River Research Institute
Ministry of Water Resources
Govt. of the People's Republic of Bangladesh

RRI Newsletter

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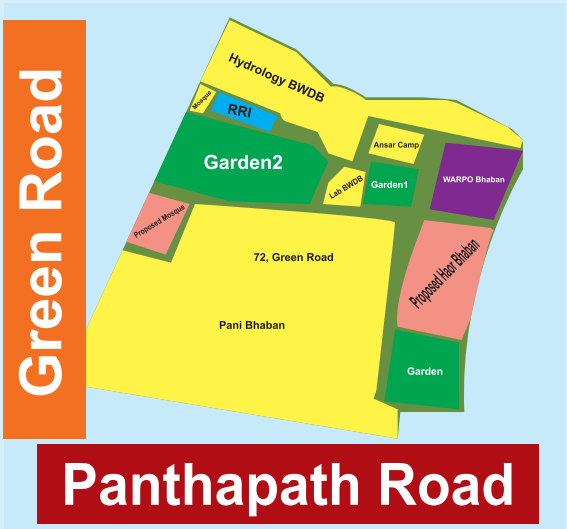
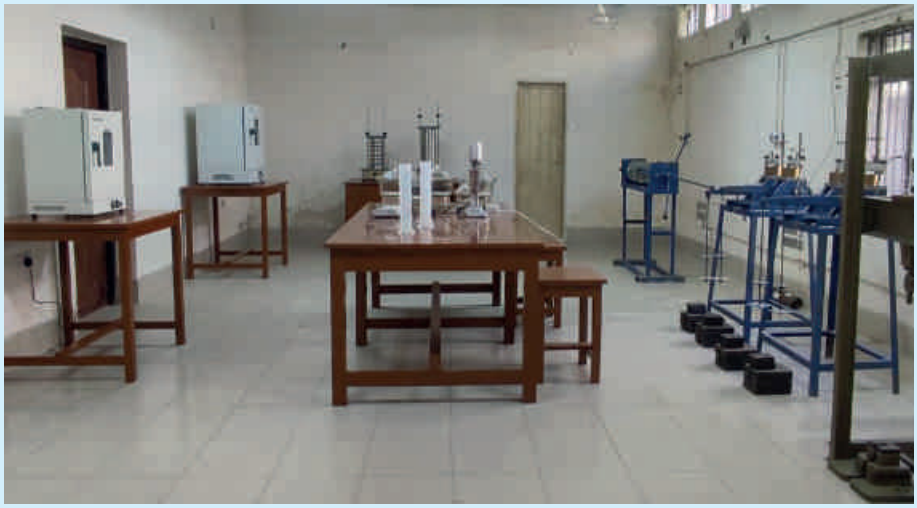
RRI'S LABORATORY FACILITIES AVAILABLE AT 72, GREEN ROAD, DHAKA OFFICE

