



ESTABLISHMENT OF GNSS CORS FIJI

18th September, 2018

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Lands Department

Presentation Outline



- Introduction
- Purpose
- Procurement of CORS Equipment
- Stakeholder Engagement
- CORS Network
- CORS Construction Drawings
- Land Acquisition
- Reconnaissance Survey
- Construction

Introduction



- United Nations General Assembly 2015
 - Resolution 69/266 – “A global geodetic reference frame for sustainable development”; was adopted in its 80th plenary meeting held 26th February 2015
- Cabinet Paper - CP(15) 169 29th August 2015
- Cabinet Decision 207 – Modernising Fiji’s Geodetic Datum; 29th August 2015



Purpose

- The purpose of this proposal is to provide a precise Geodetic Infrastructure, based on the International Terrestrial Reference Frame (ITRF) that would cover the whole of Fiji
- From a geodetic perspective; CORS form an integral component of the nation's survey and geospatial infrastructure
- Modernise Fiji's obsolete datum into this ITRF

Training in China



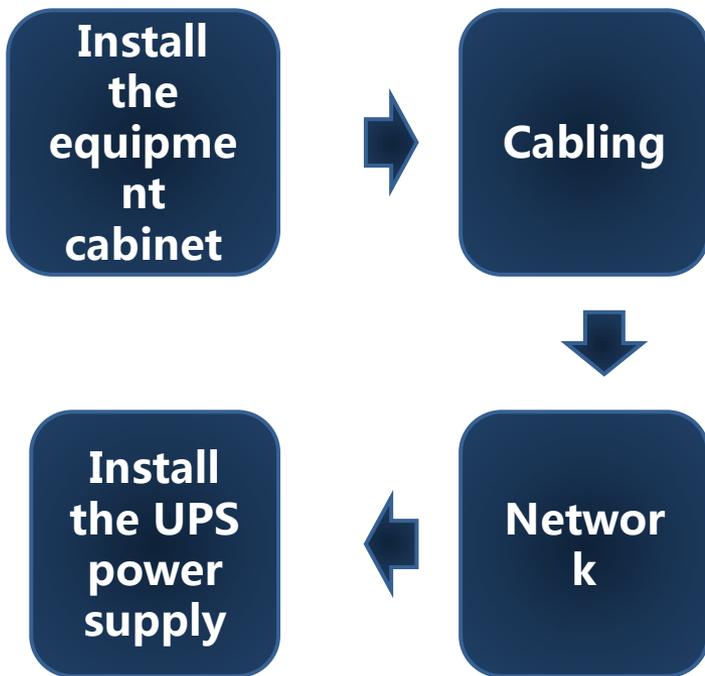
The main purpose of the training was;

- to master the application of the **ZNetVRS Software** which would be adopted and to be used in our quest to modernising Fiji's obsolete Map Datum to that of the internationally recognised system;
- to familiarize with the hardware and the installation procedures of a CORS setup;
- a **fact finding mission** for the team, since the software offered is new and we are not familiar with its compatibility with other types of CORS receivers that we anticipate to acquire.

