SESSION TRANSACTION PLAN FOR TWO-DAY CAPACITY BUILDING PROGRAMME FOR PUBLIC WORKS DEPARTMENT (BUILDINGS)

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| **SESSION NUMBER** | **SESSION TITLE AND DURATION** | **OBJECTIVE** | **SESSION TRANSACTION PLAN** | **EXPECTED OUTCOME AND FOLLOW-UP****RESOURCES** |
| SESSION 1 | **Session Title:** "Optimizing ConstructionProjects: Principles and Standards in ProjectManagement"**Duration:**1 Hour | To provide participants with an understanding of construction projectmanagement principles,practices, and BIS standards, ensuring efficient project execution and quality outcomes. | **Session Breakdown**1. **Introduction (5 minutes)**
	* **Objective:** Set the context for construction project management.
	* **Content:**
		+ Definition of construction project management.
		+ Importance of project management in the construction industry.
		+ Role of BIS in setting standards for project management.
	* **Methodology:**
		+ Brief presentation with an overview and objectives of the session.
2. **Overview of BIS Standards in Construction Project Management (10 minutes)**
	* **Objective:** Familiarize participants with relevant BIS standards.
	* **Content:**
		+ Key standards (e.g., IS 15883 series on project management practices).
		+ Explanation of standards' application in project phases.
	* **Methodology:**
		+ Interactive lecture with handouts summarizing key BIS standards.
3. **Project Lifecycle and Key Management Areas (15 minutes)**
	* **Objective:** Explain the phases and management areas of construction projects.
	* **Content:**
		+ Project lifecycle: initiation, planning, execution, monitoring, and

closure. | **Expected Outcomes:*** Understanding of BIS standards for construction project management.
* Familiarity with the project lifecycle and key management areas.
* Ability to apply project management principles to real-world construction projects.

**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.
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|  |  |  | * Key management areas: scope, time, cost, quality, risk, and communication management.
* **Methodology:**
	+ Slide presentation with flowcharts and diagrams.
1. **Interactive Activity: Project Planning Exercise (15 minutes)**
	* **Objective:** Apply project management concepts through a hands-on exercise.
	* **Content:**
		+ Participants work in groups to develop a basic project plan for a hypothetical construction project.
		+ Focus on defining scope, scheduling, and risk management.
	* **Methodology:**
		+ Group activity with presentations of their plans, followed by feedback.
2. **Conclusion and Q&A (5 minutes)**
	* **Objective:** Summarize the session and provide an opportunity for questions.
	* **Content:**
		+ Recap of key takeaways.
		+ Open floor for participant questions and clarifications.
	* **Methodology:**
		+ Facilitator-led summary and Q&A session.
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| SESSION 2 | **Session Title:** "Foundations of Stability: Geotechnical Investigation and Design"**Duration:**1 Hour | To provide a comprehensive understanding of geotechnical investigation and design principles, emphasizing BIS standards, methodologies, and best practices. | **Session Breakdown**1. **Introduction (10 minutes)**
	* **Objective:** Introduce the importance of geotechnical investigation and design in construction.
	* **Content:**
		+ Definition and significance of geotechnical investigation.
		+ Overview of how subsurface investigation impacts geotechnical design, structural stability and safety.
		+ Brief introduction to relevant BIS standards.
	* **Methodology:**
		+ Presentation with an overview and key objectives.
2. **Overview of BIS Standards for Geotechnical Investigation (10 minutes)**
	* **Objective:** Familiarize participants with BIS standards related to geotechnical investigation.
	* **Content:**
		+ Key standards (e.g., IS 1892 for soil investigation, IS 6403 for bearing capacity of shallow foundations).
		+ Application and relevance of these standards in construction projects.
	* **Methodology:**
		+ Interactive lecture with handouts summarizing key standards.
3. **Geotechnical Investigation Methods (15 minutes)**
	* **Objective:** Explain various geotechnical investigation methods and their applications.
	* **Content:**
		+ Common field investigation techniques (e.g., borehole drilling, standard penetration test, cone penetration test).
		+ Laboratory testing of soil samples (e.g., grain size analysis, Atterberg limits, shear strength tests).
		+ Importance of accurate data collection and interpretation.
	* **Methodology:**
		+ Presentation with images and videos of investigation methods.
4. **Geotechnical Design Principles (15 minutes)**
	* **Objective:** Discuss principles of geotechnical design and their application.
 | **Expected Outcomes:*** Comprehensive understanding of geotechnical

investigation processes.* Familiarity with BIS standards for geotechnical

engineering.* Ability to apply geotechnical design principles to real-world projects.

