Attachment 1 – Statement of Work
Tumaco Towers

1.0 Statement of Work

1.1 General

The offeror shall provide all labor, materials, equipment, machinery, and components to construct the requested structures. The offeror shall provide for review and approval the design, drawings, and material properties for the structures to be provided and shall identify an ability to support the logistical and security requirements associated with project execution.

The offeror shall have the capability of providing defense system structures which can be easily installed in an austere location with varying types of terrain and requirements. The defense system structures shall be constructed/assembled using a pre-fabricated structure that is easily and securely reassembled in order to ensure efficient on-site assembly while at the same time appropriately and safely distributing the weights of loaded material within the system. All defensive metal wall barrier material used for the tower's first level bunker shall be constructed using a minimum 26 gauge galvanized steel material. Once installed, the system shall offer immediate stability meeting all appropriate Colombian building and structural codes. The defense system shall include all required accessories, such as corners, connectors, anchors and protection elements. The defense system shall be easily disassembled should it be required at a future date for assembly and installation at another site.

1.2 Assembly Process.

The offeror shall provide and assemble the defense system structures according to the following procedures:

1.2.1 A geotechnical survey will be provided. The offeror is solely responsible for the design of the defense structures and shall submit for review by the NAS engineer team a detailed report, which is to include the technical requirements, material requirements, design and drawings of the defense system structures, the recommended approach for the project and detailed timeline/critical path.

1.2.2 Transportation of Materials. The offeror is responsible for coordinating the transportation of all required material for assembling the defense system structure. If fill material must be delivered to the project site, then the offeror is responsible for this effort. The offeror is responsible for ensuring that all project material is delivered in an appropriate and timely manner, taking the necessary precautions to avoid any damage to the material from vibration or movement during transport and full consideration and responsibility for all transportation security requirements.

1.2.3 Assembly of Defense System structures. The offeror is solely responsible for the mounting, installation, and assembly of the defense system in a safe, proper and timely manner.

1.2.4 Fill Material. The offeror will be provided a site-specific geotechnical survey and shall ensure the site properties meet the required physical properties to support the structure offered. Should the offeror require any fill material from a different site, the offeror shall take soil samples and/or perform other appropriate soil studies to determine suitability of said material. The offeror is responsible for ensuring that the fill material used to fill any protective barrier / bastion associated with the structure meets all force protection requirements, and that the material does not include rocks or other inappropriate

material that may cause injury or pose a safety risk should the bastion defense system come under attack. Shrapnel-producing material (3/4" and larger) must be screened and removed prior to filling to filling the bastion.

If delivery of fill material is necessary, the offeror shall include the location where appropriate fill material is to be obtained. The offeror is solely responsible for the acquisition of and quality of all fill material

1.2.5 Equipment and Machinery. For each project, the offeror shall identify, procure or rent the appropriate equipment and machinery to be used, based on the project requirements.

1.3 Site preparation. For each project, the offeror shall identify additional tasks required to install a complete defense system, including but not limited to disassembly/removal of existing fencing and structures. If any surface or subsurface obstacle is encountered, it will be removed and properly disposed of or if required (i.e. fencing, utilities, aqueduct, sewage line etc), will be properly relocated/rerouted to allow for the construction. All work must be performed in accordance with the latest appropriate Colombian National codes.

1.4 Power services. The offeror shall identify all tasks required to provide power services. These items will be detailed and individually priced. The offeror will install and connect to Tumaco public power grid all electrical to the defense systems requested in this solicitation. The offeror shall indicate in its proposal how it plans to manage this task. The offeror shall provide a certified electrical engineer for the completion of electrical installations and equipment with demonstrated, relevant experience for on-site work (please provide project engineer's CV for review). This task includes but is not limited to: external movable spotlights; reflectors; system planning and construction of electrical infrastructure (if required posts, cabling, substations, transformer, and generators, etc.), in accordance with the latest appropriate Colombian National codes.

2.0 Delivery Location and Time.

The contractor shall deliver all defense system material and components to the work sites by the date and time specified.

The contractor shall be responsible for ensuring that its personnel and subcontractors follow any special instructions for delivering materials, as may be specified. This applies to any outside sources or subcontractors that might be delivering materials to a project site on behalf of the contractor. The contractor is responsible for the security of the material and components.

