

INSTITUTIONAL TRAINING MANUAL

Building Institutional Capacity for
Resilient Public Infrastructure in Pakistan



TRAINING



TECHNICAL
LEARNING



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This Manual is a companion to the applicable codes, standards and approved technical guidance. It does not replace the Building Code of Pakistan, a signed design, a decision of the Authority Having Jurisdiction, or the project-specific judgement of a competent engineer. The intended result is a traceable training, assessment and record system in which every taught statement is sourced and every result states its boundary.

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Abbreviations

Term	Meaning
ACI	American Concrete Institute
ASCE	American Society of Civil Engineers
ASTM	ASTM International
BCP-2021	Building Code of Pakistan 2021
BMZ	German Federal Ministry for Economic Cooperation and Development
CD-CRI	Capacity Development for Climate-Resilient Infrastructure
CPD	Continuing professional development
DAC	Development Assistance Committee (OECD)
DQA	Dr. Qaisar Ali Associates
FEMA	Federal Emergency Management Agency
GADRRRES	Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector
GESI	Gender equality and social inclusion
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
INEE	Inter-agency Network for Education in Emergencies
ISO	International Organization for Standardization
KnK	Kokkyo naki Kodomotachi (Children without Borders) Japan
NDRMF	National Disaster Risk Management Fund
OECD	Organisation for Economic Co-operation and Development
PEC	Pakistan Engineering Council
SEI	Structural Engineering Institute (ASCE)
WHO	World Health Organization

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1 Purpose, Scope and Authority Boundary

Technical guidance changes practice only when the institutions that own the assets can teach it, assess it and keep teaching it after the program ends. This Manual is the instrument for that transfer.

1.1 Purpose

1.1.1 This Manual provides a facilitator's route, a reusable module structure, delivery plans and an assessment and record system for institutional capacity building in the assessment, design, strengthening and construction supervision of public buildings.

1.1.2 The technical content taught shall be drawn from the applicable codes, standards and approved technical guidance. A facilitator may explain that content but shall not invent or amend a formula, criterion, dimension, detail or acceptance value.

1.2 Authority boundary

Table 1.1 Boundary of what training establishes

Area	What the training does	What it does not do
Certification	Records attendance, completion and demonstrated training performance within the approved assessment scheme.	Does not confer PEC registration, professional accreditation or engineering authorization.
Technical decisions	Builds the ability to apply, explain and route the technical requirements correctly.	Does not transfer authority to make design, assessment or acceptance decisions.
Institutional adoption	Produces resourced action plans and prepares institutions to adopt and deliver.	Does not itself constitute adoption; that requires authorized instruments, procedures and budgets.
Field activity	Uses approved venues and sites under agreed safety, safeguarding and data controls.	Never authorizes unsafe work or interference with a functioning facility.

1.2.1 The technical modules develop competence to apply, explain, commission, review and route the requirements within the participant's own professional role. Performing detailed structural evaluation or design, or accepting work on behalf of an owner, requires the separate professional competence and authorization applicable to that work, and is not conferred by any result issued under this Manual.

1.3 How this Manual is used

This Manual is not read end to end by every reader. Table 1.2 gives the entry point for each role and the output that entry point is meant to produce, so that a reader can begin at the chapter carrying their own decision rather than at the first page.

Table 1.2 Where each role starts and what it produces

If you are	Start with	To produce
A program or governance lead	Chapters 1 to 5 and 11 to 13	Approved mandate, roles, delivery decision, quality route and a resourced institutional action plan.
A departmental engineering or training lead	Chapters 2, 3, 5 and 11 to 13	A controlled provincial or district delivery and mentoring route tied to real assets and authority.
A local government or municipal lead	Chapters 2, 4, 5 and 13	A local asset and service workflow, safe referral, maintenance and cascade actions.
A university or faculty lead	Chapters 2, 3 and 6 to 8	Source-controlled teaching, curriculum integration and trainer-pool support.
A facilitator or assessor	Chapters 6 to 12 and 14, and the relevant module	Safe inclusive delivery, valid evidence, feedback, reassessment and a bounded result.

The program addresses six hazards. Table 1.3 states where each is developed in this Manual, what it does not develop in depth, and the governing source and referral route that applies in that case.

Table 1.3 Hazard coverage and source route

Hazard	Where developed	Not developed in depth	Source and referral route
Seismic	M2 recognition; M3 assessment; M5 strengthening decision route	Analysis and retrofit design	BCP-2021 §1613; ASCE/SEI 41-17. Refer to the responsible designer.
Flood	M2 recognition; M4 design basis	Hydrological and hydraulic analysis	BCP-2021 §1612 and Appendix B. Refer to a competent specialist.
Wind	M4 design basis	Wind loading analysis; cladding and roof design	BCP-2021 §1609. Refer to the responsible designer.
Landslide	M2 recognition of site and foundation conditions; M4 design basis	Slope stability analysis and mitigation design	Geotechnical investigation. Refer to a competent geotechnical specialist.
Deterioration	M2 recognition; M3 investigation scoping; M5 residual risk	Materials testing and durability assessment	ACI 562-19; ACI 228.1R and 228.2R. Refer to a laboratory and specialist.
Fire	M2 recognition of observable conditions	Fire engineering, detection and suppression design	BCP Fire Safety Provisions 2016. Refer to a competent fire specialist.

2 Audience, Institutional Roles and Governance

A mixed cohort works only when each participant trains within their real role and authority. The tracks below define what each group is being prepared to do, and where their authority ends.

2.1 Role tracks

Table 2.1 Institutional role tracks

Track	Participants	Post-training role	Authority limit
Governance and stewardship	Regulatory and program institutions, and disaster management representatives where nominated.	Technical governance, endorsement and adoption, program stewardship, quality oversight, scale-up decisions.	Does not transfer statutory authority between institutions or create an accreditation scheme.
Provincial implementation	Provincial line departments and engineering cells responsible for works, education, health and public health engineering.	Operational use, provincial and district deployment, procurement, supervision, data handover, budgeting and cascade delivery.	A departmental title does not replace required professional competence, procurement approval or project authority.
Local implementation	Local governments, municipal bodies, development authorities and district technical offices.	Facility and asset ownership, local inspection and maintenance interfaces, drainage, water and sanitation, flood risk and community services.	Local adaptation may not alter technical criteria, professional boundaries or approved forms.
Academic	Engineering faculties, continuing-education institutions and research partners.	Faculty master trainers, curriculum integration, case development, research, peer review and trainer-pool continuity.	Academic instruction does not authorize field assessment, design, certification or construction decisions.
Delivery assurance	Facilitators, technical reviewers, practical assessors and mentoring leads.	Safe and accurate delivery, learner support, assessment integrity, feedback and cascade quality monitoring.	Facilitator status is limited to the approved module and scope.

3.1.1 Each entry in the source register shall carry its status under Table 3.2. Where a taught statement rests on more than one source, the status of each shall be recorded. A statement shall not be presented as a requirement on the strength of a source whose status does not support it.

Sources differ in what they are able to justify. Table 3.2 states the status categories and how each may and may not be used, so that guidance which is not a code requirement remains usable without being presented as one.

Table 3.2 Source status and what each may justify

Status	What it covers	May be used to justify	May not be used to justify
Law and adopted code	The Building Code of Pakistan and instruments given legal effect by notification, including standards the code adopts by reference.	A mandatory requirement, a compliance position and an acceptance value.	—
Adopted standard	A standard adopted by reference in the code, or formally adopted by the project for a stated purpose.	A criterion or method within the scope for which it is adopted.	A requirement beyond the scope of its adoption.
Approved program guidance	Guidance issued and controlled under the program.	A program method, workflow or recording requirement.	A departure from a code requirement, or a code-equivalent acceptance value.
Project decision	A decision recorded by the authorized project role.	The basis actually applied on that project.	A requirement on any other project.
Reference and good practice	International guidance, research and sector frameworks.	Context, rationale, comparison and non-mandatory good practice.	A mandatory requirement, a design value or an acceptance criterion.

Figure 2.1 draws the five tracks side by side: what each is being prepared to do, and where its authority ends.

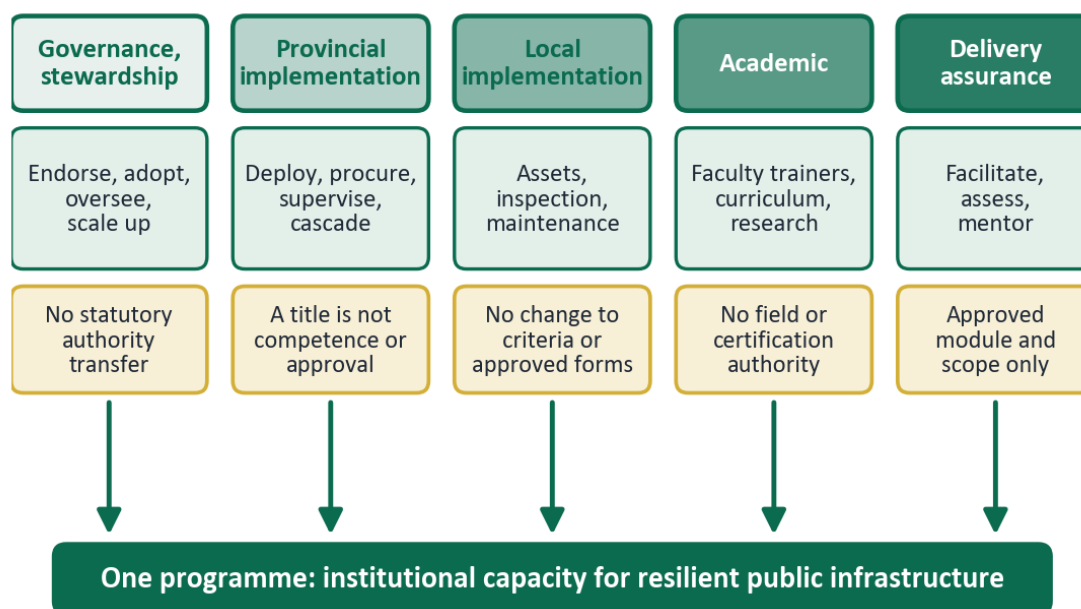


Figure 2.1 Institutional role tracks and authority limits

2.2 Governance

2.2.1 Each institution shall be mapped to its mandate, its asset and data responsibility, its training role and the decision it will take after training. Nomination shall follow that mapping.

- 2.2.2** Ownership shall be recorded for technical content, delivery approval, assessment, certificates, data and revisions. No decision shall be left unowned.
- 2.2.3** A conflict of interest in delivery, assessment or certification shall be disclosed and managed by independent review or an alternate assessor.
- 2.2.4** A local adaptation that would change technical content or authority shall be held and referred to the technical owner for review before use.

3 Content Control and Technical Assurance

3.0.1 Every taught statement, case, slide, answer key and demonstration shall be traceable to a current controlled source, and shall preserve that source's technical limitations.

3.1 Controls

Content control is exercised through a defined set of controls, each with a stated requirement and a named owner. Table 3.1 lists the controls that apply to every module, from the source register through to supersession.

Table 3.1 Content control requirements

Control	Requirement	Owner
Source register	The technical sources on which each module depends, with edition and the provisions relied upon.	Technical owner
Module crosswalk	Each learning outcome, exercise and assessment item mapped to the exact source provision and to the authority boundary.	Technical owner
Material parity	Manual, slides, handouts and answer keys carry the same definitions, references, prompts and technical caveats. Shortened wording shall not change an authority or safety meaning.	Technical owner
Case control	Permission, anonymisation, factual status and learning purpose recorded. A constructed case shall be labelled as such and shall never be presented as a real project record.	Delivery lead
Assessment control	Blueprint, item source, answer or rubric, reviewer and revision. A disputed item shall not be used for a certification decision.	Assessment owner
Translation	Stable references, approved terminology, back-check and technical review. The English technical text governs until a local-language issue is approved.	Technical owner
Supersession	Effective date, affected sessions and cohorts, withdrawn files and notification, including offline copies.	Technical owner

3.2 Technical review

3.2.1 Any structural formula, numerical criterion, dimension, material property, detail or acceptance value introduced into training material shall be reviewed by a competent structural engineer before it is used in delivery.

3.2.2 Where a facilitator cannot trace a statement or an answer to a source, that item shall not be taught or assessed until the technical owner has resolved it.

3.2.3 Where slides, manual and answer key disagree, the pack shall be withdrawn, corrected and reissued as a coherent set.

3.2.4 Where a facilitator or assessor identifies an error in a source relied upon, the affected item shall be suspended from teaching and assessment, referred to the technical owner and recorded in the source register. Where the correction is material to practice, affected cohorts shall be notified and §15.1.4 applied.

4 Ethics, Inclusion, Accessibility and Safeguarding

4.0.1 Participation, field evidence and assessment shall be protected from discrimination, coercion, retaliation and unmanaged risk. No learning outcome requires exposure to unsafe access, live services, unstable structures or unapproved work.

These safeguarding, gender equality and social inclusion (GESI) and accessibility provisions align with the cross-cutting requirements of the INEE Minimum Standards for safe and accessible learning facilities.

4.1 Controls

The protections stated in 4.0.1 are delivered through controls that run from selection to field activity. Table 4.1 states the requirement for each area together with the limit that prevents the requirement being read as a licence to lower the standard.

Table 4.1 Ethics, inclusion and accessibility controls

Area	Requirement	Limit
Selection	Transparent role-based criteria, active outreach, recorded nominations and non-discrimination.	Participation targets shall not override prerequisites; pipeline gaps are addressed by alternative pathways, not by lowering the standard.
Language	Plain English with approved local-language support, read-back and stable technical terms.	An interpreter shall understand the confidentiality and technical boundaries.
Materials	Readable print, accessible digital files, captions and alternative text, adequate contrast, and no reliance on color alone.	Tested on the devices and print conditions actually used.
Participation	Psychological safety, respectful turn-taking, small-group alternatives and protected feedback. Female facilitators or assessors are provided where women participants' full participation requires it.	No public humiliation and no coerced disclosure.
Assessment	Equivalent evidence routes and reasonable adjustments.	Adjustments shall not change the competence being assessed; they shall be documented and reviewed.
Field activity and media	Site permission, safe access, informed consent, privacy, and no unauthorized photography.	A functioning facility and its users are not training props.

4.2 Response

A control is only as good as the response that follows when it is breached. Table 4.2 sets out the conditions a facilitator is most likely to meet and the response required in each case. In every one of them the delivery is adjusted, never the standard.

Table 4.2 Response to an inclusion or safeguarding condition

Condition	Response
Harassment, discrimination, retaliation or a safeguarding concern	Stop, protect and refer through the approved protected route immediately.
A participant cannot engage safely or accessibly	Adjust or re-plan; provide an equivalent route before assessment.
Pressure to collect or publish personal or sensitive data	Hold; confirm purpose, consent, access and retention.
A field site presents an unmanaged hazard or would disrupt essential services	Cancel or relocate; use an approved alternative exercise.

4.2.1 The protected route shall be named in the delivery plan before delivery and communicated to participants and facilitators at the opening session. It shall identify the focal point by role, the channel by which a concern is raised, an alternative channel where the concern involves the focal point, and the time within which the concern is acknowledged and acted on. A safeguarding concern involving a child or a patient shall be referred immediately under the safeguarding policy applying to the delivery and to the facility, and shall not wait on the program's own route. Where delivery takes place in an occupied facility, the facility's own reporting arrangements apply in addition and are recorded in the field demonstration authorization.

