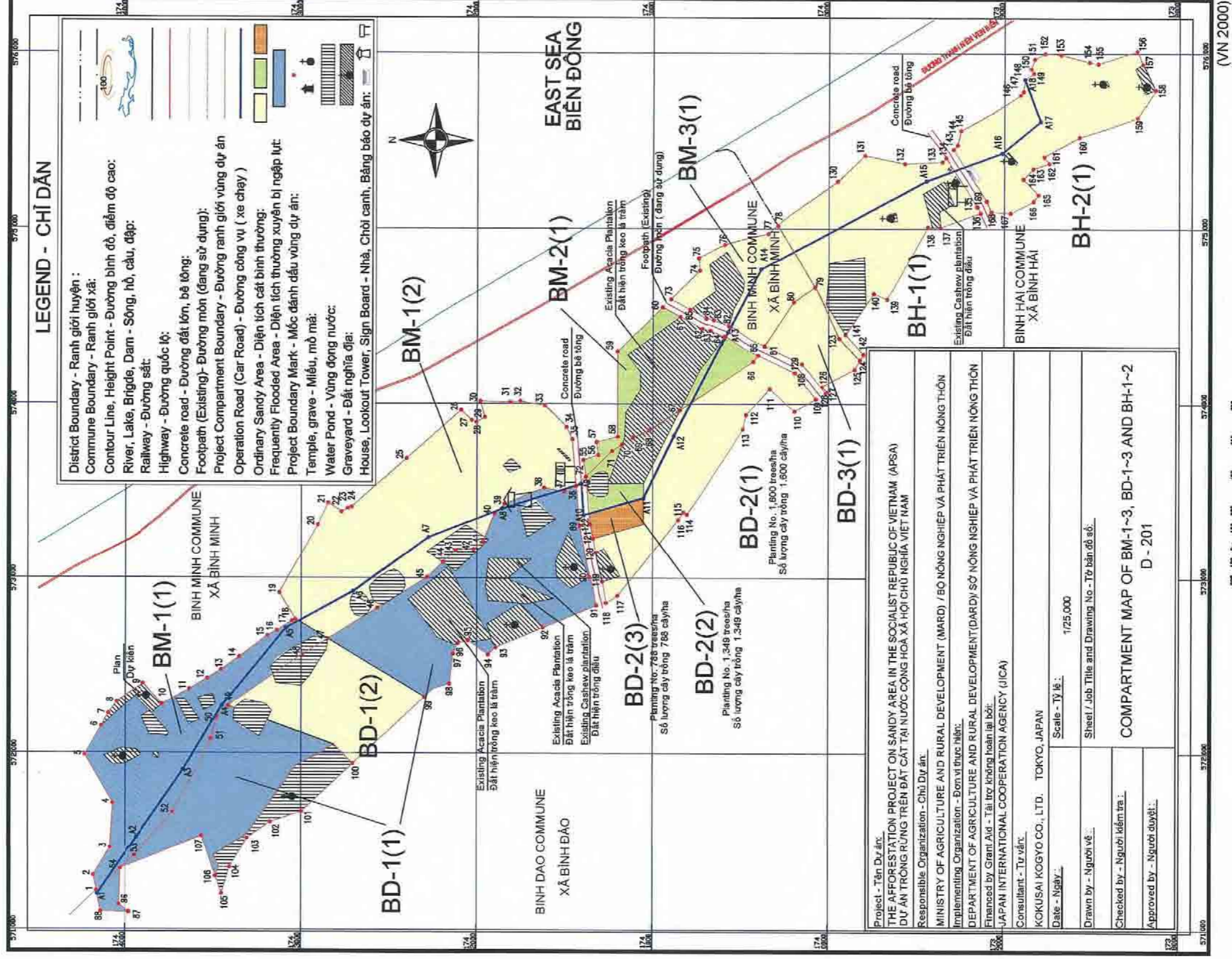
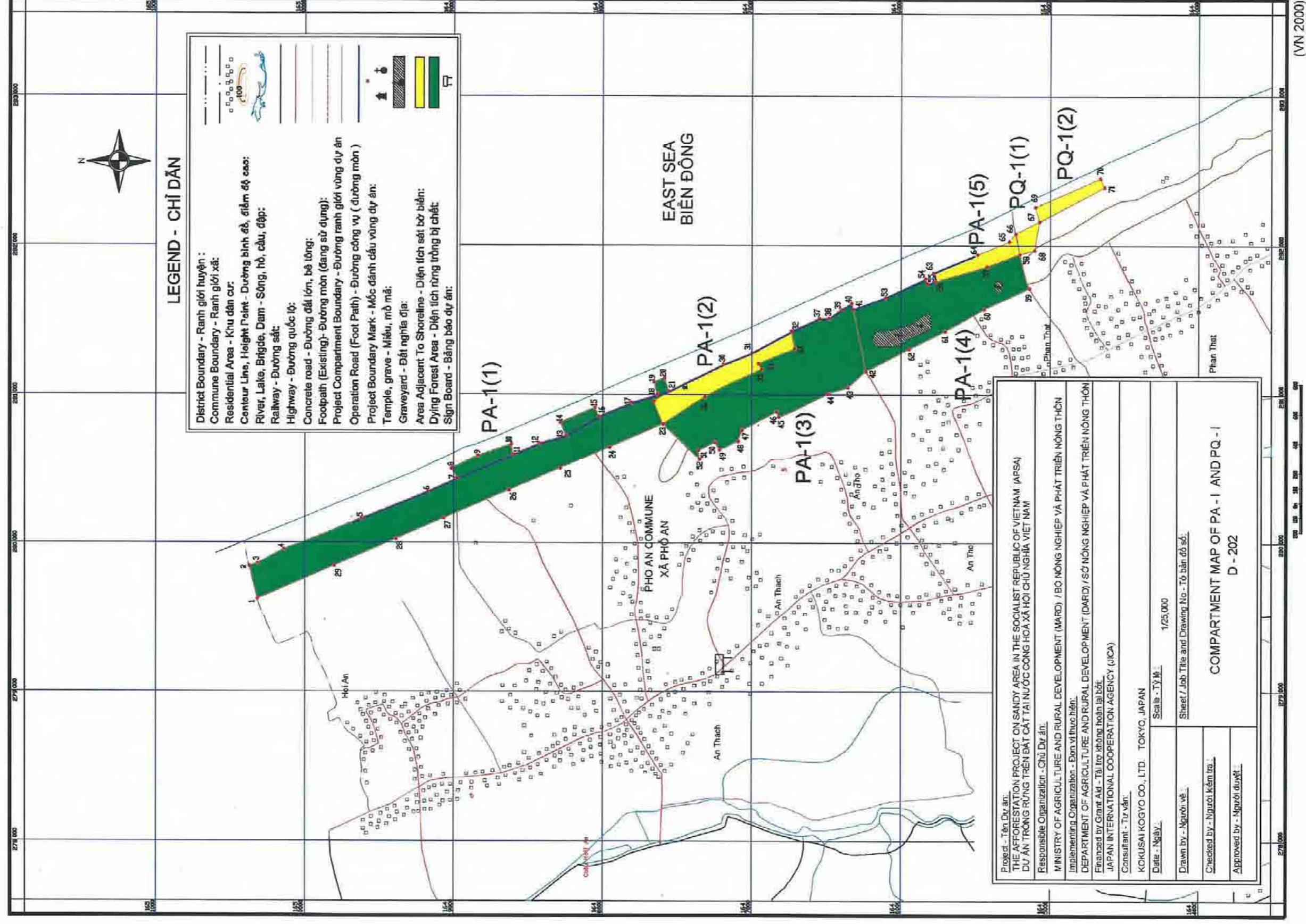


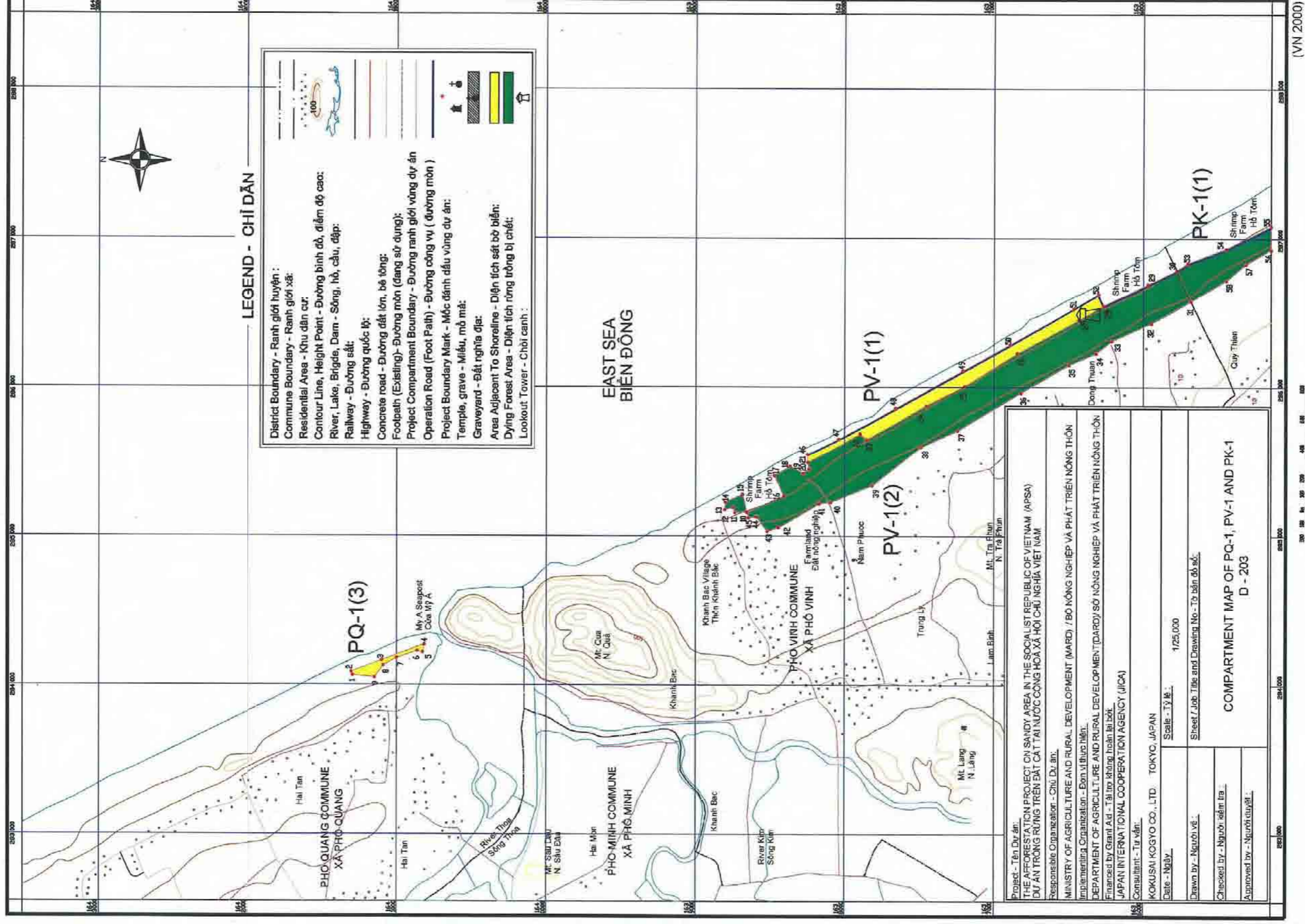
COMPARTMENT MAP
FOR AFFORESTATION PROJECT ON SANDY AREA IN VIETNAM (APSA PROJECT)
BINH MINH, BINH DAO, BINH HAI COMMUNE - THANG BINH DISTRICT - QUANG NAM PROVINCE
BẢN ĐỒ CHI TIẾT
KHẢO SÁT ĐO ĐẠC DIỆN TÍCH ĐẤT TRỒNG RỪNG TRÊN CÁT
XÃ BÌNH MINH, BÌNH ĐÀO, BÌNH HẢI - HUYỆN THẮNG BÌNH - TỈNH QUẢNG NAM (DỰ ÁN APSA)



