SOUTHEAST WATER LABORATORY

Athens, Georgia

by

David B. Harrity

A Terminal Problem Presented for the

Degree of Bachelor of Landscape Architecture

Department of Landscape Architecture

University of Georgia

Athens, Georgia

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H.B. Owens Resource Center
School of Environmental Design
Caldwell Hall
University of Georgia

SOUTHEAST WATER LABORATORY
Athens, Georgia
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SOUTHEAST WATER LABORATORY

Introduction

For a number of years there has been a growing concern throughout the United States over actual or impending shortages of water for municipal, agricultural, industrial, recreational and legitimate purposes. The realization that water resources are limited is forcing itself more and more upon the attention of the public, even in regions of relatively abundant rainfall.

In this situation it is only prudent to take stock of the potential water available, to do what can reasonably be done to store water during seasons when runoff is greatest for use in times of shortage, to transport water from areas of relative abundance to areas of scarcity, and to eliminate loss and wastage. All of these things are being done, sometimes on a grand scale. Serious study is also being given to the possibility of increasing the available supply of water by converting salt and brackish water to usable fresh water at reasonable cost.

In addition to these measures, there is a strong and accelerating trend toward conserving water quality, of controlling or preventing pollution of water so as to keep it usable and re-usable as a beneficial resource. The nation cannot continue to degrade the quality of its waters to the point that they can no longer be utilized, thereby destroying an essential resource.

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The treatment of water to remove detrimental impurities can be an expensive process. Nature itself is capable, under appropriate circumstances, of dealing with many kinds and degrees of polluting substances; and this natural purification capacity represents a considerable asset. Nature, furthermore, can teach a thoughtful observer her methods of purification; and these processes might very probably be the bases of better and cheaper methods of water purification. In this there is a fruitful field for research.

Historical Background

There are numbers of synthetic organic compounds finding their way into water that are potentially toxic in very small concentrations. New methods must be found for the treatment of water and wastes for the removal not only of conventional contaminants but also of the more refractory and persistent substances as well. Such methods may be physical, chemical, or biological; and to find and apply them calls for concerted effort by scientists and engineers.

The growing concern of the public has been reflected by the increasing insistence of both state and federal legislatures for a stronger, concentrated attack on the problem. In the last decade stronger legislative and financial backing has been given to water pollution control and to other stimulants to research. In 1956 the 84th Congress passed the Federal Water Pollution Control Act (Public

Law 880) which vested broad powers in the Public Health Service of the Department of Health, Education and Welfare. In 1962 this Act was amended (Public Law 87, 88th Congress) and in this amendment provision was made, among other things, for at least seven regional research facilities "for the conduct of research, investigation, experiments, field demonstrations and studies, and training relating to the prevention and control of water pollution." It is this act of Congress that provides official basis for the construction and operation of the Southeast Water Laboratory here at Athens.

Statement of Problem

The United States Department of Health, Education and Welfare, Public Health Service division, has acquired five acres in Northeast Georgia for a research water laboratory. The laboratory will be one of nine build throughout the United States by the Public Health Service and located near large universities. This site, consisting of 12.7 acres, is on land provided by the University of Georgia, located approximately three miles southeast of the business district of Athens on College Station Road. It is in an area, consisting of several hundred acres, set apart for research facilities. I have been retained as landscape architect to design a general landscape development plan, with particular emphasis on fountain and water display.

The portion to be developed comprises a small area of the large research park and is located in the southeast corner of the park. The boundaries of the site are: College Station Road on the north; a residential sub-division to the east; pasture land on the south (where an Agricultural Laboratory will be constructed); and on the west the new Poultry Research Laboratory. The site includes an easement for a road to the proposed Agricultural Laboratory and a ravine separating the site from the pasture land.

The overall general landscape development plan will comprise the following:

1. Administrative building containing administrative and executive offices in one wing and a training center in the other.
2. Main portion of building comprises working labs, shops, library, supply room, offices for the staff, and a lunch room.
3. Parking facilities for 125 cars.
4. Service facilities.
5. Fountain display area.

The solution will be presented in the following form:

1. Plans
   a. Master Plan
   b. Grading and Staking Plan
   c. Planting Plan

d. Sections or Profiles

e. Construction and planting details

2. Scale model of site and building

3. A bound, typewritten report which includes:

a. Title and author's name

b. Table of Contents

c. List of Plates

d. Introduction and main body of report

e. Photostatic copies of the plans and model

f. An appendix containing acknowledgements, a bibliography, specifications and cost estimate for construction and planting, and other pertinent data.

General Analysis

The landscape architect must consider certain physical conditions on the site before any design can be properly justified and carried out. The existing environment will disclose many solutions to design problems. The climate, topography, existing vegetation, and the maintenance problem are among many problems that must be studied.

The site of the Southeast Water Laboratory consists of 12.7 acres of sparsely wooded land. The basic foliage types are oak and hickory and assorted shrubs and wild grasses. To the East, along College Station Road are two main groups of oak and hickory which flow into

the wooded area at the south end of the property. These clumps are in fairly good condition and with a little tree work will be in good condition. Along the north there is a 100' easement for the Georgia Power Company. The southwest portion, the main part of the site, is open, semi-pasture land that runs into pasture land on the adjacent property.

The soil types on the site range from clay to clay loam. The present condition of the soil is fairly good due to the pasture land and shrub coverage. Since the site is quite rolling, there are two major drainage patterns, one flowing down into the ditch along College Station Road and the other into the ravine separating the site from the adjoining pasture land. The site is located in the temperate region, bordering on the hot-humid, which facilitates an informal layout of plant material to get best use of desirable sun and wind penetration.

The Southeast Water Laboratory is oriented in an East-West direction in order to keep it parallel to College Station Road. The reasoning behind this is not quite clear because this orientation makes the West side of the building very hot in the spring and summer months. The wind direction averages out to one of a westerly course so that the building does get the wind head-on.

As previously stated, the only utility on the site at the present is the Georgia Power Company's power lines which run across at the northern end of the site.

The problems faced in designing an area such as this are not only concerning with placement of different group plantings and use areas in relation to each other, but also placing these units in a manner which would best suit and accent the desirable characteristics of the site. Both topography and vegetation hold a prominent place in the design consideration, and they should be recognized as assets and used accordingly. These physical characteristics and all others must be taken into consideration before a design can be reached and a final draft be drawn up.

