administrative, supervisory and technical staff and all labour, communications, chemicals, test equipment, transport, plant, equipment, materials, furniture, tools, instruments, fuel spare parts and the like required for the proper and efficient operation of the services.

5.2 SITE AND ROADS

The Contractor is fully responsible for his own access and when he uses public roads, he shall observe regulations stipulated by relevant authorities concerned.

Any activities, such as obtaining permission for entering for surveying and investigation, land acquisition and compensation, and construction of the roads which access to borrows, spoils, stockpiles, etc. located outside the Project boundary shall be made at full responsibility and cost of the Contractor.

The Contractor shall be responsible for the construction and maintenance of access to all areas of the Site, to all Site offices, and for all haulage and other construction accesses required for carrying out the Works. These accesses shall be treated to avoid any dust nuisance, graded monthly and maintained whenever necessary or as directed by the Project Manager.

When temporary construction roads constructed by the Contractor are no longer required the Contractor shall, unless otherwise approved or directed by the Project Manager, plough to break up hardened surfaces, remove all imported material and reinstate the surface to the satisfaction of the Project Manager. Unless otherwise specified, no separate payment will be made for Access on Site.

The Contractor shall also independently liaise with local traffic authorities, including Traffic Police for specific permits or approvals for transport of particular items of goods, materials, oversized or heavy loads which may require special escort or speed restrictions.

5.3 UTILITIES SUPPLY

The Contractor shall be fully responsible for the provision of electricity, water, gas and other services he may require for the performance of the Contract.

5.4 CONTRACTOR'S RESIDENTIAL AREA

The Contractor shall provide and maintain associated facilities like Power Supply, Water Supply System, Sewerage System, Road Network, telecommunication, camps for his residential area.

Construction details shall be to the approval of the Project Manager with materials and workmanship in conformance with the appropriate specifications and code of practice.

The Contractor shall be entirely responsible for the design, provision, construction, maintenance and removal of all accommodation and related facilities within the

accommodation area proposed for such use by the Contractor.

Any generator plant for power supply shall be adequately silenced and located so as to keep the noise level at the nearest housing or office area below 65 dB.

The Contractor shall provide, operate and maintain a potable water supply for the duration of the Contract and shall provide connections and reticulation for potable water to his own facilities. The quality of the potable water shall comply with the World Health Organization (WHO) quality criteria.

The Contractor shall also make all arrangements necessary for the distribution of potable water for the due fulfilment of the Contract to his various offices, buildings and other Site facilities. For each such facility, this supply shall be maintained for the duration of the work or use of the area.

5.5 LIGHTING

Night working shall only be undertaken upon the specific approval of the Project Manager. The Contractor shall provide and maintain in good condition, adequate high powered flood lighting for all portions of the work on which he is occupied, as approved by the Project Manager.

If, in the opinion of the Project Manager, the resulting illumination is not adequate for the safe and efficient execution of the work, additional lighting shall be provided by the Contractor without additional payment. Failing this further such work will be prohibited until the lighting is satisfactory. All lights will have shades on them directing light to ground and not allowing light escape to sky to protect migratory birds from mis-navigation.

5.6 MEDICAL FACILITIES & FIRST AID

The Contractor shall provide, maintain and operate a First Aid station at or close to the areas of the Site where most of the work is being carried out. The First Aid post shall be suitably equipped with medical supplies and at minimum one of the Contractor's employees at each working area Sites shall retain a first aid qualification.

The Contractor shall designate one or more qualified staff experienced in construction projects to supervise the first aid facilities, to control the implementation of the Health and Safety policy defined by the Contractor and consented to by the Project Manager.

The Contractor shall make arrangements to transfer cases to suitable hospitals or clinics whenever necessary.

The cost of providing medical facility and First Aid is deemed to be included in other work items.

5.7 FIRE CONTROL

The Contractor shall take all reasonable precautions against outbreaks of fire and ensure that a nucleus of persons trained in the use of fire-fighting equipment is available in each section of work on each shift.

The Contractor shall provide and maintain at the Site fire extinguishers at each working area.

No open fires will be permitted in working areas or elsewhere within the Contractor's control. Grass and other vegetation in the vicinity of all buildings shall be cut at regular intervals to reduce fire hazards.

In the event of a fire, the Contractor shall mobilise all nearby personnel, and shall do everything possible to extinguish the outbreak.

The Contractor will be deemed to have included for providing such fire control in his rates and prices.

5.8 SECURITY

The Contractor shall institute and operate an effective security system on a 24h/day basis at all the areas comprising the Site. He shall co-operate with the local Police and comply with the Project Manager's requirements on all matters relating to Security of the Works and persons entering the Site. Such a system shall include appropriate identification procedures for all persons, vehicles, etc., entering and leaving.

The Contractor shall be responsible for providing and maintaining in proper operation the security system for the duration of the Contract, including personnel, equipment, access control buildings, guard shelters, turnstiles, barriers, identification systems, administration, management, etc.

The Contractor shall also institute emergency evacuation procedures at each working area. The Contractor shall also prevent firearms being brought on to Site.

The cost of providing security is deemed to be included in other work items.

5.9 PROGRESS PHOTOGRAPHS

Colour photographs showing the progress of the Works shall be taken by the Contractor at monthly intervals including ones taken from some constant views determined by the Project Manager or selected by the Contractor and agreed by the Project Manager. Digital camera with facility of time and date imprinted in picture to be used.

Photographs shall not be less than 120 mm x 80 mm and shall be inscribed with the location, taking date, identification number and title with a brief description. Four (4) prints of each photograph will be required to be submitted to the Project Manager each month as a part of the Monthly Progress Report. All negatives or a disk of CD in the case of digital photograph shall be numbered and kept on Site by the Contractor. On completion of the Works, the negatives or CDs shall be handed over to the Employer.

All such photographs, negatives, CDs shall be the property of the Employer.

5.10 ASSISTANCE FOR THE PROJECT MANAGER

The Contractor shall provide the Project Manager with such assistance as he may require during working hours at all times including weekends.

When so requested by the Project Manager the Contractor shall supply for the use of the Project Manager such equipment and facilities as the Contractor may have available, at Daywork rates or other rates to be negotiated as necessary. The Contractor shall also supply skilled labour, semi-skilled labour and unskilled labour for which there are payment items in the Bill of Quantities. Semi-skilled labour shall be deemed to include light vehicle drivers, survey assistants, checkers, messengers, cleaners, and the like.

5.11 TRANSPORT OF PERSONNEL

The Contractor shall be responsible for, and make provision for the safe vehicular transport of all personnel between their residences and their work areas, and vice versa. Personnel may only be transported on flatbed trucks or similar vehicles if acceptable side restraints and adequate seating is provided. Weather proof covers shall be used at all times. The prevention of overloading of vehicles shall be rigidly enforced by the Contractor and suitable crush barriers shall be provided at loading points.

Pedestrian access on road surfaces shall not be permitted and suitable sidewalks shall be constructed and clearly demarcated.

5.12 ENVIRONMENTAL MONITORING AND TESTING DURING CONSTRUCTION

Environmental monitoring and testing will be undertaken during the construction phase of the proposed sub-project. The results of analyses are compared with the National Environmental Quality Standards (NEQS). Unit of payment shall be in quantity of each sample according to unit rate tendered by the Contractor in the Bill of Quantities.

5.13 MEDICAL SCREENING FOR WORKERS

Medical screening of all the worker will be ensure to control the communicable disease of most concern during construction phase, like STDs such as HIV/ Acquired Immunodeficiency Syndrome (AIDS), COVID-19, will be prevented by successful initiative typically involving health awareness; education initiatives; training heath workers in disease treatment; immunization program and providing health service. Unit of payment shall be in quantity of each worker according to unit rate of medical test tendered by the Contractor in the Bill of Quantities.

5.14 PROVISION OF SAFETY SIGNBOARDS, SAFETY CONES, WARNING TAPES ETC.

Provision of safety signboards, safety cones, warning tapes etc. will be ensured by the contractor at active construction site to reduce the OHS related issues to workers, visitors and local community. The costs shall be included in the Provisional sum prices of the various safety items used for the construction project in the Bill of Quantities

5.15 MATERIAL STORAGE, HANDLING AND USE MANAGEMENT

The provision of tarpaulins, safe handling of chemicals and hazardous material, chemical encasement (if required) will be ensured by the contractors. Moreover, the inspected fire extinguishers will also be installed at these material handling areas to control any fire emergency. The costs shall be included in the Provisional sum prices of the various safe material handling items in the Bill of Quantities. Moreover, Unit of payment shall be in quantity of each fire extinguisher according to unit rate tendered by the Contractor in the Bill of Quantities.

5.16 PERSONAL PROTECTIVE EQUIPMENT (PPE)

The provision of dust masks, safety shoes, helmet, jackets, safety goggles, gloves, first aid box, ear plugs will be ensured to each worker and visitor at site by the contractor to reduce the OHS related issues to workers and visitors. Unit of payment shall be in quantity of each PPE provided at site according to unit rate tendered by the Contractor in the Bill of Quantities.

5.17 ENVIRONMENTAL TECHNICAL ASSISTANCE AND TRAINING PLAN

An Environmental and Technical Assistance Program (TAP) is to be carried out before the implementation of the project. Environmental awareness and appropriate knowledge of environmental protection is critical to the successful implementation of the ESMMP. A suitable training program will be implemented by the contractor to train the staff who will be involved in the construction phase of the subproject. The costs shall be included in the Provisional sum prices of the various training program not limited to the training on environmental laws and regulations, daily monitoring and supervision, social awareness, lecture relating to OHS which are mandatory for the construction project and included in the Bill of Quantities

5.18 TREE PLANTATION

To enhance the environmental sustainability and as an enhancement measure, trees will be planted by the contractor. The trees will be planted in nearby areas which will be

suitable for the local species. The contractor shall ensure the participation of local forest department for this activity. Unit of payment shall be in quantity of each plant along with its maintenance cost according to unit rate of plant tendered by the Contractor in the Bill of Quantities.

6. CONSTRUCTION MATTERS

6.1 CONTRACTOR'S METHODS AND MATERIALS

Unless otherwise confirmed in writing, acceptance of the Bid will not signify acceptance of the Contractor's Equipment, proposed methods of construction, Temporary Works or materials, nor will it in any way relieve the Contractor of any of his responsibilities under the Contract. Further it will not be accepted as a basis for claiming additional compensation where the proposed methods of construction or the proposed materials do not comply with the Specifications and/or for reasons of inadequacy or of non-viability are not capable of fulfilling the Contract in accordance with the specifications or the Contract Programme.

The Specifications deals with the quality of materials, workmanship, etc. but the actual methods of construction are not generally specified. The construction of the Works will involve dealing with a number of special engineering problems. The accuracy of the Works, the high standard of workmanship demanded under the Specifications, the safety of the workmen employed and the speed of construction will depend on the correct handling of these problems by the Contractor. Although responsibility for these matters rests with the Contractor, it is essential that there shall be full liaison between him and the Project Manager with regard to construction methods and materials to be employed.

Unless otherwise directed, the Contractor shall submit to the Project Manager for consent full details concerning the methods, equipment and materials proposed for each section of the work or installation. These shall be referred to as Method Statements and the details as necessary and confirmed to the Project Manager not later than twenty-eight (28) day before the programmed commencement of work in the area concerned. Initial activities shall be based on as agreed in writing by the Project Manager.

The Project Manager will consent to or comment on the proposals within twenty-one (21) days of receipt.

The Project Manager's consent will not be unreasonably withheld provided the methods, equipment and materials proposed may be expected to produce an acceptable end result, but any approval, consent, acceptance, agreement, etc. by the Project Manager shall not relieve the Contractor of his responsibilities for safety, adherence to the programme, compliance with the Specifications and Drawing or any other requirements in fulfilment of the Contract.

After operations have been commenced, it is possible that modifications to the construction methods originally agreed upon will be found desirable and such modifications will be made from time to time by agreement in writing between the Project Manager and the Contractor, and subject to the Project Manager's approval. The Project Manager's approval on the Contractor's method statement and/or the revised method statement during construction stage shall not release the Contractor from his obligation and responsibilities under the terms and conditions of the Contract.

If, however any equipment, appliances, types or quality of Temporary Works such as scaffolding, forms, safety provisions, etc., are in the opinion of the Project Manager, either unsafe or unsuitable for accurate and efficient construction, the Project Manager will instruct the Contractor to replace or modify the item or items concerned, whether or not the Contractor is in agreement with such opinion, and the Contractor shall forthwith make the required alterations without any additional payment and claim.

The Contractor shall remedy at his own costs any damages to or defects in any parts of the Works which are attributed to the Contractor's construction method, equipment, materials and workmanship, in accordance with the Contract and the Project Manager's instructions.

The Contractor is totally responsible for all costs associated with locating, establishing and operating his own Quarry Site as a source of all site requirements for stone and aggregates etc.

Where an alternative design is initiated by the Contractor, he shall be responsible for timely obtaining any required design criteria from the Project Manager as necessary.

6.2 PROGRAMMING REQUIREMENTS

6.2.1 General

The preparation of up-to-date programmes which are realistic and adequately detailed and upon which the requirements for the issue of drawings for the Project Manager's approval will be based and progress monitored is a primary requirement of this Contract. To achieve this, the Contractor shall employ adequate support staff and systems who will be responsible for the preparation and updating of programmes and progress reports.

6.2.2 Bid Construction Schedule

The Bidder shall submit a programme (Form TP-4) to define the duration of construction of the various sections of the Works and shall take into account any non-working days. Such programme shall be designated the «Bid Construction Schedule».

The Bid Construction Schedule shall be based on the Contractor's own comprehensive plan, programme and resource usage with appropriate development of method statements for construction of the Works. The Contractor shall ensure that the Bid Construction Schedule meets the requirements of the Contract notwithstanding anything that may be indicated in or inferred from the Project Manager's Programme. The Bid Construction Schedule shall be based on network logic relationships between activities. The programme shall be computerised, using Microsoft Project, Primavera or equivalent conventional construction planning computer software suitable for use on a PC.

The entire programme shall be suitable for future expansion by addition of more detailed programme activities for construction of the Works, for monitoring progress and changes therein, planning of critical activities and generation of progress and planning reports during execution of the Works.

6.2.3 Contract Programme

The detailed programme to be submitted pursuant to Clause 30 of the Conditions of Contract shall be based on updating and expanding the Bid Construction Schedule and shall be designated with the title of «Contract Work Execution Programme» and revision number with date.

The submission shall include as a minimum of:

1. The network drawing,
2. Tabular listings of early starts and finishes, late starts and finishes, free and total floats,
3. Computer generated bar charts,
4. Periods required for work carried out bay sub-contractors,
5. Information on shutdown periods, vacation day and other non-working time periods,

and

6. Schedule of equipment and plant and manpower mobilisation schedule.

Until such time as the Contract Programme has been accepted by the Project Manager, all work shall be executed and monitored against the Bid Construction Schedule.

The Contract Programme shall clearly show the interrelationship of all activities in the programme. In addition, resource statements including labour and equipment types and numbers and planned outputs shall be submitted to substantiate each activity duration. The Contractor shall also submit excavation and construction summation graphs for each section of the Works against which progress will be monitored.

The format of all outputs and reports from the Contract Programme shall be as agreed with the Project Manager.

During execution of the Contract, the Contractor shall monitor the construction activities relative to the Contract Programme (or the Bid Construction Schedule, as applicable) and shall submit a report detailing the results of the monitor on a monthly basis as a part of the Monthly Progress Report. All variances from said programmes (as applicable) shall be promptly reported and the future impact of such variances shall be determined and analysed by the Contractor, using network logic, and necessary corrective measures established, subject to the consent of the Project Manager, but it shall not release the Contractor from his obligation and responsibility of the Contract under the terms and conditions of the Contract.

6.2.4 Progress Meetings

The Contractor will be required to attend regular site meetings with the Project Manager where the progress of construction will be reviewed. Such meetings will normally be held monthly and may be attended by representatives of the Employer.

The Contractor shall also attend weekly meetings with the Project Manager and provide prior to each meeting as required by the Project Manager detailed programmes 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 programme applicable to that period.

The minutes of the meetings shall be prepared by the Project Manager and shall be deemed, after approval by the other participants, to be written confirmation of the declarations, instructions and decisions taken during the meeting.

6.3 QUALITY MANAGEMENT

6.3.1 System and Procedures

The Contractor shall be solely responsible for the quality and testing of materials, workmanship and production processes in the Contract.

To this end the Contractor shall institute and operate a Quality Management plan, in order to satisfy the specifications relevant to each operation pursuant to the Works in terms of the Contract which details:

1. Quality control procedures
2. Personnel responsibilities
3. Procurement procedures
4. Testing procedures
5. Equipment and calibration
6. Frequency testing, calibration, etc.

7. Hold points in production for inspection
8. Rejection and rectification procedures
9. Documentation and communication

6.3.2 Approval of System

Within twenty-eight (28) days after the Start Date of Work and based on the general outline and any amendments thereto requested prior to acceptance of the Bid, the Contractor shall submit comprehensive details of the systems as proposed, making use wherever possible of diagrams, charts, organograms, etc. in preference to lengthy description, all for the approval of the Project Manager. Such details shall be updated from time to time as appropriate or as directed by the Project Manager.

The Contractor shall commence the operation of the Quality Management plan without delay and in accordance with the Project Manager's approval of the general outline and documentation examples as accepted with the Bid and shall thereafter modify the system, from time to time in accordance with the further details as approved by the Project Manager.

6.3.3 Provision of Materials and Equipment

1. All materials and equipment intended to be incorporated in the Works shall be subject to approval by the Project Manager prior to order by the Contractor.
2. No Plant or part thereof shall be shipped to the work site before it has been approved by the Project Manager.
3. Proprietary Brands:

   Where the Specification refers to materials of a particular brand name the Contractor may offer an equivalent for the Project Manager's approval but the Project Manager is under no obligation to accept the alternative and no claims will be entertained if the alternative is not accepted.
4. Testing of Materials

   Unless otherwise stated in the Specifications or accepted by the Project Manager, all testing shall be carried out and interpreted in strict accordance with the methods specified in the relevant AASHTO / ASTM Standards or other international or national standards specified in the Technical Specifications or approved by the Project Manager.

6.3.4 Competence of Workmen

The competence of personnel required to undertake operations involving particular skills, affecting the quality of the Works, shall be demonstrated to the Project Manager. Suitable means of identification of different skills and training levels of workmen by way of badges or such like shall be instituted.

Workman shall only receive their practical training on those parts of the Works as agreed by the Project Manager.

6.3.5 Inspection

Whenever the regular period for carrying on work is to be changed, the Project Manager's consent shall be requested and the Project Manager shall be given notice in sufficient time, to rearrange staffing for proper inspection. The Project Manager shall be given notice of any other proposed changes to normal working times at the weekly progress meetings or as necessary to cope with emergencies.

6.4 APPROVAL OF MATERIALS AND EQUIPMENT

6.4.1 Submission of Samples and Data

The Contractor shall furnish all information as to quality, weight, constituent substances, dimensions, levels, strength and description of the materials, equipment and work, as may be designated by the Project Manager and which the Contractor proposes to incorporate in the Works, and shall give the Project Manager such other particulars as may be required.

Before placing any order for materials for incorporation in the Works, the Contractor shall submit to the Project Manager for information and consent the names of the firms supplying materials giving the origin, manufacturer's specification, quality, weight, strength and description. When requested, the Contractor shall provide such samples of the materials together with the manufacturer's test certificates as the Project Manager requires. The samples ordered or specified shall be delivered to the Project Manager on the Site, allowing sufficient time for the Project Manager to inspect and/or test the samples before the material is required in the Works. The Project Manager may request the Contractor to execute such tests on the submitted samples without separate cost.

Unless otherwise specified, all proprietary materials shall be used and placed in strict accordance with the relevant manufacturer's instructions.

Items submitted shall be properly labelled to indicate the Project Contract number, Contractor's source of supply, manufacturer Contract Item number, and other data required by the Specifications.

The results of the tests shall generally indicate:

1. Sample identification numbers.
2. Sample origin.
3. Part of the Works represented by the sample.
4. Sampling date.
5. Description of tests with reference to the relevant standards.
6. Test results.
7. Date of tests.
8. Reference of laboratory undertaking the tests.
9. Conclusion (Satisfactory or Unsatisfactory).

6.4.2 Certificates of compliance

In the case of standard labelled stock products of standard manufacture material which have a record of satisfactory performance in similar work over a period of not less than two (2) years, the Project Manager may accept a statement from such manufacturer attested by the certified laboratory certifying that the product conforms to the applicable Specifications.

Unless otherwise specified, all proprietary materials shall be used and placed in strict accordance with the relevant manufacturer's instructions.

In the case of materials for which such practice is usual, the Project Manager may accept the manufacturer's certified mill and laboratory certificate.

If a demonstrable satisfactory service record is available for a material, certain specified tests may be waived by the Project Manager.

The Project Manager may accept a certificate from a commercial testing laboratory,

satisfactory to him, certifying that the product has been tested within a period acceptable to the Project Manager and that it conforms to the requirements of the Specifications.

The Contractor shall provide to the Project Manager a list of Sub-Contractors and vendors with whom orders are to be placed for materials or equipment which will be incorporated directly into the work of the Contract.

Copies of material or equipment orders and list of stock material or equipment shall be provided to the Project Manager. All orders and stock lists shall state the Standard Specification under which the material is to be furnished, pertinent drawing and part numbers if any, and the required delivery date, and shall state that the material is subject to inspection and testing by the Project Manager.

6.4.3 Acceptance of materials

The approval by the Project Manager of any material or equipment shall in no way relieve the Contractor of any of his responsibilities for meeting all of the requirements of the Specifications and shall not prevent subsequent rejection if such material or equipment is later found to be defective or not conforming to the Specifications.

6.5 CONTRACTOR'S RETURNS

Records and returns shall be reported to the Project Manager in a format acceptable to the Project Manager.

6.5.1 Weekly Report

The Contractor shall keep accurate records detailing work carried out for the Works and shall submit them as Weekly Report to the Project Manager prior to the weekly progress meeting as required by the Project Manager or at such other times as the Project Manager may require. The records shall include the following for each section of the Works separately in sufficient detail to establish the man-hours and equipment-hours expended:

1. Extent of work done,
2. The number of each category of workmen and supervising staff,
3. The numbers and types of Contractor's Equipment used,
4. The duration and cause of any significant delays due to breakdown of any Contractor's Equipment,
5. Any other events relevant to progress of the Works.

Notwithstanding the foregoing, the Project Manager may employ members of his own staff to record some or all of the above data in addition to the Contractor's records. The Contractor shall also provide such further information as may be requested by the Project Manager.

6.5.2 Monthly Progress Report

The Contractor shall submit Monthly Progress Report at the beginning of each following month presenting the records and issues with respect to each month in question. The contents of the Report shall include, but not limited to the following items and details:

1. Record of major events in the execution of the Works including Temporary Works together with monthly construction progress photographs.
2. The Contractor's latest organization and change from previous month, if any.
3. Schedule of current number of all staff on Site for each category showing increase

and decrease from the previous month.

4. List of equipment currently owned on Site showing increase and decrease from the previous month.
5. Principal materials consumed, ordered and being stocked on Site.
6. Plant operation records.
7. Delivery or removal plan of equipment during the following month.
8. Record of accident(s) with number and descriptions.

The reporting forms of each item shall be subject to the prior agreement of the Project Manager.

6.5.3 Daywork and Similar Records

In accordance with Clause 55 of the Conditions of Contract records shall be kept daily of labour, materials and equipment where there is an agreement to pay by Dayworks. Such records shall be valid only when signed by the Contractor and the Project Manager.

In cases where there is any dispute or uncertainly on payment procedure, sheets of work records shall be prepared by the Contractor and signed daily by both the Contractor and the Project Manager as an agreed record of work done provided that such records shall not imply any commitment concerning payment. These sheets shall be annotated «For record purposes only».

7. STANDARDS, TECHNICAL DOCUMENTS SUBMISSION AND APPROVAL

7.1 STANDARDS

Abbreviations and definitions, standard codes for sampling and testing and frequency of testing has been described in detail in Technical Specifications.

Except if otherwise specified, where such standards are mentioned, the latest revision or edition on the 28 day before Bid Submission shall apply.

When the Contract Documents contain particular specification or more restrictive specification than required in Standards and Codes listed above, the Contract Documents will always prevail.

In case of lack of precise requirements in the Specifications and even if no reference to any standard listed in Technical Specifications, these standards shall be used as a reference.

Where requirements are specified by reference to a standard, it is not the intention to restrict the requirements solely to that standard. The Contractor may propose to the Project Manager an equivalent standard other than that specified, in which case he shall submit the proposed standard and all other information required and shall submit written proof that his proposed standard is equivalent in all significant respects to the standard specified. All submissions shall be made in English language.

If required, the Contractor shall supply a copy of these standards and regulations in English language.

Where a manufacturer is named in the Specifications, other manufacturers' products will also be acceptable, provided that the designated material or workmanship is of equivalent or better.

7.2 TECHNICAL DOCUMENTS

7.2.1 Bid Drawings

The Bid Drawings referred to in the Specifications are those listed in Volume 2(b) “Drawings”.

7.2.2 Construction Design Reports

In order to prepare the Construction Drawings to be used for actual construction or ordering materials, the Contractor shall carry out the Construction Design and submit the Construction Design Reports which shall include design calculation sheets with all formulas, standards, test results, basic assumptions and design criteria used for the design to Project Manager for his approval.

The Project manager reserves the right to request the Contractor additional documents as may be required for proper understanding.

7.2.3 Construction Drawings

“Drawings” referred to in the Specifications shall mean all drawings, calculations, samples, patterns, models, operation and maintenance manuals and other technical information of a like nature submitted by the Contractor and approved by the Project Manager.

After award of the Contract, the Construction Drawings shall be prepared by the Contractor for construction on the basis of the Bid Drawings by applying AutoCAD. One (1) set of A3 size prints of drawings with signature of the Contractor’s authorized person(s) together with an electronic soft copy from time to time in accordance with the drawing schedule mutually agreed.

The Permanent works shall be executed in accordance with the Construction Drawings.

The Contractor shall be responsible for assuring the adequacy of all part of the Works with respect to loading which might occur during construction and shall supply calculation notes and drawings for any necessary falsework, support, strengthening as may be required by the Project Manager.

Where the Contractor’s Equipment and Temporary Works may have an effect or impose forces on any part of the Permanent Works, the Contractor shall submit in advance details for approval of such items, including the magnitude and direction of such forces, together with any other special construction requirements.

7.3 TECHNICAL DOCUMENTS SUBMISSION

7.3.1 General

All Drawings and Documents to be submitted by the Contractor (if any) for the Project Manager’s approval shall be in English language, and all dimensions shall be in Metric system. Symbols shall be in accordance with approved Standards. All Drawings submitted for approval shall conform to ISO paper sizes A0 to A4. Title block and numbering shall be of approved by the Project Manager. Design reports, calculations, specifications, lists, manuals and other documents shall be prepared in A4 size.

7.3.2 Drawings and Documents to be submitted

The Contractor shall prepare and submit to the Project Manager the following Drawings and Documents for approval:

1. Construction Design Reports.

2. Master list of drawings and documents to be provided by the Contractor.
3. Construction Drawings including design calculation notes and other information as necessary of the Permanent Works pursuant to the specifications.
4. Drawings of construction facilities as required for the fulfilment of the Contract in accordance with the Specifications.
5. Drawings of Temporary Works for the construction of Permanent Works.
6. Drawings of the performances in the construction of Permanent Works as necessary for showing the construction methods.
7. Detailed drawings of concrete reinforcement as well as bar bending and cutting list.
8. Shop drawings of miscellaneous metal works.
9. As-built drawings of all Permanent Works constructed, with the final quantity calculations for all items in the Bill of Quantities.
10. Other drawings necessary for the performance of each part of the Works in accordance with the Contract.

7.4 APPROVAL OF DRAWINGS AND DOCUMENTS

Detailed procedure for submission of the drawings and documents prepared by the Contractor for the Project Manager's approval and the approval of the Project Manager to those drawings and documents shall be in accordance with the Conditions of Contract.

All materials ordered, or works performed, prior to the approval of the relevant designs shall be at the Contractor's risk.

The Contractor shall bring to the attention of the Project Manager any variation in the Contract in the document submitted for approval.

All the drawings, details, bill of materials and any other information or documents furnished by the Contractor shall become the property of the Employer and shall be non-returnable. The Employer will have the right to use this property.

All correspondence shall be dated, numbered and distributed in accordance with a procedure agreed with the Project Manager.

8. HEALTH AND SAFETY

8.1 GENERAL

The Contractor shall take full responsibility for the prevention of unhealthy or unsafe conditions and practices and for the promotion of healthy and safe working practices at the Site, as such conditions and practices may affect his employees and any other persons while present at the Site, and nothing specified herein will relieve the Contractor of any obligation or responsibility whatsoever in this regard.

The Contractor shall provide suitable personal protective goods, such as but not limited to, helmet, footwear, gloves, ear protector, goggles, dust mask, hi-vis jacket to all workers. The Contractor shall conduct safety induction training before starting the work.

The Contractor shall maintain and submit to the Project Manager such records and make such reports concerning safety, health and welfare of persons and damage to property as the Project Manager may from time to time prescribe.

8.2 HEALTH AND SAFETY POLICY

Pursuant to Clause 18 of the Conditions of Contract the Contractor shall implement a

Health and Safety Policy, which shall be in force throughout the duration of the Contract.

The arrangements for implementing the Health and Safety Policy shall be not less than those required by the Laws and Regulations of World Bank and Pakistan.

The Health and Safety Policy shall define

1. The duties of the Safety Officer and his deputy including the proportion of their working time to be spent on health and safety duties.
2. The arrangements in place to support and implement it. Such items as safety meetings, safe working procedures, occupational hygiene, and education and training shall be outlined.
3. The policy shall discuss active and on-going participation of employees in helping to achieve the objectives.
4. Notification, investigation and recording of accidents.
5. Code of practice to be used to ensure healthy and safe working conditions and the management of hazardous conditions.
6. The arrangements for the frequency and occasions of routine and special meetings of the Health and Safety Committee, the keeping of records, rights and access to information and the right to amend the committee constitution by the committee in agreement with the Project Manager.
7. The arrangements for disseminating information, training and supervision to ensure the codes of practices.

For the purpose of implementing the Health and Safety Policy, the Contractor shall constitute a duly empowered committee which shall convene monthly under the chairmanship of the Project Manager and which shall include, but not be limited to:

1. The Environment and Social (ES) Officer and his deputy
2. Representatives of supervisory staff
3. Representatives of the various categories of workmen

The composition of the committee shall be to the approval of the Project Manager. The Project Manager may order that a new committee be reconstituted if in his opinion the committee is not carrying out its duties with due diligence.

The Project Manager may at any time order that the Health and Safety Policy be altered completely or in part or may be added to. The Project Manager may also serve on the Contractor a Notice of Contravention of the Health and Safety Policy. Such a notice will specify the nature of the contravention, and the time limit for rectification. In the event of failure to comply with a Notice of Contravention the Project Manager may arrange for work to be done to rectify the cause or order removal or suspension of the offending persons from Site, as appropriate, at the Contractor's expense.

The Contractor may appeal to the Project Manager for modification of the terms of any Notice of Contravention before the expiry of the notice. Upon such appeal the Project Manager in his sole discretion may modify, withdraw or confirm the notice.

The Code of Practice shall be in accordance with the Contract and shall be based on a recognised standard and shall be of no less a standard than that of Safety and Health in Building and Civil Engineering Work of the International Labour Office (Geneva).

8.3 ENVIRONMENT AND SOCIAL (ES) OFFICER

The Contractor shall appoint ES Officer who shall be responsible for ensuring that the health and safety policy is adhered to. The ES shall graduate at least a bachelor course of environmental sciences/engineering and have experiences of minimum 03 years in

health and safety works in construction. He or she shall obtain a vocational qualification issued by NEBOSH (National Examination Board in Occupational Safety and Health), IOSH (Institution of Occupational Safety and Health) or an equivalent institution.

The ES Officer or his deputy shall be available on a 24h/day basis and shall carry out regular and random checks of all parts of the Site where work is taking place.

Particular attention shall be given by the ES Officer to aspects such as, but not limited to, blasting procedures, removal of construction material, orderly storing and stacking of construction equipment and materials, personal protective goods and general cleanliness. In addition, the ES Officer shall accompany the Project Manager on weekly safety inspections of the Works and shall take due account of his requirements concerning matters of safety.

8.4 EPIDEMICS AND HAZARDOUS SUBSTANCES

In the event of any outbreak of illness of a highly contagious or epidemic nature the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government of Pakistan, or the local medical or sanitation authorities for the purpose of dealing with and overcoming the same. The Contractor shall carry out medical screening related to HIV/AIDS of all workers before start of works.

The Contractor shall identify and keep records of all hazardous equipment, materials, or other substances and any other health hazards in his undertaking of the Contract. Newly created hazards or new hazardous equipment, materials or other substances brought on to Site shall be added to the record. The Contractor shall draft new or adapt and modify existing codes of practice appropriate to the said hazards.

The Project Manager shall be granted access to such records at all times.

The Contractor shall conduct and document at least weekly inspections of the storage areas for equipment, transport vehicles and hazardous materials and substances, especially for spillages and leaks. The Contractor shall take adequate precautions and make adequate provisions, to the satisfaction of the Project Manager, to prevent such spillages of toxic materials and substances from entering natural stream or areas outside the Site.

8.5 SAFETY OF PUBLIC

Where the Public could be exposed to danger by any of the Site activities, the Contractor shall provide suitable measures such as, but not limited to, blasting procedures, barrication of construction area, implementation of Environmental Code of Practices (ECPs) related to safety, flagmen, barriers and/or warning signs in English, Pashto, Shina and Urdu, all to the approval of the Project Manager.

8.6 STORAGE AND USE OF EXPLOSIVES

Blasting shall be avoided at the extent possible, but where it is unavoidable, proper precautions such as but not limited to, controlled blasting and sand bags/blasting mats shall be used to minimize dust emissions (and also to control fly rock) shall be taken by the Contractor for the protection of persons, the work, and property.

Explosives shall be stored, transported, handled and used in accordance with the best practice as approved by the Project Manager and in accordance with the provision of the law. The Contractor shall comply with all special rules and regulation that may be made by the authorities having jurisdiction, and the requirements of the Project Manager regarding construction and storage in magazines, precautions on blasting and the like. The Contractor will indemnify the Employer against all claims for damage caused by blasting.

Explosives and detonators shall not be transported in the same vehicle.

Explosives shall be stored in suitable magazines in approved location. Detonators shall be kept in a separate magazine. The magazine shall be plainly marked with large letters EXPLOSIVES-DANGEROUS in English, Urdu and any other relevant languages, and shall be locked and guarded at all times. Keys to unlock the magazines shall be kept only by magazine keepers. Each magazine shall have around it a cleared area suitably barricaded with a security fence.

Each magazine keeper shall be competent, trustworthy, and familiar with the handling, transportation, care, and storage of explosive and detonators, and shall be responsible for maintaining the cleared area around the magazine. No magazine keeper shall be allowed to work more than ten hours in any twenty-four-hour period and shall not be required or allowed to perform any other duty that will interfere with his duties as a magazine keeper.

8.7 WARNING OF BLASTING

The Contractor shall install and operate a siren of sufficient volume to be easily heard above the general site noise from all points within a radius of 1 km of surface blasts.

The Contractor shall present to Employer, the surrounding villages, police station and military office nearest to the site, a weekly schedule of his blasting operations in a written form. When the schedule will be changed, he shall inform the modified schedule to the same not later than twenty-four (24) hours before the first ignition of the day.

The Contractor shall submit details of his blasting procedures to the Project Manager for consent and shall ensure that such procedures are adhered to at all times.

8.8 PROVISION AND MAINTAINING OF PERSONAL PROTECTIVE GOODS FOR WORKERS

The payment will be made when those major personnel protective goods are provided and serviceable:

- Helmet, footwear, gloves, ear protector, goggles, dust mask, etc.

Payment for maintenance and replacement of protective goods shall be paid on the basis of Provisional Sum amount entered against the respective item in the Bill of Quantities which amount shall be deemed to include all of the Contractor's costs incidental to providing and maintaining the specified insurance. Provided that if, in the opinion of the Project Manager, proper safety policy and provision of adequate protective wears are not being provided then the Project Manager may withhold payment until a satisfactory level of implementation is provided by the Contractor.

9. ENVIRONMENTAL CONSIDERATIONS

9.1 GENERAL

This section of the General Specifications specifies the Contractor’s particular environmental obligations.

Needless disfigurement of the amenities of the area as well as needless adverse effect on the environment during construction must be avoided and special care shall be taken by the Contractor to prevent permanent damage.

The Contractor shall conduct all operation in accordance with the measures mentioned in the checklist and Environmental Codes of Practice (ECPs).

Nullah/ streams shall be protected from direct or indirect spills of pollutants. In the event of a spill prompt action shall be taken to clear polluted or affected areas.

The Contractor shall be responsible for any compensation due or reinstatement in respect of any damage caused by the Contractor to areas outside the Site and no separate payment will be made in this regard.

The Project Manager will notify the Contractor in writing of any observed noncompliance with relevant laws, regulations and other elements of Contract. The Contractor shall, after receipt of such notice, inform the Project Manager of proposed corrective actions and take such actions, at his own cost, immediately when approved. If the Contractor fails to comply promptly, the Project Manager may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extension shall be granted to the Contractor for any such suspensions.

The Contractor shall provide and maintain at his own cost the personnel and facilities necessary for a fulfilment of the requirements of the Environment Protection.

9.2 ENVIRONMENTAL CODES OF PRACTICE (ECP)

The Contractor should be aware and inform his Site Employees that the contractor for the **"Rehabilitation and Improvement of Tayal Road"** shall be implementing and monitoring Environmental Codes of Practice on Site in compliance with the requirements of the World Bank Agreement. The same contractor shall also be responsible for preparing the Environmental Health & Safety Policy.

The Environmental Codes of Practice and Monitoring for the works as provided in Appendix A to General Specifications, for reference purpose only, shall be undertaken by the contractor. It includes:

- Waste Management
- Fuels and Hazardous Goods Management
- Water Resources Management
- Erosion and Sediment Control
- Air Quality Management
- Noise and Vibration Management
- Road Transport and Road Traffic Management
- Construction Camp Management
- Workers Health and Safety

The Contractor shall make his employees aware of the above-mentioned codes of practice. The ECPs will form the part of the contract documents and will be used as monitoring tool for compliance. It is mandatory for the contractor to include these ECPs in their subcontracts. Violation of the compliance requirements will be treated as non-compliance leading to the corrections or otherwise imposing penalty on the contractor. Contractor and subcontractors are requested to refer the checklist for likely environmental and social impacts of the subproject for further information on corrective actions.

9.3 SUBMITTALS

The Contractor shall submit the Environmental Health & Safety (EHS) Policy within twenty (20) calendar days after the Commencement Date. Any construction operation shall not begin until this policy has been approved by the Project Manager.

The approval by the Project Manager shall not relieve the Contractor of any of his responsibility for the Environment Protection pursuant to his construction operations. Furthermore, the Project Manager shall have the right to require the Contractor to

improve the approved Environmental Policy whenever it is deemed necessary in the opinion of the Project Manager.

9.4 STAFF

The Contractor shall designate an Environmental and Social (ES) Officer to be responsible for implementation of ECPs and provision of checklist and communicate with the Employer and the Project Manager. The specialist should have relevant experience and fluent in the English language.

10. ARCHAEOLOGICAL / HISTORICAL SITE ACTIVITIES

The Contractor shall ensure that his work activities comply with Antiquities Act, 1975 of Pakistan and Clause 19 of the Conditions of Contract in case of accidental discovery of any historical or archaeological site/remains within or in the vicinity of the subproject area.

11. DEALING WITH WATER

11.1 GENERAL

Except as otherwise specified, Diversion, Dewatering and Care of Water, the Contractor shall bear all risks from water, whether from the main river, a local water course, an underground spring or any other source or cause.

The Contractor shall properly deal with and dispose of all water to ensure the Works are kept sufficiently dry at all times for their proper execution. For this purpose, he shall construct such Temporary Works as may be necessary to divert streams, rivers, sub-surface water and flood waters to minimise damage, inconvenience or interference. He shall also provide, operate and maintain in sufficient quantity such pumping equipment, pipes and other equipment as may be necessary. He shall also provide any sumps, furrows, and other temporary works as may be necessary to minimise damage, erosion, inconvenience or interference. Such operations shall continue for the duration of the Contract and shall at all times be subject to the agreement of the Project Manager with regard to sufficiency of measures taken and environmental protection. All discharges of water to streams and river shall follow National Environmental Quality Standards (NEQS) of KPK.

11.2 SURFACE WORKS

11.2.1 Surface Excavations

The Contractor shall take all necessary steps to ensure that water entering any surface excavation does not endanger the stability of the surface excavation at any time. Fill and cut slopes shall be promptly repaired whenever damaged by surface water.

The Contractor shall ensure, at his expense, that no concentrations or accumulations of water occur either within or around or above the area of any open excavation which may affect the safety of the excavation.

If permanent slopes on which permanent or temporary protections are designated in the Drawings or instructed by the Project Manager and the Contractor fails to provide such protections after excavation of the slopes, any damages to the slopes by surface water shall be rectified and repaired by the Contractor at his own expenses.

The Contractor shall maintain excavations such that pounding of rain water is prevented by suitably sloping surfaces where possible and the construction of channel and sumps. Where excavations are not self-draining, sufficient pumps shall be installed to keep the

water level in such sump 0.5 m below the lowest excavated surfaces for as long as required for construction of the Works. Standby pumps and generators shall be readily available in case of breakdowns.

11.3 WATER CONTROL DURING CONCRETING

All water which would flow into an area to be concreted shall be diverted clear of the area. Water arising within the area to be concreted shall be dealt with and piped clear of the area as directed by the Project Manager.

12. DEALING WITH AIR, NOISE AND VIBRATION

The Contractor shall perform his equipment operation and activities or processes with appropriate methods to control, prevent or otherwise minimize a discharge of air contamination.

Dust particles pursuant to production and preparation of materials shall be controlled at all times. The Contractor shall maintain excavations, stockpiles, haul roads, permanent and temporary access roads, spoil areas, and other work areas within or outside the Site free from particulate which would cause a hazard or a nuisance to persons and/or damage crops, orchards, cultivated field and dwellings. A discharge of dust into the atmosphere shall be controlled during excavation processing, handling and storing cement and concrete aggregates by sprinkling of water on land.

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise, vibration and/or other disturbances. The Contractor shall indemnify the Employer from any liability for damages due to noise, vibration and/or other disturbances caused by his construction operations and also from all claims relating to such liability. The construction works producing a high level of noise and/or vibration shall be performed only at time and places approved by the Project Manager.

Equipment and vehicles shall be maintained and operated at all times in such a condition as not discharge excessive exhaust gases due to poor engine adjustments or other inefficient operating conditions. The Contractor shall likewise ensure that all equipment and machinery are in proper working condition so as to minimize the amount of noise and vibration generated. The Project Manager may require, at his discretion, the Contractor to replace any equipment, machinery or vehicles emitting excessive exhaust gases, noise and/or vibration.

Odours shall be controlled by the Contractor at all times for any construction activity, processing and preparation of materials.

13. INSURANCE AGAINST INJURY TO PERSONS AND DAMAGE TO PROPERTY

The contractor shall insure against injury to persons and damage to property (Third Party Liability) including that of Employer arising out of execution of works or in carrying out the contract in accordance with Clause 13 of Conditions of Contract.

14. INSURANCE FOR WORKS & CONTRACTOR'S EQUIPMENT

The Contractor shall insure in the joint names of the Employer and the Contractor against all loss or damage from whatever cause arising, in accordance with Clause 13 of Conditions of Contract and in such manner that the Employer and the Contractor are covered for the period stipulated in particular conditions and also covered during Defect Liability Period for loss or damage arising from a cause, occurring prior to commencement of Defect Liability Period.

15. INSURANCE FOR CONTRACTOR'S PERSONNEL

The Contractor shall insure his personnel under Clause 13, insurance for Contractors' personnel, against Liability for claims, damages, losses and expenses arising from injury, sickness, disease or death of Contractor's Personnel and also cover the Employer and the Project Manager against such Liability of the Contractor.

16. PRICE ADJUSTMENT

Payment for the Provisional Sum items listed in the Bill of Quantities and Price Schedules will be made in accordance with the requirements of GCC Sub Clause 49, Provisional Sums, of the General Conditions of Contract.

17. LOCAL INDIRECT TAXES

Payment for the Provisional Sum items listed in the Bill of Quantities and Price Schedules will be made in accordance with the requirements of GCC Sub Clause 47, Provisional Sums, of the General Conditions of Contract.

18. GEOTECHNICAL INVESTIGATIONS

The entire work shall be carried out in accordance with the requirements of the General Bidding Documents for Geotechnical Investigations available at NESPAK website (www.nespak.com.pk). The field testing and sampling must be carried out under the supervision of the Consultant's representative and must conform to the guidelines outlined in the relevant ASTM standards. Laboratory testing shall be conducted at NESPAK's approved testing laboratories. Furthermore, the Contractor shall provide the coordinates and ground level at the location of test pits using total station with reference to a permanent local bench mark.

19. ADJUDICATOR

Payment for the Provisional Sum items listed in the Bill of Quantities and Price Schedules will be made in accordance with the requirements of GCC Sub Clause 23, Provisional Sums, of the General Conditions of Contract.

APPENDIX - A

LIST OF ANNEXES

LIST OF ABBREVIATIONS

CESMP	Construction Environmental and Social Management Plan
CSC	Construction Supervision Consultant
DHP	Dasu Hydropower Project
ESCP	Environmental and Social Code of Practices
ESMP	Environmental and Social Monitoring Plan
ESHS	Environment Social Health and Safety
ESU	Environment and Social Unit
GBV	Gender Based Violence
KKH	Karakoram Highway
LADP	Local Area Development Program
OP	Operational Policy
OHS	Occupational Health and Safety
PMU	Project Management Unit
SOW	Scope of Work
WAPDA	Water and Power Development Authority
WB	World Bank

REHABILITATION AND IMPROVEMENT OF TAYAL ROAD

GENERAL SPECIFICATIONS (APPENDIX-A)

1. INTRODUCTION

1.1 PROJECT OVERVIEW

The Local Area Development Program (LADP) is initiated by the Social and Resettlement Management Plan Volume-12 Area Development and Community Support Programs for Dasu Hydropower Project in March 2014.

The aims and objectives of the LADP are envisaged to:

- Reduce the potential risks of impoverishment due to involuntary resettlement;
- Contribute to rapid restoration of income and livelihoods; and
- Promote sustainable resettlement and local development with improved living standards and better lifestyle.

1.2 SUBPROJECT OVERVIEW

The project is to construct the Rehabilitation and Improvement of Tayal Road in order to facilitate the local residents. Tayal road starts from Dasu and ends on Tayal Village. The approximate length of the road under study is 2.77 km. The proposed subproject is funded by the World Bank and implemented by the Water and Power Development Authority (WAPDA) in district Upper Kohistan of Khyber Pakhtunkhwa province of Pakistan under the LADP project.

1.3 SUBPROJECT BACKGROUND

Under the LADP, Water and Power Development Authority (WAPDA) has identified some infrastructure schemes as on the community consultation and mutual agreement of WAPDA & Local Community. This Environmental and Social Management Plan (ESMP) has been prepared for the Tayal Road. The location of the subproject has been shown in **Figure 1.**

1.4 SUBPROJECT SCREENING

The screening of the proposed sub-project has been carried out on the basis of subproject activities and their potential impacts on physical, social and ecological environment. Checklists of likely environmental and social impacts of subproject are used here and divided in three parts i.e., i) subproject related issues; ii) site related issues; and iii) involuntary resettlement. The E&S Safeguard checklist is attached as **Annex-A.**

Since the activities under the subproject would mainly consist of rehabilitation, upgradation and small-scale new construction, the level of environmental and social impacts is likely to be low to moderate. The proposed subproject is classified as “Category B” subproject as per the World Bank Operational Policy (OP) 4.01 since no irreversible, long-term and significant adverse impacts are foreseen to take place as a result of its implementation.

1.5 NEED FOR ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

The findings of Category B projects result in preparation of ESMP[1]. ESMP is an instrument that details (a) the measures to be taken during the implementation and operation of a project to eliminate or offset adverse environmental and social impacts, or to reduce them to acceptable

1 (Source: OP 4.01, Annex C – Environmental and Social Management Plan)

levels; and (b) the actions needed to implement these measures[2].

1.6 SCOPE OF ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Following Scope of Work (SOW) related to ESMP is envisaged:

- Review of the World Bank (WB), national and provincial guidelines, laws and policies;
- Review of all relevant existing data, reports and drawings;
- Identification and evaluation of potential significant adverse environmental, social and ecological impacts;
- Recommend appropriate mitigation measures for the identified adverse impacts and monitoring plans to address them; and
- E&S implementation.

1.7 APPROACH AND METHODOLOGY

Methodology for the ESMP comprises a series of integrated tasks that were carried out by the Consultant. This was based on a combination of surveys and desk reviews as deemed necessary to meet the needs of the ESMP.

Subproject Description: The documents related to the subproject have been reviewed to reflect the proposed interventions in rehabilitation of roads. This information is collected and analyzed as part of ESMP process. A detailed review of information is presented in the subproject description section.

Environmental and Social (E&S) Survey: After the review of the subproject information, detailed E&S survey was conducted by the Consultant E&S team to collect primary information of the subproject area including land use, floral and faunal species, traffic situation, topography, utilities, sensitive areas etc.

Identification and Evaluation of Environmental and Social Impacts and Mitigation Measures: E&S aspects and their associated impacts were considered for proposed interventions under the subproject. Specific mitigation measures have been proposed to minimize the significant E&S impacts.

Environmental and Social Management Plan (ESMP): ESMP provides an overall approach for managing and monitoring the potential environmental and social impacts and describes the institutional framework and resource allocations to implement these measures.

1.8 ENVIRONMENTAL AND SOCIAL SAFEGUARDS PROCESSING STEPS

Implementation of environmental and social requirements will follow the following steps.

- Step 1: Subproject Screening and Preparation of ESMP;
- Step 2: Inclusion of E&S Specifications and Environmental and Social Management Plan (ESMP) in Contractor(s) bidding documents; and
- Step 3: Compliance and Monitoring.

This ESMP will be the part of Request for Proposals package/ Bid Documents and its compliance will be mandatory. The ESMP cost will be included in the overall subproject implementation cost. The Contractor will be required to prepare the site-specific Construction Environmental and Social Management Plan (CESMP) for the subproject. The CESMP will then be embedded into the civil works contracts and therefore will be legal binding on the Contractor.

2 (Source: OP 4.01, Annex A – Definitions).

The CESMP must be submitted to the Project Management Unit (PMU)/Construction Supervision Consultant (CSC) for review and clearance before signing of the Contract or before mobilization on site, whichever is earlier.

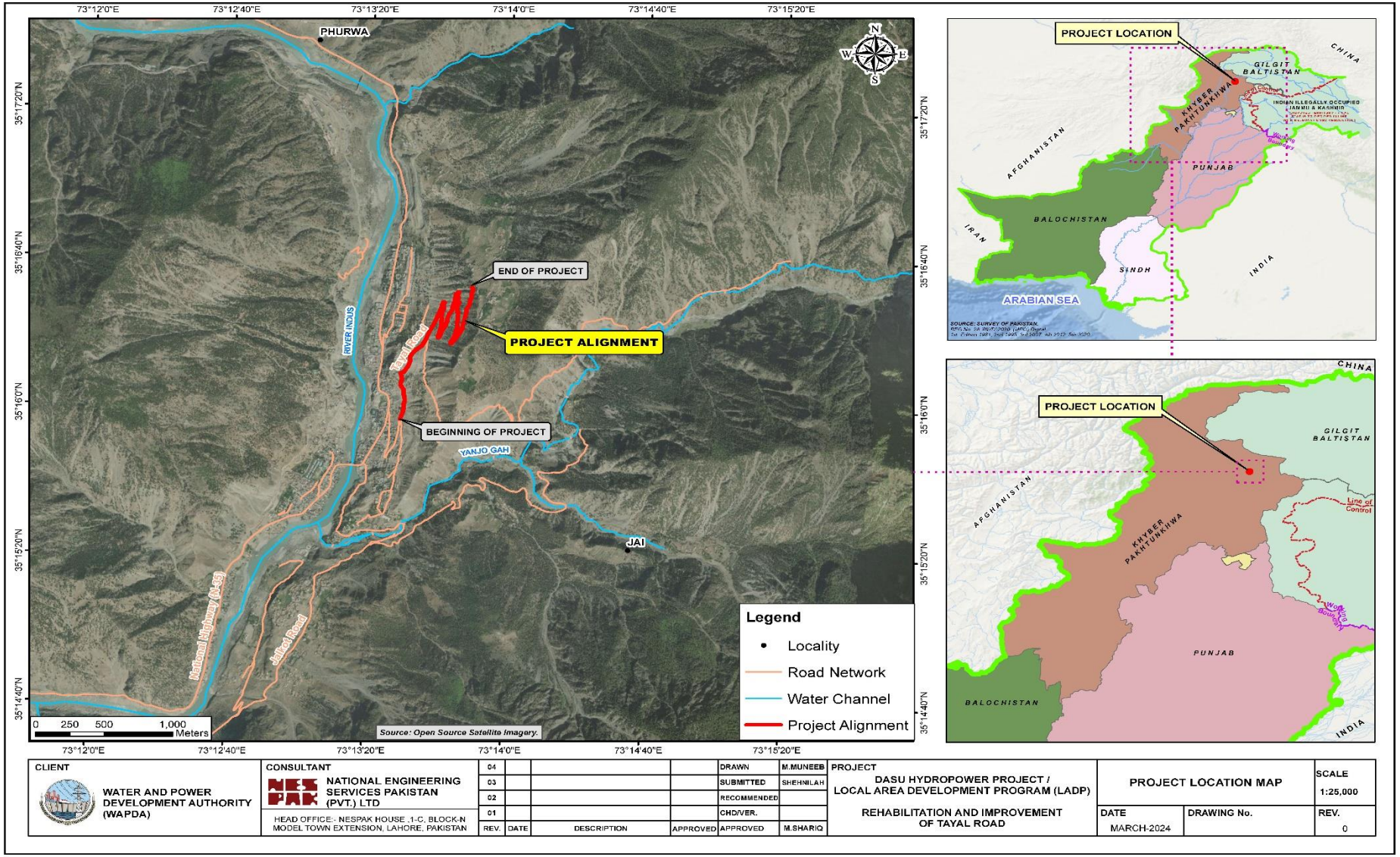


Figure 1: Location Map of the Tayal Road

2. LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1 KEY NATIONAL AND PROVINCIAL LAWS, REGULATIONS AND POLICIES

Government of Pakistan and Government of Khyber Pakhtunkhwa have promulgated laws and regulations to safeguard the environment. At national level, Ministry of Climate Change is the responsible authority and at provincial level, Khyber Pakhtunkhwa Environmental Protection Agency (KP-EPA) is responsible for promulgation & implementation of environment related laws. Besides environmental statutes, a number of laws governing the social performance of the project also exist, e.g., Land Acquisition Act 1894.

Post the adoption of the 18th Constitutional Amendment in 2011, the subject of environment was devolved, and the provinces have been empowered for environmental protection and conservation. Subsequently, the provincial Government amended PEPA 1997 as Khyber Pakhtunkhwa Environmental Protection Act 2014, and KP-EPA is responsible for ensuring the implementation of provisions of the Act in Khyber Pakhtunkhwa's territorial jurisdiction. KP-EPA is also required to ensure compliance with the National Environmental Quality Standards (NEQS) and establish monitoring and evaluation systems. This law will enforce the implementation of environmental legislations at provincial level and will be responsible for issuing "No Objection Certificates" (NOCs), if required. Other national and provincial laws, regulations and policies applicable to the subproject are as under (but not limited to):

- National Conservation Strategy, 1992;
- Khyber Pakhtunkhwa Environmental Protection Act, 2014;
- Khyber Pakhtunkhwa Environmental Assessment Rules, 2021;
- National Environmental Quality Standards (NEQS), 2010;
- National Environmental Policy (NEP), 2005;
- National Water Policy, 2018;
- Land Acquisition Act, 1894 Including Later Amendments:
- Guideline for Solid Waste Management, 2005;
- Building Code of Pakistan, Seismic provisions, 2007;
- National Disaster Risk Reduction Policy, 2013;
- National Forest Policy 2015;
- Employment of Child Act, 1991;
- The Protection against Harassment of Women at the Workplace Act, 2010;
- National Action Plan for COVID-19 Pakistan;
- The Khyber Pakhtunkhwa Occupational Safety and Health Act, 2022;
- Khyber Pakhtunkhwa Wildlife & Biodiversity Act, 2015;
- Khyber Pakhtunkhwa Forest Ordinance 2002;
- Khyber Pakhtunkhwa Antiquities Act, 2016;
- Khyber Pakhtunkhwa Climate Change Policy 2016;
- Culture Policy, Khyber Pakhtunkhwa, 2018; and
- Khyber Pakhtunkhwa Commission on Status of Women.

