Global Shelter Cluster
ShelterCluster.org
Coordinating Humanitarian Shelter

CONSTRUCTION GOOD PRACTICE STANDARDS 2021

Common standards for the responsible delivery of construction projects in humanitarian settings

www.constructionstandards.org

www.sheltercluster.org

CGPS

ACKNOWLEDGEMENTS

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This 2021 version of the document is released as the latest full version of the Construction Good Practice Standards and incorporates many substantial revisions and inclusions. Thanks go to Chiara Jasna Vaccaro, Shane Copp and Elizabeth Palmer for their work on this version.

INTRODUCTION

What is the Goal of the Construction Good Practice Standards?

The Construction Good Practice Standards (CGPS) sets out common standards for the responsible delivery of construction projects in humanitarian settings. As such, it represents the action across all sectors to be accountable in ensuring the safety, timeliness and quality of the construction projects for which the agencies are responsible. Construction is an essential part of a wide range of development and humanitarian programming.

The main goal of these standards is to influence a greater commitment to eliminating the false economies, poor design and construction practices, shortcuts and lack of oversight that limit public safety and decrease the sustainability and resilience of humanitarian delivered construction projects.

Who is Responsible for Implementing the CGPS?

Not only do the implementing agencies bear responsibility for the quality of their work, the donors also bear responsibility for the quality of the end product. It is imperative that both Implementing Agencies and Donors include the CGPS starting at the planning stages of a project to ensure that all aspects of good practice in the construction are made allowance for.

Why do we need Principles and Standards for Construction?

Build Back Better and Safer. Implementation of construction projects in the humanitarian contexts are often challenging and carries additional complexity due to many factors, and globally, the humanitarian sector has a poor track record in the construction field.

Construction's sizeable collective investment brings the opportunity to create exceptional spaces and projects for service delivery that significantly enhance the outcomes across all sectors and facilitate the delivery of many other services. Conversely, poorly planned / designed / executed construction can leave end users underserved and/or vulnerable to injury or death, not just for the duration of the construction, but critically for the subsequent lifetime of the project.

Good construction practices and building codes can be inconsistent at times with humanitarian imperatives, internal pressures, and even donor expectations. These conflicting demands can sometimes result in poor trade-offs that compromise project quality in favour of more immediate pressures. The root of the issue is that there is a general lack of awareness around what is required for good design and construction, from the donor level down through to the field level. With good design and planning, compromises can be anticipated and addressed by decision makers, before the construction stage. The construction project's chance of success is increased with good construction oversight, handover and maintenance practices.

By implementing the Construction Good Practice Standards, the requirements of a good construction project can be better understood and planned for, from the onset of the project through to the final operation of the project.

SCOPE

THE SCOPE OF THIS DOCUMENT IS SET OUT BELOW:

	IN SCOPE	OUT OF SCOPE
TYPOLOGY	**PERMANENT FACILITIES** The design, construction, alteration, relocation, enlargement, replacement, repair and maintenance of buildings, facilities and infrastructure. **SHELTER** Where agencies have direct control of the outcome. (see modality below)	**NONE** All construction project typologies could be within scope.
LIFESPAN	**PERMANENT OR UPGRADABLE TO PERMANENT** Construction works that can be expected to be in use for more than 6 months.	**BASIC STRUCTURES FOR EMERGENCY USE** Very basic structures including tents that are intended for emergency use only with no likelihood of future adaptation.
MODALITY	**DIRECT CONTROL** Activities where the implementing agency has “direct control” over the outcome. Includes the following: * all contractor built projects, even where remote management is necessary. * all public buildings. * all community led projects. * the design of the project even if the implementing agency does not manage the construction.	**OWNER DRIVEN DESIGN** Activities where the beneficiary has autonomy over the design. Planning and Procurement sections may still apply. **OWNER DRIVEN IMPLEMENTATION** Activities where the beneficiary has autonomy over how construction is carried out. Design, Planning and Procurment sections may still apply.

WHAT ARE THE CONSTRUCTION GOOD PRACTICE STANDARDS?

Construction Good Practice Standards are a commonly agreed baseline level of good practice for the management of construction in humanitarian and development programming.

The document is organised into guiding principles and good practice standards throughout the construction process that indicate attention to good practice. Described below, they are universal in wording and nature and can be applied to most contexts and a wide range of construction projects and modalities.

GUIDING PRINCIPLES

The Construction Good Practice Standards are informed throughout by nine Guiding Principles that set the level of expectation for good practice in construction in the conflicted and varied contexts where humanitarian and development work is undertaken.

GOOD PRACTICE BENCHMARKS

The benchmarks themselves describe a basic level to which critical construction activities should be carried out if they are to lead to a safe, sustainable, and effective construction outcome. The simple phrasing should be applicable in all contexts but the methodology by which the standard is achieved will vary significantly and must be tailored to the challenges of a particular situation.

▶ REPRESENTATION

As a collaboration between multiple participating agencies, the CGPS represent a widely held position on good practice in construction. The CGPS is published by the Global Shelter Cluster as a normative standard for construction good practice in the Humanitarian sector. As such they provide the basis for donors, agencies and beneficiaries to benchmark construction activities and thereby justifying the requisite resources, time and expertise required to deliver construction safely, on time and to the benefit of both current and future generations of users.

▶ WHAT THEY ARE NOT

The CGPS is not prescriptive guidance as to how these standards can be achieved. Every project is different and there will be a different approach to each of them.

The CGPS do not provide detailed technical support. It is expected that the correct expertise will be brought on board to provide the necessary expertise for a given project in order to meet the standards.

HOW SHOULD CGPS BE USED?

Use of the CGPS is envisaged to be similar to the way that SPHERE standards established a common language and expectation for humanitarian response. The CGPS is therefore a voluntarily adoptable standard that can be used in a variety of ways with anticipated uses listed below:

PROPOSAL DEVELOPMENT
Agencies may wish to reference the standards to justify the inclusion of appropriate time, cost and resourcing in proposals to ensure an acceptable standard of construction outcome.

AGENCY AND PARTNER LEVEL STANDARD SETTING
By setting a common standard for construction, agencies will be able to assess their performance across a number of grants or country programmes. This can be used as a powerful tool to push for greater attention to improving construction processes.

AWARENESS RAISING / TRAINING
The CGPS offers a framework for the development and implementation of training designed to meet the normative standards of good practice that the CGPS defines.

PUBLIC COMMITMENT
Where the capacity to do so is established it may be possible for agencies to make public commitments to hold themselves accountable against the CGPS.

DONOR COMMITMENT
Donors (government and private) may wish to use the Construction Good Practice Standards to establish mandatory requirements from their implementing partners, either on a universal or a proposal specific basis.

RESPONSE CLUSTER GUIDANCE
Clusters at country level may wish to establish the standards as common guidance for implementing agencies wishing to engage in construction activities.

GUIDING PRINCIPLES

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NATIONAL GOVERNANCE

In all cases, the national system of construction governance is the primary driver of construction standards. The primacy of national standards informs all decision making around how construction in humanitarian settings is planned, designed, and implemented.

1

PROGRAMMING
Construction projects do not exist in isolation but are undertaken to enable essential programming for the improvement of outcomes for beneficiaries.

2

SAFETY STANDARDS
Construction projects meet accepted local (government) or internationally accepted standards for structural life / safety, public health and WASH.