The different uses of the different parts of the building must also be taken into account along with the physical characteristics of the site. The landscape development of these uses must be placed in proper relation to each other and to the site as a whole. From these different relationships comes correct design for this site.

Justification and Design Conclusions

After careful consideration of the existing features of the site and each of its physical characterists and uses, the Landscape Architect must formulate certain design conclusions which tie building to the site and the proposed landscape to the existing landscape; in other words, tie everything together.

This design concept, which has evolved from a careful study of the site, is based on the recognition of the physical elements of the

site, the consideration of vehicular and service equipment movement on the site, and the different areas of the site as they relate to one another.

The first consideration to be taken is that of topography. The two entrances and the entrance road itself compliment so that a uniform slope may be obtained with as little disturbance to existing slopes as possible. Each entrance is at a low point in the site and leads up toward the main building and the parking area. The plantings are arranged with the roll of the site so that the clear view of Athens remains unobstructed. The service areas are laid out so that the basement and first floor levels are easily accessible without any unnecessary cut. The fountain area has been located in a swell so that it may be viewed equally well from the visitors' parking or from College Station Road.

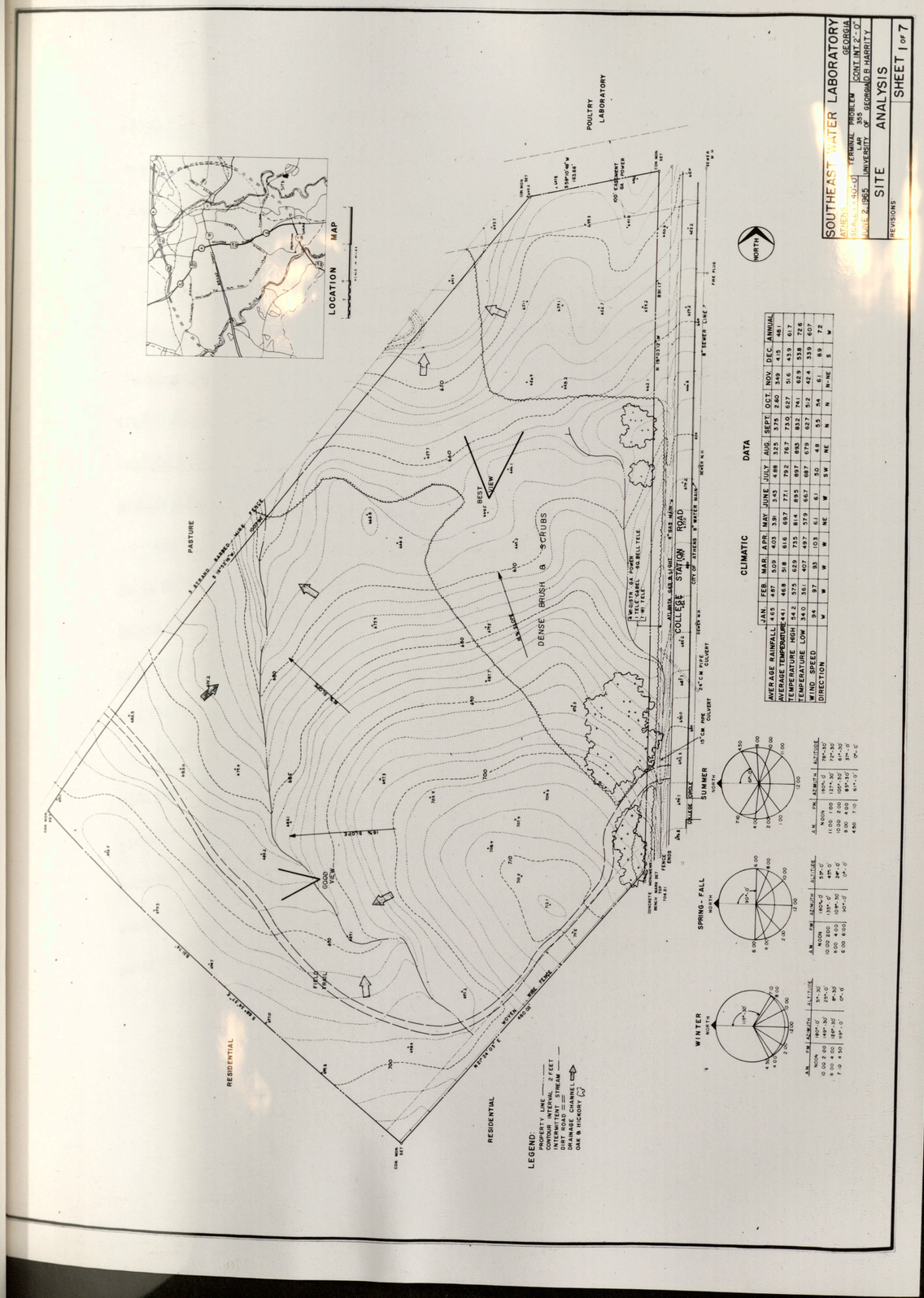
Because of the existing types of vegetation on the site, Scarlet Oak and Pin Oak have been introduced as shade trees so that they will blend in with the existing plant material. Longleaf Pine and White Pine have been introduced as the prominent evergreens and are used as both a screen and as specimen group plantings. The greatest quantity of pines has been placed on the south side of the parking area to screen it from the residential area. Two flowering trees have been introduced, the Flowering Dogwood and the Redbud, to provide scale, dimension, and color to the landscape. These trees are planted in an informal manner in order to accent the natural beauty

of the rolling site. In the back of the building, the West side, Hawthorne was introduced to provide a screen for the summer sun. To provide some fall color in a large scale, Red Maple was planted informally throughout the site.

Seven different shrubs have been selected, six evergreen and one deciduous. They range in size from one foot high to ten feet high. The areas around the building where there will be the most pedestrian traffic was the heaviest planted. In front of the administration building both deciduous and evergreen material was used in order to provide color all yeararound.

Liriope spicata was used in sunny areas on the South side because it is the hardiest ground cover in the sun. For the shady areas Hedera helix was used because of its tolerance of shade; and in the semi-shade areas Vinca minor was used because of its spring color and the fact that it is an evergreen.

Scarlet Oak was used on the terrace for two reasons; they provide good shade in the spring and summer, and in the fall they provide excellent color. In the area around the fountain, low shrubs were selected in order that the view of the fountain would not be obstructed. Flowering Dogwood and Redbud were informally placed in order to provide some color.


