

5-3 工事仕様書

1. 工事請負契約書 (案)

CONTRACT

ON

THE PILOT INFRASTRUCTURE IMPROVEMENT WORKS

FOR

THE IMPROVEMENT OF RICE CULTIVATION TECHNOLOGY PROJECT



CONTRACT

on the Pilot Infrastructure improvement Works

for

The Improvement of Rice Cultivation Technology Project

This Contract is made entered into this \_\_\_\_\_ day of \_\_\_\_\_  
at the JICA Suva Office between Japan International Cooperation Agency, Suva  
Office by \_\_\_\_\_ Title \_\_\_\_\_  
as its authorized representative of the Suva Office, hereinafter called  
"the JICA" of the one part, and \_\_\_\_\_  
whose office is situated at \_\_\_\_\_  
Represented by \_\_\_\_\_ Nationality \_\_\_\_\_ Title \_\_\_\_\_  
hereinafter called "the Contractor" of the other part.

Both parties mutually agree under the terms of this Contract as follows:-

Article - 1 (a) (Description of Work)

Contractor shall carry out the construction of irrigated and  
rainfed rice fields and its related facilities for the Koronivia Research  
Station.

Article - 1 (b)

The following documents shall be deemed to form, be read and  
constructed as part of this agreement viz:-

- i) Bill of quantities (itemized statement)
- ii) The attached construction drawings
- iii) The attached specification

Article - 2 (Contract Sum of Construction)

The contract sum of construction shall be F\$ \_\_\_\_\_ ( ) and be based on the bill of quantities attached here.

Article - 3 (Time Limit on Construction and its Prolongation)

The Contractor shall start work within ten (10) days of signing by both parties of this agreement, and complete work by the \_\_\_th of \_\_, 1987.

Article - 4 (Delays)

In a case where it is clear that the Contractor is failing to fulfil his obligations within the period referred to in the preceding Article. The Contractor shall inform the JICA of this as soon as possible and if the JICA agrees that the delay is due to such causes as natural calamity or others for which the Contractor is not liable, a reasonable extension of time shall be approved. In this case, the sum referred to in Article 15 shall not be collected.

Article - 5 (Process of carrying out of Work)

The Contractor shall carry out the work in accordance with the drawings and specification referred to in Article 1(b). And in cases where it is necessary for carrying out such work as is not mentioned therein for the purpose of promoting the present construction or for reasons of established practices, the Contractor shall carry out the said work under the direction of the JICA. In cases where the Contractor finds any doubt in the plans of construction, the Contractor shall ask the JICA for the necessary directions before commencing work

on that part for which there exists some doubt. The JICA must provide such information and details within seven (7) days of the written request from the Contractor.

#### Article - 6

The Contractor shall follow the direction of the JICA or the Engineer to be appointed by the JICA. As to materials for the construction, the Contractor shall use only those inspected and approved by the JICA or the Engineer appointed by the JICA. In cases where any defective work has been done as a result of such use of materials which have not been inspected by the Engineer. The Contractor shall be liable to change the materials or repair the work at his own responsibility. The construction shall be carried out in accordance with the proper technique and durability shall be the principal aim as regards to the construction.

#### Article - 7

As to the workman to be hired by the Contractor for the work, the Contractor shall assume the responsibility as entrepreneur or employer, as provided for by Laws and Regulations.

#### Article - 8 (Transfer of Right and Obligation)

The Contractor shall not assign or sublet to a third party the whole or part of the construction except in cases where the Contractor has obtained written approval from the JICA.

Article - 9 (Damages)

In cases where any damage is caused to the JICA or a third party, materials or buildings, through carelessness on the part of the Contractor during the course of work or transportation of materials, the Contractor shall be liable to repair or compensate such damage at his own expense by the date appointed by the JICA or the third party.

Article - 10

In case where the Contractor fails to repair or compensate such damages referred to in the proceeding Article by the fixed date, the JICA may pay for such repair on behalf of the Contractor and collect compensation from the Contractor by deducting the amount from the sum of construction to be paid to the Contractor under the provisions of Article 20, and in cases where the damages exceed the sum of construction, the JICA may collect the deficit.

Article - 11(a) (Change of Construction Drawing and  
Submission of Necessary Documents)

In cases where the JICA feels it necessary to discontinue work owing to unavoidable circumstances or to alter the plan of construction, the JICA may request the Contractor to calculate, on the basis of the unit prices as detailed in the priced bill of quantities referred to in Article - 2, as increase or decrease in the sum of construction resulting from the suspension or alteration of the work and the Contractor shall comply with the request. When the JICA orders such a suspension or alteration, depending on the statement of the above mentioned calculation, the Contractor shall submit a written consent by the date appointed the JICA.

Article - 11(b)

Where additional work cannot be properly measured and valued on the basis of the unit price in the bill of quantities referred to in Article - 2, the Contractor shall be allowed daywork rates in accordance with a written consent by the JICA .

Article - 12 (Price Adjustment)

(a) In the case of the costs of materials rising sharply as a result of the fluctuation in the market prices due to an unexpected change in the economic conditions, a reasonable adjustment of the above mentioned sum or the contents of the work, will be made according to a mutual agreement between the JICA and the Contractor.

(b) In a case where the Contractor incurs loss or suffers loss unreasonably in some item of Bill of quantities due to the JICA's failure to provide the information and details referred to in Article - 5 of the particular item or work, then reasonable adjustment of the above mentioned losses shall be considered by the JICA on the detailed claim submitted by the Contractor.

Article - 13 (Right to Rescind Contract and Penalty)

In cases where the Contractor fails to fulfil his obligations under this contract, the JICA may rescind the whole or part of the Contract. In such a case, the JICA may collect from the Contractor a sum as a penalty of 10 percent (10%) of the amount which is equivalent to the rescinded. In cases where the damages caused on the JICA, on account of the non-fulfilment of contract by the Contractor, exceed the sum referred to in the

preceeding paragraph, the JICA may further demand the Contractor to pay the excess.

#### Article - 14

In cases other than provided for in the preceeding Article where the Contractor fails to fulfil his obligations, or in cases where the fulfilment of obligation by the Contractor is regarded to be difficult, the JICA may have a third party fulfil, at the cost of the Contractor, the whole or part of the obligations of the Contractor. Even if liability of the Contractor exceeds the contract sum referred to in Article - 2 in consequence of this, the Contractor may not raise any objection to it.

#### Article - 15

In cases other than provided for in Article 13, where the Contractor fails to complete the construction at his own responsibility, within the period referred to in Article - 3, the Contractor shall be liable, a period fixed by the JICA, to pay the JICA, per week of delay, a sum equivalent to 0.2 percent (0.2%) of the contract sum referred to in Article - 2.

#### Article - 16 (Damages caused by Natural Calamity etc.)

In cases where serious damages occur to the completed part of the work, or the materials, tools etc., already carried into the field of construction, the Contractor shall promptly inform the JICA of the circumstances. If such damages are caused by a natural calamity, an earthquake, a flood, a civil war, a war, an epidemic, or a general/trade strike, rioting or other unavoidable reasons, for the occurrence of which no responsibility



can be attributed to either the JICA or the Contractor and it is admitted that the Contractor has paid the care of good administration to avoid the occurrence of such damages, the JICA shall be liable for the amount of the damages which shall be fixed through negotiations between the JICA and the Contractor.

Article - 17(a) (Inspection)

The work at any stage shall be subject to inspection to be conducted by the JICA or an inspector appointed by the JICA, in the presence of the Contractor and necessary labour and articles required for such an inspection shall be provided by the Contractor.

Article - 17(b)

In cases where the work fails to pass the inspection referred to in the proceeding paragraph, the Contractor shall carry out necessary repair at his own cost, under the direction of the JICA.

Article - 18 (Date of completion of construction  
and obligation thereafter)

The date of completion of construction shall be regarded as that on which the final work, including removal of temporary constructions and cleaning, has passed the inspection referred to in Article - 17 and on that date the object of the total construction shall be delivered to the JICA by the Contractor. For a period of three (3) months thereafter, any defect in the construction, the cause of which is judged in the opinion of the JICA to be attributable to faulty or inadequate technique or materials employed by the Contractor, shall be immediately repaired or improved at the cost of the Contractor.

Article - 19(a) (Payment & currency)

The JICA shall pay to the Contractor in local currency as follows:-

Payment for the part of the work already completed shall be allowed by the JICA three times during the course of construction at the request of the Contractor, provided that it has passed the inspection referred to in Article - 17.

However, the amount of the payment shall be limited to ninety per cent (90%) of the work already completed. The final payment will be carried out within one month after the JICA receives the bill which will be submitted by the Contractor on or after the date of completion of construction referred to in the preceding Article.

Article - 19(b)

Ten per cent (10%) of the contract price shall be paid as advance payment for mobilization with order to commence, upon production of a refund bond or Bank Guarantee for the same amount as the said advance payment.

Article - 19(c)

This advance payment shall be adjusted from subsequent monthly bills by such sum as the proportionate to the monthly progress stated in the said bills.

Article - 19(d)

The refund bond or bank guarantee as provided in paragraph (b) here or shall be returned to the Contractor by the JICA upon the delivery of the works.

Article - 20 (Interest for the delay of payment)

In cases of the payment referred to in the preceding Article being delayed owing to a cause or causes attributable to the JICA, the Contractor may request the JICA to pay, per week of delay, a sum equivalent to 1.0 per cent (1.0%) of the bill sum on arrears of payment.

Article - 21(a) (Settlement of dispute)

If there arises any dispute with regard to this Agreement or the construction Drawings or Specification referred to in Article - 1(b) it will be settled by a mutual consultation between the JICA and Contractor.

Article 21(b)

Should it not be possible to reach a mutual agreement between the JICA and the Contractor on such dispute, then it shall be referred to an Arbitrator or Arbitrators acceptable to both the JICA and the Contractor and the decision of this Arbitrator or/of Arbitrators shall be binding on both the JICA and the Contractor.

The Conclusion of the Agreement:

Two copies of the Agreement shall be prepared with the signature of both parties affixed to each of the copies, one copy to be held by each party.

Date : \_\_\_\_\_

.....JICA

Mr. \_\_\_\_\_ , Resident Representative  
JICA, Suva Office

.....Contractor

.....Witness

.....Witness

## 2. 工事仕様書 (案)

### Specification

- Section 1. Genral
- Section 2. Earth Works
- Section 3. Concrete Works
- Section 4. Land Consolidation Works
- Section 5. Irrigation Canal Works
- Section 6. Drainage Canal Works
- Section 7. Road Works
- Section 8. Relative Facilities



## Specification

### Section 1. General

#### 1-1. Application

1) This specification is applicable to "Construction of Irrigated and Rainfed Rice Fields and its Related Facilities for the Koronivia Research Station in Fiji".

#### 2) Quantity of main work

##### A) NAVUA PROJECT (Irrigated Rice Field)

- (i) Land Consolidation Works      16.4 ha
- (ii) Irrigation Facilities
  - Irrigation canal                      1,050 m
- (iii) Drainage Facilities
  - Drainage Canal                        1,500 m
- (iv) Road works
  - Farm road                              1,810 m
- (v) Relative Facilities
  - Storage House                         15 m<sup>2</sup>

##### B) NAUSORI PROJECT (Rainfed Rice Field)

- (i) Land Consolidation Works      14.3 ha
- (ii) Drainage Facilities
  - Drainage Canal                        1,880 m
- (iii) Road Works
  - Farm road                              1,670 m
- (iv) Relative Facilities
  - Storage House                         15 m<sup>2</sup>

3) Specifications entered in the drawing showing shall be treated in reference to this specification.

1-2. Engineer

"Engineer" means the engineer who was appointed to supervise the works by the JICA.

1-3. Site Representative

Site representative shall be well qualified in supervision or have enough experience of supervision. The Contractor shall submit career history of a site representative to the Engineer for his approval.

1-4. Work Schedule

The Contractor shall submit his work schedule before the commencement of the works at the job site. If the Contractor intends to change the work schedule, the approval from the Engineer shall be obtained prior to the modification of schedule.

Also the Contractor shall submit the machineries scheme including the numbers, and kind of machineries and using period of them.

1-5. Field Test and Inspection

The field tests in accordance with the specifications and the demands from the Engineer shall be the responsibility for the Contractor. The charges for such fields test shall be included in the total amount of the construction cost, and the Contractor is not entitled to claim any amount of the field test charges.



1-6. Temporary Office and Residence

In case the Contractor intends to build the temporary office, residence and so forth, the Contractor shall submit the plan to the Engineer for approval at least 10 (ten) days in advance of the commencement of such works.

The Contractor is required to always keep the buildings and facilities in good condition and to make proper drainage and sanitary system. Should the Contractor build them outside of the job site, the Contractor shall arrange with the owner of such land and at its own expense.

1-7. Record on Construction

The Contractor shall submit the record on whole progress of Construction every week to the Engineer.

1-8. Clearance of the Work Site

Upon completion of the works, the Contractor shall clear the site within period of construction.

## Section 2. Earth Works

### 2-1. Scope

The work under this Section shall consist of all classes of grading, leveling, ditching, earthmoving, all other excavation, backfill, banking, surfacing and any other such construction work.

### 2-2. Clearing and Stripping

#### (1) Clearing

All areas to be cleared will be as designated on the Drawings and/or as directed by the Engineer. This work shall basically consist of clearing all vegetation, roots, brush, rubbish and other objectionable matter from the specified area to the satisfaction of the Engineer.

#### (2) Stripping

All the surfaces which are to be stripped will be as shown on the Drawings and/or as directed by the Engineer. This work shall basically consist of removing boulders, underground roots and other undesirable items to a depth as shown on the Drawings or as otherwise stipulated by the Engineer.

Materials obtained from stripping work shall be deposited in places approved by the Engineer. Stockpiled material shall be smoothed to a measurable outline and shall not be higher than that specified by the Engineer.

### 2-3. Excavation

(1) Excavation of all canals, ditches, pipelines and structure shall be in accordance with cross-section, line and grades shown in the drawings. Excavation operations shall be such that all suitable materials for embankment shall be separated from objectionable materials which are to be wasted.

(2) If the spontaneous landslide of the slope occurs or is expected to occur, the Contractor shall inform the Engineer without any delay and shall ask him how to deal with landslide.

(3) The excavation of the slope shall be finished with tools to have the gradient indicated in the drawings or by the Engineer.

(4) If the slope and the foundation of the canals, ditches, or the foundation of pipe, structures are over excavated, the Contractor shall backfill with gravel or other material approved by the Engineer at the Contractor's expense and the backfilled materials shall be compacted sufficiently.

#### 2-4. Backfill and Fill

Backfill and fill shall be placed to the lines and dimensions as shown on the Drawings.

The materials to be used for backfill and fill shall be all classes of disposed or excavated materials available in-situ. The quality of such materials shall be approved by the Engineer and shall be free from any organic matter or other objectionable material such as large clods or stones, boulders, etc.

The material shall be handled and placed in such manner as to achieve favorable compaction and density. The method of placing, moisture controlling and compacting backfill and fill shall be subject to approval by the Engineer.

#### 2-5. Embankment

Embankments shall be placed and trimmed to the lines and dimensions as shown on the Drawings. The materials to be

used for embankment shall be all classes of disposed or excavated materials available in-situ. The quality of such materials shall be approved by the Engineer and shall be free from any organic matter or other objectionable material such as large clods or stones, boulders, etc. The material shall be placed in successive horizontal layers of loose material not more than 200mm in depth. Each layer shall be spread uniformly on a soil surface that has been moistened or aerated as necessary and scarified or otherwise broken up in such a manner that the fill will bond with the surface on which it is placed. The material shall be handled and placed in such manner as to achieve favorable compaction and density. The method of placing, moisture controlling, compacting and trimming of the embankment shall be subject to approval by the Engineer. The surface of the embankment shall be left 150mm above final grade to allow for settlement. After an adequate period approved by the Engineer, the Contractor shall return and fill in low spots, or scrape off high spots.

#### 2-6. Disposal of Excavated Material

Excavated materials may be used for backfilling and/or embarking unless otherwise specified or directed by the Engineer. Excavated material in excess of requirements, shall be disposed of in the disposal area appointed by the Engineer. Waste material shall be piled by taking sufficient measures to avoid injury or damage to adjacent area and properties.

### Section 3. Concrete Works

#### 3-1. General

All concrete works shall be performed as established on the Drawing or directed by the Engineer. Unless specifically provided in this specification, the concrete shall be produced, transported, placed, cured, finished and tested in accordance with the ASTM and JIS provisions or equivalent standard approved by the Engineer.

#### 3-2. Materials

##### (1) Cement

(i) Cement used in Concrete mixture shall be normal portland cement, properties of which shall be in accordance with ASTM-C150 and JIS-R5210 or equivalent standard approved by the Engineer.

(ii) Cement shall be reliable brand, good quality and absolutely dry.

(iii) The Contractor shall construct a water-proof cement storage shed at the job site, floor of which shall be higher than the ground surface at least 30 (thirty) cm.

(iv) The Contractor shall not keep cement at the job site more than 1 (one) month, and the storage period is counted from the date when the cement is transported from the manufacturing factory to the job site.

(v) During the course of construction, the Contractor shall not use cement for the works properties of which are changed, especially consolidated.

##### (2) Fine aggregate

(i) Fine aggregate shall be river sand that is clean and rigid without organic matter and other substance.

Fine aggregate shall have the properties as shown in following table.

Sieve No.	Percent Retained by Weight
4	0 - 5
16	25 - 40
100	93 - 97

The fineness modulus shall be in the range from 2.30 to 3.00

(ii) The Contractor shall keep fine aggregate at clean and good drainage place, which shall be protect against the mixture with harmful substance such as clay, soil and so on.

(3) Coarse aggregate

(i) The Contractor shall use crushed stone as coarse aggregate which is rigid and endurable substance without organic and harmful materials.

(ii) Coarse aggregate shall have the grading as shown in the following table.

Sieve Size	Percent Retained by Weight
1"	0
3/4"	0 - 10
3/8"	45 - 80

(iii) Coarse aggregate shall be stored in such manner as to avoid inclusion of foreign materials. All coarse aggregate shall be maintained in saturated moisture content and surface dry conditions.

(4) Water

(i) Water used in Concrete shall be clean free from oils, acid, alkali or other matters detrimental to the quality or durability of the concrete.

(ii) Water shall be stored in tanks and not to be exposed to the direct rays of the sun.

3-3. Mixing Design of Concrete

Concrete shall have the proportion as follows:

Class	Compressive Strength 28 days	Mixing portion Cement:Fine A: Coarse A	Slump
Reinforce concrete	$f'_c=210$ kg/cm	1:2:3 (by volumn)	8 - 12 cm
Plain concrete	$f'_c=160$ kg/cm	1:3:6 (by volumn)	8 - 12 cm
Lean concrete	-	1:4:6 (by volumn)	

Fine A : fine aggregate

Coarse A : coarse aggregate

Other proportions for mixed design may be indicated by the Engineer at the job site, if it is necessary.

#### 3-4. Slump Test

The Contractor shall make slump test in each batch in accordance with JIS 1101. In case the Contractor intends to place concrete, the Contractor shall not pour the concrete without prior inspection for the value of slump test by the Engineer. After the completion of the concrete Works, the Contractor shall submit the data of slump test to the Engineer.

#### 3-5. Mixing the Concrete

The Contractor shall use a power-driven concrete mixer and quantities of cement, aggregate and water in concrete mixture shall be measured correctly in each time. The driving time for mixing concrete shall be more than 2 (two) minutes and less than 5 (five) minutes in order to make concrete with constant consistency and good quality. Take out from the concrete mixer, concrete shall be placed in the form within 30 (thirty) minutes. The concrete mixer shall be checked and cleaned every day and the Contractor shall remove concrete debris attached the concrete mixer.

#### 3-6 Concrete Form Work

(1) Concrete form shall be rigid and strong enough to support the weight of concrete without deformation, and the Contractor shall make concrete form tightly in order to prevent water seepage from unsolid concrete.

(2) The Contractor may use wood form, plywood form and steel form, in any case surface of form shall be smooth and have no damage.



(3) In case the Contractor set up concrete form, the iron embedded within concrete to hold the form shall be cut at concrete surface.

(4) Before placing concrete, concrete form shall be inspected by the Engineer for correctness of size, good preparation and so on.

(5) Before placing concrete, the Contractor shall paint oil on inner side of concrete form for good separation between concrete and concrete form after solidness of concrete.

### 3-7. Placing Concrete

(1) Before placing concrete, the Contractor shall check and clean the floor and the surface of concrete form.

(2) After a batch of concrete is placed, the surface height of concrete in concrete form shall have same height in a block, and the height of placed concrete layer shall be less than 40 (forty) cm in each placing.

(3) The Contractor shall place concrete continuously into a look of structure such as wall, slab and so on.

(4) In case the new concrete is placed on solid concrete, the Contractor shall take out laitance, loose aggregate, low quality concrete on the surface of solid concrete.

### 3-8. Compaction of Concrete

After placing concrete, the Contractor shall compact concrete by using immersion type vibrator. Should the Contractor intends to use another type of vibrator, the Contractor shall obtain the prior permission of the Engineer.

### 3-9. Curing

The Contractor shall cure concrete completely with water. If the Contractor intends to use curing chemical, the Contractor shall obtain the prior permission of the Engineer.

### 3-10. Reinforcing Bars

(i) Reinforcing bars which are used in reinforced concrete works shall be round bar or deformed bar in accordance with ASTM designation A-7-55 and A-141-55 or JIS G 3112, when the Contractor uses round bars, hook shall be provided as directed by the Engineer.

(ii) The equipment and tool which are to be used to cut, bend and manufacture shall be approved by the Engineer. Hot manufacturing of the reinforcing bar is not permitted.

(iii) Before the bar is erected, the surface of the bars and the surface of any metal supports shall be clean and free from all the dirt and deteriorates which in the opinion of the Engineer is objectionable.

(iv) The minimum coverage for all main reinforcing bars shall be 5 cm.

(v) Cutting and bending of reinforcing bars may be done in a shop or at the job site. All bending works shall be in accordance with the standard approved practice of the industry or by other approved machine methods. Radial for bend and hooks will be as per the detailed approved drawings.

(vi) Laps at joints of reinforcing bar shall have a length at least thirty times of the diameter of bar and shall be bound by steel wire.

## Section 4. Land Consolidation Works

### 4-1 Scope

The work under this Section shall consist of clearing and stripping and grading works, all in accordance with the Drawing and these specifications or as directed by the Engineer.

### 4-2 Work Preparation

Prior to the work, the planned area shall be isolated from outside drainage to prevent the water coming in. During the work, surface water in the planned area shall be removed as much as practicable.

### 4-3 Clearing and stripping Work

(1) The Contractor shall conform the boundary of work area in attendance of the Engineer before the commencement of work and shall place boundary post, if necessary.

(2) Clearing and stripping work shall conform to the requirements specified under Section 2.

### 4-4 Earthmoving and Filling

(1) Primary earthmoving and filling shall be made within the planned area as a rule.

(2) Earthmoving and filling work shall conform to the requirements specified under Section 2.

(3) Slope surface shall be finished evenly with the grade given in the Drawings. Final grading shall be carried out using a bulldozer.

(4) In case of over-excavation, the Contractor shall dispose according to the instruction of the Engineer. Its cost shall be borne by the Contractor.

## Section 5. Irrigation canal works

### 5-1 Scope

This Scope under this Section shall consist of excavation, embankment and relative structures for the irrigation canals, all in accordance with the Drawings and these Specifications or as directed by the Engineer.

### 5-2 Earth Work

Earth Work for irrigation canals shall be in accordance with Section 2.

### 5-3 Concrete Work

Where shown on the Drawings or as directed by the Engineer, the Contractor shall construct division and inlet works for the irrigation canals. Those structures shall be constructed in accordance with the applicable provision as Section 3 and the relevant Drawings.

## Section 6. Drainage Canal works

### 6-1 Scope

The scope under this Section shall consist of excavation of canals and construction of the pipe culvert for drainage canal in accordance with the Drawings and Specifications or as directed by the Engineer.

### 6-2 Earth Work

Earth Work for drainage canals shall be in accordance with Section 2.

After banking operations are terminated the slope of banking shall be formed by means of slope tamping.

### 6-3 Pipe Culvert

Pipe culvert shall be made with locally manufactured concrete pipes. Concrete works shall comply with the descriptions of Section 3.

## Section 7. Road Works

### 7-1 Scope

The scope under this Section shall cover the construction of farm road. The work shall include grubbing clearing embankment and excavation, all in accordance with the Drawings and these specifications, or as directed by the Engineer.

### 7-2 Earthwork

The earthwork needed for construction of the roads shall be conducted according to the applicable provisions of Section 2.

### 7-3 Earth Materials

The road base shall be formed with those earth materials as surplus in excavation of ditch, when those materials are appropriate or equivalent in quality to those found in borrow pits.

### 7-4 Compaction

The base of the embankment shall be compacted with bulldozer and thickness of one compaction shall be about 15 cm in spread. During compaction, water shall be sprinkled for keeping optimum moisture content of the materials.

## Section 8. Relative Facilities

### 8-1. Scope

The scope under this Section shall cover the construction of storage house in accordance with the Drawings and Specifications.

### 8-2 Earth work

The earthwork needed for construction of the foundation of those facilities above mentioned shall be conducted according to the applicable provisions of Section 2.

### 8-3 Concrete Work

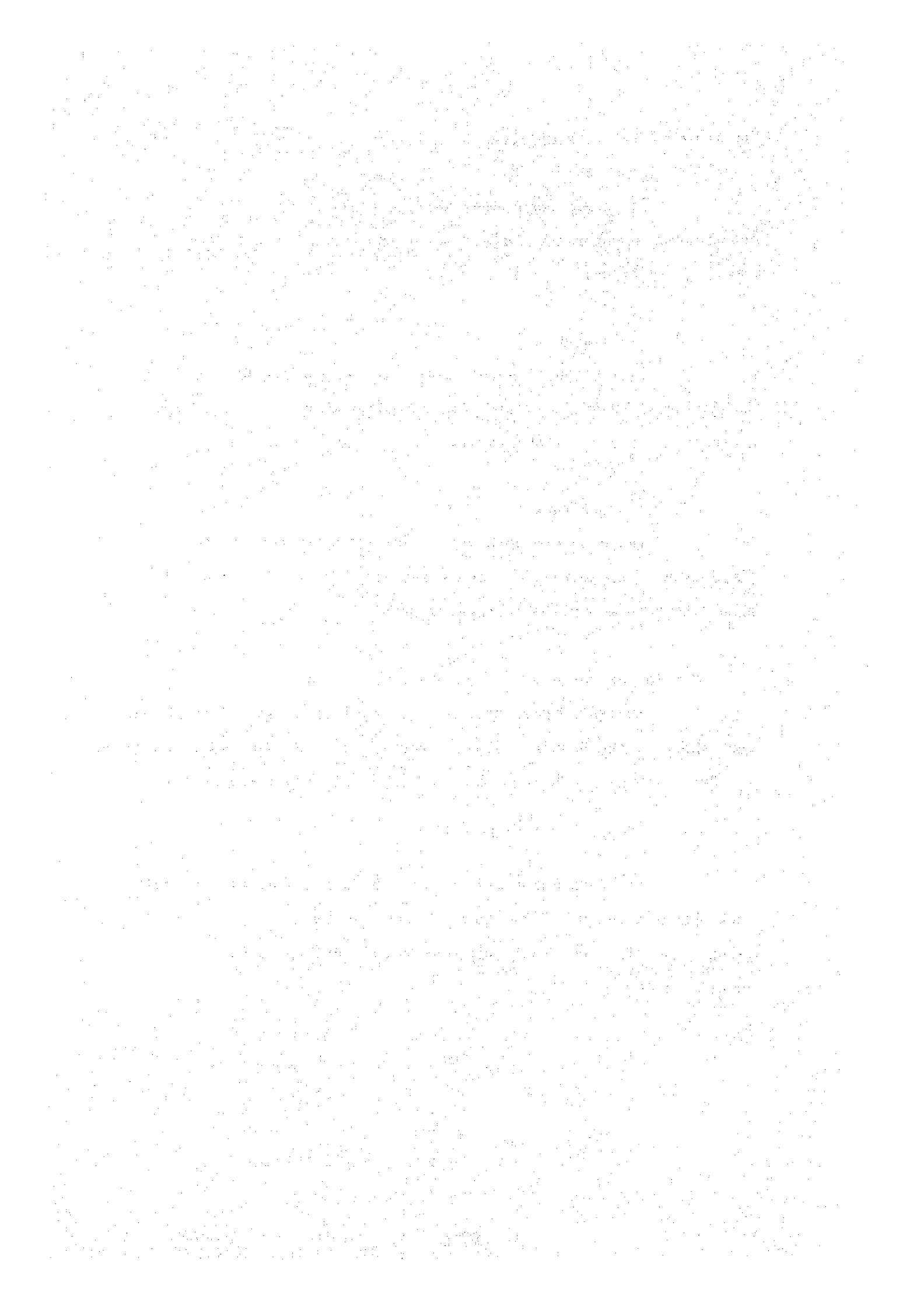
The concrete work needed for construction of the foundation of those facilities above mentioned shall be conducted according to the applicable provisions of Section 3.