3

HAZARD ASSESSMENT
Construction projects consider locally assessed multiple hazards; and incorporate hazard mitigation techniques.

4

STAKEHOLDER PARTICIPATION
Communities and other stakeholders are central to the construction project process. Agencies will engage as partners throughout the process.

5

LOCAL PRACTICE
Designs will build on local know-ledge and practice to support that the building can be maintained, sustainably used and replicated.

6

LOCAL LIVELIHOODS
Local procurement of materials and labour are encouraged and local skills will be developed wherever possible. Payments to suppliers will be timely and transparent.

7

SITE SAFETY
The Health and Safety of all stakeholders engaged in the construction project is central to all planning and decision-making.

8

MAINTENANCE
Maintenance planning is considered early in the project cycle ensuring that community buy-in and ownership of the project in operation.

9

SUSTAINABILITY
The long term sustainability of the project, including environmental and social impacts on the local area, are considered and adverse effects appropriately mitigated.

The above guiding principles are reflected in this section as the Standards that describe good practice at each stage of the construction process. Application of the CGPS will increase the likelihood of quality outcomes that mitigate risks and realise opportunities for beneficiaries and their communities.

A	B	C	D	E	F
PROPOSAL DEVELOPMENT	PROJECT PLANNING	DESIGN STAGE	PROCUREMENT	CONSTRUCTION PHASE	HANDOVER/ MAINTENANCE
A1 - STAFFING FOR DESIGN AND SUPERVISION	B1 - CONSTRUCTION WORKPLAN – PLANNING STAGE	C1 - DESIGN BRIEF	D1 - TENDER PACKAGE	E1 - HEALTH AND SAFETY	F1 - MAINTENANCE PLANNING
A2 - PROPOSAL NARRATIVE	B2 - RISK MANAGEMENT PLAN	C2 - DESIGN FOR SAFETY	D2 - TENDER EVALUATION	E2 - QUALITY ASSURANCE	F2 - PRACTICAL COMPLETION AND DEFECTS MONITORING
A3 - PROJECT BUDGETING	B3 - SEASONAL PLANNING	C3 - DESIGN FOR INCLUSIVE USE	D3 - PROCUREMENT STRATEGY	E3 - CONTRACTUAL COMMUNICATIONS	F3 - FINAL COMPLETION
A4 - HAZARD ANALYSIS	B4 - STAFFING AND CONSULTANCIES	C4 - ENVIRONMENTAL CONSIDERATIONS / REQUIREMENTS IN DESIGN	D4 - CONTRACT DOCUMENTATION	E4 - MEETINGS AND REPORTING	
A5 - PROPOSAL RISK ASSESSMENT	B5 - ENVIRONMENTAL PLANNING	C5 - INDEPENDENT DESIGN VERIFICATION	D5 – ENVIRONMENTAL	E5 - ENVIRONMENTAL MONITORING	
A6 - IMPLEMENTATION MODALITIES	B6 - SITE SELECTION / LAND TENURE	C6 - DESIGN DOCUMENTATION	D6 - HEALTH AND SAFETY	E6 - CONSTRUCTION WORKPLAN	
A7 - CONSTRUCTION WORK PLAN - PROPOSAL STAGE	B7 - DESIGN PLANNING	C7 - CONSTRUCTION WORKPLAN	D7 - CONSTRUCTION WORKPLAN		

COMMUNITY PARTICIPATION

Communities are consulted, engaged and empowered at all decision points in the standards described above. The level of participation is informed by an active assessment of capacity with the aim of transferring as much power as is feasible to the beneficiary community to ensure a safe outcome.

A PROPOSAL DEVELOPMENT

A1 - STAFFING FOR DESIGN AND SUPERVISION

Any proposal includes a defined allowance for design and construction supervision costs equivalent to 10-15% of the total construction value as an absolute minimum.

Key Action:

A1) Proposal includes reasonable design and construction allowances.

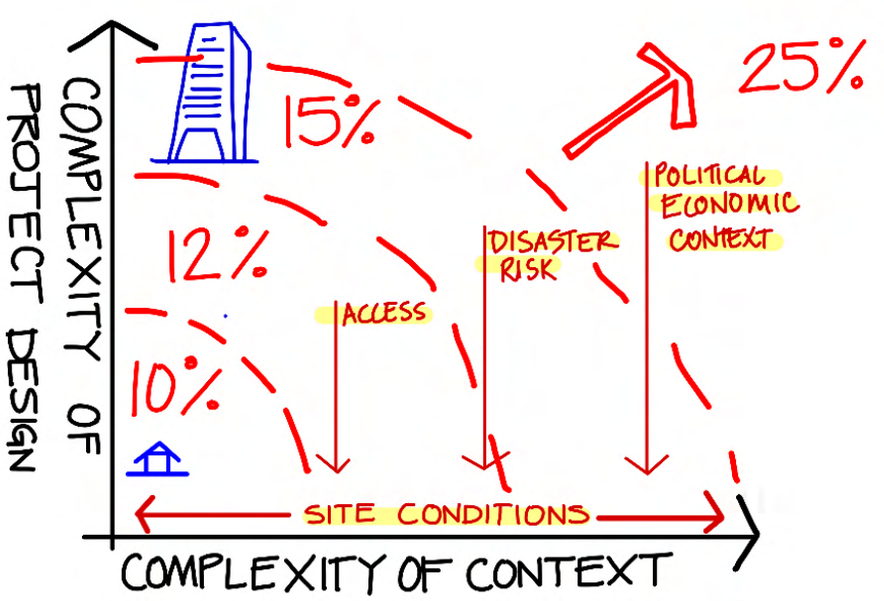
Guidance Notes:

Lack of human resources for design, planning and supervision of construction is a primary reason for poor construction delivery. The necessary staffing level will vary depending on various factors relating to the construction type, implementation method and context.

For the majority of projects, a minimum of 10-15% (depending on context) of the construction budget is a pre-requisite for compliance with the guiding principles. The table below provides guidance for the minimum level of technical input required including supervision; design and verification along with technical management to coordinate resources. The exact resourcing will require professional judgement from a technically competent person. Note that projects that require special consultants or construction procedures or have extended construction timelines may require more than the standard amount of design/supervision costs.

The 10-15% (or higher) support costs should cover:

- Structural assessment and feasibility assessment.
- Detailed building design.
- Site supervision.
- 3rd party verification.
- Community mobilization and engagement for community-led construction.



A PROPOSAL DEVELOPMENT

Additional costs may be required for:

- Soil testing and geotechnical analysis.
- Land survey.
- Bespoke architectural design.
- Infrastructure.
- Environmental assessments.
- Development of country level standards and other highly repeated designs

	Proposal Stage Construction Supervision Allocation (as a % of construction value)	**Construction Type**	
		Straightforward construction or previously used design templates.	• Retrofitting. • Multi-storey or unusual buildings. • High risks identified by a hazard risk assessment. • Community driven process.
External Factors	Stable, well established country construction programme in a functioning construction market.	Mininimum **10%**	**12%**
	• Political, regulatory or economic environment makes high quality construction challenging. • Emergency context. • Construction has been infrequent or problematic in the past. • Diverse project locations. • Weak contractor market.	**12%**	**15%+** *In some contexts and contruction types this can be as much as 25%.*

A PROPOSAL DEVELOPMENT

A2 - PROPOSAL NARRATIVE

Proposal narratives commit to best practice and are as explicit as possible about how the construction standards will be achieved.