SOUTHEAST WATER LABORATORY
GEORGIA
ATHENS
SCALE 1" = 100'-0"
CONT. INT. 2'-0"
JUNE 2, 1965
TERMINAL PROBLEM
SOIL
UNIVERSITY OF GEORGIA
D. B. HARRITY
SITE ANALYSIS
SHEET 1 OF 7
REVISIONS
LOCATION MAP
NORTH
POULTRY LABORATORY
PASTURE
DENSE BRUSH & SCRUBS
COLLEGE STATION ROAD
RESIDENTIAL
RESIDENTIAL
BEST VIEW
GOOD VIEW
TYPICAL EAGLE
CLIMATIC DATA
SUMMER
SPRING - FALL
WINTER
LEGEND:
PROPERTY LINE
CONTOUR INTERVAL 2 FEET
INTERMITTENT STREAM
DIRECTION OF FLOW
DRAINAGE CHANNEL
OAK & HICKORY

SOUTHEAST WATER LABORATORY
GEORGIA

ATHENS
SCALE 1"=40'-0" | TERMINAL | CONT. INT. 2'-0"
JUNE 2, 1965 | UNIVERSITY OF GEORGIA | DONALD B. HARRITY

MASTER PLAN

REVISIONS

SHEET 2 OF 7

SOUTHEAST WATER LABORATORY
ATHENS GEORGIA
SCALE 1"= 40'-0" TERMINAL PROBLEM 355 CONT. INT. 2'-0"
JUNE 2, 1965 UNIVERSITY OF GEORGIA LAB
GRADING & STAKING PLAN
REVISIONS
SHEET 3 OF 7
COLLEGE STATION ROAD
COLLEGE CIRCLE
BASEMENT FIN. ELE. 686.5
FIRST FL. FIN. ELE. 693.5
SECOND FL. FIN. ELE. 693.1
ADMINISTRATION
SERVICE
PARKING
10' EASEMENT
NOTES
ALL PIPE IS VITRIFIED CLAY PIPE
CONCRETE RIP-RAP USED WHERE PIPES DRAIN INTO RAVINE
AREAS INDICATED ON PARKING ISLAND IS TYPICAL
LEGEND
CATCH BASIN
STORM SEWER
EXISTING CONTOUR
PROPOSED CONTOUR
CENTER LINE

KEY	QUAN.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT D.A.	CULTURAL NOTES
TREES						
AR	8	ACER RUBRUM	RED MAPLE	16-18'	BB	A.I. STAKE WITH 2 STAKES
CC	28	CERCIS CANADENSIS	REDBUD	8'-10'	BB	A.I. STAKE AT PLANTING
CF	23	CORNUS FLORIDA	FLOWERING DOGWOOD	8'-10'	BB	A.I. STAKE & FERTILIZE
CP	29	CRATAEGUS PHAENOPYRUM	WASHINGTON HAWTHORNE	6'-8'	BB	A.I. POISONOUS THORNS
PP	15	PINUS PALUSTRIS	LONGLEAF PINE	8'-10'	BB	A.I. GOOD SCREEN
PS	24	PINUS STROBUS	WHITE PINE	8'-10'	BB	A.I. GOOD SCREEN
QC	15	QUERCUS COCCINEA	SCARLET OAK	16-18'	BB	A.I. GOOD FALL COLOR
QP	16	QUERCUS PALUSTRIS	PIN OAK	16-18'	BB	A.I. PYRAMIDAL FORM

NOTE ALL AS INDICATED
SHRUBS ARE SHOWN MATURITY SIZE
TREES ARE SHOWN MINIMUM SIZE

KEY	QUAN.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT D.A.	CULTURAL NOTES
SHRUBS						
AG	20	ABELIA GRANDIFLORA	GLOSSY ABELIA	3'-4'	BB	A.I. EVERGREEN
JCB	46	ILEX CRENATA BULLATA	JAPANESE HOLLY	3'-4'	BB	A.I. EVERGREEN
JCP	22	JUNIPERUS CHINENSIS PFITZER	PFITZER JUNIPER	4'-5'	BB	A.I. LIKES SUN
JHP	18	JUNIPERUS HORIZONTALIS	CREEPING JUNIPER	1'-2'	BB	A.I. LOW EDGING
PG	43	PHOTINA GLABRA	JAPANESE PHOTINA	3'-4'	BB	A.I. RED FOLIAGE
RC	10	RHODODENDRON CATAWBA	CATAWBA RHODODENDRON	2-3'	BB	A.I. NATURALISTIC
VR	25	VIBURNUM RHYTIDOPHYLUM	LEATHERLEAF VIBURNUM	3'-4'	BB	A.I. GOOD SCREEN
GROUND COVERS						
HH	1530	HEDERA HELIX	ENGLISH IVY	6"@ FLAT	12"	GOOD IN SHADE
VM	1440	VINCA MINOR	COMMON PERIWINKLE	5-6" @ FLAT	12"	BLUE FLOWERS
LS	720	LIRIOPE SPICATA	CREEPING LIRIOPE	2-3" @ FLAT	12"	EVERGREEN

SOUTHEAST WATER LABORATORY
ATHENS GEORGIA
SCALE 1" = 40'-0" TERRAIN DATUM MEAN SEA LEVEL CONTOUR INT. 2'-0"
JUNE 2, 1965 DRAWN BY GEORGE B. HARRITY
PLANTING PLAN
REVISIONS
SHEET 4 OF 7

SOUTHEAST WATER LABORATORY
ATHENS GEORGIA

SCALE 1"= 20'-0" | TERMINAL PROBLEM | CONT. INT. MONIE
JUNE 2, 1965 | UNIVERSITY OF GEORGIA | LAB 355 | DONALD B. HARRITY

CENTRAL AREA DETAIL

REVISIONS

SHEET 5 OF 7

SOUTHEAST WATER LABORATORY
ATHENS GEORGIA

SCALE SHOWN	TERMINAL PROBLEM	CONT.INT NONE
JUNE 2.1965	UNIVERSITY OF GEORGIA D.R.HARRITY	
	LAB 365	

CONSTRUCTION DETAILS

REVISIONS

SHEET 6 of 7

CONCRETE PLANTER & SITTING WALL
SCALE: SHOWN

SECTION OF MANHOLE
SCALE AS SHOWN

SECTION OF DROP INLET
SCALE: SHOWN

SECTION OF CATCH BASIN
SCALE AS SHOWN

CURB, GUTTER & PAVEMENT SECTION OF PARKING AREA
SCALE: 1"=1'-0"

