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|  **Version:** | 0.1 |
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| **Approved Date:** |  | **Review Date:** |  |

**Global Shelter Cluster**

DRAFT

ShelterCluster.org

Coordinating Humanitarian Shelter

**Construction Benchmark Standards**

**CBS**

Version 0.4

September 2016

# Foreword

# Acknowledgements

All reviewing and participating agencies.

# Why is the Global Shelter Cluster Proposing CBS?

Building construction is an essential part of a wide range of development and humanitarian programming. The investment that this represents provides an opportunity to create exceptional spaces that significantly enhance the outcomes of health, education and many other activities. Conversely, poor building design, implementation and maintenance can leave users underserved and vulnerable to death or injury - not just for the lifetime of the assistance but critically for the subsequent lifetime of the building. Whilst the contexts in which these buildings are delivered is often challenging, there is a growing recognition across the sector that more can be done to deliver safer, more timely and better quality buildings.

Implementing agencies usually have primary responsibility for ensuring building quality, irrespective of whether the construction is implemented by direct labour or contractor engagement. Even in owner-driven modalities agencies should, as a minimum, recognise responsibility for the quality of design, material and training inputs that influence the final outcome.

**Why standards?** Standard construction practice and globally recognised building codes conflict with the humanitarian imperative, internal pressures, donor expectations. These pressures result in legitimate and illegitimate compromises to construction delivery in terms of resource allocation, time allowances and quality requirements. Legitimate compromises involve an accepted and known trade-off between humanitarian imperatives or architectural quality against the constraints of the context. However, many times compromises derive from the pressures inherent in the funding environment, organisational politics or a lack of awareness. By establishing benchmark standards of due diligence these internally derived compromises can be recognised and addressed by decision makers. It is anticipated that in doing so, these standards will influence greater commitment to eliminating the false economies; shortcuts and lack of oversight that too often do beneficiaries of aid a disservice.

# Scope & Definitions

The CBS – Building Construction Standards shall apply to:

1. In all cases the national system of construction governance is the primary driver of construction standards. This document aims to ensure that agencies meet this standard as a minimum whilst setting a high standard of disaster disk reduction and quality commensurate with global expectations.
2. The construction, alteration, relocation, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures.
3. Buildings that can be expected to be in use for more than 6 months
4. Buildings where the implementing agency has “direct control” over the construction outcome. This therefore excludes owner driven modalities

# What are the CBS?

Construction Benchmark Standards are a set of process standards that set a commonly agreed level of due diligence for humanitarian agencies implementing:

1. The construction, alteration, relocation, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures.

They describe benchmark activities throughout the construction process that, if done well, indicate attention to good practice. They are universal in wording and nature and can be applied to most contexts and a wide range of buildings and modalities.

As a collaboration between multiple participating agencies, the CBS represent a widely held position on construction due diligence. The CBS is published by the Global Shelter Cluster as a normative standard for construction due diligence in the Aid 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.

**Guiding Principles:** The CBS are informed throughout by nine Guiding Principles that set the level of expectation for due diligence in construction in the conflicted and varied contexts where humanitarian and development work is undertaken.

**Benchmark Standards:** The standards 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.

**What they are not:** The CBS are deliberately not intended to provide guidance as to how these standards can be achieved since multiple manuals; trainings and guidelines are available covering best practice methodologies.

# How should CBS be used?

Use of the CBS is envisaged to be similar to the way that SPHERE standards established a common language and expectation for humanitarian response. The CBS 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 CBS offers a framework for the development and implementation of training designed to meet the normative standards of due diligence that the CBS defines.
* **Public Commitment:** Where the capacity to do so is established it may be possible to for agencies to make public commitments to hold themselves accountable against the Construction Benchmark Standards
* **Donor Commitment:** Donors (government and private) may wish to use the Construction Benchmark 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 benchmarks as common guidance for implementing agencies wishing to engage in construction activities.

# Guiding Principles

The Construction Policy Principles contribute towards ensuring that these best practice standards are followed across agencies.