Key Action:

A2) Complete proposal narrative is included in the proposal signed off by project engineer and project manager.

Guidance Notes:

A well described construction narrative is an opportunity to demonstrate how the quality of construction can contribute to the overall aims and objectives of the project. Committing to these construction objectives at an early stage is important to donors whilst ensuring that resources are adequately directed towards quality outcomes. Key elements that will strengthen the narrative are listed below:

Construction modality [See A6]: Outlines whether the process will be: community-led; directly implemented by the agency or; built by a contractor. Community components of the projects that are of additional benefit for beneficiaries should be highlighted.

Approval procedures: Highlights mandatory processes which may include the following:

- Pre-construction approvals: land tenure; building ownership; planning permission and design sign-off.
- Design approvals: drawings, BoQs and specifications to be signed off by the appropriate authorities and Project Engineer.
- Handover approvals: The process for handover of the completed building (including quality inspections and completion certificates to the receiving stakeholder must be set out in the proposal, including their responsibility for maintenance.

Bespoke or standard designs: Describes all steps that are required in the design process and links to the necessary budget to carry out these activities. Identifies whether a bespoke design is required or whether a standard design is to be adopted. (eg. Government/international/agency template)

Refurbishment / rehabilitation: Describes all steps of refurbishment/rehabilitation of buildings that require a structural engineer (or other specialized consultant) to assess at the planning stage.

Environmental Hazards [see A4]: Includes construction related hazards in the risk assessment and commits to ensuring that the designs and completed building(s) address any significant hazards in line with local (and where necessary, international) building practice.
Design for Vulnerable Groups and WASH [see C4 and C6]: Commits to incorporating appropriate child-friendly design, gender sensitive design, disabled access, and WASH facilities.
Workplan [see A7 and B1]: All time-frames in the construction process have been reviewed by a technically qualified person. This ensures that sufficient time has been allowed for feasibility and detailed design; site selection; tender; contractor assessment; construction; relevant approvals processes and seasonal interruptions due to weather.
Maintenance planning [see F1]

Incremental Design: How will future projects / improvements be added to this project? What design allowances or features will be incorporated that to facilitate future improvements on the project?

A PROPOSAL DEVELOPMENT

A3 - PROJECT BUDGETING

Budgets must be as accurate as possible and take into account factors that may change the projected costs.

Key Action:

A3) Proposal budget signed off by project engineer and project manager.

Guidance Notes:

Construction budgets should account for all items that will affect the overall pricing. Budgets can be done in a variety of ways and should include additional contingency to allow for unforeseen/unknown circumstances. (for example: differing ground conditions; hazard mitigation, seasonal cost variations and access constraints). Budgets and estimates should be updated as the project progresses to include new information and further refine the accuracy of the budgeting.

A4 - HAZARD ANALYSIS

All designs must meet minimum standards for environmental hazards. Refer to local building codes for design values for environmental hazards and local regulations/laws for local environmental requirements. Where a country's design codes and environmental laws are not adequate or non-existent, seek expert engineering help for guidance on what codes to use and what design values to use for the specific project locations. The extent of the independent verification of the design and construction must be outlined in the hazard analysis.

Key Action:

A4) Proposal includes the codes to be used for the project, and basic design parameters are signed off by the project engineer. The extent of the independent design verification is signed off by the project engineer and the project manager.

Guidance Notes:

A sound understanding of the environmental hazards and the relevant codes as they relate to the construction will inform the development of proposals and designs. Not all 'standard designs' are properly designed and adequately consider natural hazards present, particularly if hazards are localised to specific regions or are due to site specific issues. Site analysis is critical to assure that the location of the project is not in harm's way.

A PROPOSAL DEVELOPMENT

Prevention Web: https://www.preventionweb.net/english/hazards/
UNEP Hazard Mapping Web Platform: https://preview.grid.unep.ch/index.php?preview=map&lang=eng
Reliefweb Maps and Infographics:
https://reliefweb.int/updates?view=maps&advanced-search=%28PC257%29_%28S1503%29_%28F12.F12570%29
World Bank Think Hazard https://thinkhazard.org/en/
UNEP Global Risk Data Platform https://preview.grid.unep.ch/index.php?preview=map&lang=eng

A5 - PROPOSAL RISK ASSESSMENT

Identify construction risks early in the planning process. Plan for mitigation measures and management of these risks as early as possible.

Key Action:

A5) Complete risk assessment and management plan is signed off by project engineer and project manager.

Guidance Notes:

Systematic identification and management of construction risks from the outset of a project helps to ensure that the impact of potential risks is well mitigated. Proper management of risk is essential for the success of the project and will require money and resources.

Some risks routinely faced in construction projects are listed below:

- Fraud/corruption.
- Danger to public during construction, inadequate protection measures and safety on site.
- Unsuitable design and specifications.
- Poor engineering leading to unsafe designs being constructed.
- Poor quality workmanship.
- Weather events.
- Social impacts - Public holidays, religious festivals, strikes, labour disputes, elections, insurrection, war
- Unanticipated inflation of the cost or materials and labour during the project period.
- Lack of budget leading to compromises in the safety and quality of the building.
- Poor quality materials.
- Difficulty sourcing construction materials.
- Pressure to meet deadlines can lead to compromises in safety and quality.
- Non-existent / poor, corrupt or complex legal process to settle disputes.
- Loss of access to construction site.

UNICEF Guidance on Risk Informed programming https://www.unicef.org/media/57621/file
SCI Risk Assessment Construction Proposal (template):
https://www.dropbox.com/s/g1c6hwcjddvwc9h/A5%20SCI%20Risk%20Assessment%20Construction%20Proposal.xlsx?dl=0

A PROPOSAL DEVELOPMENT

A6 - IMPLEMENTATION MODALITIES

All options for implementation are considered with appropriate planning for staffing to maximise community involvement.

Key Action:

A6) Chosen implementation modality with back up explanation signed off by project engineer and project manager.

Guidance Notes:

The choice of modality is decided as early in the planning process as possible as the path chosen will have significant implications on timeframe, budget, and levels of staffing. Unless community involvement is planned into the proposal, it can be difficult to introduce this at a later stage without affecting resources or the project timeline. Below are four implementation modalities that are commonly used:

a. Community led construction
b. General Contractor
c. Direct implementation by the agency
d. Delivery by partner agency or local authorities

Selection of the appropriate implementation modality is informed by an understanding of numerous factors that include:

- Prioritisation of community ownership
- Building complexity and
- Impact on climate change
- The operational context
- Regulatory environment
- Team capacity
- Donor's preference/requirements

All four modalities require the frequent site presence of qualified construction professionals to control and monitor safety, quality, materials, and progress.

Community led construction covers a spectrum of possible community involvement, from making informed programmatic planning and design decisions to directly taking part in its construction. Community led has the potential to deliver inclusive and quality outcomes, but requires significant planning and oversight to ensure that the technical quality, design and safety targets are achieved.

A **General Contractor** is the traditional way of procuring construction. It is appropriate for more complex projects or contexts with an active construction market that routinely engage in complex construction.

A PROPOSAL DEVELOPMENT

Direct implementation puts all of the responsibility for delivery of the construction project with an Implementing Agency. This is normally only pursued when the Agency has strong construction and logistics capability and other options are not suitable.