Dr. Engr. Md. Alauddin Hossain, PSO and S M Abu Horayra, DG

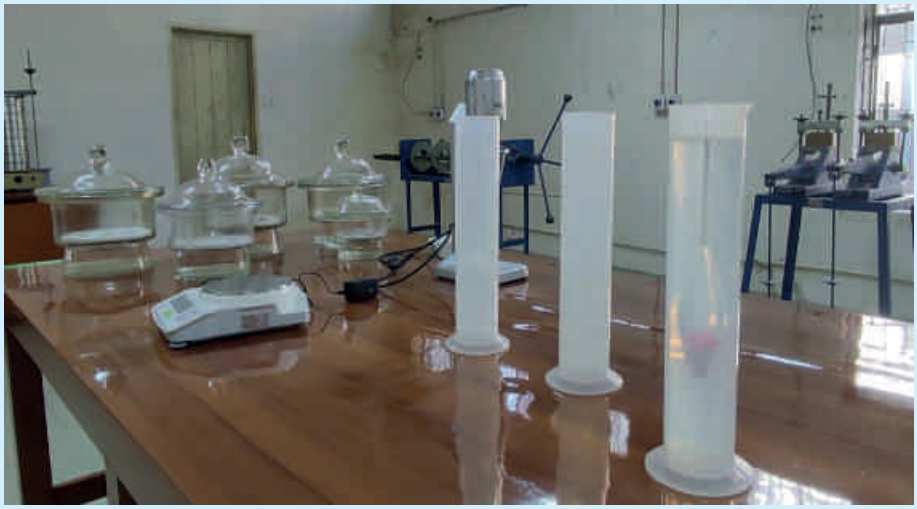
Now River Research Institute's (RRI) laboratory facilities are available at 72 Green Road, Panthapath, in Dhaka to a great extent. As a branch office of RRI, Dhaka office is now equipped in its own premises with three laboratory facilities such as Concrete materials testing laboratory, Soil testing laboratory and Water & Sediment testing laboratory. Before this, Dhaka office was running with limited laboratory facilities due to lack of it's own building. Besides this, it is noticed that the world is on the shores of the 4th Industrial and Technological Revolutions. RRI is not out of this program. For this, present Government of Bangladesh as well as DG of RRI's intension is to promote the development of new technologies in all engineering and business management areas. In continuation of this and to meet the new changes, RRI embarked in 2009 as the first implementation of the 4th Industrial Revolutions with the initiative of 'Institutional Development and Capacity Development Project (IDCBP) of River Research Institute, Faridpur' which was a potent tool for achieving the objectives of the 4th Industrial Revolution. As a part of that initiative, RRI has recently purchased a lot of modern and sophisticated equipment, machines, devices and software regarding Geotechnical investigations from different developed countries under IDCB project (Phase-II) in 2021. It is mentioned here that IDCBP of RRI, Faridpur (Phase-II) has been implemented with a view to enhancing its activities, capacity and to lift up the standard of service at the international level in the field of water resources engineering. To facilitate the related organizations with the standard service, now RRI has opened a new wing with modern and latest laboratory facilities that are available at 72 Green Road, Panthapath, Dhaka in a great extent. Especially concrete materials, soil & water and sediment samples are tested in Dhaka office for maintaining the quality of concrete materials of hydraulic structures and for the determination it's foundation details for the planning and designing of the structure. The test results play an important role for sustainable design and planning of the allied projects. So, government and non-government organizations including individuals can avail this service from Dhaka office at prescribed low cost and less time. It is needed to mention here that RRI is planning to establish the Nodi Bhaban, River Training Center, Calibration Laboratory and Survey Center, River Demonstration Model in its own premises at 72, Green Road, Panthapath, Dhaka.



GEOTECHNICAL LABORATORY



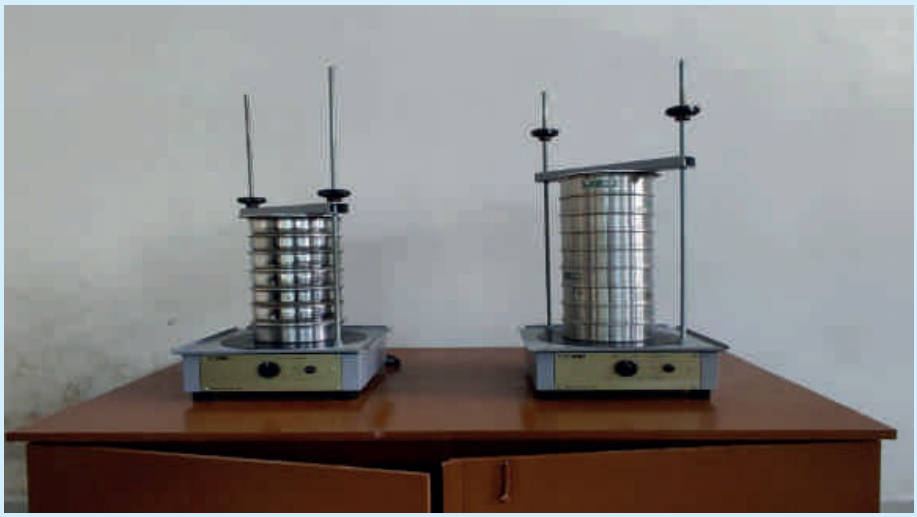
Some equipment of soil mechanics laboratory



