



TERMS OF REFERENCE
for
**DESIGN AND BUILD SCHEME FOR THE ESTABLISHMENT OF AGNO, PANGASINAN
DOPPLER WEATHER SURVEILLANCE RADAR TOWER**

Project Title: Design and Build Scheme for the establishment of AGNO, PANGASINAN Doppler Weather Surveillance Radar Tower including Provision for Water Supply System and 37.5KVA, 220 VAC, 1- Φ Commercial Electric Power Supply, Electrical Service Entrance Post, Office Furniture, Fixtures, Public Comfort Room, Security Guardhouse and Access Road.

Project Location: Brgy. Patad, Barrio Boboy, Municipality of Agno, Pangasinan

**Project Owner/
Procuring Entity:** Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)

Project Description:

A Doppler Weather Surveillance Radar Station Building and Tower is to be constructed at Brgy. Patad, Barrio Boboy, Municipality of Agno, Pangasinan. The project was funded through GAA appropriated in PAGASA 2016 budget in support of the project in enhancing the forecasting capability of PAGASA for disaster prevention and mitigation. The proposed project will house the Doppler Weather Radar System and its peripherals, communications (indoor) and other basic facilities such as power supply, water supply, public comfort room, security guardhouse, 4-meter x 1,145.30-meter rough access road with gravel bedding from Provincial road to Doppler radar site, Landscaping and Station signage.

This design and build scheme is being adopted to fast track the project's implementation, being a national project that needs to be completed to meet the commitment of the President to the people that all Doppler radar installations shall be completed by 2019 and further, to provide income generation and job opportunities in the light of the worldwide economic recession.

Conceptual Design:

The Agno, Pangasinan Doppler Weather Surveillance Radar Station Building would mainly involve the construction of a **28.45-meter** high reinforced concrete tower from the natural ground level with a dimension of **6.0m x 6.0m**. The tower shall be part of, and integrated with a 1-storey structure, whose dimensions are generally **20.0m L x 11.0m W** for the radar observation and operations room, briefing room, and stand-by generator power house. The structures shall be mainly of the reinforced concrete type which shall be used to house the station's weather radar system instruments, operation consoles, workstations, transmitter and its peripherals. Stability of the structure, particularly the radar tower shall be given utmost consideration such that it could withstand 300 KPH wind speed.



On top of the roof deck, the antenna disc, antenna pedestal and RADOME shall be installed. It has a total combined weight of **15 Tons**. The antenna disc is continuously rotating azimuthally and in elevation. These should be considered in the design of the roof deck to ensure their stability. There should be a manhole and ventilation on the roof deck and steel stair to gain access to the parabolic antenna from the radar room. There should also be an access from the radar room to roof deck outside of the radome by way of an access and stairs.

The major parts of the structures shall be the main office space (radar observation and operations room), off-duty observer's quarters, power house for two (2) stand-by generators, radar control and telecommunication room, and briefing/conference room. At the top floor level, the radar transmitter/receiver and accessories shall be housed.

For reference purposes, a conceptual plans and designs detailing elevation plan and the floor plans is attached. This will also serve as guide in the preparation of plans and designs for the designer/contractor.

Performance Specifications and Parameters:

a) Design preparation

The designer/contractor shall prepare all the plans and designs necessary for the construction of a **6.0m x 6.0m, 28.45 meter** high concrete tower integrated with a **20.0m L x 11.0m W** 1-storey office/building based on the conceptual plans and designs to be provided by PAGASA. The plans and designs shall compose of complete engineering, architectural and structural plans and designs of footing and foundation, columns and beams, and other parts of the structures, such as stairs, doors and windows. **The plans and designs shall conform to the National Building Code of the Philippines, DPWH Standard Specifications for Public Works Structures and the latest National Structural Code of the Philippines.** The plans and designs shall be required in Electronic format, preferably using AutoCAD Software with its corresponding hard prints. The stability of radar tower shall be mainly considered in the preparation of designs. **Before the implementation of the project, these engineering plans, design, drawings, and others shall first be subjected to review and approval of the PAGASA.**

b) Detailed Engineering Requirements

Upon award of the design and build contract, the winning bidder shall be responsible for the preparation and submission of all necessary detailed engineering investigations, surveys and designs in accordance with the provisions of Annex "A" of the IRR of R.A 9184, (with the exception of the bidding documents and the ABC) as follows:

