

# Targets of the Project

To achieve a success in the National Archeological Parks Project, it is necessary to establish a long-term development objects.

The system of object signified here should be accomplished by 1978. A concrete plans are to be made for each Pelita, which is made for every five years, i.e., 1983, 1988, 1993 and 1998.

The items composing the objects system include the following 8 contents:

(1) Physical environment level for the construction of parks.

(2) The object value concerning the enhancement of tourism, so to speak, the capacity of people entering the parks and income for tourism.

(3) The frame of land use of surrounding area of the park.

(4) Population frame of surrounding area of the park.

(5) Object value of productivity of surrounding area of the park.

(6) Object value of productivity per-capita of surrounding area of the park.

(7) Object value of employment plan of surrounding area of the park.

(8) Object value of agricultural products of surrounding area of the park.

The items from (3) to (8) signify the object value of area development relevant closely to the maintenance of surrounding environment of the park.

## Environmental Targets of the Park

Indications	Borobudur park					Prambanan park				
	Present condition	Pelita III	Pelita IV	Pelita V	Pelita VI	Present condition	Pelita III	Pelita IV	Pelita V	Pelita VI
(1) Targets for operational area (ha)	5.0	37.5	65.9	87.1	-	4.1	27.1	52.1	77.0	-
(2) Index goals for total operational area (1983 = 100)	6	43	76	100	-	5	35	68	100	-
(3) Targets for number of visitors in average day	1,430	4,165	7,566	9,826	-	607	2,083	4,227	5,628	-
(4) Visitor density (persons/ha)	286	111	114	113	-	148	77	81	73	-
(5) Floor area of park facility (m <sup>2</sup> )	-	3,260	8,020	8,800	-	-	4,420	9,310	9,950	-
(6) Percentage of building lot occupancy	-	0.9	1.2	1.0	-	-	1.6	1.8	1.3	-

## Tourism Promotional Targets

Indications	Borobudur park					Prambanan park				
	Present condition	Pelita III	Pelita IV	Pelita V	Pelita VI	Present condition	Pelita III	Pelita IV	Pelita V	Pelita VI
(7) Targets for total number of visitors to the park (unit: 1,000 persons)	636	1,520	2,758	3,586	-	310	705	1,513	2,054	-
(8) Average annual growth rate targets of visitors to the park (%)	20	19.1	12.7	5.5	-	29.5	17.8	17.0	5.9	-
(9) Targets for number of domestic visitors to the park (unit: 1,000 persons)	578	1,432	2,640	3,439	-	291	655	1,425	1,907	-
(10) Targets for number of foreign visitors to the park (unit: 1,000 persons)	58	88	118	147	-	19	50	118	147	-
(11) Expected operational revenues of both parks (unit: million Rp.)	92.7 estimated	202.4	781.0	904.1	-	-	-	-	-	-
(12) Expected tax revenues to the region (unit: million Rp.)	187.0 estimated	563.4	863.5	1,013.5	-	-	-	-	-	-

## Land Use Macroframe

Indications (unit: ha)	Borobudur area (1,009.6ha)					Prambanan area (740.2ha)				
	Present condition	Pelita III	Pelita IV	Pelita V	Pelita VI	Present condition	Pelita III	Pelita IV	Pelita V	Pelita VI
(13) Sanctuary area (Zone-1)	17.4	43.5	43.5	43.5	43.5	10.7	32.5	32.5	32.5	32.5
(14) Park area (Zone-2)	-	26.2	26.2	47.3	47.3	-	29.9	29.9	53.9	53.2
(15) Nature conservation area	48.1	48.1	55.0	70.3	83.9	36.4	36.4	38.0	41.5	46.3
(16) Residential area	287.4	287.4	287.4	287.4	287.4	171.2	171.2	171.2	171.2	171.2
(17) Community center area	6.5	8.0	9.0	10.0	11.9	9.2	11.0	12.0	14.0	17.0
(18) Road area	13.6	19.5	22.0	24.5	28.0	26.0	33.9	33.9	38.0	43.9
(19) Agricultural area	636.6	576.9	566.5	526.6	507.6	486.7	425.3	422.7	389.1	375.9

## Population Macroframe

Indications	Borobudur area (Zone-3)					Prambanan area (Zone-3)				
	Present condition	Pelita III	Pelita IV	Pelita V	Pelita VI	Present condition	Pelita III	Pelita IV	Pelita V	Pelita VI
(20) Population	10,300	11,300	12,400	13,600	14,900	12,900	13,600	14,800	15,900	17,100
(21) Population increase	-	1,000	1,100	1,200	1,300	-	900	1,000	1,000	1,200
(22) Average annual rate of population increase (%)	-	1.87	1.87	1.87	1.87	-	1.43	1.43	1.43	1.43
(23) Gross residential area density (persons/ha)	36	39	43	47	52	75	81	86	93	100
(24) Maximum population absorption capacity	-	-	-	-	21,600	-	-	-	-	17,100

## GDP Targets

Indications	Borobudur area (Zone-3)					Prambanan area (Zone-3)				
	Present condition	Pelita III	Pelita IV	Pelita V	Pelita VI	Present condition	Pelita III	Pelita IV	Pelita V	Pelita VI
(25) Index goals for total area production (1978 = 100)	100	148	202	275	389	100	131	165	218	284
(26) Average annual rate of increase in total area production (%)	-	8.2	6.2	6.3	7.2	-	5.5	4.2	5.8	5.4
(27) Index goals for total agricultural production (1978 = 100)	100	103	115	134	161	100	98	111	127	154
(28) Average annual rate of increase in total agricultural production (%)	-	0.6	2.2	3.1	3.7	-	0.5	2.5	2.8	4.0
(29) Total production index for other industries (1978 = 100)	100	169	281	406	601	100	140	181	245	322
(30) Average annual rate of increase in production in other industries (%)	-	13.6	8.2	7.7	8.2	-	7.0	5.3	6.2	5.7

## Per-Capita GDP Goals

Indications	Borobudur area (Zone-3)					Prambanan area (Zone-3)				
	Present condition	Pelita III	Pelita IV	Pelita V	Pelita VI	Present condition	Pelita III	Pelita IV	Pelita V	Pelita VI
(31) Per capita GDP average annual growth rate targets (%)	-	6.2	4.4	4.5	5.3	-	4.1	3.3	4.3	3.8
(32) Per capita GDP index (1978 = 100)	100	135	168	208	269	100	122	144	177	214
(33) Targets for average annual rate of increase in per capita agricultural production (%)	-	2.0	2.0	2.0	2.0	-	2.0	2.0	2.0	2.0
(34) Per capita agricultural production index (1978 = 100)	100	110	122	135	149	100	110	122	135	149
(35) Targets for average annual rate of increase in per capita production in other industries (%)	-	2.0	2.0	4.0	4.0	-	4.0	4.0	5.0	5.0
(36) Per capita production index for other industries (1978 = 100)	100	110	122	148	180	100	122	148	189	241

## Employment Targets

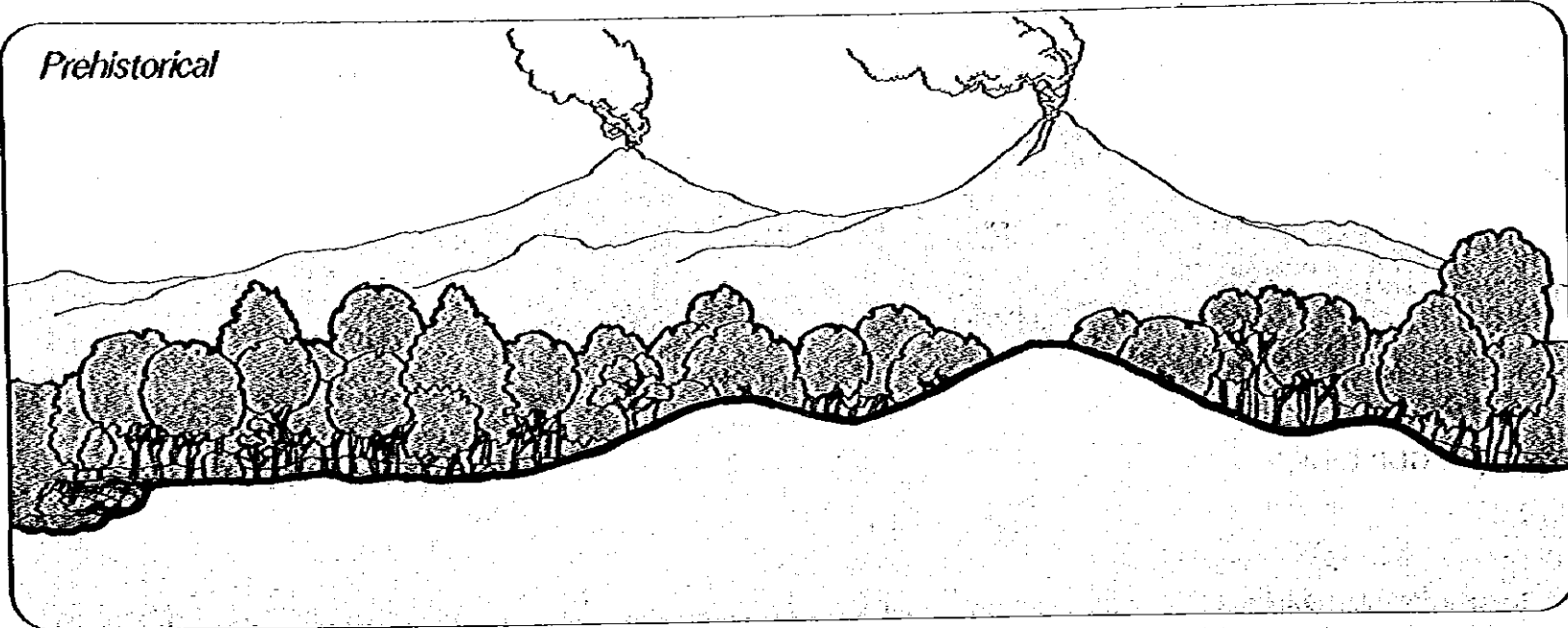
Indications	Borobudur area (Zone-3)					Prambanan area (Zone-3)				
	Present condition	Pelita III	Pelita IV	Pelita V	Pelita VI	Present condition	Pelita III	Pelita IV	Pelita V	Pelita VI
(38) Increase in number of workers	-	630	700	700	1,000	-	560	400	400	400
(37) Total number of workers	4,470	5,100	5,800	6,500	7,500	7,940	8,500	8,900	9,300	9,700
(39) Average annual rate of increase in number of workers (%)	-	2.7	2.6	2.3	2.9	-	1.4	0.8	0.8	0.8
(40) Target figures for employment in agriculture	3,300	3,100	3,100	3,300	3,600	2,620	2,300	2,400	2,400	2,600
(41) Number of persons engaged in park construction or operation	-	700	700	800	800	-	700	700	800	800
(42) Target for number of persons engaged in other sectors	1,170	1,300	2,000	2,400	3,100	5,320	5,500	5,800	6,100	6,500

## Agricultural Productivity Targets

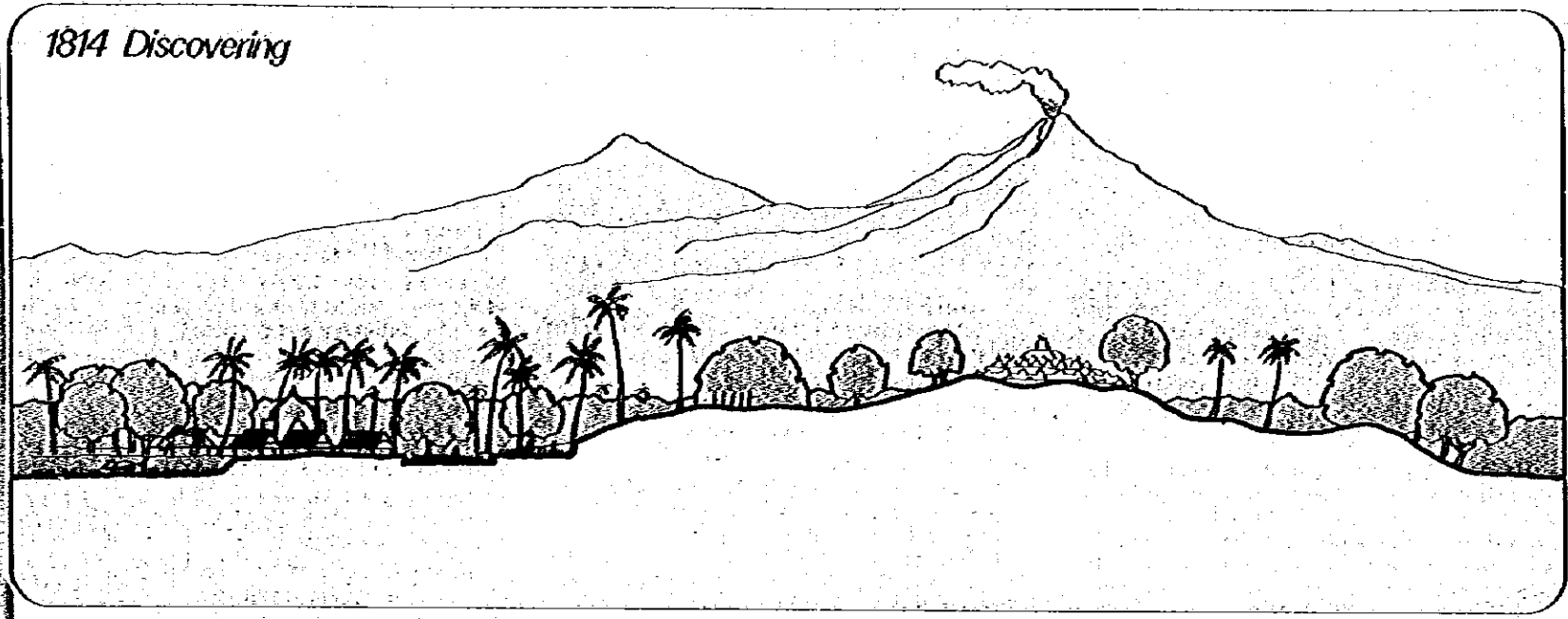
Indications	Borobudur area (Zone-3)					Prambanan area (Zone-3)				
	Present condition	Pelita III	Pelita IV	Pelita V	Pelita VI	Present condition	Pelita III	Pelita IV	Pelita V	Pelita VI
(43) Index targets for agricultural production per hectare (1978 = 100)	100	113	128	160	201	100	113	128	160	201
(44) Average annual rate of increase of agricultural production per hectare	-	2.5	2.5	4.6	4.6	-	2.5	2.5	4.6	4.6
(45) Production goals for present high-productivity farmland (ton/ha)	3.5	3.5	3.6	3.7	4.0	3.5	3.6	3.7	4.0	4.5
(46) Production goals for present low-productivity farmland (ton/ha)	1.0	1.2	1.4	2.0	2.7	1.5	1.7	2.0	2.7	3.5

# Historical Succession in the Vicinity of Candi Borobudur

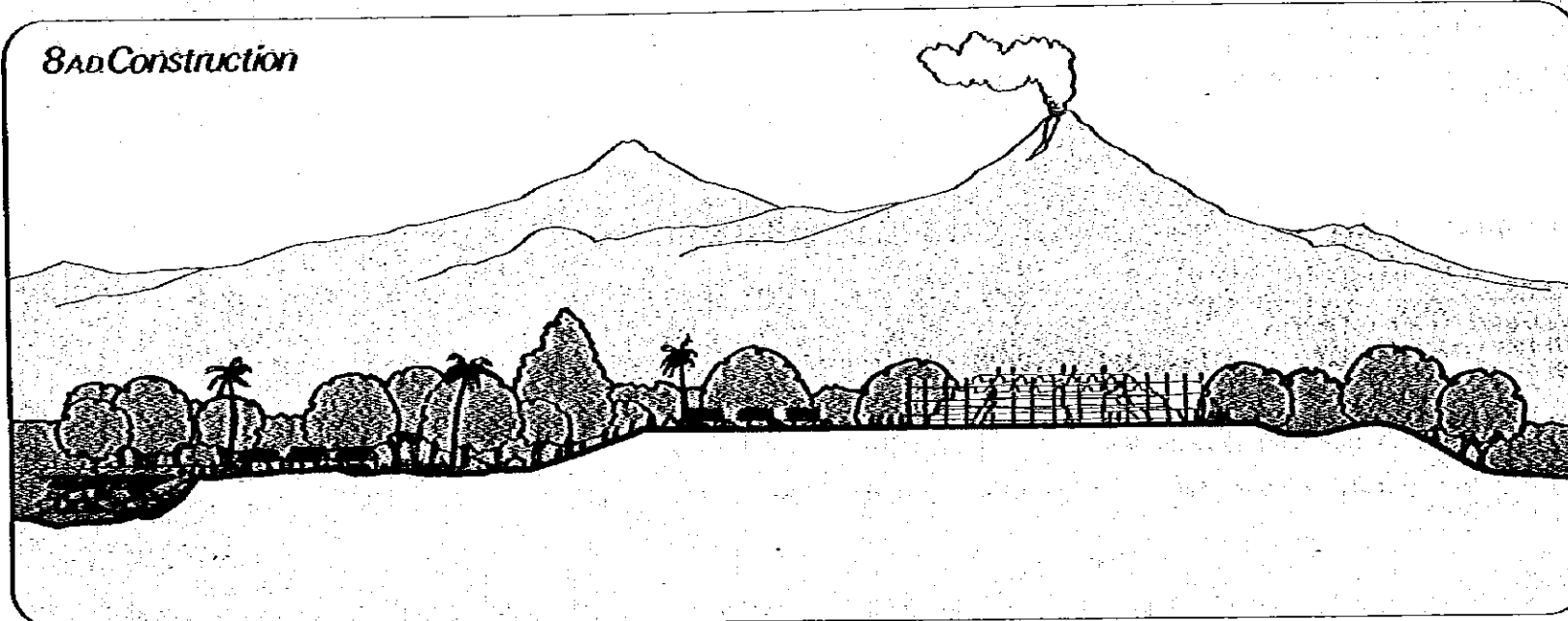
*Prehistorical*



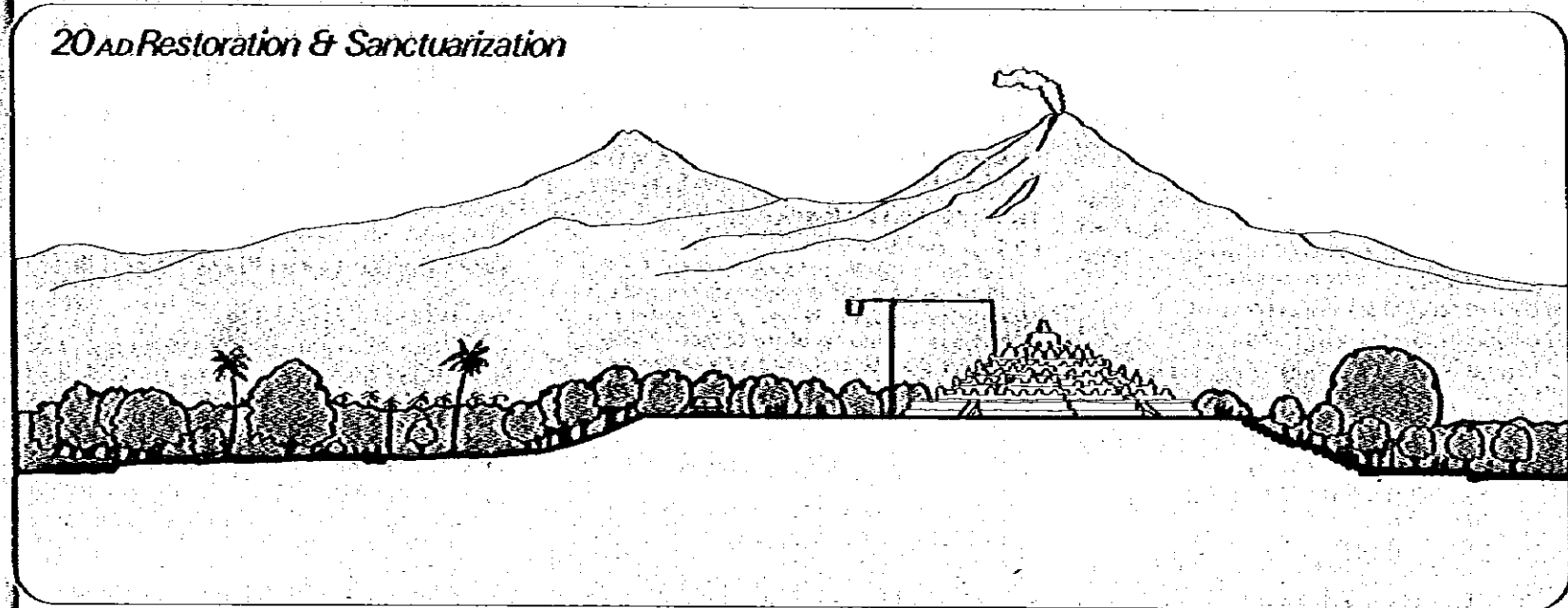
*1814 Discovering*



*8AD Construction*



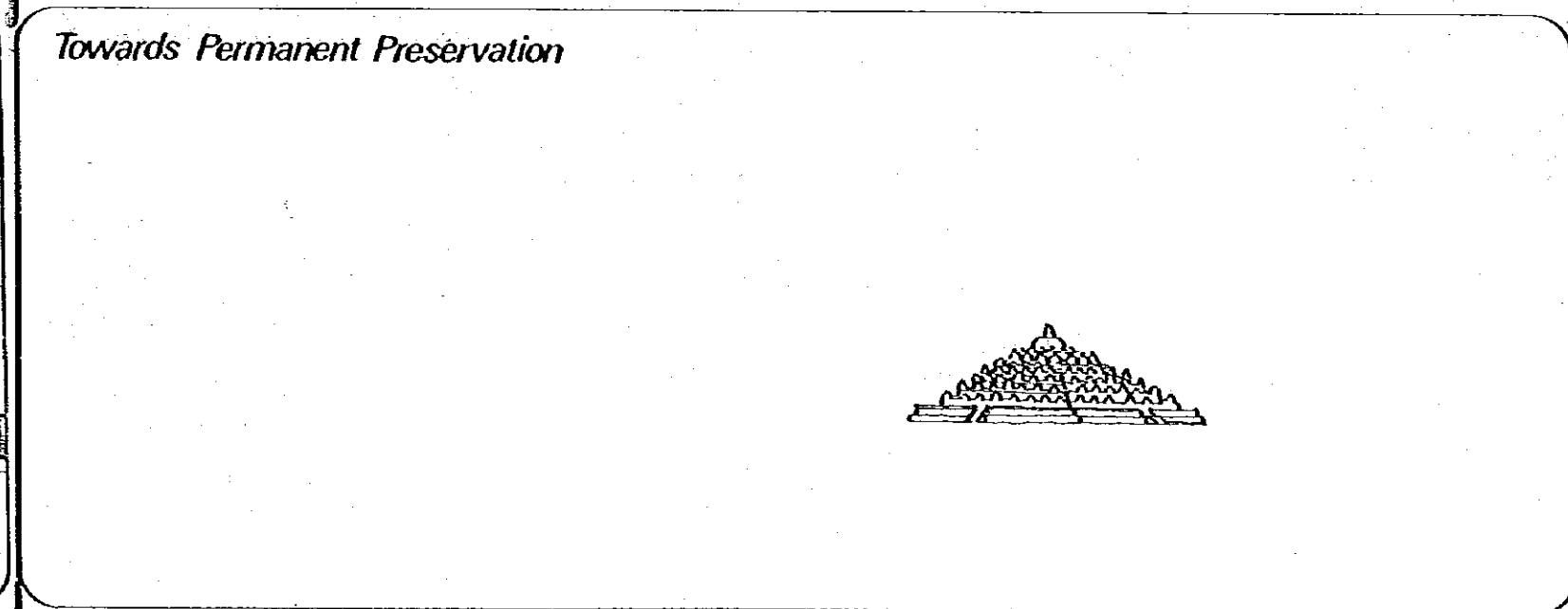
*20AD Restoration & Sanctuarization*



*Dark Ages*



*Towards Permanent Preservation*



## Further Study Requirement

What has to be done before construction can be started? Here an outline description is given of the detailed design (d/d) work that will follow this year's study. It should take about 18 months for the next period of the study, which will consist of three steps. Smooth progress will have to be made in the preparations if the two parks are to be provisionally opened by the target year.

