Introduction:

The Humanitarian and International Development Competency Framework is designed to illustrate the types of skills that structural engineers will require to be successful in the development sector.

It can be used by:

- those wanting to enter the sector, to inform them of the range of skills they will require and challenges they will face
- experienced practitioners to focus their training and development goals and to identify any skills or experience gaps if they are intending on engaging in development work
- employers within the sector when evaluating potential candidates in the hiring process
- client/donors/commissioners when assessing the suitability of an engineer, or practice, for their project

This framework also aims to highlight the key differences in skills required between the work of a structural engineer employed in a typical private sector consultancy practice and one working in humanitarian and international development.

Key differences include:

- Increased project management responsibility
- Accountability for your own competence and practice
- Lack of support from either engineering colleagues or official guidance documents and challenges of working in unfamiliar environments
- Recognition of the fact that engineers cannot be just the engineering expert, but will be playing a leadership role in the conceptualisation, design and delivery of entire projects
- Recognition of the wider consequences of the engineer's decisions – the social, political, economic and environmental impacts of projects may all be the responsibility of the engineer

Competency framework:

This competency framework is not a comprehensive listing of all competencies that will ever be required in any humanitarian or international development context. It should be interpreted carefully for any particular context.

The framework is structured to align with the IStructE's *Initial Professional Development - Core Objectives: Chartered Membership (2023)*. Objectives set out in the table below are those which an engineer should achieve, in addition to the standard core objectives, in order to achieve a level of ability to work in humanitarian and development contexts akin to chartership in more typical professional engineering settings. An engineer who has achieved these additional objectives to the standard set out is likely to be well equipped to undertake (senior level) work in humanitarian and development settings. Examples of activities which may contribute to the achievement of the core objectives have been provided.

As with chartership, it is to be expected that the competence level set out below can be achieved with a mixture of independent learning, formal training, and experience. Engineers seeking to achieve these objectives should ensure that they have appropriate support and supervision in place as they learn. See the guidance on *Working in the humanitarian or development sectors* published by the Institution.

The design objectives have been split into the design of projects and engineering design, as engineers in humanitarian and development contexts are much more likely to be playing a leading role in the overall design and set up of projects, rather than just the engineering design.

As for each of the Institution's Core Objectives for chartered membership, the following standards should be achieved as stated for each additional objective:

- (K) Knowledge – understanding of the subject and its application
- (E) Experience – able to perform independently or under supervision
- (B) Ability – able to perform independently and be competent to advise others

Framework relationship with the Professional Review Interview:

Candidates must recognise that this framework and its contents DO NOT form part of the official IPD Regulations or Core Objectives. This framework and its contents cannot therefore form the basis of a candidates IPD Final Report Forms, and neither will any candidate be assessed on the contents of this framework. The activities outlined in this framework *may* however contribute towards partial achievement of the official Core Objectives, but candidates are advised that demonstration of competence will be based solely on the official Core Objectives and IPD Regulations.

Additionally, candidates are advised to always check that they are referring to the most up-to-date version of the IPD regulations.

IStructE Core Objective (and brief summary of standard Objective)	Additional objectives relating to the humanitarian and international development sector
1. **Professional standards and engineering responsibility** (Demonstrate knowledge of professional conduct)	Countries other than your own, and the international aid sector, have their own institutional arrangements. It is important to understand these and interact appropriately with institutions and other organisations relevant to your work. • Have knowledge of institutions/organisations in other countries, and in the development and humanitarian sectors (eg national engineering institutions, PHAP, ICRC, IFRC, UN agencies, IASC, etc)

