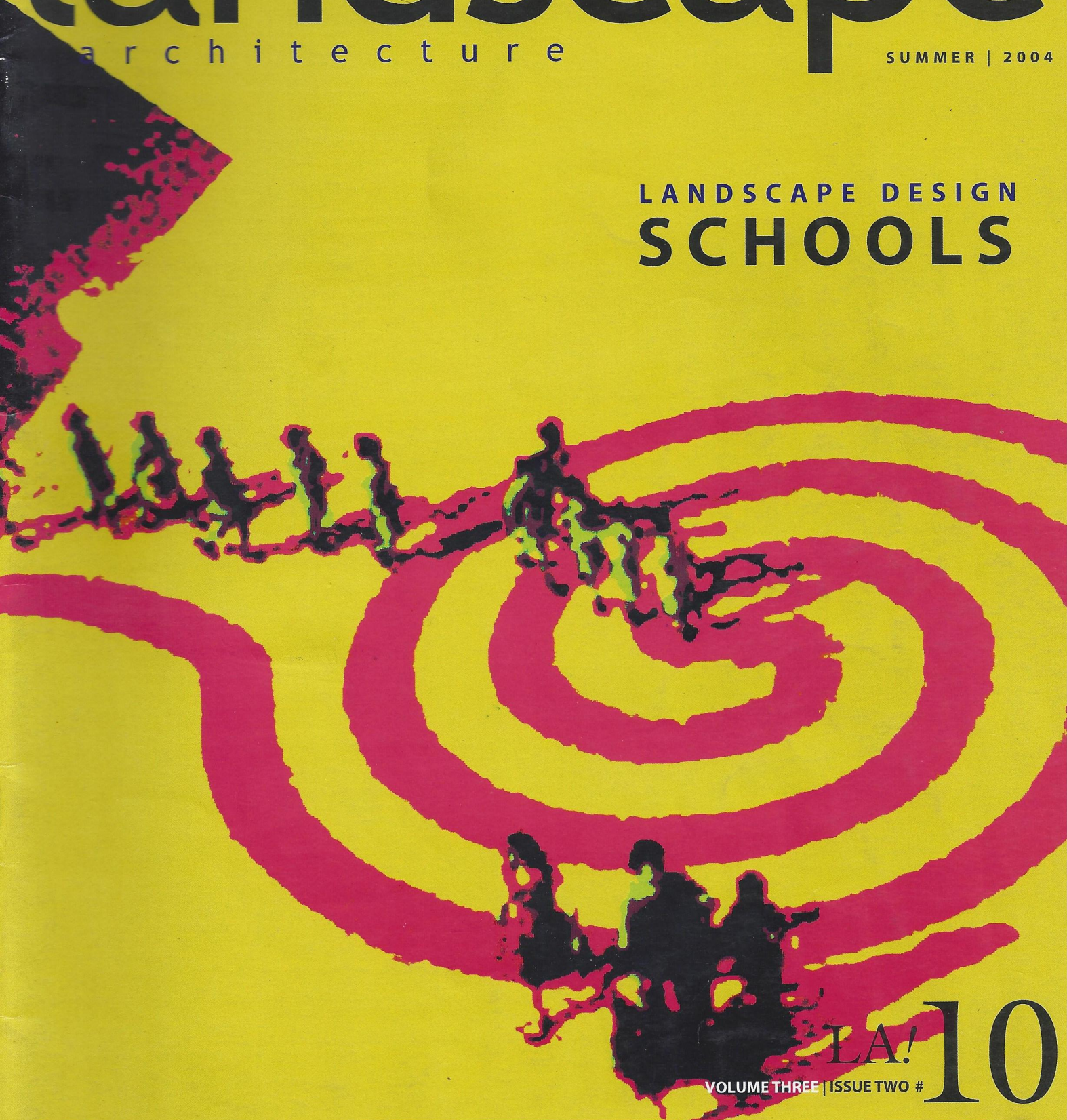


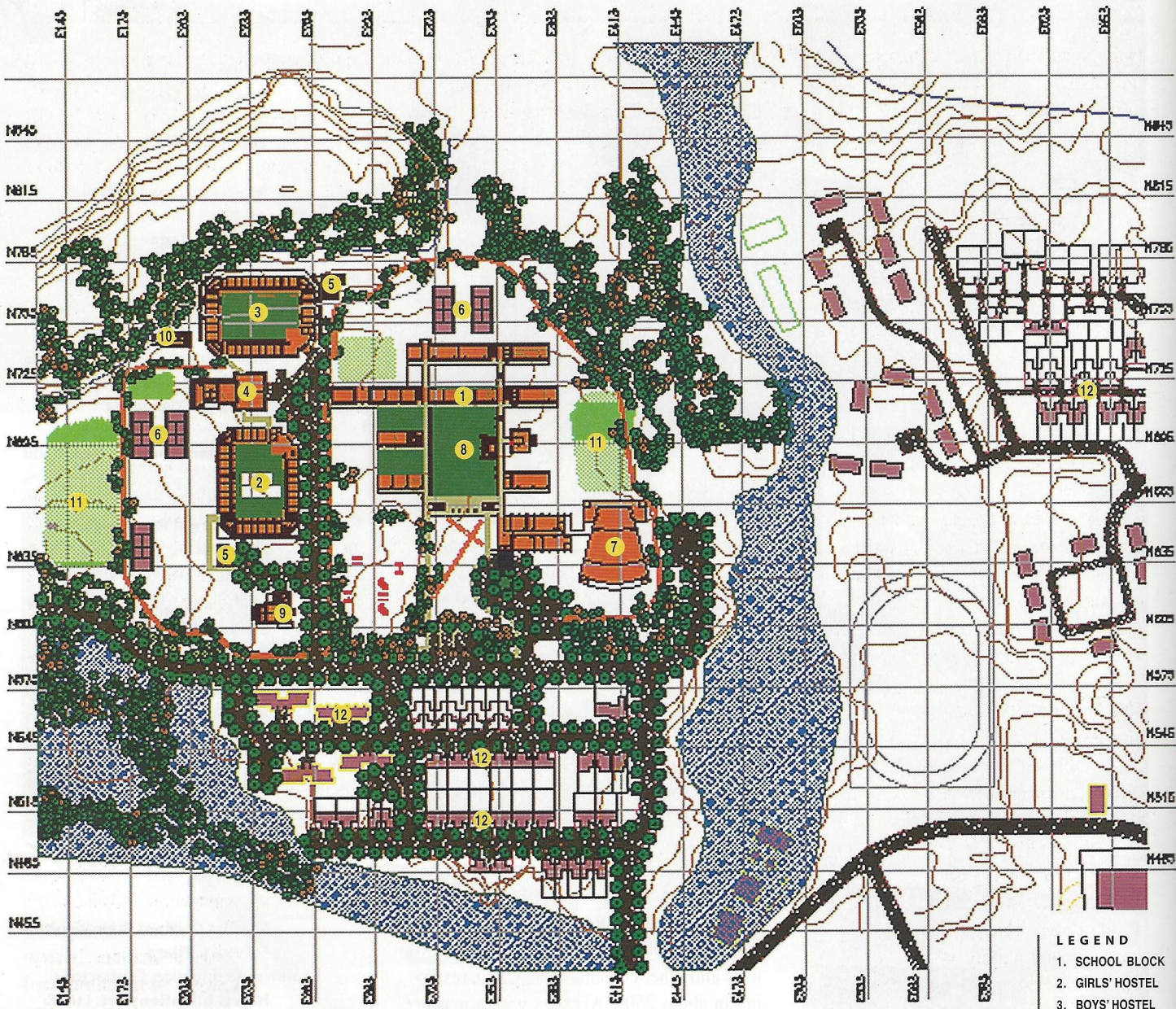
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SUMMER | 2004

