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ANNEX IV

TERMS OF REFERENCE/SCOPE OF WORK

Architectural & Engineering Design Services for Pohnpei State EOC/Fire Station in Kolonia and FSM DECEM/NEOC Expansion and Refurbishment in Palikir – Federated States of Micronesia

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I. BACKGROUND and JUSTIFICATION

A. Background

The project aims to improve the capacity for preparedness and mitigation to man-made, geo-physical and climate related hazards and to climate change impact. This initiative will be implemented in three countries: The Federated States of Micronesia (FSM), the Republic of the Marshall Islands (RMI), and Palau. The project will respond to Outcome 1 of the UN Pacific Strategy 2018-2022: "By 2022, people and ecosystems in the Pacific are more resilient to the impacts of climate change, climate variability and disasters; and environmental protection is strengthened". The cooperation with the Government of Japan will contribute to achieving the goals of the Sendai Framework for Disaster Risk Reduction, elimination of threat to human security and protect gains of sustainable development. It is in line with the Japan Country Assistance Policy in these three countries and the priority areas: 1) Overcoming Vulnerability and 2) Environment and Climate Change.

In line with the overall outcome, the overall project goal is to effectively address the consequences of, and responses to, geophysical and climate-related hazards to protect lives, sustain livelihoods, preserve the environment and safeguard the economy. The outcome will be achieved through 3 expected outputs: 1- Strengthened Disaster Communication and Climate and Tsunami Monitoring Systems, to be implemented in FSM, RMI, and Palau, 2- Enhanced National and State Disaster preparedness capacity, to be implemented in FSM, RMI and Palau, 3- Enhanced Community Disaster and Climate Resilience through improved water and food resource management and inclusive livelihood diversification, to be implemented in the FSM and Palau.

The Pohnpei State Department of Public Safety, Division of Fire and Emergency Services, is proposing a new Fire Station and Emergency Operations Center building on Pohnpei State Government land in Kolonia. The current fire station, which includes a 911 Call Center and houses emergency medical services, currently has insufficient space to house staff and equipment. In addition, no official Pohnpei State Emergency Operations Center exists and the new building is intended to fill this gap.

The Department of Environment, Climate Change & Emergency Management (DECEM) National Emergency Operations Center Facility, is proposing to expand their existing facility at the FSM National Government Campus in Palikir to alleviate overcrowding in Emergency Division offices (so they regain their original space) and expand their offices to accommodate the Climate Change and Environment Divisions. The expansion is intended to provide a clear separation between the Emergency Division, which will be strategically located in close proximity to NEOC Conference Room, and other DECEM Divisions to ensure high efficiency operations during an emergency response. Climate Change and Environment division office spaces could be taken over by Emergency Division during an emergency as a surge space. As part of the expansion the existing DECEM/NEOC also needs to be refurbished and repairs/replacements made to existing systems.

B. Project Objectives

The purpose (outcome) of the project is to enhance disaster management and response infrastructure of the Federated States of Micronesia at the National Level and at Pohnpei State Level.

The first goal is to build a new facility in Kolonia to provide the Pohnpei State Government Department of Public Safety, Fire and Emergency Services Division's with the necessary infrastructure to efficiently operate from; to store and maintain equipment/vehicles, provide living quarters and offices for staff, deploy fire/medical/emergency services resources as required, train staff, receive and manage 911 calls, and providing a State level emergency operations coordination space for Local Government and other stakeholders. This includes a humanitarian staging area.

The second goal of the project is to improve and create efficiencies in DECEM's emergency activities and resources in their existing building facility in Palikir; while accommodating new divisions; facilitates National and International disaster management and response activities; and provides an improved National

Emergency Operations Center for improved coordination during emergencies and training space during normal operations.

The objective of this assignment is to design purpose built, safe, disaster-resilient, functional, economic, practical, environmentally friendly, sustainable, low maintenance, low energy, self-sufficient, climate adapted, and modern DECEM/NEOC & Pohnpei State Fire Station/EOC facilities that are appropriate to the FSM Tropical context and activities.

C. The Programmatic Response

The two main outputs expected to be delivered through this assignment are:

Site #1: Detailed A&E Design of an approximate 5000 Sqft footprint, two storey with roof deck new Pohnpei State Emergency Operations Center (EOC)/Fire Station that has garage with supporting facilities housing emergency services equipment/staff and 911 call center in Kolonia on Pohnpei State Government Land (see Scope of Work Annex 1,2,3 for a location map, extent of work, and photos).

Site # 2: Design of a new approximately 1500 Sqft one storey extension to the existing DECEM/NEOC Office building and refurbishment of the existing facility in Palikir on FSM National Government Land. The investigations, assessments, and design of the new extension and refurbishment will be under this Phase (see Scope of Work Annex 1,4,5 for a location map, extent of works and photos).

Code Compliant designs shall be adopted following Construction Industry Best Practices that are appropriate for the tropical environment & maintenance/operations budget shall be performed to ensure high quality, safe, and resilient design that is low maintenance and durable.

Climate Change Adaptation, Resilient, Durable, Low maintenance and Energy Efficient principles will be reflected in the design with a view to enhance the safety, resilience and energy-efficiency of the proposed structures/sites.

Accessibility considerations (to enable and facilitate physical access to Persons with Disabilities) will also inform the design of infrastructure rehabilitation or reconstruction projects.

Best practice in *social and environmental standards* will also be adopted by the Project.

Gender-sensitivity will be incorporated into all aspects of the design to ensure that the facilities are responsive to the needs of both women and men.