### Scope of Work in General

It is to be comprised of two major studies: one concerning park construction and the other concerning village improvement. The latter, which is to be carried out primarily by an Indonesian team, will require design work that reflects local conditions accurately and in great detail, and liaison with the park construction design team will have to be even closer than before.

Furthermore, in order to make the parks as unique as desired, it is vitally important that those determining policy, the development entities, and the design teams be able to work in close harmony with one another for the common goal and that detailed arrangements for such a footing be made as soon as possible.

This detailed design work will include the following:

- (1) Surveying and preparation of 1:1,000 maps of 3km<sup>2</sup> design areas.
- (2) Technical surveys (soil, vegetation, water sources, etc.) for detailed design purposes.
- (3) Archeological surveys (physical probing and test excavation) for confirmation of conditions on which detailed planning will be based.
- (4) Detailed survey of property rights for land acquisition purposes.
- (5) Final adjustment of requirements of implementation entity as preparation for detailed design.
- (6) Detailed design of sanctuaries (Zone-1).
- (7) Detailed design of park areas (Zone-2).
- (8) Detailed design of substitute villages and roads and bridges.

The work to be performed shall be furnished in three phases will comprise of the following:

- Phase I: Survey, Investigation and Review of the Former Plan:  
Carry out various surveys, investigations and review of the former plan by JICA.
- Phase II: Detailed Design and Engineering:  
Carry out detailed design and engineering of the archeological parks.
- Phase III: Preparation of Tender Documents:  
Prepare all necessary documents for tender.

For description of the proposed construction of infrastructure, site development, architecture and landscaping, reference be made to the final report of the Detailed Development Plan of Borobudur and Prambanan Archeological Parks prepared by JICA.

### Work Carried Out in Phase-I Detailed Survey, Investigation and Review of Former Plan

#### Archeological Survey

For the purpose of discovering unexcavated monuments, if any, and for archeological assessment of the area, an intensive survey should be conducted in the phase, well prior to the execution of the construction. This is further to the survey conducted in 1978 by ways of:

- aerial photography
- field investigation and interview of the inhabitants
- study of the existing bibliography
- test excavation of the selected spots

The present survey should cover a wider area and should be as much of direct methods as possible.

#### (1) Physical Investigation

Approximately 30 ha., being 10 percent of the total development area, of Borobudur and Prambanan areas will be investigated by one or combination of the ways of:

- magnetic survey
- seismic survey
- electric resistivity survey

Boring test of a diameter 10cm., depth 6m totaling number of 100 holes will support above the methods for the stratigraphic analysis.

#### (2) Excavation Investigation

Direct excavation of the sites where siting of the facilities is concentrated will be conducted at the area of 4,000m<sup>2</sup>, depth of the pits reaching to about 1.5m, of Borobudur and Prambanan Parks Areas.

#### Technical Surveys and Investigations

##### (1) Engineering Survey

Further to the result of survey conducted in Phase I, all topographic and geological studies, and soil and materials surveys as needed to implement final design and engineering of the project. Topographic surveys shall be performed to such accuracy that final design construction quantities can be calculated to sufficient accuracy to permit construction tendering.

##### (2) Soils and Materials Survey and Laboratory Investigation

A review will be made for all existing relevant data, followed by a former study of the soils and materials in the project area. Investigations and testing will be completed to permit the final design of the project. Sources of suitable borrow and construction material will be defined, and their adequacy determined. Subsurface investigation along the proposed roadway, utility line alignments, and within the premises of any construction activities in area of out will be to depths adequate to permit reasonably accurate estimate to be made of the quantities of rock excavation that will be encountered in construction.

Detailed foundation investigation including laboratory testing will be made at all major structure site to permit the final design.

##### (3) Survey and Investigation for Landscaping

In order to ascertain present conditions in the project area design and engineering purposes, investigation covering the following items will be carried out with respect to landscape:

- Vegetation
- Plantings
- Other landscaping materials

##### (4) Drainage and Bridge Investigation

The consulting team shall pay particular attention both to the collection and critical examination of all available data (physical and geological maps of the territory, climatology reports, hydrological reports and maps) and to the integration of such data with the information collected directly on site (trend of

water course, study of deposited alluvia, stream velocity and maximum flood levels, types and degree of erosion, zones inundated or likely to be inundated).

The extension and nature of the catchment basins of the different water courses will be determined by examining topographical and geological maps as well as by means of the direct investigations mentioned above.

#### Production of Maps

Maps at a scale of 1:1,000 will be produced on the basis of the panchromatic black and white photographs. On the maps, distortions and displacements of images existing in photos taken by the central projection method will be corrected (rectified).

Contour lines will be drawn at intervals of 50cm, and in order to increase their precision, leveling will be done.

#### Review of the Former Plan By JICA

The review of the project framework, findings and recommendations of the above plan shall be carried out focusing to the following items:

- Scale and items of development and projects
- Institutional organization set-up
- Operation program

Design criteria as established in the aforesaid plan report will be used and no major deviation from the general outline or design criteria will be made without prior approval of the Government. However, as a result of these review and survey work, if the desirable change in the proposed location, principal features and design of the facilities would be found, specific recommendations for such changes will be made to the Government for its consideration and approval.

### Work Carried Out in Phase-II and III

#### Detailed Design and Engineering

The detailed design and engineering for the project shall be performed on the basis of predetermined precise land-use plan as well as field surveys and investigations undertaken, also preparation of contract plans with sufficient details to be suitable for tendering and construction shall be carried out.

On the basis of the former plans, final design and engineering studies of the following items shall be carried out during in these phases:

- Landscaping
- Architecture
- Road and street
- Stormwater drainage
- Water supply
- Sanitary sewerage
- Irrigation
- Electrical supply
- Telephone
- Refuse collection and disposal

#### Cost Estimates

On the basis of various studies, surveys and investigations, design, and engineering, the detailed cost estimates shall be carried out.

Three sets of estimates of the cost of construction for each contract package with break down into foreign exchange and local currency costs computed for each item shall be submitted to the Government. The unit price for each item shall be arrived at through a detailed analysis of cost of equipment, materials, labour, contractors' overheads, etc. required to complete that item of work.

#### Preparation of Tender Documents

Preparation of complete tender documents with bills of quantities and technical specifications for the works shall be of a standard suitable for competitive tendering in accordance with the requirements of the Government.

## Coordination with BPCB Project

Since the park construction and the archeological restoration work will be carried out at the same time in the same area, adequate coordination must be made between them. In the Borobudur area in particular the restoration work is already over half finished, and there are many problems that will have to be solved for coordination with the park construction work that will soon follow.

The items listed here are matters concerning which there will have to be close consultations with the restoration works entity (BPCB) in the following detailed design stage.

### Letter to BPCB

As a continuation to the studies that have been carried out during the seven preceding years. In 1978-79 the Directorate General of tourism of the ministry of transportation, communications and tourism had a Borobudur and Prambanan National Archeological Park development and improvement project plan prepared with Japanese technical assistance and additional funding on the Indonesian side, and the draft master plan for implementation of the project was approved at the end of March.

The total investment for the two parks is to be Rp. 15 billion, Rp. 10 billion of which is to take place during the first year. Rp. 3.8 billion of the latter figure is to be invested this year as the first year of the project implementation, the first work to be started being that of land acquisition and detailed design work on the basis of the above mentioned Master Plan.

In connection with such implementation of park development works in the Borobudur area, it should be noted that the present project is very closely related to the BPCB restoration works project in terms of the nature of the works, the areas involved, the construction periods, and so forth. This being the case, it is particularly necessary that the following points regarding the BPCB project be clarified at an early date for coordination of the two projects. Specifically, such confirmation will be helpful in determining the scope of implementation of the land acquisition programs for the two parks and finalizing the scope of the detailed design work.

The Directorate General of tourism is thinking along the following lines with regard to this year's implementation schedule for the park project and is of the opinion that there should be close consultations and coordination with BPCB in connection with it:

(1) There should be discussions and coordination with BPCB regarding its land acquisition program and what is to become of the sites after completion of the restoration work so as to be able to complete preparations for the park land acquisition by the end of May.

(2) There should also be discussions and coordination or clarification of the basic division of labor with the BPCB scope of work so as to be able to finalize the scope of work for the park development and village relocation detailed design by the end of June.

(3) A wide range of primarily technical consultations will also be needed during this year as the initial stage of the detailed design work. And for this purpose it will be necessary to make arrangements for regular liaison and cooperation among those concerned with the technical aspects of the two projects.

### Questionnaire to BPCB

#### Question 1:

Regarding the scope of land acquisition

The land acquisition in the Borobudur scheduled for this year is to be implemented as per the plan separately indicated. As can be seen, the areas for which acquisition is scheduled are those around blocks 1, 2, and 3, which are under BPCB jurisdiction, and block 13, which is owned by the local government. Information is desired on whether or not BPCB is planning any land acquisition in connection with future restoration yard expansion or other circumstances.

Your suggestion:

#### Question 2:

Regarding what is to become of the land under BPCB jurisdiction after the restoration work is completed

After completion of the restoration work, the land under BPCB jurisdiction is scheduled to be transferred to the park authority for environmental improvement as a sanctuary area and maintenance and control together with Zone-2 park areas. Will there be any problems in this respect? (Are separate arrangements envisioned for maintenance and control of Candi Borobudur and the BPCB land after the restoration work?)

Your suggestion:

#### Question 3:

Regarding the implementation schedule

Construction of parking areas, the concourse to the Candi, park administration facilities and other facilities is scheduled to get underway as soon as possible so as to be completed in time for the tentative opening at the end of October 1982, the date by which the restoration work is expected to be completed. In this connection, could there be any technical problems that might delay the restoration work so as not to be able to meet this schedule?

Your suggestion:

#### Question 4:

Regarding the handling of the restoration yard

It is advisable that the restoration yard be landscaped along the lines set by the Park Master Plan rather than reconverted to farmland after completion of the restoration work. In this connection, the following technical matters relating to design, construction cost, and other aspects will have to be resolved.

(1) How is the scope of restoration work area to be clearly demarcated as far as the BPCB plan is concerned?

(2) How is the annual implementation to be scheduled, and what scopes of work are to be planned for the surround candi sites?

(3) What are the terminal portion of the drainage system to be installed at Borobudur hill and its detailed structure, position and gradient to be? How is this drainage system to be planned in connection with outside area?

(4) How is erosion control to be treated after embanking the soil 50cm up from existing ground level at Borobudur hilltop?

(5) How and where are stairways and other accesses to be laid out on the side of Borobudur hill during or after the restoration period?

(6) How are former topographical and vegetational conditions to be restored after major alteration due to the restoration work?

Your suggestion:

#### Question 5:

Regarding the scope of the Borobudur sanctuary

At the end of March the Joint Steering Committee for the national archeological park project decided to determine the appropriate scope of the Borobudur sanctuary on the basis of the opinion of the consultative committee. In this connection, advice is solicited with respect to practical finalization of such scope from a comprehensive viewpoint including operations, control, and use and on the premise of preservation of the environment of the archeological monuments.

Your suggestion:

#### Question 6:

Regarding research facilities and archeological museum

According to the Park Master Plan, the various facilities on Borobudur hill that were built for the restoration work are schedule to be removed at completion of that work and to be replaced by other similar new facilities at an appropriate location outside the sanctuary area. In this connection, we would like to know about BPCB suggestions and requirements concerning the planning of the archeological conservation center and the archeological museum in particular. Furthermore, we would like to have consultations regarding organizational arrangements for the construction and operation of such facilities.

Your suggestion:

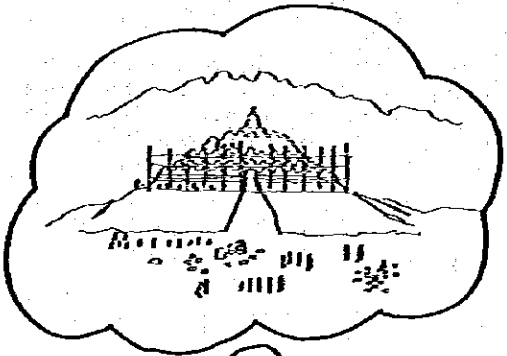
# The Three Pillars of the National Archeological Parks

## Parks for Permanent Preservation of the Monuments

Archeological monuments do not just exist but rather exist under particular historical social and natural conditions, and only on the basis of unified confirmation of them is it possible to understand their essential value. Accordingly, the monuments will have to be preserved for future generation as a part of the "historical climate" in intimate relation with the surrounding natural environment.

It is also only natural that this purpose can not be achieved within the confines of the park grounds alone and that the parks must blend into the natural environment around them rather than constituting a sharp visual contrast with it.

In determining the proper size of the parks, the main consideration has been preservation of the environment of the monuments. This being the case, for the Borobudur park a monument environmental preservation zone covering 39.8ha as a circle with a radius of 360m from the center of Candi Borobudur has been planned as a sanctuary for protection of the monuments in which no artificial structures will be allowed whatsoever. As for the rest of the park area, which, inclusive of the sanctuary area, will cover a total of 87ha, it will serve both as a buffer zone around the sanctuary area and as a park facility and service area for visitors.



Likewise and for the same reason, the Prambanan park will have a sanctuary area around the Candi Loro Jonggrang complex coinciding with the limits of the 390m by 390m third compound as based on the original building layout of the candi that will go a long way toward reinstating the erstwhile magnificence of the complex. Similar monument environment protection zones will be set around Candi Sewu, Candi Bura, and Candi Lumbung, the three together plus the Loro Jonggrang complex sanctuary accounting for 23.4ha of the total park area of 77ha. In other words, the rest of the park area will, as one of its functions, serve to connect these sanctuary areas.

## Center of Archeological Research in Indonesia

The Borobudur Archeological Conservation Center (BACC) is to be established as an organizational continuation of the Badan Pemugaran Candi Borobudur (BPCB), which has been engaged in restoration work and related survey and research activities, so that continuing use can be made of the personnel engaged in such work and the materials and information that have resulted from it.

The main activities of this center will be scholarly research on Candi Borobudur and the monuments in the vicinity of it, research on restoration techniques, the keeping of records and materials, and survey excavation of unexcavated monuments as well as training of young archeologists from various Asian countries under the direction of experts in this field also from throughout Asia and holding of international archeological conferences so that it will serve not only as the main center of Indonesian archeological research but also as a center for international exchanges in archeological research.

At the Prambanan park the Central Java Branch Office of the Archeological Bureau of the Ministry of Education and Culture, which is presently located on the grounds of the Candi Loro Jonggrang complex, will be relocated but will continue to function as the core of archeological administration in the area, its main duties being excavation surveys of unexcavated monuments, preparation of surveying, restoration, and other drawings and materials, restoration work on monuments that are partially ruined, management and maintenance of the same, and administrative guidance for their permanent preservation, particularly involving archeological environmental impact assessment in connection with large-scale development in the area.



## For All Children in Future

Among the main visitor facilities will be the archeological museums, which will take the visitors back in time to the days of ancient Java. At the Borobudur park the archeological museum will concentrate on the subject of Candi Borobudur itself, presenting exhibits on its original state, its rediscovery in the 19th century, and the restoration work that has been done on it in more recent days. Furthermore, it will present the results of archeological research, mysteries regarding the temple that have not yet been solved and various theories regarding them, the individual achievements of the many people who have participated in research on, and in the restoration work on, the temple, making ample use of attractive panels and slides.

At the Prambanan park the archeological museum will emphasize Hindu-Java art, explaining how the magnificent religious architecture of the Central Java period developed over approximately two hundred years beginning in the second half of the 8th century A.D. on the Dieng plateau, in the Ungaran mountains, in the Kedud basin, and on the Prambanan plain as well as the history of the vicissitudes of the Mataram and Sailendra dynasties which sponsored such architectural construction.

Both archeological museums will have libraries replete with research treatises and publications on their respective topics for use by visitors who might want to learn more about what they have seen at the parks.

As extensions of these archeological museums there will be outdoor archeological exhibitions (field museums) in both parks representing an attempt to get the archeological messages of the parks across in a more natural and easy manner as a personal experience through the effective use of landscaping techniques than is possible within the limited confines of indoor museums. In other words, through these outdoor exhibits the whole park becomes, as it were, and archeological museum.

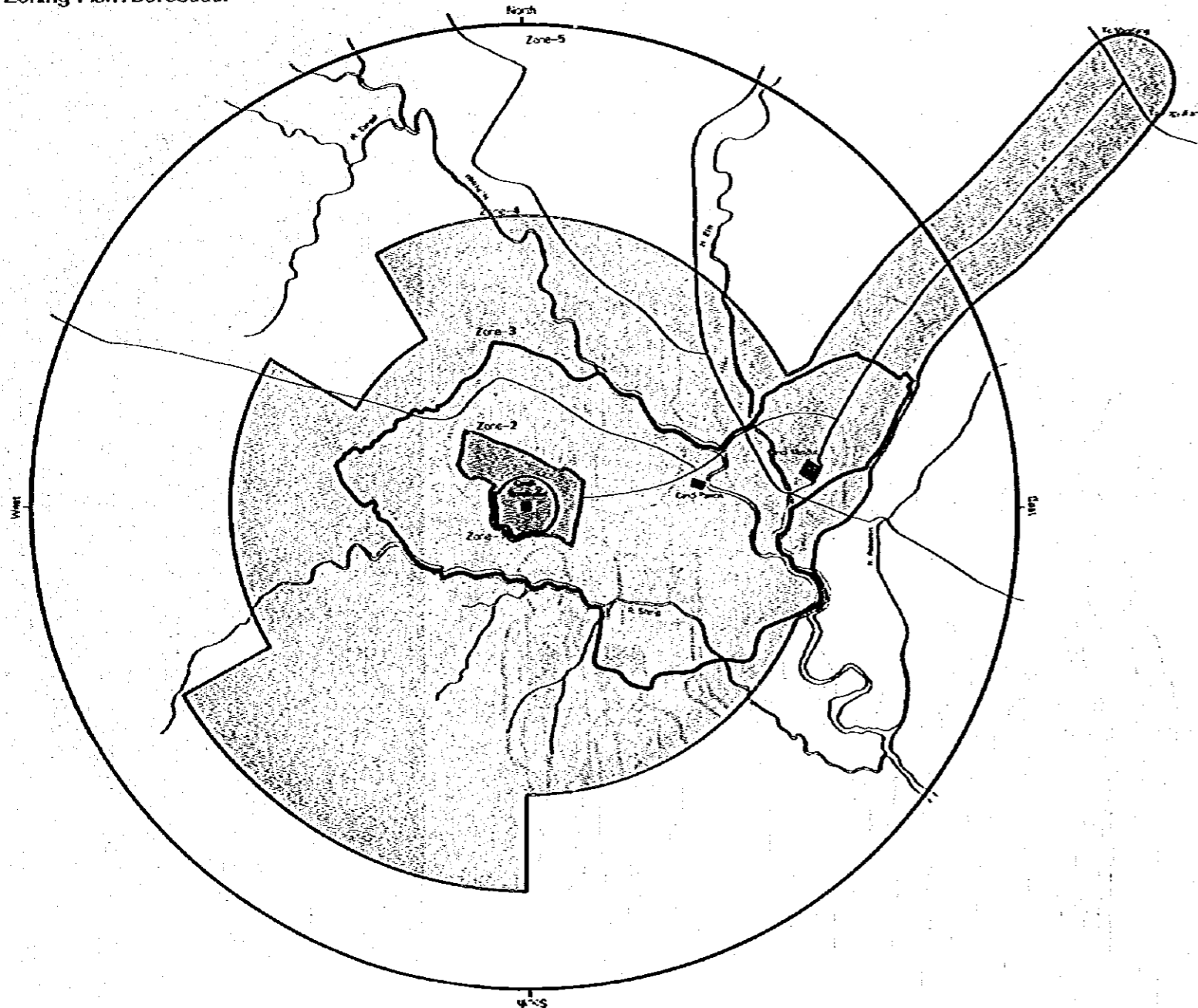


# Integrated Zoning System

We propose the introduction of an integrated zoning system as a means of passing on to the future the historical environment of this area that has been formed over a period of over ten centuries. This system encompasses the goals of both preservation and development as two extremes and aims at systematic land control. It consists of five zones, as follows, each with its own particular purpose.

- Zone-1** Zone for protection and prevention of destruction of the physical environment of the archaeological monuments.
- Zone-2** Zone for provision of park facilities for the convenience of visitors and preservation of the historical environment.
- Zone-3** Zone for regulation of land use around the parks and preservation of the environment while controlling development in areas surrounding the parks.
- Zone-4** Zone for maintenance of the historical scenery and prevention of destruction of the scenery.
- Zone-5** Zone for undertaking archeological surveys over a wide area and prevention of destruction of undiscovered archeological monuments.

Zoning Plan: Borobudur



## Archeological Environment Preservation Zone: Sanctuary Areas (Zone-1)

This zone consists of areas with existing monuments of high historical value that are to be designated as protection areas. Their land is to be nationalized, and the monuments and their surroundings are to be permanently protected as sanctuaries.

In the Borobudur area there will be five such sanctuaries - Borobudur, Pawon, Mendut, Ngawen, and Gunung Ukir - consisting of a total area of 44.8ha, and in the Prambanan area there will be eleven - Loro Jonggrang, Lumbung, Butrah, Sewu, Ploosan, Sojwan, Kraton, Ratu Boko, Banyunibo, Sari, Kalasan, and Sambisari - consisting of a total of 55.1ha.

## Archeological Park Zone (Zone-2)

Areas centering on the Borobudur Temple and the Loro Jonggrang Temple, two of Indonesia's most representative historical monuments and which can be provided with various facilities for accommodation of the growing number of visitors and functioning as parks will be designated, their land will be gradually nationalized, and their environments will be improved and facilities built for maintenance and control as parks.