LANDSCAPE DESIGN
SCHOOLS



LA! **10**
VOLUME THREE | ISSUE TWO #



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Delhi Public School

NUMALIGARH, ASSAM

Landscape design, architecture and existing ecology cannot be separated in Numaligarh, and any write-up on the Delhi Public School (DPS) in Numaligarh can essentially be nothing but an analytical description of the regional ecology. The site of DPS School, Numaligarh is situated within an undisturbed natural area. The site lies within a regional watershed where indigenous plant communities are flourishing along with large stretches of tea gardens. It presents a typical visual of a regional rural landscape - lush green almost the year round because of the heavy rainfall. It lies in the lap

of a classic natural ecosystem. There are the hills on the north, gentle slopes with defined drainage and agricultural fields on the south and grass covered areas of sheet flow, on the southeast, which carry the runoff to the Kalyani River 300 metres away. The ecosystem, which included small hamlets - had stabilized over the years. The predominantly natural location within the existing tea gardens on slopes, mixed vegetation within the valleys and tree and shrub covered slopes demanded extreme sensitivity in protection of the environmental condition inspite of the proposed construction.

In the landscape and architectural design of the school at Numaligarh, the context is so significant that it overpowers and pales into insignificance the proposed landscape and the architectural entity. This resulted in the layout and design being strongly influenced by the location.

The Ecosystem Context

The school presents a wonderful example where landscape ecology dovetails smoothly into the reality of changed landuses and construction. The school and landscape has been designed as a subsystem of a larger system and in turn includes smaller ecosystems. It also has necessary linkages with both the larger and the smaller units.

The school is a part of 300 acres watershed. It was realized that the water that runs off the land reaches the Kalyani River carrying everything it has picked up during its flow. This includes silts from original slopes, chemicals from fertilizers used for proposed planting and lawns, oil from roads, and all others wastes from kitchens and laundry which can endanger life in the river. The channelized natural drainage patterns were left scrupulously undisturbed. Whenever there was an area of sheet-flow, suitably modified levels ensured uninterrupted drainage.

The Design Process

The design of school and its landscape related to the scale of concern established by the watershed adjacent to the ecologically sensitive area of Kaziranga National Park, the specific site and the recent Numaligarh Township towards the east, besides the design brief of the DPS. The purposely restricted site design (as against site planning or regional landscape design) resulted in intentional changes in landscape and activity patterns. Landscape design was restricted in extent and restrained in the introduction of proposed plants to protect against any unforeseen changes in the existing ecology.

In the midst of ecological complexity, during the design stages, it was kept in mind that inspite of opportunities for diversion, a purpose specific order of human ecosystems had to be designed to serve the human and natural needs. To achieve such an ecosystem, the project required detailed grading. The over-

all and detailed grading required continued attention and reviewing during designing and preparation of drawings. Determination of plinth levels, grading of every open area and every spot has ensured trouble free drainage of stormwater from the site. Achieving positive drainage was relatively easy since the site had regional drainage flows on all sides into which the drainage of the site was directed.

The first design issue was of identity - the form conceptualization of landscape design and architecture. Though the school is in the middle of nowhere, yet students come in large numbers from far and near. Also, understanding the place brought forth the issues of water pollution, obstruction of natural drainage systems, deterioration of natural vegetation, and disruption to wild life and butterflies by human presence. These aspects set some of the parameters of design.

It was therefore easy to decide that the school be open to let the natural environment be constantly realized by the users. This influenced the planting design to ensure that the surroundings were not hidden by buffers or shelter belts. On the north side where such planting has been done, it is against the backdrop of the hills. The structure and activities are clear of the natural drainage patterns. On site are areas where flow patterns are conspicuous by landform. There are also the flat stretches where it appears dry but the water flows in a few inches deep sheet below the level of grass, even during the post monsoon period of November and December.

The client's brief was to design a secondary school, which should have the facilities, scale and dimensions, which reflected the Delhi Public School's academic culture. The requirements included -

8750 sqm. of covered area for the school building, 4042 sqm. for hostel and a 1275 sqm. auditorium. This included classrooms, audio-visual room, laboratories, library, toilets besides administration and its ancillary spaces. Curriculum specific requirements included an open space for morning assembly with a stage to double up for school functions. Open spaces for sports facilities, parking and informal gatherings of students and staff were required. The client also required separate hostel facilities for boys and girls along with dining hall, and common rooms, spacious kitchen and laundry was to be provided with most modern equipments.

