

5 - 2 工事仕様書 (案)

TECHNICAL SPECIFICATIONS
FOR
CONSTRUCTION OF INFRASTRUCTURE IMPROVEMENT WORKS
ON
THE FOOD CROP PROTECTION PROJECT (PHASE - II of ATA - 162)
IN
INDONESIA

INDONESIA OFFICE
JAPAN INTERNATIONAL COOPERATION AGENCY

TECHNICAL SPECIFICATIONS

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TECHNICAL SPECIFICATIONS

PART 1 SPECIAL PROVISION

1-01 APPLICATION

This specification is applicable to "Construction of Infrastructure Improvement Works on the Food Crop Protection Project (Phase II-of ATA-162) in Indonesia". Main work quantities are stipulated in Article 1 of this Contract. Specifications entered in the drawing shall be treated in reference to this technical specifications.

1-02 ENGINEER

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

1-03 SITE REPRESENTATIVE OF THE CONTRACTOR

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

1-04 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.

1-05 The Contractor shall exercise utmost care so that his construction operations will not damage any existing structure except such structures as specified to be dismantled. Any damages on such existing structure or

facilities shall be made good by the Contractor at his expense.

1-06 If it is necessary in the prosecution of the work to interrupt or obstruct the flow of existing water supply pipe, the flow of artificial drains and the drainage of the surface, the Contractor shall provide for the same during the progress of the work in such a way that no damage shall result to either public or private interest. For any neglect to provide for either natural or artificial pipeline or drainage which he may interrupt, he shall be held liable for all damages which may result there from during the progress of the work.

1-07 The Contractor is expected to visit the location of the work and make his own estimate of the facilities needed for the work. In the successful execution of the construction, the Contractor is expected to familiarize himself with local conditions, availability of labor, transportation facilities, water and electric supply, uncertainties of weather and other contingencies. From investigations, made at site, it is believed that topographical conditions are approximately as shown on the drawings, but the nature of the materials and the depth of satisfactory foundations, are not guaranteed. It is expressly understood that JICA will not be responsible for any deduction, interpretation, or conclusions made by the Contractor. JICA does not guarantee that other materials will not be encountered or that the proportions of the several materials will not vary from those indicated by the drawings.

1-08 Elevations referred to the datum plane are to be determined from benchmarks established by JICA or the Engineer at the site of the work.

1-09 SETTING-OUT

The Contractor shall entirely be responsible for accurate setting-out the works including staking of centerlines for canals and roads, etc. based on the information supplied on the Drawings and the instructions given by the Engineer.

All stakes, benchmarks, etc., placed by the Engineer in laying out the works shall be carefully guarded and preserved by the Contractor, and in such case stakes or marks are misplaced or rendered useless through the carelessness or negligence of the Contractor or his agents, employees

or workmen, they shall be replaced by the Contractor at his expense.

The Contractor shall execute the work to the lines and grades given by the drawings and/or Engineer. The Contractor shall, at his own expense, furnish all stakes, templates, pattern, platforms and labor that may be required in setting or laying out any part of the work.

The costs to conform to the requirements of this Clause shall be entered in the Lump Sum Price of the Site Expenses in the Bill of Quantities.

1-10 DRAWINGS TO BE FURNISHED BY THE CONTRACTOR

The Contractor shall submit the drawings of centerline survey results and longitudinal section in two copies for the construction of pipeline and roads, etc.

Construction of any part of the above works shall not commence until the Drawings have been approved by the Engineer, and there after no change shall be made to any drawing so approved without permission of the Engineer.

In addition to the above, during the working execution, the Contractor shall at his own expense prepare reinforcement drawings based on the Drawings supplied by the JICA at needed for performance of the works.

These reinforcement drawings shall include such bar placing drawings, bar list and any otehr reinforcement drawings as may be required to facilitate fabrication and placement of reinforcement.

All reinforcement drawings prepared by the Contractor shall be submitted to the Engineer for approval. All costs incurred by the Contractor in complying with the requirements of this Clause shall be deemed to be included in the item of Site Expenses in the Bill of Quantities.

1-11 ASSISTANCE TO ENGINEER'S STAFF

The Contractor shall render all necessary assistance to the Engineer and shall provide as required by and for use of the Engineer, sufficient quantities of pegs, poles, straight edges, stagings, moulds, templates, profiles and all other requisites for checking the Contractor's setting out and the measurement of the Works.

The cost of all labor and materials required by the Engineer for the said purposes shall be borne by the Contractor. All cost incurred by the Contractor in complying with the requirements of this Clause shall be deemed to be included in the Site Expenses of Bill of Quantities.

1-12 REPORTS

The Contractor shall submit daily or weekly reports to each work section to the Engineer.

The report shall contain, but not limited to, the following data: Weather conditions, staff and labor force employed on the Work, materials used, work in progress, work in preparation, laboratory test data, accidents, photographs and all other information relevant to the progress of the Works.

The payment of all costs incurred by the Contractor in complying with requirements of this Clause shall be deemed to be included in the Site Expenses of Bill of Quantities.

1-13 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 item of Site Expenses in the Bill of Quantities.

1-14 CLEARANCE OF THE WORK SITE

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

1-15 COMMON TEMPORARY WORK AND SITE EXPENSES

The Contractor shall price the General Works in the Temporary Works and Site Expenses of the Bill of Quantities covering all costs and expenses for preparatory works, common temporary works and other common site expenses such as :

- Mobilization and demobilization of equipments (Cause 2-03 and 2-05)

- Maintenance of temporary access road and Construction of haul road (Clause 2-02) / 1.
- Land hiring for the Contractor's yard .
- Construction, maintenance and subsequent removal of offices, stores, workshops, staff quarters and labor camps with fencing (Clause 2-03)
- Installation, operation, maintenance and subsequent removal of water and electric supply system for the Contractor's offices, workshops, staff quarters and labor camps (Clause 2-03)
- Centerline survey and furnishing of drawings (Clause 1-09 and 1-10)
- Assistance to Engineer's staff for certificates (Clause 1-11)
- Setting out pipeline, roads and structures and staking of reference pegs (Clause 1-09)
- Field tests including provision of testing apparatus, testing engineer, labor and consumables (Clause 1-13)
- Submit of periodical reports and color photographs (Clause 1-12)
- Other works but not limited to.

Note / 1. ; As to this item shall be priced in the item of

Temporary Works in the Bill of Quantities.

PART 2 GENERAL CONSTRUCTION FACILITIES

2-01 SCOPE

This part covers the construction and/or maintenance of access roads, setting up of Contractor's camp facilities, providing camp security and the disposition of the Contractor's various facilities at the end of the Contract.

2-02 ROADS

(a) The Contractor shall improve, repair and widen, if necessary, existing roads to satisfactorily meet his haulage requirements. He shall also construct all other roads within the construction area which he deems necessary in the prosecution of his work. The improving, widening and maintaining of existing roads and constructing and maintaining new roads shall be made by the Contractor at his expense, and same shall be the responsibility of the Contractor during and up to the completion of all construction work under the Contract.

2-03 CONTRACTOR'S CAMP FACILITIES

(a) If the Contractor deems necessary, he shall grade his camp site; construct his office, employee's housing, warehouses, machine and repair shops, fuel storage tanks; and provide such other facilities that the Contractor deems necessary for maintaining health, peace and order in the camp and work areas.

(b) The location, construction, operation and maintenance of such camps and facilities within the both areas of the Jatisari Center and Celuk F.L. shall be subject to the approval of the Engineer. At least ten (10) calendar days prior to the date on which the Contractor desires to begin to work on in feature of camp construction, the Contractor shall submit for the approval of the Engineer drawings and specifications in sufficient detail to permit determination of suitability of the construction in compliance with these specifications, and no camp construction of any kind shall be undertaken until such drawings and specifications have been approved by the Engineer.

2-04 CAMP SECURITY

The Contractor shall provide his own security force to the extent that he deems necessary for maintaining peace and order in the camps and work areas and to safeguard materials and equipment including fencing.

2-05 DISPOSITION OF CAMP AND CONSTRUCTION FACILITIES

After the completion of the work covered by the Contract, the entire camp of the Contractor, including its water supply system, quarters, warehouses, shops and other facilities therein; and all other temporary installations at work areas shall be removed by the Contractor and the site shall be cleared.

PART 3 CARE OF WATER DURING CONSTRUCTION

3-01 SCOPE

In accordance with specifications contained in this part, the Contractor shall care the water during construction so that construction work can be performed in areas free from water. Care of water during construction shall include provision for drainage and pumping system for dewatering foundation areas and the construction of temporary bulkheads necessary for the protection of construction operations from encroachment by water.

3-02 DRAINAGE AND PUMPING

The Contractor shall be responsible for dewatering the foundation areas so that work may be carried on in a suitably dry condition, draining and/or pumping all water during the process of construction until its completion. The contractor shall construct drainage ditches, holes, or culverts; furnish, operate, and maintain at his own expense all necessary pumps, to keep all work areas in ample dry condition, and prior to final acceptance of the work by the Contracting Officer, the Contractor shall remove, fill or plug all temporary drainage structures and pumping equipment at his expense.

3-03 PAYMENT

No separate payment shall be made for the care of water during construction. But the cost of furnishing, constructing, operating, maintaining, and removal of temporary drainage structures, canals, and pumping system necessary to keep construction operations free from water shall be included in the item of Temporary Works as indicated in the Bill of Quantities

PART 4 OPEN EXCAVATION AND FOUNDATION PREPARATION

4-01 SCOPE

In accordance with the Specifications contained in this part, and as shown on the drawings, or otherwise directed by the Engineer, the Contractor shall perform all required open excavation and foundation preparation pertinent to the construction work.

4-02 OPEN EXCAVATION

(a) General

Open excavation under these Specifications consists of the removal, hauling, dumping, and satisfactory disposal of all materials from required excavations for pipe work, roads, and miscellaneous excavations for other structures included under this Contract. Open excavation shall be performed to the lines and grades shown on the drawings or established by the Engineer. The Engineer may modify slopes of excavation to fit conditions encountered during construction. Such changes or modifications shall not be considered by the Contractor as a basis for additional compensation over and above the unit prices bid. All necessary precautions shall be taken to preserve the ground outside the specified lines and grades in the soundest possible condition.

(b) Foundation in Loose Material

When the surfaces of excavation upon or against which concrete or stone masonry or embankment fill is to be placed consist of loose materials, the said loose materials shall be removed or replaced with suitable materials and compacted in a manner satisfactory to the Engineer. The cost of removing the loose

materials shall be paid for under the pertinent bid items for open excavation. The cost for the replacement with suitable materials and the compaction of the same shall be paid for under the pertinent bid items for fill.

4-03 DISPOSITION OF EXCAVATED MATERIALS

(a) Spoil Areas

The Contractor shall submit for the approval of the Engineer locations, areas, drawings, and other necessary specifications of spoil area which the Contractor proposes to use for the work under this Contract, and any kind of disposition shall not be undertaken before obtaining the said approval. Excavated material not suitable for fill or otherwise not needed shall be wasted in approved spoil areas. Spoil piles shall be constructed to the stable slopes of the material being wasted. Any spoil pile exceeding two (2) meters in height shall not be performed. Spoil material shall be spread and graded so that surface drainage will not be concentrated and will not create and/or accelerate undesirable erosion in spoil areas.

4-04 DEMOLITION, REMOVAL, AND DISMANTLING

When specified in the drawing or the Engineer, existing concrete and/or stone masonry structures, such as concrete masses, stones, etc., shall be demolished and disposed of accordingly.

4-05 FOUNDATION PREPARATION

(a) Fill on Earth

All horizontal and sloped earth surfaces, upon which embankment material is to be placed or other foundation surfaces whose locations are specifically indicated by the Engineer, shall

consist of undisturbed or compacted material and shall be clean, damp, free from standing or running water and free from organic matter; and shall be suitable as a foundation for the material to be placed upon them.

(b) Concrete and/or Stone Masonry

All horizontal and sloped earth surfaces upon which concrete and/or stone masonry is to be placed shall be undisturbed or of approved compaction, clean and damp, free from standing or running water, and shall be otherwise suitable as a foundation for the concrete and/or stone masonry to be placed upon them.

4-06 MEASUREMENT FOR PAYMENT

Open Excavation

A survey of the areas to be excavated shall be made by the Contractor prior to the commencement of the work under this Contract, and all measurements of excavation shall be based on this survey without regard to any change that may occur during the prosecution of the work. All such surveys shall be the subject to check and approval by the Engineer. Volumes will be computed and shall be the amount between the original ground determined by the survey and the slopes, lines and grades shown on the drawings or established by the Engineer.

PART 5 BACKFILL AND EARTHFILL

5-01 SCOPE

In accordance with the specifications contained in this section and as shown in the drawings or otherwise directed by the Engineer, the Contractor shall furnish and place the earthfill for construction work, backfill for related structures. Any work of fill and backfill shall not commenced without prior approval of the Engineer. The slope of the embankment shall be finished to the designed gradient by providing fixed rules.

5-02 EARTHFILL

The earthfills shall be constructed to the lines, grades and cross sections indicated on the drawings, unless otherwise directed by Engineer. The Engineer may increase or decrease the slopes of the fill or make such other changes in the design as may be deemed necessary to produce a stable structure. Change in quantities of materials resulting from prescribed changes in section, shall not make cause for claims for increased unit prices. Generally, a tolerance of plus or minus 0.05 meter from the slope lines and grades shown on the drawings will be allowed in the finished surfaces of the embankments except that the tolerances shall not be continuous over an area greater than twenty (20) square meters.

The fill material shall be dumped and spread in horizontal layers having an uncompacted thickness of not over 20 cm. When material is spread, chunks larger than 10 cm in size shall be broken down by approved means or removed.

5-03 BACKFILL

Backfill, as used herein, is defined as refill for structures. The materials used for backfill for structures shall be free from roots, stones of more than five (5) centimeters in diameter, and other objectionable materials and subject to the approval of the Engineer. Backfill

materials shall be placed in layers, each layer being not more than twenty (20) centimeters thick before compaction, thoroughly compacted by means of power tampers or by other means of approved by the Engineer.

5-04 MEASUREMENT FOR PAYMENT

(1) Earthfill

(a) Measurement:

Measurement for payment of earth fill will be calculated on the number of cubic meters of material placed between the foundation lines as determined on the basis on drawings or a survey made after completion of the excavation and foundation preparation and the lines, grades and slopes shown on the drawings. No allowance will be made for foundation or embankment settlement.

(b) Payment

Payment shall constitute full compensation for all work in connection with the excavation from borrow areas including clearing, grubbing and stripping of borrow areas, hauling, stock-piling, rehandling, foundation preparation, placing, spreading, sprinkling, drying, breaking up, compacting, removal of objectionable material, and all other work required for the construction, protection and maintenance of the fills.

No adjustment in payment will be made for substitution of materials and for additional compaction.

(2) Backfill

Measurement for payment of backfill shall be calculated on the number of cubic meters of materials placed among the original ground line, or designated line of backfill and the structure and the neat pay lines of excavation shown in the drawings. Payment will be made on the unit price bid per cubic meter of backfill.

PART 6

LAND CONSOLIDATION

6-01 SCOPE

The land consolidation involves such kinds of construction works as earth works, stone masonry works and concrete works in connection with the construction of land shape adjustment, land levelling, farm road, irrigation and drainage canals and appurtenant structure. It is considered: that earth works for the land consolidation such as open excavation, foundation preparation and earth fill shall be performed by the Contractor in accordance with the Specification indicated in PART 4 and PART 5 and that stone masonry works and concrete works for the land consolidation such as pavement and placing of concrete shall be carried out by the Contractor based on the Specification described in PART 7 and PART 8. Under the circumstances stated above, the Specifications contained in this part shall prescribe the rules and matters, for which special attention shall be taken by the Contractor from the view-point of the execution for each of the Construction work on the land consolidation.

6-02 GENERAL

(a) Preparation of Construction

Prior to the commencement of construction works for the land consolidation, an attention shall be taken on interception of the excess rain water drained from the out-side area of the experimental field so that the excess rain water will not flow into the area of the experimental field and then the construction works for the land consolidation shall be executed under a dry condition that the surface water on the experiemntal field has almost been eliminated from the ground.

(b) Procedure of Construction Work

The construction works for the land consolidation should commence fundamentally from the work of land levelling including land shape adjustment firstly and continue in due course with the work of farm road, drainage

canal and irrigation canal.

6-03 LAND SHAPE ADJUSTMENT AND LAND LEVELLING

(a) Land Levelling

The construction of land levelling including land shape adjustment shall be prosecuted by taking the following procedure, as a standard type of the construction for land levelling;

Cut and earth fill -- Land Levelling - Land Shape adjustment.

(b) Elimination of Pebbles, Stumps and Others

Gravels, pebbles, stumps, roots and the other organic materials, those are obstructive substances for the cultivation of the land shall be disposed either by burying them into the ground up to a depth, under which the land cultivation would not be affected by them or by carrying them out to the spoil areas.

(c) Exclusion of Water Accumulated

In the case that there are water accumulated in the depression and are water stayed in the existing drainage channel, the Contractor shall be responsible for dewatering the depression as well as the existing drainage channel so that the earth fill for both the depression and the existing drainage channel may be carried out in a suitably dry condition, draining all water during the process of the construction until its completion.

(d) Cut and Earth Fill of Land

The earth materials necessary for embankment of the lower land in elevation shall be provided with those excavated from the higher land in elevation within the experimental field. For formulating the land levelling, the elevation of each plot in the experimental field after a completion of the land levelling, has been decided by taking such a way as the volume of earth materials necessary for the embankment would have well-balanced, as a whole, with those excavated.

(e) Prevention for Settlement of Embankment

The special care shall be taken on the embankment works for such areas as a settlement of the embankment would be anticipated even a little after a completion of the work, in order to keep a settlement of the embankment as small as possible. The Contractor will have liable to pay attention on the embankment works for the depression as well as for the area where the height of embankment would be comparatively high.

(f) Erection of Foot Path

The foot path shall be constructed with well compaction of earth fill materials to the lines, grades and cross sections indicated on the drawings, unless otherwise directed by the Engineer.

(g) Final Arrangement of Land

The arrangement of land for each plot in the experimental field shall be finalized to the lines and grades shown in the drawings so as to not disturb the cultivation of the experimental field.

6-04 FARM ROAD

(a) The farm road shall be constructed by using earth materials graded well from fine particle to coarse particle and be completed by compaction with hand operated mechanical tampers after a layer of fill material has been dumped and spread.

(b) The surface of farm road shall be finalized by constructing middle portion of the road higher in height than each side of the road, of which the cross sectional gradient is three (3) percent.

(c) During the period of construction for farm road, the contractor will always pay attention on drainage of rain water to prevent the surface of road from becoming muddy.

6-05 FARM DITCHES

(a) The embankment along the irrigation canal and the drainage canal shall be constructed by using earth materials not containing pervious particles such as sands and pebbles and by taking compaction of the earth materials for each lay of the embankment in order to prevent seepage through the cross section of the embankment, and shall be completed to the lines, grades and the designed shape indicated on the drawings, unless otherwise directed by the Engineer.

(b) The turn-outs shall be erected at the locations shown in the drawings, unless otherwise directed by the Engineer.

PART 7 STONE MASONRY WORK

7-01 SCOPE

In accordance with the specifications contained in this Part, and as shown on the drawings or as otherwise directed, the Contractor shall furnish all plant, labor, equipment and materials, and perform all operations in connection with the construction of stone masonry.

7-02 MATERIAL

(a) General

Samples of stone proposed for use as provided herein shall be submitted to the Engineer for approval prior to delivery of any such material to the site of work. Unless otherwise specified, all samples shall be obtained by the Contractor and delivered at his expense to a point designated by the Engineer at least 20 days in advance of the time when the placing of the material is expected to begin.

(b) Sand for Mortar

Sand for mortar shall conform to the requirements for PART 8 relative to fine aggregate for concrete.

7-03 FOUNDATION PREPARATION

Areas on which stone work is to be done shall be prepared in accordance with the requirements of PART 4. Where such areas was excavated below the designed line for foundation, they shall be brought to grade by filling with gravel or other materials approved by the Engineer and well compacted, and no additional payment will be made for foundation preparation and any materials thus required.

In the same manner, when such areas are above the designed line for foundation, said areas be brought to grade and the foundation similarly prepared without additional payment.

7-04 STONE MASONRY

(a) General

Stone masonry shall be placed at the locations as are indicated on the drawings or otherwise directed. Mortar, sand and stone shall conform to the applicable requirements of paragraph 7-02 as to quality and physical properties. Mortar cement shall conform to the applicable requirements of PART 8. The stone shall be kept free from dirt, oil, or any other injurious material which may prevent the proper adhesion of the mortar. Individual stones shall have a thickness of not less than 10 centimeters.

(b) Construction

Mortar shall be one (1) part cement and three (3) parts sand in volume unless otherwise provided. All shaping or dressing of stone shall be done before the stone is laid, and no dressing or hammering which will loosen the stone will be permitted after it is placed. Each stone shall be cleaned and moistened with water before being set. All stones shall be well bedded in freshly-made mortar. After completion, in case any stone is moved or the joint broken, the stone shall be removed, the mortar shall be thoroughly cleaned from bed and joints, and the stone reset in fresh mortar.

7-05 MEASUREMENT FOR PAYMENT

Measurement for payment for stone masonry will be based on the number of cubic meters acceptably placed as computed from the neat lines and grades indicated on the drawings or as directed in the field.

PART 8 CONCRETE WORK

8 -01 SCOPE

In accordance with the specifications contained herein and as shown on the detail drawings or otherwise directed, the Contractor shall:

- (a) Furnish all materials, and manufacture, transport, place, finish, protect and cure concrete;
- (b) Furnish, construct, erect and dismantle forms;
- (c) Construct expansion and contraction joints and furnish and place waterstops, joint fillers, and sealing compound, if required; and,
- (d) Prepare, clean, cut, bend and place steel reinforcement.

8-02 CEMENT

(a) General

Cement for mortar and concrete work shall be Portland Cement which conforms to the requirements of the Standard Specifications for Portland Cement (A.S.T.M. Designated C150-69).

(b) Storage

Cement shall be stored in a dry, weather tight and properly ventilated warehouse with adequate provisions for the prevention of absorption of moisture. All storage facilities shall be subject to approval and shall be such as to permit easy access for inspection and identification. Cement which has been stored for more than one month or which are suspected to be damp shall not be used unless otherwise approved by the Engineer.

8-03 FINE AGGREGATE

(a) Composition

Fine aggregate shall be natural sand not including organic matter and other foreign substances.

(b) Quality

Fine aggregate shall consist of hard, tough, durable, uncoated particles. The shape of the particles shall be generally rounded or cubical and reasonably free from flat or elongated pieces. The fine aggregate shall conform to the following specific requirements:

1. Grading - Fine aggregate shall be well graded from fine to coarse and the gradation shall conform to the following requirements as delivered to the mixers:

<u>Sieve Designation</u> <u>U.S. Std. Square Mesh</u>	<u>Cumulative Percentage</u> <u>by Weight Passing</u>
No. 4	95 - 100
No. 16	60 - 75
No. 100	2 - 10

In addition to the grading limits shown above, the fineness modulus shall be in the range from 2.30 to 3.0.

(c) Storage

Fine aggregate shall be stored in such a manner as to avoid the inclusion of any foreign material in the concrete. Sufficient live storage shall be maintained at all times to permit continuous placement of concrete at the rate specified.

8-04 COARSE AGGREGATE

(a) Composition

Coarse aggregate shall consist of gravel, crushed gravel or rock, or a combination of gravel and crushed gravel or rock.

(b) Quality and Grading

1. Quality - Coarse aggregate shall consist of hard, tough, durable, clean and uncoated particles. All foreign materials and dust shall be removed by adequate processing. The particle shape of the smallest size of crushed coarse aggregate shall be generally rounded or cubical, and the coarse aggregate shall be reasonably free from flat and elongated particles in all sizes.
2. Grading - The coarse aggregate shall be well graded from fine to coarse. The grading of the aggregate as delivered to the mixer shall be as follows:

<u>Sieve Designation</u> <u>U.S. Std. Sq. Mesh</u>	<u>Per Cent by Wt.</u> <u>Passing Individual Sieves</u> <u>3/4" Max.</u>
1"	100
3/4"	90 - 100
3/8"	20 - 55

3. Size - Unless otherwise directed, the maximum sizes of coarse aggregate to be used in the various parts of the work shall be 3/4 inch.
4. Storage - Storage of coarse aggregates shall be as that specified in paragraph 8-03(c) for fine aggregates.

8-05 AGGREGATE SAMPLES

Samples of the aggregate shall be furnished at a point designated by the engineer for his approval at least ten (10) days in advance of the time when the placing of concrete is expected to begin.

8-06 WATER

Water used in mixing concrete shall be fresh, clean and free from injurious amount of oil, acid, alkali, salts, or organic matter.

8-07 PROPORTIONING OF CONCRETE

(a) The Contractor shall design the mix proportion for every class of concrete placing for the approval of the Engineer. The Contractor shall carry out the mix test in case being requested by the Engineer. The test is to be made at the expense of the Contractor.

(b) The compressive strength of the age of 28 days shall be as follows and desirable mix proportion is also indicated.

<u>Class</u>	<u>Minimum 28 days Compressive Strength</u>	<u>Mixing proportion by volume cement: fine aggregates: coarse aggregates</u>
A (Reinforced Concrete)	210 kg/cm ²	1 : 2 : 4
B (Plain Concrete)	160 kg/cm ²	1 : 3 : 6
C (Concrete Layer)	135 kg/cm ²	1 : 4 : 6

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

8-08 MIXING

(a) Equipment

Concrete shall be mixed by portable concrete mixer unless otherwise approved by the Engineer.

(b) Measurement

The measurement of every ingredient of concrete shall be made in weight. Nevertheless, the measurement in volume is admitted subject to the approval of the Engineer.

(c) Mixing Time and Method

The mixing time of concrete shall be more than two (2) minutes and less than five minutes. Over mixing, requiring the introduction of additional water to preserve the required consistency, will not be permitted. The mixer shall be completely emptied before receiving the materials for the succeeding batch and shall be kept clean and washed out after stopping work at the end of each shift.

On commencing work, the first batch shall contain sufficient excess of cement, sand and water to coat the inside of the drum to avoid the reduction of the required mortar content of the mix.

8-09 CONVEYING

(a) General

Concrete shall be conveyed from mixer to forms, as rapidly as practicable, by methods which will prevent segregation or loss of ingredients. There shall be no vertical drop greater than 1.5 meters

except where suitable equipment is provided to prevent segregation and where specifically authorized. Belt conveyors, chutes or other similar equipment in which the concrete is delivered to the structure in a thin, continuously exposed flow, will not be permitted except for very limited or isolated sections of the work. Such equipment shall be arranged to prevent objectionable segregation.

8-10 PLACING

(a) Approval

Approval of the Engineer shall be obtained before starting any concrete pour.

(b) General

Concrete shall be worked into the corners and angles of the forms and around all reinforcement and embedded items without permitting the material to segregate. Not more than three (3) cubic meters shall be deposited in one pile for compaction. Free water shall be collected in depressions away from the forms and removed by bailing prior to placement of additional concrete. All concrete placing equipment and methods shall be subject to approval.

(c) Cooling of Aggregates

The aggregate shall be cooled by wetting if it is drier than the condition known as saturated, surface dry.

(d) Concrete on Earth Foundation

All concrete shall be placed upon clean, damp surfaces free from standing or running water. Prior to placing concrete, the earth foundation shall be satisfactorily compacted in accordance with approved methods.

(e) Concrete on Other Concrete

Surface upon or against which concrete is to be placed shall be clean, free from oil, standing or running water, mud, drummy rock, objectionable coatings, debris, and loose, semi-detached or unsound fragments. To insure a firm and tight bond between fresh concrete and other concrete, concrete surfaces, where necessary, shall be chipped or roughened as directed by the Engineer. All surfaces shall be wetted thoroughly to keep them in a completely moist condition before placing concrete. All approximately horizontal surfaces shall be covered with a layer of mortar of the same-sand ratio as used in the concrete mix before the concrete is placed.

(f) Consolidation of Concrete

Concrete shall be placed and consolidated with the aid of mechanical vibrating equipment or of hand-spading and tamping. In no case shall vibrators be used to transport concrete inside the forms. In placing concrete through reinforcement, care shall be taken that no segregation of the coarse aggregate occurs.

8-11 FORMS

(a) General

Forms shall be used, wherever necessary, to confine the concrete and shape it to the required lines, or insure against contamination of the concrete. Forms shall have sufficient strength to withstand the pressure resulting from placement and vibration of the concrete, and shall be maintained rigidly in correct position. Forms shall be sufficiently tight to prevent loss of mortar from the concrete. Forms for exposed surfaces against which backfill is not to be placed shall be lined with a form grade plywood or sheet steel. Steel panel forms may also be used.

(b) Cleaning and Oiling of Forms

At the time concrete is placed in the forms, the surfaces of the forms shall be free from incrustations of mortar, grout, or other foreign material that would contaminate the concrete or interfere with the fulfillment of the Specifications' requirements relative to the finish of formed surfaces. Before concrete is placed, the surfaces of the forms shall be oiled with a commercial form oil that will effectively prevent sticking and will not stain the concrete surfaces.

(c) Removal of Forms

Forms shall be removed as soon as practicable in order to avoid delay in curing and to make possible earliest practicable repair of surface imperfections, but in no case shall they be removed before approval. Any needed repair or treatment shall be performed at once, and shall be followed immediately by the specified curing. Forms shall be removed with care so as to avoid injury to the concrete, and any concrete so damaged shall be repaired.

8 -12 CURING AND PROTECTION

(a) General

All concrete shall be moist cured for a period of not less than seven (7) consecutive days by an approved method or combination of methods applicable to local conditions, except that the curing period may be reduced to three days for concrete made with high-early-strength cement. The Contractor shall have all equipment needed for adequate curing and protection of the concrete on hand and ready to install before actual concrete placement begins.

(b) Water Curing

Concrete shall be kept wet by covering with an approved, water-saturated material or by a system of perforated pipes or mechanical sprinklers or by any other approved method which will keep all surfaces continuously (not periodically) wet. Water for curing shall be generally clean and free from any element which might cause objectionable staining or discoloration of the concrete.

8-13 REPAIR OF CONCRETE

Repair of imperfections in formed concrete shall be completed within twenty four (24) hours after removal of forms at no additional cost to JICA. Fins shall be neatly removed from exposed surfaces. Concrete that is damaged or honeycombed must be removed to sound concrete and replaced with drypack, mortar, or concrete as hereinafter specified. Where large bulges and abrupt irregularities protrude, the protrusions shall be reduced by bush-hammering and grinding. Drypack filling shall be used for holes left by the removal of fasteners from the ends of form tie rods.

8-14 DRYPACK MORTAR

Drypack shall consist of a mixture (by dry volume or weight) of one (1) part cement to 2-1/2 parts of sand conforming to paragraph 8-03, Fine Aggregate, except that in gradation, 100% shall pass a No.16 sieve. Only enough water shall be used to produce a mortar which, when used, shall stick together on being molded into a ball by a slight pressure of the hands, and shall not extrude water but will leave the hands damp.