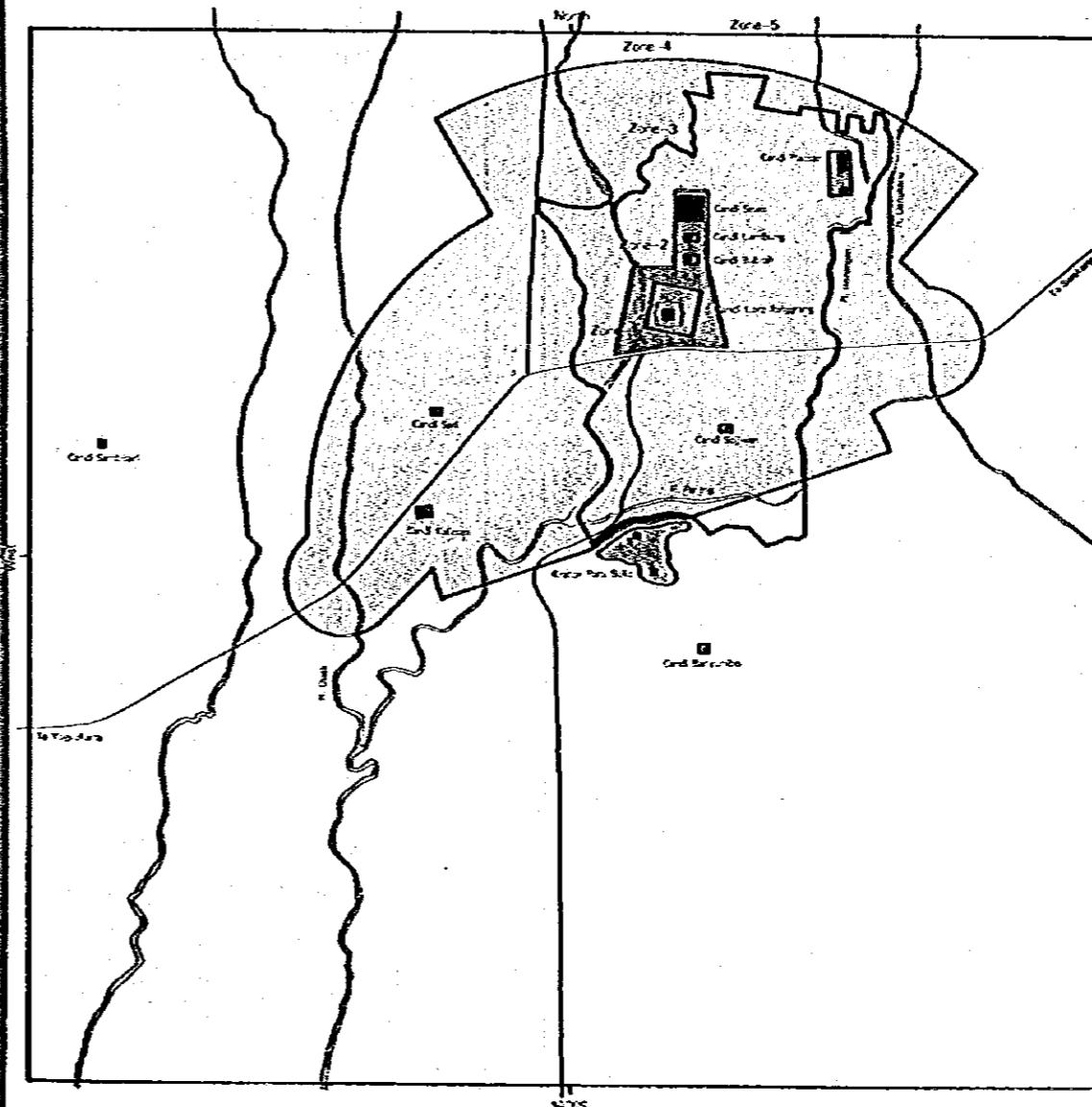
In the Borobudur area this zone will be around Borobudur Temple and will consist of an area of 87.1ha, and in the Prambanan area it will encompass the Loro Jonggrang, Lumbung, Butrah, and Sewu temples and will have a total area of 77.0ha.

## Land Use Regulation Zone (Zone-3)

This zone, which is to consist of the areas centering on the above-mentioned two park zones in which there is a concentration of existing monuments, is to be for the purpose of introducing a system of land use regulation zoning for some restriction of regional development and partial freezing of the present state of land use as well as of taking measures for environmental preservation over a wider range as means of passing on the present desirable countryside environment to future generations.

In the case of the Borobudur area this zone will consist of the entirety the three desa of Borobudur, Wanurejo, and Mendut, including the three temples Borobudur, Pawon, and Mendut, or a total area of 10.1km<sup>2</sup> with a population of 10,100, and in the case of the Prambanan area it will consist of all or part of the seven desa of Bugisan, Taji, Tlogo, Kebondalem Kidul, Pereng, and Bokoharjo, including the Prambanan park and Ploosan and Sojwan temples, or a total area of 7.4km<sup>2</sup> with a population of 12,700.

Zoning Plan: Prambanan



## Historical Scenery Preservation Zone (Zone-4)

This is a wider area than Zone-3 in which areas with high historical scenic value and which will be seen a great deal by visitors will be selected for maintenance and improvement of the scenery and where a system of scenic controls will be introduced to prevent development that might lead to deterioration of the scenery.

There will be three types of such zones:

### (1) Panoramic View Preservation Zones

Approximately 3km in all directions from the circle terrace of Borobudur Temple and approximately 3.4km of the 180° field of vision from Kraton Hill in the direction of Mt. Merapi.

### (2) Zones for Preservation of the Scenery Around Monuments

Zones within a radius of 300m from the Sari and Kalasan temples.

### (3) Roadside Scenery Preservation Zones

Zones to a distance of 500m on both sides of the 8.2km stretch of access road from the Magelang national road to Borobudur Park and the 6.0km stretch of national road leading to the Prambanan Park.

## National Archeological Park Zone (Zone-5)

These zones are those parts of the Kedu Basin and Kewu Plain, where the Shailendra and Mataram dynasties of the Central Java Period of Indonesian history centered, that include all of the existing archeological monuments and where it is likely that other unexcavated monuments exist. In them archeological surveys and excavation work will be undertaken and all necessary steps will be taken to ensure that development activity does not lead to the destruction or damage of such unexcavated monuments.

In the Borobudur area this zone is the 78.5km<sup>2</sup> area within a radius of 5km of Borobudur Temple, and in the Prambanan area it is the 81.0km<sup>2</sup> square area centering on Kraton Hill measuring 9km on a side.

### Zoning Key: Borobudur

- Zone-1 Total area 44.8ha
- Zone-2 Total area 87.1ha
- Zone-3 Total area 10.1km<sup>2</sup>
- Zone-4a Total area 17.8km<sup>2</sup>
- Zone-4c Total area 8.2km<sup>2</sup>
- Zone-5 Total area 78.5km<sup>2</sup>

### Zoning Key: Prambanan

- Zone-1 Total area 39.8ha
- Zone-2 Total area 77.0ha
- Zone-3 Total area 7.4km<sup>2</sup>
- Zone-4a Total area 30.0km<sup>2</sup>
- Zone-4b Total area 14.1ha
- Zone-4c Total area 6.0km<sup>2</sup>
- Zone-5 Total area 81.0km<sup>2</sup>

# Master Plan Index

There are about twenty-five plans and studies for promotion of the national archeological park project in four different strategy categories. These wide-ranging plans and studies, all closely related to one another, go together to form a comprehensive master plan.

**Strategy Two**  
Areas containing the Borobudur Temple and the Loro Jonggrang Temple, two of Indonesia's most representative historical monuments, of which can be provided with various facilities for reconstruction of the growing number of visitors and functions as parks will be designated. Their land will be gradually nationalized and their environment will be improved and facilities built for maintenance and control as parks.

**Designation of Park Development Special Areas (Zone-2)**  
Indicated is the process of determination of optimum park scale in terms of the purposes and functions of the parks and ability to accommodate the future number of visitors.  
Areas covered: In the Borobudur area this zone will be around Borobudur Temple and will consist of an area of 87.1ha, and in the Prambanan area it will encompass the Loro Jonggrang, Lumung, Butrah, and Sewu temples and will have a total area of 77.0ha.  
Planning term: 15 years  
Undertaken by: JICA Team  
See pp. 93-96, 103-104

**Park Construction Plan**  
In the park construction process the basic site work, utilities, landscaping building construction, and so on will be undertaken in a complicated manner. Indicated here are the methods and procedures for ensuring that the overall process runs smoothly.  
Project area: Same areas as for Master Plan #12  
Budgetary frame: Borobudur Rp. 2,357 million and Prambanan Rp. 2,503 million, for a total of Rp. 4,860 million  
Project term: 10 years  
Undertaken by: JICA Team  
See pp. 153-160

**Strategy Three**  
In this category are the various plans and studies concerning environmental preservation and area development in areas around the parks.  
Turning our attention to the area around the parks, we see the need, along with the village relocation program in connection with the park construction, to promote regional development at the same time as controlling it in line with the future picture that has been drawn of the area around the parks. Development, provided it is healthy development, should not be considered to be at odds with the idea of maintaining a good environment.

**Long-term Plan for Village Improvement**  
Indicated are the rational distribution of villages (duduk) for optimum community formation in Zone-3 areas and a long-term plan for provision of infrastructure and community service facilities needed for village modernization.  
Areas covered: Zone-3 areas, the anticipated populations by the target year (end of Pelita VI) being 14,900 in the case of Borobudur and 17,100 in the case of Prambanan.  
Planning term: 20 years  
Budgeting: On basis of separate local funds  
Undertaken by: UGM and JICA Teams  
See pp. 183-186

**Strategy One**  
In this category are the plans and studies concerning the preservation of the monuments and the environments around them for all time.  
This purpose is to be fully achieved by the following three steps: (1) staged archeological surveys, (2) restoration of monuments, and (3) construction of archeological environment protection areas, or sanctuaries.

**Plan for Archeological Restoration Works**  
The sanctuary and park projects are very closely related to the archeological restoration works. Coordination between the two is explained on the basis of the Ministry of Education and Culture's long-term restoration plans.  
Project area: 16 sites in the Borobudur and Prambanan areas, including those where restoration work is already underway such as Candi Borobudur, Candi Loro Jonggrang, Candi Banyunibo, and Candi Sambisari.  
Budgetary frame: To be based on funds from other sources  
Project term: 15 years  
Undertaken by: Ministry of Education and Culture  
See pp. 79-80

**Site Plan for Design of Optimum Park Frame**  
The first requirement for design of the parks is site planning techniques. Indicated here are such items as the desirable scope of the parks, land use, facility location, environmental standards, and so on.  
Areas covered: Zone-2 areas above  
Planning term: 15 years  
Undertaken by: JICA Team  
See pp. 91-106

**Park Operation Plan**  
This is a manual for operation of the parks once they are completed. When they get into full operation, they will require a staff of 600 persons for surveillance of the monuments, cleaning and maintenance of park grounds, management of park facilities, and provision of services to visitors, which will number about 10,000 on an average day.  
Planning area: Same areas as for Master Plan #12  
Planning term: 10 years (from 1984)  
Undertaken by: JICA Team  
See pp. 161-168

**Designation of Land Use Control Areas (Zone-3)**  
Designated are areas in the vicinity of the parks optimum for a combination of environment preservation and social development.  
Area covered: All of the three villages (desa) of Borobudur, Wanurejo, and Mendut in the Borobudur area with a total area of 10.1km<sup>2</sup> and a total population of 10,100 (1977). All or part of the seven villages of Bugisan, Taj, Tlogu, Kebondalem Kidul, Perang, Bokoharjo, and Terran Martani in the Prambanan area, for a total area of 7.4km<sup>2</sup> with a total population of 12,700 (1977).  
Planning term: 20 years  
Undertaken by: JICA Team  
See pp. 172

**Plan for Substitute Village Development**  
Indicated is all of the work involved in the relocation program for housing and public facilities in connection with the sanctuary and park development projects, including the selection of substitute land, the setting of land compensation conditions, and the acquisition and preparation of the land.  
Project area: 18.2ha of substitute residential land for 273 households (1,330 persons) and 2.9ha of substitute land for public facilities, for a total of 21.1ha in the Borobudur area, and 17.6ha of substitute residential land for 365 households (1,520 persons) and 2.5ha of substitute land for public facilities, for a total of 20.1ha in the Prambanan area.  
Budgetary frame: Borobudur Rp. 1,530 million and Prambanan Rp. 574 million for a total of Rp. 2,104 million.  
Undertaken by: UGM and JICA Teams  
See pp. 187-190

**Archeological Surveys in Connection with Formulation of Master Plan**  
The archeological surveys that were carried out at the same time that the master plan was being formulated this fiscal year have been for the purpose of checking the archeological validity of the master plan. See pp. 75-76 for a description of such surveys, their results, and the conclusions reached on the basis of them with respect to the validity of the master plan.  
Area covered: Analysis of aerial photographs of 30km<sup>2</sup> areas at both Borobudur and Prambanan and test excavation at suspected points.  
Period of survey: 1978  
Undertaken by: JICA Team and Indonesian counterparts.  
See pp. 75-76

**Designation of Archeological Environment Preservation Areas (Zone-1, i.e. sanctuary areas)**  
This zone consists of areas with existing monuments of high historical value that are to be designated as protection areas. Their land is to be nationalized, and the monuments and their surroundings are to be permanently protected as sanctuaries.  
Area covered: In the Borobudur area there will be five such sanctuaries - Borobudur, Pawon, Mendut, Ngawen, and Gunung Ulu - consisting of a total area of 44.8ha, and in the Prambanan area there will be eleven - Loro Jonggrang, Lumung, Butrah, Sewu, Ploasan, Sofwan, Kraton, Ratu Boko, Banyunibo, Sari, Kalasan, and Sambisari - consisting of a total of 55.1ha.  
Planning term: 15 years  
Undertaken by: JICA Team  
See pp. 83-86

**Landscape Plan for Design of Optimum Park Environment**  
Here are indicated the techniques for creation of the park environments, including the design guidelines for basic site work, planting, hard surfaces, outdoor furniture, and so on.  
Areas covered: Zone-2 areas above  
Planning term: 15 years  
Undertaken by: JICA Team  
See pp. 109-126

**Forecast of Future Number of Visitors to the Parks (Market Study)**  
The long-range forecasts indicated here are based on statistical data for the past ten years and the tourist demand projections recently made by PATA for this area. They will serve as tourism promotion goals and have provided a basis for the physical planning and the economic feasibility study.  
Planning term: 15 years  
Undertaken by: JICA Team  
See pp. 207-208

**Setting of Macroframe for Land Use and Population**  
Indicated are the long-term development guidelines for Zone-3 areas from the viewpoints of optimum land use distribution and optimum population accommodation capacity.  
Areas covered: Zone-3 areas  
Planning term: 20 years  
Undertaken by: JICA Team  
See pp. 173-176

**Plan for Provision of Related Social Infrastructure in Connection with the Substitute Village Development Project**  
This is a plan for construction of infrastructure not included in the substitute village development project such as minor roads and streets, water supply and sewage facilities, and electricity and communications facilities as well as construction of educational, medical care, religious, welfare, and other community social service facilities.  
Project area: Zone-3 areas for development of substitute villages.  
Project term: 10 years  
Budgeting: Separate local government funds  
Undertaken by: UGM Team  
See pp. 187-190

**Plan for Detailed Archeological Surveys in Connection with Project Implementation**  
This plan indicates what kinds of archeological surveys will be necessary during the further course of the project.  
Area covered: The construction areas of the sanctuary, park development, and road and bridge development projects during the first 10 years.  
Budgetary frame: Rp. 150 million for the detailed design stage in 1979-80 and Rp. 200 million for the construction stage beginning in 1980, for a total of Rp. 350 million.  
Period of survey: 1979-85  
Undertaken by: JICA Team  
See pp. 77-78

**Plan for Acquisition of Land for Sanctuary Areas**  
Indicated in outline, are the methods, schedule, etc. for the acquisition of land for the purpose of extending the present monument sites to maintain the archeological environments around the monuments and prevent outside development.  
Project area: 3.5ha in the Borobudur area and 10.5ha in the Prambanan area, not including the sanctuary areas within the parks themselves.  
Budgetary frame: Borobudur Rp. 109 million and Prambanan Rp. 259 million for a total of Rp. 368 million  
Project term: 10 years  
Undertaken by: JICA Team  
See pp. 87-89

**Architectural Plan for Design of Optimum Park Facilities**  
Indicated here are the planning methods, facility scale, and design and structural specifications for the park administrative facilities, research facilities, and visitor service facilities, which are to be designed in line with the purposes and functions of the parks.  
Areas covered: Zone-2 areas above  
Planning term: 15 years  
Undertaken by: JICA Team  
See pp. 127-142

**Study of Financial and Economic Feasibility of the Project and Measurement of Its Economic Effects**  
Although this project cannot be easily compared with the normal kind of industrial project because of its very different nature, a maximum effort has nevertheless been made to make an objective assessment of its financial and economic feasibility in terms of the indicators used in economic feasibility studies in general and to diagnose its regional development impact in socioeconomic terms.  
Undertaken by: JICA Team  
See pp. 209-214

**Land Use Control Plan**  
It is necessary to maintain order in land use in order to protect the environment at the same time as promoting social development in areas around the parks. This plan can serve as an administrative manual for land use controls and related administrative guidance.  
Areas covered: Zone-3 areas  
Planning term: 20 years  
Undertaken by: JICA Team  
See pp. 177-180

**Plan for Road and Bridge Development**  
Rerouting and widening of local roads as required by village relocation program, including what bridge construction this will entail. To be undertaken by local authorities.  
Project area: Borobudur area: 5.5km of new roads as well as three bridges  
Prambanan area: 3.0km of new roads and improvement of 3.6km of existing roads  
Project term: 10 years  
Budgetary frame: Borobudur Rp. 1,220 million and Prambanan Rp. 267 million for a total of Rp. 1,487 million  
Undertaken by: UGM and JICA Teams  
See pp. 191-192

**Obligatory Archeological Environmental Impact Assessment**  
Since there are still many unexcavated ruins in the Kedji Basin and on the Kewu Plain dating from the Central Java period, the need has been indicated for obligatory archeological surveys prior to any development in these areas and for other administrative measures for the preservation of historical assets.  
Area covered: Borobudur area: 78.5km<sup>2</sup> area within a radius of 5km of Borobudur Temple.  
Prambanan area: 81.0km<sup>2</sup> square area centering on Kraton Hill.  
Undertaken by: JICA Team  
See pp. 77-78

**Environmental Improvement Works in the Sanctuary Areas**  
Indicated in outline are the works for the preparation of the sanctuary areas, including the establishment of buffer zones for monument preservation inclusive of the newly acquired land and the provision of service facilities for research and tourists.  
Scale of works: 5.1ha in the Borobudur area and 16.0ha in the Prambanan area, for a total of 21.1ha, not including the sanctuary areas within the parks themselves.  
Budgetary frame: Borobudur Rp. 129 million and Prambanan Rp. 511 million, for a total of Rp. 640 million.  
Project term: 10 years  
Undertaken by: JICA Team  
See pp. 87-90

**Plan for Acquisition of Land for Park Sites**  
Indicated here are general descriptions, scales, and cost estimates for each of the four methods of acquisition of park land, i.e. transfer, purchase, compensation, and substitution.  
Project area: Borobudur 65.9ha and Prambanan 52.1ha, for a total of 118.0ha not including sanctuary areas within the parks themselves.  
Budgetary frame: Borobudur Rp. 3,062 million and Prambanan Rp. 1,330 million, for a total of Rp. 4,442 million  
Project term: 10 years  
Undertaken by: JICA Team  
See pp. 143-152

**Strategy Four**  
In this category are the plans and studies concerning preservation of the historical climate around the parks.  
Finally, it is necessary to stress the need to preserve the Javan climate around the parks as a wider concept than preservation of the monuments alone. This is because of a recognition of the fact that the national archeological parks cannot exist in isolation but can only evince their full value as a part of their surroundings, the "Garden of Java".

**Designation of Historical Scenery Preservation Area (Zone-4)**  
This is a wider area than Zone-3 in which areas with high historical scenic value and which will be seen a great deal by visitors will be selected for maintenance and improvement of the scenery and where a system of scenic controls will be introduced to prevent development that might lead to deterioration of the scenery.  
Areas covered: (1) Panoramic view preservation zones  
(2) Zones for preservation of the scenery around monuments  
(3) Roadside scenery preservation zones  
Planning term: 20 years  
Undertaken by: JICA Team  
See pp. 199-202

**Regulation Plan for Preservation of Historical Scenery**  
Indicated are administrative measures for protection of the scenery in historical scenery preservation areas and for prevention of destruction of such scenery by the kind of development activities that are foreseen.  
Areas covered: Zone-4 areas  
Planning term: 20 years  
Undertaken by: JICA Team  
See pp. 203-204

# Project Outline and its Procedure

The total budget of Rp. 15 billion for the first ten years of implementation of the archeological park project has been divided into four project categories in such a way as to be able to attain the goals of the project most effectively. These four categories, which are park construction, sanctuarization, substitute village development, and road and bridge development, are closely related to one another in terms not only of cause and effect but also of time and geographical relationship. In other words, the park construction and sanctuarization require that villages and roads be relocated, and work cannot be started on the park construction until such relocation has been completed.



## Park Project

Park development centering on the Borobudur and Loro Jonggrang temples and construction of archeological museum, research facility, visitor center, and other supplementary facilities for accommodation of growing number of visitors, all in the context of the Ministry of Transportation, Communications, and Tourism's program for tourism development of Central Java.

Development of 65.9ha for the Borobudur park (39.8ha as a special archeological preservation area and 26.1ha as a park facilities area) and 52.1ha for the Prambanan park (23.0ha as special archeological preservation areas and 29.1ha as park facility areas).

JICA Study: 1978-79	
Borobudur	Prambanan
Pawon	Ploasan
Mendut	Sojwan
Ngawen	Ratu Boko
Gumung Ukir	Banyunbo
	Sari
	Kalasan
	Sambisari
See pp. 81-90	

Engineering Study: 1979-80	
Archeological and technical surveys and detailed design stage	
Budgetary frame (million Rp.)	
Archeological survey	31
Technical study	257
Total	288
See pp. 15 and 77-78	

Real Estate Acquisition	
Project scale:	
Borobudur	3.5ha
Prambanan	10.5ha
Budgetary frame (million Rp.)	
Land purchase	168
Compensation	200
Total	368
See p. 8	

Archeological Assessment	
Archeological survey before construction of the sanctuaries.	
Budgetary frame:	
100 million Rp.	
See pp. 77-78	

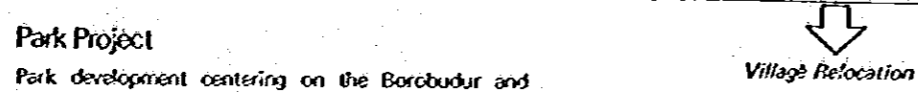
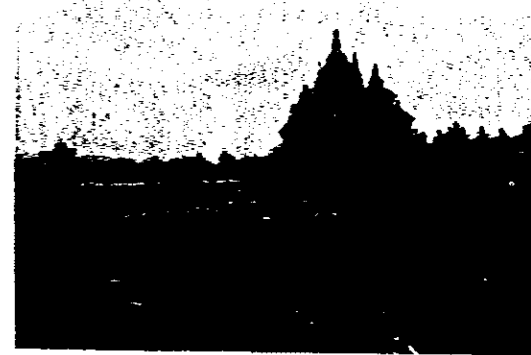
Basic Site Work, Landscape and Building Construction	
Budgetary frame (million Rp.)	
Borobudur	129
Prambanan	511
Total	740
See p. 90	

Operation and Maintenance	
Operation and maintenance of sanctuary areas will be covered by the staff of the parks.	
See pp. 161-168	

## Sanctuary Project

Nationalization of land immediately surrounding existing archeological ruins in the project area and creation within them of a desirable archeological environment in accordance with the Ministry of Education and Culture's policy of protection of archeological ruins.