GFDRR: 'Towards safer schools construction: a community based approach':
https://gadrrres.net/what-we-do/gadrrres-global-activities/comprehensive-school-safety-framework
https://inee.org/resources/towards-safer-school-construction-community-based-approach)
https://www.youtube.com/watch?v=he-l-2Sk4iE&list=PL1tZEzblvVQX00HeAyMTQ7mlef91PQfLL&index=2

World Bank Safer Homes, Stronger Communities:
https://www.humanitarianlibrary.org/resource/safer-homes-stronger-communities-handbook-reconstructing-after-natural-disasters-1

A7 - CONSTRUCTION WORK PLAN - PROPOSAL STAGE

All construction activities in the proposal narrative should be included in an overall project implementation plan with estimated timelines allocated, this should be updated as the project progresses.

Key Action:

A7) Construction work plan at proposal stage is signed off by project engineer and project manager.

Guidance Notes:

Construction work plan should take into account activities outside the construction phase, such as timelines for proposal development and approval, designs, consultations, government approvals, recruitment, program activities (for school, include teacher training, equipment and furniture, WASH committees, M&E, etc) retention and maintenance activities, as well as any external influences that might impact project delivery such as religious festivals and political events.

SCI Construction Project Work Plan (example):
https://www.dropbox.com/s/1cktcqju107wx9u/A7%20SCI%20Construction%20Project%20Work%20Plan.xlsx?dl=0

B PROJECT PLANNING

B1 - CONSTRUCTION WORK PLAN – PLANNING STAGE

Construction work plan is updated and coordinated with the overall project implementation plan at the planning stage.

Key Action:

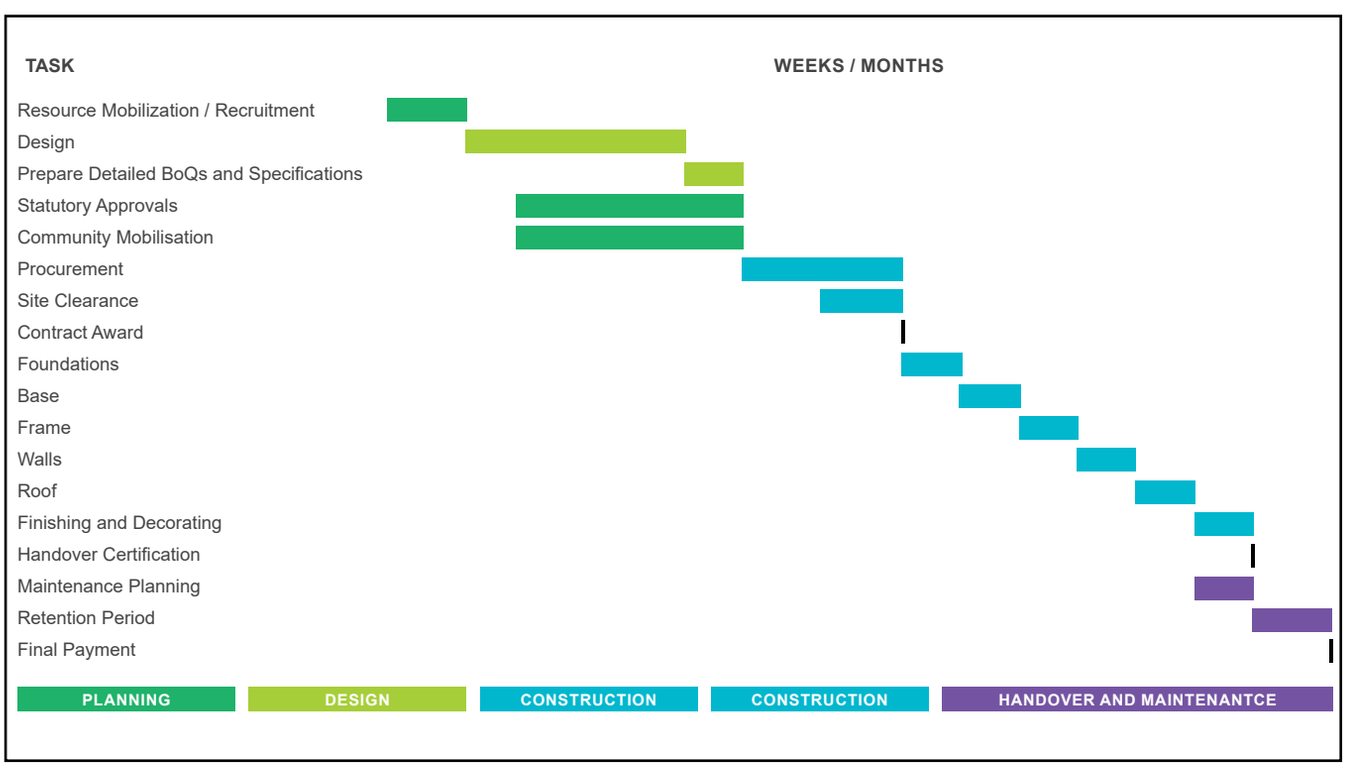
B1) Completed and detailed construction work plan at planning stage is signed off by project engineer and project manager.

Guidance Notes:

See A7 commentary.

Construction work plans are updated at proposal, inception and contract stages in the project and revised with progress updates and if contextual changes affect the project outcome. The construction work plan is used to provide early warning of delays, drive progress and report on progress to senior management and donors.

Sample Construction Work Plan:



B PROJECT PLANNING

B2 - RISK MANAGEMENT PLAN

Project risks including construction health and safety risks, and risks identified in the A5 Risk Assessment, are captured in a Risk Management Plan.

Key Action:

B2) Risk management plan is completed and signed off by project engineer and project manager.

Guidance Notes:

Systematic identification, mitigation and tracking of risks will help to minimise the impact of projects not going as per plan. To be effective, risks management must be reviewed on a monthly basis to ensure that actions for mitigation are being properly followed up.

Many risks are common to all construction such as contractor delays, site safety, fraud, poor quality works and price inflation. These risks are assessed in the light of the local context as well as any other risks that may be encountered.

B3 - SEASONAL PLANNING

Project planning is on the basis of a sound understanding of constraints resulting from weather, seasonal and geographic variations.

Key Action:

B3) Project plan from C1 Workplan, is signed off by the project engineer and project manager with all seasonal planning variables accounted for.

Guidance Notes:

Seasonal events (weather and non-weather related) and geography affect construction. An understanding of these constraints when designing, planning and implementing construction work is critical to proper project planning.

The Logistics Cluster Website provides access constraints and maps for disaster affected countries which can be used to assess seasonal weather variations. An experienced local construction professional can advise on the seasonal and geographic variables that can affect timings and costs of a project.

Logisitcs Cluster Website: http://www.logcluster.org/

B PROJECT PLANNING

B4 - STAFFING AND CONSULTANCIES

Technical Terms of Reference for staffing and consultancies are well defined by a construction professional and staff are selected based on robust technical criteria.

Key Action:

B4) Project manager signs off confirming that project staff and consultants are adequately skilled to carry out their part of the project.

Guidance Notes:

Recruiting the right team for the job and then managing their performance is essential for the success of any project and the ability to comply with the guiding principles set out in this document. A well-defined set of job descriptions should reflect all aspects of the standards at various levels of seniority and be specific to the country context and 'ways of working'. For specialized expertise, external consultants may be required.