5 Training-Needs Assessment and Nomination

Match each participant and institution to the right module, depth and post-training task using evidence, not job title, availability or assumed prior knowledge.

This chapter and Chapters 6 to 11 follow an analysis, design, delivery and evaluation structure.

5.1 Method

1. Define the post-training tasks and the observable performance required for each role track.
2. Consult the institutions that will deploy, supervise and sustain the capability.
3. Collect participant profiles, self-assessment and objective baseline evidence.
4. Identify technical, pedagogical, language, digital, accessibility and institutional gaps.
5. Assign modules, prework, support, delivery route and assessment route.
6. Approve nominations and record deferred or ineligible candidates with a development pathway.

Figure 5.1 shows the six steps as one route from task definition to an approved or deferred nomination. Steps 4 and 5 carry the full gap and assignment categories set out in §5.2 and Table 5.1.

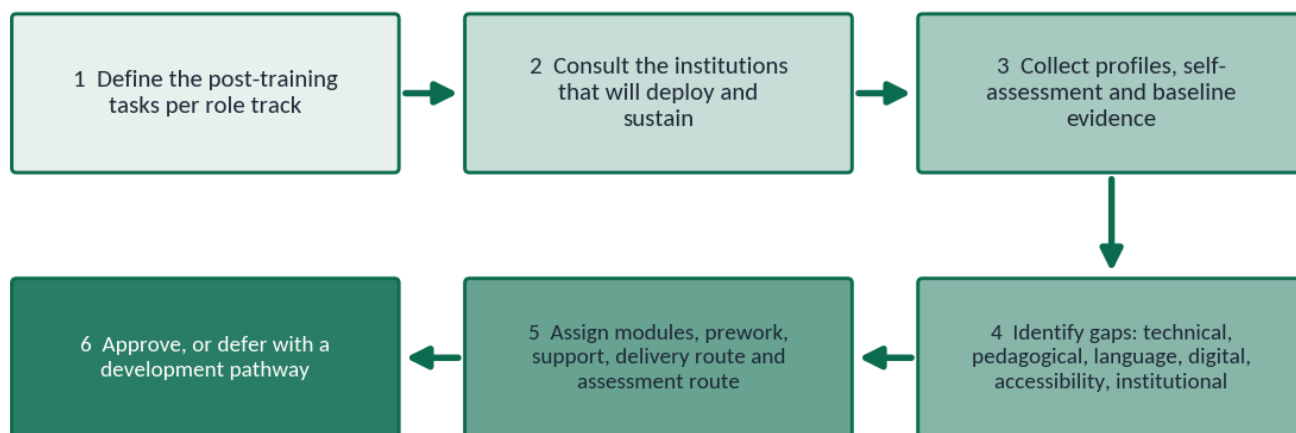


Figure 5.1 Needs-assessment and nomination workflow

5.2 What the assessment establishes

The needs assessment establishes six things about a participant and their institution, each carrying a limit on what it can be used to conclude. Table 5.1 sets these out; clauses 5.2.1 and 5.2.2 state what shall happen where an area cannot be satisfied.

Table 5.1 What the needs assessment establishes

Area	Question	Limit
Task analysis	What decisions and actions will the participant actually take, how often, with what consequence and using what tools?	Distinguish a trainable gap from a policy, resource or process gap. Training does not fix a missing mandate.

Area	Question	Limit
Prerequisites	What professional qualification, field experience, source familiarity or facilitation experience does the module require?	Module-specific and verified, not assumed.
Baseline knowledge	What does the participant already know, and how well can they navigate the sources?	The diagnostic result is separate from any final certification decision.
Baseline practice	Can the participant explain, navigate a form, make an evidence decision or teach a sample?	No unsafe live-task testing.
Institutional readiness	Does the institution have the mandate, supervisor support, time, budget, data, field access, mentoring and opportunity to apply the capability?	Recorded and tracked separately as non-training actions.
Participation barriers	Timing, travel, care responsibilities, disability, language, confidence, technology and workplace culture.	Adjustments planned before invitations are issued.

- 5.2.1** Where a participant lacks a safety-critical prerequisite, they shall be deferred with a bridging pathway. Attendance shall not be used to certify a competence that was not demonstrated.
- 5.2.2** Where an institution cannot provide the post-training role or resources, the gap shall be recorded and the training treated as awareness rather than as capability transfer.

6 Module Structure, Outcomes and Delivery Routes

6.1 Module bank

Eight modules cover the technical and institutional content. Each has a stated audience, prerequisites, outcomes, practice activity, assessment route and authority boundary.

Table 6.1 Module bank

Module	Subject	Primary audience
M1	Institutional adoption, role tracks and the controlled technical basis	All master trainers, with role-track breakouts.
M2	Screening and intake: proforma, workflow and data	Technical users, departmental engineers and planners, nominated trainers.
M3	Detailed structural assessment: investigation, evaluation and engineering handover	Engineers and planners who commission, support, review or route assessment.
M4	Climate, environmental screening and green and nature-based measures	Design and assessment engineers, planners, disaster-risk and environment staff, asset managers.
M5	Structural rehabilitation and strengthening	Structural and civil engineers and project decision makers carrying assessment, design review or supervision responsibility for strengthening work.
M6	Engineer field practice, evidence and escalation	Engineers and technical officers conducting or supervising field work.
M7	Construction management, quality assurance and the worker interface	Project managers, engineers, supervisors and quality and safety staff.
M8	Trainer practice, inclusion, monitoring, cascade and academic integration	All nominated master trainers, assessors and mentoring leads.

6.2 Delivery routes

Table 6.2 Delivery routes

Route	Duration	Purpose	Entry condition
Full program	Five days	Complete progression through all eight modules with guided practice, field or tabletop work, microteaching and institutional action planning.	Approved nomination and prework. The default route where participants need technical grounding or extended facilitation development.

Route	Duration	Purpose	Entry condition
Training of trainers	Three days	Compressed integrated route for participants who already hold the technical competence and complete the required prework.	Verified prerequisites and completed prework. Compression is achieved by moving content to prework, not by removing outcomes.
Awareness briefing	One day	Orientation for decision makers and senior officials: legal basis, purpose, benefits, risks, resources and oversight.	No prerequisite. This route does not assess technical or teaching competence and does not lead to a trainer result.

- 6.2.1** The three routes have different outcomes and different evidence. The same certificate wording shall not be used for more than one route.
- 6.2.2** The awareness briefing is an orientation event. It shall not be recorded or described as a training-of-trainers delivery, and completing it does not authorize a participant to deliver the modules.
- 6.2.3** A role-scoped route may be delivered to a named cohort whose institutional role does not require the full technical progression. The delivery record shall state the modules covered, the duration, the entry condition, the assessed outcomes and their evidence, and certificate wording specific to that route. A role-scoped route is assigned through the needs-assessment and nomination workflow rather than the standard selection in Figure 6.1. It shall not be recorded as the full program, a training-of-trainers delivery or an awareness briefing, and it does not authorize module delivery.

Figure 6.1 gives the route selection logic as a decision tree. The role-scoped route is assigned under §6.2.3 and does not appear in the figure.

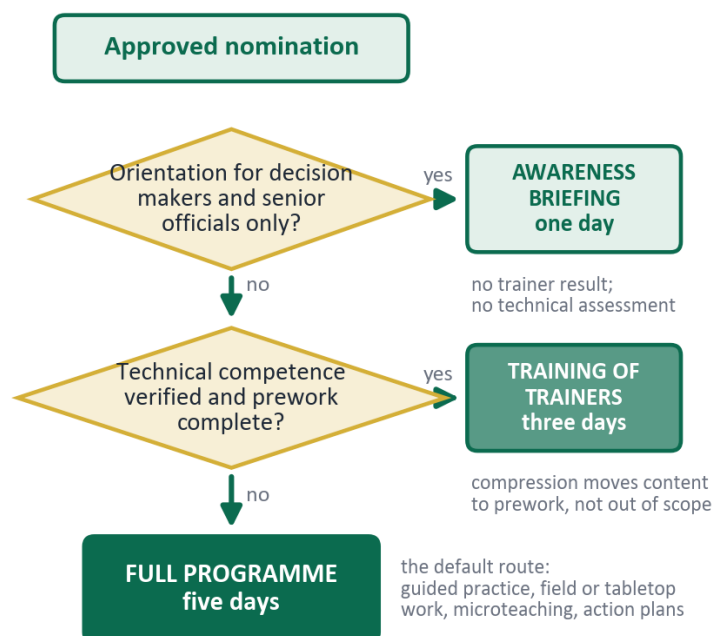


Figure 6.1 Selecting the delivery route

6.3 Five-day plan

Table 6.3 Five-day delivery plan

Day	Morning	Afternoon	Evidence produced
1	M1 Institutional adoption and technical basis	M2 Screening and intake workflow	Role map, source check and a guided workflow exercise.
2	M3 Detailed assessment and investigation	M3 continued: scope, evidence and reporting workshop	Case evidence plan and referral and reporting handover.
3	M4 Climate, environment and nature-based measures	M5 Rehabilitation and strengthening	Screening exercise and intervention-boundary exercise.
4	M6 Field practice, evidence and escalation	M7 Construction management, quality and worker interface	Field or tabletop demonstration, release-point and stop-and-report practice.
5	M8 Trainer practice, inclusion, monitoring and cascade	Microteaching, institutional action plans and final assessment	Facilitation evidence, cascade plan and individual closeout decision.

6.4 Three-day plan

Table 6.4 Three-day delivery plan

Day	Morning	Afternoon	Evidence produced
1	Mandate, role tracks and technical basis; M1	M2 and M3 integrated assessment workflow	Pework verification, guided case workflow and source decision.
2	M4 and M5: climate, environment and intervention handover	M6 and M7: field evidence, construction quality and worker interface	Controlled field or tabletop demonstration and interdisciplinary handover.
3	M8: facilitation, inclusion, monitoring and assessment. The monitoring and evaluation block at outcome 8.5 is delivered at awareness level on this route (Table 8.6).	Microteaching, reassessment decisions and institutional cascade plans	Observed teaching practice, approved action plan and closeout record.

6.4.1 The delivery plans in Tables 6.3 and 6.4 are expressed in half-day blocks of about three hours. The facilitator session guides in Chapter 8 are written for a single three-hour block per guide. A guide is therefore expanded, split or run in full according to the route, as set out in Table 6.5. A facilitator shall not invent the expansion during delivery.

6.4.2 Microteaching is delivered once in each route. In the five-day route it is run in the Day 5 afternoon block, and in the three-day route in the Day 3 afternoon block; in both cases it is the microteaching rotation of the M8 guide and is not repeated in the preceding morning block. The final assessment block is additional facilitated time, not a further delivery of the M8 guide.

6.4.3 Where a block is expanded, the additional time is given to guided and independent practice. The sequence, the assessed evidence and the critical controls stated in the guide are not changed by the expansion.

Table 6.5 Session guide expansion by delivery route

Session guide	Five-day route block(s)	How the guide is expanded	Three-day route block(s)
M1 (§8.2)	Day 1 morning	Run in full as the guide is written.	Day 1 morning, with the mandate and role-track material taken from prework.
M2 and M3 (§8.3)	Day 1 afternoon; Day 2 morning and afternoon	The M2 portion of the guide (0:00–1:55) expands into Day 1 afternoon. The M3 portion (2:00–3:00) expands into Day 2 morning, and the scope, evidence and reporting workshop extends it into Day 2 afternoon.	Day 1 afternoon. Run in full as the guide is written; the case pack is issued as prework.
M4 and M5 (§8.4)	Day 3 morning and afternoon	The M4 portion (0:00–1:25) expands into Day 3 morning; the M5 portion (1:30–3:00) expands into Day 3 afternoon.	Day 2 morning. Run in full as the guide is written.
M6 and M7 (§8.5)	Day 4 morning and afternoon	The M6 portion (0:00–1:25) expands into Day 4 morning; the M7 portion (1:30–3:00) expands into Day 4 afternoon.	Day 2 afternoon. Run in full as the guide is written.
M8 (§8.6)	Day 5 morning and afternoon	Guide items 0:00–1:15 (trainer practice, assessment integrity, inclusion) expand into Day 5 morning. Items 1:15–3:00 (microteaching, cascade and mentoring planning, closeout) run in Day 5 afternoon, together with the final assessment block. Microteaching runs in parallel stations under §8.6.1; where the cohort exceeds the stations that can be staffed, it is scheduled as a separate session.	Day 3 morning and afternoon, split at the same point: items 0:00–1:15 in the morning; items 1:15–3:00, reassessment decisions and cascade planning in the afternoon. Microteaching runs in parallel stations under §8.6.1.

Figure 6.2 lays the two delivery plans out side by side; the color deepens as the cohort moves from adoption to trainer practice.

Five-day full programme

Day	Morning	Afternoon
1	M1 Institutional adoption and technical basis	M2 Screening and intake workflow
2	M3 Detailed assessment and investigation	M3 Scope, evidence and reporting workshop
3	M4 Climate, environment, nature-based measures	M5 Rehabilitation and strengthening
4	M6 Field practice, evidence and escalation	M7 Construction quality and worker interface
5	M8 Trainer practice, inclusion and cascade	Microteaching, action plans, final assessment

Three-day training-of-trainers route

Day	Morning	Afternoon
1	Mandate, role tracks, technical basis; M1	M2 + M3 Integrated assessment workflow
2	M4 + M5 Climate and intervention handover	M6 + M7 Field evidence and construction quality
3	M8 Facilitation, inclusion, monitoring, assessment	Microteaching, reassessment, cascade plans

Figure 6.2 Five-day and three-day delivery plans

6.5 Module specification

Each module in the bank is specified against the same fields, so that a facilitator receives a complete and consistent pack.

Table 6.6 Module specification fields

Field	Content
Audience and prerequisites	Who the module is for, and what they must already hold.
Learning outcomes	Observable actions, the conditions and sources, the evidence, and the authority boundary.
Facilitator sequence	Explanation, demonstration, guided practice, independent practice, feedback, assessment, application.
Guided practice	The task participants perform, using an approved case.
Assessment and feedback	The task assessed, the evidence, the rubric and the critical controls.
Workplace transfer	What the participant will do in their own institution, with an owner and a date.
Source route	The technical provisions relied upon and the boundary reminders that must be preserved.

7 Module Outcomes and Critical Controls

7.1 M1 Institutional adoption and technical basis

M1 establishes the technical basis and the institutional authority surrounding it. Table 7.1 states the outcomes a participant shall be able to demonstrate.

Table 7.1 M1 learning outcomes

Outcome	Participant will be able to
1.1	Explain the technical basis, its legal foundation and the boundary of what it establishes.
1.2	Map institutional roles across governance, implementation, local bodies and academia without transferring authority.
1.3	Select the correct source and escalation route for a given task.
1.4	Produce a resourced institutional adoption and cascade action plan.

Practice, build a one-page implementation canvas for the participant's own institution: mandate, target users and assets, workflow, decisions, partners, resources, risks, evidence and the first ninety-day action.

Critical control, an action proposed outside the institution's actual authority.