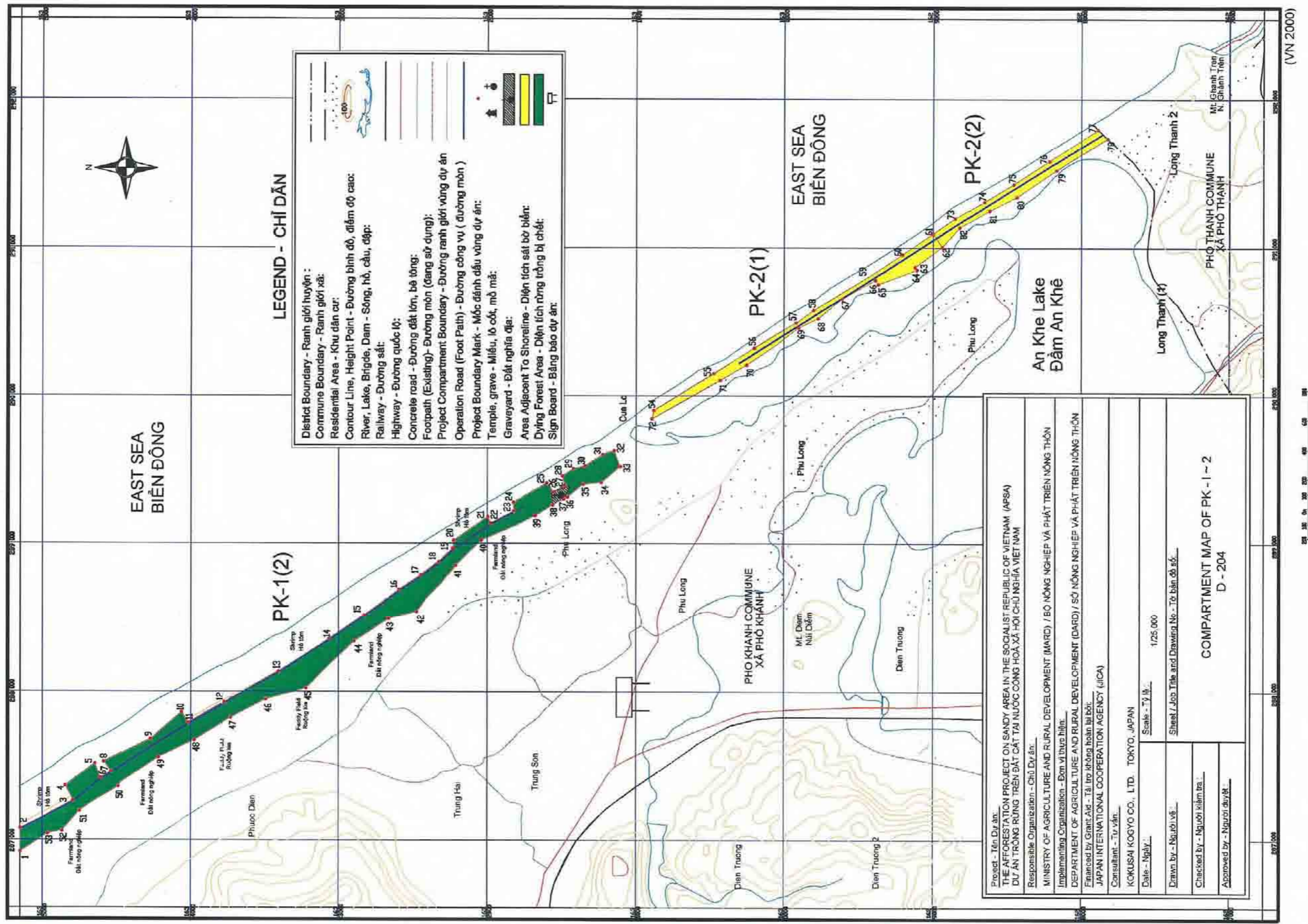
COMPARTMENT MAP
FOR AFFORESTATION PROJECT ON SANDY AREA IN VIETNAM (APSA PROJECT)
PHO AN, PHO QUANG COMMUNE - DUC PHO DISTRICT - QUANG NGAI PROVINCE
BẢN ĐỒ CHI TIẾT
KHẢO SÁT ĐO ĐẠC DIỆN TÍCH ĐẤT TRỒNG RỪNG TRÊN CÁT
XÃ PHỒ AN, PHỒ QUANG - HUYỆN ĐỨC PHỒ - TỈNH QUẢNG NGÃI (DỰ ÁN APSA)



COMPARTMENT MAP
FOR AFFORESTATION PROJECT ON SANDY AREA IN VIETNAM (APSA PROJECT)
PHO QUANG, PHO VINH, PHO KHANH COMMUNE - DUC PHO DISTRICT - QUANG NGAI PROVINCE
BẢN ĐỒ CHI TIẾT
KHẢO SÁT ĐO ĐẠC DIỆN TÍCH ĐẤT TRỒNG RỪNG TRÊN CÁT
XÃ PHỒ QUANG, PHỒ VINH, PHỒ KHÁNH - HUYỆN ĐỨC PHỒ - TỈNH QUẢNG NGÃI (DỰ ÁN APSA)

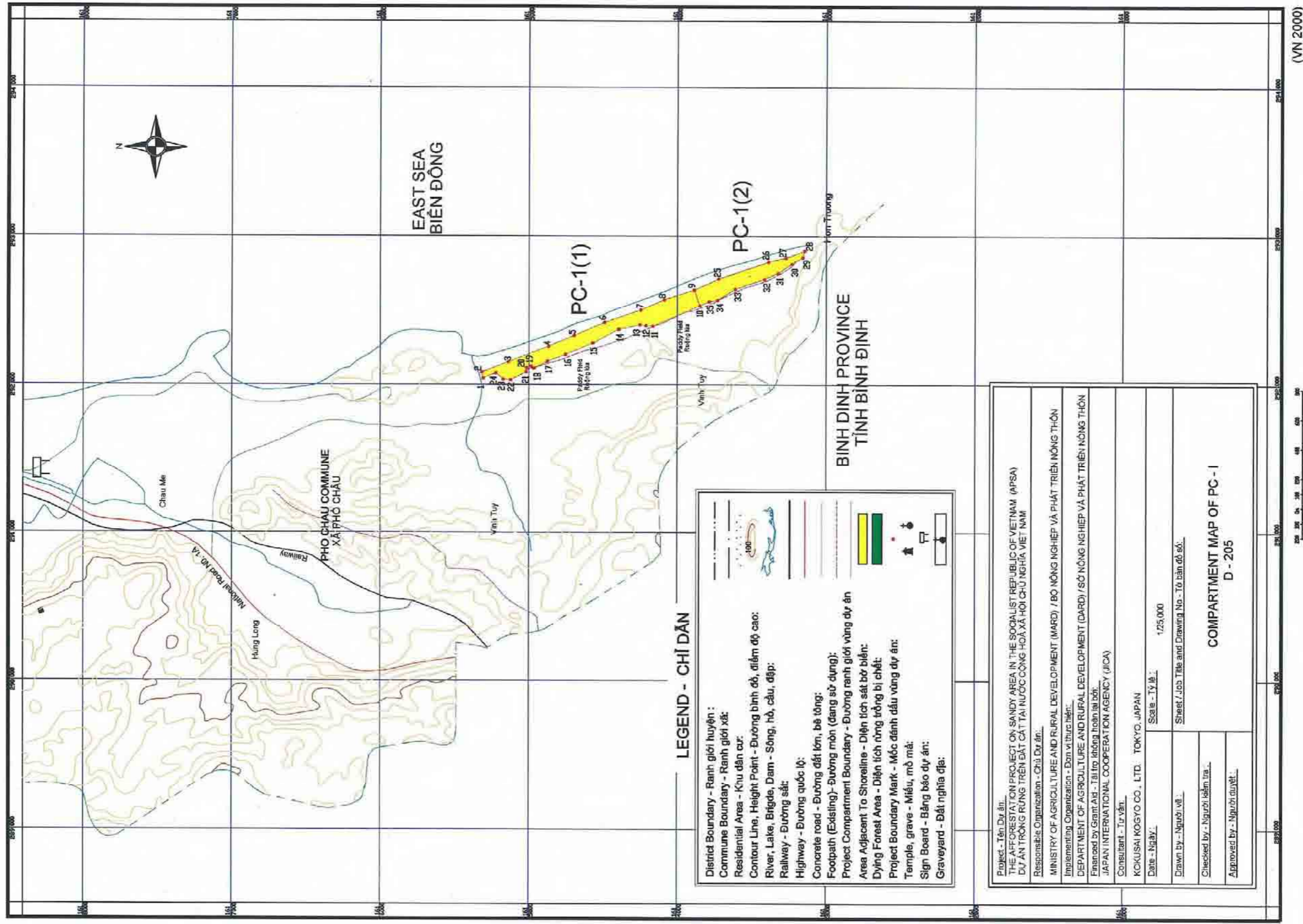


COMPARTMENT MAP
FOR AFFORESTATION PROJECT ON SANDY AREA IN VIETNAM (APSA PROJECT)
PHU KHANH COMMUNE - DUC PHO DISTRICT - QUANG NGAI PROVINCE
BẢN ĐỒ CHI TIẾT
KHẢO SÁT ĐO ĐẠC DIỆN TÍCH ĐẤT TRỒNG RỪNG TRÊN CÁT
XÃ PHỒ KHÁNH - HUYỆN ĐỨC PHỒ - TỈNH QUẢNG NGÃI (DỰ ÁN APSA)



COMPARTMENT MAP
FOR AFFORESTATION PROJECT ON SANDY AREA IN VIETNAM (APSA PROJECT)
PHO CHAU COMMUNE - DUC PHO DISTRICT - QUANG NGAI PROVINCE
BẢN ĐỒ CHI TIẾT

KHẢO SÁT ĐO ĐẠC DIỆN TÍCH ĐẤT TRỒNG RỪNG TRÊN CÁT
XÃ PHỒ CHÁU - HUYỆN ĐỨC PHỒ - TỈNH QUẢNG NGÃI (DỰ ÁN APSA)



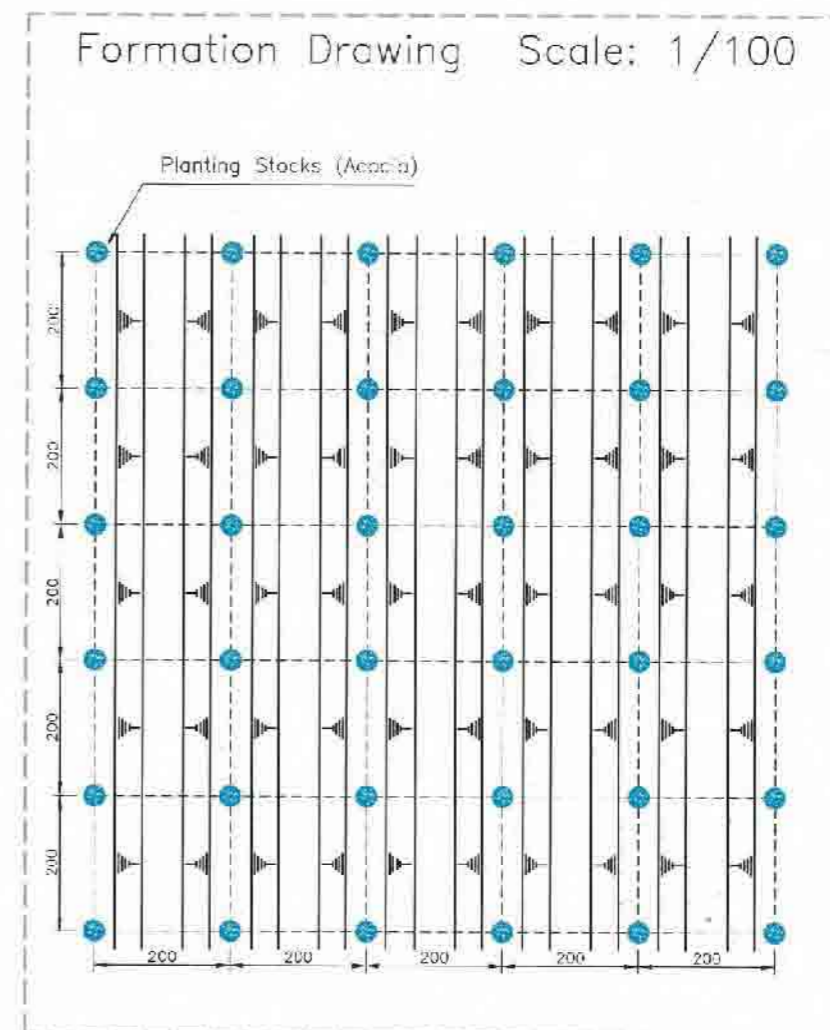
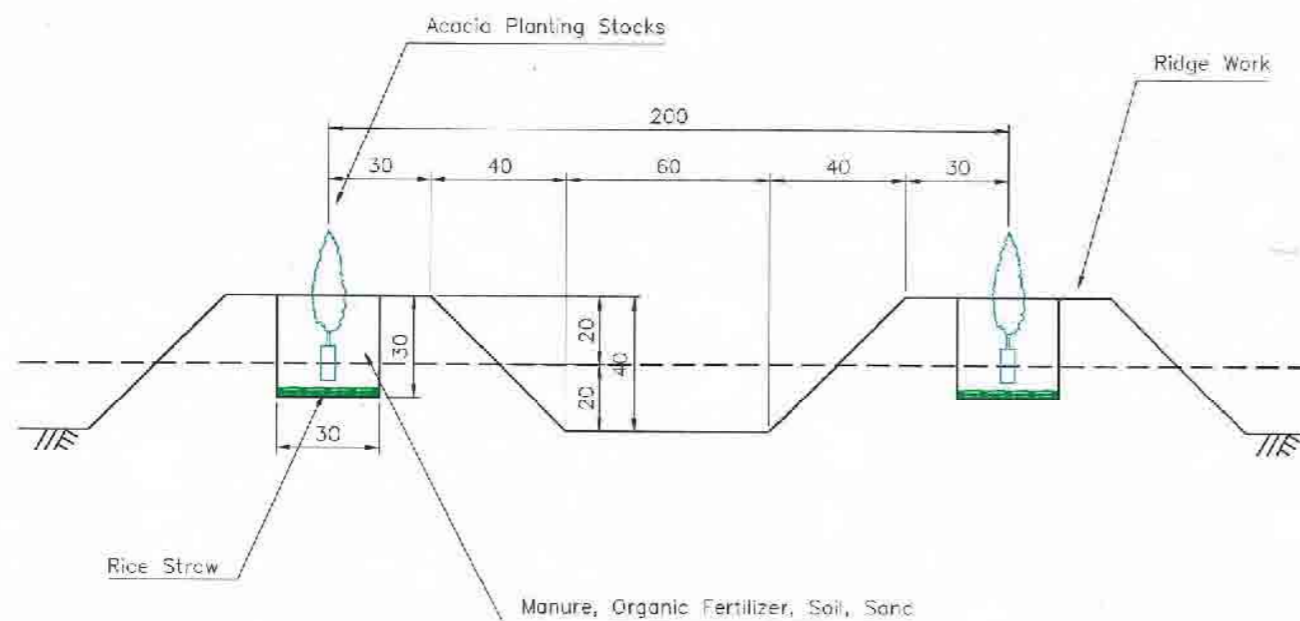
LEGEND - CHỈ DẪN