IStructE Core Objective (and brief summary of standard Objective)	Additional objectives relating to the humanitarian and international development sector	
2. Communication (Ability to demonstrate effective communication and interpersonal skills)	Effective communication in cross-cultural contexts, in unfamiliar languages, and often in stressful situations, requires skills and insight beyond that required in more conventional professional engineering contexts. Engineers will find themselves engaging in two-way communication with audiences and groups they would not encounter in normal professional engineering work. • Ability to communicate effectively in cross-cultural contexts with a wide range of project stakeholders, including marginalised and vulnerable populations • Knowledge of the effect of identity and power on interactions and communications • Ability to communicate technical concepts to non-technical audiences who may have lower levels of literacy, lack of familiarity with traditional technical drawings and imagery or other conventional ways of demonstrating technical information, or lack access to electronic and mobile communications • Knowledge of principles and approaches to communicating with affected communities and project participants, including feedback and accountability mechanisms. (See Core Humanitarian Standard and Accountable Now)	
3. Concept creation and design (Ability to produce viable structural solutions, within the scope of a design brief, taking account of structural stability, durability, aesthetics and cost)	**Projects** In humanitarian and development contexts engineers are very likely to be closely involved in the conceptualisation of entire projects, including the rationale for doing them at all, establishing what the objectives of a project are, what the changes and interventions are which are needed to achieve those objectives, how those will be undertaken. • Ability to draft the overall project specification, brief or business case with a variety of different forms of appointment or involvement in projects, since as an engineer you could be acting on behalf of governments, NGOs, donors or for affected populations and people in need, or a combination of those • Ability to conceive an entire project based on an appropriate contextual analysis and the resulting intended outcomes and impacts • Knowledge of impact and different ways to achieve it as well as high-level project planning tools including logical frameworks and theories of change	**Engineering** Conceptual engineering design is likely to be much more based on judgement and experience than it would be in more conventional engineering contexts. • Experience of applying engineering judgement and expertise in situations with limited codified guidance and/or limited adherence to codified guidance • Ability to set and agree appropriate technical standards for the context, recognising that international best practice standards may not be achievable in the short term, and incremental improvements may have a greater positive impact

IStructE Core Objective (and brief summary of standard Objective)	Additional objectives relating to the humanitarian and international development sector	
4. Analysis and sizing (Ability to carry out appropriate analysis and design calculations)	**Projects** Engineers designing humanitarian or development projects must be able to choose and undertake appropriate analyses of the context in which they are operating. They must understand what analyses are relevant and necessary, and be able to apply the findings of those analyses to structured project designs, including programme, staffing, activities, budgets, outputs (deliverables). • Ability to procure or undertake, and understand and analyse assessments of need, vulnerability (of people and communities), knowledge and capacities, markets, conflict sensitivity or other factors critical to effective development or humanitarian interventions • Ability to fully design a project, including required inputs and outputs, within a structured understanding and framework of wider societal and environmental objectives, outcomes and impacts	**Engineering** Engineering analysis and design is likely to be much more based on judgement and experience than it would be in more conventional engineering contexts, or to rely on first principles rather than codified analysis and calculations. It is likely that robust engineering guidance is not available for many of the design problems that will be encountered. • Experience of the assessment and analysis of non-engineered structures using judgement, rules of thumb, and context-appropriate calculations • Ability to collect sufficient data, undertake appropriate testing, and context-appropriate research, to enable projects to proceed safely in a timely manner, where data and design information is not readily available
5. Materials (Ability to specify and coordinate the use of materials)	Engineering and construction materials in many humanitarian and development contexts will not be certified to any particular standards and are likely to be highly variable in quality. Strength and durability will be variable, and design will need to account for that. Quality control will rely on visual inspection and simple tests. Good detailing is essential. • Experience of design and specification of vernacular and non-engineered materials (eg non-engineered timber, bamboo, coco-lumber, unreinforced masonry, mud blocks) and ability to draw on and apply specialist expertise in the use of such materials, which may only be available from local NGOs, technical agencies or academic institutions, local experts, or other less conventional sources of technical guidance • Ability to appropriately specify and design materials for durability in contexts with harsh exposure to very varying climates, and limited ability to undertake maintenance. Durability and maintenance must take a much more central role in design decisions than they do in typical professionally engineered projects	