### 8-4 Brick Masonry

The work under this clause consists of all brick masonry work shown in the Drawings. Local products can be used and it shall be the first class. All bricks shall be laid after applying mortar.

### 8-5 Carpentry

The work under this paragraph consists of all carpentry work shown in the Drawings. Local timber can be used and it should be first class. The construction method shall conform to Fiji specifications.





### 3. 申請書 (案)

昭和 年 月 日

国際協力事業団

総裁 \_\_\_\_\_ 殿

事務所長

氏 名 \_\_\_\_\_ 印

下記内容に対するパイロット・インフラ整備費の支給を申請する。

(1) プロジェクト名

(2) 工 事 名 ナブア地区、ナウソリ地区ほ場整備工事

(3) 工 事 費 45,647千円 (積算内訳 参照)

(4) 工 事 内 容

(1)ナブア地区工事概要

16.4 ha のほ場造成、用排水施設及び農道の整備工事等を行なう。

1) ほ場整地工

ほ場造成工 16.4 ha

2) 用水施設工

灌漑用水路 (開水路) 1,050 m

3) 排水施設工

排水路 1,500 m

4) 道路工

農道 1,810 m

5) 付帯施設

ほ場管理棟 15 m<sup>2</sup>

(2)ナウソリ地区工事概要

14.3 ha のほ場造成、排水施設及び農道の整備工事等を行なう。

1) ほ場整地工

ほ場造成工 14.3 ha

2) 排水施設工

排水路 1,880 m

3) 道路工

農道 1,670 m

4) 付帯施設工。

ほ場管理棟 15 m<sup>2</sup>

(3) 工 期

昭和 年 月 日 ~ 昭和 年 月 日

(5) 申請の事由

#### 4. 工事施工業者

フィジー国で比較的規模の大きい工事施工業者は次ぎの通りである。

- 1) Grayburn Construction Ltd.
- 2) J S Hill & Associates Ltd.  
Box 3105, Lami (Local Co)
- 3) Vanua Landscapers  
Box 4276, Samabula
- 4) D Narayan Industries Ltd.  
Box 883, Suva
- 5) Subhan & Sons  
Box 375, Laiwaqa
- 6) Govind Singh & Sons Ltd.  
Box 358, Nausori
- 7) Ram's Construction Co. Ltd.  
Box 575, Labasa
- 8) Northern Civil Engineering Contractors Ltd.  
Box 575, Labasa
- 9) Valebasoga Transport Co.  
Box 528, Labasa
- 10) Afzal Industries  
Box 50, Labasa
- 11) Mohammed Yakub Khan & Co.  
Box 547, Loutoka
- 12) B W Holdings
- 13) Prime Image



## 付 属 資 料



## APPENDIX-1

### Members of the Team

Team Leader	Mr.K.Kobayashi	Assistant Director Disaster Prevention Division Structure Improvement Bureau Ministry of Agriculture, Forestry and Fisheries
Member	Mr.H.Goto	Agricultural Development Cooperation Department,JICA
Member	Mr.T.Sakai	Taiyo Consultants Co.,Ltd.
Member	Mr.I.Iwai	Taiyo Consultants Co.,Ltd.

29 January, 1988

Mr R Yarrow  
Permanent Secretary  
Ministry of Primary Industries  
SUVA

Dear Sir

The Japanese Detailed Design Survey Team (herein after referred to as "The Team") organised by Japan International Cooperation Agency (herein after referred to as "JICA"), visited Fiji from January 22 to January 30, (to March 3 for the consultant), for the main purpose of formulating detailed Plan on the Pilot Infrastructure Improvement Works for the Improvement of Rice Cultivation Technology Project (herein after referred to as "The Project").

During its stay in Fiji The Team did field survey, exchanged views and had a series of discussions with Fiji authorities as well as Japanese Expert Team. As a result of exchange of views and field survey; we have a great honour of submitting to you the summary Report attached hereto, showing the outline of the design of the works which will be consolidated by consultant members during their stay in Fiji.

Finally, I wish to take this opportunity to express our most sincere thanks for all the assistance, cooperation and hospitality and I hope that necessary arrangement will be taken for the smooth implementation of the works.

Yours sincerely

小林一成

[ Kazunari Kobayashi ]  
Team Leader

Detailed Design Survey Team of Improvement of  
Rice Cultivation Technology Project

c.c. Permanent Secretary, Ministry of Foreign Affairs  
Aid Unit, Ministry of Finance



## SUMMARY REPORT

### I. Pilot Farm

The objective of the Team is to conduct a survey and detailed design on two Pilot Farms comprising of an irrigated paddy and a rainfed wetland paddy farms taking into consideration topography, weather and type of land ownership in this country, so that farmers in Fiji realize and learn from the results of rice research carried out in the country.

For selection of Pilot-Farms, a field survey has been carried out on the areas proposed by the government of Fiji along with JICA experts and Government officials concerned.

After discussions among the members, Navua area has been selected for the irrigated farm and Vusuya area for the rainfed wetland farm.

These are summarized as follows:

#### A. Irrigated area (Navua area)

1. The area is located within the Navua East Project, the first phase of which has been completed.

Irrigation infrastructure have been constructed on south and east sides of the area. On the north and west sides, the canals are now under construction. The total area of 22.4 ha consists of 2.0ha to 3.0ha plots. Presently, the fields are cultivated by draught animals. A small hill about 6-8m high is included in the 22.4ha.

2. The size of the proposed pilot farm will be about 15ha. The area will be levelled and banded with the view to adopt appropriate mechanization if necessary.

Since it is impossible to change the boundaries of each farm, the road, and the irrigation and drainage system will be designed along the boundaries. An existing main drainage running from North-West to South-East within the area may need to be realigned to adjust the shape of plots.

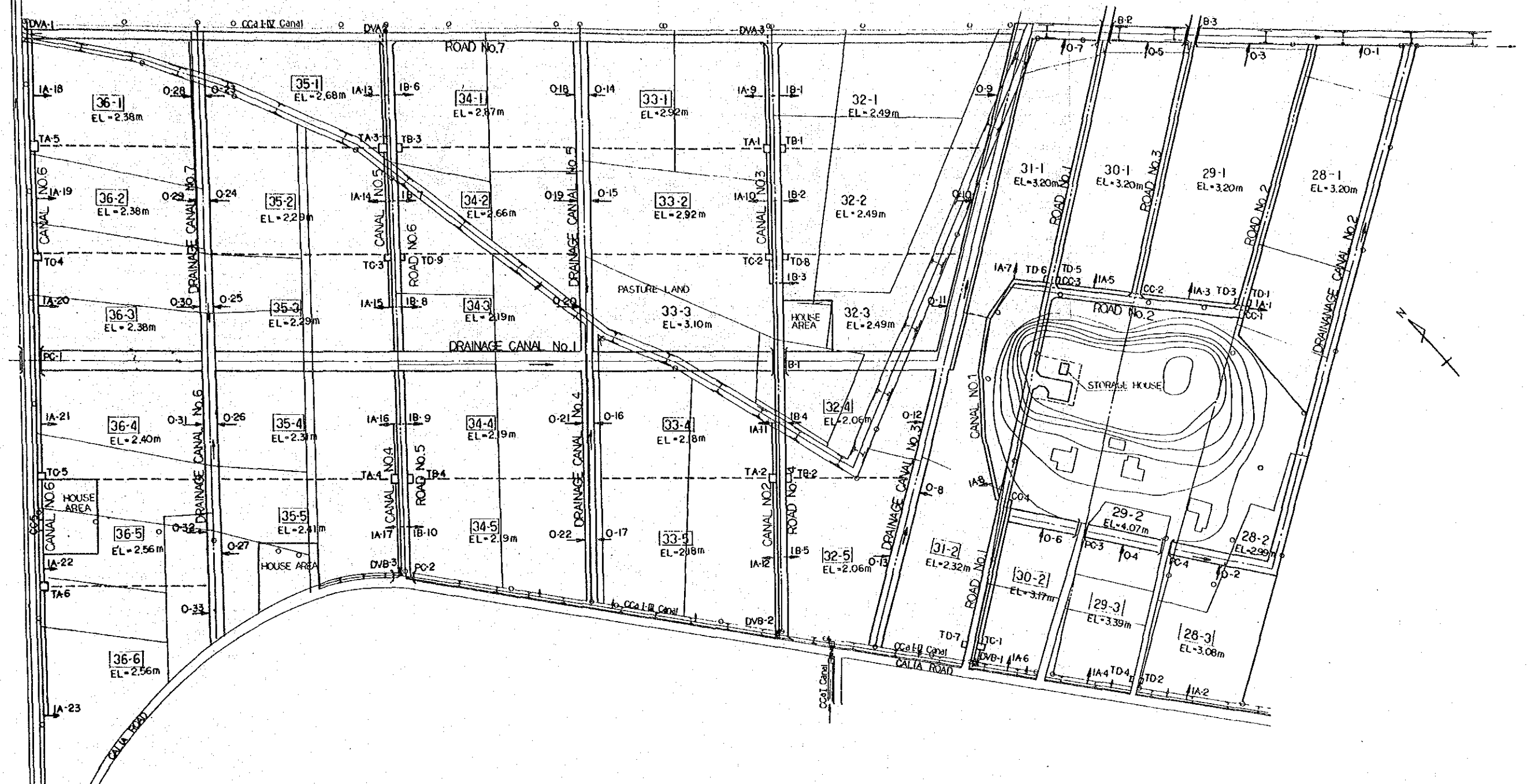
2/...



## 添付図面

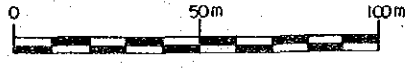
Drawing No. 1	General Plan
Drawing No. 2	Drainage Canal No. 1 Longitudinal and Cross Section (1/2)
Drawing No. 3	Drainage Canal No. 1 Longitudinal and Cross Section (2/2)
Drawing No. 4	Drainage Canal No. 2 - No. 7 Longitudinal Section
Drawing No. 5	Irrigation Canal No. 1 - No. 6 Longitudinal Section
Drawing No. 6	Typical Sections of Road, Irrigation Canal, Drainage Canal and Band
Drawing No. 7	Canal Crossing and Tractor Passage
Drawing No. 8	Detail of Inlet and Outlet for Canal Crossing and Tractor Passage
Drawing No. 9	Inlet Works, Outletworks and Pipe Culvert
Drawing No. 10	Division Works
Drawing No. 11	Box Culvert
Drawing No. 12	Storage House (1)
Drawing No. 13	Storage House (2)
Drawing No. 14	Storage House (3)
Drawing No. 15	Storage House (4)
Drawing No. 16	Storage House (5)
Drawing No. 17	General Plan
Drawing No. 18	Road No. 1 Longitudinal Section
Drawing No. 19	Road No. 1 and Road No. 2 Longitudinal Section
Drawing No. 20	Drainage Canal No. 1 Longitudinal and Cross Section
Drawing No. 21	Drainage Canal No. 2 Longitudinal and Cross Section
Drawing No. 22	Drainage Canal No. 3 Longitudinal and Cross Section
Drawing No. 23	Typical Sections of Road, Drainage Canal and Outlet Works
Drawing No. 24	Outlet Works and Pipe Culvert
Drawing No. 25	Box Culvert
Drawing No. 26	Stop Gate
Drawing No. 27	Storage House (1)
Drawing No. 28	Storage House (2)
Drawing No. 29	Storage House (3)
Drawing No. 30	Storage House (4)
Drawing No. 31	Storage House (5)

# GENERAL PLAN

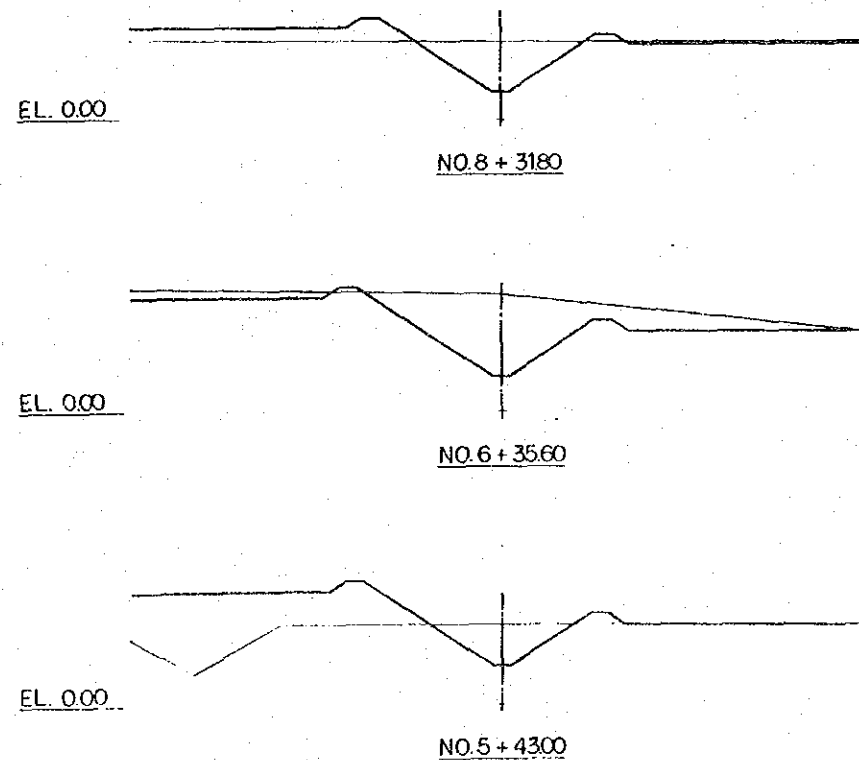
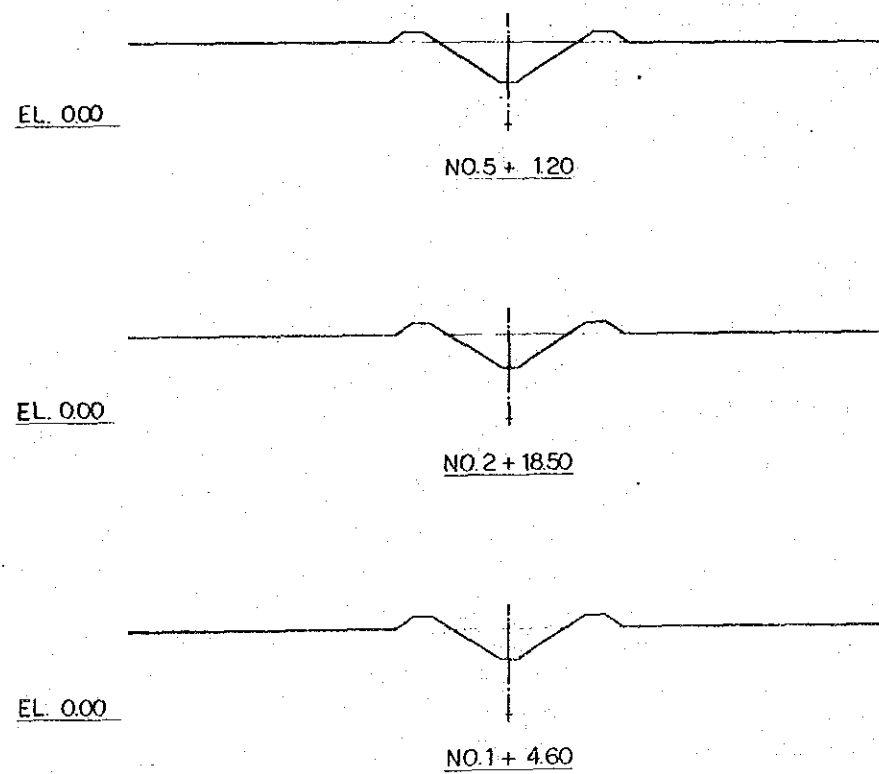
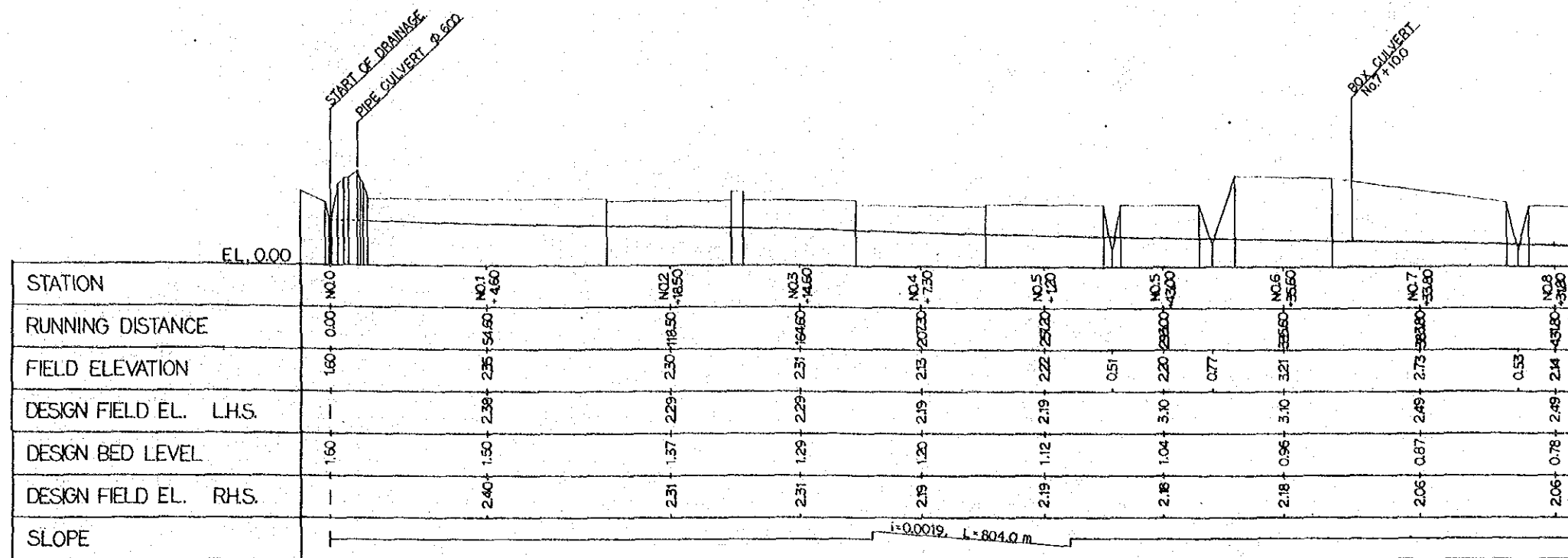


### LEGEND

- 28-1 : FIELD NUMBER
- [35-1] : FIELD NUMBER TO BE DONE SURFACE SOIL HANDLING
- EL- : DESIGN FIELD ELEVATION
- O-n : OUTLET WORKS
- IA-n : INLET WORKS A-TYPE
- IB-n : INLET WORKS B-TYPE
- CC-n : CANAL CROSSING WORKS
- B-n : BOX CULVERT
- PC-n : PIPE CULVERT
- TA-n : TRACTOR PASSAGE A-TYPE
- TB-n : TRACTOR PASSAGE B-TYPE
- TC-n : TRACTOR PASSAGE C-TYPE
- TD-n : TRACTOR PASSAGE D-TYPE



THE GOVERNMENT OF FIJI	
THE IMPROVEMENT OF RICE CULTIVATION TECHNOLOGY PROJECT	
TITLE OF DRAWING NAVUA PROJECT	
GENERAL PLAN	
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO JAPAN	DWG. No. 1

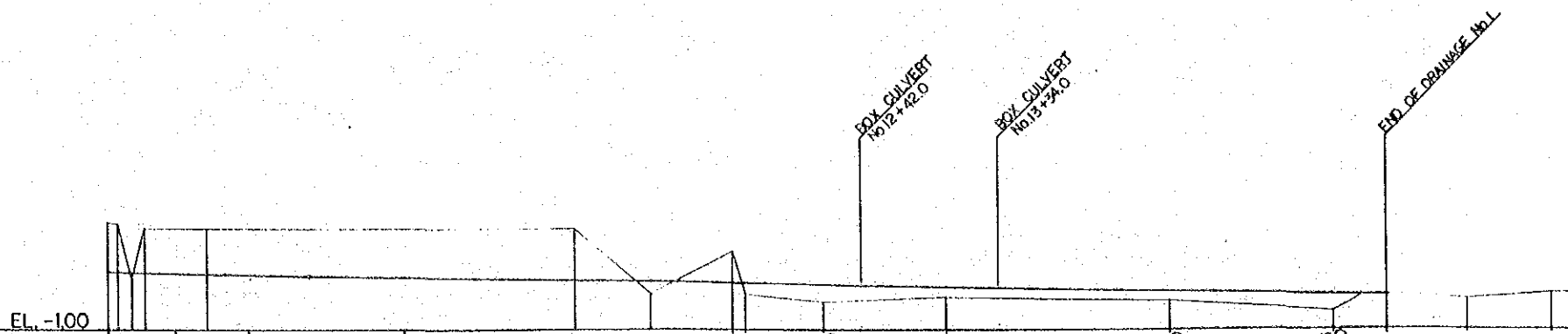


THE GOVERNMENT OF FIJI  
 THE IMPROVEMENT OF RICE CULTIVATION  
 TECHNOLOGY PROJECT

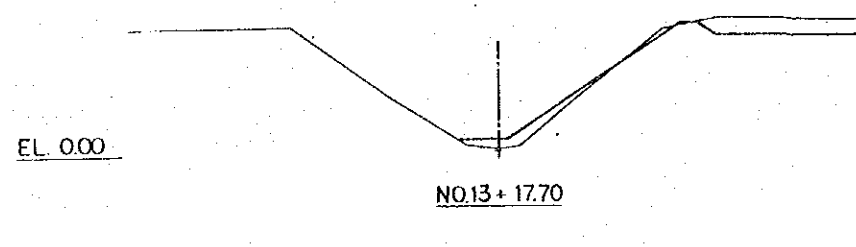
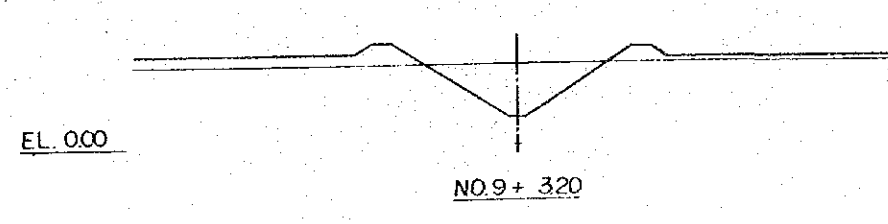
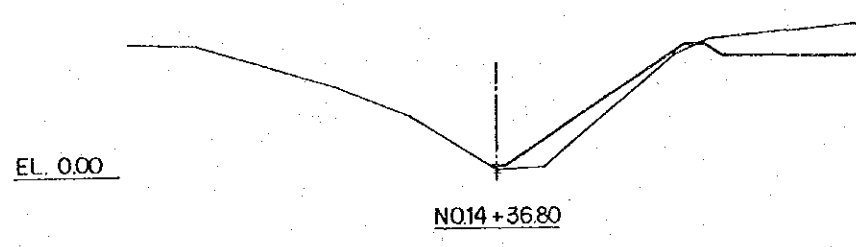
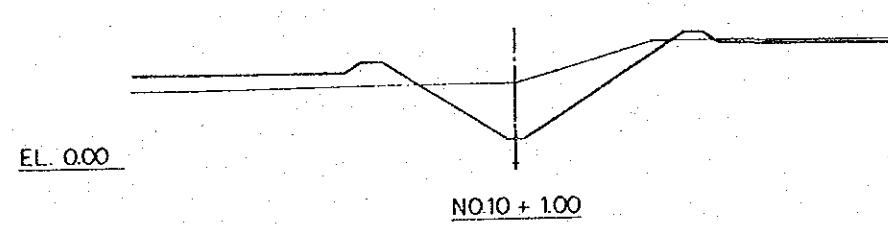
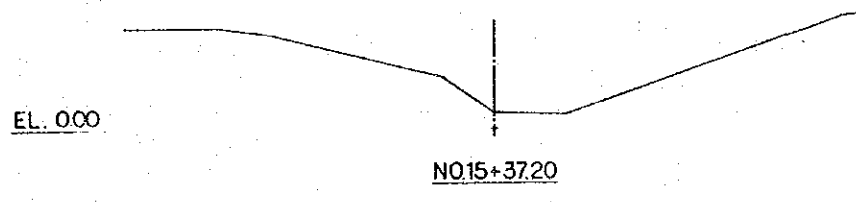
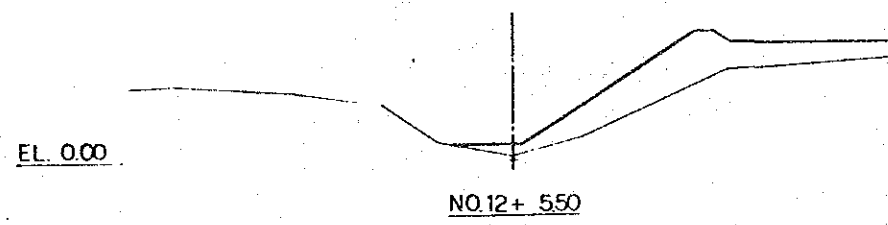
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 DRAINAGE CANAL No.1  
 LONGITUDINAL AND CROSS SECTION (1/2)

JAPAN INTERNATIONAL COOPERATION AGENCY  
 TOKYO JAPAN

DWG. No.  
 2



STATION		NO.8 +51.80	NO.9 +53.20	NO.10 +50.10	NO.11 +50.50	NO.12 +51.70	NO.13 +51.70	NO.14 +56.80	NO.15 +57.20		
RUNNING DISTANCE		43.80	45.20	50.10	50.50	51.70	51.70	56.80	57.20	58.40	66.20
FIELD ELEVATION		2.14	2.14	2.14	1.42 0.10	-0.14	0.02	-0.10	-0.44	0.12	0.06
DESIGN FIELD EL. LHS.		2.49	2.49	2.49	—	—	—	—	—	—	—
DESIGN BED LEVEL		0.78	0.74	0.65	0.45 0.48	0.40	0.35	0.20	0.10	0.10	—
DESIGN FIELD EL. RHS.		2.05	2.32	3.20	3.20	3.20	3.20	3.20	—	—	—
SLOPE		$i=0.0019, L=804.0m$									