- District Boundary - Ranh giới huyện :
- Commune Boundary - Ranh giới xã:
- Residential Area - Khu dân cư:
- Contour Line, Height Point - Đường bình đồ, điểm độ cao:
- River, Lake, Bridge, Dam - Sông, hồ, cầu, đập:
- Railway - Đường sắt:
- Highway - Đường quốc lộ:
- Concrete road - Đường đất lớn, bê tông:
- Footpath (Existing) - Đường mòn (đang sử dụng):
- Project Compartment Boundary - Đường ranh giới vùng dự án
- Area Adjacent To Shoreline - Diện tích sát bờ biển:
- Dying Forest Area - Diện tích rừng trồng bị chết:
- Project Boundary Mark - Mốc đánh dấu vùng dự án:
- Temple, grave - Miếu, mộ mả:
- Sign Board - Bảng báo dự án:
- Graveyard - Đất nghĩa địa:

Project - Tên Dự án: THE AFFORESTATION PROJECT ON SANDY AREA IN THE SOCIALIST REPUBLIC OF VIETNAM (APSA) DỰ ÁN TRỒNG RỪNG TRÊN ĐẤT CÁT TẠI NƯỚC CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM	
Responsible Organization - Chủ Dự án: MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT (MARD) / BỘ NÔNG NGHIỆP VÀ PHÁT TRIỂN NÔNG THÔN	
Implementing Organization - Đơn vị thực hiện: DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT (DARD) / SỞ NÔNG NGHIỆP VÀ PHÁT TRIỂN NÔNG THÔN	
Financed by Grant/Aid - Tài trợ không hoàn lại bởi: JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	
Consultant - Tư vấn: KOKUSAI KOGYO CO., LTD. TOKYO, JAPAN	
Date - Ngày:	Scale - Tỷ lệ: 1:25,000
Drawn by - Người vẽ:	Sheet / Job Title and Drawing No. - Tô bản đồ số:
Checked by - Người kiểm tra:	COMPARTMENT MAP OF PC - I D - 205
Approved by - Người duyệt:	



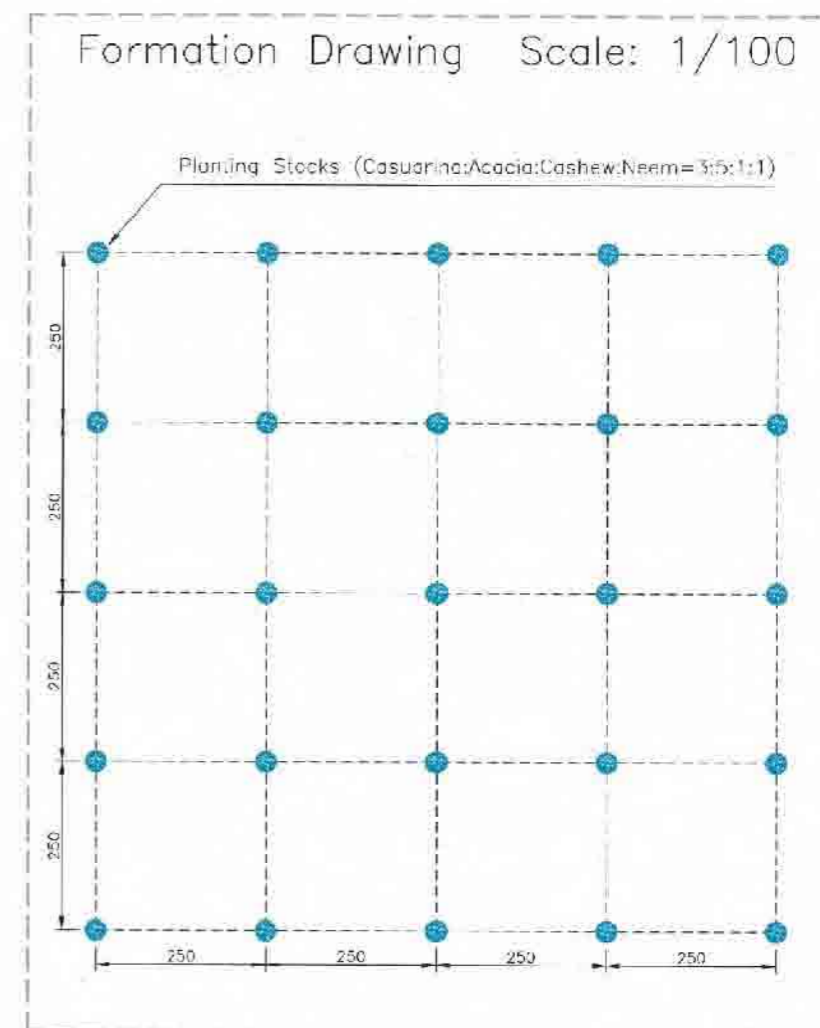
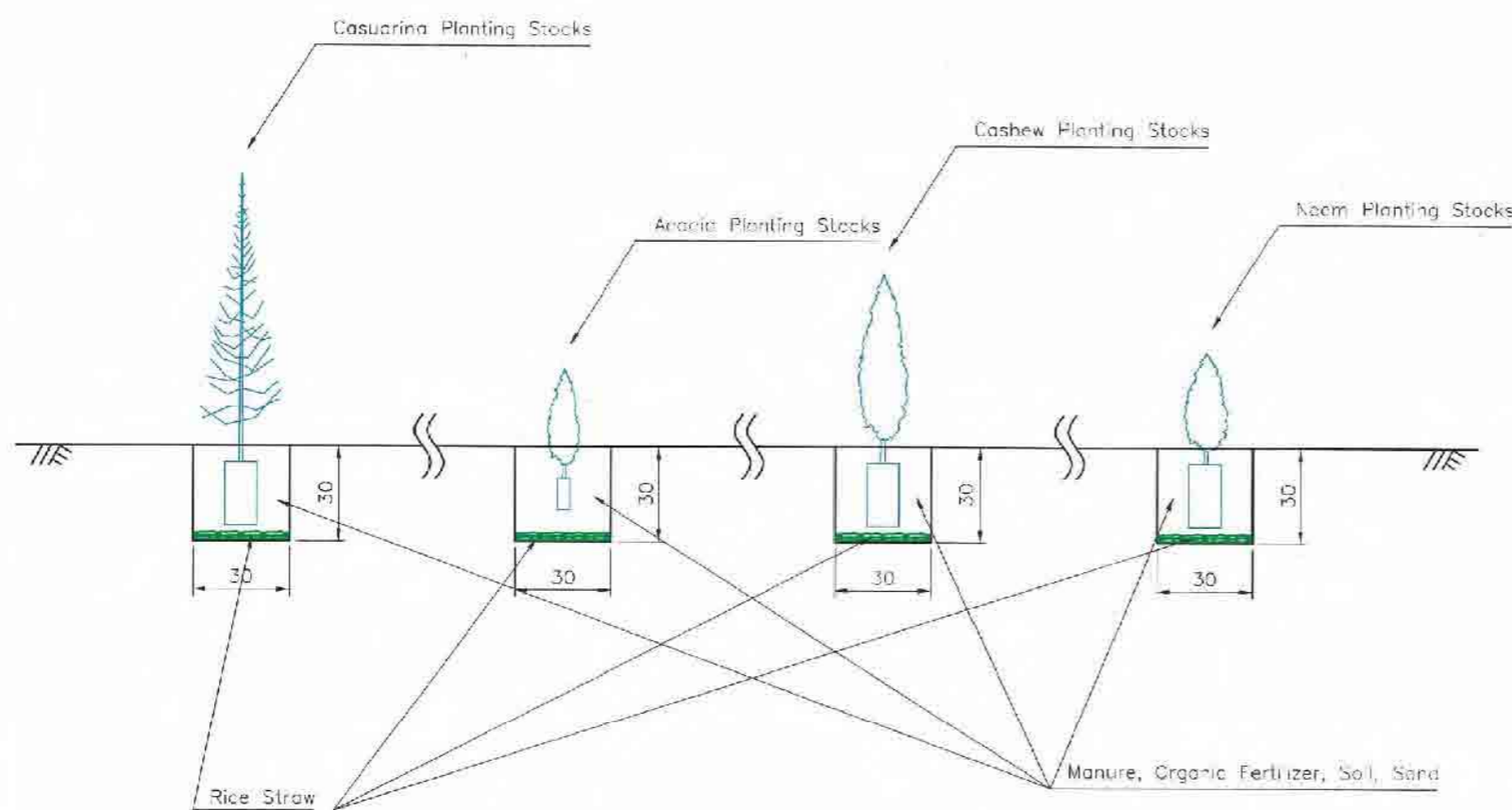
Standard Drawing of Planting, NP-AC-25 (Normal Planting, Acacia)
SCALE: 1/20



Project - Tên Dự án: THE AFFORESTATION PROJECT ON SANDY AREA IN THE SOCIALIST REPUBLIC OF VIETNAM (AFSA) DỰ ÁN TRỒNG RỪNG TRÊN ĐẤT CÁT TẠI NƯỚC CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM	
Responsible Organization - Chủ Dự án: MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT (MARD) / BỘ NÔNG NGHIỆP VÀ PHÁT TRIỂN NÔNG THÔN	
Implementing Organization - Đơn vị thực hiện: DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT (DARD) / SỞ NÔNG NGHIỆP VÀ PHÁT TRIỂN NÔNG THÔN	
Financed by Grant Aid - Tài trợ không hoàn lại bởi: JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	
Consultant - Tư vấn: KOKUSAI KOGYO CO., LTD. TOKYO, JAPAN	
Date - Ngày:	Scale - Tỷ lệ: 1/20 and 1/100
Drawn by - Người vẽ:	Sheet / Job Title and Drawing No. - Tờ bản đồ số: STANDARD DRAWING OF PLANTING, NP-AC-25 (Normal Planting, Acacia)
Checked by - Người kiểm tra:	
Approved by - Người duyệt:	D - 302

Species	Total	Manure	Organic Fertilizer	Soil	Rice Straw
Acacia	3.825 kg/tree	0.375 kg/tree	50 g/tree	3.000 kg/tree	400 g/tree

Standard Drawing of Planting, MP-T1-16 (Mixed Planting) SCALE: 1/20

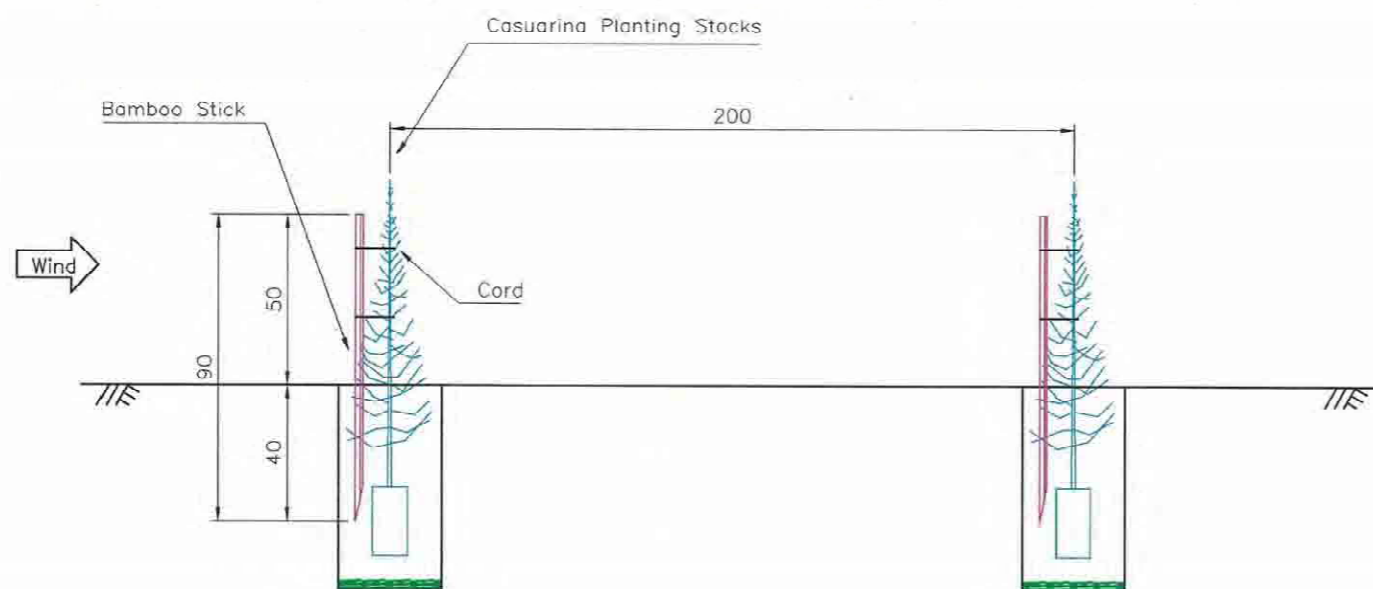


Project - Tên Dự án: THE AFFORESTATION PROJECT ON SANDY AREA IN THE SOCIALIST REPUBLIC OF VIETNAM (AFSA) DỰ AN TRỒNG RỪNG TRÊN ĐẤT CÁT TẠI NƯỚC CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM	
Responsible Organization - Chủ Dự án: MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT (MARD) / BỘ NÔNG NGHIỆP VÀ PHÁT TRIỂN NÔNG THÔN	
Implementing Organization - Đơn vị thực hiện: DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT (DARD) / SỞ NÔNG NGHIỆP VÀ PHÁT TRIỂN NÔNG THÔN	
Financed by Grant Aid - Tài trợ không hoàn lại bởi: JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	
Consultant - Tư vấn: KOKUSAI KOGYO CO., LTD. TOKYO, JAPAN	
Date - Ngày:	Scale - Tỷ lệ: 1/20 and 1/100
Drawn by - Người vẽ:	Sheet / Job Title and Drawing No - Tô bản đồ số: STANDARD DRAWING OF PLANTING, MP-T1-16 (Normal Planting, Casuarina)
Checked by - Người kiểm tra:	
Approved by - Người duyệt:	D - 303