- a) Survey
- b) Site Investigation
- c) Soils and Foundation Investigation (Soil Boring Test to be provided by PAGASA)
- d) Construction Materials Investigation
- e) Preparation of Design Plans
- f) Preparation of Technical Specifications
- g) Preparation of Quantity and Cost Estimates
- h) Preparation of Program Work

- i) Preparation of Proposed Construction Schedule (and estimated Cash Flow for projects with Schedule over Six (6) Months)
- j) Preparation of Site or Right-of-Way Plans including Schedule of Acquisition
- k) Preparation of Utility Relocation Plan
- l) Preparation and submission of Design Report
- m) Environmental Impact Statement for critical project as defined by the Department of Environment and Natural Resources (DENR)
- n) Preparation of minimum requirements for a Construction Safety and Health Program for the Project being considered

Considering that this is a Design and Build project, bidders are allowed to submit its preliminary engineering designs as part of their bids.

For reference and as applicable to the project, the PAGASA will secure the following:

1. Certificate of Non-Coverage (CNC) from the DENR, in lieu of the Environmental Compliance Certificate (ECC);
2. DOH Radiation Hazard Permit;
3. ATO (now CAAP) Height Clearance Permit for the allowable maximum height of the Radar Building/Tower;
4. Geotechnical Investigation Report

c) Construction and Contract Implementation

The designer/contractor shall be responsible for securing all the necessary permits (Building Permit, Electrical, Sanitary, Commercial Electric Power connection). Securing the Building Permit shall be necessary before commencement of any works and shall form part of the contract implementation, at the expense of the winning contractor.

The designer/contractor shall have charge and care of the work. He shall take every precaution against damage or injury caused by the action of the elements or from any other cause whether arising from the execution or from the non-execution of work.

The design and build contractor shall be solely responsible for the integrity of the detailed engineering design and the performance of the structure irrespective of the approval/confirmation by the procuring entity.

The contractor/designer shall rebuild, repair, restore and make good all damages or injuries to any portion of the works occasioned by any of the above causes and bear related expenses, except due to Force Majeure and without fault or negligence of the contractor.

Rain, windstorm, or other natural phenomena of normal intensity, based on the official weather reports for the particular season of the year in which the works are being implemented shall not be construed as Force Majeure or unforeseeable causes beyond the control of the contractor.

Preliminary Survey and Mapping

The project site is located at Brgy. Patad, Barrio Boboy, Municipality of Agno, Pangasinan about 83.25km. from Lingayen City.

The lot where the PROPOSED DOPPLER RADAR Municipality of Agno, Pangasinan is situated on the property of Engr. Claro S. Doctor where PAGASA has leased a total area of 2,800square meters (40m. x 70m.)

Geotechnical Investigations

A soil-boring test consisting of 2 drill holes at 15 meters depth and geotechnical investigation was conducted by Solar Surveying Corporation. Results of the investigation shall be provided to any prospective bidder so they can submit as part of their bids, the detailed engineering costs, detailed estimates, etc.

Utility Locations

The proposed site has a commercial electric power lines nearby. The winning bidder/contractor shall apply for a separate commercial power supply connection with the required rating of a step down power transformer of 37.5 KVA to PANELCO. All expenses for the application, installation and commissioning of said commercial power line shall be at the expense of the winning contractor. A basic load schedule / riser electrical diagram shall also be provided to prospective bidder.

Approved Budget for the Contract

The Approved Budget for the Contract (ABC) is Twenty Five Million One Hundred Sixty Six Thousand Pesos (**PhP25,166,000.00**).

Proposed Design and Construction Schedule

The implementation and completion of the project shall not be more than 300 calendar days from the receipt by the winning contractor of the Notice to Proceed.

However, no works shall commence unless the contractor has submitted all the required documentary requirements and the PAGASA has given written approval. Work execution shall be in accordance with reviewed and approved documents.