IStructE Core Objective (and brief summary of standard Objective)	Additional objectives relating to the humanitarian and international development sector
6. Sustainability (Experience in assessing and acting on the environmental and societal implications of projects)	People living in humanitarian and development contexts face more and very different hazards than those structural engineers are used to considering. It is important to consider these hazards holistically and adapt projects accordingly to make interventions appropriate. The lack of robustly engineered structures is just one of many risks faced by those experiencing poverty and vulnerability from lack of food or environmental collapse. Addressing the resilience of structures is a priority that must be carefully balanced with addressing the other risks people face, especially if structural interventions come at the expense of their resilience to more direct and frequent hazards. • Have knowledge of principles of climate justice and equity and apply them to project and design decisions • Have knowledge of the impact of multi-hazard risk on both structures and populations, and be able to design and adapt projects accordingly • Have knowledge of the environmental impact of projects and activities on the health, livelihoods and future resilience of vulnerable affected populations, and ability to adapt project and structural designs accordingly
7. Construction (Experience in construction techniques)	Construction practices vary across the world. In humanitarian and development contexts it is even more important than usual to adapt design and construction methods to local practices and capacities, as the resources and ability to change and improve practices will be very limited. • Ability to assess local labour experience and skill level and, typical tools and methodologies employed by local builders, to enable contextual programming and supervision
8. Health, safety and risk management (Experience in health and safety requirements, risk management and associated legislation)	The importance placed on and understanding of health, safety and risk management varies enormously from country to country. In addition to complying with local laws and regulations, engineers working in humanitarian and development contexts must apply best practices appropriate to the context. Engineers must understand their personal and ethical responsibility for their own health and safety, and the health and safety of those working with and for them. Risks people face will vary considerably and will go beyond construction site risks. Engineers must be able to ensure that appropriate risk assessment and management is in place in their projects and organisations. • Ability to apply context-appropriate measures to maintain personal safety, including ability to apply hostile environment awareness training and trauma first aid • Ability to manage safety and security for project stakeholders, including staff, partners, and communities, including due consideration of both physical and mental health and safety • Ability to appropriately manage health and safety in construction in a variety of contexts, with understanding that although legal and regulatory frameworks may be weak, and health and safety practices poor, health care and social safety nets are likely to be weak or non-existent, and accidents can lead to destitution for workers and their dependents. Engineers must seek to improve understanding and practice of health and safety to eliminate or substantially mitigate risk

IStructE Core Objective (and brief summary of standard Objective)	Additional objectives relating to the humanitarian and international development sector

9 Management
 	
(Experience in management skills for programming and control as well as quality systems)
	Management of projects and engineering teams in humanitarian and development contexts is very different from managing teams in more conventional engineering contexts. Engineers are often managing teams with very variable levels of qualification, skill and expertise, across large geographical areas, delivering complex projects in difficult circumstances. Good engineering in such contexts is invariably dependent on good and adaptive management and getting the most out of technical and engineering teams.
	
	• Understanding of a manager's duty of care in stressful and high-risk contexts. Help others to recognise and manage stress by modelling appropriate self-care and prioritising workload
	• Knowledge of monitoring and evaluation approaches and methods, including using real-time monitoring and post-distribution monitoring to enable adaptive management of projects
	• Ability to use a logical framework
	• Ability to set up and manage projects to deliver in partnership with different types of organisations in very different contexts. Partnership may be with organisations which are working beyond their normal competence or capacity, and partnership needs to be mutual and supportive and build capacities, rather than contractual or competitive
	• Ability to manage diverse workforces, which will include both technical and non-technical staff and may include volunteers, traumatised and disaster-affected people, vulnerable people and people with lower skill levels and/or literacy
	• Knowledge of conflict sensitive project management and negotiation
	• Ability to manage teams remotely
	
	Formal quality systems are unlikely to exist in many locations and contexts. Engineers must be able to recognise what quality systems are needed, and set up systems which are good enough to deliver the desired quality of outcomes.
	
	• Ability to institute contextually appropriate systems for quality management, where those systems are weak or do not already exist. This is likely to include:
	  ○ Procurement: quality of materials purchased and delivered; quality of services procured
	  ○ Design: Appropriate design checks for engineered structures, or appropriate support and oversight for those planning or designing non-engineered structures
	  ○ Management of construction quality, whether undertaken by contractors, individual tradespeople, or householders/communities
	  ○ Provision of training for staff and project participants
	• Ability to ensure efficient and transparent use of resources in development and humanitarian contexts, including budgeting and financial management and avoidance of corruption and fraud