Table 7.1a M1 module specification

Field	Content
Audience and prerequisites	All master trainers, with role-track breakouts. No prerequisite.
Learning outcomes	Table 7.1, outcomes 1.1 to 1.4.
Facilitator sequence	Table 8.2.
Guided practice	Institutional implementation canvas, in institution groups.
Assessment and feedback	The individual institutional implementation and authority decision record produced in independent practice (Table 8.2), retained per participant. Critical control: an action proposed outside the institution's actual authority, non-offsetable under §11.2.1.
Workplace transfer	Table the adoption action plan to the institution's authorized decision maker within ninety days, with an owner and a date.
Source route	Table 1.1 and §1.2.1 for the authority boundary; the Building Code of Pakistan 2021 and S.R.O. 971(1)/2008 for the legal basis; source status under Table 3.2.

7.2 M2 Screening and intake

M2 covers the screening and intake stage and the boundary that separates it from detailed assessment. Table 7.2 states the outcomes a participant shall be able to demonstrate.

Table 7.2 M2 learning outcomes

Outcome	Participant will be able to
2.1	Distinguish screening and intake from detailed assessment, design and facility certification.
2.2	Navigate the intake proforma and workflow and make correct evidence decisions on an approved case.
2.3	Recognize missing or conflicting evidence, stop conditions and the referral route.
2.4	Explain record, privacy, version and offline parity controls.
2.5	Identify the principal construction and lateral-load-resisting system of a facility from observable evidence, record it in the approved screening record for the delivery, and state where the system cannot be determined without further evidence.
2.6	Recognize the configuration and vulnerability conditions in the controlled recognition set from observable evidence, record each as an observation, and distinguish an observed condition from a judgement of structural adequacy.
2.7	Explain the inclusion-related information collected at screening — occupancy and use, physical accessibility and gender-responsive facility provision — and identify what each implies for the assessment and design response.

Practice, identify the construction and lateral system and the configuration conditions present, then complete selected fields and an evidence and referral map from an approved case pack, comparing paper and digital routes.

Critical control, presenting a screening outcome as a verdict on structural safety.

Table 7.2b Construction and lateral-system recognition

System	What is observable	What confirms it	Common misidentification	If misidentified
Stone masonry in mud mortar	Irregular stone units; thick walls; mud or weak mortar joints; timber or CGI roof.	Wall thickness and unit irregularity; mortar that can be raked by hand.	Read as coursed brick masonry where rendered.	Out-of-plane vulnerability and wall-density checks omitted.
Burnt brick or block masonry in cement mortar	Regular coursing; cement mortar joints; load-bearing walls without frame members.	Absence of columns and beams at wall junctions and openings.	Read as a frame with infill where plaster conceals the junctions.	The wrong screening route and the wrong referral trigger.
Confined masonry	Masonry panels bounded by slender cast-in-place tie columns and tie beams; masonry built before the confining members.	Tie members that follow the panel, and toothing at the panel edge.	Read as a reinforced concrete frame with infill.	Frame criteria applied to a system that does not behave as a frame.

System	What is observable	What confirms it	Common misidentification	If misidentified
Reinforced concrete frame with masonry infill	Columns and beams built first; infill panels built into the frame.	Frame members continuous through the junctions; infill not load-bearing.	Read as confined masonry.	Infill contribution and short-column effects assessed on the wrong basis.
Reinforced concrete frame with walls	Frame with continuous reinforced concrete walls, often at cores and stairs.	Wall continuity through storeys and into the foundation.	Walls counted as infill panels.	The lateral system recorded as a frame when it is not.
Steel truss roof on load-bearing masonry	Steel or timber truss spanning to masonry walls; no vertical frame.	Roof bearing directly on the wall head; no columns.	Read as a steel frame.	Wall-head restraint and out-of-plane checks omitted.
Timber, dhajji dewari and bhatar	Timber framing with masonry or earth infill; layered timber lacing in stone walls.	Timber members visible at corners, openings and wall courses.	Read as plain stone masonry.	A resilient system recorded as a brittle one, and the wrong referral.
Precast or prefabricated panel	Repeating panel modules; visible panel joints; consistent unit dimensions.	Joint pattern and connection details at panel edges.	Read as cast-in-place construction.	Connection-dependent behavior not identified.
Mixed or altered system	Added storey, replaced roof, changed structural material between parts of the building, or a separation between blocks.	Differences in material, storey height, finish or roof between parts.	The building recorded as one system throughout.	The critical part of the building assessed against the wrong system.

Where the system cannot be determined from the evidence available, it is recorded as undetermined with the basis on which it could be established. A field is not completed by assumption.

Table 7.2c Configuration and vulnerability conditions

Condition	What is observable	Why it matters	What recording it does not establish
Soft or weak storey	A storey with markedly fewer walls or a greater height than those above, commonly an open ground floor.	Deformation and damage concentrate in that storey.	That the storey is inadequate. The code-defined irregularity is determined at assessment under BCP-2021 §1613.
Vertical irregularity and setback	Setbacks, discontinued walls or columns, and changes of stiffness up the height.	Force paths are interrupted and demand concentrates at the discontinuity.	The irregularity types. Classification requires drawings or measurement.

Condition	What is observable	Why it matters	What recording it does not establish
Plan irregularity and torsion	Re-entrant corners, an L, T or U plan, and walls concentrated on one side.	The building twists about a stiffness center away from its mass center.	The torsional amplification. That is an assessment calculation.
Short or captive column	A column restrained over part of its height by partial-height infill, a plinth wall or a landing beam.	The free length is shortened, attracting force and failing in shear.	The shear demand or capacity.
Inadequate separation and pounding	Adjacent blocks with little or no gap, and evidence of contact at the interface.	Blocks strike one another and damage concentrates at the contact level.	The required separation, which is determined at assessment.
Wall density	The length of wall in each direction relative to the floor area served.	It governs whether a masonry building has a lateral system at all.	Adequacy. The measured value is compared with the threshold in the controlling source; a value below it is a referral trigger, not a judgement.
Out-of-plane vulnerability of masonry walls	Long unrestrained wall lengths between cross-walls, slenderness, and absence of a band or wall-head restraint.	The wall can fail out of plane before the building responds as a whole.	The out-of-plane capacity.
Parapet and gable restraint	Unrestrained parapets, gable walls above the roof line, and free-standing boundary elements.	They fail early and fall where people gather.	Anything about the structure below.
Falling hazards	Unrestrained water tanks, equipment, ceilings, light fittings and stored material.	They cause casualties in buildings that are otherwise sound.	That the structure is safe or unsafe.
Site and foundation conditions	Building on fill or a cut slope, evidence of settlement or movement, scour, standing water and inadequate drainage.	Ground conditions can govern the outcome regardless of the superstructure.	The ground condition itself, which requires geotechnical investigation.
Observable fire-safety conditions	Blocked or locked escape routes, absent compartmentation, and obstructed exits.	They govern whether occupants can leave.	Fire performance, which requires a competent fire specialist.

The first three conditions correspond to irregularity types defined in BCP-2021 §1613 and are classified at detailed assessment. The remainder are screening indicators. In both cases M2 records the observable indicator and applies the referral route; it does not classify or judge adequacy.

Table 7.2a M2 module specification

Field	Content
Audience and prerequisites	Technical users, departmental engineers and planners, and nominated trainers. An engineering or technical qualification, and a current role carrying screening, inspection or facility responsibility.
Learning outcomes	Table 7.2, outcomes 2.1 to 2.7.
Facilitator sequence	Table 8.3, M2 portion.
Guided practice	Identify the construction and lateral system and the configuration conditions present, then complete the record and the evidence and referral map from an approved case.
Assessment and feedback	Table 9.2 practical task 1, and the Table 9.1 knowledge tasks on trigger events and on inclusion information. Critical control: presenting a screening outcome as a verdict on structural safety, non-offsetable under §11.2.1.
Workplace transfer	Apply the screening route to an agreed number of the participant's own facilities within ninety days, with an owner and a date.
Source route	Tables 7.2b and 7.2c; BCP-2021 §1613 for the code-defined irregularities; the approved screening record for the delivery as fixed in the delivery record; Table 4.1 and Table 17.1 for inclusion and accessibility; source status under Table 3.2.

7.3 M3 Detailed assessment

M3 develops competence to commission, scope, read, review and route a detailed assessment. It does not develop or authorize the performance of detailed structural evaluation, which requires the professional competence and authorization applicable to that work (§1.2.1). M3 covers the staged assessment process and the handovers it depends on. Table 7.3 states the outcomes a participant shall be able to demonstrate.

Table 7.3 M3 learning outcomes

Outcome	Participant will be able to
3.1	Explain the staged assessment process, its scope, uncertainty and reporting handovers.
3.2	Differentiate observation, test data, engineering interpretation and authorized decision.
3.3	Prepare a scope, evidence and quality handover without inventing test criteria or conclusions.
3.4	Recognize when a specialist, responsible engineer, laboratory or institutional decision is required.
3.5	Define an investigation question, identify the class of method capable of answering it and its principal limitation, and route it to the competent specialist or laboratory, without specifying the test procedure or sampling regime.

Practice, using an approved case, prepare an investigation and reporting handover matrix: question, evidence, method class and its limitation, source, competent role, quality check, decision and limitation.

Critical control, asserting a capacity, demand-capacity ratio or verdict that the evidence does not support.

The methods available to answer an investigation question, their applicability and their limitations are set out in the governing sources rather than in this Manual. The provisions relied upon are ASCE/SEI 41-17 §6.2 and Table 6-1 for data-collection level, testing requirements and the knowledge factor, and §7.3 for selection of the analysis procedure; ACI 562-19 §5 for the assessment of existing concrete structures; ACI 228.1R and ACI 228.2R for in-place strength estimation and non-destructive methods; and the ASTM method standards for individual tests. Masonry and durability indicators are referred to the controlling source recorded for the delivery. The participant locates, cites and applies the requirement from its source; the procedure and the sampling regime are not taught in this Manual.

Table 7.3a M3 module specification

Field	Content
Audience and prerequisites	Engineers and planners who commission, support, review or route assessment. An engineering degree, and a role commissioning, reviewing or routing assessment work.
Learning outcomes	Table 7.3, outcomes 3.1 to 3.5.
Facilitator sequence	Table 8.3, M3 portion.
Guided practice	Investigation and reporting handover matrix from an approved case.
Assessment and feedback	The handover matrix and investigation scope produced in independent practice (Table 8.3), and Table 9.1 knowledge tasks 1 and 2. Critical control: asserting a capacity, demand-capacity ratio or verdict that the evidence does not support, non-offsetable under §11.2.1.
Workplace transfer	Draft or revise one assessment commissioning instruction in the participant's own institution within ninety days.
Source route	§1.2.1 for the boundary; ASCE/SEI 41-17 §6.2, Table 6-1 and §7.3; ACI 562-19 §5; ACI 228.1R and ACI 228.2R; the ASTM method standards; source status under Table 3.2.

7.4 M4 Climate, environment and nature-based measures

M4 connects climate, environmental and hazard information to the assessment and design handover. Table 7.4 states the outcomes a participant shall be able to demonstrate.

Table 7.4 M4 learning outcomes

Outcome	Participant will be able to
4.1	Connect climate, hazard and environmental information to the design and assessment handover.
4.2	Differentiate screening, option identification, design criteria and project approval.
4.3	Apply passive, water, waste and nature-based measures within system and maintenance boundaries.
4.4	Record assumptions, co-benefits, trade-offs, owner capacity and approval needs.
4.5	Identify an authoritative climate or hazard information source, state the horizon or scenario the information belongs to, show how it becomes a design input, and record the assumptions, uncertainty and approval route.

Practice, build the design-basis record for the governing variable, then prepare a climate and environment option-screening table for an approved case: problem, evidence, option, co-benefit, trade-off, design input, approval and maintenance owner.

Critical control, adopting a numerical climate allowance without a stated source, horizon and transformation.

Table 7.4b the climate design-basis chain

Step	What is recorded	What fails the critical control
Source	The publication relied upon, its issuing body, its edition and its status under Table 3.2.	An unattributed value, or a figure carried across from another project.
Horizon or scenario	The period and, where the source expresses one, the scenario the value belongs to.	A value used without the horizon or scenario under which it was derived.
Transformation	How the information becomes a design input, and the competent role that made the transformation.	A projection applied directly as a design value with no stated transformation.
Uncertainty	The range or confidence the source states, and what was assumed where it states none.	A single value presented as certain.
Approval	Who approves the adopted input, and where the approval is recorded.	An allowance adopted in the classroom, or by a role without authority to adopt it.

The Manual does not prescribe a climate dataset or publication. Outcome 4.5 requires the participant to identify the authoritative source used, to record it with its status under Table 3.2, and to carry it through the chain above. Green and nature-based measures under outcome 4.3 are adopted as project decisions on a stated basis; where such a measure affects a code-governed performance, the code value governs.

Table 7.4a M4 module specification

Field	Content
Audience and prerequisites	Design and assessment engineers, planners, disaster-risk and environment staff, and asset managers. An engineering or planning qualification, and a role carrying design, assessment or environmental responsibility.
Learning outcomes	Table 7.4, outcomes 4.1 to 4.5.
Facilitator sequence	Table 8.4, M4 portion.
Guided practice	The design-basis record for the governing variable, then the option-screening table for an approved case.
Assessment and feedback	Table 9.2 practical task on the climate design-basis record. Critical control: adopting a numerical climate allowance without a stated source, horizon and transformation, non-offsetable under §11.2.1.
Workplace transfer	Record the design basis for one climate variable on a live project within ninety days.

Field	Content
Source route	Table 7.4b for the design-basis chain; Table 3.2 for source status; BCP-2021 §1609, §1612 and §1613; the Green Building Code of Pakistan 2023 as reference and good practice, advisory unless adopted by the relevant provincial authority.

7.5 M5 Rehabilitation and strengthening

M5 covers rehabilitation and strengthening as a decision route rather than as a set of details. Table 7.5 states the outcomes a participant shall be able to demonstrate.

Table 7.5 M5 learning outcomes

Outcome	Participant will be able to
5.1	Distinguish the assessment finding, the strengthening option, the design decision and the construction verification, and identify the point at which the decision passes to the responsible designer.
5.2	Separate assessment finding, option screening, selected design, temporary condition, construction verification and handover.
5.3	Identify the required project inputs, specialists, checks and stop conditions.
5.4	Explain residual risk, monitoring, maintenance and institutional decision handovers.

Practice, trace one assigned intervention through a handover canvas: deficiency evidence, decision owner, design inputs, project documents, construction controls, completion evidence and residual stewardship, closing with the residual-risk and monitoring statement for that intervention.

Critical control, producing a dimension, reinforcement arrangement or anchor specification in the classroom and treating it as a design.

Table 7.5b What an intervention leaves behind

Element	What the participant states	Boundary
Residual risk	What the intervention does not address: hazards outside its scope, deficiencies accepted at design stage, and the performance level it was designed to rather than the one an occupant may assume.	Stated from the design record and its stated limitations. The participant does not evaluate residual capacity.
Monitoring	What is observed after completion, how often, by whom, and what the observation is compared against.	Where a threshold governs, it is taken from the design record or the controlling source, and is not set in the classroom.
Maintenance	The maintenance the intervention itself requires, distinct from routine facility maintenance, and who holds it.	An intervention with no assigned maintenance holder is recorded as a handover gap, not as complete.
Institutional handover	Who receives the as-built record, the design limitations, the monitoring regime and the maintenance obligation, and how receipt is evidenced.	Handover is a recorded transfer of obligation, not the issue of a document.