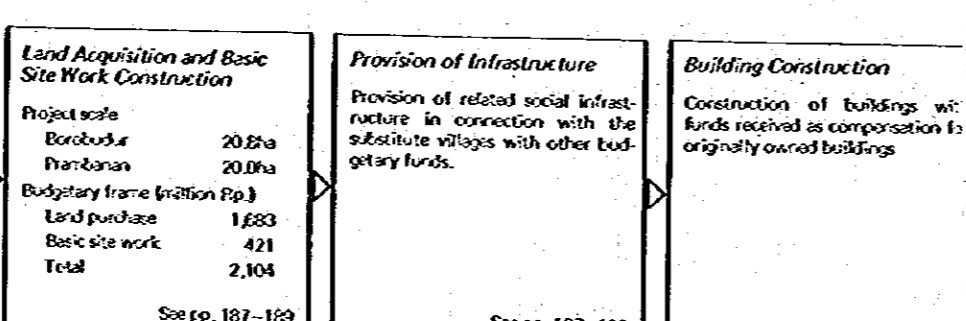
Land acquisition (3.5ha) and environmental improvement (5.1ha) with respect to four Zone-1 designated areas in the Borobudur area and land acquisition (10.5ha) and environmental improvement (16.0ha) with respect to seven Zone-1 designated areas in the Prambanan area.



Village Relocation



Village Relocation



Construction of Substitute Village

UGM Study: 1978-79	
Population (households)	
Borobudur	1,427 (273)
Prambanan	1,474 (350)
See pp. 181-190	

Engineering Study: 1979-80	
Social, archeological and technical surveys and detailed design stage	
Budgetary frame (million Rp.)	
Archeological survey	36
Technical study	90
Total	126
See pp. 15 and 77-78	

Land Acquisition and Basic Site Work Construction	
Project scale	
Borobudur	20.8ha
Prambanan	20.0ha
Budgetary frame (million Rp.)	
Land purchase	1,683
Basic site work	421
Total	2,104
See pp. 187-189	

Provision of Infrastructure	
Provision of related social infrastructure in connection with the substitute villages with other budgetary funds.	
See pp. 187-189	

Building Construction	
Construction of buildings with funds received as compensation to originally owned buildings	
See p. 16	

**Substitute Village Project**  
Provision of substitute land for public facilities and residential purposes for resettlement of residents in connection with the above two projects, serving at the same time as a model for village modernization.

In the Borobudur area, 1,330 people will be resettled, and 2.6ha of substitute land will be provided for public facilities and 18.2ha as substitute residential land. In the Prambanan area, 1,240 people will be resettled, and 2.5ha of substitute land will be provided for public facilities and 17.5ha as substitute residential land.



JICA Study: 1978-79	
Project scale	
New roads	8.5km
Improve roads	7.4km
Bridges	4
See pp. 191-192	

Engineering Study: 1979-80	
Archeological and technical surveys and detailed design stage	
Budgetary frame (million Rp.)	
Archeological survey	22
Technical study	112
Total	134
See pp. 15 and 77-78	

Real Estate Acquisition	
Budgetary frame (million Rp.)	
Borobudur	478
Prambanan	108
Total	586
See pp. 192	

Archeological Assessment	
Archeological survey before construction of the roads.	
Budgetary frame:	
40 million Rp.	
See pp. 77-78	

Construction of Roads and Bridges	
Budgetary frame (million Rp.)	
Roads	409
Bridges	491
Total	900
See pp. 191-192	

**Road and Bridge Project**  
Routing and widening of local roads as required by village relocation program, again to be undertaken by local authorities.

In the Borobudur area: 5.5km of new roads as well as three bridges. In the Prambanan area: 3.0km of new roads and improvement of 3.6km of existing roads as well as one bridge.

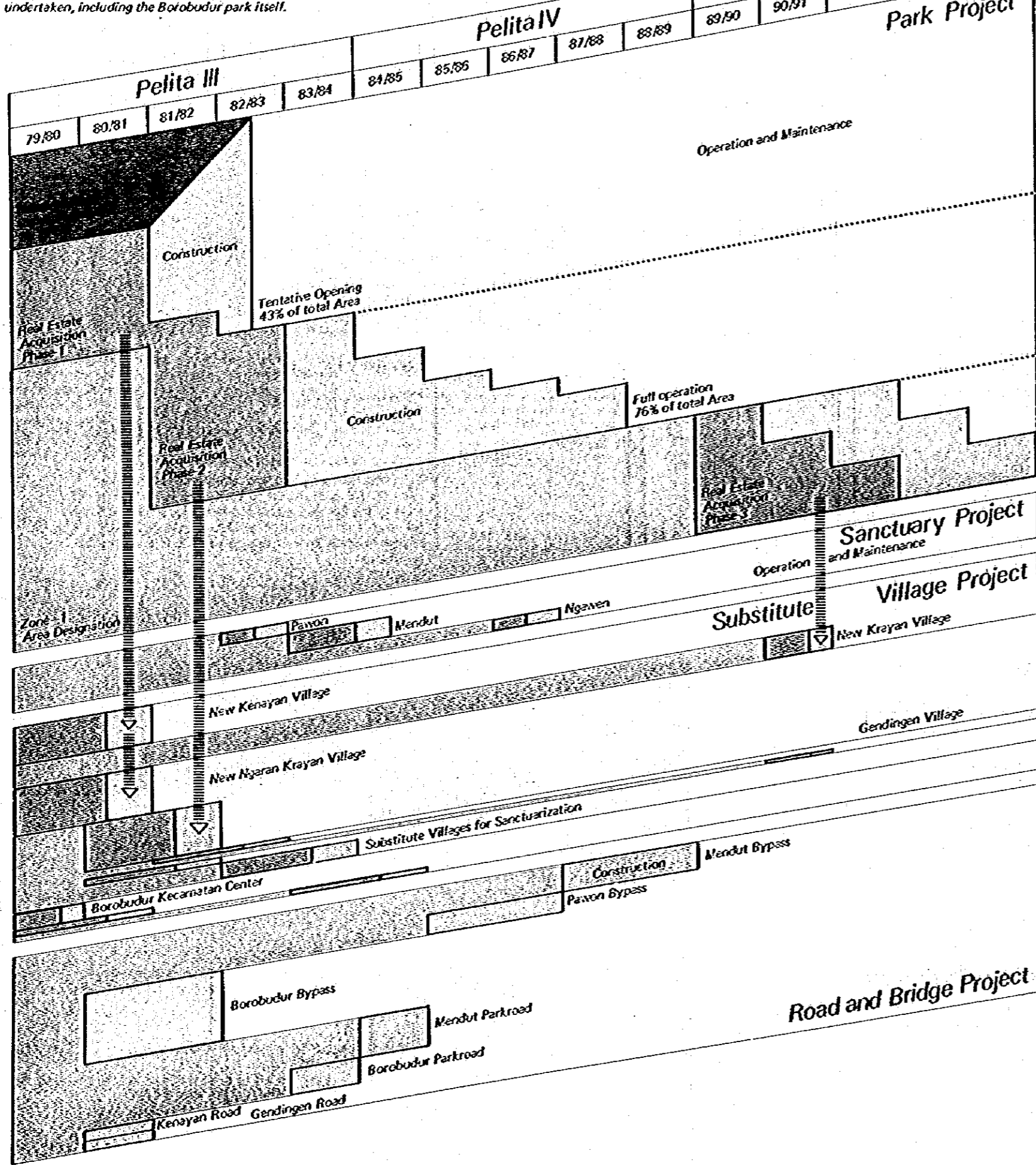


- Notes: (1) The restoration work itself is not included in this project. It will be based instead on separate funding by the Ministry of Education and Welfare.  
(2) Only preparation of substitute land included in this project, water supply, sewage facilities, and other public utilities to be developed by local authorities on the basis of other funds.

# Project Implementation Program : Borobudur

This chart indicates which of the works to be undertaken in the Borobudur area will take place in which year of the overall 15-year period for implementation of such works.  
It gives a good idea of the locational and time relationships between the total of twenty different works to be undertaken, including the Borobudur park itself.

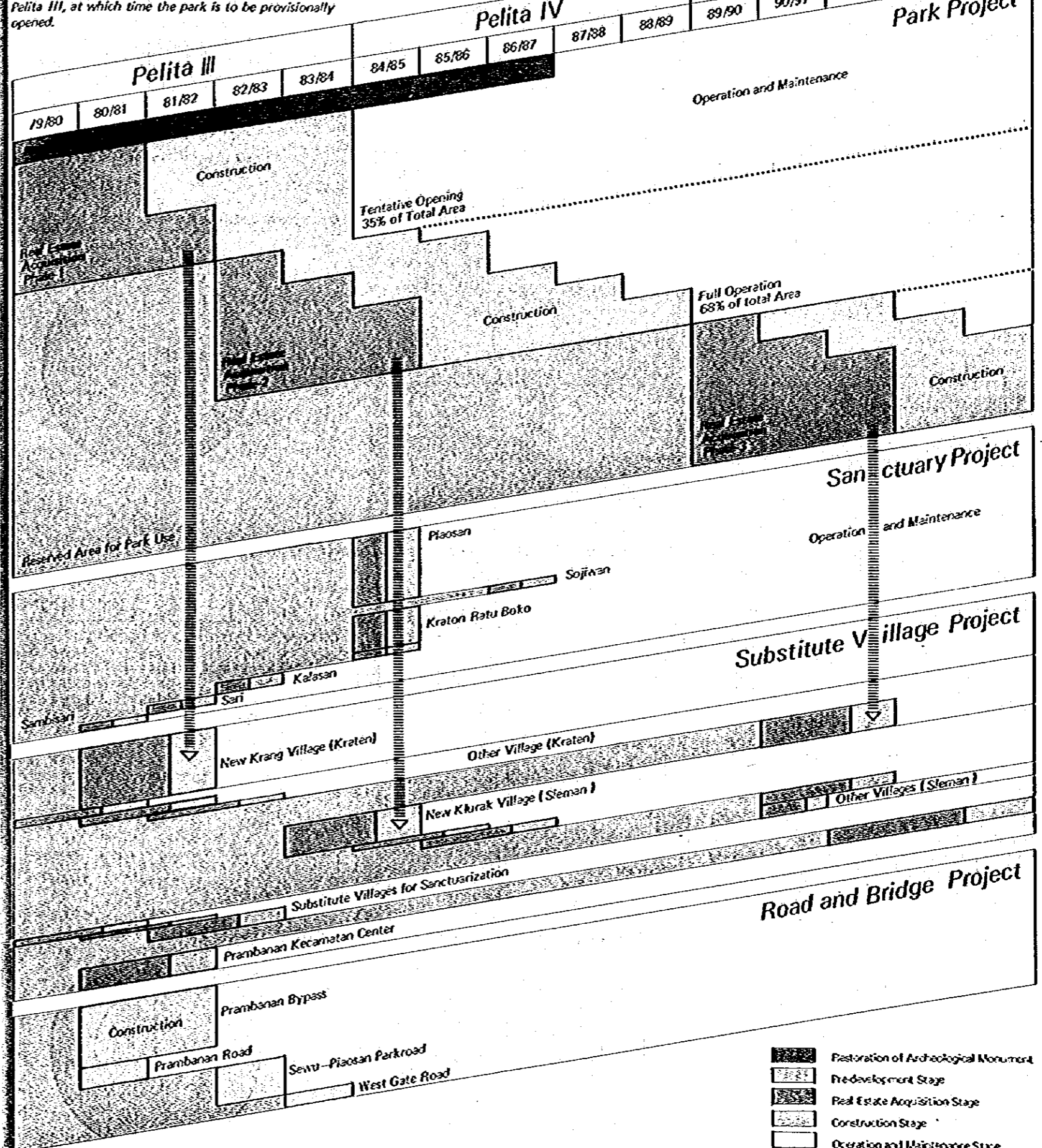
In particular, construction of the bypass and of the substitute villages by 1982 (fiscal), when the park is to be provisionally opened, are necessary conditions for purchase of land for the park site, and the key to steady progress in the park construction is early completion of these works.



# Prambanan

This chart indicates all of the works to be undertaken in the Prambanan area in the same way the preceding chart did those to be undertaken in the Borobudur area.  
As one can see, of the twenty-one works, including the Prambanan park itself, the majority are to take place in the period up to the end of the period covered by Pelita III, at which time the park is to be provisionally opened.

Needless to say, the area and time schedules of the park construction correspond to the rate of increase in the number of visitors.

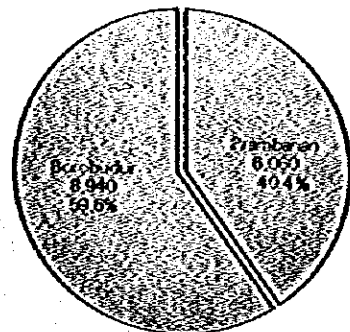


- Restoration of Archeological Monument
- Pre-development Stage
- Real Estate Acquisition Stage
- Construction Stage
- Operation and Maintenance Stage
- Village Mobilization



# Development Budget Allocation

Determination of the scale of development during the first ten years has been one of the chief tasks in the studies for this project, with various alternatives having been presented and considered in the three progress reports to date. In the Draft Final Report the figures of Rp. 8,940 million and Rp. 6,060 million in direct investment costs for the Borobudur and Prambanan areas, respectively, were finally settled upon in talks with the Indonesian side, for a total of Rp. 15,000 million.



## Budgetary Scale Study to Date

The following table summarizes the conclusions reached by the 1976 JICA Plan and subsequent plans and reports regarding the amount of investment that the project will entail, the figure of 15,000 million Rp. (bare minimum) having been settled upon as a result of the latest consultations with the Indonesian Steering Committee.

In making this final decision, it was possible to arrive at a feasible figure by minimizing the scale of land acquisition and postponing all but the most urgent village relocation.

Studies	Budget (Unit: Million Rp.)		
	Budget	Real estate acquisition costs	Other development costs
(1) 1976 JICA Plan	19,447	1,936 (10.0%)	17,511 (90.0%)
(2) 1978 UGM Plan	12,763	6,272 (49.5%)	6,491 (50.5%)
(3) Progress Report (October, 1978) - Optimum Scale	17,213	7,642 (44.4%)	9,571 (55.6%)
- Bare Minimum Scale	14,880	6,277 (42.2%)	8,603 (57.8%)
(4) Interim Report (December, 1978) - Optimum Scale	18,517	9,295 (50.2%)	9,222 (49.8%)
- Bare Minimum Scale	14,975	7,170 (47.9%)	7,805 (52.1%)

## Basis of Cost Estimates

The following are the main items of the project cost estimate conditions:

- The estimates of land acquisition costs and building compensation costs are based on the findings of the UGM Team as reported at the end of November, with the exception of the cost of land acquisition in unsurveyed areas, in which case a figure of Rp. 2,000/m<sup>2</sup> has been assumed.
- The survey and engineering costs are for the urgent archaeological survey, technical surveys and mapping, and detailed design and engineering study.
- The archaeological survey costs have been estimated at 1-15% of construction cost for the different project categories and 10% of construction cost elsewhere.
- The construction costs are based on the unit costs in Indonesia as of July 1978. The cost of archaeological surveys to be carried out prior to construction has been estimated at 3% of net construction cost.

## Development Budget Allocation

The tables below show how the total investment of Rp. 15,000 million in this project as indicated by the Indonesian steering committee can be best distributed.

The distribution between Borobudur and Prambanan is Rp. 8,940 million to Rp. 6,060, or roughly 6:4, the reason being that land prices are 2.2 times higher in the Borobudur area than the Prambanan area. Looking at the distribution from the viewpoint of different items of cost, one sees that the cost of acquisition of land represents 50% and the construction cost just under 43%.

Cost Items	(unit: million Rp.)		
	Borobudur	Prambanan	Total
Survey and design	583.0 (5.9)	567.0 (9.6)	1,100.0 (7.3)
Real estate acquisition	5,178.6 (58.0)	2,321.4 (38.3)	7,500.0 (50.0)
Construction	3,227.8 (36.1)	3,172.2 (52.3)	6,400.0 (42.7)
Total	8,939.4	6,060.6	15,000.0

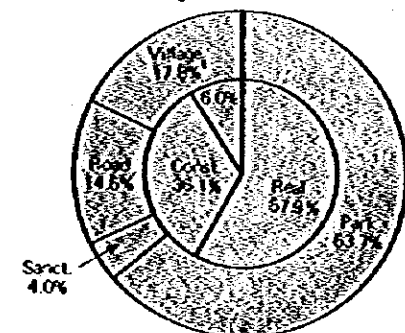
Note: The figure in the parenthesis is the percentage of the total

Project categories	(unit: million Rp.)		
	Borobudur	Prambanan	Total
Park	5,690.1 (63.7)	4,163.5 (68.7)	9,853.6 (65.7)
Sanctuary	361.9 (4.0)	934.2 (15.4)	1,296.1 (8.6)
Substitute village	1,592.7 (17.8)	637.2 (10.5)	2,229.9 (14.9)
Road and bridge	1,294.7 (14.5)	325.7 (5.4)	1,620.4 (10.8)

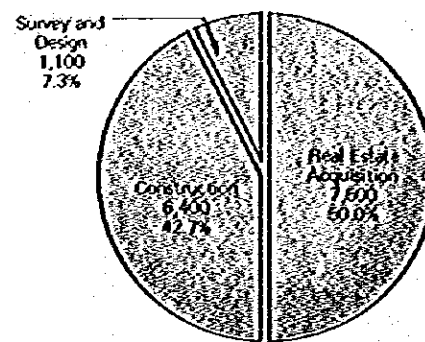
## Breakdown of Development Budget by Cost Items and Project Categories

Cost Items	(unit: million Rp.)				
	Park project	Sanctuary project	Road and bridge project	Substitute village project	Total
<b>Borobudur area:</b>					
Survey and design	271.0	124.0	75.0	63.0	533.0 (6.0)
Real estate acquisition	3,061.9	109.2	477.8	1,529.7	5,178.6 (57.9)
Construction	2,367.2	128.7	741.9	-	3,227.8 (36.1)
Total	5,690.1 (63.7)	361.9 (4.0)	1,294.7 (14.5)	1,592.7 (17.8)	8,939.4
<b>Prambanan area:</b>					
Survey and design	281.0	164.0	59.0	63.0	567.0 (9.4)
Real estate acquisition	1,379.7	258.9	108.6	574.2	2,321.4 (38.3)
Construction	2,502.8	511.3	158.1	-	3,172.2 (52.3)
Total	4,163.5 (68.7)	934.2 (15.4)	325.7 (10.5)	637.2 (5.4)	6,060.6
<b>Borobudur + Prambanan:</b>					
Survey and design	562.0	288.0	134.0	126.0	1,100.0
Real estate acquisition	4,441.6	368.1	586.4	2,103.9	7,500.0
Construction	4,680.0	690.0	900.0	-	6,400.0
Total	9,683.6	1,296.1	1,620.4	2,229.9	15,000.0

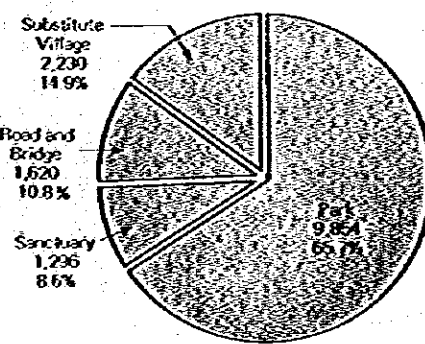
## Development Budget: Borobudur



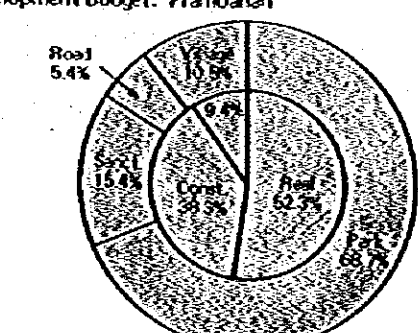
## Development Budget by Cost Items



## Development Budget by Project Categories



## Development Budget: Prambanan



# Distribution of Development Costs Over Time

## Budgetary Schedule by Cost Items

An attempt has been made to distribute the project costs as evenly as possible over the entire period of the project, but the distribution turns out to be rather top-heavy since over 80% of the land acquisition costs will arise in the first four years and because of the need to open the parks provisionally by the end of the period covered by Pelita III. The ratio of overall investment between Pelita III and Pelita IV will be 4:3, and the ratios between them of land acquisition costs and construction costs will be 8:1 and 6:4, respectively. (The breakdown of survey and design costs is Rp. 350 million for archaeological surveys and Rp. 750 for detailed design.)

## Breakdown of Budgetary Schedule by Cost Items

Fiscal years	(unit: million Rp.)			
	Survey and design	Real estate acquisition	Construction	Total
1979-80	450.0	1,134.3	509.3	2,093.6 (14.0)
80-81	450.0	1,297.9	447.0	2,294.9 (15.3)
81-82	200.0*	1,883.7	948.9	3,032.6 (20.2)
82-83	-	1,781.6	956.6	2,744.2 (18.3)
83-84	-	444.5	845.9	1,290.4 (8.6)
1984-85	-	697.4	592.1	1,289.5 (8.6)
85-86	-	90.7	856.5	947.2 (6.3)
86-87	-	30.9	290.6	321.5 (2.1)
87-88	-	33.0	335.2	368.2 (2.5)
88-89	-	-	619.9	619.9 (4.1)
Pelita III total	1,100.0	6,643.0 (83.6)	3,705.7 (57.9)	11,452.7 (76.4)
Pelita IV total	-	852.0 (11.4)	2,694.3 (42.1)	3,546.3 (23.6)
Pelita III + IV	1,100.0	7,500.0	6,400.0	15,000.0

## Budgetary Schedule by Project Categories

The following table shows the investment schedule for the different project categories, survey and engineering costs excluded. The substitute villages will have 86% of their investment in the first four years, and the roads relating to the substitute villages will be built at the same time. Furthermore, 80% of the park construction costs will take place in the first five years, land acquisition costs accounting for 57%.