SECTION OF CONCRETE SITTING WALL
SCALE: 1"=1'-0"

BENCH FRONT ELEVATION
SCALE: SHOWN ON END ELEVATION

BALLED & BURLAPPED TREE
DOUBLE STAKE BRACING
SCALE: 3/4"=1'-0"

BARE-ROOT SHRUB
SCALE: SHOWN

BENCH END ELEVATION
SECTION A-A
SCALE: SHOWN

BARE-ROOT SHRUB
SCALE: SHOWN

BALLED & BURLAPPED SHRUB
SCALE: SHOWN

TYPICAL CONCRETE STEPS
SCALE: 3/4"=1'-0"

CONCRETE SIDEWALK
SCALE: 1"=1'-0"

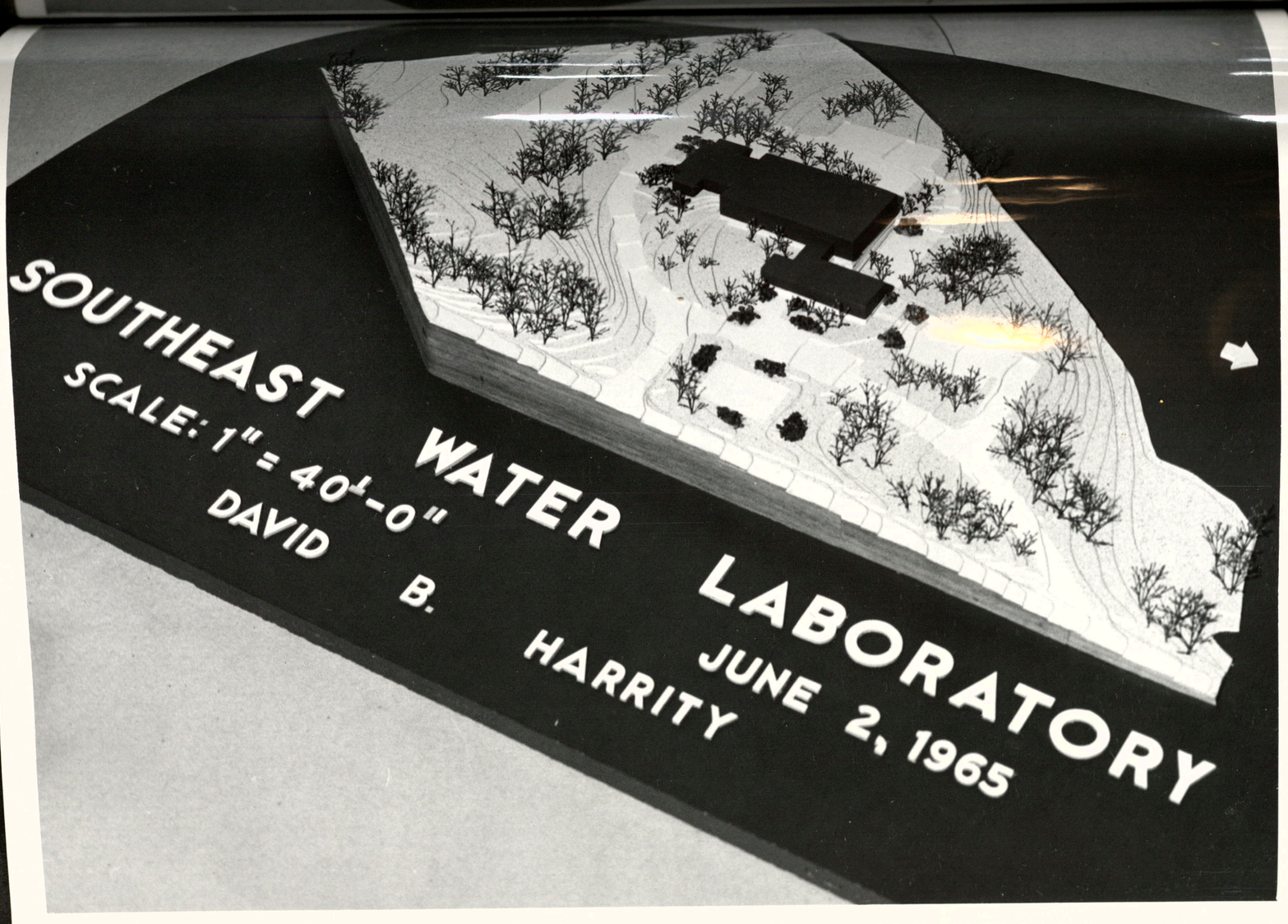
SOUTHEAST WATER LABORATORY
GEORGIA

ATHENS: TERMINAL PROBLEM — CONT. INT. NONE
SCALE: NONE — LAB 305
JUNE 4, 1965 — UNIVERSITY OF GEORGIA — D. B. HARRITY

PERSPECTIVES

REVISIONS:

SHEET 7 of 7


SOUTHEAST WATER LABORATORY
SCALE: 1" = 40'-0"
DAVID B. HARRITY
JUNE 2, 1965

NOTICE TO BIDDERS

Dr. John E. Thorson
Secretary
Room 214, Physics Building
University of Georgia
Athens, Georgia

Sealed bids are hereby given for construction and installation of plant controls at Southeast Water Laboratory. The site is located on Wilkes Dam Road, Athens, Georgia. Sealed bids shall be received by the United States Department of Health, Education, and Welfare, Public Health Service Division, on Monday, June 7, 1965 at ten o'clock Eastern Standard time in Room 214, Physics Building, University of Georgia, Athens, Georgia.

To be considered regular in every way

APPENDIX

EXCAVATING AND INSTALLATION OF ALL PLANT MATERIALS, INCLUDING FILLING SLOPE AND TOWN, CONSTRUCTION OF ENTRY AREAS CURBS, PARKING AREAS, WALKS, TERRACES, TREE PLANTING, GRASS, RETAINING WALL, BALANCE OF WORK.

No contract shall be awarded to the lowest responsible bidder subject, however, to the discretionary right reserved by the owner to waive any technicality, reject any and all proposals and to request new proposals, if in his opinion the best interest of Southeastern Water Laboratory will thereby be promoted.