Element	What the participant states	Boundary
Trigger for re-entry	The conditions under which the facility returns to screening or assessment, including damage, change of use, alteration and elapsed time.	Aligns with the trigger-event logic at Table 9.1 and §15.2.

Table 7.5a M5 module specification

Field	Content
Audience and prerequisites	Structural and civil engineers and project decision makers carrying assessment, design review or supervision responsibility for strengthening work. An engineering degree.
Learning outcomes	Table 7.5, outcomes 5.1 to 5.4.
Facilitator sequence	Table 8.4, M5 portion.
Guided practice	Trace the assigned intervention through the handover canvas.
Assessment and feedback	The completed handover canvas closing with the residual-risk and monitoring statement (Table 8.4, independent practice). Critical control: producing a dimension, reinforcement arrangement or anchor specification in the classroom and treating it as a design, non-offsetable under §11.2.1.
Workplace transfer	Produce a residual-risk and monitoring statement for one completed or planned intervention within ninety days.
Source route	Table 7.5b; the applicable design standards and project documents for technique-level design guidance; Table 9.1 for the trigger-event logic; source status under Table 3.2.

7.6 M6 Field practice, evidence and escalation

M6 covers field practice, the evidence a visit produces and the point at which a finding is escalated. Table 7.6 states the outcomes a participant shall be able to demonstrate.

Table 7.6 M6 learning outcomes

Outcome	Participant will be able to
6.1	Plan the assignment, identity, sources, roles, access and evidence before arrival.
6.2	Observe and record facts without converting them into unsupported diagnosis or verdict.
6.3	Use work-control labels, urgent notification and referral boundaries correctly.
6.4	Produce a traceable, calculation-ready handover and protect data, people and the facility.
6.5	Recognize the conditions that make a position unsafe to occupy or to continue documenting from, withdraw to a safe standoff and escalate through the route named under §4.2.1, without completing the record from an unsafe position.

Practice, run an approved field or tabletop station: confirm the assignment, create evidence references, record factual observations, respond to a scripted condition change by withdrawing and recording from safety, identify a stop or referral trigger and deliver a structured handover.

Critical control, continuing to work, or to document, in an unsafe position.

Table 7.6b Withdrawal and escalation

Stage	What the participant does	Boundary
Before entry	Confirms the clearance under §12.0.2 and its basis, the areas permitted and the conditions under which entry is not permitted.	The participant does not clear the area. Clearance is given by the competent, authorized person under §10.1.3.
On arrival	Checks the condition of the areas to be used against the clearance and confirms whether it still holds.	A changed condition invalidates the clearance.
While working	Recognizes indicators of instability, immediate danger and unsafe access, including new or widening cracking, displacement, distress in a member carrying load, and unstable or falling material.	Recognition triggers withdrawal. It is not an assessment of the structure.
On withdrawal	Withdraws to a safe standoff, records what was and was not observed, and escalates through the route named under §4.2.1.	The record is completed from safety. Incompleteness is recorded, not filled in.

Table 7.6a M6 module specification

Field	Content
Audience and prerequisites	Engineers and technical officers conducting or supervising field work. An engineering or technical qualification, a role conducting or supervising field work, and a completed field safety induction.
Learning outcomes	Table 7.6, outcomes 6.1 to 6.5.
Facilitator sequence	Table 8.5, M6 portion.
Guided practice	Field or tabletop station rotation, including the scripted condition change and withdrawal.
Assessment and feedback	Table 9.2 field station task, including the withdrawal condition. Critical control: continuing to work, or to document, in an unsafe position, non-offsetable under §11.2.1.
Workplace transfer	Apply the recording and withdrawal route on one field visit within ninety days.
Source route	Table 7.6b; Chapter 12 and §12.0.2 for site controls and clearance; §4.2.1 for the escalation route; the applicable field-practice procedure for the delivery as recorded in the source register; source status under Table 3.2.

7.7 M7 Construction management and quality

M7 covers the construction controls that hold quality at the point work is carried out and accepted. Table 7.7 states the outcomes a participant shall be able to demonstrate.

Table 7.7 M7 learning outcomes

Outcome	Participant will be able to
7.1	Explain package readiness, submittal, material, release-point, non-conformance, completion and handover controls.

Outcome	Participant will be able to
7.2	Distinguish worker prompts from the project definitions of hold, witness, review and surveillance, and from acceptance authority.
7.3	Use a controlled inspection and test plan exercise without inventing acceptance criteria.
7.4	Plan a supervisor-led worker demonstration and evidence handback safely and accessibly.

Practice, build a package-control route for an approved case and deliver a worker briefing structured around four prompts: start only when, check before covering, stop and report, and protect and record.

Critical control, treating a completed form or an absent inspector as automatic acceptance.

Table 7.7b Completion and handover

Element	What is verified	Boundary
Completion	The work is complete against the approved package, non-conformances are closed or formally accepted, and outstanding items are listed with dates and owners.	Completion is a recorded state, not the absence of complaint.
As-built record	What was actually built where it differs from the design, with the difference and its authorization recorded.	The as-built records what exists, not what was intended.
Defects liability	The period, what it covers, who holds it, and how a defect is raised during it.	Expiry does not extinguish a latent defect.
Operation and maintenance handover	The maintenance the work requires, its frequency, the competence needed and the holder, consistent with Table 7.5b.	Handover is a recorded transfer of obligation, not the issue of a document.
Receipt	Who receives the record set, and how receipt is evidenced.	Unassigned receipt is a handover gap, not a completion (Table 15.2).

Table 7.7a M7 module specification

Field	Content
Audience and prerequisites	Project managers, engineers, supervisors, and quality and safety staff. An engineering or technical qualification, and a role in supervision, quality or project management.
Learning outcomes	Table 7.7, outcomes 7.1 to 7.4.
Facilitator sequence	Table 8.5, M7 portion.
Guided practice	Place the hold points in a method sequence and justify each.
Assessment and feedback	Table 9.2 hold-point task and the worker briefing task, including what must be complete before acceptance and handover. Critical control: treating a completed form or an absent inspector as automatic acceptance, non-offsetable under §11.2.1.
Workplace transfer	Review one live inspection and test plan against its governing acceptance sources within ninety days.

Field	Content
Source route	Table 7.7b; the applicable construction control procedure for the delivery as recorded in the source register; the governing project, code and product sources for acceptance criteria; source status under Table 3.2.

7.8 M8 Trainer practice and institutionalization

M8 converts a competent practitioner into a facilitator who can teach, assess and institutionalize the content. Table 7.8 states the outcomes a participant shall be able to demonstrate.

Table 7.8 M8 learning outcomes

Outcome	Participant will be able to
8.1	Plan and deliver a source-controlled, inclusive and practice-rich session.
8.2	Assess knowledge, practical and teaching evidence fairly and apply reassessment and certificate boundaries.
8.3	Produce cascade, mentoring, inclusion, monitoring and repository controls.
8.4	Defend an institutional and academic action plan using evidence, roles, resources and change control.
8.5	Build an indicator set for an infrastructure or safety program in the participant's own institution — definition, baseline, target, disaggregation, means of verification, data-quality check and reporting cycle — and state what each indicator does not establish.

Practice, deliver an approved microteaching segment, assess a peer task using the rubric, give corrective feedback and present a ninety-day institutional cascade and mentoring plan carrying the indicator set for the programme it describes.

Critical control, teaching a technical statement that cannot be traced to a source.

Table 7.8a M8 module specification

Field	Content
Audience and prerequisites	Nominated master trainers, assessors and mentoring leads. Completion of the technical modules in the assigned route, and a nominated training or mentoring role.
Learning outcomes	Table 7.8, outcomes 8.1 to 8.5.
Facilitator sequence	Table 8.6.
Guided practice	Microteaching in parallel stations under §8.6.1, assessed against Table D.2.
Assessment and feedback	Observed microteaching against Table D.2, and the ninety-day cascade and mentoring plan carrying its indicator set. Critical control: teaching a technical statement that cannot be traced to a source, non-offsetable under §11.2.1.
Workplace transfer	Deliver one authorized cascade session or mentoring engagement, and define the indicator set for one programme in the participant's own institution, within ninety days.
Source route	Chapters 8 to 15; Table D.2; §13.1.1 and §13.1.2 for cascade authorization; Table 15.3 for the indicator set; source status under Table 3.2.

8 Facilitator Session Guides

The guides below convert each module into a timed session a facilitator can run. Timings are for a three-hour block. Table 6.5 states how each guide is expanded, split or run in full for the five-day and three-day routes; the sequence and the evidence produced are not adjusted by that expansion.

8.1 Standard session structure

Table 8.1 Standard session structure

Phase	Share of time	What the facilitator does	What participants produce
Connect	5 per cent	Establish why the session matters for the participants' own institutions and what decision it supports.	A stated link to their own work.
Explain	20 per cent	Present the minimum concept needed to act, with the source open and visible.	Notes referenced to the source.
Demonstrate	15 per cent	Perform the task once, thinking aloud, including the checks and the point at which they would stop and refer.	An observed model of the task.
Guided practice	25 per cent	Participants attempt the task in mixed groups with circulating support and immediate correction.	A first attempt with feedback recorded.
Independent practice	20 per cent	Participants perform the task unaided under the assessment conditions.	The assessed evidence.
Debrief and transfer	15 per cent	Draw out the reasoning, the evidence and the authority boundary; agree the workplace action.	A named action with an owner and a date.

The shares sum to one hundred per cent, so the time for any block length can be derived directly. For a three-hour block, they give nine, thirty-six, twenty-seven, forty-five, thirty-six and twenty-seven minutes. Figure 8.1 shows where the time goes in a standard session, and the 45 per cent practice share that is protected.

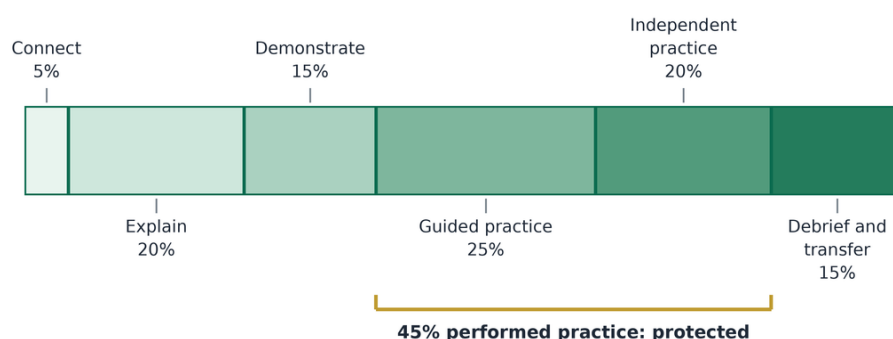


Figure 8.1 Standard session structure: share of time

GOOD PRACTICE

The proportions matter more than the content list. A session that spends sixty per cent of its time on explanation will produce participants who can describe the requirement and cannot apply it. If time is lost, reduce explanation and protect practice.

8.2 M1 Institutional adoption

The guide below converts M1 into a timed three-hour block. Table 8.2 gives the sequence, the time at which each activity begins and the facilitator note that governs it.

Table 8.2 M1 session guide

Time	Phase	Activity	Facilitator note
0:00	Connect	Each institution states one asset decision it currently makes without adequate technical input.	Capture on a visible list; return to it at the debrief.
0:10	Explain	The technical basis and its legal foundation, with the code and the notification open.	Show the actual documents. Participants should see the source, not a summary of it.
0:46	Demonstrate	Routing one real task through the correct source and authority, and role mapping: who decides, who advises, who records, who accepts.	Include one point where the correct answer is to refer rather than decide. Use the participants' own institutions rather than a generic diagram.
1:13	Guided practice	Institutional implementation canvas, in institution groups.	Circulate; challenge any action that lies outside the institution's authority.
1:58	Independent practice	Each participant completes their own institutional implementation and authority decision record; the group then presents the combined canvas in five minutes.	The individual record is the assessed evidence for the module and is retained per participant (Table 14.1). The group canvas is collaborative practice and does not carry the individual result.
2:34	Debrief and transfer	Debrief against the opening list; agree the first ninety-day action.	Every action needs an owner and a date, or it is not an action.

8.3 M2 and M3 Screening, intake and detailed assessment

M2 and M3 are guided as one continuous workflow, because the decision to escalate from screening to detailed assessment is the point the session is built around. Table 8.3 gives the sequence and the facilitator notes.

Table 8.3 M2 and M3 session guide

Time	Phase	Activity	Facilitator note
0:00	Connect	The staged logic: why most buildings are resolved by screening and what triggers detailed work.	Anchor on affordability at national scale, not on caution.

Time	Phase	Activity	Facilitator note
0:10	Explain	Construction and lateral systems, and the configuration and vulnerability conditions (Tables 7.2b and 7.2c); then the intake record field by field, with an approved case in hand.	Emphasise which findings enter the structural route and which do not. Keep recognition at the level of the observable indicator.
0:45	Demonstrate	Identify the system and the conditions present on the case, then reach an outcome including one deliberately ambiguous item.	Model saying that the evidence does not resolve it, and recording the system as undetermined with the basis.
1:12	Guided practice	Participants identify system and conditions and complete the intake and evidence map in pairs; then escalation from screening to detailed assessment: what changes, what evidence is needed and who decides.	Watch for participants inventing values to complete a field. Introduce the staged workflow and its termination criteria.
1:57	Independent practice	Prepare an investigation and reporting handover matrix, including the investigation scope for one stated question and its routing.	This is the assessed evidence.
2:32	Debrief and transfer	What would have to be true for the outcome to change? Agree the workplace action.	Every action needs an owner and a date.

8.4 M4 and M5 Climate, environment and strengthening

M4 and M5 are guided together so that a climate or hazard finding is carried through to an intervention decision within the same block. Table 8.4 gives the sequence and the facilitator notes.

Table 8.4 M4 and M5 session guide

Time	Phase	Activity	Facilitator note
0:00	Connect	From hazard to design decision: what a design basis must record.	Stress traceability of the chain, not the size of any allowance.
0:10	Explain	The design-basis chain at Table 7.4b — source, horizon or scenario, transformation, uncertainty and approval; then the M5 decision route separating assessment finding, option, design decision and construction verification.	Use Table 3.2 to establish what each source may justify.
0:46	Demonstrate	Building a climate design basis record for one variable, and tracing one intervention to the point at which the decision passes to the responsible designer.	Show a case where the honest answer is that no numerical allowance is justified.
1:13	Guided practice	Design-basis record for the governing variable, then the option-screening table for the approved case.	Challenge any option chosen before the deficiency is stated, and any allowance adopted without its horizon.
1:58	Independent practice	Trace one assigned intervention through the handover canvas, closing with the residual-risk and monitoring statement.	This is the assessed evidence.

Time	Phase	Activity	Facilitator note
2:34	Debrief and transfer	Which check, if omitted, would most likely cause the intervention to fail? Agree the workplace action.	Every action needs an owner and a date.

8.5 M6 and M7 Field practice and construction quality

M6 and M7 are guided together so that field evidence and construction control are practised as one chain from observation to acceptance. Table 8.5 gives the sequence and the facilitator notes.