In all cases the management of technical staff needs to be done by suitably qualified staff who have a strong understanding of the functions they are managing and the standards that are required to achieve success.

The Built Environment Professions in Disaster Response - A Guide for Humanitarian Agencies. ICE, RIBA, RICS, RTPI.
https://www.preventionweb.net/publications/view/10390

B5 - ENVIRONMENTAL PLANNING

Environmental requirements of the project are recognized and incorporated into project planning.

Key Action:

B5) Project manager signs off that project plan has incorporated the required environment requirements.

Guidance Notes:

Planning for environmental assessment, monitoring, testing and impact evaluation are to be incorporated, considering social, political, economic and governance factors.

World bank Environment and Social Framework:
https://www.worldbank.org/en/projects-operations/environmental-and-social-framework
UNEP Environment, social and sustainability framework
https://www.unep.org/resources/report/un-environments-environmental-social-and-economic-sustainability-framework?_ga=2.239161478.483706962.1613561039-1345864923.1613561039

B PROJECT PLANNING

B6 - SITE SELECTION / LAND TENURE

a) The selection of sites is carried out with direct input from technical specialist(s) and should be conducted with engagement of relevant stakeholders, such as local community Site selection must ensure that local risks, environmental conditions and land tenure are properly considered.

b) Site specific environmental hazards and issues must be identified in the site that is selected.

c) Land tenure security for the site must be ensured. The following are required:

1) A cadastral survey showing property, adjacent properties and landmarks, tied into one or more benchmarks, fixed points (of known location) or monuments.
2) Government registration of the cadastral survey and a government certificate indicating the validity of the survey and ownership of the said property.
3) Tenure Agreement – an agreement on the tenure and use of the land that is acceptable to all stakeholders.

Key Action:

B6) Site selection documentation is signed off by the project engineer and the project manager. Land tenure documentation is signed off by project manager and technical specialist(s) responsible for verification of the land tenure status and provides Security of Occupancy.

Guidance Notes:

The selection of a site is a key design decision for a new or existing project location. Understanding the feasibility, constraints and opportunities offered by a site will affect not just the design of the buildings itself but also the cost and time required for implementation. Proper site selection considers all aspects of the site including physical and environmental hazards, land tenure, access constraints, ground conditions, material and labour availability etc. These site-specific parameters will inform the detailed design and cost development; improve procurement outcomes and support programmatic decision making.

Land tenure (Ownership and right of use) is often a complicated issue and it would be prudent to have the land tenure work double checked by the appropriate specialists. Transfer/ownership of the land to the appropriate party should be established as early as possible in the project, definitely prior to starting construction. Not having appropriate land tenure will introduce a risk that the building cannot be handed over to the end user, undermining the entire project.

Special care must be taken in place with only informal land tenure arrangements as obtaining official documentation or registration of the property may not be possible.

USAID Sector Environmental Guidelines:
https://www.usaid.gov/sites/default/files/documents/1860/SectorEnvironmentalGuidelines_Schools_2015.pdf
https://www.usaid.gov/environmental-procedures/sectoral-environmental-social-best-practices/seg-construction/pdf
https://www.usaid.gov/sites/default/files/documents/1860/SectorEnvironmentalGuidelines_HealthcareFacilities_2014.pdf

B PROJECT PLANNING

B7 - DESIGN PLANNING

a) The design of the project is planned, and incorporated into overall project planning.

b) The need for specialist designers is identified. How, and when the specialist design services will be acquired for the project is incorporated into the design plan.

c) The design process, including the submissions, reviews, sign offs, and chain of command, is included as a part of the design plan.

d) Budgeting for the design work and specialists is incorporated into the overall project budgeting.

Key Actions:

B7a) A complete design plan is produced and signed off by the Project Engineer.

B7b) Design planning and budgeting is incorporated into the overall project plan and budget and signed off by the Project Manager.

Guidance Notes:

Planning for the design is a key element to the project's success. Early identification of the specialists required for the design and construction of the project will help ensure that the proper expertise is available when needed for the project. Note that if outside consultants are required, there may be a requirement for tendering for their services, so time will be required just to engage their services.

Discuss the design with the specialists to make sure that timelines and budgeting are reasonable for the scope of work. In some cases it may be necessary to engage specialists to define the scope of work to be able to determine what is required, design wise, for a project.

C DESIGN STAGE

C1 - DESIGN BRIEF

A design brief, including a summary scope of work, design requirements, design & construction timeline, quality constraints and planned community participation is produced and agreed upon at the outset of the project by relevant stakeholders.

Key Action:

C1) Completed design brief is signed off by project engineer and project manager.

Guidance Notes:

The 'design brief' is intended to make sure that the relevant stakeholders all have a similar understanding of the overall project and what will have to be done to achieve it. Agreeing to these considerations in detail at the outset will minimise confusion and misunderstanding to differing expectations with regards to the project. The design brief clearly records the following, as well as any other design issues that are specific to the particular project:

Design requirements

- Architectural requirements – spatial, incremental improvement potential, fire safety, gender, useability of the space, materials selection, maintenance, community engagement/participation.
- Structural requirements – wind loads, earthquake loads, lateral force resisting system type, live loads and materials selection.
- Civil requirements – flood studies, site selection, rubble/debris, drainage, earthworks, connection to municipal services.
- Electrical – energy supply, connection to existing grid, lighting, emergency power and generators.
- Mechanical – ventilation, heating/air conditioning, water distribution within the building, plumbing within the building. (WASH)
- Environmental requirements.
- WASH, especially Sphere standards minimums.

Timeline & Budget

- Timeline of the design and construction process.
- Overall budget of construction project.

Community Participation

- Include all planned community participation in the design brief.

Project Constraints

- Record any issues that constrain the project such that all of the known constraints are clear from the outset.

The design brief should be updated and shared as the project progresses if any of the key elements change.

C DESIGN STAGE

C2 - DESIGN FOR SAFETY

Designs must meet local and international building codes for life-safety as a minimum.

Key Action:

C2) Completed designs for each design stage must be signed off for completeness and technical correctness by the project engineer, and design engineers.

Guidance Notes:

Quality design must respond to the evaluation of likely future hazards relative to natural or human-induced hazards and vulnerable conditions. Building code elements relating to life-safety, where human life is at risk, must be met or exceeded.

The local building code is the starting point for the design. Construction specialists - in particular local and independent verification engineers, must review the adequacy of the local code and determine if other codes or standards need to be adopted to strengthen the local code. Adoption of additional standards or codes is appropriate where local codes are outdated, non-existent or inadequate for the particular project.

International Building Code purchase: https://shop.iccsafe.org/
Ontario 2017 Building Code: http://www.buildingcode.online/
UNOPS - Design Planning Manual for Buildings: https://www.humanitarianlibrary.org/resource/design-planning-manual-buildings
UK Building Regulations: https://www.gov.uk/government/collections/approved-documents
Australian National Construction Code: https://ncc.abcb.gov.au/ncc-online/NCC

C DESIGN STAGE

C3 - DESIGN FOR INCLUSIVE USE

Buildings are designed together with the community and applicable codes to ensure that they are child-friendly, gender sensitive, can be improved incrementally, and accessible for persons with disabilities. Disabilities includes as a minimum, vision impaired, mobility impaired and hearing impaired.