**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.
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|  |  |  | * **Content:**
	+ Design of shallow and deep foundations (e.g., spread footings- IS 1904, IS 1080, pile foundations-IS 2911).
	+ Considerations for slope stability and earth retaining structures.
	+ Impact of soil properties on foundation design and load-bearing capacity.
* **Methodology:**
	+ Presentation with design examples.

**5. Conclusion and Q&A (10 minutes)*** **Objective:** Recap key points and address participant questions.
* **Content:**
	+ Summary of geotechnical investigation and design practices.
	+ Importance of adherence to BIS standards for project safety.
	+ Open floor for participant questions and clarifications.
* **Methodology:**
	+ Facilitator-led summary and Q&A session.
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| SESSION 3 | **Session Title: "Good Construction Practices: Masonry, RCC, and Steel"****Duration:****1 Hour 15 Minutes** | **To provide participants with an understanding of construction practices involving****masonry, steel, and reinforced concrete (RCC), focusing on BIS standards,****materials,****methods, and best practices for quality****construction.** | **Session Breakdown**1. **Introduction (10 minutes)**
	* **Objective:** Introduce participants to the importance of masonry, steel, and RCC in construction.
	* **Content:**
		+ Overview of masonry, steel, and RCC as fundamental building materials.
		+ Importance of understanding construction methods to ensure quality, durability, and safety.
		+ Role of BIS in setting standards for these materials and practices.
	* **Methodology:**
		+ Brief presentation and overview of session objectives.
2. **Overview of BIS Standards for Construction Practices (15 minutes)**
	* **Objective:** Familiarize participants with relevant BIS standards for masonry, steel, and RCC.
	* **Content:**
 | **Expected Outcomes:*** Familiarity with the key construction practices for masonry, steel, and RCC.
* Understanding of BIS standards for each material and construction practice.
* Knowledge of best practices for quality control and material testing in construction.

**Follow-up Resources:** |

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|  |  |  | * Key BIS standards for masonry (e.g., IS 1905 for brick masonry, IS 3495 for testing of bricks).
* BIS standards for steel structures (e.g., IS 800 for general structural design, IS 1363 for bolts).
* BIS standards for RCC (e.g., IS 456 for design and construction of reinforced concrete structures).
* **Methodology:**
	+ Interactive presentation with handouts summarizing key BIS standards.
1. **Masonry Construction Practices (15 minutes)**
	* **Objective:** Explain masonry construction methods and best practices.
	* **Content:**
		+ Types of masonry: Brick, stone, and block masonry.
		+ Mortar types, curing techniques, and structural considerations.
	* **Methodology:**
		+ Presentation with visual aids and real-world examples of masonry practices.
2. **Steel Construction Practices (15 minutes)**
	* **Objective:** Discuss steel construction practices and considerations.
	* **Content:**
		+ Types of steel sections and their applications.
		+ Design and fabrication of steel structures (e.g., welding, bolting).
	* **Methodology:**
		+ Slide presentation discussing about standards.
3. **RCC Construction Practices (15 minutes)**
	* **Objective:** Explain reinforced concrete construction techniques.
	* **Content:**
 | * Access to relevant BIS documents and standards.
* Contact information for further queries or guidance.
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|  |  |  | * Basics of RCC design: Concrete mix, reinforcement, and curing practices.
* Methods of forming and placing concrete (e.g., shuttering, vibrating, curing).
* Quality control in RCC work (e.g., testing of concrete, ensuring proper reinforcement).
* **Methodology:**
	+ Presentation with diagrams and examples of RCC construction in practice.
1. **Conclusion and Q&A (5 minutes)**
	* **Objective:** Recap key points and answer participant questions.
	* **Content:**
		+ Summary of masonry, steel, and RCC practices and their importance in construction.
		+ Open floor for questions and clarifications.
	* **Methodology:**
		+ Facilitator-led summary and interactive Q&A session.
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| SESSION 4 | **Session Title:****"Ensuring Safety: Fire and Life Safety in Buildings"****Duration: 1 Hour** | **To provide participants with the knowledge of fire and life safety standards, safety measures, and best practices in building design and****management, in line with BIS standards.** | **Session Breakdown**1. **Introduction (10 minutes)**
	* **Objective:** Introduce the significance of fire and life safety in buildings.
	* **Content:**
		+ Importance of fire and life safety in the built environment.
		+ Overview of relevant BIS standards and regulations.
		+ Key objectives of the session and the importance of compliance.
	* **Methodology:**
		+ Brief presentation and discussion on the significance of fire and life safety.
2. **Overview of BIS Standards for Fire and Life Safety (10 minutes)**
	* **Objective:** Familiarize participants with relevant BIS standards for fire and life safety.
	* **Content:**
 | **Expected Outcomes:*** Enhanced understanding of fire and life safety standards for buildings.
* Familiarity with BIS guidelines for fire protection and life safety.
* Knowledge of best practices for ensuring fire safety and