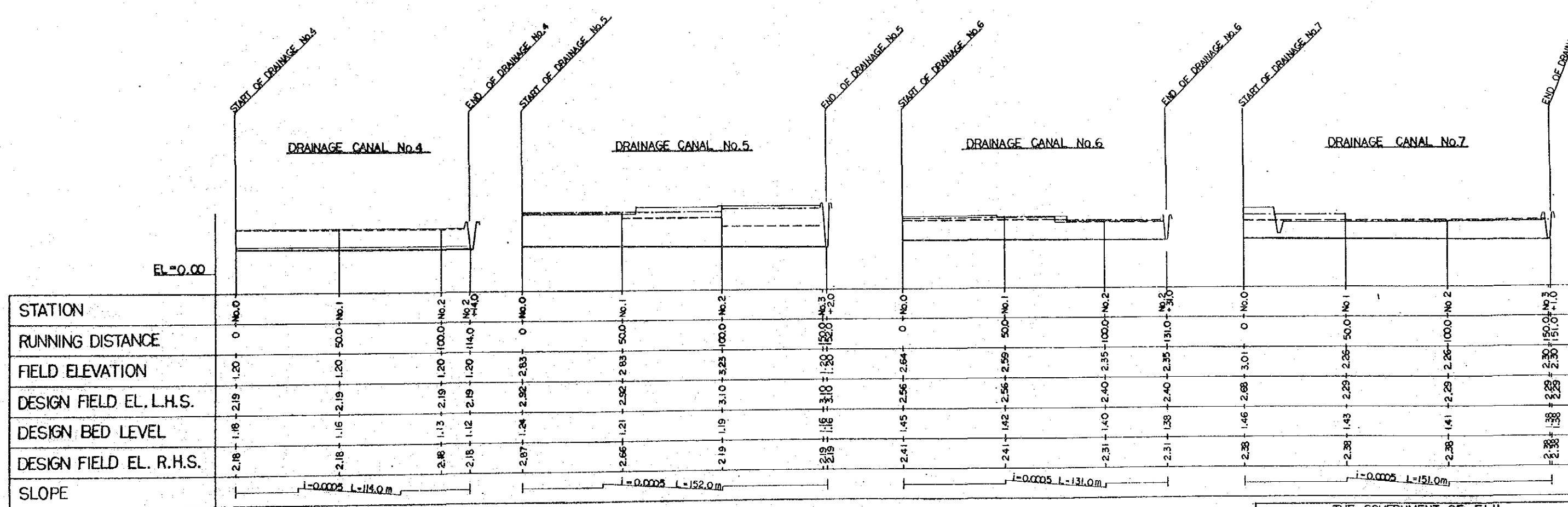
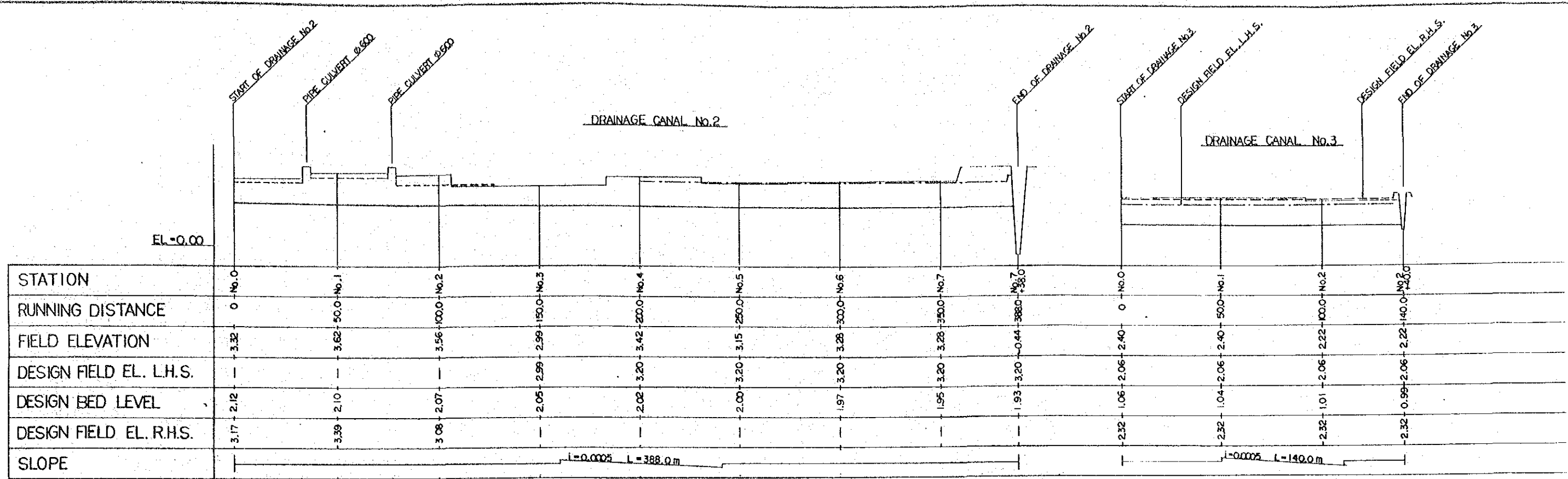


THE GOVERNMENT OF FIJI  
 THE IMPROVEMENT OF RICE CULTIVATION  
 TECHNOLOGY PROJECT

TITLE OF DRAWING NAVUA PROJECT  
 DRAINAGE CANAL No.1  
 LONGITUDINAL AND CROSS SECTION (2/2)

JAPAN INTERNATIONAL COOPERATION AGENCY  
 TOKYO JAPAN

DWG. No.  
 3



THE GOVERNMENT OF FIJI  
 THE IMPROVEMENT OF RICE CULTIVATION  
 TECHNOLOGY PROJECT

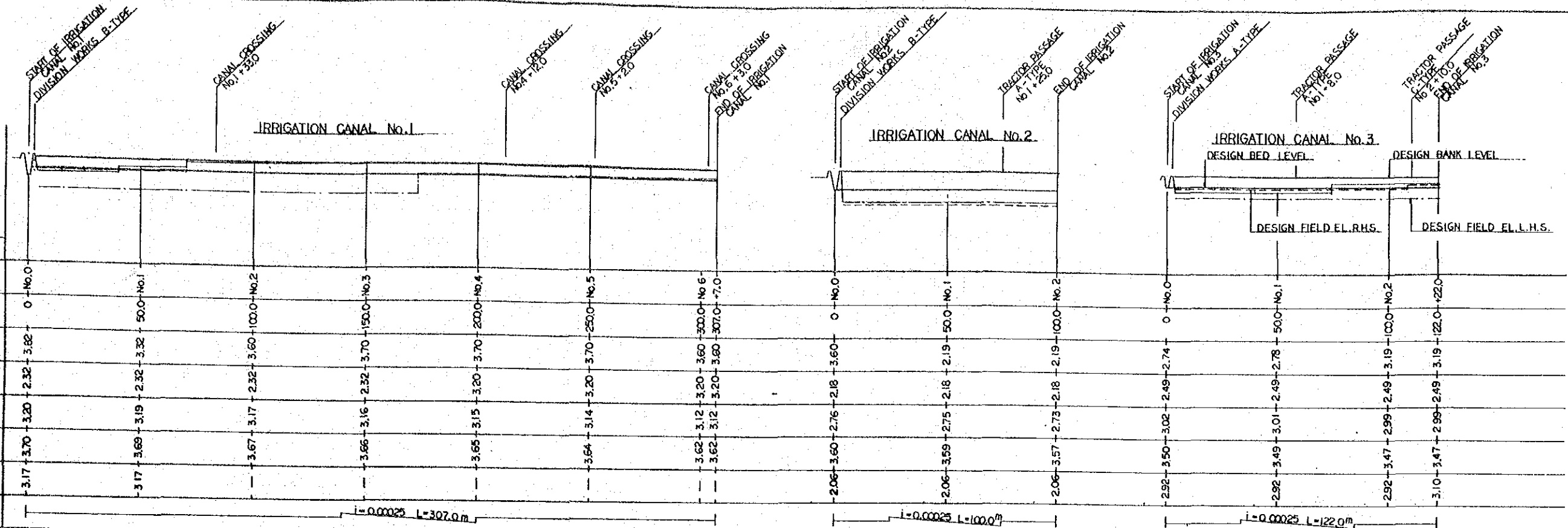
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 LONGITUDINAL SECTION

JAPAN INTERNATIONAL COOPERATION AGENCY  
 TOKYO JAPAN

DWG. No.  
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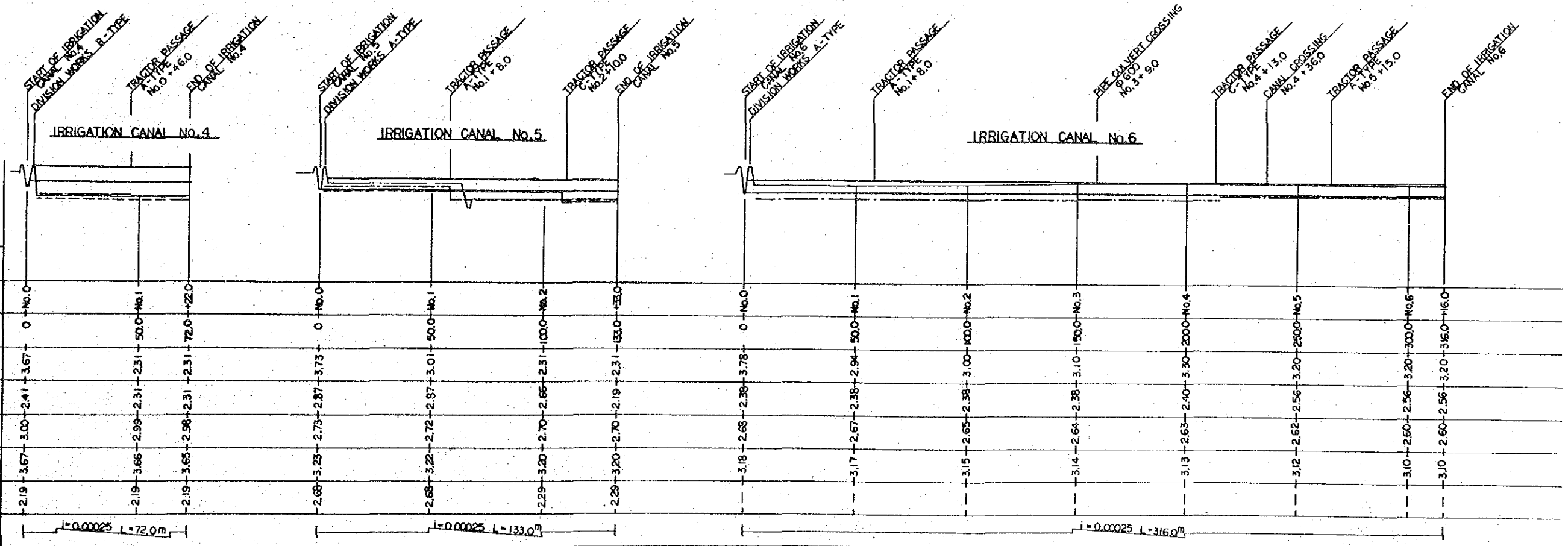
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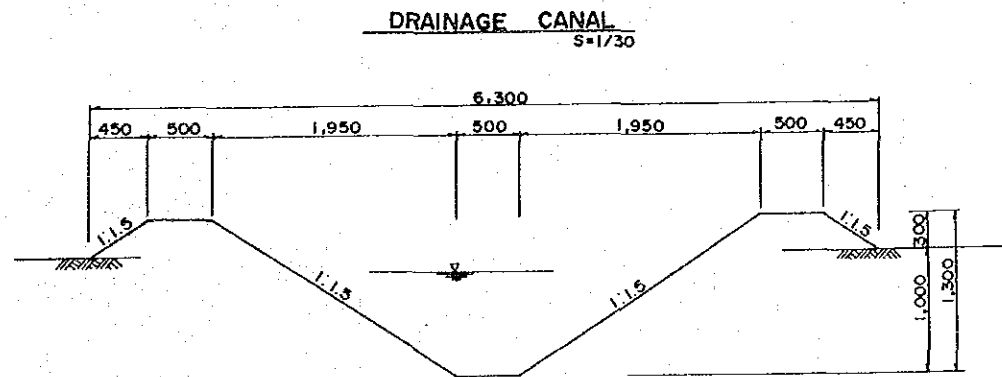
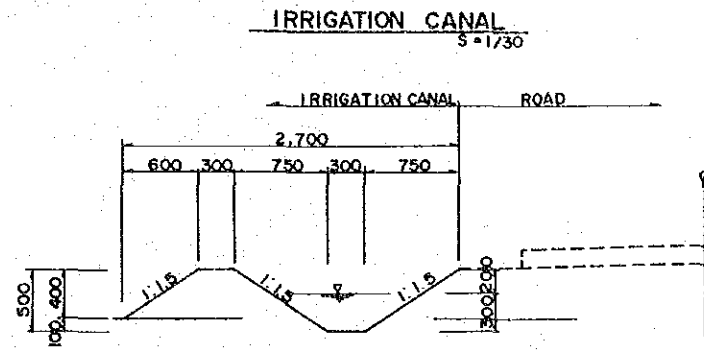
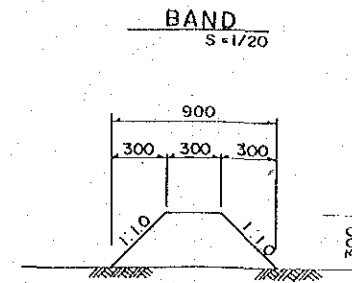
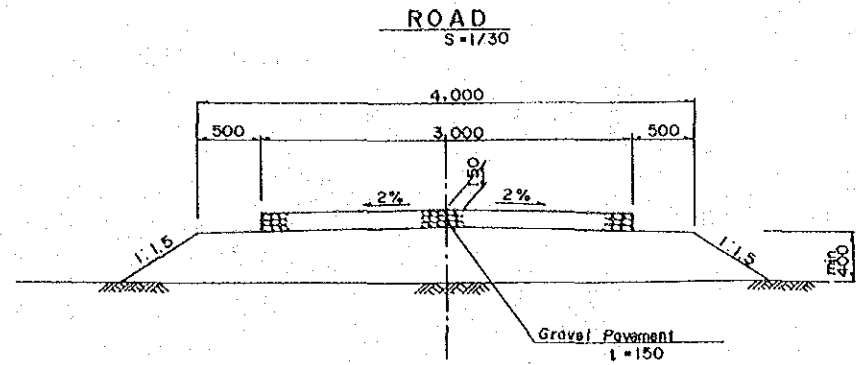
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THE GOVERNMENT OF FIJI  
 THE IMPROVEMENT OF RICE CULTIVATION  
 TECHNOLOGY PROJECT  
 TITLE OF DRAWING NAVUA PROJECT  
 IRRIGATION CANAL No 1 - No 6  
 LONGITUDINAL SECTION  
 JAPAN INTERNATIONAL COOPERATION AGENCY  
 TOKYO JAPAN  
 DWG. No. 5





THE GOVERNMENT OF FIJI  
THE IMPROVEMENT OF RICE CULTIVATION  
TECHNOLOGY PROJECT

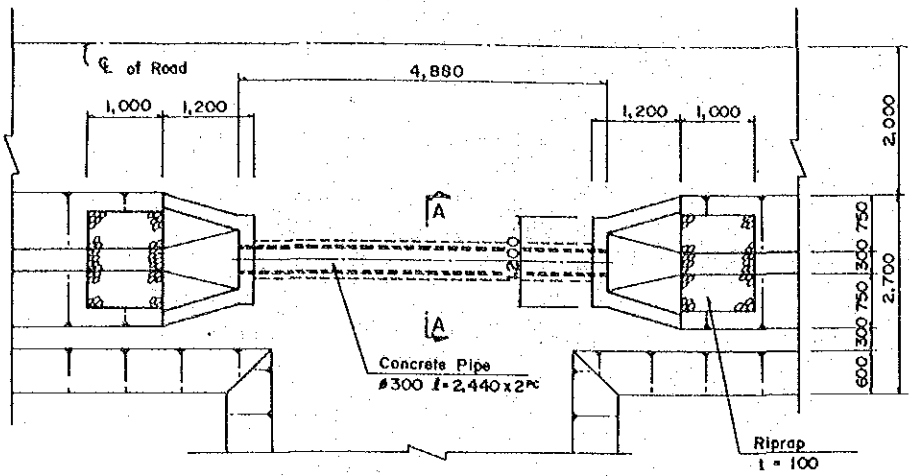
TITLE OF DRAWING NAVUA PROJECT  
TYPICAL SECTIONS OF ROAD, IRRIGATION CANAL,  
DRAINAGE CANAL AND BAND

JAPAN INTERNATIONAL COOPERATION AGENCY  
TOKYO JAPAN

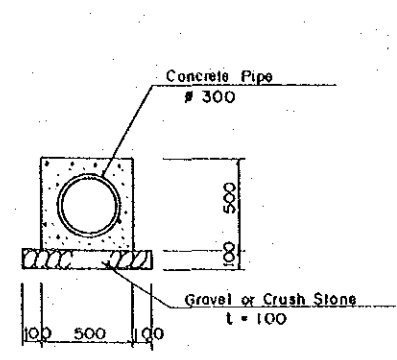
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6

**CANAL CROSSING**  
S=1/750

**PLAN**

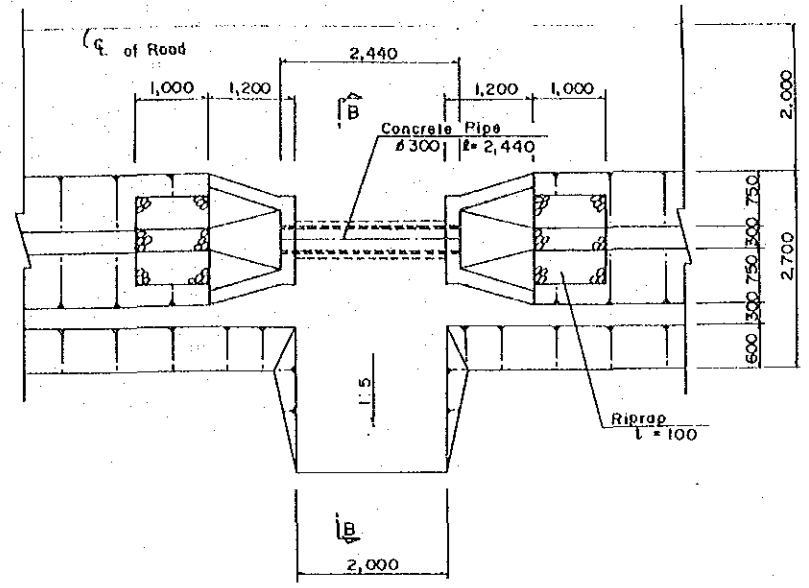


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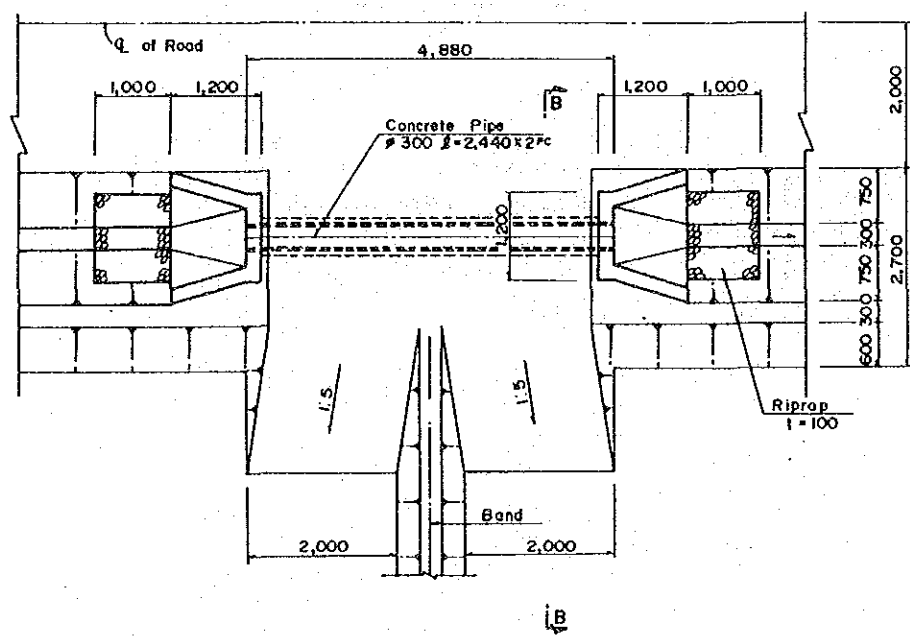
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S=1/750

**PLAN**



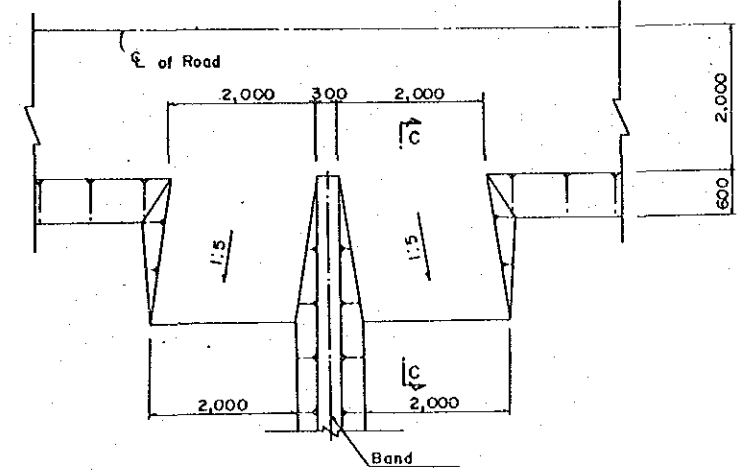
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S=1/750

**PLAN**



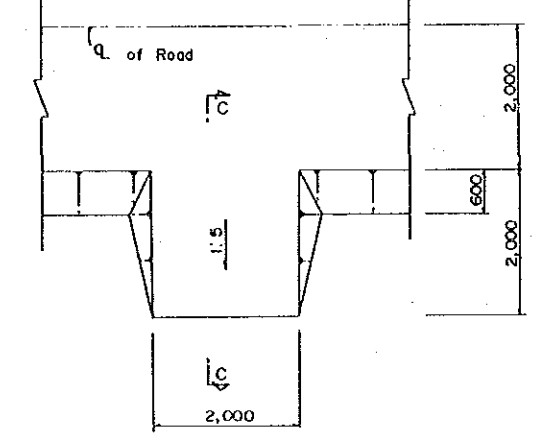
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S=1/750

**PLAN**

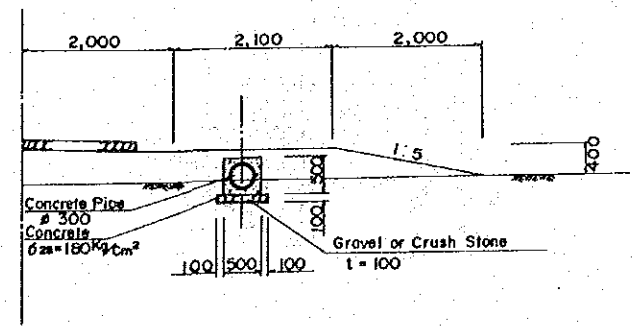


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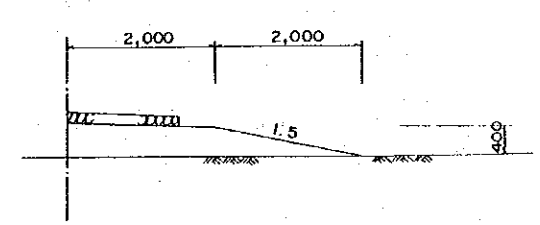
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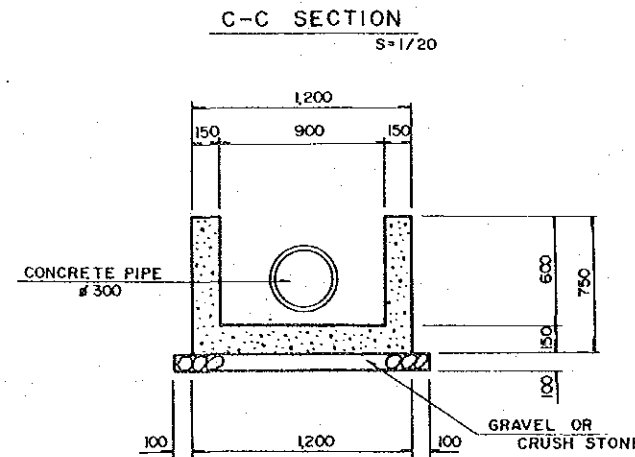
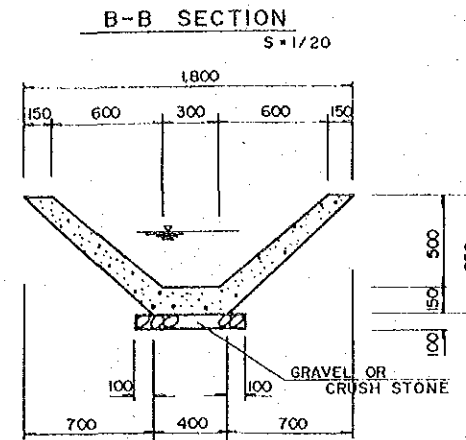
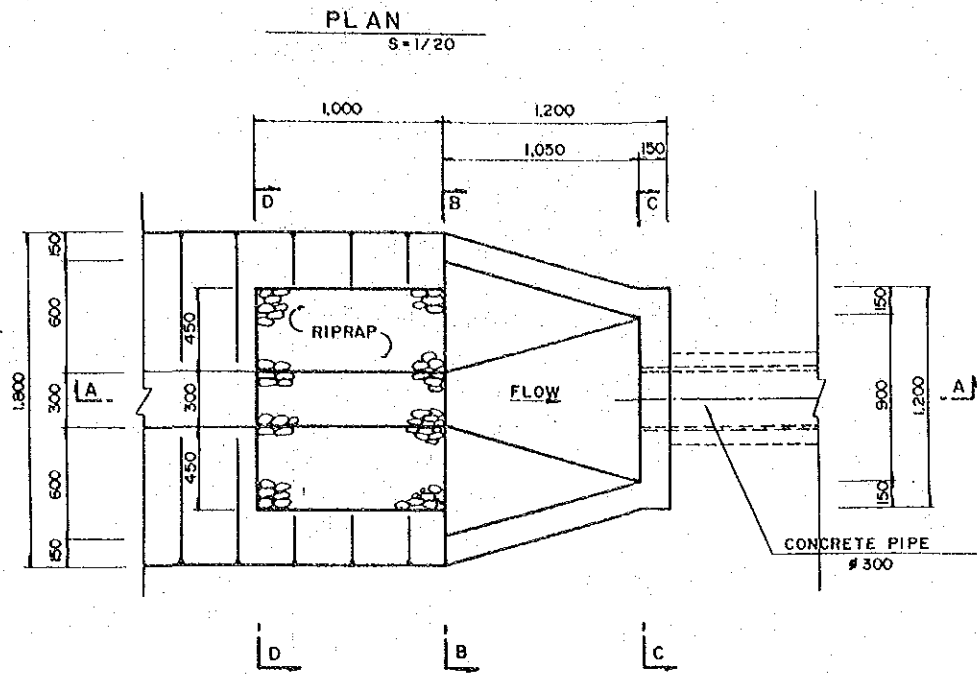
**B-B SECTION**  
S=1/750



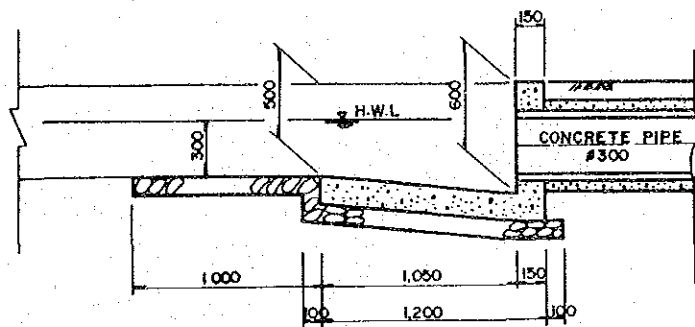
**C-C SECTION**  
S=1/750



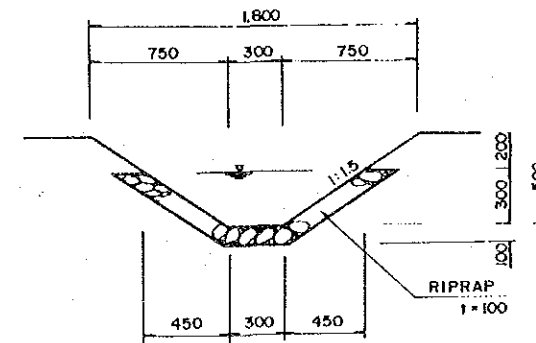
THE GOVERNMENT OF FIJI  
THE IMPROVEMENT OF RICE CULTIVATION  
TECHNOLOGY PROJECT  
TITLE OF DRAWING NAVUA PROJECT  
**CANAL CROSSING AND TRACTOR PASSAGE**  
JAPAN INTERNATIONAL COOPERATION AGENCY  
TOKYO JAPAN  
DWG. NO  
**7**