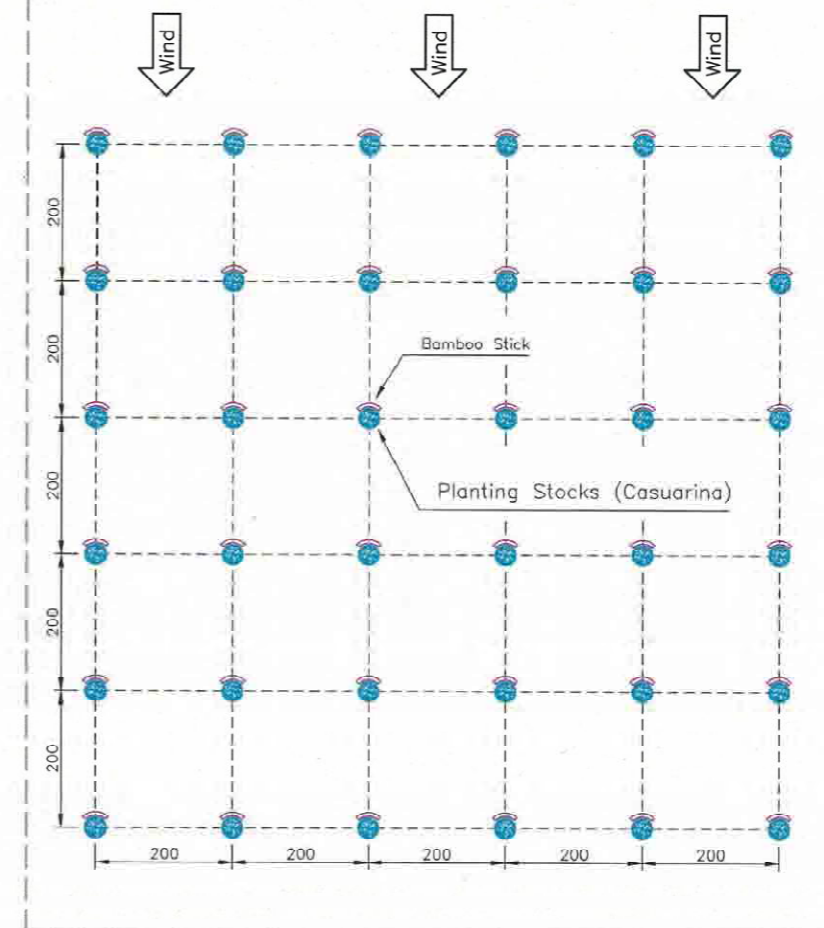
Species	Total	Manure	Organic Fertilizer	Soil	Rice Straw
Casuarina	4.500 kg/tree	1.000 kg/tree	100 g/tree	3.000 kg/tree	400 g/tree
Acacia	3.825 kg/tree	0.375 kg/tree	50 g/tree	3.000 kg/tree	400 g/tree
Cashew	8.700 kg/tree	5.000 kg/tree	300 g/tree	3.000 kg/tree	400 g/tree
Neem	4.000 kg/tree	0.500 kg/tree	100 g/tree	3.000 kg/tree	400 g/tree

Standard Drawing of Bamboo Shield Stick

SCALE: 1/20



Formation Drawing Scale: 1/100



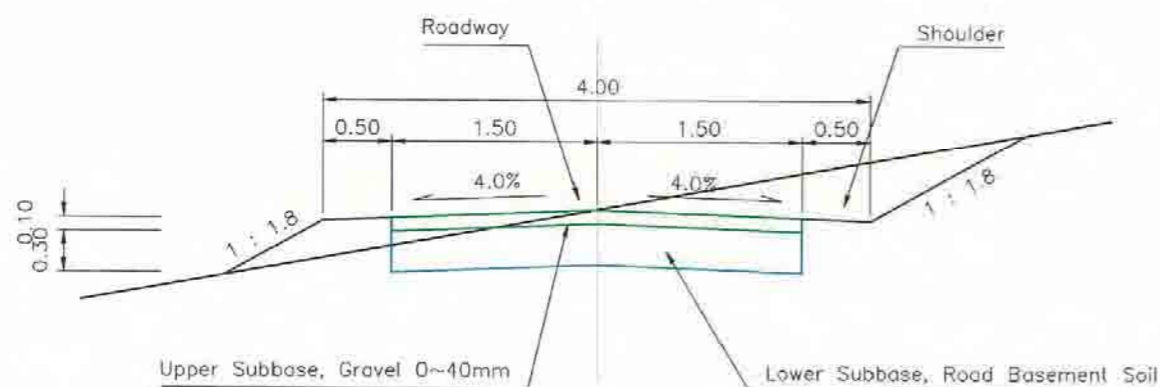
Project - Tên Dự án: THE AFFORESTATION PROJECT ON SANDY AREA IN THE SOCIALIST REPUBLIC OF VIETNAM (APSA) DỰ ÁN TRỒNG RỪNG TRÊN ĐẤT CÁT TẠI NƯỚC CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM	
Responsible Organization - Chủ Dự án: MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT (MARD) / BỘ NÔNG NGHIỆP VÀ PHÁT TRIỂN NÔNG THÔN	
Implementing Organization - Đơn vị thực hiện: DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT (DARD) / SỞ NÔNG NGHIỆP VÀ PHÁT TRIỂN NÔNG THÔN	
Financed by Grant Aid - Tài trợ không hoàn lại bởi: JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	
Consultant - Tư vấn: KOKUSAI KOGYO CO., LTD. TOKYO, JAPAN	
Date - Ngày:	Scale - Tỷ lệ: 1/20 and 1/100
Drawn by - Người vẽ:	Sheet / Job Title and Drawing No - Tờ bản đồ số: STANDARD DRAWING OF BAMBOO STICK D - 401
Checked by - Người kiểm tra:	
Approved by - Người duyệt:	

Quantity Table per 1.0ha

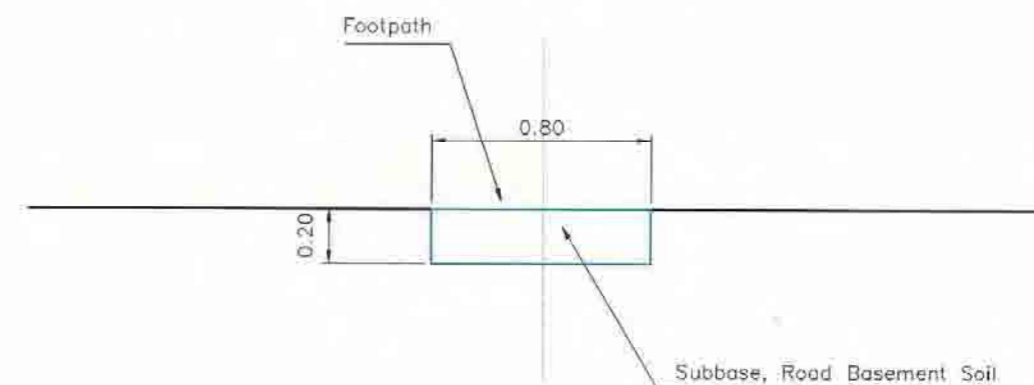
Remarks	Remarks	Remarks	Remarks
Bamboo Stick	Bamboo is divided into four pieces. L= 90cm	2,500.0pcs	Intervals to be set: 2m x 2m
Cord	Bind stick and planting stock at two points	750.0m	L= 15cm per one binding point

Standard Drawing of Operation Road

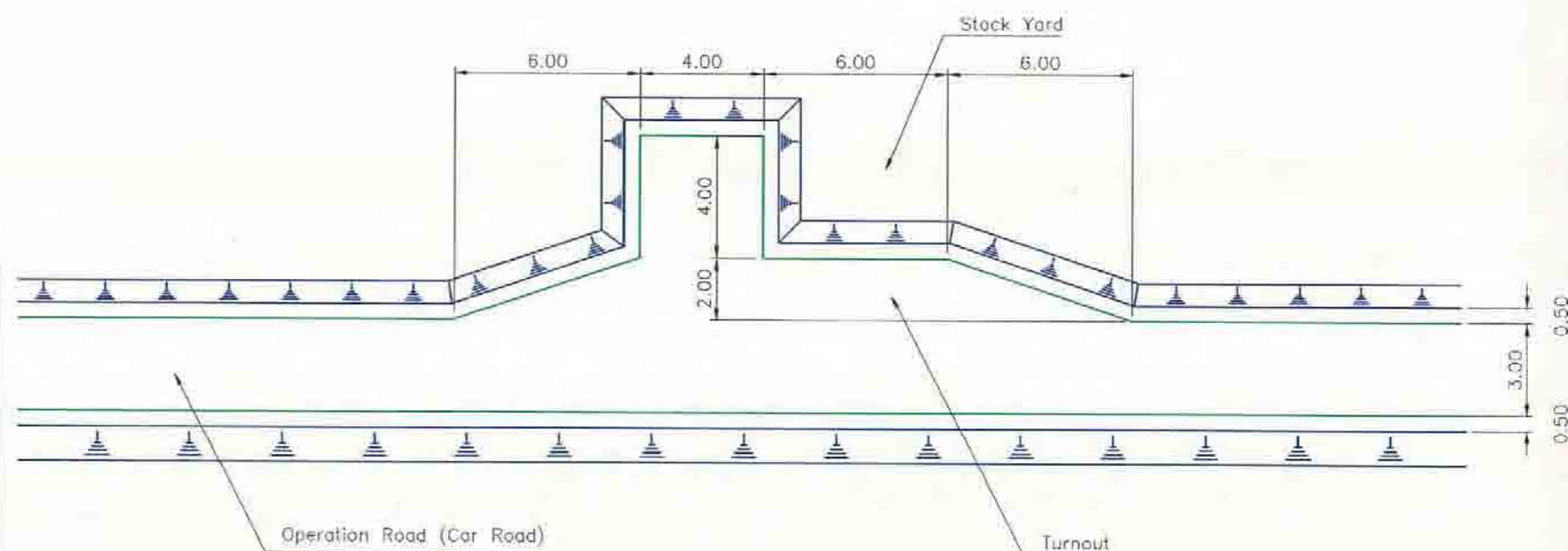
Standard Section Drawing of Operation Road (Car Road)
SCALE: 1/50