The bidder must submit with his bid, security in an amount not less than five (5%) per cent of the bid, in the form, and subject to the conditions provided in the Information to Bidders.

Date February 14, 1965

NOTICE TO BIDDERS

Mr. John R. Thoman
Director
Room 254, Physics Building
University of Georgia
Athens, Georgia

Notice is hereby given for construction and installation of plant materials at Southeast Water Laboratory. The site is located on College Station Road, Athens, Georgia. Sealed bids shall be received by the United States Department of Health, Education, and Welfare, Public Health Service division, on Monday, June 7, 1965 at two o'clock Eastern Standard time in Room 254, Physics Building, University of Georgia, Athens, Georgia.

The work will consist of the following:

SUPPLYING AND INSTALLATION OF ALL PLANT MATERIALS, ESTABLISHING FINISHED GRADE AND TOWN, CONSTRUCTION OF PAVED AREAS (ROADS, PARKING AREAS, WALKS, TERRACE), TREE SLEEVES, STEPS, RETAINING WALLS, DRAINAGE SYSTEM.

The contract shall be awarded to the lowest responsible bidder subject, however, to the discretionary right reserved by the owner to waive any formalities, reject any and all proposals and to request new proposals, if, in his opinion the best interest of Southeastern Water Laboratory shall thereby be promoted.

Each bidder must deposit with his bid, security in an amount not less than five (5%) per cent of the bid, in the form, and subject to the conditions provided in the Information to Bidders.

Date: February 14, 1965

INFORMATION FOR BIDDERS
FOR THE
PLANTING AND CONSTRUCTION WORK
FOR

SOUTHEAST WATER LABORATORY
ATHENS, GEORGIA

1. RECEIPT AND OPENING OF BIDS

(a) Mr. John R. Thoman, Director, Southeast Water Laboratory, Athens, Georgia, (hereinafter called the owner) invites separate sealed bids for the:

SUPPLYING AND INSTALLATION OF ALL PLANT MATERIALS, ESTABLISHING FINISHED GRADE AND TOWN, CONSTRUCTION OF PAVED AREAS (WALKS, ROADS, PARKING AREAS, TERRACE) TREE SLEEVES, STEPS, RETAINING WALLS, DRAINAGE SYSTEM.

at the Southeast Water Laboratory.

(b) Bids shall be received by Mr. John R. Thoman, Director, Southeast Water Laboratory, Athens, Georgia on Monday, June 7, 1965 at two o'clock Eastern Standard time in Room 254, Physics Building, University of Georgia, Athens, Georgia.

(c) Any bids received after the time and date specified will not be considered. No bids will be withdrawn pending the decision of the Owner.

2. PREPARATION OF PROPOSAL

(a) Proposals must be submitted on the prescribed form, two copies of which are attached hereto, all blanks filled by printing, in ink, in both words and figures. The Contractor shall remove the proposal form from the specifications, and submit as his bid one copy, and keep the other copy for his records.

(b) All proposals must be submitted in sealed envelopes, bearing on the outside the name of the Bidder, his address, the name of the project, and the Contract bid upon.

(c) Proposals so enclosed shall be delivered to the aforementioned place on or before the hour and the date noted above.

3. OBLIGATION OF BIDDERS

(a) At the time of the opening of bids, each Bidder shall be presumed to have inspected the site and to have examined and to be thoroughly familiar with the Plans, General Conditions, General Requirements of the Contract, and Specifications (including all addenda thereto). The failure of or the omission of any Bidder to receive or examine any drawings, form, instruction or document shall in no wise relieve such Bidder from any obligation with respect to his bid.

(b) Each Bidder shall, by careful examination of the site, satisfy himself as to the location of the work to be performed and materials to be furnished, the character of equipment and facilities needed preliminary to and during prosecution of the work, the general and local conditions and all other matters which in any way effect the work specified herein.

(c) After the contract has been entered into, no consideration shall be given for any misunderstanding as to work and materials set forth herein and shown on any of the accompanying drawings, details and schedules, it being mutually understood that the tender of a bid carries with it an agreement to this and other obligations set forth in the Contract or Specifications, and further implies a full understanding of the Specifications, Drawings and Details, notes, indications and requirements.

4. AWARDS

Contract will be awarded to the lowest responsible Bidder, subject, however, to the discretionary right reserved by the Owner to waive any informalities in or to reject any or all proposals if, in his opinion, the best interests of Southeast Water Laboratory shall thereby be promoted.

5. ADDENDA AND INTERPRETATION

Bidders are expressly notified that their proposals shall be based upon materials, products, and methods specified. For the purpose of estimate, no deviation from the Drawings and Specifications will

be considered, except as provided. No interpretation of the meaning of the Drawings, Specifications or other Contract Documents shall be made to the Bidder orally. Every request for such interpretation shall be in writing addressed to Mr. John R. Thoman, University of Georgia, Athens, Georgia, and to be given consideration must be received at least five (5) days prior to the date fixed for the opening of the bids. Any and all such interpretations and any supplemental drawings which, if issued, shall be mailed to all prospective Bidders (at the respective addresses furnished for such purposes) not later than three (3) days prior to the date fixed for the opening of bids. Failure of any Bidder to receive any such addenda or interpretation shall not relieve any Bidder from any obligation, under his bid as submitted.

6. TIME FOR COMPLETION

The Contractor shall state in the bid form the number of days required for him to complete the project.

7. BID SECURITY

Each bid must be accompanied by the certified check of the Bidder, or by a Bid Bond duly executed by the Bidder as principal, and having as surety thereon a surety company approved by the Owner, in an amount not less than five (5) percentum of the amount of the bid. Such check as Bid Bond shall be returned to all except the successful Bidder within 48 hours after the Owner and the accepted Bidder have executed the Contract, or if no Contract has been executed within fifteen (15) days after the opening of bids, upon demands of the Bidder, or anytime thereafter, so long as he has not been notified of the acceptance of his Bid.

8. SECURITY OF FAITHFUL PERFORMANCE

(a) Simultaneously with the delivery of the executed Contract, the successful Bidder must deliver to the Owner an executed Performance Bond of a corporate surety licenses to do business in the State of Georgia in the amount of one hundred per cent (100%) of the accepted bid for the faithful performance of the terms, covenants, and conditions of the Contract and a further separate labor and material Bond, in the amount of fifty per cent (50%) of the accepted bid

guaranteeing the prompt payment of all indebtedness encurred by the Contractor or Sub-Contractor for supplies, materials or labor furnished, used or consumed in connection with or in or about the construction of the project, including fuels, lubricants, power, etc. The forms of both Performance Bond and Labor and Material Payment Bond shall be as per form No. 107 (AIA).

