SESSION TRANSACTION PLAN FOR TWO-DAY CAPACITY BUILDING PROGRAMME FOR

WATER RESOURCES AND MINOR IRRIGATION DEPARTMENTS

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| **SESSION NUMBER** | **SESSION TITLE AND DURATION** | **OBJECTIVE** | **SESSION TRANSACTION PLAN** | **EXPECTED OUTCOME AND FOLLOW-UP**  **RESOURCES** |
| SESSION 1 | **Session Title:** "Flowing Forward: Mastering Canals and Cross Drainage Works"  **Duration:**  1.5 Hours | To provide participants with knowledge of the design principles, operational strategies, and maintenance practices for canals and cross drainage works, ensuring effective water conveyance and sustainability. | **Session Breakdown**   1. **Introduction (10 minutes)**  * **Objective:** Set the context for canal and drainage design. * **Content:** Importance of effective water management systems, challenges in canal operations, and role of BIS standards. * **Methodology:** Presentation with an overview and key objectives.  1. **Design Principles (20 minutes)**  * **Objective:** Explain the technical aspects of canal and cross-drainage design. * **Content:** Hydraulic principles, canal sections, types of drainage works, and design examples. * **Methodology:** Lecture with design diagrams and case studies.  1. **Operational Strategies (20 minutes)**  * **Objective:** Highlight best practices in canal operations. * **Content:** Water flow management, sediment control, and monitoring. * **Methodology:** Interactive discussion with real-world examples.  1. **Maintenance Practices (30 minutes)**  * **Objective:** Outline key aspects of maintenance for longevity. * **Content:** Inspection techniques, repair methods, and common issues. * **Methodology:** Demonstration using visual aids.  1. **Conclusion and Q&A (10 minutes)**  * **Objective:** Recap key takeaways and address questions. * **Methodology:** Facilitator-led summary and Q&A. | **Expected Outcomes:**   * Improved understanding of canal and drainage systems. * Familiarity with BIS standards for water management.   **Follow-up Resources:**   * Access to BIS documents and standards. * Contact information for further queries or guidance. |
| SESSION 2 | **Session Title:** "Beneath the Surface: Geological Investigations in River Valley Projects"  **Duration:**  1.5 Hours | To provide a comprehensive understanding of geotechnical investigation and design principles, emphasizing BIS standards, methodologies, and best practices. | 1. **Introduction (10 minutes)**  * **Objective:** Introduce the importance of geological studies. * **Content:** Basics of geological investigation and its role in project safety. * **Methodology:** Presentation with case examples.  1. **Techniques and Tools (30 minutes)**  * **Objective:** Provide an overview of investigation methods. * **Content:** Drilling, sampling, and in-situ testing methods. * **Methodology:** Presentation with visual aids and videos.  1. **Data Interpretation (30 minutes)**  * **Objective:** Explain how to analyze and use geological data. * **Content:** Report preparation, risk assessment, and decision-making. * **Methodology:** Interactive discussion with examples.  1. **Conclusion and Q&A (10 minutes)**  * **Objective:** Summarize and clarify doubts. * **Methodology:** Facilitator-led recap and Q&A. | **Expected Outcomes:**   * Comprehensive understanding of geological processes in water projects. * Familiarity with BIS guidelines on geological studies.   **Follow-up Resources:**   * Access to BIS documents and standards. * Contact information for further queries or guidance. |
| SESSION 3 | **Session Title: "**Precision in Practice: Instrumentation for Hydraulic Structures**"**  **Duration:**  1.5 Hours | To familiarize participants with instrumentation techniques and their role in monitoring and maintaining hydraulic structures. | 1. **Introduction (10 minutes)**  * **Objective:** Highlight the importance of instrumentation. * **Content:** Role of sensors, monitoring, and maintenance. * **Methodology:** Presentation with examples.  1. **Instrumentation Techniques (40 minutes)**  * **Objective:** Explain tools and methodologies. * **Content:** Types of instruments, installation, and data collection. * **Methodology:** Case studies and demonstrations.  1. **Data Utilization (30 minutes)**  * **Objective:** Use monitoring data for decision-making. * **Content:** Case examples of failure prevention. * **Methodology:** Interactive activity and discussion.  1. **Conclusion and Q&A (10 minutes)**  * **Objective:** Recap and address participant questions. * **Methodology:** Facilitator-led summary. | **Expected Outcomes:**   * Improved knowledge of hydraulic structure monitoring. * Practical understanding of instrumentation and BIS standards.   **Follow-up Resources:**   * Access to BIS documents and standards. * Contact information for further queries or guidance. |