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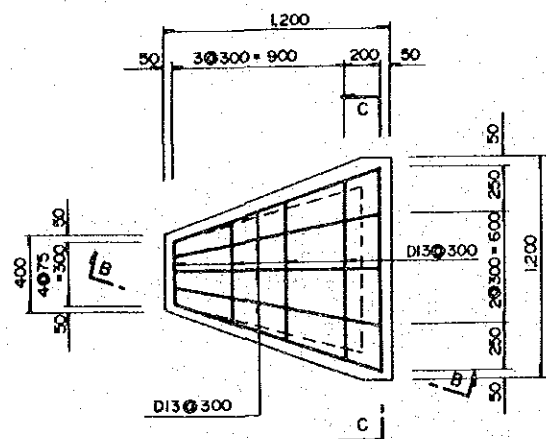


**D-D SECTION**  
S=1/20

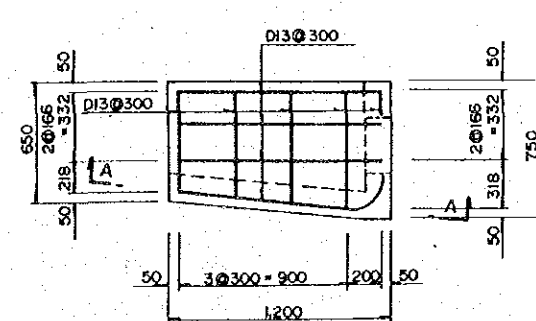


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S=1/20

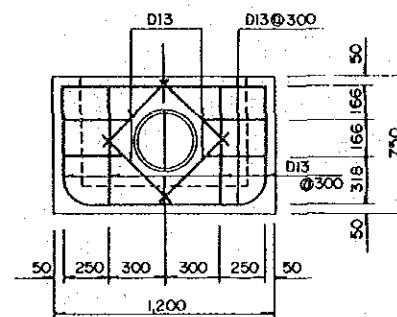
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**B-B SECTION**



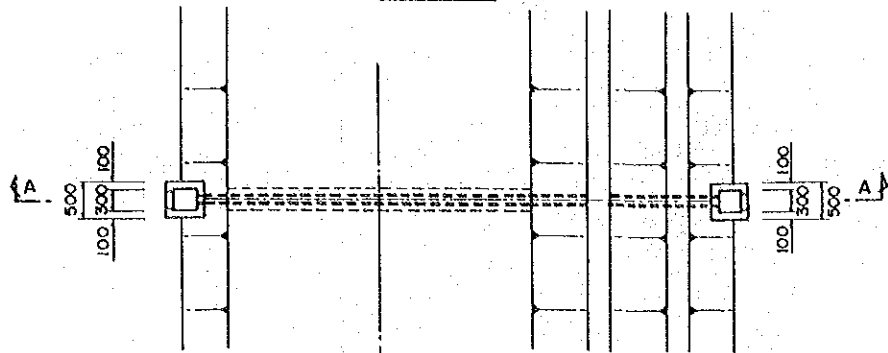
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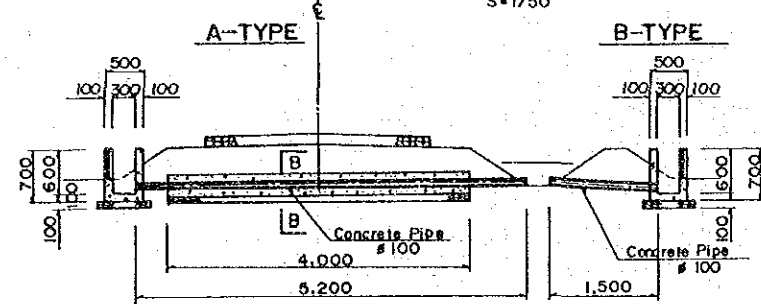
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THE IMPROVEMENT OF RICE CULTIVATION  
TECHNOLOGY PROJECT  
TITLE OF DRAWING NAUVUA PROJECT  
DETAIL OF INLET AND OUTLET FOR CANAL  
CROSSING AND TRACTOR PASSAGE  
JAPAN INTERNATIONAL COOPERATION AGENCY  
TOKYO JAPAN  
DWG NO  
8

**INLET WORKS**  
S=1/750

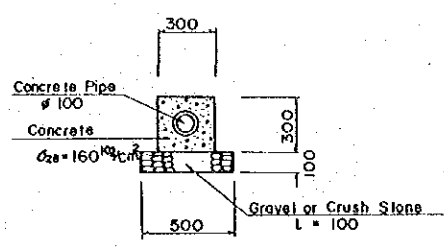
**PLAN**



**A-A SECTION**  
S=1/50

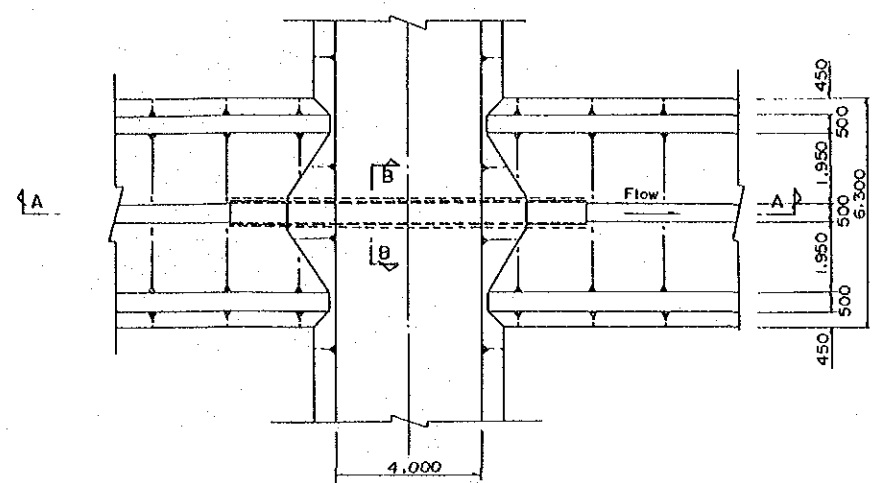


**B-B SECTION**  
S=1/20

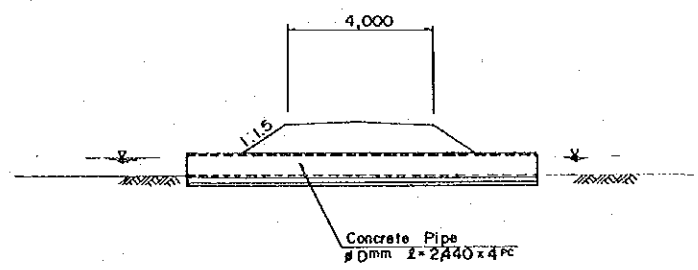


**PIPE CULVERT**  
S=1/100

**PLAN**

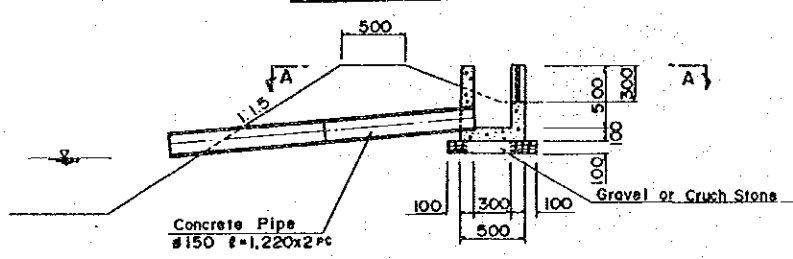


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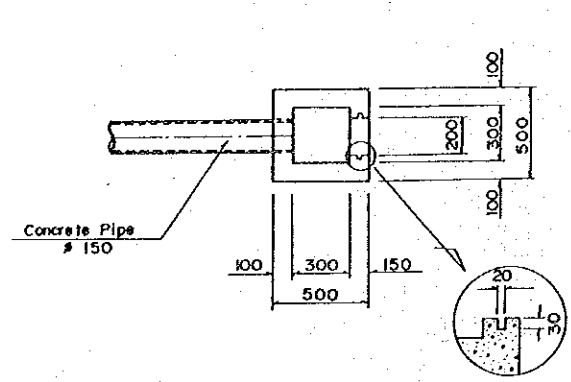


**OUTLET WORKS**  
S=1/30

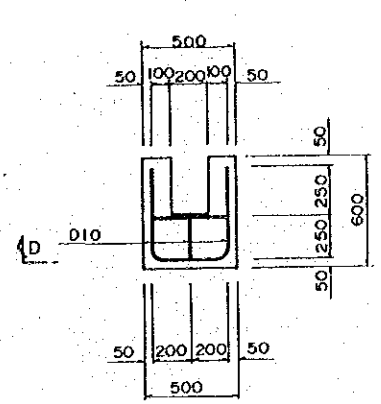
**CROSS SECTION**



**A-A SECTION**  
S=1/20

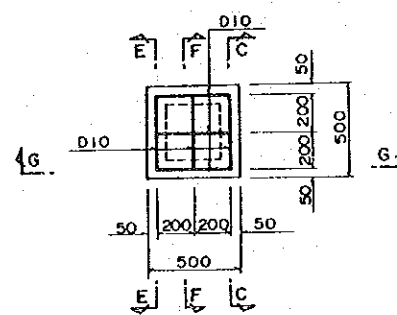


**C-C SECTION**

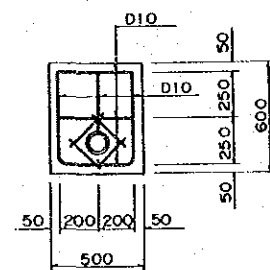


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S=1/20

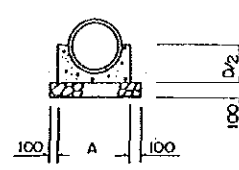
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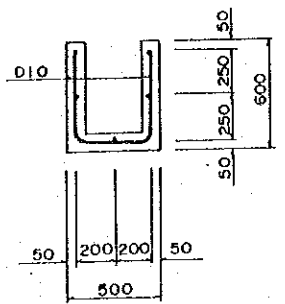
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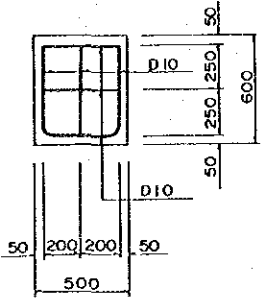
**B-B SECTION**



**F-F SECTION**



**G-G SECTION**



**DIMENSION TABLE**

	Pipe Dia	A(mm)
A-TYPE	1,225	1,500
B-TYPE	600	800

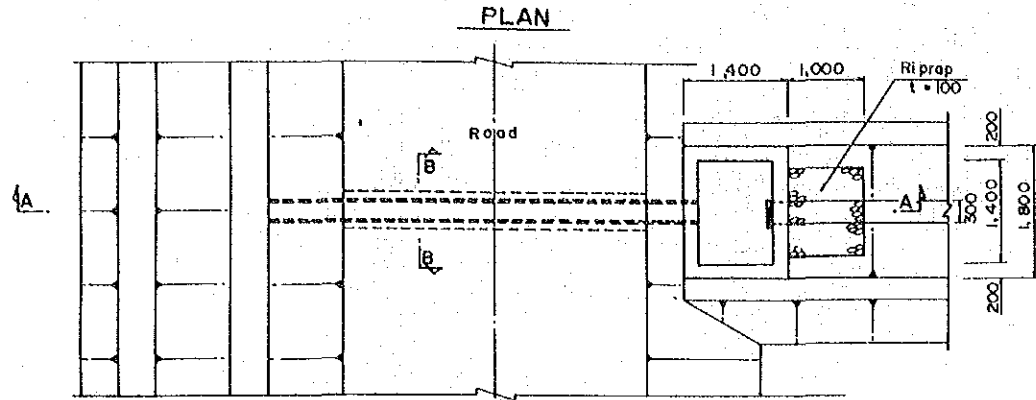
THE GOVERNMENT OF FIJI  
THE IMPROVEMENT OF RICE CULTIVATION  
TECHNOLOGY PROJECT

TITLE OF DRAWING NAVUA PROJECT  
**INLET WORKS, OUTLETWORKS AND PIPE CULVERT**

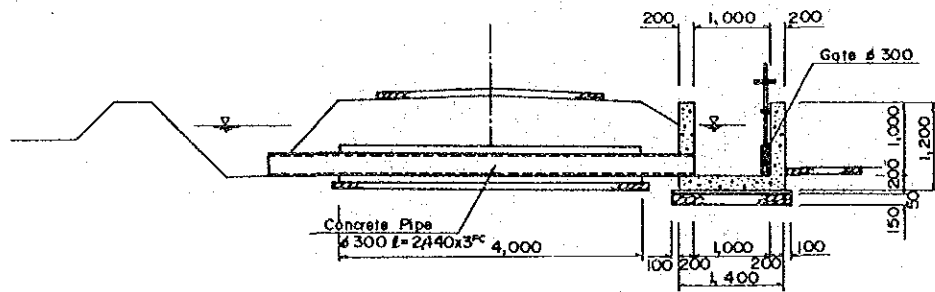
JAPAN INTERNATIONAL COOPERATION AGENCY  
TOKYO JAPAN

DWG NO  
9

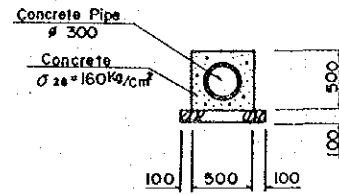
**DIVISION WORKS A-TYPE**  
S=1/50



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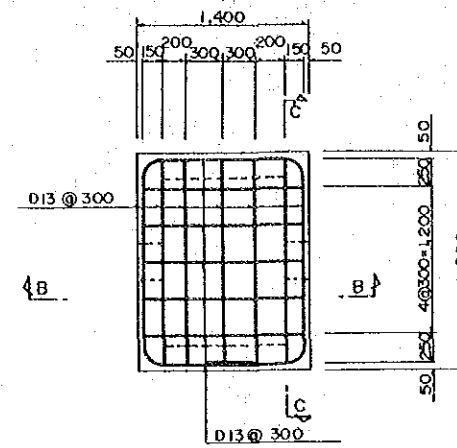


**B-B SECTION**  
S=1/30

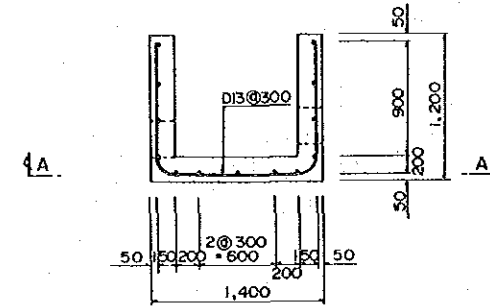


**REINFORCEMENT ARRANGEMENT**  
S=1/30

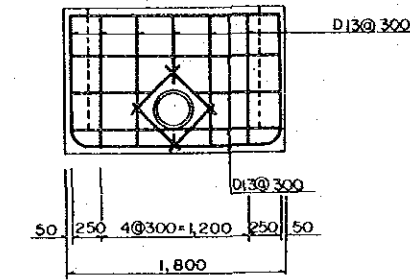
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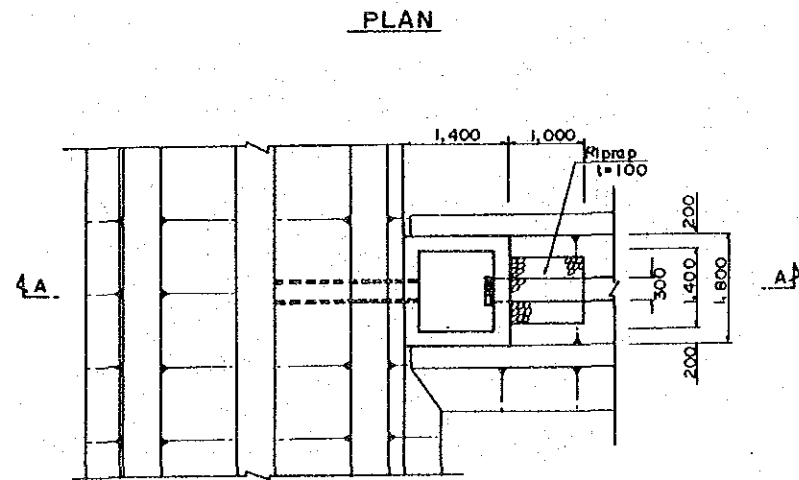
**B-B SECTION**