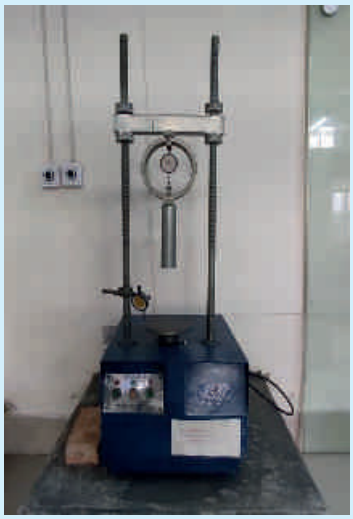
Hydrometer analysis setup

Soil Mechanics Laboratory

- Specific Gravity
- Natural Moisture Content
- Visual Inspection & Classification
- Sieve Analysis
- Hydrometer Analysis
- Unit Weight
- Loss-on-Ignition
- Liquid Limit
- Plastic Limit
- Shrinkage Limit
- Consolidation Test
- Direct Shear Test
- Triaxial Shear Test
- Unconsolidated Undrained
- Consolidated Undrained (with P.P. & without P.P.)
- Consolidated Drained Test
- Vane Shear Test
- Unconfined Compression
- Test/Remolded UCT
- Standard AASHO (4" & 6")
- Modified AASHO (4" & 6")
- Field Density
- Permeability Test
- Density Index (Id)
- C.B.R. Test
- Laboratory Boring Log
- Chemical test of Soil (pH, Cl^-, SO_4^{2-} etc)