D. Site Information

Site # 1: The site where the proposed new Pohnpei State EOC/Fire Station building and associated works are to be constructed on Pohnpei State Government land adjacent to the Pohnpei State Government offices (e.g. Governor's Office, Finance, Attorney-General). The land has a slight slope towards the main road. A location map and Photos is attached in Annex 1 and 3. The Pohnpei Office of Transportation and Infrastructure (T&I) had already prepared a concept plan (Annex 2) and a rough cost estimate for planning purposes. The Designer would be required to update the existing drawing instead of starting from scratch.

Site # 2: The site where the proposed DECEM/NEOC building extension and refurbishment work on the existing DECEM/NEOC building and associated works are to be constructed within the FSM National Government Campus in Palikir, Pohnpei State. The land has a slight slope and fill material has been placed on natural grade to level the area around the existing facility. Some fill will be required for the extension. Existing drawings for the National Campus and the existing DECEM/NEOC building are available. A location map and photos are attached in Annex 1 and 5.

There are some established trees on both sites, and it is expected that the position for the new building/extension on the site will be selected so that the existing trees can be protected as far as practicable.

Distances from property boundaries, distances from above ground and below ground utilities, and easements along roads and sidewalks will need to be accounted for in the positioning of buildings and other works.

The Proposers do not have to visit the site to complete the proposal. However, the Designer to be selected has to visit the site to conduct Topographic Survey, Environmental and Social Impact Assessment, Geotechnical investigation, Assessment of Existing Building, and Site-Specific Hazards study etc. whichever requires primary data.

II. GENERAL RESPONSIBILITIES/REQUIREMENTS

The Designer's cost shall be deemed included and/or surcharged in/to the Designer's fee rates under each phase.

A. Facilities

Facilities to be provided by UNDP: No facilities shall be provided by UNDP.

Facilities to be provided by the Designer: All required facilities for proper designing shall be its own responsibility. Unless otherwise explicitly called upon, any facilities shall be deemed included and/or surcharged in/to the designer's fee rates.

B. Liaison

The Designer's focal point shall liaise with UNDP on all matters related to the execution of the Contract. All activities related to financial and administrative process are to be conducted according to UNDP rules, regulations and decision. The Designer shall also obtain UNDP's endorsement of all deliverables and activities at various stages.

C. Institutional Arrangement

The Designer shall be primarily and ultimately responsible to the UNDP Project Manager regarding securing certifications for services/deliverables completion, after sign-off by the UNDP Country Office Representative.

III. SCOPE OF SERVICES AND EXPECTED DELIVERABLES

A. Scope of Work

The scope of works includes all work required updating the existing drawings and produce detailed A&E design of the Pohnpei State EOC/Fire Station (Site # 1), and the extension of the DECEM/NEOC building and refurbishment of the existing building and associated works (Site #2). The drawings and other design documents shall be detailed to such an extent where they can be used directly by the Construction Contractor.

The scope of works is given below but not limited to:

- Site Investigations and Topographic Survey.
- Environmental and Social Impact Assessment.
- Detailed Design of parking area outside of building footprint (Site # 1 only).
- High quality and resilient design incorporating all elements of building following the latest National and International Codes.
- Structural design with complete details and bar bending schedules.
- Mechanical, Electrical and Plumbing design complete.
- Drawings for all works in appropriate scale as per need (first "Tender Drawings" during tendering then "Good for Construction Drawings" after the award of construction works).

- Detailed Quantity Estimate, Rate Analysis, Cost Estimate, Tender Document/Bidding Document with Technical Specifications.
- A Detailed Project Report Containing all Elements mentioned above.
- Pre-Construction Bidding Support Services

B. Expected Outputs – Deliverables & Activities

This contract is expected to result in the following deliverables/activities that ensure a high quality, energy efficient, low maintenance, disaster resilient, and highly efficient and functioning emergency operation buildings. The following is provided as a reference for general deliverables/activities that link to the milestones & pricing & payment schedules; see other sections of SoW for other deliverables/activities. It is expected that other activities/deliverables will be provided as per construction industry best practice.

The Designer shall submit a Plan of Action with date for the following activities to be completed within the time mentioned in section VIII.

Deliverables/Activities

- Inception Report
- Topographic Survey
- Environmental and Social Impact Assessment Report
- Geotechnical Investigation & Study Report
- Site Specific Hazards report
- USGBC LEED Report (Only for site # 1)
- Existing Building Code Compliance Assessment Report (only for site # 2)
- Preliminary Concept Design Stakeholder Workshop – Information Collection
- Further Developed Design Brief Concept Design version 1
- Confirmation of Concept Design Stakeholder Workshop
- Updated Design Brief of Concept Design version 2
- 90% Detailed Design Documentation (All Disciplines)
- 95% Detailed Design Documentation (Tender Drawings – All Disciplines)
- 100% Detailed Design Documentation (Construction Drawings - All Disciplines)
- Detailed Quantity Estimate, Rate Analysis, Cost Estimate, Bidding or Tender Document with Technical Specifications.
- Final Detailed Project Report (DPR)
- Pre-Construction Bidding Support Services

Note: Two separate design documentation sets are required, one for each site.

IV. DESIGN STANDARDS & PARAMETERS

A. Design Codes & Standards

All FSM and Pohnpei State laws, regulations, codes, and standards shall be adhered to. The stricter requirements of FSM & Pohnpei State laws, regulations, codes, standards, practices and the requirements shall be utilized while preparing the A&E Designs.

The latest edition of the International Building Code (2018) and UFC Guidelines (including EOC Planning Guidelines UFC 4-141-04) especially American codes and standards related to the design, repair and reformation buildings for emergency purposes shall be used for the design of these buildings. In general, to take advantage of industry familiarity in FSM, the use of the latest US standards and codes are required.