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| **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 knowledge follow local practice, making adaptations to ensure safety, disabled access and gender appropriateness.** | **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 building in operation.** | **9****SUSTAINABILITY****The long term sustainability of the project including environmental and social impacts on the local area is considered and adverse effects appropriately mitigated**  |

A minimum of 5-15% (depending on context) of the construction budget is required to ensure that the above principles are consistently adhered to. This allows for resourcing of technical inputs including design, supervision and management of construction Quality Assurance. See Benchmark Standard B1 below.

# Construction Benchmark Standards

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

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| **UNIVERSAL****Benchmark Standards***A common benchmark recommendation for donors, clusters and implementing organisation.* | 1. **Staffing for Design and Supervision**

***Any proposal should include a defined allowance for design and construction supervision costs equivalent to 5-15% of the total construction value as an absolute minimum. More is likely for engineered structures.*** | 1. **Design for Safety**

***Designs are easy to maintain and verified as meeting an international standard of life-safety reflecting the locally identified hazards at the sites.***  | 1. **Workplan**

***All construction activities are planned in detail and monitored ensuring a full understanding of interdependencies between activities and programme risks*** | 1. **Tender**

***Construction tenders clearly and transparently communicate bid requirements and facilitate local procurement where possible*** | 1. **Health and Safety**

***Agencies, communities and contractors and actively contribute to supporting a culture of project safety*** | 1. **Maintenance**

***A maintenance plan is developed together with the community or building operator/owner detailing the planned work required to maintain the building*** |
| 1. **Proposal Narratives**

***Proposal narratives commit where possible to enhancing participation, child focus, disabled access, DRR, gender equality, WASH integration and livelihoods*** | 1. **Site Selection**

***The selection of sites is carried out with direct input from a technical specialist and ensures that local hazards, constraints and connectivity to infrastructure is are properly considered*** |  | 1. **Competitive Bid Analysis**

***Contractors and suppliers are selected on the basis of quality ahead of cost, based on thorough assessment of their technical and financial capacity*** | 1. **Quality Assurance**

***Regular documented site supervision and monitoring is carried out by an Engineer or Construction Supervisor actively working to ensure quality in line with the contract*** |  |
| **X1. 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.*** |
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| **OPERATIONAL Benchmark Standards***Recommended best practice for all organisations implementing construction activities* | 1. **Designs and Budgeting**

***Proposals reference standard designs taking appropriate professional advice to incorporate local hazards and context in developing the design scope and estimating budgets based on appropriate allowances for risks and assumptions*** | 1. **Design Brief**

***The design requirements for construction work are fully described and agreed at the outset, including time, cost and quality constraints and planned community participation to facilitate an appropriate design*** | 1. **Risk Management**

***Risks including construction health and safety risks are captured in a risk management plan (RMP) and monitored on an ongoing basis*** | 1. **Procurement Strategy**

***A robust market analysis drives procurement decisions that actively encourage local procurement and select suppliers who are best placed to deliver quality.***  | 1. **Contractual Communications**

***All formal communications relating to the contract are recorded and signed off as appropriate to ensure that changes are properly managed*** | 1. **Defects Monitoring**

***Quality is ensured after the completion of the buildings with a systematic process of defects monitoring and rectification in line with contract terms.*** |
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| **OPERATIONAL Benchmark Standards***Recommended best practice for all organisations implementing construction activities* | 1. **Hazard Mapping**

***Planning of designs is informed by a thorough mapping of natural hazards such as earthquakes, high winds and flooding in our areas of operation*** | 1. **Design for Inclusive Use**

***Buildings are designed together with the community to ensure that they are child-friendly, gender sensitive and accessible to the disabled*** | 1. **Seasonal Planning**

***Annual construction planning is on the basis of a sound understanding of access and market constraints resulting from seasonal and geographic variation*** | 1. **Contract Documentation**

***Construction contracts are robust construction specific legal documents that capture equitable terms and conditions between signing parties*** | 1. **Meetings and Reporting**

***A systematic meeting and reporting schedule is in place to ensure that progress is properly managed and communication with all community and government stakeholders is maintained*** |  |
|  | 1. **Feasibility**

***The feasibility of the project and risks associated with its implementation are analysed and articulated in the proposal risk assessment*** | 1. **Sector Minimum Standards**

***All projects are designed in line with the relevant government minimum standards and any additional standards that are developed by the cluster system or donors.*** | 1. **Staffing and Consultancies**