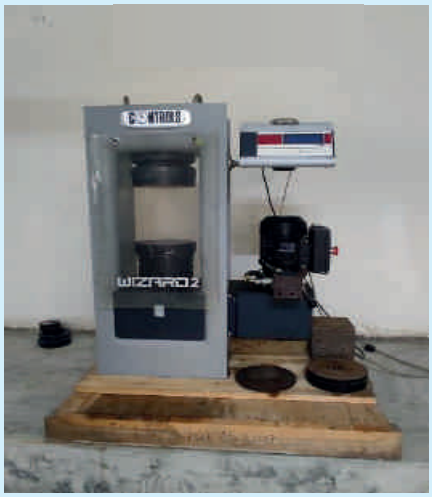


Sieve shaker

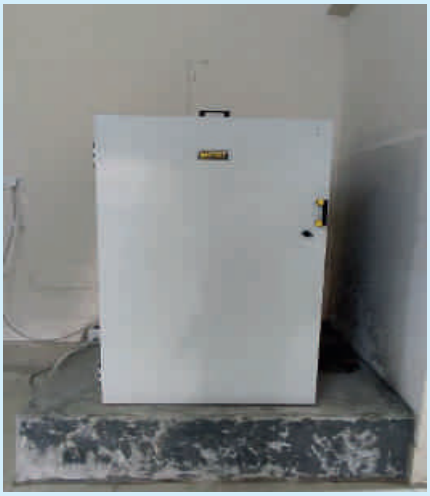


CBR test apparatus

MATERIALS TESTING LABORATORY



Concrete Crushing Machine



Coarse Aggregate Shaker

Materials Testing and Quality Control Laboratory

Cement
- Normal Consistency
- Setting Time
- Compressive Strength

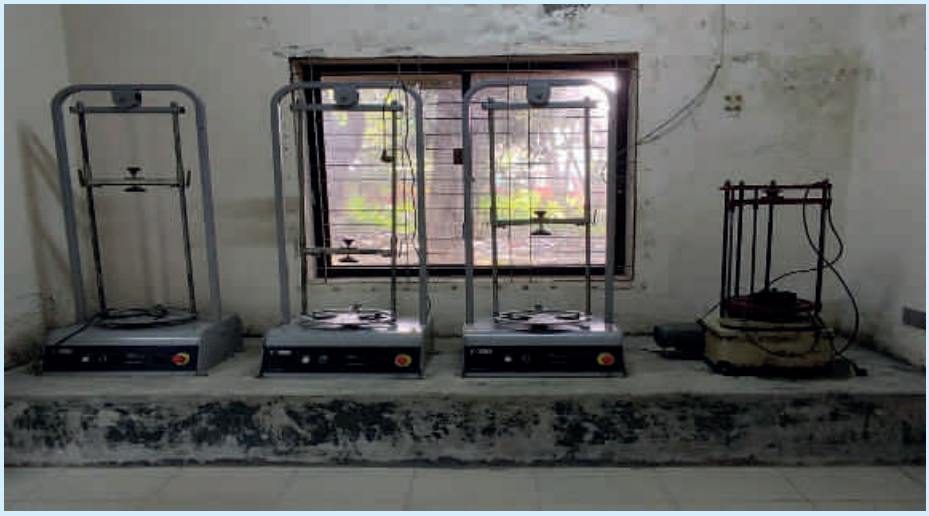
Sand
- Fineness Modulus
- Salinity
- Soundness
- Unit Weight
- Specific Gravity
- Organic Impurities

Coarse Aggregate
- Gradation
- Soundness
- Loss Angeles Abrasion Test
- Unit Weight
- Specific Gravity

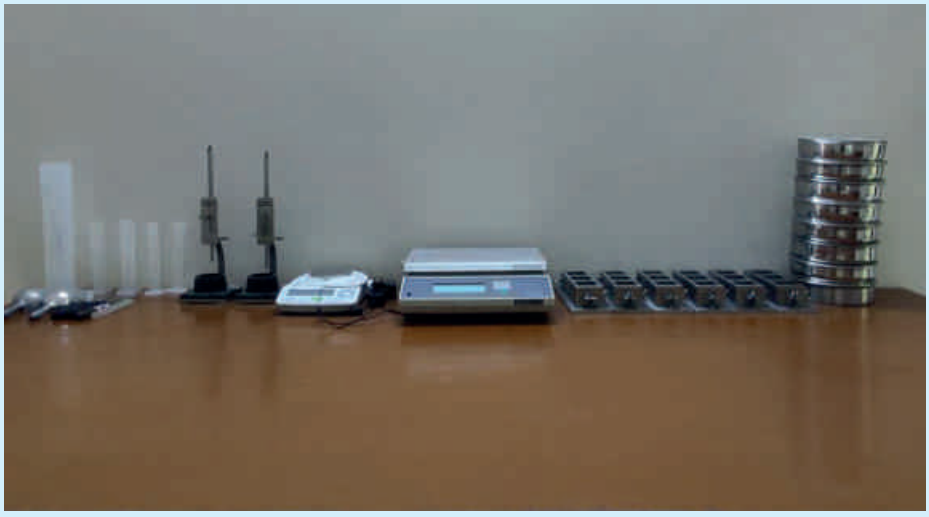
Brick
- Absorption
- Unit Weight
- Compressive Strength

Concrete
- Crushing Strength
- Design of Trial Mix
- Core Cutting and Testing (In Lab)
- Core Testing (Supplied)

Steel
- Tension
- Bend test
- Rebend test
- Stress-strain curves
- Deformation Measurement