VIEW FROM THE SCHOOL TOWARDS SOUTH (ABOVE); SOUTH-WEST VIEW OF THE SCHOOL (BELOW)





THE SCHOOL SETTING WITH THE HILLS IN THE BACKGROUND



APPROACH TO THE HOSTEL BLOCKS



APPROACH ROAD TO THE SCHOOL COMPLEX



PEDESTRIAN PATH LEADING TO THE SCHOOL

The building was restricted to a height upto first floor only, so as to relate it to the tree height and help it merge visually with the site. Determination of plinth levels and external grading was done by relating them to the existing site grades. Keeping in view the humid climate, it was desired that all areas be allowed ample cross ventilation. There was also a brief requirement list with regard to landscape design requiring provision of open spaces of gathering, courts for badminton, basketball, tennis and volleyball, a horse-riding trail, and informal outdoor seating areas associated with both the school and the hotels.

Planting Policy

As a result of the interpretation of the requirements, spaces were created that related intimately to blocks where the natural ecosystem merge seamlessly with the

buildings. Meaning thereby, that where it was not specifically functionally required, the existing vegetation of natural plants and tea gardens come right up to the buildings. Large and extended singly loaded corridors ensure that the ecosystem context of the school is never lost on the users. Views were not required to be created, they were already there only to be preserved! Extreme restraint was exercised for design and selection of the proposed planting, which included few ornamental species. The plant selection was entirely from the existing regional indigenous plant species which were doing well in the region.

Guiding principle of planting policy was for the functional needs while maintaining the supremacy of the existing ecosystem. It was also decided to use native flora and avoid the import of any exotic species. No conflict

and uncertainty was introduced in the ecosystem by using whatever was locally available. In any case, Numaligarh has an exceptionally wide range of plant material palette which required no augmentation and certainly did not restrict the designer.

Plant selection and planting was broadly categorized as Road-side planting; Boundary planting; Planting for hostel and residential areas; Planting for institutional/public areas (School, Shopping complex, Hospital, Guest house area etc.); Special planting for protection of ridges; and Special planting for protection of valley slopes.

Intentionally introduced variety in the scale, dimensions and types of open spaces within and adjacent to the school allow for a variety of functional requirements and use experiences necessary for students. Openness

of design layout and the roof-forms help establish a relation between the school architecture and the local design forms.

Enforced restrictions during construction, in the works of various contractors ensured the protection of the sites surface and vegetation.

Such was the completed project which was presented to the clients and users for their use and assessment. Time will either confirm the designers interpretations or show how things can go wrong even with the best of intentions and efforts.



Layout plan, photographs and text courtesy Dr Rommel Mehta.

ROAD-SIDE PLANTING

Along 7.5 m wide roads

Terminalia arjuna	Arjun
Alstonia scholaris	Devil's tree
Erythrina indica	Indian coral tree
Peltophorum ferrugineum	The copper pod
Putranjiva roxburghii	Jal patri
Michelia champaca	Champa
Poinciana regia	Gulmohar
Spathodea campanulata	Fountain tree
Bauhinia triandra	Lal kachnar
Schleichera trijuga	Kusum

Along 5.5 m wide roads

Grevillea robusta	Silver oak
Alstonia scholaris	Devil's tree
Jacaranda mimosaeifolia	Nili gulmohar
Mimusops hexandra	Khirni
Polyalthia longifolia	Ashoka
Cassia fistula	Amaltas
Pongamia glabra	Karanj
Milletia ovalifolia	Moulmein rosewood
Callistemon lanceolatus	Bottle brush
Plumeria alba	White champa

BOUNDARY PLANTING

Trees

Alstonia scholaris	Devil's tree
Gravillea robusta	Silver oak
Dalbergia sissoo	Shisham
Tectona grandis	Teak
Putranjiva roxburghii	Jal patri
Populus tremuloides	Poplar
Melia azadirachta	Neem
Polyalthia longifolia	Ashoka