2.2 APPLICABLE INTERNATIONAL CONVENTIONS

Pakistan is a signatory to number of international conventions and agreements on biodiversity conservation, environmental protection, and sustainable development. The major conventions and agreements that are relevant to the subproject are as follows (but not limited to):

- Convention on Biological Diversity, 1997;
- Convention on Conservation of Migratory Species of Wild Animals, (1981);
- United Nations Framework Convention on Climate Change, (1994); and
- Sustainable Development Goals (SDGs).

2.3 APPLICABILITY OF WORLD BANK SAFEGUARD POLICIES

The development objectives of the World Bank safeguard policies are based on sustainability, transparency, fairness, accountability, governance, informed decision making, rights, participation and meaningful consultation for investment projects financed by the World Bank. Among total twelve safeguard policies, there are six environmental, two social, and two legal policies with their detailed Bank procedures can be found on the World Bank website. The disclosure and access to information policy is applicable to all investment projects and programs funded by the World Bank. Based on available information the applicability of World Bank policies is summarized below:

Table 1: Applicability of World Bank policies on Subproject

WB Safeguard Policies Triggered by the Project	Triggered		Explanation
	Yes	No	
Environmental Assessment (OP/BP 4.01)	[√]	[ ]	The ESMP in hand is fully committed to the requirements determined in the WB Safeguard Policy. The environmental works carried out by the consultants on behalf of project proponents have been essentially guided by these rules as enunciated in the OP 4.01.
Physical Cultural Resources (OP/BP 4.11)	[√]	[ ]	The possible discovery of archaeological sites or random findings during the excavation and earthworks may occur. In such case, this OP will trigger.
Involuntary Resettlement (OP/BP 4.12)	[√]	[ ]	This OP is triggered as project interventions may require land from public or private land holders.

2.4 OTHER RELEVANT WORLD BANK GUIDELINES AND POLICIES

2.4.1 Environmental and Social Framework

The Environmental and Social Framework (ESF) consists of a Vision for Sustainable Development and Environmental and Social Standards (ESSs), which set out the requirements for Borrowers. The ESF supports green, resilient and inclusive development by strengthening protections for people and the environment and making important advances in areas such as labor, inclusion and non-discrimination, gender, climate change, biodiversity, community health and safety, and stakeholder engagement.

2.4.2 Guidance Note on Labor Influx

A Guidance Note for “Managing the Risks of Adverse Impacts on Communities from Temporary Project Induced Labor Influx” was issued by World Bank in 2016. This Note provide guidance on identifying, assessing and managing the risks of adverse social and environmental impacts that are associated with the temporary influx of labor resulting from Bank supported projects. It contains guiding principles and recommendations to be considered as part of the design and implementation of projects with civil works that require labor from outside the project’s area of influence. It does not introduce new requirements, but rather seeks to provide concrete guidance on how to approach temporary labor influx within the environmental and social assessment process.

2.4.3 Environmental, Health & Safety Guidelines

In addition to operational policies (OP), the WBG has also established its EHS guidelines for all the interventions that are financed by the group. These EHS Guidelines are technical reference documents with general and sector-specific examples of Good International Industry Practice (GIIP).

2.4.4 World Bank Group Gender Strategy (2016-2023)

The 2015 Gender Strategy recognizes that stronger and better-resourced efforts are needed to address gender inequalities in access to jobs as well as control over and ownership of productive assets are key levers of change for women, their communities and economies and fundamental drivers of economic growth and poverty reduction. Gender equality is central to the World Bank Group's own goals of ending extreme poverty and boosting shared prosperity in sustainable manner.

3. SUBPROJECT DESCRIPTION

3.1 SUBPROJECT OVERVIEW

The subproject is an infrastructure facility that was identified by the WAPDA in consultation with the locals. The interventions in this subproject seek to upgrade the Tayal Road through rehabilitation.

3.2 SUBPROJECT COMPONENTS

The main subproject components will be road construction, retaining structures (retaining wall and breast wall) and traffic safety devices. Other temporary facilities such as site office/labor camp, material storage yards and disposal site will also constitute the subproject components.

3.7 CONSTRUCTION ASPECTS

3.7.1 Machinery Required

Table 2: List of Machineries expected to be used in Construction of the Subproject[3]

Subproject Activity	Construction Machinery
Clearing and grubbing	Bulldozer or grader
	Dumper
Removal of bushes and trees	Excavator
Excavation and backfill	Plate compactor
Concrete Pavement and Finishing	Asphalt Premix Plant, Paver, Rollers, Road Marking Machine

3.7.2 Work Force Requirement and Construction Duration

The estimated work force requirement and construction duration of the proposed Subproject is assumed to be 50 (approx.). The work force will include skilled, semi-skilled and laborers.

It is assumed that one (01) Contractor will be hired for construction of the subproject. The tentative construction duration is estimated as 09 months.

3.7.3 Construction Material

The materials used in construction of the proposed subproject would include following but not limited to: cement, sand, aggregates, stones, reinforced cement concrete frame (RCC Frame), brick infill, brick cladding coarse aggregates (crush), fine aggregates (sand), water, asphalt, reinforcement cement and steel.

3.7.4 Water Requirement

Contractor will be responsible to arrange water for construction works. The water consumption is estimated to be 4,000[4] gallons/day for 50 construction workers during construction phase of the proposed Project.

3 Source: Recommended Major Construction Equipment, General Specification, National Highway Authority (NHA), 1998

4 WASA Average Daily Per Capita Water Consumption (80 gallons/day)

3.7.5 Wastewater Generation

The wastewater generation is estimated to be 3,200[5] gallons/day for 50 construction workers during construction phase of the proposed Project.

3.7.6 Solid Waste Estimation

The solid waste generation is estimated to be 20[6] kg/day for 50 construction workers during construction phase of the proposed Project.

3.7.7 Power Requirement/ Power Source

The main source of electricity/electric power during construction phase will be diesel generators for construction camps and construction machinery.

5 *Design Criteria of Public Health Engineering for Water Supply, Sewerage and Storm Water Drain (Domestic sewage generation = 80% of water consumed/day)*
6 *Pakistan – Waste Management Report, 2018 (Mansehra District: 0.4 kg/capita/day)*

4. IMPACTS IDENTIFICATION AND MITIGATION

4.1 GENERAL

This section identifies the potential beneficial and summary of adverse impacts on the human and natural environment due to the implementation of the subproject. If properly carried out, the overall E&S impacts of the subproject are extremely beneficial.

4.2 METHODOLOGY OF IMPACT ASSESSMENT

The term “Environmental and Social Impact” or simply “Impact” covers the negative, adverse or harmful as well as positive, desirable or beneficial impacts of the Project on environmental and social settings. Prediction of impacts of the proposed activity is based on factual data; however, the significance of these impacts involves a value judgment technique. The nature of the impacts may be categorized in terms of:

Direction	-	Positive or Negative
Duration	-	Long or Short Term
Effect	-	Direct or Indirect
Extent	-	Wide or Local

Impact significance depends on both the nature of the impact and on the sensitivity of the receptor. The more sensitive the receptor the greater will be the significance of impact from that proposed activity. For this ESMP, activities and nature of impact are combined with the sensitivity of the receptor to evaluate the significance of the impact. The significance of impact is characterized as negligible, low, moderate and high. Environmental and social issues having “low”, “moderate” and “high” are provided with mitigation measures.

4.3 POTENTIAL POSITIVE IMPACTS

The positive impacts due to the proposed subproject are mentioned below:

- The proposed subproject will significantly improve accessibility for both local people and goods. Surrounding communities that were previously facing issues and had limited connectivity can now have better access to essential services;
- The road construction subproject itself will create employment opportunities for local residents. From manual labor to skilled jobs in engineering and project management, the construction phase will boost local employment rates;
- People living in remote hilly areas often experience social and economic isolation due to limited transportation options. The proposed subproject will reduce this isolation, leading to a greater sense of community and improved quality of life; and
- The proposed subproject will provide aid to emergency services, such as ambulances, with improved access to remote regions. This can significantly reduce response times during emergencies, potentially saving lives.

4.4 SUMMARY OF ADVERSE IMPACTS

Apart from beneficial impacts, the subproject has adverse impacts by its design and construction. The summary of assessed impacts and their significance is presented in **Table 3**.

Table 3: Summary of Potential Impacts and Significance

Aspect	Potential Impact/Description	Significance without Mitigation	Mitigation	Residual Significance
Pre-Construction/Design Impacts				
Impacts Relating to Surveying and mapping	The pre-construction activities will mainly be on a limited scale, and will not pose any major issues of environmental and social concern. However, the marking of houses, properties and utilities during surveying will likely create anxiety amongst property owners with regard to properties and compensation rights.	Low	• Prior information to the local public which will likely address such concerns.	Low
Landslide Hazards	Geographically, subproject area is a typical mountain area consisting of loose sandy and gravely soils having loose alluvial Soil Slopes. Seismic risk and unstable geological formations are two major causes of land sliding in the subprojects area. Slope stability may be affected by construction of road cuts or retaining structures. Excessive slope of steep cuts may result in landslides as the subprojects areas are prone to land sliding.	Moderate	• Design will consider maintaining natural angle of cut slopes to avoid land sliding. • Minimum clearance of vegetation will be considered in design. • Engineering measures will be incorporated in design to increase slope stability	Low
Road Safety	Enhanced vehicular movement and speed may result in road safety issues like road side accidents. The frequency of accidents may be lowered, but their intensity may be quite severe due to enhanced speeds at which vehicles will move.	Moderate	• Consider improvement of sharp curves to achieve uniform speed. • Traffic signs will be posted at accident prone sites to provide valuable information to drivers.	Low
Impact on Existing Utilities	Construction activities may damage the existing utilities and disconnect essential supplies such as electricity and water supply to the users.	Low	• It will be preferred that all required works related to avoidance of interference with these utilities will be considered.	Low
Site Selection of Construction Camp/Site Office	Campsite for construction workers is the important location that has significant impacts such as health and safety hazards, burden on local resources and infrastructure of nearby communities.	Moderate	• Preference will be given to avoid the requirement of construction camp by hiring the labors locally and will accommodate the outside workers in a rented house. • The Contractor will also build an office in a rented house. • If the installation of construction camp is	Low

Aspect	Potential Impact/Description	Significance without Mitigation	Mitigation	Residual Significance
			unavoidable, then the Contractor will finalize the location with the consent of the Construction Supervision Consultant before mobilization to the site. • The Contractor will identify the location of construction camp away from sensitive areas like densely populated area, schools, healthcare facilities and mosques to minimize the disturbance for locals.	
Site Selection of Stockpile Areas, Storage Areas and Disposal Areas	The clearing and excavation processes may loosen the soil and make it more susceptible to erosion due to wind and rain. Improper location of stockpile and storage areas may disturb the public access and also contaminates surface water quality due to runoff.	Moderate	• The disposal site will be sited in locations which will have suitable capacity to accept the disposal volumes, proximity to the spoil sources, unlikely to flood, preferably owned by the government and not located close to major inhabitation. • The location of dumping site will be finalized by the Contractor with the consent of the Construction Supervision Consultant. If private land will be acquired for storage of machinery, materials and disposal area on temporary basis. The Contractor will be liable to compensate the land owner and will restore the land in its prior condition before demobilization.	Low
Site Selection of Sources of Materials/Borrow Areas	Extraction of materials can disrupt natural land contours and vegetation resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and water logging and water pollution.	Moderate	• Priority will be given to purchase construction materials from market. If it is deemed necessary to bring materials from quarry site, these would to be located away from population centers, drinking water intakes and streams, cultivable lands and in structurally stable areas. • The Contractor will include the design specifications, the locations of camp site, storage area, disposal area and quarry site.	Low
Construction Impacts				
Soil Erosion and	Soil erosion and contamination can be occurred	Low	• Reinstate and protect cleared areas as soon	Low

Aspect	Potential Impact/Description	Significance without Mitigation	Mitigation	Residual Significance
Contamination	due to Clearing and grubbing, earthwork, excavation, blasting, improper storage of fuel, lubricants, paints, chemicals and movement of construction vehicles. These activities may loosen the soil and contaminate it.		as possible to avoid soil erosion. • Fuels will be stored on concrete-floored, bunded, facility, covered to provide shade and prevent the ingress of rain. • Spill kits will be readily available at material storage sites to deal with accidental spillage.	
Deterioration of Air Quality	There is a potential for creating dust from clearing and grubbing, earthwork, excavation of dry soil, backfilling, movement of construction vehicle, concrete mixer and open storage of materials. In addition, gaseous emissions due to operation of diesel generator sets will also cause air pollution	Low	• The Contractor will undertake frequent water sprinkling to reduce dust emissions. • Water sprinkling for the material stockpiles and access roads on an as required basis to minimize the potential for environmental nuisance due to dust. • Construction vehicles carrying materials will be covered with tarpaulin sheets to avoid dust pollution. • Impose speed limits on all vehicle movement at the worksite to reduce dust emissions. • The Contractor will carry out the third party testing of its equipment such as generator for gaseous emissions and shall ensure compliance to NEQS.	Low
Noise and Vibration	The earthwork, site clearance, movement of construction vehicles and operation of construction machinery will increase the ambient noise and vibration and may disturb the nearby residents.	Low	• Notify adjacent residents/landholders prior any typical noise and vibrational events. • Organize the loading and unloading of vehicles and handling operations for the purpose of minimizing construction noise and vibration at work site. • Avoid undertaking the noisiest activities, where possible, when working at night near the residential areas. • The Contractor will monitor and analyze noise results, adjust construction practices as required and ensure compliance with the NEQS.	Low
Contamination of Surface Water	Soil erosion, dust generation, runoff from construction site (containing fuel, lubricants,	Moderate	• The Contractor will ensure that roads used by construction vehicles are swept regularly to	Low

Aspect	Potential Impact/Description	Significance without Mitigation	Mitigation	Residual Significance
	paints and chemicals) will increase the sediment and contaminant loading of surface water bodies. Excavation during rainy season may cause flooding of construction sites, mixing of construction waste and material within the runoff.		remove sediment. • Water the material stockpiles, access roads and bare soils on as required basis to minimize dust. Increase the watering frequency during periods of high risk (e.g. high winds). • Minimize the generation of sediment, oil and grease, litter and any form of waste (particularly fuel and chemical wastes). These substances must not enter waterways or storm water systems. • The Contractor will not discharge cement and water curing directly into water courses. • Ensure that there will be no water stagnation at the construction sites. • The on-site storage of excessive quantities of unwanted spoil and aggregate materials will be avoided. Where storage is necessary, the Contractor will ensure heaps and stockpiles are located at sites that they do not permit direct runoff into watercourses. • The earthwork and storage of fuel and chemicals may cause short-term water contamination. • Avoid stockpiling especially during the rainy season unless covered by tarpaulins or plastic sheets. • Prioritize re-use of excess spoils and materials in the construction works. • Place storage areas for fuels and lubricants away from any drainage leading to water bodies.	
Landscape and Aesthetics	The construction works are likely to generate soil, stone, rock and cemented material. Improper storage and indiscriminate disposal of waste may affect the aesthetics of the area.	Low	• Avoid stockpiling of excess excavated soils as far as possible. • Promote beneficial uses of excess excavated soils or immediately dispose to designated	Low

Aspect	Potential Impact/Description	Significance without Mitigation	Mitigation	Residual Significance
			areas.	
Traffic Disruption / Disruption of Public Access	The overall traffic disruption due to material transportation and storage will be insignificant/minor as local traffic volume is very low. The overall traffic disruption due to material transportation and storage near the sensitive locations will have some impact on public access.	Low	• Storage of material outside the designated area will be prohibited. • Construction material will be brought to the site as and when required. • Suitable signboards will be placed at strategic locations. Signboards will be painted with reflective paints for nocturnal vision. • Where access to or from an individual property is closed for certain period, the owner will be informed prior to the commencement of works. Pedestrian access to schools and mosques will be maintained with the use of walking boards where feasible. • If community access is hindered, alternate routes will be provided. If provision of alternate route is not present, the Contractor will allow lane closure only during night time, when traffic volumes drop substantially from day to night and/or when a longer continuous period of construction activity is needed. • Inform public the date and time of activity well before start of work.	Low
Disruption to Public Utilities	Public utilities such as electric poles, water supply lines etc. may be located within the RoW of the proposed subproject. Damage to these facilities may temporarily interrupt supplies to consumers.	Low	• The Contractor will accurately locate the existing utilities before work commences which can be disrupted by the rehabilitation works. • The Contractor will conduct its operations, make necessary arrangements, take suitable precautions and perform all required works related to the protection of and avoidance of interference with these utilities. • The Contractor will repair all damaged utilities at the earliest to avoid social issues.	Low
Occupational Health and Safety Hazards	Workers need to be mindful of the occupational hazards which can arise from subproject	Moderate	• The Contractor will develop and implement site- specific Health and Safety (H&S) Plan	Low

Aspect	Potential Impact/Description	Significance without Mitigation	Mitigation	Residual Significance
	interventions. The construction workers will be exposed to a number of safety risks which can arise from site clearance, earthwork and construction activities		which will include measures such as: (a) excluding public from the site; (b) ensuring all workers are provided with and use personal protective goods; (c) H&S Training for all site personnel; and (d) documentation of work-related accidents. • Ensure that equipped first-aid material boxes will be easily accessible throughout the sites. • The Contractor will provide H&S orientation training to all new workers to ensure that they are apprised of the basic site rules of work, personal protection, and preventing injuring to fellow workers; • The Contractor will provide suitable personal protective goods, such as but not limited to, helmet, footwear, gloves, ear protector, goggles, dust mask to all workers. • The Contractor will implement Construction Environmental and Social Management Plan (CESMP), which will be in force throughout the duration of the Contract. • Provide awareness to the construction drivers to strictly follow the driving rules. • Enforce on-site speed limit. • Overall, the Contractor will comply with Environmental Code of Practices (ECP) related to H&S.	
Community Health and Safety Hazards	Considering the scale of construction, the risk to public safety will be restricted in the vicinity of existing RoW, routes of the material transportation, campsites and spoil disposal areas.	Moderate	• The Contractor will ensure that visitor do not enter hazard areas unescorted. • Inform public well before construction works. • Where the public could be exposed to danger by any of the site activities, the Contractor will as appropriate provide suitable measures such as, but not limited to barricading of construction area. • Work crews on access roads will include	Low

Aspect	Potential Impact/Description	Significance without Mitigation	Mitigation	Residual Significance
			flagmen to provide for the safe passage of traffic and all work sites will be adequately watched and lit during the hours of darkness.	
Social, Cultural and Religious Resources	There are no archaeological and historical sites within immediate surroundings of the subproject. However, there are religious sites such as mosques. The noise generated from the construction activities can impact the religious activities.	Low	The Contractor will: • Communicate to the locals through community consultation regarding the scope and schedule of construction, as well as certain construction activities causing disruptions or access restriction. • Not block access to the mosques by any of the construction activities. • Stop construction works that produce noise particularly during prayer time. • Restrict all construction activities within the foot prints of the construction sites. • Ensure same mechanism described under GRP for Dasu Hydropower Project.	Low
Impact on Flora	The construction activities will be carried out within the existing RoW of the proposed road (approx. 5 meter). No as such tree cutting is envisaged, however few road side shrubs might be affected and removed during clearing activities. Dust emission and air pollution will also cause an adverse impact on the flora situated near the vicinity of the propose project. Further, there could be a possibility of loss of some vegetation/shrubs during development of ancillary sites (labor camp/site office etc.).	Low	• Efforts will be made to avoid the cutting of trees. The loss of trees will be compensated by successful plantation of native species at available spaces near subproject roads. The lost trees will be replaced at a ratio of 1:10.	Low
Construction Camp	Campsite for construction workers is the important location that has significant impacts such as health and safety hazards, burden on local resources and infrastructure of nearby communities. Lack of proper infrastructure facilities such as water supply and sanitation facilities within the labor camp will increase burden on local	Low	• The location of labor camp will be identified by the Contractor and finalized with the consent of the Construction Supervision Consultant before start of works. • The Contractor will identify the location of ancillary facilities away from sensitive areas like densely populated area, schools, healthcare facilities and mosques to minimize	Low

Aspect	Potential Impact/Description	Significance without Mitigation	Mitigation	Residual Significance
	resources. Improper siting of labor camp may create environment and social issues. Management of wastes will be crucial to minimize impacts on the environment. Illegal sourcing of fuel wood by construction workers will impact the natural flora. There will be a potential for diseases to be transmitted including malaria, exacerbated by inadequate health and safety practices. There will be an increased risk of work crews spreading COVID-19 and sexually transmitted infections (HIV/AIDS).		the disturbance for locals. • Submit to the CSC for approval a detailed layout plan for the development of the construction camp showing the relative locations of all temporary facilities. • Provide safe and reliable water supply, which will meet NEQS. • Provide hygienic sanitary facilities and sewerage system. • Provide treatment facilities for sewerage of toilet and domestic wastes. • Do not establish site specific landfill sites. All solid waste will be collected and removed from the work camp and disposed in approved waste disposal site. • Consider the location of construction camp away from community in order to avoid social conflict in using the natural resources. • Provide fuel to the construction camps for their domestic purpose, in order to discourage them to use fuel wood. • Provide first aid facility round the clock. Maintain stock of medicines in the facility. • Conduct initial health screening of the laborers coming from outside areas. • Train all construction workers in basic sanitation and health care issues and safety matters, and on the specific hazards of their work. • Display emergency contact numbers clearly and prominently at strategic places. • Dismantle and remove from the site all facilities established for the subproject. • Restore the sites to its condition prior to commencement of the works or to an agreed condition with the landowner.	

Aspect	Potential Impact/Description	Significance without Mitigation	Mitigation	Residual Significance
Wastewater Generation	Wastewater will be generated at the construction camps by the resident workers. If the generated wastewater is not properly treated or disposed of, this may contaminate the surface water sources such as nullahs, drains, water channels etc. apart from soil contamination.	Moderate	• Domestic and chemical effluents from the construction camp will be disposed by the development of on-site sanitation systems i.e. septic tanks; • Proper monitoring to check the compliance of NEQS will be carried out; • Sewage from construction camps will be disposed of after proper pre-treatment and processes such as soakage pit; and • The contractor(s) will be responsible to submit details of site-specific wastewater management plan along with details of wastewater collection, transportation and its disposal.	Low
Solid Waste (Construction, Municipal and Hazardous Waste)	Different type of waste is likely to be generated during the construction phase of the subproject. The municipal waste will be in the form of food, cans, paper and wastewater from construction camps toilets and washing yards. Construction waste will include excavated soil, sand, gravel, rocks, asphalt, pieces of concrete, bricks, wood, metal pieces and electrical wires. Whereas, hazardous waste can be comprised of paints and construction chemicals. All these, if left unattended, can become a source of nuisance and environmental pollution in the project area. Insecure and unhygienic disposal of the solid wastes particularly garbage and trash may cause degradation of soil and land. Insecurely disposed of heaps of wastes containing kitchen garbage and food waste can serve as breeding grounds for the disease spreading vectors and rodents. Throwing away of solid wastes into water channels and the wastewater network can result into choking of the later.	Moderate	• Solid Waste generated during construction and camp sites will be safely disposed in demarcated waste disposal sites and the contractor will provide a proper waste management plan; • Training of work force in the storage and handling of hazardous materials and chemicals construction workers and supervisory staff will be encouraged and educated to practice waste minimization, reuse and recycling to reduce quantity of the waste; • Proper labeling of containers, including the identification and quantity of the contents, hazard contact information etc.; • Waste disposal plan must be reviewed during the entire construction phase in the light of changing weather conditions • Emergency Response Plan shall be prepared to address the accidental spillage of fuels and hazardous goods; • Immediate collection of spilled	Low

Aspect	Potential Impact/Description	Significance without Mitigation	Mitigation	Residual Significance
			oils/fuels/lubricants by collection of contaminated soils and skipping oils from surface water by applying appropriate technologies; • Reusing bitumen spillage; and Disposing non-usable bitumen spills in a deep trench providing clay linings at bottom and filled with soil at the top (for at-least 0.5 m); • Used oil shall be collected in separate containers stored on impervious platform with restricted access and shall be sold to licensed contractor and the burning of waste oil shall be strictly restricted; • Segregating and stockpiling scarified/ milled bituminous material and reusing this material in sub grade/shoulders; and • Waste Management Plan shall be prepared by contractor and ensure implementation of the plan.	
Labor Influx	For the implementation of Project activities, skilled and unskilled labor is required by the contractor. Mostly, skilled workers have been associated with the contractor since long which they utilize, where they are required for the projects, and while other workers are hired from the different areas that belong to different cultural backgrounds. Social problems and conflicts that are associated with Labor Influx are as follows: • Risk of social conflict; • Increased risk of illegitimate behavior and crime; • Impacts on community dynamics; • Increased burden on and competition for public service provision;	Moderate	• Labor camp(s) will be established away from residential population; • Preference will be given to the local people to work with contractor, and contractor will hire maximum labor force from the Project Area because this will reduce the labor influx; • Contractor will be bound to hire local unskilled labor to avoid this impact; • Awareness will be created among the work force to ensure respect for local customs; • Construction work will be completed within the stipulated time to move workers to next location; • Labor force will be shuffled with the time; • An effective GRM will be established for the subproject to resolve all issues related to the community. Thus, progress regarding	Low

Aspect	Potential Impact/Description	Significance without Mitigation	Mitigation	Residual Significance
	• Increased risk of communicable diseases and burden on local health services; • Local inflation of prices, accommodations and rents; and • Increase in traffic and related accidents.		resolving the issues will be monitored closely; • Create awareness among workers on proper sanitation and hygiene practices to endorse proper health and maintain good housekeeping practices at all Project sites; • Provide adequate personal hygiene facilities in good condition with adequate supply of clean water; • Make arrangements to treat the affected workers on time to control the movement of vector borne diseases; • Sensitize workers and surrounding communities on awareness and prevention of COVID-19, HIV/AIDS and sexually transmitted infections (STI) through training, awareness campaigns and workshops during community meetings; • Provide proper and free COVIID-19, HIV/AIDS and STI health screening and counseling for site workers and community members; • Develop and enforce a strict code of conduct for workers to regulate behavior in the local communities; • Taking all sensible precautions to avert illicit, vicious conduct by or amongst the Contractor's personnel, and to preserve unity and harmony, and protection of people and property on and near the sites; • Prohibiting drugs, alcohol, weapons, and ammunition on the worksite among personnel; • Appropriate fencing, security check points, gates and security guards will be provided at the construction sites to ensure the security of all plant, equipment, machinery and materials, as well as to secure the safety of site staff; and	

Aspect	Potential Impact/Description	Significance without Mitigation	Mitigation	Residual Significance
			• The Contractor must guarantee that good relations are maintained with local communities and their leaders to help reduce the risk of vandalism and theft.	
Gender Based Violence	In the society, female plays important role in managing household as well as in income earning activities, but they face various challenges to get access to educational institutions and employment opportunities due to cultural bindings, economic vulnerability and lack of facilities. According to Pakistan Demographic and Health Survey (PDHS), 2017-18, 28 percent of women of Pakistan age 15 to 49 have experienced physical violence, six percent have experienced sexual violence, and seven percent experienced violence during pregnancy. Three in ten women who have ever experienced physical or sexual violence sought help to stop the violence, yet 56 percent never sought help nor told anyone.	Moderate	• Awareness will be created among the females at individual and community levels about the constructions sites; • During the timing of educational institutions workers will not be allowed to crowd in the surroundings; • Alternative routes for pedestrian will be provided to avoid mixing of women with workers; • Gender protection act will strictly be enforced during the construction activities in the Project Area, and monitor the implementation through field staff; • Raise awareness among the communities of the potential risks of GBV, and establish response services in the communities that can respond to instances of GBV (particularly those related to issues of labor influx); • The Contractor will make sure that no discrimination is made on the basis of gender while hiring of workers. Complete SOPs will be formed and implemented by the contactor regarding working women at site. Implementation on these SOPs will be monitored by the implementation Consultants. • Provisions of gender disaggregate bathing, changing, and sanitation facilities; and • Contractor will take proper measures to address and resolve issues relating to harassment, intimidation, and exploitation, especially in relation to women.	Low

5. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

5.1 GENERAL

The objective of the Environmental and Social Management Plan (ESMP) is to address all the major E&S issues and provide framework for the implementation of the proposed mitigation measures during the pre-construction and construction phases of the subproject. The proper implementation of the ESMP will ensure that all the adverse E&S impacts identified are adequately mitigated, either totally prevented or minimized to an acceptable level and required actions to achieve those objectives are successfully adopted by the concerned parties. The implementation of ESMP will be carefully coordinated with the design and construction program of this Subproject to ensure that relevant mitigation measures are implemented at the appropriate stage and that adequate resources are properly allocated to achieve the desired results.

The Contractor will be responsible for the implementation of this Subproject under the direction of Construction Supervision Consultant (CSC) and WAPDA. The Contractor will be bound to follow the provisions of the contract documents about E&S protection and apply good construction techniques and methodology without damaging the environment.

The Plan provided as **Table 5** will act as a guideline for incorporating E&S measures that can be grouped into three categories: (i) mitigating measures that can be included in the detailed design of the subproject; (ii) mitigating measures that can be included and worked out by the Contractor on basis of the ESMP and an Environmental Code of Practices (ECP) enclosed in the Contract Documents alongside the specifications, and (iii) stand-alone mitigation measures. The ECPs are presented as Annex – B.

5.2 OBJECTIVES OF ESMP

The ESMP provides a delivery mechanism to address potential impacts of the sub projects activities, to enhance subprojects benefits and to outline standardized good practices to be adopted for all subprojects works. The ESMP has been prepared with the objectives of:

- Defining the roles and responsibilities of concerned parties for the implementation of ESMP and identifying areas where these roles and responsibilities can be shared with other parties involved in the execution and monitoring of the subprojects;
- Outlining mitigation measures required for avoiding or minimizing potential adverse impacts assessed by environmental study;
- Developing a monitoring mechanism and identifying requisite monitoring parameters to confirm effectiveness of the mitigation measures recommended in the study;
- Defining the requirements for communication, documentation, training, monitoring, management and implementation of the mitigation measures.

5.3 INCLUSION OF ESMP IN CONTRACT DOCUMENTS

In order to make Contractors fully aware and responsible of the implications of the ESMP and to ensure compliance, it is recommended that environmental and social mitigation measures are included in the tender documentation. The Contractor will be accountable through contract documents and/or other agreements of the obligations and importance of the environmental and social aspects of the subproject.

5.4 INSTITUTIONAL ARRANGEMENTS

The overall responsibility for the implementation of the subprojects rests with the Project

Management Unit (PMU), headed by the Project Director (PD). Within the PMU there will be an Environment and Social Unit (ESU) - responsible for implementing the ESMP. The ESU, headed by the Chief Engineer (CE)/Director General (DG) Social Safeguards will include representatives of all actors responsible for ESMP implementation (see **Figure 2**).

The ESU will consist of three sub-units (Environment and Social, and Occupational Health and Safety - OHS) with the following staff:

- Deputy Director – Environment and Social
- Assistant Director – Environment and Social
- Assistant Director – OHS

The Director E&S with the assistance of Deputy Director-E&S will endorse and support the implementation of the ESMP and associated policies and documentation. The Director E&S will be responsible to ensure appropriate resources are made available to implement the ESMP and to support established systems, procedures and E&S objectives.

5.5 INSTITUTIONAL RESPONSIBILITIES

Institutions responsible for executing and monitoring the E&S aspects of the subprojects during construction phase are:

Project Management Unit (PMU) would be responsible for:

- Liaising with the Construction Supervision Consultant (CSC), and ensuring that they perform their responsibilities effectively and adequately;
- Liaising with relevant stakeholders regarding E&S matters; overseeing the implementation of ESMP requirements;
- Ensuring the Implementation of ESMP;
- Monitoring and evaluation of environmental and social impacts and risks associated with the subprojects;
- Preparing progress reports on the status of implementation of the ESMP;
- Conduct monthly meetings with the E&S staff of CSC and Contractor on the progress of ESMP implementation, issues associated with implementation, non-compliance issues, and recommended course of action. Document the minutes of the meetings and present them in the progress reports;
- Imposing penalty and/ or require corrective action in case of non-compliance;
- The Assistant Director – E&S will be mainly responsible for liaising with CSC on the field level for the implementation of ESMP and preparing weekly compliance reports. He is also responsible for coordinating with District Forest and Fisheries departments (and other relevant agencies), and participating in landscaping plans for the quarry and spoil disposal areas; and
- The Assistant Director – OHS will be responsible for liaising with CSC for the implementation and supervision of occupational health and safety issues at the work areas.

Construction Supervision Consultant (CSC) would be responsible for:

- Supervising implementations of ESMP for E&S compliance;
- Issuing non-compliance notices to the Contractor;
- Reviewing ESMP every three months and updating, if required;
- Reviewing environmental monitoring/testing reports submitted by the Contractor;
- Preparing corrective action plan in case of non-compliance;

- Conducting E&S and OHS trainings;
- Assisting ESU in addressing and resolving environment-related complaints and grievances;
- Responding to E&S and OHS incidents reported; and
- Reviewing and assisting in preparation of progress reports.

Contractor will be responsible for:

- Appointing dedicated Environment Social Health and Safety (ESHS) Officer at the site for the implementation of ESMP in the field, particularly the mitigation measures;
- Preparing Construction Environmental and Social Management Plan (CESMP) describing the mechanism to comply with the ESMP and get it approved from CSC and PMU prior to mobilization;
- Carried out environmental monitoring, sampling and testing as recoded in monitoring plan;
- Training of its staff in the environmental/social aspects; and
- Implementing of E&S mitigation measures during construction stage.

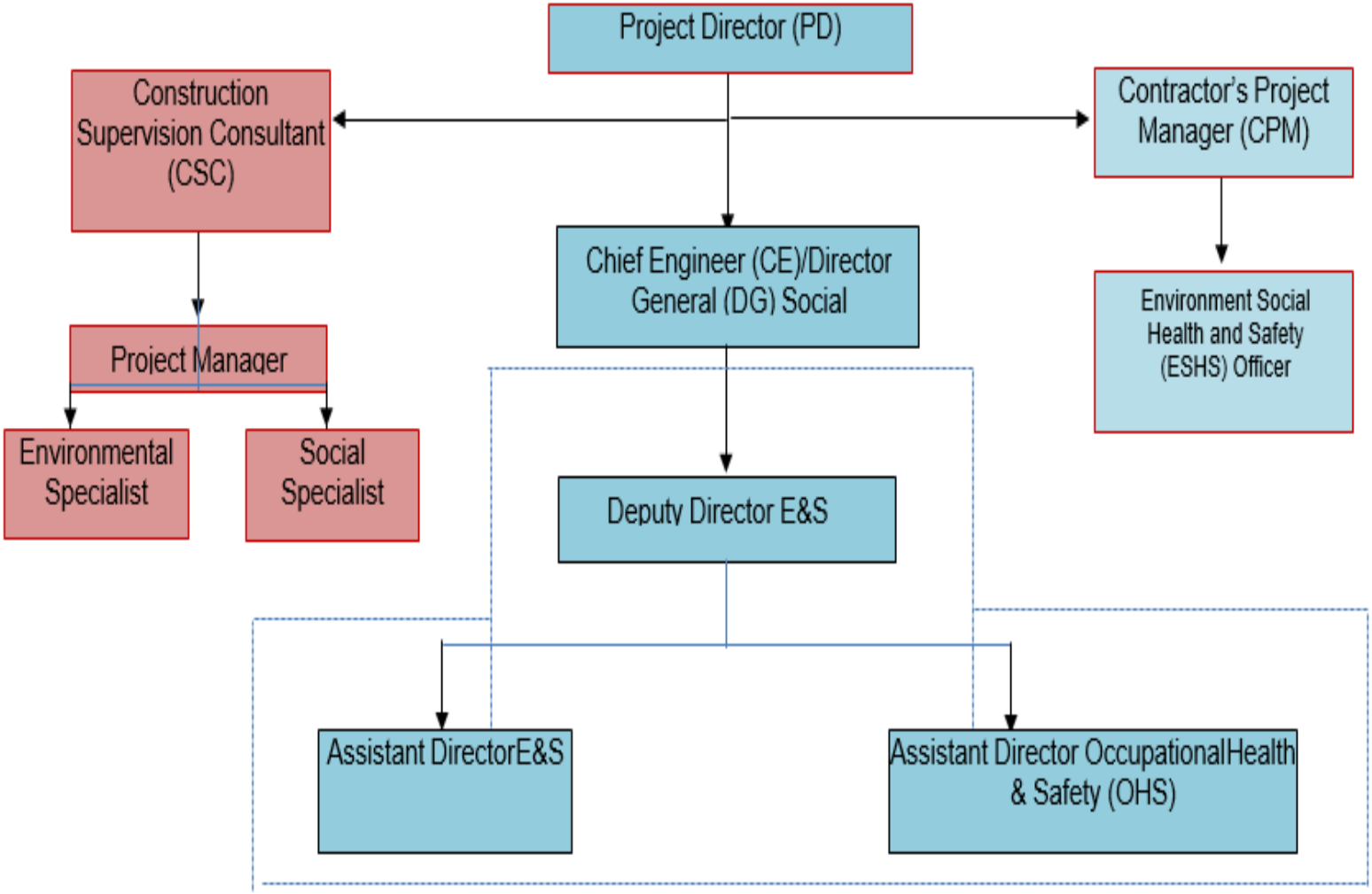


Figure 2: LADP Organization Chart for Safeguards Implementation

5.6 REPORTING AND FEEDBACK MECHANISM

The Contractor's ESHS Officer will manage the daily activities to be conducted in compliance with the ESMP and will be responsible for weekly reporting. CSC would be responsible for preparing monthly inspection and monitoring report and submit to the PMU. Project Director - PMU will prepare quarterly compliance report and submit to WB (see **Table 4).**

Table 4: **Reporting Requirements**

Reporting Responsibility	Reporting Requirement	Report Submitted To
Contractor	Weekly Compliance Report	CSC
CSC	Monthly Monitoring Report	PMU
PMU	Quarterly Compliance Report	WB

5.7 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

The Environmental and Social Management and Monitoring Plan provide the framework for the implementation of the mitigating measures and E&S management and monitoring. **Table 5** shows impacts, mitigations, means of monitoring, estimated cost and the responsible organizations for the implementation of the mitigation measures during the design and construction phases.

Table 5: **Environmental Mitigation and Monitoring Plan**

Impact/Aspect	Mitigation	Monitoring Site/Location	Means of Monitoring	Monitoring Frequency	Implemented by	Supervised/ Approved by
Pre-Construction/Design Impacts						
Impacts Relating to Surveying and mapping	Prior information to the local public which will likely address such concerns.	Survey sites/along the road alignement	Public Consultation	Before start of work	Design Consultant	CSC / WAPDA
Landslide Hazards	Design will consider maintaining natural angle of cut slopes to avoid land sliding. Minimum clearance of vegetation will be considered in design. Engineering measures will be incorporated in design to increase slope stability	Project Area	Design Documents / Topographic Survey Results	Before start of work	Design Consultant	CSC / WAPDA
Road Safety	Consider improvement of sharp curves to achieve uniform Speed. Traffic signs will be posted at accident prone sites to provide valuable information to drivers.	Project Area	Design Documents	Before start of work	Design Consultant	CSC / WAPDA
Impact on Existing Utilities	It will be preferred that all required works related to the protection of and avoidance of interference with these utilities will be considered.	Project Area	Design Documents	Before start of work	Design Consultant	CSC / WAPDA
Site Selection of Construction Camp/Site Office	• Preference will be given to avoid the requirement of construction camp by hiring the labors locally and will accommodate the outside workers in a rented house. • The Contractor will also build an office in a rented house. • If the installation of construction camp is unavoidable, then the Contractor will finalize the location with the consent of the Supervision Consultant before mobilization to the site. • The Contractor will identify the location of construction camp away	Project Area	CESMP/Detailed Design Documents	Before start of work	Design Consultant	CSC / WAPDA

Impact/Aspect	Mitigation	Monitoring Site/Location	Means of Monitoring	Monitoring Frequency	Implemented by	Supervised/ Approved by
	from sensitive areas like densely populated area, schools, healthcare facilities and mosques to minimize the disturbance for locals.					
Site Selection of Stockpile Areas, Storage Areas and Disposal Areas	• The disposal site will be sited in locations which will have suitable capacity to accept the disposal volumes, proximity to the spoil sources, unlikely to flood, preferably owned by the government and not located close to major inhabitation. • The location of dumping site will be finalized by the Contractor with the consent of the Engineer. If private land will be acquired for storage of machinery, materials and disposal area on temporary basis. The Contractor will be liable to compensate the land owner and will restore the land in its prior condition before demobilization.	Project Area	CESMP/Detailed Design Documents	Before start of work	Design Consultant	CSC / WAPDA
Site Selection of Sources of Materials/Borrow Areas	• Priority will be given to purchase construction materials from market. If it is deemed necessary to bring materials from quarry site, these would to be located away from population centers, drinking water intakes and streams, cultivable lands and in structurally stable areas. • The Contractor will include in the design specifications and on plan drawings the locations of camp site, storage area, disposal area and quarry site.	Project Area	CESMP/Detailed Design Documents	Before start of work	Design Consultant	CSC / WAPDA
Construction Impacts						
Soil Erosion and	• Reinstate and protect cleared areas	Access	Visual inspection	Weekly	Contractor	CSC/PMU

Impact/Aspect	Mitigation	Monitoring Site/Location	Means of Monitoring	Monitoring Frequency	Implemented by	Supervised/ Approved by
Contamination	as soon as possible to avoid soil erosion. • Fuels will be stored on concrete-floored, bunded, facility, covered to provide shade and prevent the ingress of rain. • Spill kits will be readily available at material storage sites to deal with accidental spillage.	Road/Hauling Route At active construction sites				
Deterioration of Air Quality	• The Contractor will undertake frequent water sprinkling to reduce dust emissions. • Water the material stockpiles and access roads on an as required basis to minimize the potential for environmental nuisance due to dust. • Construction vehicles carrying materials will be covered with tarpaulin sheets to avoid dust pollution. • Impose speed limits on all vehicle movement at the worksite to reduce dust emissions. • The Contractor will carry out the third party testing of its equipment such as generator for gaseous emissions and shall ensure compliance to NEQS.	Near sensitive receptors	Visual inspection to ensure good standard equipment is in use and dust suppression measures (spraying of water) are in place. Monitoring of ambient air quality through EPA certified laboratory	Weekly Once before the start of construction and report quarterly during construction	Contractor	CSC/PMU
Noise	• Notify adjacent residents /landholders prior any typical noise events. • Organize the loading and unloading of vehicles and handling operations for the purpose of minimizing construction noise on the work site. • Avoid undertaking the noisiest	Near sensitive receptors	Visual inspection to ensure well maintained equipment is in use Monitoring of noise level through EPA certified laboratory	Weekly Once before the start of construction and report quarterly during construction	Contractor	CSC/PMU

Impact/Aspect	Mitigation	Monitoring Site/Location	Means of Monitoring	Monitoring Frequency	Implemented by	Supervised/ Approved by
	activities, where possible, when working at night near the residential areas. • The Contractor will monitor and analyze noise results and shall ensure compliance to the NEQS.					
Contamination of Surface Water	• The Contractor will ensure that roads used by construction vehicles are swept regularly to remove sediment. • Water the material stockpiles, access roads and bare soils on an as required basis to minimize dust. Increase the watering frequency during periods of high risk (e.g. high winds). • Minimize the generation of sediment, oil and grease, litter and any form of waste (particularly fuel and chemical wastes). These substances must not enter waterways or storm water systems. • The Contractor will not discharge cement and water curing directly into water courses. • Ensure that there will be no water stagnation at the construction sites. • The on-site storage of excessive quantities of unwanted spoil and aggregate materials will be avoided. Where storage is necessary, the Contractor will ensure heaps and stockpiles are located at sites that they do not permit direct runoff into watercourses. • The earthwork and storage of fuel	At stockpile/storage areas	Visual inspection	Monthly	Contractor	CSC/PMU

Impact/Aspect	Mitigation	Monitoring Site/Location	Means of Monitoring	Monitoring Frequency	Implemented by	Supervised/ Approved by
	and chemicals may cause short-term water contamination. • Avoid stockpiling especially during the rainy season unless covered by tarpaulins or plastic sheets. • Prioritize re-use of excess spoils and materials in the construction works. • Place storage areas for fuels and lubricants away from any drainage leading to water bodies.					
Landscape and Aesthetics	• Avoid stockpiling of excess excavated soils as far as possible. • Promote beneficial uses of excess excavated soils or immediately dispose to designated areas.	At stockpile/storage areas	Visual inspection	Throughout the construction phase	Contractor	CSC/PMU
Traffic Disruption / Disruption of Public Access	• Storage of material outside the designated area will be prohibited. • Construction material will be brought to the site as and when required. • Suitable signboards will be placed at strategic locations. Sign boards will be painted with reflective paints for nocturnal vision. • Where access to or from an individual property is closed for certain period, the owner will be informed prior to the commencement of works. Pedestrian access to schools and mosques will be maintained with the use of walking boards where feasible. • If community access is hindered, alternate routes will be provided. If provision of alternate route is not present, the contractor will allow lane closure only during nighttime	Access road/hauling route At construction sites	Visual inspection Public grevances	Weekly	Contractor	CSC/PMU

Impact/Aspect	Mitigation	Monitoring Site/Location	Means of Monitoring	Monitoring Frequency	Implemented by	Supervised/ Approved by
	hours when traffic volumes drop substantially from day to night and/or when a longer continuous period of construction activity is needed. • Inform public the date and time of activity well before start of work.					
Disruption to Public Utilities	• The Contractor will accurately locate the existing utilities before work commences which can be disrupted by the rehabilitation works. • The Contractor will conduct his operations, make necessary arrangements, take suitable precautions and perform all required works related to the protection of and avoidance of interference with these utilities. • The Contractor will repair all damaged utilities at the earliest to avoid social issues.	Along the proposed road alignments	Public complaints Visual inspection to ensure that utilities are not damaged	Before start of Construction works Throughout the construction	Contractor	CSC/PMU
Occupational Health and Safety Hazards	• The Contractor will develop and implement site- specific Health and Safety (H&S) Plan which will include measures such as: (a) excluding public from the site; (b) ensuring all workers are provided with and use personal protective goods; (c) H&S Training for all site personnel; and (d) documentation of work-related accidents. • Ensure that equipped first-aid material boxes will be easily accessible throughout the sites. • The Contractor will provide H&S orientation training to all new workers to ensure that they are	At active construction sites, labor camp and material storage area	Usage of Personal Protective Goods Availability of first aid material box	Daily	Contractor	CSC/PMU

Impact/Aspect	Mitigation	Monitoring Site/Location	Means of Monitoring	Monitoring Frequency	Implemented by	Supervised/ Approved by
	apprised of the basic site rules of work, personal protection, and preventing injuring to fellow workers; • The Contractor will provide suitable personal protective goods, such as but not limited to, helmet, footwear, gloves, ear protector, goggles, dust mask to all workers. • The Contractor will implement Construction Environmental and Social Management Plan (CESMP), which will be in force throughout the duration of the Contract. • Provide awareness to the construction drivers to strictly follow the driving rules. • Enforce on-site speed limit. • Overall, the Contractor will comply with Environmental Code of Practices (ECP) related to H&S.					
Community Health and Safety Hazards	• The Contractor will ensure that visitor do not enter hazard areas unescorted. • Inform public well before construction works. • Where the public could be exposed to danger by any of the site activities, the Contractor will as appropriate provide suitable measures such as, but not limited to barricading of construction area. • Work crews on access roads will include flagmen to provide for the safe passage of traffic and all work sites will be adequately watched and lit during the hours of darkness.	At active construction sites Along the access roads	Road signage are placed at appropriate locations Community awareness regarding commencement of works	Weekly	Contractor	CSC/PMU

Impact/Aspect	Mitigation	Monitoring Site/Location	Means of Monitoring	Monitoring Frequency	Implemented by	Supervised/ Approved by
Social, Cultural and Religious Resources	The Contractor will: • Communicate to the locals through community consultation regarding the scope and schedule of construction, as well as certain construction activities causing disruptions or access restriction. • Not block access to the mosques by any of the construction activities. • Stop construction works that produce noise particularly during prayer time. • Restrict all construction activities within the foot prints of the construction sites. • Ensure same mechanism described under GRP for Dasu Hydropower Project.	At construction sites where deep excavation is required Near religious structures	Visual observation during construction more specifically during excavation process	Weekly	Contractor	CSC/PMU
Impact on Flora	Efforts will be made to avoid the cutting of trees. The loss of trees will be compensated by successful plantation of native species at available spaces near subproject roads. The lost trees will be replaced at a ratio of 10:1.	Tree Plantation at suitable locations along or near the subproject road corridors	Visual observation to ensure plantation is growing well.	Throughout the construction phase	Contractor	CSC/PMU
Construction Camp	• The location of labor camp will be identified by the Contractor and finalized with the consent of the Supervision Consultant before start of works. • The Contractor will identify the location of ancillary facilities away from sensitive areas like densely populated area, schools, healthcare facilities and mosques to minimize the disturbance for locals. • Submit to the CSC for approval a	Camp site	Visual observation Layout showing temporary facilities Record keeping	Before and during construction phase	Contractor	CSC/PMU

Impact/Aspect	Mitigation	Monitoring Site/Location	Means of Monitoring	Monitoring Frequency	Implemented by	Supervised/ Approved by
	detailed layout plan for the development of the construction camp showing the relative locations of all temporary facilities. • Provide safe and reliable water supply, which will meet NEQS. • Provide hygienic sanitary facilities and sewerage system. • Provide treatment facilities for sewerage of toilet and domestic wastes. • Do not establish site specific landfill sites. All solid waste will be collected and removed from the work camp and disposed in approved waste disposal site. • Consider the location of construction camp away from community in order to avoid social conflict in using the natural resources. • Provide fuel to the construction camps for their domestic purpose, in order to discourage them to use fuel wood. • Provide first aid facility round the clock. Maintain stock of medicines in the facility. • Conduct initial health screening of the laborers coming from outside areas. • Train all construction workers in basic sanitation and health care issues and safety matters, and on the specific hazards of their work. • Display emergency contact numbers clearly and prominently at strategic					

Impact/Aspect	Mitigation	Monitoring Site/Location	Means of Monitoring	Monitoring Frequency	Implemented by	Supervised/ Approved by
	places. • Dismantle and remove from the site all facilities established for the subprojects. • Restore the sites to its condition prior to commencement of the works or to an agreed • condition with the landowner.					
Wastewater Generation	• Domestic and chemical effluents from the construction camp will be disposed by the development of on-site sanitation systems i.e. septic tanks; • Proper monitoring to check the compliance of NEQS will be carried out; • Sewage from construction camps will be disposed of after proper pre-treatment and processes such as soakage pit; and • The contractor(s) will be responsible to submit details of site-specific wastewater management plan along with details of wastewater collection, transportation and its disposal.	At construction sites Camp Site	Visual observation Water Quality Testing	Throughout the construction phase	Contractor	CSC/PMU
Solid Waste (Construction, Municipal and Hazardous Waste)	• Solid Waste generated during construction and camp sites will be safely disposed in demarcated waste disposal sites and the contractor will provide a proper waste management plan; • Training of work force in the storage and handling of hazardous materials and chemicals construction workers and supervisory staff will be encouraged and educated to	At construction sites Camp Site	Visual Observation	Throughout the construction phase	Contractor	CSC/PMU

Impact/Aspect	Mitigation	Monitoring Site/Location	Means of Monitoring	Monitoring Frequency	Implemented by	Supervised/ Approved by
	practice waste minimization, reuse and recycling to reduce quantity of the waste; • Proper labeling of containers, including the identification and quantity of the contents, hazard contact information etc.; • Waste disposal plan must be reviewed during the entire construction phase in the light of changing weather conditions • Emergency Response Plan shall be prepared to address the accidental spillage of fuels and hazardous goods; • Immediate collection of spilled oils/fuels/lubricants by collection of contaminated soils and skipping oils from surface water by applying appropriate technologies; • Reusing bitumen spillage; and Disposing non-usable bitumen spills in a deep trench providing clay linings at bottom and filled with soil at the top (for at-least 0.5 m); • Used oil shall be collected in separate containers stored on impervious platform with restricted access and shall be sold to licensed contractor and the burning of waste oil shall be strictly restricted; • Segregating and stockpiling scarified/ milled bituminous material and reusing this material in sub grade/shoulders; and • Waste Management Plan shall be					

Impact/Aspect	Mitigation	Monitoring Site/Location	Means of Monitoring	Monitoring Frequency	Implemented by	Supervised/ Approved by
	prepared by contractor and ensure implementation of the plan.					
Labor Influx	• Labor camp(s) will be established away from residential population; • Preference will be given to the local people to work with contractor, and contractor will hire maximum labor force from the Project Area because this will reduce the labor influx; • Awareness will be created among the work force to ensure respect for local customs; • Construction work will be completed within the stipulated time to move workers to next location; • Labor force will be shuffled with the time; • An effective GRM will be established for the Project to resolve all issues related to the community. Thus, progress regarding resolving the issues will be monitored closely; • Create awareness among workers on proper sanitation and hygiene practices to endorse proper health and maintain good housekeeping practices at all Project sites; • Provide adequate personal hygiene facilities in good condition with adequate supply of clean water; • Make arrangements to treat the affected workers on time to control the movement of vector borne diseases; • Sensitize workers and surrounding communities on awareness and	At construction sites Camp Site Near Community	Visual Observation No. of Grievances	Through out the construction phase	Contractor	CSC/PMU

Impact/Aspect	Mitigation	Monitoring Site/Location	Means of Monitoring	Monitoring Frequency	Implemented by	Supervised/ Approved by
	prevention of COVID-19, HIV/AIDS and sexually transmitted infections (STI) through training, awareness campaigns and workshops during community meetings; • Provide proper and free COVIID-19, HIV/AIDS and STI health screening and counseling for site workers and community members; • Develop and enforce a strict code of conduct for workers to regulate behavior in the local communities; • Taking all sensible precautions to avert illicit, vicious conduct by or amongst the Contractor's personnel, and to preserve unity and harmony, and protection of people and property on and near the sites; • Prohibiting drugs, alcohol, weapons, and ammunition on the worksite among personnel; • Site security preparations must be contained within the Bills of Quantities (BoQs) to avoid any delays which might be caused due to insecurity; • Appropriate fencing, security check points, gates and security guards will be provided at the construction sites to ensure the security of all plant, equipment, machinery and materials, as well as to secure the safety of site staff; and • The Contractor must guarantee that good relations are maintained with local communities and their leaders					

Impact/Aspect	Mitigation	Monitoring Site/Location	Means of Monitoring	Monitoring Frequency	Implemented by	Supervised/ Approved by
	to help reduce the risk of vandalism and theft.					
Gender Based Violence	• Awareness will be created among the females at individual and community levels about the constructions sites; • During the timing of educational institutions workers will not be allowed to crowd in the surroundings; • Alternative routes for pedestrian will be provided to avoid mixing of women with workers; • Gender protection act will strictly be enforced during the construction activities in the Project Area, and monitor the implementation through field staff; • Raise awareness among the communities of the potential risks of GBV, and establish response services in the communities that can respond to instances of GBV (particularly those related to issues of labor influx); • The Contractor will make sure that no discrimination is made on the basis of gender while hiring of workers. Complete SOPs will be formed and implemented by the contactor regarding working women at site. Implementation on these SOPs will be monitored by the implementation Consultants. • Provisions of gender disaggregate bathing, changing, and sanitation	Construction site Near Community	Visual Observation No. of Grievances	Throughout the construction phase	Contractor	CSC/PMU

Impact/Aspect	Mitigation	Monitoring Site/Location	Means of Monitoring	Monitoring Frequency	Implemented by	Supervised/ Approved by
	facilities; and • Contractor will take proper measures to address and resolve issues relating to harassment, intimidation, and exploitation, especially in relation to women.					

5.8 NON-COMPLIANCE OF THE ESMP

The implementation of the proposed ESMP involves inputs from various functionaries as discussed earlier. The contractor will be primarily responsible for ensuring implementation of the mitigation measures proposed in the ESMP, which will be part of the contract documents. The provision of the environmental mitigation cost will be made in the total cost of project, for which contractor will be paid on the basis of monthly compliance reports. However, if the contractor fails to comply with the implementation of ESMP and submission of the monthly compliance reports, deductions will be made from the payments to the contractor claimed under the heads of environmental components.

5.9 CONTRACTOR'S OBLIGATION AND MANAGEMENT

The contractor will be primarily responsible for ensuring the implementation of the mitigation measures proposed in the ESMP. The requisite content of this ESMP or complete ESMP will be incorporated in bidding document and will become a part of the contractor's contract documents. The provision of the environmental and social mitigation cost will be made in the total cost of project, for which the contractor will be paid on the basis of monthly compliance reports and actual work done at site along with resource loading. In addition to this the contractor will be responsible for the preparation and implementation of site specific ESMP also called as CESMP, along with all the sub-plans with prior approval from CSC and PMU-WAPDA. The contractor will ensure the availability of the E&S staff as mentioned above at site from the start of the project (at mobilization stage) and organogram will be dually approved from CSC and PMU-WAPDA.