Imperial units shall be used for all documents.

B. Discipline Specific Requirements

Architectural and Interior Design must be carried out by a licensed and registered Architect. Architectural design shall comply with the requirements of the latest edition of the International Building Code, International Plumbing Code, UFC Guidelines (including EOC Planning Guidelines UFC 4-141-04) and other applicable standards and codes listed in this document. Particular attention shall be placed on efficient offices and emergency operations, and access for Persons with Disabilities. Ceilings should be avoided, and exposed structure is preferred. Reflected ceiling plans (noting that the structure serves as the ceiling) and window/shutter/door/rolling-door schedules (noting cyclone requirements) shall be provided. Detailed drawings for the latter shall also be prepared to define their construction, shape model, size, materials, size, type of glass, and specify hardware lists. The architectural drawings shall also allow for detailing of any other construction or finishing requirements such as damp-proofing treatment, dust control, balustrades, and special details for fixation of equipment. Architectural Design will be reviewed by UNDP at all stages.

Civil Design must be carried out by a registered Civil Engineer with appropriate qualifications and relevant experience. Civil Design shall comply with the requirements of the latest edition of the International Building Code, UFC Guidelines and other applicable standards and codes listed in. All storm, sewage, and water systems shall include climate change impacts.

Mechanical design must be carried out by a registered Mechanical Engineer with suitable qualifications and substantial experience in mechanical engineering design for buildings. The mechanical engineering design shall include the design of all mechanical systems to function the building including suitable heating, ventilating and air conditioning systems, plumbing, drainage, fire protection systems, and other mechanical systems. Mechanical systems are not intended to be complex. Designing climatically comfortable energy efficient interior environments, using shading, appropriate window types/films, solar energy panels & storage, cross flow and ceiling space ventilation, ceiling fans under-cladding & ceiling insulation and high reflectivity roofing paints is a requirement. The Designer must carefully consider insulation, both thermal and acoustic and specify appropriate materials to achieve recommended insulation levels in compliance with international standards approved to be used in the design. Mechanical drawings and specifications shall be appropriately detailed illustrating: equipment; piping; fittings; electromechanical components; connections, etc. Mechanical Engineering design documentation shall be submitted to UNDP for review at all stages. Mechanical Engineering design shall comply with the latest edition of the National and International Standards, Codes and Practices.

Electrical design must be carried out by a registered Electrical Engineer with suitable qualifications and relevant experience. Electrical design shall include design of all electrical systems including power systems, internal and external lighting, security lighting, communications, alarm systems, lightening protection, grounding system and controls, backup generator system, solar power system and all other electrical systems required to function the building properly to serve the purpose it is intended for. Electrical drawings and specifications shall include wiring diagrams, transformers, single line diagrams, standby power generation set; site illumination, cabling, grounding, control, instrumentation, etc. The drawings shall illustrate electric operation and control panels, switchboards; measurement equipment panels; synchronizing equipment; lighting panels, etc. Electrical design shall be submitted to UNDP at all stages. Electrical design shall comply with the latest edition of the National and International Standards, Codes and Practices.

Plumbing / Hydraulic Design shall be carried out by a suitably qualified and experienced Civil Hydraulic Engineer. Hydraulic design shall include sanitary drainage, solid waste and venting, plumbing and venting, cold and hot water supplies, rainwater and storm water drainage, gas devices, fire hydrants and hose reel services, pumps, fire sprinklers and on-site domestic waste management systems. The work also includes design of elevated water tanks (Pohnpei State) and ground based water tanks (DECEM/NEOC) and water reticulation system. Civil and Hydraulic Engineering design documentation shall be submitted to UNDP for

review at all stages. The design shall comply with the latest edition of the National and International Standards, Codes and Practices.

Design of Fire Safety / Protection systems shall include all features required to make the facility and the end-users safe against a possible fire. In the selection of building materials, the Designer's Design Designer shall pay special attention to the fire retarding properties of the materials. As required by relevant standards and codes, the buildings shall be fitted with fire sprinklers, smoke alarms, fire rated doors and windows, strategically located firefighting equipment and all other features to eliminate the risk of damage due to fire to the buildings and surrounding.

Landscape design shall be carried out by a suitably qualified and experienced Landscape Designer. Landscape design shall be carried out based on sound ecological, social/cultural and economic principles. The landscape design shall include as a minimum the landform itself, circulation routes such as vehicle access, footpaths, steps, ramps, railing including accessibility concerns, vegetation and planting, water features, art and other installations, outdoor furniture, lighting, drainage, signage and carparks. There are a number of trees on site which must be protected as much as practicable and they must be incorporated into new landscape design. The landscape designer shall incorporate locally grown plants and trees in the new landscape design. The types of plants and trees including the quantities and the approximate sizes shall be clearly identified in the landscape design. UNDP Project Team can provide details of preferred locally grown plants and trees when required. Space shall be allowed for parking of vehicles within the building premises, with a parking close to the building entry for Persons with Disabilities. The parking area shall also serve as a logistics and humanitarian staging area. Landscape design must comply with the latest edition of the National and International Standards, Codes and Practices

Structural design must be carried out by a registered Structural Engineer with appropriate qualifications and relevant experience. Structural design shall include design of all structural components and members for the building to function for the purpose it is intended for. This includes the design of non-structural bracing of all ceilings, MEP systems, equipment, and furniture (interior and exterior). The buildings shall be designed to withstand appropriate level of cyclone and earthquake resistance. The Structural Designer must have specialist experience in designing buildings for these hazards. Structural design shall be reviewed by UNDP at all stages. Structural design shall comply with the latest edition and strictest requirements of the latest edition of the National and International Standards, Codes and Practices.