3.0 Completion, inspection, and delivery

Once awarded the offeror shall include a project management tool (Gantt chart, critical path, or equivalent) indicating preparation, delivery, installation, clean up/turn over, and related tasks.

4.0 Specifications.

4.1 General.

All defense systems provided/assembled by the offeror shall meet the following minimum specifications:

Shall be fireproof, meet most updated Colombian National Codes / International Building Code for a seismic area and shall provide adequate resistance against external environmental factors (e.g., humidity, sea salt, excessive wind, fungus, mold, ultra-violet radiation). Surfaces shall be resistant to corrosion.

Structure base barrier defense systems shall serve as a blocking system for external visual observation, and shall effectively mitigate damage from direct fire and indirect fire weapons attacks.

Structure base bunker barrier material must be made from material that is currently either U.S. Department of State, U.S. Department of Defense, U.S. Army Corps of Engineers, U.S. Nuclear Regulatory Commission or U.S. Embassy Bogota/Narcotics Affairs Section tested and approved.

All electrical installation shall comply with the following electrical standards: NTC 2050 last upgraded version included but not limited to chapters 1,2,3,4 and section 645,NEC 250 last version upgrade, NTC 3471/UL 67, EIA/TIA 607, EIA/TIA 568-569 last version upgraded, ANSI/IEEE C62.41-C62.45, NEPA 780, NTC 4552, IEEE-80, IEEE-77 and RETIE last version upgraded.

4.1 Camouflage/Paint.

The towers base/first level bunker/lodging metal barrier material shall be able to withstand elements to include UV rays, salt air, moisture etc….possible covering by wild plants, without reducing or compromising the structural security and stability of the structures. The sides and surfaces of each installed component shall prevent any adverse affects from the root growing process of plants that may grow to cover the surfaces. Structures must be painted in accordance with the installation paint scheme.

4.2 Maintenance.

Following installation, the installed defense system's design shall facilitate easy maintenance without the need to disassemble any of the components. All damages - environmental, accidental or combat-related - shall be easily corrected using the same materials as were used in the original construction. During the warranty period any damage related to poor site preparation, design, quality of material or construction shall be repaired by the offeror**.** All damages shall be repaired in such a manner so that the repaired defense system has the same resistance and level of protection as before the damage occurred.

4.3 Warranty.

The offeror shall provide a defense system that will remain stable with the required level of force protection for a minimum period of 10 years. During the ten-year period following installation, the constructed defense system shall be able to retain its quality and protective properties. The warranty will cover all of the components used to construct the towers and bunkers -- to include labor-- for 10 years and shall cover for a period of 5 years the lighting associated with the structures (minus the filament which is subject to normal use wear and tear).

5 **Supply and Required Components.** The offeror shall provide the following defense system components:

5.1 Supply and Installation of eight Fire Ports per tower bunker. Fire port frame 12" x 8" (30 x 20 cm), exterior frame both sides 28" x 24" (70cm x 60 cm), with a depth of 42" (1.05 m). Ground level fire ports shall

include a removable grenade screen made from the same material as the fire ports and sized to cover the entire opening.

5.2 Supply and Install one Two to Three Man Bunker With a 2.40 m high Tower, for a total structure height of approximately 5 meters.

- First level interior dimensions (L 2.80 m x W 2.25 m H 2.40 m). Fortified first level bunker shall be constructed with a defensive metal wall barrier consisting of a minimum 26 gauge galvanized steel material
- First level provides basic lodging for 2 - 3 men.
- First level fire ports shall include a removable grenade screen made from the same material as the fire ports and sized to cover the entire interior opening.
- Bunker material must be previously certified by one of the following: United States Department of State (DOS), United States Department of Defense (DOD), United States Nuclear Regulatory Commission (NRC) or NAS Bogota.
- The second level is the tower, interior dimensions (L 2.80 m x W 2.25 m H 2.40 m).
- Protective facilities shall reduce the exposure gap of personnel in the tower, meaning that the gap between the walls height and the roof shall allow unobstructed observation and firing from a minimum of 0.40m not to exceed 0.60m.
- The level of protection shall include the roof; side walls and rafters with a load design to support a minimum two levels of sandbags topped by a wire/rebar mesh to mitigate the effect of indirect fire/pre-detonate rockets/grenades, etc.
- Tower platform shall include 360 degree rebar mesh protection to pre-detonate rockets/grenades etc.
- Roof construction includes sheet metal roofing with metal support truss/beams for environmental protection.
- Tower walls at observation tower shall be made of a material capable of stopping the threats described elsewhere in the contract.
- Protective facilities shall reduce the exposure gap of personnel in the tower, meaning that the gap between the walls height and the roof shall allow unobstructed observation and firing from a minimum of 0.40m not to exceed 0.60m.
- Include a steel bench/shelf sized to support a crew served weapon w/tripod (M60/M240G) reducing the requirement to shoot from the offhand position. Gunner shall be able to sweep the weapon from side to side while mounted on the bench without obstruction / hazard of the rebar mesh pre-detonation protection interfering with this action and rounds/projectiles leaving the weapon.
- The second level shall include a minimum 1000 Watt searchlight (outdoor marine rated light, instant on) pintel mounted for ease of use and coverage.
- Bunker and tower walls shall be made of a material capable of stopping the threats described elsewhere in the contract
- Connect all electrical to the Tumaco public power grid.