emergency preparedness.**Follow-up Resources:** |

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|  |  |  | * Overview of key standards (e.g., Part 4 of National Building Code of India 2016).
* Scope and application of the standards in building construction and management.
* **Methodology:**
	+ Interactive presentation with handouts summarizing key BIS standards.
1. **Fire Safety Measures in Building Design (15 minutes)**
	* **Objective:** Discuss fire safety measures during building design.
	* **Content:**
		+ Fire-resistant building materials and their properties.
		+ Passive fire protection measures (e.g., fire walls, fire-resistant doors).
		+ Active fire protection systems (e.g., fire alarms, sprinklers).
	* **Methodology:**
		+ Presentation with images and examples of fire safety features in buildings.
2. **Life Safety Features and Emergency Planning (15 minutes)**
	* **Objective:** Explore life safety features and emergency planning measures.
	* **Content:**
		+ Design and location of exits, emergency evacuation routes, and signage.
		+ Role of fire drills and training in ensuring occupant safety.
		+ Emergency response planning and coordination with local authorities.
	* **Methodology:**
		+ Presentation with slides and discussing about standards.
3. **Conclusion and Q&A (10 minutes)**
	* **Objective**: Recap key points and answer participant queries.
	* **Content:**
		+ Summary of session highlights.
		+ Open floor for questions and clarifications from participants.
	* **Methodology:**
		+ Facilitator-led summary and Q&A session.
 | * **Access to relevant BIS documents and standards.**
* **Contact information for further queries or guidance.**
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| SESSION 5 | **Session Title:** "Efficient Building Services: HVAC and Plumbing Systems"**Duration:**1 Hour | **To provide participants with an understanding of HVAC and plumbing****systems in buildings, focusing on BIS standards, design considerations, installation practices, and****maintenance for optimal performance.** | **Session Breakdown**1. **Introduction (5 minutes)**
	* **Objective:** Introduce the importance of HVAC and plumbing systems in buildings.
	* **Content:**
		+ Overview of HVAC and plumbing services and their role in building functionality.
		+ Importance of designing efficient, sustainable, and compliant systems.
		+ Brief on BIS standards for HVAC and plumbing services.
	* **Methodology:**
		+ Presentation with an overview of session objectives.
2. **Overview of BIS Standards for HVAC and Plumbing (10 minutes)**
	* **Objective:** Provide an understanding of relevant BIS standards for HVAC and plumbing systems.
	* **Content:**
		+ Key BIS standards (e.g., Part 8/Sec 3 and Part 9 of National Building Code of India 2016).
		+ Scope, application, and importance of these standards.
	* **Methodology:**
		+ Interactive lecture with handouts summarizing key standards and codes.
3. **HVAC System Design and Considerations (15 minutes)**
	* **Objective:** Explain the design principles for HVAC systems in buildings.
	* **Content:**
		+ Key components of HVAC systems (heating, ventilation, and air conditioning).
		+ Factors affecting HVAC design: load calculations, energy efficiency, zoning, and air quality.
		+ Common design and installation challenges.
	* **Methodology:**
		+ Presentation with design diagrams, airflow examples, and energy- saving tips.
4. **Plumbing System Design and Considerations (15 minutes)**
 | **Expected Outcomes:*** Understanding of HVAC and plumbing system design and operation.
* Familiarity with BIS standards for HVAC and plumbing services.
* Knowledge of best practices for installation and maintenance of

these systems.**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.
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|  |  |  | * **Objective:** Discuss design principles for plumbing systems in buildings.
* **Content:**
	+ Key components of plumbing systems (water supply, drainage, sewage systems).
	+ Design considerations: water pressure, pipe material selection, and waste management.
	+ Common plumbing issues and their solutions.
* **Methodology:**
	+ Slide presentation with pipe layout diagrams and real-world examples.