***Technical ToRs are well defined by a construction professional and staff are selected on the basis of robust technical interview to ensure quality outputs*** |  |  |  |
|  | 1. **Implementation Modalities**

***All options for implementation are considered with appropriate planning for staffing and community engagement*** | 1. **Design Documentation**

***Design Drawings, Specifications and Bills of Quantities are coordinated and of a high standard to include details that fully define the building***  |  |  |  |  |
|  | 1. **Market Analysis**

***The availability of materials and labour along with seasonal or conflict related constraints to access inform the feasibility, budgeting and design of the programme***  |  |  |  |  |  |

# Guidance and Approaches

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| **A** | **Proposal Development**  |
|  | Benchmark Standard |  |
|  | **Approach** |
|  | Relevant Tool/Guideline |
| **A1** | Staffing for Design and SupervisionAny proposal should include a defined allowance for design and construction supervision costs equivalent to 5-15% of the total construction value as an absolute minimum. More is likely for engineered structures. |
|  | Lack of human resources for design 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 building type, implementation method and context.For the majority of projects a minimum of 5-15% (depending on context) of the construction budget is required to ensure that the above principles are consistently adhered to. The table below provides guidance for the minimum level of technical input required, the exact resourcing will require professional judgement from a technically competent person.

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| **Proposal Stage Construction Technical Allocation (as %-age of construction value)** | **Building Type** |
| Refurbishment or straightforward construction to 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 programme in a functioning construction market**  | **5%** | **10%** |
| * Political, regulatory or economic environment makes high quality construction challenging;
* Emergency context;
* Construction has been infrequent or problematic in the past
* Diverse project locations.
 | **10%** | **15%** |

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| **The 5-15% support costs should cover:*** Structural assessment and feasibility design
* Detailed building design
* Capacity building/training
* WASH integration and design
* Site supervision
* 3rd party verification
* Community mobilization and engagement.
 | **Additional costs may be required for:*** Soil testing and geotechnical analysis
* Bespoke architectural design
* Infrastructure
* Development of country level standards and other highly repeated designs
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|  | Ref: [The Built Environment Professions in Disaster Response - A Guide for Humanitarian Agencies. ICE, RIBA, RICS, RTPI](http://www.preventionweb.net/publications/view/10390)ADB / / World Bank Standards for CosntructionUSAID Standards |
| **A2** | Proposal NarrativesProposal narratives commit where possible to enhancing participation, child focus, disabled access, DRR, gender equality, WASH integration and livelihoods |
|  | 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 will be attractive to donors whilst ensuring that resources are adequately directed towards quality outcomes. Key elements of 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**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.
* **Handover approvals:** The process for handover of the completed building to the receiving institution 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 government standard design is to be adopted (or other International/Agency template). **Refurbishment/rehabilitation:** Differentiates refurbishment/rehabilitation of buildings that require a structural engineering assessment by a qualified professional to be undertaken at feasibility stage.**Natural 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 B4 and B5]:** Commits toincorporating appropriate child-friendly design, gender sensitive design, disabled access and WASH facilities.**Workplan [see C1]:** All time-frames set for the construction process in the proposal have been reviewed by a technically qualified person ensuring sufficient timehas been allowed for feasibility and detailed design; site selection; tender; contractor assessment; construction; relevant approvals processes and seasonal interruptions due to weather. |

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| **A3** | Designs and BudgetingProposals reference standard designs taking appropriate professional advice to incorporate local hazards and context in developing the design scope and estimating budgets based on appropriate allowances for risks and assumptions |
|  | Budgeting for appropriate designs requires an understanding of numerous inputs to the standard designs set out in Section A above. Adjust the standard design budget to allow for ground conditions; hazard mitigation, seasonal cost variations and access constraints. Bottom-up estimates based on the above should be complemented with a top down estimate comparing similar buildings in various locations and contexts or a rate per m2.Where no detailed design information exists for the proposal, a budget based on top down estimation can be used provided that additional contingency (up to 15%) is included to allow for unforeseen circumstances and likely design developments.**Top-down cost estimate*** Check costs of similar buildings with local builder’s or other NGOs
* Check costs against resources such asUNICEF TLS Compendium
* Factor in country specific costs relative to logistics and transport