(a) General

The Contractor shall furnish deformed steel bar in accordance with the drawings and these specifications. The Contractor shall prepare, clean, cut, bend and place all reinforcements, as shown on the detail drawings or as otherwise directed. The Contractor shall furnish all chains, supports and ties. All reinforcement shall be reasonably free from loose, flaky rust and scale, and free from oil, grease and other coating which might destroy or reduce its bond with concrete.

(b) Relationship of Reinforcement to Concrete Surfaces

The distance from the edge of the main reinforcement to the concrete surface shall be 5 cm except such portions as shown in the drawings. The concrete covering the stirrups, spacer bars, and similar secondary reinforcement may be reduced by the diameter of such bars, unless otherwise indicated.

(c) Lapping

Lapping length at joints of the reinforcing bar shall be at least thirty times of the diameter of bar and shall be bound by steel wire.

(d) Supports

All reinforcements shall be secured in place by use of metal or concrete supports, spacers or ties. Such supports shall be of sufficient strength to maintain the reinforcement in place throughout the concrete operation. The supports shall be used in such a manner that they will not be exposed or contribute in any way to the discoloration or deterioration of the concrete.

(a) Concrete

1. Measurement for payment for plain or reinforced concrete, will be based on the volume of concrete in place within the lines and grades shown on the drawings.
2. No deduction will be made for rounded or bevelled edges, or space occupied by metal work, or embedded items such as supports, spacers or ties. The cost of construction joint treatment with the attendant loss of material shall be included in the unit price bid per cubic meter of concrete.
3. Payment at the unit prices bid shall constitute full payment for all costs for concrete work. The costs of any dewatering required to maintain dry conditions during the pouring of concrete, furnishing materials, and installing and removing such materials, shall be included in the item of Temporary Works as indicated in the Bill of Quantities.

(b) Steel Reinforcement

Measurement for payment for furnishing, preparing bar, cleaning, cutting, bending, and placing steel reinforcement by the Contractor will be based on the number of kilograms placed in accordance with the detail drawings or as otherwise directed. Payment will be made for steel in laps as shown on the drawings; where bars are welded, payment will be made as if they were lapped. Payment will not be made for steel in laps or used which are solely for the convenience of the Contractor. Payment will be made at the unit price bid for steel reinforcement. No separate payment will be made for steel reinforcement supports, and the cost thereof shall be included in the unit price bid.

(a) General

Waterproofing shall be performed to the lines and grades shown on the drawings for the following structures :

1. Generator house

(b) Material for Waterproof Mortar

Sand and cement shall conform to the requirements for PART 8 relative to fine aggregate and cement. As to the waterproof agent, the MANOR or local mortar agent equivalent to JIS-A6101 can be used.

(c) Construction

Waterproofing mortar shall be placed at the inside walls and floor with the thickness of 1.5 cm after chipping work of the inside concrete surface as shown on the drawings or as otherwise directed by the Engineer.

The mortar shall be one (1) part cement and three (3) parts sand in volume unless otherwise provided. Mixing rate of waterproof agent shall be three percent (3%) of cement weight. The mixing proportion per 10.0 m² is shown as follows ;

Cement	Fine aggregate	Waterproof agent
90 kg	0.18 m ³	2.7 kg

9-01 SCOPE

(a) In accordance with the specification contained in this part and as shown on the detail drawings, the Contractor shall furnish plant, labour, equipment, and materials, and perform all operations in connection with deep well required as a suction hole for submargible motor pump.

(b) The exact location, depth and diameter of the hole shall be decided based on the results obtained from an electric prospective survey which shall be executed by the Contractor.

(c) Additional instructions in the form of additional drawings or written or verbal instructions, may be given during the progress of the work and such will not be considered to be extra work within the meaning of the specifications.

9-02 MAKING HOLE

The hole shall be made at a depth and a diameter as shown on the drawings or as directed by the Engineer. The hole through overburden or unstable materials shall be cased and/or treated with cementation to prevent the caving-in of the hole. The hole shall be made by either percussive or rotary machine and the selection of the machine shall be informed in advance by the contractor and approved by the Engineer. Confirmation of the depth shall be done using the inspection of the length of casing pipes in the presence of the Engineer.

9-03 INSTALLATION OF CASING AND FILTER

(a) Casing pipe shall be rigid polyvinyl chloride (PVC) pipe and designated in JIS, K6741 unless noted otherwise.

(b) The casing pipe shall be processed strainers at the appropriate positions which shall be adjusted water bed.

(c) The position of water bed shall be searched by an electric water detector or other method by the Contractor. After collating above tests, the suitable position of the strainer of casing shall be decided by the Contractor in the presence of the Engineer.

(d) Size of the slit perforated on the strainer shall be approximately five (5) millimeters in width and 15 cm in length, and its number and arrangement shall be shown as drawings. The processed casing pipe shall carefully be installed into the hole, and crevice between the hole and the casing shall be filled with appropriate filter materials approved by the Engineer.

9-04 WASHING

After installation of the casing and filter, all slime, clay and other washable materials containing in the hole and strainers shall be completely washed out as directed by introducing fresh water, air or a mixture of water and air pressure.

9-05 PUMPING TEST

After completion of making the deep well, pumping test shall be executed by the Contractor and checked by the Engineer. When the Engineer will approve the result of pumping test as a satisfactory, the works may be regarded as completion. In case of no approval by the Engineer, the Engineer may direct to make another hole to the Contractor and the

Contractor shall comply with the request.

9-06 PAYMENT

Measurement for payment for making hole will be based on the number of linear meters of hole made from the point where the works begins to the bottom of the hole in accordance with the detail drawings or as directed. Payment for making hole will be made at the applicable unit prices. Measurement for payment for casing pipe precessed strainers will be based on the number of linear meters. Payment will be made at the unit prices which shall include all costs incidental to processing assembling, locating, installing the pipe as shown on the drawing or as directed. Measurement for payment for filter materials will be based on the number of cubic meters acceptably placed as computed from the neat lines indicated on the drawings. Payment will be made at the unit price which shall include all costs for furnishing, hauling, handling, and placing the filter materials as required.

PART 10

PUMP FACILITIES

10-01 SCOPE

(a) Submergible deep wellpump shall be installed in the field of Jatisari Pests Forecasting Center. The submergible deep well pump shall be conformed to the following requirement of equivalent.

TYPE	:	Submergible Pumps for Deep Wells
MODEL	:	50 BHS 5-2.2 (EHARA)
CAPACITY	:	200 l/min.
PUMP DIAMETER	:	50 mm
HEAD	:	40 m
MOTOR	:	Submergible motor 200v, 3-phase, 2.2 kW, 50 Hz
START METHOD	:	Automatic-transformer
ACCESSORIES		
Well cover	:	D200 mm, 1 pce.
Discharge elbow	:	D50 mm, 1 pce.
Check valve	:	D50 mm, 1 pce.
Sluice valve	:	D50 mm, 1 pce.
Automatic air vent valve	:	1 pce.
Compound gage	:	1 pce.
Submergible cable	:	1.25 mm ² , 30 m
Low water level electrode	:	1 L.S.
Well frange	:	D50 mm, 1 set
Pipe flange	:	D50 mm, 1 set
Anchor bolt	:	1 set
Riser pipe	:	D50 mm, SGPW, 25 m
Control panel	:	Floor standing type, Indoor dust proof, Auto-transformer
Other sundries	:	1 L.S.

(b) The Contractor shall furnish the submergible deep well pump, casing pipes, riser pipes, fittings, bolts, nuts, and all other materials necessary to properly install the works shown on the drawings and as specified. As to the diesel engine generator itself (10 kVA. 200v/220v) shall be procured by the JICA.

(c) These facilities shall be strictly in accordance with the manufacturer's technical data and printed instruction and permitted by the Engineer. For all kinds of earth works required for the works, the specification for earth and foundation works, shall be applied.

10-02 INSTALLATION OF PIPE

Water pipe of deep well pump shall be right Carbon Steel Pipes for Ordinary Piping (SGPW, JIS G 3452). The pipes shall be suitable for field cutting and coupling.

Joints for SGPW pipe shall be approved by the Engineer before making connection. In making connections, cleaning dirt and moisture free from pipe and fittings shall be required.

Cutting of the pipe shall be kept to a minimum. When cuts are necessary, they shall be perpendicular to axes of the pipe and smooth.

10-03 INSTALLATION OF GENERATOR

The Generator shall be procured by the JICA and the Contractor shall install the facilities.

The installation of the generator shall conformed to the manufacturer's instruction and the regulations of the Government of Indonesia.

PART 11 BUILDING AND FOUNDATION

11-01 SCOPE

In accordance with the Specifications and as shown on the drawings or otherwise directed by the Engineer, the Contractor shall furnish labor, equipment and materials and perform all operations in connection with the construction of buildings, including earthworks, grading of the houses foundation, concrete works, construction of column, walls, roof, windows, doors, finishings, electrical facilities, water supply facilities and other related works and facilities.

11-02 MATERIALS

All materials used in the building works shall be subject to the Engineer's approval. The Contractor shall submit the Engineer, samples of said materials prior to commencement of relative works for his approval.

11-03 BRICK WORK

Local products can be used and all bricks shall be laid after applying mortar. Mortar shall be prepared in the same way as for plastering. It shall be applied firmly to raked out and well wetted joints with a pointing trowel and well pressed in. All superfluous mortar shall be removed with a trowel.

External surfaces shall be finished with weather struck pointing and internal surfaces given flush pointing.

11-04 CARPENTRY

(a) The work under this paragraph consists of all carpentry works as shown in the drawings.

(b) Local timber can be used. All timber shall be sufficiently seasoned and planned smooth, straight true and free from cracks, cuts, breaks, loose or dead knots, borehole, and any other defect. Metal fittings suitable to local timbers shall be used.

(c) All frameworks shall be jointed by optimum jointing methods. Joints shall transmit required loads and withstand stresses, to which they will be subjected and shall be approved by the Engineer. Unless otherwise stated, all joints shall be fixed with as many nails of a proper type as required.

For columns, studs, beams, binders, joists, rafters, and purlins, one piece of timber extended between the supports or the base on which it is to be fitted shall be used. However, when inevitably it is necessary to joint at an intermediate position, such a method that has been approved to cause no hindrance in structure shall be employed.

11-05 ROOFING

The construction method shall conform to Indonesian specifications.

Wooden door and window work --- Wood fittings shown in drawings shall be manufactured in Indonesia by local timber.

Articles of builders hardware shall be of approved type and well finished. Samples shall be submitted to the Engineer for approval before use. Screws shall be of the same metal as the main article.

All articles shall be fixed in a secure and efficient manner. Articles damaged during fixing shall be removed and new fixed at Contractor's expense. Surface of joinery where effected shall be made good.

Glass shall be 3 millimeters sheet glass of good quality, free from specks, bubbles, air holes and other defects. Sheet glass shall be plain, clear. The glass panes shall be fixed either with wood beads or shall be bedded in oil putty, sprigged, firmly back puttied finished to a chamfer. Rabbets shall be painted one coat of oil paint before glazing. Each pane shall be whole square.

11-06 PAINTING

Painting shall not be carried out to exterior surfaces in wet weather. All surfaces must be thoroughly dry before applying paint. Painting shall not be carried out in windy weather as the paint is likely to be damaged by dust.

Contents of drums or tins shall be stirred well before using. When more than one coat is required to be done, each coat shall vary slightly in shade and shall be passed by the Engineer before the next coat is started. First coat should be thoroughly dry before the second coat is applied.

All brushes, tools, pots, etc. used in carrying out the work shall be clean and free from foreign matter and shall be thoroughly cleaned out before being used for different type of material. Paint shall be applied with proper paint brushes of good quality.

In using proprietary brands of paint, the materials shall be mixed, prepared and applied strictly in accordance with manufacturer's instructions.

11-07 ELECTRICAL AND WATER SUPPLY WORKS

All electrical works and water supply works shall be as shown on the drawings and Indonesian standard specifications or directed by the Engineer.

12-01 GENERAL

The land consolidation works for the experimental field include, under this contract, construction works for appurtenant structure of main construction works such as the construction of land shape adjustment, land levelling, farm road and irrigation and drainage canals and other related structures.

The said appurtenant structures include farm ditches; cross culverts; capping pipes for inlet and outlet of drain pipes; diversion facility; turn-out; including culvert; water valve; etc.

The majority of the appurtenant structures shall be either stone masonry structure or concrete structure, which shall be constructed by means of either the combination of earth work and stone masonry work or that of earth work and concrete work. It means that the Specification indicated in the PART 4, 5, 7 and 8 shall be adoptable for the construction of the appurtenant structure.

12-02 RAT FENCE

It is generally observed that rats have intensively magnified their damage to paddy fields and devoured the vast area of plant crops. Facing the damage, the experimental field, likewise, will meet the gross impedence by the attack of rats. Therefore, the Laboratory shall be guarded by the installation of rat fence to avoid and culminate possible attack to the field by rats. They also carry epidemic bacteria that would affect appropriate experimentation in the field.

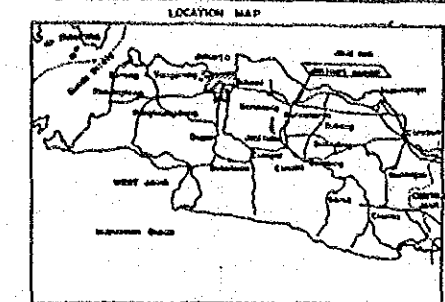
As to the fence panel for Jatisari center, the panels of 640 meter length shall be procured by the JICA and the Contractor shall fabricate the corner panels and other supporting steel materials as specified on the drawings. On the other hand the Contractor shall furnish the all fence materials for Celuk Field Laboratory as specified on the drawings.

第6章 添付図面

D R A W I N G L I S T

No.	Title of Drawing
	JATISARI
J-1	GENERAL PLAN OF JATISARI CENTER
J-2	IRRIGATION AND DRAINAGE CANAL
J-3	STANDARD TYPE OF LAND CONSOLIDATION
J-4	D-LINE IRRIGATION CANAL
J-5	A-E LINE IRRIGATION CANAL
J-6	E-C LINE DRAINAGE CANAL
J-7	MAIN DRAINAGE CANAL (F-LINE)
J-8	E-LINE FARM ROAD
J-9	PLAN OF FARM ROAD (1)
J-10	PLAN OF FARM ROAD (2)
J-11	A-LINE OPERATION ROAD/ B-LINE FARM ROAD
J-12	OPERATION ROAD & DRAINAGE CANAL IN HOME YARD
J-13	TERTIARY CANAL
J-14	DIESEL ENGINE GENERATOR HOUSE
J-15	DEEP WELL AND WATER TANK
J-16	FOUNDATION FOR NET HOUSE AND BERTEBRATE LABORATORY
J-17	RAT FENCE STRUCTURE
J-18	GATE STRUCTURE
J-19	OTHER RELATED STRUCTURES
	CELUK
C-1	GENERAL PLAN OF CELUK FIELD LABORATORY
C-2	IRRIGATION & DRAINAGE CANAL
C-3	FARM POND & PIPING WORK
C-4	MASONRY RETAINING WALL & ACCESS ROAD
C-5	RAT FENCE STRUCTURE
C-6	GATE STRUCTURE

GENERAL PLAN OF JATISARI CENTER



THE INFRASTRUCTURE IMPROVEMENT WORKS FOR THE FOOD CROP PROTECTION PROJECT

1. LAND CONSOLIDATION WORK FOR PADDY FIELD
 - 1. Land shape adjustment & land levelling A= 2.8 ha
 - 2. Irrigation canal L= 447m
 - 3. Main drainage canal L= 238m
 - 4. Drainage canal L= 261m
 - 5. Farm ditch L= 212m
 - 6. Farm road / 8-2.0, 3.5m L= 322m
 - 7. Operation road / 8-3.5m L= 248m
2. INTAKE AND IRRIGATION CANAL
 - 1. Intake / 0-2 1/2pc 1 place
 - 2. Tertiary canal / 0-50 Vm L= 178m
 - 3. Intake canal L= 48m
3. ADDITIONAL WATER RESOURCES
 - 1. Deep well / 200mm H= 40m
 - 2. Deep well pump & operation house, 50mm H= 40m
 - 3. Generator house A= 321.44m²
 - 4. Water Tank/Reservoir / 4x61.5m V= 32.4m³
4. INSTALLATION OF RAT FENCE
 - 1. Concrete foundation / 10-0.8m L= 430m
 - 2. Rat Fence / L= 440m
 - 3. Automatic gate 1 place
5. VERTEBRATE LABORATORY, NET HOUSES FOUNDATION WORKS
 - 1. Vertebrate Laboratory A= 13.00 x 7.50
 - 2. Net houses A= 14.34 x 7.26 2 pieces
6. OTHER RELATED STRUCTURES
 - 1. Repairment of existing operation road/slope pavement / 8-3.0m L= 157m
 - 2. Access road and gate 2 pieces
 - 3. Repairment of existing fence 1 L.S.

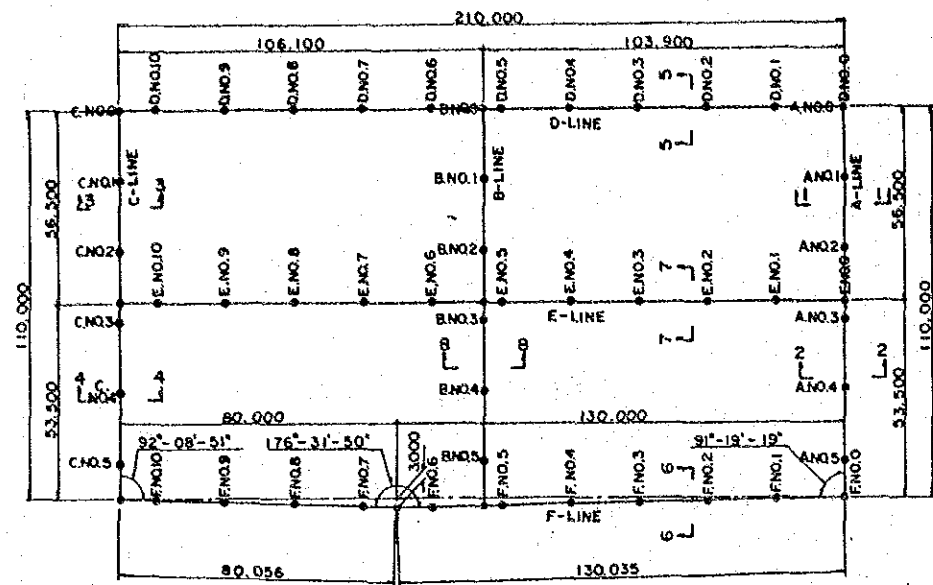
DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-182)

JATISARI PESTS FORECASTING CENTER

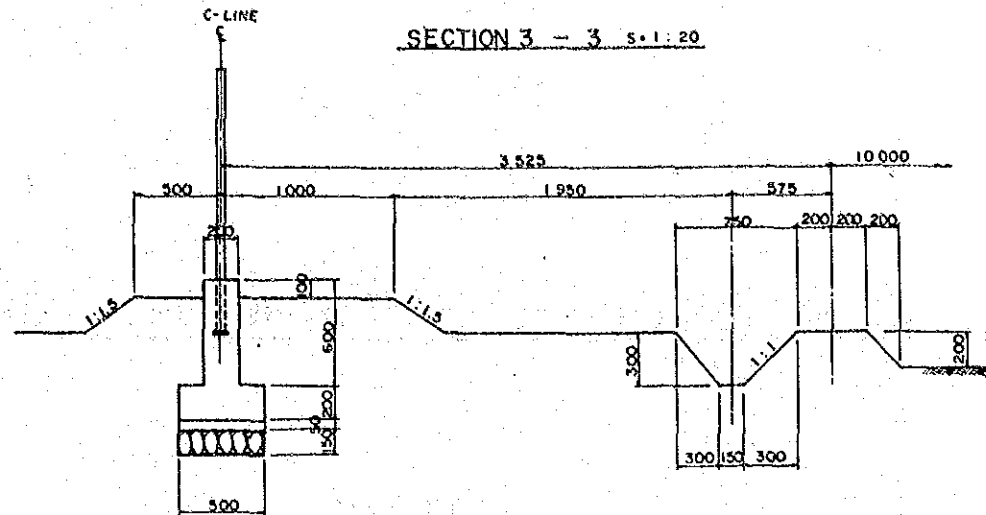
GENERAL PLAN

JAPAN INTERNATIONAL COOPERATION AGENCY 896. 89.
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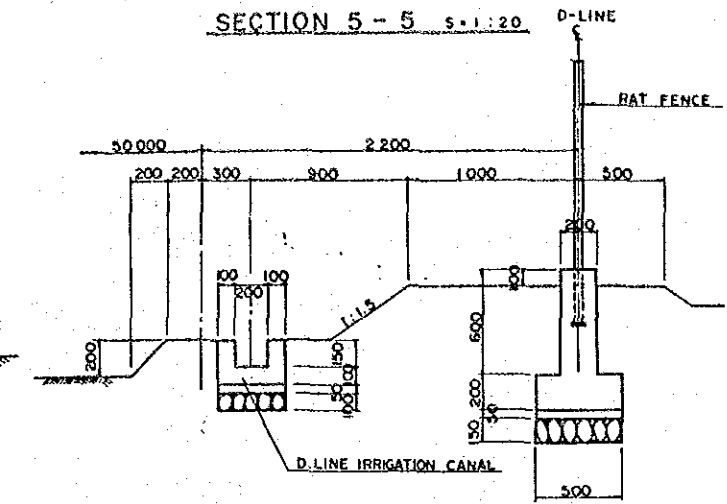
FORMATION PLAN 5:1:1000



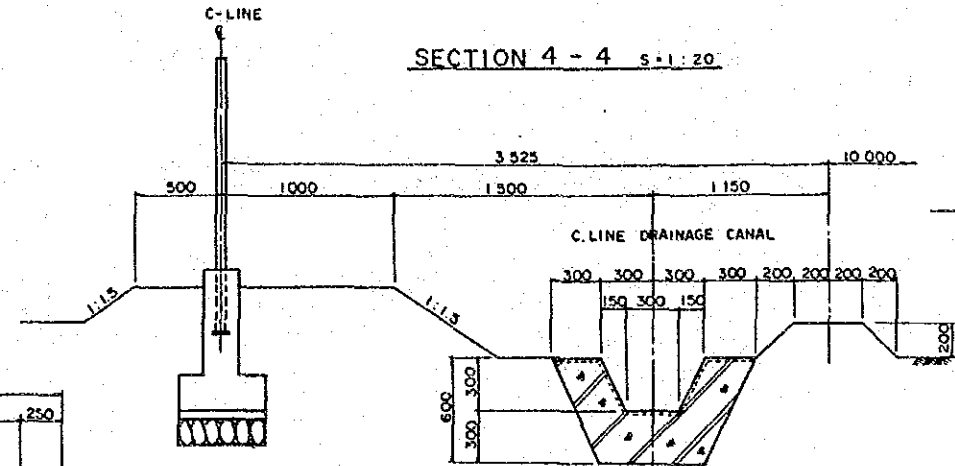
SECTION 3 - 3 5:1:20



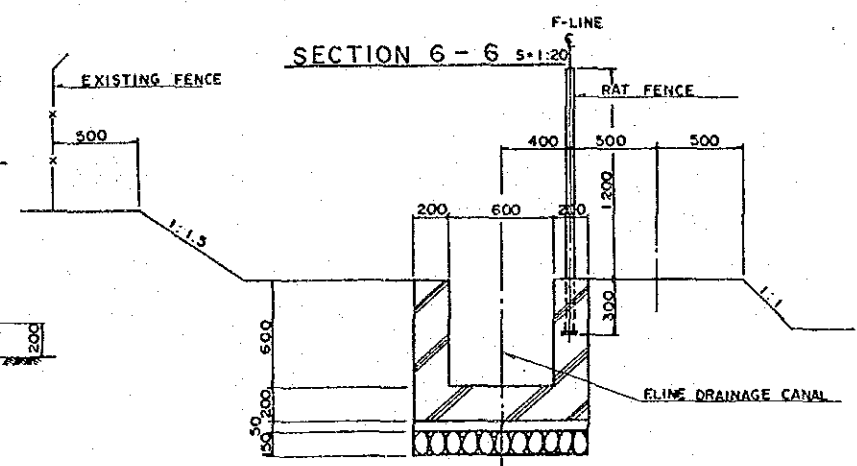
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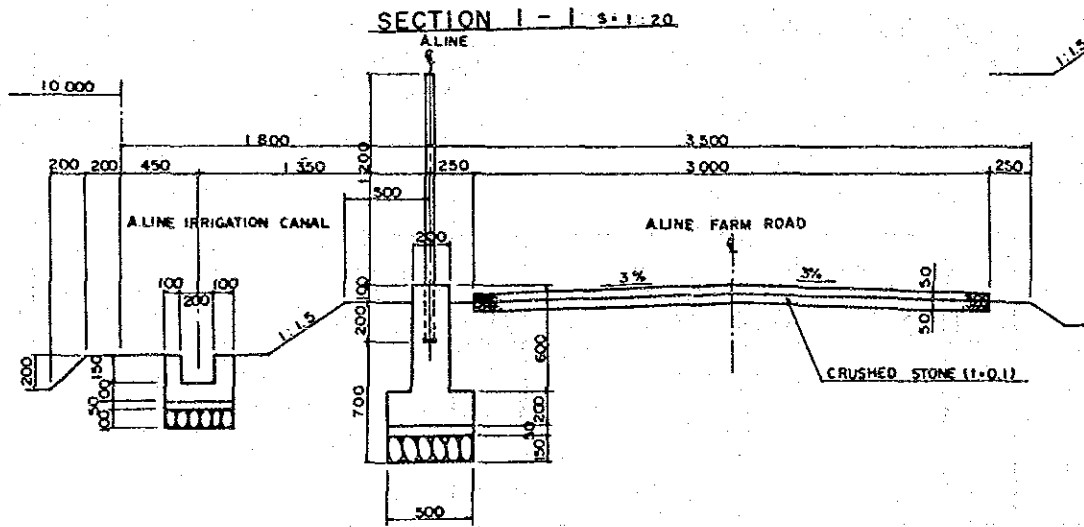
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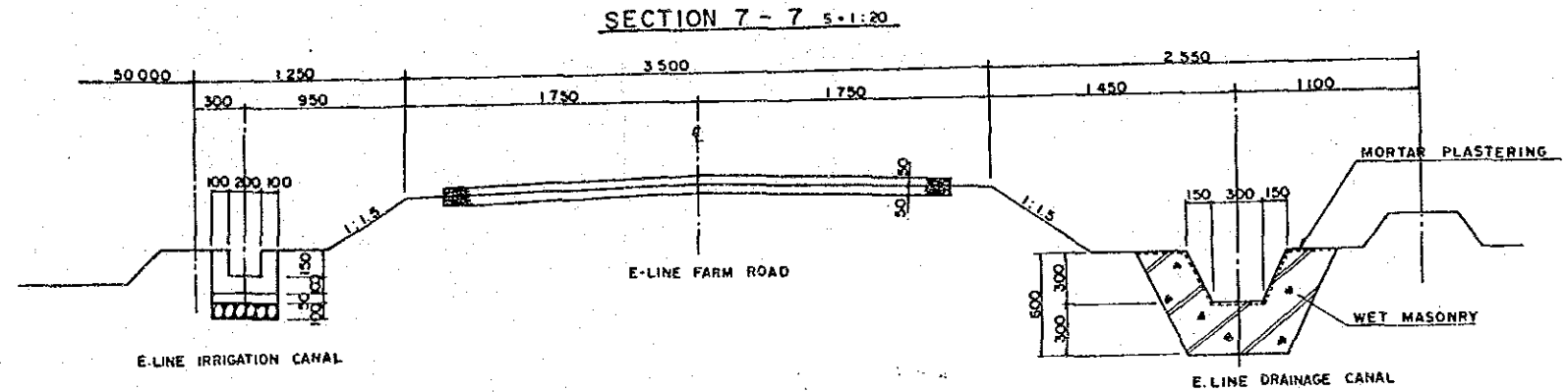
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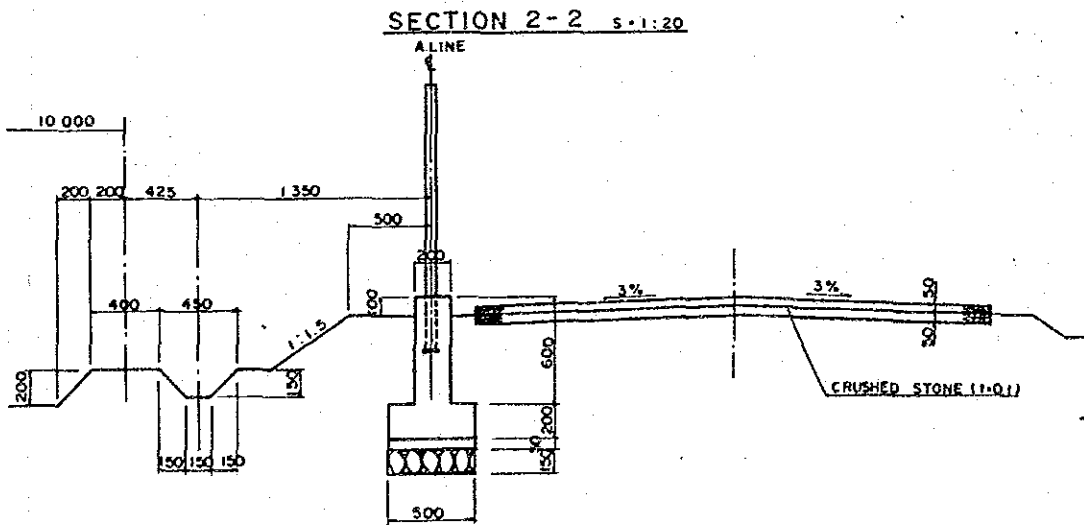
SECTION 1 - 1 5:1:20