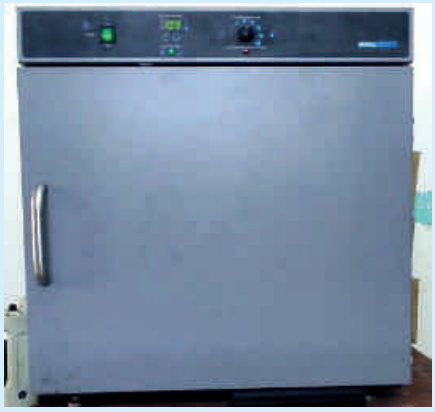
Sand Shaker



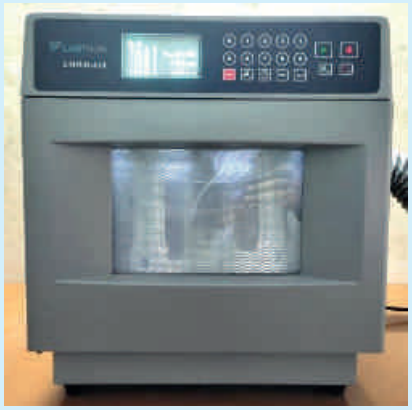
Cement Test Apparatus

Various types of molds

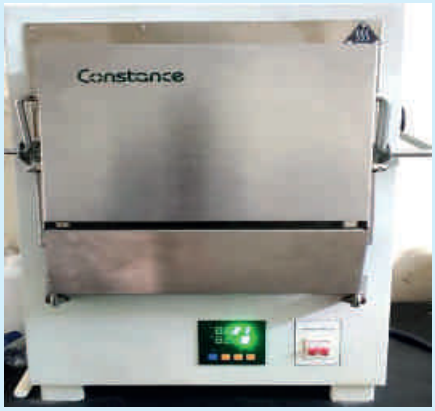
ENVIRONMENTAL LABORATORY



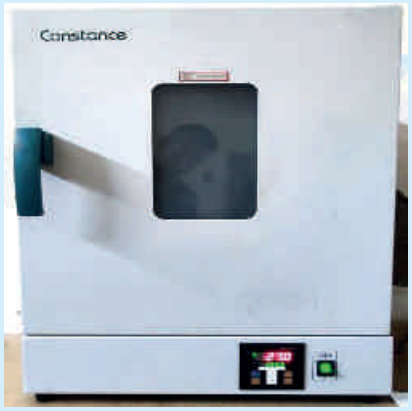
BOD Apparatus



Microwave Digestion

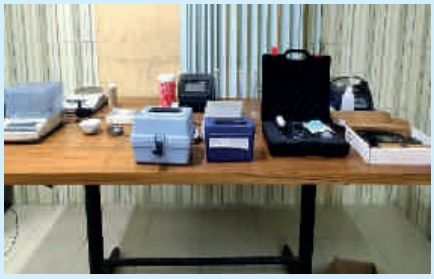


Muffle Furnace



Forced Convection Oven

Titration Unit



Spectrophotometer

Microscope

Environmental Laboratory

Metal and Elemental Analysis Laboratory

- Aluminum (Al)
- Arsenic (As)
- Boron (B)
- Calcium (Ca)
- Cadmium (Cd)
- Chromium (Cr)
- Copper (Cu)
- Iron (Fe)
- Mercury (Hg)
- Potassium (K)
- Magnesium (Mg)
- Manganese (Mn)
- Sodium (Na)
- Nickel (Ni)
- Selenium (Se)
- Lead (Pb)
- Zinc (Zn)
- Carbon (C)
- Nitrogen (N)
- Hydrogen (H)
- Sulfur (S)
- Oxygen (O)

Microbiological Environmental Laboratory

- E. Coli
- F. Coli
- Total Coliform
- BOD
- COD

Sediment Laboratory

- Sediment Concentration
- Total Suspended Solids
- Total Solids
- Specific Gravity
- Sieve
- Hydrometer
- Organic Matter