**Bottom-up cost estimate*** Materials, equipment and tools
* Construction labour
* Transportation
* Storage and security
* Supervision an monitoring
* Risks and assumptions

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| **A4** | Hazard MappingPlanning of designs is informed by a thorough mapping of natural hazards such as earthquakes, high winds and flooding in our areas of operation |
|  | A sound understanding of hazard maps as they relate to areas of operation will inform the development of **proposals and designs**. Not all government’s standard designs adequately consider natural hazards present in the country, particularly if hazards are localised to specific regions. The UNEP Global Risk Data Platform allows you to generate relevant hazard maps for your country.Where implementation is at scale, agencies should employ further advice to be satisfied of a safe design |
|  | [Prevention Web: Hazard Maps](http://www.preventionweb.net/english/professional/maps/?pid:6&pif:3)[UNEP Hazard Mapping Web Resources [link]:](http://preview.grid.unep.ch/index.php?preview=map&lang=eng) |
| **A5** | FeasibilityThe feasibility of the project and risks associated with its implementation are analysed and articulated in the proposal risk assessment |
|  | The following typical risks may be relevant for construction:* Children and adults (or livestock) falling down open excavations and wells during construction; inadequate protection measures on site
* Unverified engineering capacity leading to unsafe designs being constructed
* Poor quality workmanship of structural elements due to a lack of supervision or missed design aspects.
* Out of season construction
* Unknown stability of rehabilitated building leads to an unsafe building being perceived as safe by the community / users.
* Unanticipated inflation of the cost or materials and labour during the project period.
* Client or government pressure on budget compromises quality and safety of the building
* Poor quality workmanship and materials compromises the use of the building or delays its delivery

Where the risk threatens the agency’s obligations under the award or requires extra resources relating to an award, it should also be declared in the award risk assessment. |
| **A6** | Implementation ModalitiesAll options for implementation are considered with appropriate planning for staffing and community engagement |
|  | Selection of the appropriate implementation modality is informed by an understanding of numerous factors that include:* The operational context
* Regulatory environment
* Team capacity
* Community engagement
* Building complexity

Ideally this is decided as early on in the planning process as possible as the path chosen will have significant implications on timeframe, supervisory responsibility and levels of staffing. Implementation can be broken down into three basic modalities:1. Community led construction
2. Lump sum contract – Building Contractor
3. Direct implementation by SC

***All three modalities require the frequent site presence of qualified construction professional to control and monitor safety, quality, materials and progress.*****Community-based 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 design and safety targets are achieved. The “*Towards Safer School Construction”* guideline sets out the ideal methodology for achieving excellent buildings constructed within a community.**A Lump sum contract** is the traditional way of procuring construction. It is appropriate for more complex buildings or contexts with an active construction market that routinely engage in building construction.**Direct implementation** is only appropriate when all other options have been explored and are deemed unsuitable. It must be noted that Direct Implementation will put *significant demands on SC logistics* and must be identified as the required option early to allow significant planning/staffing to be agreed to meet the milestones outlined in the construction workplan.  |
|  | [GFDRR: ‘Towards safer schools construction: a community based approach’](https://www.gfdrr.org/towards-safer-school-construction-community-based-approach) |
| **A7** | Market AnalysisThe availability of materials and labour along with seasonal or conflict related constraints to access inform the feasibility, budgeting and design of the programme |
|  | A clear documentation of how seasons and geographies affect construction on an annual basis will help ensure that all team members have a common understanding of the constraints when designing, planning and implementing construction work. It also provides useful tools for communicating planning constraints to donors when developing proposals. | * **A5. Access Constraints Map**
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| **B** | **Design Stage**  |
|  | Benchmark Standard |  |
|  | **Approach** | **Relevant Tool/Guideline** |
| **B1** | Design for SafetyDesigns are verified as meeting an international standard of life-safety reflecting the locally identified hazards at the sites  |
|  | Quality design reflects evaluation of threats and likely future events relative to natural or human-induced hazards and vulnerable conditions. It includes simple engineering analysis to design building elements that mitigate the worst effects of identified risks. Locally appropriate good construction practice is often sufficient where extreme events are not expected or deemed likely. However, in seismically active terrain, areas prone to cyclone or flood events, SC must be sure that hazards have been fully considered in the design process. This may go beyond the scope of some government standards. It may therefore require employing specialist engineering to verify, enhance or develop designs to ensure that respond to the relevant hazards in line with an internationally recognised building code. Many standard designs exist but they are rarely ideal for every context. The skill level of available labour and available materials need to be considered when applying existing template designs to new locations. Where resources are scarce, modifications of the design to make them feasible need to consider how this impacts on the building safety.In most countries, designs of buildings need to be formally signed off by a professional with locally recognised qualifications.The library of technical guidance on particular hazards and building materials will help ensure that key connections and building details are hazard resistant. For buildings that may be used as evacuation centres, more stringent design requirements will apply. |
|  | **Resources** |
| **B2** | Site SelectionThe selection of sites is carried out with direct input from a technical specialist and ensures that local hazards and constraints are properly considered |
|  | The Site Selection Checklist helps to ensure that all aspects of the site are considered and recorded at the point of site selection. This includes physical and environmental hazards, land tenure, access constraints, ground conditions, material and labour availability etc. A properly documented site selection process will inform the detailed design and cost development; improve procurement outcomes and support programmatic decision making.Site selection is the earliest opportunity to address land tenure for which standard templates will help ensure that agreements are as legally binding as possible. |
|  | **Resources** |