Table 8.5 M6 and M7 session guide

Time	Phase	Activity	Facilitator note
0:00	Connect	What a visit is for: evidence another engineer can rely on.	Show a poor record and a good record of the same finding.
0:10	Explain	Work-control labels and what they are not; then construction controls: readiness, release points, concealment and acceptance, and what must be complete before handover (Table 7.7b).	Make the distinction from occupancy decisions explicit and test it.
0:46	Demonstrate	Locate the hold points in a specimen inspection and test plan, and model the withdrawal decision under Table 7.6b.	Model completing the record from safety, showing what was not observed.
1:13	Guided practice	Field or tabletop station: observe, record, measure, photograph and reference, including the scripted condition change and withdrawal; then place hold points in a method sequence and justify each.	Run in rotation; assess against the observation rubric. Assess the decision to withdraw, not the quality of the record produced after it. A participant who completes the record from an unsafe position has failed the module critical control regardless of the record's quality. Challenge any hold point that does not precede an irreversible step.
1:58	Independent practice	Deliver a short worker briefing using the four prompts.	This is the assessed evidence; assess clarity and boundary, not delivery polish.
2:34	Debrief and transfer	What would you now change in your own site records? Agree the workplace action.	Every action needs an owner and a date.

8.6 M8 Trainer practice

The M8 guide carries the microteaching rotation and the closeout decisions, and is run once in each route. Table 8.6 gives the sequence and the facilitator notes.

Table 8.6 M8 session guide

Time	Phase	Activity	Facilitator note
0:00	Connect	What makes technical training change practice: demonstration and practice, not explanation.	Reference the session structure and the time proportions.
0:10	Explain	Assessment integrity: evidence, rubrics, critical controls and the boundary of a certificate.	Work through a borderline case as a group.
0:40	Explain	Inclusion in practice; and monitoring and evaluation as programme practice: the indicator set at Table 15.3 applied to the participant's own asset or safety programme.	Use scenarios drawn from the cohort's own delivery contexts. In the three-day route, this block is delivered at an awareness level.
1:00	Demonstrate	Work a borderline assessment decision and one indicator definition through to what it does and does not establish.	Show the claim being matched to the level of evidence (§15.1.2).
1:15	Guided and independent practice	Microteaching, in parallel stations: fifteen minutes each, assessed against the facilitation rubric. Station capacity is derived under §8.6.1.	Assessed by an authorized assessor against the facilitation rubric. Peer feedback is collected as formative input and does not carry the result. Microteaching is the guided and independent practice for this guide.
2:30	Debrief and transfer	Cascade and mentoring planning, in institution groups, each plane carrying its indicator set; then closeout: individual decisions, reassessment needs and follow-up.	Every plan needs a trainer, an audience, a date and a resource.

8.6.1 Microteaching runs in parallel stations, each observed by one authorized assessor. Station capacity is derived from the full segment and not from teaching time alone: fifteen minutes teaching, four minutes assessor recording against Table D.2, four minutes corrective feedback and two minutes changeover, for a total of twenty-five minutes per participant. A station therefore takes three participants within the seventy-five minutes allowed in Table 8.6, or four where the block is expanded to one hundred minutes under Table 6.5. Where the cohort exceeds the number of stations that can be staffed at that capacity, the microteaching and Trainer Performance assessment is scheduled as a separate session and the certificate decision is deferred until it is completed.

9 Specimen Assessment Tasks

The tasks below illustrate the form and standard of assessment. They are examples for calibrating assessors and are replaced by the approved item bank for a delivery. Each specimen task names the controlled provision that governs the strong answer, so that an assessor calibrating against it can check the answer rather than accept it. Every item and answer key in the approved item bank shall carry the same source reference, to the same level of precision, under §3.1 and Table 14.4.

9.1 Knowledge tasks

Table 9.1 Specimen knowledge tasks

Task	What a strong answer contains	What fails the critical control	Governing source / provision
A school with 480 pupils has been designated a district flood shelter. State the Risk Category and the performance objective, and cite the provision.	States the occupant load determined under the applicable occupancy and floor-area provisions, treating the enrolment figure as contextual facility information rather than as the code occupant load; identifies Risk Category IV on the shelter designation, cited to the risk-category table; states the resulting performance objective and the paired hazard check.	Treats enrolment or headcount as the code occupant load; gives a category without citing the provision; or applies an occupant-load trigger and misses the shelter designation.	Building Code of Pakistan 2021, §1604.5 and Table 1604.5 (Risk Category); Appendix A §A104.1 and §A104.1.1, with ASCE/SEI 41-17 Table 2-1 (performance objective for existing buildings); §1612 (flood-load and flood-hazard requirements); Appendix B where adopted or applicable.
A building has original drawings, confirmed visually, and no material testing. State the knowledge factor and the analysis procedures permitted.	Identifies the value applying to that data-collection level, notes it is assigned per component, and states that linear procedures apply unless the data-collection level is raised.	Quotes a single building-wide value, or permits a non-linear procedure on minimum-level data.	ASCE/SEI 41-17, §6.2 and Table 6-1 (data-collection requirements and the knowledge factor); §7.3 (selection of the analysis procedure).
A screening outcome of SAFE has been recorded. A custodian later reports a new crack. State what happens.	Identifies the report as a trigger event, states that the assessment reopens at the screening stage, and notes that the earlier outcome does not survive the trigger.	Treats the earlier outcome as a standing certification.	The approved screening and intake protocol for the delivery: trigger events and re-entry to screening, as entered in the source register under §3.1. ACI 562-19, §4 (assessment required on a change in condition).

Task	What a strong answer contains	What fails the critical control	Governing source / provision
An anchor capacity is taken from a manufacturer's table for installation into an existing cracked concrete edge. State what must be checked.	Confirms first that the anchor is qualified for use in cracked concrete and for the actual installation condition before any tabulated capacity is applied; lists the failure modes in the receiving material as well as the steel; identifies the cracked condition and the edge distance as likely governing; and requires site verification.	Applies a tabulated capacity without confirming that the product is qualified for the cracked-concrete condition, or accepts the tabulated value without identifying the concrete failure modes.	ACI 318-19, Chapter 17 (anchoring to concrete): §17.1 and §17.5 (qualification for the cracked or uncracked condition), steel and concrete failure modes, and edge-distance requirements.
A screening visit records the occupancy and use of a school, its physical accessibility and its sanitation provision. State what each implies for the assessment and design response.	Relates occupancy and use to who is present and when, and to the consequence of loss of use; relates physical accessibility to step-free access, circulation and safe egress for all occupants; relates sanitation provision to separate, secure and usable facilities; and identifies which of these become design or referral inputs under M4 and M5 rather than administrative data.	Records the information as administrative data with no consequence stated, or converts it into a judgement of adequacy.	Table 4.1 (ethics, inclusion and accessibility controls); Table 17.1 (facilities); §4.0.1.

9.2 Practical tasks

Table 9.2 Specimen practical tasks

Task	Assessed against
From a supplied case pack, identify the construction and lateral system, record the configuration and vulnerability conditions present, complete the intake record and produce an evidence and referral map.	System correctly identified, or recorded as undetermined with the basis stated; conditions present correctly recognized and recorded as observations; no condition converted into a judgement of structural adequacy; correct record and issue used; evidence handled without invention; boundary respected; referral route correctly identified; record discipline.
From a supplied case, build the design-basis record for one climate variable and state what would have to change for the adopted input to change.	Source identified with its issuing body, edition and status under Table 3.2; horizon or scenario stated where the source expresses one; transformation to a design input stated and attributed to a competent role; uncertainty recorded as the source expresses it; approval route named; no numerical allowance adopted without all five.

Task	Assessed against
At a field or tabletop station, record three findings to the standard required for handover, and state the condition under which you would withdraw and what the record would then show.	Location referencing; neutral description separated from interpretation; measurement method and units stated; photograph sequence and scale; coverage recorded; the withdrawal condition correctly identified and the record completed from safety with the gap stated rather than filled.
Given a method sequence, place the hold points and justify each, and state what must be complete before the work is accepted and handed over.	Each point precedes an irreversible or concealing step; the evidence and releasing role are named; no point placed where it generates a record without protecting the work; completion, as-built, defects liability, operation and maintenance handover and evidenced receipt correctly identified (Table 7.7b).
Prepare and deliver a five-minute briefing to a supervisor on one control.	Technical accuracy; clarity for the audience; correct statement of what the control does and does not establish; the stop-and-report condition stated.

9.3 Assessor calibration

- 9.3.1** Before a delivery, assessors shall independently assess the same specimen evidence and compare results. Where the results differ by more than the scheme permits, the rubric shall be clarified before assessment begins.
- 9.3.2** Where a participant's evidence sits at the boundary, a second assessor shall review it and the moderated decision shall be recorded with both views.
- 9.3.3** Evidence sits at the boundary where any criterion is assessed as partly met, where assessors differ on any criterion, or where the overall outcome would change on a single criterion. Where a criterion carries a module critical control, a not-met outcome is non-offsetable under §11.2.1 and is not resolved by moderation.

10 Facilitation and Bilingual Delivery

10.1 Facilitator and assessor prerequisites

- 10.1.1** A facilitator shall hold the relevant technical or role competence, command of the module sources, demonstrated facilitation practice, and an authorization for the module and scope they deliver.
- 10.1.2** An assessor shall hold the technical or role competence for the outcomes assessed, shall have completed the calibration required by §9.3.1, and shall be authorized for the modules and outcomes they assess. The authorization, its scope and its review date shall be recorded in the delivery record.
- 10.1.3** Where a role under this Manual exercises regulated engineering judgement — reviewing a technical statement or acceptance value under §3.2.1, giving the field demonstration clearance under §12.0.2, or delivering or assessing a module whose outcomes require professional engineering judgement — the person shall hold the registration and authorization required for that work under the Pakistan Engineering Council framework applicable at the date of delivery, and it shall be recorded in the delivery record.
- 10.1.4** A facilitator, assessor or accompanying person taking part in a delivery in a school or health facility shall have completed the safeguarding vetting and code-of-conduct acknowledgement applying to the delivery before participating, recorded in the delivery record. A person who has not completed it shall not take part in field activity in an occupied facility.

10.2 Method

The method is the same whichever module is being delivered, and it is what separates a session that changes practice from one that only describes it. Table 10.1 states the requirement for each element of the sequence.

Table 10.1 Facilitation method requirements

Element	Requirement
Sequence	Short explanation, then worked navigation of the source, structured discussion, guided practice, feedback and application. Explanation alone does not build capability.
Demonstration	The facilitator performs the task once, thinking aloud, before participants attempt it.
Guided practice	Participants perform the task with support and immediate feedback, using an approved case.
Independent practice	Participants perform the task unaided, producing the evidence that will be assessed.
Questioning	Open questions that require reasoning and a source, rather than recall of a number.
Debrief	What was decided, on what evidence, what would change the decision, and who holds the authority.

10.3 Language

10.3.1 Delivery shall use plain English for the controlled technical meaning, with approved local-language support in Urdu or in the provincial language required by the cohort, for explanation and discussion. Technical references and terms shall remain stable across languages.

10.3.2 Where interpretation is used, the interpreter shall be briefed on the technical terms that must not be paraphrased, and on the confidentiality applying to facility and participant information.

10.3.3 A local-language version shall be back-checked and technically reviewed before it is used for assessment. Wording that carries a safety or authority meaning shall be verified word by word.

10.4 Mixed-authority cohorts

GOOD PRACTICE

In a cohort combining regulators, departmental engineers, local officials and academics, the risk is not disagreement but silence: the participant with the least positional authority often holds the most relevant operational knowledge. Structure practice in small mixed groups with rotating reporting roles, so that contribution does not depend on seniority.

Figure 10.1 shows the method in use: sources open, mixed groups, and the facilitator circulating.



- ① Mixed small groups work a case together; contribution does not depend on seniority
- ② Controlled sources open on the table: participants see the source, not a summary
- ③ The facilitator circulates with feedback instead of lecturing from the front
- ④ Group outputs stay on the wall and are returned to at the debrief

Figure 10.1 Facilitation in practice (illustrative image, not a project record)

11 Assessment, Reassessment and Certification

11.0.1 Attendance is not competence. The approved assessment scheme shall define the evidence, moderation, critical controls, reassessment, appeal and certificate wording before any result is issued.

11.1 Evidence layers

Table 11.1 What each evidence layer establishes

Layer	What it shows	What it does not show
Diagnostic baseline	Starting knowledge, source navigation and support needs.	Final competence or trainer authorization.
Formative practice	Progress during guided performance and response to feedback.	A pass decision on its own.
Knowledge evidence	Source-linked concepts, distinctions and decisions.	Safe practical performance or teaching performance.
Practical evidence	Observed task performance under approved conditions.	Authority beyond the task and context assessed.
Microteaching evidence	Technical accuracy, facilitation, inclusion, practice design, assessment and boundary management.	Technical mastery of every subject area.
Institutional action	A feasible transfer and cascade intention with roles and resources.	Completed adoption, impact or sustainability.
Follow-up evidence	Verified workplace use, mentoring and organizational change.	Attribution beyond what the evidence supports.

Figure 11.1 sets out the evidence layers side by side: what each one shows, what it does not show, and which certification decision it feeds. The layers are distinct evidence types. The certification decisions at Table 11.2 are cumulative: Completion builds on Attendance, and Trainer Performance builds on Completion.

	each layer shows	and does not show	feeds
Diagnostic baseline	starting knowledge and support needs	not final competence	route and support (no result)
Formative practice	progress under guidance and feedback	not a pass decision	feedback only (no result)
Knowledge evidence	source-linked concepts and decisions	not practical performance	Completion
Practical evidence	observed task under approved conditions	not authority beyond the task	Completion
Microteaching	facilitation, inclusion, boundary control	not mastery of every subject	Trainer Performance
Institutional action	a feasible, resourced transfer plan	not completed adoption	not a result
Follow-up	verified workplace use and mentoring	not unlimited attribution	not a result

Figure 11.1 Evidence layers, their limits and the decisions they support

11.2 Decisions

Table 11.2 Certification decisions and their basis

Decision	Basis	Wording constraint
Attendance	Verified participation in the delivered sessions.	States attendance only; makes no competence claim.
Completion	Attendance plus the required knowledge and practical evidence at the standard set by the scheme.	States the modules completed and the evidence assessed.
Trainer performance	Completion plus observed microteaching meeting the facilitation rubric, with all critical controls met.	States the modules and scope the person is authorized to facilitate, and the review date.
Deferred	One or more evidence requirements not yet met.	States what remains and the reassessment route; no partial competence is implied.

11.2.1 A critical-control failure shall not be offset by strong performance elsewhere.

11.2.2 Reassessment shall address the specific evidence not met, under the same conditions and rubric, and shall be recorded with the original result rather than replacing it.

11.2.3 Trainer authorization shall be limited to named modules and shall carry a currency period and a condition for renewal. Renewal may recognize continuing professional development (CPD) recorded under the Pakistan Engineering Council's CPD requirements as they apply at the date of renewal, where that recognition is approved.

11.2.4 Every certificate shall state on its face that it is not registration with the Pakistan Engineering Council, professional accreditation, design authority or evidence of competence beyond what was assessed.

Figure 11.2 traces the decision ladder from attendance to trainer authorization, including the deferred route.