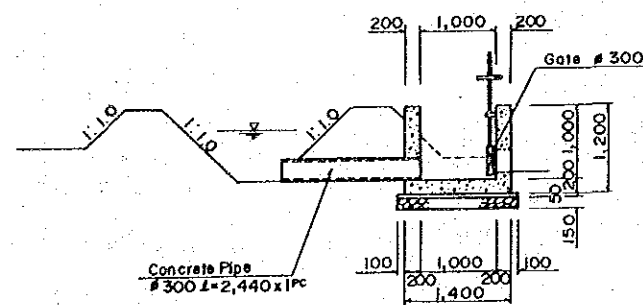
**C-C SECTION**



**DIVISION WORKS B-TYPE**  
S=1/50



**A-A SECTION**



THE GOVERNMENT OF FIJI  
THE IMPROVEMENT OF RICE CULTIVATION  
TECHNOLOGY PROJECT

TITLE OF DRAWING NAVUA PROJECT

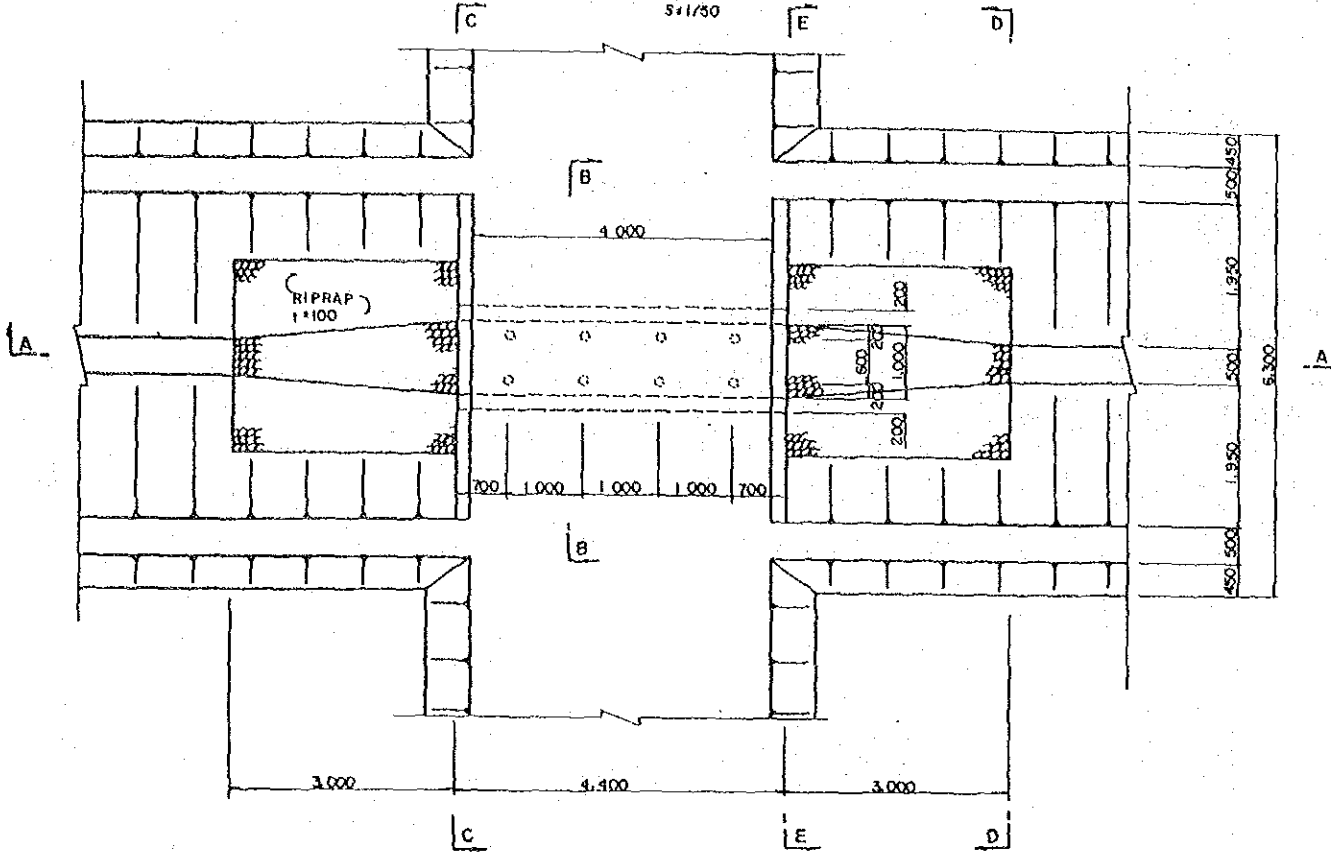
**DIVISION WORKS**

JAPAN INTERNATIONAL COOPERATION AGENCY  
TOKYO JAPAN

DWG. NO  
10

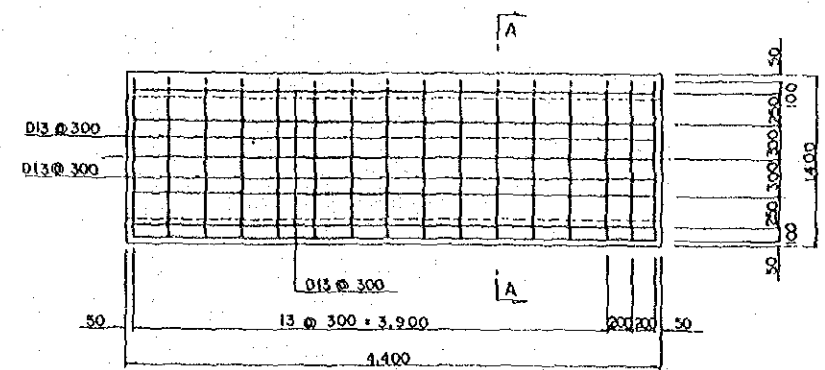
**BOX CULVERT**

**PLAN**  
S: 1/50

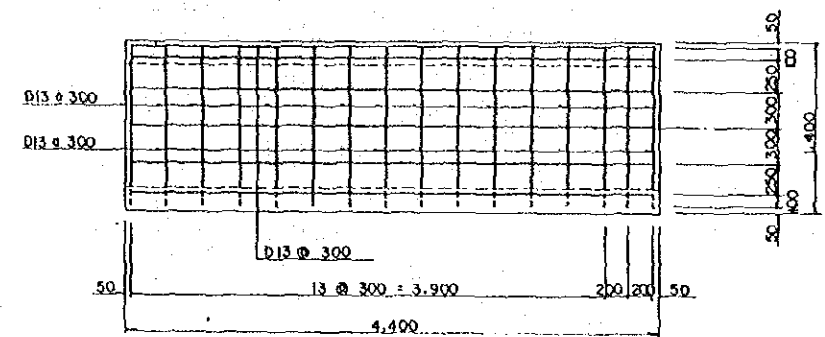


**REINFORCEMENT ARRANGEMENT**  
S: 1/30

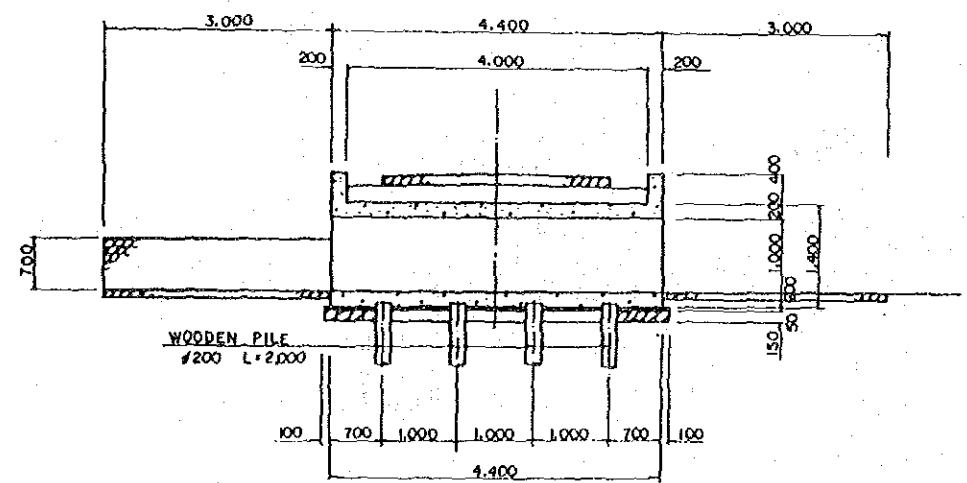
**B-B SECTION**



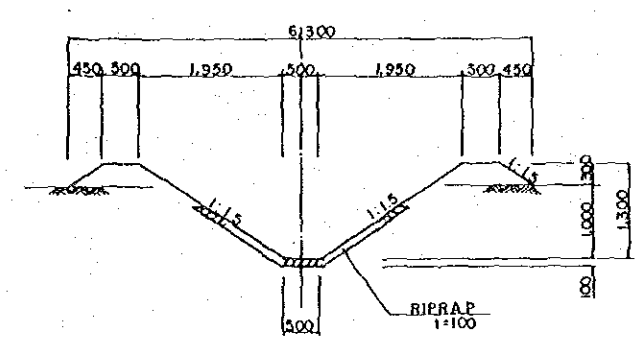
**C-C SECTION**



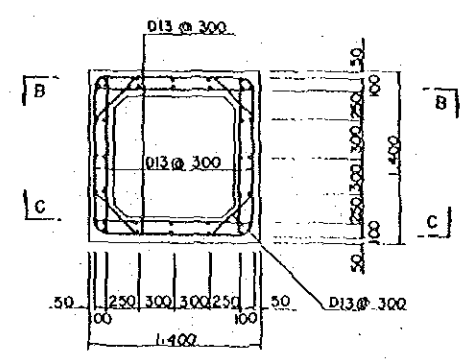
**A-A SECTION**  
S: 1/50



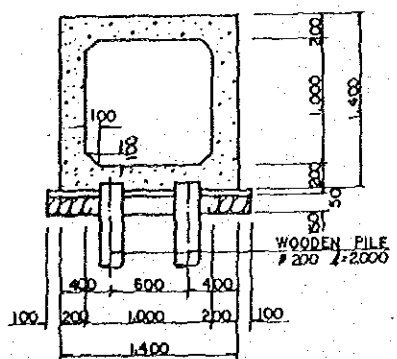
**D-D SECTION**  
S: 1/50



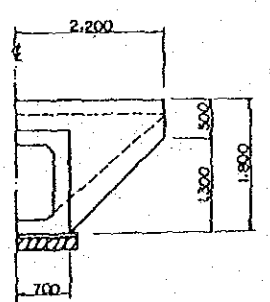
**A-A SECTION**



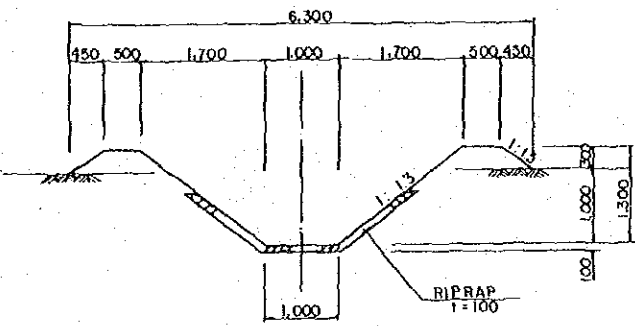
**B-B SECTION**  
S: 1/30



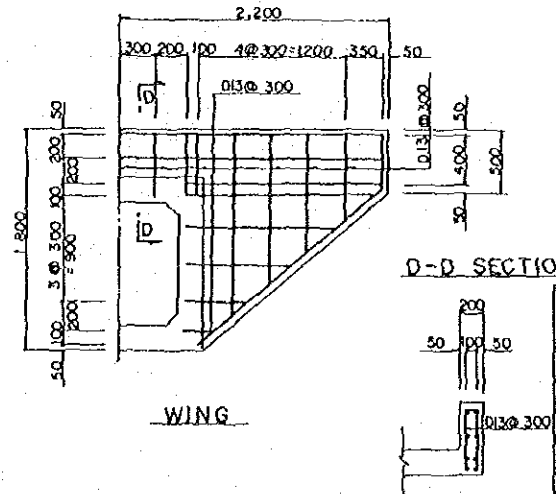
**C-C SECTION**  
S: 1/50



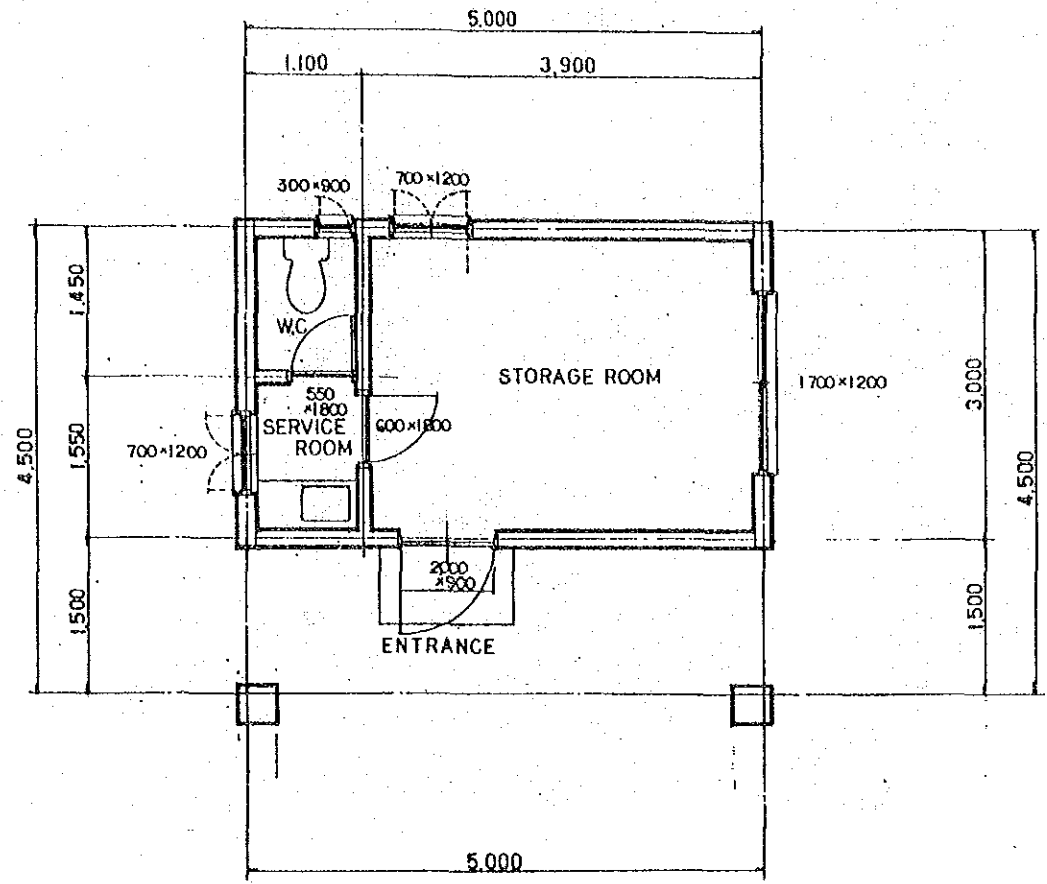
**E-E SECTION**  
S: 1/50



**D-D SECTION**

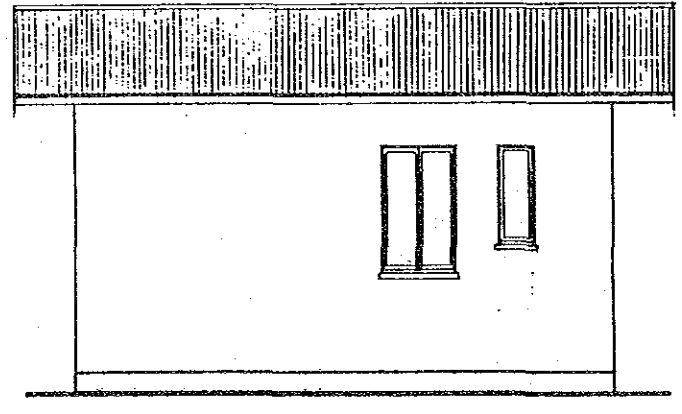
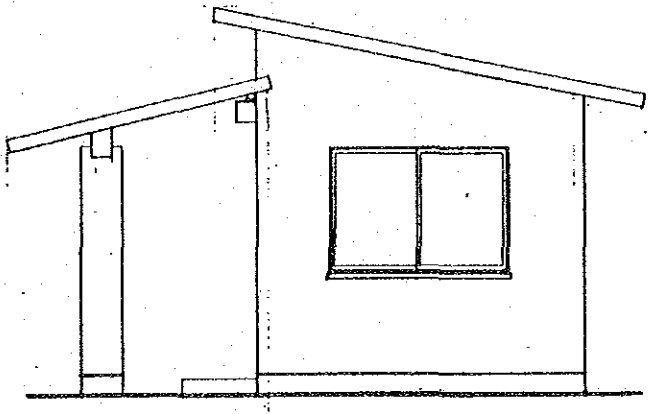
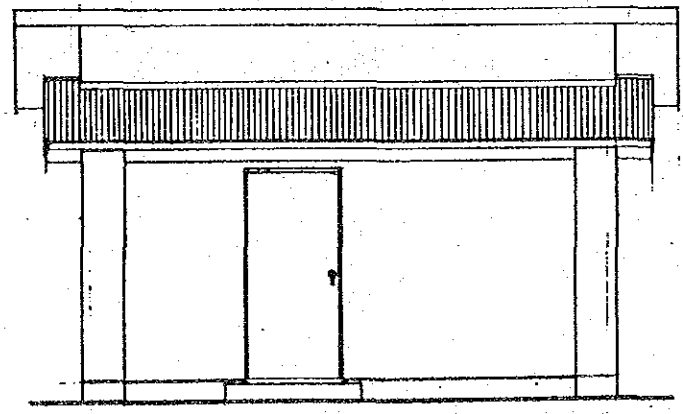
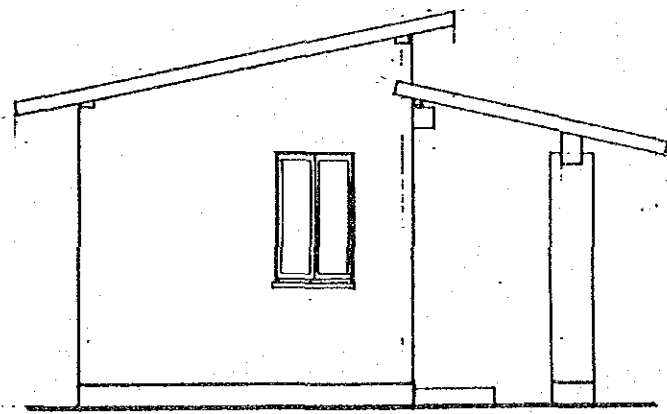


THE GOVERNMENT OF FIJI  
THE IMPROVEMENT OF RICE CULTIVATION  
TECHNOLOGY PROJECT  
TITLE OF DRAWING NAVUA PROJECT  
**BOX CULVERT**  
JAPAN INTERNATIONAL COOPERATION AGENCY  
TOKYO JAPAN  
DWG NO  
11



Storage room Interior finish

Floor	Floor Concrete Finish
Baseboard	Emulsion Paint
Wall	Emulsion paint on pre mixed plaster
Celing	
Remark	



Exterior finish

Roof	Corrugated asbestos sheet
Wall	Emulsion paint
Remark	

THE GOVERNMENT OF FIJI  
 THE IMPROVEMENT OF RICE CULTIVATION  
 TECHNOLOGY PROJECT

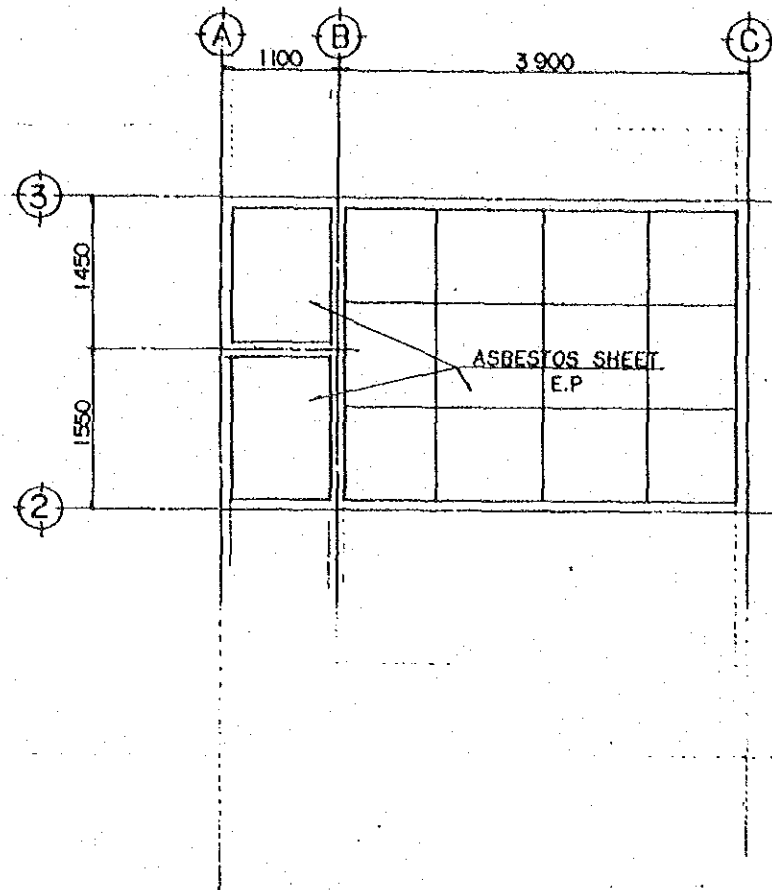
TITLE OF DRAWING NAVUA PROJECT

**STORAGE HOUSE (1)**

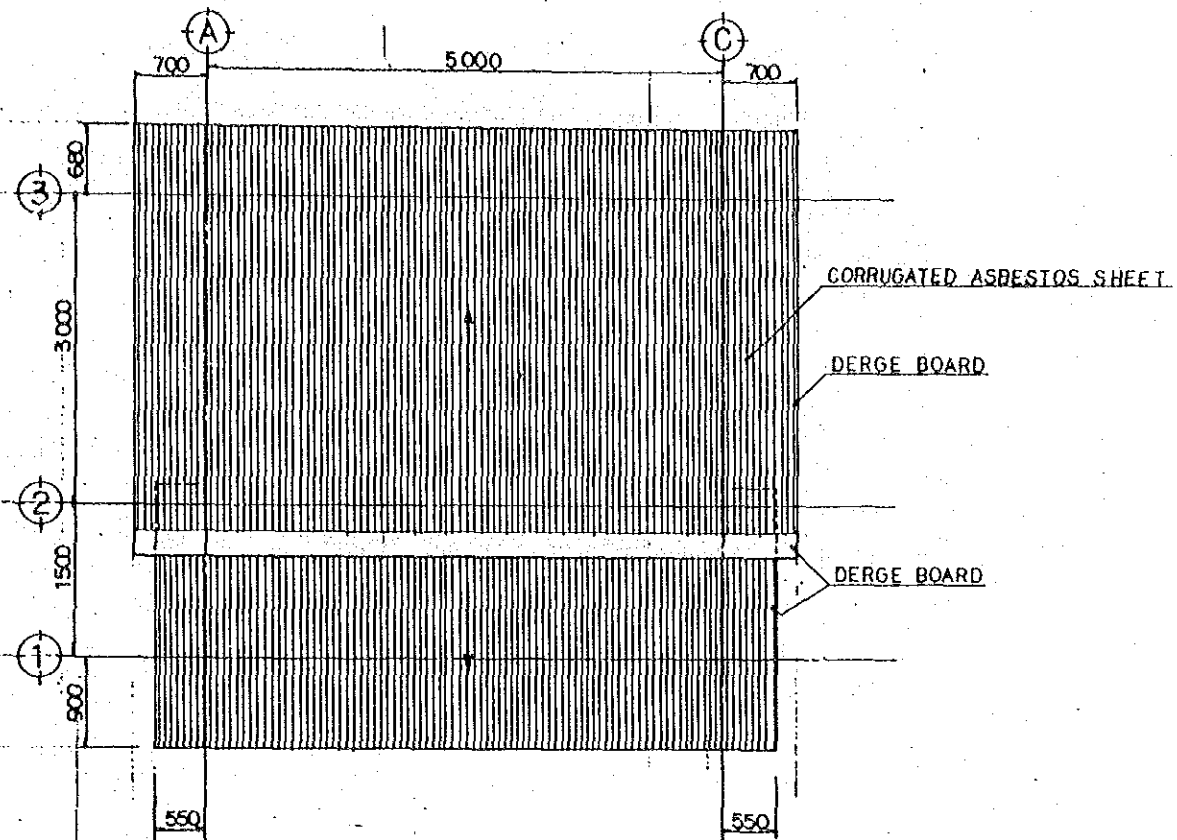
JAPAN INTERNATIONAL COOPERATION AGENCY  
 TOKYO JAPAN

DWG. NO  
 12

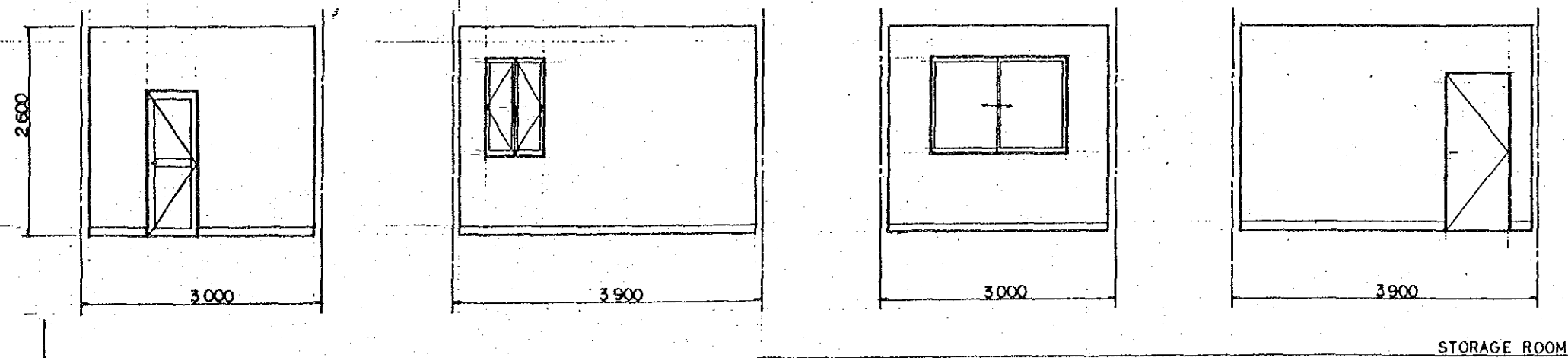
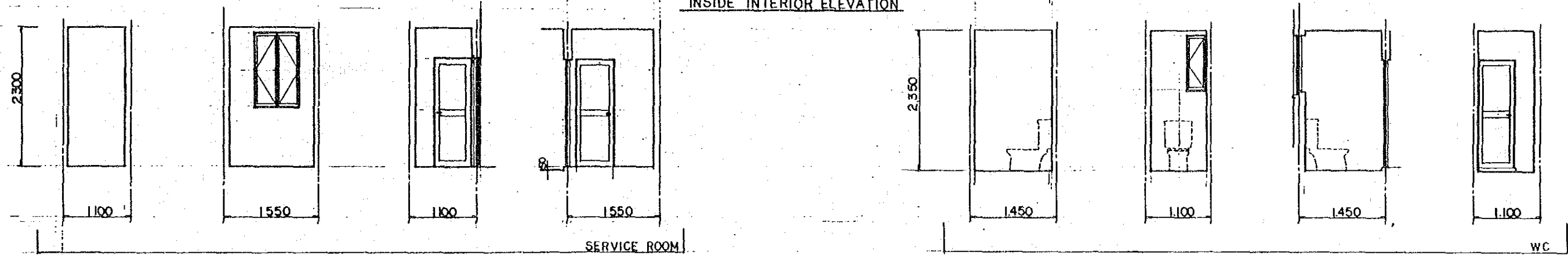
CEILING PLAN



ROOFING PLAN



INSIDE INTERIOR ELEVATION



THE GOVERNMENT OF FIJI  
 THE IMPROVEMENT OF RICE CULTIVATION  
 TECHNOLOGY PROJECT

TITLE OF DRAWING NAVUA PROJECT

**STORAGE HOUSE (2)**

JAPAN INTERNATIONAL COOPERATION AGENCY  
 TOKYO JAPAN

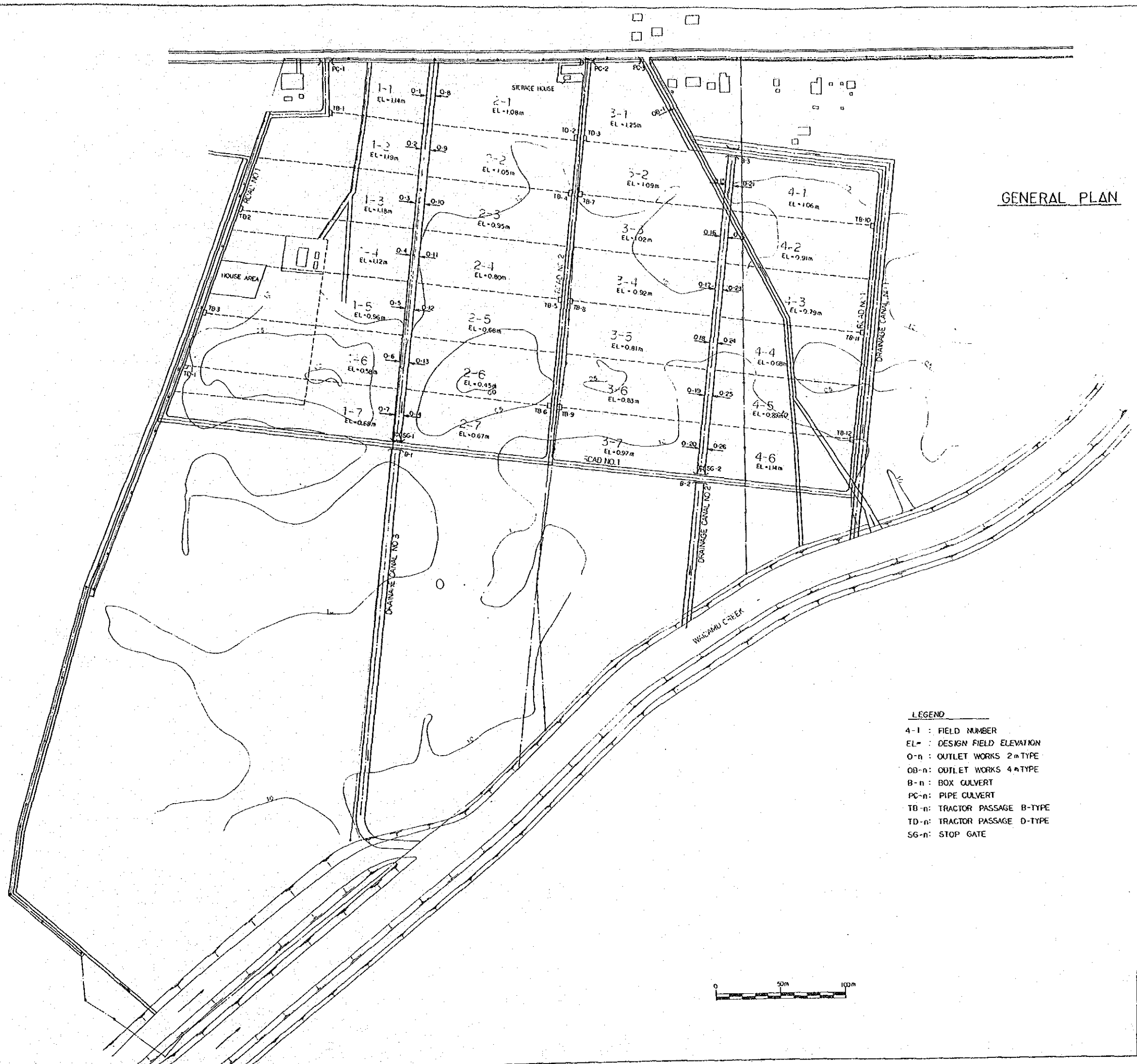
DWG. NO  
 13









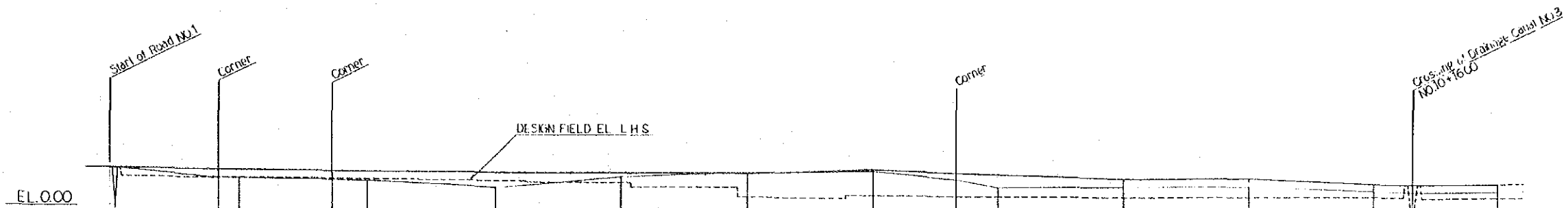


GENERAL PLAN

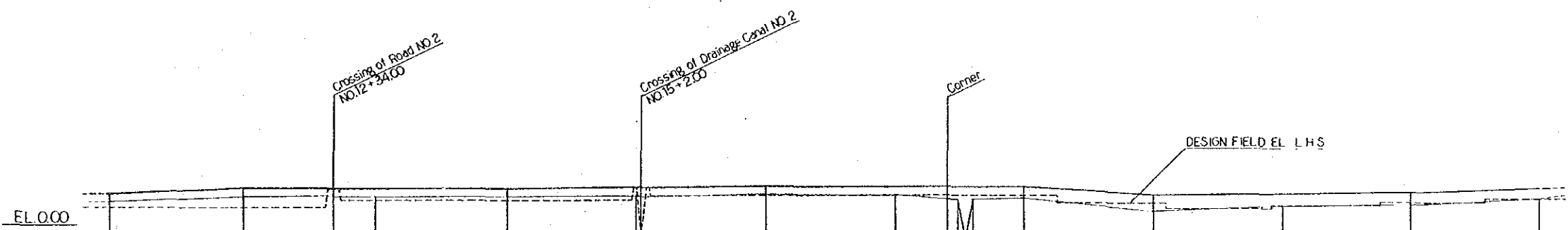
- LEGEND**
- 4-1 : FIELD NUMBER
  - EL- : DESIGN FIELD ELEVATION
  - O-n : OUTLET WORKS 2m TYPE
  - OB-n : OUTLET WORKS 4m TYPE
  - B-n : BOX CULVERT
  - PC-n : PIPE CULVERT
  - TB-n : TRACTOR PASSAGE B-TYPE
  - TD-n : TRACTOR PASSAGE D-TYPE
  - SG-n : STOP GATE



THE GOVERNMENT OF FIJI	
THE IMPROVEMENT OF RICE CULTIVATION TECHNOLOGY PROJECT	
TITLE OF DRAWING	HAUSORI PROJECT
GENERAL PLAN	
JAPAN INTERNATIONAL COOPERATION AGENCY	DWG. NO.
TOYO JAPAN	17

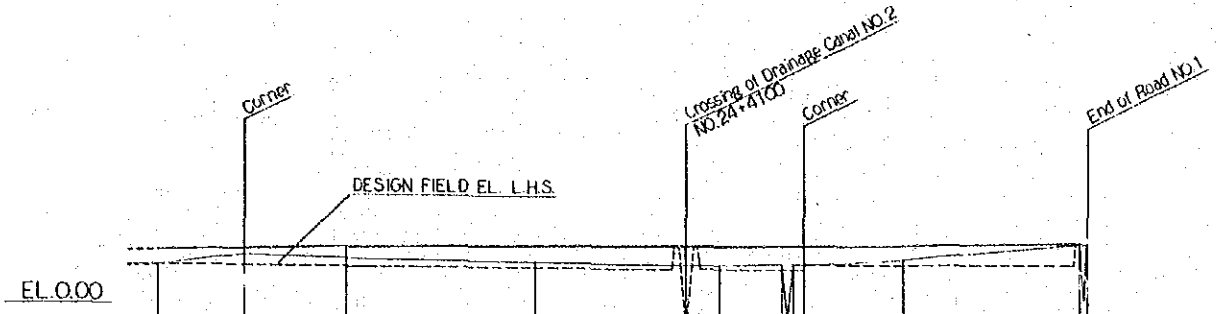


STATION	0.00 NO. 0	42.00 NO. 1	86.00 NO. 2	130.00 NO. 3	174.00 NO. 4	218.00 NO. 5	262.00 NO. 6	306.00 NO. 7	350.00 NO. 8	394.00 NO. 9	438.00 NO. 10	482.00 NO. 11
RUNNING DISTANCE	0.00	42.00	86.00	130.00	174.00	218.00	262.00	306.00	350.00	394.00	438.00	482.00
FIELD ELEVATION	1.48	1.16	1.15	0.89	1.35	1.51	1.63	1.34	1.09	1.09	0.91	0.88
DESIGN FIELD EL. L.H.S.		1.19	1.19	1.19	1.12	0.69	0.69	0.69	0.69	0.69	0.69	0.67
DESIGN ROAD LEVEL	1.48	1.48	1.48	1.48	1.48	1.48	1.70	1.55	1.40	1.40	1.20	1.20
DESIGN FIELD EL. R.H.S.												
SLOPE	1:4.5	LEVEL L=2500m				1:0.004 L=1000m	1:0.003 L=1000m	LEVEL L=5000m		1:0.004 L=5000m	LEVEL L=5000m	