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| **B3** | Design BriefThe design requirements for construction work are fully described and agreed at the outset, including time, cost and quality constraints and planned community participation to facilitate an appropriate design and approach |
|  | The Design Brief must clearly note spatial necessities, constraints, functional requirements (including WASH), community participation, material preferences, accessibility needs, gender needs, energy supply, maintenance responsibilities as well as consider the time available for delivery, the cost and quality standards to be achieved. Early dialogue will establish the feasibility of the project proposal and requisite sign-off, in order that resources are mobilised and ensure effective and timely delivery of the project. Subsequent changes to the brief can then be recorded to track the likely impact of these on the project. |
|  | **Resources** |
| **B4** | Design for Inclusive UseBuildings are designed together with the community to ensure that they are child-friendly, gender sensitive and accessible to the disabled |
|  | Various guidelines can assist with ensuring that buildings are designed appropriately for all users including the most vulnerable. Simple, low cost modifications can make a difference to how buildings can enhance programmatic outcomes and acceptance by users and their communities. The involvement of the community and user groups (including children) in the design process is critical to being able to apply these modifications appropriately and innovatively.Facilities can be adjusted for children by avoiding dangerous features such open edges without the required barrier/guardrail for protection from falling. The design of gender-sensitive facilities such as showers and latrines must be oriented and positioned to ensure maximum privacy and dignity of women and girls. Health clinics can be designed to ensure that patient flow minimises the risk of infection. Schools sites can be planned to minimise areas where children are unsupervised. |
|  | [Nairobi University: Design for Hospitals](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=6&cad=rja&uact=8&ved=0ahUKEwjZ-ZPR87bPAhVL-GMKHYHZB3MQFggtMAU&url=http%3A%2F%2Ferepository.uonbi.ac.ke%2Fbitstream%2Fhandle%2F11295%2F96464%2FMEIN%2C%2520P.%2520DESIGN%2520FOR%2520MEDICAL%2520BUILDING.pdf%3Fsequence%3D1&usg=AFQjCNGoBheI2xWuASJ4uTjC68zOkeJJKQ&sig2=GDPFz1iow7WWownuotqhPw)UNICEF Child Friendly Schools ManualUNICEF Schools compendiumHandicap International Design GuidanceChild Friendly Schools Guidelines - Rwanda |

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| **B5** | Sector Minimum StandardsAll projects are designed in line with the relevant government minimum standards and any additional standards that are developed by the cluster system or donors. |
|  | Where construction falls within the scope of formal standards these must be adhered to. They may define technical design codes of practice; architectural space standards or the provision of building services.  |
|  | Codes of practiceWASH standardsEiE standards |
| **B6** | Design DocumentationDesign Drawings, Specifications and Bills of Quantities are coordinated and of a high standard to include details that fully define the building |
|  | Good quality and coordinated Drawings, Bills of Quantities and Specifications set out the detail of how a finished building should appear. Beyond architectural layout, they include precise construction details and exact descriptions of the materials and workmanship that are required to ensure the quality and safety of the design. These documents also technically underpin the contractual agreement and allow SC to hold contractors to account. |
|  | Resources |