5.10 ENVIRONMENTAL CODES OF PRACTICE

The Contractor will seek to develop and implement the Environmental Codes of Practice (Refer **Annex-B**) for its staff and employees in order to ensure that the intrusion of workers in the project area does not result in any social and environmental and social issues between the workers and locals which can harm the project by causing unnecessary delays. These codes will be reviewed and approved by SC prior to start of the construction activities.

5.11 ENVIRONMENTAL TESTING

Environmental testing will be undertaken before and during the construction phase. The results of analyses are compared with the National Environmental Quality Standards (NEQS).

Table 6: Environmental Testing during Construction Phase

Components	Parameters	No. of Samples	Frequency	Responsibility	Duration
Air Quality	CO, CO_2, NO_x, SO_x, $PM_{2.5}$, PM_{10}, SPM	05	Through Third Party	Contractor	24 hours
Dust Emission	$PM_{2.5}$, PM_{10}, SPM	05	Daily at Active Construction Site through Portable Equipment	Contractor	24 hours

Components	Parameters	No. of Samples	Frequency	Responsibility	Duration
Noise Level	Day and Night	05	Daily at Active Construction Site through Portable Equipment	Contractor	24 hours

5.12 Environmental Technical Assistance and Training Plan

In order to raise the level of professional and managerial staff, there is a need to upgrade their knowledge in the related areas. WAPDA shall play a key role in this respect and arrange the trainings.

An Environmental and Technical Assistance Program (TAP) is to be carried out before the implementation of the project. Environmental awareness and appropriate knowledge of environmental protection is critical to the successful implementation of the ESMP. A suitable training program is proposed to train the staff who will be involved in the construction phase of the subproject.

The objective of the TAP will help in establishment of appropriate systems, and to train WAPDA staff for managing environment. The TAP representative will organize training courses/lectures for requirements of WAPDA and contractor staff to train them.

5.13 ESMP IMPLEMENTATION

The Summary of E&S compliance for subproject is presented in **Table 8**.

Table 7: **Summary of Environmental and Social Compliance**

Sr. No.	Items	Description
1	Personal Protective Equipment (PPE)*	For 50 employees for the provision of dust masks, safety shoes, helmet, jackets, safety goggles, gloves, first aid box, ear plugs
2	Environmental Testing	Refer Table 6
3	hiring of staff for ESMP implementation	Hiring of one (01) ESHS expert for 01 year

5.14 GRIEVANCE REDRESS PLAN

The key objective of the GRP is to establish procedures for filing any grievances and disputes on social and environment safeguards and other issues arising out of the implementation of proposed subproject.

The scope and mandate of Grievances Redress Committees (GRCs) to be established under the Plan shall include any grievances or disputes related to policy and/or measures in Dasu Hydropower Project (DHP) social and environmental plans.

A four-tier “bottom up” system of GRC has been established in the DHP, starting with Village Level GRC, (ii) Union Council Level GRC, (iii) District-Level GRC and (iv) Project

Level Independent GRC to be led by a retired civil judge.

The mechanism described under GRP will be used for the subproject and will be accessible to the affected persons and communities for redressing their grievances and issues related to social and environmental impacts.

ANNEXES

ANNEXES

ANNEX – A

CHECKLIST OF LIKELY ENVIRONMENTAL AND SOCIAL IMPACTS OF SUBPROJECT

CHECKLIST OF LIKELY ENVIRONMENTAL AND SOCIAL IMPACTS OF SUBPROJECT

Name of Subproject: Rehabilitation and Improvement of Tayal Road
Number of Subproject: 01
Proposing Agency: Water and Power Development Authority (WAPDA)
Subproject Location: Tayal Village
Subproject Objective: The objective of the subproject is to improve the road condition and enhancement of road capacity to meet the projected increase in traffic volumes in the Project Area.
Infrastructure to be Rehabilitated: The subproject is to upgrade and improve the Tayal Road. The subproject components consist of the following facilities:

- Road Construction
- Retaining Structures

Estimated Cost: approximately 217.55 Million PKR

Proposed Date of Commencement of Work: After necessary approvals

TECHNICAL DRAWING/SPECIFICATIONS REVIEWED (CIRCLE ANSWER): **YES** **NO**

SUBPROJECT RELATED ISSUES

	A. ISSUES	None	Minor/ Small	Moderate/ Medium	Significant/ Large	Mitigation Measures
A.	**Zoning and Land Use Planning**					
1.	Will the subproject affect land use zoning and planning or conflict with prevalent land use patterns?	✓				Rehabilitation and reconstruction activities will be carried out within the existing ROW.
2.	Will the subproject involve significant land disturbance or site clearance?		✓			• The subproject will involve rehabilitation of existing road and new construction. Site clearance will involve cutting or uprooting trees/shrubs and other vegetation and debris removal. Earthwork will involve the removal of topsoil and/or unconsolidated rock. Excavation will be carried out for road construction and retaining structures. The following mitigation measures will be carried out: • Excavated material will be reused in the construction, wherever possible. • The excess material (spoils) that cannot be reused will be transported to the disposal site. It will be ensured that none of the excess material is dumped into the Nullah. • A suitable location for spoil disposal will be identified by the Contractor with the consent of the Engineer. The spoils will be placed in layers and will be suitably compacted. Adequate drainage and dust control measures will be carried out at the disposal site. • All disposal sites will be situated in locations which are not affected by floods.
3.	Will the subproject land be subject to potential encroachment by urban or industrial use or located in an area intended for urban or industrial development?	✓				
B.	**Utilities and Facilities**					
4.	Will the subproject require the setting up of ancillary facilities?					• The Contractor will identify the need and location of construction yard/material storage area and

	A. ISSUES	None	Minor/ Small	Moderate/ Medium	Significant/ Large	Mitigation Measures
			✓			construction camp. • The mitigation measures that will be applied to potential environmental, social, health and safety (ESHS) impacts will also be used at the ancillary facilities.
5.	Will the subproject make significant demands on utilities and services?		✓			The Contractor will be responsible to provide proper infrastructure facilities such as water supply and sanitation facilities within the labor camp to avoid burden on local resources.
6.	Will the subproject require significant levels of accommodation or service amenities to support the workforce during construction (e.g., contractor will need more than 20 workers)?		✓			If necessary, the Contractor will avoid the requirement of construction camp by hiring the labors locally. The contractor will accommodate the outside workers in a rented house.
C.	**Water and Soil Contamination**					
7.	Will the subproject require large amounts of raw materials or construction materials?		✓			The Contractor will purchase construction material (cement, sand, aggregates, fuel) from the market.
8.	Will the subproject generate large amounts of residual wastes, construction material waste or cause soil erosion?		✓			The clearing and excavation processes will generate the considerable amount of spoil material. The construction waste will also be produced in small amounts which will be immediately cleared from the site and will be disposed at the spoil disposal sites (see point 2 for mitigation measures applied at the spoil disposal sites).
9.	Will the subproject result in potential soil or water contamination (e.g., from oil, grease and fuel from equipment yards)?		✓			• During the construction phase, storage and handling of some construction materials (stones, sand, bitumen, gravels, fuel) may pose a risk of soil and water contamination. • The following mitigation measures will be carried out: • Fuel will be stored on concrete-floored, bunded, facility, covered to provide shade and prevent the ingress of rain. • Spill kits will be readily available at material storage sites to deal with accidental spillage. • Maintain construction site in a cleaner, tidy and safe

	A. ISSUES	None	Minor/ Small	Moderate/ Medium	Significant/ Large	Mitigation Measures
						condition and provide and maintain appropriate facilities as temporary storage of all wastes before transportation and final disposal.
10.	Will the subproject lead to contamination of ground and surface waters by herbicides for vegetation control and chemicals (e.g., calcium chloride) for dust control?	✓				
11.	Will the subproject lead to an increase in suspended sediments in streams affected by road cut erosion, decline in water quality and increased sedimentation downstream?		✓			• During site clearance and other construction works, the excavated material (if not appropriately managed) may enter into the stream/nullah. The following mitigation measures will be implemented: • Prevention of dumping of excavated material in stream/nullah. • Remove material immediately from the construction site. • Locate stockpiles at an appropriate distance from the stream/nullah.
12.	Will the subproject involve the use of chemicals or solvents?		✓			During the construction, small quantities of chemicals may be used in concrete/bitumen production. They will be handled in a way similar to other hazardous materials such as fuels (see measures given in point 9)
13.	Will the subproject lead to the destruction of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards?		✓			• Vegetation/Trees of sub-mature category might get affected in construction of subproject road. • The mitigation measures will include successful plantation of native species. The lost trees will be replaced at a ratio of 1:10.
14.	Will the subproject lead to the creation of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors?	✓				The Contractor will purchase construction material (cement, sand, aggregates, fuel) from the market.
D.	**Noise and Air Pollution Hazardous Substances**					
15.	Will the subproject increase the levels of harmful air emissions?		✓			• Construction activities particularly earthworks, movement of construction machinery, and the use of

						aggregates and cement will produce airborne dust. In addition, gaseous emissions due to the combustion of diesel from vehicles, diesel generator sets, etc. will cause some air pollution. The following mitigation measures will be implemented: • The Contractor will water the material stockpiles, access roads and bare soils on an as required basis to minimize the potential for environmental nuisance due to dust. • All vehicles used during construction activities will be kept in good working condition and be appropriately tuned. • Construction vehicles carrying materials will be covered with tarpaulin sheets to avoid spilling.
16.	Will the subproject increase ambient noise levels?			✓		• During the construction, excavations will increase the ambient noise and vibration levels. The following mitigation measures will be implemented: • Notify adjacent residents /landholders prior any typical noise events. • Organize the loading and unloading of vehicles and handling operations for the purpose of minimizing construction noise on the work site. • Avoid undertaking the noisiest activities, where possible, when working at night near the residential areas. • The Contractor will monitor and analyze noise results and shall ensure compliance to the NEQS.
17.	Will the subproject involve the storage, handling or transport of hazardous substances?		✓			• Hazardous material that would be used during the construction are fuels, and chemical additives for concrete. The following measures will be implemented for storage and handling of fuels at the site: • Fuels and chemicals will be stored on concrete-floored, bunded, facility, covered to provide shade and prevent the ingress of rain. • Chemicals will be stored on an impervious base and handled carefully to avoid any spills. • Trained workers will be used in the handling of

						hazardous material, and MSDS sheets will be made available at the site. • Spill kits will be readily available at material storage sites to deal with accidental spillage. • Used chemicals and their containers will be considered as a hazardous waste and will be sold to the vendors. • Provide protective clothing, safety boots, helmets, masks, gloves, goggles, to the construction personnel, appropriate to materials in use.
E.	**Fauna and Flora**					
18.	Will the subproject involve the disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes)?	✓				
19.	Will the subproject lead to the destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development?	✓				
20.	Will the subproject lead to the disruption/destruction of wildlife through interruption of migratory routes, disturbance of wildlife habitats, and noise- related problems?	✓				
F.	**Destruction/Disruption of Land and Vegetation**					
21.	Will the subproject lead to unplanned use of the infrastructure being developed?	✓				
22.	Will the subproject lead to long-term or semi-permanent destruction of soils in cleared areas not suited for agriculture?	✓				
23.	Will the subproject lead to the interruption of subsoil and overland drainage patterns (in areas of cuts and fills)?		✓			Causeways have been proposed at identified locations to prevent interruption of drainage patterns.
24.	Will the subproject lead to landslides, slumps, slips and other mass movements in road cuts?	✓				
25.	Will the subproject lead to erosion of lands receiving concentrated outflow carried by	✓				

	covered or open drains?					
26.	Will the subproject lead to long-term or semi-permanent destruction of soils in cleared areas not suited for agriculture?	✓				
27.	Will the subproject lead to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles?		✓			• Dust generation from movement of construction vehicles on access road and within the construction site can be a health hazard for nearby residents and may impair plant growth present near the construction site. • The following mitigation measures will be implemented: • Machinery causing excess pollution (e.g. visible smoke) will be banned from construction sites. • Operate the vehicles in a fuel efficient manner. • Limit the idling time of vehicles not more than 2 minutes. • Water the material stockpiles, access roads on an as required basis to minimize the potential for environmental nuisance due to dust. • All vehicles used during construction activities will be kept in good working condition and be appropriately tuned. • Construction vehicles carrying materials will be covered with tarpaulin sheets to avoid dust pollution. • Impose speed limits on all vehicle movement at the worksite to reduce dust emissions.
G.	**Cultural Property**					
28.	Will the subproject have an impact on archaeological or historical sites, including historic urban areas?	✓				
29.	Will the subproject have an impact on religious monuments, structures and/or cemeteries?	✓				
30.	Have Chance Finds procedures been prepared for use in the subproject?	✓				The “chance find procedures” will be incorporated in the contract documents.
H.	**Expropriation and Social Disturbance**					
31.	Will the subproject involve land expropriation or demolition of existing structures?		✓			• No existing structure is anticipated to be removed or demolished.

	Will the subproject lead to induced settlements by workers and others causing social and economic disruption?	✓				
33.	Will the subproject lead to environmental and social disturbance by construction camps?		✓			If necessary, the Contractor will avoid the requirement of construction camp by hiring the labors locally. The contractor will accommodate the outside workers in a rented house.
34.	Will the subproject pose community health & safety and OHS risks?		✓			Construction works such as excavations may pose risk to nearby communities and workers. The following measures will be implemented to deal with safety of workers and community: • The contractor will barricade the construction area. • The Contractor will provide Personal Protective Equipment (PPE relevant to work) to all workers. • All workers will undergo safety induction training before starting the work. • The contractor will carry out job hazard analysis for the construction activity to identify potential hazards that may arise from the proposed works or working conditions to the project workers: and implement necessary control measures. • Environmental Code of Practices (ECPs) will be the part of the Contract Document.

Site Related Issues

	A. ISSUES	Yes	No	Don't Know	Mitigation Measures
1.	Does the subproject require land acquisition?		✓		• No land acquisition is required for the proposed subproject however, • In addition, the Contractors will require land for establishment of material storage area, which will be acquired by the contractor on a temporary basis. The Contractor will negotiate with the landowners on rental and lease terms, and will make a legal contract. The Contractor will clear all the debris from the site before handing over to the owner after completion of the lease terms.
2.	Will the subproject negatively impact livelihoods?		✓		The land which is proposed for the project facilities is vacant and is not being used for any kind of livelihood activities.
3.	Is the subproject located in an area with designated natural reserves?		✓		
4.	Is the subproject located in an area with unique natural features?		✓		
5.	Is the subproject located in an area with endangered or conservation-worthy ecosystems, fauna or flora?		✓		
6.	Is the subproject located in an area falling within 500 meters of national forests, protected areas, wilderness areas, wetlands, biodiversity, critical habitats, or sites of historical or cultural importance?		✓		

	A. ISSUES	Yes	No	Don't Know	Mitigation Measures
7.	Is the subproject located in an area which would create a barrier for the movement of conservation-worthy wildlife or livestock?		✓		
8.	Is the subproject located close to groundwater sources, surface water bodies, water courses or wetlands?	✓			The water source for project area is main stream/nullah; however the project activities will not affect the downstream users. The contractor will implement pollution prevention measures to prevent contamination of the water resources during construction of road, allied structures and other construction activities.
9.	Is the subproject located in an area with designated cultural properties such as archaeological, historical and/or religious sites?		✓		
10.	Is the subproject in an area with religious monuments, structures and/or cemeteries?		✓		
11.	Is the project located in an area from where people have been displaced?		✓		
12.	Is the project located in an area where IDPs are temporarily settled?		✓		
13.	Is the project in a politically sensitive area?		✓		
14.	Is the subproject in a polluted or contaminated area?		✓		
15.	Is the subproject located in an area of high visual and landscape quality?		✓		
16.	Is the subproject located in an area susceptible to landslides or erosion?	✓			Roadside erosion/landslide may take place during floods. In order to avoid landslide risk, the Contractor will maintain natural angle of cut slopes to avoid land slide hazards.
17.	Is the subproject located in an area of seismic faults?		✓		
18.	Is the subproject located in a densely populated area?		✓		
19.	Is the subproject located on prime agricultural land?		✓		
20.	Is the subproject located in an area of tourist importance?		✓		
21.	Is the subproject located near a waste dump?		✓		
22.	Does the subproject have access to potable water?				Local water supply lines are present to supply water to the community.

	A. ISSUES	Yes	No	Don't Know	Mitigation Measures
		✓			
23.	Is the subproject located far (1-2 kms) from accessible roads?		✓		
24.	Is the subproject located in an area with a wastewater network?		✓		
25.	Is the subproject located in the urban plan of the city?		✓		
26.	Is the subproject located outside the land use plan?		✓		

Signed by Safeguard Focal Person: Name:

Title:

Date:

Signed by Project Manager: Name:

Title:
Date:

INVOLUNTARY RESETTLEMENT SCREENING CHECKLIST

Name of Enumerator: Date:
Province: Khyber Pakhtunkhwa (KP) District: Kohistan
Project: Rehabilitation and Improvement of Tayal Road
Sector: LADP
Project Categorization: A (B) C1

Potential Impacts	Yes	No	Expected	Remarks
Does the sub-project involve any physical construction work, i.e. rehabilitation, reconstruction or new construction? Specify in "remarks" column.	✓			The scope of subproject is rehabilitation of existing road and new construction by providing retaining structures and installation of reflectors and traffic signs.
Does the sub-project involve impacts on land,	✓			The project will have impact on land and assets within ROW.
Potential impacts				
Land		✓		No land acquisition is involved in this project.
Government or state owned landfree of occupation (agriculture or settlement)		✓		
Private land		✓		
Residential		✓		
Commercial		✓		
Agriculture		✓		
Communal			✓	
Others		✓		
Land-based assets:				
Residential structures		✓		
Commercial structures		✓		
Community structures		✓		
Agriculture structures		✓		
Public utilities			✓	Construction activities may damage the existing utilities and disconnect supply to the users. The Contractor will accurately locate the existing utilities before work commences which can be disrupted by the rehabilitation works. The Contractor will repair all damaged utilities at the earliest to avoid social issues
Others		✓		
Agriculture related impacts				
Crops and vegetables		✓		

Potential Impacts	Yes	No	Expected	Remarks
Trees	✓			Vegetation/trees of sub-mature category might get affected in construction of subproject road. The lost trees will be compensated at a ratio of 1:10
Others		✓		
Affected Persons (DPs)				
Number of DPs			✓	Will be identified after the revenue survey
Males			✓	
Females			✓	
Titled land owners			✓	
Tenants and sharecroppers		✓		
Leaseholders		✓		
Agriculture wage laborers		✓		
Encroachers and squatters		✓		
Vulnerable DPs			✓	
Others		✓		
Section 2				
Others		✓		
Are there any tribal people, indigenous or other minority groups affected by land acquisition or project activities If “Yes” check the following items		✓		
Indigenous groups				
Tribal People				
Minority groups				

ANNEX – B
Environmental and Social Code of Practices

ENVIRONMENTAL AND SOCIAL CODE OF PRACTICES (ESCPS)

Introduction

The objective of the Environmental Code of Practices (ECPs) is to address all potential and general construction related impacts during implementation of the project. The ECPs will provide guidelines for best operating practices and environmental management guidelines to be followed by the contractor for sustainable management of all environmental issues.

The Contractor shall make his employees aware of the codes of practice. The ECPs will form the part of the contract documents and will be used as monitoring tool for compliance. It is mandatory for the contractor to include these ECPs in their subcontracts. Violation of the compliance requirements will be treated as non-compliance leading to the corrections or otherwise imposing penalty on the contractor. Contractor and subcontractors are requested to refer the ESMP for likely environmental and social impacts of the project for further information on corrective actions.

ESCP 1: Waste Management

Project Activity/ Impact Source	**Impacts**	**Mitigation Measures/ Management Guidelines**
General Waste	Soil and water pollution from the improper management of wastes and excess materials from the construction sites.	The Contractor shall • Develop waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food waste etc.) prior to commencing of construction and submit to CSC for approval. • Organize disposal of all wastes generated during construction in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact. • Minimize the production of waste materials by 3R (Reduce, Recycle and Reuse) approach. • Segregate and reuse or recycle all the wastes, wherever practical. • Prohibit burning of solid waste • Collect and transport non-hazardous wastes to all the approved disposal sites. Vehicles transporting solid waste shall be covered with tarps or nets to prevent spilling waste along the route • Train and instruct all personnel in waste management practices and procedures as a component of the environmental induction process. • Provide refuse containers at each worksite. • Request suppliers to minimize packaging where practicable. • Place a high emphasis on good housekeeping practices. • Maintain all construction sites in a cleaner, tidy and safe condition and provide and maintain appropriate facilities as temporary • Storage of all wastes before transportation and final disposal.
Hazardous Waste	Health hazards and environmental impacts due to improper waste management practices	The Contractor shall • Collect chemical wastes drums (or similar sealed container), appropriately labeled for safe transport to an approved chemical waste depot. • Store, transport and handle all chemicals avoiding potential environmental pollution. • Store all hazardous wastes appropriately in bunded areas away from water courses. • Make available Material Safety Data Sheets (MSDS) for hazardous materials on-site during construction. • Collect hydrocarbon wastes, including lube oils, for safe transport off-site for reuse, recycling, treatment or disposal at approved locations. • Construct concrete or other impermeable flooring to prevent seepage in case of spills

ESCP 2: Fuels and Hazardous Goods Management

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Fuels and hazardous goods.	Materials used in construction have a potential to be a source of contamination. Improper storage and handling of fuels, lubricants, chemicals and hazardous goods/materials on-site, and potential spills from these goods may harm the environment or health of construction workers.	The Contractor shall • Prepare spill control procedures and submit the plan for CSC approval. • Train the relevant construction personnel in handling of fuels and spill control procedures. • Store dangerous goods in bunded areas on a top of a sealed plastic sheet away from watercourses; and also under a rainwater shed (to prevent contact with rainwater). • Refueling shall occur only within bunded areas. • Make available MSDS for chemicals and dangerous goods on- site. • Transport waste of dangerous goods, which cannot be recycled, to a designated disposal site approved by KP EPA or sold to KP EPA registered vendors. • Provide absorbent and containment material (e.g., absorbent matting) where hazardous material are used and stored and personnel trained in the correct use. • Provide protective clothing, safety boots, helmets, masks, gloves, goggles, to the construction personnel, appropriate to materials in use. • Make sure all containers, drums, and tanks that are used for storage are in good condition and are labeled with expiry date. Any container, drum, or tank that is dented, cracked, or rusted might eventually leak. Check for leakage regularly to identify potential problems before they occur. • Put containers and drums in temporary storages in clearly marked areas, where they will not be run over by vehicles or heavy machinery. The area shall preferably slope or drain to a safe collection area in the event of a spill. • Put containers and drums in permanent storage areas on an impermeable floor that slopes to a safe collection area in the event of a spill or leak. • Take all precautionary measures when handling and storing fuels and lubricants, avoiding environmental pollution. • Avoid the use of material with greater potential for contamination by substituting them with more environmentally friendly materials. • Return the gas cylinders to the supplier. However, if they are not empty prior to their return, they must be labeled with the name of the material they contained or contain, information on the supplier, cylinder serial number, pressure, their last • Hydrostatic test date, and any additional identification marking that may be considered necessary.

ESCP 3: Water Resources Management

Project Activity/ Impact Source	**Impacts**	**Mitigation Measures/ Management Guidelines**
Hazardous Material and Waste	Water pollution from the storage, handling and disposal of hazardous materials and general construction waste, and accidental spillage	The Contractor shall • Follow the management guidelines proposed in ESCPs 1 and 2. • Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter waterways, storm water systems or underground water tables
Discharge from construction sites	Waste waters from construction sites and work camps. The construction works will modify groundcover and topography changing the surface water drainage patterns of the area including infiltration and storage of storm water.	The Contractor shall • Minimize the amount of exposed soil at any one time (only clear vegetation immediately before construction is about to begin) • Install temporary drainage works (channels and bunds) in areas required for sediment and erosion control and around storage areas for construction materials • Install temporary sediment basins, where appropriate, to capture sediment-laden run-off from site • Divert runoff from undisturbed areas around the construction site • Stockpile materials away from drainage lines • Prevent all solid entering waterways by collecting solid waste, oils, chemicals, bitumen spray waste and wastewaters from brick, concrete and asphalt cutting and transport to an approved waste disposal site or recycling depot • Collect, transport and discharge the septic tank waste from the construction camps in the nearby municipal waste water treatment plants • Ensure that tires of construction vehicles are cleaned in the washing bay (constructed at the entrance of the construction site) to remove the mud from the wheels. This shall be done in every exit of each construction vehicle to ensure the local roads are kept clean.
Soil Erosion and siltation	Soil erosion and dust from the material stockpiles will increase the sediment and contaminant loading of surface water bodies.	The Contractor shall • Ensure that sealed roads used by construction vehicles are swept regularly to remove sediment. • Water the material stockpiles, access roads and bare soils on an as required basis to minimize dust. Increase the watering frequency during periods of high risk (e.g. high winds)

ESCP 4: Drainage Management

Project Activity/ Impact Source	**Impacts**	**Mitigation Measures/ Management Guidelines**
Excavation and earth	Lack of proper drainage for rainwater/liquid waste or	The Contractor shall • Prepare a program for prevent/avoid standing

Project Activity/ Impact Source	**Impacts**	**Mitigation Measures/ Management Guidelines**
works, and construction yards	wastewater owing to the construction activities harms environment in terms of water and soil contamination, and mosquito growth.	waters, which CSC will verify in advance and confirm during implementation • Provide alternative drainage for rainwater if the construction works/earth-fillings cut the established drainage line • Establish local drainage line with appropriate silt collector and silt screen for rainwater or wastewater connecting to the existing established drainage lines already there • Rehabilitate road drainage structures immediately if damaged by contractors' road transports. • Build new drainage lines as appropriate and required for wastewater from construction yards connecting to the available nearby recipient water bodies. Ensure wastewater quality conforms to the relevant standards provided by NEQS, before it being discharged into the recipient water bodies. • Ensure the internal roads/hard surfaces in the construction yards/construction camps that generate has storm water drainage to accommodate high runoff during downpour and that there is no stagnant water in the area at the end of the downpour. • Construct wide drains instead of deep drains to avoid sand deposition in the drains that require frequent cleaning. • Provide appropriate silt collector and silt screen at the inlet and manholes and periodically clean the drainage system to avoid drainage congestion • Protect natural slopes of drainage channels to ensure adequate storm water drains. • Regularly inspect and maintain all drainage channels to assess and alleviate any drainage congestion problem. • Reduce infiltration of contaminated drainage through storm water management design
Ponding of water	Health hazards due to mosquito breeding	• Do not allow ponding of water especially near the waste storage areas and construction camps • Discard all the storage containers that are capable of storing of water, after use or store them in inverted position

ESCP 5: Soil Quality Management

Project Activity/ Impact Source	**Impacts**	**Mitigation Measures/ Management Guidelines**
Storage of Hazardous and toxic chemicals	Spillage of hazardous and toxic chemicals will contaminate the soils	The Contractor shall • Strictly manage the wastes management plans proposed in ESCP1 and storage of materials in ESCP2 • Construct appropriate spill contaminant facilities for all fuel storage areas • Establish and maintain a hazardous materials

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
		register detailing the location and quantities of hazardous substances including the storage, use of disposals • Train personnel and implement safe work practices for minimizing the risk of spillage • Identify the cause of contamination, if it is reported, and contain the area of contamination. The impact may be contained by isolating the source or implementing controls around the affected site • Remediate the contaminated land using the most appropriate • available method to achieve required commercial/industrial guideline validation results
Construction material stock piles	Erosion from construction material stockpiles may contaminate the soils	The Contractor shall • Protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds

ESCP 6: Erosion and Sediment Control

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Construction activities and material stockpiles	The impact of soil erosion are (i) Increased run off and sedimentation causing a greater flood hazard to the downstream, (ii) destruction of aquatic environment in nearby lakes, streams, and reservoirs caused by erosion and/or deposition of sediment damaging the spawning grounds of fish, and (iii) destruction of vegetation by burying or gullying.	The Contractor shall • Locate stockpiles away from drainage lines • Protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds • Remove debris from drainage paths and sediment control structures • Cover the loose sediments and water them if required • Divert natural runoff around construction areas prior to any site disturbance • Install protective measures on site prior to construction, for example, sediment traps • Observe the performance of drainage structures and erosion controls during rain and modify as required.

ESCP 7: Top Soil Management

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Land clearing and earth works	Earthworks will impact the fertile top soils that are enriched with nutrients required for plant growth or agricultural development.	The Contractor shall • Strip the top soil to a depth of 15 cm and store in stock piles of height not exceeding 2m. • Remove unwanted materials from top soil like grass, roots of trees and similar others. • The stockpiles will be done in slopes of 2:1 to reduce surface runoff and enhance percolation

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
		through the mass of stored soil. • Locate topsoil stockpiles in areas outside drainage lines and protect from erosion. • Construct diversion channels and silt fences around the topsoil stockpiles to prevent erosion and loss of topsoil. • Spread the topsoil to maintain the physico-chemical and biological activity of the soil. The stored top soil will be utilized for covering all disturbed area and along the proposed plantation sites • Prior to the re-spreading of topsoil, the ground surface will be ripped to assist the bunding of the soil layers, water penetration and revegetation
Transport	Vehicular movement outside right of way of existing roads or temporary access roads will affect the soil fertility of the agricultural lands	• Limit equipment and vehicular movements to within the approved construction zone • Construct temporary access tracks to cross concentrated water flow lines at right angles • Plan construction access to make use, if possible, of the final road alignment • Use vehicle-cleaning devices, for example, ramps or wash down areas

ESCP 8: Topography and Landscaping

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Land clearing and earth works	Construction activities especially earthworks will change topography and disturb the natural rainwater/flood water drainage as well as will change the local landscape.	The Contractor shall • Ensure the topography of the final surface of all raised lands (construction yards, approach roads, access roads, etc.) are conducive to enhance natural draining of rainwater/flood water; • Keep the final or finished surface of all the raised lands free from any kind of depression that insists water logging • Undertake mitigation measures for erosion control/prevention by grass-turfing and tree plantation, where there is a possibility of rain- cut that will change the shape of topography. • Cover immediately the uncovered open surface that has no use of construction activities with grass-cover and tree plantation to prevent soil erosion and bring improved landscaping

ESCP 9: Air Quality Management

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Air quality can be adversely affected by vehicle exhaust emissions and combustion of	The Contractor shall • Fit vehicles with appropriate exhaust systems and emission control devices. Maintain these devices

Project Activity/ Impact Source	**Impacts**	**Mitigation Measures/ Management Guidelines**
	fuels.	in good working condition. • Operate the vehicles in a fuel efficient manner • Cover haul vehicles carrying dusty materials moving outside the construction site • Impose speed limits on all vehicle movement at the worksite to reduce dust emissions • Control the movement of construction traffic • Water construction materials prior to loading and transport • Service all vehicles regularly to minimize emissions • Limit the idling time of vehicles not more than 2 minutes
Construction machinery	Air quality can be adversely affected by emissions from machinery and combustion of fuels.	The Contractor shall • Fit machinery with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition in accordance with the specifications defined by their manufacturers to maximize combustion efficiency and minimize the contaminant emissions. Proof or maintenance register shall be required by the equipment suppliers and contractors/subcontractors • Focus special attention on containing the emissions from generators • Machinery causing excess pollution (e.g. visible smoke) will be banned from construction sites • Service all equipment regularly to minimize emissions • Provide filtering systems, duct collectors or humidification or other techniques (as applicable) to the concrete batching and mixing plant to control the particle emissions in all its stages, including unloading, collection, aggregate handling, cement dumping, circulation of trucks and machinery inside the installations
Construction activities	Dust generation from construction sites, material stockpiles and access roads is a nuisance in the environment and can be a health hazard.	• Water the material stockpiles, access roads and bare soils on an as required basis to minimize the potential for environmental nuisance due to dust. Increase the watering frequency during periods of high risk (e.g. high winds). Stored materials such as gravel and sand shall be covered and confined to avoid their being wind-drifted • Minimize the extent and period of exposure of the bare surfaces • Reschedule earthwork activities or vegetation clearing activities, where practical, if necessary to avoid during periods of high wind and if visible dust is blowing off-site • Store the cement in silos and minimize the emissions from silos by equipping them with filters. • Establish adequate locations for storage, mixing and loading of construction materials, in a way that dust dispersion is prevented because of such operations

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
		• Crushing of rocky and aggregate materials shall be wet-crushed, or performed with particle emission control systems

ESCP 10: Noise and Vibration Management

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Noise quality will be deteriorated due to vehicular traffic	The Contractor shall • Maintain all vehicles in order to keep it in good working order in accordance with manufactures maintenance procedures • Make sure all drivers will comply with the traffic codes concerning maximum speed limit, driving hours, etc. • Organize the loading and unloading of trucks, and handling • operations for the purpose of minimizing construction noise on the work site
Construction machinery	Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.	The Contractor shall • Appropriately site all noise generating activities to avoid noise pollution to local residents • Use the quietest available plant and equipment • Modify equipment to reduce noise (for example, noise control kits, lining of truck trays or pipelines) • Maintain all equipment in order to keep it in good working order in accordance with manufactures maintenance procedures. Equipment suppliers and contractors shall present proof of maintenance register of their equipment. • Install acoustic enclosures around generators to reduce noise levels. • Fit high efficiency mufflers to appropriate construction equipment • Avoid the unnecessary use of alarms, horns and sirens
Construction activity	Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.	The Contractor shall • Notify adjacent landholders prior any typical noise events outside of daylight hours (6 pm to 7 am) if the construction works are being carried out near residential areas • Educate the operators of construction equipment on potential noise problems and the techniques to minimize noise emissions • Employ best available work practices on-site to minimize occupational noise levels • Install temporary noise control barriers where appropriate • Notify affected people if major noisy activities will be undertaken, • e.g. pile driving • Plan activities on site and deliveries to and from site to minimize impact

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
		• Monitor and analyze noise and vibration results and adjust construction practices as required. • Avoid undertaking the noisiest activities, where possible, when working at night (6pm to 7 am) near the residential areas

ESCP 11: Protection of Flora

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Vegetation clearance	Local flora are important to provide shelters for the birds, offer fruits and/or timber/fire wood, protect soil erosion and overall keep the environment very friendly to human-living. As such damage to flora has wide range of adverse environmental impacts.	The Contractor shall • Reduce disturbance to surrounding vegetation • Use appropriate type and minimum size of machine to avoid disturbance to adjacent vegetation. • Get approval from supervision consultant for clearance of vegetation. • Make selective and careful pruning of trees where possible to reduce need of tree removal. • Control noxious weeds by disposing of at designated dump site or burn on site. • Clear only the vegetation that needs to be cleared in accordance with the plans. These measures are applicable to both the construction areas as well as to any associated activities such as sites for stockpiles, disposal of fill and construction of diversion roads, etc. • Before excavation, mark the trees that must remain on the site and cannot be removed. • Do not burn off cleared vegetation – where feasible, chip or mulch and reuse it for the rehabilitation of affected areas, temporary access tracks or landscaping. Mulch provides a seed source, can limit embankment erosion, retains soil moisture and nutrients, and encourages re-growth and protection from weeds. • Return topsoil and mulched vegetation (in areas of native vegetation) to approximately the same area of the roadside it came from. • Avoid work within the drip-line of trees to prevent damage to the tree roots and compacting the soil. • Minimize the length of time the ground is exposed or excavation left open by clearing and re-vegetate the area at the earliest practically possible. • Ensure excavation works occur progressively and re-vegetation done at the earliest • Provide adequate knowledge to the workers regarding nature protection and the need of avoid felling trees during construction • Supply appropriate fuel in the work caps to prevent fuel wood collection

ESCP 12: Protection of Fauna

Project Activity/ Impact Source	**Impacts**	**Mitigation Measures/ Management Guidelines**
Vegetation clearance	Clearance of vegetation may impact shelter, feeding and/or breeding of animals	The Contractor shall Restrict the tree removal to the minimum required. • Retain tree hollows on site, or relocate hollows, where appropriate • Leave dead trees where possible as habitat for fauna • Identify the trees that require specific attention (e.g the hollow bearing trees) and fell them in a manner which reduces the potential for fauna mortality. Felled trees will be inspected after felling for fauna and if identified and readily accessible will be removed and relocated or rendered assistance if injured. After felling, hollow bearing trees will remain unmoved overnight to allow animals to move of their own volition.
Construction camps	Illegal poaching	• Provide adequate knowledge to the workers regarding protection of flora and fauna, and relevant government regulations and punishments for illegal poaching.

ESCP 13: Road Transport and Road Traffic Management

Project Activity/ Impact Source	**Impacts**	**Mitigation Measures/ Management Guidelines**

Construction vehicular traffic	Increased traffic use of road by construction vehicles will affect the movement of normal road traffics and the safety of the road-users.	The Contractor shall
		• Prepare and submit a traffic management plan to the CSC for their approval before commencement of construction.
		• Include in the traffic management plan to ensure uninterrupted traffic movement during construction: detailed drawings of traffic arrangements showing all detours, temporary road, temporary bridges temporary diversions, necessary barricades, warning signs/ lights, and road signs.
		• Provide signs at strategic locations of the roads complying with the schedules of signs contained in the Pakistan Traffic Regulations.
		• Install and maintain a display board at each important road intersection on the roads to be used during construction, which shall clearly show the following information in local language:
		  • Location: chainage and village name
		  • Duration of construction period
		  • Period of proposed detour / alternative route
		  • Suggested detour route map
		  • Name and contact address/telephone number of the concerned personnel
		  • Name and contact address / telephone number of the Contractor
		  • Inconvenience is sincerely regretted.

Project Activity/ Impact Source	**Impacts**	**Mitigation Measures/ Management Guidelines**
Construction vehicular traffic	Accidents and spillage of fuels and chemicals	• Restrict truck deliveries, where practicable, to day time working hours (7 am to 6 pm). • Restrict the transport of oversize loads. • Operate road traffics/transport vehicles, if possible, to non-peak periods to minimize traffic disruptions. • Enforce on-site speed limit

ESCP 14: Construction Camp Management

Project Activity/ Impact Source	**Impacts**	**Mitigation Measures/ Management Guidelines**
Siting and Location of construction camps	Campsites for construction workers are the important locations that have significant impacts such as health and safety hazards on local resources and infrastructure of nearby communities.	The Contractor shall • Locate the construction camps within the proposed site • Consider the location of construction camps away from communities in order to avoid social conflict in using the natural resources such as water or to avoid the possible adverse impacts of the construction camps on the surrounding communities. • Submit to the CSC for approval a detailed layout plan for the development of the construction camp showing the relative locations of all temporary buildings and facilities that are to be constructed together with the location of site roads, fuel storage areas (for use in power supply generators), solid waste management and dumping locations, and drainage facilities, prior to the development of the construction camps. • Local authorities responsible for health, religious and security shall be duly informed on the set up of camp facilities so as to maintain effective surveillance over public health, social and security matters
Construction Camp Facilities	Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards.	• Contractor shall provide the following facilities in the campsites • Housing facilities for all the non-local workers hired by the contractor • Safe and reliable water supply. • Hygienic sanitary facilities and sewerage system. The toilets and domestic waste water will be collected through a common sewerage. Provide separate latrines and bathing places for males and females with total isolation by wall or by location. The minimum number of toilet facilities required is one toilet for every ten persons. • Treatment facilities for sewerage of toilet and domestic wastes • Storm water drainage facilities. Both sides of roads are to be provided with shallow v drains to drain off storm water to a silt retention pond which shall be sized to provide a minimum of 20 minutes

Project Activity/ Impact Source	**Impacts**	**Mitigation Measures/ Management Guidelines**
		retention of storm water flow from the whole site. Channel all discharge from the silt retention pond to natural drainage via a grassed swale at least 20 meters in length with suitable longitudinal gradient. • Paved internal roads. Ensure with grass/vegetation coverage to be made of the use of top soil that there is no dust generation from the loose/exposed sandy surface. Pave the internal roads of at least haring-bond bricks to suppress dusts and to work against possible muddy surface during monsoon. • Provide child crèches for women working construction site. The crèche shall have facilities for dormitory, kitchen, indoor and outdoor play area. Schools shall be attached to these crèches so that children are not deprived of education whose mothers are construction workers • Provide in-house community/common entertainment facilities. dependence of local entertainment outlets by the construction camps to be discouraged/prohibited to the extent possible.
Disposal of waste	Management of wastes is crucial to minimize impacts on the environment	The Contractor shall • Ensure proper collection and disposal of solid wastes within the construction camps • Insist waste separation by source; organic wastes in one pot and inorganic wastes in another pot at household level. • Store inorganic wastes in a safe place within the household and clear organic wastes on daily basis to waste collector. Establish waste collection, transportation and disposal systems with the manpower and equipment/vehicles needed. • Dispose organic wastes in a designated safe place on daily basis. At the end of the day cover the organic wastes with a thin layer of sand so that flies, mosquitoes, dogs, cats, rats, are not attracted. One may dig a large hole to put organic wastes in it; take care to protect groundwater from contamination by leachate formed due to decomposition of wastes. Cover the bed of the pit with impervious layer of materials (clayey or thin concrete) to protect groundwater from contamination. • Locate the garbage pit/waste disposal site min 500 m away from the residence so that peoples are not disturbed with the odor likely to be produced from anaerobic decomposition of wastes at the waste dumping places. Encompass the waste dumping place by fencing and tree plantation to prevent children to enter and play with. • Do not establish site specific landfill sites. All solid waste will be collected and removed from the work camps and disposed in approval waste disposal sites.
Fuel supplies	Illegal sourcing of fuel wood by	The Contractor shall

Project Activity/ Impact Source	**Impacts**	**Mitigation Measures/ Management Guidelines**
for cooking purposes	construction workers will impact the natural flora and fauna	• Provide fuel to the construction camps for their domestic purpose, in order to discourage them to use fuel wood or other biomass. • Made available alternative fuels like natural gas or kerosene on ration to the workforce to prevent them using biomass for cooking. • Conduct awareness campaigns to educate workers on preserving the protecting the biodiversity and wildlife of the project area, and relevant government regulations and punishments on wildlife protection.
Health and Hygiene	There will be a potential for diseases to be transmitted including COVID 19, heat stroke, malaria, exacerbated by inadequate health and safety practices. There will be an increased risk of work crews spreading sexually transmitted infections and HIV/AIDS.	The Contractor shall • Provide adequate health care facilities within construction sites. • Provide first aid facility round the clock. Maintain stock of medicines in the facility and appoint fulltime designated first aider or nurse. • Provide ambulance facility for the laborers during emergency to be transported to nearest hospitals. • Initial health screening of the laborers coming from outside areas • Train all construction workers in basic sanitation and health care issues and safety matters, and on the specific hazards of their work • Provide COVID 19, heat stroke and HIV awareness programming, including STI (sexually transmitted infections) and HIV information, education and communication for all workers on regular basis • Complement educational interventions with easy access to condoms at campsites as well as voluntary counseling and testing • Provide adequate drainage facilities throughout the camps to ensure that disease vectors such as stagnant water bodies and puddles do not form. Regular mosquito repellant sprays during monsoon. • Carryout short training sessions on best hygiene practices to be mandatorily participated by all workers. Place display boards at strategic locations within the camps containing messages on best hygienic practices
Safety	In adequate safety facilities to the construction camps may create security problems and fire hazards	The Contractor shall • Provide appropriate security personnel (police / home guard or private security guards) and enclosures to prevent unauthorized entry in to the camp area. • Maintain register to keep a track on a head count of persons present in the camp at any given time. • Encourage use of flameproof material for the construction of labor housing / site office. Also, ensure that these houses/rooms are of sound construction and capable of withstanding wind storms/cyclones. • Provide appropriate type of firefighting equipment

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
		suitable for the construction camps • Display emergency contact numbers clearly and prominently at strategic places in camps. • Communicate the roles and responsibilities of laborers in case of emergency in the monthly meetings with contractors.
Site Restoration	Restoration of the construction camps to original condition requires demolition of construction camps.	The Contractor shall • Dismantle and remove from the site all facilities established within the construction camp including the perimeter fence and lockable gates at the completion of the construction work. • Dismantle camps in phases and as the work gets decreased and not wait for the entire work to be completed • Give prior notice to the laborers before demolishing their camps/units • Reuse the demolition debris to a maximum extent. Dispose remaining debris at the designated waste disposal site. • Handover the construction camps with all built facilities as it is if agreement between both parties (contactor and land-owner) has been made so. • Restore the site to its condition prior to commencement of the works or to an agreed condition with the landowner. • Not make false promises to the laborers for future employment in O&M of the project.

ESCP 15: Socio-Cultural and Religious Issues

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Construction activities near residential areas	Disturbance from construction activities (dust, noise, traffic, conflicts with contractor's work force etc.)	The Contractor shall • Establish a system for receiving complaints from the community and address them (the community can also make complaints to the GRM established under the project) • Shall ensure all the construction workers follows the following code of conduct: • All workers are strictly forbidden to establish any kind of relationship with local women bring any un-related women to the project site. • All workers will avoid sexual harassment and child abuse. • All workers must not leave the camps or work sites unless a written authorization is issued by the respective supervisor • The contractors will advise and prohibit the local population and its authorities or representatives not to enter the project operation areas (camp sites, colonies, etc.) in order to minimize the potential risk of incidents related to the operations.
Construction	Disturbance from	The Contractor shall

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
activities near Religious and cultural sites	construction works to the cultural and religious sites, and contractors lack of knowledge on cultural issues cause social disturbances.	• Communicate to the public through community consultation and newspaper announcements regarding the scope and schedule of construction, as well as certain construction activities causing disruptions or access restriction. • Do not block access to cultural and religious sites, wherever possible • Restrict all construction activities within the foot prints of the construction sites. • Stop construction works that produce noise (particularly during prayer time) shall there be any mosque/religious/educational institutions close to the construction sites and users make objections. • Take special care and use appropriate equipment when working next to a cultural/religious institution. • Stop work immediately and notify the site manager if, during construction, an archaeological or burial site is discovered. It is an offence to recommence work in the vicinity of the site until approval to continue is given by the CSC/PMU. • Provide separate prayer facilities to the construction workers. • Show appropriate behavior with all construction workers especially women and elderly people • Allow the workers to participate in praying during construction time • Resolve cultural issues in consultation with local leaders and supervision consultants • Establish a mechanism that allows local people to raise grievances arising from the construction process. • Inform the local authorities responsible for health, religious and security duly informed before commencement of civil works so as to maintain effective surveillance over public health, social and security matters

ESCP 16: Worker Health and Safety

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Best practices	Construction works may pose health and safety risks to the construction workers and site visitors leading to severe injuries and deaths. The population in the proximity of the construction site and the construction workers will be exposed to a number of (i) biophysical health risk factors, (e.g. noise, dust, chemicals, construction material,	The Contractor shall • Implement suitable safety standards for all workers and site visitors which shall not be less than those laid down on the international standards (e.g. International Labor Office guideline on 'Safety and Health in Construction; World Bank Group's 'Environmental Health and Safety Guidelines') and contractor's own national standards or statutory regulations, in addition to complying with the national standards of the Government of Pakistan

Project Activity/ Impact Source	**Impacts**	**Mitigation Measures/ Management Guidelines**
	solid waste, waste water, vector transmitted diseases etc), (ii) risk factors resulting from human behavior (e.g. COVID 19, heat stroke, STD, HIV etc) and (iii) road accidents from construction traffic.	• Provide the workers with a safe and healthy work environment, taking into account inherent risks in its particular construction activity and specific classes of hazards in the work areas, • Provide personal protection equipment (PPE) for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields, and ear protection. Maintain the PPE properly by cleaning dirty ones and replacing them with the damaged ones. • Safety procedures include provision of information, training and protective clothing to workers involved in hazardous operations and proper performance of their job • Appoint an environment, health and safety manager to look after the health and safety of the workers • Inform the local authorities responsible for health, religious and security duly informed before commencement of civil works and establishment of construction camps so as to maintain effective surveillance over public health, social and security matters
Best practices	Child and pregnant labor	The Contractor shall not hire children of less than 16 years of age and pregnant women or women who delivered a child within 8 preceding weeks, in accordance with the national Labor Laws
Accidents	Lack of first aid facilities and health care facilities in the immediate vicinity will aggravate the health conditions of the victims	• Provide health care facilities and first aid facilities are readily available. Appropriately equipped first-aid stations shall be easily accessible throughout the place of work • Document and report occupational accidents, diseases, and incidents. • Prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, so far as reasonably practicable, the causes of hazards. In a manner consistent with good international industry practice. • Identify potential hazards to workers, particularly those that may be life-threatening and provide necessary preventive and protective measures. • Provide awareness to the construction drivers to strictly follow the driving rules • Provide adequate lighting in the construction area and along the roads
Construction Camps	Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards.	The Contractor shall provide the following facilities in the campsites to improve health and hygienic conditions as mentioned in ECP 14 Construction Camp Management • Adequate ventilation facilities • Safe and reliable water supply • Hygienic sanitary facilities and sewerage system. The toilets and domestic wastewater will be collected through a common sewerage.

Project Activity/ Impact Source	**Impacts**	**Mitigation Measures/ Management Guidelines**
		• Treatment facilities for sewerage of toilet and domestic wastes • Storm water drainage facilities. • Recreational and social facilities • Safe storage facilities for petroleum and other chemicals in accordance with ESCP 2 • Solid waste collection and disposal system in accordance with ESCP1. • Arrangement for trainings • Paved internal roads. • Security fence at least 2 - 3 m height. • Sick bay and first aid facilities
Water and sanitation facilities at the construction sites	Lack of Water sanitation facilities at construction sites cause inconvenience to the construction workers and affect their personal hygiene.	• The contractor shall provide portable toilets at the construction sites, if about 25 people are working the whole day for a month. Location of portable facilities shall be at least 6 m away from storm drain system and surface waters. These portable toilets shall be cleaned once a day and all the sewerage shall be pumped from the collection tank once a day and shall be brought to the common septic tank for further treatment. • Contractor shall provide bottled drinking water facilities to the construction workers at all the construction sites.
Other ECPs	Potential risks on health and hygiene of construction workers and general public	The Contractor shall follow the following ESCPs to reduce health risks to the construction workers and nearby community • ESCP 2: Fuels and Hazardous Goods Management • ESCP 4: Drainage Management • ESCP 9: Air Quality Management • ESCP 10: Noise and Vibration Management • ESCP 13: Road Transport and Road Traffic Management
Trainings	Lack of awareness and basic knowledge in health care among the construction workforce, make them susceptible to potential diseases.	The Contractor shall • Train all construction workers in basic sanitation and health care issues (e.g., how to avoid malaria, heat stroke, COVID-19 and transmission of sexually transmitted infections (STI) HIV/AIDS. • Train all construction workers in general health and safety matters, and on the specific hazards of their work. Training shall consist of basic hazard awareness, site specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate. • Commence the malaria, heat stroke, COVID-19, HIV/AIDS and STI education campaign before the start of the construction phase and complement it with by a strong condom marketing, increased access to condoms in the area as well as to voluntary counseling and testing. • Implement malaria, COVID-19, heat stroke, HIV/AIDS and STI education campaign targeting all workers hired, international and national, female and male, skilled, semi- and unskilled

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
		occupations, at the time of recruitment and thereafter pursued throughout the construction phase on ongoing and regular basis. This shall be complemented by easy access to condoms at the workplace as well as to voluntary counseling and testing.

Volume 2(a)
TECHNICAL SPECIFICATIONS

REHABILITATION AND IMPROVEMENT OF TAYAL ROAD

TECHNICAL SPECIFICATION

IMPORTANT NOTE:

1. The WAPDA CSR and NHA CSR items as given in the BOQ shall be executed in-conformance with the Technical Specifications issued by Water and Power Development Authority (WAPDA), Government of the Pakistan for Composite schedule of Rates (CSR) and National Highway Authority, Government of the Pakistan for Composite schedule of Rates (CSR) Items respectively and whereof any such specification appearing in this document shall be deemed as null and void.

   Whereby

2. The Non-CSR items as given in the BOQ shall be executed in-conformance with the enclosed Technical Specifications.

Item 01 NS PVC PIPES

1.1 PVC PIPE/ACCESSORIES

The PVC pipe/accessories shall be manufactured according to the standards as below.

PS4607 Part-1: PVC conduits and accessories (metric units)
BS3595: PVC pipes and accessories.

The PVC pipes and their accessories shall be of polyvinyl chloride (PVC) complying with above stated or equivalent other reputed standards. Manufactured smooth bends shall be used where pipe/conduit changes direction. Bending of conduit by heating or otherwise shall be allowed only at special situation with the approval of Engineer. The use of sharp bends or tees shall not be allowed. The PVC Pipes/conduits of Pakistan PVC Limited under brand name SHAVYL or of Shafi Sons (brand name BETA) Lahore or approved equivalent shall be preferred. PVC pipes shall be placed underground across the road for future use. These pipes shall be surrounded by concrete which shall conform to provisions of section 401 and shall be paid extra under pay item No. 401a.

1.2 MEASUREMENT AND PAYMENT

Measurement shall be made for the number of running meters for PVC pipe acceptably supplied and installed by the Contractor.

Payment shall be made for the number of running meters of PVC pipe measured as provided above, at the Contract unit price per running metre and shall constitute full compensation for supplying installing, connecting, earth excavation and backfilling to the satisfaction of the Engineer including all accessories.

Pay Item No.	Description	Unit of Measurement
NS	PVC Pipe 4” dia	M

ITEM 108ai FORMATION OF EMBANKMENT

108.1 DESCRIPTION

Add at the end of para.

The work shall also include the compaction, trimming and shaping of the side slopes as shown on the plans and removal of any excess fill as directed by the Engineer prior to placement of top soil on slopes of the embankment where required.

108.2 MATERIAL REQUIREMENTS

Add the following at the end of 1st para.

Wet excavated material which will be suitable when dry and if approved by the Engineer shall first be allowed to dry before being placed in the embankment.

b) Add "at 95% MDD AASHTO T-180" after "AASHTO T-193" in first sentence. Delete 2nd sentence and replace with "Swell value for the material for embankment formation, as measured in the CBR test under standard surcharge load, shall not exceed 1.5%.

Add after (d)

e) In case non-cohesive material is used for embankment formation, it shall be properly confined at no extra cost, with a cohesive material having Liquid Limit not more than 25 and Plasticity Index not more than 6 or as approved by the Engineer.

For the purpose of embankment and subgrade construction the following shall be considered as unsuitable materials:

1) AASHTO soil classification group of A6 and A7;
2) Material from swamps, marshes and bogs;
3) Peat, logs, stumps, garbage and perishable materials;
4) Material susceptible to spontaneous combustion;
5) Organic Soils, as determined by ASTM D 2487-83 or USBR Earth Manual.

f) The moisture content of the soil at the time of compaction shall be optimum to achieve the compaction up to the specified density. The maximum dry density and optimum moisture content shall be determined from moisture density test (AASHTO T-180 Method D) performed on different type of soil to be used in the construction of the work. Optimum moisture content and the moisture range required for the soil to achieve the desired compaction shall be approved by the Engineer. The soil shall be compacted at optimum moisture content with +1 % to -2 % tolerances, commensurate with the soil type, unless otherwise directed by the Engineer.

When compaction is determined by "Relative Density Test" then tolerance for moisture content shall be finalized during the compaction trial and approved by the Engineer.

108.3 CONSTRUCTION REQUIREMENTS

108.3.1 Formation of Embankment with Borrow Common Material

After 1st para add following:

If suitable material is not available in the Project area, the Contractor shall blend granular material with locally available soils which are otherwise unsuitable (as per category 1 of 108.2e), to achieve a uniform blend that meets the material requirements stated above without any additional cost to the Employer. Such widely divergent materials may be mixed, sampled and tested outside the embankment limits and the mixture may be used as a proposed source of borrow material as outlined in Section 108.2. However, the Contractor will submit his method statement to the Engineer and get it approved before proceeding with the work. Approval of this method statement by the Engineer shall not relieve the Contractor of his responsibility to use the suitable material in the Works. Material for embankment, obtained and approved as provided above, shall be placed in horizontal layers of uniform thickness and in conformity with the lines, grades, sections and dimensions shown on the Drawings or as required by the Engineer. The layers of loose material other than rock shall be not more than 20 cm. thick, unless otherwise allowed by the Engineer after a trial section is prepared and approved for each material source and/or borrow area.

Delete para 7

Delete last para and replace it with the following:

Side slopes shall be neatly trimmed to the lines and slopes shown on the drawings or as directed by the Engineer, and the finished work shall be left in a neat and acceptable condition. The slopes of the design road cross-section shall be trimmed and compacted to the densities as specified above for different zones". No surplus material shall be permitted to be left at the toe of embankment or at the top of cut section.