Security system design shall be carried out by a qualified and experienced security personnel. Security system shall include all features that are required to ensure safety and security of the facilities to be provided and people who will be using them from theft, malicious damage or similar attacks. This will include basic passive features and controlled access through gates and doors, protected doors and windows and any other features to make the facilities safe from any security and safety threats. Design shall be reviewed by UNDP at all stages.

Data and telecommunications design shall be carried out by qualified and experienced data and telecommunications personnel. Phone, internet, radio, VSAT, EOC operations room displays, and antennae systems shall be part of the design and specifications submission. The Data and Telecommunications Designer is responsible for consulting with the stakeholder to determine needs and verifying interoperability with current systems/equipment and future systems/equipment. Design shall be reviewed by UNDP at all stages.

C. Special Design Considerations

Natural Hazards and Climate change combined with the tropical island environment in close proximity to the ocean is a major risk for the buildings. Tropical Cyclones, Flooding, Rain/Ponding, Earthquakes, Extreme Heat, and the effects of climate change are to be designed for. The building is considered to be in a Hurricane-Prone Region (Tropical Cyclone) requiring Wind Borne Debris impact to be accounted for in design and specifications.

Due to the intended purposes of the buildings, it is required that the buildings be disaster resilient and operational as a Risk Category IV structure, Essential Facility. The facilities need to be self-sufficient for at least 2 weeks for water and power (water tanks, generators, and sufficient fuel for generator, vehicles, and emergency response equipment).

Durability & Maintenance Notes:

The Designer shall take into account the limitations in maintenance capabilities of the beneficiaries in FSM and provide a design that can be easily maintained by local authorities after completion. It is expected that the Designer will strike the right balance between incorporating modern building design aspects into the building and the need to keep the maintenance requirements as simple and low cost as possible. It is expected the building Design has Life of 50 years.

Materials Selection Notes:

Asbestos or Asbestos Containing Material (ACM) shall not be imported, used during construction, nor be incorporated into building designs/specifications.

Appropriate environmentally friendly termite ground treatment must be specified for this building that also considers the water table depth. It is expected that treatment will be performed beneath the building prior to filling and pouring of the ground floor and for the whole site. Termite resistant strategies/detailing and materials shall be incorporated in design drawings and specifications. The use of timber and potential void spaces for nests shall be minimized. When structural timber is utilized it shall be appropriately treated and in conformance with FSM laws and regulations. The treatment system that is to be specified in the design must carry a guarantee of a minimum of ten years.

Type V cement shall be utilized in all concrete mixes. Corrosion inhibiting admixtures shall be specified as well as admixtures that waterproof the concrete. Concrete mixes and concrete block shall utilize basalt aggregate and sand.

Services and Equipment Notes:

Designer shall consider the operating budget of DECEM & the Pohnpei Department of Public Safety for the design of the electrical, fuel, and water supply systems.

The Designer shall design water storage tanks assessing the needs, considering geo-physical environment, following local practices and the reticulation system to supply water to the facilities. The facilities need to be self-sufficient for at least 2 weeks for water for operating the building. Fresh water is expected to be used throughout the facility. The existing DECEM/NEOC water tank capacity will need to be evaluated and determined whether additional tanks are required. The Pohnpei State EOC/Fire Station will also require sufficient water tank capacity to refill their fire fighting vehicles twice during a 2 week period (if the town water supply fails), at 6000L/min minimum flow volume to achieve a refill time under 2 minutes for the largest vehicle in the fleet, with the system designed for the simultaneous refilling of 2 FF Vehicles. Refill options include gravity fed, no pumps, no power filling directly into FF vehicle water tanks (from the top through an overhead refill line) or through fire hydrants at 80 psi pressure, with pumps functioning (main or generator power).

Gender Equality, Prevention of CAE, Prevention of SEA, Persons with Disabilities, Occupational Health and Safety Notes:

The design should incorporate the needs of men and women so that the design is gender inclusive. This will include provision of separate amenities for men and women including toilets, changing facilities, childcare facility and rest areas during normal operations and sheltering operations. It is expected that the Designer shall incorporate design features promoting gender equality, safety and friendly to the Persons with Disabilities. The Design Criteria report shall indicate specifics to achieve this.

D. Reference Design Parameters

The designs shall utilize the following design parameters for the design of the buildings.

MINIMUM BUILDING DESIGN FORCES & CONSIDERATIONS	
Item	Notes
1. Building Code	2018 IBC and the UFC 3-301-1 dated 10-01-2019, based on the 2018 International Building Code (2018 IBC) as modified by UFC 1-200-01, DoD Building Code (General Building Requirements), and its referenced standards (IMC, IPC, IFC, IEC, ASCE 7, ACI 318, AISC, NFPA, etc....). Use reflects the construction industry requirements and most common practices. The codes, standards and other reference documents should be consulted to determine and produce an appropriate Design Features report that clearly lists the design forces and durability requirements for the Buildings.
2. Building Category	Risk Category IV structures “Essential Facility” as per IBC 2018. The facilities need to be self-sufficient for at least 2 weeks for water and power (water tanks, generators, and sufficient fuel for generator, vehicles, and emergency response equipment).
3. Design Life	Life of building shall not be less than 50 years. Time before first maintenance shall not be less than 50 years.
4. Siting	Pohnpei State zoning laws and easements shall be consulted for offsets from roads and sidewalks. Sites are already selected.
5. Dead Load	UFC, IBC, and ASCE should be used for material weights adjusted for any local conditions.
6. Live Load	UFC, IBC, and ASCE referenced standards should be used for live loads.
7. Coastal Flooding / High Surf / King Tide Inundation	Sites are considered evacuation zones and sloped sites. Flooding and coastal inundation does not appear to be an issue to be considered for design.
8. Wind - Tropical Storms and Cyclones	Buildings shall be designed for a Category 5 (severe tropical cyclone) on the Saffir-Simpson Scale, which represents a 1-minute average wind speed at 33 feet above open water of >155 mph, a 3-second gust wind speed at 33 feet above open water of >190 mph and a 3-second gust wind speed at 33 feet above open ground in Exposure C of > 171 mph. Wind speeds for Risk Category IV structures shall be approximately 1.6% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00033, MRI = 3,000 years) and increased by 11% to account for climate change predictions of increased wind speeds. FSM is considered a Wind-Borne Debris region with resistance/penetration/impact requirements for windows and other architectural-structural components and systems as per IBC/ASCE 7. ASTM E695 for testing and evaluation of products for cyclone prone regions and impact resistance should be specified for window, door, and wall products. ASTM E1186, ASTM E1996, and ANSI/DASMA 115 for glazing and doors