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| **C** | **Construction Planning** |
|  | Benchmark Standard |  |
|  | **Approach** | **Relevant Tool/Guideline** |
| **C1** | WorkplanAll construction activities are planned in detail and monitored ensuring a full understanding of interdependencies between activities and programme risks |
|  | A detailed construction workplan aims to present the general sequence and duration of feasibility assessments, designs approvals and construction related activities. This allows the identification of key dependencies between activities that relate to the critical path that, if followed, means the project will complete on time. If agreed with the contractor, by close monitoring of progress, this tool should be used to provide early warning of delays, drive progress and report on progress to senior management and donors. |
| **C2** | Risk Management Plan and Award Risk AssessmentRisks including construction health and safety risks are captured in a risk management plan (RMP) and monitored on an ongoing basis |
|  | Implementation risks including health and safety risks are captured in the risk management plan (RMP) with an appropriate mitigation plan in place. Modified for the local context this will cover implementation delays, site safety, fraud, and poor quality works.  |
| **C3** | Seasonal PlanningAnnual construction planning is on the basis of a sound understanding of access and market constraints resulting from seasonal and geographic variation |
|  | A clear documentation of how seasons and geographies affect construction on an annual basis will help ensure that all team members have a common understanding of the constraints when designing, planning and implementing construction work. It also provides useful tools for communicating planning constraints to donors when developing proposals.The Logistics Cluster Website provides access constraints maps for disaster affected countries which can be used to assess seasonal variations in access. An experienced local construction professional will need to advise on the variability of construction costs on an annual and geographic basis. |
|  | <http://www.logcluster.org/> |
| **C4** | Staffing and ConsultanciesTechnical ToRs are well defined by a construction professional and staff are selected on the basis of robust technical interview to ensure quality outputs |
| Definition of required capacities and recruitment of a capable construction team requires some initial technical understanding to design job descriptions and identify properly qualified staff.Job descriptions should be tailored to the country context and ‘ways of working’, as well as local capacity. For one-off design and construction of more complex buildings a specialist consultant may be required. |
|  | Ref: [The Built Environment Professions in Disaster Response - A Guide for Humanitarian Agencies. ICE, RIBA, RICS, RTPI](http://www.preventionweb.net/publications/view/10390) |

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| **D** | **Procurement** |
|  | Benchmark Standard |  |
|  | **Approach** | **Relevant Tool/Guideline** |
| **D1** | TenderConstruction tenders clearly and transparently communicate bid requirements and facilitate local procurement where possible |
|  | 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 should also be clearly included in the tender advertisement. By holding a **pre-tender clarification meeting** where the details of the project are clearly explained and contractors have the opportunity to ask questions. The quality of bids received and the ability to identify competent contractors will be greatly improved by attention to this activity.Construction is generally best procured as close to the location of the works as possible whilst still ensuring the necessary quality and financial compliances. This supports local livelihoods and helps to encourage community ownership of the work. Local procurement can be encouraged through careful stipulation of the selection criteria. The hiring of local staff can be one of the stated selection criteria in the invitation to tender. A cheaper but more local contractor’s capacity can be compensated for by providing enhanced supervision at the site.  |
|  | [**Transparency International Guide to Avoiding Construction Fraud**](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwjB_tyMh7fPAhULVhQKHai2APkQFggeMAA&url=http%3A%2F%2Fwww.transparency.org%2Fnews%2Ffeature%2Fpreventing_corruption_on_construction_projects&usg=AFQjCNFcOmcVdcDOFoeV-zsHUFhL5v8dcw&sig2=Q8sbEDH_MWQ47GVRcXrYJQ) |
| **D2** | Competitive Bid AnalysisContractors and suppliers are selected on the basis of quality ahead of cost, based on thorough assessment of their technical and financial capacity |
|  | The CBA includes an assessment of the human, financial and physical resources that a contractor has at hand to deliver the project. Once non-compliant bidders have been eliminated, interviews with the identified site staff, visits to the construction yard and inspection of previous work and references, will all form part of the CBA alongside the usual assessment of cost and financial capacity. This will require a construction professional with relevant skills to advise on the process.The CBA can then be carried out using a contractor selection matrix that applies a weighted score to all of the criteria and documents a transparent selection process. The weighted scoring needs to be included as part of the tender documentation so that contractors are able to bid on a fair basis. |