**5. Best Practices for Installation and Maintenance (10 minutes)*** **Objective:** Highlight best practices for the installation and maintenance of HVAC and plumbing systems.
* **Content:**
	+ Installation standards and guidelines for both HVAC and plumbing systems.
	+ Routine maintenance tasks and importance of regular checks.
	+ Compliance with BIS standards for installation and testing.
* **Methodology:**
	+ Practical tips and maintenance checklists for participants to follow.

**6. Conclusion and Q&A (5 minutes)*** **Objective:** Recap key points and answer participant questions.
* **Content:**
	+ Summary of session highlights and the role of efficient building services.
	+ Open floor for questions and clarifications.
* **Methodology:**
	+ Facilitator-led summary and interactive Q&A session.
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| SESSION 6 | **Session Title:** "Effective WaterproofingSolutions for Wet | To educate participants on effectivewaterproofing | **Session Breakdown**1. **Introduction (5 minutes)**
	* **Objective:** Highlight the importance of waterproofing in wet areas.
	* **Content:**
 | **Expected Outcomes:*** Enhanced understanding of BIS waterproofing

standards. |

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|  | Areas: Adhering to BIS Standards"**Duration:**1 Hour | techniques for wet areas in buildings, adhering toBureau of Indian Standards (BIS) guidelines, ensuringdurability and minimizing water- related damages. | * Definition of wet areas (bathrooms, kitchens, balconies, basements, etc.).
* Common issues due to inadequate waterproofing.
* Role of BIS in establishing waterproofing standards.
* **Methodology:**
	+ Brief presentation with examples of water damage.
1. **Overview of Relevant BIS Standards (10 minutes)**
	* **Objective:** Familiarize participants with BIS standards for waterproofing.
	* **Content:**
		+ Key standards (e.g., IS 2645, IS 12054, IS 15477).
		+ Scope and application of these standards.
	* **Methodology:**
		+ Interactive lecture with handouts summarizing key points of the standards.
2. **Key Waterproofing Techniques (15 minutes)**
	* **Objective:** Explain various waterproofing techniques for different wet areas.
	* **Content:**
		+ Surface preparation.
		+ Use of membranes (liquid-applied, sheet membranes).
		+ Cementitious waterproofing.
		+ Application methods and best practices.
	* **Methodology:**
		+ Slide presentation with images and step-by-step guides.
3. **Interactive Activity: Identifying Waterproofing Issues (15 minutes)**
 | * Improved knowledge of waterproofing techniques for wet

areas.* Ability to identify and address waterproofing issues effectively.

**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.
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|  |  |  | * **Objective:** Apply knowledge to identify potential waterproofing issues in a hypothetical or real scenario.
* **Content:**
	+ Participants analyze provided images or scenarios to spot waterproofing failures.
	+ Suggest corrective measures based on BIS standards.
* **Methodology:**
	+ Group activity with discussion and feedback.

**6. Conclusion and Q&A (5 minutes)*** **Objective:** Summarize the session and address participant questions.
* **Content:**
	+ Recap key takeaways.
	+ Open floor for questions and clarifications.
* **Methodology:**
	+ Facilitator-led summary and Q&A session.
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| SESSION 7 | **Session Title:** "Enhancing Accessibility:Standards and Practices inBuildings and Built Environment"**Duration:**1 hour | To enhanceunderstanding of accessibility standards inbuildings and built environment, as outlined by Bureau of Indian Standards (BIS), promoting inclusivity for all users, including persons with disabilities. | **Session Breakdown**1. **Introduction (5 minutes)**
	* **Objective:** Provide an overview of the importance of accessibility.
	* **Content:**
		+ Definition of accessibility.
		+ Significance of accessibility in buildings and public spaces.
		+ Role of BIS in promoting accessible design.
	* **Methodology:**
		+ Brief presentation with key statistics and real-life examples.
2. **Overview of Relevant BIS Standards (10 minutes)**
	* **Objective:** Familiarize participants with BIS standards related to accessibility.
	* **Content:**
		+ Key standards (e.g., Part 3 of National Building Code of India 2016, IS 4963).
		+ Explanation of the standards' scope and application.
	* **Methodology:**
		+ Interactive lecture with handouts summarizing standards.
 | **Expected Outcomes:*** Improved understanding of BIS accessibility standards.
* Enhanced ability to identify and implement accessible design