Relative Density Test

For cohesion-less free-draining soils for which impact compaction will not produce a well-defined moisture density relationship curve and the maximum

density, the Test for the Relative density of Cohesion-less soils ASTM D-4253/4254 shall be used to determine the relative density.

Relative density is defined as the state of compactness of a soil with respect to the loosest and densest state at which it can be placed by the laboratory procedures described in the ASTM D-4253/4254. The field Density and actual Moisture Content of the compacted embankment shall be determined by field tests according to AASHTO T 191.

108.3.5 Formation of Embankment in Water Logged Areas

Delete 1st and 2nd paras and replace with the following:

Where embankments are constructed across marshlands, tidal flats, or wet ground which is soft and compressible and will not support the weight and forces of hauling and compacting equipment, the lower part of the embankment may be constructed by dumping successive loads in a uniformly distributed layer (bridging lift) of a thickness necessary to support equipment hauling but not more than 50 cm, and the placing and compacting of subsequent layers. Such supporting layers shall not be subjected to compaction requirements specified in clause 108.3.1. The remainder of the embankment shall be constructed in layers as specified.

The material of working platform shall be as per clause 108.2 (d) and paid under item 108d.

It should also be checked that selected grading is such that intrusion into the working platform material of sub-grade or natural ground surface material is not allowed.

For this condition to be met it will be required that the ratio as below shall be checked and followed:

$$\frac{\text{D15 - (Granular Fill Material)}}{\text{D85 - (Natural Ground Material)}} < 5$$

D15 and D85 mean the particle diameters corresponding to 15% and 85% respectively, passing (by weight) in a grain size analysis.

At the end of clause 108.3.5 add the following:

When the roadway profile is so low that after construction of the lower part of the embankment using a "bridging lift" will not permit the placement and compaction of fifty (50) centimeters of acceptable embankment material, Contractor shall prepare a proposal to raise profile of the embankment and submit it to the Engineer for his approval.

Boulders and rock fragments larger than twenty (20) centimeters in maximum dimension shall not be placed in the embankment any closer than fifty (50) centimeters from top of the subgrade.

Embankment settlement period for critical section, where height is greater than 5.0 meter, is approximately three (3) months. Embankment

therefore,shall remain in place for the required settlement period before placing the 30 cm thick subgrade layer, excavating for abutments, wing walls or retaining wall foundations or installing foundation piles at each location.

108.3.6 General Requirements

At the end add the following:

Embankment filling shall be brought up and compacted over the full width of the embankment of the carriageways in one operation in layers parallel with the sub-grade level. At no time shall any part of the embankment width under one carriageway be left more than one layer lower than any other part of the embankment width.

Shoulder construction shall be brought up simultaneously with the pavement construction. In order to prevent water penetration into the pavement layers during construction, shoulder and median construction shall be brought up simultaneously with the pavement construction whenever the transverse slope of the sub-grade slopes downwards towards the pavement or sub-grade.

Embankment side slopes shall be neatly trimmed to the lines and slopes shown on the drawings or as directed by the Engineer and the finished work shall be left in a neat and acceptable condition.

108.3.7 Formation of Embankment with A-3 Material

The construction of embankments with A-3 material shall be accomplished as shown on the plans, specified in Particular Specifications and Special Provisions or as directed by the Engineer. Construction of embankment with A-3 material shall be carried out in a series of operations as follows:

Edge berms shall first be constructed along both sides of the staked embankment, except where the embankment is to be constructed against hillsides or existing embankment, using Class A-1, A-2 or A-2-4 soils from roadway excavation or borrow or any other source which can resist erosion by wind and water and are approved by the Engineer. However, if Engineer so approved A-4 material having PI value 4-8 from borrow excavation can be used for confinement. Edge berms shall be constructed with an external side slope as shown on the plans or specified in these Particular Specifications and Special Provisions, but not steeper than one (1) vertical to three (3) horizontal. Edge berms shall be constructed not more than thirty (30) centimeters in height w.r.t A-3 embankment and not less than 2.0 meters wide at the top. The materials shall be placed and spread in layers as specified in these Specifications and compacted as specified in Table 108.3.1.

A-3 material shall be excavated, hauled, deposited and spread within the edge berms to the full height of the edge berms using any means other than hydraulic sluicing.

108.3.8 Formation of Embankment on Existing Structures

When an embankment surface is to be constructed over an area previously occupied by a building basement, cellar, irrigation canal, well, any previous excavation, or other such construction that will not permit the use of normal compaction equipment, the embankment construction shall conform to the backfilling requirements specified in Structural Backfilling in these Specifications, until the normal compaction equipment can be used. The material shall be compacted to the density specified for the adjacent embankments.

108.3.9 Trial Section

Before starting the filling of the embankment, the Contractor shall construct trial sections of minimum 200 meters and maximum of 500 meters or as directed by the Engineer with each soil type / source proposed to be used as fill material. The soils used in the trials shall be the same as those intended to be used for the formation of embankment and the compacting equipment shall be the same that the Contractor will use for the main work.

The construction of embankment with any type of soil / material source shall be subject to written approval of the Engineer after the trial section made for that particular type of soil/material source.

The objective of these trials shall be to determine the optimum moisture content and the relationship between the number of passes of compacting equipment and density obtained for the soil types under trial and for the verification of the soil type itself. No separate payment will be made for this work, which shall be required as a subsidiary obligation of the Contractor under Pay Item Nos. 108a, 108b or 108c, as the case may be. The Engineer may order additional compaction test sections when deems necessary.

108.4.1 Measurement

iii) Formation from Roadway Excavation

In para 1, last line, delete “&108b”

108.4.2 Payment

Replace the table as under:

Pay Item No.	Description	Units of Measurement
108ai	Formation of Embankment from Unclassified Roadway Excavation	CM

ITEM 106da UNCLASSIFIED EXCAVATION OF SURPLUS MATERIAL

Delete the entire item and replace with:

106.1 DESCRIPTION

The work shall consist of unclassified excavation of surplus material arising from Roadway and Structural Excavations which shall be declared in writing by the Engineer. Extent in plan and depth for removal of unsuitable material under the embankment and foundation of a structure shall be determined by the Engineer.

106.2 CONSTRUCTION REQUIREMENTS

All suitable material excavated within the limits and scope of the project shall, unless provision is expressly made to the contrary in the Specifications, be used in the most effective manner for the formation of the embankment, widening the roadway, backfill, widening or diversion of water courses, and/or other works included in the Contract.

Any surplus material, declared in writing by the Engineer shall be disposed of and leveled in thin layers by the Contractor in areas as designated by the Engineer.

When material shall be removed and replaced as directed by the Engineer, the soil left in place shall be compacted to a depth of 20 cm to the density prescribed under Section 104.2. Payment for such compaction shall be made under pay Item 104.

When material shall be removed and replaced with selected fill material under the structure footing, the excavated ground surface shall be compacted as per Subsection 107.3.1 (d) 'Preparation of Foundation of Footings' of the Particular Specification and Special Provision.

If the material shall be removed below standing water level and the replaced material shall be gravel or a similar self-draining material of at least 30 cm in depth, the compaction shall be dispensed with if approved by the Engineer.

106.3 MEASUREMENT AND PAYMENT

106.3.1 Measurement

The material which shall be surplus to the requirements of the project or declared unsuitable in writing by the Engineer shall qualify for payment under pay Item 106.

The under mentioned pay item shall include the cost of obtaining the consent of the owner or tenant of the land including royalties where the disposal of surplus or unsuitable material shall be made together with the haul costs.

The cost of excavation of material which shall be used anywhere on the project shall be deemed to be included in the respective pay items relating to the part of the work. Unsuitable or surplus material shall be measured in its original position and its volume shall be calculated in cubic meters.

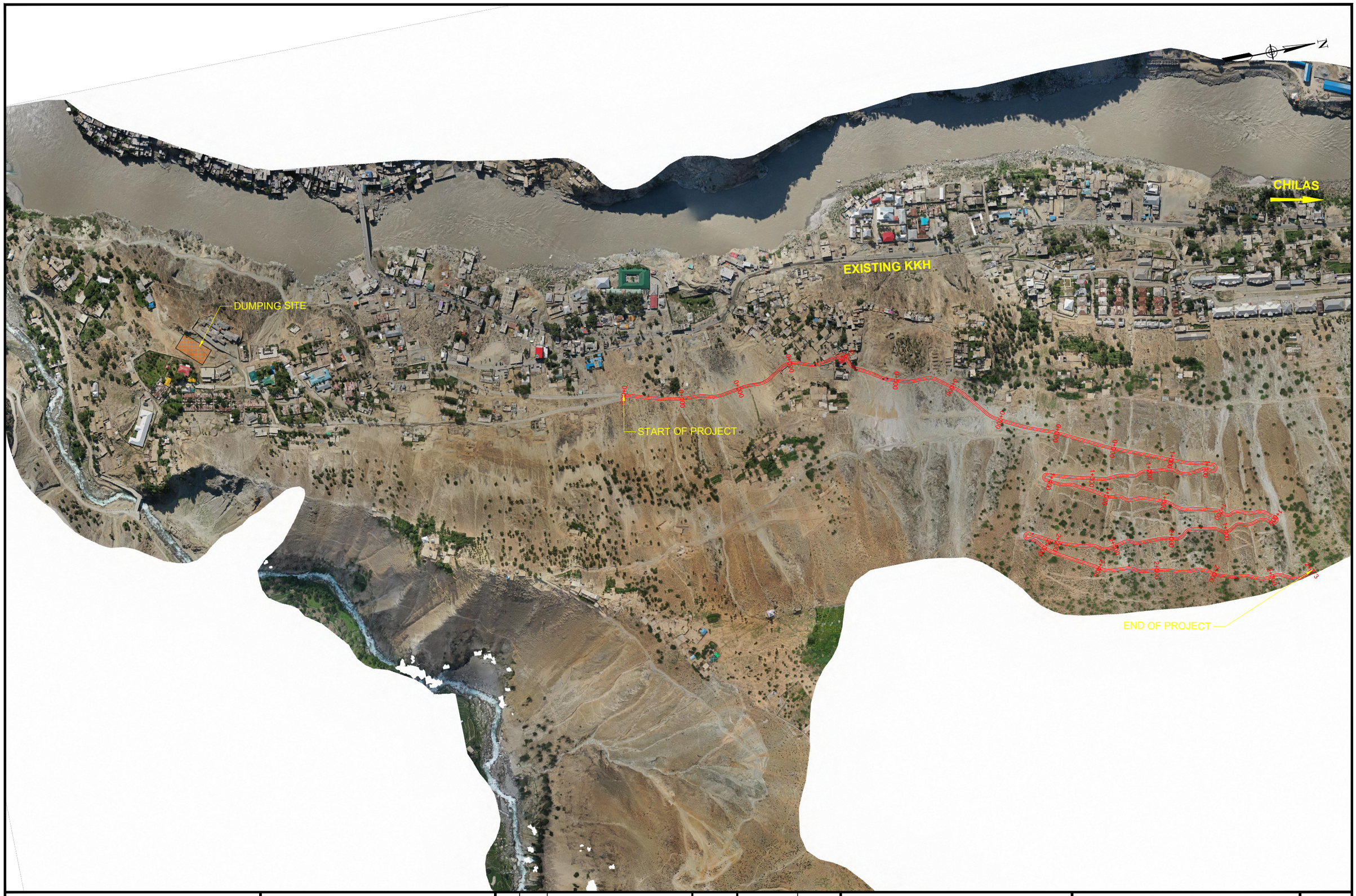
106.3.2 Payment

The payment under this item shall be made at unit price for cubic meters, measured as above and shall constitute full compensation for all costs involved in the proper completion of the work prescribed in this item.

Pay Item No.	Description	Units of Measurement
106da	Excavate Unclassified Surplus Material	CM

VOLUME 2(b)
DRAWINGS

TAYAL ROAD



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
02			
01			

DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

REHABILITATION & IMPROVEMENT OF TAYAL ROAD LAYOUT PLAN

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/1A001

REV.: 0

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CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

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HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

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REHABILITATION & IMPROVEMENT OF TAYAL ROAD LAYOUT PLAN

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/1A001

REV.: 0

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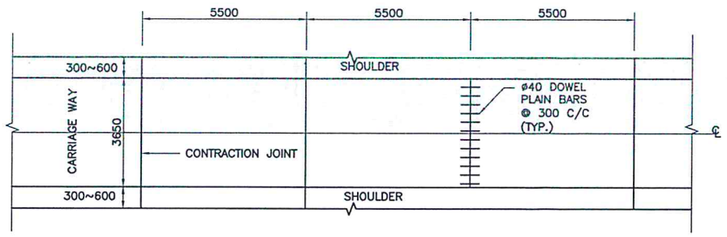
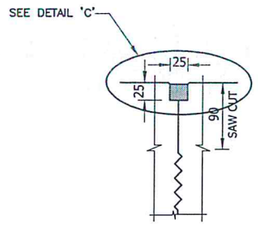
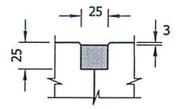
TYPICAL X-SECTIONS



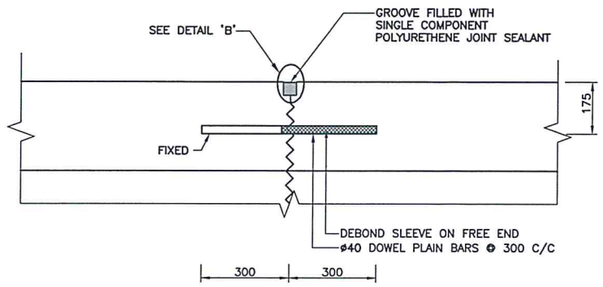
PLAN



DETAIL 'B'



DETAIL 'C'



TYPICAL CONTRACTION JOINT

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SPECIFIED OTHERWISE.
2. SUBGRADE/EMBANKMENT SHALL HAVE A MINIMUM SOAKED CBR OF 50% AT 95% MDD.
3. CONCRETE COMPRESSIVE STRENGTH (CYLINDER) SHALL BE 3000 Psi MINIMUM.
4. FOR DETAILS REFER RELEVANT DRAWINGS.

CLIENT

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TYPICAL JOINTED REINFORCED CONCRETE PAVEMENT DETAIL

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS002

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\GENERAL DRAWINGS\XS002.dwg,

PLAN AND PROFILE

PI # 1
PI STA = 0+050.60
N = 3904010.00
E = 338549.00
I = 175°01'

T = 17.42
R = 400.00
L = 34.81
C = 34.80
E = 0.38
M = 0.379

PI # 2
PI STA = 0+097.87
N = 3904056.00
E = 338560.00
I = 166°33'

T = 17.69
R = 150.00
L = 35.21
C = 35.13
E = 1.04
M = 1.032

PI # 3
PI STA = 0+132.07
N = 3904090.36
E = 338560.00
I = 162°40'

T = 7.62
R = 50.00
L = 15.12
C = 15.06
E = 0.58
M = 0.570

PI # 4
PI STA = 0+158.81
N = 3904116.00
E = 338568.00
I = 153°23'

T = 11.83
R = 50.00
L = 23.23
C = 23.02
E = 1.38
M = 1.343

PI # 5
PI STA = 0+214.12
N = 3904171.00
E = 338559.00
I = 168°55'

T = 11.64
R = 120.00
L = 23.21
C = 23.18
E = 0.56
M = 0.561

PI # 6
PI STA = 0+246.13
N = 3904203.07
E = 338560.00
I = 146°17'

T = 10.61
R = 35.00
L = 20.60
C = 20.31
E = 1.57
M = 1.505

PI # 7
PI STA = 0+298.10
N = 3904247.70
E = 338532.19
I = 128°46'

T = 16.78
R = 35.00
L = 31.30
C = 30.26
E = 3.82
M = 3.440

PI # 8
PI STA = 0+340.65
N = 3904290.00
E = 338547.00
I = 155°16'

T = 7.68
R = 35.00
L = 15.11
C = 14.99
E = 0.83
M = 0.812

PI # 9
PI STA = 0+361.51
N = 3904311.00
E = 338545.00
I = 172°55'

T = 6.19
R = 100.00
L = 12.37
C = 12.36
E = 0.19
M = 0.191

PI # 10
PI STA = 0+397.70
N = 3904346.34
E = 338537.15
I = 90°28'

T = 6.94
R = 7.00
L = 10.94
C = 9.86
E = 2.86
M = 2.030

PI # 11
PI STA = 0+420.89
N = 3904352.22
E = 338562.62
I = 131°01'

T = 9.11
R = 20.00
L = 17.10
C = 16.58
E = 1.98
M = 1.799

PI # 12
PI STA = 0+454.63
N = 3904383.00
E = 338579.00
I = 174°20'

T = 9.90
R = 200.00
L = 19.78
C = 19.77
E = 0.24
M = 0.244

PI # 13
PI STA = 0+483.46
N = 3904407.00
E = 338595.00
I = 164°17'

T = 9.66
R = 70.00
L = 19.21
C = 19.15
E = 0.66
M = 0.658

PI # 14
PI STA = 0+522.24
N = 3904444.00
E = 338607.00
I = 160°34'

T = 10.28
R = 60.00
L = 20.36
C = 20.26
E = 0.87
M = 0.861

PI # 15
PI STA = 0+561.05
N = 3904483.00
E = 338606.00
I = 141°40'

T = 10.43
R = 30.00
L = 20.07
C = 19.70
E = 1.76
M = 1.663

PI # 16
PI STA = 0+615.27
N = 3904527.00
E = 338639.00
I = 165°24'

T = 10.25
R = 80.00
L = 20.39
C = 20.33
E = 0.65
M = 0.648

PI # 17
PI STA = 0+684.19
N = 3904570.00
E = 338693.00
I = 156°54'

T = 10.22
R = 50.00
L = 20.16
C = 20.02
E = 1.03
M = 1.013

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

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HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

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REHABILITATION & IMPROVEMENT OF TAYAL ROAD
PLAN
FROM KM. 0+000 TO KM. 0+700

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/1C001

SCALE: HOR=1:2000 VER =1:200

REV.: 0

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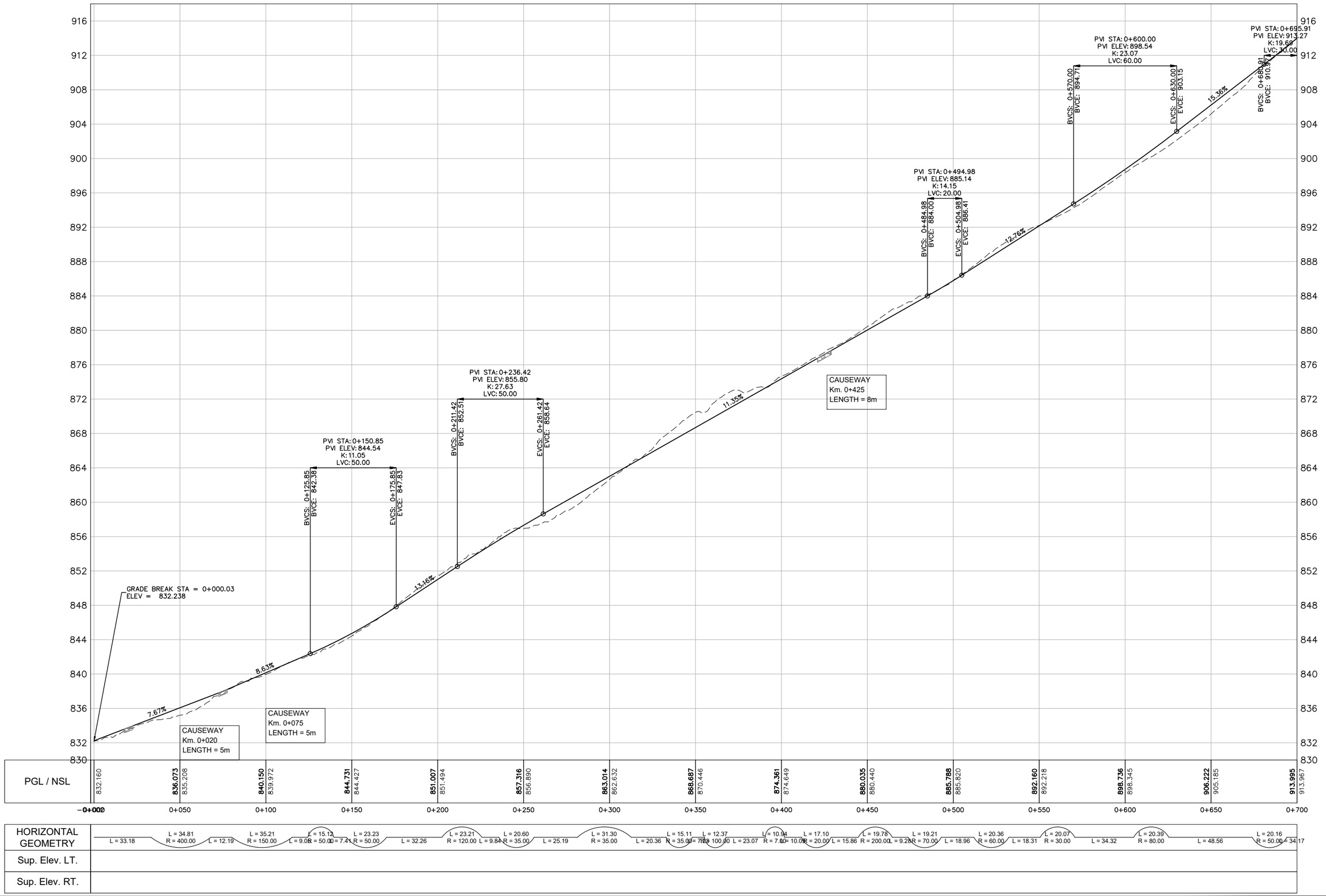

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REHABILITATION & IMPROVEMENT OF TAYAL ROAD
PROFILE
FROM KM. 0+000 TO KM. 0+700

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/1C001A

SCALE: HOR=1:2000 VER =1:200

REV.: 0

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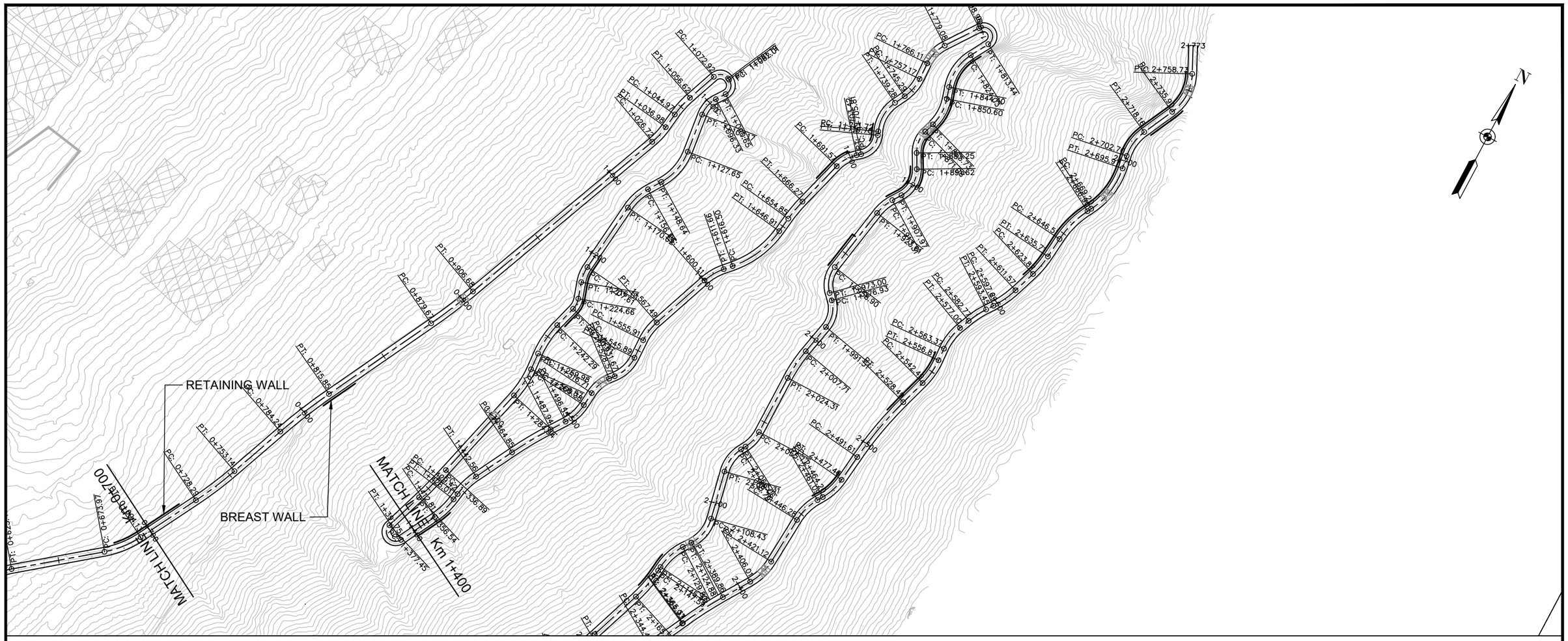

PI # 18
PI STA = 0+740.73
N = 3904620.00
E = 338720.00
I = 172°53'

T = 12.44
R = 200.00
L = 24.85
C = 24.83
E = 0.39
M = 0.386

PI # 19
PI STA = 0+800.06
N = 3904675.32
E = 338741.51
I = 173°58'

T = 15.82
R = 300.00
L = 31.60
C = 31.59
E = 0.42
M = 0.416

PI # 20
PI STA = 0+893.19
N = 3904758.11
E = 338784.22
I = 174°51'

T = 13.51
R = 300.00
L = 27.01
C = 27.00
E = 0.30
M = 0.304

PI # 21
PI STA = 1+031.88
N = 3904886.60
E = 338836.47
I = 165°18'

T = 5.16
R = 40.00
L = 10.26
C = 10.23
E = 0.33
M = 0.329

PI # 22
PI STA = 1+050.82
N = 3904905.45
E = 338838.93
I = 166°40'

T = 5.85
R = 50.00
L = 11.64
C = 11.62
E = 0.34
M = 0.338

PI # 23
PI STA = 1+078.35
N = 3904931.23
E = 338848.71
I = 85°19'

T = 5.43
R = 5.00
L = 8.26
C = 7.35
E = 2.38
M = 1.612

PI # 24
PI STA = 1+087.87
N = 3904926.03
E = 338859.64
I = 80°57'

T = 5.86
R = 5.00
L = 8.64
C = 7.61
E = 2.70
M = 1.754

PI # 25
PI STA = 1+102.00
N = 3904911.85
E = 338849.90
I = 138°35'

T = 5.67
R = 15.00
L = 10.84
C = 10.61
E = 1.04
M = 0.969

PI # 26
PI STA = 1+138.60
N = 3904875.02
E = 338854.36
I = 139°55'

T = 10.95
R = 30.00
L = 20.99
C = 20.57
E = 1.93
M = 1.817

PI # 27
PI STA = 1+163.69
N = 3904853.27
E = 338840.14
I = 153°01'

T = 7.20
R = 30.00
L = 14.12
C = 13.99
E = 0.85
M = 0.827

PI # 28
PI STA = 1+211.87
N = 3904805.10
E = 338834.90
I = 155°55'

T = 4.27
R = 20.00
L = 8.41
C = 8.34
E = 0.45
M = 0.440

PI # 29
PI STA = 1+227.73
N = 3904789.89
E = 338839.81
I = 145°56'

T = 3.06
R = 10.00
L = 5.95
C = 5.86
E = 0.46
M = 0.439

PI # 30
PI STA = 1+251.23
N = 3904767.15
E = 338833.20
I = 159°44'

T = 8.94
R = 50.00
L = 17.69
C = 17.60
E = 0.79
M = 0.781

PI # 31
PI STA = 1+276.97
N = 3904741.28
E = 338835.05
I = 161°35'

T = 8.10
R = 50.00
L = 16.06
C = 16.00
E = 0.65
M = 0.644

PI # 32
PI STA = 1+346.72
N = 3904673.57
E = 338817.76
I = 175°30'

T = 9.83
R = 250.00
L = 19.64
C = 19.64
E = 0.19
M = 0.193

CLIENT
WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

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REHABILITATION & IMPROVEMENT OF TAYAL ROAD
PLAN
FROM KM. 0+700 TO KM. 1+400

DATE: SEPTEMBER, 2024
DRAWING No.: 4520/102/TD/1C002

SCALE
HOR=1:2000
VER =1:200

REV. 0

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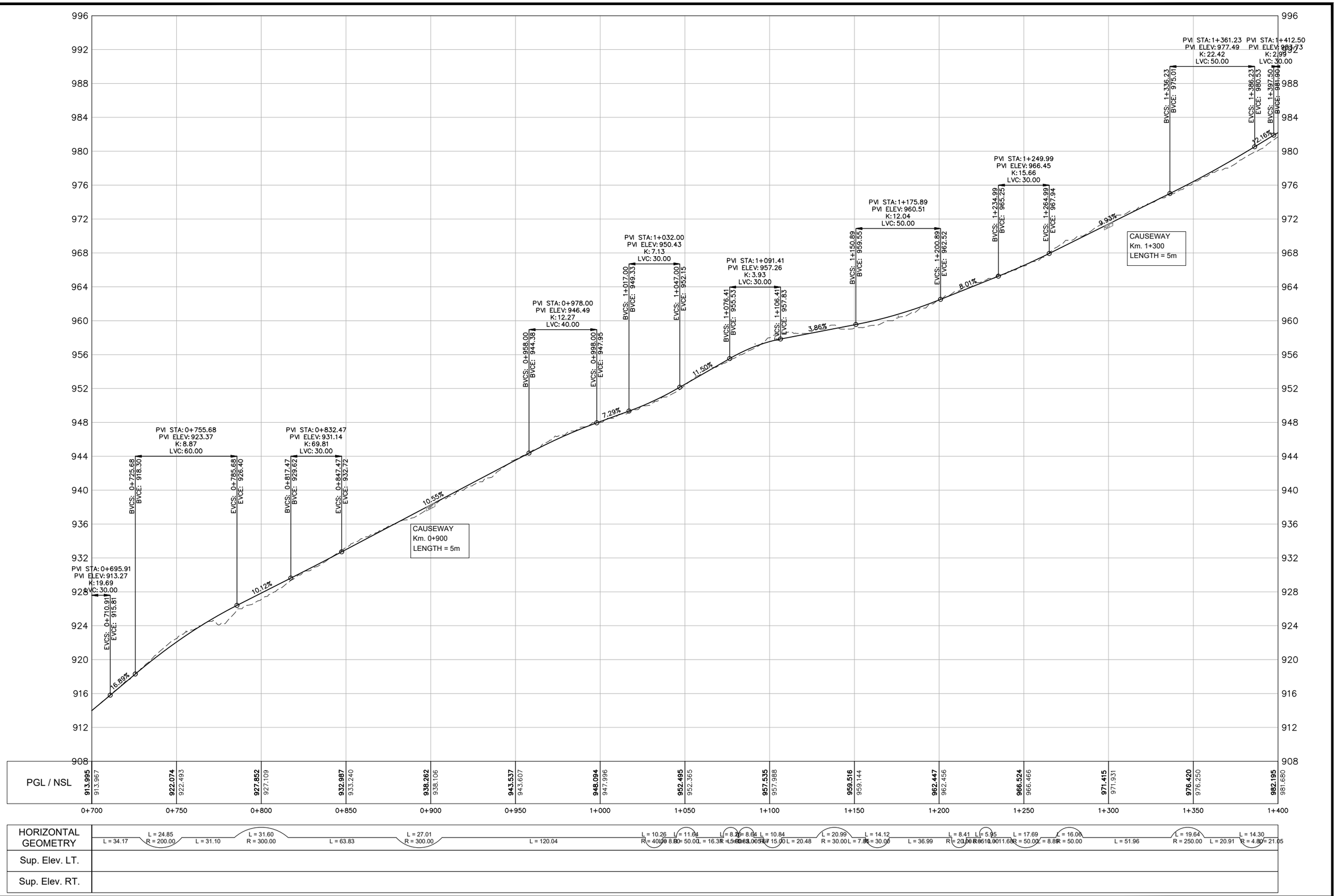

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REHABILITATION & IMPROVEMENT OF TAYAL ROAD
PROFILE
FROM KM. 0+700 TO KM. 1+400

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/1C002A

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REV.: 0

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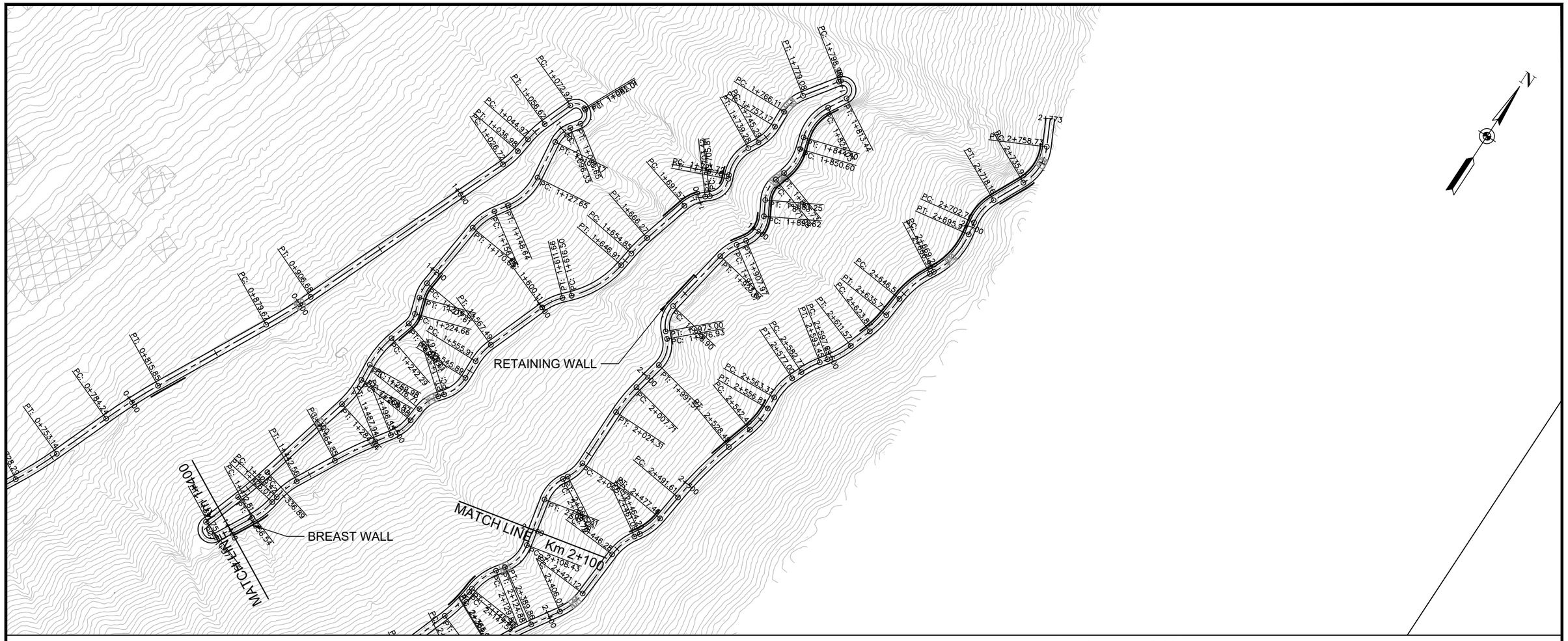

PI # 33
PI STA = 1+436.80
N = 3904588.30
E = 338788.69
I = 9°15'

T = 59.35
R = 4.80
L = 14.30
C = 9.57
E = 54.74
M = 4.413

PI # 34
PI STA = 1+419.47
N = 3904665.12
E = 338829.66
I = 161°05'

T = 6.66
R = 40.00
L = 13.20
C = 13.14
E = 0.55
M = 0.543

PI # 35
PI STA = 1+436.05
N = 3904681.61
E = 338832.32
I = 161°11'

T = 6.63
R = 40.00
L = 13.14
C = 13.08
E = 0.55
M = 0.538

PI # 36
PI STA = 1+476.41
N = 3904717.35
E = 338851.31
I = 173°23'

T = 11.55
R = 200.00
L = 23.08
C = 23.07
E = 0.33
M = 0.333

PI # 37
PI STA = 1+503.11
N = 3904739.36
E = 338866.49
I = 150°36'

T = 6.56
R = 25.00
L = 12.83
C = 12.69
E = 0.85
M = 0.818

PI # 38
PI STA = 1+522.82
N = 3904759.27
E = 338868.30
I = 146°01'

T = 6.11
R = 20.00
L = 11.86
C = 11.69
E = 0.91
M = 0.873

PI # 39
PI STA = 1+539.10
N = 3904772.17
E = 338878.81
I = 139°17'

T = 7.42
R = 20.00
L = 14.21
C = 13.92
E = 1.33
M = 1.250

PI # 40
PI STA = 1+561.77
N = 3904795.47
E = 338878.18
I = 157°54'

T = 5.86
R = 30.00
L = 11.57
C = 11.50
E = 0.57
M = 0.556

PI # 41
PI STA = 1+605.96
N = 3904836.98
E = 338893.74
I = 157°57'

T = 5.85
R = 30.00
L = 11.55
C = 11.48
E = 0.56
M = 0.554

PI # 42
PI STA = 1+632.19
N = 3904856.39
E = 338911.60
I = 145°09'

T = 15.69
R = 50.00
L = 30.41
C = 29.94
E = 2.40
M = 2.294

PI # 43
PI STA = 1+660.57
N = 3904885.48
E = 338915.57
I = 171°49'

T = 5.72
R = 80.00
L = 11.42
C = 11.41
E = 0.20
M = 0.204

PI # 44
PI STA = 1+697.67
N = 3904921.17
E = 338925.76
I = 146°03'

T = 6.11
R = 20.00
L = 11.85
C = 11.68
E = 0.91
M = 0.872

PI # 45
PI STA = 1+713.90
N = 3904931.85
E = 338938.45
I = 107°21'

T = 8.09
R = 11.00
L = 13.95
C = 13.03
E = 2.65
M = 2.138

PI # 46
PI STA = 1+731.11
N = 3904949.78
E = 338930.93
I = 129°42'

T = 9.39
R = 20.00
L = 17.56
C = 17.00
E = 2.09
M = 1.896

PI # 47
PI STA = 1+751.37
N = 3904968.82
E = 338940.86
I = 150°24'

T = 6.08
R = 23.00
L = 11.88
C = 11.75
E = 0.79
M = 0.763

PI # 48
PI STA = 1+772.83
N = 3904990.55
E = 338940.09
I = 142°49'

T = 6.73
R = 20.00
L = 12.98
C = 12.75
E = 1.10
M = 1.043

PI # 49
PI STA = 1+899.89
N = 3905094.84
E = 339013.48
I = 5°23'

T = 100.92
R = 4.75
L = 14.48
C = 9.49
E = 96.29
M = 4.527

PI # 50
PI STA = 1+834.82
N = 3904988.65
E = 338952.80
I = 133°20'

T = 10.79
R = 25.00
L = 20.36
C = 19.81
E = 2.23
M = 2.045

PI # 51
PI STA = 1+858.40
N = 3904964.94
E = 338960.02
I = 145°20'

T = 7.80
R = 25.00
L = 15.13
C = 14.90
E = 1.19
M = 1.136

PI # 52
PI STA = 1+877.52
N = 3904946.27
E = 338954.05
I = 133°31'

T = 6.44
R = 15.00
L = 12.17
C = 11.84
E = 1.32
M = 1.217

PI # 53
PI STA = 1+900.71
N = 3904925.31
E = 338965.54
I = 117°34'

T = 9.09
R = 15.00
L = 16.34
C = 15.55
E = 2.54
M = 2.172

PI # 54
PI STA = 1+918.53
N = 3904908.95
E = 338954.64
I = 156°23'

T = 5.22
R = 25.00
L = 10.30
C = 10.23
E = 0.54
M = 0.529

PI # 55
PI STA = 1+966.52
N = 3904861.56
E = 338946.21
I = 126°08'

T = 7.62
R = 15.00
L = 14.10
C = 13.59
E = 1.82
M = 1.627

PI # 56
PI STA = 1+984.85
N = 3904847.50
E = 338959.68
I = 124°20'

T = 7.92
R = 15.00
L = 14.57
C = 14.01
E = 1.96
M = 1.736

PI # 57
PI STA = 2+016.04
N = 3904815.75
E = 338953.00
I = 168°07'

T = 8.33
R = 80.00
L = 16.60
C = 16.57
E = 0.43
M = 0.430

PI # 58
PI STA = 2+061.03
N = 3904770.69
E = 338953.00
I = 150°31'

T = 5.26
R = 20.00
L = 10.29
C = 10.18
E = 0.68
M = 0.658

PI # 59
PI STA = 2+076.39
N = 3904757.12
E = 338945.33
I = 138°24'

T = 7.60
R = 20.00
L = 14.52
C = 14.20
E = 1.39
M = 1.303

CLIENT
WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.
HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED		
04				DRAWN	BILAL AZIZ
03				SUBMITTED	
02				RECOMMENDED	
01				CHD./VER.	
				APPROVED	

PROJECT
DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

REHABILITATION & IMPROVEMENT OF TAYAL ROAD
PLAN
FROM KM. 1+400 TO KM. 2+100

SCALE
HOR=1:2000
VER =1:200

DATE
SEPTEMBER, 2024

DRAWING No.
4520/102/TD/1C003

REV.
0

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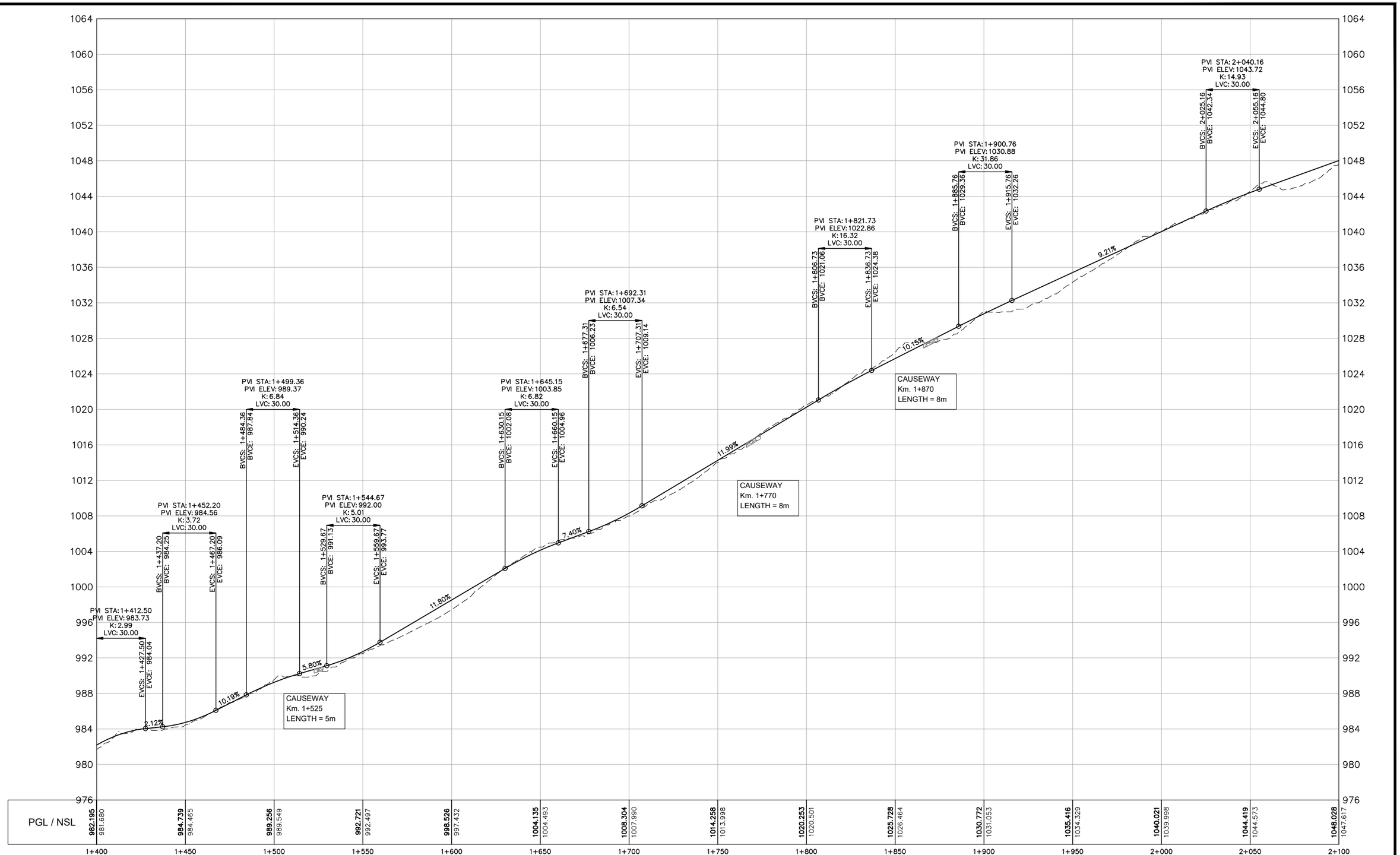

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
02			
01			

DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

REHABILITATION & IMPROVEMENT OF TAYAL ROAD
PROFILE
FROM KM. 1+400 TO KM. 2+100

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/1C003A

SCALE: HOR=1:2000 VER =1:200

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\PLAN AND PROFILE (20-09-2024)\Tayal Road Civil3D design.dwg,

PI # 33
PI STA = 1+436.80
N = 3904588.30
E = 338788.69
I = 9°15'

T = 59.35
R = 4.80
L = 14.30
C = 9.57
E = 54.74
M = 4.413

PI # 34
PI STA = 1+419.47
N = 3904665.12
E = 338829.66
I = 161°05'

T = 6.66
R = 40.00
L = 13.20
C = 13.14
E = 0.55
M = 0.543

PI # 35
PI STA = 1+436.05
N = 3904681.61
E = 338832.32
I = 161°11'

T = 6.63
R = 40.00
L = 13.14
C = 13.08
E = 0.55
M = 0.538

PI # 36
PI STA = 1+476.41
N = 3904717.35
E = 338851.31
I = 173°23'

T = 11.55
R = 200.00
L = 23.08
C = 23.07
E = 0.33
M = 0.333

PI # 37
PI STA = 1+503.11
N = 3904739.36
E = 338866.49
I = 150°36'

T = 6.56
R = 25.00
L = 12.83
C = 12.69
E = 0.85
M = 0.818

PI # 38
PI STA = 1+522.82
N = 3904759.27
E = 338868.30
I = 146°01'

T = 6.11
R = 20.00
L = 11.86
C = 11.69
E = 0.91
M = 0.873

PI # 39
PI STA = 1+539.10
N = 3904772.17
E = 338878.81
I = 139°17'

T = 7.42
R = 20.00
L = 14.21
C = 13.92
E = 1.33
M = 1.250

PI # 40
PI STA = 1+561.77
N = 3904795.47
E = 338878.18
I = 157°54'

T = 5.86
R = 30.00
L = 11.57
C = 11.50
E = 0.57
M = 0.556

PI # 41
PI STA = 1+605.96
N = 3904836.98
E = 338893.74
I = 157°57'

T = 5.85
R = 30.00
L = 11.55
C = 11.48
E = 0.56
M = 0.554

PI # 42
PI STA = 1+632.19
N = 3904856.39
E = 338911.60
I = 145°09'

T = 15.69
R = 50.00
L = 30.41
C = 29.94
E = 2.40
M = 2.294

PI # 43
PI STA = 1+660.57
N = 3904885.48
E = 338915.57
I = 171°49'

T = 5.72
R = 80.00
L = 11.42
C = 11.41
E = 0.20
M = 0.204

PI # 44
PI STA = 1+697.67
N = 3904921.17
E = 338925.76
I = 146°03'

T = 6.11
R = 20.00
L = 11.85
C = 11.68
E = 0.91
M = 0.872

PI # 45
PI STA = 1+713.90
N = 3904931.85
E = 338938.45
I = 107°21'

T = 8.09
R = 11.00
L = 13.95
C = 13.03
E = 2.65
M = 2.138

PI # 46
PI STA = 1+731.11
N = 3904949.78
E = 338930.93
I = 129°42'

T = 9.39
R = 20.00
L = 17.56
C = 17.00
E = 2.09
M = 1.896

PI # 47
PI STA = 1+751.37
N = 3904968.82
E = 338940.86
I = 150°24'

T = 6.08
R = 23.00
L = 11.88
C = 11.75
E = 0.79
M = 0.763

PI # 48
PI STA = 1+772.83
N = 3904990.55
E = 338940.09
I = 142°49'

T = 6.73
R = 20.00
L = 12.98
C = 12.75
E = 1.10
M = 1.043

PI # 49
PI STA = 1+899.89
N = 3905094.84
E = 339013.48
I = 5°23'

T = 100.92
R = 4.75
L = 14.48
C = 9.49
E = 96.29
M = 4.527

PI # 50
PI STA = 1+834.82
N = 3904988.65
E = 338952.80
I = 133°20'

T = 10.79
R = 25.00
L = 20.36
C = 19.81
E = 2.23
M = 2.045

PI # 51
PI STA = 1+858.40
N = 3904964.94
E = 338960.02
I = 145°20'

T = 7.80
R = 25.00
L = 15.13
C = 14.90
E = 1.19
M = 1.136

PI # 52
PI STA = 1+877.52
N = 3904946.27
E = 338954.05
I = 133°31'

T = 6.44
R = 15.00
L = 12.17
C = 11.84
E = 1.32
M = 1.217

PI # 53
PI STA = 1+900.71
N = 3904925.31
E = 338965.54
I = 117°34'

T = 9.09
R = 15.00
L = 16.34
C = 15.55
E = 2.54
M = 2.172

PI # 54
PI STA = 1+918.53
N = 3904908.95
E = 338954.64
I = 156°23'

T = 5.22
R = 25.00
L = 10.30
C = 10.23
E = 0.54
M = 0.529

PI # 55
PI STA = 1+966.52
N = 3904861.56
E = 338946.21
I = 126°08'

T = 7.62
R = 15.00
L = 14.10
C = 13.59
E = 1.82
M = 1.627

PI # 56
PI STA = 1+984.85
N = 3904847.50
E = 338959.68
I = 124°20'

T = 7.92
R = 15.00
L = 14.57
C = 14.01
E = 1.96
M = 1.736

PI # 57
PI STA = 2+016.04
N = 3904815.75
E = 338953.00
I = 168°07'

T = 8.33
R = 80.00
L = 16.60
C = 16.57
E = 0.43
M = 0.430

PI # 58
PI STA = 2+061.03
N = 3904770.69
E = 338953.00
I = 150°31'

T = 5.26
R = 20.00
L = 10.29
C = 10.18
E = 0.68
M = 0.658

PI # 59
PI STA = 2+076.39
N = 3904757.12
E = 338945.33
I = 138°24'

T = 7.60
R = 20.00
L = 14.52
C = 14.20
E = 1.39
M = 1.303

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
02			
01			

DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

REHABILITATION & IMPROVEMENT OF TAYAL ROAD
PLAN
FROM KM. 2+100 TO KM. 2+773.31

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/1C004

SCALE
HOR=1:2000
VER =1:200

REV. 0

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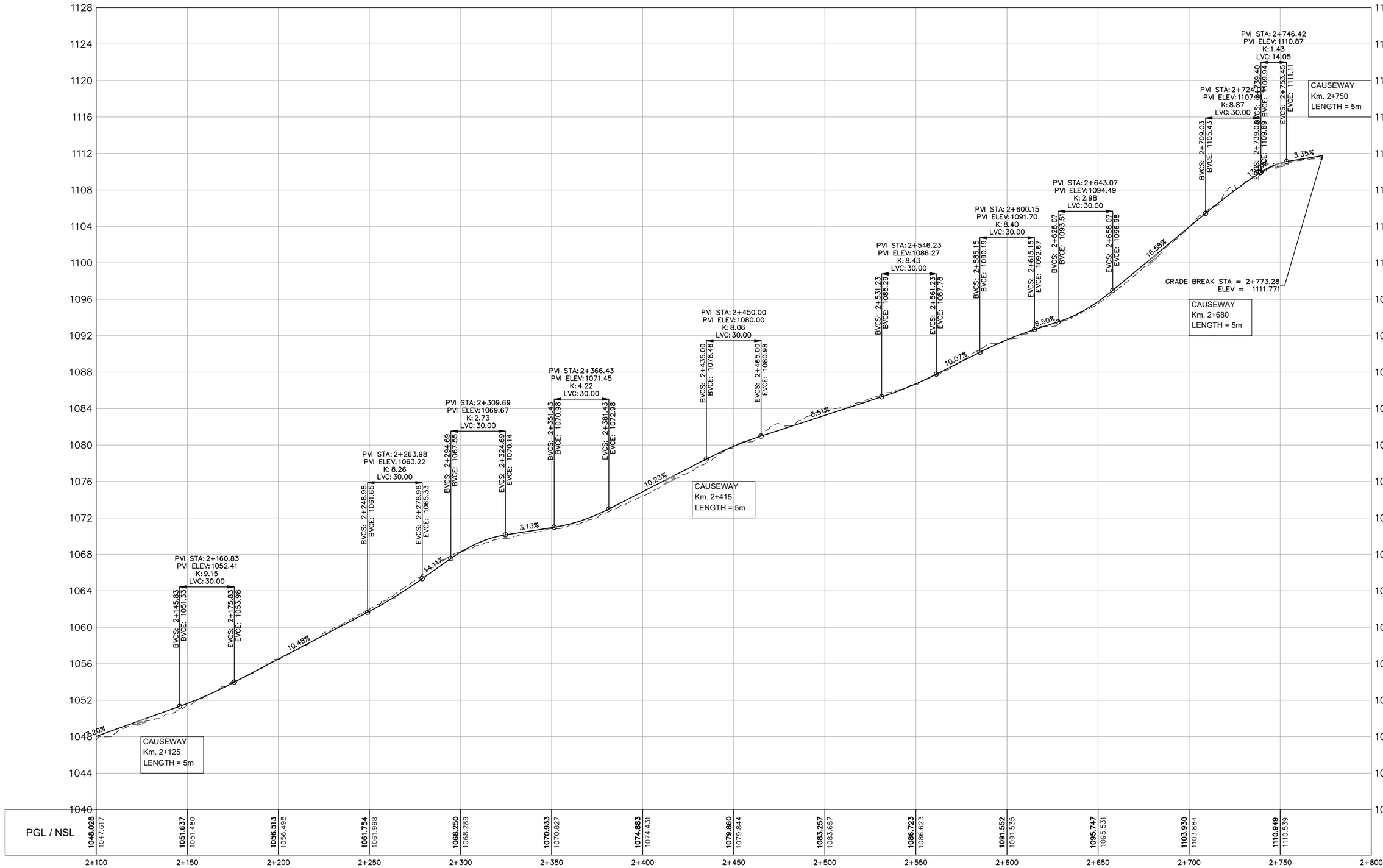

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
02			
01			

DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

REHABILITATION & IMPROVEMENT OF TAYAL ROAD
PROFILE
FROM KM. 2+100 TO KM. 2+773.28

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/1C004A

SCALE: HOR=1:2000 VER =1:200

REV.: 0

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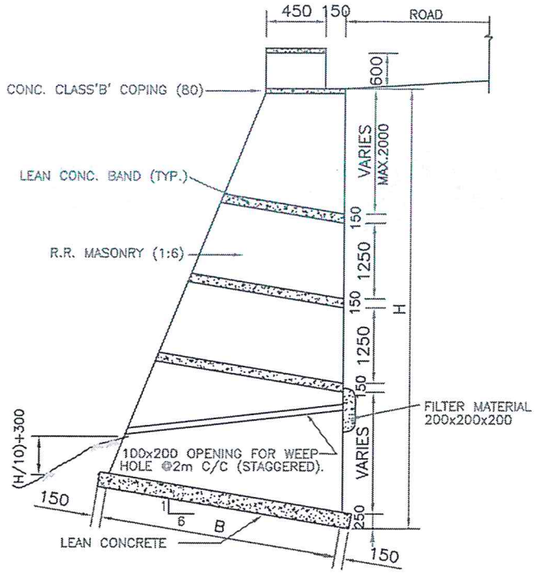
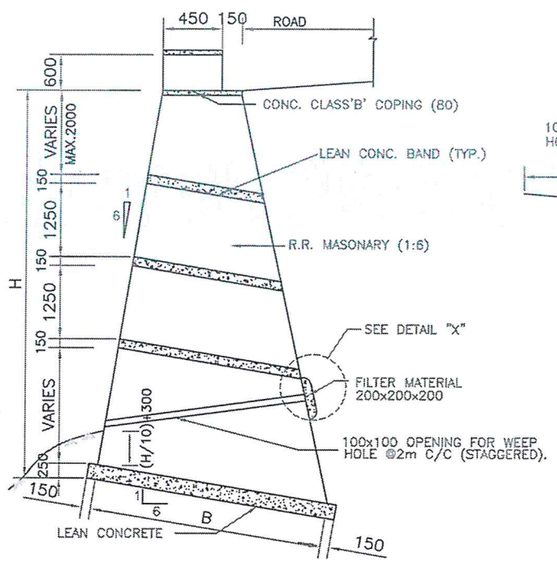
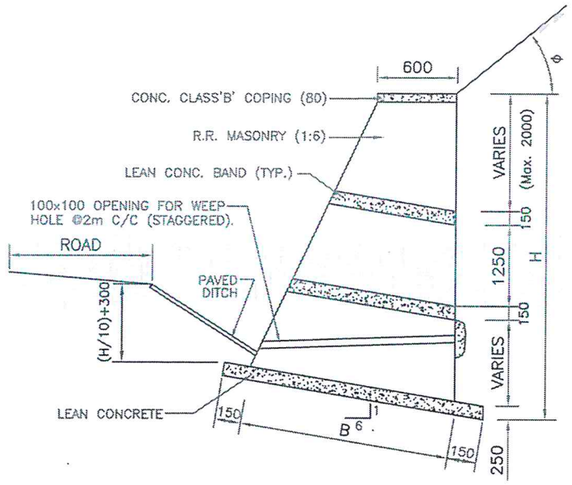


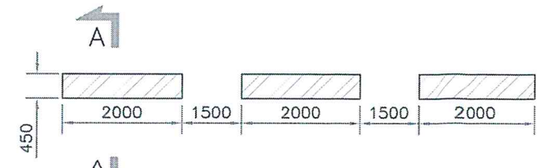
TYPICAL SECTION OF STONE MASONRY
RETAINING WALL TYPE RW1



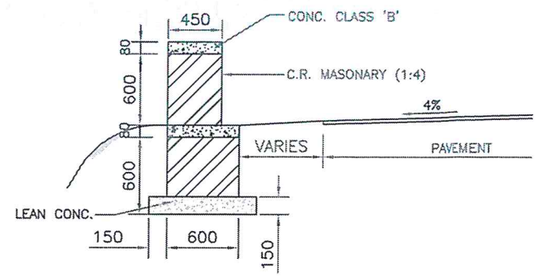
TYPICAL SECTION OF STONE MASONRY
RETAINING WALL TYPE RW2



TYPICAL SECTION OF STONE MASONRY
RETAINING/BREAST WALL TYPE RW3



TYPICAL PLAN OF PARAPET WALL



APPLICABLE WHERE NO RETAINAING WALL EXISTS
SECTION A–A

TABLE RW1

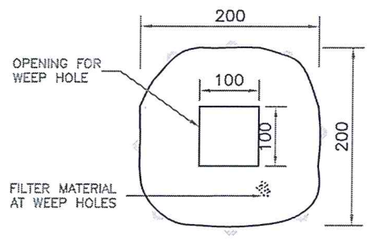
H (m)	B (m)
1.50	0.60
2.00	0.80
2.50	1.00
3.00	1.20
3.50	1.50
4.00	1.80
4.50	2.00
5.00	2.30
5.50	2.60
6.00	2.90
7.00	3.40
8.00	3.90

TABLE RW2

H (m)	B (m)
1.50	0.80
2.00	1.05
2.50	1.40
3.00	1.70
3.50	2.10
4.00	2.40
4.50	2.70
5.00	3.00
5.50	3.30
6.00	4.00
7.00	4.70
8.00	5.50

TABLE RW3
$\theta \leqslant 32°$

H (m)	B (m)
1.50	0.75
2.00	0.90
2.50	1.10
3.00	1.40
3.50	1.60
4.00	1.90
4.50	2.10
5.00	2.40
5.50	2.70
6.00	3.00
6.50	3.20
7.00	3.50
7.50	3.70
8.00	4.00



DETAIL "X"

NOTES

1– ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2– WEEP HOLES SHALL BE STAGGERED AT AN INTERVAL OF 2m VERTICALLY AND HORIZONTALLY AND/OR AS DIRECTED BY THE ENGINEER'S REPRESENTATIVE.
3– THE SLOPE OF WEEP HOLE SHALL BE 1 IN 8 FROM BACK OF THE MASONRY TO THE OUTER FACE OR AS DIRECTED BY THE ENGINEER'S REPRESENTATIVE.
4– TYPE OF RETAINING WALL TYPE RW1 SHALL BE DECIDED BY THE ENGINEER'S REPRESENTATIVE AS PER SITE CONDITIONS KEEPING FOLLOWING IN VIEW.
   – RETAINING WALL TYPE RW1 SHALL BE PROVIDED WHERE THE ROAD IS WELL AWAY FROM THE NALLAH, RIVER/RIVINE.
   – RETAINING TYPE RW2 WALL SHALL BE PROVIDED WHERE THE ROAD IS IN CLOSE VICINITY OF THE RIVER/RIVINE OR CLIFF FACE.
   – RETAINING WALL TYPE RW3 SHALL BE PROVIDED TO RETAIN THE SCREED MATERIAL.
5– R.R MASONRY AND C.R MASONRY STANDS FOR RANDOM RUBBLE MASONRY AND COURSE RUBBLE MASONRY RESPECTIVELY. R.R MASONRY SHALL BE LAID IN 1:6 CEMENT SAND MORTAR, WHERE AS C.R MASONRY IN 1:4 C/S MORTAR.
6– TYPICAL PARAPET WALL SHALL BE PROVIDED AT TOP OF RETAINING WALL AND AT OTHER HAZARDOUS LOCATIONS AS APPROVED BY THE ENGINEER'S REPRESENTATIVE.
7– THE DESIGN OF RETAINING WALLS IS BASED ON FOLLOWING PARAMETERS.
   (i) BEARING CAPACITY 2.2 Kg/Cm2
   (ii) ANGLE OF INTERNAL FRICTION
      (a) FOR WALL TYPE RW 1 & RW 2 = 32°
      (b) FOR WALL TYPE RW 3 = 32°
8– VERTICAL SLOPE TO THE OUTER FACE OF THE RETAINING WALL TYPE RW 2 CAN BE CHANGED UP 1 IN 10.
9– PAYMENT FOR WEEP HOLES AND FILTER MATERIAL IS INCLUDED IN THE COST OF OTHER ITEMS AND SHALL NOT BE PAID SEPARATELY.