| SESSION 4 | **Session Title:**  **"**Sustaining Strength: Maintenance and Repair of Dams**"**  **Duration:** 1.5 Hours | To provide participants with insights into maintenance strategies, repair techniques, and standards for enhancing the safety and longevity of dams. | 1. **Introduction (10 minutes)**  * **Objective:** Highlight the importance of dam maintenance. * **Content:** Overview of dam structures, common issues, and risks. * **Methodology:** Presentation with examples of dam failures and their consequences.  1. **Inspection Techniques (30 minutes)**  * **Objective:** Explain methods for assessing dam health. * **Content:** Visual inspections, instrumentation, and non-destructive testing methods. * **Methodology:** Lecture with case studies and practical examples.  1. **Repair Methods (40 minutes)**  * **Objective:** Outline strategies for dam repair and rehabilitation. * **Content:** Grouting, crack sealing, and structural strengthening techniques. * **Methodology:** Slide presentation and video demonstrations.  1. **Conclusion and Q&A (10 minutes)**  * **Objective:** Summarize key takeaways and answer questions. * **Methodology:** Facilitator-led summary and Q&A session. | **Expected Outcomes:**   * Enhanced understanding of dam maintenance practices. * Familiarity with BIS standards for dam safety.   **Follow-up Resources:**   * Access to BIS documents and standards. * Contact information for further queries or guidance. |
| SESSION 5 | **Session Title:** "Rising Above: Flood Control and Diversion Strategies"  **Duration:**  1.5 Hours | To equip participants with knowledge of flood control strategies, diversion works, and BIS standards to mitigate flood risks effectively. | 1. **Introduction (10 minutes)**  * **Objective:** Set the context for flood management. * **Content:** Overview of flood control challenges and objectives. * **Methodology:** Presentation with statistics and case examples.  1. **Flood Control Structures (40 minutes)**  * **Objective:** Explain structural measures for flood management. * **Content:** Design and operation of levees, spillways, and detention basins. * **Methodology:** Interactive discussion with design examples.  1. **Diversion Techniques (30 minutes)**  * **Objective:** Highlight the role of diversion works in flood mitigation. * **Content:** Channels, tunnels, and storage solutions. * **Methodology:** Case studies and visual aids.  1. **Conclusion and Q&A (10 minutes)**  * **Objective:** Recap and address participant questions. * **Methodology:** Facilitator-led summary and Q&A. | **Expected Outcomes:**   * Improved understanding of flood control measures. * Practical knowledge of designing and implementing diversion works.   **Follow-up Resources:**   * Access to BIS documents and standards. * Contact information for further queries or guidance. |
| SESSION 6 | **Session Title:** "Tapping Reserves: Groundwater Investigations and Recharge Techniques"  **Duration:**  1.5 Hours | To provide participants with knowledge of groundwater investigations and recharge techniques for sustainable water management. | 1. **Introduction (10 minutes)**  * **Objective:** Emphasize the significance of groundwater management. * **Content:** Overview of groundwater resources, challenges, and potential. * **Methodology:** Presentation with case studies.  1. **Investigation Techniques (30 minutes)**  * **Objective:** Explain methods for groundwater assessment. * **Content:** Geophysical surveys, well logging, and aquifer modeling. * **Methodology:** Lecture with visual aids and real-world examples.  1. **Recharge Techniques (40 minutes)**  * **Objective:** Discuss strategies for groundwater recharge. * **Content:** Artificial recharge methods, site selection, and BIS standards. * **Methodology:** Interactive discussion with examples and videos.  1. **Conclusion and Q&A (10 minutes)**  * **Objective:** Summarize key takeaways and provide clarity. * **Methodology:** Facilitator-led summary and Q&A session. | **Expected Outcomes:**   * Enhanced understanding of groundwater investigations. * Practical skills for implementing recharge techniques.   **Follow-up Resources:**   * Access to BIS documents and standards. * Contact information for further queries or guidance. |