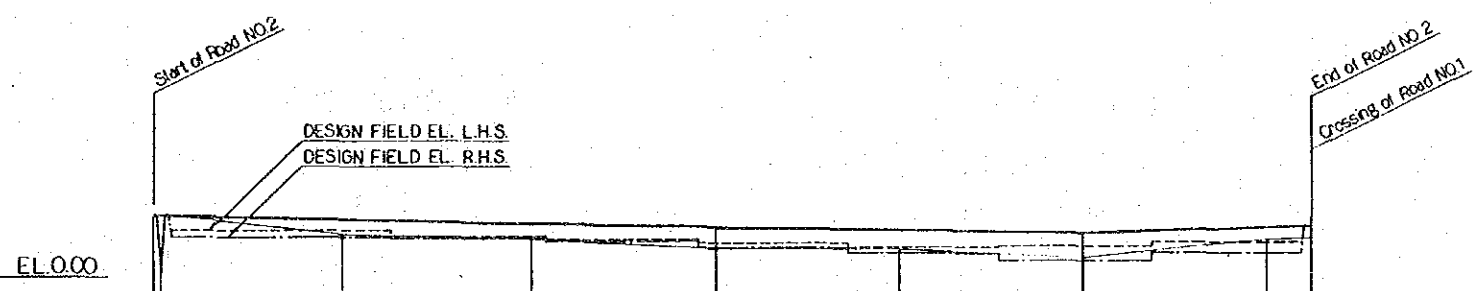


STATION	482.00 NO. 11	526.00 NO. 12	570.00 NO. 13	614.00 NO. 14	658.00 NO. 15	702.00 NO. 16	746.00 NO. 17	790.00 NO. 18	834.00 NO. 19	878.00 NO. 20	922.00 NO. 21	966.00 NO. 22
RUNNING DISTANCE	482.00	526.00	570.00	614.00	658.00	702.00	746.00	790.00	834.00	878.00	922.00	966.00
FIELD ELEVATION	0.89	1.07	1.09	1.09	1.11	1.20	1.18	1.06	0.57	0.76	0.64	1.03
DESIGN FIELD EL. L.H.S.	0.67	0.67	0.67	0.97	0.97	1.14	1.14	1.14	0.99	0.79	0.91	1.06
DESIGN ROAD LEVEL	1.20	1.40	1.40	1.40	1.45	1.50	1.50	1.50	1.20	1.25	1.30	1.45
DESIGN FIELD EL. R.H.S.												
SLOPE	1:0.004 L=5000m	LEVEL L=10000m		1:0.001 L=1000m	LEVEL L=10000m		1:0.006 L=5000m	1:0.001 L=10000m	LEVEL L=10000m		1:0.003 L=10000m	

THE GOVERNMENT OF FIJI  
 THE IMPROVEMENT OF RICE CULTIVATION  
 TECHNOLOGY PROJECT  
 TITLE OF DRAWING NAUSORI PROJECT  
 ROAD No.1  
 LONGITUDINAL SECTION  
 JAPAN INTERNATIONAL COOPERATION AGENCY  
 TOKYO JAPAN

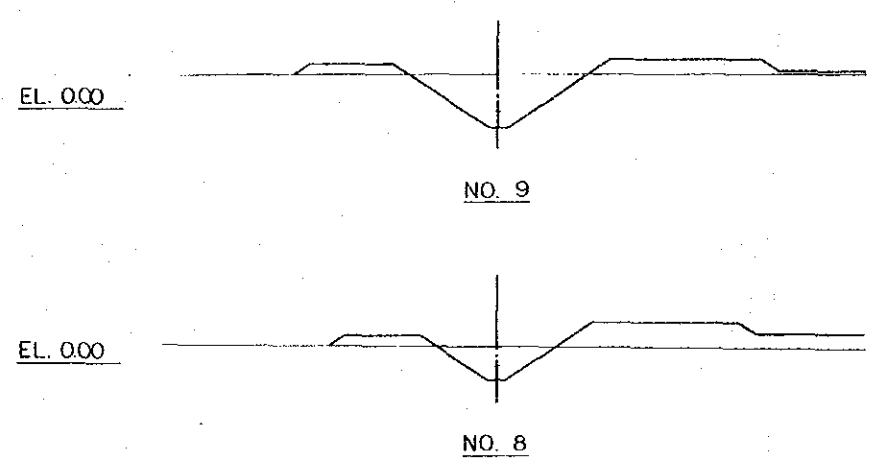
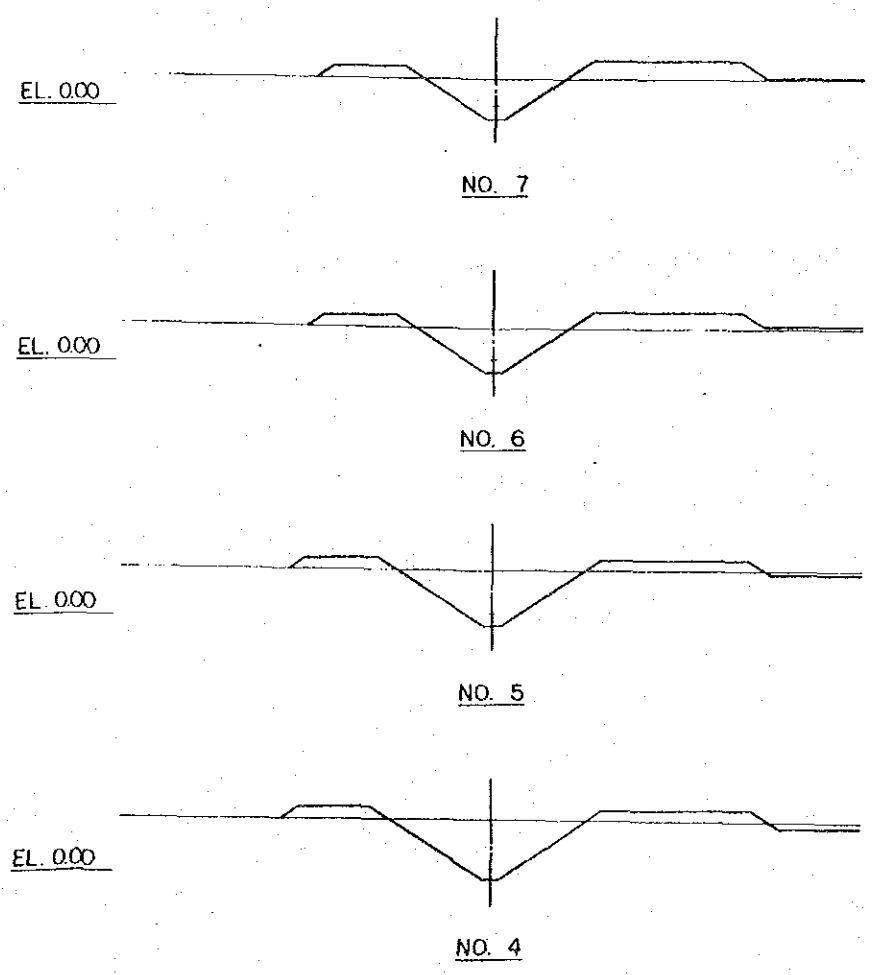
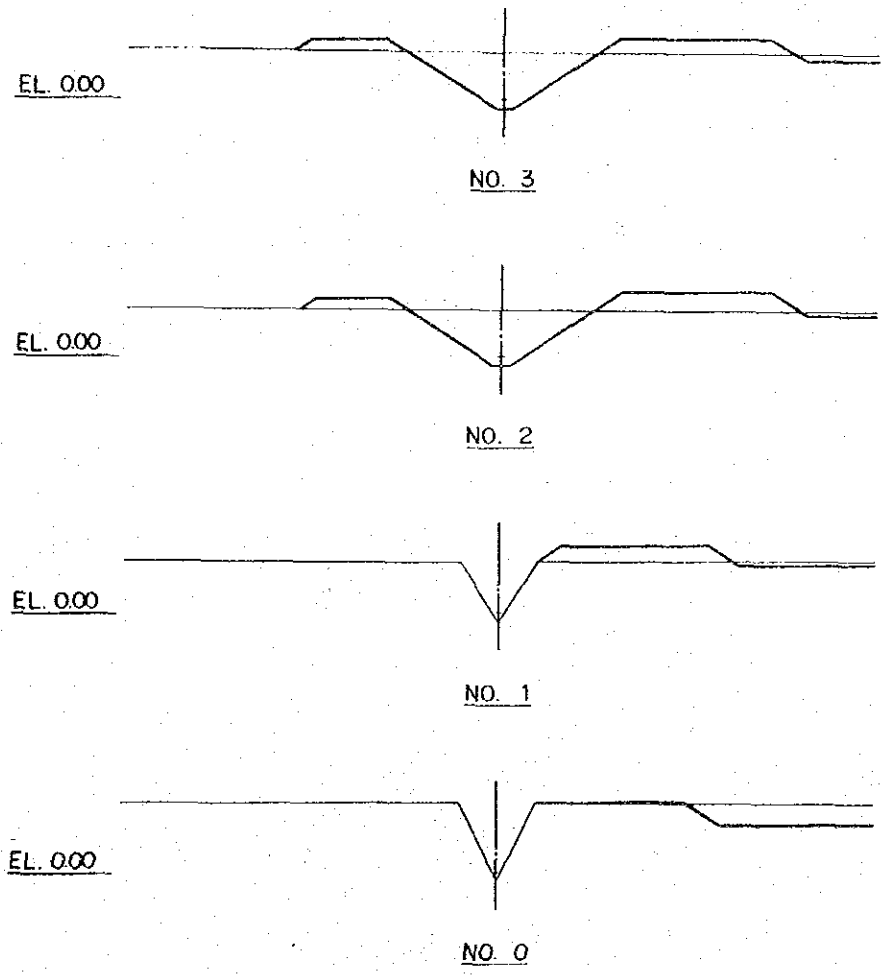
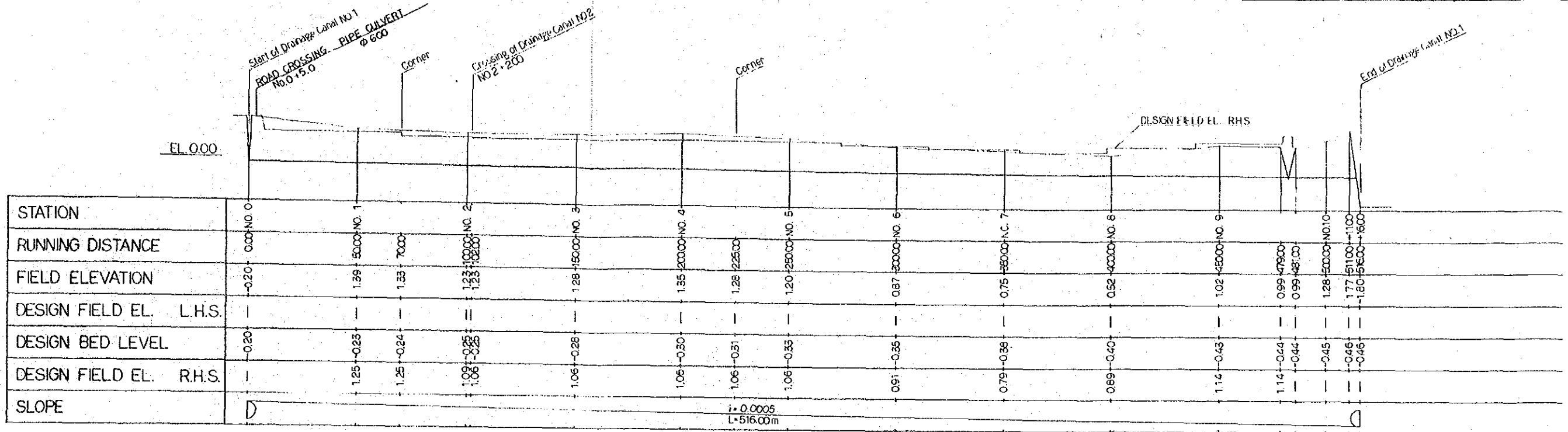


STATION	122	123	124	125	126	127
RUNNING DISTANCE	0000	12300	24000	36000	48000	60000
FIELD ELEVATION	1.03	1.35	1.25	1.20	1.40	1.85
DESIGN FIELD EL. L.H.S.	1.06	1.06	1.05	1.05	1.25	1.25
DESIGN ROAD LEVEL	1.45	1.52	1.60	1.67	1.72	1.86
DESIGN FIELD EL. R.H.S.						
SLOPE	i=0.003 L=1000.0m		i=0.0013 L=2000.0m			i=0.006



STATION	0	1	2	3	4	5	6
RUNNING DISTANCE	000	5000	10000	15000	20000	25000	30000
FIELD ELEVATION	1.63	1.15	1.05	0.75	0.72	0.51	1.03
DESIGN FIELD EL. L.H.S.		1.25	1.09	0.92	0.81	0.83	0.97
DESIGN ROAD LEVEL	1.63	1.54	1.44	1.35	1.28	1.20	1.36
DESIGN FIELD EL. R.H.S.		1.08	1.05	0.80	0.66	0.45	0.67
SLOPE	i=0.001	i=0.0019 L=1500.0m		i=0.0015 L=1000.0m		i=0.0029 L=70.00m	

THE GOVERNMENT OF FIJI  
 THE IMPROVEMENT OF RICE CULTIVATION  
 TECHNOLOGY PROJECT  
 TITLE OF DRAWING NAUSORI PROJECT  
 ROAD No.1 AND ROAD No.2  
 LONGITUDINAL SECTION  
 JAPAN INTERNATIONAL COOPERATION AGENCY  
 TOKYO JAPAN

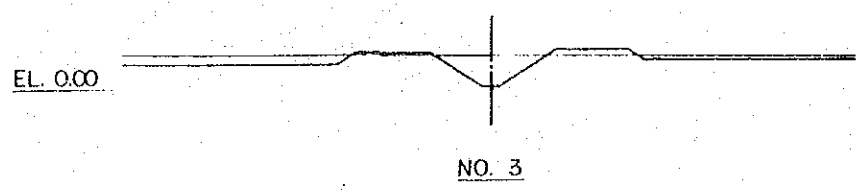
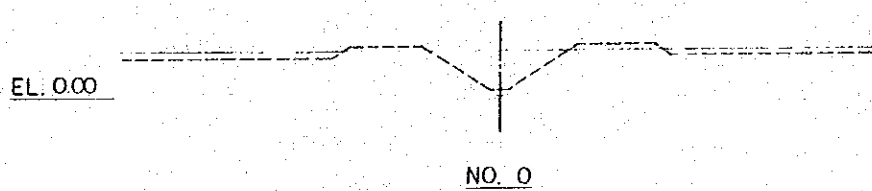
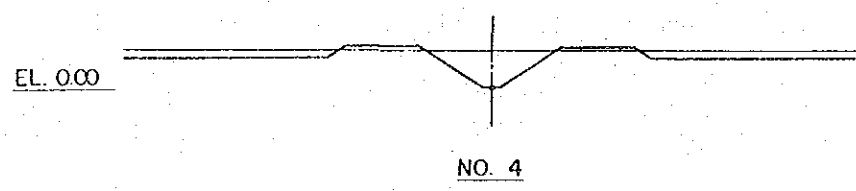
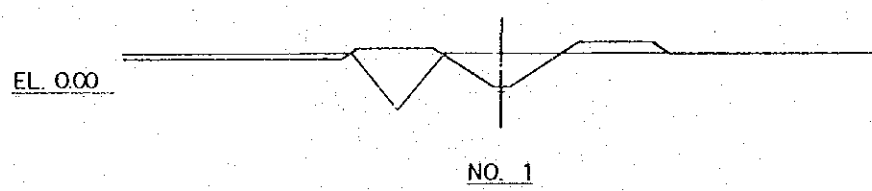
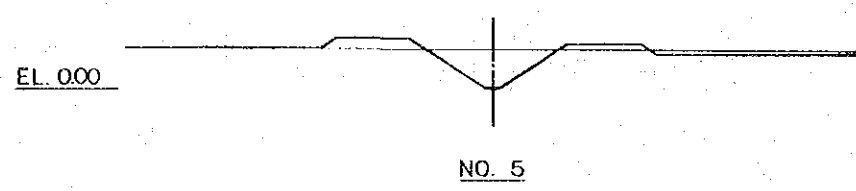
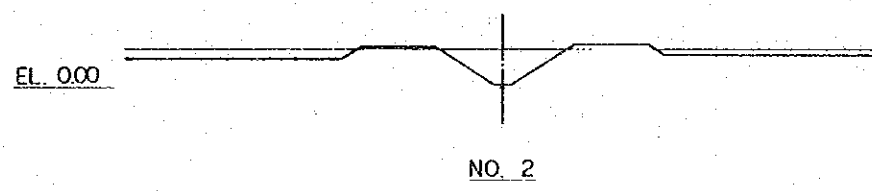
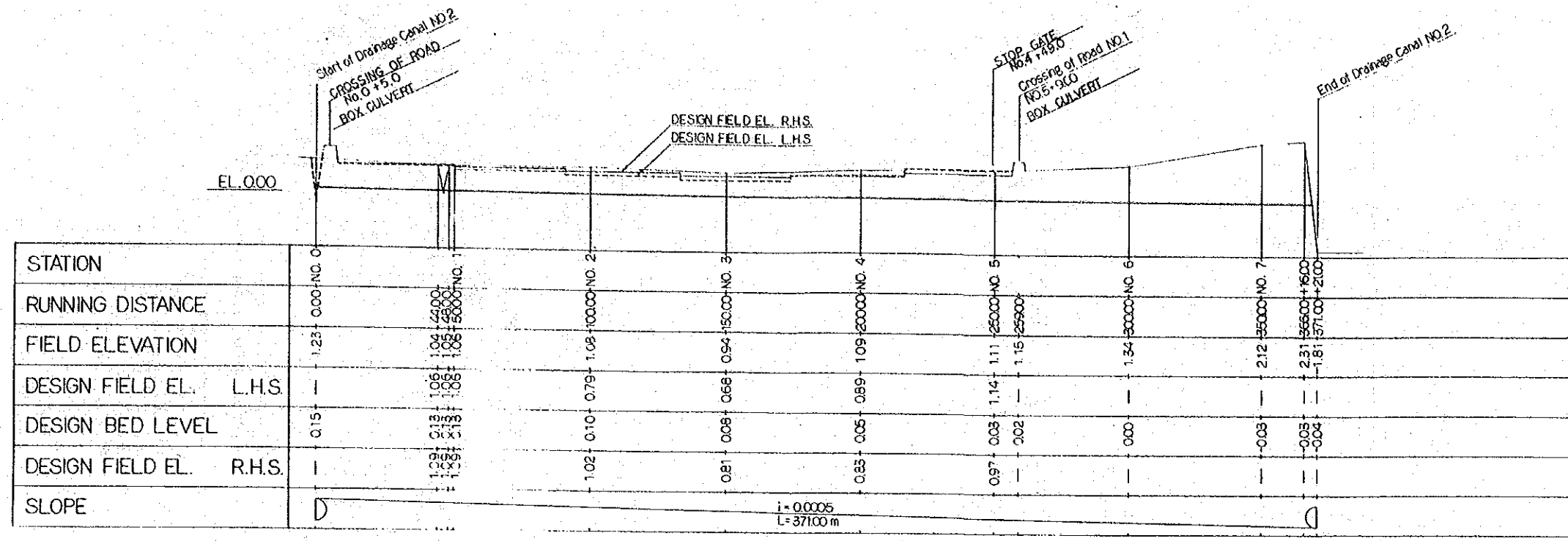


THE GOVERNMENT OF FIJI  
THE IMPROVEMENT OF RICE CULTIVATION  
TECHNOLOGY PROJECT

TITLE OF DRAWING NAUSORI PROJECT  
DRAINAGE CANAL No.1  
LONGITUDINAL AND CROSS SECTION

JAPAN INTERNATIONAL COOPERATION AGENCY  
TOKYO JAPAN

DWG. No.  
20



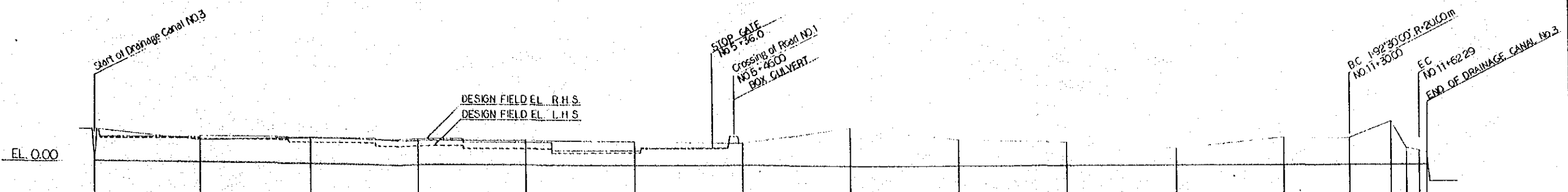
THE GOVERNMENT OF FIJI  
THE IMPROVEMENT OF RICE CULTIVATION  
TECHNOLOGY PROJECT

TITLE OF DRAWING NAUSORI PROJECT  
DRAINAGE CANAL No. 2  
LONGITUDINAL AND CROSS SECTION

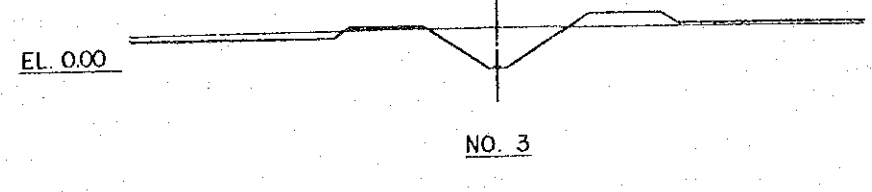
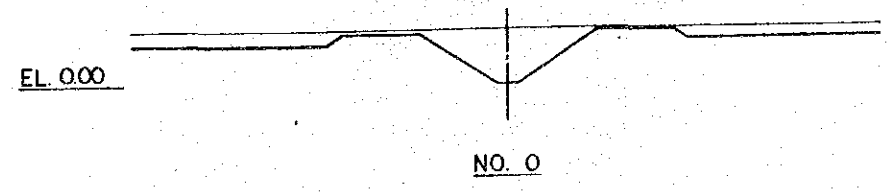
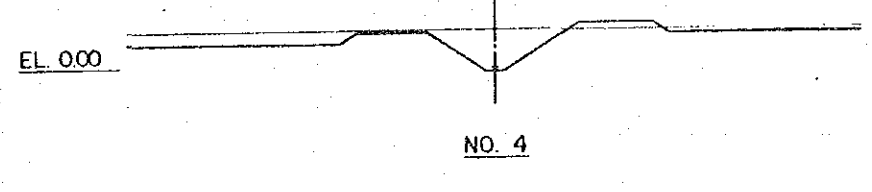
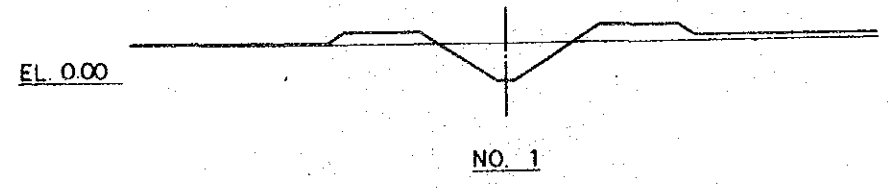
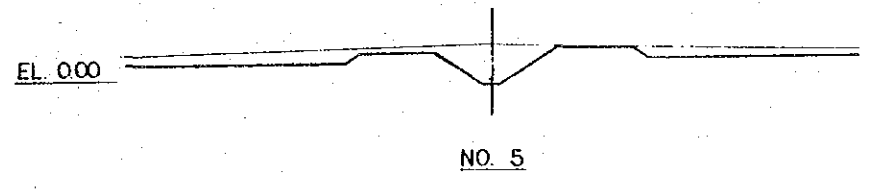
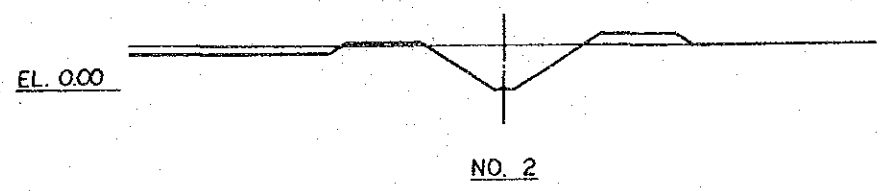
JAPAN INTERNATIONAL COOPERATION AGENCY  
TOKYO JAPAN

DWG. No. 21





STATION	0	1	2	3	4	5	6	7	8	9	10	11	11+30.00	11+62.29	
RUNNING DISTANCE	0.00	48.00	96.00	144.00	192.00	240.00	288.00	336.00	384.00	432.00	480.00	528.00	576.00	624.00	
FIELD ELEVATION	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80	0.78	0.76	0.74	
DESIGN FIELD EL. L.H.S.	1.00	1.08	1.16	1.24	1.32	1.40	1.48	1.56	1.64	1.72	1.80	1.88	1.96	2.04	
DESIGN BED LEVEL	0.00	-0.02	-0.05	-0.07	-0.10	-0.12	-0.15	-0.17	-0.20	-0.22	-0.25	-0.27	-0.29	-0.31	
DESIGN FIELD EL. R.H.S.	1.00	1.14	1.18	1.22	1.26	1.30	1.34	1.38	1.42	1.46	1.50	1.54	1.58	1.62	
SLOPE	D													i=0.0005 L=645.29m	

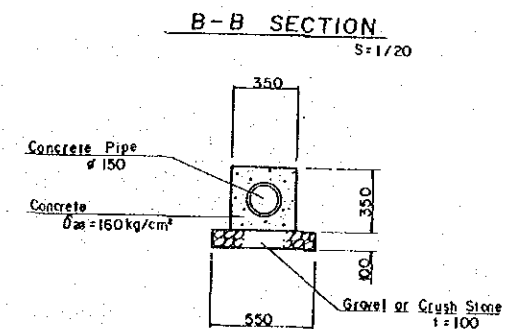
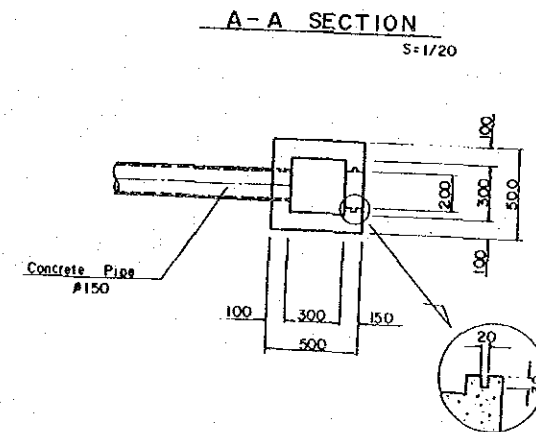
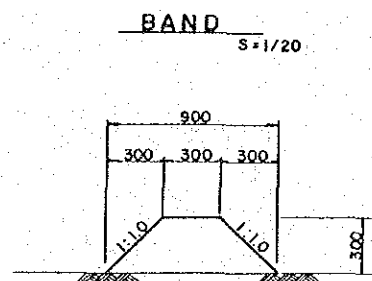
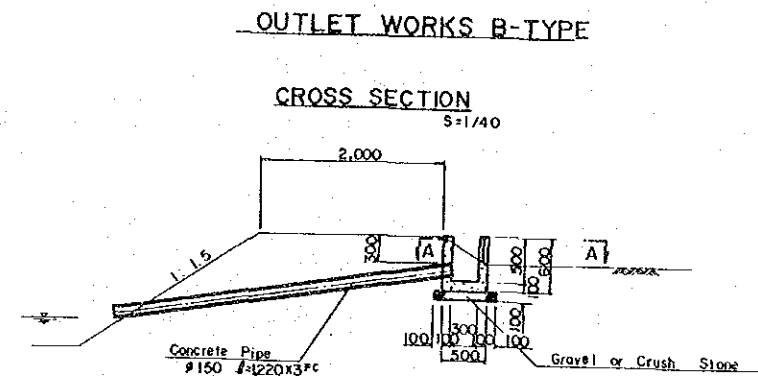
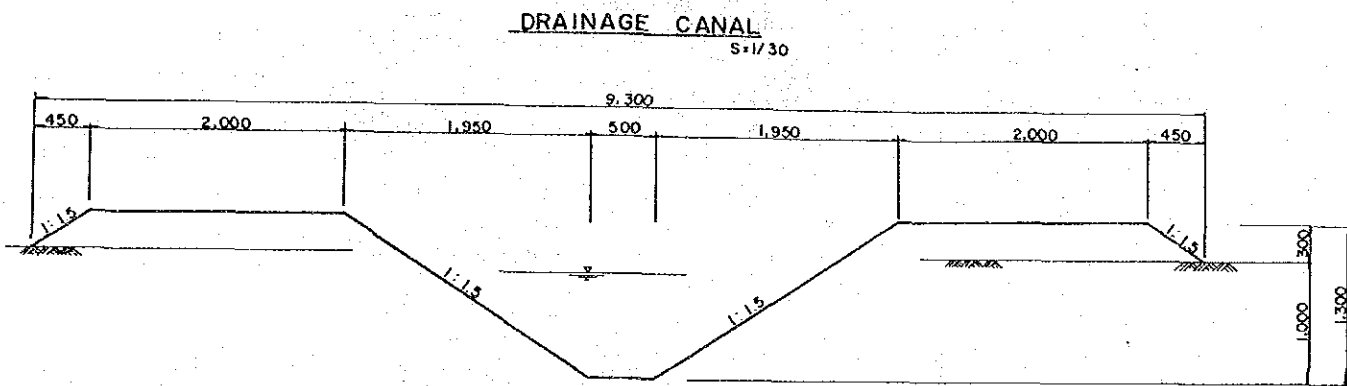
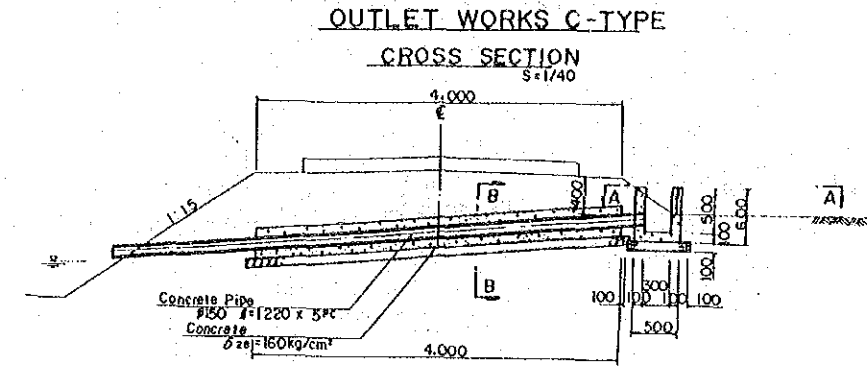
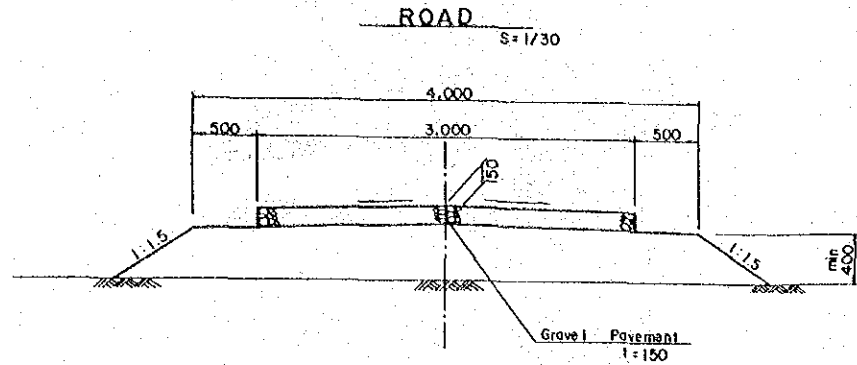