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| **D3** | Procurement StrategyA robust market analysis drives procurement decisions that actively encourage local procurement and select suppliers who are best placed to deliver quality. |
|  | A clear understanding of context, costs and the construction market will inform the types of contractor that are best suited to carrying out the work. It may be that following market analysis it is decided that the contracting companies are not the most appropriate body to carry out the work and it is better delivered by skilled craftsmen from the beneficiary community itself supported by robust technical input. Similarly, for certain types of work, only the most qualified organisations will be capable of delivering to an acceptable or compliant level of quality.Areas to consider when developing a procurement strategy include:* Previous experience, references and knowledge of contractors. This should be systematically kept based on previous work.
* A survey of current market prices to inform the cost estimate.
* The appropriate certification of contractor to carry out the work
* The agency’s capacity to oversee the work
* Capacity of local organisations to provide skilled labour and quality materials
* Complexity of the building and the relative importance of a high-quality finish
 |
| **D4** | Contract DocumentationConstruction contracts are robust construction specific legal documents that capture equitable terms and conditions between signing parties |
|  | Construction contracts should be written specifically for the purpose and include clauses that describe all the key contract management processes. Whichever contract is used decisions will need to be made on the exact terms. Since contractors often have low contractual awareness it is important that the main terms are explained in the **pre-tender clarification meeting** (see D1). A typical construction contract will include clauses such as: * The Contractual Partners
* The Scope of Work
* The Contract Price
* Construction Schedule
* Payment schedule and method of measurement and payment
* Advance Bank Guarantees and Insurances
* Variations clauses describing the process by which variations are instructed and costed
* Termination clauses describing the rights of client and contractor to end the contract.
* Completion and retention release

Where a construction contract exists that is standard in the local contexts (e.g. set by the Department of Labour or local engineering board) this should be the first choice of contract.For locations where this does not exist or the contract is not satisfactory, FIDIC provides an internationally recognised contract for small works. The Short Form of Contract is recommended for engineering and building work of relatively small capital value. The Guidance Notes for the Green Book recommended that generally it should not be used on projects with a contact value greater than US$500,000. |
|  | [FIDIC Green Book](http://fidic.org/books/short-form-contract-1st-ed-1999-green-book) |

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| **E** | **Construction Phase** |
|  | Benchmark Standard |  |
|  | **Approach** | **Relevant Tool/Guideline** |
| **E1** | Health and SafetyAgencies, communities and contractors and actively contribute to supporting a culture of project safety |
|  | The culture of project safety starts with a contractual commitment to meet site safety standards as included in the standard contract template. In addition, contractors commit to ensuring that their supply chain is free of child labour.At the site kick-of meeting, potential site hazards such as, open excavations, standing water and falls from height are highlighted to the community, contractor and supervising staff. Once construction is underway, the SOP sets out a regular process of Health and Safety inspections to ensure that site safety is maintained on a regular basis. The **Health and Safety Inspection Form** includes a checklist of common hazards and documents mitigating actions that must be agreed with the site team. Inspections should also periodically visit the supply chain to ensure that children are not engaged in work at any stage in the construction process. |
|  | [South Africa Department of Labour - Construction Health and Safety Guide](http://cidb.org.za/publications/Pages/Health-and-Safety.aspx) |
| **E2** | Quality AssuranceRegular documented site supervision and monitoring is carried out by an Engineer or Construction Supervisor actively working to ensure quality in line with the contract |
|  | Site progress monitoring includes a record that the following key stages in the construction progress have been inspected and signed off before proceeding to the next stage. The sign-off includes an inspection of the structure against the drawing details and the materials/workmanship specification defined in the BoQ.All **monitoring inspections** can utilise the SC templates to record daily progress, advice and instructions given to contractors and inspections of key elements of the work. All inspections and site visits are signed-off by the contractor. Key elements for inspection are set out below:

|  |  |  |
| --- | --- | --- |
| * **Site inspection record**
* **Foundations & Slab works**
* **Wall Superstructure**
 | * **Reinforced Concrete / Steel Frame Roof & Coverings**
* **Architectural, Plumbing & Electrical**
 | * **Screeding and Plastering**
* **Painting and Finishing**
* **Site Clearing**
 |