(b) The Broker for the Bond and the Surety Company shall be approved by the Owner.

(c) The premium on all Bonds shall be paid for by the Contractor.

9. FAILURE TO EXECUTE CONTRACT

Failure to execute contract and file acceptance bonds within eight (8) days shall be just cause for the annulment of the award and the forfeiture of the Proposal Guarantee which shall become the property of the Owner, not as a penalty but in liquidation of the damages sustained. Award may then be made to the next lowest responsible Bidder or the work may be readvertised and constructed under contract or otherwise, as the Owner may decide.

10. INSURANCE

(a) The successful Contractor shall not commence work until the following insurances have been obtained, approved and certificates delivered to the Owner.

(b) Workman's Compensation Insurance.

(c) Public Liability Insurance shall be furnished in amounts of $100,000/300,000, and Property Damage Insurance in amounts of $50,000.

(d) Before final payment is made, the Contractor will provide an affidavit stating all costs for labor and materials have been paid, and that the Owner is indemnified against any lien.

GENERAL CONDITIONS

Art. I. Definitions

(a) Contract - A written agreement executed between the Owner and the successful Bidder, covering the performance of work and the furnishing of labor, equipment and materials, by which the Contractor is bound to perform the work and furnish the labor, equipment and materials, and by which the Owner is obligated to compensate him therefore at the mutually established rate or price. The Contract shall include the invitation for bids, instructions to Bidders, Proposal Contract form and Contract Bond, These Specifications, all Special Provisions, all Plans and Notice to Proceed, also any written Change Orders and Supplemental Agreements that are required to complete the construction of work in an acceptable manner including authorized extensions, thereof, all of which constitute one instrument.

(b) Contract Bond - The approved form of security, executed by the Contractor and his surety or sureties, guaranteeing complete execution of the Contract and all Supplemental Agreements pertaining thereto.

(c) Equipment - All machinery, equipment and livestock, together with the necessary supplies for upkeep and maintenance and also tools and apparatus necessary for the proper construction and acceptable completion of the work.

(d) Plans - The official approved plans, profiles, typical cross sections, working drawings and supplemental drawings, or exact reproduction thereof which show the location, character, dimensions, and details of the work to be done, and which are to be considered part of the Contract supplementary to these Specifications and which are identified as such.

(e) Profile Grade - The trace of a vertical plane intersecting the top surface of the proposed wearing surface, along the longitudinal section of the roadbed.

(f) Specifications - The general term comprising all directions, provisions and requirements contained herein, together with such as may be added or adopted as Supplemental Specifications.

(g) Subcontractor - Any individual partnership, firm or corporation undertaking the construction of a part of the work under the terms of the Contract, by virtue of an agreement with the Contractor, who, prior to such undertaking, receives the consent of the Surety and the approval of the Owner.

(h) Work - Work shall be understood to mean the furnishing of all labor, materials, equipment, and other incidentals necessary to the completion of the project and the carrying out of all duties and obligations imposed by the Contract.

Art. II. Intent of Contract

The intent of the Contract is to prescribe a complete work of improvement which the Contractor undertakes to do, in full compliance with the Plans, Specifications, Special Provisions, Proposal and Contract. The Contractor shall perform all work in accordance with the lines, grades, typical cross sections dimensions, and other data shown on the Plans or as modified by the written orders, including the furnishing of all materials, implements, machinery, equipment, tools, supplies, transportation, labor, and all other things necessary to the satisfactory prosecution and completion of the Contract.

Art. III. Special Provisions

Conditions not covered by the Plans or these Specifications shall be known as Special Provisions and attached to the Proposal Form, and shall be considered a part of these Specifications the same as though contained fully herein. Special Provisions shall govern over Specifications, Supplimental Specifications and Plans. Also, it should be understood that Plans govern over Specifications and Supplimental Specifications.

Art. IV. Execution of Contract

The Contract shall be signed by the successful bidder and returned, together with the Contract Bond and Payment Bond within ten (10) days after the Owner forewards the Contract. If the Contract is not executed by the Owner within twenty (20) days after receiving properly executed Contracts, Contract Bonds, and Payment Bonds from the Contractor, he shall have the right to withdraw his bid without penalty. No Contract shall be considered as effective until it has been executed by all of the parties thereto. It shall be further understood and agreed that all Specifications as well as Special Provisions attached to the Proposal Form used in submitting bids, and all approved drawings are parts of the Contract and shall be considered in full force and effect even though not included in and/or attached to the separate form used in actual execution of the Contract.

Art. V. Shop Plans and Working Drawings

The approved plans will be supplimented by such working drawings as are necessary to adequately control the work. It is mutually agreed that all authorized alterations effecting the requirements and information given on the approved plans shall be in writing and approved by the Landscape Architect. When at any time reference is made to the Plans, the interpretation shall be the Plans as affected by all authorized alterations then in effect.

Art. VI. Copies Furnished

Unless otherwise provided in the Contract Documents, the Landscape Architect will furnish to the Contractor, free of charge, all copies of drawings and Specifications necessary for the execution of the work.

Art. VII. Drawings and Specifications on the Work

The Contractor will keep one copy of Drawings and Specifications on the work, in good order, available to the Landscape Architect.

Art. VIII. Ownership of Drawings

The drawings and Specifications furnished by the Landscape Architect are his property. They are not to be used on other work and are to be returned to him on request, at the completion of the work.

Art. IX. Materials, Appliances, Employees

Unless otherwise stipulated, the Contractor will provide and pay for, all materials, labor, water, tools, equipment, light, power, transportation and other facilities necessary for the execution and completion of the work.

Art. X. Protection of Work and Property

The Contractor will maintain adequate protection of all his work from damage and will protect the Owner's property from injury or loss arising in connection with the Contract. He will make good any such damage, injury, or loss, except such as may be directly due to errors in the Contract Documents, or caused by agents or employees of the Owner. He will adequately protect adjacent property as provided for by law.