	<p>shall be specified. Risk Category IV shall have "enhanced protection" for glazing and impact-protective systems.</p> <p>The following Codes/Standards/Guidelines, but not limited to, shall be consulted:</p> <ol style="list-style-type: none"> IBC 2018 ASCE 7-16 ICC 500/NSSA Standard for the Design and Construction of Storm Shelters FEMA 543, Design Guide for Improving Critical Facility Safety from Flooding and High Winds: Providing Protection to People and Buildings (2007) FEMA P-361, Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms, Third Edition (2015) <p>A safe room within a critical structure should also be considered. Minimum wind pressures are provided.</p>
9. Inland Flooding	The sites are at sufficient elevation to not consider, but appropriate site drainage needs to be provided.
10. Tsunami	The sites are at sufficient elevation to not consider.
11. Extreme Heat	This should be considered as it relates to Interior Environment. The Design Designer shall research publications and account for any temperature changes due to climate change during the life of the structures.
12. Water Scarcity / Drought	Ensure water for at least 2 weeks self-sufficiency.
13. Earthquake	<p>The buildings shall be designed for the following earthquake forces. The site class and liquefaction potential shall be determined by the Geotech report. Seismic parameters for use with IBC 2018 and ASCE 7-16, the Uniform Collapse seismic parameters for a Site Class B is as follows:</p> <ol style="list-style-type: none"> Kolonia: PGA = 41%g, S_s = 108%g, S₁ = 51%g Palikir: PGA = 41%g, S_s = 108%g, S₁ = 51%g <p>It is expected that the lateral system will either be a concrete moment frame or concrete shear wall system with fully grouted non-load bearing masonry infill walls.</p>
14. Volcanic	There does not appear to be any information in FSM regarding volcanic activity and ashfall. Design loads could be considered, but there appears to be a low probability and exposure and it is likely that the wind and seismic design forces will control the roof design (thus a small amount of ash fall could be accommodated).
15. Climate Change	The Typhoon wind speeds should be increased by 11% to account for climate change as per Australian Bureau of Meteorology recommendations.
16. Ponding	Due to high rainfalls in Pohnpei and existing building practices, appropriate roof slopes to prevent ponding, redundant drainage systems, and ponding loads should be considered. See ASCE 7.

V. SERVICES & DELIVERABLES SPECIFICS

A. General

The Designer's design services shall include but not be limited to the following:

- Establishing formal contact and working arrangements, through UNDP as the Focal Point, with
 - Pohnpei State Department of Public Safety Division of Fire and Emergency Services
 - DECEM
 - FSM Department of Transportation, Communications and Infrastructure (TC&I)
 - Pohnpei Office of Transportation and Infrastructure (T&I)
 - National and local regulators, administrators, and community stakeholders; through UNDP as the focal point.
- Fine tuning and finalizing facility requirements/specifications and space planning requirements through meetings, review of concept drawings and space planning documents, cost estimate; with UNDP providing instructions and approvals on how to proceed.

The Designer shall acknowledge that these are fundamentally simple structures, with contextual needs already known to local officials and community stakeholders.

All documents shall be dated with a version number and title block where applicable. The Designer's Design Designer's details shall be indicated. The designer and/or author of the document as well as the person performing quality control of the documents shall be indicated.

B. Inception Report, Preliminary Stakeholder Engagement & Securing Notice to Proceed

The following activities required, but not limited to, are as follows:

- Establishing formal contact and working arrangements through UNDP and other stakeholders.
- Collecting and analyzing all available documentation and identifying any gaps. The Designer shall carry out a comprehensive desktop study of documents provided by UNDP. The purpose of this desktop study is to identify requirements and standards that are applicable to the design of the facility so that they can be incorporated in the design. If there is any missing documentation or information that is required for the design, the Designer shall identify them promptly at this stage and inform UNDP.
- Preparing a plan of action, identifying risks and opportunities, and reconfirming the program.

The Designer's Inception Report shall incorporate, but not be limited to items listed above.

C. Topographic Survey

The Designer's team shall perform a topographic survey of the existing site identifying all property boundaries, infrastructure (above and below ground), significant trees, significant slopes and drainages, and elevations that can be reviewed by the Designer's designated designers for use in planning and design. The topographic survey shall be performed by a licensed Land Surveyor registered in FSM. The topographic survey shall be in metric and can be submitted officially to government agencies. CAD files and pdf drawings shall be submitted. It is expected that a final topographic survey will also be performed.