Learning



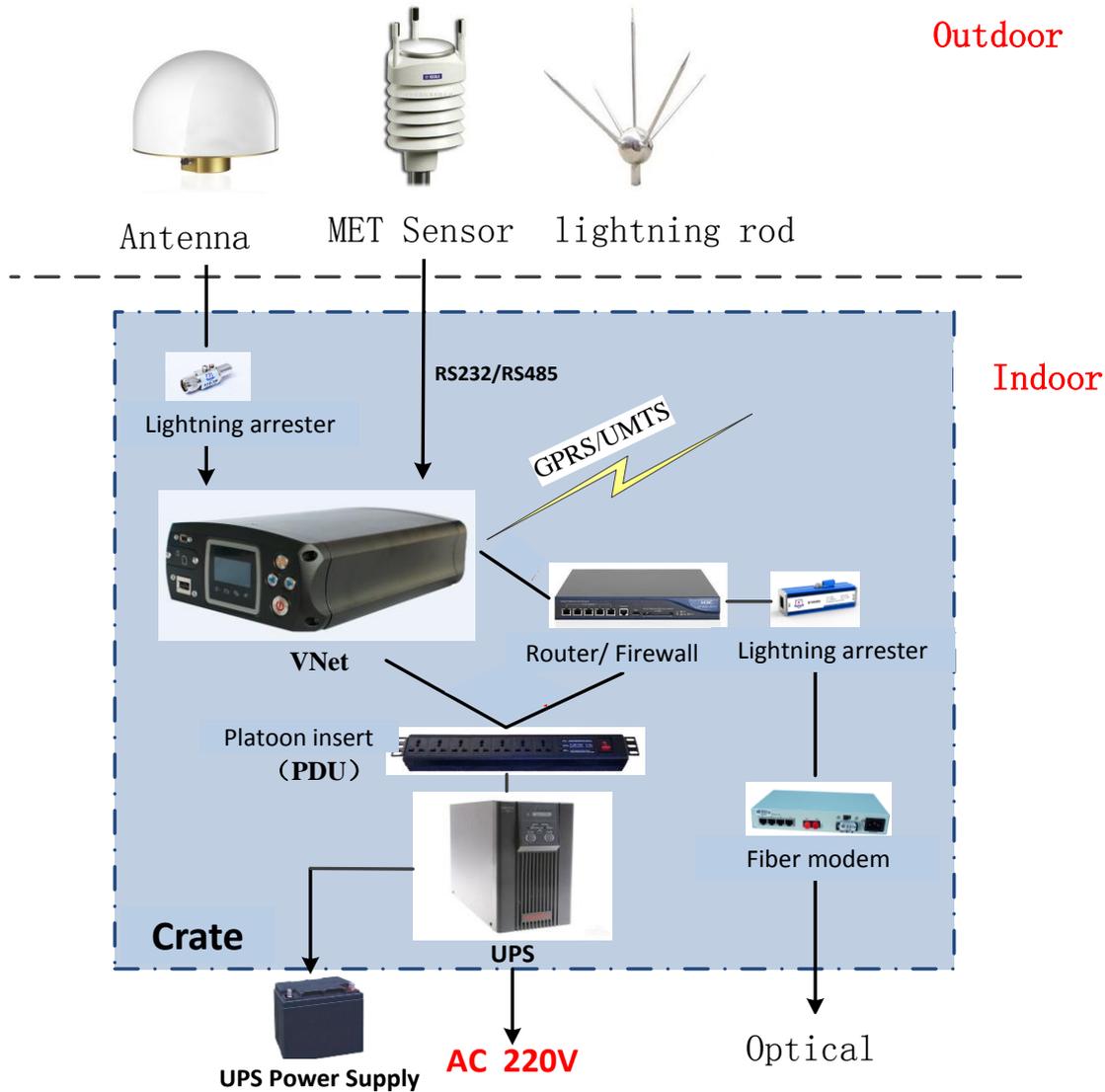
Observation Room Setup



VNet6+ Reference Station



Learning



Learning



Indoor Part



Server Room



UPS and power supply



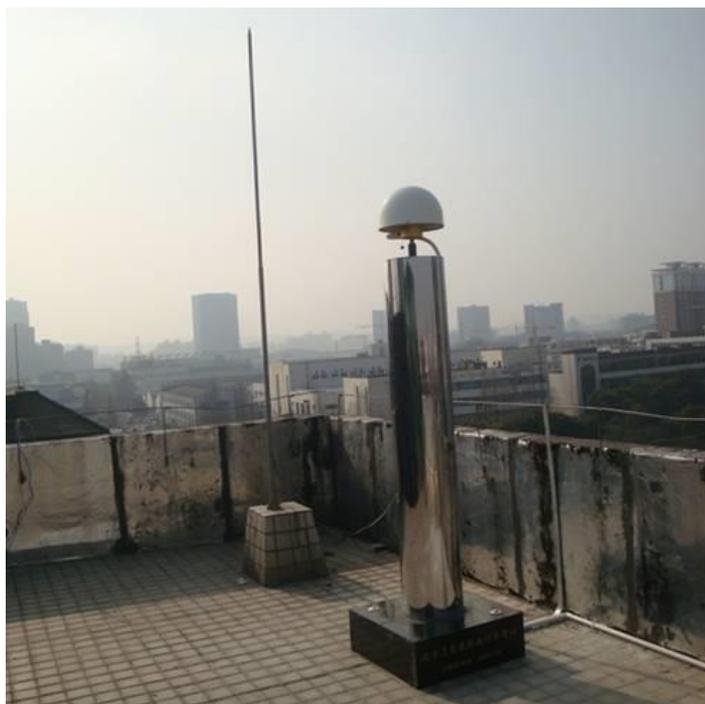
Equipment cabinet



Learning

- We were first introduced to the CORS receiver hardware and how it was to be setup plus the pillar and hut construction plans.