CLIENT
WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT
NESPAK NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.
HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
02			
01			

DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT
DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

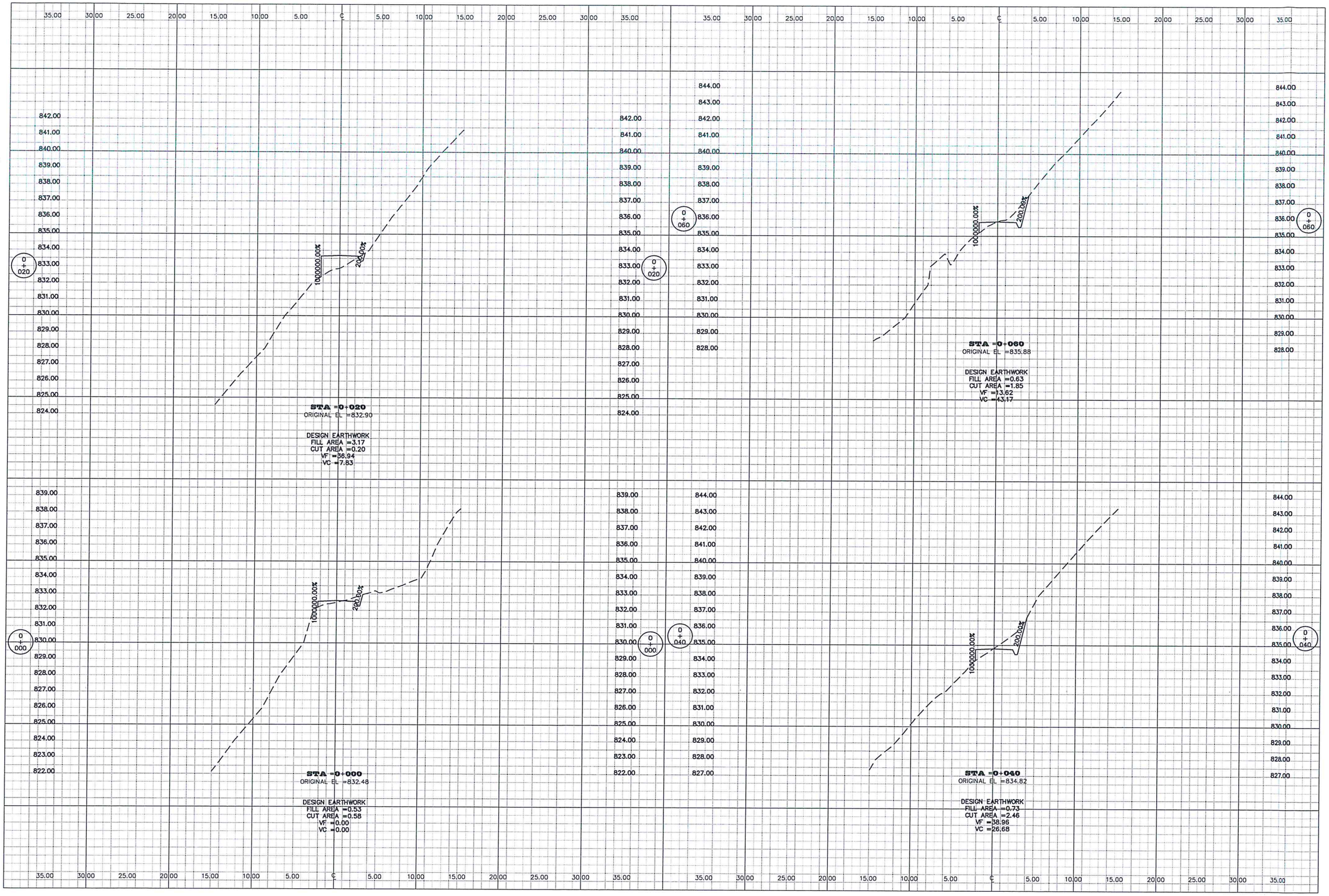
TYPICAL STONE MASONRY RETAINING WALL DETAILS

SCALE

DATE: SEPTEMBER, 2024
DRAWING No.: 4520/102/TD/MS001
REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\GENERAL DRAWINGS\MS001.dwg,

CHAINAGE WISE X-SECTIONS



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
02			
01			

DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 0+000 to Km 0+060

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS101

REV.: 0

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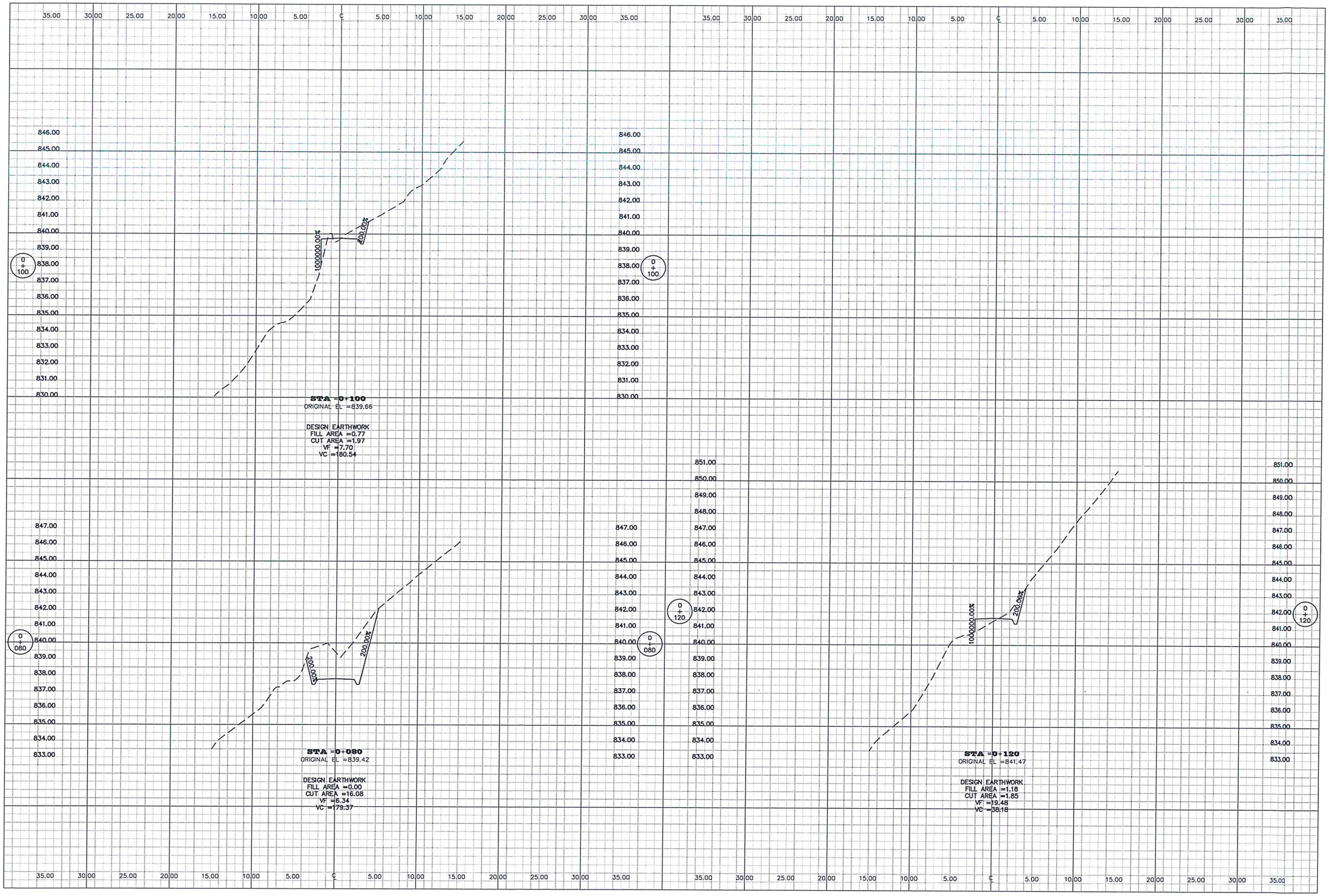

CLIENT	WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)	CONSULTANT	NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.	PROJECT	DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)
			HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.		

REV.	DATE	DESCRIPTION	APPROVED		
04				DRAWN	BILAL AZIZ
03				SUBMITTED	
02				RECOMMENDED	
01				CHD./VER.	
				APPROVED	

X-SECTIONS
From Km 0+080 to Km 0+120

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS102

REV.: 0

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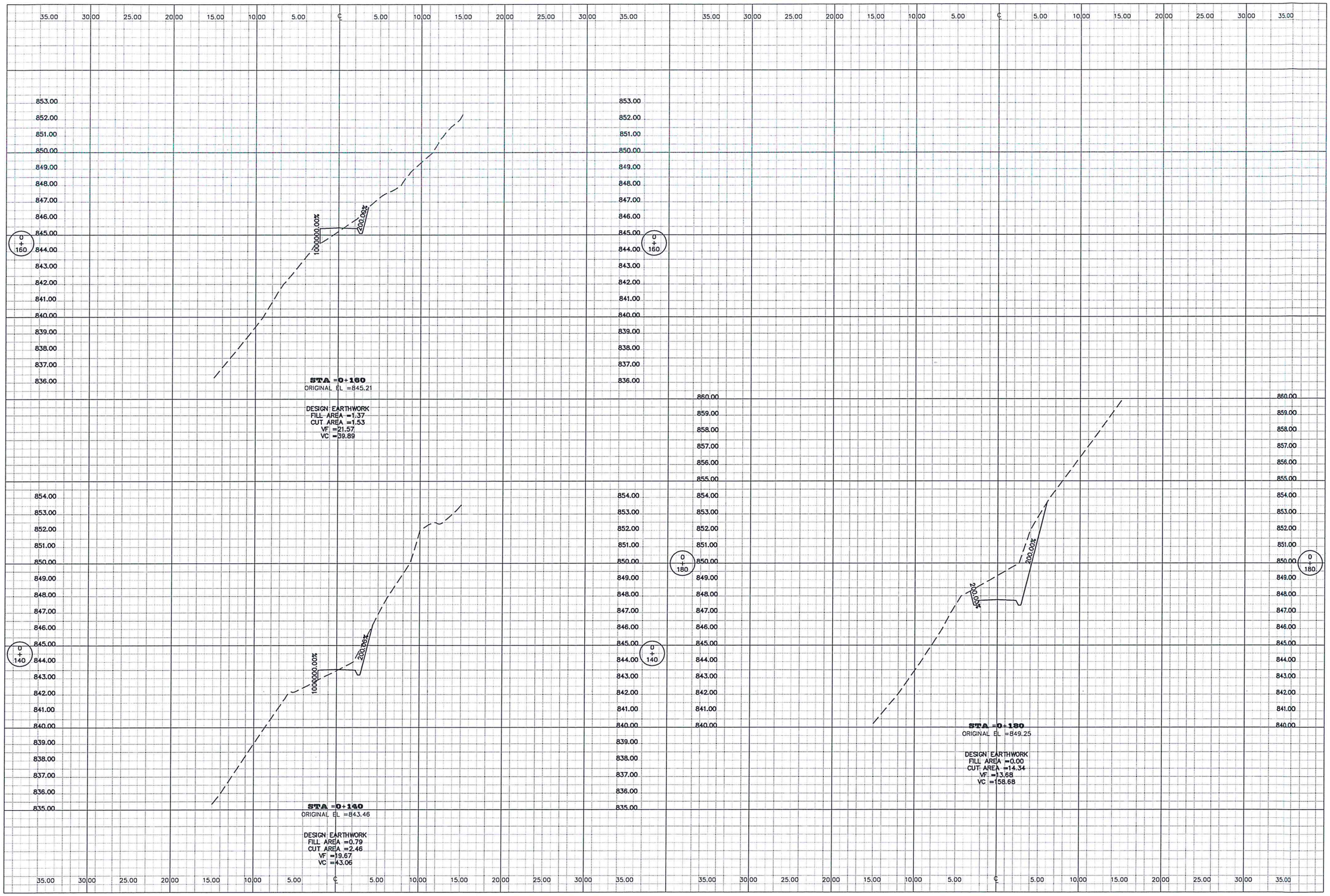

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
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RECOMMENDED	
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APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 0+140 to Km 0+180

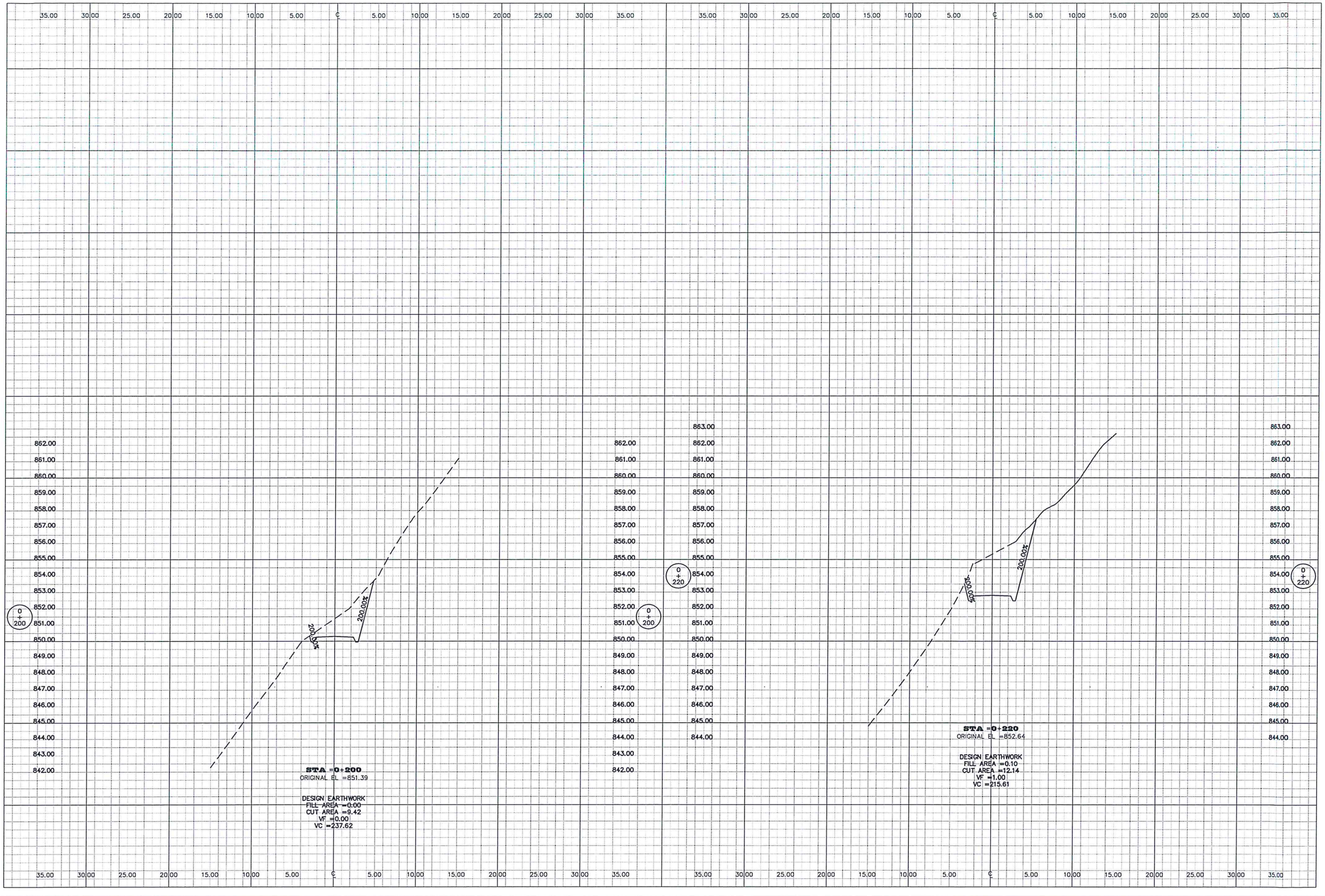
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS103

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc003001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
02			
01			

DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 0+200 to Km 0+220

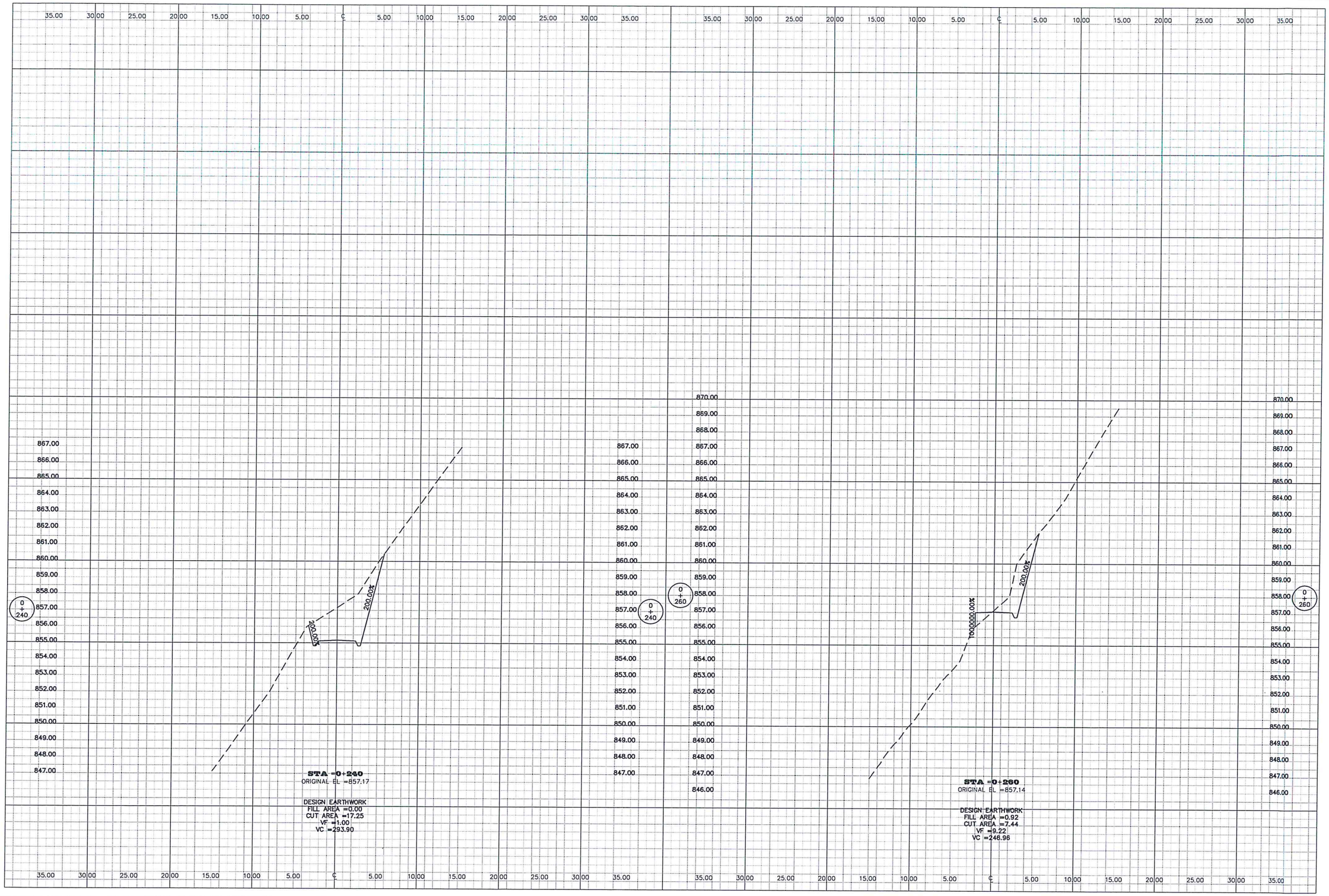
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS104

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc004001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
02			
01			

DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 0+240 to Km 0+260

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS105

REV.: 0

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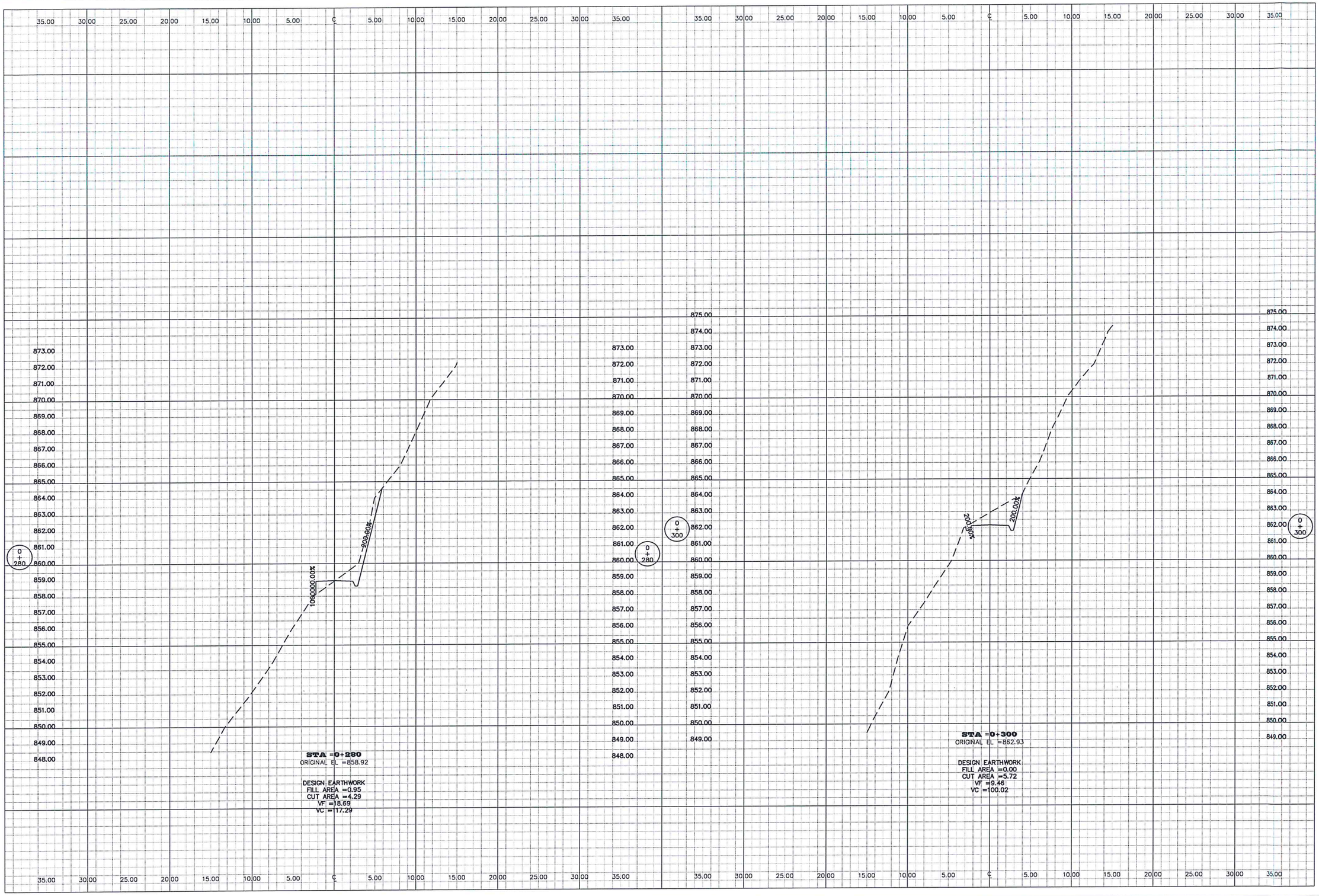

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 0+280 to Km 0+300

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS106

REV.: 0

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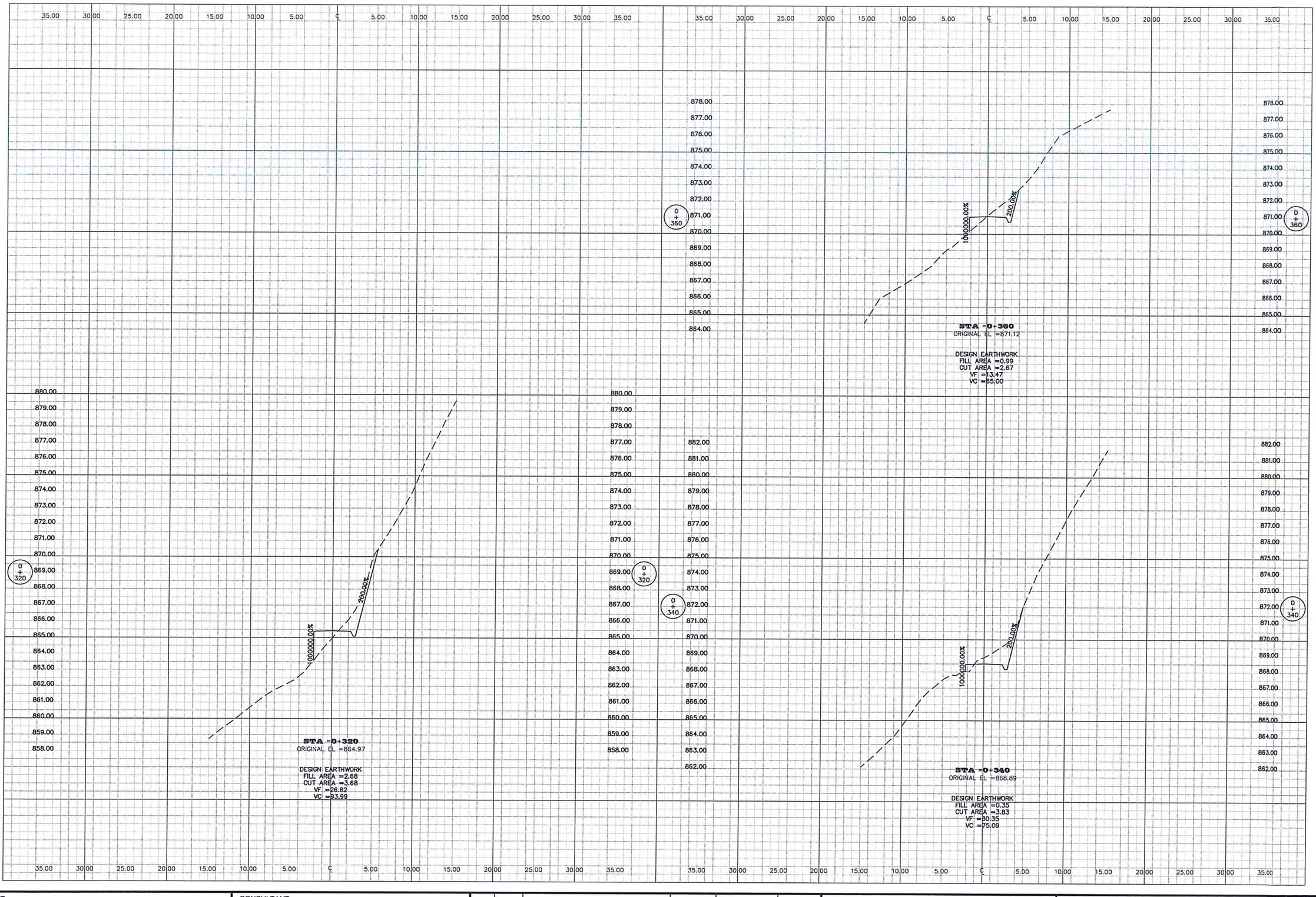

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 0+320 to Km 0+360

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS107

REV.: 0

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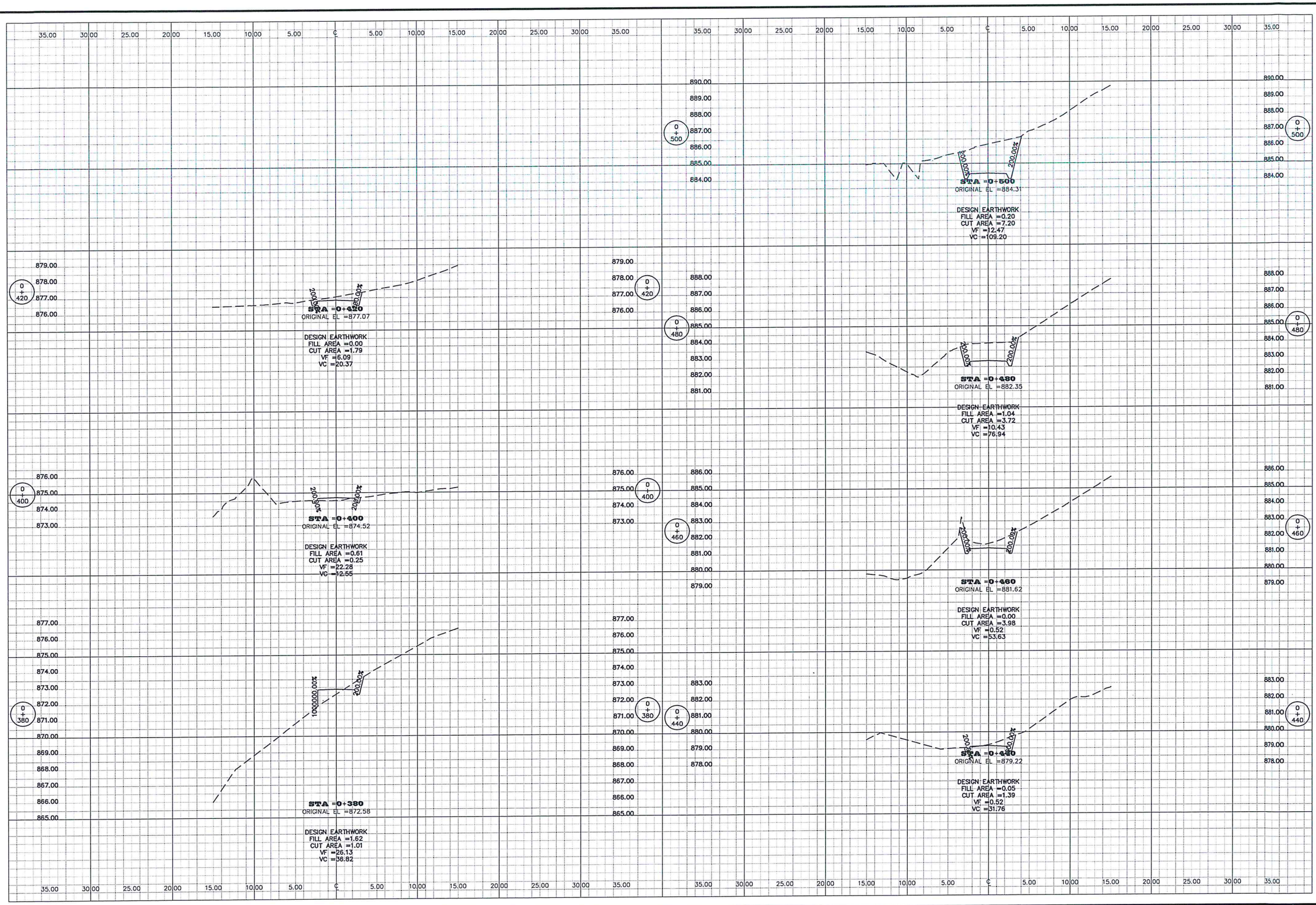

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 0+380 to Km 0+500

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS108

REV.: 0

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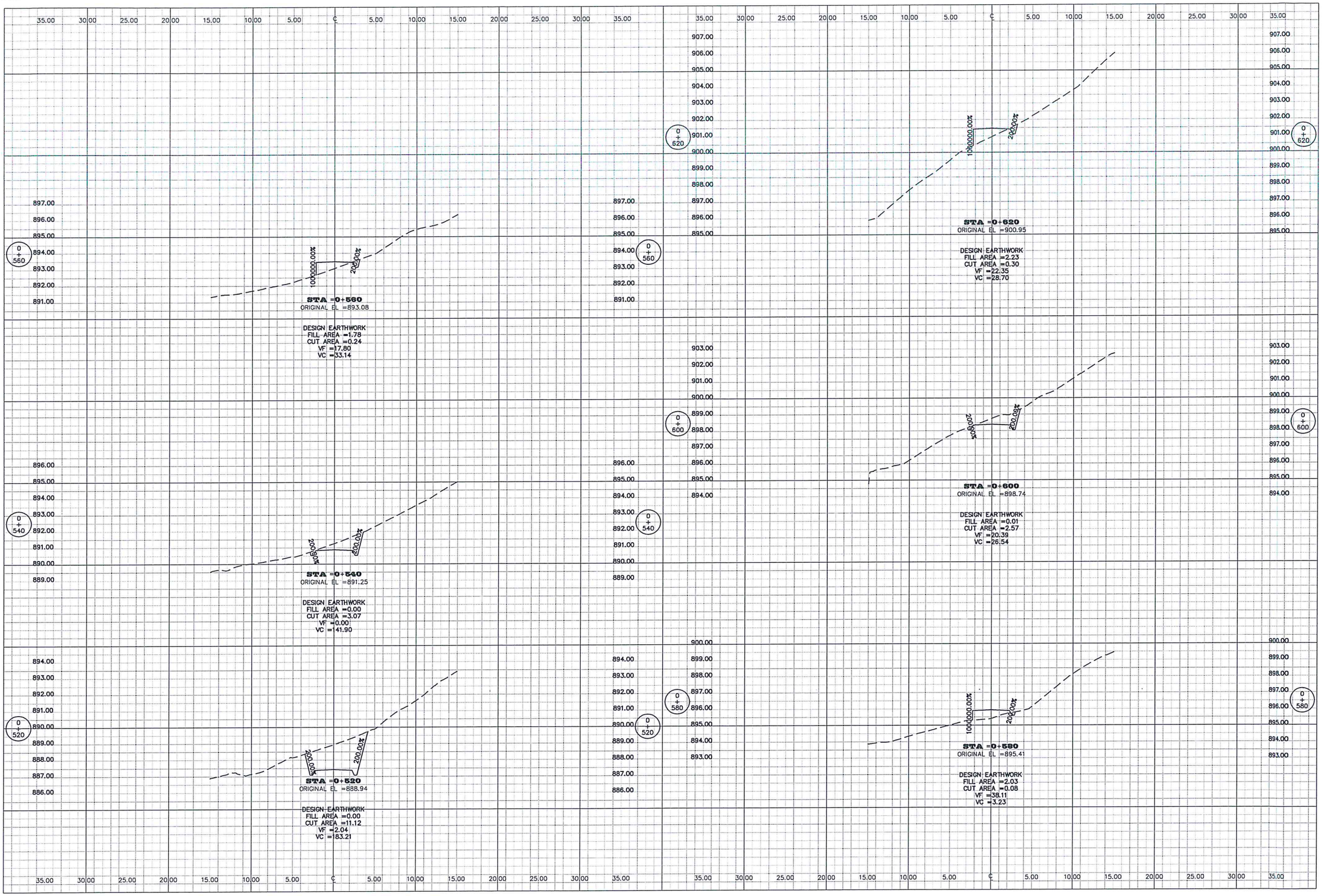

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 0+520 to Km 0+620

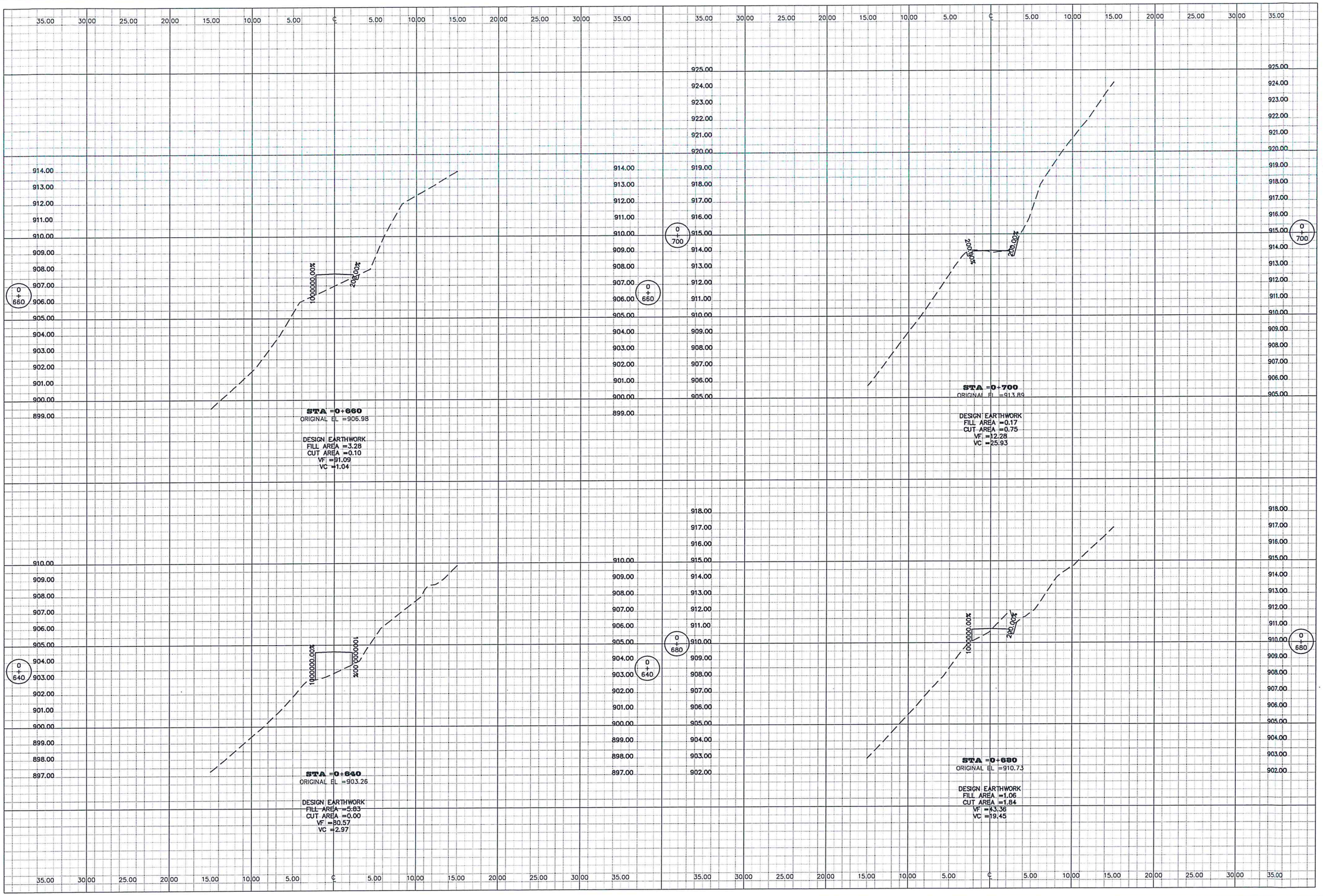
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS109

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc009001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 0+640 to Km 0+700

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS110

REV.: 0

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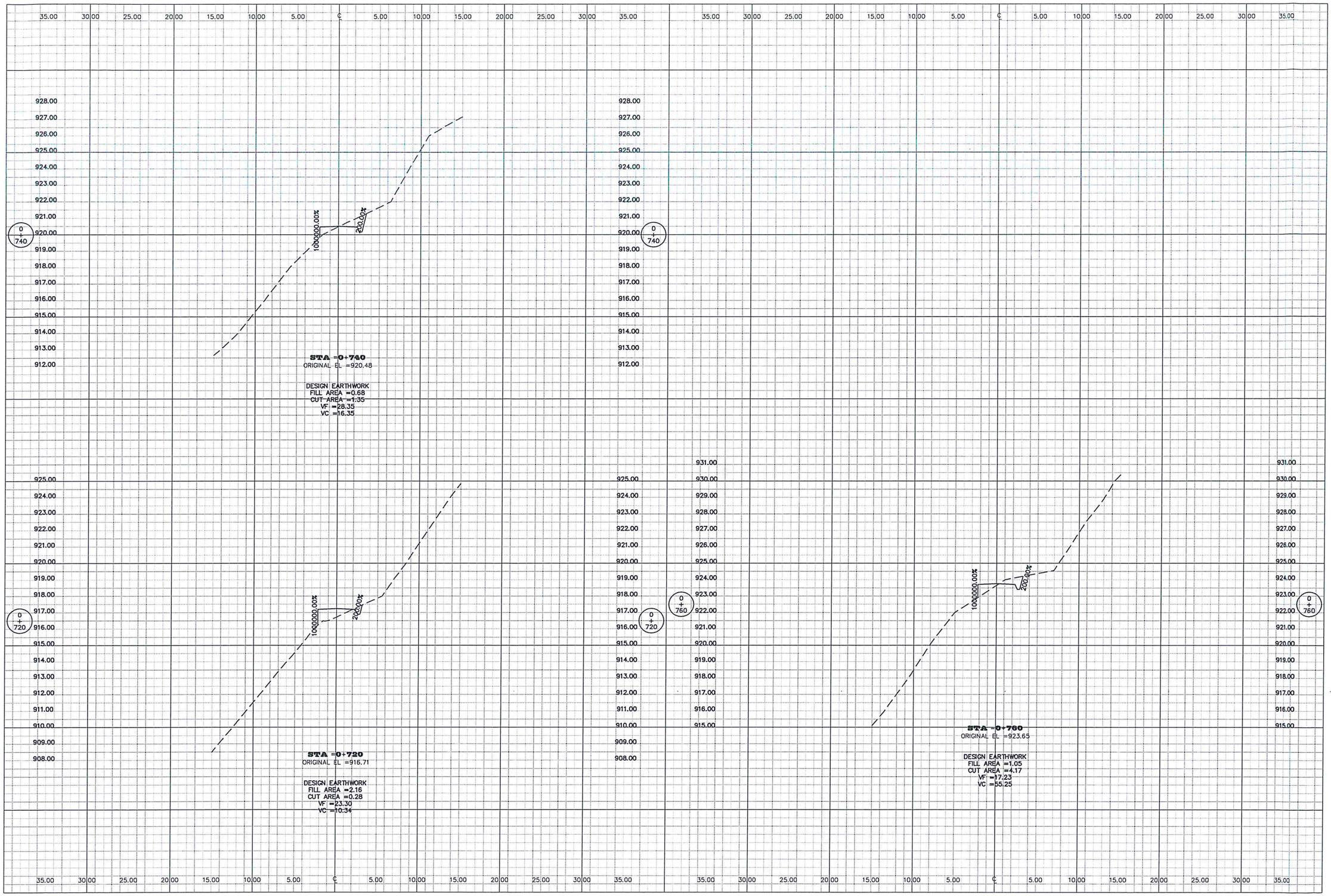

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 0+720 to Km 0+760

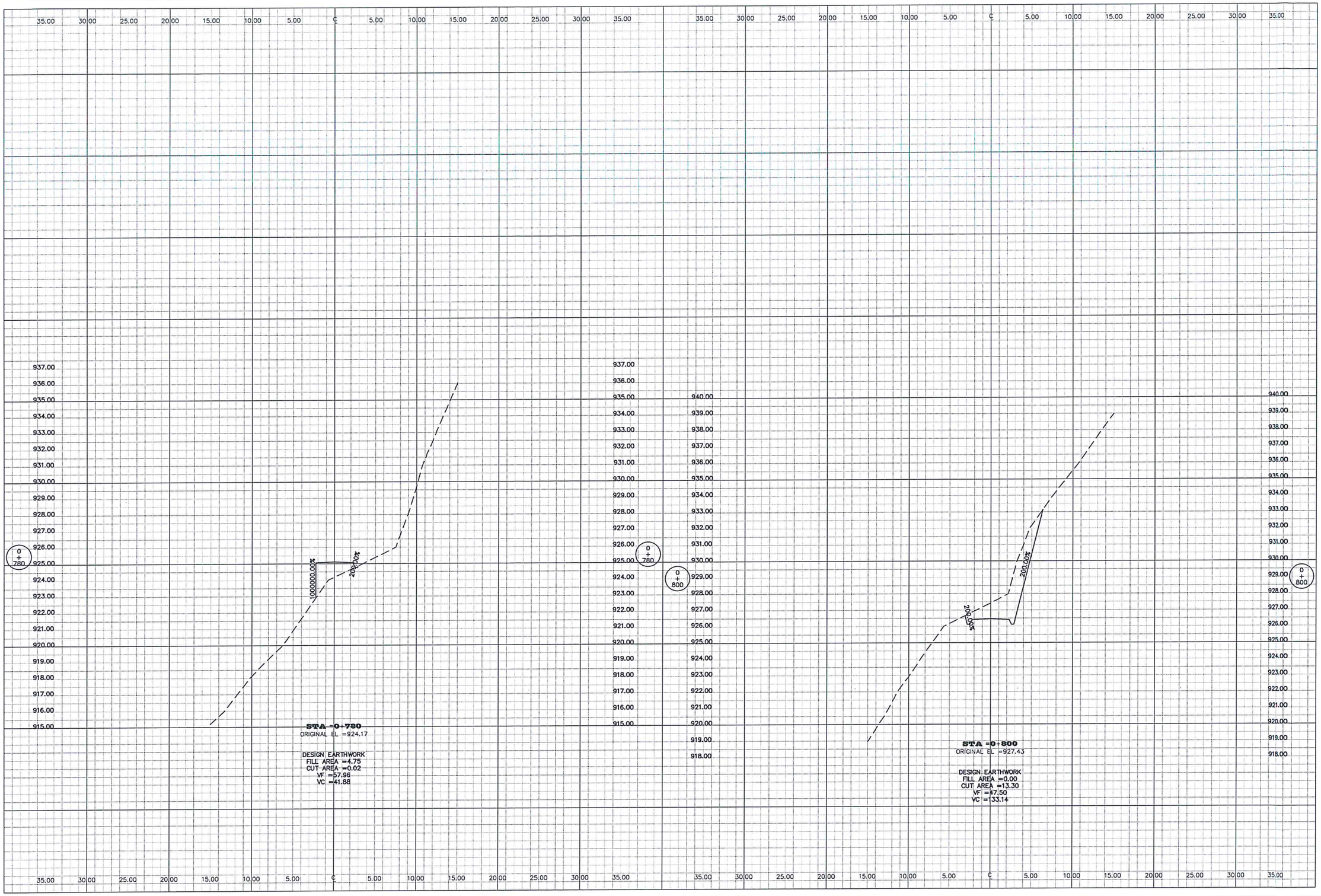
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS111

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc011001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 0+780 to Km 0+800

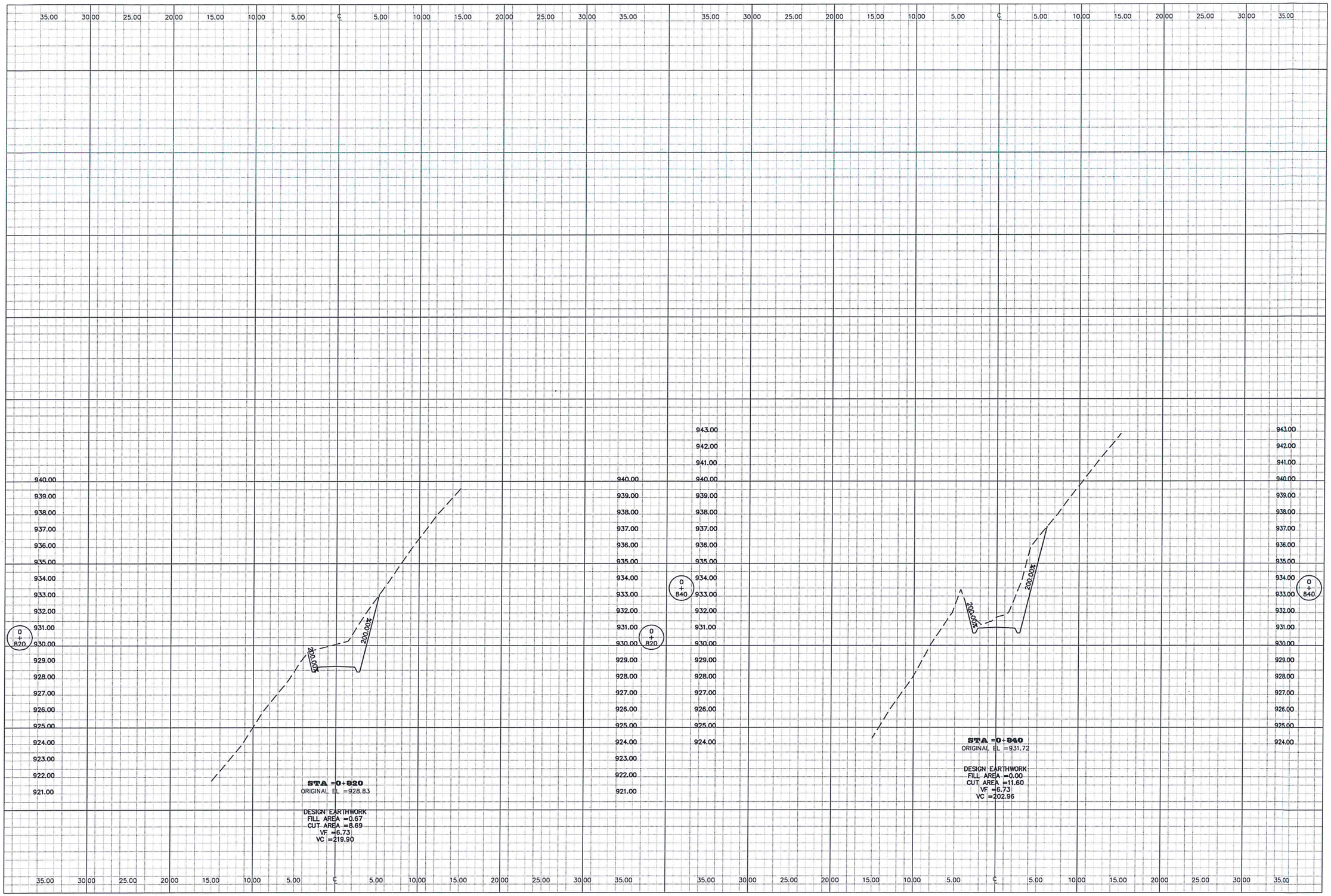
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS112

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc012001.dwg,



CLIENT	WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)	
CONSULTANT	NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.	