D. Environmental and Social Impact Assessment

The Designer shall prepare an Environmental and Social Impact Assessment (ESIA) in accordance with UNDP Social and Environmental Standards and Pohnpei State EPA policies, laws, and regulations considering the various issues identified in this SoW. A single report covering all sites is acceptable provided that the report clearly separates requirements for the different sites and/or structures.

The Designer's ESIA Report shall incorporate, but not be limited to items listed above.

E. Geotechnical Investigation & Study Report

Geotechnical investigations must be carried out by a registered Geotechnical Engineer with appropriate qualifications and relevant experience. The report shall contain all technical information required to know before designing a safe building. All reports must be stamped and signed.

A geotechnical site investigation and study shall be performed and prepared in accordance with the UFC and IBC codes.

A single report covering all sites is acceptable provided that the report clearly separates requirements for the different sites and/or structures. Report shall be stamped and signed.

The Designer shall pay particular attention to fill and void spaces at the sites.

The Designer's Geotechnical Investigation and Study Report shall incorporate, but not be limited to items listed above.

F. Site-Specific Hazard Report

A site-specific hazard report shall be prepared considering all hazards at the sites providing appropriate recommendations for design consideration. Climate change impacts on hazards shall be included.

A single report covering all sites is acceptable provided that the report clearly separates requirements for the different sites and/or structures. Report shall be stamped and signed by the Engineer(s) of Record.

The Designer's Site-Specific Hazard Report shall incorporate, but not be limited to items listed above.

G. USGBC LEED Report

The Designer's Design Designer shall prepare a report identifying the means and methods to implement USGBC LEED v4 for Building Design and Construction requirements to achieve a "Certified" or "Silver" Level for the Pohnpei State Fire Station. The report shall indicate the strategies that can be achieved in the FSM context with recommendations for incorporation in design drawings and specifications. USGBC Checklists shall be utilized throughout the project cycle.

The Designer shall register the project with USGBC.

The Designer's USGBC LEED Report shall incorporate, but not be limited to items listed above.

H. Existing Building Code Compliance Assessment Report

The Designer's Design Designer shall perform an existing Building Code Compliance Assessment on the Existing DECEM/NEOC Building. The assessment shall cover architectural, structural, MEP, and fire safety. This includes the evaluation of windows, doors, and shutters for compliance with wind-borne debris region requirements. The report shall evaluate the current condition and propose specific and detailed recommendations of what works are required to bring the existing structure into full code/standard compliance.

The Designer's Existing Building Code Compliance Assessment Report shall incorporate, but not be limited to items listed above.

I. Review and Submission of updated Concept Designs

UNDP has been provided a preliminary concept design prepared by the stakeholder and/or UNDP. The concept plans and associated documents are attached in Annexes 1-5.

The Designer shall review the proposed site plans, concept design, and space planning comments to harmonize the concept and space planning, verify code compliance, and incorporate requirements of this SoW as part of their bid submission.

The Designer shall organize and facilitate a Preliminary Concept Design Stakeholder Workshop, focusing on space planning and site requirements with relevant stakeholders. The Designer shall provide updated Concept plans for the buildings, site, and supporting facilities for UNDP review and selection as part of a Stakeholder Workshop.

Once the proposed Updated Concept Designs has been selected, UNDP intends to have the selected Concept Design drawings and Preliminary Design Reports signed by the stakeholders, UNDP, and the Designer to ensure agreement. UNDP will then issue a notice to proceed with the Detailed Design Phase.

The Designer's Preliminary Design Report with approved Concept Design Drawings shall incorporate, but not be limited to items listed above. Meetings and the officially signed and selected concept drawings shall be included in the report.

J. Detailed Design (90%, 95% (Tender drawings) & 100% (Good for Construction drawings))

Upon approval of the updated concept design has been provided by UNDP, the Designer shall commence the detailed design phase. The detailed design shall include all aspects of design to ensure full functionality of the building for its intended use. The detailed design shall include as a minimum architectural-interior, civil, mechanical, electrical, plumbing, fire safety, landscape, security systems, and data and communications.

Feedback and design review comments will be provided by UNDP at each submission stage. Closeout of all comments by the Designer at each stage needs to be completed prior to UNDP providing approval to proceed with the following stage and processing of payments.

It is expected that Drawings shall be provided in 2 separate stand-alone sets, one for each site. Design Calculations, Construction Specifications, and Design Criteria Reports shall also be 2 separate documents.

All drawings shall be prepared at a suitable scale in accordance with international standards and practices fully detailing and dimensioning all building portions and components. Plans, building elevations, building section cuts, section cuts, and details shall be provided at a suitable and readable scale providing all necessary information for construction. Imperial units shall be used. Documents can be submitted in color electronically, but the documents must be readable when printed in black and white.

At each stage of detailed design, the Designer's Design Designer shall submit a comprehensive two and/or three-dimensional computer model using a software such as AutoCAD Revit or similar (i.e. submission of original drawing files). The model shall capture the architectural, electrical, civil, structural mechanical, hydraulic/plumbing, and landscape designs. UNDP and other stakeholders shall be able to access the 2D/3D model through a free software without the need for a licensed software.

All design submissions shall provide drawings, design criteria reports, calculations, BOQ, cost estimate and construction specifications. Submissions shall be provided in electronic format through a shared drive or cloud service with access restrictions (UNDP Only). Drawings shall be submitted in AutoCAD dwg or Revit file. All other documents shall be submitted in word, ppt, and/or excel. All documents in the submission shall also be submitted in pdf.

The Designer's detailed design, with all supporting documentation listed above) shall be submitted as follows.