THE GOVERNMENT OF FIJI  
 THE IMPROVEMENT OF RICE CULTIVATION  
 TECHNOLOGY PROJECT

TITLE OF DRAWING NAUSORI PROJECT  
 DRAINAGE CANAL No.3  
 LONGITUDINAL AND CROSS SECTION

JAPAN INTERNATIONAL COOPERATION AGENCY  
 TOKYO JAPAN

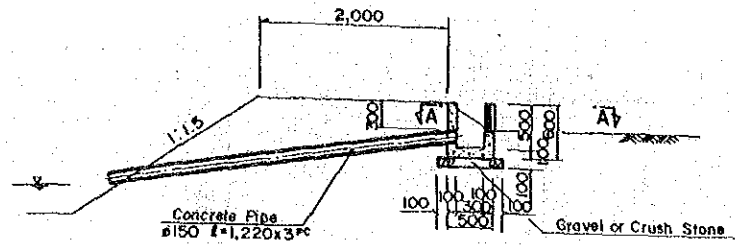
DWG. No.  
 22



THE GOVERNMENT OF FIJI  
THE IMPROVEMENT OF RICE CULTIVATION  
TECHNOLOGY PROJECT  
TITLE OF DRAWING NAUSORI PROJECT  
TYPICAL SECTIONS OF ROAD, DRAINAGE  
CANAL AND OUTLET WORKS  
JAPAN INTERNATIONAL COOPERATION AGENCY  
TOKYO JAPAN  
DWG NO  
23

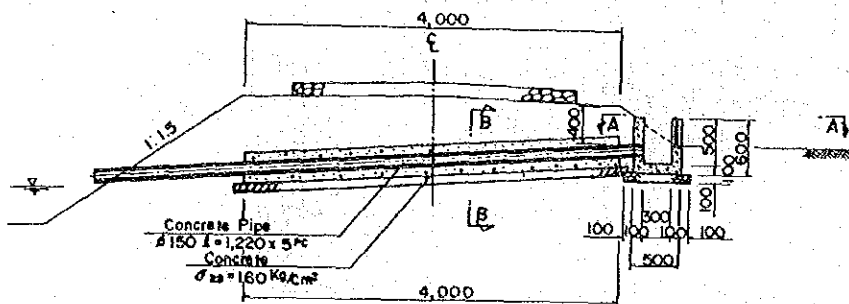
**OUTLET WORKS B-TYPE**  
S=1/740

**CROSS SECTION**

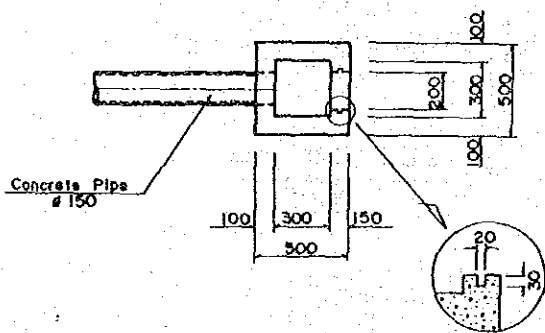


**OUTLET WORKS C-TYPE**  
S=1/740

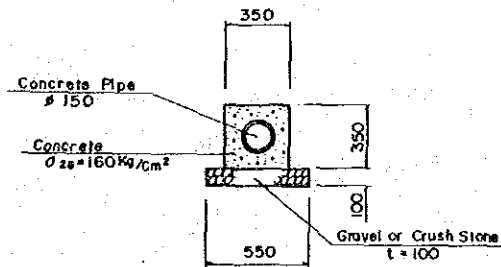
**CROSS SECTION**



**A-A SECTION**  
S=1/20

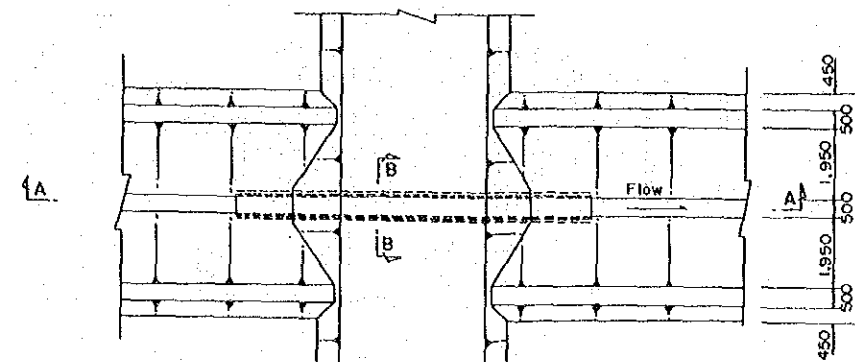


**B-B SECTION**  
S=1/20

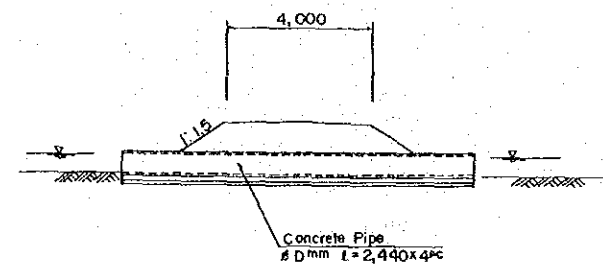


**PIPE CULVERT**  
S=1/100

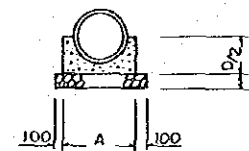
**PLAN**



**A-A SECTION**



**B-B SECTION**

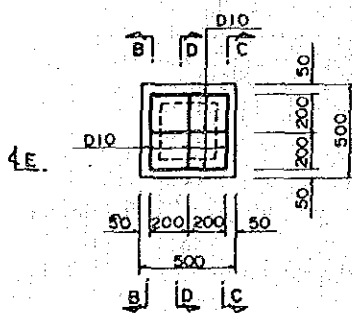


**DIMENSION TABLE**

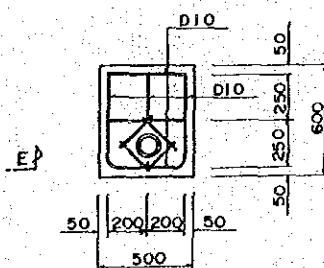
	Pipe Dia	A (mm)
A-TYPE	φ 1,225	1,500
B-TYPE	φ 600	800

**REINFORCEMENT ARRANGEMENT**  
S=1/20

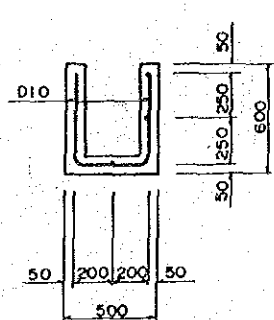
**A-A SECTION**



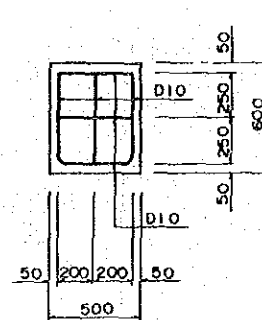
**B-B SECTION**



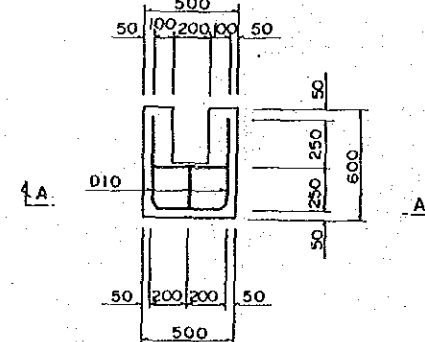
**D-D SECTION**



**E-E SECTION**



**C-C SECTION**



THE GOVERNMENT OF FIJI  
THE IMPROVEMENT OF RICE CULTIVATION  
TECHNOLOGY PROJECT

TITLE OF DRAWING NAUSORI PROJECT

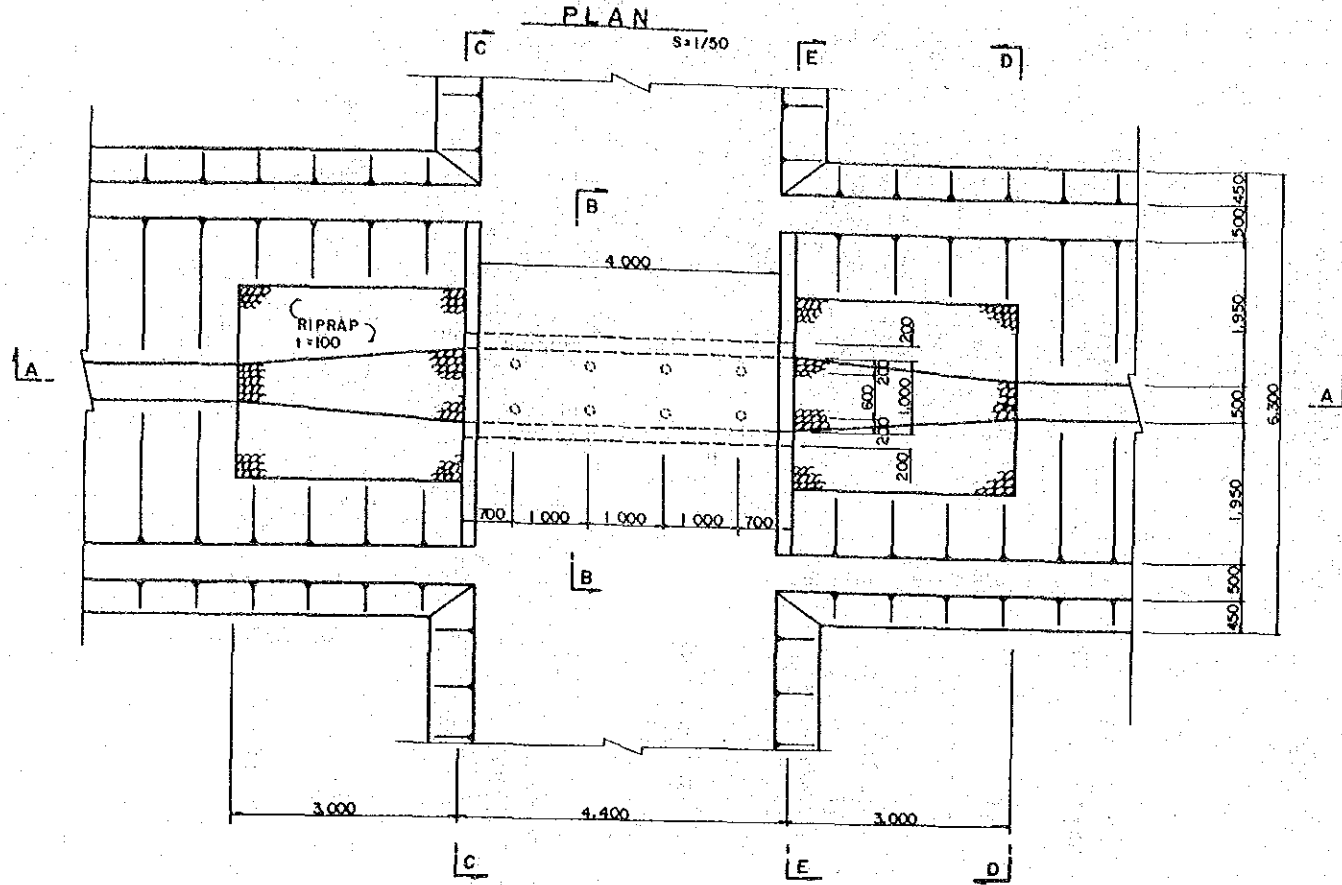
OUTLET WORKS AND PIPE CULVERT

JAPAN INTERNATIONAL COOPERATION AGENCY  
TOKYO JAPAN

DWG. NO  
24

**BOX CULVERT**

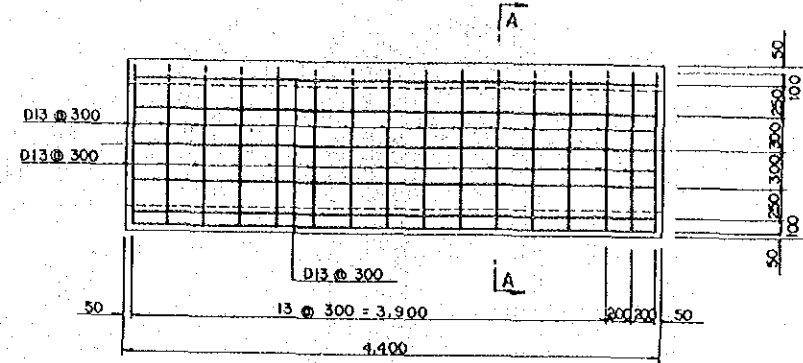
**PLAN**



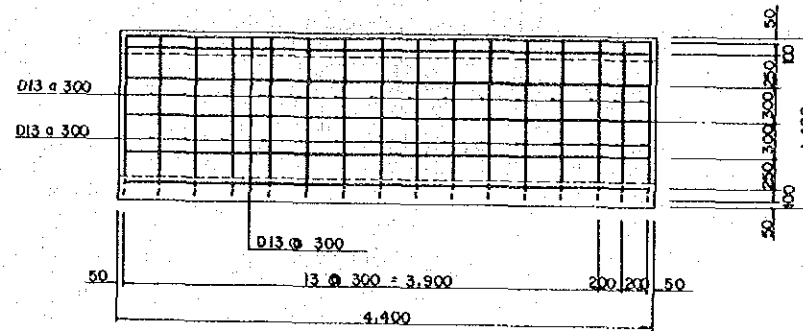
**REINFORCEMENT ARRANGEMENT**

S=1/30

**B-B SECTION**

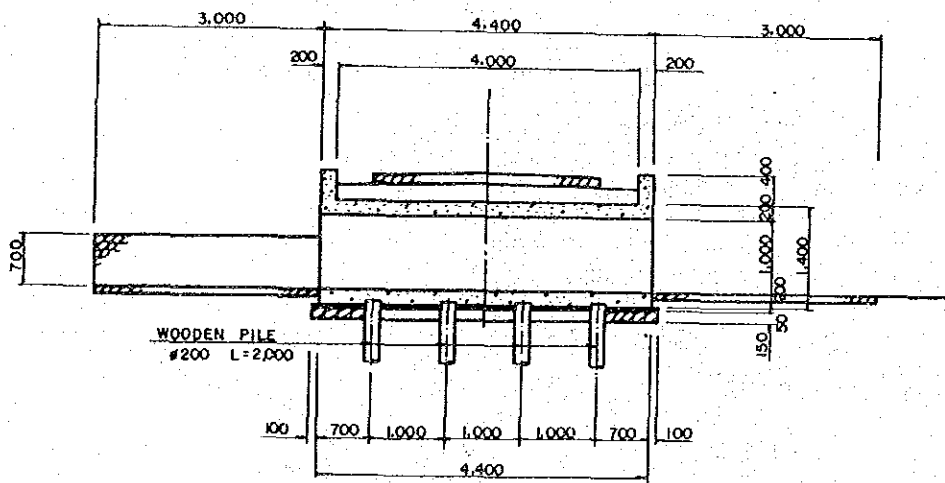


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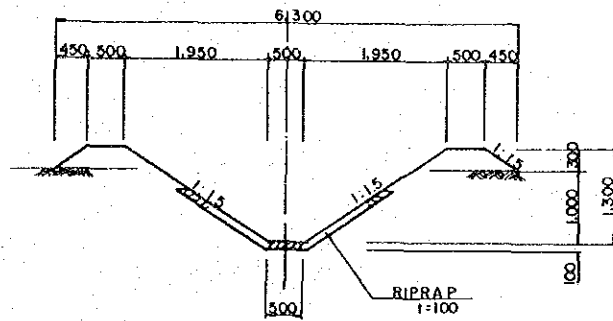
**A-A SECTION**

S=1/50

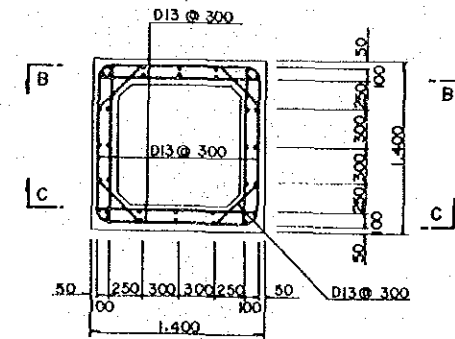


**D-D SECTION**

S=1/50

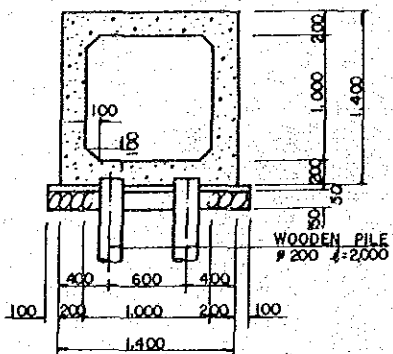


**A-A SECTION**



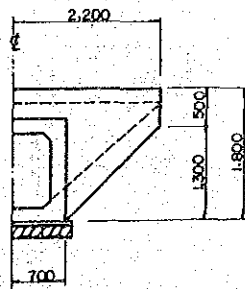
**B-B SECTION**

S=1/30



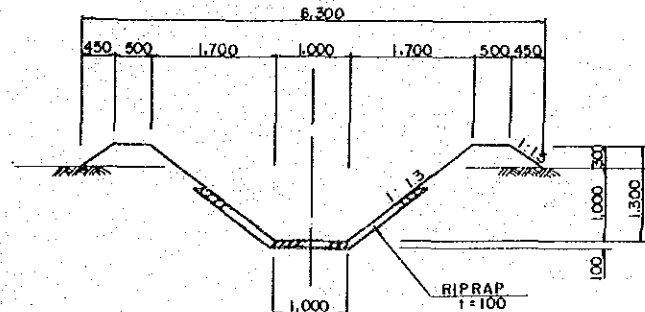
**C-C SECTION**

S=1/50

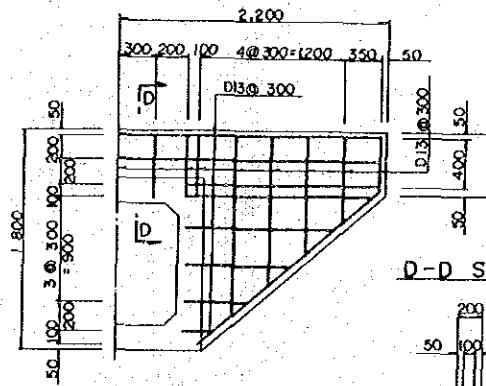


**E-E SECTION**

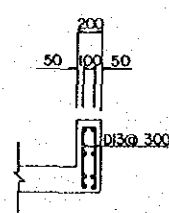
S=1/50



**WING**



**D-D SECTION**



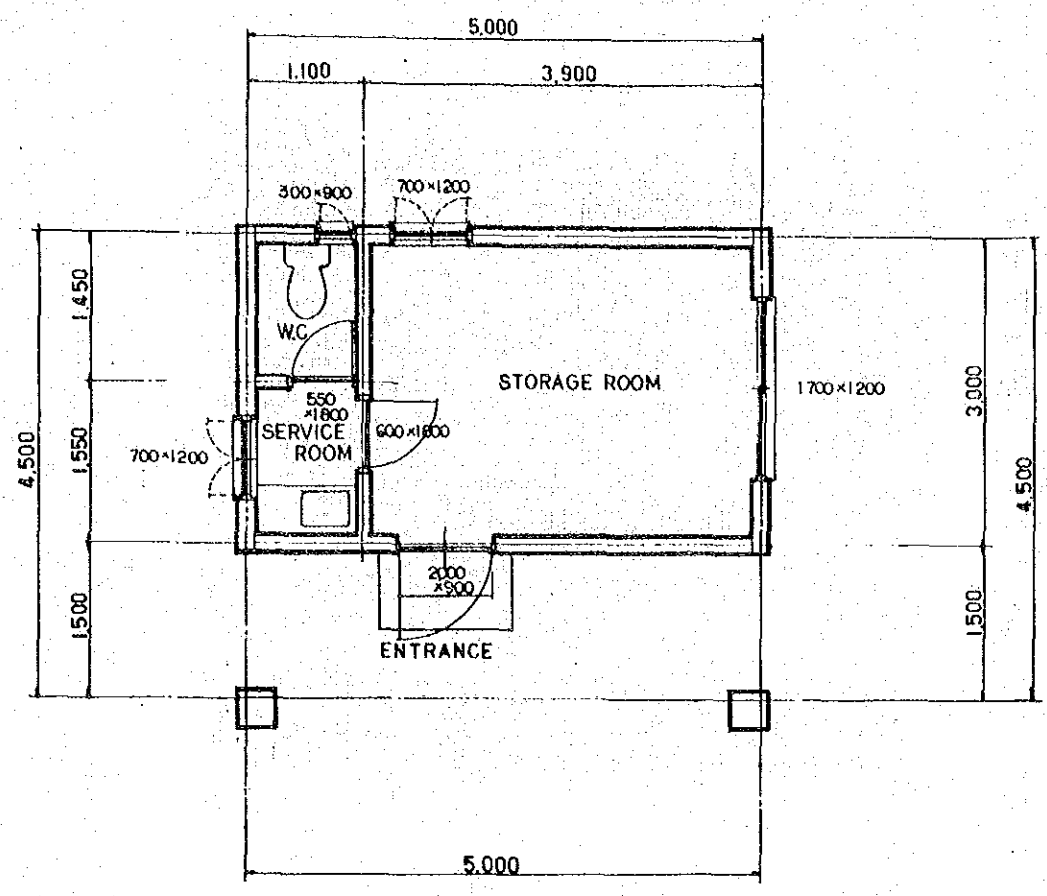
THE GOVERNMENT OF FIJI  
THE IMPROVEMENT OF RICE CULTIVATION  
TECHNOLOGY PROJECT

TITLE OF DRAWING NAUSORI PROJECT

**BOX CULVERT**

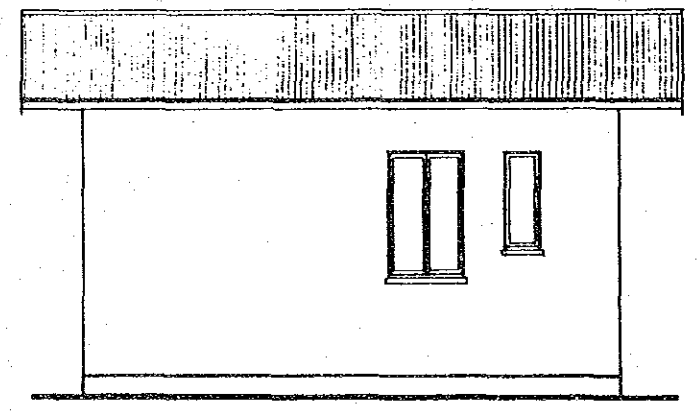
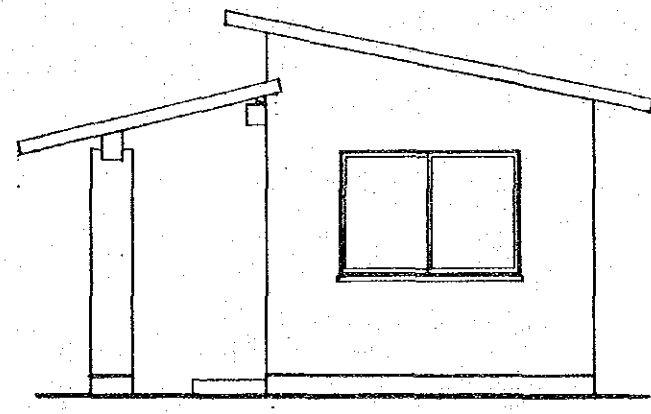
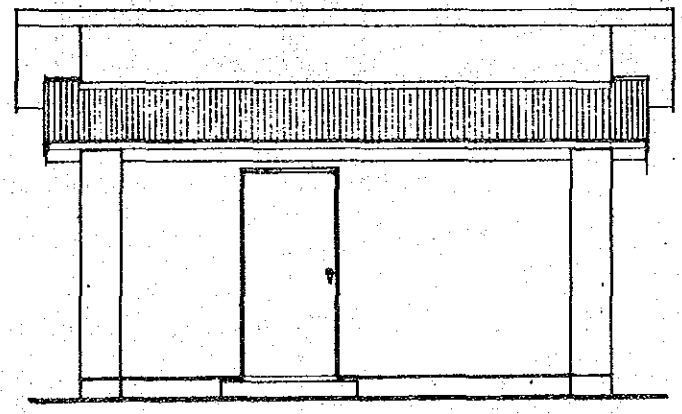
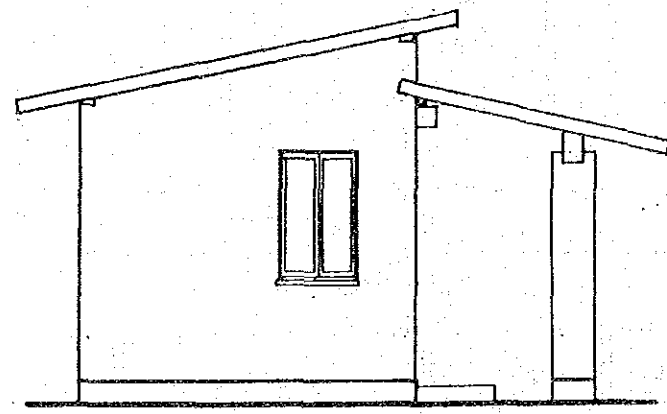
JAPAN INTERNATIONAL COOPERATION AGENCY  
TOKYO JAPAN