10. Commercial and Legal (Knowledge of relevant law and statutory legislation, commercial awareness and contracts)	The legal frameworks which apply in humanitarian and international development work can be very different to those professional engineers more normally work under. International law, and national laws that apply internationally, will be much more relevant, particularly in conflict and fragile settings. • Knowledge of International Humanitarian Law and International Human Rights Law • Knowledge of anti-terrorism legislation, know-your-customer legislation, anti-corruption and fraud legislation, and legislation to limit child and sexual abuse, that applies in different countries and internationally • Knowledge of different legal frameworks in countries of operation, and how they affect the risk and liability (including potential criminal liability) taken on by providing engineering or other services. In particular appreciation of locally relevant employment law and contract law is important, in addition to appreciation of any relevant planning and construction laws and regulations The commercial drivers of projects and the organisations involved in them in humanitarian and development contexts is always very different from those in purely commercial settings. Incentives can drive perverse competition and decision-making that is not in the best interests of the people in need. The rule of law may be weak, or subject to significant corruption, in some places. Engineers working in this sector need to be able to manage the successful delivery of projects which do no harm, and improve people's lives, while still controlling significant financial and legal risks. • Ability to manage commercial and contractual relationships in contexts where recourse to the law and litigation may not be practically available, or may be extremely one-sided to the benefit of other parties • Experience of managing projects and risk on projects where clients have varied objectives. For example, on projects funded by governmental donors, public opinion in the donor country can be a significant risk that drives client decision-making, perhaps contrary to the stated objectives of the project or the interests of the people it seeks to serve • Knowledge of value for money and cost effectiveness of humanitarian and development projects and interventions (eg ensuring appropriate scale, speed and quality, or appropriate economy, efficiency, effectiveness and equity, in projects) • Knowledge of international funding flows, including institutional donors, public donations, remittances, etc. • Knowledge of accountable grants and commercial contracts from institutional donors, cost and no-cost extensions, sub-granting • Knowledge of partnership and business models of UN, NGOs Contracts in some humanitarian and development contexts are difficult to enforce and doing so could be counter-productive in many situations. However, clear contracts, and the process of drawing them up, are essential in ensuring clear understanding of an agreement by both sides, avoiding and managing conflict, and empowering parties to an agreement. Engineers should be confidently able to use contracts as useful tools to help deliver their projects. • Ability to explain and use construction and procurement contracts with partners and suppliers with little experience of such contractual relationships, in order to achieve clear mutual understanding of agreements and responsibilities

The following are additional competence areas that do not fall under the Institution's Core Objectives, but are essential additional competencies to be able to work professionally in humanitarian or development roles. **They are given to provide additional context for those aspiring to work or advance their career in the humanitarian and international development sector.**	
A.1 Personal conduct and safety	In many humanitarian and development contexts it is not possible or appropriate to separate personal conduct inside and outside work. An engineer's role as an aid worker will require adherence with high standards of conduct and ethics at all times. Conduct and safety are closely related, and poor conduct can put you and your colleagues at risk. There are clear and internationally accepted standards for conduct for aidworkers which are set out in the Red Cross Code of Conduct. • Knowledge of and adherence to the Red Cross Code of Conduct in addition to the IStructE Code of Conduct • Ability to work, under pressure, in unfamiliar and sometimes high-risk contexts • Ability to apply personal stress-management and well-being techniques. Ability to recognise stress and burnout in oneself • Knowledge of safeguarding and prevention of sexual exploitation and abuse, and ability to institute appropriate policies and procedures • Ability to apply anti-racist behaviours and institute anti-racist policies and procedures in teams
A.2 Contextual awareness	Working in our home country, state or region we rely on our understanding of context and culture to deliver appropriate work. The idea that we can simply transfer our ways of working and our solutions to a new context without first learning about a new context is a key and crucial misconception. • Experience of working in cross-cultural situations and contexts • Ability to adapt ways of working and technical approaches to different contexts and cultures • Knowledge of the (post-)colonial context of the humanitarian and international development sectors and how this is relevant in different countries and regions
A.3 Global agendas and frameworks	There are, at any particular time, a variety of initiatives and frameworks that affect and guide humanitarian action and international development work. It is important that engineers working in this field are aware of these and understand how they affect their work and what is expected of them. • Knowledge of key frameworks that guide development and humanitarian initiatives (eg SDGs, Sendai Framework for Disaster Risk Reduction, Core Humanitarian Standard, Accountable Now, Paris Climate Agreement)

A.4 Development and humanitarian concepts and practices	Unlike in most commercial engineering practice, where contractual agreements and regulations hold engineers to a high standard of accountability for their work, in many development and humanitarian settings the only effective accountability is that of self-regulation. It is essential that engineers working in this field are able to hold themselves accountable, and know how to establish systems so that the people they are working to support, colleagues and partner organisations can also hold them accountable. This requires strong participation and communication with communities, and particularly those who are marginalised and excluded. • Knowledge of the humanitarian principles of humanity, impartiality, neutrality and independence, and further principles set out in the Red Cross Code of Conduct • Knowledge of best practices in accountability to affected populations and project participants, and ability to institute feedback and accountability mechanisms • Knowledge of best practices in participation of affected populations and communities • Knowledge of key concepts of diversity, gender, inclusion and exclusion, including intersectionality • Knowledge of formal and informal humanitarian coordination mechanisms, including the IASC Cluster System