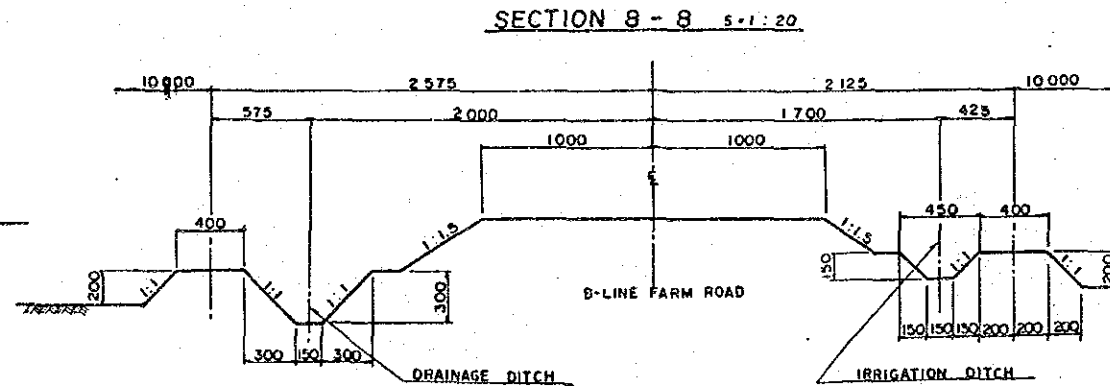
SECTION 7 - 7 5:1:20



SECTION 2 - 2 5:1:20

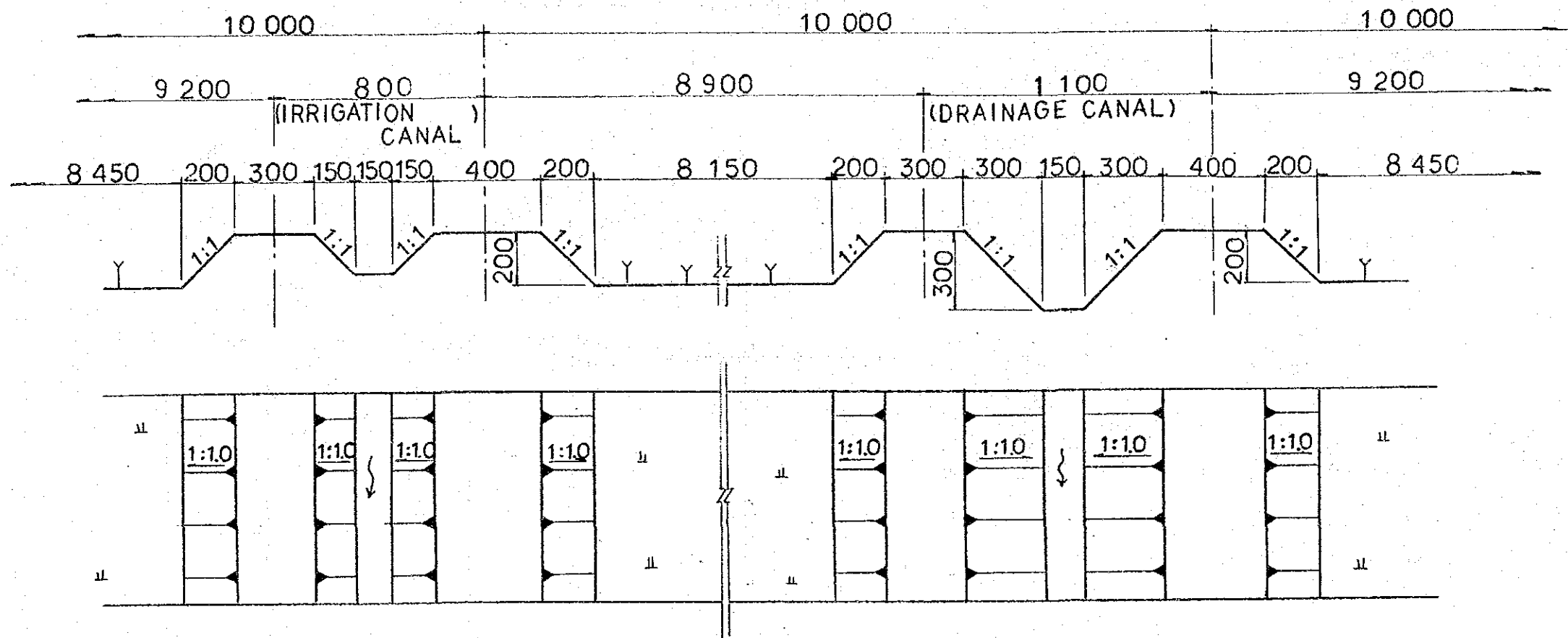


SECTION 8 - 8 5:1:20



DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
 THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
 THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)
 JATISARI PESTS-FORECASTING CENTER
 IRRIGATION and DRAINAGE CANAL
 JAPAN INTERNATIONAL COOPERATION AGENCY
 TOKYO
 DWG. NO.
 J-2

STANDARD TYPE OF LAND CONSOLIDATION $S=1:20$



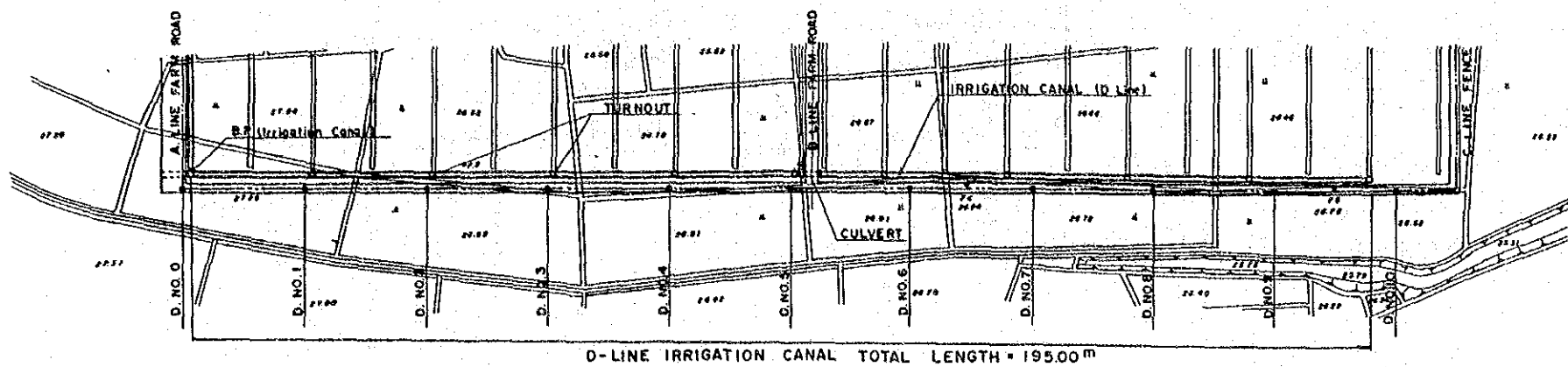
DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)

JATISARI PESTS FORECASTING CENTER
STANDARD TYPE
OF LAND CONSOLIDATION

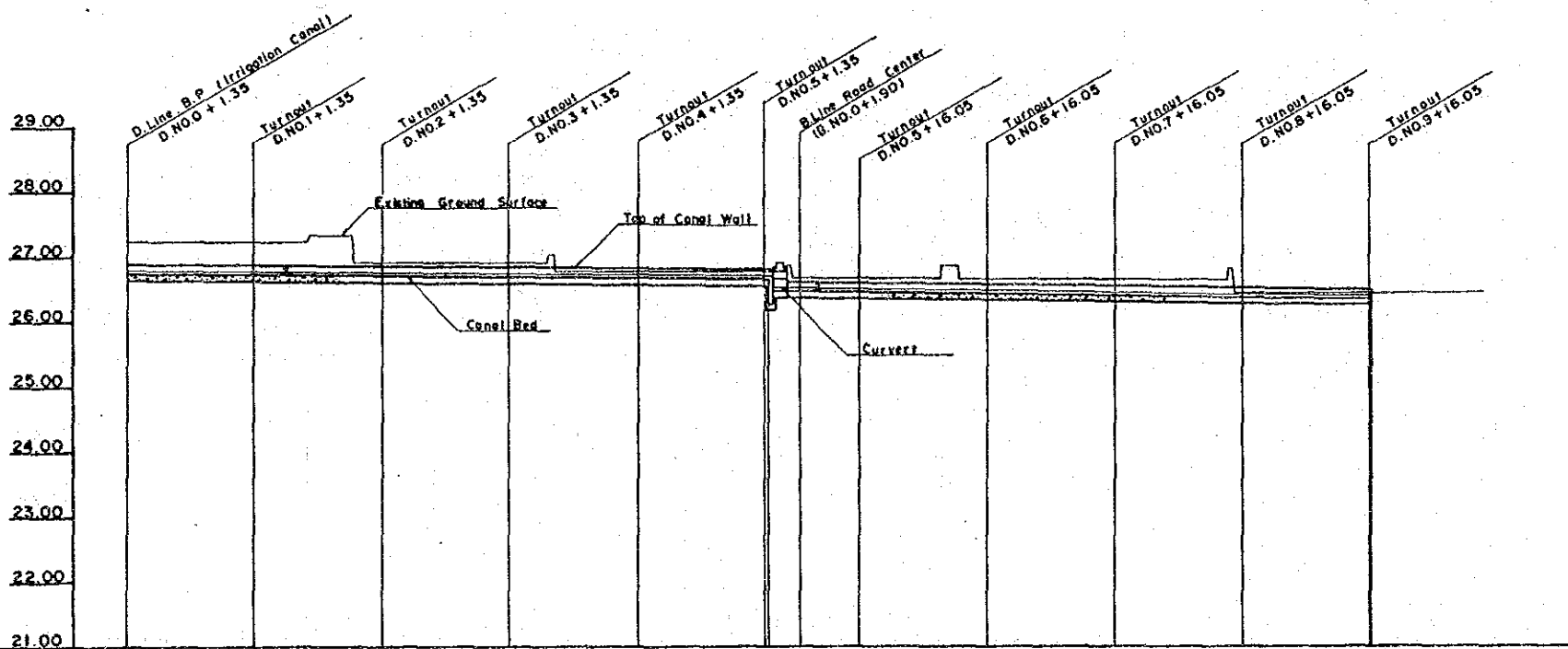
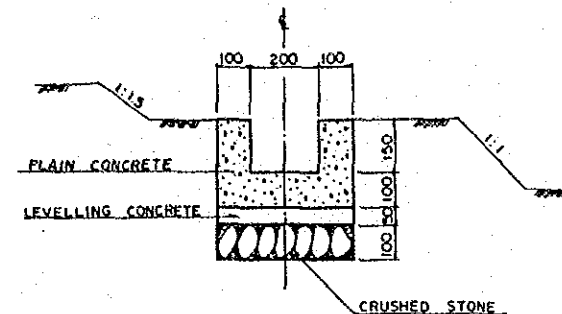
JAPAN INTERNATIONAL COOPERATION AGENCY
T O K Y O

DWG. NO.
J-3

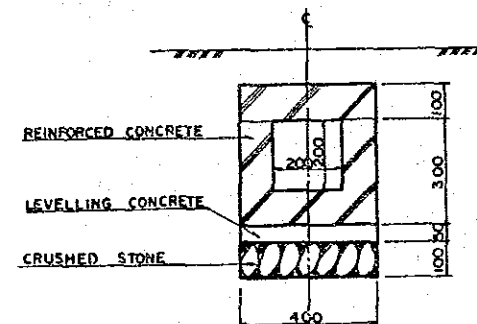
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TYPICAL CROSS SECTION 5:1:10 (IRRIGATION CANAL)



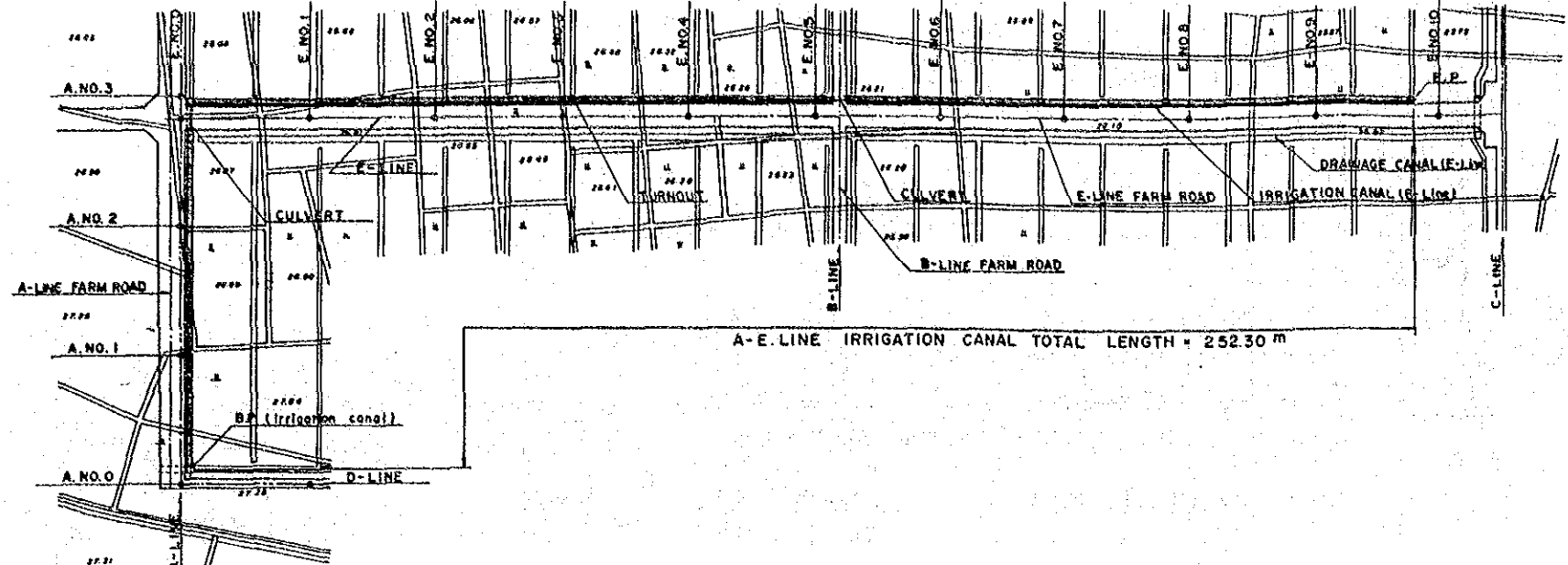
TYPICAL CROSS SECTION 5:1:10 (CULVERT)



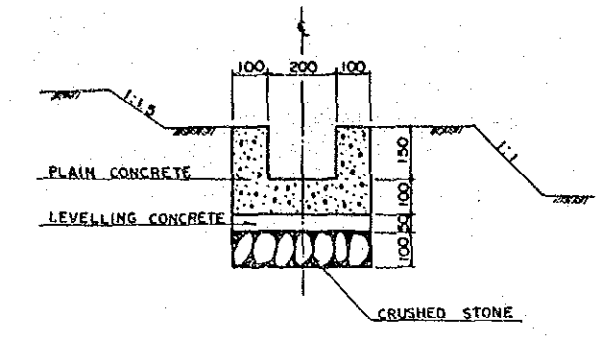
SLOPE	1/1000										
WATER SURFACE ELEVATION	26.73	26.77	26.75	26.73	26.71	26.69	26.67	26.65	26.47	26.45	26.41
CANAL BED ELEVATION	26.73	26.73	26.71	26.69	26.67	26.65	26.47	26.45	26.43	26.41	26.37
GROUND ELEVATION	27.23	27.25	26.92	26.92	26.78	26.67	26.66	26.66	26.56	26.45	26.46
ACCUMULATED DISTANCE	0.00	20.00	40.00	60.00	80.00	100.00	121.15	134.70	154.70	174.70	195.00
DISTANCE	0.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.30
STATION	D.NO.0+1.35	D.NO.1+1.35	D.NO.2+1.35	D.NO.3+1.35	D.NO.4+1.35	D.NO.5+1.35	D.NO.6+16.05	D.NO.7+16.05	D.NO.8+16.05	D.NO.9+16.05	D.NO.9+16.05 (E.P.)
CURVE											

DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
 THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
 THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)
 JATISARI, PESTS FORECASTING CENTER
D.LINE IRRIGATION CANAL
 JAPAN INTERNATIONAL COOPERATION AGENCY
 TOKYO
 DWG. NO. J-4

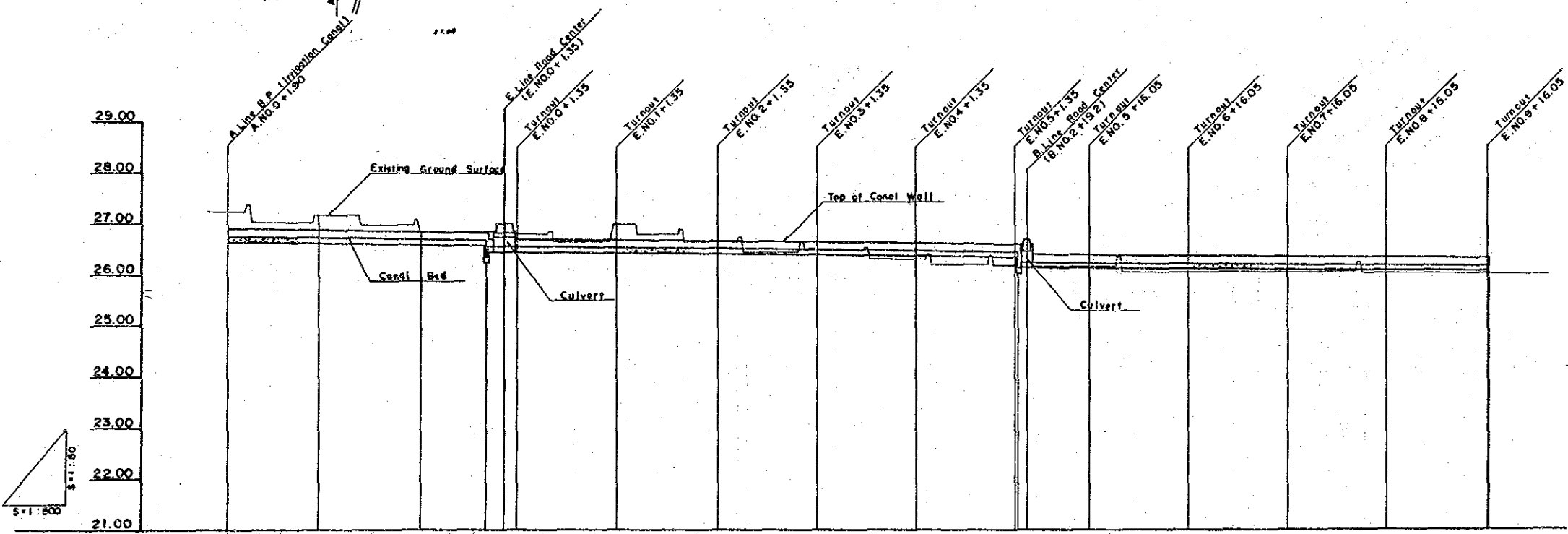
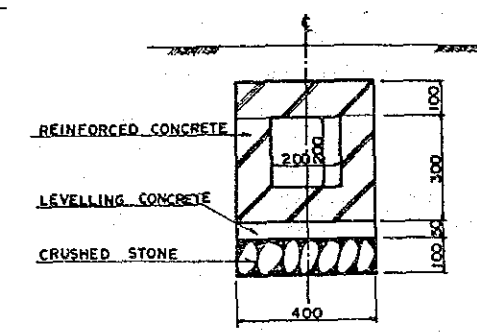
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TYPICAL CROSS SECTION 5:1:10 (IRRIGATION CANAL)



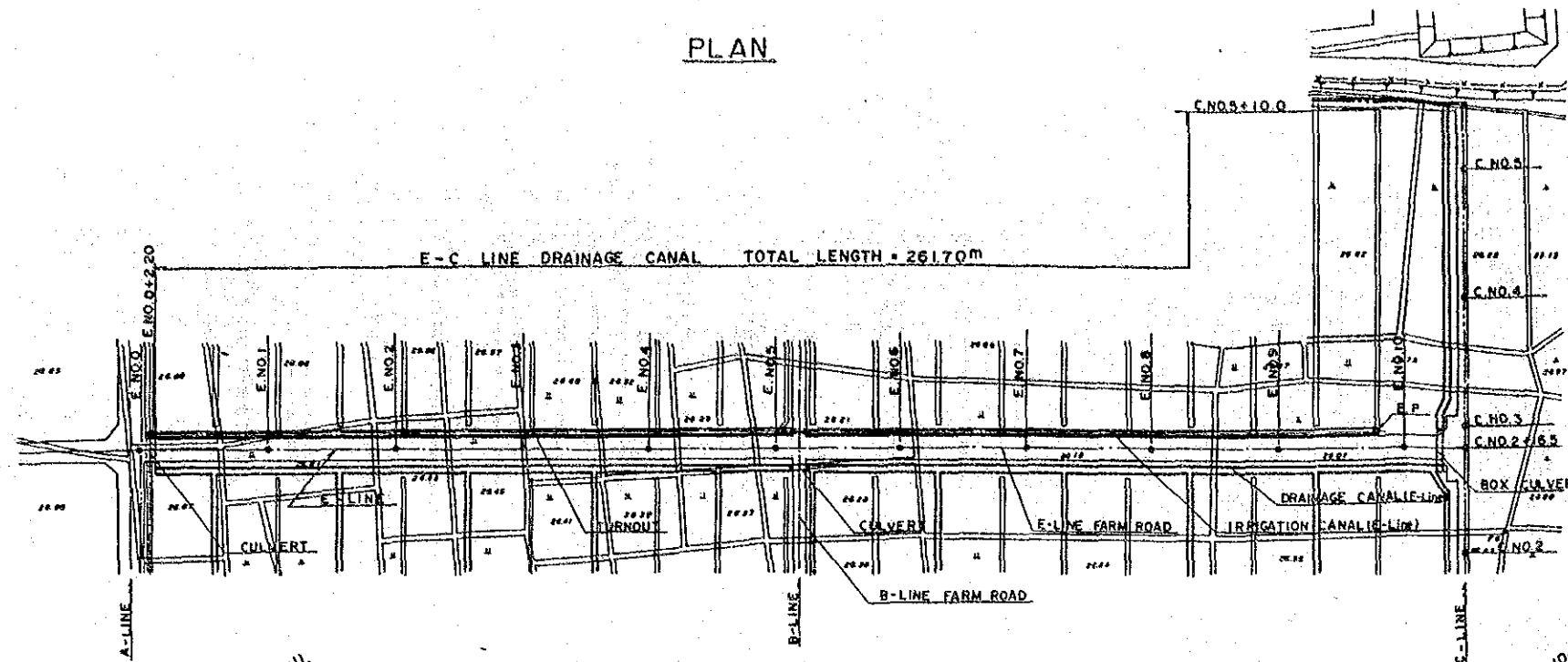
TYPICAL CROSS SECTION 5:1:10 (CULVERT)



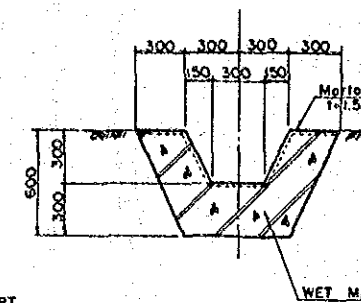
SLOPE	1/1000																
WATER SURFACE ELEVATION	26.79	26.773	26.753	26.740	26.597	26.59	26.37	26.55	26.53	26.51	26.30	26.29	26.27	26.25	26.23	26.21	26.21
CANAL BED ELEVATION	26.750	26.732	26.712	26.692	26.556	26.500	26.330	26.510	26.490	26.470	26.26	26.250	26.230	26.210	26.190	26.170	26.211
GROUND ELEVATION	27.25	27.20	26.87	26.87	26.80	26.80	26.81	26.65	26.48	26.32	26.21	26.21	26.10	26.07	26.07	26.07	26.170
ACCUMULATED DISTANCE	0.00	18.10	38.10	51.10	54.60	57.30	77.30	97.30	117.30	137.30	157.30	172.00	192.00	212.00	232.00	252.00	252.30
DISTANCE	0.00	18.10	20.00	13.00	3.50	2.70	20.00	20.00	20.00	20.00	20.00	12.15	20.00	20.00	20.00	20.00	20.00
STATION	A.NO.0 +1.30	A.NO.1 +1.35	A.NO.2 +1.35	A.NO.3 +1.35	A.NO.4 +1.35	A.NO.5 +1.35	E.NO.1 +1.35	E.NO.2 +1.35	E.NO.3 +1.35	E.NO.4 +1.35	E.NO.5 +1.35	E.NO.6 +1.35	E.NO.7 +1.605	E.NO.8 +1.605	E.NO.9 +1.605	E.NO.10 +1.605	E.P.
CURVE	1A-90°-00'-00"																

DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
 THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
 THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)
 JATISARI PESTS FORECASTING CENTER
A-E LINE IRRIGATION CANAL
 JAPAN INTERNATIONAL COOPERATION AGENCY
 TOKYO
 DVG. NO.
J-5

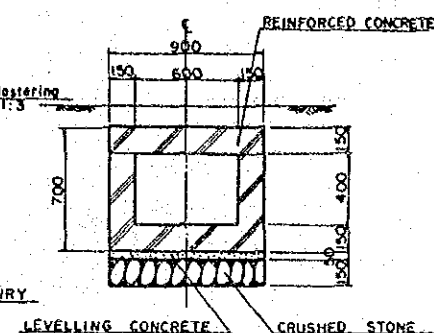
PLAN



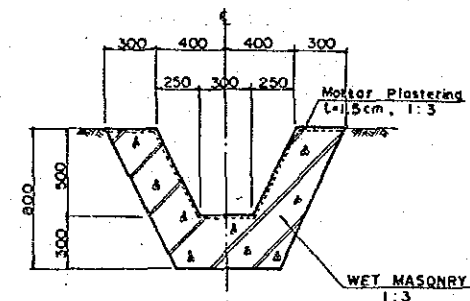
TYPICAL SECTION 5:1:20 (DRAINAGE CANAL)



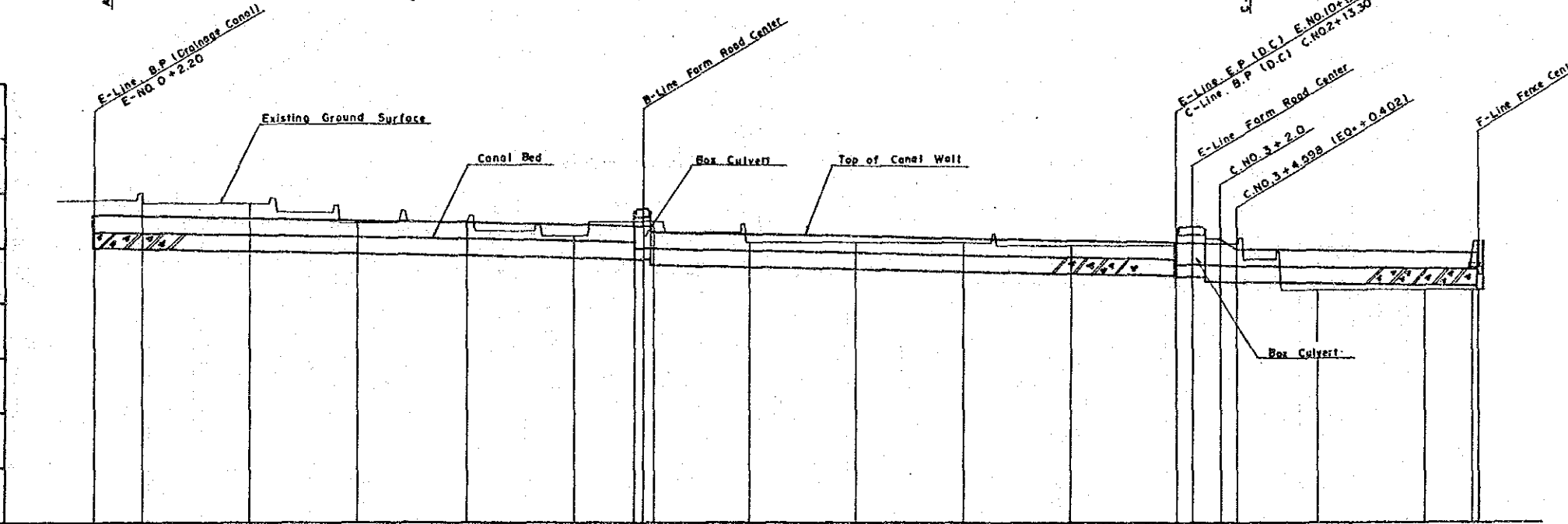
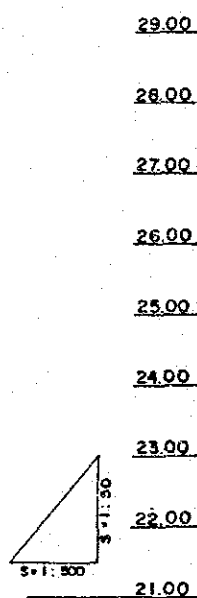
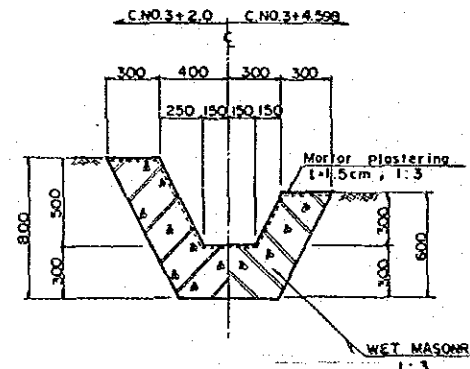
TYPICAL SECTION 5:1:20 (BOX CULVERT)



CROSS SECTION 5:1:20 (C.NO.2+19.1 ~ C.NO.3+2.0)



CROSS SECTION 5:1:20 (C.NO.3+2.0 ~ C.NO.3+4.598)



SLOPE	1/501		1/518		1/559	
TOP OF CANAL WALL ELEVATION	26.600	26.600	26.400	26.400	26.100	26.100
CANAL BED ELEVATION	26.300	26.282	26.200	26.183	25.900	25.884
GROUND ELEVATION	26.87	26.8	26.8	26.8	26.10	26.10
ACCUMULATED DISTANCE	0.00	9.00	29.00	49.00	69.00	89.00
DISTANCE	0.00	9.00	20.00	20.00	20.00	20.00
STATION	E.NO.0+2.20	E.NO.0+11.20	E.NO.1+11.20	E.NO.2+11.20	E.NO.3+11.20	E.NO.4+11.20
CURVE					IA=90°00'00"	IA=30°00'00"

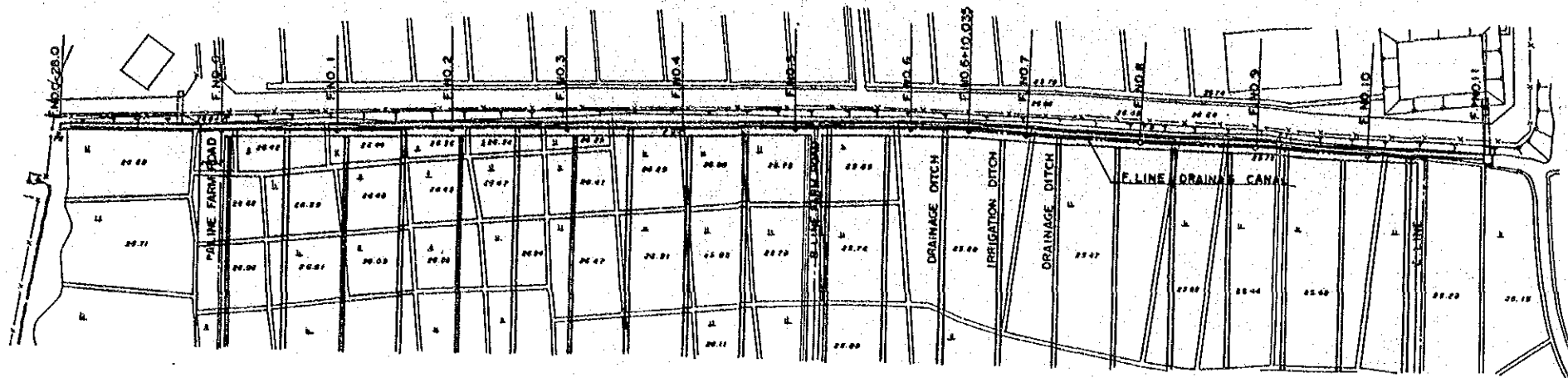
DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
 THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
 THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)
 JATISARI PESTS FORECASTING CENTER