Outdoor Part



Antenna pier with lightning conductor



3D Choke Ring Antenna



Antenna pier



中海达
HARGET





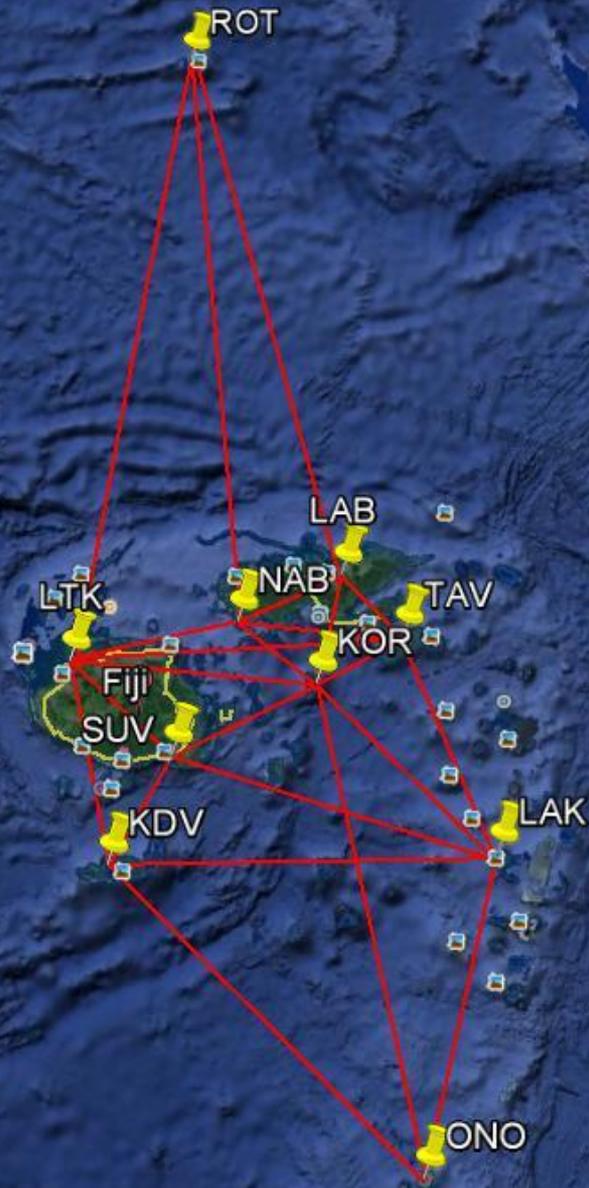
Procurement of CORS Equipment

- 3 sets were donated by **Hi-Target, China**
- 5 were purchased by the Ministry of Lands and Mineral Res.
- 1 CORS built and equipped by the Pacific Community (SPC) Nabua, Suva
- 1 Existing CORS by Geoscience Australia, Lautoka

Stakeholder Engagement



- Ministry of Economy
- Ministry of Lands and Mineral Resources
- Commissioner Eastern
- Commissioner Northern
- Director Buildings & Government Architect
- iTaukei Land Trust Board (iTLTB)
- Pacific Community (SPC)
- PGSC and GA



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Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Data LDEO-Columbia, NSF, NOAA