Storage room Interior finish

Floor	Floor Concrete Finish
Baseboard	Emulsion Paint
Wall	Emulsion paint on pre mixed plaster
Celing	
Remark	

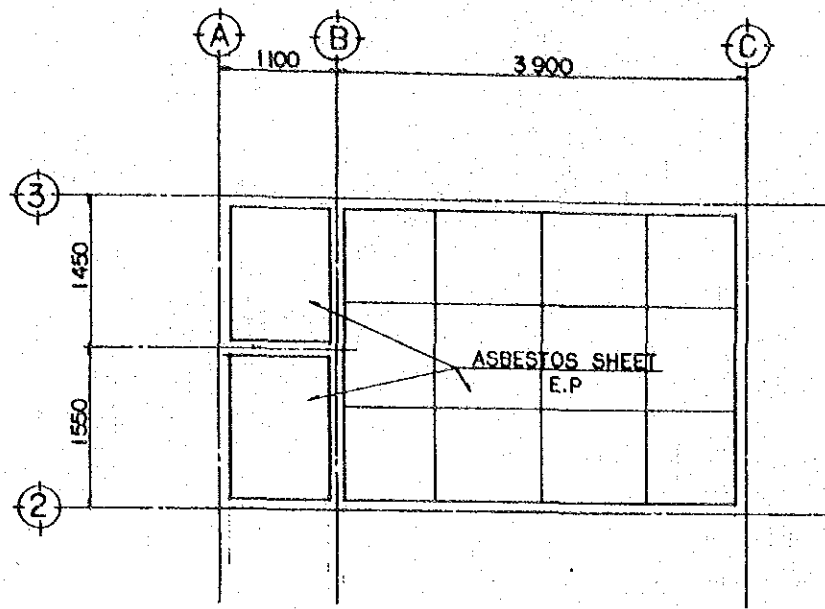


Exterior finish

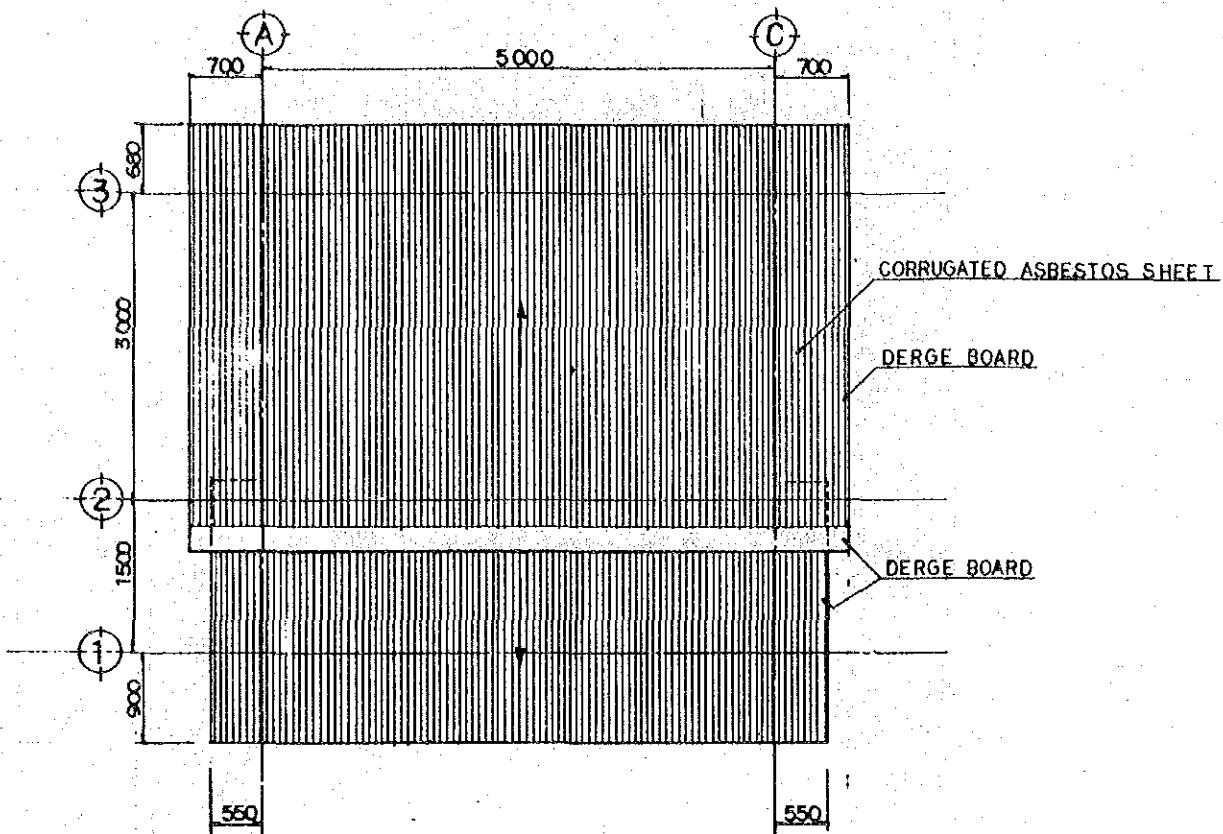
Roof	Corrugated asbestos sheet
Wall	Emulsion paint
Remark	

THE GOVERNMENT OF FIJI THE IMPROVEMENT OF RICE CULTIVATION TECHNOLOGY PROJECT	
TITLE OF DRAWING NAUSORI PROJECT	
<b>STORAGE HOUSE (1)</b>	
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO JAPAN	DWG. NO <b>27</b>

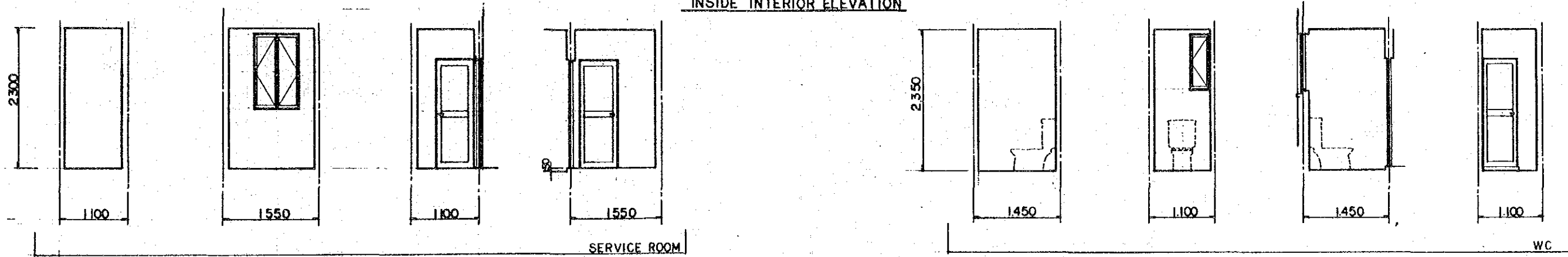
CEILING PLAN



ROOFING PLAN

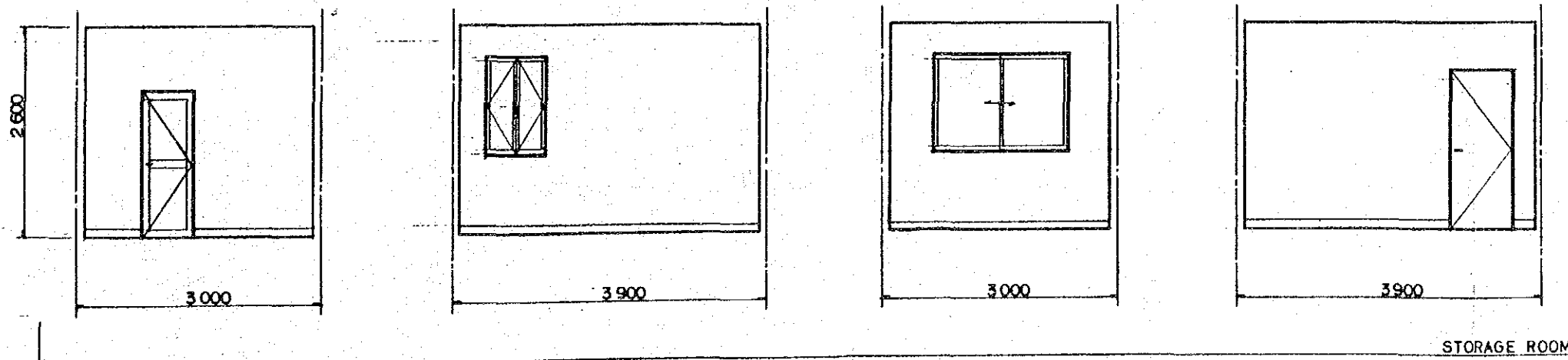


INSIDE INTERIOR ELEVATION



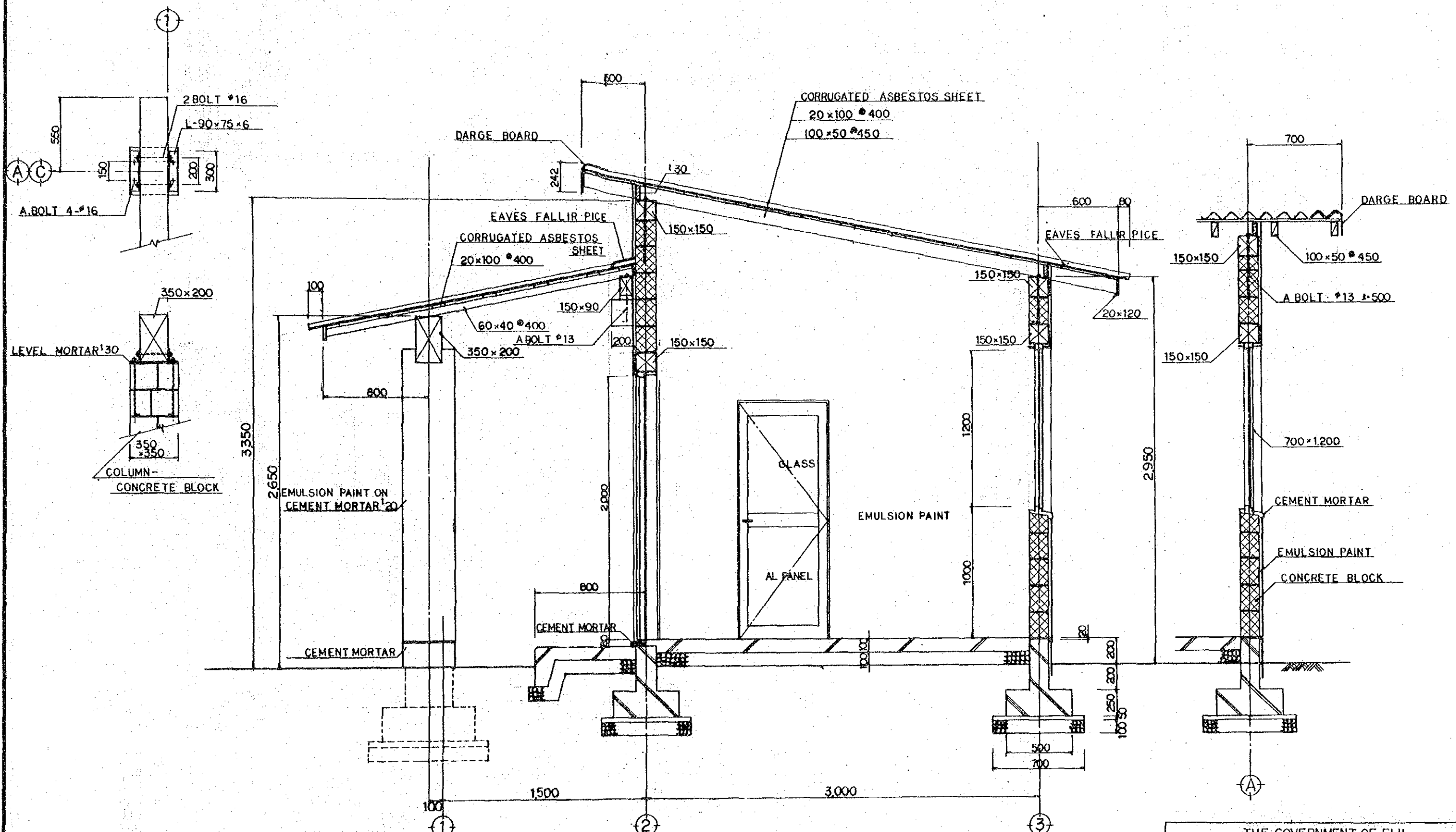
SERVICE ROOM

WC



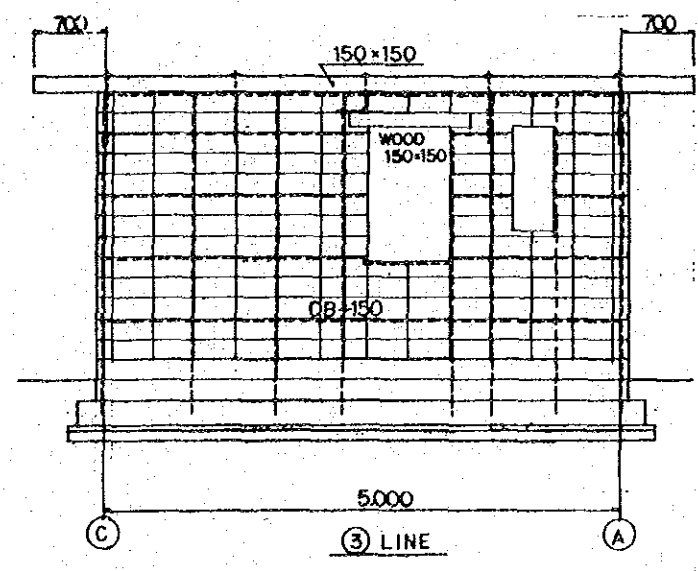
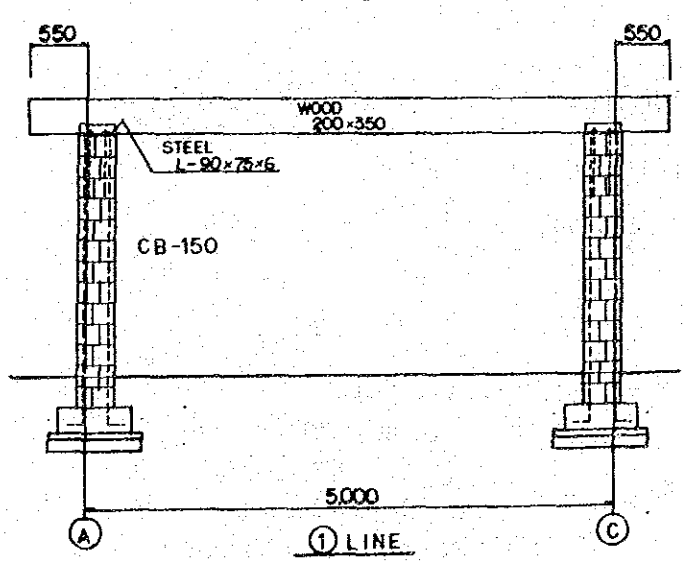
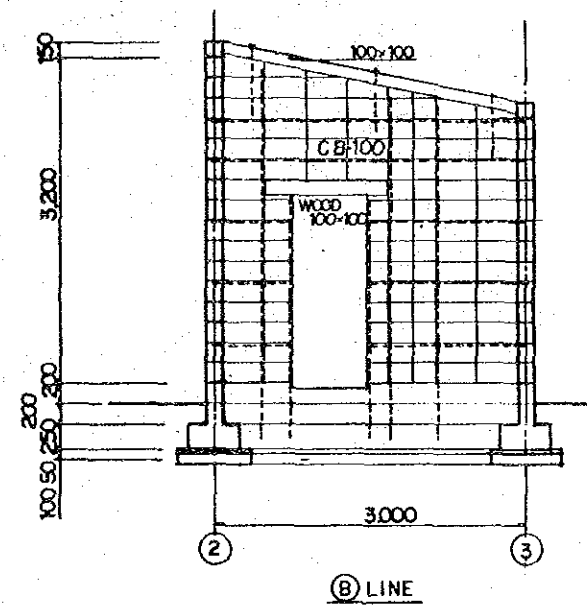
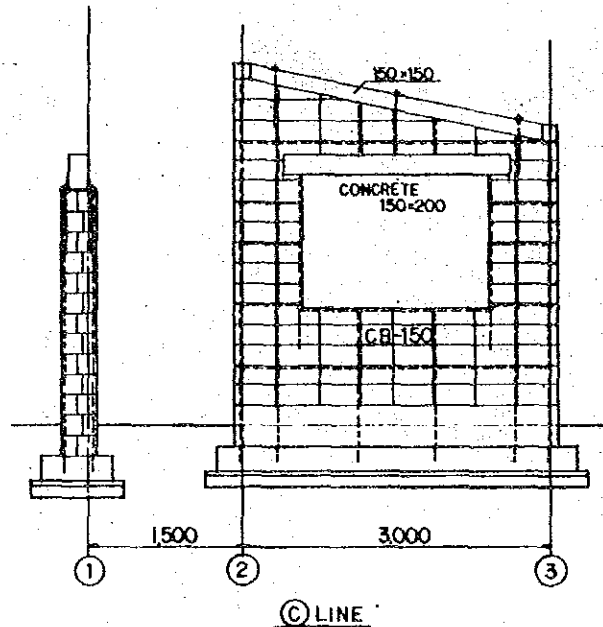
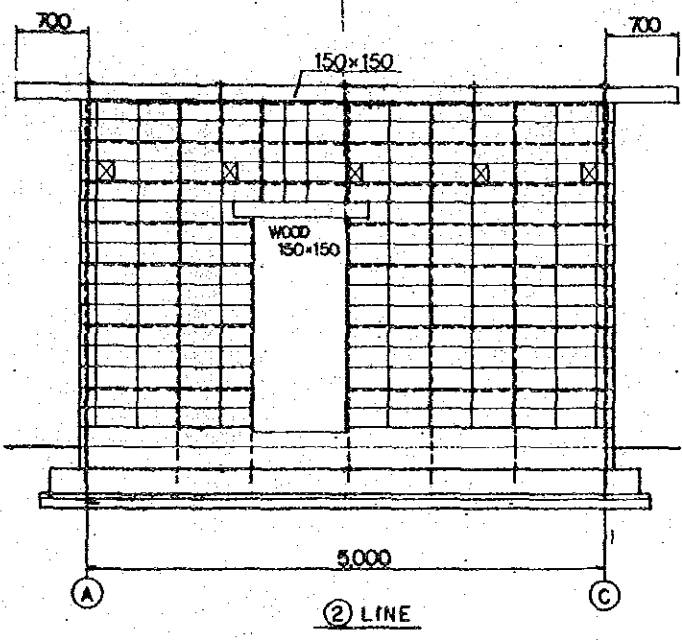
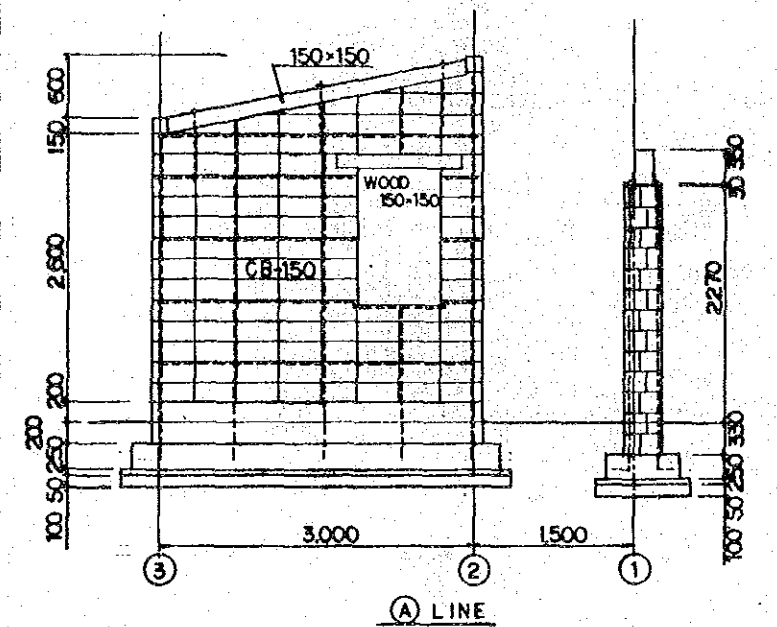
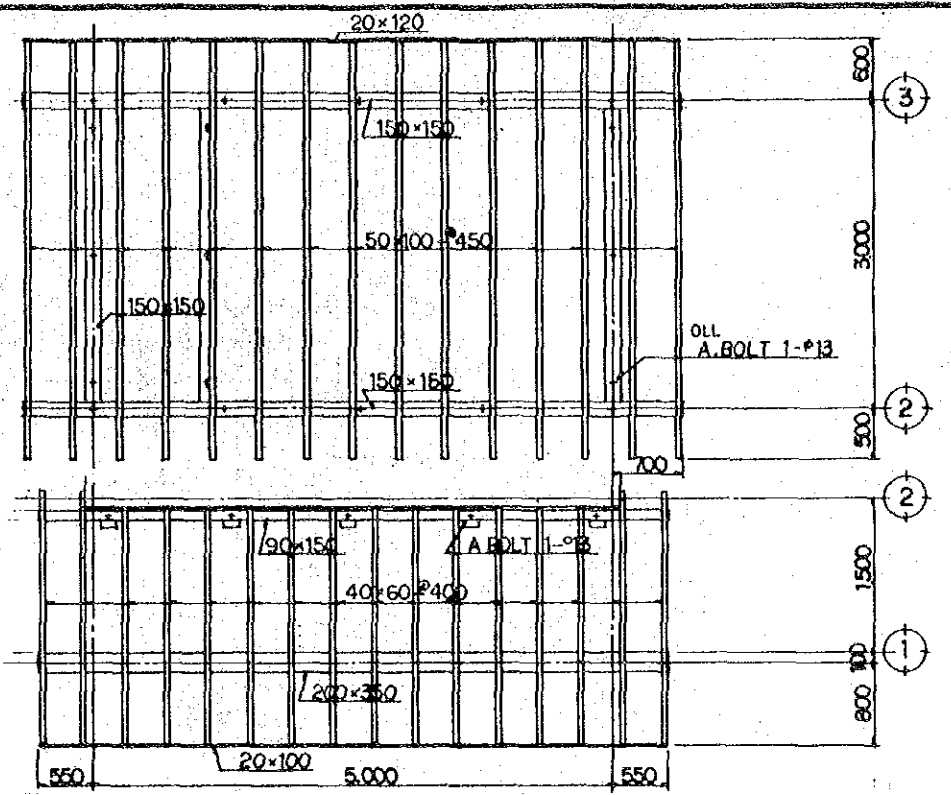
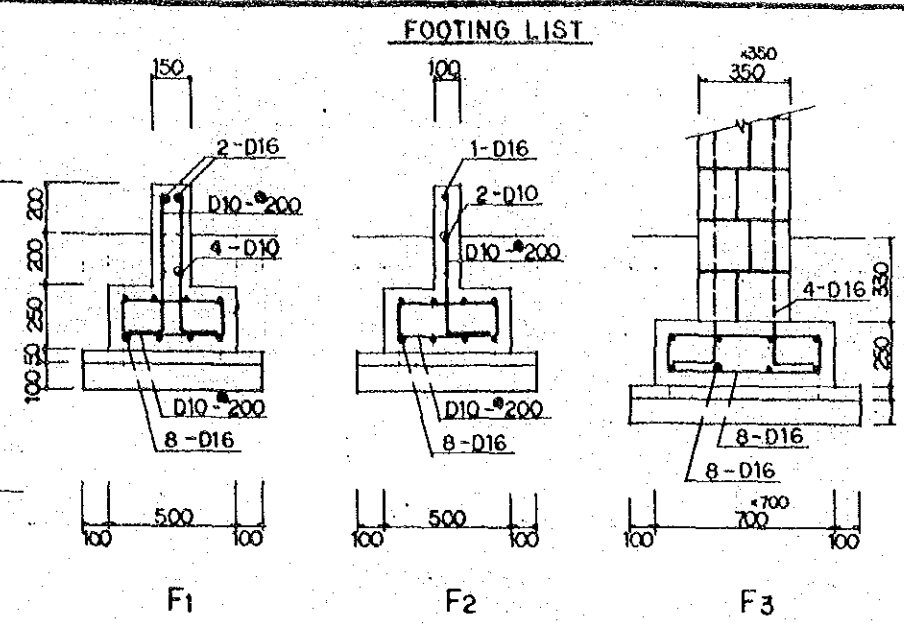
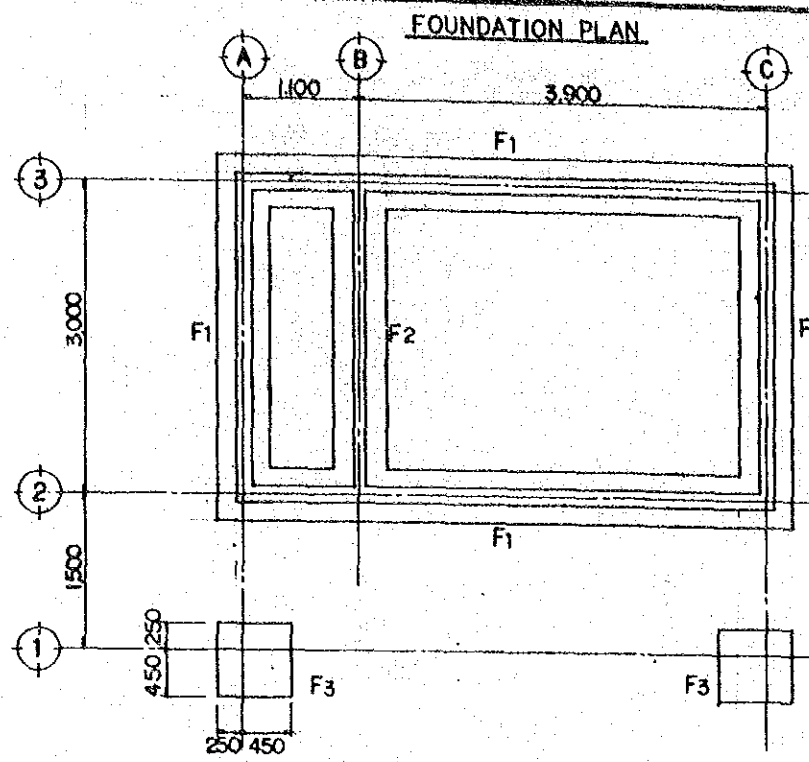
STORAGE ROOM

THE GOVERNMENT OF FIJI THE IMPROVEMENT OF RICE CULTIVATION TECHNOLOGY PROJECT	
TITLE OF DRAWING NAUSORI PROJECT	
STORAGE HOUSE (2)	
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO JAPAN	DWG. NO 28



THE GOVERNMENT OF FIJI  
 THE IMPROVEMENT OF RICE CULTIVATION  
 TECHNOLOGY PROJECT  
 TITLE OF DRAWING NAUSORI PROJECT  
**STORAGE HOUSE (3)**  
 JAPAN INTERNATIONAL COOPERATION AGENCY  
 TOKYO JAPAN  
 DWG. NO  
 29





THE GOVERNMENT OF FIJI  
 THE IMPROVEMENT OF RICE CULTIVATION  
 TECHNOLOGY PROJECT

TITLE OF DRAWING NAUSORI PROJECT

**STORAGE HOUSE (4)**

JAPAN INTERNATIONAL COOPERATION AGENCY  
 TOKYO, JAPAN

DWG. NO  
 30







JICA