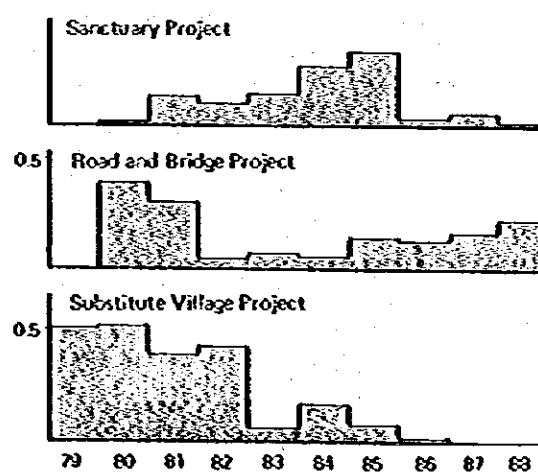
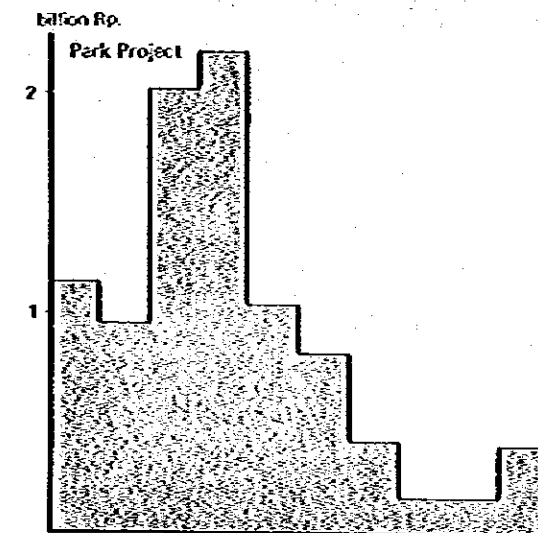
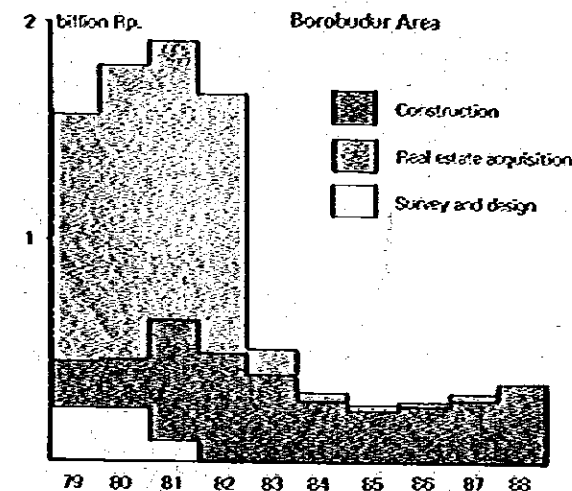
Fiscal years	(unit: million Rp.)				
	Park project	Sanctuary project	Road and bridge project	Substitute village project	Total
1979-80	1,138.0	-	-	-	506.6
80-81	950.8	4.1	383.8	-	506.2
81-82	2,020.9	125.7	298.9	-	365.1
82-83	2,192.2	86.5	45.7	-	419.8
83-84	1,041.8	135.7	62.7	-	50.2
1984-85	815.4	250.2	57.5	-	157.4
85-86	417.9	324.6	134.0	-	70.7
86-87	162.8	22.0	127.8	-	8.9
87-88	162.8	45.4	160.0	-	-
88-89	399.0	4.9	216.0	-	-
Pelita III total	7,343.7 (79.0)	352.0 (34.9)	791.1 (53.2)	-	1,866.9 (88.7)
Pelita IV total	1,957.9 (21.0)	665.1 (65.1)	695.3 (46.8)	-	237.0 (11.3)
Pelita III + IV	9,301.6	1,017.1	1,486.4	-	2,103.9

Note: The figure in the parenthesis is the percentage of the total

## Budgetary Schedule by Cost Items: Borobudur Area

Fiscal years	(unit: million Rp.)			
	Survey and design	Real estate acquisition	Construction	Total
1979-80	225.0	1,134.3	218.1	1,577.4
80-81	225.0	1,355.0	224.3	1,804.3
81-82	83.0*	1,281.0	550.8	1,914.8
82-83	-	1,185.0	488.7	1,673.7
83-84	-	115.1	389.4	504.5
1984-85	-	40.0	264.7	304.7
85-86	-	20.0	227.8	247.8
86-87	-	15.2	242.6	257.8
87-88	-	33.0	271.2	304.2
88-89	-	-	350.2	350.2
Pelita III total	533.0	6,070.4	1,871.3	7,474.7
Pelita IV total	-	108.2	1,356.5	1,464.7
Pelita III + IV	533.0	6,178.6	3,227.8	8,939.4

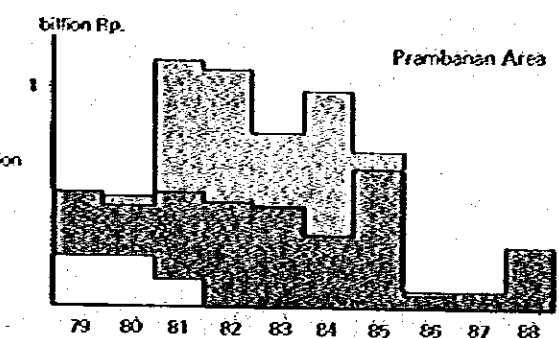
Note: The figure in the parenthesis is the percentage of the total



## Budgetary Schedule by Cost Items: Prambanan Area

Fiscal years	(unit: million Rp.)			
	Survey and design	Real estate acquisition	Construction	Total
1979-80	275.0	-	291.2	566.2
80-81	275.0	42.9	222.7	490.6
81-82	117.0*	602.7	396.1	1,115.8
82-83	-	602.6	467.9	1,070.5
83-84	-	329.4	456.5	785.9
1984-85	-	657.4	327.4	984.8
85-86	-	70.7	628.7	699.4
86-87	-	15.7	48.0	63.7
87-88	-	-	64.0	64.0
88-89	-	-	269.7	269.7
Pelita III total	567.0	1,577.6	1,834.4	3,979.0
Pelita IV total	-	743.8	1,337.8	2,081.6
Pelita III + IV	567.0	2,321.4	3,172.2	6,060.6

Note: The figure in the parenthesis is the percentage of the total



Notes: The figure indicated by the asterisk is for the prior archaeological survey costs in the construction stage. These costs will actually be distributed over the entire period from 1981 to 1989, but they have been lumped together here for the sake of convenience.

The figure in the parenthesis is the percentage of the total

## Budgetary Schedule by Project Categories: Borobudur Area

Fiscal years	(unit: million Rp.)			
	Park project	Sanctuary project	Road and bridge project	Substitute village project
1979-80	846.8	-	-	506.6
80-81	782.0	-	-	506.6
81-82	1,397.6	-	210.2	224.0
82-83	1,390.9	31.1	-	251.7
83-84	350.5	94.0	22.5	37.5
1984-85	169.4	77.8	57.5	-
85-86	113.8	-	134.0	-
86-87	114.8	9.9	127.8	5.3
87-88	124.0	20.2	160.0	-
88-89	129.3	4.9	216.0	-
Pelita III total	4,767.8	125.1	524.4	1,524.4
Pelita IV total	651.3	112.8	695.3	5.3
Pelita III + IV	5,419.1	237.9	1,219.7	1,529.7

## Budgetary Schedule by Project Categories: Prambanan Area

Fiscal years	(unit: million Rp.)			
	Park project	Sanctuary project	Road and bridge project	Substitute village project
1979-80	291.2	-	-	-
80-81	168.8	4.1	92.1	0.6
81-82	623.3	125.7	88.7	161.1
82-83	801.3	55.4	45.7	168.1
83-84	691.3	41.7	40.2	12.7
1984-85	646.0	181.4	-	157.4
85-86	304.1	324.6	-	70.7
86-87	48.0	12.1	-	3.6
87-88	39.8	25.2	-	-
88-89	269.7	-	-	-
Pelita III total	2,575.9	226.9	266.7	342.5
Pelita IV total	1,306.6	643.3	-	231.7
Pelita III + IV	3,882.5	770.2	266.7	574.2

# Real Estate Acquisition Method

The survey regarding land acquisition and various kinds of compensation as a part of the socioeconomic survey undertaken in connection with the village improvement study carried out by the UGM Team and as described below, including the items covered, the methods employed, the time involved, and the results obtained, serves as a basis for the cost estimate of Rp. 7,500 million for land acquisition in the recently determined budget.

## Outline of Basic Survey Regarding Real Estate Acquisition

### Land Price Survey

There have been three kinds of survey results regarding land prices in the two park areas:

- the socioeconomic survey map of January 1977 by the UGM Team
- the UGM Consultative Report of November 1978
- the Tentative Interim Report of February 1979

Naturally, the latest data (shown in the land price maps below) has been relied upon.

### Land and Building Ownership Survey

The situation with respect to ownership has been determined on the basis of the Socioeconomic Survey Report of 1977 by the UGM Team and the Consultative Report of November 1978 by the same team, which contains the results of local questionnaires.

### Surveying of Land Area

The figures used for land area are those as measured by the JICA Team with planimeter on maps on a scale 1:2,000 prepared in August 1978.

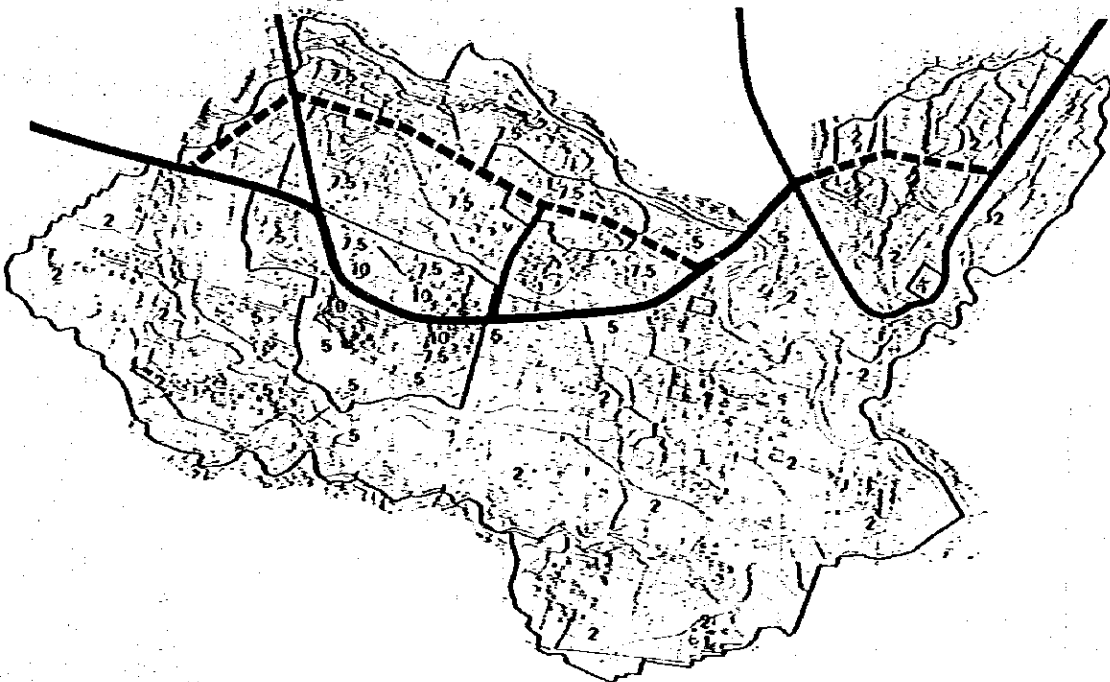
### Survey of Buildings

The structures and durability of buildings have been checked on the basis of the local survey undertaken by the UGM Team, and as a result the following three evaluation standards have been set for building compensation:

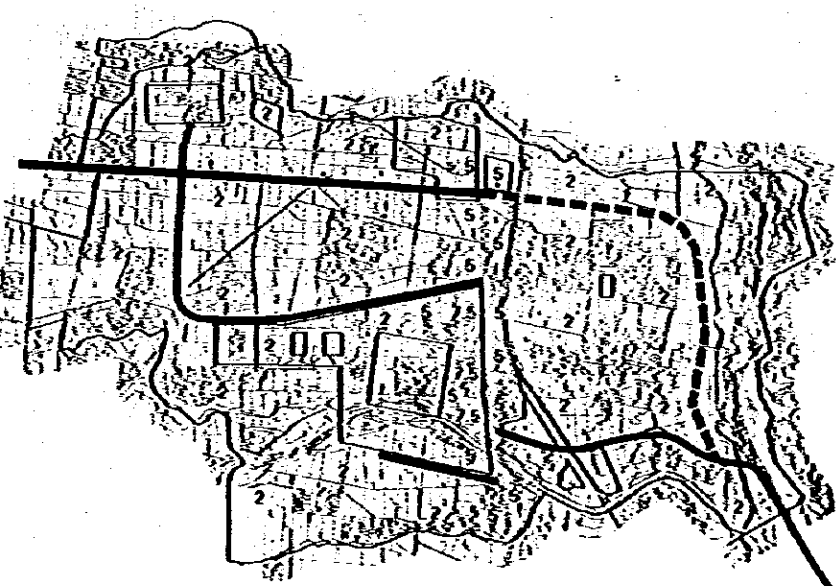
- Permanent structures @30,000 Rp./m<sup>2</sup>
- Semi-permanent structures @20,000 Rp./m<sup>2</sup>
- Temporary structures @15,000 Rp./m<sup>2</sup>

The figures for floor space were obtained from the 1:2,000 maps as described above rather than having been actually measured.

Land Price Map: Borobudur Area



Land Price Map: Prambanan Area



(Unit: 1,000 Rp./m<sup>2</sup>)

## Real Estate Acquisition Technics

### Methods of Real Estate Acquisition Suggested by UGM Team

The following are the methods and scope of the real estate acquisition necessitated by the sanctuary, park and road projects as tentatively set by the UGM Team on the basis of detailed study.

(1) All monument sites, including restoration yards represent nationally owned land that is to be transferred to the control of the Park Authority and is therefore not involved in the land acquisition program. In the case of Candi Borobudur they are presently under the ownership or control of BPCB, but all the rest are under the control of the Archeological Bureau of the Ministry of Education and Culture.

(2) Offices of government agencies and present tourist facility sites are to be transferred to new sites within the parks on the basis of the park master plans and are therefore not involved in the land acquisition program.

(3) Since substitute roads, water courses, etc. are to be provided for roads, rivers, and public utility sites included within the designated limits of the parks, such land will also be excluded from the land acquisition program.

(4) Local government offices, public markets, schools and other public facilities within the designated limits of the parks will be transferred to village centers in Zone-3 areas formed from private farmland purchase for that purpose as substitute areas. Furthermore, the buildings themselves will be assessed for the purpose of providing monetary compensation for them. However, the sites of the two private schools in the Borobudur area will be acquired by purchase.

(5) Similarly, residential sites within the park limits will be replaced by substitute residential sites on private farmland purchased for that purpose in Zone-3 areas with the same kind of real estate assessment for compensation payments for the homes themselves.

(6) As for vacant land within residential sites (land owned by absentee landlords and dukuh commons), it will be acquired by purchase.

(7) Private farmland within the designated limits of the parks will be acquired by purchase, and public farmland within the limits of the Prambanan park will be replaced with private farmland purchased in Zone-3.

(8) In connection with village relocation, substitute land will be provided for graveyards, and some compensation will be paid to those with rights to them.

The above conditions do not exclude some change of revision on the basis of thorough review on the part of both the project entity and those whose interests are at stake. They are meant to serve here as tentative basic conditions for estimating project costs.



## Real Estate Acquisition Program in General

### Scale of Real Estate Acquisition

The population living on the land that is to be acquired during Pelita III and Pelita IV is 2,800 persons, or 640 households, which represents 12% of the total population of Zone-3 areas. The area of the land to be acquired is 110ha, the breakdown being: public facility sites, 8.4%; residential sites, 33.2%; and farmland, 68.4%.

Items	Borobudur	Prambanan	Total
Population	1,329	1,473	2,802
No. of households	273	368	639
Total land to be acquired (ha)	55.82	55.28	111.10
(1) Public facility area	4.90	4.40	9.30
(2) Residential area	21.05	15.90	36.95
(3) Agricultural area	29.87	34.98	64.85

### Scale of Real Estate Acquisition by Projects

The following table is based on application of the methods of real estate acquisition discussed in the preceding section, the breakdown of the total of 118ha by project being: 92ha, or 78%, for the park project and 13ha, or 11%, each for the sanctuary and road projects. Of the total, 68ha represents purchase of original land, and 50ha purchase of substitute land. The number of households to be involved in the relocation program is 702.

Items	Park project	Sanctuary project	Road project
Original land acquisition:			
(1) Purchase of privately owned agricultural land (ha)	36.70	8.41	12.05
(2) Purchase of privately owned open space within residential area (ha)	9.04	—	—
(3) Purchase of residential area beside road (ha)	—	—	1.36
Subtotal	45.74	8.41	13.41
Substitute land acquisition:			
(4) Purchase of land for public facility site (ha)	6.35	—	—
(5) Purchase of land for residential area (ha)	31.77	4.72	—
(6) Purchase of land for change with publicly owned agricultural land (ha)	7.69	—	—
Subtotal	45.81	4.72	—
Building compensation:			
(7) Compensation of public facility (m <sup>2</sup> )	12,914	—	—
(8) Compensation of private housing (unit)	602	100	—

### Unit Price of Land to Be Acquired

The following table gives the average prices for different types of land as based on the land price survey data of the preceding section for the purpose of estimating the cost of the land acquisition program. As one can see, the prices in the Borobudur area are triple those in the Prambanan area. The average compensation payment for homes is estimated at Rp. 2,224,000.

Items	Borobudur	Prambanan
Unit price of original land:		
(1) Privately owned agricultural land	6,140	2,000
(2) Privately owned open space within residential area	7,500	3,130
(3) Residential area beside road	7,350	2,000
Unit price of substitute land:		
(4) For public facility site	8,000	5,500
(5) For residential area	7,250	2,500
(6) For agricultural land	non	2,000

## Further Study Required

### Appropriate Conditions and Fairness of Compensation

The method of substitution of residential areas determined by the UGM Team takes into consideration increase in the amount of land. There is, however, some variation in the amount of increase depending on the suitable household density of the particular area. As for the relative value of the substitute real estate in comparison to the original real estate, in the case of Prambanan there is a decline of 24-32%, whereas in the case of Borobudur there is an increase of 35-55%.

Items	Borobudur		Prambanan	
	Dukuh Kenayan	Dukuh Ngaran	Dukuh Karang	Dukuh Klurak
Average property per household before relocation:				
(1) Area (m <sup>2</sup> )	394	458	333	299
(2) Unit price of land (Rp./m <sup>2</sup> )	10,000	7,500	5,500	5,500
Average property per household after relocation:				
(3) Area (m <sup>2</sup> )	667	667	500	500
(4) Unit price of land (Rp./m <sup>2</sup> )	8,000	8,000	2,500	2,500
(3) ÷ (1)	1.69	1.45	1.50	1.67
Real estate index (1) x (2)				
(3) x (4)	1.35	1.55	0.68	0.76

Considering this imbalance, it will be necessary to adjust the amounts of increase in land and real estate value in order to set more equitable compensation conditions from the standpoint of both the government and those whose rights are concerned.

### Ongoing Detailed Survey of Land and Buildings

There is an urgent need to obtain more precise survey information for implementation of the land and building acquisition program during the coming fiscal year. This will entail public relations efforts in advance with respect to the residents that will be affected by the program, accurate and fair surveying of the land and buildings in question by personnel with proper qualifications and authority, and investigation of the status of rights on the basis of local real estate registers, local land tax ledgers, and other documents. The following are the items that will have to be covered in the survey:

- (1) All entries in land registers, including the location, type, and dimensions of the land in question.
- (2) The registered owner of the land.
- (3) Entries concerning buildings, including location, address, number, type, and owner.
- (4) Actual measurement of buildings and assessment of their value on the basis of structure, floor space, durability, auxiliary facilities, etc.
- (5) Family survey.
- (6) Other items relating to compensation, including water rights, farming rights, and rights of use of common land.

### Land Price Controls

The largest item of cost in the present project is that of land acquisition, and in the past few years, especially the past year the rate of increase in land prices in the project area has been very high, obviously owing to the very fact that progress is being made toward realization of the project. This skyrocketing of land prices is a financial phenomenon rather than an economic one in that there is no accompanying change in the social value of the land. In order to cope with this situation, it is necessary to launch a fair property assessment program and at the same time formulate and publicize as soon as possible a relocation program that will not cause those that will have to resettle unnecessary loss or disadvantage.

## Property Assessment

Fairness of property assessment means fairness both to those that have to relocate and to taxpayers, who have to foot the bill. In making final decisions about the prices, all of the three following specific basic approaches should be taken into account:

### (1) Cost Approach

This approach is assessment of the cost of acquiring and constructing substitute property practically equivalent to the original property in terms of its state and conditions. Needless to say, the age and quality of the buildings is one of the factors to be taken into consideration.

### (2) Income Approach

This approach is that of determining the value of the property on the basis of the amount of income that it yields and pertains particularly to commercial, industrial, and agricultural land.

### (3) Market Approach

This approach is that of determining the value of a property through comparison with that of another property at another location that is in just about the same state or condition and that is being used for the same purposes.

In any case, the importance of fair assessment cannot be overemphasized from the standpoint of effective resource utilization and avoidance of economic loss.

## Sound Relocation Program

One of the factors causing a rise in land prices is anxiety on the part of residents living on the land that is to be required for the project that they are going to be deprived of their land and kicked out of the area. It is only a natural defensive psychology for them to try to get as much as they can in the process in order to cope with an uncertain future, as pointed out by sociologists on the UGM team. Hence the urgent need to formulate, finalize, and publicize a relocation program that will minimize the disadvantages that they will have to face in order to do away with unnecessary anxiety on their part.

Needless to say, such a program should be formulated by experts well acquainted with local conditions. At the present time, however, at least the following point can be recommended for inclusion:

- (1) Who will be qualified for protection by the relocation program?
- (2) Equitable determination of property values.
- (3) When, where, and by what procedure is the relocation to be carried out?
- (4) A decent, safe, and sanitary new place to live.
- (5) Provision of information on where to go to have one's questions about the relocation program answered.

What is important in this respect is that the local residents be convinced of the fact that the relocation program is in fact a village improvement program.

# Whole Project Catalog: Borobudur

In the tables and map below are indicated the contents in outline, the scale, development cost, year, and location of all of the works to be carried out in the Borobudur area during the ten-year period covered by Pelita III and IV. Detailed information on the different works can be referred to with the following Index.