E - C LINE DRAINAGE CANAL

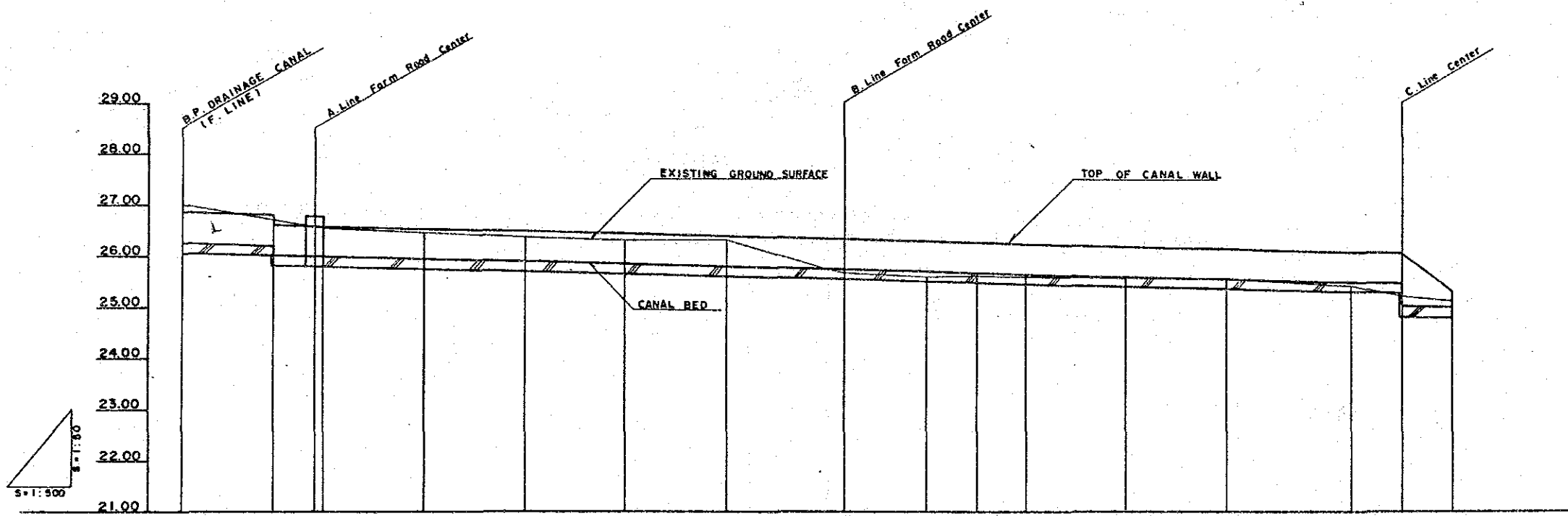
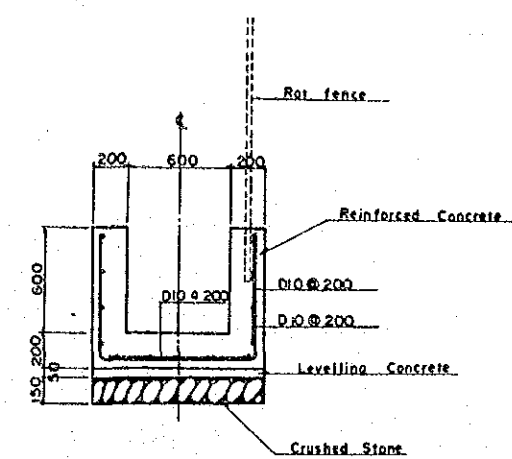
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO

DWG. NO. **J-6**

PLAN



TYPICAL SECTION 5-1:20
(Main Drainage Canal)



SLOPE	1/400														
TOP OF WALL ELEVATION	26.850	26.850	26.575	26.525	26.475	26.425	26.375	26.325	26.275	26.225	26.175	26.125	26.075	26.025	25.975
CANAL BED ELEVATION	26.250	26.250	25.975	25.925	25.875	25.825	25.775	25.725	25.675	25.625	25.575	25.525	25.475	25.425	25.375
GROUND ELEVATION	27.00	26.53	26.44	26.36	26.29	26.29	26.25	26.25	26.20	26.15	26.10	26.05	26.00	25.95	25.90
ACCUMULATED DISTANCE	0.00	18.10	28.00	48.00	68.00	88.00	108.00	128.00	148.00	168.00	188.00	208.00	228.00	248.00	268.00
DISTANCE	0.00	18.10	9.90	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
STATION	F.NO. 0-28.0	F.NO. 0-33.3	F.NO. 0-38.0	F.NO. 0-48.0	F.NO. 0-68.0	F.NO. 0-88.0	F.NO. 0-108.0	F.NO. 0-128.0	F.NO. 0-148.0	F.NO. 0-168.0	F.NO. 0-188.0	F.NO. 0-208.0	F.NO. 0-228.0	F.NO. 0-248.0	F.NO. 0-268.0
CURVE															

DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)

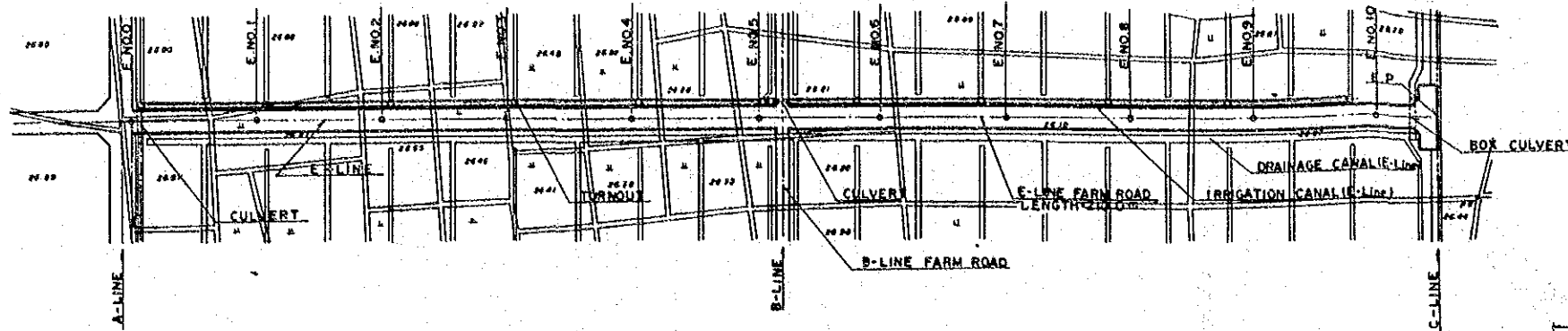
JATISARI PESTS FORECASTING CENTER

**MAIN DRAINAGE CANAL
(F. LINE)**

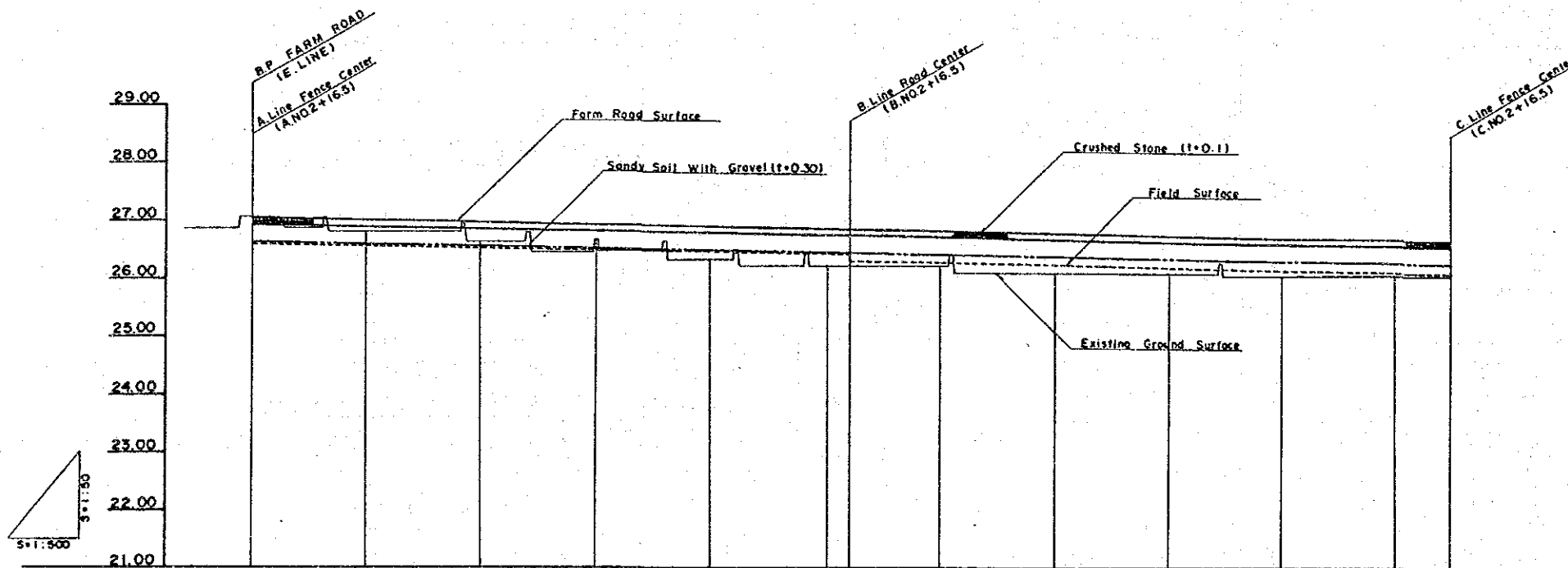
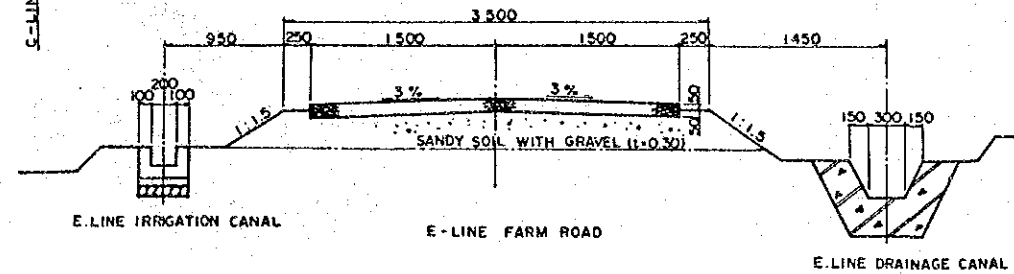
JAPAN INTERNATIONAL COOPERATION AGENCY
TOKYO

DWG. NO.
J-7

PLAN



TYPICAL SECTION



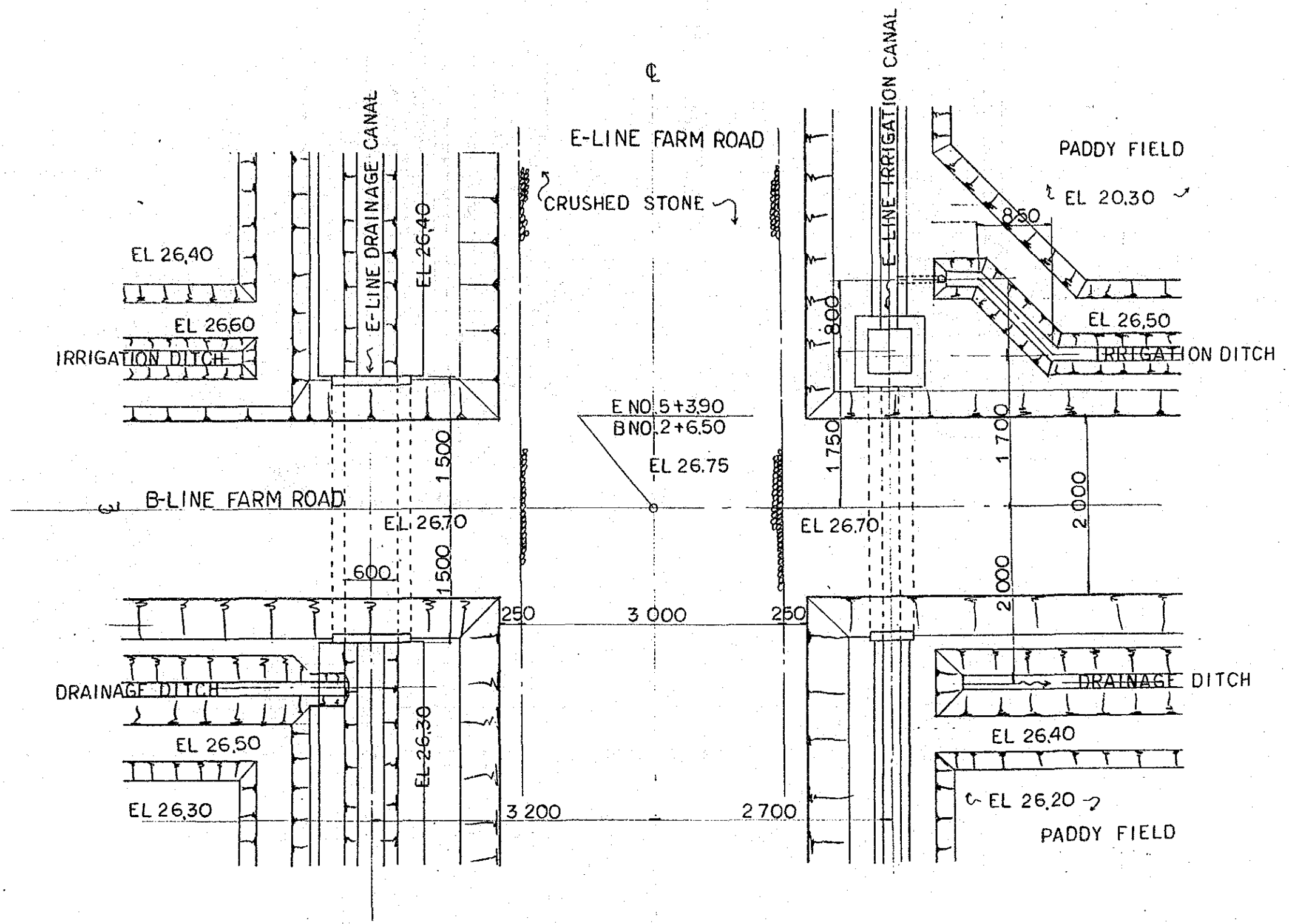
SLOPE	1:3.50												
FARM ROAD ELEVATION	27.05	26.99	26.93	26.87	26.82	26.76	26.75	26.71	26.65	26.59	26.54	26.48	26.45
THICKNESS OF SANDY SOIL	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
GROUND ELEVATION	27.07	26.81	26.65	26.65	26.32	26.21	26.21	26.21	26.10	26.10	26.07	26.07	26.07
ACCUMULATED DISTANCE	0.00	20.00	40.00	60.00	80.00	100.00	103.90	120.00	140.00	160.00	180.00	200.00	210.00
DISTANCE	0.00	20.00	20.00	20.00	20.00	3.90	16.10	20.00	20.00	20.00	20.00	10.00	10.00
STATION	E.NO.0	E.NO.1	E.NO.2	E.NO.3	E.NO.4	E.NO.5	+3.90	E.NO.6	E.NO.7	E.NO.8	E.NO.9	E.NO.10	+10.00
CURVE													

DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
 THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
 THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)
 JATISARI PESTS FORECASTING CENTER

E. LINE FARM ROAD

JAPAN INTERNATIONAL COOPERATION AGENCY
 TOKYO

DWG. NO.
J-8



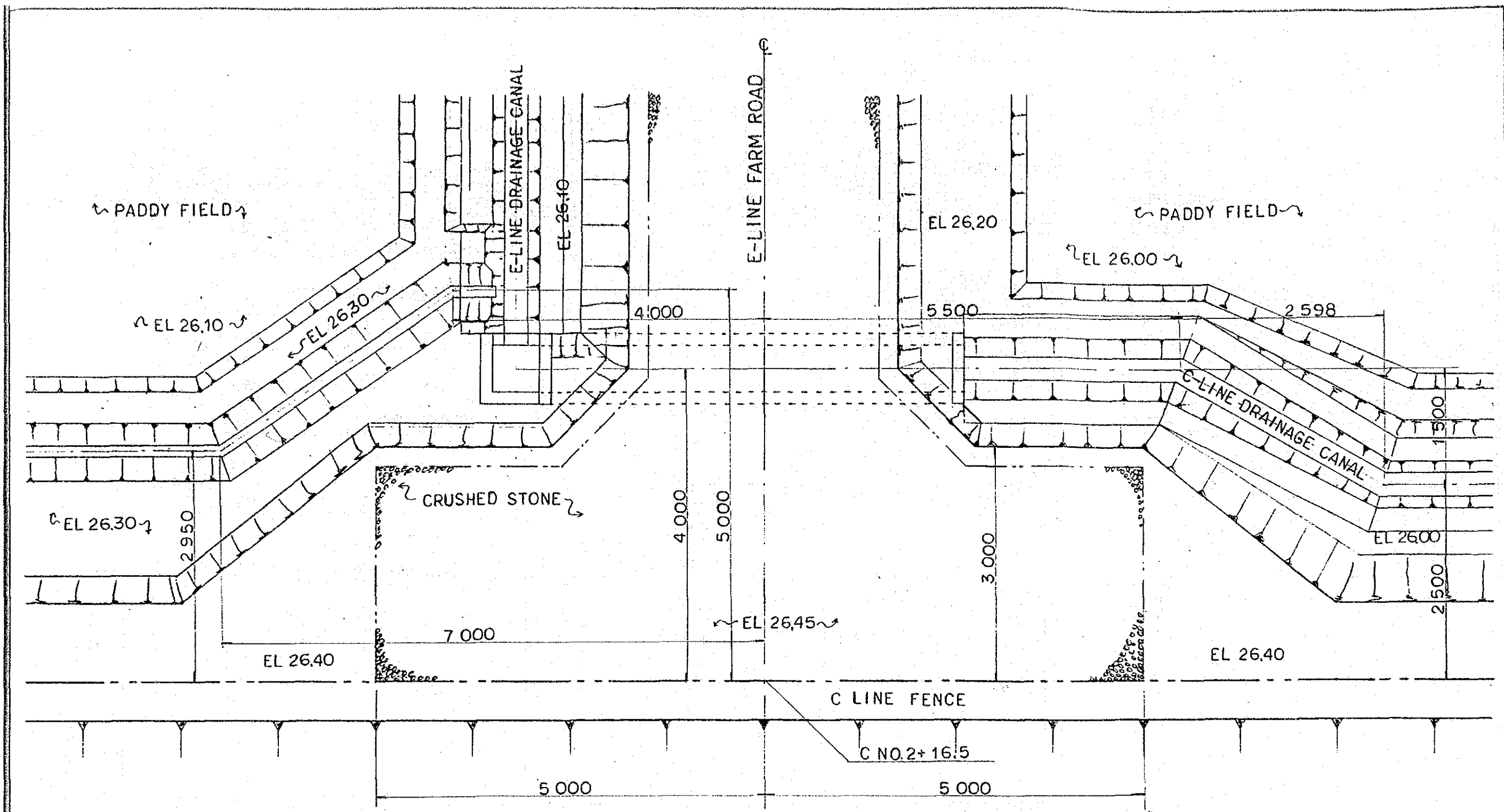
DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
 THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
 THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)

JATISARI PESTS FORECASTING CENTER

PLAN OF FARM ROAD (1)

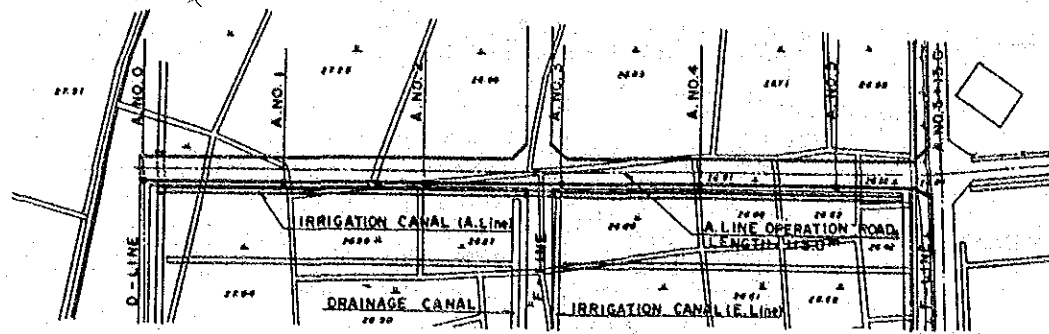
JAPAN INTERNATIONAL COOPERATION AGENCY
 TOKYO

DRG. NO.
 J-9

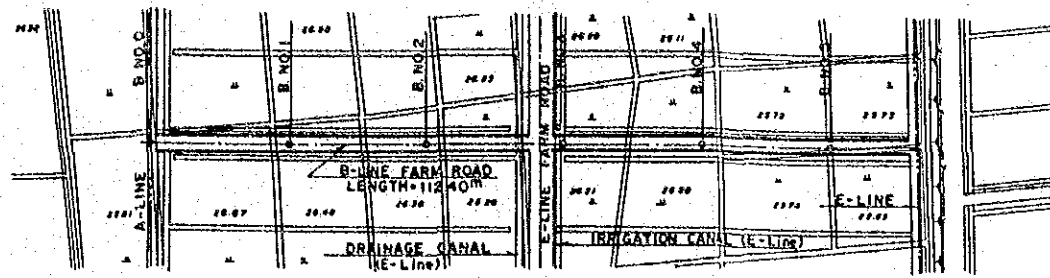


DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE THE INFRASTRUCTURE IMPROVEMENT WORKS FOR THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)	
JATISARI PESTS FORECASTING CENTER	
PLAN OF FARM ROAD (2)	
JAPAN INTERNATIONAL COOPERATION AGENCY T O K Y O	DWG. NO. J-10

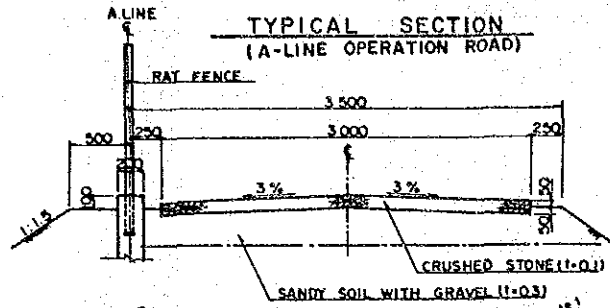
PLAN



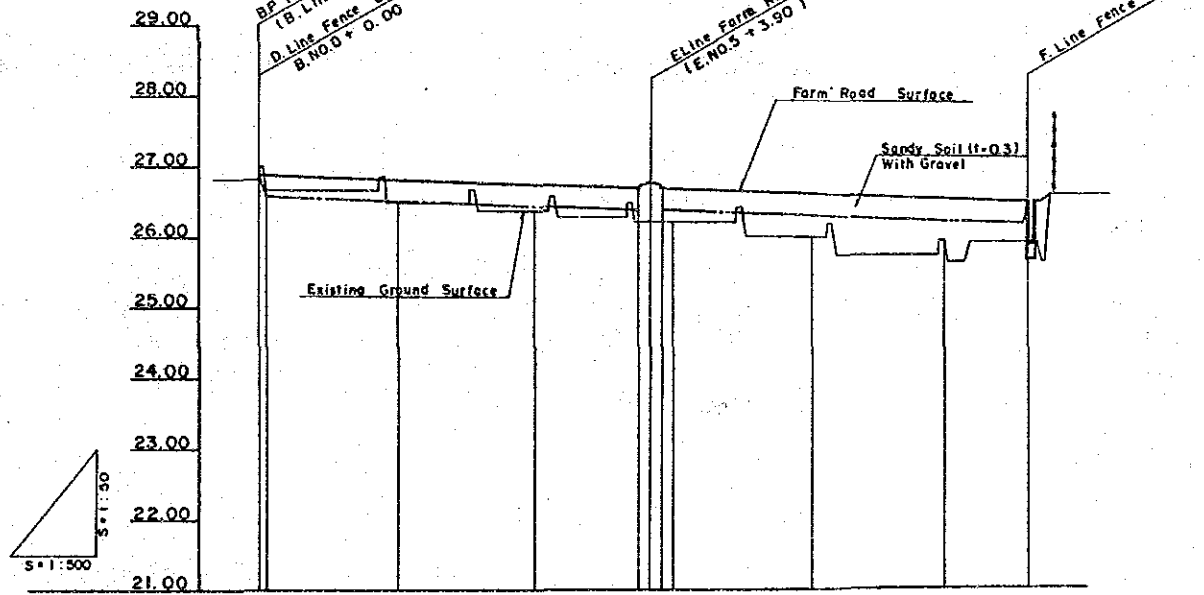
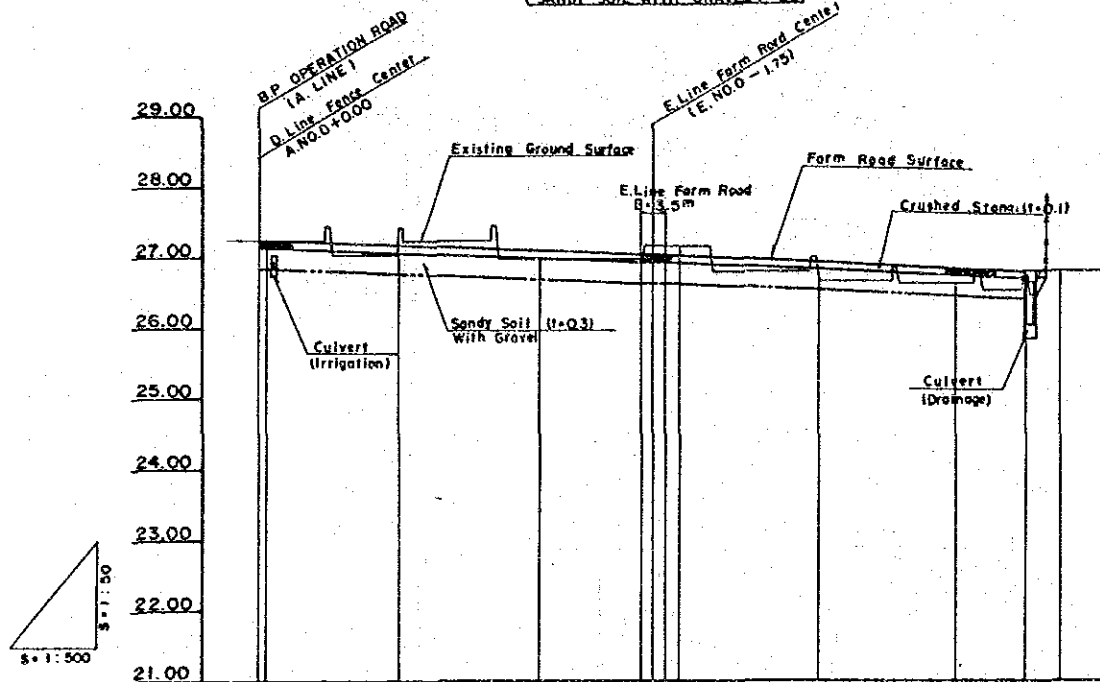
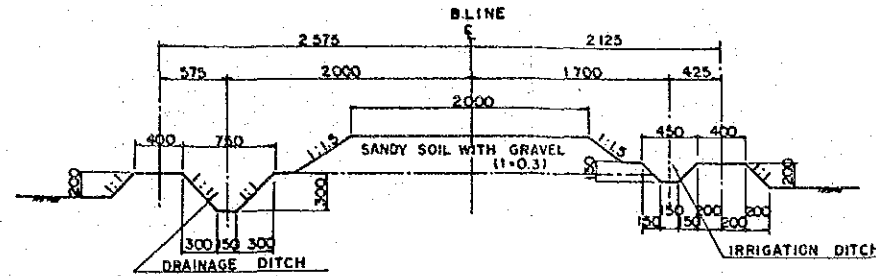
PLAN



TYPICAL SECTION
(A-LINE OPERATION ROAD)



TYPICAL SECTION
(B-LINE FARM ROAD)

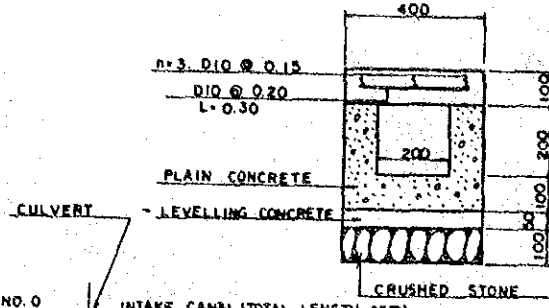


SLOPE	1/269									
FARM ROAD ELEVATION	27.250	27.250	27.179	27.103	27.028	27.028	26.945	26.846	26.800	26.800
THICKNESS OF SANDY SOIL	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
GROUND ELEVATION	27.25	27.25	27.103	26.99	27.20	27.20	26.65	26.62	26.74	26.80
ACCUMULATED DISTANCE	0.00	1.00	20.00	40.00	54.75	60.00	80.00	100.00	110.00	115.00
DISTANCE	0.00	19.00	20.00	20.00	14.75	1.75	20.00	20.00	10.00	5.00
STATION	A.NO.0 +1.00	A.NO.1	A.NO.2	A.NO.3	A.NO.4	A.NO.5	+10.0	+15.0		
CURVE										

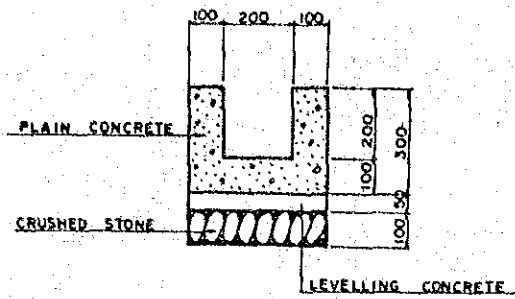
SLOPE	1/266									
FARM ROAD ELEVATION	26.900	26.900	26.829	26.733	26.698	26.700	26.698	26.610	26.542	26.500
THICKNESS OF SANDY SOIL	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
GROUND ELEVATION	26.81	26.81	26.48	26.38	26.21	26.21	26.00	25.94	25.94	26.00
ACCUMULATED DISTANCE	0.00	1.00	20.00	40.00	54.75	60.00	80.00	100.00	110.00	114.80
DISTANCE	0.00	19.00	20.00	20.00	14.75	1.75	20.00	20.00	10.00	4.80
STATION	B.NO.0 +1.00	B.NO.1	B.NO.2	B.NO.3	B.NO.4	B.NO.5	+10.0	+15.0		
CURVE										

DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)
JATISARI PESTS FORECASTING CENTER
A. LINE OPERATION ROAD
B. LINE FARM ROAD
JAPAN INTERNATIONAL COOPERATION AGENCY
TOKYO
DWG. NO. J-11