- 90% Detailed Design Documentation
- 100% Detailed Design Documentation

Following submission of each Detailed Design Stage the Designer shall facilitate a Detailed Design Workshop which shall concisely present the design features, foreseeable risks, quality of materials, provide a forum for answering any questions, and identify which construction/materials items are "In-Scope," "Out-of-Scope," and "Optional."

○ 90% Detailed Design Workshop

Following the 90% Detailed Design approval the Designer shall update the 90% Detailed Design Documentation with comments and issue as 90% Detailed Design Documentation version 2

UNDP shall review the 90% Detailed Design Documentation version 2 and confirm approval to proceed with the “Pre-Construction Bidding Support Services”

Final Detailed Design Documents (for Tender/or for Construction)- Design Designer shall provide final copy of the Detailed Designs to include signed and sealed drawings, specifications, final estimates and all associated design calculations. Any supporting documents which deemed necessary as part of the final design submission shall be provided by the Design Designer.

Bill of Quantities (BoQ), Technical Specification and Tender Documents:

The Designer shall prepare a complete Bill of Quantities (BoQ) for all the work under this assignment including all items that are required to be carried out to complete the construction works that will be designed under this assignment. The BoQ shall be sufficiently detailed and provided at each Design Review Submission Stage of the Detailed Design. It must include all activities and trades that are required to complete construction work. The BOQ shall have subheadings for each activity and discipline. As far as practicable, the items in the BoQ shall have actual quantities calculated rather than providing lump sum quantities. The BoQ shall also include, rate analysis, unit costs and total costs for each line item to ensure the design is within the available budget.

All costings shall be confidential and only be circulated to the UNDP team only. The Designer shall be discrete and shall sign a letter of confidentiality / non-disclosure agreement with UNDP.

BOQ shall be provided in 2 excel files, one for each site.

The Designer’s Design Designer shall prepare technical specifications for all trades that are included in the design. The construction technical and materials specifications shall be in Construction Specifications Institute Master Format® 2018 or equivalent and shall be compiled for each trade separately and bound together to make a complete and comprehensive set of specifications for the project.

For specific items, the Technical Specifications should identify the specific products in detail with quantities, brand name, model number, color, make and other details. Detailed product specifications and standards will help the UNDP team in quality control and contract compliance during construction. High quality materials shall be specified.

The Designer shall prepare Tender Document incorporating all necessary elements and information including requirements of UNDP.

Pre-Construction Bidding Support Services

This phase is the critical stage of the project in which potential bidders are identified, the procurement process executed, and the contract is readied for award to the preferred successful bidder. This phase will include:

- Supporting the final Invitation to Bid (ITB), which for good transparency shall include a Form of Contract pro forma, general conditions of contract, proforma special conditions schedule, and Scope of Works. The Scope of Works shall be sufficiently detailed to include all trades and work so that the Construction Contractors can price the construction work.
- The Construction Tender Package provided shall have a watermark “95% CD - For Tender Only, Not for Construction”.
- The BOQ shall be provided in excel with all quantities and blank cells for the Bidder to provide a unit price, total price for each line item, and total price. BOQ shall be provided in 2 separate excel files as follows: (1) Pohnpei State fire station/EOC in Kolinia; (2) FMS DECEM/NEOC Expansion in Palikar.

- Supporting responses in pre-bid meeting technical and procedural clarifications. The Design Designers documents may require updating as questions arise during the Tendering Process. Upon award of the construction contract, it is expected that the Design Designer will have already updated their detailed design documents based on any questions or comments received during the Tendering Process, and the Design Designer is required to issue all documents to UNDP with a “100% Construction Documentation – For Construction” watermark. All documents shall be stamped and signed by the licensed and registered Architect and Engineer of Record. This includes, but is not limited to, drawings, specifications, calculations, geotechnical reports, and design criteria reports.

K. Final Design Report and Detailed Project Report

At the completion of the design phase, the Designer shall prepare a Final Design Report and submit it to UNDP. The Design Report shall, as a minimum, include the following information:

- Standards used in the design and design assumptions made.
- Activities included in the design process and the outputs produced.
- A summary of SoW requirements and how there were met.
- Any issues related to the process and the output.
- Recommendations to UNDP to be considered in the construction, operation and maintenance stages of the project.

The selected Designer requires to submit the following together with the Final Detailed Project Report in two separate packages for each site.

- A compact electronic drive containing the plot files, the drawing in AutoCAD or Revit file, BoQ (including detailed estimates, rate analysis, cost estimates), structural analysis, technical specifications, SoW (for future construction bidding document), and a complete tender document for bidding process.
- Three sets (hard copy) of BoQ (detailed estimate, rate analysis, and cost estimate), technical specifications, structural analysis, SoW, tender document.
- Three sets of detailed design drawings printed in A3 size paper.
- Post Approval process: The Designer should facilitate the approval of all the drawings, and submit any missing details on the instruction of UNDP

VI. PROFESSIONAL LICENSES

FSM does not have a professional architect/engineer licensure law or act. The Designer’s Design Designers shall have a valid and current architect’s license and/or professional engineer’s license issued by a recognized government body without any warnings/notifications for each discipline. Official copies of all licenses from a board/government entity shall be provided. The license shall include, the country and/or state, license number, license type, license status, and expiration date. Architect and Engineering licenses shall be from the United States, Guam, the Northern Mariana Islands, and/or Philippines. The intent of this requirement is to ensure that the Designer’s Design Designers are experienced and licensed in the practice of US codes/standards, materials, practices, and detailing (or Building Codes fundamentally based in US Codes & Standards); and have working experience in Pacific Island Contexts. The Architect and Engineer(s) of record will be required to stamp and sign all documents prepared under this SoW.