## Park Project List

Cost items	Development cost (million Rp.)	Remarks
<b>Real estate acquisition:</b>		
(1) Purchase of privately owned agricultural land	1,583.1	22.5ha
(2) Purchase of privately owned open space within residential area	512.3	6.8ha
(3) Compensation of public facility	237.6	8,400m <sup>2</sup>
(4) Compensation of private housing	540.7	237 houses
(5) Acquisition of other real property	188.2	2 private schools
<b>Subtotal</b>	<b>3,061.9</b>	
<b>Land development:</b>		
(6) Basic site work	213.1	
(7) Landscape construction	810.1	
(8) Utilities construction	325.0	
<b>Subtotal</b>	<b>1,348.2</b>	
<b>Facility construction:</b>		
(9) Borobudur archeological museum	262.8	1,800m <sup>2</sup>
(10) Borobudur archeological conservation center	139.2	1,200m <sup>2</sup>
(11) Guest house	176.8	1,300m <sup>2</sup>
(12) Operational facilities	281.8	2,400m <sup>2</sup>
(13) Service facilities	148.4	2,000m <sup>2</sup>
<b>Subtotal</b>	<b>1,009.0</b>	
<b>Total</b>	<b>5,419.1</b>	

## Outline of Project by Categories

Project categories	No. of project components	Development cost (million Rp.)	Percentage of total cost
Park	1	5,419.1	64.5
Sanctuaries	5	237.9	2.8
Roads	7	737.7	8.8
Bridges	3	462.0	5.7
Substitute villages	5	1,529.7	18.2
<b>Total</b>	<b>21</b>	<b>8,406.4</b>	

Note: Each development cost excludes survey and engineering costs

## Sanctuary Project List

Code no.	Project title	Area requirement (unit: 100m <sup>2</sup> )			Development costs (million Rp.)			Development year
		Designated land	Government owned land	Additional land to be acquired	Real estate acquisition	Construction	Total	
B-01	Candi Borobudur	3,978	1,630	2,348				1979-86 1982-83 1984-85 1986-87 1988
B-02	Candi Pawon	100	10	90	30.0	25.8	55.8	
B-03	Candi Mendut	272	97	175	66.0	77.8	143.8	
B-04	Candi Ngawen	108	23	85	13.2	20.2	33.4	
B-05	Candi Gunung Ukir	25	25	-	-	4.9	4.9	
<b>Total</b>		<b>4,483</b>	<b>1,785</b>	<b>2,698</b>	<b>109.2</b>	<b>128.7</b>	<b>237.9</b>	

Notes: (1) Real estate acquisition costs include farmland acquisition and building compensation costs within designated area and excluding substitute land acquisition cost.  
(2) Construction costs include basic site work, landscaping and auxiliary facility construction only, and excluding restoration costs of candi itself.

## Road Project List

Code no.	Project title	Category	Length (m)	Planned ROW (m)	Type of construction	Development costs (million Rp.)			Development year
						Land acquisition	Construction	Total	
B-06	Mendut bypass	Regional road	1,100	15	New	33.0	89.0	122.0	1987-88
B-07	Pawon bypass	Regional road	800	15	Improve	20.0	13.8	33.8	
B-08	Borobudur bypass	Regional road	2,750	15	New	309.4	110.9	420.3	1980-81
B-09	Mendut parkroad	Excursion road	2,000	12	Improve	40.0	17.5	57.5	
B-10	Borobudur parkroad	Excursion road	1,050	15	Improve	9.4	13.1	22.5	1983
B-11	Kenayan road	Village road	500	12	New	30.0	9.3	39.3	1990
B-12	Gendingan road	Village road	1,100	6	New	36.0	6.3	42.3	1990
<b>Total</b>			<b>9,300</b>	<b>6</b>		<b>477.8</b>	<b>250.9</b>	<b>737.7</b>	

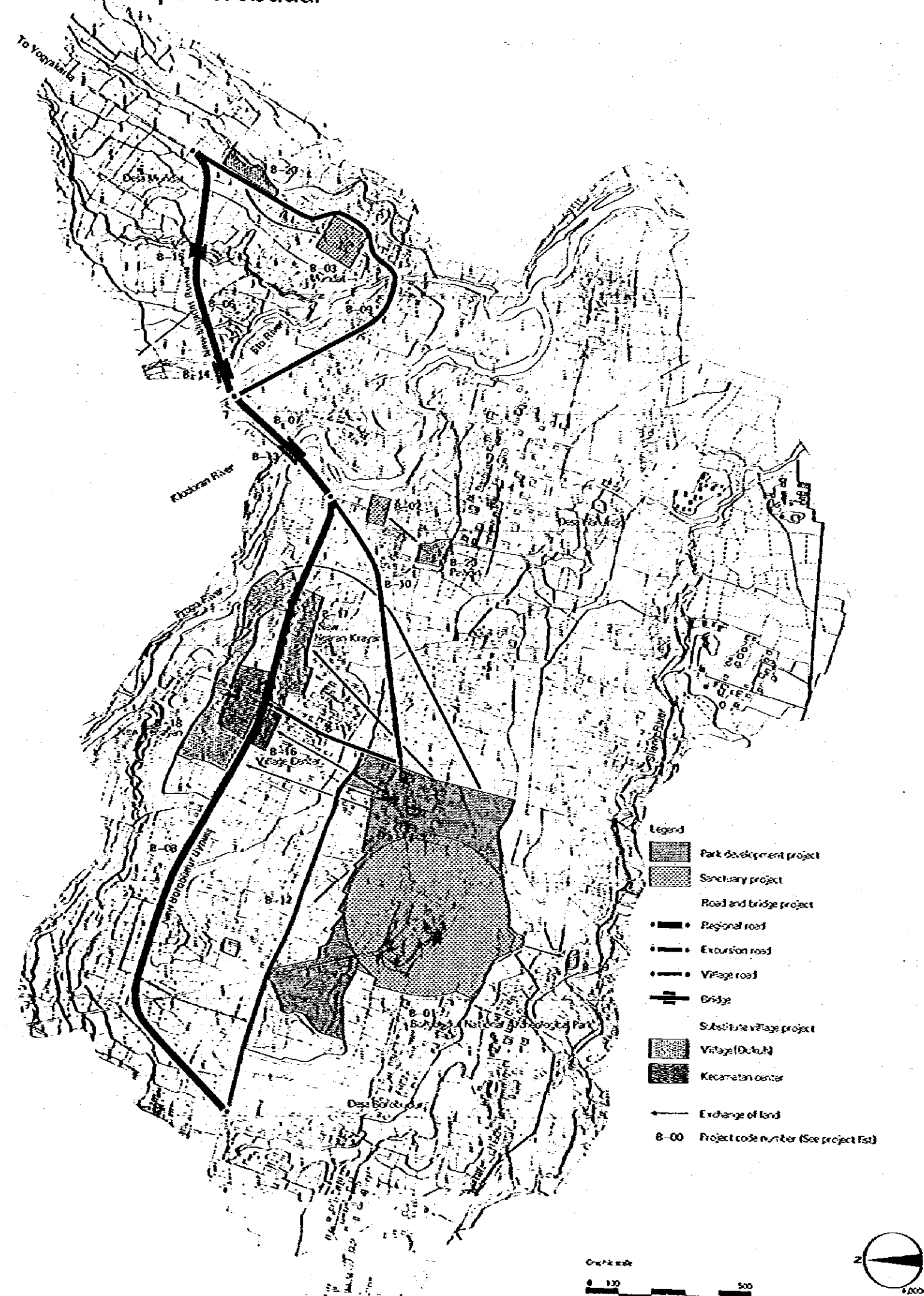
## Bridge Project List

Code no.	Project title	Route	Structure type	Length (m)	Width (m)	Type of construction	Construction cost (million Rp.)	Development year
B-13	Praga bridge	Pawon bypass	PC box cantilever	75	8	New	228.0	1985-86
B-14	New Ero bridge 1	Mendut bypass	PC composite	75	8	New	190.0	1987-88
B-15	New Ero bridge 2	Mendut bypass	PC composite	75	8	New	64.0	1987-88
P-16	Gatak bridge	Prambanan road	RC slab	10	8	Improve	9.0	1981
<b>Total</b>							<b>491.0</b>	

## Substitute Village Project List

Code no.	Project title	Population	No. of households	Area (ha)	Development cost (million Rp.)	Development year
B-16	Borobudur Kecamatan center	-	-	-	-	-
B-17	New Kenayan village	400	66	2.6	211.2	1979-80
B-18	New Ngaran Krayan village	734	168	4.4	352.0	1979-80
B-19	Other substitute villages	15	3	11.2	896.0	1979-81
B-20	Substitute villages for sanctuarization	180	36	0.2	11.0	1982
<b>Total</b>		<b>1,329</b>	<b>273</b>	<b>20.8</b>	<b>1,529.7</b>	<b>1980-83</b>

## Project Location Map: Borobudur



# Whole Project Catalog: Prambanan

In the tables and map below are indicated the contents in outline, the scale, development cost, year, and location of all of the works to be carried out in the Prambanan area during the ten-year period covered by Pelita III and IV. Detailed information on the different works can be referred to with the following index.

## Park Project List

Cost items	Development cost (million Rp.)	Remarks
<b>Real estate acquisition:</b>		
(1) Purchase of privately owned agricultural land	284.0	14.2ha
(2) Purchase of privately owned open space within residential area	69.2	2.2ha
(3) Compensation of publicly owned agricultural land	153.8	7.7ha
(4) Compensation of public facility	85.4	4,500m <sup>2</sup>
(5) Compensation of private housing	770.9	303 houses
(6) Acquisition of other real property	16.4	Grave yard
<b>Subtotal</b>	<b>1,379.7</b>	
<b>Land development:</b>		
(7) Basic site work	456.1	
(8) Landscape construction	620.7	
(9) Utilities construction	335.0	
<b>Subtotal</b>	<b>1,411.8</b>	
<b>Facility construction:</b>		
(10) Ramayana theater	512.0	4,400m <sup>2</sup>
(11) Prambanan archeological museum	131.4	900m <sup>2</sup>
(12) Archeological site office	119.0	1,000m <sup>2</sup>
(13) Operational facilities	217.0	1,800m <sup>2</sup>
(14) Service facilities	111.6	1,600m <sup>2</sup>
<b>Subtotal</b>	<b>1,091.0</b>	
<b>Total</b>	<b>3,882.5</b>	

## Outline of Project by Categories

Project categories	No. of project components	Development cost (million Rp.)	Percentage of total cost
Park	1	3,882.5	70.7
Sanctuary	11	770.2	14.0
Road	4	257.7	4.7
Bridge	1	9.0	0.2
Substitute village	5	574.2	10.4
<b>Total</b>	<b>22</b>	<b>5,493.6</b>	

Note: Each development cost excludes survey and engineering costs

## Sanctuary Project List

Code no.	Project title	Area requirement (unit: 100m <sup>2</sup> )			Development costs (million Rp.)			Development year
		Designated land	Government owned land	Additional land to be acquired	Real estate acquisition	Construction	Total	
P-01	Candi Loro Jonggrang	1,521	440	1,081				1979-88
P-02	Candi Lumbrung	125	30	95				1982-83
P-03	Candi Butrah	100	20	80				1982-83
P-04	Candi Sewu	638	330	308				1983-84
P-05	Candi Plaosan	770	212	558	145.6	165.7	311.3	1983-84
P-06	Candi Sojwan	98	24	74	14.8	25.2	40.0	1986-87
P-07	Kraton Ratu Boko	1,860	180	150*	29.9	128.3	158.2	1984-85
P-08	Candi Banyunibo	102	38	64	11.0	30.6	41.6	1985-86
P-09	Candi Sri	100	19	81	17.0	20.3	37.3	1981-82
P-10	Candi Kalasan	145	47	98	35.6	41.7	77.3	1982-83
P-11	Candi Sambisari	50	25	25	5.0	99.5	104.5	1980-81
<b>Total</b>		<b>5,509</b>	<b>1,365</b>	<b>2,614*</b>	<b>258.9</b>	<b>511.3</b>	<b>770.2</b>	

Notes: \* Land acquisition during 10-year period

- (1) Real estate acquisition costs include farmland acquisition and building compensation costs within designated area and excluding substitute land acquisition cost.  
 (2) Construction costs include basic site work, landscaping and auxiliary facility construction only, and excluding restoration costs of candi itself.

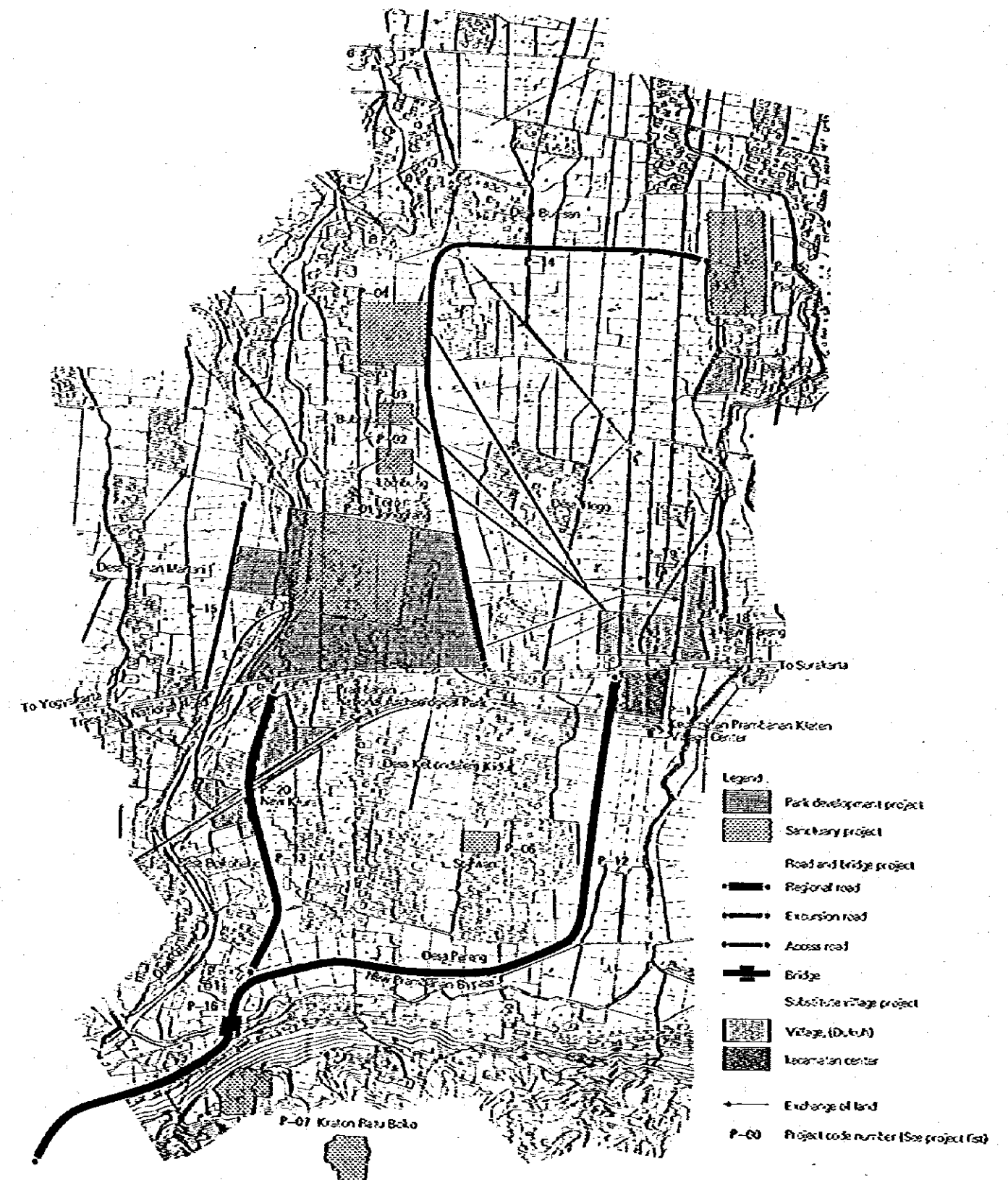
## Road Project List

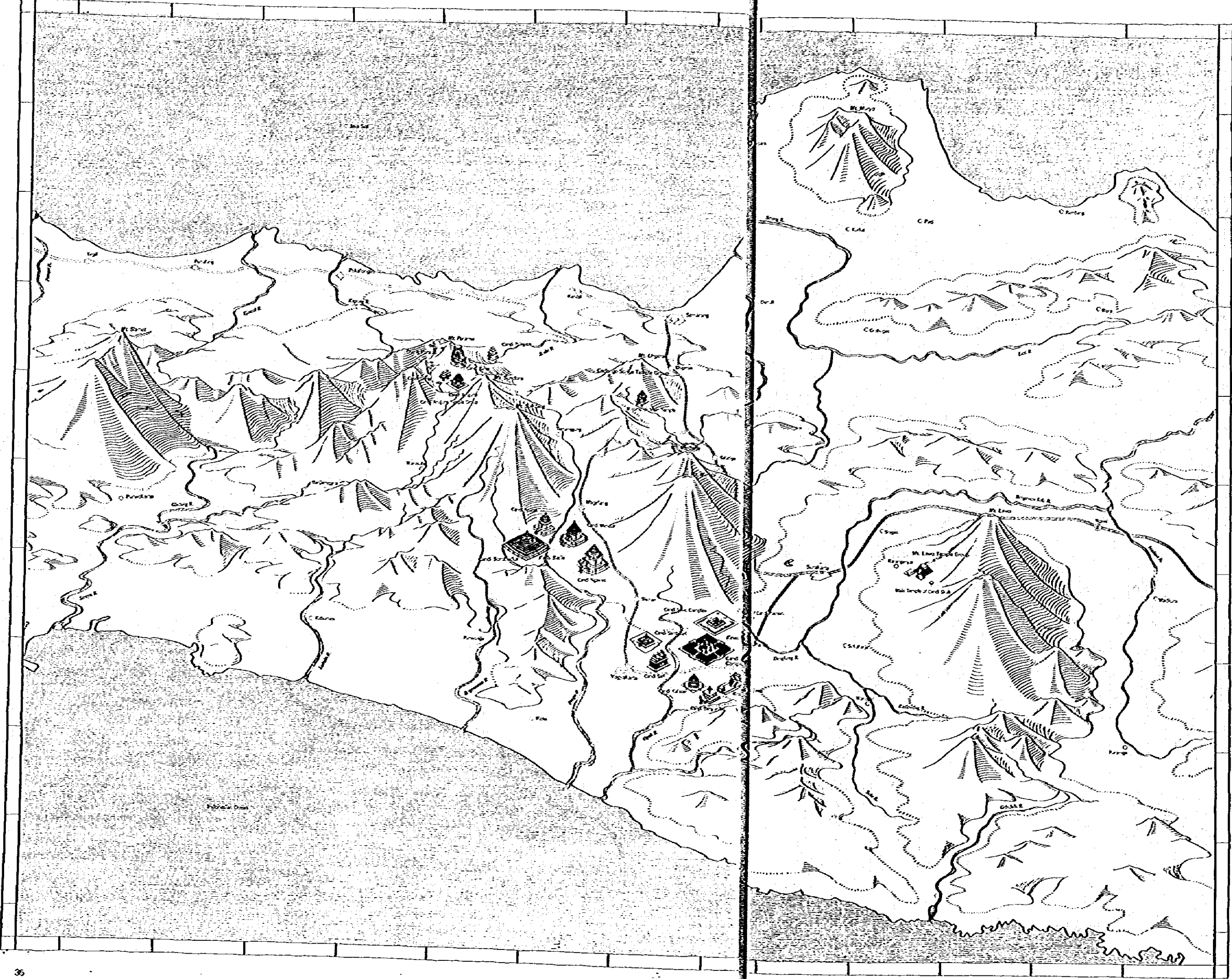
Code no.	Project title	Category	Length (m)	Planned ROW (m)	Type of construction	Development costs (million Rp.)			Development year
						Real estate acquisition	Construction	Total	
P-12	Prambanan bypass	Regional road	2,400	15	New	72.0	87.3	159.3	1980-81
P-13	Prambanan road	Regional road	1,100	12	Improve	2.2	10.3	12.5	1980
P-14	Sewu-Plaosan parkroad	Excursion road	2,550	12	Improve	20.0	25.7	45.7	1982
P-15	West gate road	Access road	550	12	New	14.4	25.8	40.2	1983
<b>Total</b>			<b>6,600</b>			<b>108.6</b>	<b>149.1</b>	<b>257.7</b>	

## Substitute Village Project List

Code no.	Project title	Population	No. of households	Area (ha)	Development cost (million Rp.)	Development year
P-17	Prambanan Kecamatan center	-	-	-	-	-
P-18	New Krang village (Kraton side)	504	150	2.5	136.4	1980-81
P-19	Other substitute village (Kraton side)	180	45	7.5	178.0	1980-81
P-20	New Klurak village (Selaman side)	542	108	2.3	60.0	1979-82
P-21	Substitute villages for sanctuarization	190	47	5.4	141.3	1983-86
<b>Total</b>		<b>1,236</b>	<b>350</b>	<b>20.0</b>	<b>574.2</b>	

## Project Location Map: Prambanan





# 5 Historic Spots in Mid-Java

Central Java was the stage of the culmination of Hindu-Java art in the period extending from the second half of the 6th century A.D. to the beginning of the 10th century. Ruins of the religious architecture representative of this art, known as *candi*, are to be found in abundance in five areas of central Java. The following are descriptions of these areas in the form of excerpts from tourist guides put out by Pariwisata and local tourist offices.

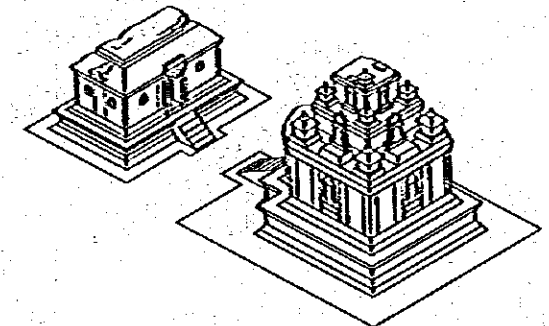
## Dieng Plateau: Mists and Mysteries

Dieng, a volcanic plateau some 2,000m above sea level, is the site of a number of 8th century Shivaite Hindu temple groups. The rim of the volcano apparently collapsed many ages ago, forming a marshy plain over the old crater. Here the temples stand, not far from placid lakes, bubbling geysers and pungent sulphur fumes pouring out of the earth. The plain was once drained by an underground tunnel (the remains of which can still be seen) and seems to have been the site of a temple city whose population consisted mainly of priests, temple attendants and visiting pilgrims.

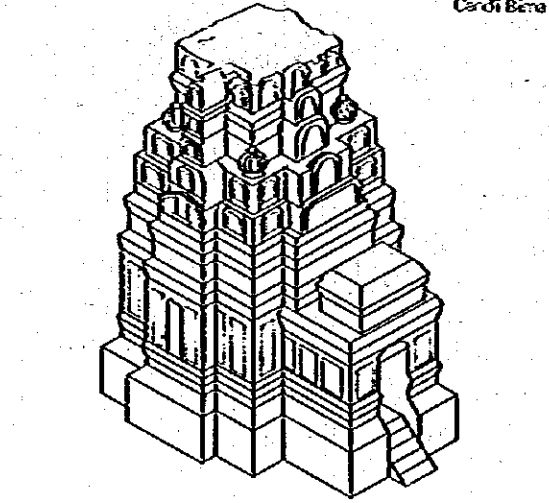
All the standing temples have been named after the Pandava heroes of the Hindu Mahabharata epic. Scholars generally assume that these names were given to the temples by the local people several centuries after they had been erected. The temples are smaller and simpler in ornamentation than those in southern Central Java. Eight temples, perhaps a third of the original number, have been partially restored. Of special note are the Bima temple in the south and the group in the centre: Semar, Arjuna, Srikanthi, Pundarawa and Sembadra. The group on the western side of the plateau has also been partially restored.

Traces of a palace can be seen near the centre of the plain, east of the Semar and Arjuna temples. Further to the west, but now covered by a mushroom plantation, are the ruins of a monastery.