The Contractor will take all necessary precautions for the safety of employees on the work, and will comply with all applicable provisions of Federal, State and Municipal safety laws to prevent accident, injury to person on, about, or adjacent to the premises where the work is being performed. He will erect and properly maintain at all times, as required by the conditions and progress of the work, all necessary safeguards for the protection of workmen and the public.

Art. XI. Inspection of Work

All materials and each part or detail of the work shall be subject at all times to inspection by the Landscape Architect or his authorized representative, and the Contractor will be held strictly to the Contract and allowable tolerances and regard to quantity of materials, workmanship and the diligent execution of the Contract. The Landscape Architect or his representative shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

Art. XII. Superintendence: Supervision

The Contractor will keep on his work, during its progress, a competent superintendent, satisfactory to the Landscape Architect.

The Contractor will give efficient supervision to the work, using his best skill and attention. He will carefully study and compare all drawings and Specifications, and will at one report to the Landscape Architect any error, inconsistancy or omission which he may discover, but he will not be held responsible for their existence or discovery.

Art. XIII. Additional Work

The Contractor shall perform such increased quantity of any contract item as the Landscape Architect may deem necessary to properly complete the Contract, and shall receive in full payment for such increased work the prices in the Proposal or by Supplimental Agreement(s) when such Supplimental Agreement(s) is (are) properly agreed to and executed.

Art. XIV. Changes in the Work

The Owner, without invalidating the Contract, may order extra work or make changes by altering, adding to, or deducting from the work, the Contract sum being adjusted accordingly. All such work will be

executed under the conditions of the original Contract. In giving instructions, the Landscape Architect will have the authority to make minor changes in the work not involving extra cost.

The value of any extra work or change will be determined in one of the following ways:

(a) By estimate and acceptance in a lump sum.
(b) By unit price named in the contract or subsequently agreed upon.
(c) By cost and percentage or by cost and fixed fee.

Art. XV. Claims for Extra Cost

If the Contractor claims that any instructions by drawings or otherwise involves extra cost under this Contract, he will give the Landscape Architect written notice thereof within a reasonable time after such instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property, and the procedure will then be as provided as for changes in the work.

Art. XVI. Correction of Work Before Final Payment

If the Contractor does not remove from the premises all work condemned by the Landscape Architect as failing to conform to the Contract within a reasonable time, fixed by written notice, the Owner may remove it and may store the material at the expense of the Contractor. If the Contractor does not pay the expenses of such removal within ten (10) days time thereafter the Owner may, upon ten (10) days notice, sell such materials at auction or at private sale and shall account for the net proceeds thereof, after deducting all the cost and expenses that should have been borne by the Contractor.

Art. XVII. Correction of Work After Final Payment

Neither the final certificate nor payment nor any provision in the Contract Documents will relieve the Contractor of responsibility for faulty materials or workmanship, and, unless otherwise specified, he will remedy any defects due thereto, and pay for damage for other work resulting therefrom, which will appear within a period of one year from the date of substantial completion. The Owner will give notice of observed defects with responsible promptness. All questions arising under this article will be decided by the Landscape Architect subject to arbitration.

Art. XVIII. The Owner's Right to do Work

If the Contractor should neglect to prosecute the work or fail to perform any provisions of this Contract, the Owner, after three (3) days written notice to the Contractor may, without prejudice to any other remedy he may have, make good such deficiencies and may deduct the cost thereof from the payment then, or thereafter due the Contractor, provided, however, that the Landscape Architect approve such action and the amount charged to the Contractor.

Art. XIX. Owner's Right to Terminate Contract

If the Contractor should be adjudged a bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should persistantly or repeatedly refuse or should fail to provide enough properly skilled workmen or proper materials, or if he should fail to make prompt payment to subcontractors or for materials or labor, or persistantly disregard laws, ordinances, or the instructions of the Landscape Architect, or otherwise be guilty of a substantial violation of any provision of the Contract, then the Owner, upon the certificate of the Landscape Architect that sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor seven (7) days written notice, terminate the employment of the Contractor and take possession of the premises and of all Materials, tools and appliances thereon and furnish the work by whatever method he may deem expedient. In such case the Contractor will not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract price shall exceed the expense of finishing the work including compensation for additional managerial and administrative services, such excess will be paid to the Contractor. If such expense shall exceed such unpaid balance, the Contractor will pay the difference to the Owner. The expense incurred by the Owner has herein provided, and the damage incurred through the Contractor's default, will be certified by the Landscape Architect.

Art. II. Contractor's Right to Stop Work or Terminate Contract

If the work should be stopped under the order of any court, or under public authority, for a period of three months, through no act or fault of the Contractor or of anyone employed by him, or if the Landscape Architect should fail to issue any certificate for payment within seven (7) days after it is due, or if the Owner should fail to pay the Contractor within seven (7) days after its maturity and presentation, any sum certified by the Landscape Architect or awarded by arbitrators, then the Contractor may, upon seven (7) days written

notice to the Owner and the Landscape Architect, stop work or terminate this Contract and recover from the Owner payment for all work executed and any loss sustained upon any plant or materials and reasonable profit and damages.

Art. XXI. Applications for Payment

The Contractor will submit to the Landscape Architect an application for each payment, and, if required, receipts or other vouchers, showing his payments to subcontractors as required by article XXXI.

If payments are made on valuation of work done, such application will be submitted at least ten days before each payment falls due, and, if required, the Contractor will, before the first application, submit to the Landscape Architect a schedule of values of the various parts of the work, including quantities, aggregating the total sum of the divided so as to facilitate payments to subcontractors in accordance with article XXXI (e), made out in such form as the Landscape Architect and the Contractor may agree upon, and, if required, supported by such evidence as to its correctness as the Architect may direct. This schedule, when approved by the Landscape Architect, will be used as a basis for certificates of payment, unless it be found to be in error. In applying for payments, the Contractor will submit a statement based upon this schedule, and, if required, itemized in such form and supported by such evidence as the Landscape Architect may direct, showing his right to the payment claimed.

If payments are made on account of materials delivered and suitable stored at the site, but not incorporated in the work, they will, if required by the Landscape Architect, be conditional upon submission by the Contract of bills of sale or such other procedure as will establish the Owner's title to such material or otherwise adequately protect the Owner's interest.

Art. XXII. Certificates of Payments

If the Contractor has made application as above, the Landscape Architect will, not later than the date when each payment falls due, issue to the Contractor a certificate for such amount as he decides to be properly due, or state in writing his reasons for withholding a certificate.