| SESSION 7 | **Session Title:** "Micro Irrigation Systems: Understanding the Essentials of Drip and Sprinkler Irrigation Components"  **Duration:**  1.5 Hours | To provide participants with knowledge of components of micro irrigation systems for. efficient and sustainable water management. | **Introduction (15 minutes)**  **Objective:** Emphasize the significance of water management in agriculture.  **Content:** Overview of Irrigation, Micro Irrigation, Factors Affecting, Today’s Scenario.  **Methodology:** Presentation with an overview of session objectives and key terms.    **Drip Irrigation Systems (30 minutes)**  **Objective:** Familiarize participants with importance of Drip Irrigation and key standards on Drip Irrigation Systems.  **Content:**  Detail of IS 12786, IS 13488, IS 13487  Types of Pipes, Emitting Pipes, Emitters, their applicability, important requirements.  **Methodology:** Lecture with presentations and real-world examples.    **Sprinkler Irrigation System (30 minutes)**  **Objective:** Familiarize participants with importance of Sprinkler Irrigation and key standards on Sprinkler Irrigation Systems.   * + **Content:**   Detail of IS 17425, IS 12232 (Part 1 & 2), IS 14605 and IS 18286  Types of Pipes, Sprinklers, Valves, their applicability, important requirments.  **Methodology:** Lecture with presentations and real-world examples..    **Conclusion and Q&A (15 minutes)**  **Objective:** Summarize key takeaways and provide clarity.  **Methodology:** Facilitator-led summary and Q&A session. | **Expected Outcomes:**   * Enhanced understanding of Indian Standards on Micro Irrigation Systems. * Applicability of these standards.   **Follow-up Resources:**   * Access to BIS documents and standards. * Contact information for further queries or guidance. |
| SESSION 8 | **Session Title:** "Micro Irrigation Systems: Fertigation, Filters, Installation, Operation and Maintenance’  **Duration:**  1.5 Hours | To provide participants with comprehensive knowledge of filters and fertigation unit used in Micro Irrigation. Installation, Operation and Maintenance of Micro Irrigation Systems. | * + **Introduction (20 minutes)** * **Objective:** Familiarize participants with importance of usage of certified filters in Micro Irrigation Systems * **Content:** Overview of Filters, Types of Filters Used, Strainer Filter, Media Filter, Hydrocyclone Filter, Their Applicability, Important Requirments * **Methodology:** Presentation with an overview of session objectives and key terms.      * + **Fertigation (20 minutes)** * **Objective:** Familiarize participants with concept and importance of Fertigation and relevant Indian Standards * **Content:**   About Fertigation, methods and equipment for fertigation.  Detail of Venturi Injector, Chemical Injector Pump, Fertilizer Tank  Their Types, Their Applicability, Important Requirements.   * **Methodology:** Lecture with presentations and examples.      * + **Preventive Maintenance of DIS (20 minutes)** * **Objective:** Familiarize participants with importance of Preventative Maintenance of Drip Irrigation Systems. * **Content:**   Problems of Clogging in Drip Irrigation  Maintenance and Prevention  Detail of IS 14791   * **Methodology:** Lecture with presentations and real-world examples.   + **Design, Installation and Operation of Sprinkler Irrigation System (20 minutes)** * **Objective:** Familiarize the participants with guidelines for Design, Installation and Operation of Sprinkler Irrigation System * **Content:** Details of IS 14792 * **Methodology:** Lecture with presentations and real-world examples   + **Conclusion and Q&A (0 minutes)** * **Objective:** Summarize key takeaways and provide clarity. * **Methodology:** Facilitator-led summary and Q&A session. | **Expected Outcomes:**   * Enhanced understanding of Indian Standards on Micro Irrigation Systems. * Applicability of these standards.   **Follow-up Resources:**   * Access to BIS documents and standards. * Contact information for further queries or guidance. |