features.* Increased awareness of the importance of

accessibility in the built environment.**Follow-up Resources:*** Access to BIS documents and standards.
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|  |  |  | 1. **Key Components of Accessible Design (15 minutes)**
	* **Objective:** Detail the critical elements of accessible buildings.
	* **Content:**
		+ Entrances and pathways.
		+ Accessible toilets.
		+ Lifts and ramps.
		+ Signage and wayfinding.
	* **Methodology:**
		+ Slide presentation with images and diagrams of compliant vs. non- compliant designs.
2. **Interactive Activity: Accessibility Assessment (15 minutes)**
	* **Objective:** Apply knowledge to assess accessibility in a hypothetical or real scenario.
	* **Content:**
		+ Participants work in groups to evaluate photos for compliance.
		+ Identify areas for improvement and suggest modifications.
	* **Methodology:**
		+ Group activity followed by a brief presentation of findings.
3. **Conclusion and Q&A (5 minutes)**
	* **Objective:** Recap key points and address participant queries.
	* **Content:**
		+ Summary of session highlights.
		+ Open floor for questions and discussion.
	* **Methodology:**
		+ Facilitator-led summary and Q&A session.
 | * Contact information for further queries or guidance.
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| SESSION 8 | **Session Title:**"Building theFuture: Innovations in Materials and Technologies"**Duration:**45 Minutes | To introduce participants to the latestadvancements in building materials and technologies, highlighting their benefits,applications, and compliance with BIS standards. | **Session Breakdown**1. **Introduction (3 minutes)**
	* **Objective:** Provide an overview of the session and the importance of innovation in construction.
	* **Content:**
		+ Importance of adopting new materials and technologies.
		+ Role of BIS in standardizing innovative materials and technologies.
	* **Methodology:**
		+ Brief presentation with an overview of the session's goals.
2. **Overview of BIS Standards for Innovative Materials (7 minutes)**
	* **Objective:** Familiarize participants with BIS standards related to new building materials.
	* **Content:**
		+ Overview of key standards for innovative materials (e.g., IS 15462 for geopolymer concrete, IS 18256 for GFRP bars).
		+ Discussion on the importance of compliance with these standards.
	* **Methodology:**
		+ Interactive lecture with handouts summarizing relevant standards.
3. **Innovative Building Materials (10 minutes)**
	* **Objective:** Present new building materials and their applications.
	* **Content:**
		+ Overview of materials such as fry mix mortar, cross-laminated timber (CLT), GFRP bars, etc.
		+ Benefits and challenges of using these materials.
	* **Methodology:**
		+ Slide presentation with images and discussing about standards.
4. **Advanced Building Technologies (10 minutes)**
	* **Objective:** Introduce advanced technologies in construction.
	* **Content:**
 | **Expected Outcomes:*** Increased awareness of new building materials and technologies.
* Understanding of the benefits and challenges of adopting innovative solutions.
* Knowledge of BIS standards related to innovative materials and technologies.