Key Action:

C3) Project engineer, design engineers and independent verification professionals sign off that the completed design meets inclusive use requirements.

Guidance Notes:

As required by the governing Code and by the users, the design must meet the needs of all potential user groups including the most vulnerable people. Disabled access is especially critical, since an estimate 15% of the worlds' population have a disability, and many people are likely to experience disability during their lifetime (46% of person over 60. *IASC Guidelines). There is no building that should not have accessibility features, even when not immediately needed by the users.

Various guidelines can assist with ensuring that buildings are designed appropriately for all users. Simple, low cost modifications such as ramps, handrails and lighting can enhance accessibility. The involvement of the community and user groups (including children) in the design process is critical to being able to incorporate these design considerations appropriately and innovatively.

UNICEF Child Friendly Schools Manual https://www.unicef.org/documents/child-friendly-schools-manual
IChild Friendly Schools Guidelines - Rwanda:
https://www.preventionweb.net/files/15377_rwandachildfriendlyschoolsinfrastru.pdf
CBM Manual, and toolkit for inclusive DRR: https://idrr.cbm.org/en/
CBM Humanitarian Hands-on-Tool for Inclusive access: https://hhot.cbm.org/en/card/building-access
IASC Guidelines Inclusion of Persons with Disability in Humanitarian Action:
https://interagencystandingcommittee.org/iasc-task-team-inclusion-persons-disabilities-humanitarian-action/documents/iasc-guidelines
International Federation of Water, Sanitation and Disability in Rural West Africa: A summary report of the Mali Water and Disability Study (2010): https://www.susana.org/en/knowledge-hub/resources-and-publications/library/details/1422
Loughborough University Water and sanitation for disabled people and other vulnerable users (2005)
https://wedc-knowledge.lboro.ac.uk/resources/books/Water_and_Sanitation_for_Disabled_People_-_Contents.pdf
Shelter Cluster Inclusion of Persons with Disability Working Group:
https://www.sheltercluster.org/working-group/inclusion-persons-disabilities-shelter-programmingInternational
Federation of Red Cross and Red Crescent (IFRC), All Under One Roof: Disability-inclusive shelter and settlements in emergencies (2015): https://www.ifrc.org/Global/Documents/Secretariat/Shelter/All-under-one-roof_EN.pdf
Handicap International, Conduct an accessibility audit in low- and middle-income countries (2014):
http://www.hiproweb.org/uploads/tx_hidrtdocs/AccessibilityAudit_PG13.pdf
CBM, Accessibility audit checklist for public latrines (2019):
https://www.cbm.org.au/wp-content/uploads/2019/02/Accessibility-audit-for-public-latrines-CBM-WV.pdf

C DESIGN STAGE

C4 - ENVIRONMENTAL CONSIDERATIONS / REQUIREMENTS IN DESIGN

Projects are designed with environmental considerations of the life cycle of the project (regulations, design, construction, material manufacture, building performance and use, deconstruction and disposal) and resilience built into the project, including consideration of the surrounding context through an Environmental Impact Assessment.

Key Action:

C4) Project engineer, design engineers and independent verification professionals sign off that the completed design meets environmental considerations and requirements.

Guidance Notes:

Designs include provisions for:

- ethically sourced materials, reused and recycled materials.
- watershed management and biodiversity enhancements.
- future environmental considerations, impacts on climate change.
- reduction of environmental impacts, both short and long term.
- increased durability, functionality and resilience of the project.
- local laws and regulations concerning the project and the environment.

USAID Sector Environmental Guidelines & Resources
https://www.usaid.gov/environmental-procedures/sectoral-environmental-social-best-practices/sector-environmental-guidelines-resources#co

C DESIGN STAGE

C5 - INDEPENDENT DESIGN VERIFICATION

Design and implementation are verified by appropriately qualified engineers or technical professionals who have not been directly involved in the project. Designs are not to proceed to the next steps until the designs are signed off by the independent design engineers and technical professionals.

a) Independent verification of life/safety aspects of the project (as a minimum) is to be carried out by appropriately qualified engineers and technical professionals who are registered in a country with an established building code and engineering association.

b) Independent verification of the design is to be done at least once at the completion the design stage.

c) Independent verification to be done at least once during the construction stage, at critical junctures of the construction.

d) Independent verification engineers and technical professionals must be at 'arm's length' from a project. Arm's length test:

- Independent verification engineer(s) is not working directly on the project.
- Independent verification engineer(s) does not stand to lose or gain financially or professionally due to the results of the review.

Key Action:

C5) Independent design engineers to sign off on the completed designs at each step before the designs proceed to the next step.

Guidance Notes:

Independent verification of the design and construction of the project is a means for agencies to ensure they are meeting their responsibility for a safe design in accordance with government standards and/or accepted codes. Independent verification should be worked into the quality management plans and incorporated into budgets.

Life/safety aspects of the project must be independently reviewed, however, it would be prudent to have other aspects of the project independently checked as well. Good design will save money at the construction stage.

Independent verification carried out by an appropriately qualified and experienced engineer is critical to ensure that the design meets the appropriate standards. Reviewers must be able to perform their task independently and with reasonable arm's length distance from the project. Whilst reviewers may work for the same organisation, agencies need to ensure that the engineer responsible for independent verification is appropriately qualified. Reasonable safeguards should be put in place to ensure that an 'arm's length' review is achieved throughout the project.

C DESIGN STAGE

C6 - DESIGN DOCUMENTATION

Design Drawings, Specifications and Bills of Quantities are coordinated and of a high standard to include details that fully define the project and associated infrastructure.

Key Action:

C6) Completed design documentation is signed off by the project engineer and the independent verification professionals.

Guidance Notes:

Good quality and coordinated design drawings, bills of quantities and specifications set out in detail the project components and the design requirements. Drawings must be adequately detailed to convey the design intent of all of the elements and to be properly understood. These documents also technically underpin the contractual agreement and allow agencies to hold contractors to account.

ICE Designing Buildings Wiki – Drawings https://www.designingbuildings.co.uk/wiki/Types_of_drawings_for_building_design
ICE Designing Buildings Wiki – BoQs https://www.designingbuildings.co.uk/wiki/Bill_of_quantities_BOQ
ICE Designing Buildings Wiki – Specifications https://www.designingbuildings.co.uk/wiki/Specification_for_construction

C7 - CONSTRUCTION WORK PLAN

Construction work plan is to be updated and coordinated with the overall project implementation plan at the design stage.

Key Action:

C7) Updated construction work plan is signed off by the project engineer and the project manager.

Excel ‘How to add a date line’ tutorial:
https://www.extendoffice.com/documents/excel/4485-excel-insert-current-date-line.html

D PROCUREMENT

D1 - TENDER PACKAGE

Construction tender packages clearly communicate bid requirements, contract terms and risks.

Key Action:

D1) Project manager signs off on complete tender package.

Guidance Notes:

Communication with potential bidders is critical to ensure that they are bidding on the basis of a sound knowledge of the contractual risks. This requires a tender package that communicates the design and specification in detail along with site constraints identified in the site selection process. Details of selection criteria including the weighting of quality over cost will also be clearly included in the tender advertisement.