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 0+820 to Km 0+840

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS113

REV.: 0

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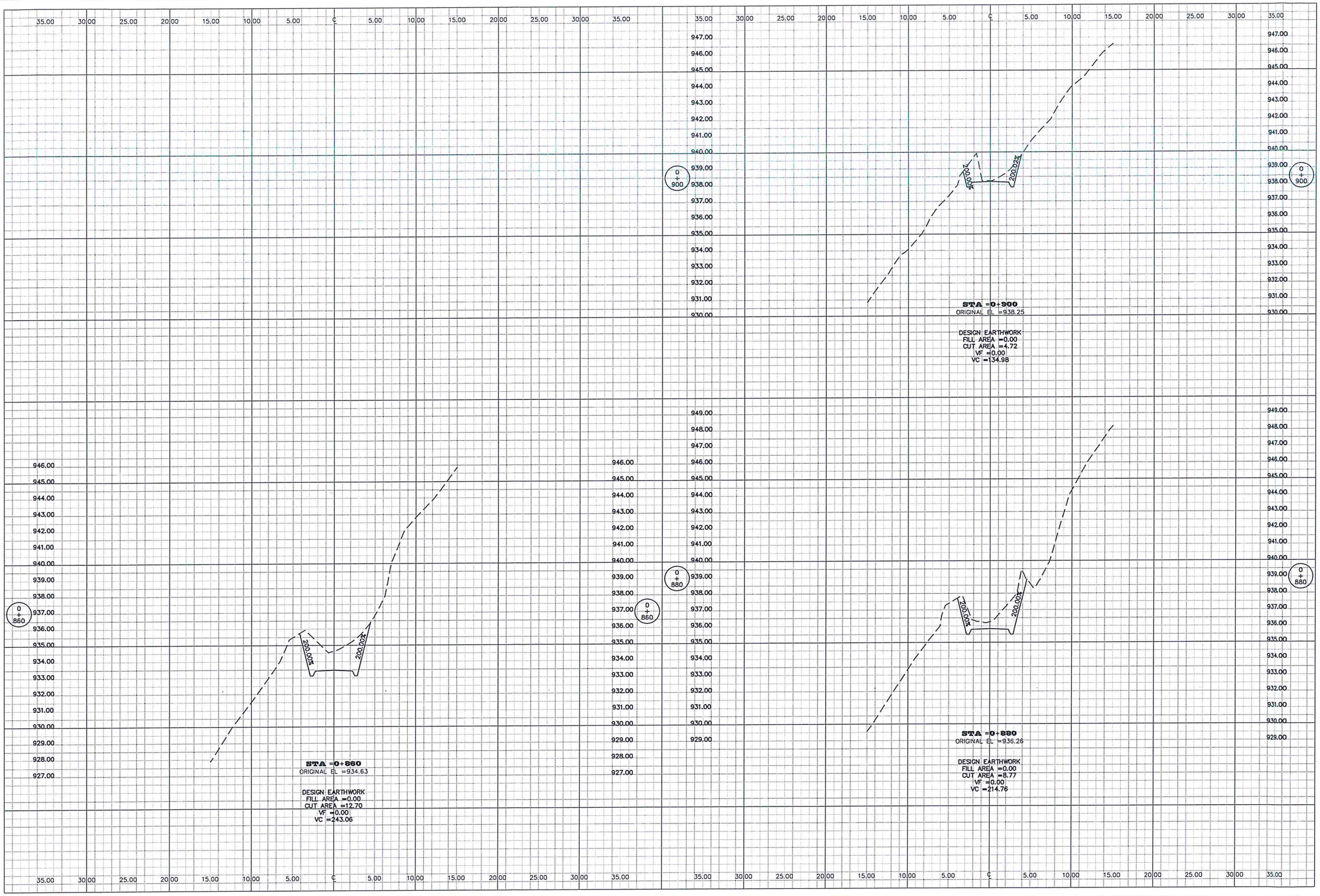

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 0+860 to Km 0+900

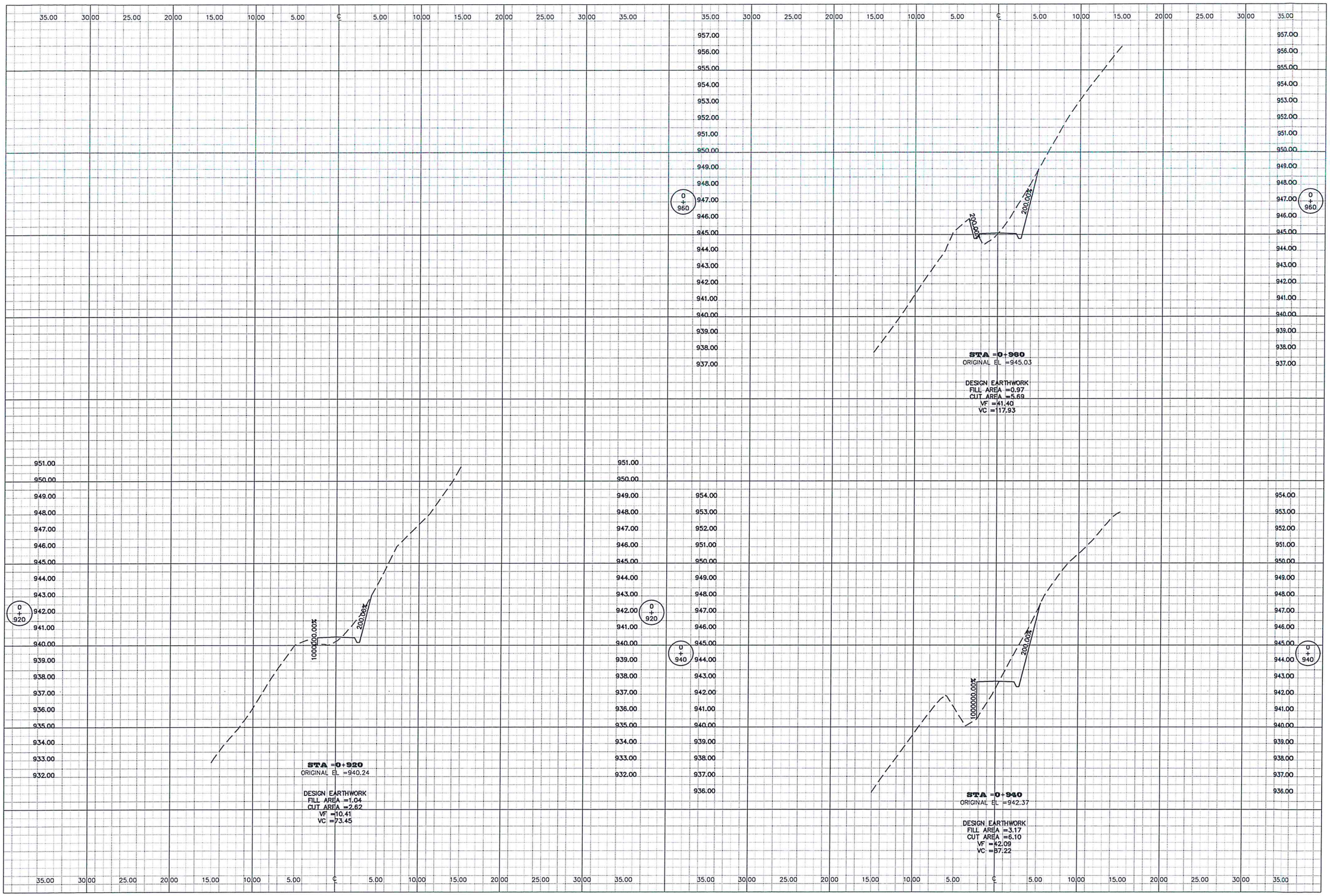
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS114

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc014001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 0+920 to Km 0+960

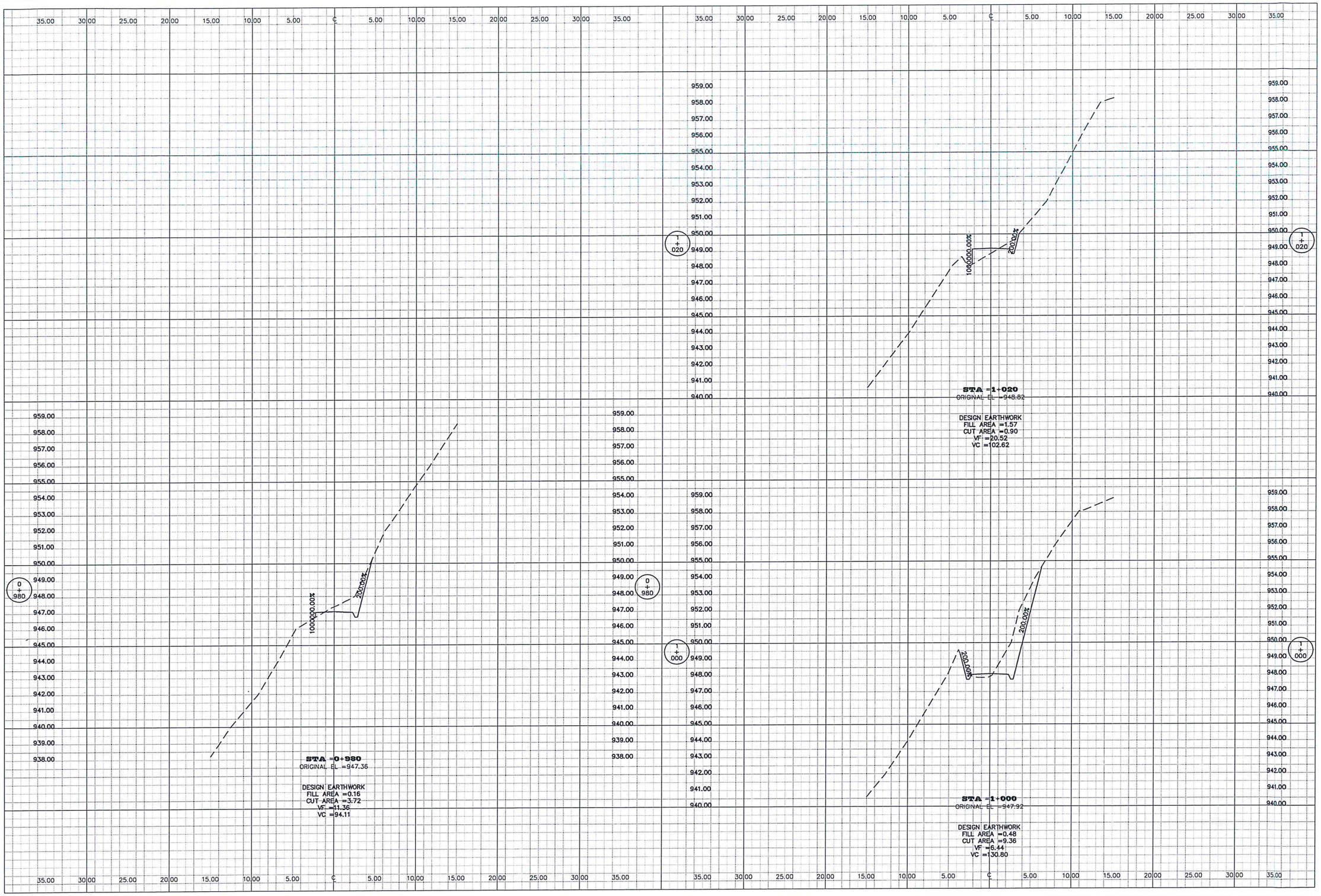
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS115

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc015001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
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01			

DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 0+980 to Km 1+020

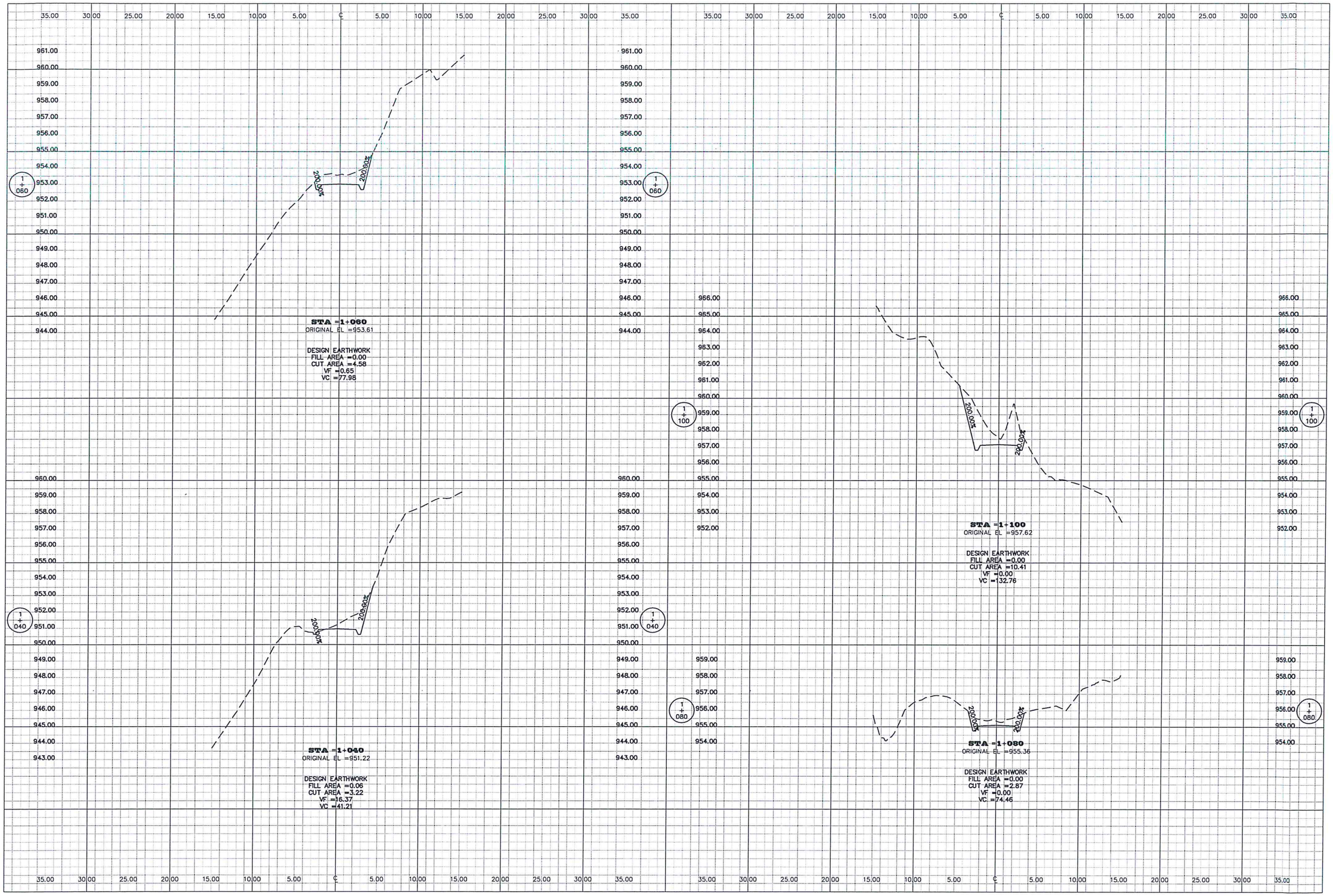
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS116

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc016001.dwg.



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+040 to Km 1+100

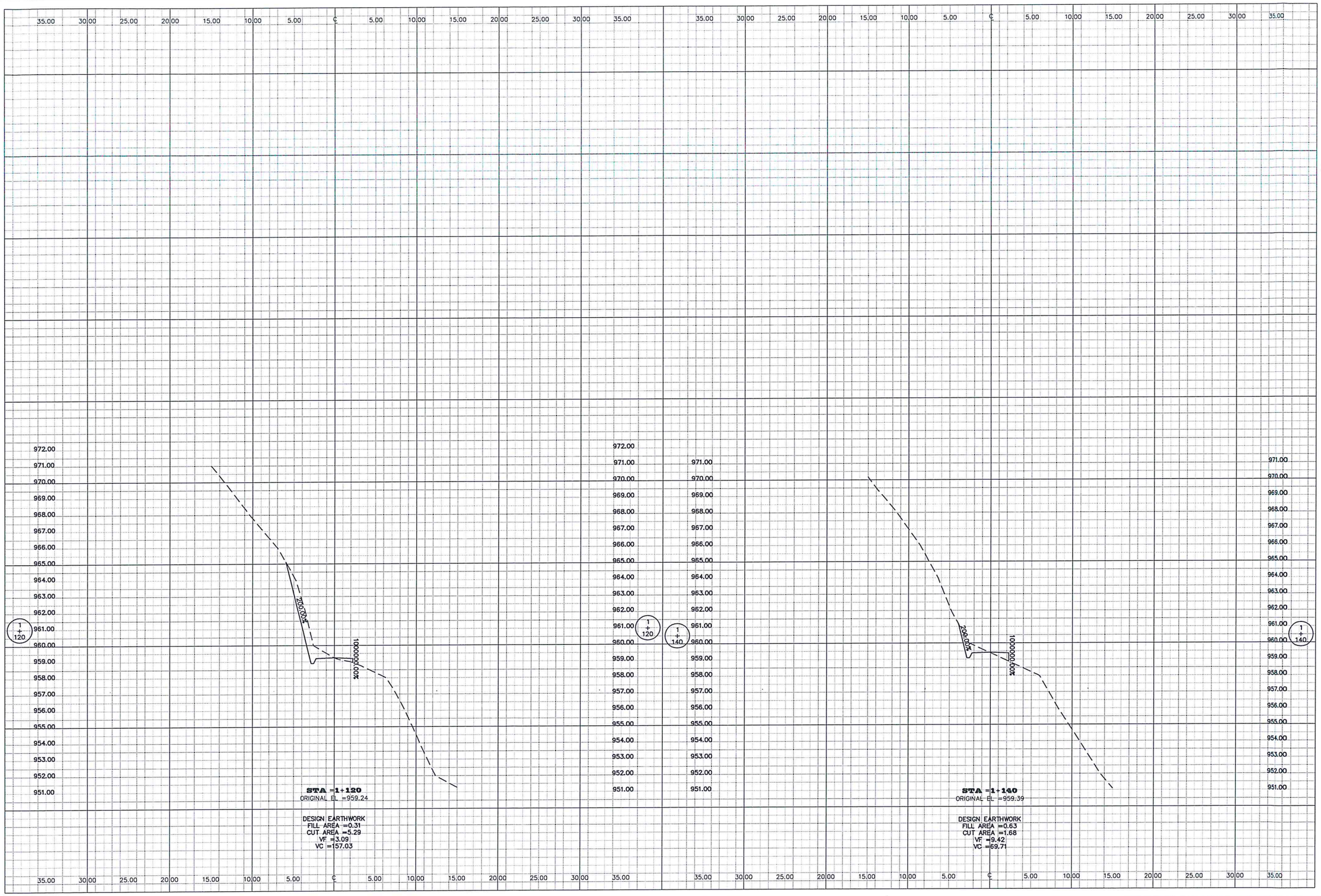
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS117

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc017001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+120 to Km 1+140

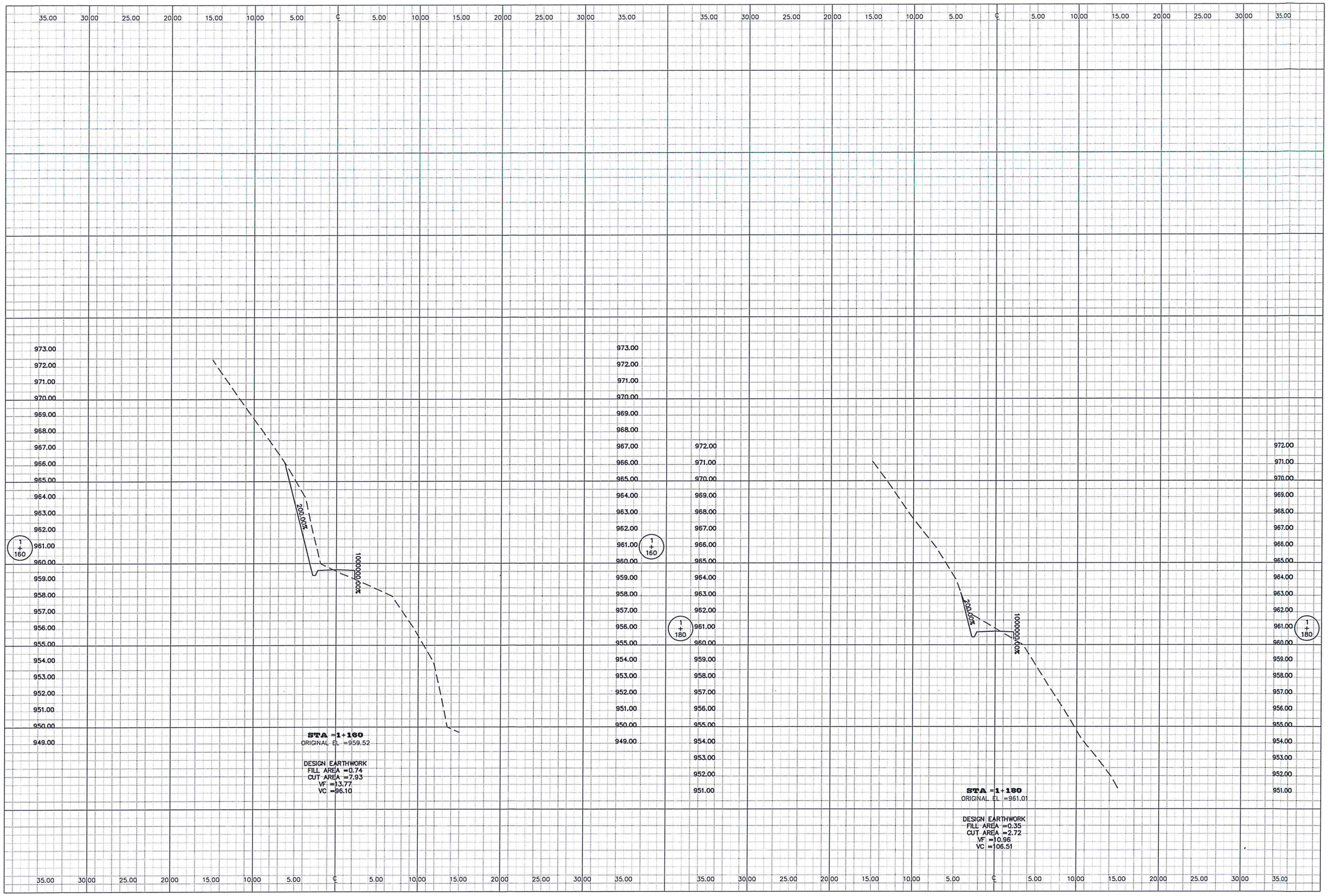
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS118

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc018001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+160 to Km 1+180

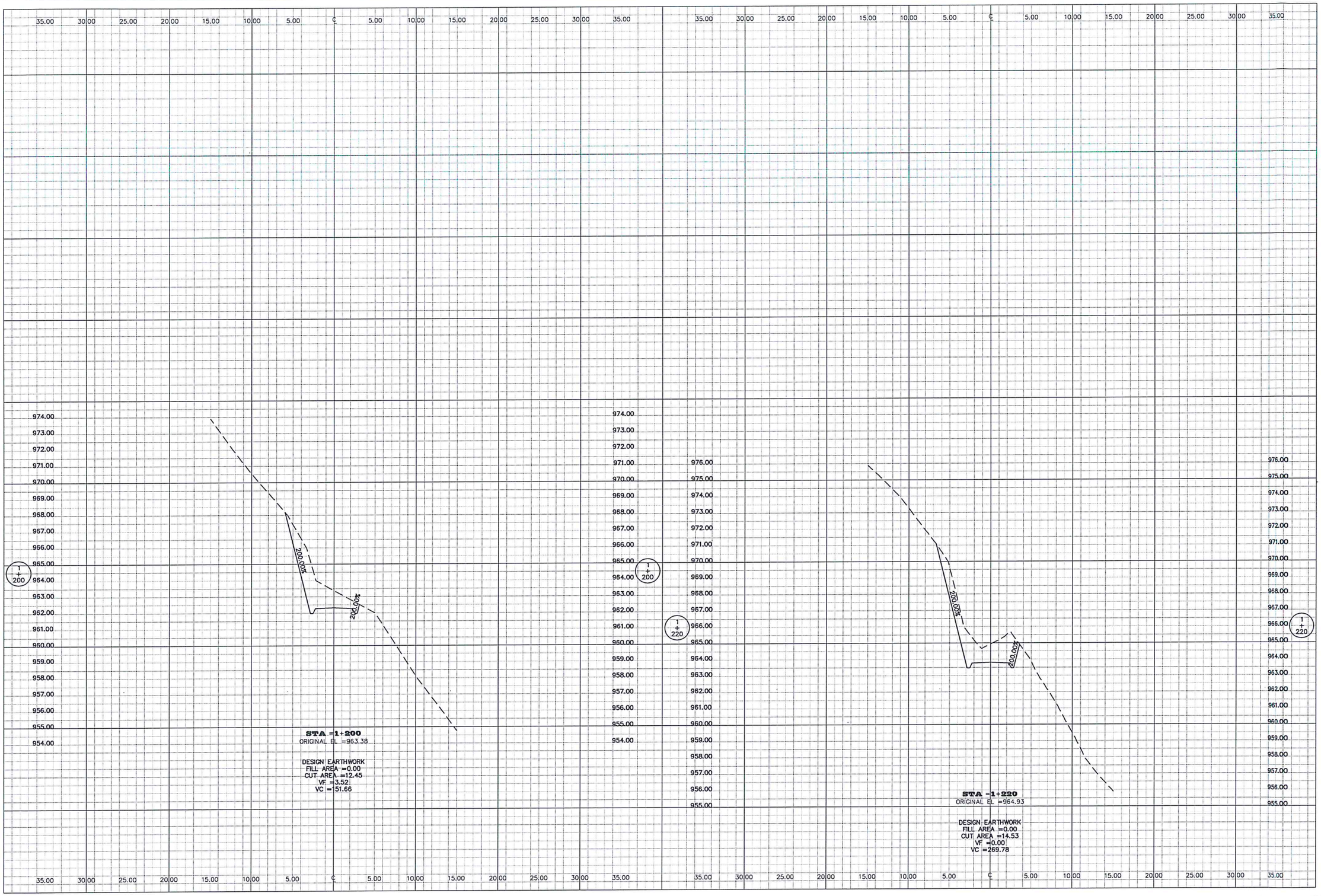
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS119

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc019001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+200 to Km 1+220

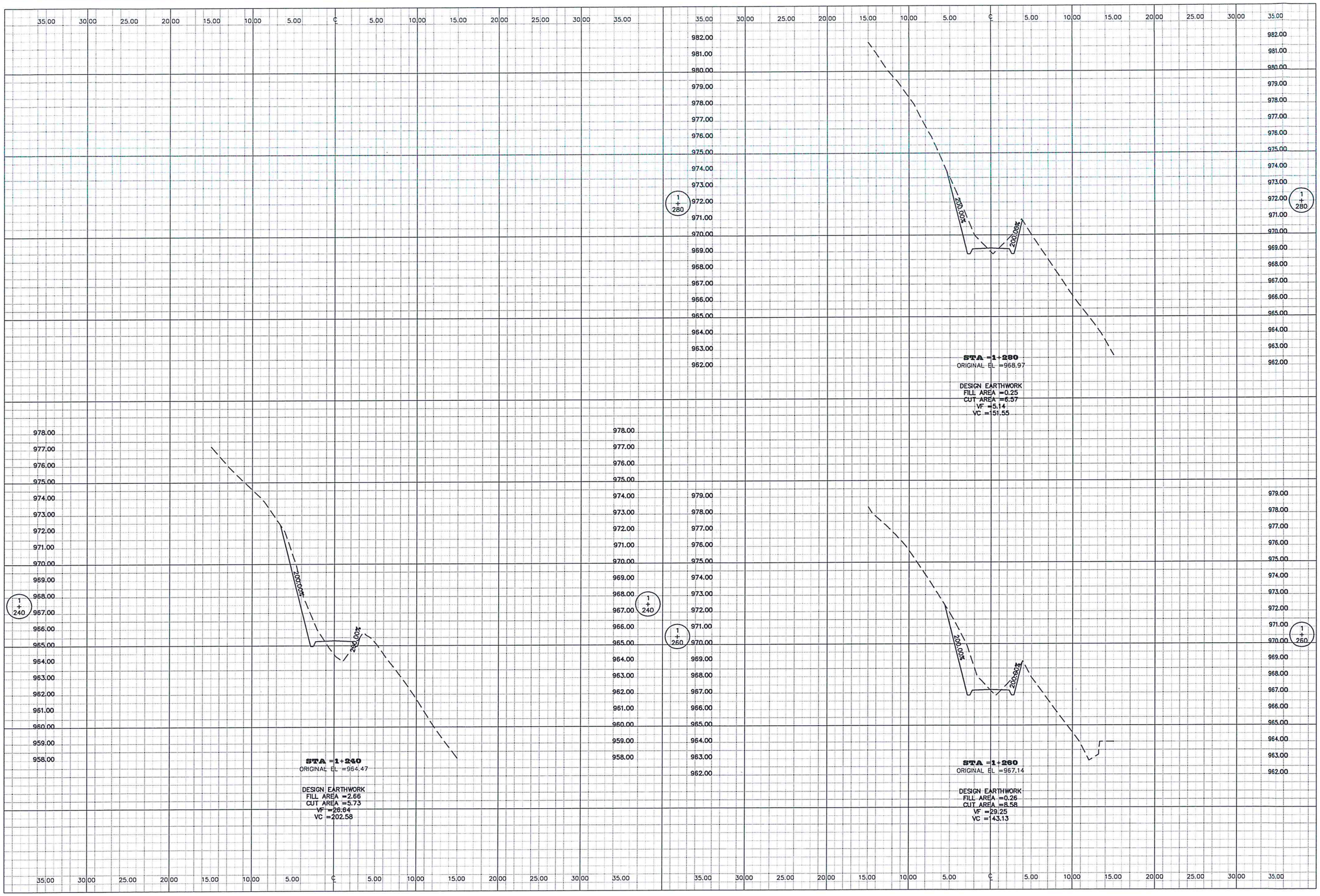
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS120

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc020001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
02			
01			

DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+240 to Km 1+280

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS121

REV.: 0

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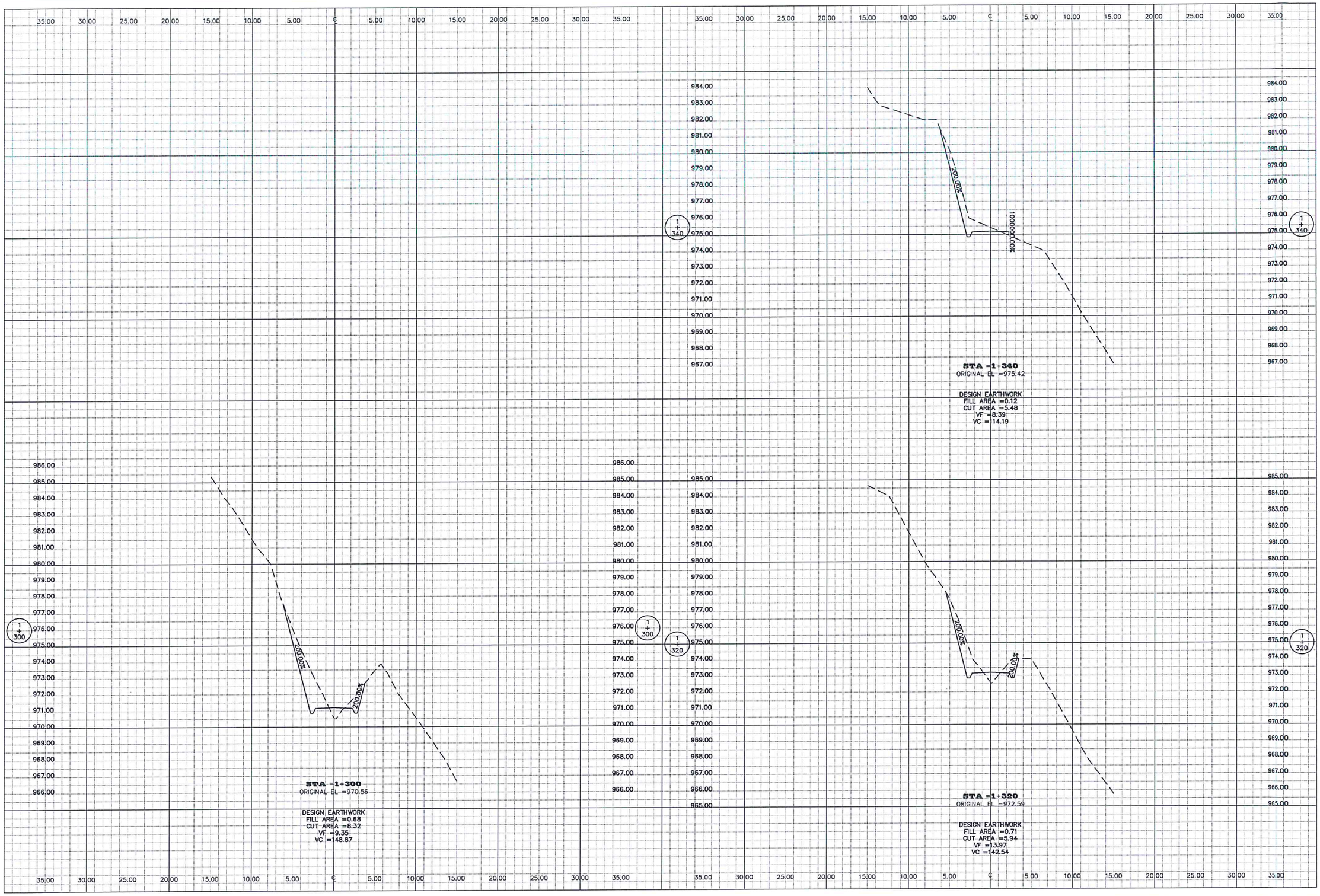

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
02			
01			

DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+300 to Km 1+340

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS122

REV.: 0

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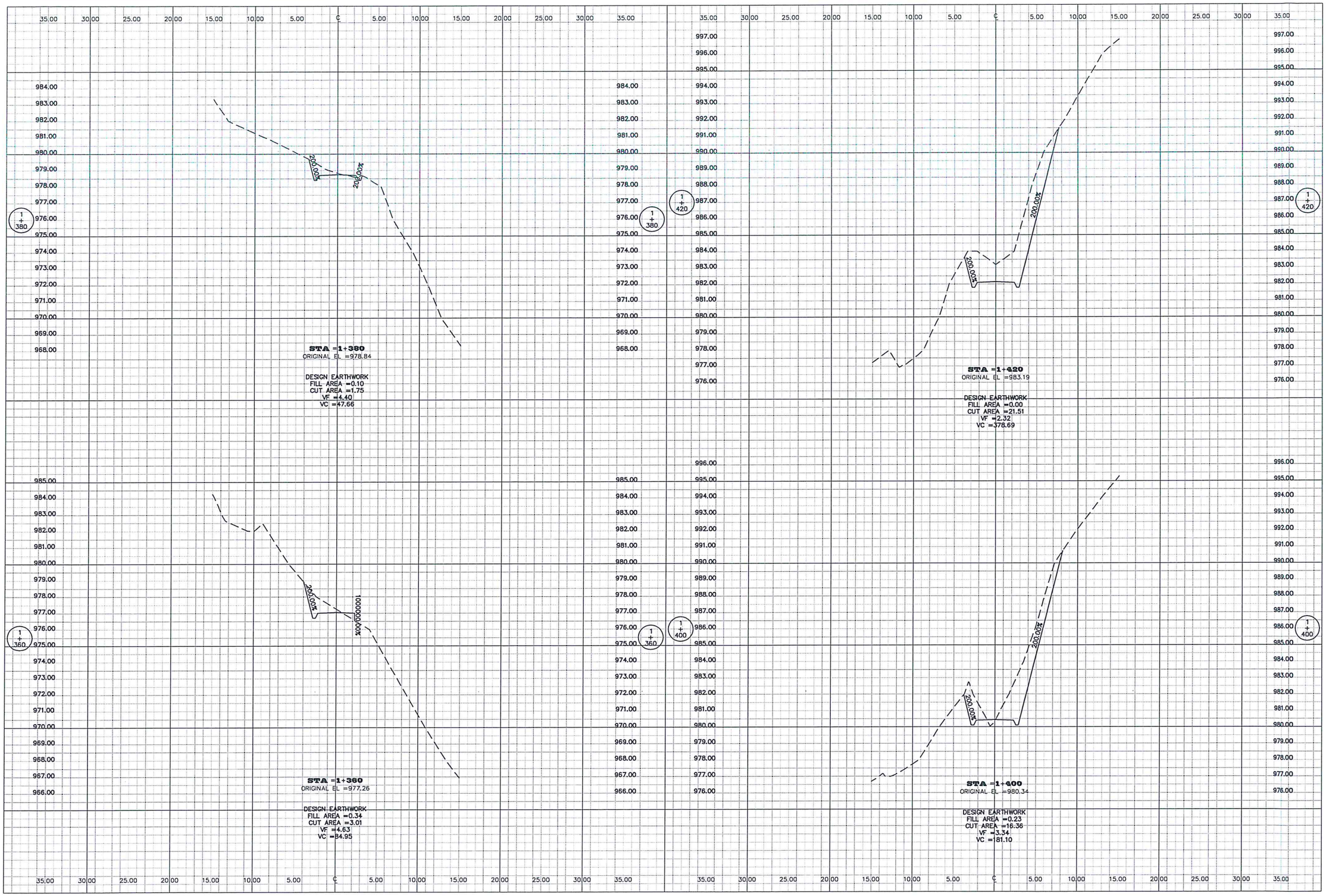

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+360 to Km 1+420

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS123

REV.: 0

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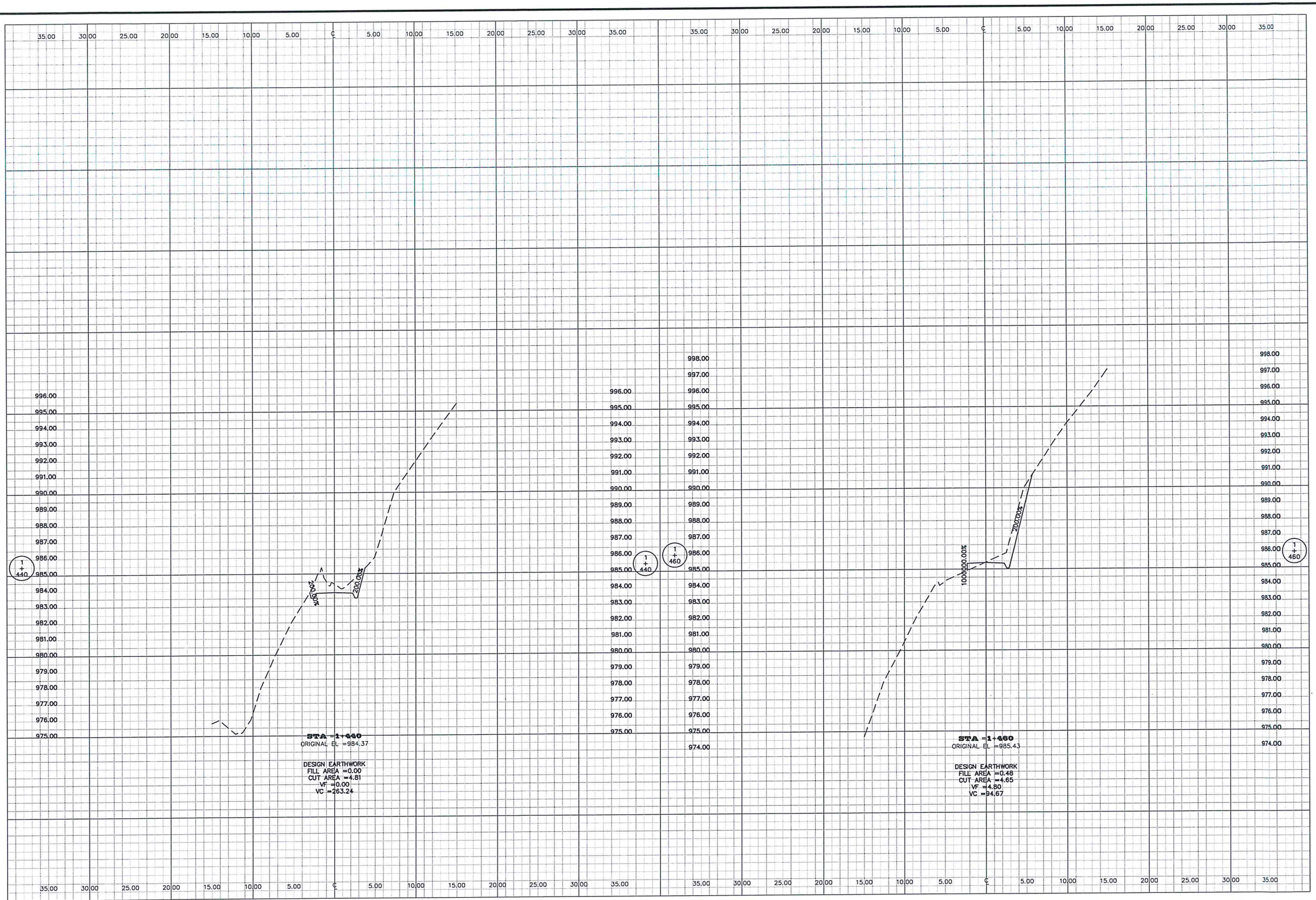

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+440 to Km 1+460

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS124

REV.: 0

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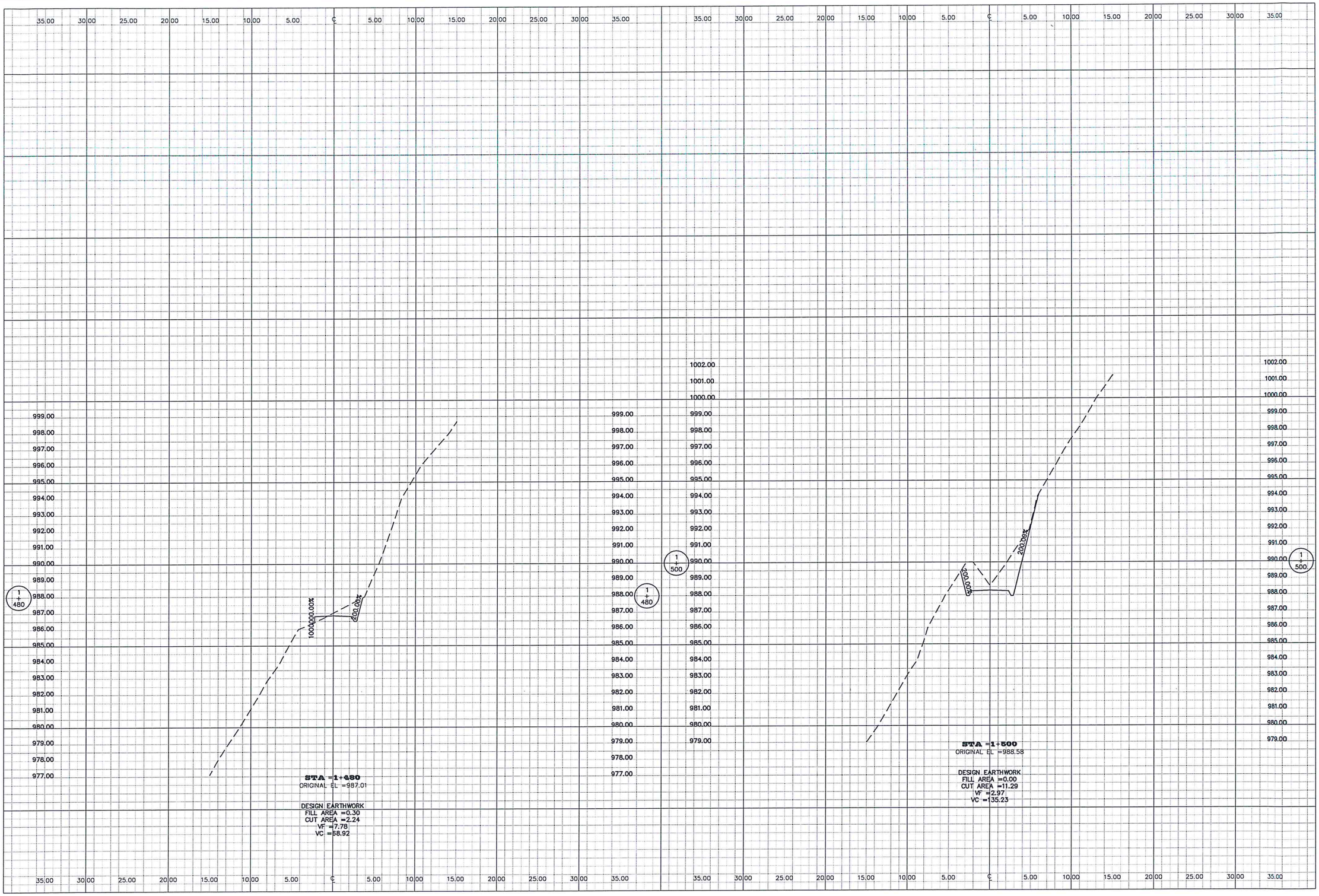

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+480 to Km 1+500

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS125

REV.: 0

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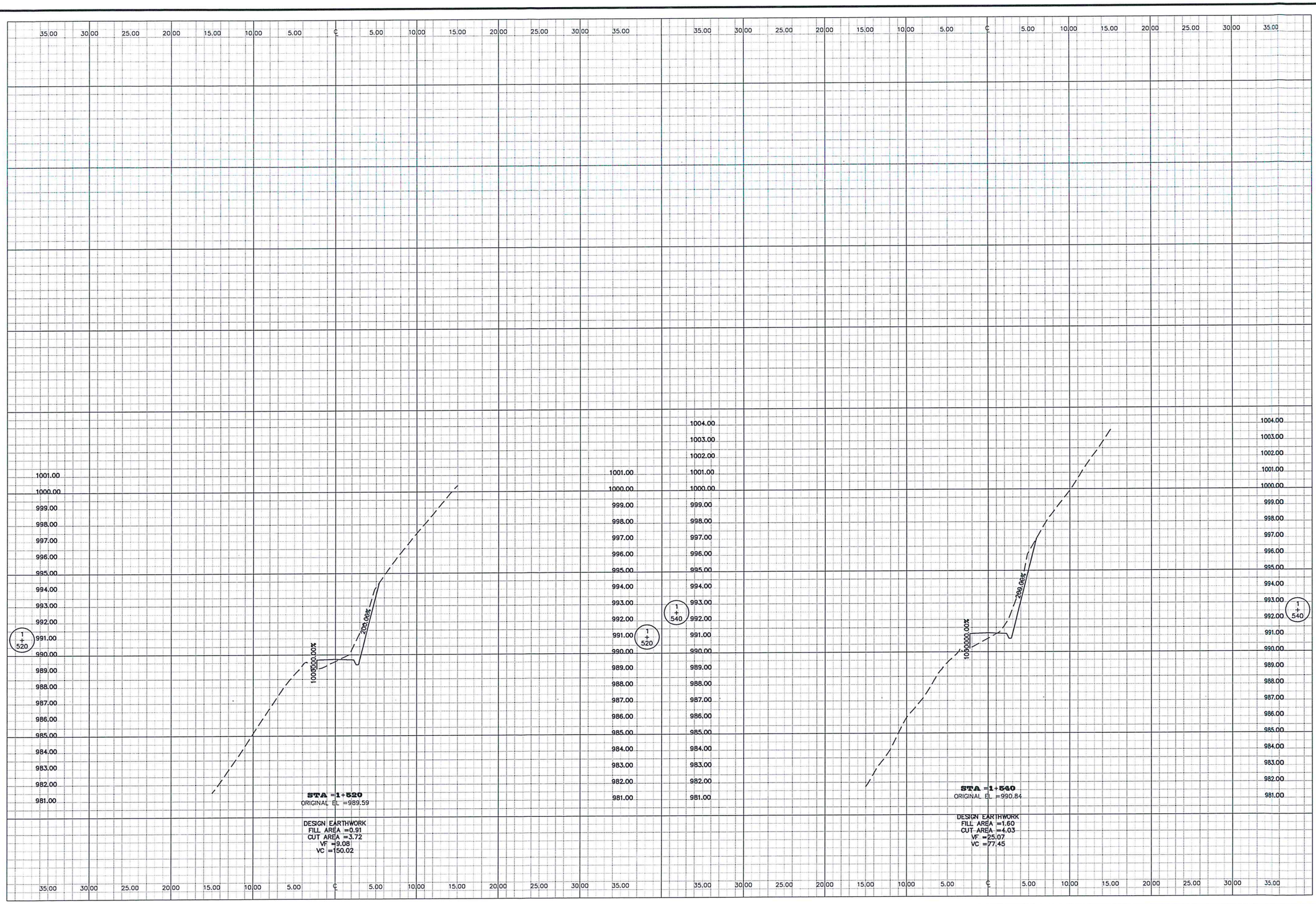

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+520 to Km 1+540

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS126

REV.: 0

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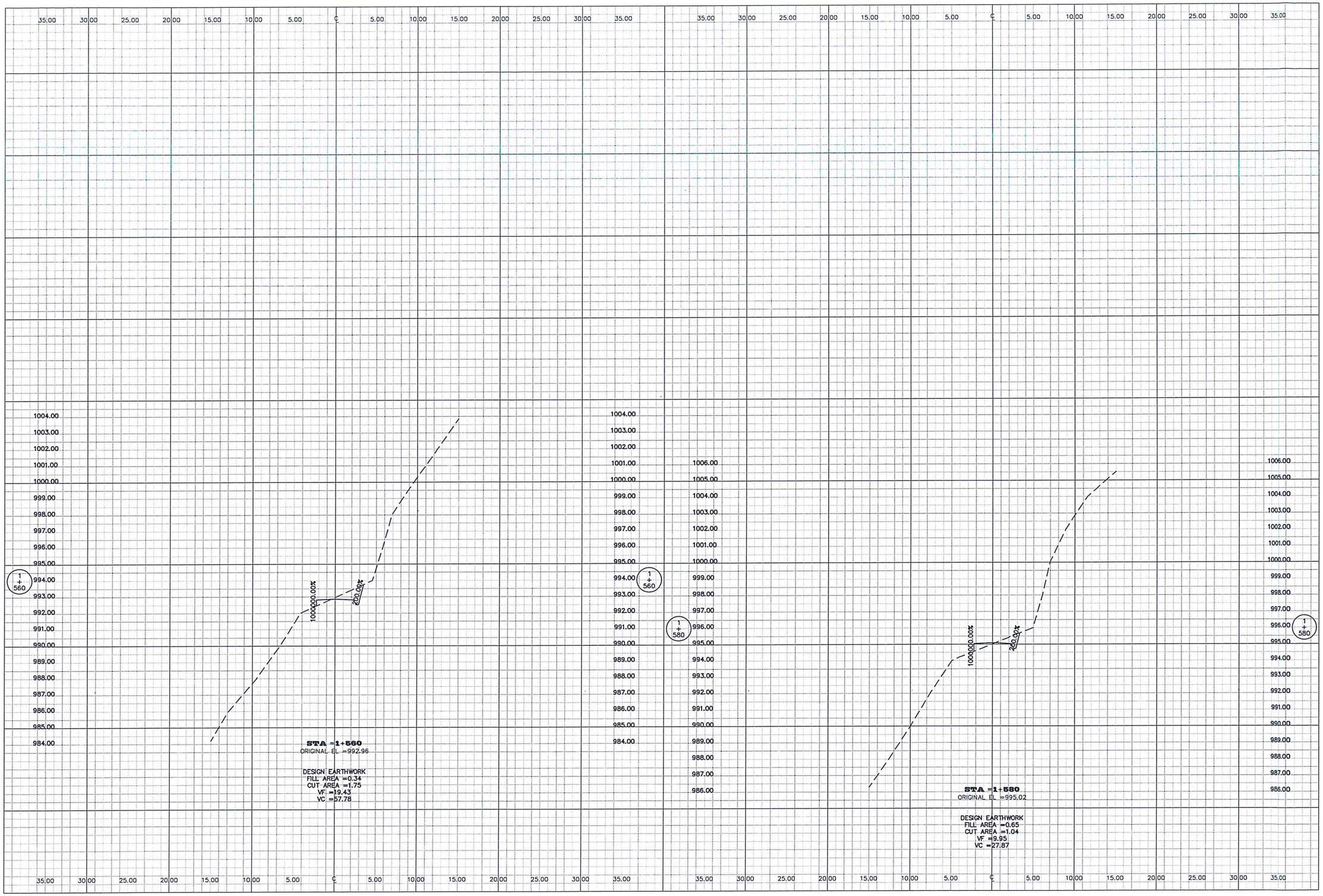

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+560 to Km 1+580

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS127

REV.: 0

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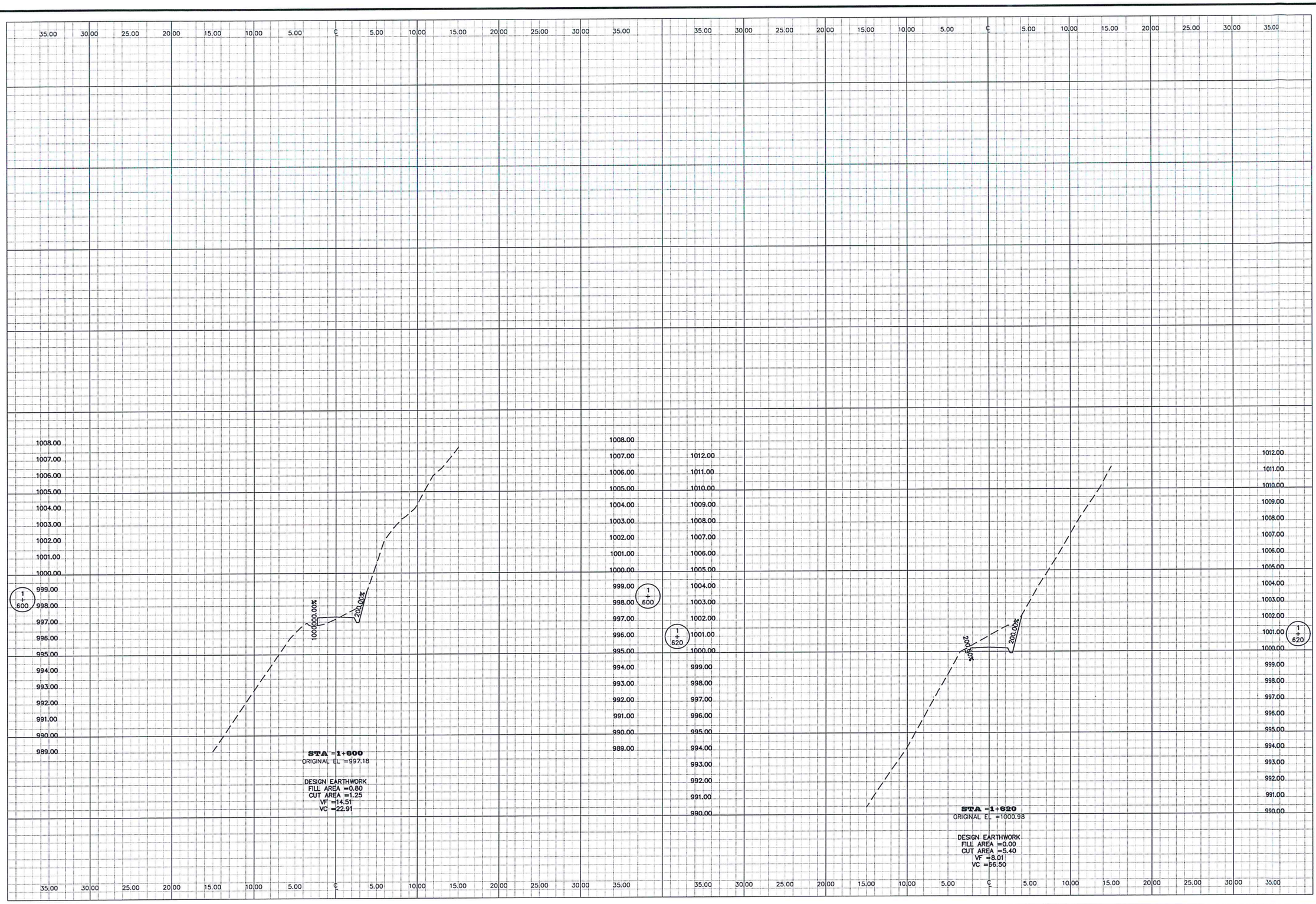