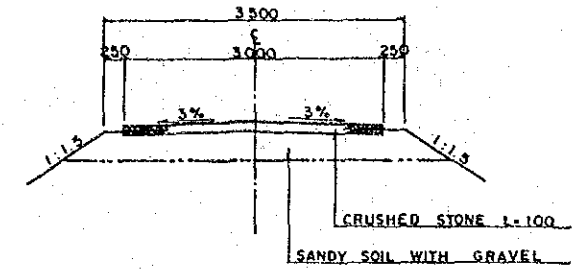
TYPICAL SECTION S=1:10
(CULVERT OF INTAKE CANAL)



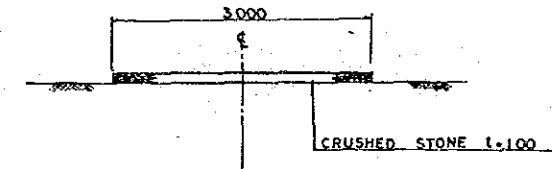
TYPICAL SECTION S=1:10
(INTAKE CANAL)



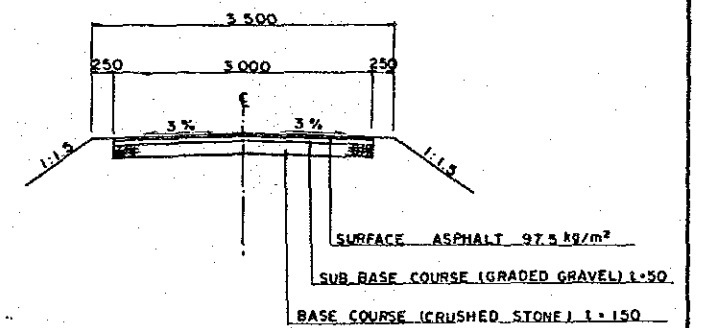
TYPICAL SECTION S=1:40
(A - A SECTION)



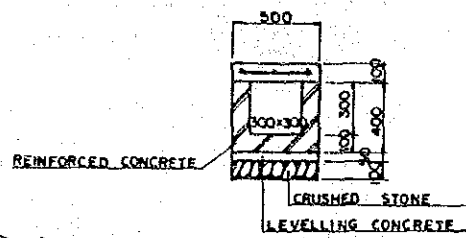
TYPICAL SECTION S=1:40
(B - B SECTION)



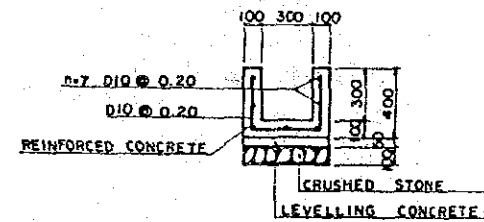
TYPICAL SECTION S=1:40
(C - C SECTION)



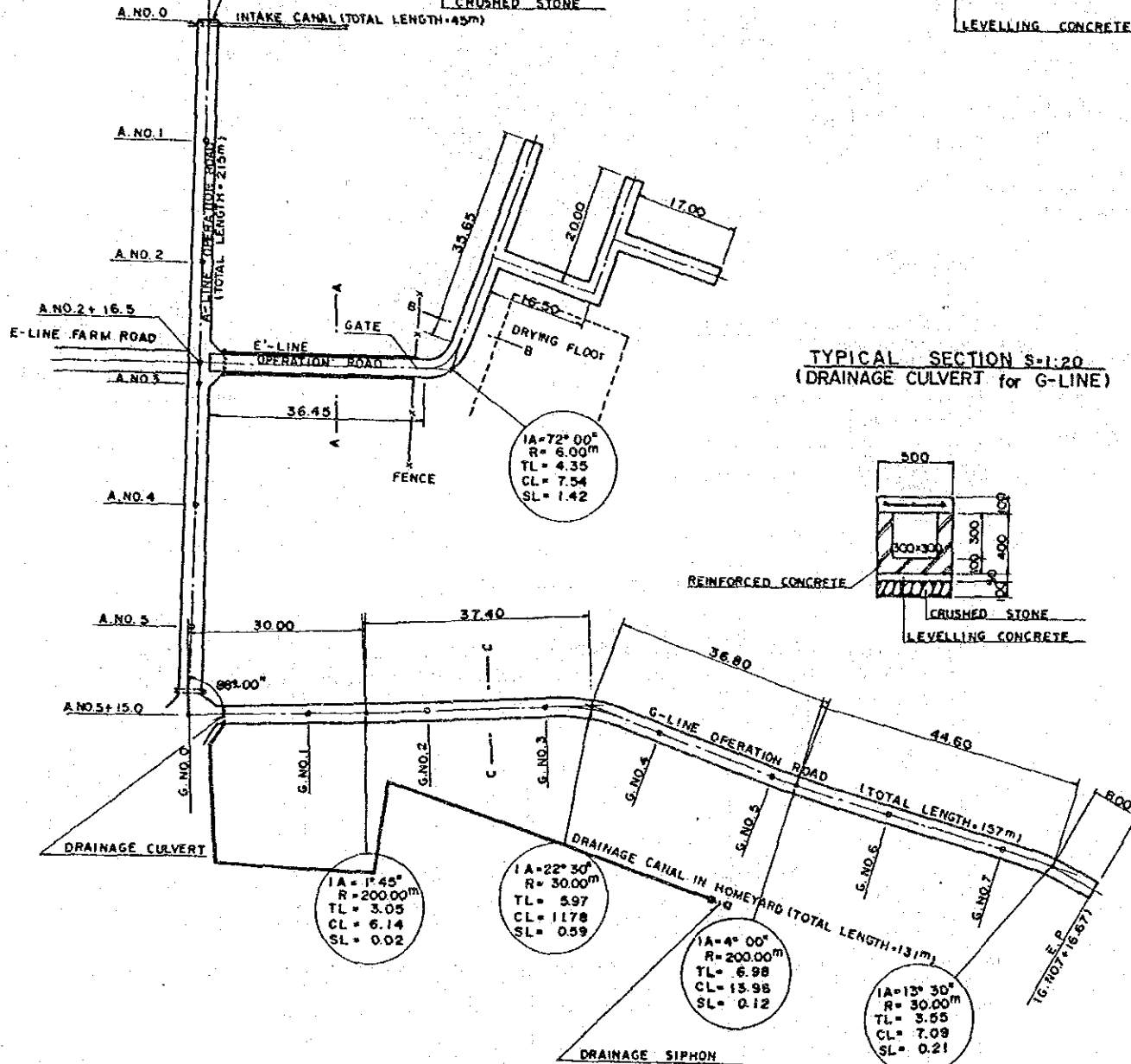
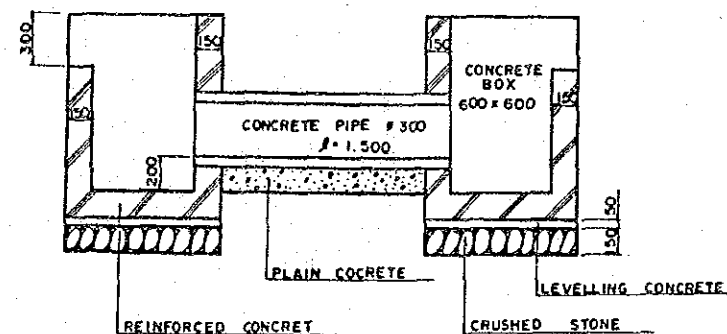
TYPICAL SECTION S=1:20
(DRAINAGE CULVERT for G-LINE)



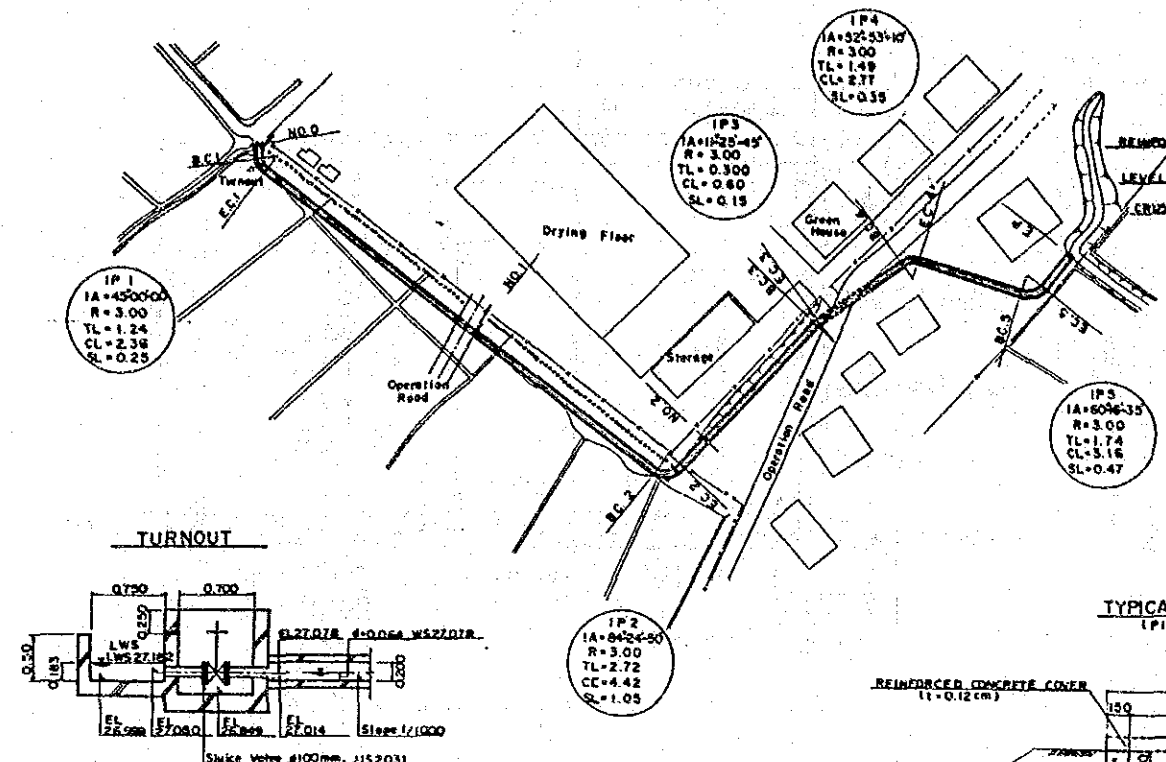
TYPICAL SECTION S=1:20
(DRAINAGE CANAL IN HOME YARD)



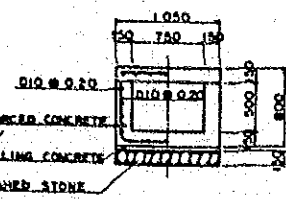
DRAINAGE SIPHON S=1:30



DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)
JATISARI PESTS FORECASTING CENTER
**OPERATION ROAD
and DRAINAGE CANAL IN HOME YARD**
JAPAN INTERNATIONAL COOPERATION AGENCY
T O K Y O
DWG. NO.
J-12



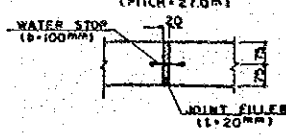
TYPICAL SECTION
(UNDER OPERATION ROAD)



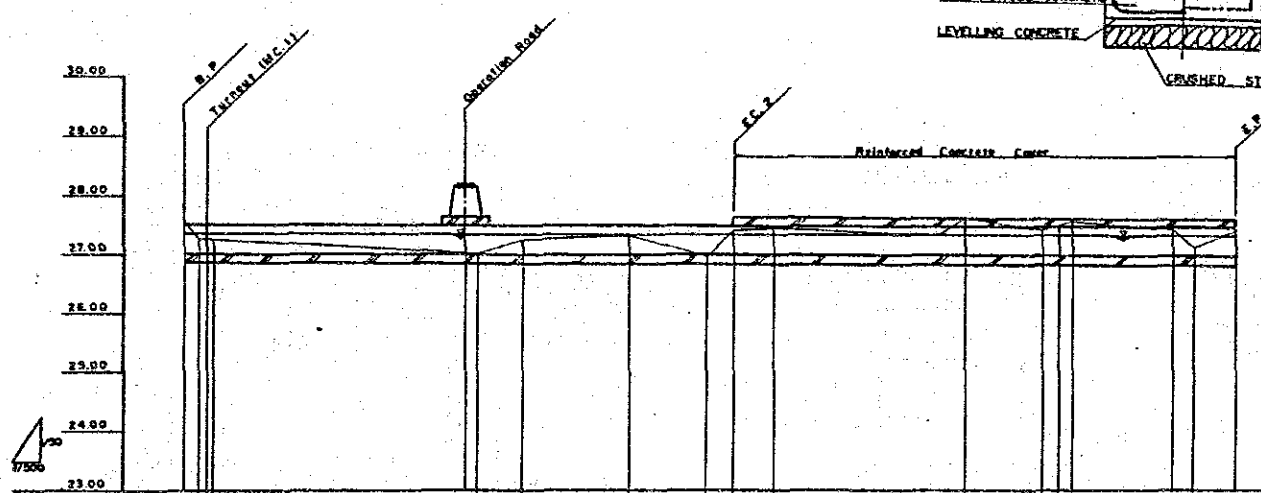
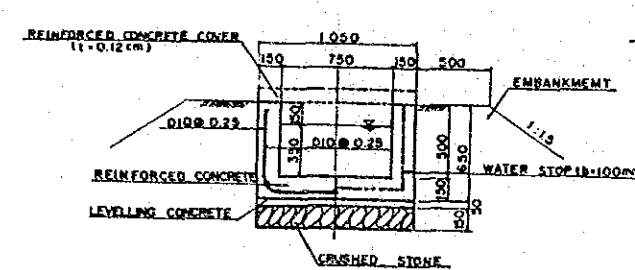
CONTRACTION JOINT



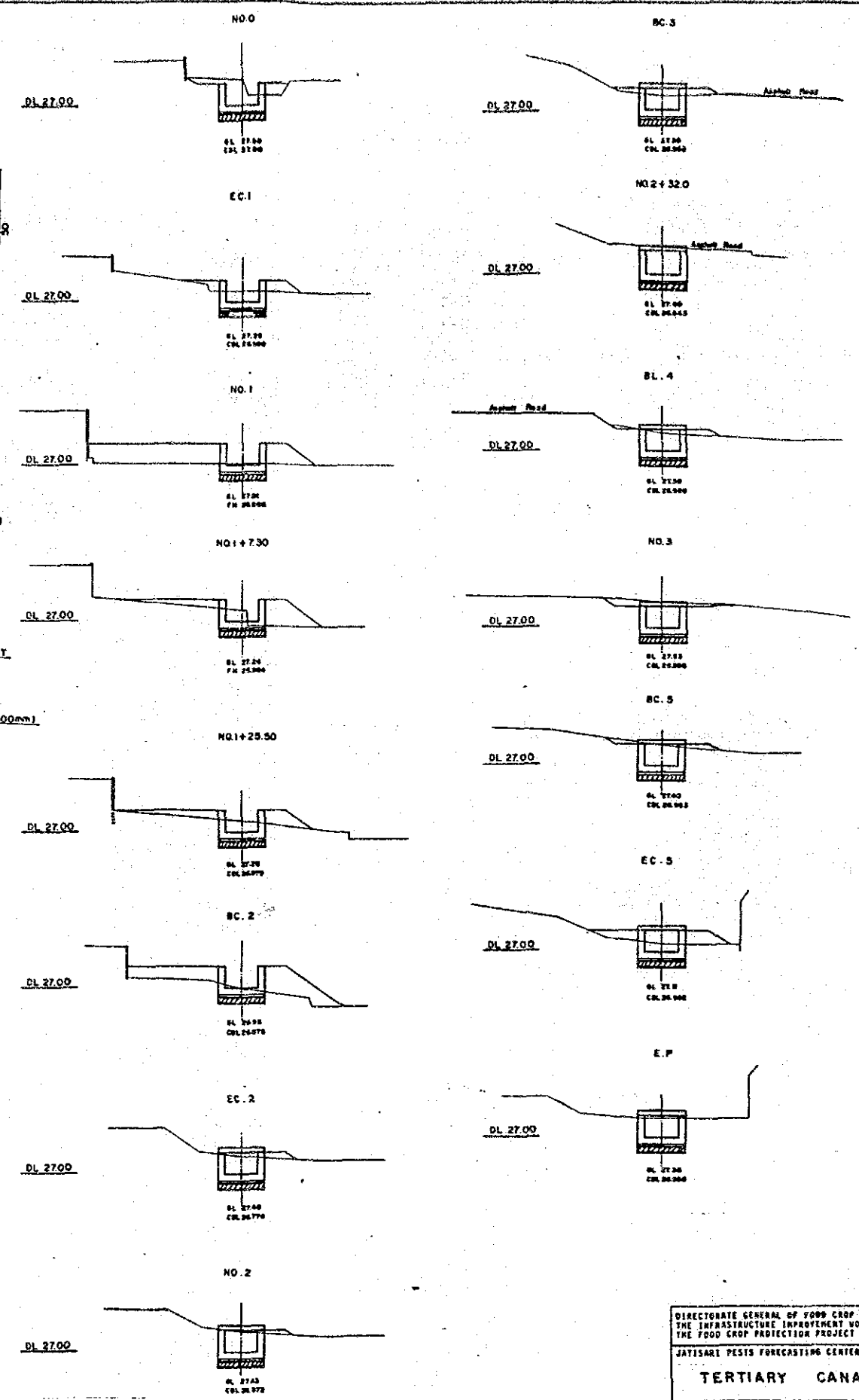
EXPANSION JOINT



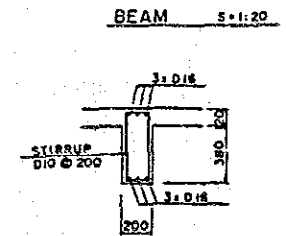
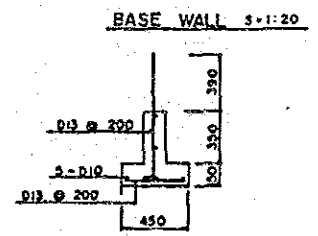
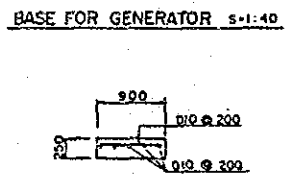
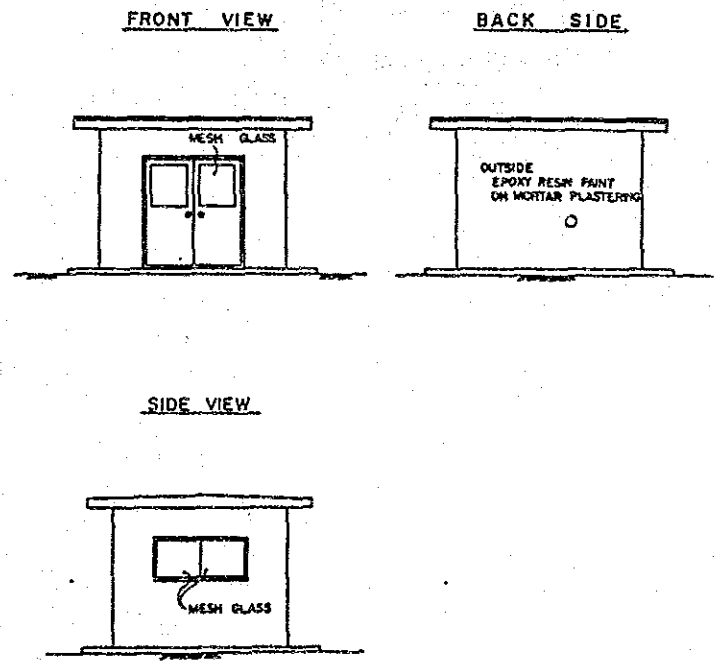
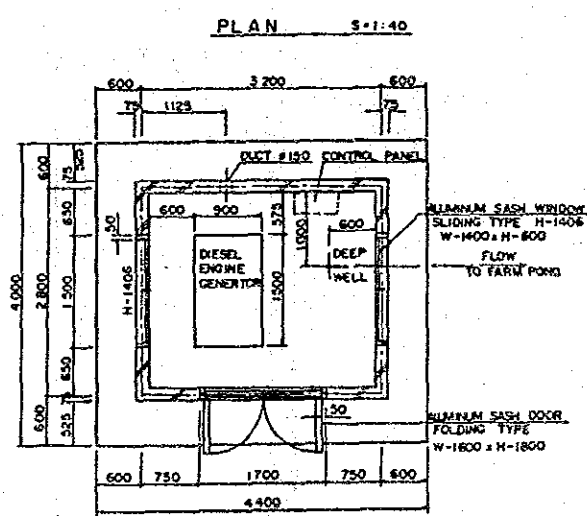
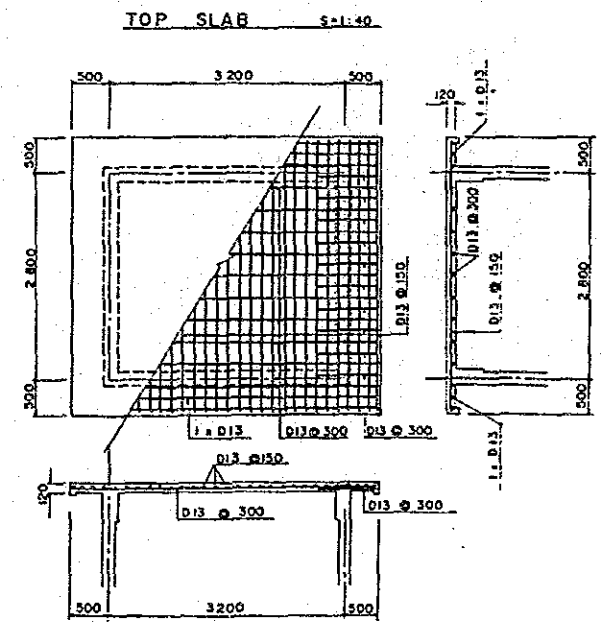
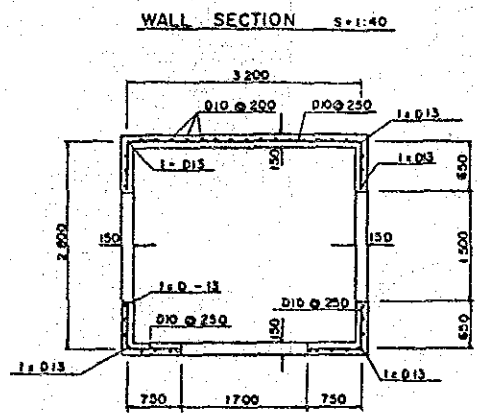
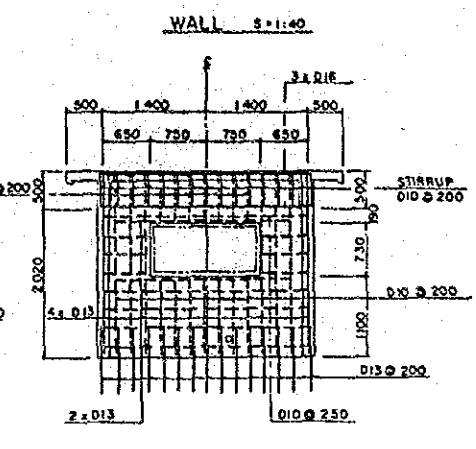
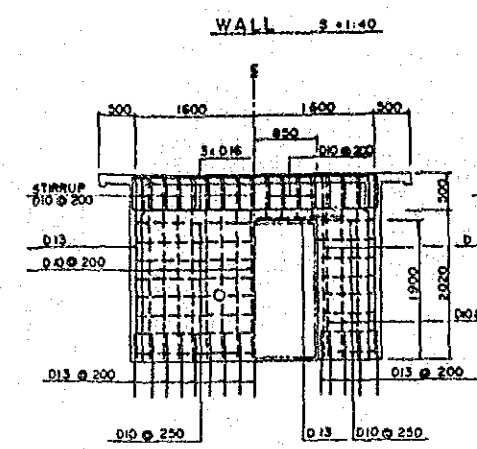
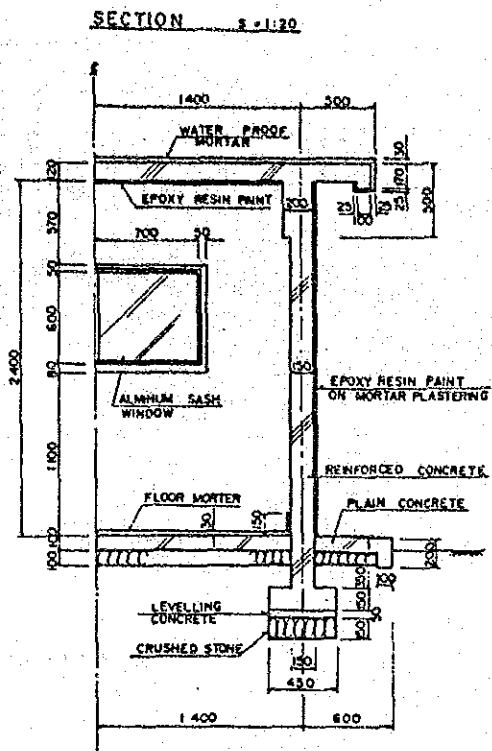
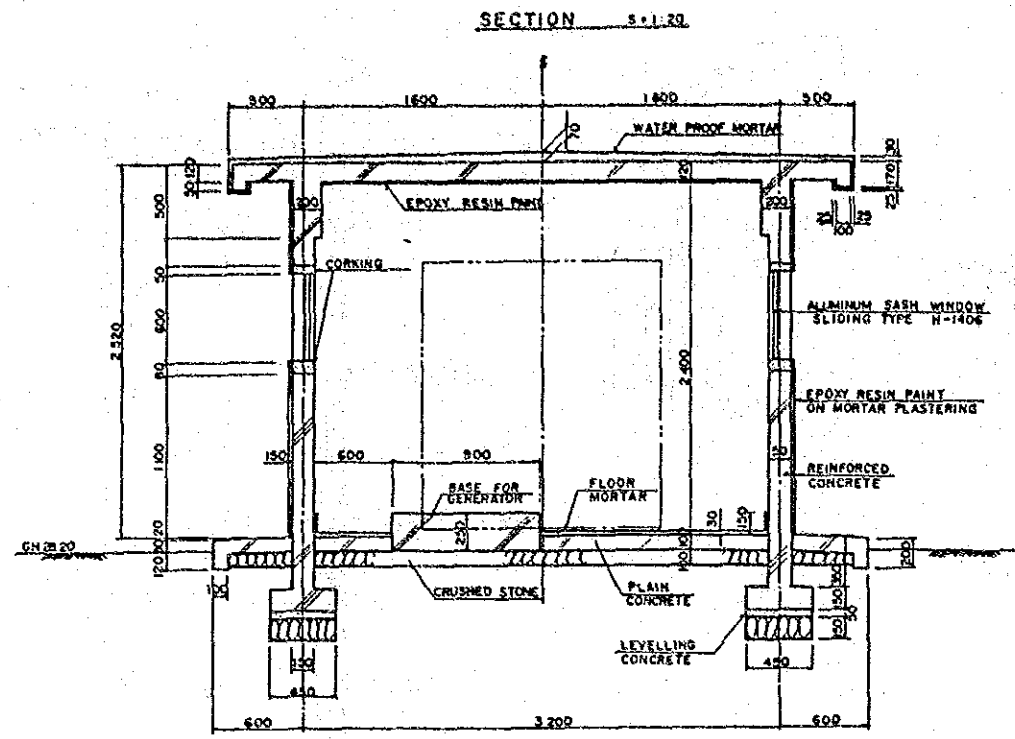
TYPICAL SECTION
(PITCH = 9.00m)



SLOPE	1:1000														
CANAL BED LEVEL	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
GROUND ELEVATION	27.28	27.28	27.28	27.28	27.28	27.28	27.28	27.28	27.28	27.28	27.28	27.28	27.28	27.28	27.28
ACCUMULATED DISTANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DISTANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STATION	NO.0	NO.1	NO.2	NO.3	NO.4	NO.5	NO.6	NO.7	NO.8	NO.9	NO.10	NO.11	NO.12	NO.13	NO.14
CORVE	$24^{\circ}-25^{\circ}-30'$ $17^{\circ}-25^{\circ}-45'$ $32^{\circ}-33^{\circ}-10'$														



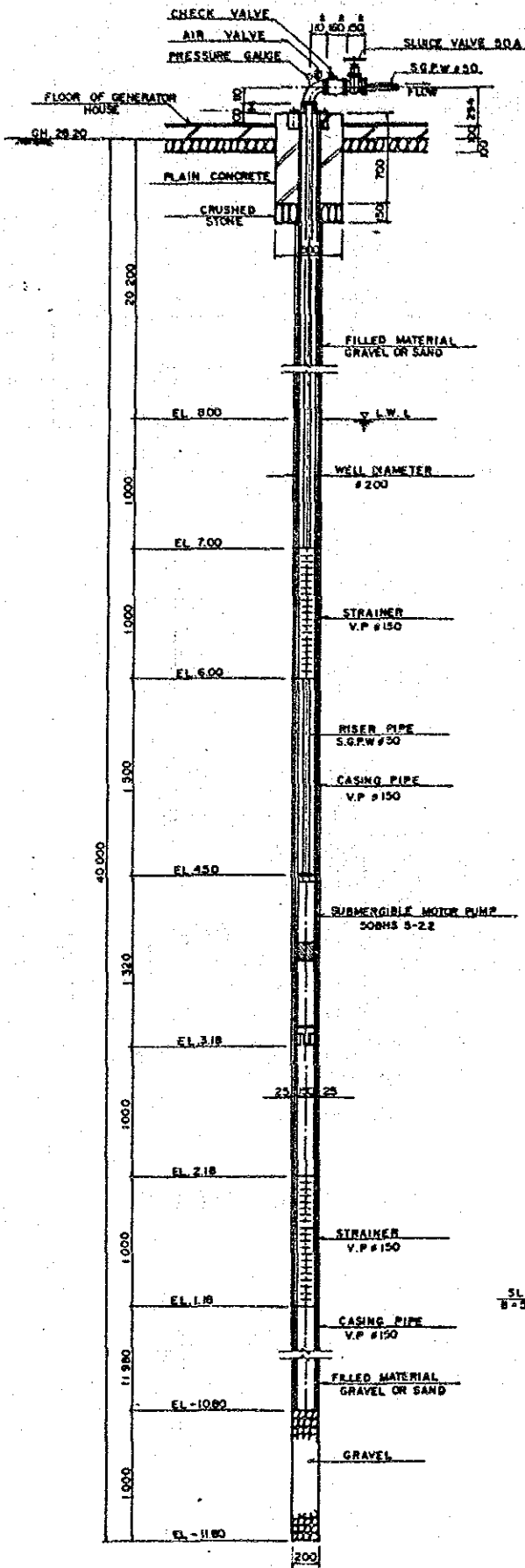
DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
THE FOOD CROP PRODUCTION PROJECT (2nd Phase of ATA-162)
JATISARI PESTS FORECASTING CENTER
TERTIARY CANAL
JAPAN INTERNATIONAL COOPERATION AGENCY
D.M.C. NO. J-13
T O K Y O



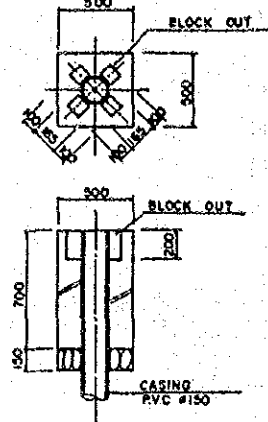
DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
 THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
 THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)
 JATISARI PESTS FORECASTING CENTER
DIESEL ENGINE GENERATOR HOUSE
 JAPAN INTERNATIONAL COOPERATION AGENCY
 TOKYO