Pre-tender meetings are a good way to address any questions about the bid or project from the bidders. Having the pre-tender meeting at the future construction site ensures that all eligible bidders have seen the site and thus can adapt their bids accordingly.

Transparency International Guide to Avoiding Construction Fraud:
https://www.transparency.org/en/news/preventing-corruption-on-construction-projects

D2 - TENDER EVALUATION

Contractors and suppliers are selected based on a set of relevant criteria, that thoroughly evaluates all bids based on quality, technical / financial capacity, and value, along with cost.

Key Action:

D2) Project manager signs off on financial capacity, value, and cost; project engineer signs off on quality and technical aspects of the selection criteria.

Guidance Notes:

The tender evaluation includes an assessment of the contractor's essential criteria (registration with relevant Ministry, tax status, etc), capability criteria (quality, technical capacity and suitability) and commercial criteria (financial bid and value for money) has available to deliver the project. The evaluation requires a construction professional with relevant skills to evaluate contractors and advise on the selections.

The evaluation and selection of contractors is to be transparently carried out with criteria weighted according to the scoring system that was included as part of the tender documentation, so that the tenders are evaluated on a fair basis. Having a scoring system that prioritises value, quality and capacity will help to ensure a quality end product.

ICE - Design of Buildings Wiki - Tender Evaluation: https://www.designingbuildings.co.uk/wiki/Tender_evaluation
Worldbank Procurement Framework and Regulations:
https://projects.worldbank.org/en/projects-operations/products-and-services/brief/procurement-new-framework

D PROCUREMENT

D3 - PROCUREMENT STRATEGY

A robust procurement strategy is in place that promotes transparency, attracts quality suppliers, allocates risks to the party best placed to manage them and encourages local procurement.

Key Action:

D3) Procurement strategy is signed off by project manager.

Guidance Notes:

A clear understanding of context, costs and the construction market informs the way in which the procurement is planned. Key procurement decisions include:

- Packages of work. A single large package of work will make small contractors ineligible whilst multiple small packages of work may not attract large credible contractors.
- Eligibility requirements. Setting minimum eligibility standards will help exclude weak contractors but setting the eligibility standards too high might not allow for enough bidders for a competitive bid.
- Scoring methodology. The published tender scoring methodology needs to be suitable for the contracting market.
- Contractors who are otherwise competent may be excluded due to excessively complex or unachievable requirements.
- Direct Implementation. Where market analysis demonstrates an unworkable market for employing contractors it may be necessary to implement directly.
- Procurement of materials. Some materials may need to be procured internationally if materials of the appropriate quality are not locally available.

Understanding the local market and the strengths and weaknesses of the local construction companies is essential.

D PROCUREMENT

D4 - CONTRACT DOCUMENTATION

Construction contracts are complete, construction specific, legal documents that capture equitable terms and conditions between signing parties.

Key Action:

D4) Construction contract for the project is signed off by the project manager.

Guidance Notes:

Contracts should be proven standard formats (or adaptations thereof) written specifically for the purpose of construction and include clauses that describe all the key contract management processes. Whichever contract is used, contracts terms and contents need to be updated for each project. Since contractors often have low contractual awareness it is important that the main terms are explained in the **pre-tender clarification** meeting (see D1 commentary).

Check local laws and regulations to be sure that the chosen contract format and content will be valid and enforceable in the particular context. International bodies such as FIDIC/NEC/JCT or the World Bank provide internationally recognised contract templates for small construction projects FIDIC Green Book (in development) IHIP Contract Template.
FIDIC Green Book: https://fidic.org/books/short-form-contract-1st-ed-1999-green-book
IHIP: http://www.ihip.earth/

D5 - ENVIRONMENTAL

Environmental requirements for the project are incorporated into the contract documents and procurement, augmented with additional Health and Safety standards that suit the project.

Key Actions:

D5) Project manager signs off confirming that environmental requirements and regulations have been incorporated into the contract documents.

Guidance Notes:

Ethical sourcing, manufacture and performance criteria should be applied to procurement planning. Local procurement should be prioritised where possible with a thorough assessment of all environmental considerations over the sourcing of materials, manufacture, transportation, performance over the intended lifespan and disposal.

BRE Responsible Sourcing in Construction: https://www.bregroup.com/insights/responsible-sourcing-in-construction-an-introduction/

D PROCUREMENT

D6 - HEALTH AND SAFETY

A Health and Safety Policy should be developed for each project, identifying Health and Safety Standards in the contract, site conditions and key obligations and actions for the contractor, that meet the local laws and regulations as a minimum. If the Health and Safety standards are inadequate, then they must be augmented with additional Health and Safety standards that suit the project.

Key Actions:

D6a) A complete set of Health and Safety standards is prepared and signed off by project engineer and project manager.

D6b) Health and Safety standards are to be included in the construction contracts.

Guidance Notes:

Adoption of Health and Safety Policy and standards the project should follow local regulatory and national regulation, and seek to adopt additional standards to compensate if the local standards are perceived to be inadequate to ensure safeguarding on site. It is important to engage all parties, starting early in the project process, in health and safety discussions, to create a culture supporting safety.

ILO - Safety and Health in Construction (Normative Instrument):
https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/normativeinstrument/wcms_107826.pdf
ILO - How to Prevent Accidents on Small Construction Sites:
https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/publication/wcms_110238.pdf
South Africa Department of Labour - Construction Health and Safety Guide:
http://www.cidb.org.za/publications/Pages/Health-and-Safety.aspx

D7 - CONSTRUCTION WORK PLAN

The construction work plan is updated after the selection of the contractor(s) incorporating the contractor's construction timeline estimates.

Key Action:

D7) Project manager signs off on updated workplan for construction.

E CONSTRUCTION PHASE

E1 - HEALTH AND SAFETY

Health and Safety is to be monitored, enforced and documented throughout the project.

Key Actions:

E1a) Adherence to the health and safety standards are monitored throughout the construction phase. Project engineer signs off on monthly Health and Safety reports as a minimum.

E1b) At Kick off meeting, all safety principles and potential hazards, mitigation measures are to be highlighted to the community, contractor and supervising staff. Project engineer and contractor to sign off that meeting has been held.

Guidance Notes:

See D6 for more information.

Undertake Regular site safety inspections to document compliance with health and safety conditions on the site and manage issues of non-compliance in a timely manner.

ILO Conducting Labour Inspections on Construction:
https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---lab_admin/documents/publication/wcms_570678.pdf

E CONSTRUCTION PHASE

E2 - QUALITY ASSURANCE

Regular, documented site inspection/supervision and monitoring is carried out by the appropriate Construction Specialist(s) to ensure quality in line with the contract.

Key Actions:

E2a) Site review reports are collated, reviewed and signed off of by the project Engineer on a weekly basis as a minimum.

E2b) Remedial measures for quality issues are issued within a week of discovering the quality issues.

E2c) Quality issues are tracked and remediated.

Guidance Notes:

Regular site inspection/supervision and monitoring is the only viable way of ensuring quality and safety on site. Robust quality assurance includes a record that, as a minimum, key stages in the construction progress have been inspected, against the construction documents and drawings, and signed off before proceeding to the next stage. Inspection / supervision visits must be carried out by the appropriate Construction Specialist such that the items inspected are review by people with the appropriate expertise.

Inspections reports are generally standard templates used to record daily progress, advice, instructions given to contractors and inspections of key elements of the work. Inspection reports to include both written and photographic material documenting the situation.