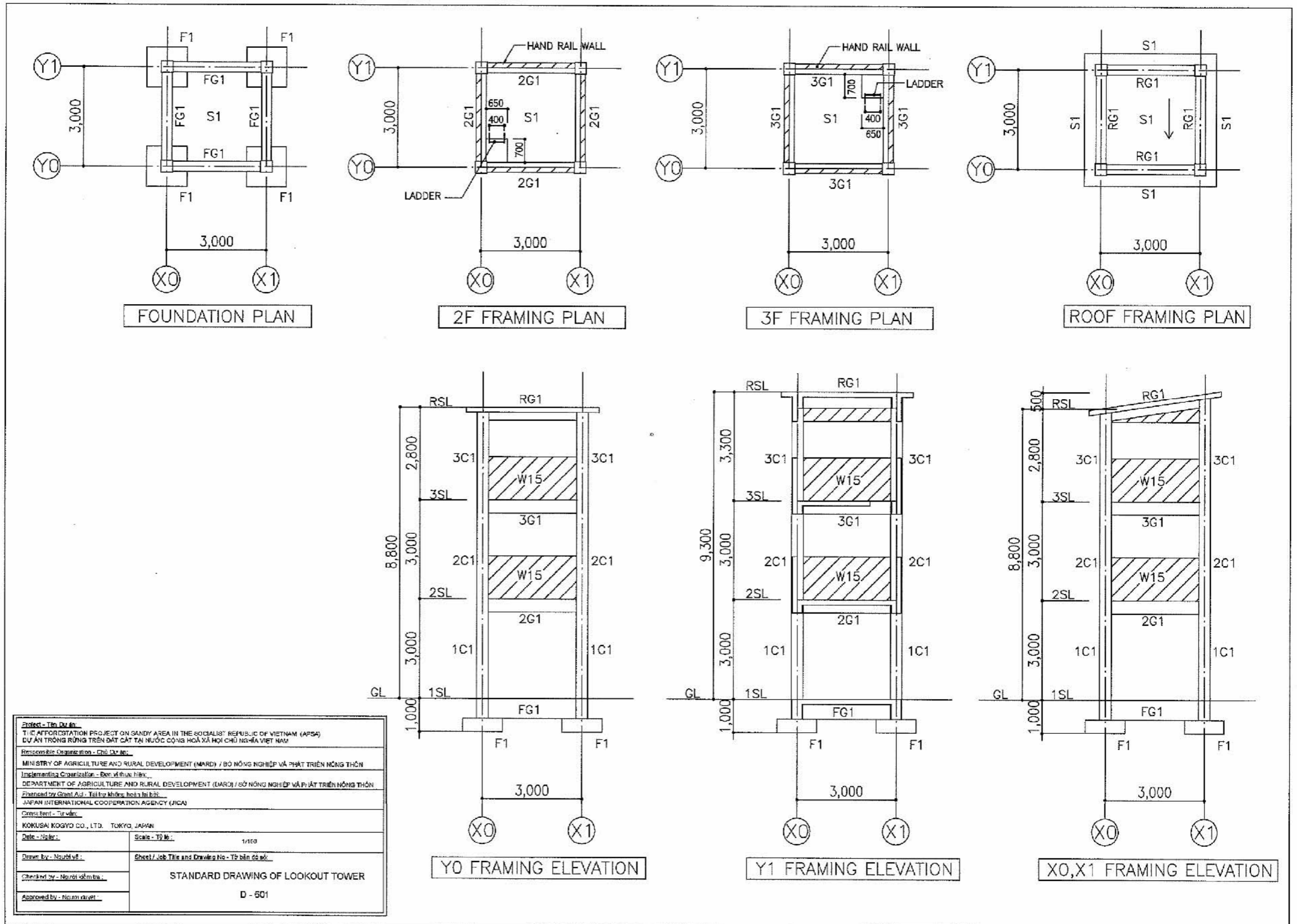
Standard Section Drawing of Operation Road (Footpath)
SCALE: 1/25



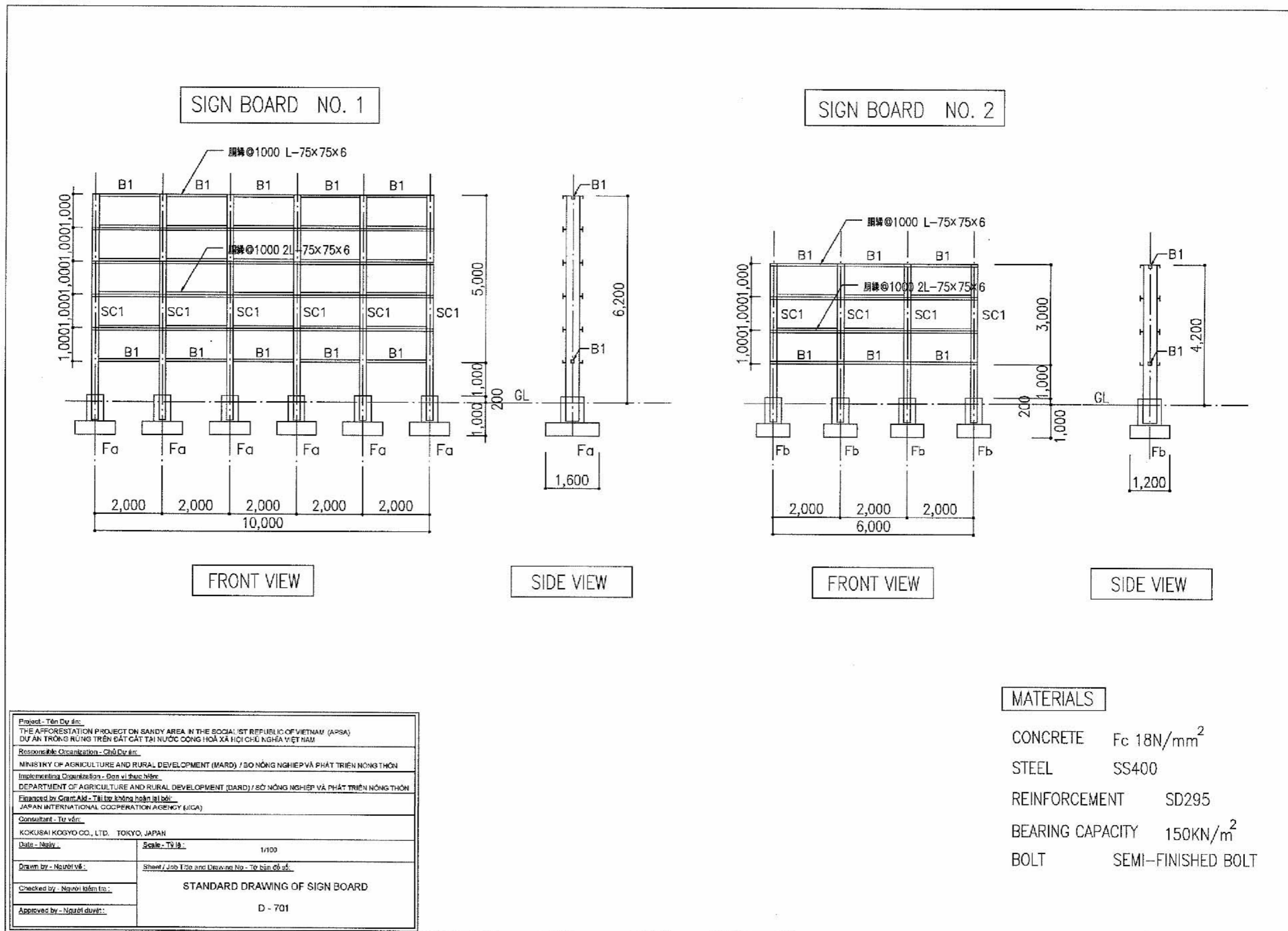
Standard Drawing of Turnout and Stack Yard
SCALE: 1/200



Project - Tên Dự án: THE AFFORESTATION PROJECT ON SANDY AREA IN THE SOCIALIST REPUBLIC OF VIETNAM (APSA) DỰ ÁN TRỒNG RỪNG TRÊN ĐẤT CÁT TẠI NƯỚC CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM	
Responsible Organization - Chủ Dự án: MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT (MARD) / BỘ NÔNG NGHIỆP VÀ PHÁT TRIỂN NÔNG THÔN	
Implementing Organization - Đơn vị thực hiện: DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT (DARD) / SỞ NÔNG NGHIỆP VÀ PHÁT TRIỂN NÔNG THÔN	
Financed by Grant Aid - Tài trợ không hoàn lại bởi: JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	
Consultant - Tư vấn: KOKUSAI KOGYO CO., LTD. TOKYO, JAPAN	
Date - Ngày:	Scale - Tỷ lệ: 1/25, 1/50 and 1/200
Drawn by - Người vẽ:	Sheet / Job Title and Drawing No - Tô bản đồ số: STANDARD DRAWING OF OPERATION ROAD
Checked by - Người kiểm tra:	D - 501
Approved by - Người duyệt:	



Project - Tên Dự Án: TIE AFFORSTATION PROJECT ON SANDY AREA IN THE SOCIALIST REPUBLIC OF VIETNAM (APSA) DỰ ÁN TRỒNG RỪNG TRÊN ĐẤT CÁT TẠI QUỐC CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM	
Responsible Organization - Chủ Dự Án: MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT (MARD) / BỘ NÔNG NGHIỆP VÀ PHÁT TRIỂN NÔNG THÔN	
Implementing Organization - Đơn vị thực hiện: DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT (DARD) / SỞ NÔNG NGHIỆP VÀ PHÁT TRIỂN NÔNG THÔN	
Financed by Grant Aid - Tài trợ không hoàn lại bởi: JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	
Consultant - Tư vấn: KOKUSAI KOGYO CO., LTD. TOKYO, JAPAN	
Date - Ngày:	Scale - Tỷ lệ: 1/100
Drawn by - Người vẽ:	Sheet / Job Title and Drawing No - Tờ bản vẽ số:
Checked by - Người kiểm tra:	STANDARD DRAWING OF LOOKOUT TOWER
Approved by - Người duyệt:	D - 501



Project - Tên Dự án: THE AFFORESTATION PROJECT ON SANDY AREA IN THE SOCIALIST REPUBLIC OF VIETNAM (APSA) DỰ ÁN TRỒNG RỪNG TRÊN ĐẤT CÁT TẠI NƯỚC CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM	
Responsible Organization - Chủ Dự án: MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT (MARD) / BỘ NÔNG NGHIỆP VÀ PHÁT TRIỂN NÔNG THÔN	
Implementing Organization - Đơn vị thực hiện: DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT (DARD) / SỞ NÔNG NGHIỆP VÀ PHÁT TRIỂN NÔNG THÔN	
Financed by Grant AID - Tài trợ không hoàn lại bởi: JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	
Consultant - Tư vấn: KOKUSAI KOGYO CO., LTD. TOKYO, JAPAN	
Date - Ngày:	Scale - Tỷ lệ: 1/100
Drawn by - Người vẽ:	Sheet / Job Title and Drawing No - Tên bản đồ số:
Checked by - Người kiểm tra:	STANDARD DRAWING OF SIGN BOARD
Approved by - Người duyệt:	
D - 701	

2-2-4 Implementation Plan

The implementation plan must be prepared to achieve the principal objectives of achieving the required quality and safely completing the work within the time schedule.

2-2-4-1 Implementation Policy

(1) Necessary Steps Prior to Commencement of the Work

The distribution of the planned forests to local residents (who will play a crucial role in the maintenance (protection) of the coastal protection forests) prior to the commencement of the work and the closure of the titanium mine and restoration of the original state are the most important steps which must be taken to ensure the smooth progress of the Project. It is essential to monitor the progress of these steps from the time of the detailed design and to facilitate their execution.

(2) Right Work at the Right Time

As the Project involves living trees, it is important to conduct the right work at the right time. In particular, the timing for planting and tending are restricted to the rainy season and, therefore, other types of work, such as the construction of operation roads, must be conducted earlier to prepare for planting and tending. It is essential for the sequence of the work in each process to be properly determined and followed in a systematic manner. Therefore, it is important to implement the project work in accordance with its plan by determining its implementation orders at each working stage.

(3) Implementation System on the Vietnamese Side

Under APSA, MBs (Management Boards) will be set up at MARD which is the responsible organization for the Project at the central government level and also at DARD which is the implementation body at the provincial level. It is planned that a person holding the position of vice director class of MBFP (Management Board for Forestry Project) will lead MB at MARD. Meanwhile, the assignment of a director (vice director class of DARD) and approximately two staff members to MB of each DARD is planned. Such assignment will be finalized after the signing of the E/N. At the district level, a MB will be also set up in P'C of the district government to ensure the smooth implementation of APSA while reflecting local views and opinions through close collaboration with P'C of the commune government.

(4) Implementation System on the Japanese Side

The Japanese consultant will undertake a range of work, including the detailed design, supervision for the tender and dispatch of engineers (one full-time engineer complemented by spot dispatch as the occasion demands) to supervise the field work. It is assumed the main work will be carried out by the Japanese contractor which has won the relevant contract.

2-2-4-2 Implementation Conditions

Careful attention will be paid in connection with the execution of the planned work.

■ Appropriate Employment Planning

Planting will be mainly manually conducted and will require the employment of many local residents. It is desirable for the scale of employment to be as level as possible from the viewpoint of smoothly and economically implementing the Project. For this reason, the preparation of an employment plan which takes the busy farming season and other relevant matters into consideration is necessary.

■ Understanding and Cooperation of Local Residents

The planting sites under the Project will be maintained by local residents whose understanding and cooperation will be essential to prevent forest fires and feeding damage by farm animals. The access to a planting site will normally be via residential areas and/or farmland. If the access route runs through residential areas, priority should be given to the daily lives and activities of the local residents. Efforts should be made to minimize the noise, vibration and dust caused by work vehicles.

■ Conservation of the Local Environment

The planting sites are generally surrounded by coastal areas with white sand and/or existing forests. Careful attention must be paid to not causing any adverse impacts on the local environment by the work. Waste materials (pots, fertilizer bags, waste from construction work, etc.) in particular must be properly disposed of without leaving anything at the site.

■ Provision of Stock Yards

A stock yard (temporary yard to stock the seedlings transported from the nursery and fertilizer until they are divided and further transported to the actual planting areas) will be created near a turnout in those compartments where operation vehicle roads are constructed. In those compartments without operation vehicle roads, bare land should be secured along the existing road for use as a stockyard. In this case, prior notification to local residents should be made along with the careful introduction of safety measures to avoid any problems with local residents and road users.

The implementation conditions for each project component are further explained next.