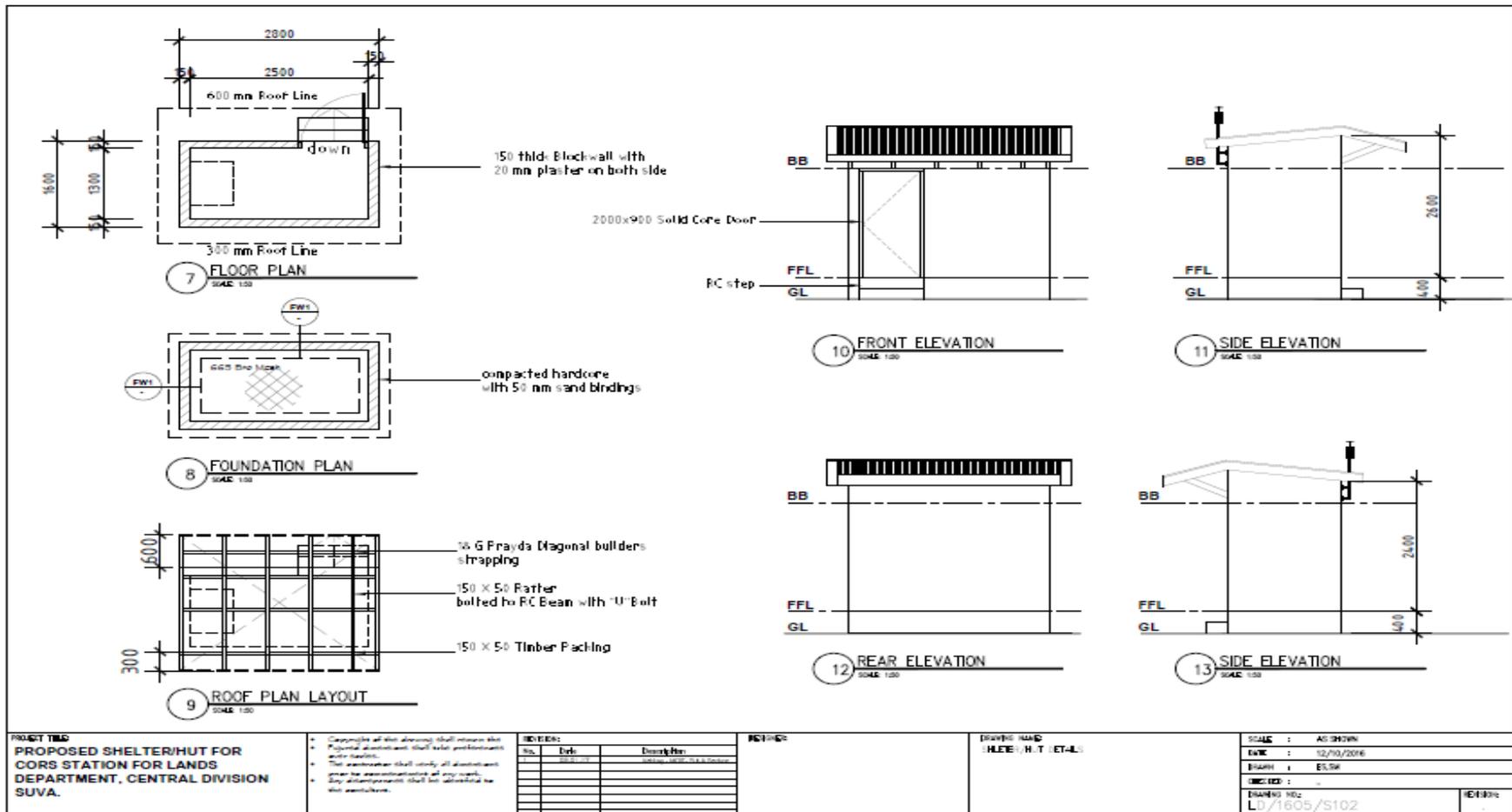
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CORS DRAWINGS