Supervisors are fully briefed as to technical acceptance criteria for the key elements that require sign-off. Where these are not met work is either rejected or demonstrated to be technically adequate by a qualified engineer.

In areas that are remote or where access is challenging, remote monitoring can be set up with community engagement. Regular photographic reporting and prompting by the supervisor and ensure communities are empowered to monitor construction progress and report on troubleshooting.

E CONSTRUCTION PHASE

E3 - CONTRACTUAL COMMUNICATIONS

A formal system of contractual communications is agreed and systematically documented with all necessary sign-offs as required by the organisation.

Key Actions:

E3) Construction communication templates and reporting lines are laid out. Arrangement is documented and signed off by the project engineer and project manager.

Guidance Notes:

A formal system of documentation for construction projects allows for a transparent and logical system for documenting the construction process and helps to ensure that the construction processes are well managed in accordance with contract terms and conditions. When contracts come into dispute, having well documented formal communications is key to helping resolve the dispute.

The contractual communications system should be explained and agreed to both the contractor and the Construction Supervisor monitoring the construction such that the agreed forms/documents are used correctly and at the appropriate stages. Typical formal communications forms include but are not limited to:

- Site Visit Reports
- Delay Documentation
- Handover Certificate
- Variation Orders
- Stop Work Orders
- Payments
- Contractor Claims

E4 - MEETINGS AND REPORTING

Regular, planned meetings with stakeholders are conducted and documented.

Key Actions:

E4) Regular stakeholder meetings are held and documented.

Guidance Notes:

Regular, planned meetings with stakeholders are an essential component of ensuring that communication is smooth and minimises conflict/misunderstanding with stakeholders. Stakeholder meetings should be held and minuted at key points during the construction. Potential key meetings points are set out below:

- Kick-off Meeting and Site Handover
- Community supervision training
- Community Meeting
- Final completion and defect inspection
- Regular Risk Review
- Site Progress Meeting and site inspection of key stages
- Practical Completion and Handover Meeting
- Project Close and Lessons Learned

E CONSTRUCTION PHASE

E5 - ENVIRONMENTAL MONITORING

Environmental requirements for the project are monitored and followed rigorously in accordance with local laws & regulations, the Environmental Impact Assessment, and the Environmental Monitoring Plan.

Key Action:

E5) Environmental requirements are monitored and deficiencies/remedial measures are documented as per section E3, 'Construction Communications'.

Guidance Notes:

Environmental Monitoring requirement will vary depending on donor conditions, governmental regulation and internal agency standards. It is important that all these conditions are clearly incorporated into monitoring procedures before the construction commences on site.

E6 - CONSTRUCTION WORK PLAN

Construction work plan is updated, coordinated, and revised as required to reflect the actual situation.

Key Action:

E6) Updated construction work plan signed off by project engineer and project manager.

F HAND OVER AND MAINTENANCE

F1 - MAINTENANCE PLANNING

A maintenance plan, and possibly an incremental improvement plan, is developed together with the community and/or project operator/owner detailing the planned work required to maintain the project after construction.

Key Action:

F1) Maintenance plan is developed and signed off by project manager.

Guidance Notes:

Embedding a practice of maintenance after the construction is complete can substantially extend the life of a building or capital work. Ideally, Maintenance plans should be prepared together with the community at the earliest stages of the project design stage, to inform material choices, ensure their sense of ownership and future responsibilities. During the construction process, joint monitoring and reporting supports their general knowledge of the building and informs detailed maintenance plans. The plans are included during the handover in order to support a more sustainable outcome for the community.

Details of the maintenance commitments are included in an MoU with the community and/or government authority responsible for the facility. Community involvement from the outset of the project works towards ownership that will encourage the implementation of the maintenance plan.

The Maintenance Plan includes the following information:

- Responsibility for maintenance activies.
- Description and frequency of routine maintenance activities.
- Plan for reactive maintenance.
- Estimates on likely costs.
- Ongoing environmental mitigation measures or considerations.
- Integration with the Incremental Development Plan - maintenance considerations should incorporate considerations for the future development of the project.

Maintenance activities range from significant repairs that require funding to routine preventative maintenance that can be done at almost zero cost. The maintenance plan aims to prioritise low cost preventative work to minimise deterioration and reduce the need for costly repairs.

A manual for the use of schools and communities in the maintenance of primary school buildings:
https://www.humanitarianlibrary.org/resource/manual-use-schools-and-communities-maintenance-primary-school-buildings-0

F HAND OVER AND MAINTENANCE

F2 - PRACTICAL COMPLETION AND DEFECTS MONITORING

At Practical Completion, the construction works are completed, and the building is handed over to the users. The snag list has been resolved and signed off by the project Engineer. At this stage, the project commences Defect Liability / Defect Correction period, as defined in the contract.

Key Action:

F2) Construction snag list items are resolved, documented and remediated appropriately before the handover of the project at Practical Completion, and signed off by the Project Engineer.

Guidance Notes:

Construction is not necessarily complete once the project is handed over to the user. Before Practical Completion of construction works, the project is inspected by the Engineer-in-Charge and appropriate technical experts for outstanding or unsatisfactory work and a snag list is prepared of all outstanding items. Once the snag list items are completed to satisfaction, the project is handed over the end user, commencing the Defects Correction Period , which is included in contracts. Handover of the building should include all relevant stakeholders to inspect and sign off the building. Key project operators and owners are interviewed about any observed defects and a thorough inspection is carried out by a qualified professional. Contractors are then liable to rectify defects that have become apparent during the period and the final payment is withheld until this is complete. Funding should be planned to incorporate the final payment.

ICE Practical Completion: https://www.designingbuildings.co.uk/wiki/Practical_completion

ICE Snag List: https://www.designingbuildings.co.uk/wiki/Snagging_construction_works

F HAND OVER AND MAINTENANCE

F3 - FINAL COMPLETION

The final payment and holding of retention are controlled processes that ensures that quality is satisfactory to all formal stakeholders before final payment is made and issuing completion certificate. Sign off is controlled through the Defect Inspection, where the contractor is obligated to correct any construction defects that have arisen during the 'construction defects period' as defined in the contract. Project Engineer is responsible for overall sign off on defects correction, remediation and producing Completion Certificate.

Key Action:

F3) Construction defects that arise in the defects period are documented and remediated appropriately at the end of the defect correction period (Final Completion), and signed off by the Project Engineer and appropriate stakeholders.

Guidance Notes:

Key project operators and owners are interviewed about any observed defects and a thorough inspection is carried out by a qualified professional. Contractors are then liable to rectify defects that have become apparent during the period and the final payment is withheld until this is complete. Funding may need to be specially planned to incorporate the final payment. When all obligations under the contract and defects list have been satisfied, Final Completion certification is issued. Depending on the project type, this typically lasts for six to twelve months after completion so that a full annual cycle of seasons has been weathered by the building. Typically a monetary percentage of the contract value withheld until the end of the defects correction period, but this may vary depending on the local market.

Completion certification approval should include all relevant stakeholders in a joint inspection, to further promote community engagement and enhance transparency.

ICE Completion of Project: https://www.designingbuildings.co.uk/wiki/Completion_of_construction_contracts

Global Shelter Cluster
ShelterCluster.org
Coordinating Humanitarian Shelter

www.sheltercluster.org