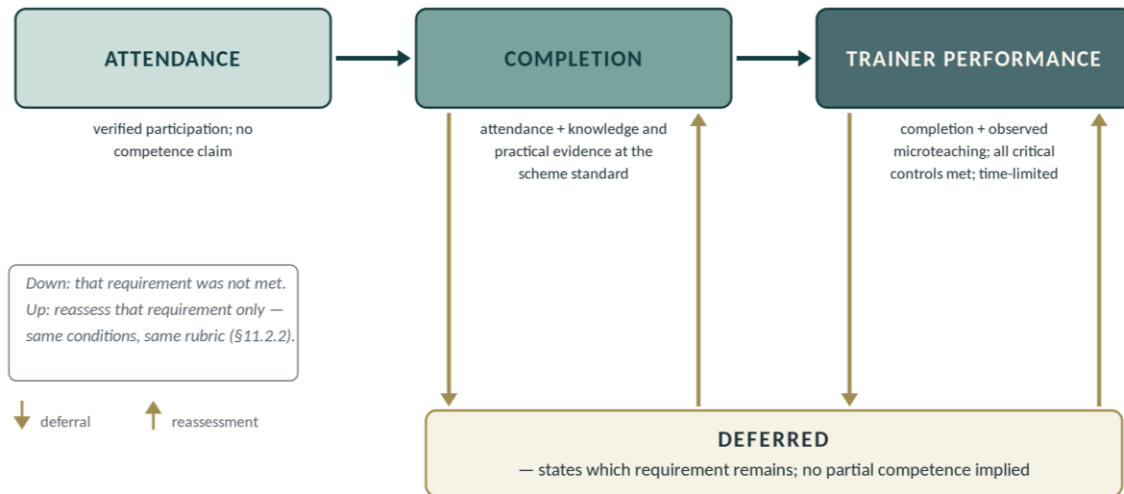


Figure 11.2 Certification decision ladder

12 Field Demonstrations and Site Controls

12.0.1 A field demonstration shall take place only at an authorized site, under the site's safety, environmental, safeguarding, consent and data controls, with an approved alternative available if conditions change.

12.0.2 A field demonstration shall not proceed until a competent, authorized person under §10.1.3 has recorded a structural and access safety clearance for the areas to be used. The clearance shall state the basis on which it was given, the areas cleared, the areas excluded, its period of validity, and the conditions under which the demonstration is to be abandoned. Availability of a site is not a clearance. The clearance shall be confirmed as still valid on arrival, and a changed condition invalidates it. Where the clearance cannot be given or has lapsed, the approved alternative under Table 12.1 is used.

12.1 Controls

A field demonstration takes place in a working facility, so the controls protect the facility and its users as well as the participants. Table 12.1 states the requirement for each area, and no demonstration proceeds until every one of them is satisfied.

Table 12.1 Field demonstration controls

Area	Requirement
Structural and access safety clearance	Recorded before the visit by a competent, authorized person under §10.1.3: the areas cleared, the areas excluded, the basis of the clearance, its validity, and the no-entry and abort conditions. Confirmed as still valid on arrival; a changed condition invalidates it (§12.0.2).
Site authorization	Written permission from the facility, with the scope, the areas, the timing and the permitted activities stated.
Safety	Site induction, protective equipment, exclusion zones, access limits and emergency arrangements briefed and confirmed for every participant.
Facility operation	Teaching, clinical and emergency functions unaffected; no interference with services, equipment or occupied space.
Non-intrusive by default	Observation, measurement and non-destructive methods only, unless intrusive work is separately authorized, supervised and made good.
Safeguarding and consent	No unsupervised contact with children or patients; no identifiable imagery without authorization; consent recorded where people appear.
Data	Facility and participant information handled under the approved data plan, with retention and access defined.
Contingency	A tabletop alternative prepared in advance, so that cancellation does not remove an assessed outcome.

12.1.1 Where a field demonstration is cancelled, the affected outcome shall be recovered through the approved alternative or the assessment decision shall be deferred. It shall not be recorded as achieved.

Figure 12.1 shows a controlled station in use under the Chapter 12 controls.



- ① Protective equipment briefed and worn before entry
- ② Evidence recorded at the station against the observation rubric
- ③ Observation from a safe agreed position; the facility keeps operating

Figure 12.1 A controlled field demonstration station (illustrative image, not a project record)

13 Cascade, Mentoring and Academic Integration

13.1 Cascade

13.1.1 A cascade delivery shall be authorized: named institution, named trainer, defined audience, approved modules and issue, assessment route and certificate wording. Uncontrolled replication is not a cascade.

13.1.2 Authorization to deliver does not carry authority to authorize. A cascade trainer shall not authorize a further cascade delivery. A second-generation cascade requires separate authorization by the technical owner, and the generation shall be stated in the cascade register.

Four controls hold a cascade delivery to the standard of the original. Table 13.1 states the requirement for each, and together they define the difference between an authorized cascade and uncontrolled replication.

Table 13.1 Cascade controls

Control	Requirement
Localization	Sector and provincial examples, language, logistics and institutional procedure may be adapted. Technical criteria and references remain controlled.
Quality	The same evidence standard, critical controls and certificate boundaries apply as in the original delivery.
Monitoring	A sample of cascade sessions is observed, and the results compared against the original cohort.
Materials	Only the current approved pack is used; superseded packs are withdrawn from cascade trainers.

Figure 13.1 shows the controlled cascade and the four controls that hold it to the original standard.

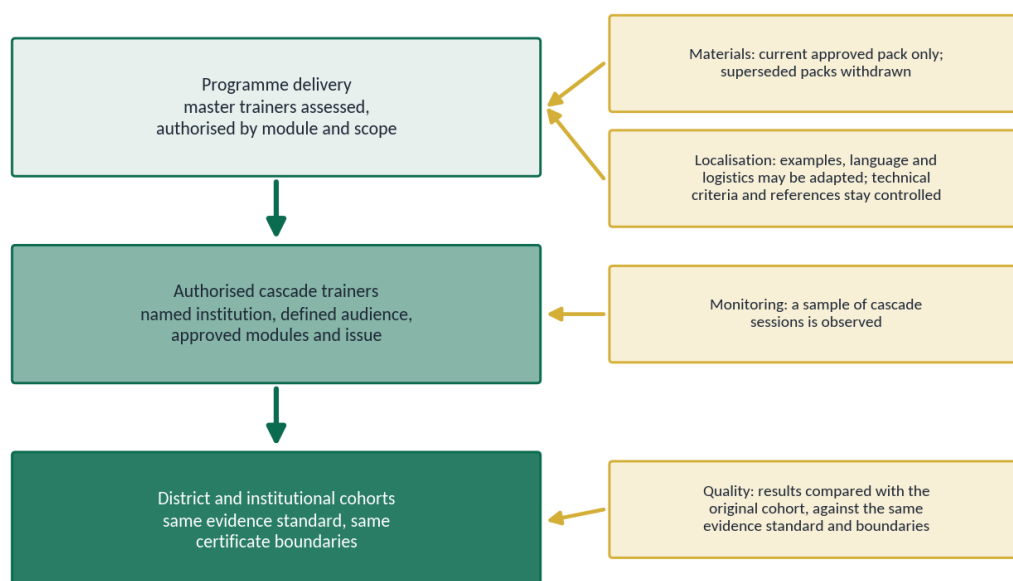


Figure 13.1 The controlled cascade

13.2 Mentoring

13.2.1 Mentoring shall be time-bound, tied to real authorized work, and recorded: the question, the case, the source route, the advice given, the boundary of that advice, the action and the closure.

13.2.2 Mentoring advice shall not become remote design or project approval. Where a question requires a project decision, it is referred to the responsible professional route.

13.3 Academic integration

Academic integration gives the content a permanent home and a renewable trainer pool, but only where the arrangement is recorded and technically owned. Table 13.2 states the requirement for each element.

Table 13.2 Academic integration requirements

Element	Requirement
Curriculum integration	Named course, learning outcomes, credit and assessment arrangement, technical review, teaching staff and review cycle, recorded in an authorized institutional agreement.
Case development	Cases developed with the facility's permission, anonymized as required, and technically reviewed before teaching use.
Research	Research questions arising from delivery routed to the technical owner, with findings fed back through controlled revision rather than into teaching directly.
Trainer pipeline	Faculty trainers maintained as a continuing pool, with currency and refresher requirements defined.

13.4 Repository

13.4.1 A repository shall hold the current approved manuals, modules, slides, forms and issue notices, with a named owner, controlled upload and review, version and supersession control, access control, privacy protection and backup. One current issue shall be visible at any time.

14 Records, Personal Data and Reporting

A delivery produces two kinds of record: evidence that an individual met a stated outcome, and evidence that the delivery itself was controlled. The first carries obligations to the individual, because it is personal data. The second is what allows a later reader to establish whether a result can be relied on.

14.1 Record set

Table 14.1 Record set for a delivery

Record	Created by	Purpose it serves later	Minimum retention
Nomination and role record	Nominating institution	Establishes that the participant held a role the outcome applies to.	For the life of the certificate.
Needs assessment and baseline	Program	Establishes why the route and the outcomes were selected.	One full review cycle of the content.
Delivery plan and agenda as approved	Program	The standard against which actual delivery is compared.	One full review cycle.
Session record, including deviations	Facilitator	Establishes what was actually delivered, and what was shortened, substituted or omitted.	For the life of the certificate.
Assessed evidence	Participant, retained by the assessor	The basis of the individual result; the only defensible answer to a later challenge.	For the life of the certificate.
Assessment and moderation record	Assessor	Establishes who decided, against which rubric, and how borderline cases were resolved.	For the life of the certificate.
Certificate register	Program or owning institution	Allows a certificate presented later to be checked as genuine and current.	Permanently, or for as long as certificates are recognized.
Trainer authorization and observation record	Program	Establishes that a cascade was delivered by an authorized trainer from current content.	For the life of the authorization.
Content version and source register	Technical owner	Establishes which version of the content, and which issue of each source, a cohort was taught from.	Permanently.
Feedback and review record	Program	Drives the content review cycle and evidences that it operated.	Two review cycles.

14.2 Personal data

14.2.1 Collect only the personal data needed to run the delivery, assess the participant and issue and verify the result. Institutional affiliation, role, contact details for the delivery, accessibility needs and assessment evidence generally meet that test. Data unrelated to any of them does not.

- 14.2.2** Tell participants, before data is collected, what is being collected, why, who will hold it, how long it will be held, to whom results will be reported, and how they may ask for correction.
- 14.2.3** Report individual results only to the participant and to the parties identified to the participant in advance. Report to any wider audience in aggregate.
- 14.2.4** Hold accessibility and health information disclosed for the purpose of adjustments separately from assessment records, restrict access to those making the adjustment, and do not record it on any certificate or result.
- 14.2.5** Store records so that access is controlled, hold backups, and dispose of records securely at the end of the retention period.

14.3 Photography, recording and consent

Images and recordings made during a delivery are personal data, and consent for one purpose is not consent for another. Table 14.2 states the requirement for each situation a delivery is likely to meet.

Table 14.2 Photography, recording and consent requirements

Situation	Requirement
Photographs or video of participants	Consent obtained in advance, separately for internal use and for publication, recorded, and withdrawable without any effect on participation or assessment.
Images used in reporting or publicity	Only where consent for publication was given for that person. Where consent is partial, use images in which unconsented individuals are not identifiable.
Images of children or of any person who cannot give informed consent	Not made or used unless the safeguarding requirements of Chapter 4 are satisfied, including consent from the person responsible, and never in a manner that identifies location alongside identity.
Photographs taken on a field site	Permission of the owner or custodian obtained before the visit; occupants and their property not photographed without their agreement; images limited to the technical purpose of the exercise.
Recording of sessions	Announced in advance, with the purpose and retention stated, and with an option to participate without being recorded.

14.4 Reporting

Table 14.3 Reporting outputs and their boundaries

Report	Contains	Does not contain
Delivery report to the commissioning party	Cohort composition by institution and role, routes delivered, sessions delivered against plan with deviations, aggregate assessment outcomes, institutional action plans, and issues requiring management decision.	Individual results, individual evidence, or personal data beyond what the commissioning party requires.

Report	Contains	Does not contain
Institutional report to a nominating institution	Its own participants, the outcomes assessed, individual results where the participant was told in advance that results would be reported, and the agreed follow-up actions.	Other institutions' participants; adjustment or health information.
Participant record	The outcomes assessed, the result for each, the evidence retained, and any reassessment route.	Comparative ranking against other participants.
Technical assurance report to the technical owner	Questions raised that the content did not answer, source issues found to be superseded, exercises that did not work as designed, and proposed content changes.	Participant-identifying information.

14.5 Challenge to a result

A participant may ask for a result to be reviewed. The review examines the retained evidence against the rubric that applied at the time; it does not reassess the participant and it does not revisit the rubric. It is conducted by an assessor who did not make the original decision, and the outcome, whether the result stands or is changed, is recorded with the reasons. Where the review finds that the rubric or the task was unclear, that finding is routed to the technical owner and the participant is offered reassessment at no cost to them.

14.6 Outcome traceability

Before a delivery is approved, each assessed outcome is traced to the module that develops it, the practice that prepares it, the evidence that demonstrates it and the source that governs it. An outcome that cannot complete the row is either not assessable or not supported by the delivery, and one of the two must be corrected before the agenda is issued.

Table 14.4 Outcome traceability record

Column	What it records	Test applied
Assessed outcome	The observable task, stated in the terms the participant will be assessed against.	Could two assessors agree, from this wording alone, whether it was met?
Module	Where the outcome is developed.	Is the module actually in the route assigned to this track?
Practice activity	The guided and independent practice that prepares it.	Did the participant perform the assessed task before being assessed on it?
Evidence	What the participant produces and the assessor retains.	Is it a physical or electronic artefact, not an impression?
Critical control	The element whose absence fails the outcome regardless of the rest.	Is it a genuine safety or integrity point, not merely a difficult one?
Governing source	The code, standard or protocol the requirement comes from, with its issue.	Is the source current, controlled and available in the room?

GOOD PRACTICE

Complete the traceability record before the agenda, not after. Built afterwards, it becomes a description of what happened; built beforehand, it removes topics that support no outcome and exposes outcomes with no practice behind them, which is one of the most common reasons a well-received training change nothing.

- 14.6.1** The traceability record shall be completed for every assessed outcome in the route before the agenda is issued, and before any reissue of this Manual. An outcome that cannot complete a row shall not be assessed until it is corrected.

15 Monitoring, Evaluation and Sustainability

15.1 Levels of evidence

Table 15.1 Levels of evidence and their limits

Level	What is measured	What it does not establish
Delivery	Who was trained, where, on what, with role and sex disaggregation and completion.	Learning, application or impact.
Learning	Change in knowledge and demonstrated practical and teaching performance, by outcome.	Whether the capability is used at work.
Transfer	Documented workplace or cascade application, mentoring records and supervisor confirmation.	Institutional adoption or programme outcome.
Institutionalization	Approved procedures, budget and roles, curriculum integration, repository ownership and recurring delivery.	Long-term outcome or sustained quality.
Outcome	Change in the quality of assessment, design or supervision practice attributable to the capability.	Attribution beyond what the evidence design supports.

Institutionalization is included as a distinct programme level. The operative evaluation basis for this Manual is the OECD-DAC criteria and ISO 10015 listed in the References.

Figure 15.1 arranges the five levels as a staircase: each step is harder to climb and supports a stronger claim.