Recommended inspection frequencies for different modalities is set out below:

|  |  |
| --- | --- |
| **Implementation Modality** | **Inspection Frequency**  |
| **Simple, single-storey non time-critical** | **Complex, time critical or multi-storey** |
| 1. Community led construction
 | 2-4 visits / week | Daily |
| 1. Building Contractor
 | 1-2 visits / week | Daily |
| 1. Direct implementation
 | Daily | Daily |

**Note:** Wherever **Government Engineers** are also available to support the supervision, the agency’s construction team supervisors will produce a separate inspection report. ***Any instructions given by the government engineer are not valid unless confirmed by the Agency’s Engineer.***Where the context limits the ability for site presence, this may be mitigated by close involvement and training of community bodies to report on elements of construction progress when supervision is not present. |
| **E3** | Contractual CommunicationsAll formal communications relating to the contract are recorded and signed off as appropriate to ensure that changes are properly managed |
|  | Communications that relate to clauses in the contract are formally issued with sign-off by the relevant authority going up to Country Director level where substantial financial changes are involved.Templates are used for the most common communications that include reference to the relevant clauses and help to ensure that all aspects of the communication are properly covered. The key communications are listed below:

|  |  |
| --- | --- |
| * Variation Orders
 | * Payment
 |
| * Delays
 | * Stop Works Orders
 |
| * Contractor Claims
 | * Handover
 |
| * Retention
 |  |

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| **E4** | Meetings and ReportingA systematic meeting and reporting schedule is in place to ensure that progress is properly managed and communication with all community and government stakeholders is maintained |
|  | A schedule of meetings starts with the **kick-off meeting** where all stakeholders including building users, community leaders, government officials and contractors are invited in order to introduce the project and its objective. This is followed by regular site meetings to monitor progress and resolve issues.Site progress is carefully recorded with both written and photographic evidence by the site supervisor. **Written reports** follow templates provided and are a clear record of progress against agreed specification and milestones on the construction workplan. **Photographs** record a mixture of the full building (each elevation) plus a good selection of important details (to be focused in on) at key stages of construction. For instance, if earthquake detailing is required with concrete reinforcement, proof must be taken of the reinforcement layout as evidence of it having been connected according to the design intent. |

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| **F** | **Hand Over and Maintenance**  |
|  | Benchmark Standard |  |
|  | **Outputs** | **Relevant Tool/Guideline** |
| **G1** | MaintenanceA maintenance plan is developed together with the community or building operator/owner detailing the planned work required to maintain the building |
|  | Maintenance plans are prepared together with the community, as part of the handover process, in order to support a more sustainable outcome for the community. An outline of the maintenance commitments should be included in the MoU. In addition, on-going community involvement simplifies setting up an effective maintenance plan with sufficient financial support.The Maintenance Plan should include the following information:* Responsibility for maintenance
* Description and frequency of routine maintenance activities
* Plan for reactive maintenance
* Estimates on likely costs

Maintenance activities will depend on the building but might consist of: general cleaning; clearing vegetation / cutting grass; drainage clearance; general repairs (e.g. patch repairs to thatch or mud-brick walls); checking structural connections; painting / protecting timber against wood boring insects and rot; oiling / greasing hinges; re-fixing or replacing mosquito netting. |
| **G2** | Defects MonitoringQuality is ensured after the completion of the buildings with a systematic process of defects monitoring and rectification in line with contract terms. |
|  | Construction is not complete once the building is handed over to the user. A defects correction period is usually included in the contract to last approximately 12 months after completion with 5% of the contract value withheld until completion. Closing out the defects period therefore needs to be carried out in a systematic way in the final 1-2 months of the defects period. Key building operators and owners should be interviewed about any observed defects and a thorough inspection needs to be carried out by a qualified professional. |