Physical and Nutrient Environmental Laboratory

- Temperature
- PH
- Electrical Conductivity
- Salinity
- Total dissolved solid
- Dissolved Oxygen
- Turbidity
- Odor
- Color (True or Apparent)
- Alkalinity
- Total Hardness
- Ca-Hardness
- Mg-Hardness
- Carbon-di-Oxide/Acidity
- Carbonate/Bicarbonate
- Sulphate
- Orthophosphate
- Total Phosphorous
- Chloride
- Fluoride
- Chlorine Content Total/Free
- Iodine Content
- Bromine Content
- Ammonia-Nitrogen
- Nitrate-Nitrogen
- Nitrite-Nitrogen
- Total Iron: UV-VIS
- Ferrous Iron/Ferric Iron
- Silica Content
- Manganese: UV-VIS
- Arsenic (Kit Method)
- TOC and DOC

Water Treatment Materials Research Laboratory

- Materials Synthesis
  - o Magnetic Nanoparticles
  - o Metal Organic Frameworks
  - o Hydrochar
  - o Biochar
- Adsorption
- Photocatalysis

ONGOING PHYSICAL MODEL STUDY

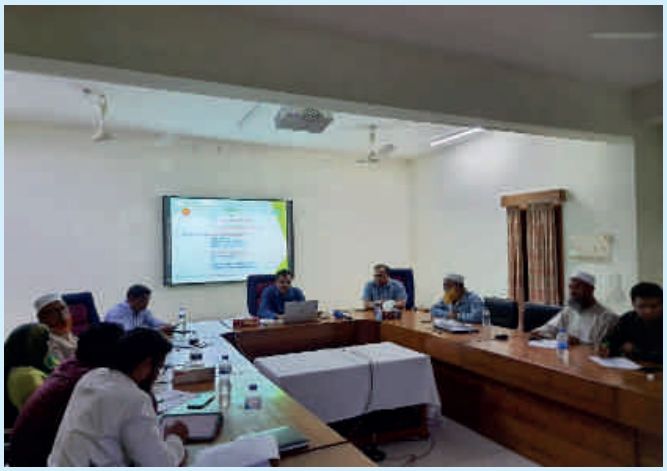
PHYSICAL MODELLING FOR REHABILITATION OF MUHURI-KAHUA FLOOD CONTROL, DRAINAGE AND IRRIGATION PROJECT IN FENI DISTRICT

The Muhuri-Kahua Flood Control, Drainage and Irrigation (Muhuri-Kahua FCDI) Project in Feni, Bangladesh, aims to mitigate the impact of frequent flash flood caused by intense monsoon rains in the region. However, existing infrastructure is damaged by these floods, necessitating rehabilitation. To guide this process, a detailed feasibility study has been initiated, comprising three components: technical assessment, physical modeling, and environmental impact assessment. This comprehensive approach aims to identify effective solutions for flood control, drainage improvement, and irrigation development in the project area. RRI is commissioned by BWDB to conduct the physical model study. The inception report has been submitted to BWDB authority. The interim report will be submitted soon.

On-field scenarios of physical model study.

MOU AND SCIENTIFIC TRAINING

An MoU signed between DUCT Engineering and River Research Institute to transfer the knowledge and technology for the betterment of both the organizations.