(1) Planting

- Planting, which is the main work, will be concentrated in the first half of the rainy season so that reserve the after-half of rainy season for sufficient growth of the living planted trees.
- As a pure forest will be created at those planting sites with especially high level of technical difficulty, the work will be simple as in the case of PACSA. In contrast, mixed planting will be conducted at sites with a high level of technical difficulty and careful attention should be paid to the correct size of the planting hole, the correct quantity of manure and organic fertilizer and other relevant matters.
- In the case of the planting of potted seedlings, a large quantity of vinyl pots will become waste after planting. These pots should not be disposed of at the planting sites and should be returned for appropriate disposal.

(2) Ancillary Planting Works

- A large quantity of materials such as bamboo will be required for shield stick works. Although these can be procured locally, some are subject to seasonal production. Accordingly, high quality materials must be systematically procured in a stable manner through good preparation.

(3) Tending

- The supplementary planting work and top dressing should also be concentrated in the first half of the rainy season to ensure the steady growth of the living planted trees in the second half of the rainy season which is the growing period for plants.
- Supplementary planting is the replacement of colonies of dead planted trees at those sites planted during the previous year. Planting using the same species and same planting method is likely to have the same result unless proper measures to prevent tree death are applied based on identification of the specific cause of death. Accordingly, it will be necessary to conduct a study to identify the cause of death along with a study on the damage situation prior to the planning of supplementary planting and improvement measures, including a change of the planting species and the introduction of ancillary planting works, should be carefully considered.
- In regard to supplementary planting, careful attention must be paid to the correct size of the planting hole and the correct quantity of manure, organic fertilizer, etc. as in the case of the original planting.

- The use of the correct fertilizer and correct quantity is also important for top dressing.
- At the time of supplementary planting or top dressing, it may be necessary to approach adult trees or an existing stand. Careful attention must be paid to avoiding incidents involving poisonous snakes, bees, etc. which are harmful to humans.

(4) Procurement or Production of Seedlings

- Since a large supply will be required in a short time, and given the fact that there are established standards for the seedlings to be used, it will be necessary to check the supply system and supply capacity of each nursery in advance.
- One frequent practice observed with the production of seedlings in Vietnam involves with the use of fertilizer and water in a large quantity to produce large seedlings in a short period of time. As the planting sites under the Project are characterized by a high level of environmental stress after planting, appropriate hardening must be conducted at the supply sources' nurseries. Therefore, the advices for the nurseries' staffs are necessary in advance. Hardening can be conducted in two ways, (i) the watering control method; and (ii) the root cutting method. What is necessary is the combination of these methods to produce good drought-resistant seedlings which meet the standards without causing their death or epinasty.
- It should be advised to the nursery staffs that when the root cutting method is used, root cutting and re-arrangement of the pots should be simultaneously conducted so that seedlings at a similar growth stage can be placed in the same nursing bed. In this way, subsequent water control and shipment work can be efficiently conducted.

(5) Operation Roads

- Some of the locally procurable equipment etc. is unreliable and proper attention must be paid to the capacity and safety control of such equipment.
- Although crusher run and other materials can be procured locally, they must be supplied in a large quantity, making it necessary to plan the steady supply of high quality materials.
- The operation road construction work may well be conducted in the dry season under heat. Careful planning, including the shifting of the working hours to the early morning and/or late afternoon, will be required to avoid labor accidents.
- The weight of the heavy machinery used for the road construction work should be 8 tons or less because of the conditions of the access roads.
- In regard to the earth work, the moisture content of the sediment significantly affects the efficiency and level of difficulty of the work. The higher the moisture content is, the lower the efficiency is due to an increased unit weight of the sediment. Accordingly, no work will be

conducted in the rainy season, especially in October and November when the rainfall level is high.

- As the project sites are sandy sites, subsidence or loss of the subbase of the operation roads may occur. For this reason, construction firms should check the road surface and subbase from time to time during the work period and also after a downpour or long lasting rain and repair the facilities if necessary.

2-2-4-3 Scope of Works

The scope of works (demarcation of undertakings) between the Japanese side and the Vietnamese side for the APSA is outlined in Table 2-22.

Table 2-22 Scope of Works

Work Category	Japanese Side	Vietnamese Side
Work in General		
Permission/Approval		i. Permission and approval required for the implementation of the Japanese assistance
Maintenance	i. Patrolling and safeguarding of the planting sites, temporary facilities, permanent facilities, equipment and materials during the work period	i. Procurement of equipment (vehicles etc.) required for maintenance ii. Patrolling and safeguarding of the planting sites, temporary facilities, permanent facilities after their handing over
Various Awareness Raising (Educational) Activities		i. Preparation of pamphlets etc. ii. Meetings to explain the Project to local residents iii. Forest Day events
Work Supervision	i. Work supervision by the Japanese consultant (on-site inspection, document examination, inspection for warranty against defects and monitoring)	i. Issue of the Notice of Commencement ii. Witnessing of the various inspections and issue of the certificates of completion of the work and the service
Afforestation Work		
Planting and Tending	i. Work commencement survey and installation of concrete stakes on the boundaries of compartments ii. Construction of ancillary planting works iii. Planting iv. Tending (supplementary planting and top dressing)	i. Distribution of the planned forests to local residents ii. Removal of obstacles at the sites iii. Coordination of labor supply iv. Measures to reduce feeding damage by cattle and other farm animals (coordination work) v. Measures to combat disease and pests

Work Category	Japanese Side	Vietnamese Side
		<ul style="list-style-type: none"> vi. Measures to combat forest fires vii. Measures to combat the theft of the planted trees viii. Explanation of the Project to and request for the cooperation of local residents
Procurement of Seedlings	<ul style="list-style-type: none"> i. Entrustment of seedling production to existing nurseries and purchase of seedlings ii. Production of seedlings at the temporary nursery iii. Transportation of seedlings 	<ul style="list-style-type: none"> i. Coordination with existing nurseries and related organizations
Construction of Operation Roads	<ul style="list-style-type: none"> i. Construction of operation vehicle roads (construction and maintenance) ii. Construction of operation footpaths (construction and maintenance) 	<ul style="list-style-type: none"> i. Construction of access roads (construction and maintenance) <ul style="list-style-type: none"> Quang Nam Province : 600 m (two sites) Quang Ngai Province : none
Construction of Lookout towers	<ul style="list-style-type: none"> i. Construction of lookout towers 	<ul style="list-style-type: none"> i. Maintenance of the towers after handing over
Installation of Project Information Signboards	<ul style="list-style-type: none"> i. Installation of project information signboards 	<ul style="list-style-type: none"> i. Provision of land ii. Maintenance of the signboards after handing over

2-2-4-4 Consultant Supervision

The Japanese consultant will conduct the work supervision for APSA in accordance with the contract (Agreement) concluded with the Government of Vietnam (Table 2-23). This work supervision and inspection of various work will be conducted so that the planting and construction of facilities can be carried out as designed, taking the schedule control, quality control, work progress control, etc. by the contractor into consideration.

Given the unique character of the Japanese assistance as an afforestation project, it was confirmed in the M/D at the time of the field survey that the afforestation work would not carry the responsibility for warranty against defects. In view of this, risk management to replace this responsibility will be conducted by means of identifying and assessing the project effects in an appropriate manner and making the project contents reflect the assessment results. For this reason, the "survival rate", "growth situation" and "situation of damage by shifting sand, strong winds, etc." will be set as indicators for the project effects. The "survival rate" and "growth situation" will be measured by monitoring targeting the entire planting sites while the "situation of damage by shifting sand, strong winds, etc." will be determined by a questionnaire survey with local residents. If any problem or issue is found by such monitoring or survey, correction and improvement measures to be carried out during and after the implementation period of Japanese assistance will be examined to improve the project contents as required.

Table 2-23 Contents of Consultant Supervision

Timing	Contents of Consultant Supervision
Prior to the Commencement of the Work	Checking of "the General Work Plan", "the Work Execution Plan" and "the Operation Plan" submitted by the contractor. <ol style="list-style-type: none"> i. Schedule plan ii. Work implementation system iii. Work method iv. Temporary work plan v. Quality control plan vi. Safety control plan vii. Environmental conservation plan etc.
During the Work	Supervision to ensure that the work is in progress as specified by the Operation Plan submitted in advance. <ol style="list-style-type: none"> i. Checking of the progress and safety control situations ii. Quality control in accordance with the quality control plan and work progress control (to meet the quality and standards specified in the specifications) iii. Inspections which are required during the work iv. Implementation of necessary measures through consultations with the implementation body and other related organizations after checking the ongoing state of the work if the original design requires alteration v. Reporting of the progress situation and other relevant matters to the implementation body and other related organizations Monitoring of the following matters will be conducted to extract any problematic issues. This will be followed by the examination of improvement measures with a view to improving the project contents. <ol style="list-style-type: none"> i. Survival rate survey ii. Growth situation of coastal protection forests iii. Situation of damage by shifting sand, strong winds, etc.
Upon the Completion of Individual Work	Completion inspection <ol style="list-style-type: none"> i. Progress situation and safety control situation ii. Quality and completed amount
Upon Completion of the Entire Work	Procedure required at the time of completion <ol style="list-style-type: none"> i. Submission of the notice of completion ii. Procedure for handing over iii. Preparation of documents related to the payment procedure
Inspection for Warranty against Defects	Inspection to check for any defect of the work for various facilities (excluding created forests and temporary facilities) one year after the completion of the individual work.

2-2-4-5 Quality Control Plan

The standards listed in Table 2-24 are introduced for the purpose of safety control and executed work quantity control so that the afforestation work and construction work is conducted in accordance with the respective design and plan.

Table 2-24 List of Quality Control Standards and Others

Work Category	Type of Work	Control Category	Standards	Timing of Inspection
Afforestation	Work Commencement Survey	Finishing	i. The stakes for compartments are positioned within ± 5 m of the boundaries established by the perimeter survey at the Implementation Review Study stage.	During and immediately after the survey
			ii. The stakes for sub-compartments are positioned within ± 5 m of the boundaries specified in the design documents.	
	Materials	QC	i. The reference dimensions for the concrete stakes will be 10 x 10 x 80 cm.	Prior to installation
	Survey on the center line of the operation roads	Finishing	i. The IP stakes will be positioned within a radius of 5 m from the point specified in the design documents.	During and immediately after the survey
			ii. Distance stakes will be positioned at intervals of 50 m. or less.	
	Planting	Planting	Finishing	i. Planting will be conducted in the area specified in the design documents (visual confirmation at all sub-compartments).
ii. The planted species and mixing ratio conform to the respective design (visual confirmation at all sub-compartments).				
iii. Intervals of planted trees are within $\pm 10\%$ specified in the design book (visual confirmation at all sub-compartments).				
iv. The sub-compartment boundary boards and nameplates (ODA plates) are in place (visual confirmation at all sub-compartments).				
v. 85% of the planted trees in a sample plot of 0.1 ha (31.62 m x 31.62 m) have survived (based on the confirmation of either green leaves or new shoots).				
vi. Depth of planting hole, the tree height, the existence of basal dressing etc. of planted trees in 99% of the each sample plot fall in trees the design values.				

Work Category	Type of Work	Control Category	Standards	Timing of Inspection	
Afforestation	Planting	QC	i. The purchased seedlings are healthy without any signs of disease or external damage.	Before and during planting	
			ii. The standards of the purchased seedlings correspond to the design values.		
			iii. The manure is made of cow feces and straw and its fermentation and maturation are visible.		
			iv. A quality certificate should be obtained from the plant producing the organic fertilizer.		
			v. The dressing soil should be good quality red to black soil which has been sieved to achieve a uniform grain size and the removal of impurities.		
			vi. The straw must be completely dry.		
	Ancillary Planting Works	Shield Stick Work	Finishing	i. The shield sticks are positioned as shown in the design documents within the sample plots in which planting inspection is conducted.	During and after construction
		Ridge Work	Finishing	i. The distance between the ridges is within $\pm 5\%$ of the design value.	During and after construction
				ii. The ridge height is within $\pm 10\%$ of the design value.	
				iii. The crest width of the ridge is equal to or wider than the design value.	
		Materials	QC	i. The bamboo should be at least three years old and very firm.	Before and during planting
				ii. Wires are galvanized and within the designed thickness	
	iii. The straw must be completely dry.				
	Tending	Supplementary Planting	Finishing	i. Supplementary planting is conducted in the area specified in the Operation Plan (visual confirmation at all sub-compartments).	1.5 – 2 months after supplementary planting
				ii. The species and mixing ratio are those specified in the Operation Plan (visual confirmation at all sub-compartments).	
				iii. The combined survival rate of the originally planted trees and supplementary planted tree in the sample plots which are set up in the same manner as that described for planting is 85% or higher.	
iv. The ground at the base of the supplementary-planted trees in each sample plot is dug to check the depth of planting hole, the tree height, the existence of basal dressing etc. and that 99% of the supplementary-planted trees meet the design values.					