DWG. NO.
J-14

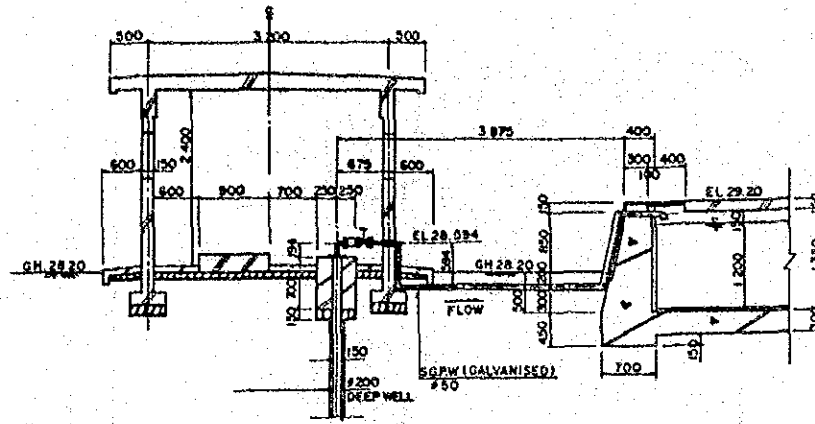
SECTION A-A S=1:20



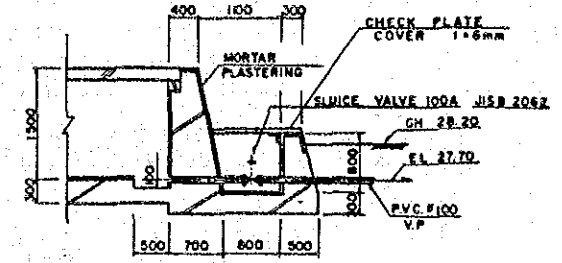
TOP OF WELL CASING S=1:20



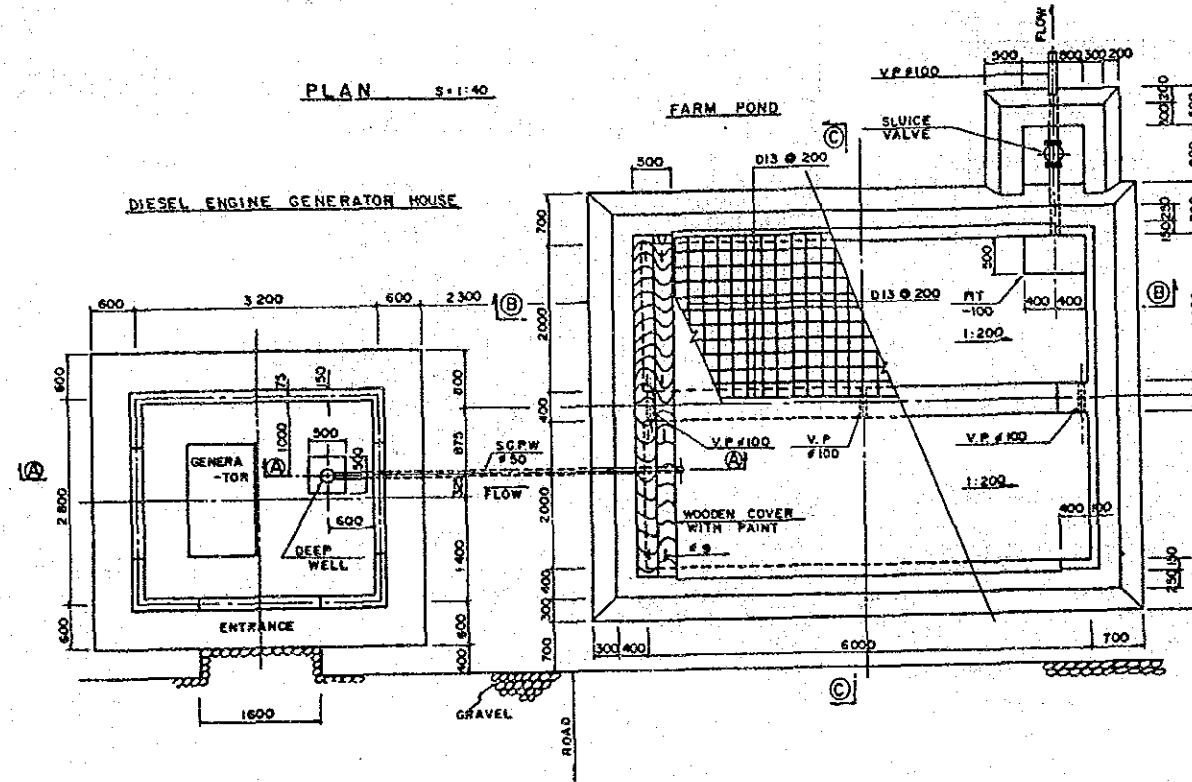
SECTION A-A S=1:40



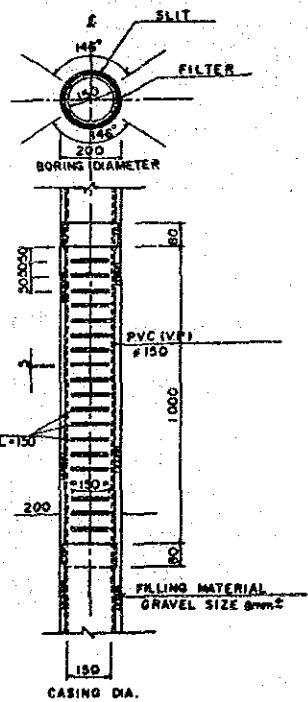
OUTLET BOX S=1:40



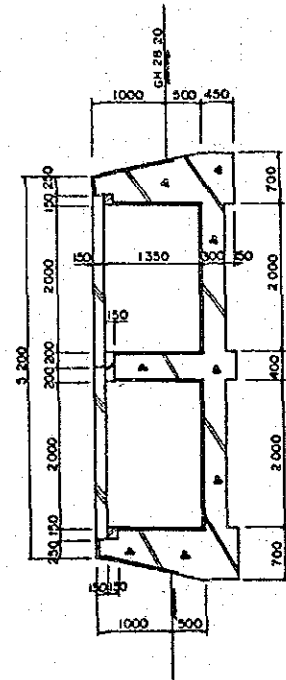
PLAN S=1:40



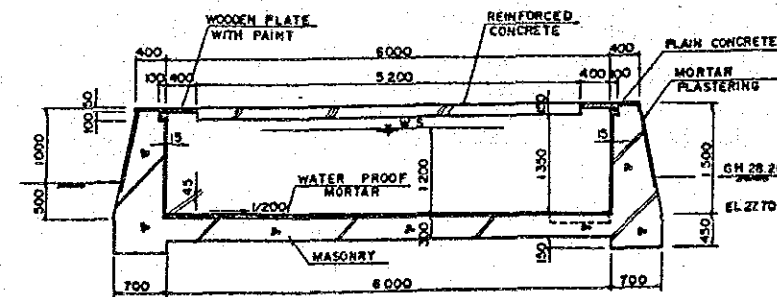
DETAIL OF STRAINER S=1:10



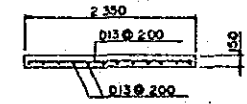
SECTION C-C S=1:40



SECTION B-B S=1:40

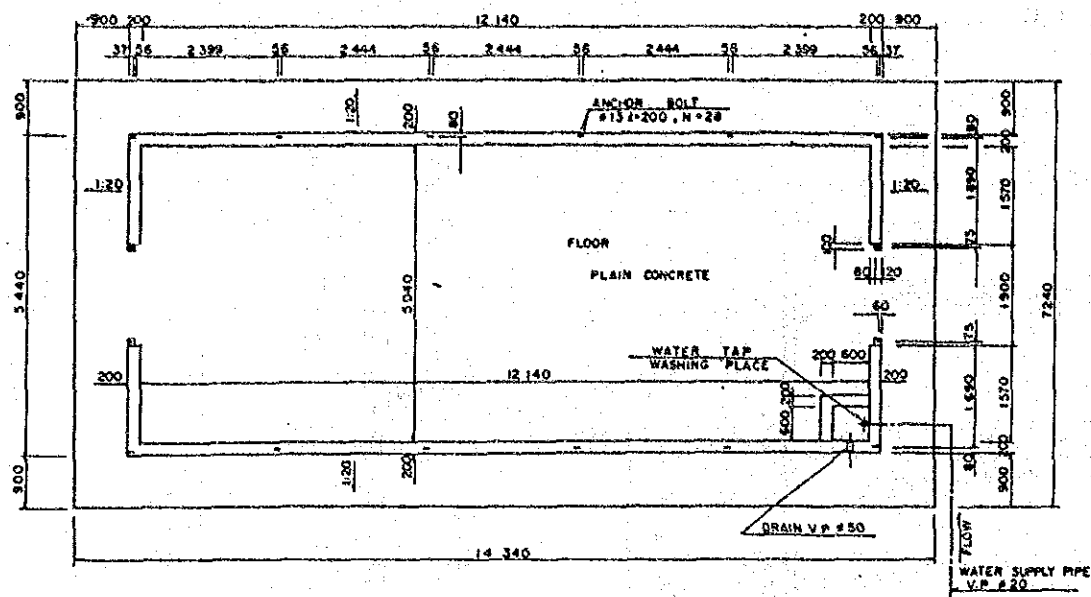


TOP SLAB S=1:40



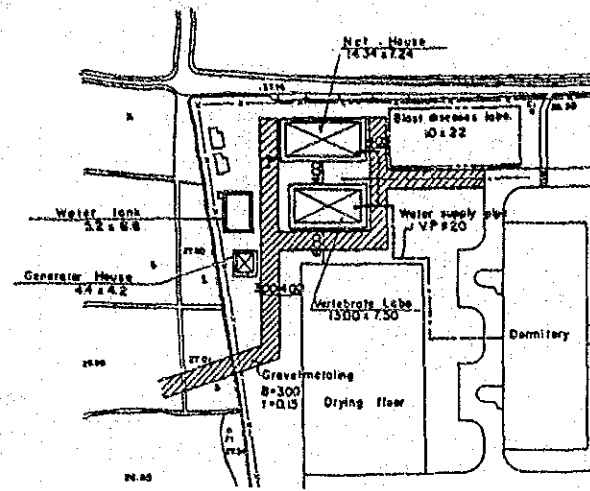
DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)
JATISARI PESTS FORECASTING CENTER
DEEP WELL AND WATER TANK
JAPAN INTERNATIONAL COOPERATION AGENCY
TOKYO
DES. NO. J-15

FOUNDATION OF NET HOUSE S=1:50 (For 2 sheets)

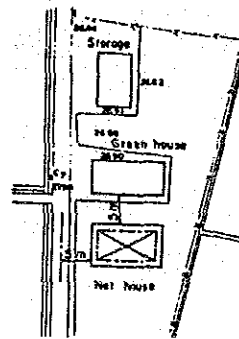


NOTE: WASHING SPACE & WATER SUPPLY PIPE ARE INSTALLED FOR ONE PLACE ONLY.

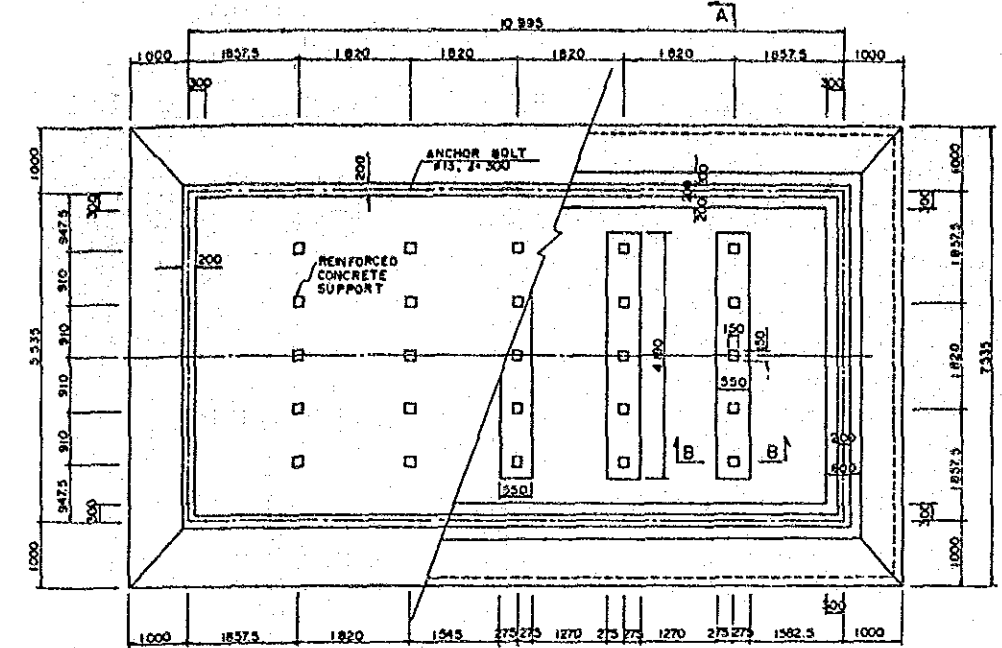
ARRANGEMENT OF HOUSE S=1:500



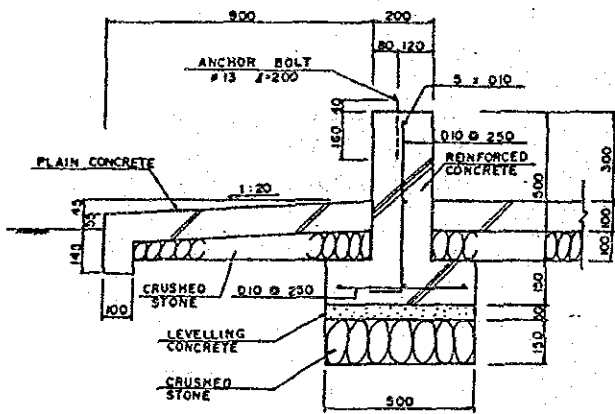
PLAN OF NET HOUSE S=1:500



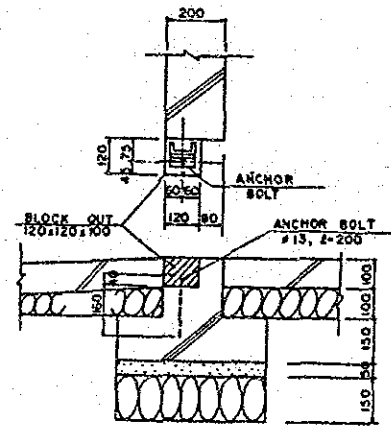
FOUNDATION OF VERTEBRATE LABORATORY (FOR TAKASHI PRE FAB HOUSE YKA 3 TYPE 18-TUBO 1) S=1:50



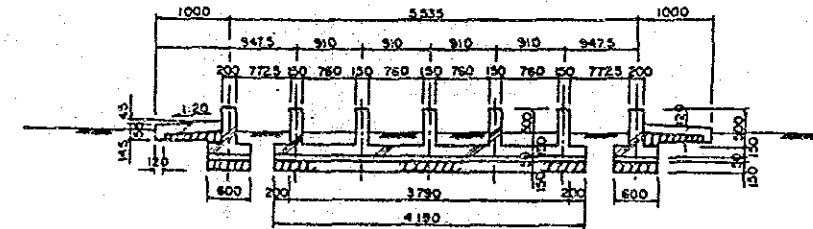
DETAIL OF WALL S=1:10



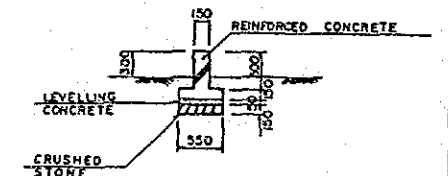
BLOCKOUT OF ENTRANCE S=1:10



SECTION A-A S=1:40

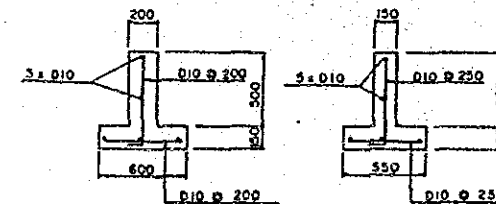


SECTION B-B S=1:40

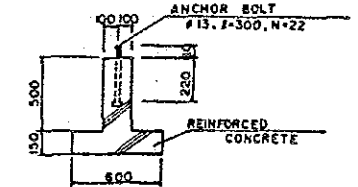


OUTSIDE WALL S=1:20

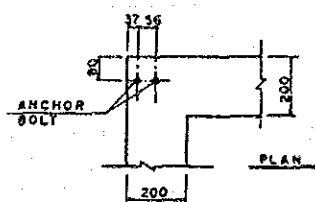
INSIDE SUPPORT S=1:20



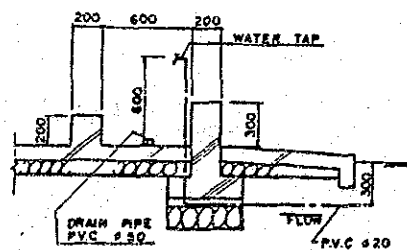
DETAILS OF ANCHOR BOLT S=1:20



ANCHOR BOLT OF CORNER S=1:10



WASHING PLACE S=1:20



DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-192)
JATISARI PESTS FORECASTING CENTER
FOUNDATIONS FOR NET HOUSE AND
VERTEBRATE LABORATORY
JAPAN INTERNATIONAL COOPERATION AGENCY
D.K.C. NO. J-16

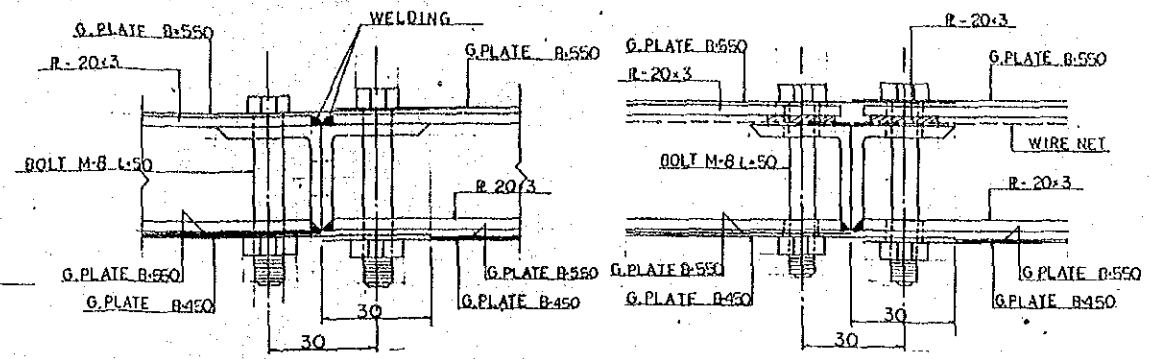
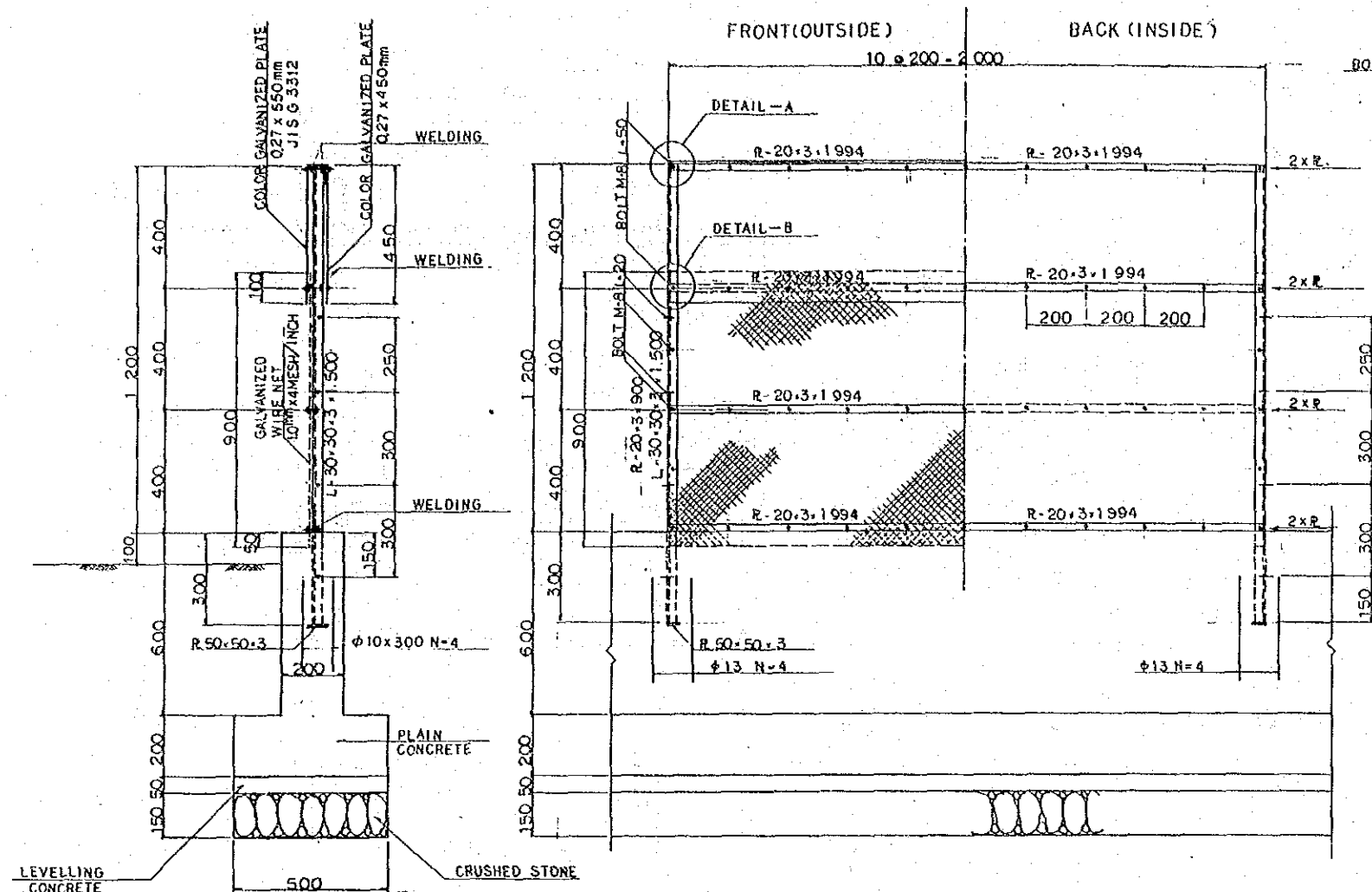
FRONT/BACK VIEW

SECTION

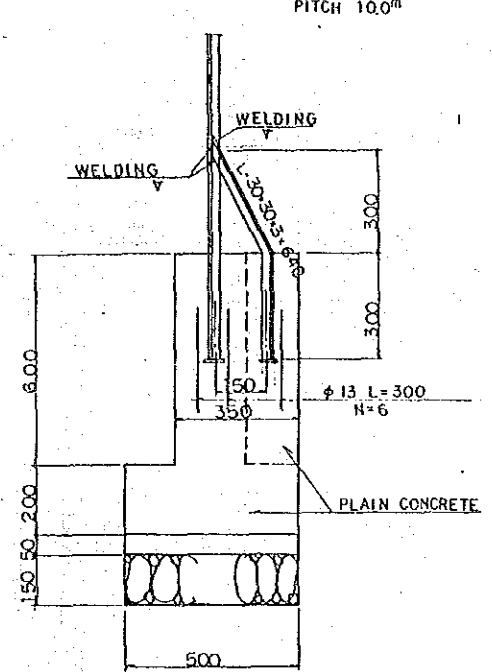
PANEL OF RAT FENCE

DETAIL-A

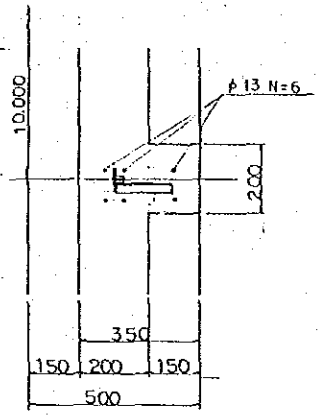
DETAIL-B



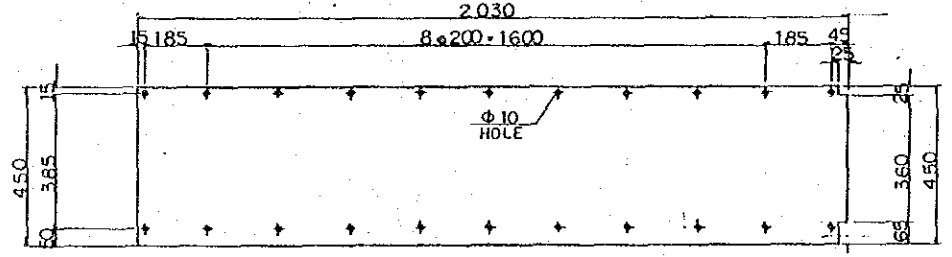
FENCE SUPPORT



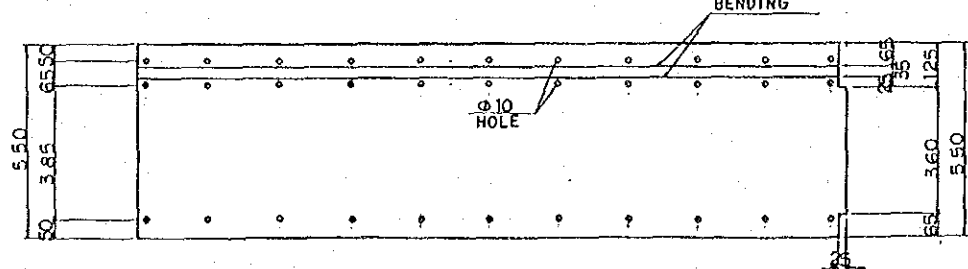
PLAN



GALVANIZED PLATE (INSIDE)



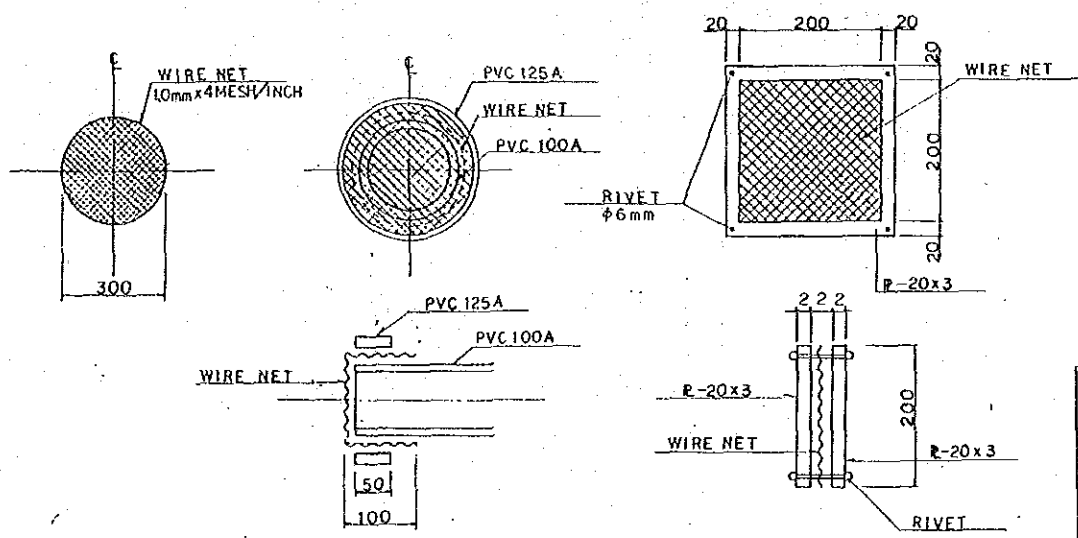
OUT SIDE PLATE (INSIDE)



DETAIL OF RAT SCREEN

TYPE-A

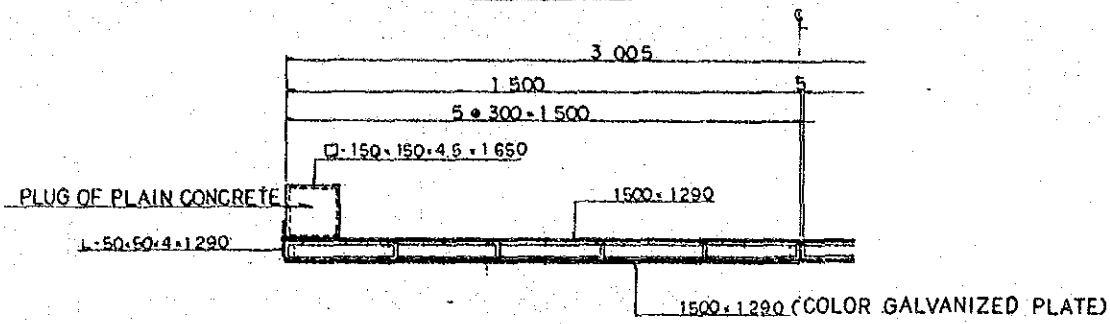
TYPE-B



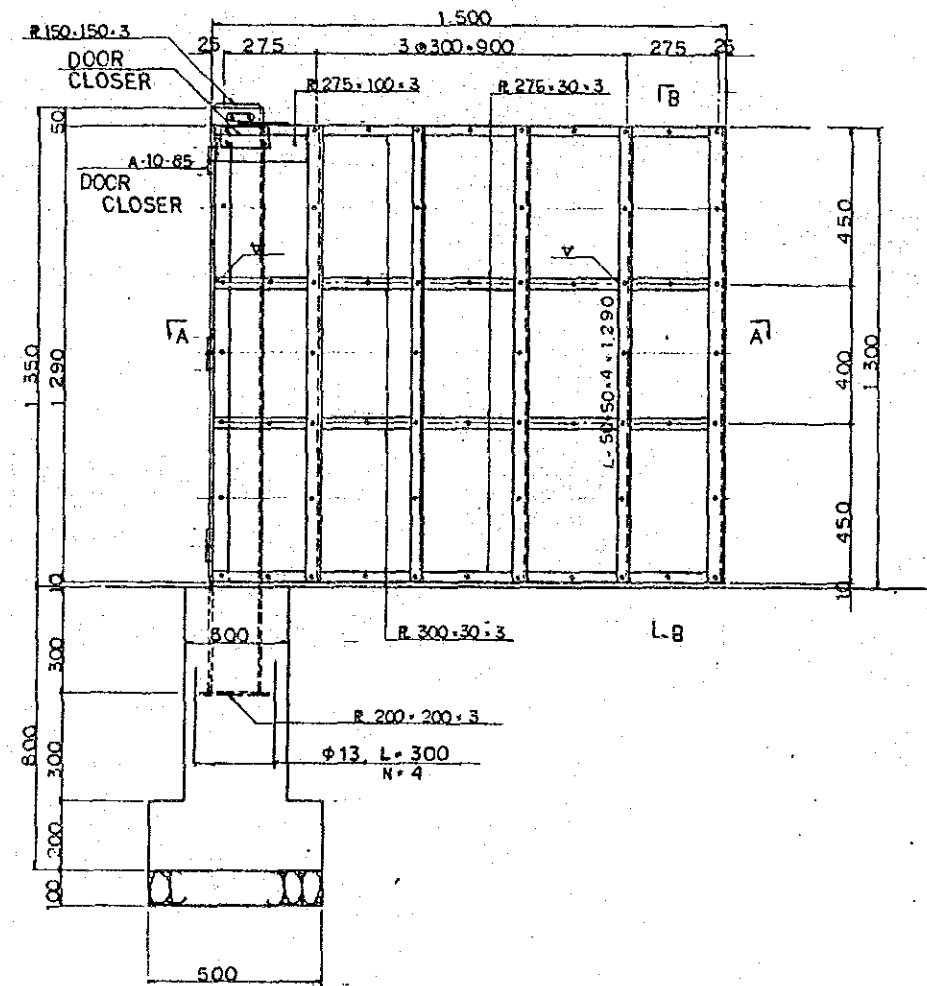
DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
 THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
 THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)
 JATISARI PESTS FORECASTING CENTER
RAT FENCE STRUCTURE
 JAPAN INTERNATIONAL COOPERATION AGENCY
 TOKYO
 ONG. NO. J-17