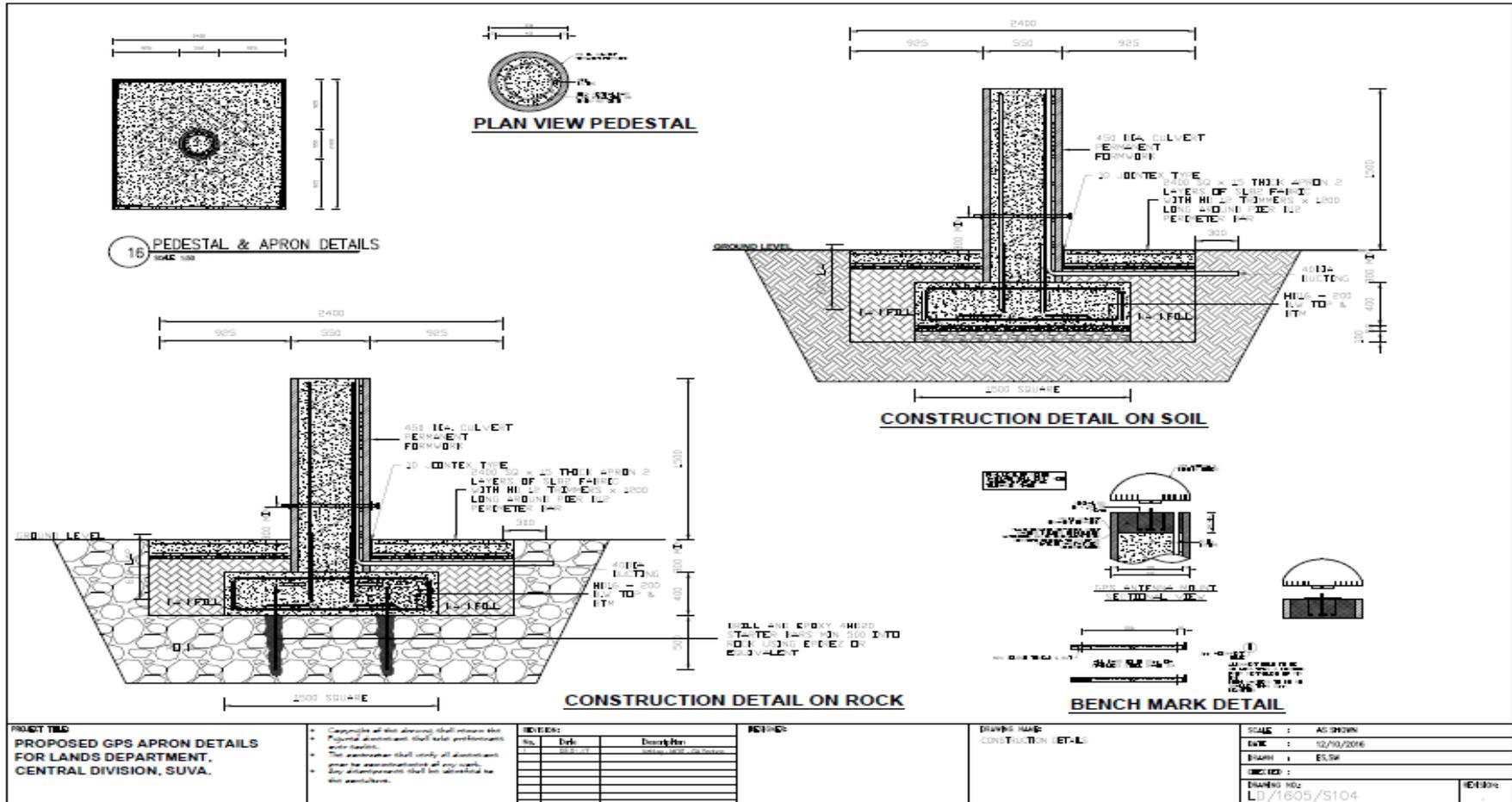


- CORS Construction Drawings
 - completed and examined
 - Bill Of Quantities (BOQ)
 - PWD - \$35,551.00 per station
 - PC - \$21,100.00 per station
- Procurement of building materials
 - GTB Approved Suppliers

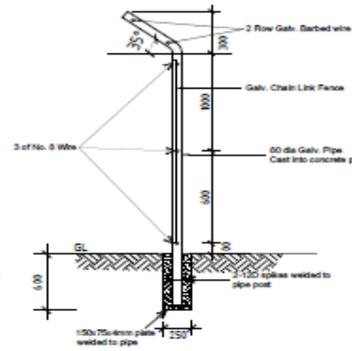
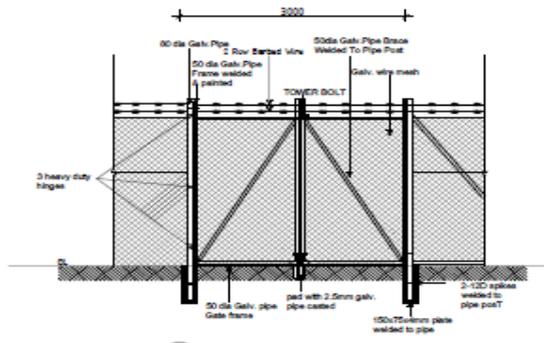
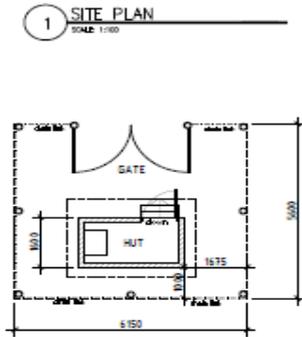
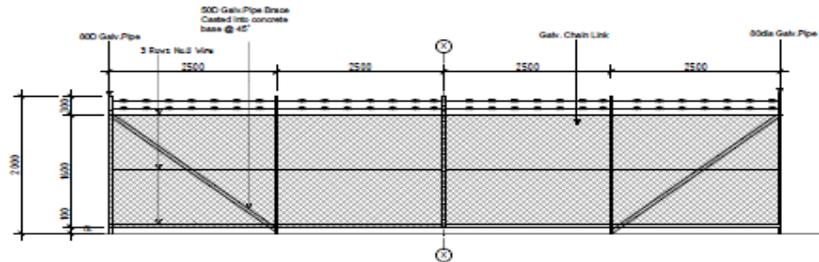
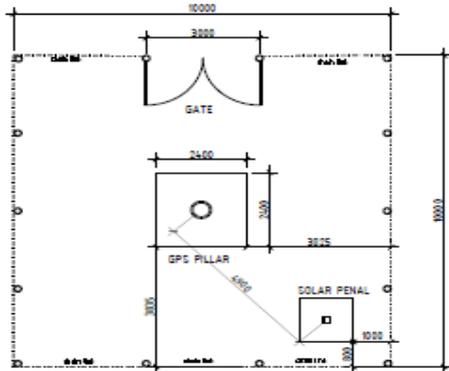
Shelter/Hut Plan