Work Category	Type of Work	Control Category	Standards	Timing of Inspection	
Afforestation	Tending	Materials (Supplementary Planting)	QC	i. The same quality standards for the materials used for planting apply.	Before and during supplementary planting
		Top Dressing	Finishing	i. A sample plot is set up as in the case of planting and the ground at the base of the planted trees is dug to confirm top dressing at 99% or more of the planted trees.	Immediately after top dressing
		Materials (Top Dressing)	QC	i. The quality standards for the manure and organic fertilizer for planting equally apply.	Before and during top dressing
	Operation Roads	Structural Dimensions of Operation Vehicle Roads, Operation Footpaths and Turnouts	Finishing	i. The width of the subbase is falls within the range of – 5 cm and +20 cm of the design value.	During and after the work
				ii. In principle, the subbase thickness is equal to or thicker than the design value.	
				iii. The shoulder width is equal to or wider than its design value.	
				iv. The slope gradient is equal to or more than the design value (1:1.80).	
				v. The distance stakes to be installed after the work are positioned within $\pm 1\%$ of the design value (50 m intervals).	
				vi. The total length of the operation roads is at least 99% of the design value or longer	
	Materials	QC	i. The subbase materials conform to the quality and standards specified in the design documents.	Before and during the work	
	Lookout Towers	Earth Work	Finishing	i. The depth of ground excavation is within ± 5 cm of the design value.	During the work
		Foundation Work	Finishing	i. The thickness of the foundations is within ± 5 cm of the design value.	During the work
		Structural Dimensions of Lookout Towers	Finishing	i. The structural dimensions (height etc.) of lookout towers are within $\pm 2\%$ of the respective design values.	During and after the work
		Materials (Concrete)	QC	i. The maximum size of the coarse aggregates is 5 cm.	Before and during the work
				ii. The slump value in the slump test must be within 8cm. ± 2 cm.	
iii. The minimum compressive strength as an indicator of the design strength (Fc) must maintain 18 N/mm ² or more.					
Materials (Others)		QC	i. The surface of bolts, nuts and other joints must have anti-rust finishing.	Before and during the work	
	ii. Materials used for the building, such as basement, steel frames, cements, and others must meet both Vietnamese standards.				

Work Category	Type of Work	Control Category	Standards	Timing of Inspection	
Afforestation	Lookout Towers	Standards (Concrete)	Finishing i. The completed concrete tower must be in error by less than the allowance set by JASS5 (Japanese Architectural Standard Specification Article 5)	During and after the work	
		Materials (Others)	Finishing	i. The maximum size of the coarse aggregates is 5 cm.	Before and during the work
				ii. The slump value in the slump test must be within 8cm \pm 2cm.	
	iii. The minimum compressive strength (Fq) should not fall under 18N/mm ² .				
	Project Information Sign Boards	Dimensions of Project Information Signboards	QC	i. The structural dimensions of project information signboards are within \pm 1% of the design value.	During and after the work
		Standard	Finishing	i. The size error must be less than 1% of the designed values.	Before and during the work
		Materials (Concrete)	QC	i. The maximum size of the coarse aggregates is 5 cm.	Before and during the work
				ii. The slump value in the slump test must be within 8cm \pm 2cm.	
				iii. The minimum compressive strength as an indicator of the strength is Fq=18 N/mm ²	
		Materials (Others)	QC	i. Signboards, posts and fixing items will be given anti-rust treatment.	Before and during the work
				ii. Materials used for signboard including the basement must meet both Vietnamese standards.	
	Standards	Finishing	i. Dimensions of the basement must be in the allowance set by JASS5.	During and after the work	
	Materials (Concrete)	Finishing	i. The maximum size of the coarse aggregates is 5 cm.	Before and during the work	
			ii. The slump value in the slump test must be within 8cm \pm 2cm.		
iii. The minimum compressive strength (Fq) should not fall under 18N/mm ² .					

2-2-4-6 Procurement Plan

While most of the equipment and materials required for the Project can be procured in Vietnam (see Table 2-25), procurement must be conducted in a well-planned manner, as large quantities must be procured at certain times.

In particular, although the required quantity of bamboo and straw to be used for the shield stick works does not pose a problem, these are not readily available in the market. The timing of production must be carefully checked and good quality bamboo and straw must be steadily procured in a systematic manner. Equipment will be used for the construction of the operation roads, production and transportation of the seedlings, maintenance and protection of the planting sites, etc. However, some of the local products lack reliability and careful attention must be paid to the capacity machinery and safety control regarding its use.

Table 2-25 Procurement Sources of the Main Equipment and Materials

Equipment / Materials	Procurement Sources		
	Vietnam	Japan	Third Country
Tools / Materials			
Seedlings (Purchased seedlings)	X	-	-
Planting tools (hoes, carrying poles, etc.)	X	-	-
Manure	X	-	-
Organic fertilizer	X	-	-
Dressing soil	X	-	-
Bamboo	X	-	-
Galvanized steel wire	X	-	-
Binding cord	X	-	-
Concrete stakes	X	-	-
Wooden stakes	X	-	-
Crusher run (for roads)	X	-	-
Soil with gravel	X	-	-
Sand	X	-	-
Machinery			
Ordinary trucks	X	-	-
Back hoes	X	-	-
Bulldozers	X	-	-
Vibration rollers	X	-	-
Tractors with a trailer	X	-	-
Sprinkler trucks	X	-	-
Water pumps	X	-	-
Motor generators	X	-	-
Engine pumps	X	-	-

2-2-4-7 Implementation Schedule

The obligations of the Japanese side and the Vietnamese side are shown in Table 2-26. Refer to Table 2-22 in "2-2-4-3 Scope of Work" for the types of work to be undertaken by each side during the main work (work to be conducted during the period of the Japanese assistance, i.e. APSA).

Table 2-26 Obligations of the Japanese side and the Vietnamese side

Project Stage	Japanese Side	Vietnamese Side
At the detailed design stage	<ul style="list-style-type: none"> i. Verification of the Japanese consultant's contract (Agreement) by the Government of Japan ii. Site evaluation survey during the rainy season iii. Calculation of the expected bidding price iv. Preparation of the tender documents 	<ul style="list-style-type: none"> i. Establishment of a MB in all related organizations ii. Signing of the B/A iii. Issue of the A/P iv. Detailed design contract (Agreement) with the Japanese consultant based on the E/N v. Distribution of the planned forests to local residents vi. Approval of the tender documents
Prior to the signing of the contract for the main work (Japanese assistance)	<ul style="list-style-type: none"> i. Verification of the Japanese consultant's contract (Agreement) by the Government of Japan ii. Agency work for the tender by the Japanese consultant iii. Assistance by the Japanese consultant to facilitate the work contract (Contract) iv. Verification of the work contract (Contract) by the Government of Japan 	<ul style="list-style-type: none"> i. Signing of the B/A ii. Issue of the A/P iii. Work supervision contract (Agreement) with the Japanese consultant based on the E/N iv. Implementation of the tender v. Signing of the work contract (Contract)
During the main work	See Table 2-22 Scope of Work	
After the completion of the main work	<ul style="list-style-type: none"> i. Inspection for warranty against defects by the Japanese consultant ii. Evaluation study by the Government of Japan (if required) 	<ul style="list-style-type: none"> i. Maintenance (protection) of the created coastal protection forests ii. Maintenance of the constructed facilities iii. Maintenance of the temporary facilities (if necessary) iv. Extension of and awareness raising activities on the techniques to create coastal protection forests v. Witnessing of the inspection for warranty against defects and issue of the certificate of inspection completion

Table 2-27 shows the implementation schedule of the work to be undertaken by the Japanese side among the various obligations. The area shaded in yellow indicates the rainy season. For the implementation of the work in accordance with this schedule, it will be necessary to sign the E/N twice, i.e. once for the detailed design (single year Treasury obligation) and once for the main work (project resulting in Treasury obligation), to make APSA a Type A contract resulting in Treasury obligation as outlined in Design Policy 15.

2-3 Obligations of Recipient Country

Table 2-28 Feasibility and Relevance of the Work to be Conducted by the Vietnamese Side

Project Stage and Work Category	Work to be Conducted by the Vietnamese Side	Feasibility / Relevance
At the detailed design stage	<ul style="list-style-type: none"> i Establishment of a MB in all related organizations ii Signing of the B/A iii Issue of the A/P iv Detailed design contract (Agreement) with the Japanese consultant based on the E/N v Distribution of the planned forests to local residents vi Approval of the tender documents 	<p>These represent the minimum range of work to be conducted by the recipient country at the detailed design stage. No problems are anticipated in regard to the implementation of this work by the Vietnamese side as this work was conducted under PACSA except for "v".</p> <p>Under PACSA, "v" was conducted after the completion of the Japanese assistance (which took approximately seven months to complete). As it is customary to distribute the planned forests prior to planting work under afforestation projects in Vietnam, the execution of this forest distribution does not pose any problems.</p>
Prior to the signing of the contract for the main work (Japanese assistance)	<ul style="list-style-type: none"> i Signing of the B/A ii Issue of the A/P iii Work supervision contract (Agreement) with the Japanese consultant based on the E/N iv Implementation of the tender v Signing of the work contract (Contract) 	No problems are anticipated in regard to the implementation of this work by the Vietnamese side as this work was conducted under PACSA as in the case of the above.
During the main work		
Work in General		
Permission and approval	<ul style="list-style-type: none"> i Permission and approval required for the implementation of the Japanese assistance 	No problems are anticipated in regard to the implementation of this work by the Vietnamese side as this work was conducted under PACSA as in the case of the above.
Maintenance	<ul style="list-style-type: none"> i Procurement of equipment (vehicles etc.) required for maintenance ii Patrolling and safeguarding of the planting sites, temporary facilities, permanent facilities after their handing over 	As the purchase of vehicles using Vietnamese funds is unrealistic, it is necessary to consider the diversion of existing vehicles and other measures. A request for budgetary appropriation has been made for the protection of the facilities after their handing over.

Project Stage and Work Category	Work to be Conducted by the Vietnamese Side	Feasibility / Relevance
Various awareness raising (educational) activities	i. Preparation of pamphlets etc. ii. Meetings to explain the Project to local residents iii. Forest Day events	These activities were well received in PACSA and the active commitment of the Vietnamese side to these activities is expected under APSA.
Work supervision	i. Issue of the Notice of Commencement ii. Witnessing of the various inspections and issue of the certificates of completion of the work and the service	This work was conducted immediately under PACSA.
Afforestation Work Planting and tending	i. Distribution of the planned forests to local residents ii. Removal of obstacles at the sites iii. Coordination of labor supply iv. Measures to reduce feeding damage by cattle and other farm animals (coordination work) v. Measures to combat disease and pests vi. Measures to combat forest fires vii. Measures to combat the theft of the planted trees viii. Explanation of the Project to and request for the cooperation of local residents	"i" has already been described earlier. In regard to "ii", no special obstacles were found at the project sites at the time of the field survey except titanium mine. No such obstacles were found under PACSA. Minor obstacles can be moved to left-over areas. While "iii" through "viii" were attempted under PACSA, some did not function as planned at some sites. Therefore, constant reminding by the Japanese side (contractor and work supervisor) will be required for the Project. Unlike PACSA, persons in charge of maintenance (protection) will be appointed prior to planting under the Project and it is expected that the necessary responses will be quickly made.
Procurement of seedlings	i. Coordination with existing nurseries and related organizations	This work was conducted under PACSA. No problems are anticipated as this work is routinely conducted by the Vietnamese side.
Construction of operation roads	i. Construction of access roads (construction and maintenance) Quang Nam Province : 600 m (two sites) Quang Ngai Province : none	As similar work was conducted under PACSA, no problems are anticipated. A request for budgetary appropriation to cover the necessary expenses has been made.
	ii. Extension of power supply to auxiliary facilities	
Construction of lookout towers	i. Maintenance of the towers after handing over	A request for budgetary appropriate to cover the maintenance cost after handing over has been made.

Project Stage and Work Category	Work to be Conducted by the Vietnamese Side	Feasibility / Relevance
Installation of project information signboards	<ul style="list-style-type: none"> i. Provision of land ii. Maintenance of the signboards after handing over 	<p>No problems are anticipated in regard to "i" as this work was conducted under PACSA. In regard to "ii", a request for budgetary appropriation to cover the maintenance cost has been made.</p>
After the completion of the main work	<ul style="list-style-type: none"> i. Maintenance (protection) of the created coastal protection forests ii. Maintenance of the constructed facilities iii. Maintenance of the temporary facilities (if necessary) iv. Extension of and awareness raising activities on the techniques to create coastal protection forests v. Witnessing of the inspection for warranty against defects and issue of the certificate of inspection completion 	<p>Maintenance (protection) during the implementation period of Japanese assistance posed a particular problem under PACSA, except clearing of planted forest in Quang Nam. Maintenance (protection) by the Vietnamese side after the completion of Japanese assistance did not produce any special problems under PACSA. Therefore, no special problems are anticipated under the Project if the countermeasures for clearing trees would show their effectiveness.</p>

2-4 Project Operation Plan

(1) Operation and Maintenance System

The Project will be managed by MARD which is responsible body for the implementation of the Project at the central government level and DARDs which are the implementation body for the Project at the provincial level. During the implementation period of the Japanese assistance, a MB will be set up in each of the above organizations. It is planned that APSA will be implemented through collaboration between these MBs and the Japanese side. The MBs will be dissembled after the completion of APSA and MARD and DARDs will become responsible for continued operation and maintenance for the Project. Even if MBs are dissembled, their staff members will continue to perform their duties. This means that the operation and maintenance system following the end of APSA will essentially remain the same.