AUTOMATIC GATE FOR RAT EXPERIMENTAL FARM
(1 PLACE)

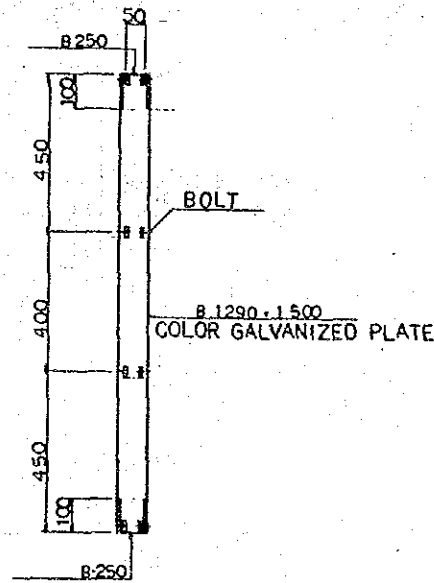
SECTION A-A



FRONT VIEW

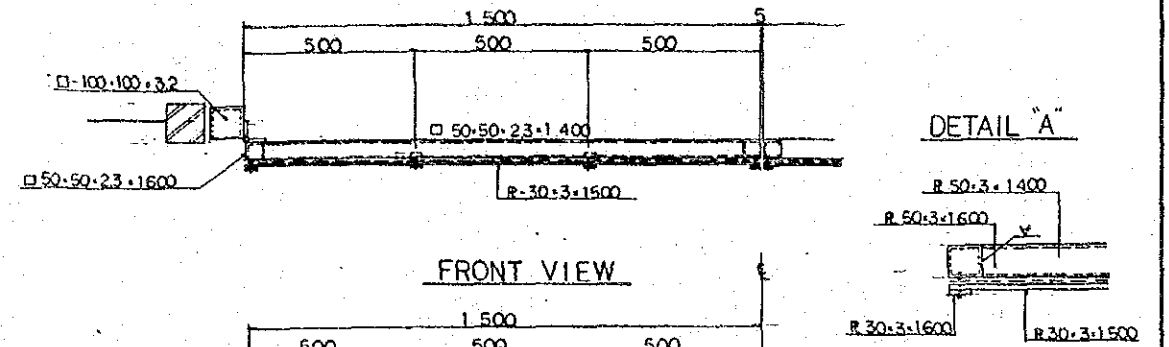


SECTION B-B

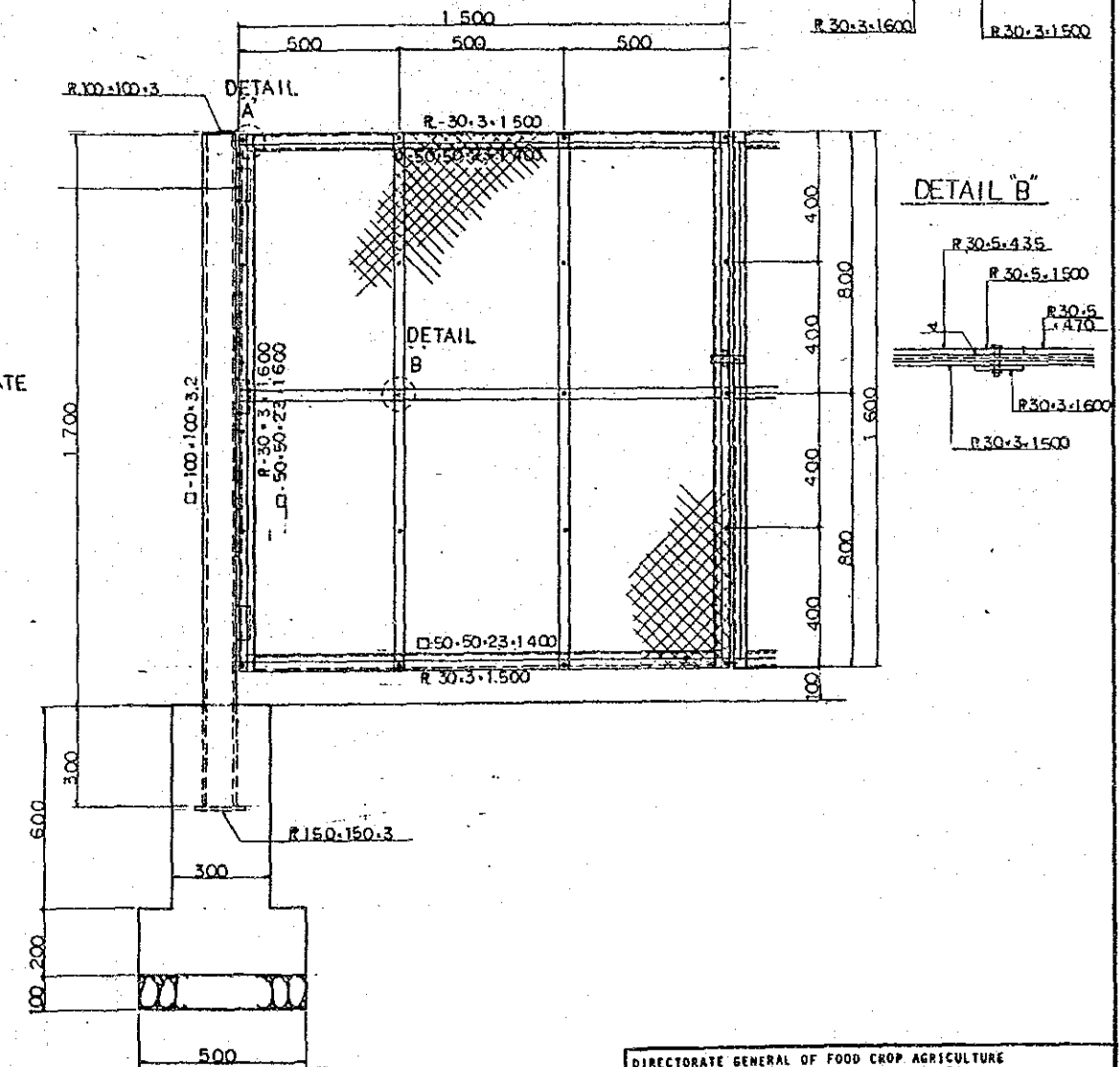


GATE FOR OPERATION ROAD
(2 PLACES)

SECTION



FRONT VIEW



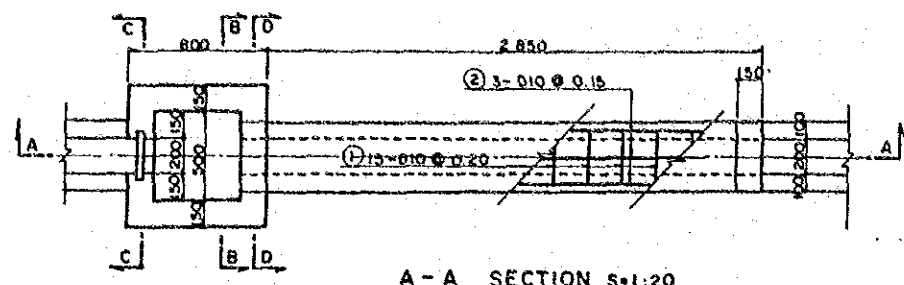
DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)
JATISARI PESTS FORECASTING CENTER

GATE STRUCTURE

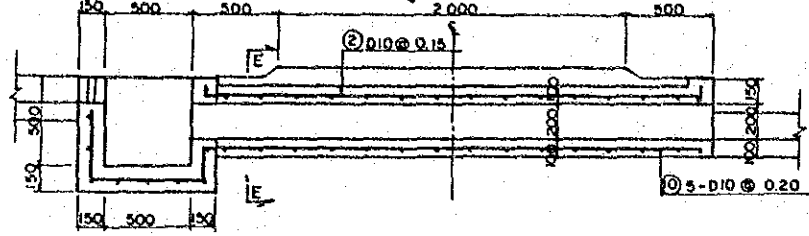
JAPAN INTERNATIONAL COOPERATION AGENCY
T O K Y O

DWG. NO.
J-18

CULVERT PLAN S=1:20
(IRRIGATION CANAL D-LINE, E-LINE)

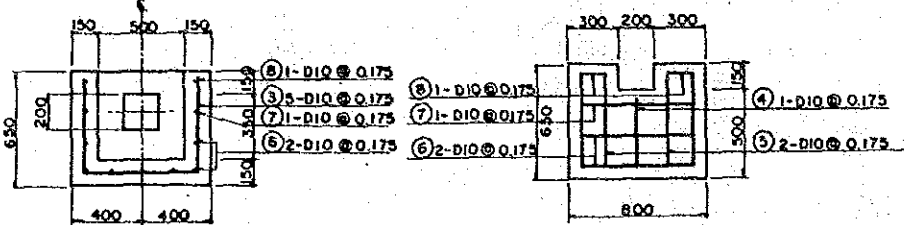


A-A SECTION S=1:20



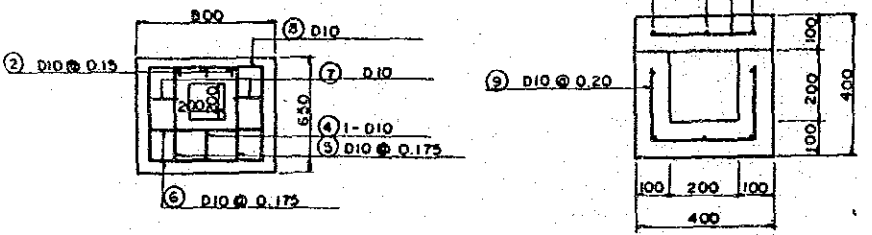
B-B SECTION S=1:20

C-C SECTION S=1:20

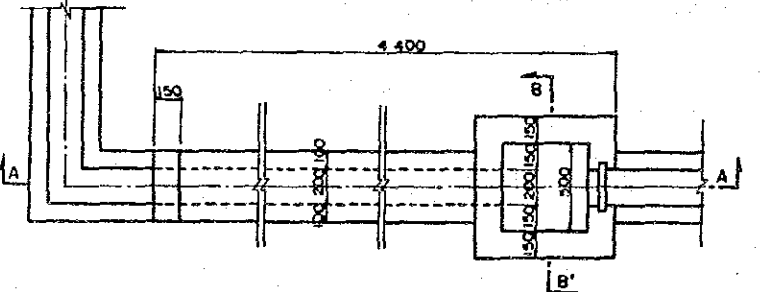


D-D SECTION S=1:20

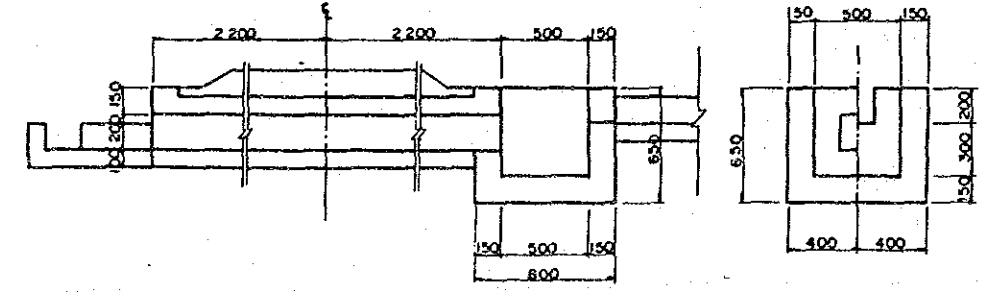
E-E SECTION S=1:10



CULVERT PLAN S=1:20
(IRRIGATION CANAL C-LINE)



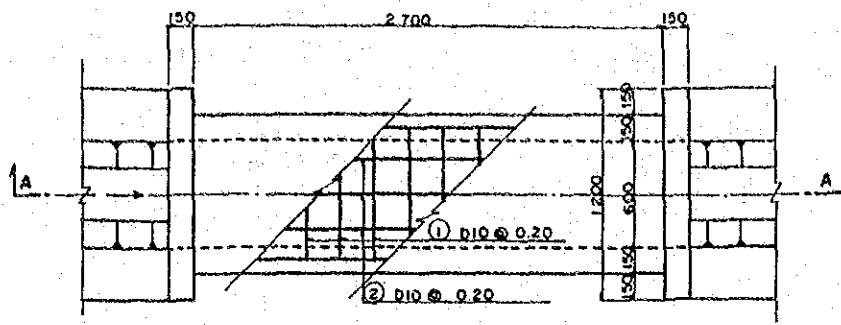
A-A SECTION S=1:20



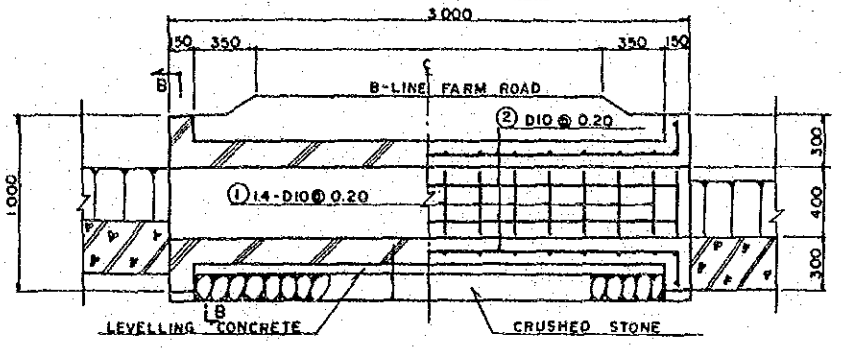
B-B' SECTION S=1:20

RELATED STRUCTURE

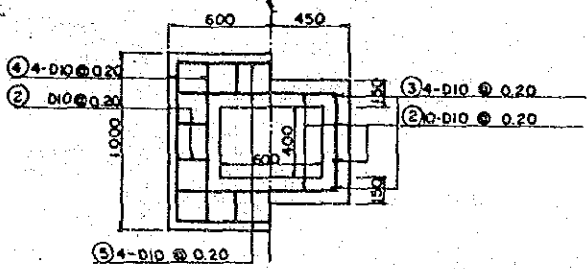
CULVERT PLAN (DRAINAGE CANAL E-LINE) 1:20



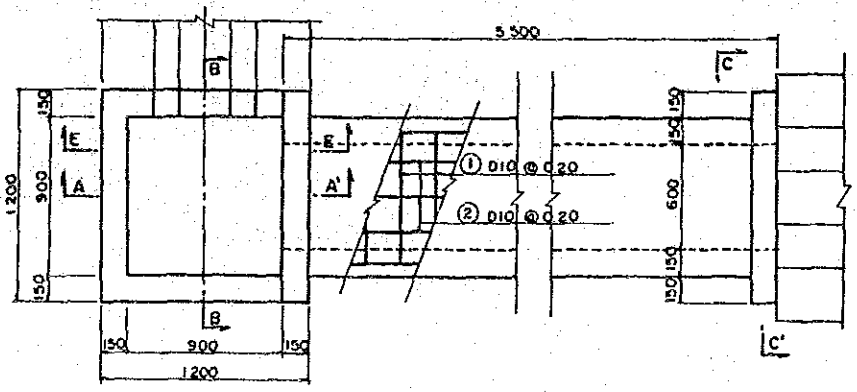
A-A SECTION S=1:20



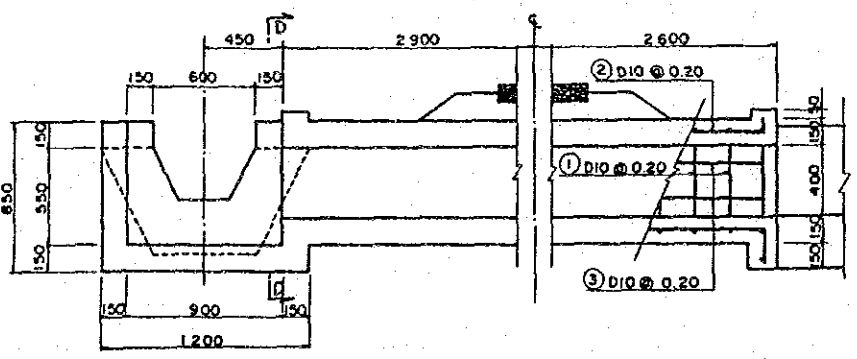
B-B SECTION S=1:20



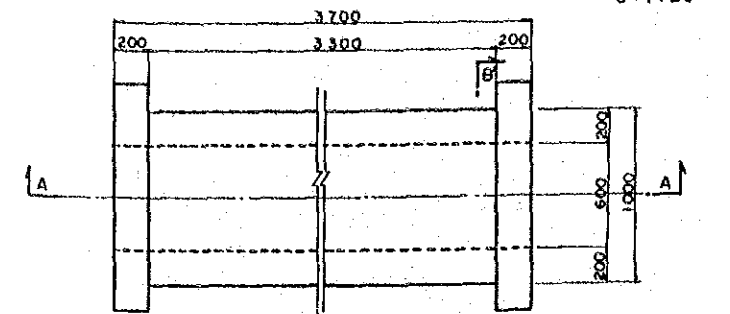
CULVERT PLAN S=1:20
(DRAINAGE CANAL C-LINE)



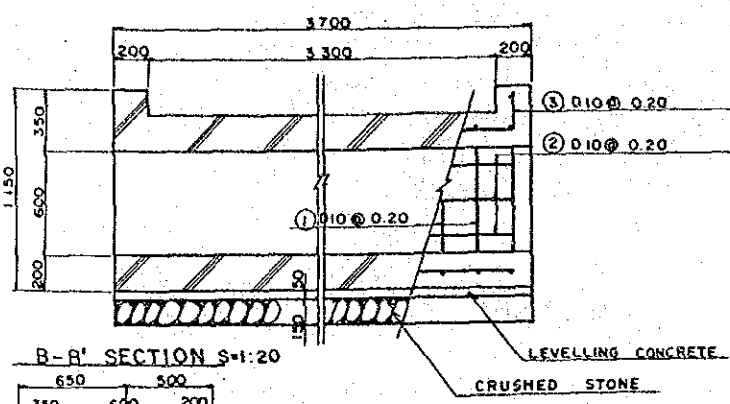
A-A SECTION S=1:20



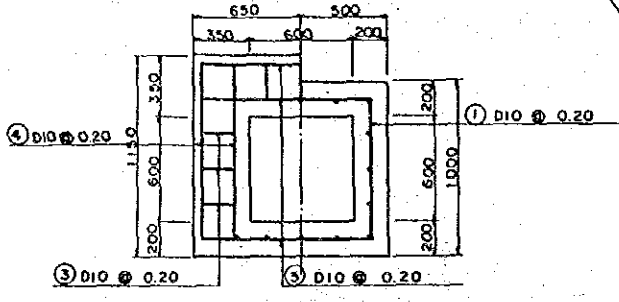
CULVERT PLAN (MAIN DRAINAGE CANAL) S=1:20



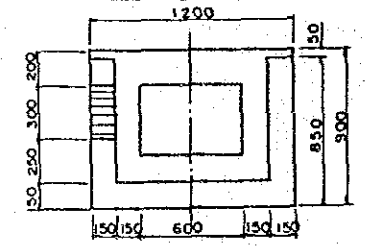
A-A SECTION S=1:20



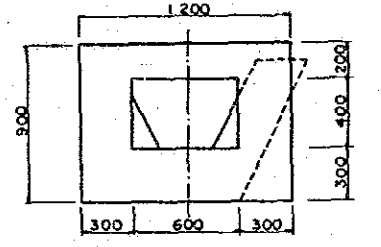
B-B' SECTION S=1:20



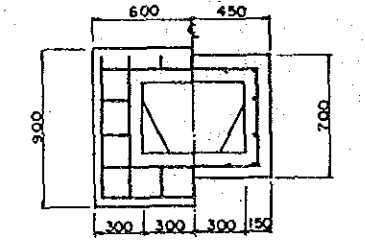
B-B SECTION S=1:20



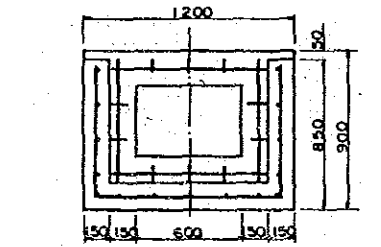
C-C SECTION S=1:20



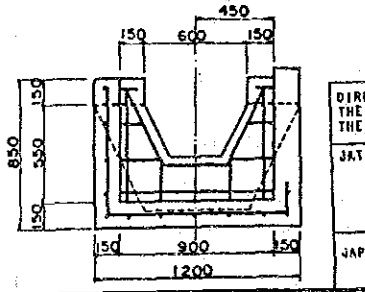
C-C' SECTION S=1:20



D-D SECTION S=1:20



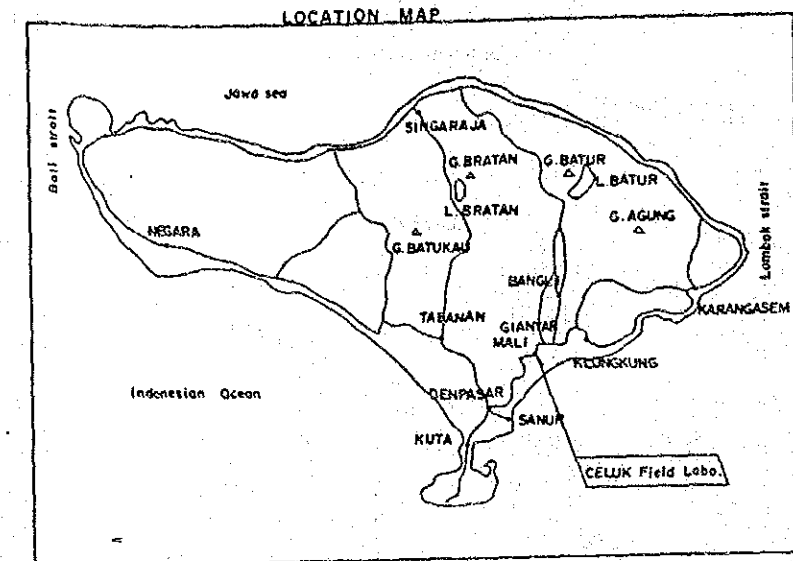
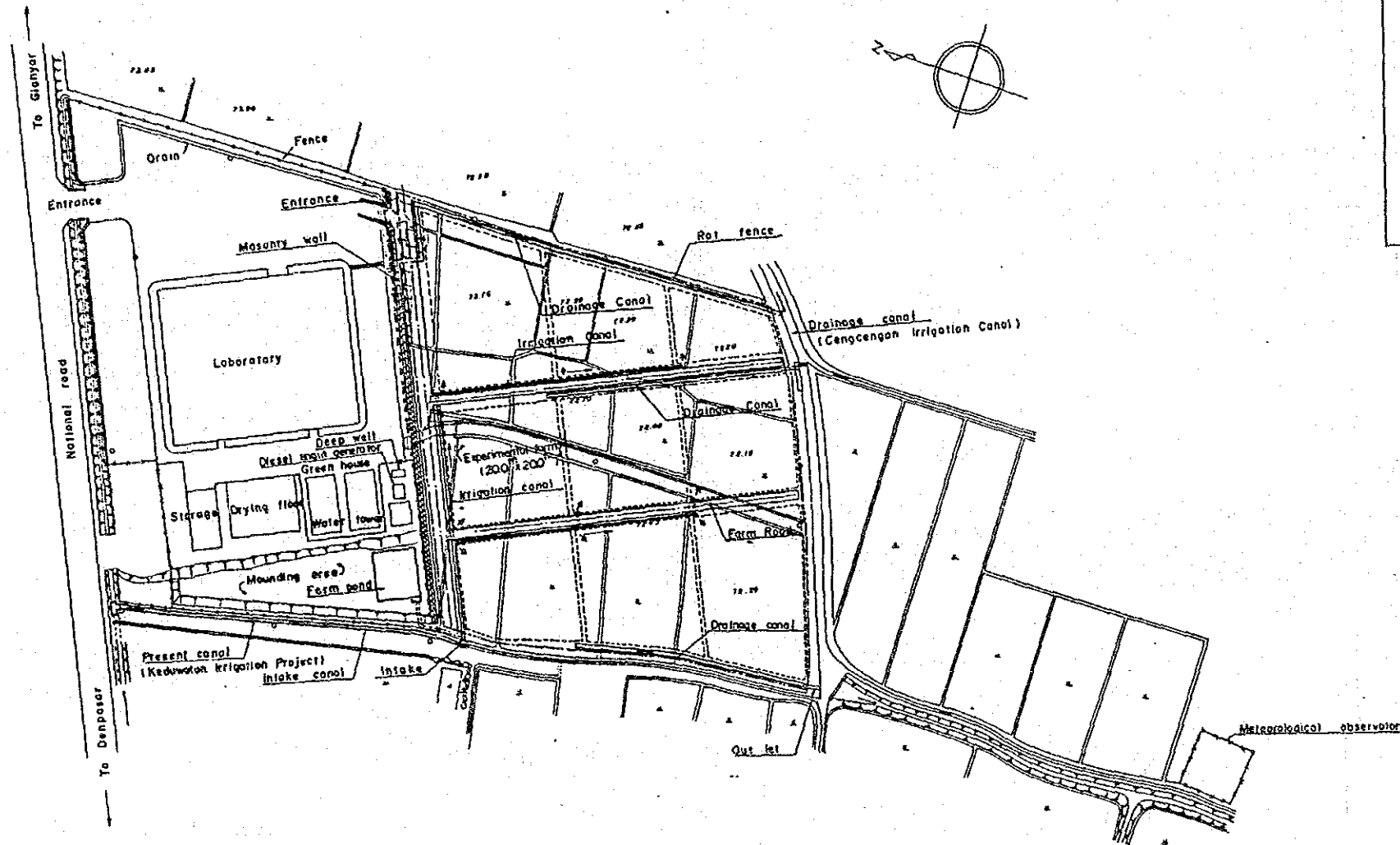
E-E SECTION S=1:20



DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)
JATISARI PESTS FORECASTING CENTER
RELATED STRUCTURE
JAPAN INTERNATIONAL COOPERATION AGENCY
TOKYO
DWR. NO.
J-19

GENERAL PLAN OF CELUK FIELD LABORATORY

0 10 20m
SCALE 1 : 500

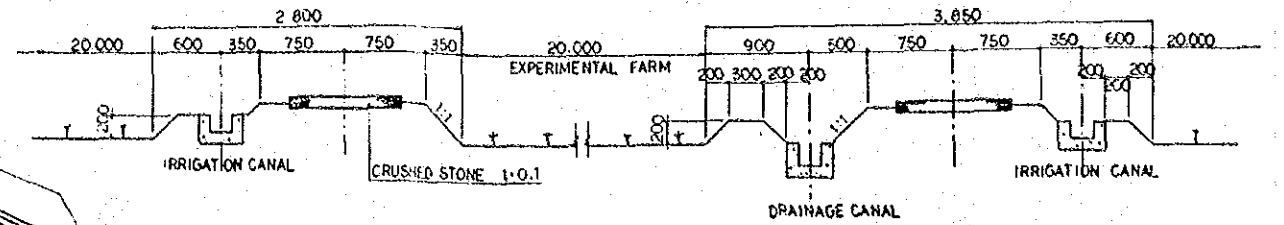


THE INFRASTRUCTURE IMPROVEMENT WORKS FOR THE FOOD CROP PROTECTION PROJECT

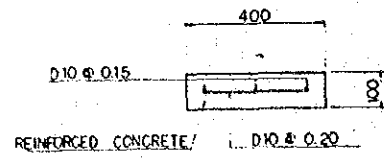
1. LAND CONSOLIDATION WORK FOR PADDY FIELD
 - 1. Land shape adjustment & land levelling A= 0.5 ha
 - 2. Irrigation canal/flume L= 130 m
 - 3. Drainage canal/masonry L= 230 m
 - 4. Farm road/gravel metaling
 - Type-A B= 2.5 m L= 75 m
 - Type-B B= 1.5 m L= 125 m
2. INTAKE CANAL & FARM POND
 - 1. Intake canal/concrete lining L= 60 m
 - 2. Turnout box/concrete 1 place
 - 3. Farm pond/concrete 7.5x7.5x1.6 m V= 80 m³
3. INSTALLATION OF RAT FENCE WITH AUTOMATIC DOOR
 - H= 1.5 m L= 275 m
4. OTHER RELATED STRUCTURES
 - 1. Access road & entrance 1 place
 - 2. Masonry wall H= 1.8 m L= 77 m
 - 3. Repairment of existing fence 1 L.S.
 - 4. Mounding work V= 500 m³

DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE THE INFRASTRUCTURE IMPROVEMENT WORKS FOR THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)	
CELUK FIELD LABORATORY	
GENERAL PLAN	
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO	DWG. NO. C-1

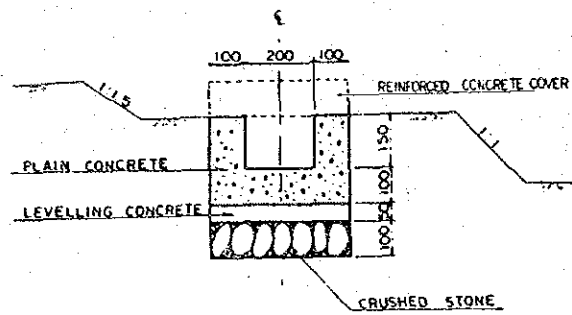
A-A SECTION S-1:30



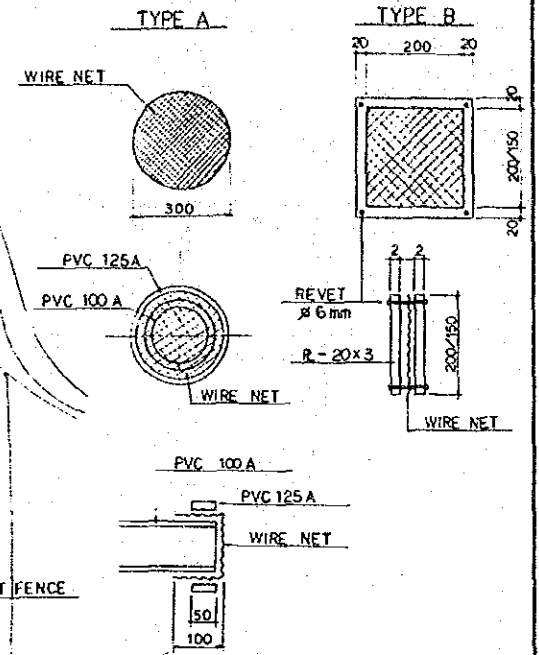
DETAIL OF REINFORCED CONCRETE COVER S-1:10



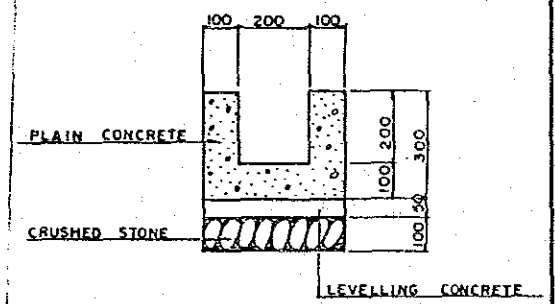
TYPICAL CROSS SECTION S-1:10 (IRRIGATION CANAL)