Pillar Plan

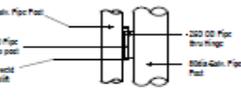


Fence Plan



BARB SPECIFICATION FOR FENCING

ALL GRADE 90 GALVANIZED PIPE TO BE USED FOR FENCING.
 GALV. POINTING SHALL BE CONTINUOUSLY FILLED AND FINISHED WITH WATER PROOF EPDM/CONCRETE GROUTING ALL WELD JOINTS. LISTS IN THE PROJECT SHALL BE SUPPLEMENTARY.
 3 THE CONCRETE PAD SHALL BE ON 4 PARTS OF 80 DIA. BOLT.
 2 PARTS OF 150x750MM PLATE WELDED TO PIPE POST.
 4 FASTENING STEEL CLOSURE.
 BOTTOM: 150x750MM PLATE WELDED TO PIPE POST.
 ALL DIMENSIONS TO BE VERIFIED ON SITE.



PROJECT TITLE
PROPOSED FENCING PLAN FOR
CORS STATION FOR LANDS
DEPARTMENT.CENTRAL DIVISION
SUVA.

• Physical dimension shall refer to professional work sheets.
 • The contractor shall verify all dimensions given for execution of all work.
 • Any alterations shall be identified by the architect.

NO.	REV.	DESCRIPTION

REVISIONS

DATE: 05/10/2018

SCALE: AS SHOWN

DATE: 05/10/2018

DRAWN BY: ET-LL

SCALE: 1:100

ISSUED BY: ET-LL

SCALE: 1:100

DATE: 05/10/2018

SCALE: 1:100

SCALE: AS SHOWN

DATE: 05/10/2018

DRAWN BY: ET-LL

SCALE: 1:100

ISSUED BY: ET-LL

SCALE: 1:100

DATE: 05/10/2018

SCALE: 1:100

Land Acquisition



- Labasa – Vaturekuka Govt. Station
- Nabouwalu - Nabouwalu Govt. Station
- Taveuni - Waiyevo Govt. Station
- Kadavu - Vunisea Govt. Station
- Koro Is. – Nasau Govt. Station
- Lakeba – Govt. Station Tubou
- Rotuma – Ahau Govt. Station
- Ono-i-lau Island

Reconnaissance Survey



- **Reconnaissance surveys completed 7 of 8 CORS sites**

Labasa

Nabouwalu

Taveuni

Kadavu

Lakeba

Rotuma

Koro Island

Ono-i-lau – yet to be built

Proposed CORS – what a proposed Hut and Pillar Look Like



Antenna set up on Pillar



Choke Ring Antenna



Hut to house Receiver and Internet modem



Cabinet inside the Hut shelving the Receiver and internet modem



CONSTRUCTION



- **Construction of 5 CORS out of 8 has been completed:**

Labasa

Nabouwalu

Taveuni

Kadavu

Koro

Lakeba – in progress

Rotuma – procurement of materials

Ono-i-lau – procurement of materials

Construction Phase

- Labasa Station



- Nabouwalu Station



- Taveuni Station





Kadavu



Koro



- Electricity connection
- Air-con unit installed
- Mounting of CORS equipment
- Solar panel