(2) Maintenance (Protection) by Local Residents

From the viewpoint of guaranteeing the proper maintenance (protection) of the coastal protection forests, forests to be created will be distributed to local residents prior to the planting by the Vietnamese side. The maintenance (protection) of the forests will, therefore, be conducted under the guidance of DARD by the local residents to which the forests have been distributed. The maintenance (protection) cost, however, will be borne by the Japanese side during the work period in each term. In the period from the handing over to the commencement of the next work, the cost will be borne by the Vietnamese side. The funding side for the maintenance (protection) work will, therefore, alternate between the Japanese side and the Vietnamese side during the implementation period of Japanese assistance, but the local residents to whom the forests have been distributed will be responsible for conducting the actual work.

After the completion of APSA, the Project will become part of the 661 Program¹ as in the case of PACSA and the funding for maintenance (protection) work will be guaranteed. DARD in each province will continually play a leading role and its staff members will patrol the project sites and provide strict guidance for local residents to ensure proper maintenance (protection).

The equipment (4WD wagons, motorbikes etc.) required for smooth patrolling will be secured by the

¹ The 661 Program (Decision No. 661/QD-TTg by the Prime Minister) in 1998 is a more detailed program of 5MHRP which was passed by the National Assembly in 1997. It lists such targets as the establishment of headwater areas, promotion of agriculture for permanent settlement, improved income for ethnic people living in mountain areas, etc. while principally aiming at the afforestation/reforestation and protection of existing forests over an area of five million hectare.

Vietnamese side. It is planned that MARD and DARDs will jointly provide the budget and manpower required for the operation and maintenance of the coastal protection forests.

2-5 Project Cost Estimation

2-5-1 Initial Cost Estimation

(1) Project Cost to be Borne by the Vietnamese Side

Table 2-29 Project Cost to be Borne by the Vietnamese Side

Project Cost Component	Amount		Breakdown
	Local Currency	Conversion to Japanese Yen	
1) Witnessing of Detailed Design	25.600 mil. VND	Approx. ¥ 0.18 million	*Air Travel Cost 990,000 VND/one way × 2 return trips = 3,960,000 VND *Accommodation Cost 360,000 VND/night × 60 nights = 21,600,000 VND
2) Awareness Raising	720.000 mil. VND	Approx. ¥ 5.08 million	*Publication Cost of Pamphlet 48,000,000 VND/issues × 7 issues = 336,000,000 VND *Forest Day Event Cost 48,000,000 VND/event × Province × 4 events × 2Provinces = 384,000,000 VND
3) Witnessing of Inspection	91.800 mil. VND	Approx. ¥ 0.65 million	*Air Travel Cost 990,000 VND/one way × 10 return trips = 19,800,000 VND *Accommodation Cost 360,000 VND/night × 20 nights × 10 times = 72,000,000 VND
4) Distribution of the project site land to local residents	428.200 mil. VND	Approx. ¥ 3.02 million	*Quang Nam Province 480,000 VND/ha × 482.81 ha = 231,748,800 VND *Quang Ngai Province 480,000 VND/ha × 409.25 ha = 196,440,000 VND
5) Disease and Harmful Insect Control Cost	288.000 mil. VND	Approx. ¥ 2.03 million	*Quang Nam Province 43,200,000 VND/year × 4 years = 172,800,000 VND *Quang Ngai Province 28,800,000 VND/year × 4 years = 115,200,000 VND
6) Construction and Repair of Operation Roads	653.800 mil. VND	Approx. ¥ 4.62 million	*Quang Nam Province : Construction 600 m × 480,000 VND/m = 288,000,000 VND *Quang Nam Province : Maintenance 600 m × 152,400 VND/m × 4 times = 365,760,000 VND *Quang Ngai Province 0 VND
7) Maintenance Cost of Lookout Towers	134.400 mil. VND	Approx. ¥ 0.95 million	*Quang Nam Province 16,800,000 VND × 1 × 4 years = 67,200,000 VND *Quang Ngai Province 16,800,000 VND × 1 × 4 years = 67,200,000 VND
8) Maintenance Cost of Project Information Signboards	111.600 mil. VND	Approx. ¥ 0.79 million	*Quang Nam Province 13,200,000VND×2 + 8,400,000VND×2 = 43,200,000 VND *Quang Ngai Province 13,200,000VND×2 + 8,400,000VND×5 = 68,400,000 VND
9) MB Operation Cost	5,958.000 mil. VND	Approx. ¥ 42.06 million	*MARD 36,000,000 VND/month × 67months = 2,412,000,000 VND *Quang Nam DARD 18,000,000 VND/month × 66months = 1,188,000,000 VND *Quang Ngai DARD 18,000,000 VND/month × 66months = 1,188,000,000 VND *P/C of Thang Binh Dist. 9,000,000 VND/month × 65months = 585,000,000 VND *P/C of Duc Pho Dist. 9,000,000 VND/month × 65months = 585,000,000 VND
10) Maintenance (Protection) of the Coastal Protection Forests by Local Residents	169.500 mil. VND	Approx. ¥ 1.20 million	*Term-1 120,000 VND/ha-yrs × 0 ha × 0 yrs = 0 VND *Term-2 120,000 VND/ha-yrs × 892.06 ha × 0.083 yrs = 8,884,918 VND *Term-3 120,000 VND/ha-yrs × 892.06 ha × 0.417 yrs = 44,638,682 VND 120,000 VND/ha-yrs × 892.06 ha × 0.083 yrs = 8,884,918 VND *Term-4 120,000 VND/ha-yrs × 892.06 ha × 0.417 yrs = 44,638,682 VND 120,000 VND/ha-yrs × 892.06 ha × 0.083 yrs = 8,884,918 VND *Term-5 120,000 VND/ha-yrs × 892.06 ha × 0.417 yrs = 44,638,682 VND 120,000 VND/ha-yrs × 892.06 ha × 0.083 yrs = 8,884,918 VND
Total	8,580.9 mil. VND	Approx. 60.58 million	

(2) Estimation Conditions

- Time of estimation : March, 2008
- Foreign exchange rates : US\$ 1 = ¥ 112.62
: VND 1 = ¥ 0.00706
- Work period : The Japanese assistance will be implemented as a Type A project resulting in Treasury obligation. The detailed design period and work period are those shown in the project implementation schedule (see Table 2-27).
- Others: The project cost estimation will be implemented in accordance with the grant aid scheme of the Government of Japan.
- Operation and Maintenance Cost

The operation and maintenance of the Project after the completion of the Japanese assistance will be conducted by MARD at the central government level and by DARDs at the provincial level. The cost of such operation and maintenance is roughly estimated as shown in Table 2-30. It is expected that the forest maintenance (protection) cost will be met by the 661 Program while other costs will mainly be met by DARD budget in each province.

The subject period for this cost estimation is 20 years after the completion of the Japanese assistance as in the case of PACSA and all figures are rough estimates which do not take the rate of price inflation and others into consideration.

Table 2-30 Operation and Maintenance Cost

Project Cost Component	Amount		Breakdown
	Local Currency	Conversion to Japanese Yen	
1) Disease and Harmful Insect Control Cost	1,440.000 mil VND	Approx. ¥ 10.17 million	Quang Nam Province 43,200,000 VND/year × 20 years = 864,000,000 VND
			Quang Ngai Province 28,800,000 VND/year × 20 years = 576,000,000 VND
2) Maintenance Cost of Lookout Towers	336.000 mil VND	Approx. ¥ 2.37 million	Quang Nam Province 16,800,000 VND × 1 × 10 years = 168,000,000 VND
			Quang Ngai Province 16,800,000 VND × 1 × 10 years = 168,000,000 VND
3) Maintenance Cost of Project Information Signboards	480.000 mil VND	Approx. ¥ 3.39 million	Quang Nam Province 43,200,000 VND × 4 times = 172,800,000 VND
			Quang Ngai Province 76,800,000 VND × 4 times = 307,200,000 VND
4) Maintenance (Protection) of the Coastal Protection Forests by Local Residents	2,140.900 mil VND	Approx. ¥ 15.11 million	Quang Nam Province 100,000 VND/ha-yrs × 570.52 ha × 20 yrs = 1,158,744,000 VND
			Quang Ngai Province 100,000 VND/ha-yrs × 409.61 ha × 20 yrs = 982,200,000 VND
Total	4,396.900 mil VND	Approx. ¥ 31.04 million	

2-6 Other Relevant Issues

The issues which could directly affect the smooth implementation of APSA are discussed below.

(1) Important Issues Relating to the Obligations of the Recipient Country

The conclusion has already been reached that all types of the work to be conducted by the recipient country under APSA (see Table 2-43) are highly feasible as similar work was conducted under PACSA. The issues which could significantly affect the smooth implementation of APSA are pointed out again in Table 2-31.

Table 2-31 Important Points Relating to the Undertakings of the Recipient Country and Their Detailed Description

Project Stage and Work Category	Important Points	Detailed Description
Detailed Design Stage	Distribution of the planned forests to local residents	In Vietnam, forest maintenance (protection) is generally left to local residents. This distribution agreement is necessary prior to the commencement of the work regarding who will be responsible for the maintenance (protection) of which forests. The relevant policy varies from one province to another. There is a plan that to allocate forests temporally to organizations and not to individual residents. Either way, unless the persons (organizations) responsible for forest maintenance (protection) during the implementation period of the Japanese assistance are decided in advance, there is a risk that the work will be delayed or that Japanese assistance may even be suspended. It is, therefore, essential to check the progress of distribution in this regard with the Vietnamese side at the detailed design stage.
During the main work		
Maintenance	Procurement of the equipment (vehicles etc.) required for the maintenance work by the Vietnamese side	Although no procurement of vehicles Japanese assistance, this will not alter the need for vehicles to conduct the maintenance work. The current situation is that the Vietnamese side is finding it difficult to procure new vehicles. Although the use of existing vehicles is considered, there is concern in regard to diminished opportunities for staff members of the implementation organizations to visit the project sites compared to PACSA. It is necessary for the supervisor and contractor to create actively opportunities for site visits.

Project Stage and Work Category	Important Points	Detailed Description
Planting and tending	Measures to reduce feeding damage by cattle and other farm animals (coordination work)	Two measures, i.e. (i) intensified patrols by those responsible for forest maintenance (protection) and (ii) intensified coordination, including a request that cattle and other animal owners cooperate with the Project, are necessary to reduce the feeding damage caused by farm animals. The responsible personnel are to be designated prior to the project. The situation regarding (i) has improved compared to the situation under PACSA because of the advance appointment of the personnel responsible for forest maintenance (protection) prior to the implementation of the main work. Concerning (ii), MB staffs should be confirmed to cooperate with cattle and other animals' farmers.
	Measures to combat disease and pests	The required measures are (i) the establishment of a system where the discovery of the occurrence of disease or pest damage by a person responsible for forest maintenance (protection) quickly reports such discovery and (ii) quick response to reported damage by MB. Repeated discussions with the Vietnamese side are required to ensure the implementation of these measures.
	Measures to combat the theft of the planted trees Measures to combat the theft of the planted trees	Two measures are required to minimize the theft of the planted trees: (i) intensified patrols by the persons responsible for forest maintenance (protection) and (ii) intensified requests for local residents in a wider area to cooperate with the Project. The situation regarding (i), establishment of a system, which is responsible for appointing the forest maintenance (protection) personnel prior to the main work, is necessary. In regard to (ii), staff members of MB should appeal for the cooperation not only to the representatives of communes but also that of all residents, including children, women, and elderly.
	Explanation of the Project to and request for the cooperation of local residents	In addition to the important points listed above, it is extremely important to explain the contents of the Project and to request the cooperation of local residents around the project sites to facilitate their favorable understanding of the Project. As in the case of the above important points, staff members of MB should be approach to facilitate the understanding and cooperation for the Project among local residents.

(2) Continual Long-Term Maintenance System

1) Maintenance System

Following the completion of APSA, the Project will be incorporated in the 661 Program as in the case of PACSA. By these means, it is planned that MARD and DARD will jointly secure the budget and labor required for long-term forest maintenance and protection. It is envisaged that DARD will provide continuous guidance for local residents through patrols and other activities to ensure appropriate forest maintenance and protection by local residents in each province. After the handing over of the forests to

the Vietnamese side, the forests will start to experience crown closure in 5 – 10 years time, making adequate improvement cutting and thinning necessary to ensure the continual healthy growth of the forests in subsequent years. As these coastal protection forests are classified as protection forests which can be used to obtain thinned wood, forest products and non-wood products (Decision No. 661/QĐ-TTg by the Prime Minister), the formulation of a long-term rational forest management plan is essential. For continual appropriate maintenance and protection for a long period of time, the clear establishment of where the responsibility for forest maintenance and protection lies is also important at not only the provincial level but also at the district as well as commune levels to firmly establish the practice of resident-led forest maintenance (protection) as the newly created coastal protection forests will be distributed over a wide area.

2) Survey Records

The continuation of the surveying conducted during the period of the Japanese assistance after the completion of APSA by DARD, under supervising of MARD, is essential to record and analyze the situation of tree growth over a long period of time so that the protection forest creation techniques in Vietnam can be improved. It is advised that DARD to report MARD the survey record periodically. So that MARD will be able to give timely advices to DARD. Concerning Casuarina in particular, continual survey records will prove vital for healthy growth as such records covering a long period are scarce throughout the world. The importance of these records is also evident because of the absence of concrete technical standards for improvement cutting and thinning at coastal forests.