Close to Lake Wara (Coloured Lake) on the south-eastern edge of the plateau is the Semar Cave, a holy spot where Javanese come to meditate. There are pleasant paths leading round the lake. Shady trees and grassy banks make this an ideal picnic spot.



Candi Bima



Candi Arjuna and Candi Semar

## Gedung Songo: Sacred Spot

This impressive Shivaite Hindu temple group stands on the slopes of Mt. Ungaran, about 80km north of Yogyakarta. The temples date from the 8-9th century, and are similar to those on the Dieng plateau, although more ornately decorated. Several are in a good state of preservation.

Unlike the Dieng temples, which are clustered in groups on a marshy plain, the Gedung Songo temples stand on the peaks of six hillocks commanding a magnificent panorama of the Central Javanese Plain. The view sweeps south to the volcanoes Mt. Merapi and Mt. Merbabu, and east as far as Mt. Lawu.

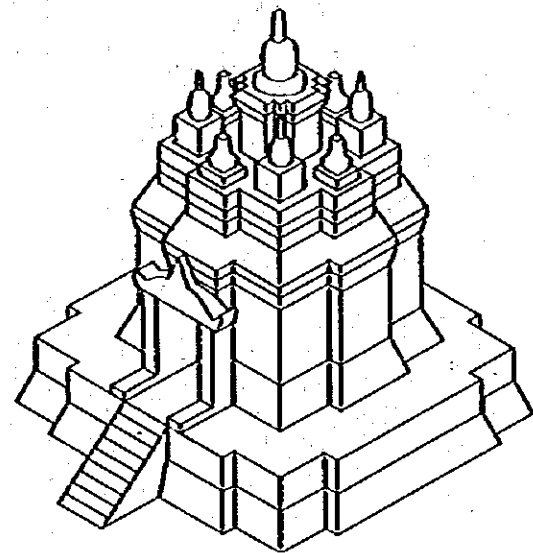
There are nine temples in the complex, some consisting of more than one edifice, divided into six groups. Group I consists of a single temple. (Burned incense and flower petals inside indicate that it is still used by worshippers.) An ancient pilgrim's Way leads to the next five groups. After passing Group II and Group III further north, one follows the path west across a sulphurous gully, then south to Group IV, containing a temple dedicated to Vishnu (something very rare in Central

## Kedu Basin: Greater Glory of the Gods

### Candi Pawon

This temple is 1,150m from Mendut and 1,750m from Borobudur. It resembles Mendut in many ways. The temple-yard for instance, is also square with its gate to the south-west; it is entered from the north-west; its box-like shape has projections on all four walls; and finally, like Mendut, the temple body rests on a rectangular base that has projections along its sides.

The wall panels display reliefs of richly attired figures, each backed by a praba, which indicates that the figures are possibly representations of celestial beings, deities from heaven, Bodhisattvas or Taras. Their obscure attributes make it difficult to ascertain their identity.

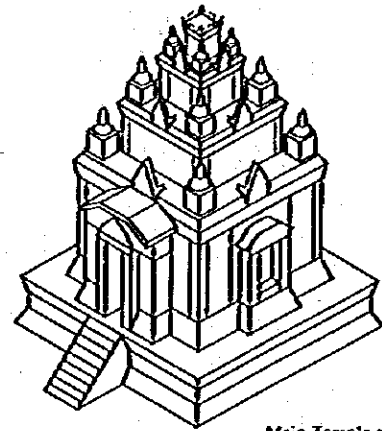


Candi Pawon



Statue of Candi Mendut

Java, where most Hindu temples are Shivaite). Further south one comes to Group V, consisting of three temple complexes teetering on the edge of a lofty bluff. Re-doubling north, one first passes Group IV, finally reaching Group VI, which consists of two ruined temple complexes.

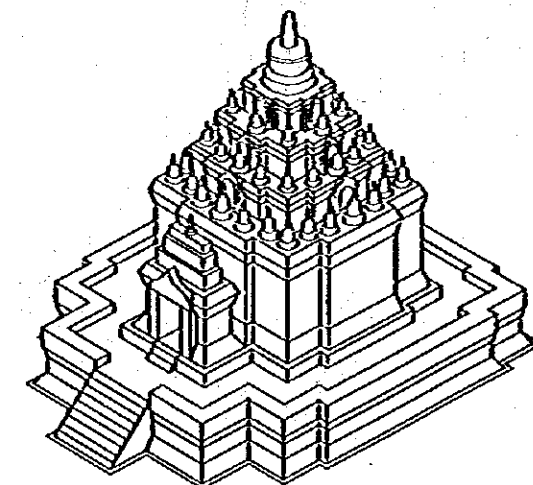


Main Temple of Group II

### Candi Mendut

Candi Mendut was built about the same time as Borobudur, but it is not a stupa. It resembles most Central Javanese temples with its broad base, a high central body and a steep pyramidal roof once crowned by a large dagob and a series of smaller ones. The superbly carved panels on the outer walls depict various bodhisattvas and Buddhist goddesses, and are the largest in Indonesia. On the outside of the staircase balustrade small panels relate charming folktales, many of which in the manner of Aesop's fables, are about animals. The walls of the passageway to the antechamber and the interior of the temple are also decorated with fine reliefs of the tree of heaven surrounded by pots of money and kinnaras (half bird, half man), and with two beautiful panels of a man and a woman amidst swarms of playful children. It is thought that these represent a yaksa and a yakshini, child-eating ogres who converted to Buddhism and became protectors instead of devourers.

The Mendut panels are delightful in their artistry and detail, but they hardly prepare you for the stunning impact of the temple interior and three of the finest statues to be found in the Buddhist world: a magnificent 3m high figure of Buddha as Sakyamuni flanked on the left and right (of the viewer) by the bodhisattvas Lokeshvara and Vajrapani. This is, as Bernet Kempers says, "one of the greatest manifestations of Buddhist spiritual thought and art.... For many visitors to Mendut a silent sojourn in the interior must (be) one of their most impressive contacts with a higher world."



Candi Mendut

## Kewu Plain: Ancient City?

### Candi Ploasan

Ploasan, about 11km east of Sewu, originally consisted of two large, rectangular temples. Both were two-storeyed, three-roomed buildings, bounded by a multitude of little shrines and solid stupas. One major temple has been restored, and a good reason for visiting Ploasan is to see restoration work in progress on the other: a painstaking task where stones are stripped from the ruins of the old site and fitted together like a monstrous jigsaw puzzle before being reassembled as a whole. The restored temple contains a number of beautiful small Buddhas and bodhisattvas, very fine kala heads above the windows (an unusual feature), and reliefs which perhaps depict donors who helped finance the building.

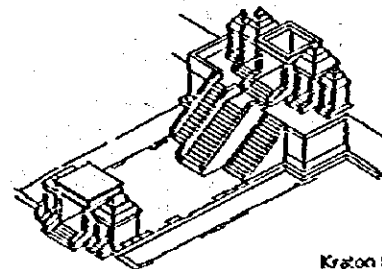


Statue of Candi Ploasan

### Ratu Boko

For those who love, within the mind's eye, to reconstruct history, Ratu Boko is a dream. The main site is on a small plateau. The trek is best done at dawn or in the late afternoon when the views from the plateau's ridge are most beautiful.

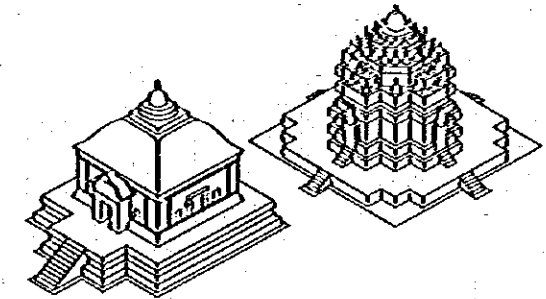
Ratu Boko was probably a fortified palace built by the Buddhist Sailendras and later taken over by Hindu Mataram. Little remains apart from a huge, sparsely ornamented gateway and a series of foundations and bathing places, but the atmosphere is enchanting. A few hundred metres to the south on another small plateau (linked with the first, but difficult to find) is a large stone platform with decorated waterspouts and staircases surrounded by an empty moat; a little below the platform, through kala head gateways, is a group of tranquil green pools, one of which is still used by the villagers.



Kraton Ratu Boko

### Candi Kalasan

Remnants of fine, yellowed plasterwork can also be seen at Candi Kalasan. An ancient inscription dates Kalasan at 778 A.D., but the existing structure is probably a century younger. The outstanding feature is a huge, ornate kala-head above the southern doorway. If you can stand the sweet-ammonia stench of bat droppings, the inner chamber of Kalasan reveals the overlapping blocks of an extraordinarily high and steep pyramidal structure; it once housed a huge bronze statue of Buddha.



Candi Banyuwirto

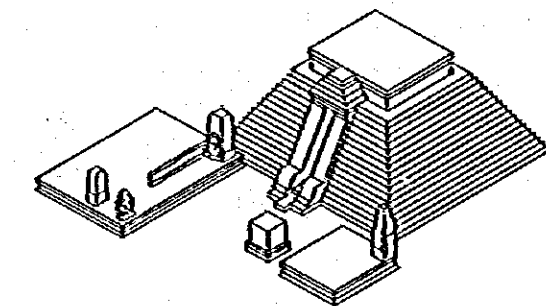
Candi Kalasan

### Candi Banyuwirto

Beautifully carved double makara-motif is above the niche which frames a seated female deity. Three stone oxen stand in a row. You can see the spaces where the most important sculpture has been robbed. Most of the roof is missing. A statue of a goddess points of Java's ancient links with Ceylon, some believe, in its strong facial and bodily form, very reminiscent of India. An almost duplicate goddess can be found in a niche above the entrance of the House of Pilgrims behind the Temple of the Tooth in Kandy, Sri Lanka.

## Mt. Lawu: Fertility and Mountain God Cult

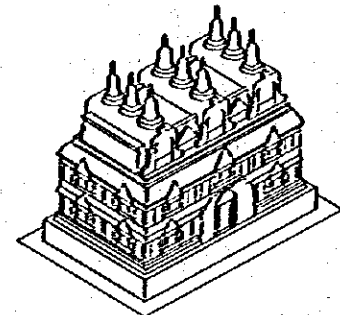
Two terraced pyramids and megaliths are found high in the pine forests on the western side of Mt. Lawu, a sacred site since early times. These mysterious mid-15th Century temples, with their stark, crude, and moving sculptural reliefs, have often been compared with the ruins of ancient Mexico and Egypt. Both are dedicated to Bima, the giant warrior god of the Mahabharata's Pandava brothers. Built during the final days of Hinduism when the last Hindu Kingdom (Majapahit of East Java) was tottering, these temples are strikingly distinct and considerably less ornate than other Hindu-Buddhist monuments of Central Java. Though they are the most recent (15th Century) Hindu-Buddhist temples in the region, they mark a resurgence of a pre-Hindu fertility and mountain-god cult prevalent in the archipelago over 15th centuries ago. These prehistoric "aboriginal" cults reappeared when Hindu influences started to waver.



Main Temple of Candi Sukuh

### Candi Sari

Candi Sari is similar to the Ploasan temples, with two storeys, windows, internal cuttings for wooden joists supporting the floors, and superb external reliefs of heavenly beings. Temples like Sari and Ploasan were probably also monasteries where priests, votaries and pilgrims lived above the sanctuaries. Some of Candi Sari's relief statues show traces of "diamond plaster", hard and stone-like, which helped preserve the carvings, enabled sculptors to add fine detail, and provided a base for the bright paint-work that once lit up these temples like immense, multi-faceted gems.



Candi Sari

### Candi Sambisari

To see a discovery in progress, visit Candi Sambisari, where the remains of a small temple, discovered in 1966, are being excavated. The floor of the temple lies four to five metres below the surface of the surrounding padi-fields, and ancient walls, doorways and altars have been finely preserved under centuries-old layers of volcanic ash and dust. Parts of the temple have been tentatively reassembled on the edge of the dig, but there is still much more to be done. Watching Sambisari emerge from the soil, you'll wonder how many more temples are hidden in the heart of Central Java.

### Candi Sukuh

Approached in ancient times from the plains by a long flight of steps. To Sukuh, 910m above sea level, it's about a 7km very steep walk, or take a donkey, oplet or horse. Rp. 60 entrance. The shape of Candi Sukuh with its flight of steps leading to the upper part of the temple looks like the Maya temples of Guatemala. Walk up three grassy pyramids until you come to the main structure, a large flat unadorned powerfully carved stepped pyramid of rough hewn stone. Sukuh's narrow stairway leads into a dark inner chamber. There are many phallic symbols; Sukuh is said to be the only explicitly erotic temple in all of Java. On a stone floor at the top of the steep stone tunnel a large realistic penis faces a lovingly sculpted, swollen in excitement vagina carved in relief. The first representation of a kris in Indonesian art is shown in one panel; Bima forging one with his bare hands while using his knee as an anvil. These strongly carved figures are so intriguing because they are done in the "wayang-puppet style". There is a statue of Bima, plus carvings of crabs, lizards, tortoises, bats, panakawan clowns, nasty underworld creatures, decorated tortoise statues, and guardians holding their clubs in one hand and their penis in the other. Pylons and obelisks nearby are decorated with the story of Garuda. Sleep in the hut near the temple grounds. There's also a kampung nearby with excellent goats' milk. On Sukuh's mountain the last king of Majapahit, Brawijaya, is said to be buried; offerings are placed on this site by the Sultan of Yogya each year.

### Candi Ceta

A 15km walk from Candi Sukuh. You pass through a small village, then it's 6km beyond. At 1,600m altitude, it's 600m higher than Sukuh, but not as fascinating. Ceta is in poorer condition, not having the statues and monuments that Sukuh has, just guardian figures and linggas.

# Yogya: Gateway to the Parks

This beautiful ancient capital with an old history and culture is, as the gateway to the two national archaeological parks, Indonesia's third most prominent tourist city behind Bali and Jakarta. Let us consider some of the attractions of this city of tranquil residential areas and abounding cultural vitality.

## Country and People

Yogyakarta lies in the most densely settled area of Java, itself one of the most heavily populated islands in the world. The region has 2.5 million inhabitants, spread over 3,160km<sup>2</sup>, but several subdistricts register figures of more than 1,200 persons/km<sup>2</sup>. The population is increasing at the rate of 1.5% per year, a little less than the national average of 2.3% per year.

Yogyakarta lies approximately 7° south of the equator and is bathed in tropical sunshine all year round. There are only two seasons — the wet and the dry monsoon. The wet season, hot and humid, begins in September or October and lasts until about March. Most rain usually falls in January. The dry season begins in about March or April and lasts until about September. As a general rule, virtually no rain falls between May and August. Average yearly rainfall for the region is more than 2,000mm.

Average temperatures range between 20°C minimum and 30°C maximum; the hottest afternoons fall during the dry season, the coolest mornings at the height of the wet season in the month of January.

## Arts and Crafts

### Wayang

A Javanese word meaning literally "shadow" or "ghost". Indonesians believe that drama is the shadow of life and that man is a mere puppet of God. Wayang is the main vehicle of drama in Indonesia, using live people or puppets to enact scenes from the lives of Javanese ancestors or from the Hindu epic poems. This art is 1,000 years old and on Java you may see figures on 13th Century bas-reliefs similar to those used in Wayang today. Some Wayang forms have completely died out. These are only a few of more than 200 diverse characters: gods, noble and cruel kings and princes, demons, giants, vile monsters, beautiful princesses, wisemen, servants, lovable clowns and fools. The almond-eyed, slant-nosed chalky faced ones are the heroes and the pop-eyed bulbous-nosed ones are the villains. All characters win approval no matter what their personality or appearance. Everyone watches and enjoys Wayang, from becak drivers to government ministers. It's a mixture of mysticism, slapstick comedy, morality play, social commentary, and magical myth-making-all in one. Audiences sit up all night for 10 hours watching live plays in immense bamboo theatres following every word with laughter or boos, tense silence or crying. Wayang is also used for social change; clowns have now begun to ad lib about family planning. Movies, TV and rock groups only provide more themes.



## Yogya is the Cultural Capital of Java

### Yogya

Yogya is the cultural capital of Java, Java's Kyoto. In a town of only 400,000 there are over 75 art organizations. The city has numerous music and dance schools, brilliant dance choreographers, drama and poetry workshops, folk theatre and wayang troupes, its artists excel in the plastic arts. It's one of the best places to shop in S.E. Asia, if you look. Along with Solo, Yogya is a major batik-producing center and because of increased tourist awareness this art is becoming of even higher quality. Its painters and sculptors are Indonesia's elite, strongly individualistic and increasingly commercialized. It's one of the biggest villages in the world.

This city was established in the year of 1756 by Sri Sultan Hamengku Buwono I. Before second World War this city was an empire. During Independence War between the year of 1946 up until 1949 it had ever been made as capital of the State of Republic of Indonesia.

### Sultan's Palace (Kraton)

The Kraton of Yogyakarta is one of the finest examples of Javanese courtly architecture still in existence. The original buildings date from 1756, one year after the founding of the Sultanate. Extensive renovations and improvements were carried out in the 1920s under the reign of Sultan Hamengku Buwono VIII.

The Greater Kraton is flanked on four sides by white walls 5m high and 3m thick, each 1km in length. Some 26,000 people live in the small city thus formed. There is a market, a large section of the University Medical School, as well as shops, schools, mosques, offices and home industries such as batik and silverware.

### Gamelan Music

Gamelan music is the sound of that pulse. You'll hear its insinuating, liquid melodies floating over a white-washed wall in a quiet, sunlit street, or bursting forth from a transistor radio at a warung; you may hear it as you stroll through the yards and forecourts of a palace, or in the lobby of a hotel; and gamelan is an integral part of Javanese dance dramas and the ever-popular puppet shows.

The number of instruments in a gamelan orchestra may vary from as few as 13 to as many as 75. They are almost all percussion instruments, ranging from the large gongs, "kettles" and resonating slabs of bronze to smaller pieces like the genders and the gambang or xylophone. A rebab (two-stringed lute), a celempung (a kind of zither) and occasionally a ruting (flute) are the only string or wind instruments. The larger and more sonorous pieces carry melodies with long notes, whilst the smaller and lighter instruments carry melodies with shorter notes and (generally) a faster tempo. To foreign ears the most curious aspect of gamelan is the tuning, which normally combines a five-tone system (séndro) and a seven-tone system (pelog).

An appreciation of gamelan music is of course a very personal experience: people attuned to the vigorous Balinese form often find the Central Javanese version soporific; lovers of Central Java's style often deary West Java's as monotonous and unimaginative. Although describing music with words is a dangerous occupation, the following much-quoted quotation, cited by Jaap Kurst in his Music of Java, seems to sound the right chord: "(Gamelan) is comparable to only two things: moonlight and flowing water. It is pure and mysterious like moonlight and always changing like flowing water... it is a state of being, such as moonlight itself which lies poured out over the land."

### Museum Sonobudoyo

Rated as Java's second museum (after the Museum Pusaka in Jakarta), the Sonobudoyo consists of a collection of arts and crafts from Java, Madura and Bali, as well as an extensive library of mainly Javanese books. The most outstanding exhibits are the magnificent carved wooden screens, two ancient gamelans, wayang kulit and wayang golek puppets, small wooden carvings, religious relics and artifacts from the Bronze Age in Java. The exhibits are housed in a graceful building, constructed in traditional Javanese style.

### Fragrant Garden: Water Castle (Taman Sari)

In the year 1758, Sultan Hamengku Buwono I commissioned the court architect to design him a pleasure park complete with royal living quarters. A site was selected near a natural spring in the south-west corner of the Kraton. The work was not completed until 1765, and the complex took its name (taman sari means fragrant garden) from its flowers, lawns and groves of fruit trees. The Dutch referred to it as het waterkasteel because the central edifice was surrounded by a wide moat; there were also three bathing pools and two other pools in the southern part of the complex. The Sultan communicated with the Palace, his official residence, by means of a small boat which plied along a narrow canal between the Taman Sari moat and the southern part of the Palace.

The extensive use of water is indeed a common feature of traditional Javanese architecture. As one of the basic elements of the Universe, water is considered by the Javanese to have supernatural qualities. (In Yogyakarta even the Great Mosque — Masjid Agung — is surrounded by a moat.) The original Taman Sari complex must have been dominated by expanses of glistening water. When the Sultan wished to meditate, he retired to a partly submerged building in circular form, where he sat upon a raised platform erected directly above a well. Water even flowed below the beds in the royal sleeping quarters.

### BATIK

Batik means wax painting — the application of wax to materials, almost entirely cotton, which are afterward dyed, and certain portions of which are protected by the wax so that they do not absorb the dye, leaving as a result a pattern or design on them.

The wax is usually composed of bees-wax, paraffin and sometimes, a little resin, which makes it adhere more securely to the material. The wax is applied hot so that it flows easily and sinks into the material.

Little is known of the origin of this art. It is, like many others, lost in antiquity. Some believe that it was Turkish and Egyptian origin, handed down to Persia and brought by the Indians with some other painting arts to Indonesia.

The dyes used were originally extracts of plants and other colour-bearing shrubs. But nowadays chemical painting materials are imported and widely used. Modern batik makes use of multi-colour combination, the principles of which are not unlike those employed in the process of four-colour printing.

### Silverware Town Cota Gede

Skilled silversmiths is also a feature of Indonesia's culture. In Yogyakarta, silver smiths are concentrated in Kotagede, the capital of second Sultanate of Mataram in the 16th century.

### Leather Work

The raw material used for leather work is the hide of the water buffalo. Lampshades, fans, book-marks and book-covers are made by craftsmen, but their greatest skills are devoted to the making of the Wayang Puppets.

### to Borobudur Park

Chandi Borobudur is situated in the regency of Magelang, 41km north of Yogyakarta, on the way to Magelang (see map). Those who have no private cars can take bus, taxi or an oplette that passes Borobudur on its way to the terminal; if not, you stop at Muntilan, about 7km from Yogyakarta and continue your journey by dokar\* (a horse cart).