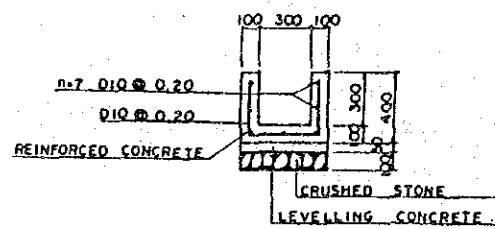
DETAIL OF RAT SCREEN



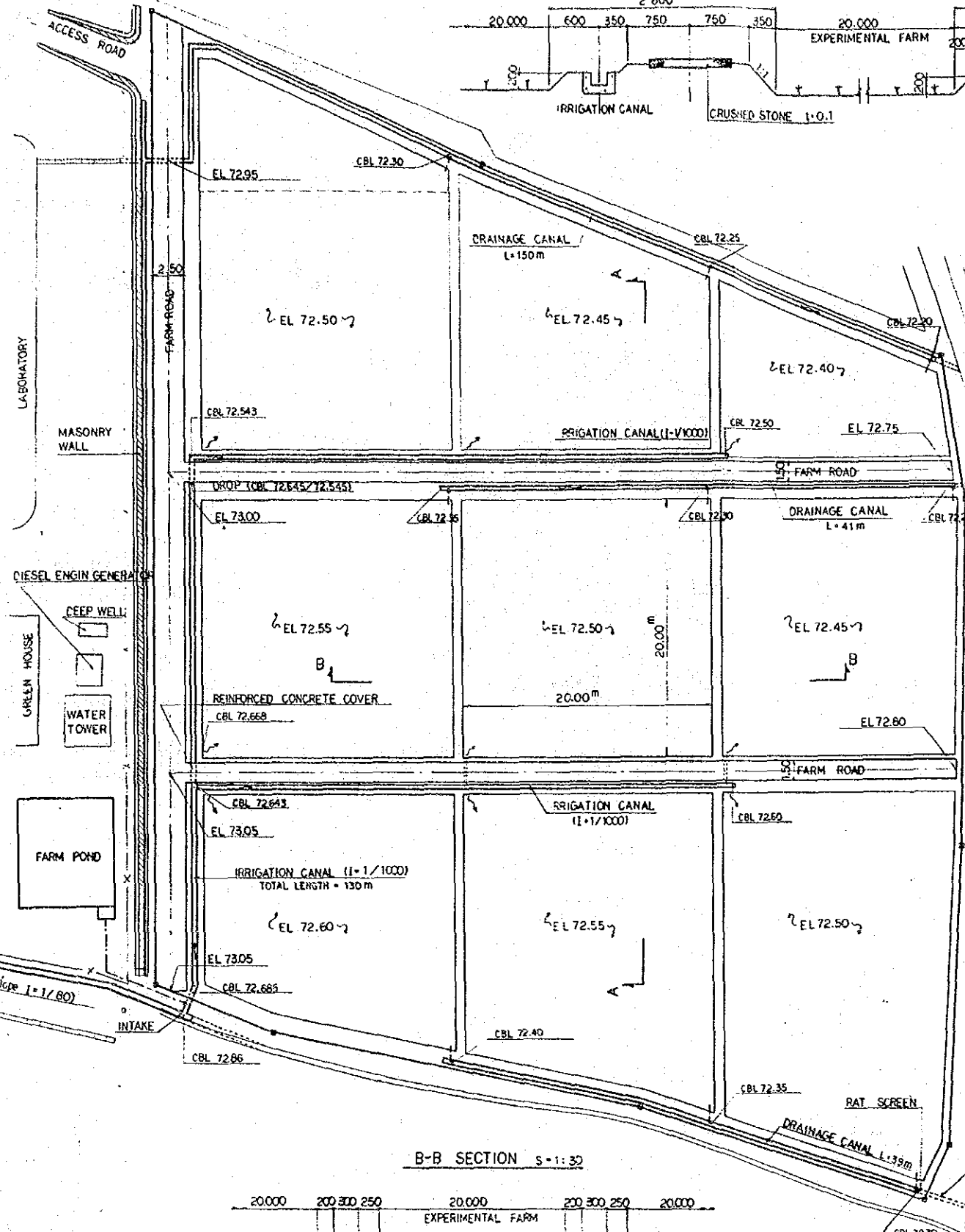
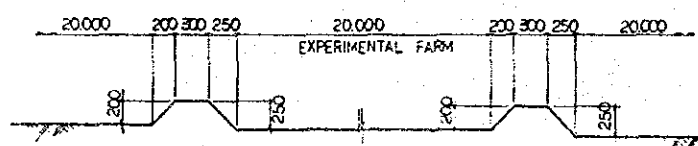
TYPICAL SECTION S-1:10 (DRAINAGE CANAL)



TYPICAL SECTION S-1:20 (INTAKE CANAL)



B-B SECTION S-1:30



DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)

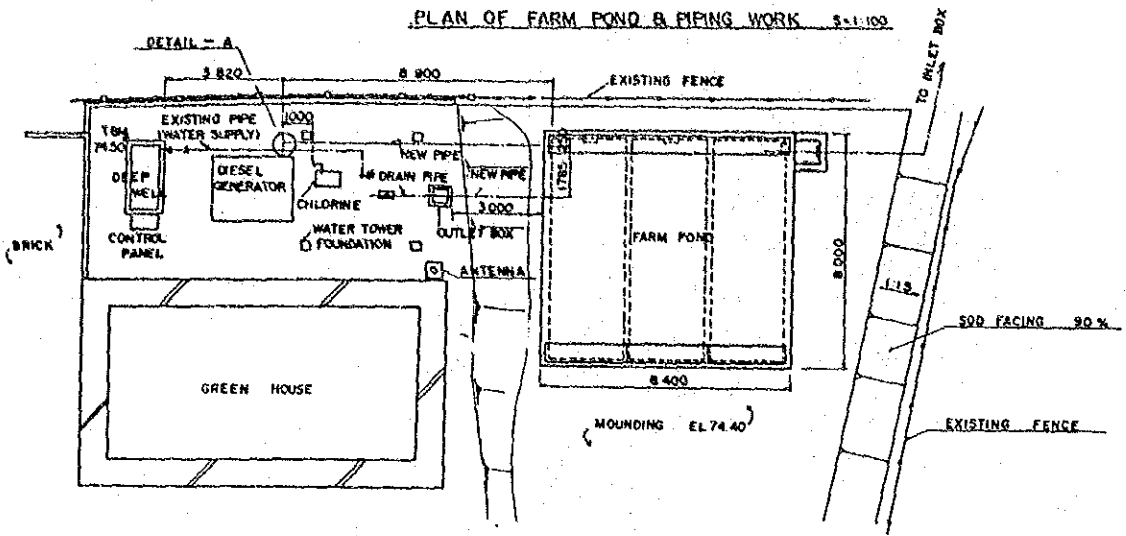
CELUK FIELD LABORATORY

IRRIGATION and DRAINAGE CANAL

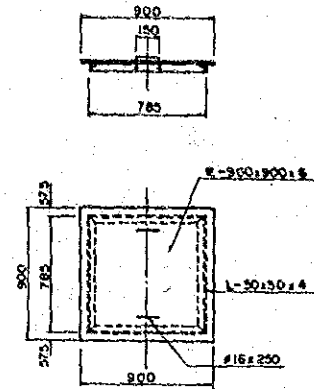
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO

DWG. NO. C-2

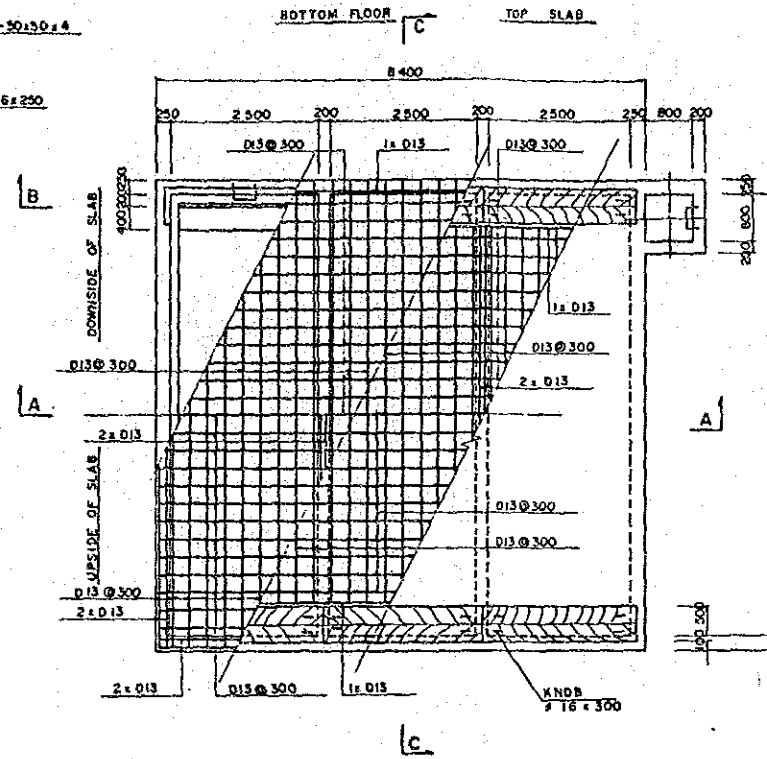
PLAN OF FARM POND & PIPING WORK S=1:100



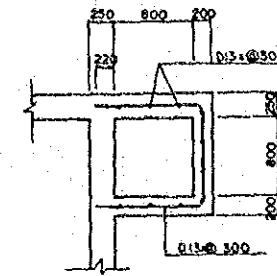
DETAIL OF VALVE PIT COVER S=1:20



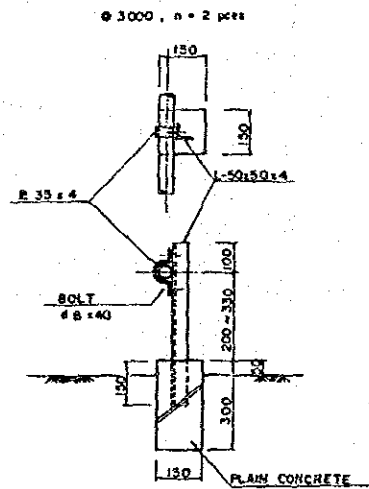
PLAN OF FARM POND S=1:50



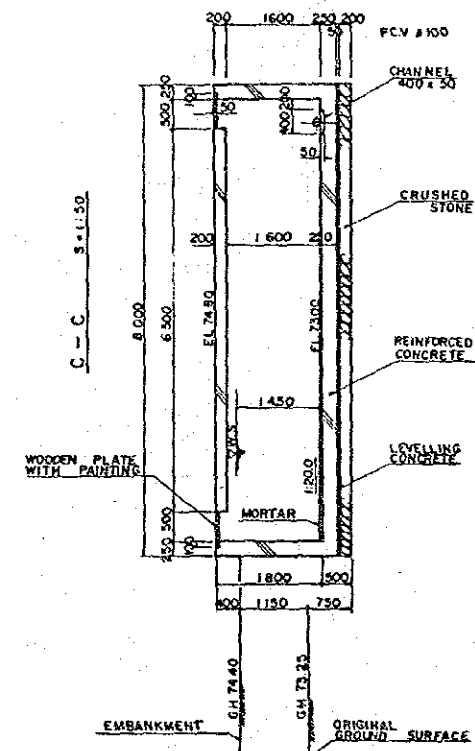
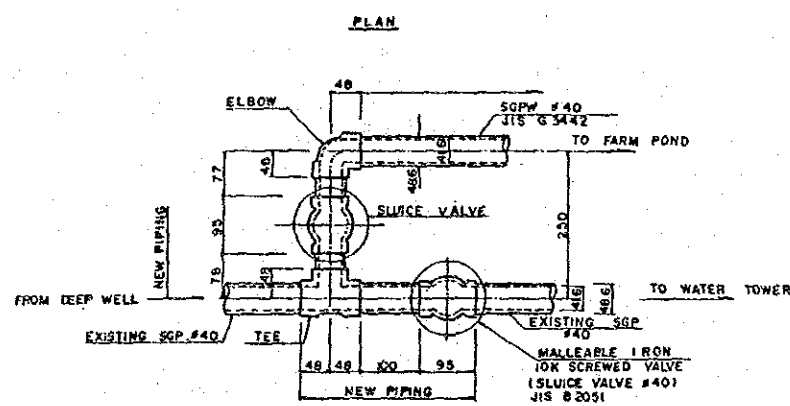
PLAN OF VALVE PIT S=1:30



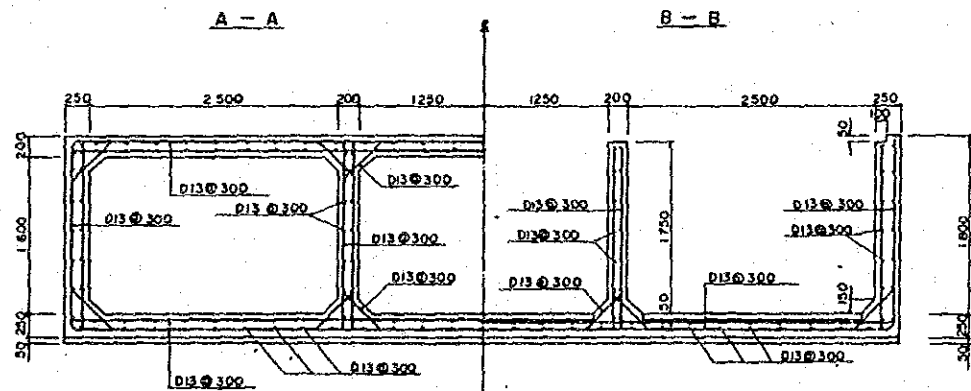
DETAIL OF PIPE SUPPORT S=1:10



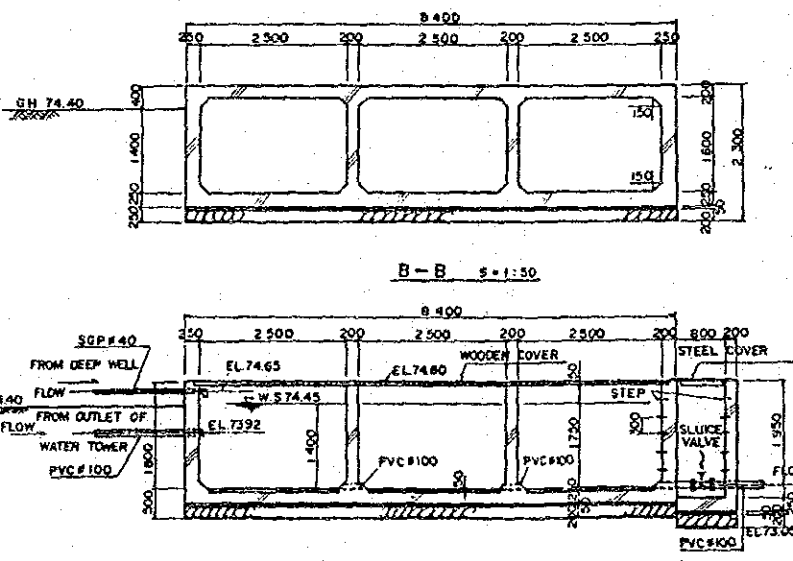
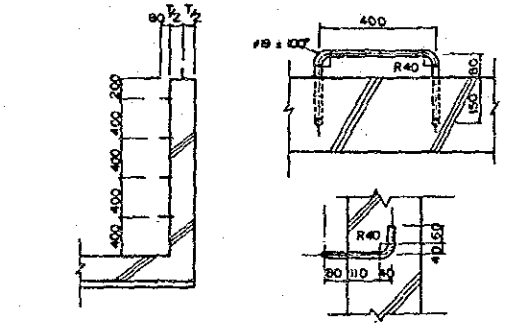
DETAILS - A S=1:15



REINFORCEMENT PATTERN S=1:30

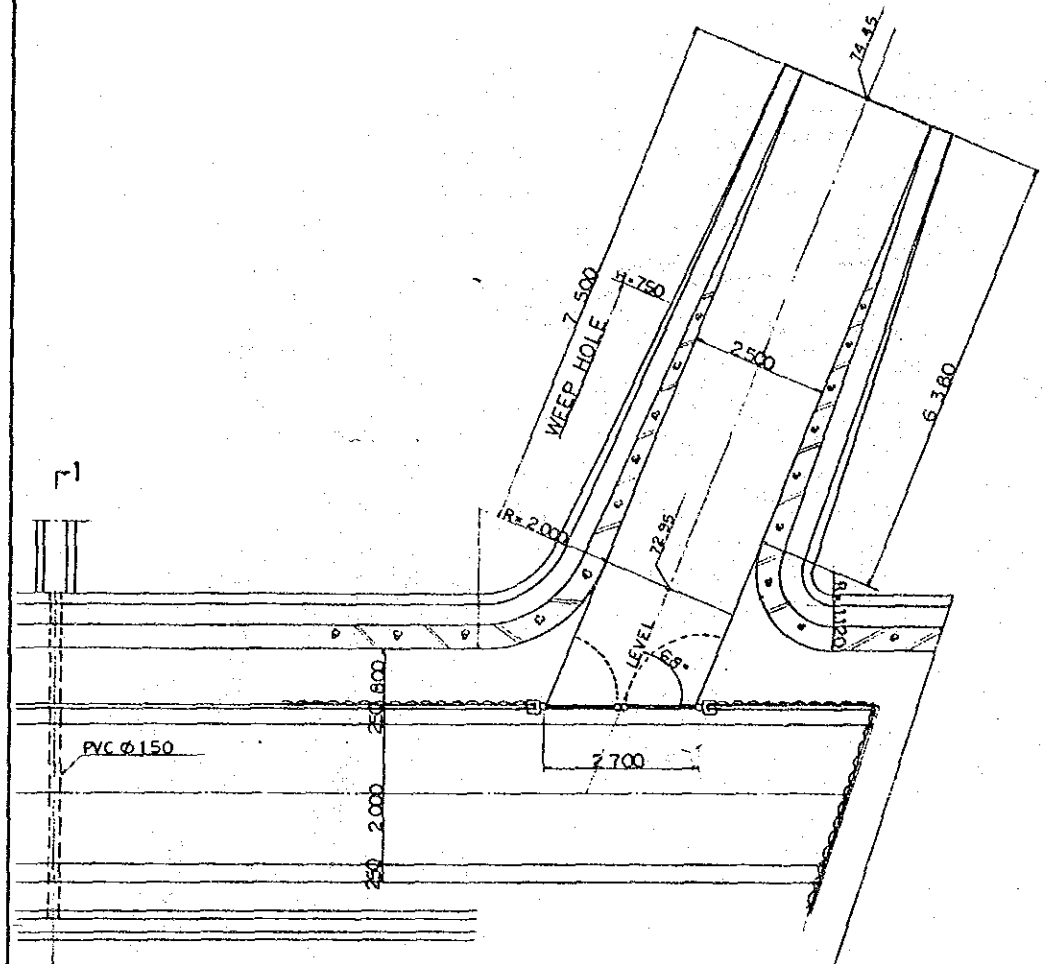


DETAIL OF STEP (for 4 Pieces)

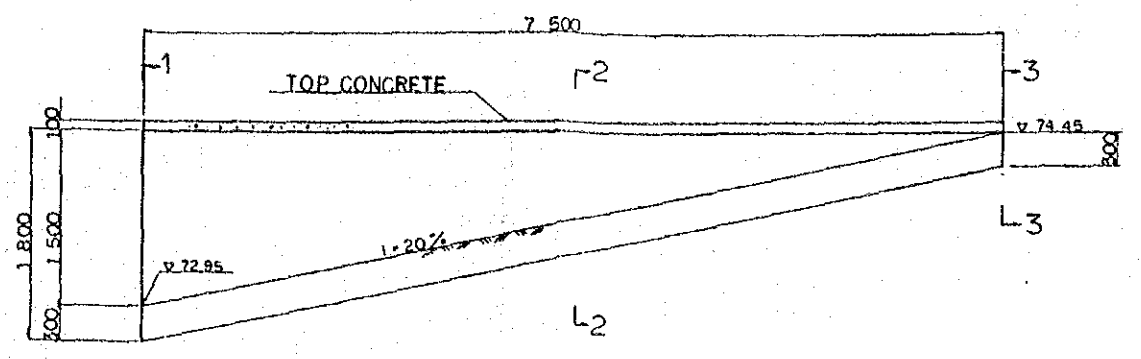


DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)
CELEX FIELD LABORATORY
FARM POND & PIPING WORK
JAPAN INTERNATIONAL COOPERATION AGENCY
D.V.C. RU.
10 X 10
C-3

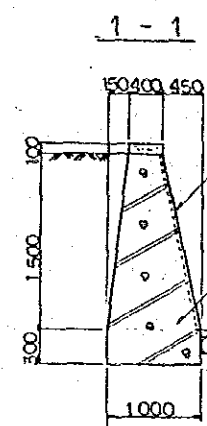
PLAN S=1:50



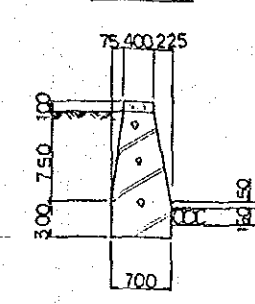
SIDE VIEW OF WALL S=1:30



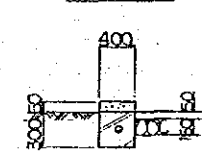
L1



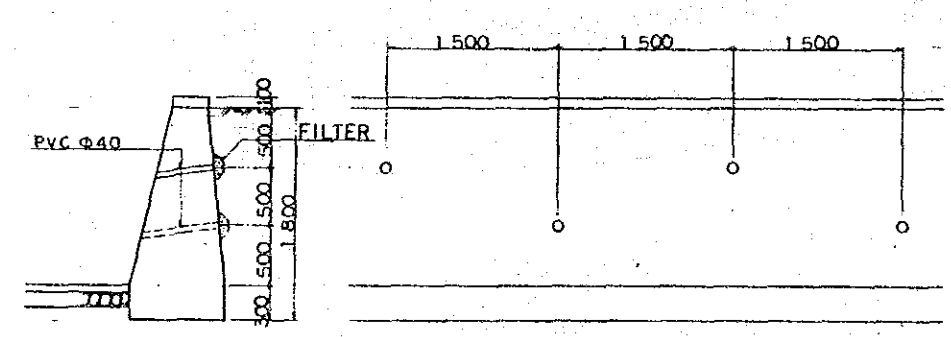
2-2



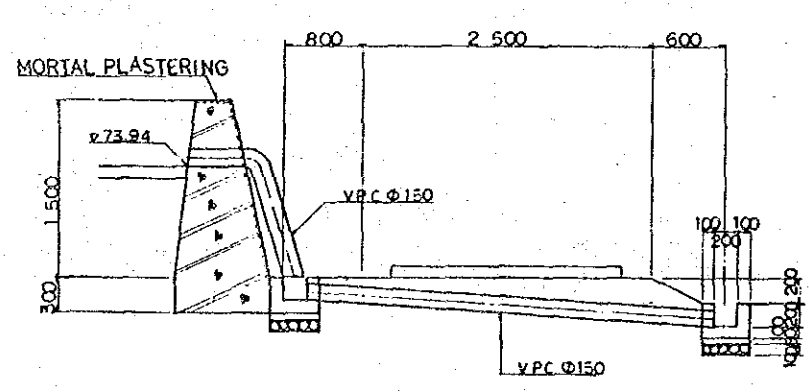
3-3



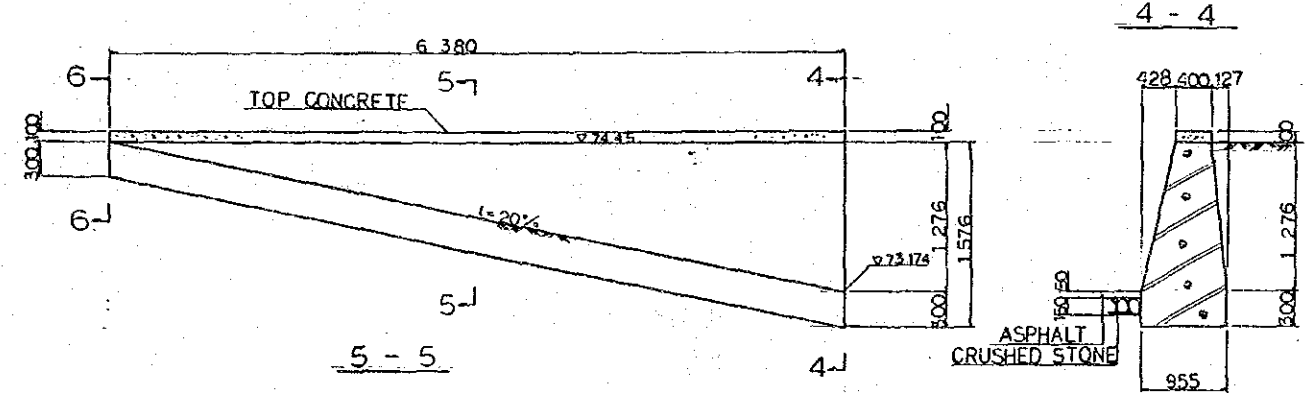
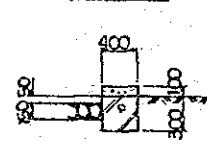
WEEP HOLE S=1:30



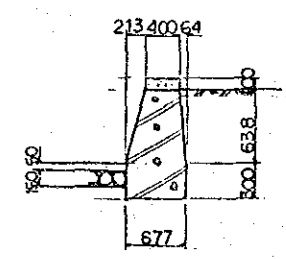
1-1 S=1:30



6-6

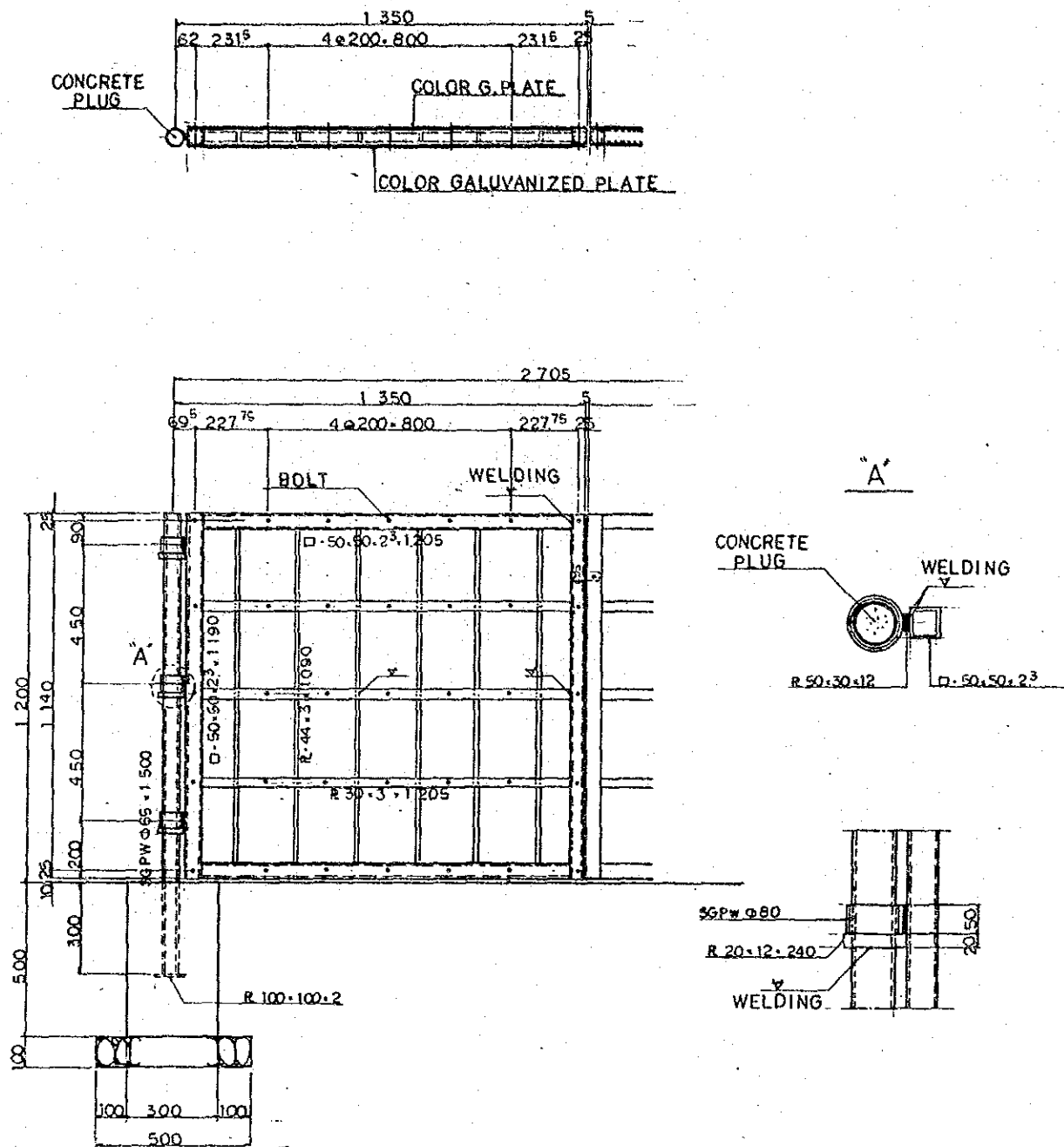


5-5



DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE
 THE INFRASTRUCTURE IMPROVEMENT WORKS FOR
 THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)
 CELUK FIELD LABORATORY
**MASONRY RETAINING WALL
 and ACCESS ROAD**
 JAPAN INTERNATIONAL COOPERATION AGENCY
 T O K Y O
 DWG. NO.
C-4

DETAIL OF GATE



DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE THE INFRASTRUCTURE IMPROVEMENT WORKS FOR THE FOOD CROP PROTECTION PROJECT (2nd Phase of ATA-162)	
CELUK FIELD LABORATORY	
GATE STRUCTURE	
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO	DWG. NO. C-6