**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.
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|  |  |  | * Discussion on how these technologies improve efficiency, sustainability, and safety.
* **Methodology:**
	+ Presentation with videos or animations showcasing technology applications.
1. **Conclusion and Q&A (5 minutes)**
	* **Objective:** Summarize key points and provide an opportunity for participant questions.
	* **Content:**
		+ Recap of session highlights.
		+ Open floor for questions and clarifications.
	* **Methodology:**
		+ Facilitator-led summary and Q&A session.
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| SESSION 9 | **Session Title:** "Ensuring Excellence:Building Material Testing and Quality Assurance"**Duration:**45 Minutes | To educate participants onthe importance of building material testing, the process of quality assurance, and compliance with BIS standards toensure the | **Session Breakdown**1. **Introduction (5 minutes)**
	* **Objective:** Introduce the importance of building material testing and quality assurance.
	* **Content:**
		+ Overview of construction material quality and its impact on building safety and performance.
		+ Role of BIS in standardizing testing procedures and quality assurance.
		+ Session objectives and structure.
	* **Methodology:**
 | **Expected Outcomes:*** Comprehensive understanding of material testing processes.
* Familiarity with BIS standards for material testing and quality assurance.
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|  |  | durability and safety of construction projects. | * Brief presentation with introductory remarks.
1. **Overview of BIS Standards for Building Material Testing (5 minutes)**
	* **Objective:** Provide an understanding of BIS standards for material testing.
	* **Content:**
		+ Key BIS standards for common materials (e.g., IS 456 for concrete, IS 383 for aggregates).
		+ Scope, requirements, and compliance importance.
	* **Methodology:**
		+ Interactive lecture with handouts summarizing key standards.
2. **Material Testing Procedures (15 minutes)**
	* **Objective:** Explain the testing procedures for various building materials.
	* **Content:**
		+ Testing procedures for concrete, steel, bricks, and aggregates.
		+ Laboratory testing vs. on-site testing.
		+ Interpreting test results and ensuring compliance.
	* **Methodology:**
		+ Presentation with videos or images of testing processes.
3. **Quality Assurance Plan (15 minutes)**
	* **Objective:** Discuss the elements of a comprehensive quality assurance plan.
	* **Content:**
		+ Components of a quality assurance plan (QA policy, inspection plan, documentation).
		+ Roles and responsibilities of stakeholders in quality assurance.
	* **Methodology:**
		+ Slide presentation with practical examples and best practices.
4. **Conclusion and Q&A (5 minutes)**
	* **Objective:** Summarize key points and address participant questions.
	* **Content:**
		+ Recap of the importance of material testing and quality assurance.
		+ Open floor for questions and clarifications.
	* **Methodology:**
		+ Facilitator-led summary and Q&A session.
 | * Ability to develop and

implement an effective quality assurance plan.**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.
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| SESSION 10 | **Session Title:**"Building Resilience: Design and Construction for Special Areas"**Duration:**1 Hour | To equip participants with knowledge andskills for designing and constructing buildings inspecial areas like hilly and cyclonic regions,emphasizing BIS standards,challenges, and best practices. | **Session Breakdown**1. **Introduction (5 minutes)**
	* **Objective:** Set the context for designing and constructing in special areas.
	* **Content:**
		+ Importance of adapting construction practices to regional challenges.
		+ Role of BIS in setting standards for safe and resilient construction.
		+ Overview of session objectives.
	* **Methodology:**
		+ Brief presentation with introductory remarks and session outline.
2. **Overview of BIS Standards for Special Areas (15 minutes)**
	* **Objective:** Familiarize participants with relevant BIS standards.
	* **Content:**
		+ Key standards for hilly areas (e.g., IS 14458 for retaining walls) and cyclonic areas (e.g., IS 15498 for improving cyclonic resistance).
		+ Scope and application of these standards.
	* **Methodology:**
		+ Interactive lecture with handouts summarizing key standards.
3. **Design Considerations for Hilly Areas (10 minutes)**
	* **Objective:** Explain design principles for construction in hilly regions.
	* **Content:**
		+ Topographical challenges and solutions.
		+ Stability and slope protection measures.
		+ Material selection and construction techniques suitable for hilly terrain.
	* **Methodology:**
		+ Slide presentation with diagrams, photos, and discussing about standards.
4. **Design Considerations for Cyclonic Areas (10 minutes)**
	* **Objective:** Discuss design principles for construction in cyclonic regions.
	* **Content:**
		+ Wind load assessment and structural design.
		+ Use of cyclone-resistant building materials.
		+ Building orientation and layout considerations.
	* **Methodology:**
 | **Expected Outcomes:*** Comprehensive

understanding of design and construction principles for specialareas.* Familiarity with BIS standards for resilient construction in hilly and cyclonic regions.
* Ability to develop and implement effective design strategies for

special areas.**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.
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|  |  |  | * Presentation with videos and examples of cyclone-resistant