VII. REPORTING CONTENT & FREQUENCY

The Designer shall be required to submit and present the following report to the UNDP Project Manager or designated deputy and UNDP Country Office Representative. Reports shall confirm sub project commencement, progress and completion, supported by photographs minutes of meetings and results.

Inception Report: Within three weeks from the date of commencement of the services the Designer shall provide Preliminary Concept Design, survey and site investigation reports (See V B also) including revised plan of action.

Progress Meetings: The Designer will be expected to participate in fortnightly progress meetings with UNDP during the course of the Works or any other intervals agreed between parties. The meetings will be coordinated by the Employer who will manage agendas and prepare records of discussions and decisions for circulation.

Progress Reports: The Designer shall report at the end of each month from the date of commencement of the services. The reports shall outline substantive works completed to date; milestones achieved in accordance with the project plan.

Presentations: On completion or otherwise upon request, the Designer shall report by AV presentation.

All irregular or emergency events or situations will be immediately reported to the UNDP Project Manager.

VIII. DURATION OF THE WORK AND PAYMENT TERM

All works for contracts secured by Request for Proposal (RFP) shall have to be completed within **three months** from the date of commencement of the Contract as shown in the table below.

<i>Output #</i>	<i>Phase #</i>	<i>Duration</i>	<i>Payment</i>
1	Site # 1 – Pohnpei State EOC/Fire Station Building and Associated Works Kolonia, Pohnpei State, FSM (Pohnpei State Land)	3 months	Within thirty (30) days from the date of meeting UNDP’s written acceptance (i.e., not mere receipt) of the quality of the Output #1 for Site 1 and receipt of invoice from the Service Provider.
	Surveys, Investigations, Detailed Designs etc. and DPR for Whole Site etc. (See Section III above)		
2	Site # 2 – DECEM/NEOC Building Extension and Existing Building Refurbishment Palikir, Pohnpei State, FSM (National Government land)		Within thirty (30) days from the date of meeting UNDP’s written acceptance (i.e., not mere receipt) of the quality of the Output #2 for Site 2 and receipt of invoice from the Service Provider.
	Surveys, Investigations, Assessments, Detailed Designs etc and DPR for Whole Site etc. (See Section III above)		

Note: The A&E design shall run in parallel for both sites to align design submission deliverables.

IX. DESIGNER’S PREFERRED PROFILE

Type of Firm and Specialization Areas: The preferred firm shall be primarily be an engineering/ architectural consultancy, construction contractor or developer well experienced in the A&E design and works contract supervision for government, and fire station infrastructure development.

This experience shall have addressed a broad range of simple buildings infrastructure for: government, fire stations, emergency buildings and hospitals and health centers. These essentially will have been successfully addressed through close working relationships with local government, with strong emphasis on community participation in producing an empathetic, culturally & climatically appropriate built environment

Years of Experience: The preferred firm shall demonstrate at least 3 years project design/ management experience for multiple public building sites, with a significant geographical spread throughout the Pacific region. This shall include at least two years’ experience in design and construction for government facilities, healthcare facilities, and fire stations.

Team Composition: Details of key personnel including their CVs shall be provided with the Tenderer's proposal. The qualifications, experience, professional memberships, type of employment relationship and the number of years of affiliation with the company must be provided. Designers are free to include more members in the team as they feel fit. However, the technical evaluation will be based on the qualifications, experience and suitability of the key members of the team.

Key Members

Position Name	Minimum Relevant Experience years	Minimum Education	Special Skills
Senior Design Team Leader	5	Master's degree in Civil Engineering and/or Architecture	Project management for a multidisciplinary building design project with building design experience. Public sector & community engagement/ leadership. 3 years minimum experience in Pacific Island Contexts.
Architect	3	Master's degree in Architecture	Architectural design of essential emergency operations centers, shelter, and warehouse facilities using IBC/UFC, including 2 years of Pacific Island experience. Architect must be registered Architect in the country of origin and must sign off and stamp all Architectural designs and documentation.
Structural Engineer	3	Master's Degree in Structural Engineering	Structural engineering design of Essential Facilities using IBC/UFC, with specialty in concrete and concrete masonry structures, including 2 years of Pacific Island experience. Structural Engineer must have necessary licenses and registration in the country of origin to sign off and stamp all structural designs and drawings.
Quantity Surveyor	3	Bachelor's Degree in Civil Engineering	Rate analysis, quantity and cost estimate preparation of buildings using excel spread sheet including 2 years of Pacific Island experience.

The Team Leader must be a permanent or a long-term employee of the company. Although permanent employees of the company are preferred, other team members may be external personnel with whom the company has long term relationships. External Designers must provide an assurance that they will be available to work in the team until the end of the contract period.

Beside the above key personals, the consulting firm shall hire Environmental Expert, Surveyor, Geotechnical Engineer, Civil Engineer, Mechanical Engineer, Electrical Engineer, Plumbing Engineer, Data/Telecommunication Engineer, Fire Safety Engineer, and Landscape Architect to accomplish this task and report their bio-brief in the progress report. The consulting firm shall be responsible for the qualification and quality of work of all Designers.

Changes to the Key Members proposed in the bid after an award of a Contract or at any stage during implementation is allowed only if the substitute personnel proposed have equal or more qualifications and experience than the team members proposed in the bid. Such requests for substitutions are subject to approval of UNDP.

Annexes to the Scope or Works:

Annex 1. Site Plans, Phasing, & Concept Notes

Annex 2. Pohnpei State EOC/Fire Station Concept Plan

Annex 3. Pohnpei State EOC/Fire Station Site Photos (available upon request)

Annex 4. DECEM/NEOC Existing Plans

Annex 5. DECEM/NEOC Site Photos (available upon request)