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+600 to Km 1+620

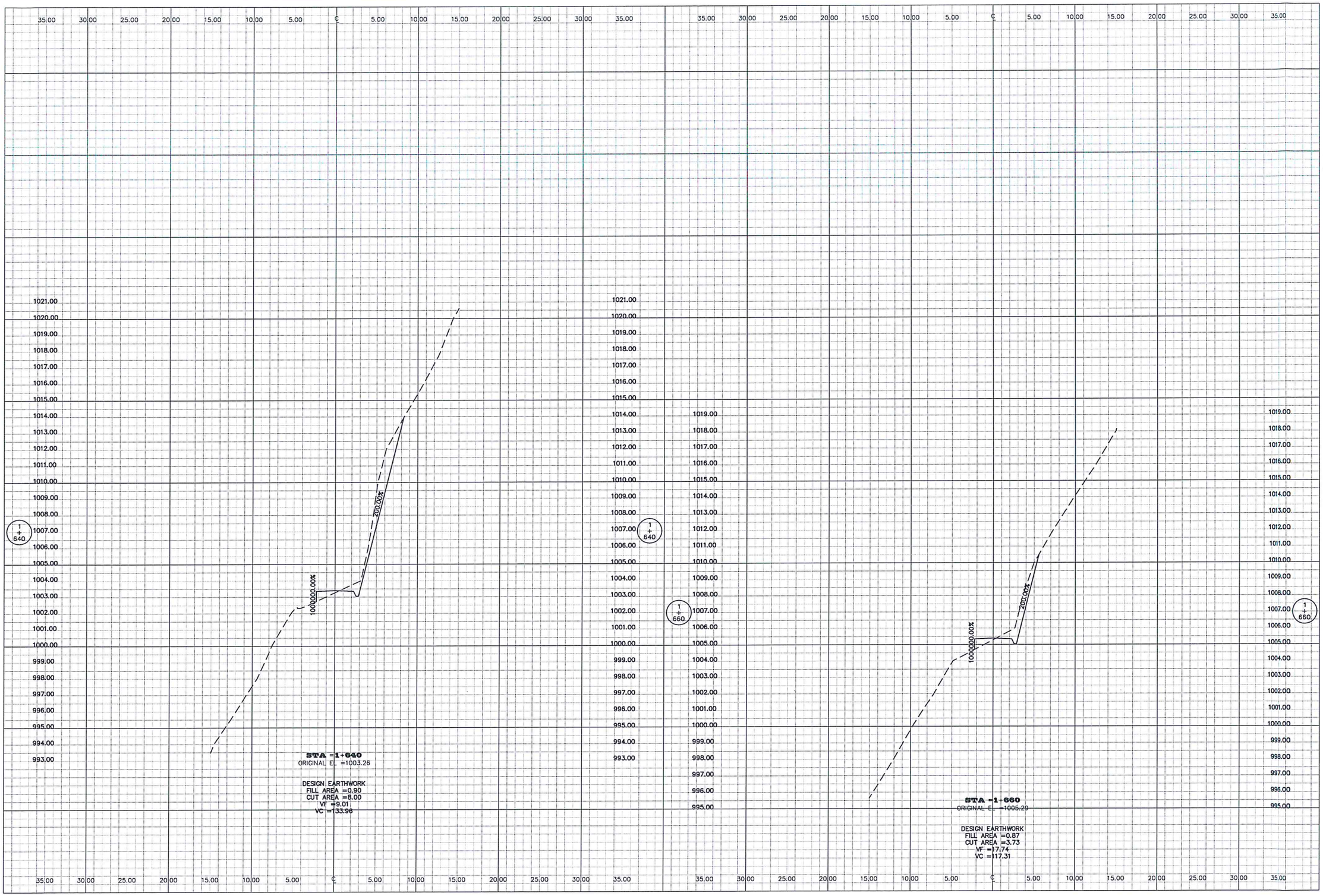
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS128

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc028001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+640 to Km 1+660

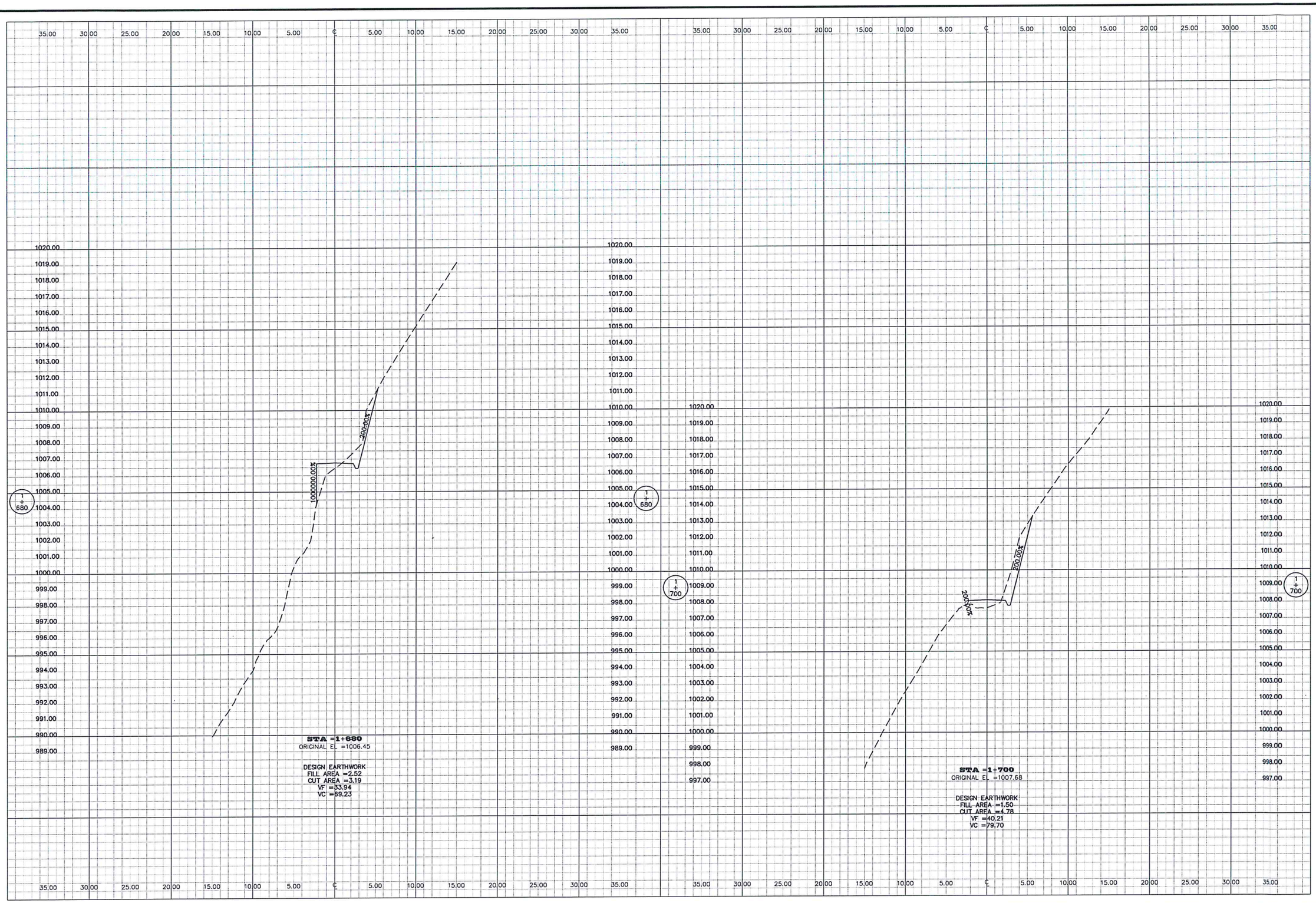
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS129

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc029001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+680 to Km 1+700

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS130

REV.: 0

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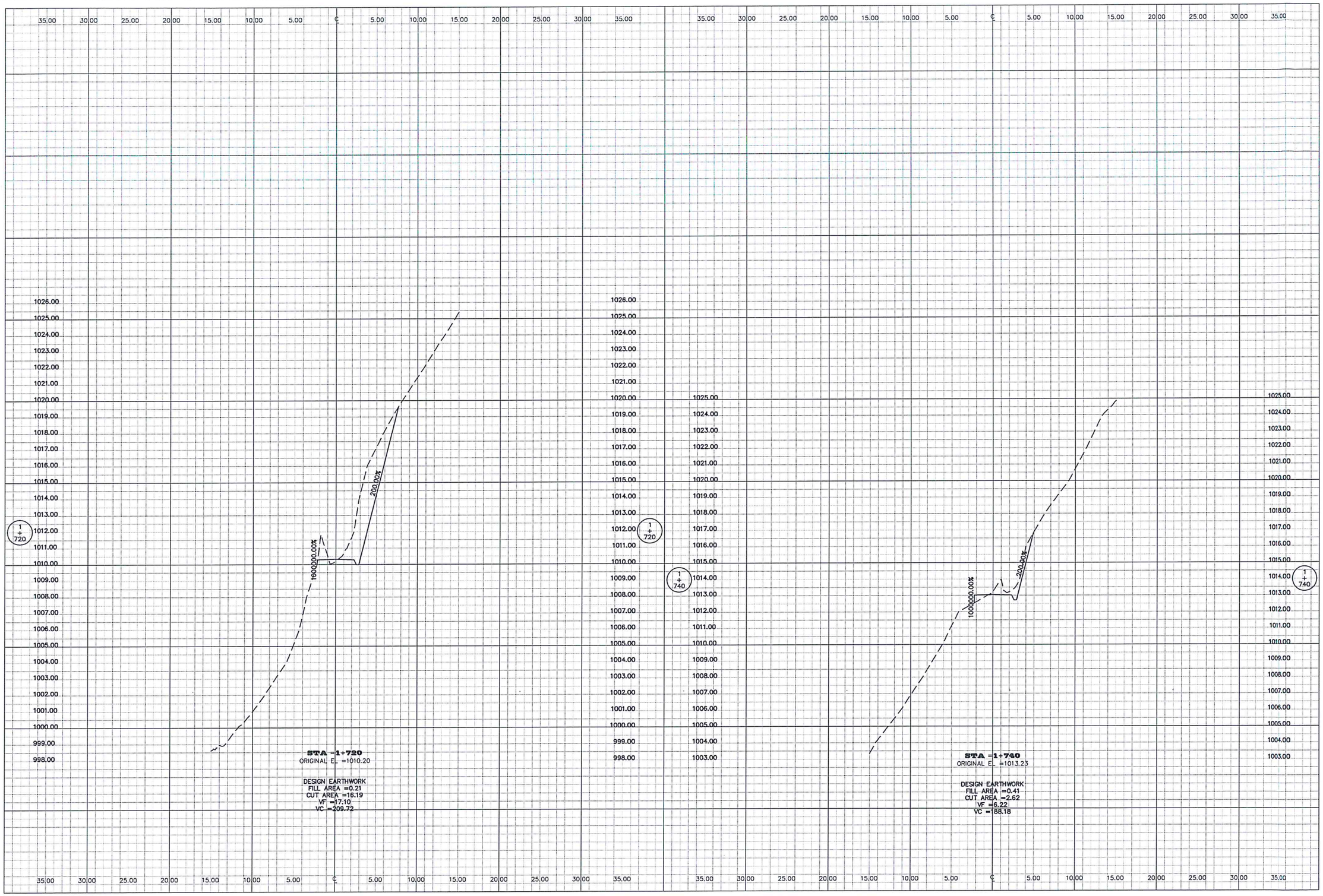

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+720 to Km 1+740

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS131

REV.: 0

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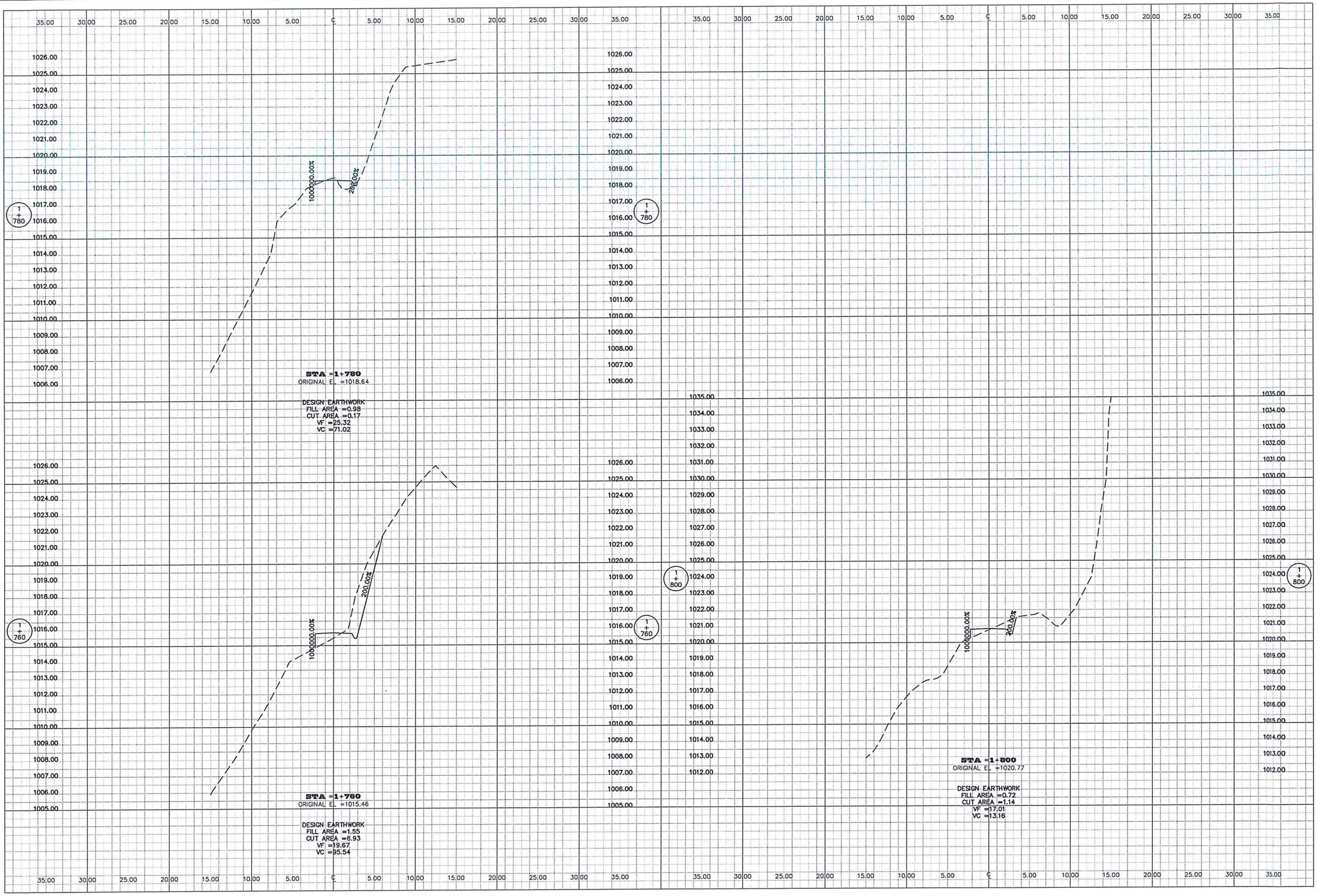

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+760 to Km 1+800

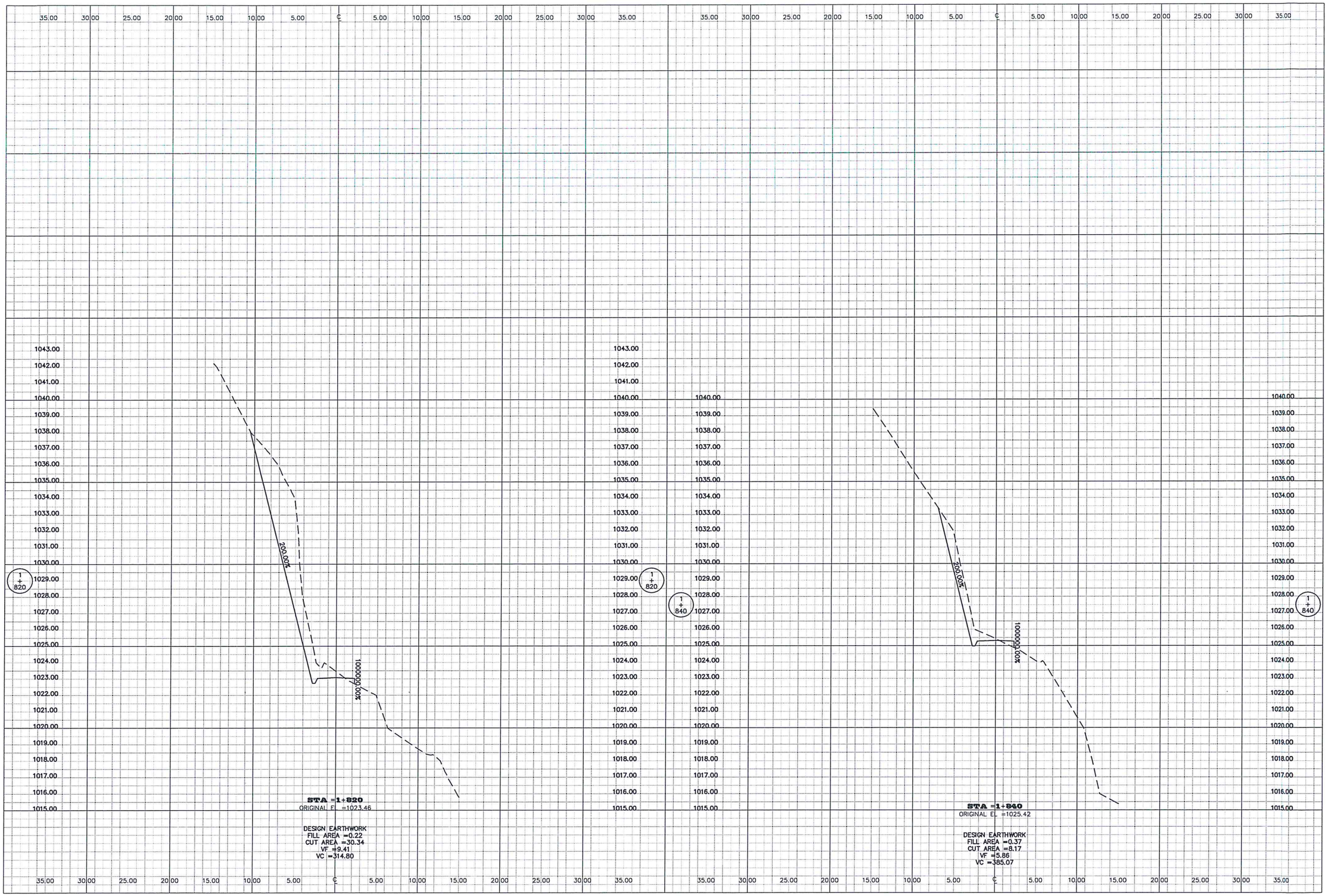
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS132

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc032001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+820 to Km 1+840

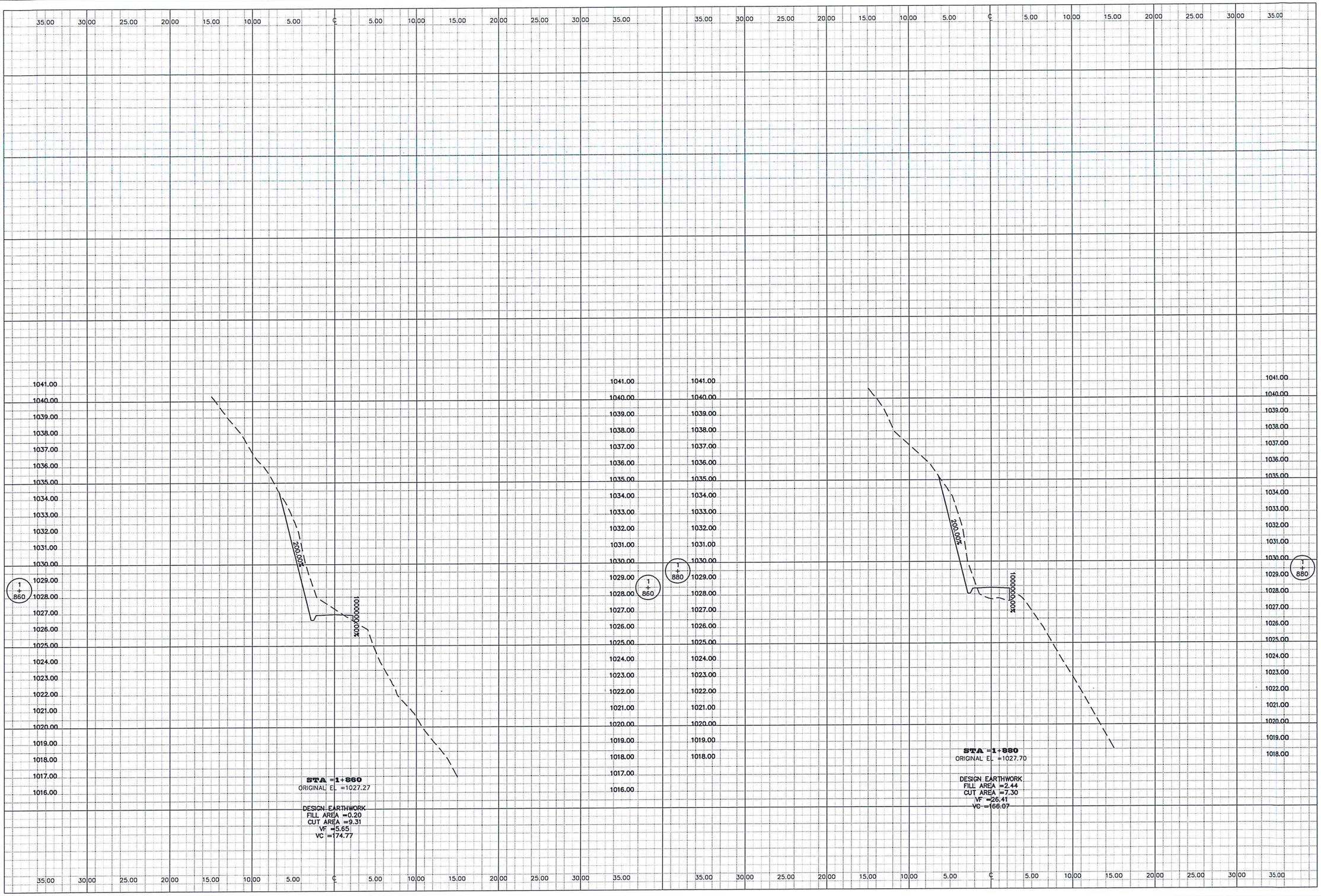
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS133

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc033001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+860 to Km 1+880

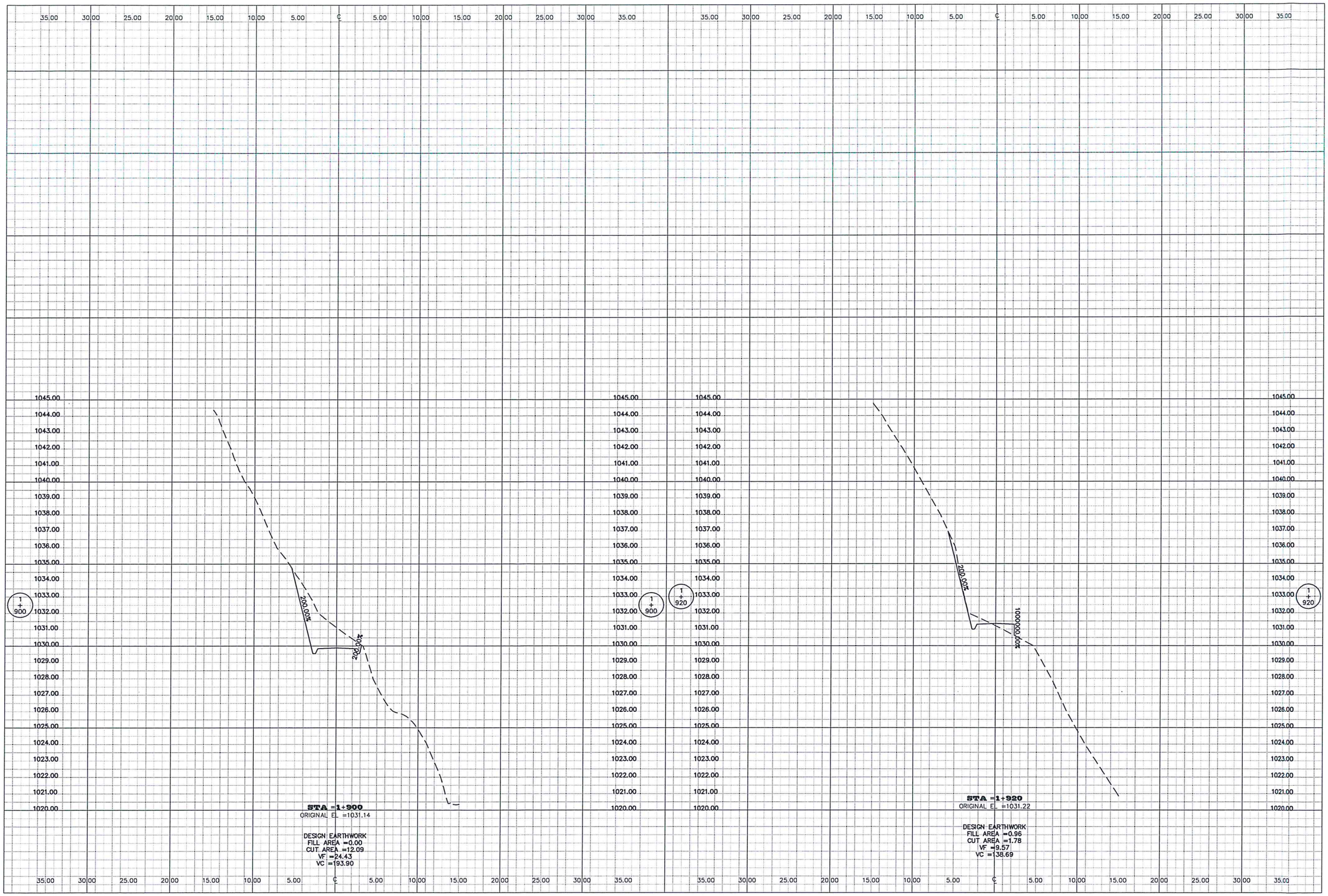
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS134

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc034001.dwg,



CLIENT	WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)	CONSULTANT	NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+900 to Km 1+920

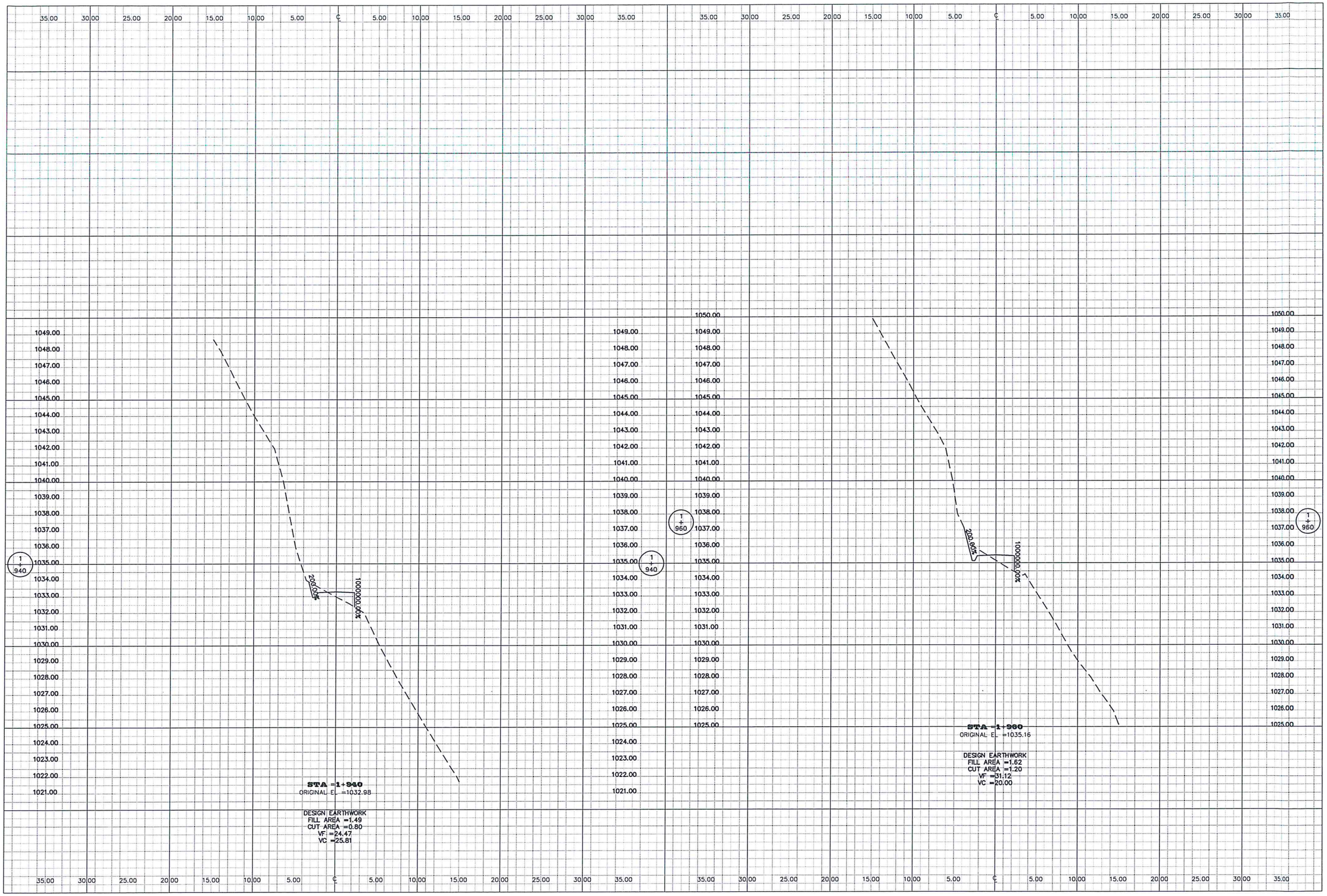
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS135

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc035001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+940 to Km 1+960

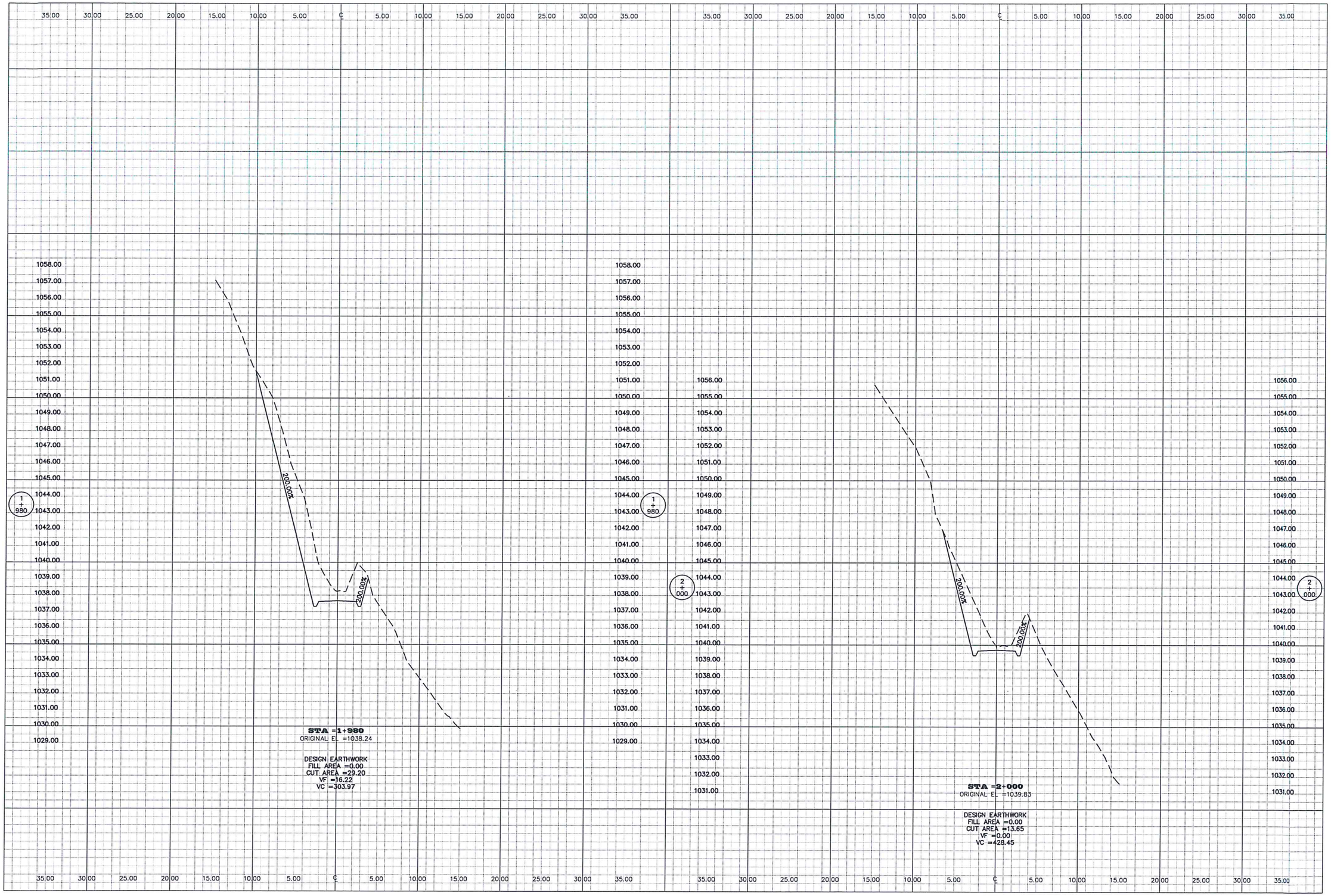
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS136

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc036001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 1+980 to Km 2+000

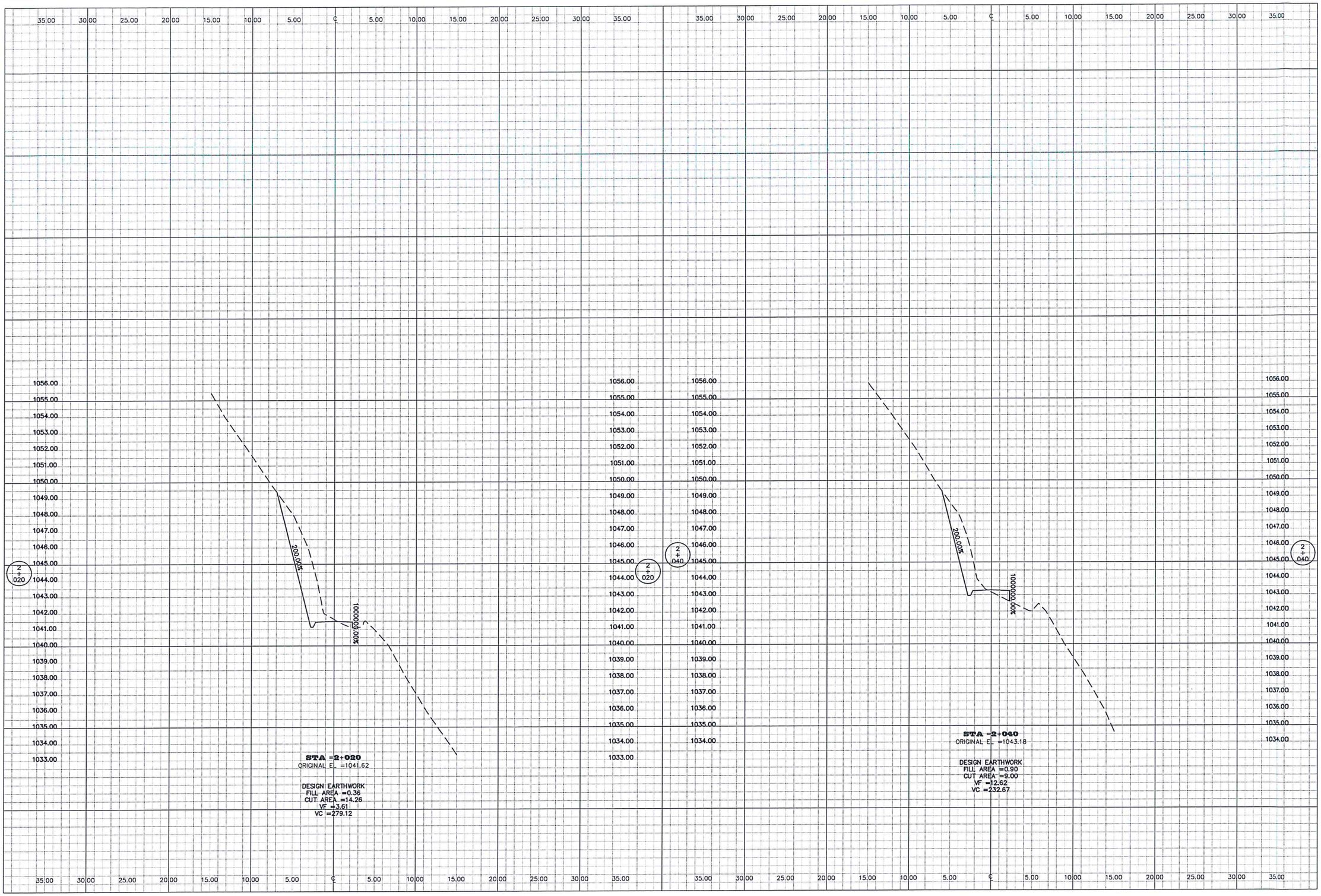
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS137

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc037001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
02			
01			

DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 2+020 to Km 2+040

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS138

REV.: 0

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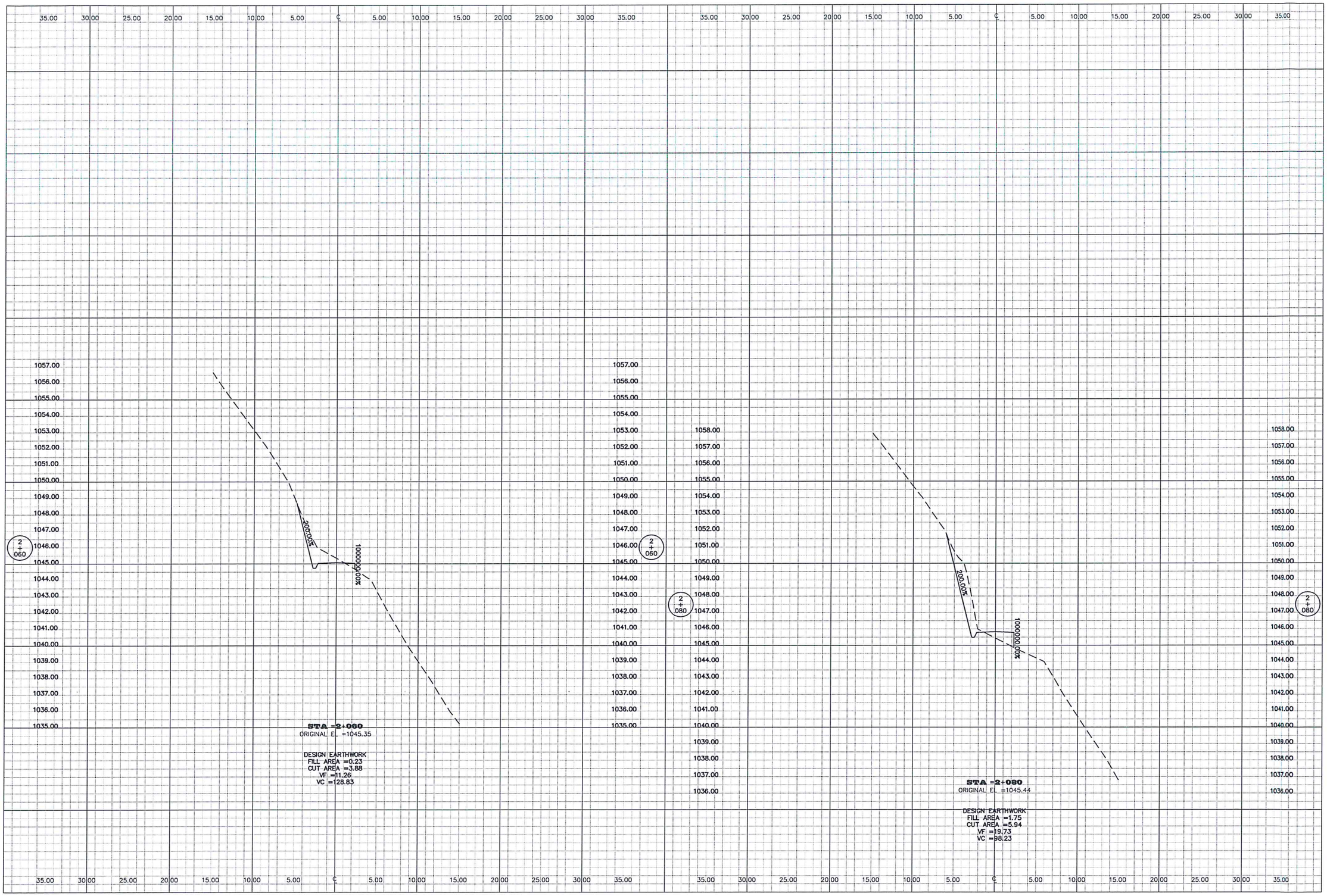

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
02			
01			

DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 2+060 to Km 2+080

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS139

REV.: 0

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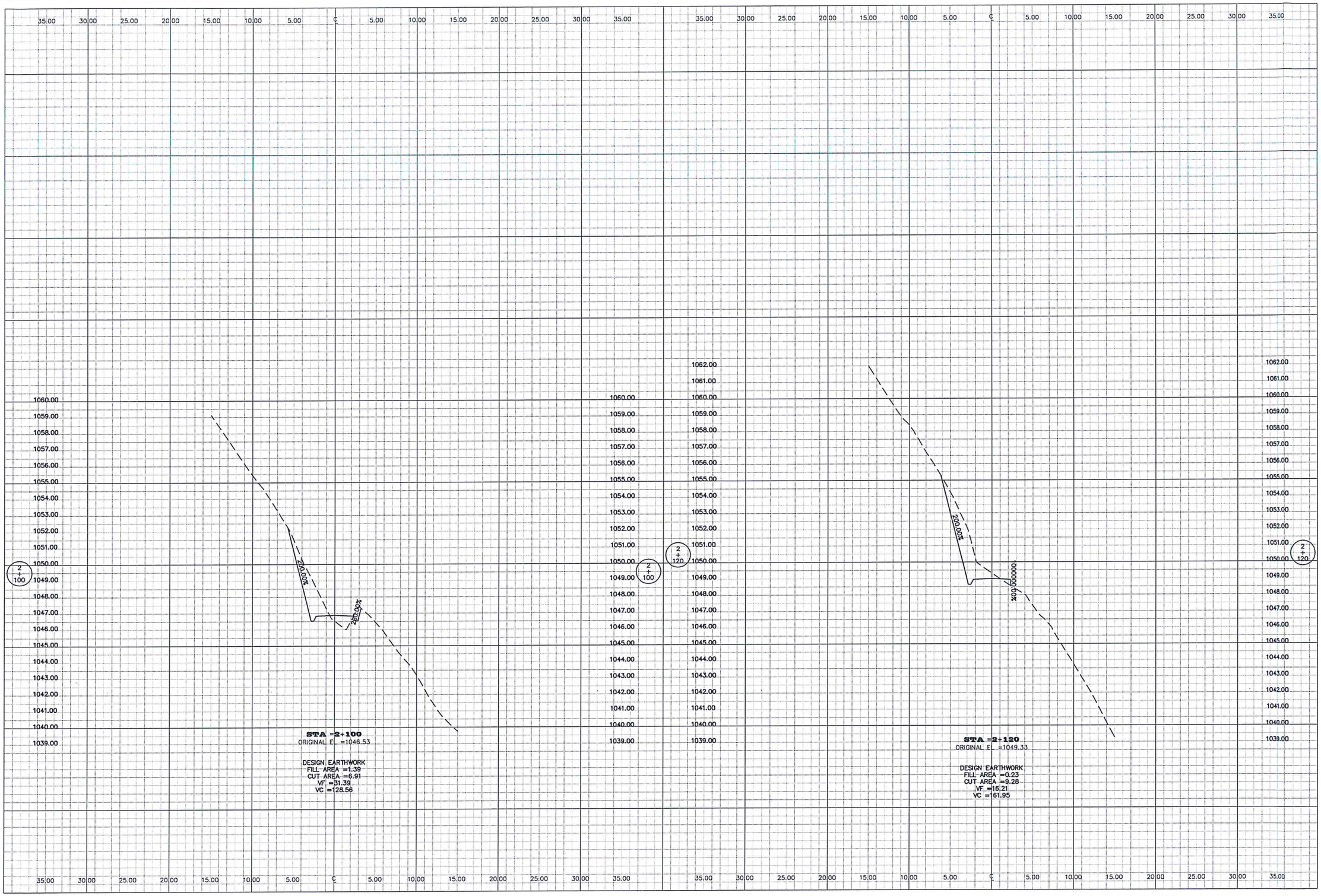

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
02			
01			

DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 2+100 to Km 2+120

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS140

REV.: 0

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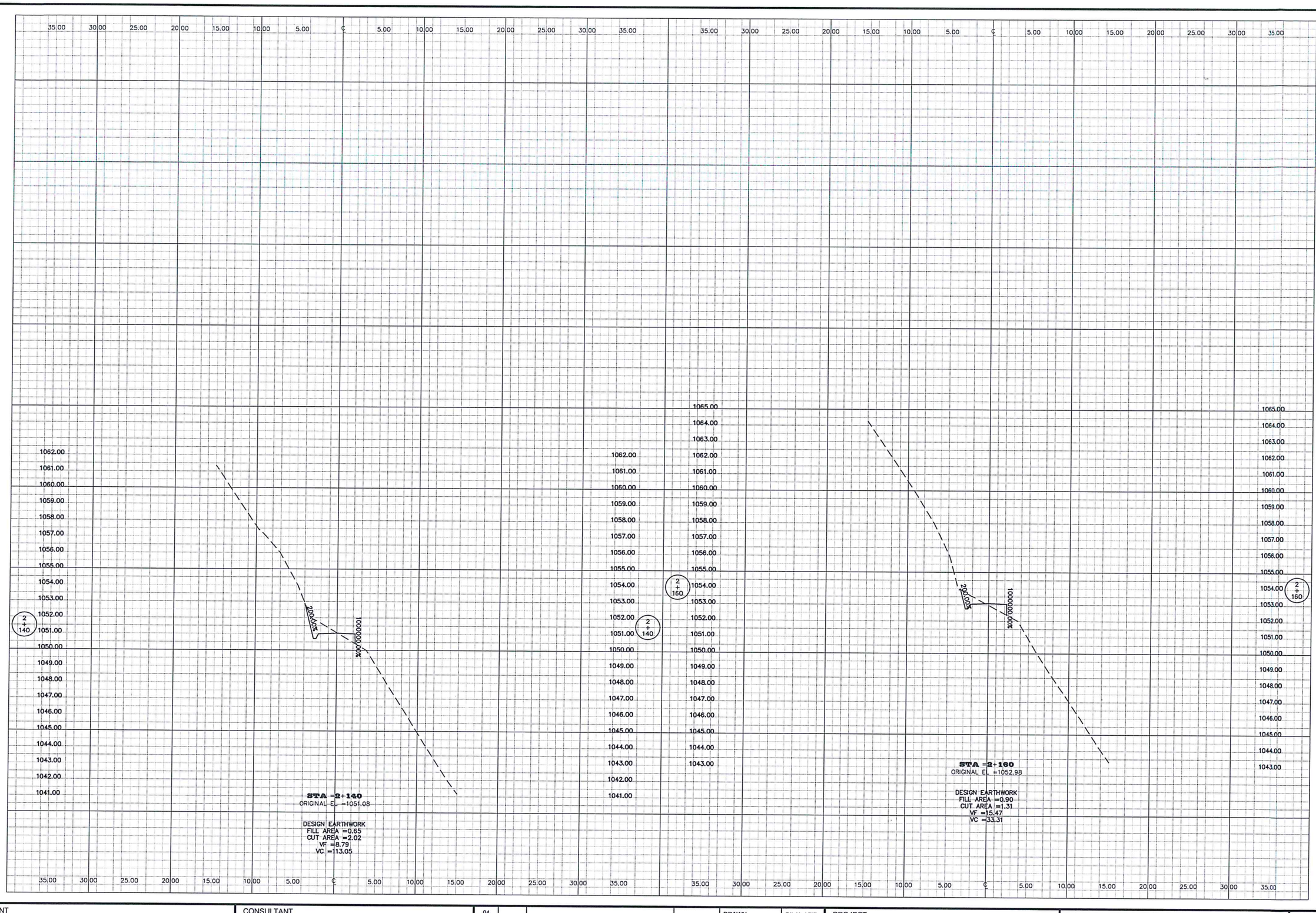

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 2+140 to Km 2+160

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS141

REV.: 0

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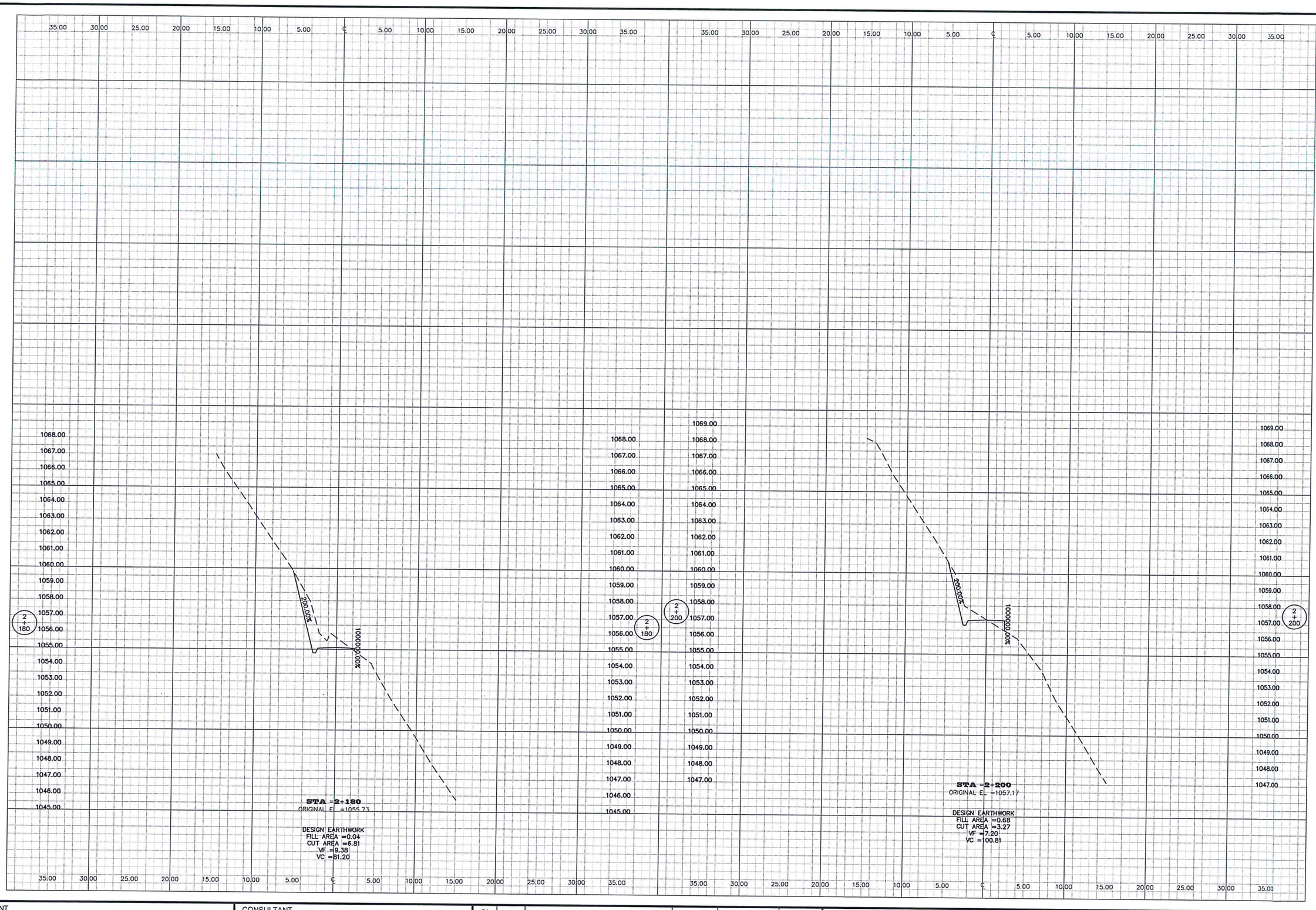


CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED	
04				DRAWN: BILAL AZIZ
03				SUBMITTED:
02				RECOMMENDED:
01				CHD./VER.:
				APPROVED:

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 2+180 to Km 2+200

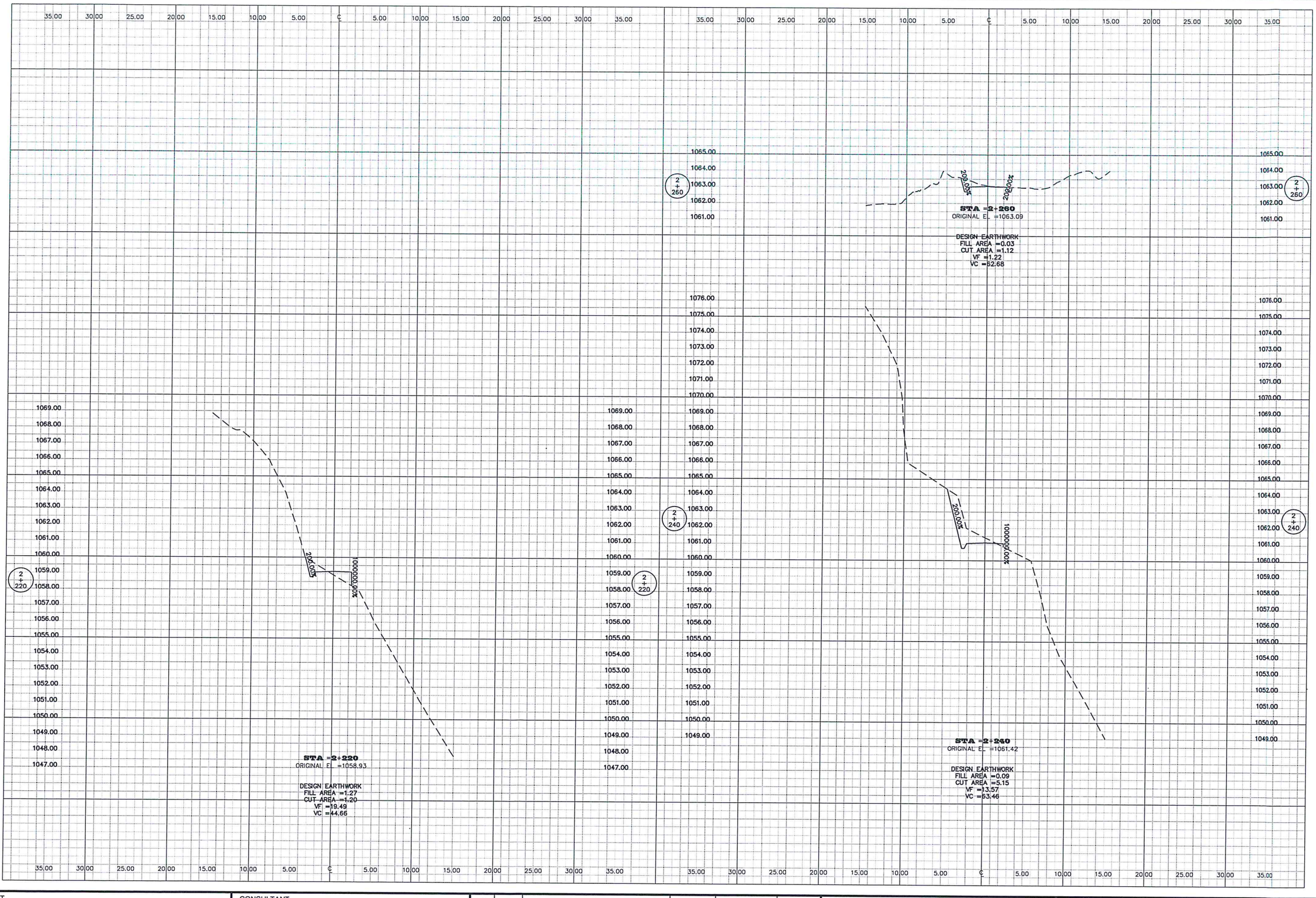
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS142

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc042001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 2+220 to Km 2+260

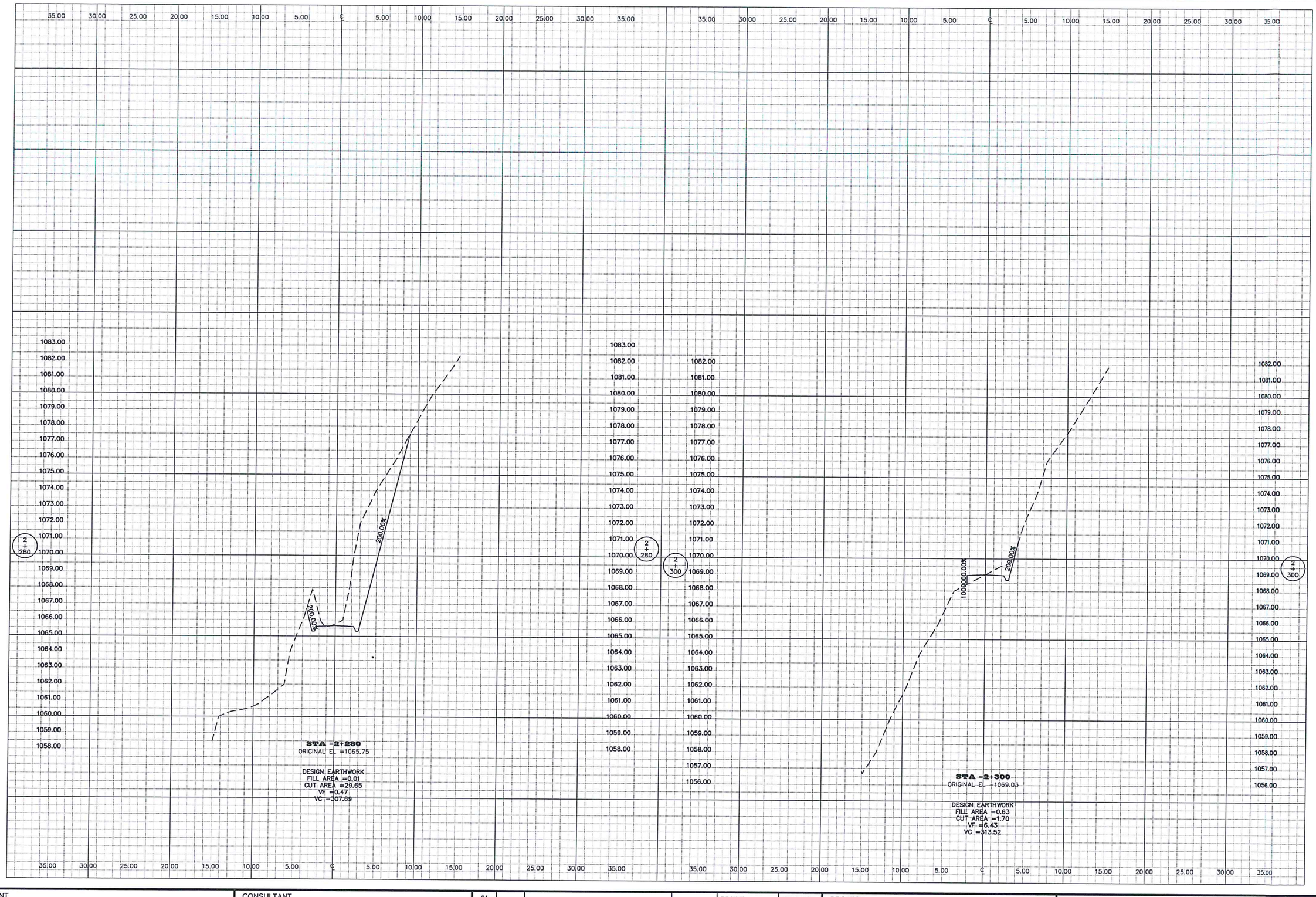
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS143

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc043001.dwg.