structures. |  |
| 1. **Interactive Activity: Designing for Special Areas (5 minutes)**
	* **Objective:** Apply concepts through a hands-on exercise.
	* **Content:**
		+ Participants work in groups to develop a basic design plan for a hypothetical building in a hilly or cyclonic area.
		+ Focus on site analysis, design adaptations, and material selection.
	* **Methodology:**
		+ Group activity with presentations of their plans, followed by feedback and discussion.
2. **Conclusion and Q&A (5 minutes)**
	* **Objective:** Recap key points and address participant questions.
	* **Content:**
		+ Summary of session highlights.
		+ Open floor for questions and clarifications.
	* **Methodology:**
		+ Facilitator-led summary and Q&A session.
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| SESSION 11 | **Session Title:** Maximizing Value: Asset and FacilityManagement Best Practices**Duration:**1 hour | **Objective:**To provide participants with an understanding of asset andfacilitymanagementprinciples, the | **Session Breakdown**1. **Introduction (5 minutes)**
	* **Objective:** Introduce the concepts of asset and facility management.
	* **Content:**
		+ Definitions and key differences between asset and facility management.
 | **Expected Outcomes:*** Comprehensive

understanding of asset and facility management principles.* Familiarity with BIS standards for asset and

facility management. |

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|  |  | importance of effectivemanagement, and compliance with BIS standards for optimalperformance and sustainability. | * Importance of effective management for operational efficiency and sustainability.
* Overview of BIS’s role in standardizing asset and facility management in National Building Code of India 2016.
* **Methodology:**
	+ Brief presentation with an overview and session objectives.
1. **Overview of BIS Standards for Asset and Facility Management (10 minutes)**
	* **Objective:** Familiarize participants with relevant BIS standards.
	* **Content:**
		+ Key standards (e.g., Part 12 of NBC 2016, IS 15489 for asset management, IS 13005 for facility management).
		+ Scope and application of these standards.
		+ Importance of compliance for operational excellence.
	* **Methodology:**
		+ Interactive lecture with handouts summarizing key BIS standards.
2. **Core Principles of Asset Management (10 minutes)**
	* **Objective:** Explain the fundamental principles and lifecycle of asset management.
	* **Content:**
		+ Asset lifecycle stages: acquisition, operation, maintenance, and disposal.
		+ Strategies for optimizing asset performance and value.
		+ Risk management and cost-benefit analysis.
	* **Methodology:**
		+ Slide presentation with lifecycle diagrams and real-world examples.
3. **Best Practices in Facility Management (10 minutes)**
	* **Objective:** Discuss best practices for efficient facility management.
	* **Content:**
		+ Integrated facility management (IFM) approach.
 | * Ability to develop and implement effective management plans.
* List of recommended readings and resources on asset and facility management.

**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.
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|  |  |  | * Key aspects: space management, energy efficiency, maintenance, and safety.
* Technological advancements and their impact on facility management.
* **Methodology:**
	+ Presentation with images and discussing about standards.
1. **Interactive Activity: Developing an Asset/Facility Management Plan (10 minutes)**
	* **Objective:** Apply concepts through a hands-on exercise.
	* **Content:**
		+ Participants work in groups to develop a basic management plan for a hypothetical facility.
		+ Focus on asset inventory, maintenance schedules, and sustainability practices.
	* **Methodology:**
		+ Group activity with presentations of their plans, followed by feedback and discussion.
2. **Conclusion and Q&A (5 minutes)**
	* **Objective:** Recap key points and address participant questions.
	* **Content:**
		+ Summary of session highlights.
		+ Open floor for questions and clarifications.
	* **Methodology:**
		+ Facilitator-led summary and Q&A session.
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| SESSION 12 | **Session Title:**"Revitalizing Structures:Retrofitting Existing Buildings"**Duration:**1 Hour | **To provide participants with an understanding of the need for retrofitting****existing buildings, methodologies, BIS standards, and best practices for enhancing****structural integrity and performance.** | **Session Breakdown**1. **Introduction (10 minutes)**
	* **Objective:** Introduce the concept and importance of retrofitting.
	* **Content:**
		+ Definition of retrofitting and its significance.
		+ Common reasons for retrofitting (e.g., structural degradation, seismic vulnerability, code updates).
		+ Overview of session objectives.
	* **Methodology:**
		+ Brief presentation with introductory remarks and session outline.
2. **Overview of BIS Standards for Retrofitting (10 minutes)**
	* Objective: Familiarize participants with relevant BIS standards.
	* **Content:**
		+ Key standards (e.g., IS 15988 for seismic evaluation, IS 13935 for repair and seismic strengthening).
		+ Scope and application of these standards.
	* **Methodology:**
		+ Interactive lecture with handouts summarizing key standards.
3. **Assessment and Diagnosis (10 minutes)**
	* **Objective:** Explain the process of assessing and diagnosing the condition of existing buildings.
	* **Content:**
		+ Methods for structural assessment (visual inspection, non-destructive testing).
		+ Identifying common structural deficiencies and vulnerabilities.
	* **Methodology:**
		+ Slide presentation with examples of assessment techniques.
4. **Retrofitting Techniques and Approaches (15 minutes)**
	* **Objective:** Discuss various retrofitting techniques.
	* **Content:**
		+ Structural retrofitting methods (e.g., jacketing, base isolation, use of