5.3 Supply and Installation of two Observation Multi-Story Towers (9 + meters high) with two/three man bunker.

- Multi-story tower that offers adequate observation, protection, and early warning in the event of an attack – tower's base protected with four firing positions.

- First level is a fortified position that provides lodging for two – three (2-3) men. Fortified first level bunker shall be constructed with a defensive metal wall barrier consisting of a minimum 26 gauge galvanized steel material
- Interior dimensions are L 3.6m x W 3.6 m x H 2.40m, structure shall be supported by steel I-beams.
- Bunker material must be previously certified by one of the following: United States Department of State (DOS), United States Department of Defense (DOD), United States Nuclear Regulatory Commission (NRC) or NAS Bogota.
- First-level fire ports shall include a removable grenade screen made from the same material as the fire ports and sized to cover the entire interior opening.
- The second level must afford the same side wall protection as the third level platform.
- The third level is the observation platform.
- Third level tower observation platform shall include 360 degree rebar mesh protection to pre-detonate rockets/grenades, etc.
- Protective facilities shall reduce the exposure gap of personnel in the tower, meaning that the gap between the walls height and the roof shall allow unobstructed observation and firing from a minimum of 0.40m not to exceed 0.60m.
- Walls at each level at observation tower shall be made of a material capable of stopping the threats described elsewhere in the contract.
- Include a steel bench/shelf sized to support a crew served weapon w/tripod (M60/M240G), reducing the requirement to shoot from the offhand position. Gunner shall be able to sweep the weapon from side to side while mounted on the bench without obstruction / hazard of the rebar mesh pre-detonation protection interfering with this action by obstructing rounds/projectiles leaving the weapon.
- The level of protection shall include the roof; side walls, rafters and tower with a load design to support a minimum two levels of sandbags topped by a wire/rebar mesh to mitigate the effect of indirect fire/pre-detonate rockets/ grenades, etc.
- Roof construction includes sheet metal roofing with metal support truss/beams for environmental protection.
- A fine plastic mesh, known locally as “polisombra”, or an equivalent visual screening material shall be installed to improve the security of personnel when ascending or descending the tower.
- The ladder way between the different levels shall have a hatch installed to protect personnel against accidental falls.
- The second level shall include a minimum 1000 Watt searchlight (outdoor marine rated light, instant on) pintel mounted for ease of use and coverage.
- Bunker and tower walls shall be made of a material capable of stopping the threats described elsewhere in the contract
- Connect all electrical to the Tumaco public power grid.

6.0 NAS Bogota Minimum Threat Standards for First Level Bunker Barrier Base Material

Threat	Minimum Acceptable Standard
Fire	No resulting structural damage after flames extinguish. Fill material must be retained within the barrier / bastion wall after exposure to fire.
Long Range Weapon Small Arms/Crew Served Mitigation	
5.56 MM	No Pass-through penetration of the bunker wall.
7.62 MM	No Pass-through penetration of bunker wall. .
.50 CAL	No Pass-through penetration of bunker wall.
40mm HE grenade	No Pass-through penetration of the bunker wall and the tower pre-det screen and roof.
Explosive Attacks	No Pass-through penetration for a 40lb net explosive weight charge landing a minimum distance of 3m from the base of the bunker wall.