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 2+280 to Km 2+300

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS144

REV.: 0

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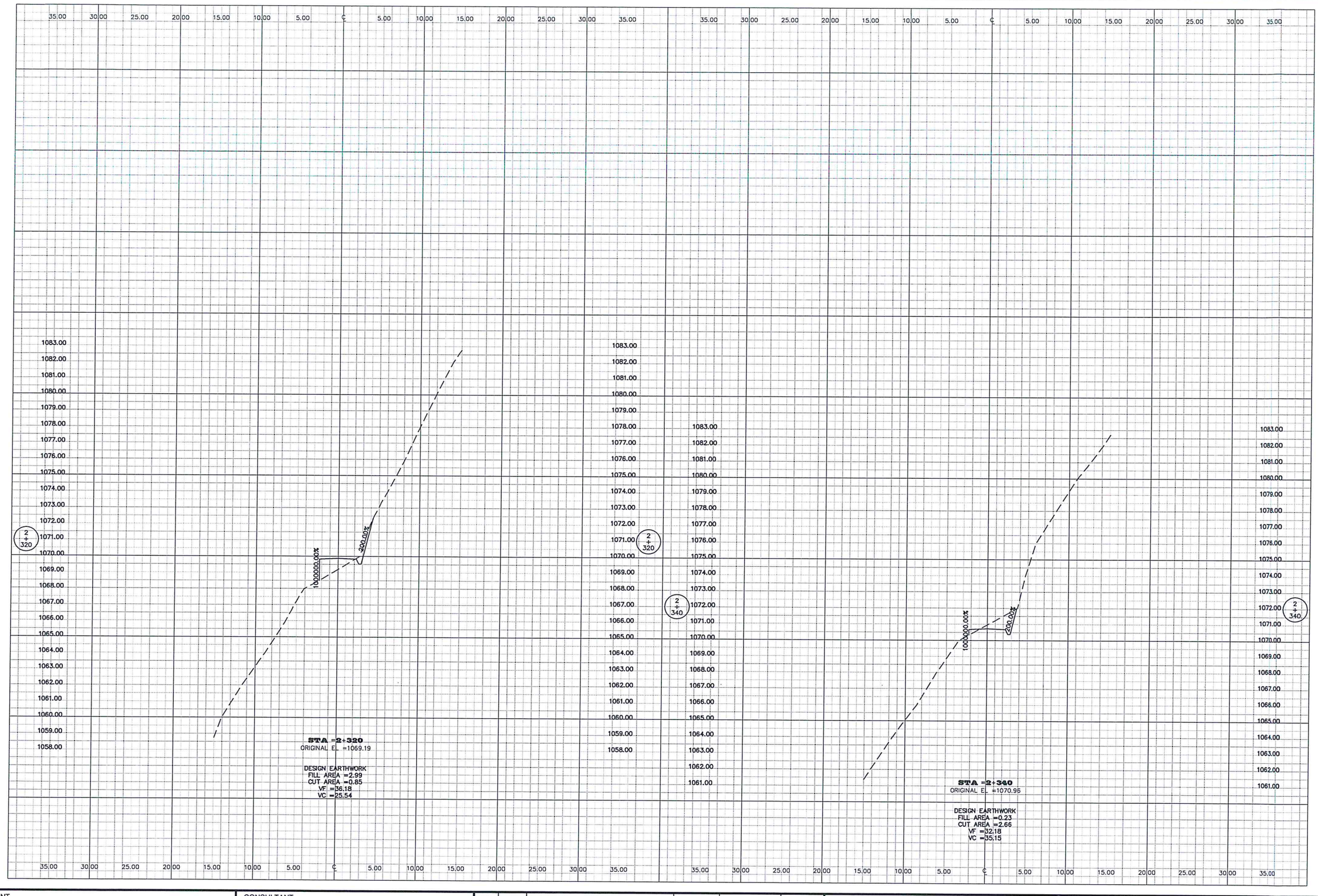

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 2+320 to Km 2+340

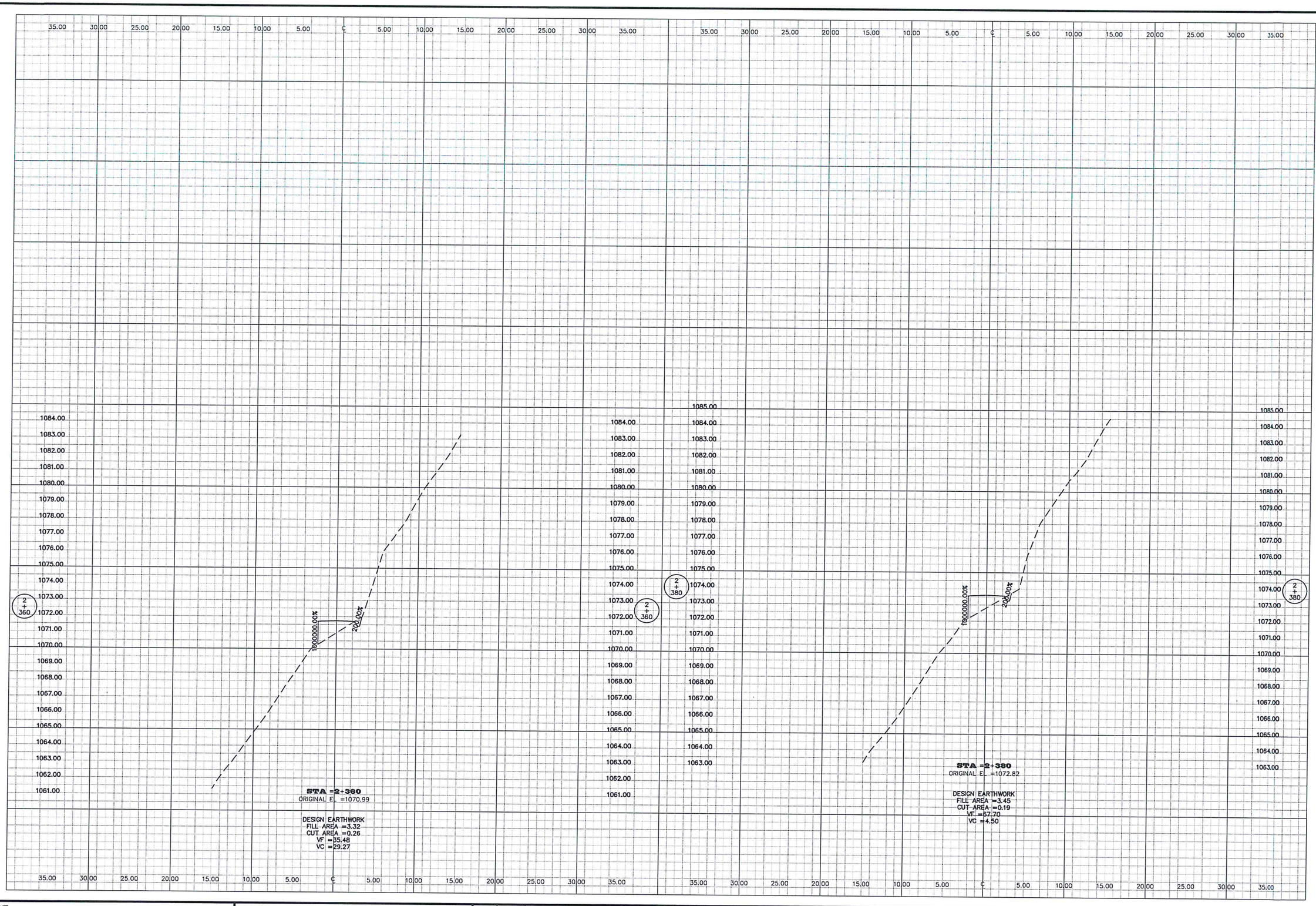
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS145

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc045001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 2+360 to Km 2+380

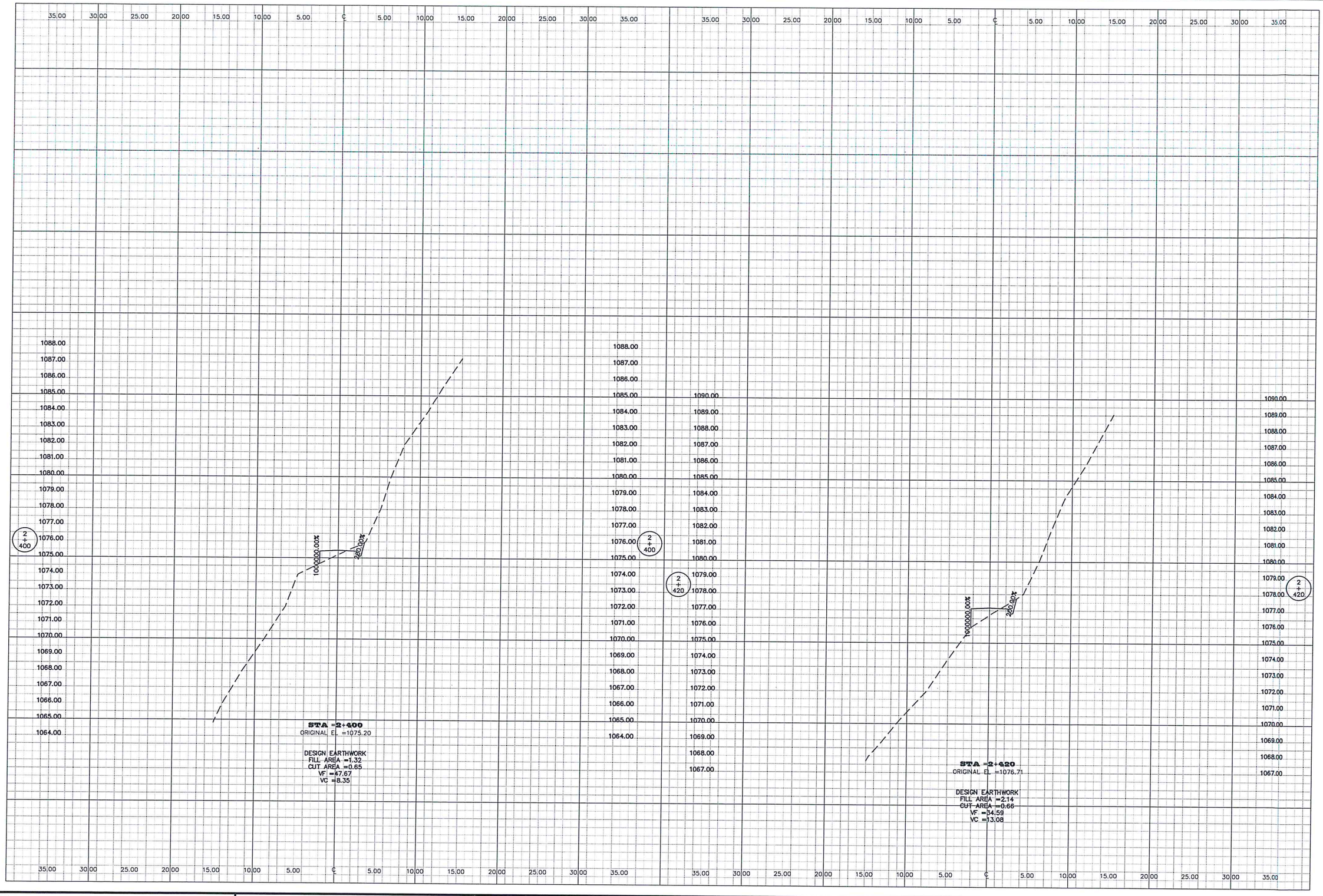
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS146

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc046001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 2+400 to Km 2+420

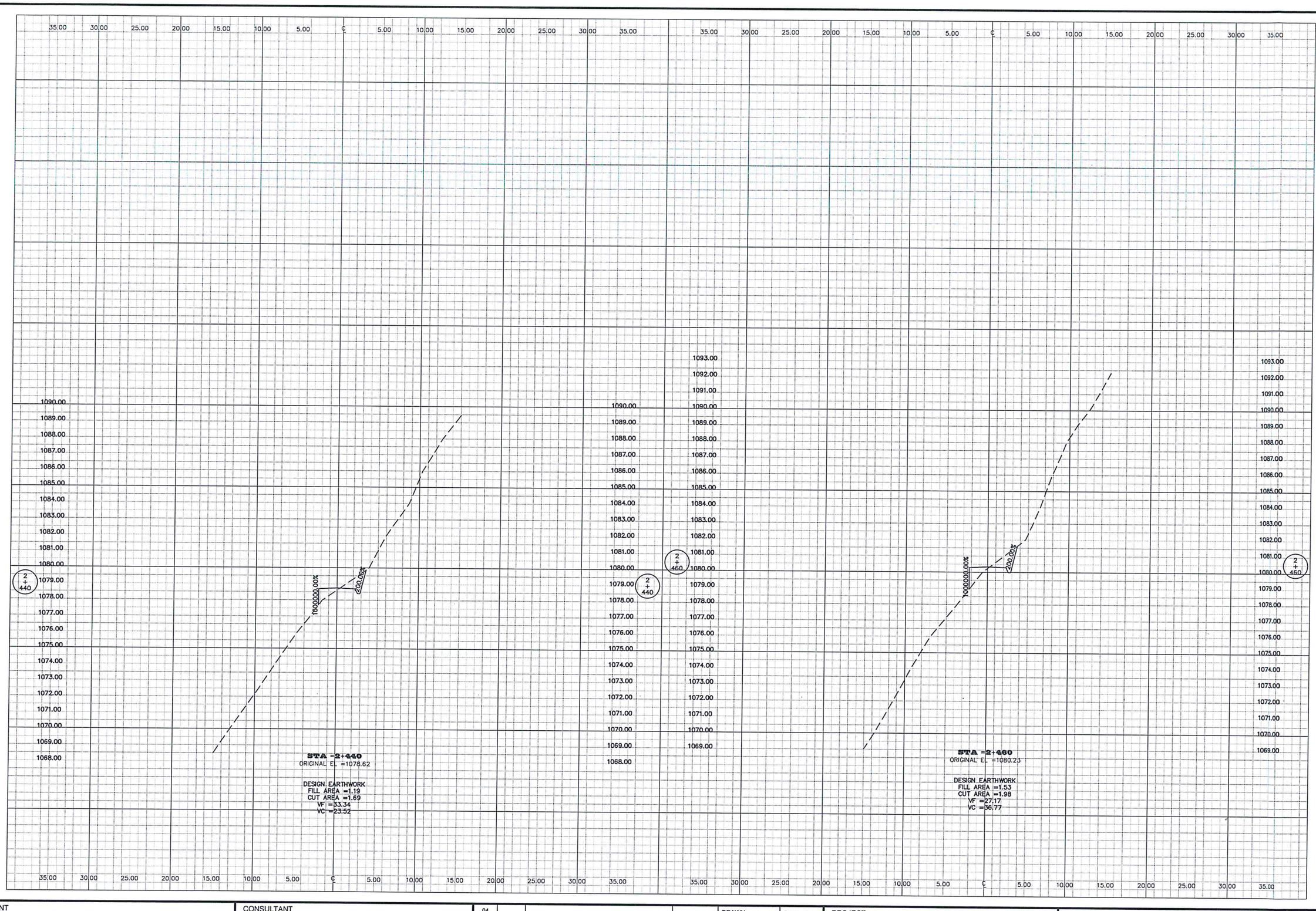
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS147

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc047001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NESPAK — NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 2+440 to Km 2+460

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS148

REV.: 0

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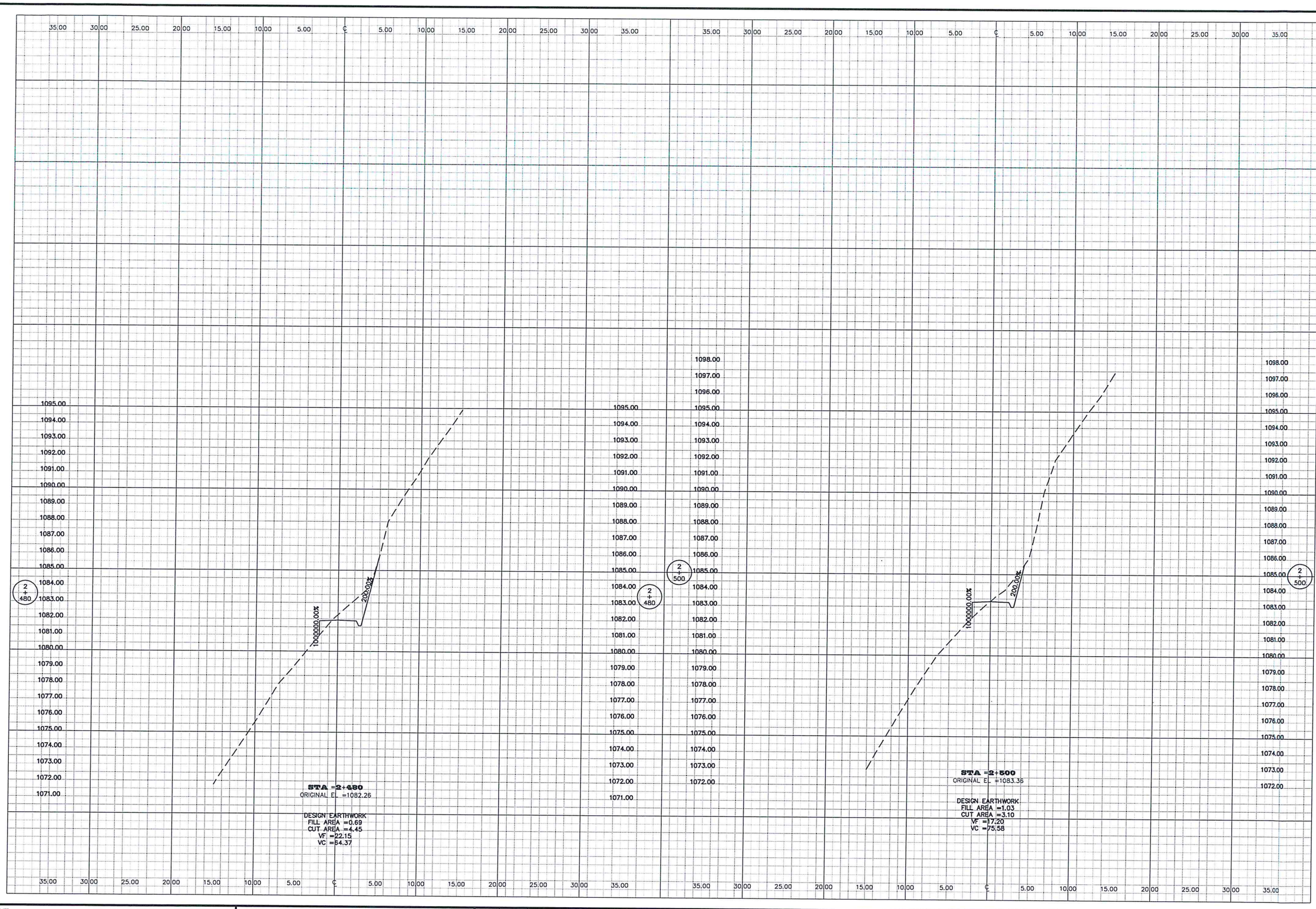

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 2+480 to Km 2+500

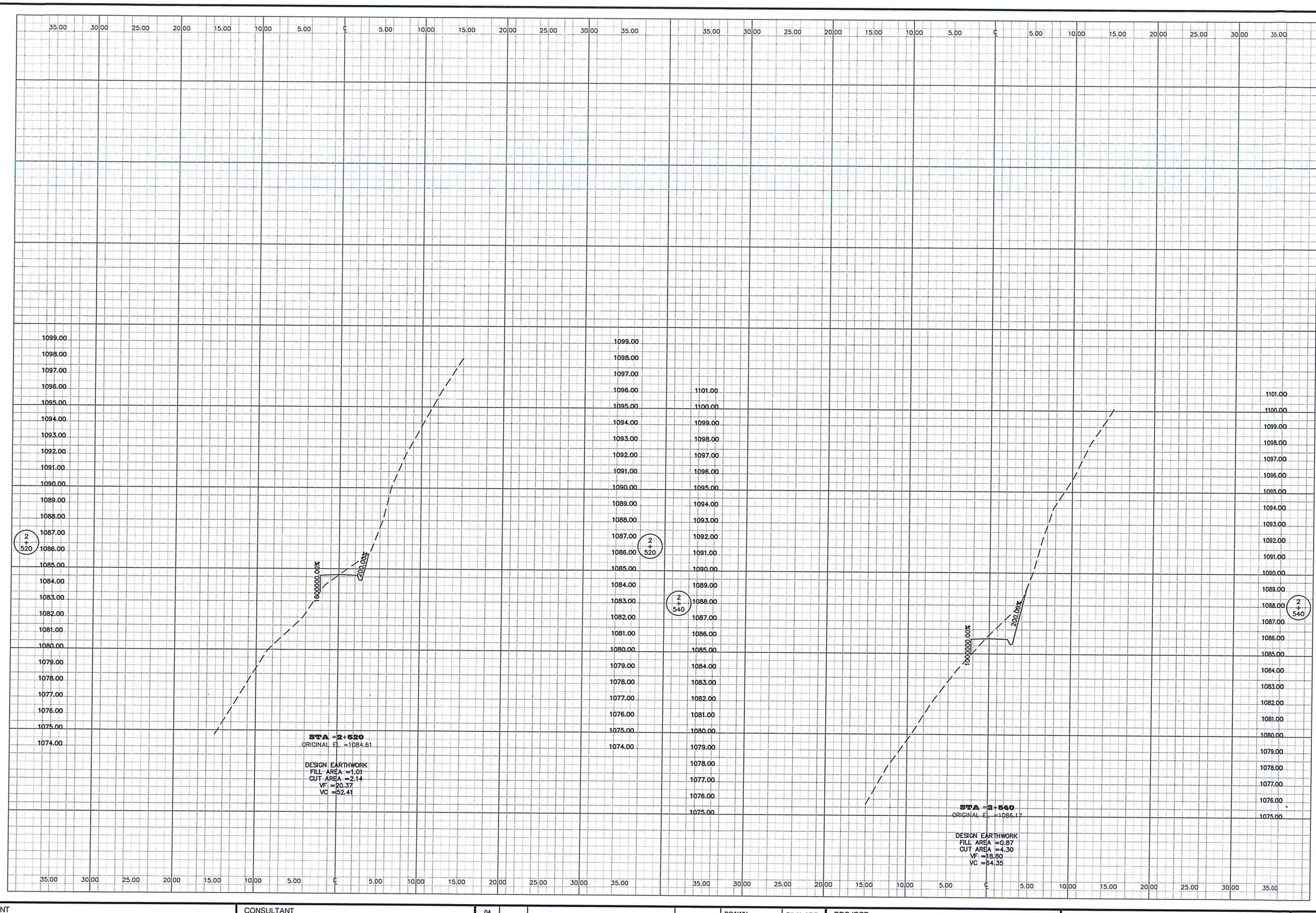
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS149

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc049001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 2+520 to Km 2+540

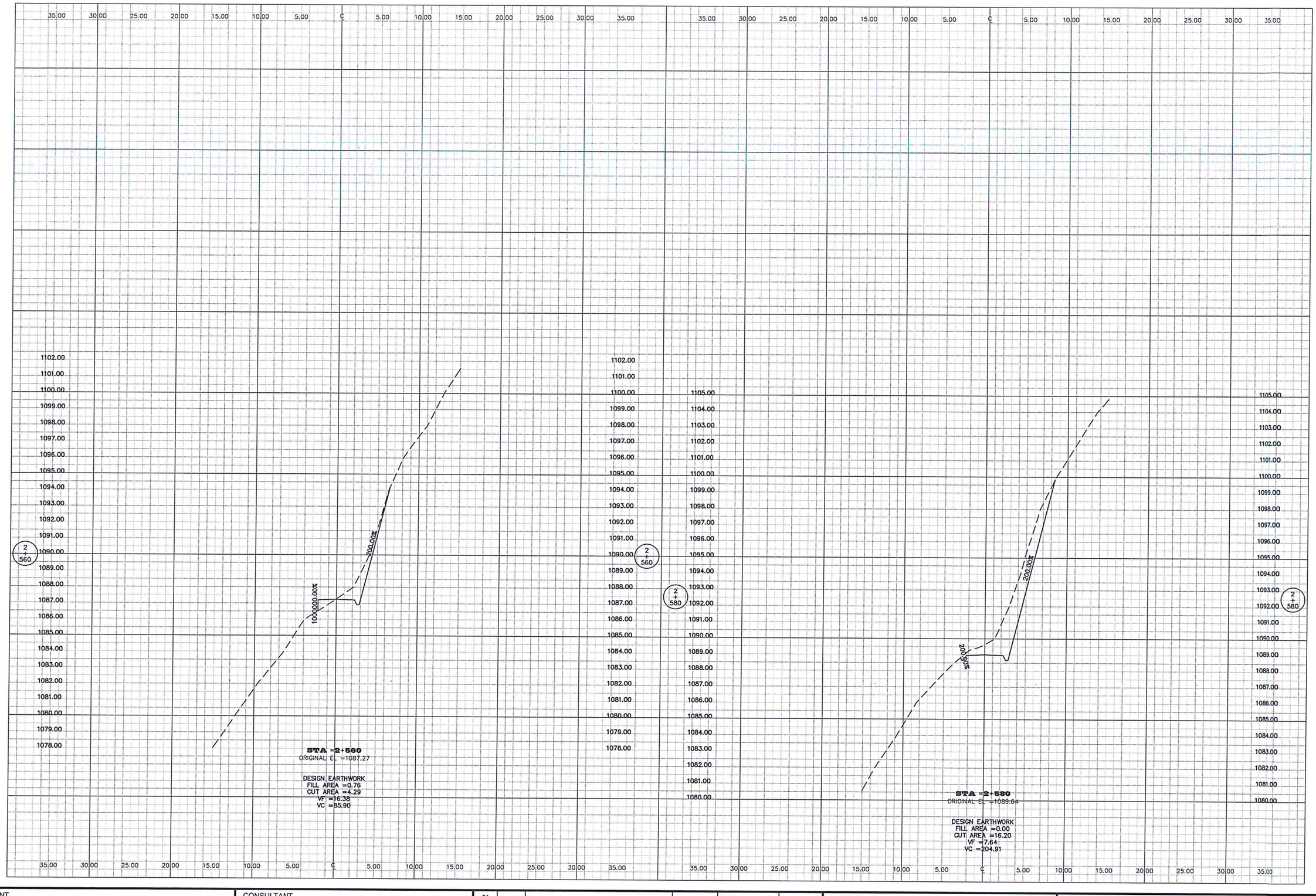
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS150

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc050001.dwg.



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION		
04				DRAWN: BILAL AZIZ
03				SUBMITTED:
02				RECOMMENDED:
01				CHD./VER.:
			APPROVED	APPROVED:

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 2+560 to Km 2+580

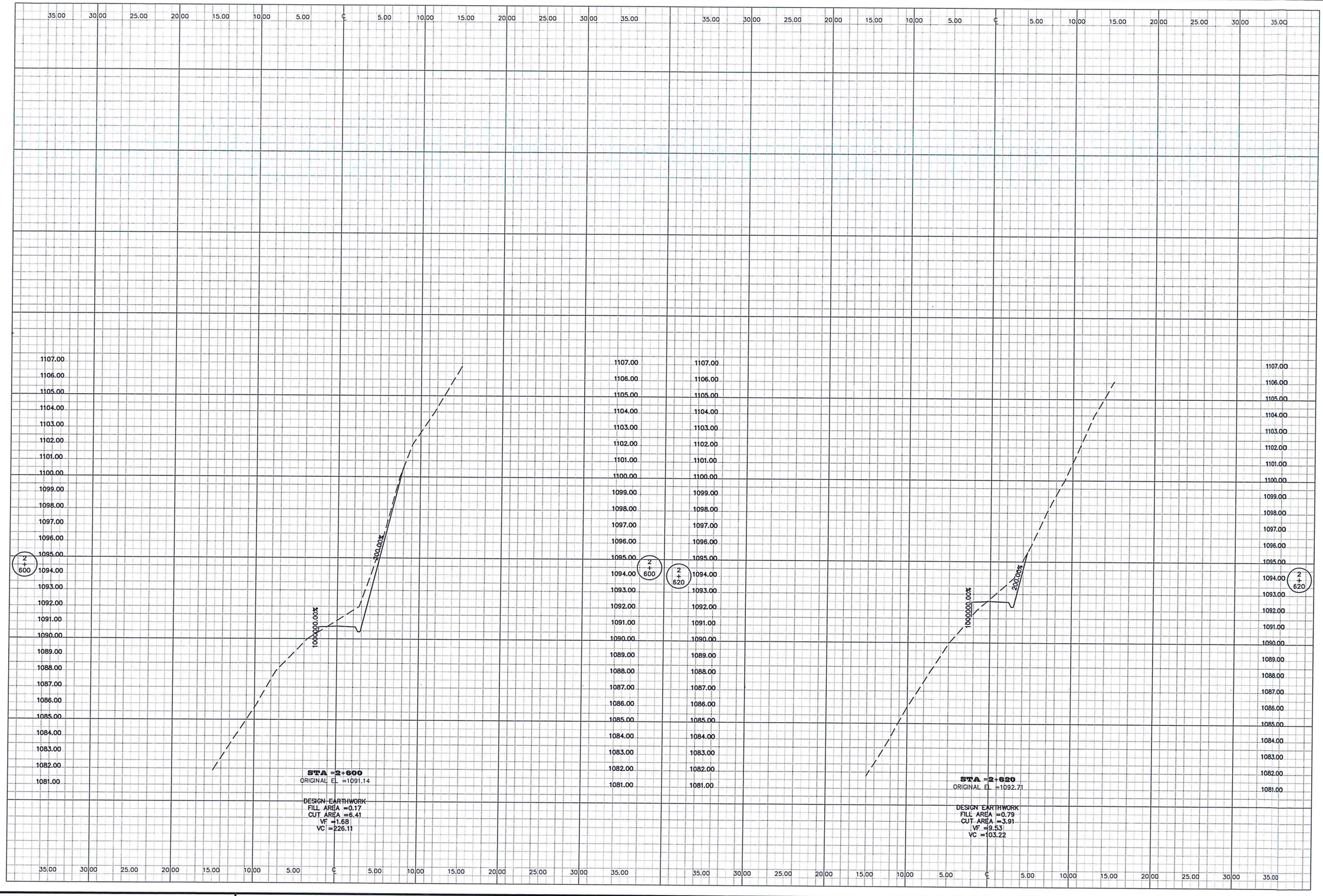
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS151

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc051001.dwg.



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 2+600 to Km 2+620

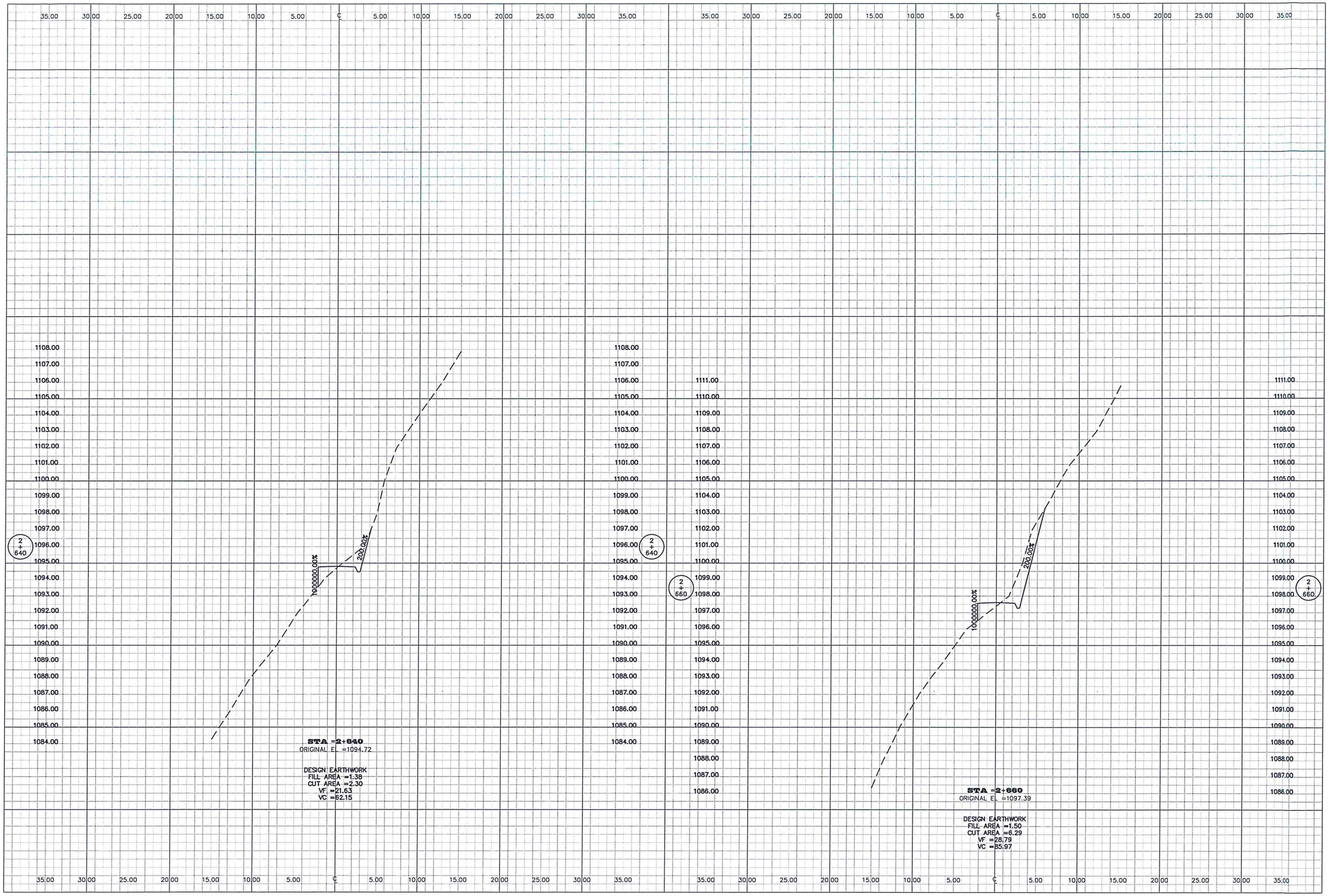
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS152

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc052001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 2+640 to Km 2+660

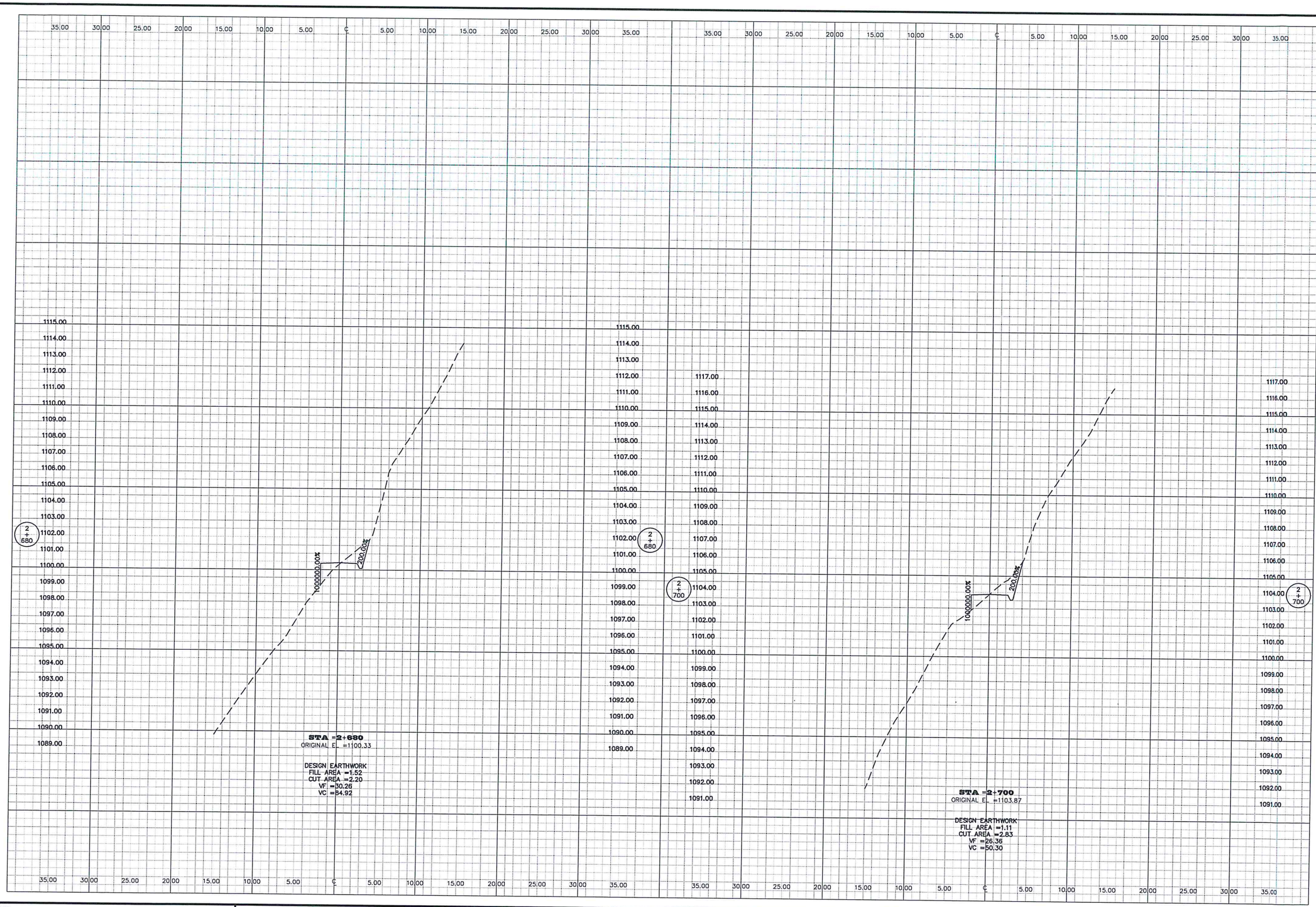
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS153

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc053001.dwg,



CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
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DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 2+680 to Km 2+700

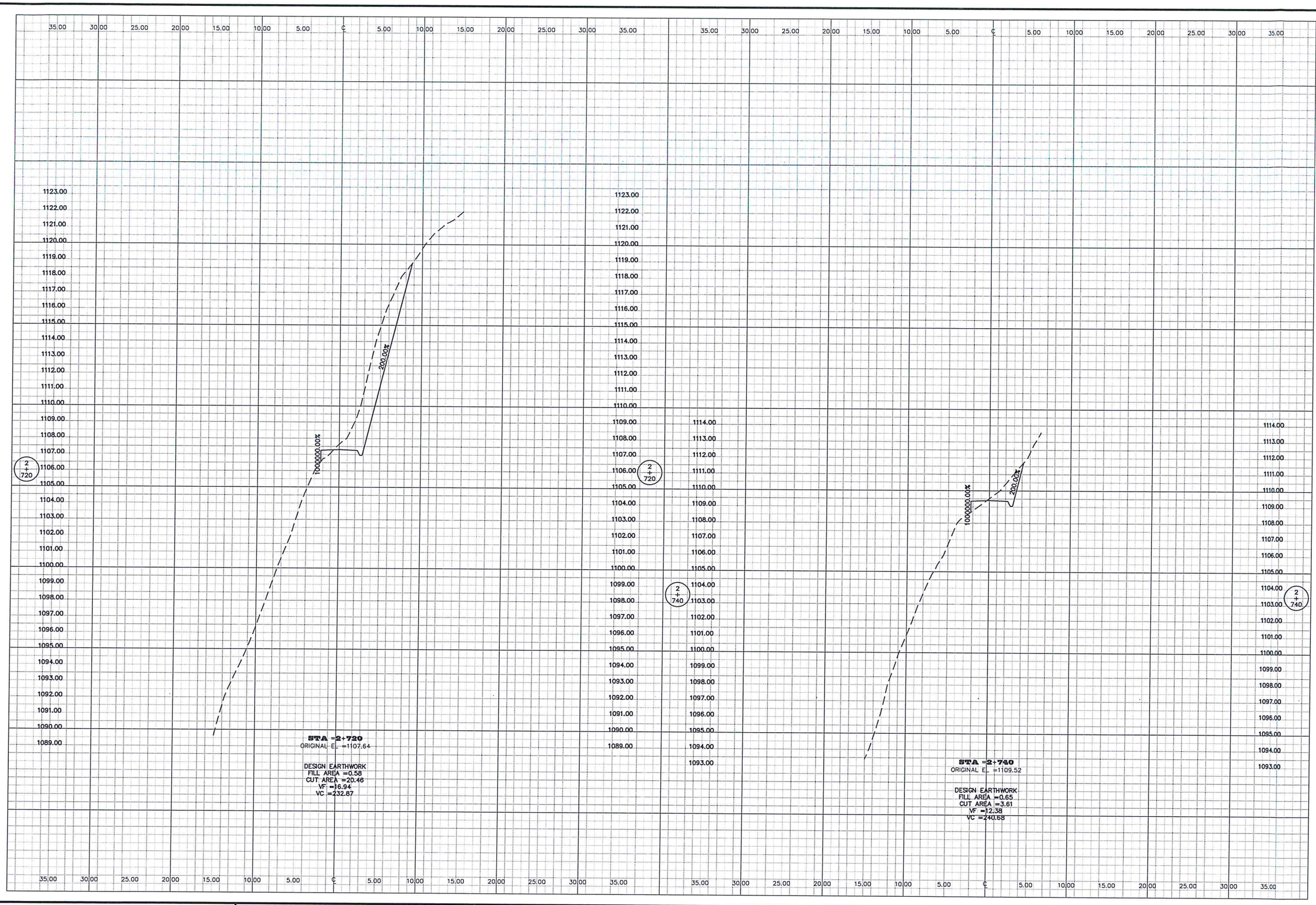
SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS154

REV.: 0

BILAL E:\LADP PROJECTS\TAYAL ROAD\X-SECTIONS FOR EARTH WORK (04-09-2024)\rc054001.dwg,



CLIENT	WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)	CONSULTANT	NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED		
04				DRAWN	BILAL AZIZ
03				SUBMITTED	
02				RECOMMENDED	
01				CHD./VER.	
				APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 2+720 to Km 2+740

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS155

REV.: 0

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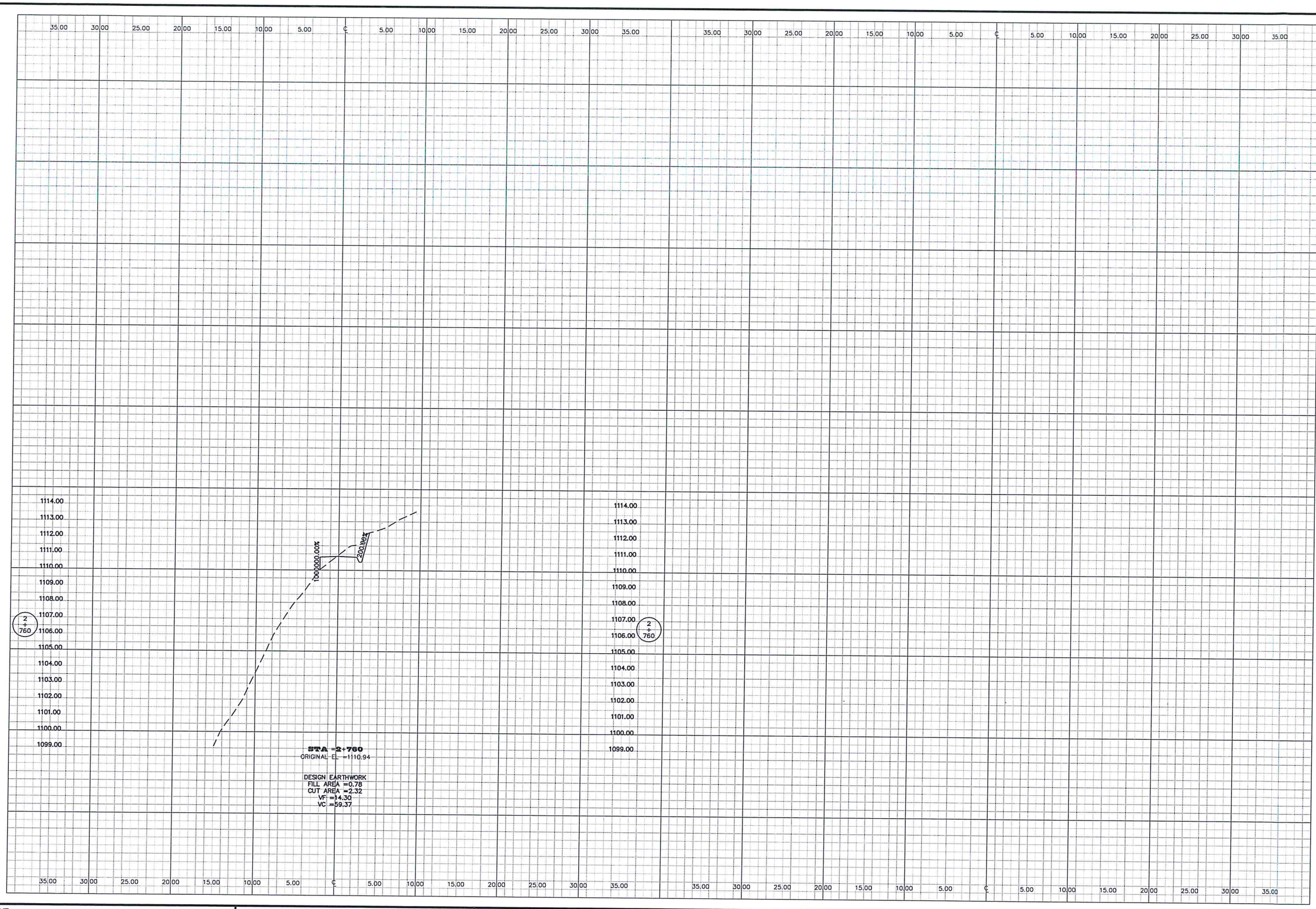

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
02			
01			

DRAWN	BILAL AZIZ
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

X-SECTIONS
From Km 2+760 to Km 2+773.31

SCALE

DATE: SEPTEMBER, 2024

DRAWING No.: 4520/102/TD/XS156

REV.: 0

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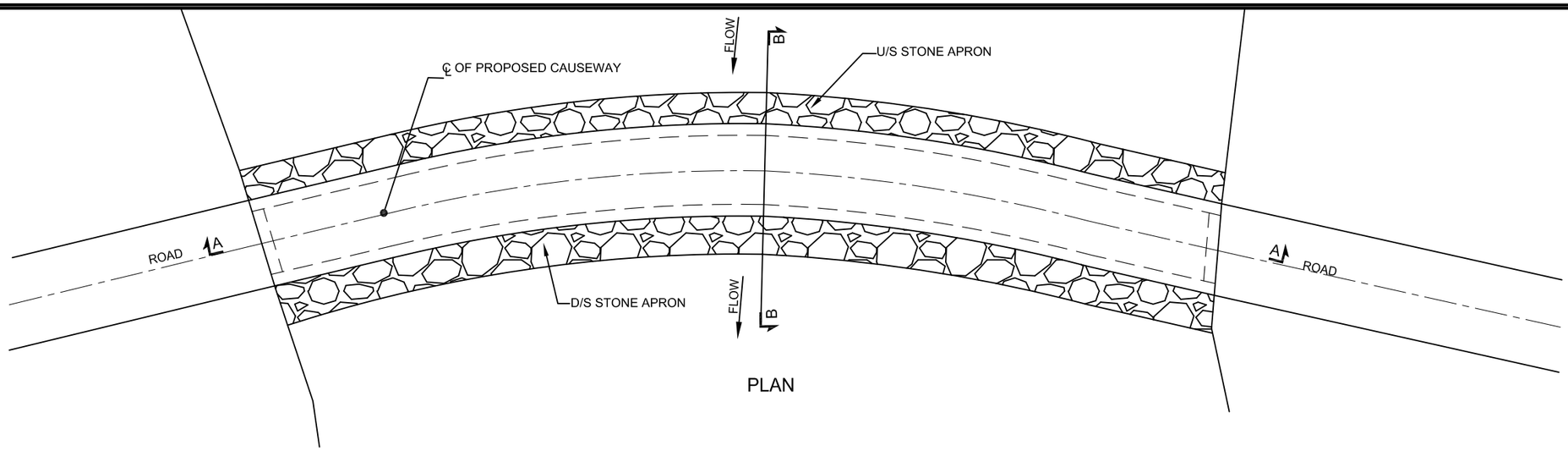
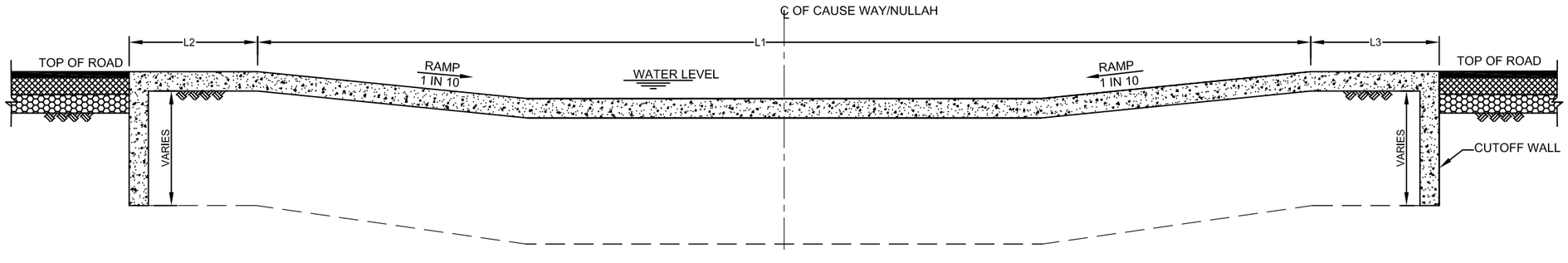
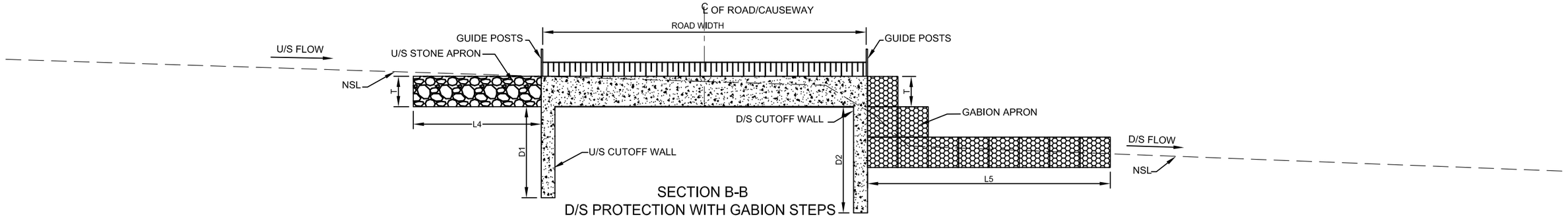


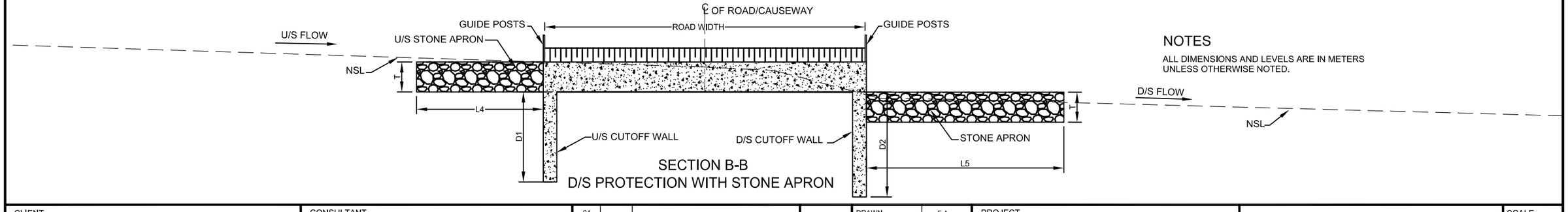
PLAN



SECTION A-A



SECTION B-B
D/S PROTECTION WITH GABION STEPS



SECTION B-B
D/S PROTECTION WITH STONE APRON

NOTES

ALL DIMENSIONS AND LEVELS ARE IN METERS
UNLESS OTHERWISE NOTED.

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
02			
01			

DRAWN	F.A
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-4CS)

REHABILITATION & IMPROVEMENT OF TAYAL ROAD
TYPICAL LAYOUT PLAN & SECTIONS OF CAUSEWAYS

DATE	DRAWING No.	REV.
AUG, 2024		1

SCALE
HOR=1:7
VER =1:7

GH E:\Office\Projects\2024\DASU\Bidding Documents\Tayal Road\R-4 Inprogress\Data Recieve From Other divisions\W&A\Typical Causway Tayal road 05-09-2024.dwg,

Table of Dimensions of Proposed Causeways of Tayal Road, LADP Dasu Project

Sr. No.	No. of Structures	Length	Upstream			Downstream			Thickness of Apron
			Cut-off Depth	Concrete Floor	Length of Apron	Cut-off Depth	Concrete Floor	Length of Apron	
		L1	D1	L2	L4	D2	L3	L5	T
		(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)
1	9	5.00	1.00	1.00	1.50	1.50	1.50	2.50	0.50
2	3	8.00	1.50	1.50	2.50	2.00	2.00	3.00	0.50

CLIENT

WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

HEAD OFFICE:- NESPAK HOUSE, I-C, BLOCK-N, MODEL TOWN EXTENSION, LAHORE, PAKISTAN.

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
02			
01			

DRAWN	F.A
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

PROJECT

DETAILED DESIGN AND CONSTRUCTION SUPERVISION / IMPLEMENTATIONS OF LOCAL AREA DEVELOPMENT PROGRAM (LADP) PUBLIC HEALTH, LIVELIHOOD DEVELOPMENT AND DOWNSTREAM FISHERIES PLANS; NAMELY LADP IMPLEMENTATION CONSULTANTS (LADP-ICS)

REHABILITATION & IMPROVEMENT OF TAYAL ROAD
TABLE OF DIMENSIONS OF CAUSEWAYS

SCALE

DATE: SEP, 2024

DRAWING No.

REV.: 0

GH E:\Office\Projects\2024\DASU\Bidding Documents\Tayal Road\R-4 Inprogress\Data Recieve From Other divisions\W&A\New\Typical Causway Tayal road 16-09-2024 R2.dwg,