Technical Installation



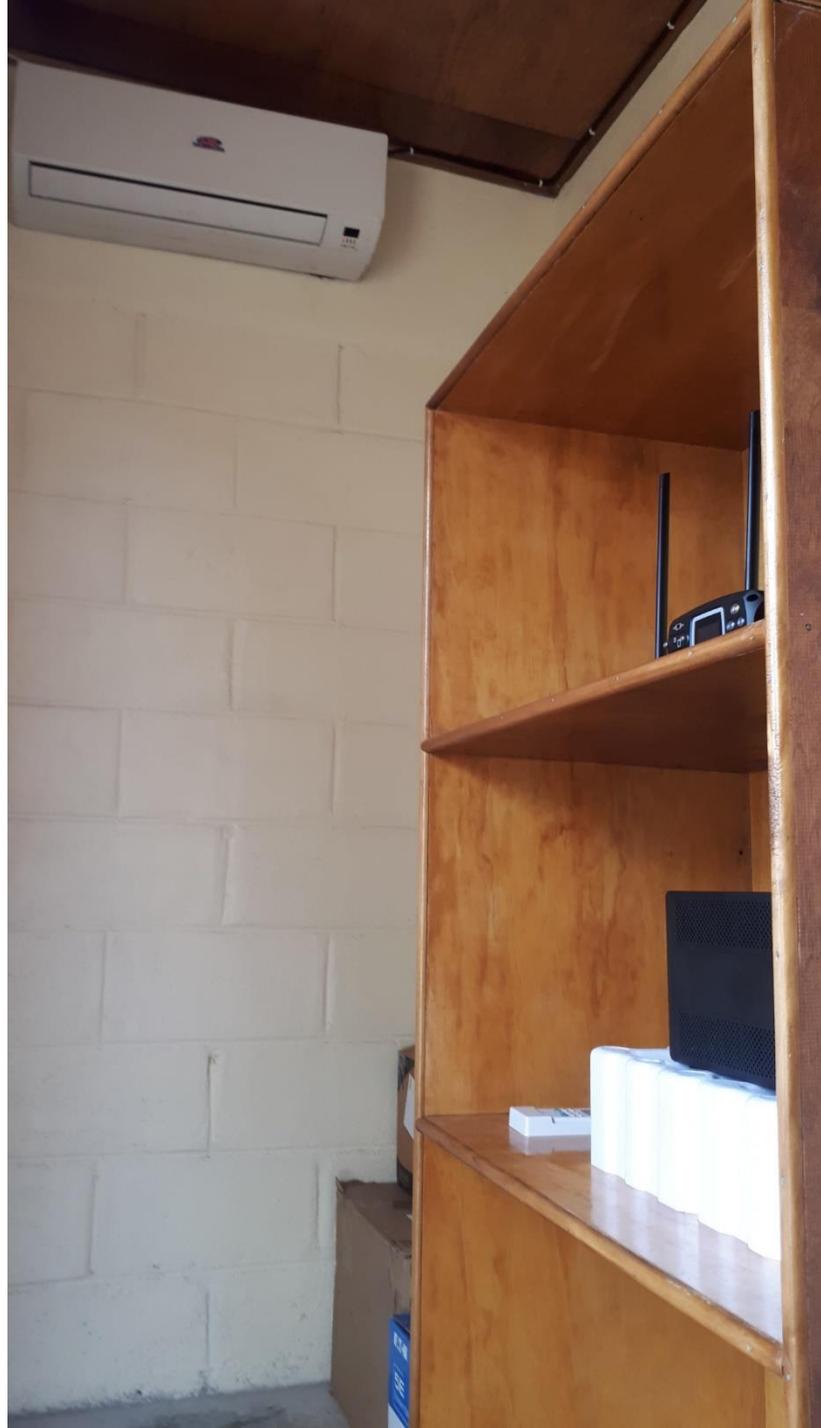
- Labasa CORS – Hi-Target completed on 19th July 2018
- Nabouwalu CORS – Hi-Target completed on 24th July 2018
- Taveuni CORS – Hi-Target completed on 13th September 2018
- Kadavu CORS – Leica yet to be installed
- Koro CORS – Leica yet to be installed



