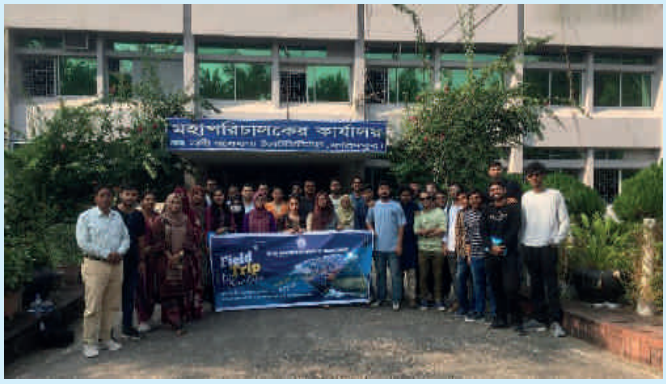


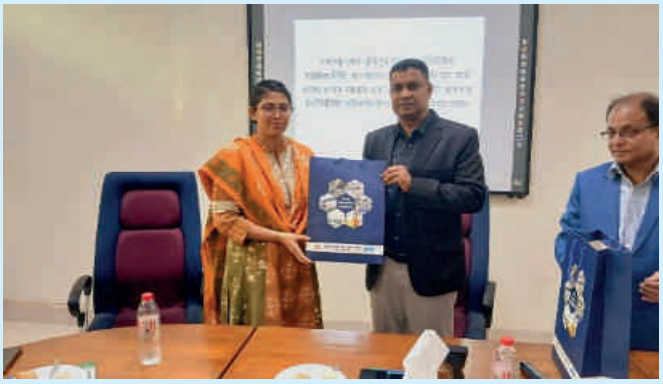
Training on the scientific paper writing was conducted at RRI to enhance the knowledge of the RRI scientist.

STUDY TOUR AT THE RIVER RESEARCH INSTITUTE

Students of Department of Water Resources Engineering, Bangladesh University of Engineering and Technology, L4/T2(19 Batch) and L1/T2 (22 Batch) along with their teachers visited River Research Institute (RRI) in October 2024 as a study tour. During the visit, scientists of RRI warmly welcomed them and demonstrated the research facilities.

The students of the Environmental Science and Disaster Management Faculty of Patuakhali Science and Technology University visited the River Research Institute (RRI) in October. The visit was conducted as a field trip under the course named "River erosion, Flood and Water Management".





The students of the Earth and Ocean Science Faculty of Bangabandhu Sheikh Mujibur Rahman Maritime University visited RRI as their study tour in November 2024. During the visit, scientists of RRI warmly welcomed them and demonstrated the research facilities.

HYDRAULIC ROTARY DRILLING RIG: A VERSATILE SOLUTION FOR DRILLING

Md. Zubayerul Islam, Senior Scientific Officer

Recently, River Research Institute (RRI) has purchased the Hydraulic Rotary Drilling Rig (Brand– Massenza, Model- MI2, Country of Origin: Italy) under the Institutional Development and Capacity Building (IDCB) Project (phase-II). The Massenza Drilling Rig MI2 has emerged as a robust and efficient drilling machine, widely recognized for its versatility and advanced technology. In case of geotechnical and geo-environmental site investigations equipment, Hydraulic Rotary Drilling Rig can be used for conventional and wire line coring, in situ testing (SPT), sample collection and the installation of borehole instrumentation. It is specifically designed for water well drilling and can adapt to various geological conditions, making it a valuable tool for contractors and engineers.

The MI2 operates using rotary drilling techniques. A drill pipe powered by a rotary table or top-head swivel rotates the attached drill bit, enabling it to penetrate different soil formations. During operation, drilling fluid (mud) is pumped through the pipe to cool and lubricate the drill bit, transport cuttings to the surface, and stabilize the borehole walls from preventing collapse.

Drilling rig operated entirely by radio remote control and especially designed for the geotechnical and soil investigations sector. Complete with rotary head for coring, hydraulic hammer for dynamic sampling, automatic SPT and triplex water pump, the new MI2 has a weight of 2650 kg, allowing it to be easily transported on trailer with a gross weight of 3500 kg. With a powerful engine generating approximately 100 HP and a highly efficient hydraulic system, the MI2 offers exceptional performance. Its significant drilling capacity includes depths of up to 200 meters (656 feet) and borehole diameters ranging from 100 mm to 300 mm (4 to 12 inches), ensuring flexibility for diverse project requirements.

The Massenza Drilling Rig MI2 is highly suitable for a range of geotechnical applications, including sub-surface soil investigation and both disturbed and undisturbed soil sampling, which are essential for foundation analysis and landslide investigations. Its versatility makes it ideal for projects such as bridge construction and high-rise building foundation development. Additionally, the rig is capable of measuring Standard Penetration Test (SPT) values and determining N-values, providing critical data for evaluating soil strength and stability.