FRP). | **Expected Outcomes:*** **Comprehensive understanding of the need for retrofitting and its benefits.**
* **Familiarity with BIS standards for retrofitting.**
* **Ability to assess existing buildings and develop effective retrofitting strategies.**

**Follow-up Resources:*** **Access to BIS documents and standards.**
* **Contact information for further queries or guidance.**
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|  |  |  | * Non-structural retrofitting considerations (e.g., fire safety, energy efficiency).
* **Methodology:**
	+ Presentation with videos and practical examples of retrofitting techniques.
1. **Interactive Activity: Retrofitting Strategy Development (10 minutes)**
	* **Objective:** Apply knowledge through a hands-on exercise.
	* **Content:**
		+ Participants work in groups to develop a retrofitting strategy for a hypothetical building.
		+ Focus on assessment findings, chosen retrofitting techniques, and expected outcomes.
	* **Methodology:**
		+ Group activity with presentations of their strategies, followed by feedback and discussion.
2. **Conclusion and Q&A (5 minutes)**
	* **Objective:** Recap key points and address participant questions.
	* **Content:**
		+ Summary of session highlights.
		+ Open floor for questions and clarifications.
	* **Methodology:**
		+ Facilitator-led summary and Q&A session.
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| SESSION 13 | **Session Title:** "Harvesting the Future: Sustainable WaterManagementthrough Rainwater Harvesting"**Duration:**1 Hour | To educate participants on the principles, benefits, andimplementation of rainwaterharvesting systems,highlighting BIS | **Session Breakdown**1. **Introduction (10 minutes)**
	* **Objective:** Introduce the concept and importance of rainwater harvesting.
	* **Content:**
		+ Definition and significance of rainwater harvesting.
		+ Role of BIS in promoting sustainable water management.
		+ Overview of session objectives.
	* **Methodology:**
		+ Brief presentation with introductory remarks and session outline.
2. **Overview of BIS Standards for Rainwater Harvesting (15 minutes)**
* **Objective:** Familiarize participants with relevant BIS standards.
* **Content:**
	+ Key standards (e.g., IS 15797, IS 14961).
	+ Scope, application, and compliance requirements.
* **Methodology:**
	+ Interactive lecture with handouts summarizing key standards.
1. **Components of Rainwater Harvesting Systems (15 minutes)**
	* **Objective:** Explain the key components of rainwater harvesting systems.
	* **Content:**
		+ Catchment areas, conveyance systems, storage tanks, filtration units.
		+ Integration with existing water supply systems.
	* **Methodology:**
		+ Slide presentation with diagrams and images of system components.
2. **Design and Implementation (15 minutes)**
	* **Objective:** Discuss the design principles and implementation strategies.
	* **Content:**
		+ Site assessment and system sizing.
		+ Material selection and installation best practices.
		+ Maintenance and sustainability considerations.
	* **Methodology:**
		+ Presentation with images discussing about standards.
3. **Conclusion and Q&A (10 minutes)**
	* **Objective:** Summarize key points and address participant questions.
	* **Content:**
		+ Recap of session highlights.
		+ Open floor for questions and clarifications.
	* **Methodology:**

Facilitator-led summary and Q&A session. | **Expected Outcomes:*** Comprehensive understanding of rainwater harvesting systems.
* Familiarity with BIS standards for rainwater harvesting.
* Ability to design and implement rainwater
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|  |  | standards and best practices. |  | harvesting systems effectively.**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.
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|  |  |  | * Focus on system components, sizing, and integration.
* **Methodology:**
	+ Group activity with presentations of their designs, followed by feedback and discussion.
1. **Conclusion and Q&A (5 minutes)**
	* **Objective:** Summarize key points and address participant questions.
	* **Content:**
		+ Recap of session highlights.
		+ Open floor for questions and clarifications.
	* **Methodology:**
		+ Facilitator-led summary and Q&A session.
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