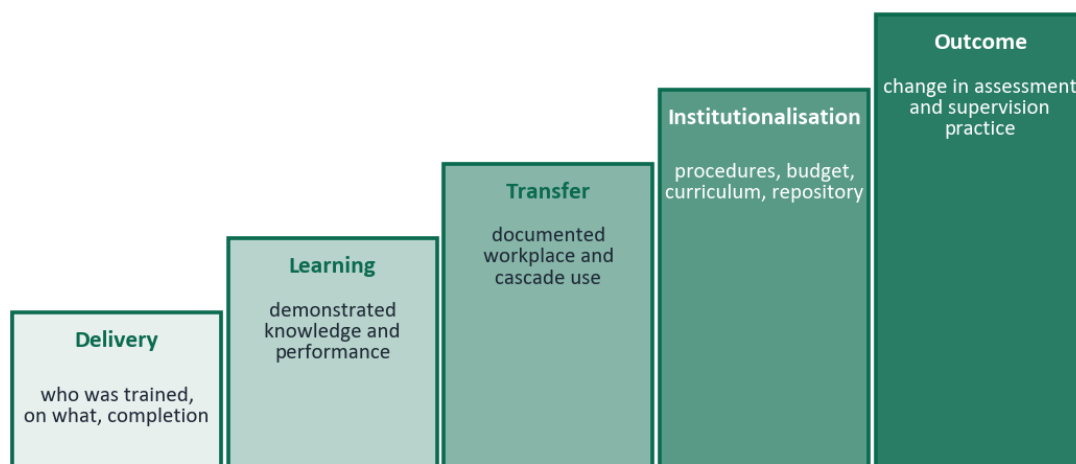


Figure 15.1 Levels of monitoring evidence

15.1.1 Indicators shall be defined before data collection: definition, baseline, target, source, disaggregation, frequency, owner and data-quality check.

15.1.2 Attendance, download counts, certificates issued, memoranda signed or self-reported application shall not be reported as competence, adoption or impact. The claim shall match the level of evidence collected.

15.1.3 Where assessment or participation data shows systemic bias or failure, decisions shall be paused, the cause investigated and affected results reviewed.

15.1.4 Where a technical correction affects material already delivered, the affected cohorts shall be notified and, where the correction is material to practice, retrained or reassessed.

15.1.5 The indicator requirements at §15.1.1 and the limits on claims at §15.1.2 apply to any programme the participant monitors, not only to the delivery of training. A participant applying them to their own asset or safety programme uses the same definitions, disaggregation and data-quality requirements.

Table 15.3 sets out the elements of an indicator set as they are applied to an infrastructure or safety programme, with the failure most commonly met at each. It is the structure used for the M8 practice under outcome 8.5.

Table 15.3 Indicator set for an infrastructure or safety programme

Element	What is recorded	Common failure
Definition	What is counted, the unit, and the inclusion and exclusion rules.	A title in place of a definition, so two people count differently.
Baseline	The value at the start, its date and how it was established.	A baseline assumed rather than measured, so change cannot be shown.
Target	The value sought, by when, and on what basis it was set.	A target set to what is achievable rather than to what is needed.
Disaggregation	The categories the indicator is reported by, including role and sex, and any others the decision requires.	An aggregate that conceals the group the programme was meant to reach.
Means of verification	The source of the data, who collects it and how often.	A source that does not exist, or one nobody is accountable for.
Data-quality check	How the value is verified before it is reported.	A number reported because it was received, not because it was checked.
Reporting cycle	When the indicator is reported, to whom, and the decision it informs.	Reporting that informs no decision, which is the point at which collection stops.
Limits of the claim	What the indicator does not establish.	Output reported as outcome, contrary to §15.1.2.

15.2 Sustainability

A programme is sustainable when the institution can maintain the content, the trainers and the records without the original delivery partner. Table 15.2 states the requirement for each element, and clause 15.2.1 states what happens where one of them is unassigned.

Table 15.2 Sustainability requirements at handover

Element	Requirement
Institutional ownership	A named institution accountable for maintaining the content, the trainer pool and the repository after the programme ends.
Budget and time	Recurrent funding for delivery, materials, venue and assessor time, secured rather than assumed.
Trainer pipeline	A defined route by which new trainers are developed, assessed and authorized, and by which currency is maintained.
Content currency	A review cycle tied to changes in the codes and standards relied upon, with a named technical reviewer.
Mentoring	Continuing access to technical support for trainers and for participants applying the capability.
Review	A periodic review of quality, reach, inclusion and outcome, with the authority to change the programme.

15.2.1 Where repository ownership, trainer-pool responsibility or recurrent funding is unassigned, programme handover shall be held until the responsibility is accepted.

16 Common Failures in Technical Training

The failures below account for most of the gap between training delivery and changes in practice. They are listed because each is avoidable by design, and each is easier to prevent in planning than to correct once a cohort is in the room.

16.1 Design failures

Table 16.1 Design failures

Failure	How it appears	Prevention
Coverage substituted for capability	A full agenda, every topic mentioned, no task performed unaided.	Fix the observable tasks first, then cut topics until the practice time fits. Breadth is the variable, not practice.
Explanation substituted for demonstration	The facilitator describes how to do something the participants have never seen done.	Every task that participants will be assessed on is demonstrated once, in full, thinking aloud.
Generic cases	A case that resembles no participant's actual work, so the transfer step never happens.	Use cases drawn from the sectors, typologies and institutional arrangements the cohort actually works in.
Assessment bolted on at the end	A written test on the final afternoon, unrelated to what was practiced.	Assessment tasks are the independent-practice tasks. Participants should recognize them.
Prerequisites assumed	A compressed route delivered to participants who lack the technical basis it assumes.	Verify prerequisites before nomination is approved; defer rather than dilute.

16.2 Delivery failures

Table 16.2 Delivery failures

Failure	How it appears	Prevention
Improvised technical answers	A participant asks for a value the facilitator does not have; a plausible number is produced.	Model the correct response: identify the source, state that it must be checked, and record the question.
Authority drift	A classroom exercise is described in terms that imply participants may now make decisions reserved to others.	State the boundary at the start of each module and test it in the assessment.
Seniority capture	The most senior participant answers every question; others disengage.	Small mixed groups with rotating reporting roles; direct questions to roles rather than to volunteers.

Failure	How it appears	Prevention
Language drift	Technical terms paraphrased differently in each explanation, so meaning shifts.	Fix the terms in advance; brief the interpreter on which terms must not be paraphrased.
Field demonstration as spectacle	A large group walks a site, nobody records anything, no evidence is produced.	Rotate small groups through stations with a defined output at each; assess the output.

16.3 Institutional failures

Table 16.3 Institutional failures

Failure	How it appears	Prevention
Training used to fill a non-training gap	Practice does not change because the mandate, budget, data or authority is missing, not the knowledge.	Separate training and non-training gaps in the needs assessment; route the latter to management.
No post-training role	Participants return to work with no opportunity to apply what they learned.	Confirm the post-training task and the supervisor's commitment before nomination is approved.
Cascade without control	Trainers deliver from superseded or self-made material; content drifts.	Authorise each cascade, issue only the current pack, and observe a sample of sessions.
Certificates overstated	A completion certificate is presented as a professional qualification.	Fix the wording of each result type; state the boundary on the certificate itself.
Ownership unassigned at handover	Content ages, the trainer pool disperses, the repository goes stale.	Assign institutional ownership, budget and review cycle before programme close; hold handover until accepted.

17 Delivery Planning and Logistics

17.1 Planning sequence

1. Confirm the cohort, role tracks, baseline, prerequisites, accessibility needs and institutional objectives.
2. Select the route and assign prework, bridging and follow-up.
3. Map modules to facilitators, methods, field or tabletop activity and assessment points. Where microteaching is delivered, plan the number of parallel stations and name the authorized assessor for each, within the station size set by §8.6.1.
4. Check workload, venue and site suitability, accessibility, safety, technology and contingency. Obtain the structural and access safety clearance for any field demonstration under §12.0.2, and name the protected route under §4.2.1 for communication at the opening session.
5. Approve the agenda and communicate the exact assessment and certificate route to participants.
6. Review actual delivery against the plan and record deviations before results are issued.

17.1.1 A cohort shall not exceed twenty-four participants, or four participants per facilitator during practice blocks, whichever is lower. Field and tabletop stations shall take no more than six participants each with one facilitator or assessor, and microteaching station capacity is derived under §8.6.1. Where a nomination list exceeds these limits, the delivery is split into cohorts rather than delivered at a higher ratio.

17.2 Venue and materials

The room and the materials decide whether the practice proportions in Chapter 8 can actually be delivered. Table 17.1 states what the venue and the materials must provide.

Table 17.1 Venue and materials requirements

Requirement	Provision
Room configuration	Tables arranged for small-group work, not lecture rows. Participants must be able to work together and to be reached by a circulating facilitator.
Wall space	Sufficient to display group outputs for the duration; the outputs are referred back to at the debrief.
Source documents	The controlled sources physically or electronically available in the room, in sufficient copies for group work.
Offline capability	Every exercise runnable without network access; materials available in print.
Accessibility	Step-free access, seating and sightlines, adequate lighting and acoustics, materials in accessible formats, and a quiet space available.
Facilities	Separate, secure and usable sanitation; prayer space; and refreshment arrangements compatible with the timetable. The timetable respects the Friday congregational prayer and, in Ramadan, uses adjusted session hours.
Field equipment	Sufficient sets for the planned station rotation, checked and calibrated before the session, with protective equipment for every participant.

Requirement	Provision
Microteaching stations	One separable space per parallel station, each able to seat a station group with its observing assessor, and each usable without disturbing the others (§8.6.1).

17.3 Contingency

Disruption is normal in field delivery, and the response is planned before it is needed rather than improvised on the day. Table 17.2 sets out the disruptions most often met and the response required for each.

Table 17.2 Contingency responses

Disruption	Response
Field site becomes unavailable or unsafe	Run the prepared tabletop alternative; record the substitution and its effect on the assessed outcome.
Facilitator unavailable	Deliver from the session guide by another authorized facilitator for that module; do not substitute an unauthorized facilitator.
Session overruns	Reduce explanation and protect practice, feedback and assessment; record what was reduced.
Participant arrives without prework on a compressed route	Assess the actual baseline; either bridge or move the participant to the full route.
Power or connectivity fails	Continue from print and offline materials; no exercise depends on connectivity.

17.4 Closeout

Closeout is the point at which the delivery becomes a defensible record. Table 17.3 states what shall be complete before results are issued and the cohort is closed.

Table 17.3 Closeout requirements

Item	Requirement
Evidence completeness	All assessed evidence collected, moderated where required, and reconciled against the register before any result is issued.
Deviation record	Sessions shortened, substituted or omitted, and the effect on outcomes and evidence.
Results and reassessment	Individual decisions recorded, with reassessment routes for deferred outcomes.
Feedback	Participant and facilitator feedback collected and routed into the content review cycle.
Institutional actions	Each action plan recorded with owner, resource and review date, and transferred to the mentoring route.

Annex A Institutional Role and Nomination Records

Table A.1 Institutional role map

Field	Entry
Institution and mandate	
Assets, services or data held	
Role track assigned	
Post-training decision or task	
Authority limit recorded	
Delivery and cascade responsibility	

Table A.2 Nomination register

Nominee	Institution and position	Role track	Prerequisites verified	Intended application	Decision
Example: A. Khan	District Office, Education Assistant Engineer	Provincial implementation	Verified - degree and screening duty	Prioritization of district school buildings	Approved

Annex B Needs Assessment and Participant Profile

Table B.1 Needs assessment record

Field	Entry
Post-training tasks and observable performance required	
Institutions consulted and method used	
Technical, pedagogical, language and digital gaps identified	
Institutional readiness gaps identified	
Non-training actions arising, with owners	
Training design decision and rationale	

Table B.2 Participant profile record

Participant	Role and experience	Prerequisites	Baseline result	Language and access needs	Assigned route
Example: A. Khan	Assistant Engineer, six years	Verified	Baseline diagnostic completed	Urdu support for discussion; no access needs	Five-day full programme

Annex C Delivery Plan and Session Record

Table C.1 Delivery record

Field	Entry
Route delivered and dates	
Cohort, institutions and numbers by role and sex	
Facilitators and assessors: authorised scope, professional registration where §10.1.3 applies, and safeguarding vetting confirmed under §10.1.4	
Venue, field site and approvals held	
Materials issue used	
Deviations from the plan, and their effect	
Protected route: focal point by role, channel, alternative channel and response time (§4.2.1)	

Table C.2 Session plan

Session	Module and outcome	Method	Materials	Evidence produced	Facilitator
Example: Day 1 afternoon	M2, outcomes 2.1 to 2.7	Table 8.3, M2 portion	Approved case pack; Tables 7.2b and 7.2c	Completed intake record and evidence and referral map	Named facilitator

Table C.3 Source register

Source	Edition	Status (Table 3.2)	Modules relying on it	Provisions relied upon	Owner	Superseded on

Source	Edition	Status (Table 3.2)	Modules relying on it	Provisions relied upon	Owner	Superseded on

Table C.4 Decision ownership register

Area (§2.2.2)	Decision owned	Owner by role	Recorded where	Review date
Technical content				
Delivery approval				
Assessment				
Certificates				
Data				
Revisions				

Annex D Assessment Records

Table D.1 Assessment blueprint

Outcome	Assessment task	Evidence type	Rubric reference	Critical control	Result
Example: 2.5	Table 9.2 practical task 1	Practical	Table 9.2 criteria	Screening outcome presented as a verdict on structural safety	Met

Table D.2 Microteaching and facilitation rubric

Criterion	Met	Partly met	Not met
Technical accuracy and source discipline	Every technical statement is correct and traced to the controlled source. Where a value is not known, the participant says so and states how it would be established, rather than supplying it.	Statements are correct but not consistently traced, or the source is named without being shown. An unknown value is acknowledged but no route to establish it is given.	A technical statement is incorrect, or a value is supplied that the participant cannot trace. Carries the M8 critical control.
Structure and sequence	The segment opens with its purpose, follows the sequence in Table 10.1, and closes with what was decided and on what evidence. Explanation does not displace practice.	The sequence is followed in part, or the close does not state the decision and its evidence. Explanation encroaches on practice time.	There is no discernible sequence, or explanation displaces practice altogether.
Demonstration quality	The task is performed once by the participant, thinking aloud, so that the reasoning and the decision points are visible before the group attempts it.	The task is demonstrated but the reasoning is not made visible, or the decision points are passed over.	The task is described and not demonstrated.

Criterion	Met	Partly met	Not met
Guided practice and feedback	The group performs the task with support; feedback is specific, is given against the rubric, and identifies what to change rather than only what was wrong.	The group performs the task but feedback is general, or identifies the fault without the change required.	The group does not perform the task, or no feedback is given.
Inclusion and participation	Turn-taking is managed so that no participant dominates and no participant is passed over. Language, pace and materials are adjusted when a participant is excluded by them.	Turn-taking is managed unevenly, or an exclusion is noticed but not adjusted for.	Participation is left to volunteers, or a participant is excluded and the exclusion is not addressed.
Assessment and boundary management	The participant states what the segment does and does not establish, applies the module critical control, and refers a question beyond scope rather than answering it.	The boundary is stated but not applied consistently, or a question beyond scope is answered with a qualification rather than referred.	The boundary is not stated, or a question beyond scope is answered as though within it. Carries the certificate boundary control.
Time and materials management	The segment finishes within its slot with practice and feedback intact, and the approved materials are the ones used.	The segment overruns or underruns so that practice or feedback is compressed, or a material outside the approved pack is used incidentally.	Practice or feedback is lost to overrun, or unapproved material is used.