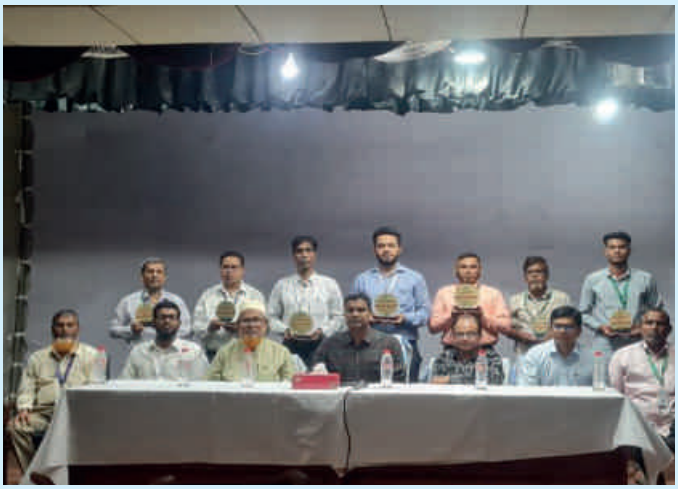
The Massenza MI2's combination of advanced technology, reliability, and adaptability makes it an indispensable tool for water well drilling projects. Its efficient drilling mechanism and impressive capacity enable rapid progress, even in challenging geological conditions, solidifying its position as a preferred choice in modern drilling operations. Already several sub-surface soil investigation research have been done by RRI expert through this machine. Some other institute (having MoU with RRI) hired this facility for their industrial, business and project work.

WE DEEPLY MOURN

With deepest sorrow, sharing with you all that Mr. Md. Muktadir Hossain, Security Guard of RRI, has passed away (Inna lillahi wa inna ilaihi rajeun) on 28 September 2024 at around 04.00 AM due to heart disease. He was a very honest, sincere and dedicated staff of RRI and contributed a lot in RRI. He was a popular "Baul voice artist". He was only 58 years 7 Months.He left behind his beloved wife and two daughters. His funeral was arranged at his hometown Faridpur Sadar, Faridpur. All the members of RRI are heartbroken at the sad demise of Md. Muktadir Hossain. RRI family is extremely grieving for his immature and sudden departure. Our heartiest condolences and sincere sympathy to the bereaved family members on this difficult time. RRI's thoughts and prayers are forever for his work and active contribution. May his soul rest in eternal peace and may Allah grant him a place in paradise.

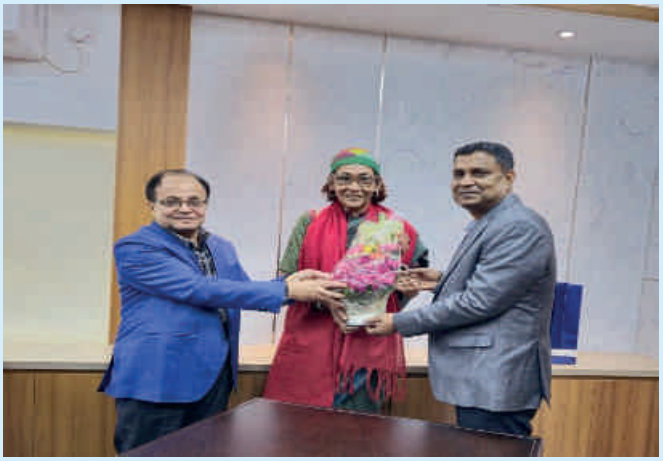
CELEBRATING THE VICTORY DAY 2024 AND THE SHAHID SAYEED AND MUGDHO TOURNAMENT AT RRI

Victory Day 2024 was celebrated with due solemnity at the River Research Institute.



Trophy distribution to the winners of Shahid Sayeed and Mughdho Smriti Table Tenis Tournament at the RRI.

COURTESY AND GREETINGS



A team led by Bibi Russell, a world famous personality visited RRI & warmly welcomed by RRI officials and showed the RRI's facilities.

Contact
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