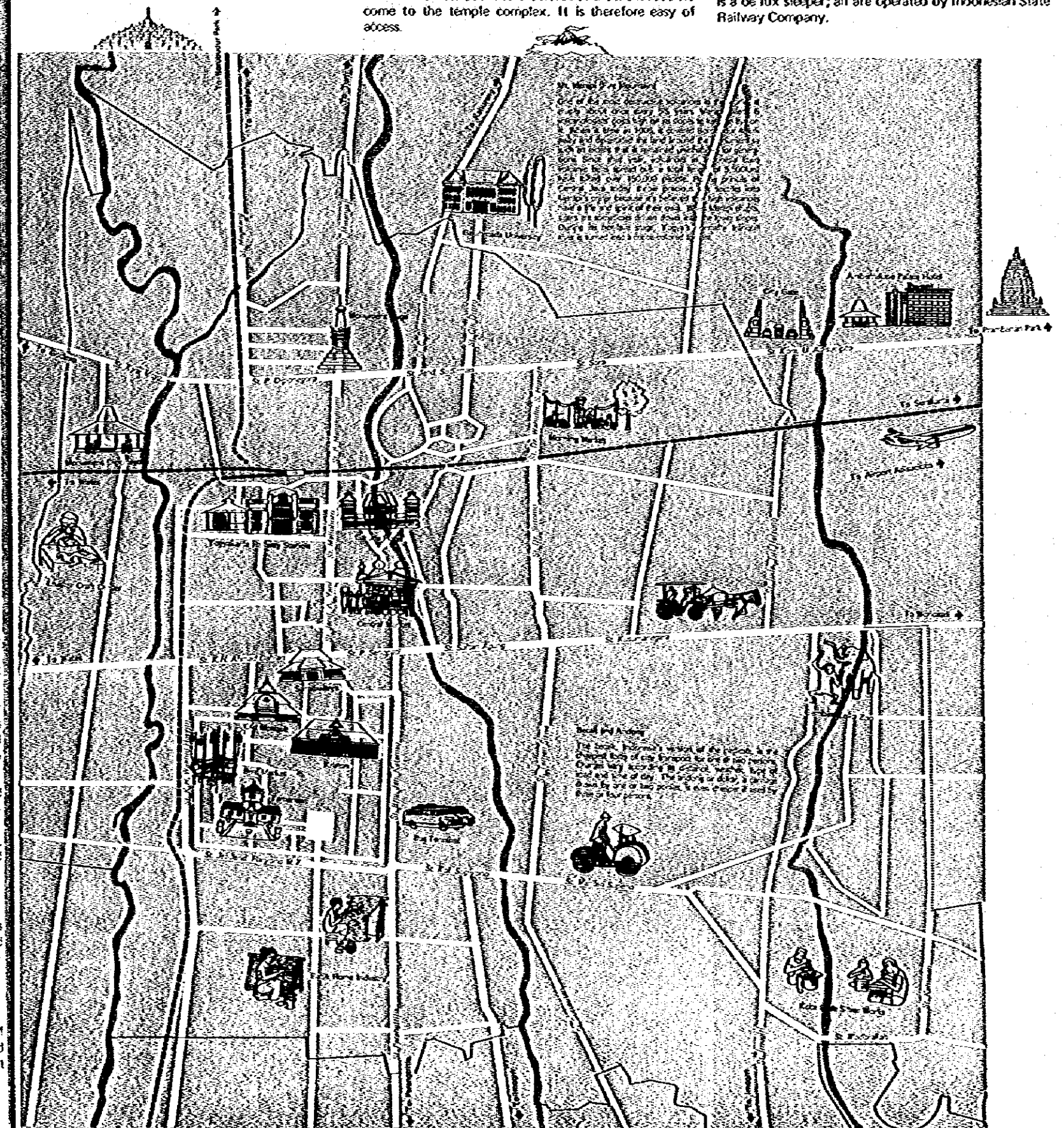
### To Prambanan Park

Chandi Loro Jonggrang is situated in the village of Prambanan, regency of Sleman, Yogyakarta, approx. 17km from Yogyakarta on the way to Surakarta. Driving from Yogyakarta by car and crossing the river Opak, we can see in the distance of the north side of the road, the top of the main temple rising high up into the sky. Turning left from the Prambanan market and more or less 300m to the north of the main road we come to the temple complex. It is therefore easy of access.

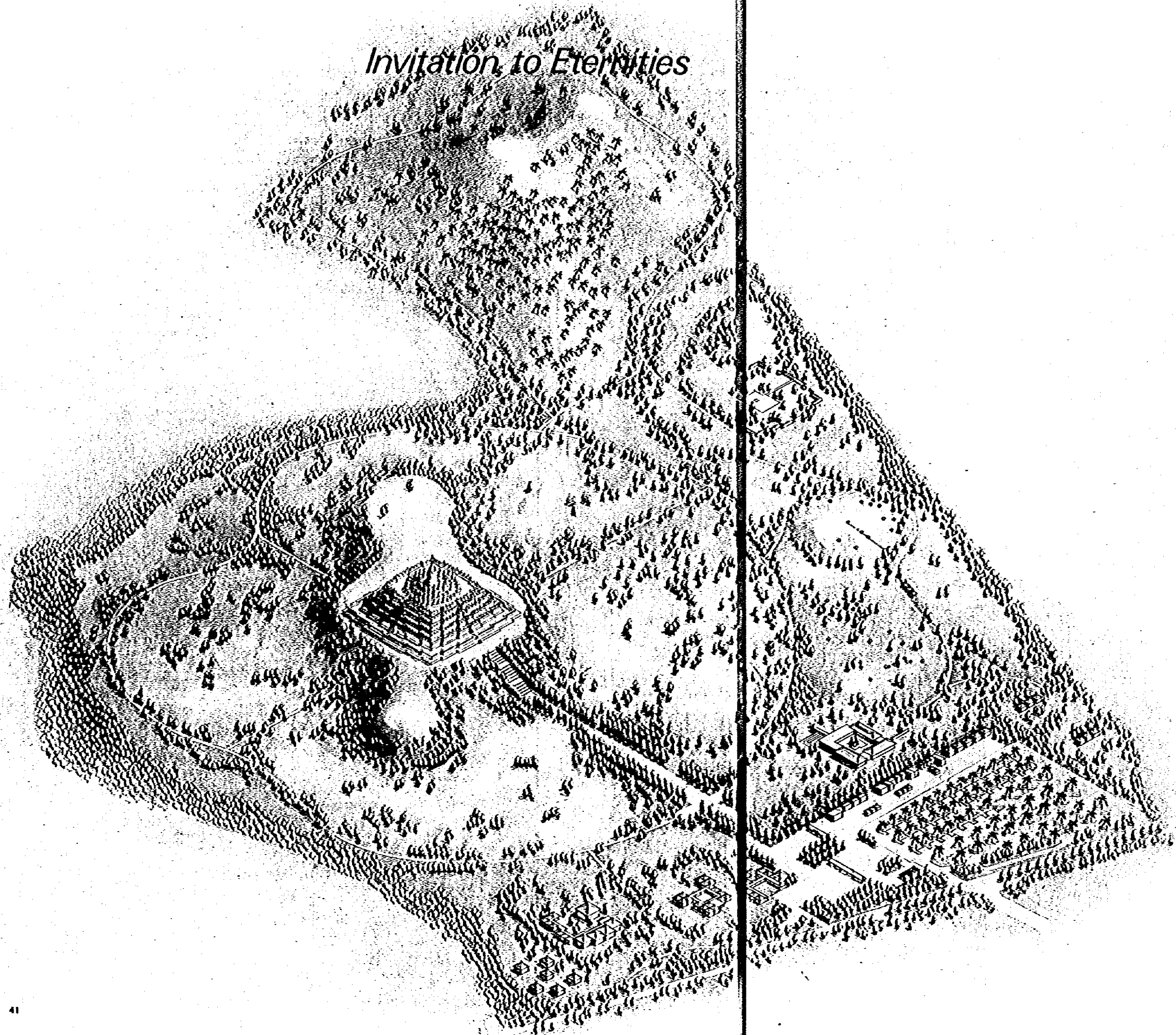
### Your Arrival in Yogyakarta

By air: Garuda Indonesian Airways (GIA) provides three daily jet services to and from Jakarta; also two daily jet services to and from Denpasar. The service and comfort provided on these flights are excellent. It takes 1 hour from Jakarta same as Denpasar.

By Train: from Jakarta or Surabaya there are plenty of express non air-conditioned wagons while BIMA is a de-lux sleeper; all are operated by Indonesian State Railway Company.



*Invitation to Eternities*





# Profile of Candi Borobudur

Borobudur, the significant Buddhist and Hindu-Javanese artistic remains, built in the late 8th century. Borobudur is not only the most precious heritage of the Indonesian people but also one of the most important valuables to the whole mankind.

width: 123m

original height: 42m

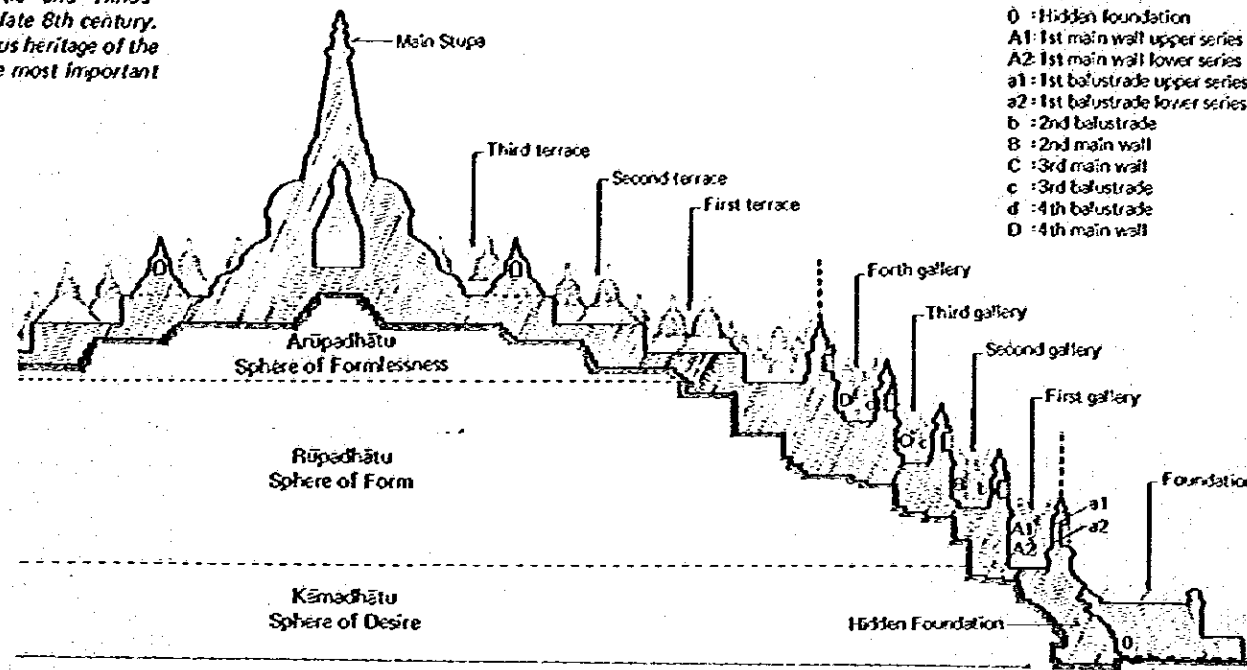
present height: 31.5m

used material including base: 55,000m<sup>3</sup> of andesite stone

**Arupadhātu**  
72 trellised stupas  
1 large central stupa

**Rupadhātu**  
4 galleries with 1,300 pictorial reliefs with a total length of 2.5km and 1,212 decorative panels

**Kamadhātu**  
base and hidden foot  
13,000m<sup>3</sup> of stone with 160 hidden reliefs



## 504 Buddha Statues in Candi Borobudur

Arranged circularly on the upper terraces are 72 hollow, latticed and bell-shaped stupas; 32 on the first, 24 on the second, and 16 on the third terrace. Inside each of them is a stone Buddha image (about 1.3m in height) sitting in the Dharmacakara mudra.

All the galleries are bordered on the outside by a balustrade. The inner side wall of each gallery is called the main wall. The balustrade of each gallery is constructed directly over the main wall of the gallery below it. That is, the upper part of the main wall of the first gallery forms the balustrade of the second gallery. The balustrade is composed of a long series of independent architectural units called niche-temples, each having in its center a niche which contains a sitting stone Buddha image facing outward. The total number of the niches is 432; 104 niches on the lowest level, 104 on the second lowest, 88 on the third, 72 on the fourth, and 64 on the top. In each of the 64 top level niches is a Buddha image sitting in the Witaraka mudra.

All the other 368 niches can be divided into four groups by the Mudras of the Buddha images contained in them. In each of the 92 niches facing East is a Buddha image in the Bhumi-sparca mudra. In each of the 92 facing South, a Buddha image sits in the Wara mudra. A Buddha image in each of the 92 facing West is in the Dhyana mudra and the images in the 92 facing North, in the Abhaya mudra. All these images are also about 1.3m in height. The Buddha images of Borobudur, including those in the latticed stupas on the terraces mentioned above are six in kind and 504 in total number.

### Location of Buddha Statues

	East	South	West	North	Total
Foundation	26	26	26	26	104
First gallery	26	26	26	26	104
Second gallery	22	22	22	22	88
Third gallery	18	18	18	18	72
Subtotal	92	92	92	92	368
	Bhumi-sparca mudra				
Fourth gallery	16	16	16	16	64
	Witaraka mudra				
First terrace					32
Second terrace					24
Third terrace					16
Subtotal					72
	Dharmacakara mudra				
Total					504

### The Hand Positions of Buddha

Hundreds of Buddhas holding their hands in different positions are put in niches along five balustraded terraces.

The graceful hand positions of Buddha, mudras in Sanskrit, have all specifically symbolic meanings. Six mudras are depicted, the deep sense of their character being well known.

On the first four terraces surrounded by balustrades four different mudras can be distinguished. With their hands, the Buddhas here placed on the east side of Borobudur, call upon the Earth as Witness in Sanskrit Bhumi-sparca mudra.

Those on the south side symbolise Charity, the Wara mudra. Further west, comes the gesture of Meditation or Dhyana mudra, whereas those to the north express Fearlessness, the Abhaya mudra.

The entire fifth balustrade represents the Zenith. To all four winds of heaven the hands of Buddha signify Reasoning or Witaraka mudra.

The sixth mudra, reflecting the Turning of the Wheel of Law - Dharmacakara mudra, is hidden in stupas. During his first sermon in the park of the Gazelles at Benares, Buddha assumed this posture.

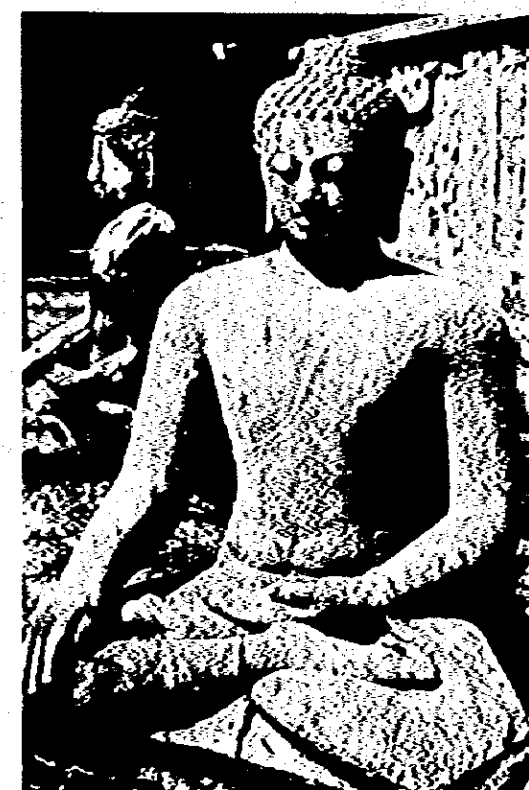
Should a connection be sought between the six mudras and the cosmographic division - the sphere of Desire, the sphere of Form and the sphere of Formlessness - then the placing of Buddhas on the first balustrade, forming part of the sphere of Desire, would be incorrect.

But as this balustrade also constitutes a smooth transition to the sphere of Form, being the appropriate sphere in which to place statues, the Javanese architects placed the Buddhas there, in niches differently arranged.

The fifth balustrade separates the sphere of Form and the access to the sphere of Formlessness. Here too the depiction of Buddhas in the sphere of Formlessness would actually be applicable.

Nevertheless, an ingenious solution was found to demonstrate the presence and non-presence of the Buddhas in the highest sphere, by putting them under trellised stupas.

The six positions of the hands - Bhumi-sparca mudra, Wara mudra, Dhyana mudra, Abhaya mudra, Witaraka mudra and Dharmacakara mudra, reveal the mystery which Buddha's face conceals.



Buddha statue in the Bhumi-sparca mudra

### Buddhist Cosmology

According to Buddhist cosmology the universe is divided into three major divisions Kamadhātu, Rupadhātu and Arupadhātu.

Kamadhātu is the "phenomenal world" for common people; the foot or base of the Borobudur represents this phenomenal world.

Rupadhātu is the transitional sphere in which human beings released from worldly matters; this sphere is presented by the four rectangular storeys. Arupadhātu is the highest sphere, the abode of gods; the three circular terraces and the central dagob form the Rupadhātu.

The base of the monument measures about 123m, whilst the total height is now only 31.5m. The pinnacle of the central stupa being incomplete.

Not less than 55,000m<sup>3</sup> of andesite stones were used for the edifice.

### Structure of Borobudur

The monument is built up of more than 55,000m<sup>3</sup> of andesite blocks mantling around the top of the natural hill which was artificially enlarged using sandy soil from the immediate surroundings and forms the nucleus of the monument consequently.

Borobudur, built in the form of nine-storied step-pyramid, can be divided into a lower and an upper structure.

The lower structure consists of six square terraces; the foundation, some 115 x 115m at its bottom, the first, second, third, and fourth gallery and the plateau. Above these are three circular terraces, which are called the first, second, and third terrace respectively. So the plateau forms the transition from the square structure to the circular one.

There is a huge sealed and bell-shaped central stupa in the center of the third terrace. The pinnacle on its top, now lost, is supposed to rise about 42m above the ground level.

### Main Stupa

The main stupa is bigger than the others and is situated in the centre forming the crown of the monument. It is 9.9 m in diameter and is 7m high to the pinnacle. It is placed on a double lotus and the pinnacle is erected on a double harmika. The pinnacle seems to have ended in three umbrellas or chhatras in succession. This upper-most part of the Borobudur is no more.

The main stupa is firmly closed. Inside is an open space that is empty now. People say that it is a repository for a statue or relic, but this statement is not very convincing. Hartmann, resident of Kedu made investigations about the content of the main stupa in 1842, but written reports were missing. Accordingly all theories about the content of the main stupa are not convincing.

### The Wide Panorama from Candi Borobudur

Viewed from the circle terrace of Candi Borobudur, the sanctuary area looks like a ring that varies in color according to the season, and the park facilities are for the most part hidden from view by the crowns of the trees. As for the undulations of Dagi Hill, they blend into the background in harmony with the coconut groves. Furthermore, the edge greenery along the periphery of the park gives clear visual definition of how far it extends. Beyond the park boundaries are to be seen the villages and paddies that are typical of Javanese countryside scenery, and beyond them is a sea of coconut palms that seems to insulate the park from the noise and bustle of human activity outside. Reigning over this wide panorama can be seen the majestic forms of Mt. Merbabu, and Mt. Sambing in the distance as guardians of the whole Kedu basin.

## 1,460 Reliefs on Four Galleries and Hidden Foundation

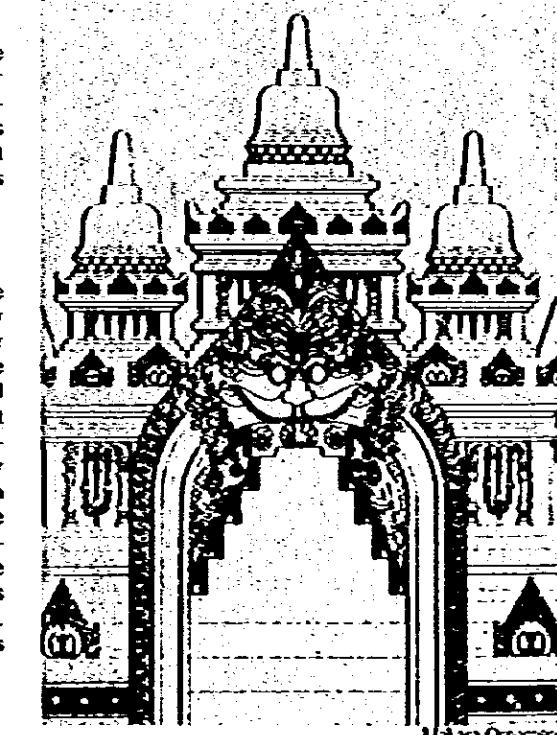
There are eleven series of reliefs, consisting of not less than 1,460 scenes; some are derived from manuscripts, while others are not. It is indeed not easy to recognize the stories or scenes in relief of the Borobudur. First and foremost it is due to the sculptors and designers who did not keep to the original manuscript in executing their task, they left out parts of stories that might hurt the feelings or annoy the visitors of the holy monument. Besides, sensational or frightening scenes were obliterated. Secondly the technique of carving obscures the meaning of the relief. The sculptors didn't make any difference between the diverse personalities. There are certain distinct types for certain persons e.g. for kings or gods, brahmins or priests and many others. The sculptors did not carve these outstanding personalities according to their specific characteristics or types; consequently if there are to kings in a scene, it is very difficult to recognize them unless our knowledge of the stories derived from manuscripts makes it possible. The rest however, remains guess work. In order to follow the sequence of the stories in relief in good order, admission to the monument is through the East gate, and on each platform you have to turn to the left and leave the monument on your right.

### Contents of the Reliefs

	No. of panels	Original manuscript
0 Hidden foundation	160	Karmawibhanga
A1 1st main wall upper series	120	Lalitavistara
A2 1st main wall lower series	120	
a1 1st balustrade upper series	372	Jatakamala, Jataka and
a2 1st balustrade lower series	128	Awanda
b 2nd balustrade	100	
B 2nd main wall	128	
C 3rd main wall	88	
c 3rd balustrade	88	Gandawyuha
d 4th balustrade	84	
D 4th main wall	72	Bhadratjari
Total	1,460	

### Ornamental Carvings

Ornamental carvings such as religious imageries are also abundant and add to the beauty of the monument.



Makara Ornament

### Story of Original Manuscript

#### Lalitavistara

The life of Buddha Gautama from his birth until his first Sermon at Benares, is depicted here. Only one round along the terraces has been dedicated to this manuscript.

#### Jatakamala-Jataka

Jatakamala or Garland of Jatakas, is a collection of poems consisting of 34 Jatakas. Written by Aryacara in the 4th century, these Jatakas contain stories about great deeds performed by Buddha in his former lives. These episodes of reincarnations serve as examples of self-sacrifice.

#### Awanda

Awandas are actually Jatakas, in which Buddha is not performing the principal lead. They describe deeds accomplished by Bodhisattvas in their former lives, preparing for Buddhahood.

#### Gandawyuha

In the Buddhist world, the Gandawyuha writing is considered most important. Describing Sudhana, son of a rich merchant, who in his aim to attain the highest wisdom, meets several Bodhisattvas. Maitreya - the Future Buddha and Samantabhadra belong to these spiritual teachers.

#### Bhadratjari

Concluding the Gandawyuha - the Bhadrattjari has been added to it - containing the pledge of Sudhana as an example of the Bodhisattva Samantabhadra.

#### Karmawibhanga

The Karmawibhanga is a manuscript describing the doctrine of cause and effect of good and evil. This series of reliefs are not visible as it is surrounded by the broad base. Only part of the south side is dismantled for the visitors.

As for the drainage of rainwater, a total of 100 gargoyles are installed in the monuments. Eighty of them are the ornamental monster heads called "Kala" and inserted in the main wall of the four galleries. Other twenty gargoyles are set up on the main wall of the foundation ornamented with another monster named "Makara" which is also one of the imageries of the Hindu-Javanese carvings.

On each of the four sides of the step-pyramid runs up through its center to the top, flights of stairs and gateways framed by the "Kala-Makara" ornaments, and through these gateways the visitor gradually proceeds to the higher terraces.



Kala-Makara Ornament