Vines

Bougainvillea mahara	Double red flowers
B. lady marry barring	Turmeric yellow flowers
B. mahatma gandhi	Bright pink flowers
B. marry palmer	Double colours flowers white & magenta
B. golden	Golden yellow
B. thimma	Variegates leaves, pink & white flowers
B. snow queen	White flowers

HOSTELS AND RESIDENTIAL AREAS

Acacia auriculiformis	Australian kikar
Cassia javanica	Java ki rani
Cassia fistula	Amaltas
Grevillea robusta	Silver oak
Jacaranda mimosaeifolia	Nili gulmohar
Lagerstroemia thorelli	Pride of India
Phyllanthus emblica	Amla
Plumeria acuminata	Pagoda tree
Plumeria alba	White champa
P. rubra	Red champa
Mimusops elengi	Moulsary
Bauhinia purpurea	Kachnar
Erythrina cristagalli	Cockspar coral tree
Pongamia glabra	Karanj
Spathodea campanulata	Fountain tree
Callistemon lanceolatus	Bottle brush
Thespesia populnea	Tulip tree
Saraca indica	Sita ashok
Anthocephalus cadamba	Kadam
Chorisia speciosa	Mexican silk cotton tree
Lagerstroemia flos reginae	Pride of India
Millingtonia hortensis	Akash neem
Peltophorum ferrugineum	The copper pod
Delonix regia	Gulmohar
Sterculia colorata	Wild almond
Pterospermum acerifolium	Wild almond
Terminalia arjuna	Arjun

INSTITUTIONAL/PUBLIC AREAS

Ficus benjamina	Java fic tree
Ficus elastica	Rubber tree
Jacaranda mimosaeifolia	Nili gulmohar
Spathodea campanulata	Tulip tree
Terminalia catappa	Indian almond tree

Bauhinia variegata	Kachnar
Callistemon lanceolatus	Bottle brush
Plumeria acutifolia	Pagoda tree
Thevetia nereifolia	Yellow oleander
Putranjiva roxburghii	Jalpatri

SPECIAL PLANTING FOR PROTECTION OF RIDGES

Butea frondosa	Dhak
Ailanthus excelsa	Tree of heaven
Bauhinia variegata	Kachnar
Erythrina indica	Indian coral tree
Kigelia pinnata	Sausage tree
Lagerstroemia flosreginae	Pride of India
Pongamia glabra	Karanj
Melia azadirachta	Neem
Pterospermum acerifolium	Kanak champa
Thespesia populnea	Tulip tree

SPECIAL PLANTING FOR PROTECTION OF VALLEY SLOPES

Salix babylonica	Majnu
Terminalia arjuna	Arjun
Melia azadirachta	Neem
Cordia dichotoma	Lasora
Mimusops elengi	Molasary
Pongamia glabra	Karanj
Eucalyptus citridora	Safeda
Bamboosa arundinacea	Common bamboo
Aegle marmelos	Bael

Name of Project

Delhi Public School

Location

Numaligarh, Distt. Golaghat, Assam

Total area

14 Acres (approx.)

Client / Developer

Delhi Public School Society & Numaligarh Refineries Ltd.

Landscape Design Team

**Prof (Dr.) Rommel Mehta
Krishan C. Singal
Arun Kumar**

Project Coordinator

Dr. V. Thiruvengadam

Architect

Prof (Dr.) Rommel Mehta

Prime Consultant

**School of Planning and Architecture
New Delhi**

Other Consultants

**Structural
Dr. V. Thiruvengadam
Plumbing**

**Deolaliker Consultants
Electrical**

**Electro Consultants
Project Management
Assam Construction Corp.**

Landscape Horticulture Contractor

**Numaligarh Refineries Ltd
Horticulture Department**

Landscape Irrigation Contractor

**Numaligarh Refineries Ltd.
Horticulture Department**

Year of Commencement and Completion

1997-2001

Project Cost

1.75 crores



suggested list of plants