Table D.2a Microteaching and facilitation record

Criterion	Descriptor selected	Evidence observed	Feedback given	Outcome
Technical accuracy and source discipline				
Structure and sequence				
Demonstration quality				
Guided practice and feedback				
Inclusion and participation				
Assessment and boundary management				
Time and materials management				

The descriptor is selected from Table D.2 and the evidence note recorded against it, within the assessor recording time derived at §8.6.1. A criterion assessed as partly met, or on which assessors differ, is boundary evidence under §9.3.3.

Table D.3 Result and certificate register

Result ID	Participant	Modules	Knowledge	Practical	Teaching	Decision	Issued	Authorised scope	Currency
Example : 2026-001	A. Khan	M2, M3, M6	Met	Met	Not assessed	Role-scoped Completion	Date of issue	M2, M3 and M6 outcomes assessed; does not authorise module delivery	Per \$11.2.3

Annex E Inclusion, Safeguarding and Field Controls

Table E.1 Inclusion and accessibility plan

Barrier or risk identified	Group affected	Adjustment or control	Owner	Effectiveness
Example: recording sheet requires written entry	Participants not literate in the written form used	Sheet worked through orally with sketch and photograph entries, which the sheet permits	Facilitator	Outcome met; check assigned at nomination for the next cohort

Table E.2 Field demonstration authorisation

Field	Entry
Site, facility and authorising person	
Date, time and authorised window	
Permitted activities and areas	
Facility operation restrictions (services, equipment, occupied space)	
Intrusive work: authorised, supervised and made good, or not applicable	
Safety induction and controls confirmed	
Safeguarding, consent and media arrangements	
Data plan: retention and access confirmed	
Emergency arrangements and contacts	
Tabletop alternative prepared	
Structural and access safety clearance: person giving it, their competence and authority under §10.1.3	
Basis of the clearance, and its period of validity	
Areas cleared, and areas excluded	
No-entry and abort conditions, and confirmation that the clearance remained valid on arrival	

Annex F Cascade, Mentoring and Sustainability

Table F.1 Cascade register

Institution	Audience	Trainer and authorisation reference	Modules and issue	Assessment route	Certificate or result wording	Dates	Evidence	Status	Generation
Example: District Education Office	District engineering staff	Named trainer, authorisation reference	M2 and M6, current issue	Practical, per Table 9.2	Role-scoped Completion	Dates	Session record and assessed evidence	Delivered and observed	First

Table F.2 Mentoring log

Date raised	Participant and application	Case or reference	Question	Source route	Advice and boundary	Action	Closure: status and date
Example: date raised	A. Khan, district prioritisation	Case reference	Whether a recorded crack is a trigger event	Table 9.1 trigger-event logic	Advice given; does not constitute an assessment	Facility re-entered at screening	Closed, with date

Table F.3 Sustainability plan

Field	Entry
Institution accountable after programme close	
Recurrent budget secured, and its source	
Trainer pipeline and currency arrangements	

Field	Entry
Content review cycle and technical reviewer	
Repository owner and access arrangements	
Review authority and frequency	

Annex G Worked Example: Delivery of One Cohort

The example below follows one cohort from nomination to cascade. The institutions, participants and findings are assumed for illustration and are not a record of any delivery. It is included to show how the records in Annexes A to F connect, and where the decisions that determine whether a delivery changes practice are actually made.

G.1 Request and scoping

A district administration requested training on building safety for twenty-two staff following damage to three public buildings in a single season. The request named a topic, not an outcome, and named a number, not a set of roles. Scoping resolved both before anything was designed.

Table G.1 Scoping questions and their effect on the design

Question asked	Answer obtained	Effect on the design
Which decisions do these staff make that the training is meant to improve?	Prioritizing which buildings are examined; commissioning assessment work; accepting completed strengthening and construction work.	Three decision points became the design targets. Topics that supported none of them were dropped.
Which of the current gaps are training gaps?	Two were: staff could not distinguish a screening outcome from a detailed assessment, and could not specify what to require from an assessment. One was not: no budget line existed for investigation work.	The two training gaps were designed for. The budget gap was written into the report to management, not addressed by training.
What technical basis do the participants already hold?	Six graduate engineers, four sub-engineers, nine administrative and procurement staff, three facility custodians.	A single cohort would have been wrong for all of them. Three role tracks were formed.
What happens after the training?	A prioritization exercise across forty-one district buildings, scheduled for the following quarter.	That exercise became the workplace-transfer and ninety-day follow-up task, using the district building list.

KEY DECISION

Twenty-two people, one room and one agenda would have been simpler to deliver and would have taught the engineers too little and the custodians too much. Splitting the cohort by role cost two additional facilitator days and was the single decision that made the delivery useful.

G.2 Route and nomination

Table G.2 Route assignment by role track

Item	Technical	Commissioning and acceptance	Custodial
Participants	Six graduate engineers and four sub-engineers (ten).	Nine administrative and procurement staff.	Three facility custodians.
Modules delivered	M2, M3 and M6, with the field session. M5 was not delivered: no strengthening outcome was assessed for this track, so the module was removed from the route rather than left unassessed.	M3 (scope and evidence) and M7 (acceptance and construction quality), with a tabletop in place of the field session.	M6, scoped to observation, recording, trigger events and the reporting route.
Duration	Two days (four half-day blocks).	One and a half days (three half-day blocks).	One day (two half-day blocks).
Entry condition	Holds an assessment or inspection duty in the district engineering section; completed prework on the technical basis and the intake proforma.	Holds a commissioning, procurement or acceptance role. No technical prerequisite; completed prework on the staged assessment workflow.	Holds a custodial or facility role carrying a reporting duty. No technical prerequisite; no prework.
Assessed outcome	Completes a screening record and an evidence and referral map unaided, to the standard required for handover.	Specifies what an assessment instruction must require, and identifies what a submitted report does not establish.	Records an observed change to the standard required for it to be acted on, and states the reporting route.
Evidence retained	The completed screening record and the evidence and referral map for the assigned case, retained per participant.	The drafted assessment instruction and the marked-up specimen report, retained per participant.	The completed observation and reporting sheet, including sketch and photograph entries where those were used.
Critical control applied in assessment	Presenting a screening outcome as a verdict on structural safety (M2); asserting a capacity, ratio or verdict the evidence does not support (M3); continuing to work or document in an unsafe position (M6).	Asserting a conclusion, the submitted evidence does not support (M3); treating a completed form or an absent inspector as automatic acceptance (M7).	Reporting an interpretation or a safety verdict in place of the observation, or continuing to record in an unsafe position (M6).
Certificate wording	Role-scoped Completion, naming M2, M3 and M6 and the outcomes assessed. Does not authorize module delivery (§6.2.3).	Role-scoped Completion, naming M3 and M7 and the outcomes assessed. Does not authorize module delivery (§6.2.3).	Role-scoped Completion, naming M6 and the outcome assessed. Does not authorize module delivery (§6.2.3).

Two nominations were returned. One named a participant transferring out of the district within the month; one named a participant with no role in any of the three decision points. Both were replaced.

Returning a nomination may be uncomfortable, but it is cheaper than delivering to someone who cannot use the result.

G.3 Delivery and what changed during it

Table G.3 Delivery observations and responses

Observation	Response
In the technical track, the first guided-practice attempt produced screening records in which four participants had entered construction dates that no evidence in the case pack supported.	The facilitator stopped the exercise and demonstrated the correct entry: unknown, with the basis on which it could be established. The point was then reinforced as a rubric criterion for record discipline in the independent task. This is the single most common failure the cohort brought with them and it would have passed unnoticed in a lecture.
The commissioning track found the tabletop case unconvincing because it used a school and their work is predominantly health facilities.	At the midday break the facilitator substituted a pre-approved alternate case built on a basic health unit, drawn from the controlled case bank for the module and carrying the same outcomes, critical controls and assessment standard. The substitution and the approved case reference were recorded in the session record. An unapproved case would not have been substituted during delivery; under §3.1 and 3.2 the change would have been routed to the technical owner and technically checked before use.
Two custodians were not literate in the written form used by the recording sheet.	The sheet was worked through orally with sketch and photograph entries, which the sheet already permits. Both met the outcome. The delivery plan for the next cohort now assigns this check at nomination.
A senior participant answered on behalf of the group in the first two sessions.	Reporting roles were rotated by name from the third session. Participation across the group rose and one of the quieter participants produced the strongest evidence in the cohort.

G.4 Assessment outcome

Table G.4 Assessment outcome by track

Track	Met	Deferred	Reason for deferral
Technical	Eight of ten	Two	One asserted value the evidence did not support under time pressure in the independent task, which is the approved M3 critical control (§7.3). The second was a moderated borderline case: the entries were supported, but the referral route was stated for the wrong authority. Both were reassessed four weeks later on a fresh case and both met the standard.
Commissioning and acceptance	Nine of nine	None	Not applicable.
Custodial	Three of three	None	Not applicable.

The second of the two deferred technical participants was the borderline case, reviewed by a second assessor under §9.3.2. The evidence was correct but the referral route was stated for the wrong authority. The moderated decision was to defer that outcome only, and the participant met it on reassessment. Both views were recorded. The technical track therefore records two deferrals in total, and the certificate counts below follow from that.

G.5 Certificates issued

Attendance certificates were issued to all twenty-two. Role-scoped Completion certificates were issued to the twenty participants who met the assessed outcomes, and to the two deferred technical participants after reassessment. Each Completion certificate named the modules delivered and the outcomes assessed, and stated the authority boundary of the result. No Trainer Performance result was issued from this delivery: none of the three role-scoped routes included M8 or the observed microteaching and authorization route that §§11.2.3 and 6.2.3 require. No certificate stated or implied an authority to certify structural adequacy or to deliver the modules.

G.6 Follow-up and cascade

Table G.5 Follow-up actions at the ninety-day review

Action	Owner	Result at the ninety-day review
Prioritization of forty-one district buildings using the method practiced.	District engineering section	Completed for thirty-four. Seven were deferred because access could not be arranged; the deferral was recorded rather than the buildings being scored without inspection.
A standing instruction template for commissioning assessment work.	Procurement lead	Drafted and in use. Two subsequent instructions were rejected by the section on the grounds practiced in the training.
A budget line for investigation work.	District administration	Not achieved. Carried into the following annual submission. This was correctly identified at scoping as a gap training could not close.
Custodial reporting route to the engineering section.	Facility custodians	Operating. Eleven reports in ninety days, of which three triggered inspection and one identified a condition requiring immediate restriction of use.
Cascade to two adjacent districts, delivered by authorized programme trainers rather than by participants from this cohort.	Authorized trainers	One delivered, observed and within scope. The second was postponed because the trainer could not be released; postponement was recorded rather than substituting an unauthorized facilitator. No participant in this cohort was authorized to deliver modules, because no role-scoped route here included M8.

APPLICATION

Of the five follow-up actions, three succeeded, one partly succeeded and one failed, and the one that failed was known to be outside the reach of training before the cohort was formed. That is what a realistic outcome looks like. A review reporting five of five would indicate that the actions were written to be achievable rather than to be useful.

References

1. Pakistan Engineering Council. *Building Code of Pakistan 2021*. Islamabad: Pakistan Engineering Council, 2021. Status: law and adopted code. Provisions relied upon in module content: §1604.5 and Table 1604.5; §1609; §1612; §1613; Appendix A; Appendix B where adopted.
2. Pakistan Engineering Council. *Building Code of Pakistan — Fire Safety Provisions 2016*. Islamabad, 2016. Status: law and adopted code. Relied upon for the fire referral route at Table 1.3.
3. Pakistan Engineering Council. *Green Building Code of Pakistan 2023*. Islamabad: Pakistan Engineering Council, 2023. Status: reference and good practice, advisory unless adopted by the relevant provincial authority. Basis for the green and nature-based measures at outcome 4.3.
4. Government of Pakistan, Ministry of Science and Technology. Statutory Notification S.R.O. 971(1)/2008, 8 September 2008. *Gazette of Pakistan, Extraordinary*, Part II, 10 September 2008. Status: law. Relied upon for the legal basis taught in M1.
5. ASCE/SEI 41-17. *Seismic Evaluation and Retrofit of Existing Buildings*. Reston, VA: American Society of Civil Engineers, 2017. Status: adopted standard within the scope for which it is adopted. Provisions relied upon: §6.2 and Table 6-1; §7.3; Table 2-1.
6. ACI 318-19. *Building Code Requirements for Structural Concrete and Commentary*. Farmington Hills, MI: American Concrete Institute, 2019. Status: adopted standard. Provisions relied upon: Chapter 17, including §17.1 and §17.5.
7. ACI 562-19. *Code Requirements for Assessment, Repair, and Rehabilitation of Existing Concrete Structures and Commentary*. Farmington Hills, MI: American Concrete Institute, 2019. Status: adopted standard. Provisions relied upon: §4; §5.
8. ACI 228.1R and ACI 228.2R. *In-Place Methods to Estimate Concrete Strength; Report on Nondestructive Test Methods for Evaluation of Concrete in Structures*. Farmington Hills, MI: American Concrete Institute. Status: reference and good practice. Relied upon for the method classes at outcome 3.5.
9. ASTM International. *C42/C42M, C805/C805M and C597 test method standards*. West Conshohocken, PA: ASTM International. Status: adopted standard within the scope for which each is adopted. Relied upon for the method classes at outcome 3.5.
10. Federal Emergency Management Agency. *FEMA P-154, Rapid Visual Screening of Buildings for Potential Seismic Hazards*. Third edition. Washington, DC: FEMA, 2015. Status: reference and good practice. Relied upon for the screening indicators at Table 7.2c.
11. ISO 10015:2019. *Quality management — Guidelines for competence management and people development*. Geneva: International Organization for Standardization, 2019. Status: reference and good practice. Named at §15.1 as part of the operative evaluation basis.
12. Organisation for Economic Co-operation and Development. *DAC Criteria for Evaluating Development Assistance*. Paris: OECD Development Assistance Committee. Status: reference and good practice. Named at §15.1 as part of the operative evaluation basis.
13. Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector. *Comprehensive School Safety Framework 2022–2030*. GADRRRES, 2022. Status: reference and good practice. Relied upon for the school safety context in M1 and M2.
14. World Health Organization. *Guidance for Climate-Resilient and Environmentally Sustainable Health Care Facilities*. Geneva: WHO, 2020. Status: reference and good practice. Relied upon for the health facility context in M4, M6 and M7.
15. Inter-agency Network for Education in Emergencies. *INEE Minimum Standards for Education: Preparedness, Response, Recovery*. 2024 Edition. New York: INEE, 2024. Status: reference and good practice. Relied upon at §4.0.1 for the cross-cutting inclusion and accessibility requirements.

17.5 Applicable legal and professional framework

The instruments below are duties applying to delivery rather than technical sources. The instrument applicable in the province of delivery is recorded in the delivery record.

16. Pakistan Engineering Council Act 1975, and the bye-laws and continuing professional development framework made under it, as applicable at the date of delivery. Supports §10.1.3 and §11.2.3.
17. Pakistan Environmental Protection Act 1997, and the initial environmental examination and environmental impact assessment regulations applicable in the province of delivery. Supports the environmental screening taught in M4.
18. The occupational safety and health legislation applicable in the province of delivery. Supports Chapter 12 and the clearance required at §12.0.2.
19. The child protection and child labor legislation applicable in the province of delivery, together with the safeguarding policy applying to the delivery. Supports Chapter 4, §4.2.1, §10.1.4 and Table 12.1.