CORS Site Maintenance



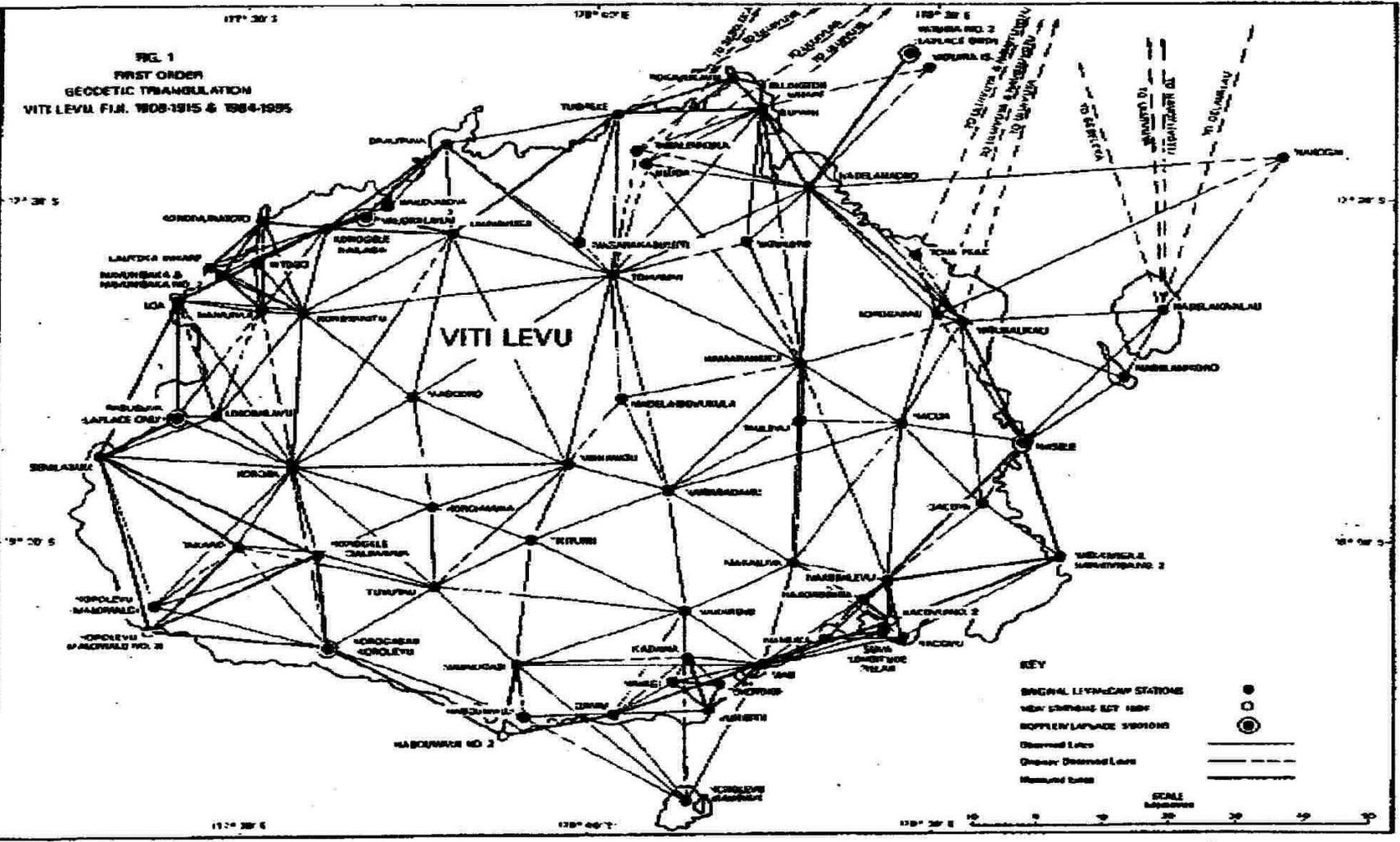
- Labasa
- Nabouwalu
- Taveuni
- Kadavu
- Lakeba
- Rotuma
- Koro
- Ono-i-lau

Connection to Datum



- Viti Levu
- Vanua Levu
- Maritime Islands
- EEZ Boundary Delimitation Network

Primary Network Viti Levu



Ongoing Maintenance



- Maintenance funding to be sought
- Staff training on the relevant software
- GNSS GPS Data management
- CORS Infrastructure maintained
- Replacement of GNSS CORS equipment
- Extend the CORS network



Vinaka Vakalevu