No certificate issued nor payment made to the Contractor, nor partial or entire use or occupancy of the work by the Owner, will be an acceptance of any work or materials not in accordance with this contract. The making and acceptance of the final payment will constitute a waiver of all claims by the Owner, other than those arising from unsettled liens, from faulty work appearing after final payment or

from requirement of the specifications, and of all claims by the Contractor, except those previously made and still unsettled.

Should the Owner fail to pay the sum named in any certificate of the Landscape Architect or in any award by arbitration, upon demand when due, the Contractor will receive, in addition to the sum named in the certificate, interest thereon at the legal rate in force at the place of building.

Art. XXIII. Payments Withheld

The Landscape Architect may withhold or, on account of subsequently discovered evidence, nullify the whole or a part of any certificate to such extent as may be necessary to protect the Owner from loss on account of:

(a) Defective work not remedied.
(b) Claims filed or reasonable evidence indicating probable filing of claims.
(c) Failure of the Contractor to make payments properly to subcontractors or for material or labor.
(d) A reasonable doubt that the contract can be completed for the balance then unpaid.
(e) Damage to another Contractor.

When the above grounds are removed, payment will be made for amounts withheld because of them.

Art. XXIV. Contractor's Liability Insurance

The Contractor will maintain such insurance as will protect him from claims under workmen's compensation acts and from claims for damages because of bodily injury, including death, which may arise from and during operations under this Contract, whether such operations be by himself or by any subcontractor or anyone directly or indirectly employed by either of them. This insurance will be written for not less than any limits of liability specified as part of this contract.

Art. XXV. Owner's Liability Insurance

The Owner will be responsible for and at his option may maintain such insurance as will protect him from his contingent liability to others for damages because of bodily injury, including death, which may arise from operations under this contract, and any other liability for damages which the Contractor is required to insure under any provision of this contract.

Art. XXVI. Fire Insurance

The Owner will effect and maintain fire insurance on all structures on property that the work of this contract is to be done to 100 per cent of the insurable value, including items of materials connected therewith whether in or adjacent to the structure insured, materials in place or to be used as part of the permanent construction including surplus materials in place or to be used as part of the work, and such structures, miscellaneous materials and supplies incident to the work. The loss, if any, is to be made adjustable with and payable to the Owner as Trustee for the insureds as their interests may appear, except in such cases as may require payment of all or proportion of said insurance to be made to a mortgagee as his interests may appear.

The Contractor and all subcontractors shall be named or designated in such capacity as insured jointly with the Owner in all policies. If the Owner fails to effect or maintain insurance as above and so notifies the Contractor, the Contractor may insure his own interest and that of the subcontractors and charge the cost thereof to the Owner.

Art. XXVII. Guarantee Bonds

The Owner will have the right, prior to the signing of the Contract, to require the Contractor to furnish bond covering the faithful performance of the Contract and the payment of all obligations arising thereunder, in such form as the Owner may prescribe and with sureties as he may approve. If such bond is required by instructions given previous to the submission of bids, the premium will be paid by the Contractor; if subsequent thereto, it will be paid by the Owner.

Art. XXVIII. Responsibility for Damage Claims

The Contractor shall indemnify and save harmless the Owner or all of his representatives from all suits, actions, or claims of any character brought on account of any injuries or damages sustained by any person or property in consequence of any neglect in and safeguarding the work or through the use of unacceptable materials in the construction of the improvement, or an account of any act or omission by said Contractor, or as a result of faulty, or inadequate or improper temporary drainage during construction, or on account of the use or misuse, storage or handling of explosives, or on account of any claims or amounts recovered for any infringement, or patent, trademark or copyright, or from any claims or amounts arising or recovered under the Workmen's Compensation Laws, or any other law, by-law, ordinance, order or decree. The Contractor shall be responsible for all damage

or injury to property of any character during the prosecution of the work resulting from any act, omission, neglect, or misconduct, in the manner of method of executing said work satisfactorily or due to the non-execution of said work or at any time due to defective work or materials and said responsibility shall continue until the improvement shall have been completed and accepted.

Claims for damages will be made in writing to the party liable within a reasonable time of the first observance of such damage and not later than the time of final payment, except as expressly stipulated otherwise in the case of faulty work or materials, and will be adjusted by agreement or arbitrations.

Art. XXIX. Liens

Neither the final payment nor any part of the retained percentage will become due until the Contractor, if required, will deliver to the Owner a complete release of all liens arising out of this Contract, or receipts in full lieu thereof, and, if required in either case, an affidavit that so far as he has knowledge or information the releases and receipts include all the labor and material for which a lien could be filled; but the Contractor may, if any subcontractor refuses to finish a release or receipt in full, furnish a bond satisfactory to the Owner, to indemnify him against any lien. If any lien remain unsatisfied after all payments are made, the Contractor will refund to the Owner all money that the latter may be compelled to pay in discharging such a lien, including all costs and a reasonable attorneys' fee.

Art. XXX. Assignment

Neither party to the Contract will assign the Contract or sublet it as a whole without the written consent of the other, nor will the Contractor assign any money due or to become due to him hereunder, without the previous written consent of the Owner.

Art. XXXI. Mutual Responsibility of Contractors

Should the Contractor cause damage to any separate contractor on the work the Contractor agrees, to settle with such contractor by agreement or arbitration, if he will so settle. If such separate contractors sue the Owner on account of any damage alleged to have been so sustained, the Owner will notify the Contractor, who will defend such proceedings at the Owner's expense, and, if any judgment against the Owner arise therefrom, the Contractor will pay or satisfy it and pay all costs incurred by the Owner.

Art. XXXII. Separate Contracts

The Owner reserves the right to let other contracts in connection with this work. The Contractor will afford other contractors reasonable opportunity for introduction and storage of their materials and the execution of their work, and will properly connect and coordinate his work with theirs.

Art. XXXIII. Subcontractors

The Contractor will as soon as practicable after the execution of the contract, notify the Landscape Architect in writing of the names of subcontractors proposed for the principal parts of the work and for such others as the Landscape Architect may direct and will employ any that the Landscape Architect may within a reasonable time object to as incompetent or unfit.

If the Contractor has submitted before execution of the contract a list of subcontractors and the change of any name on such a list is required in writing by the Owner after such execution, the contract price will be increased or diminished by the difference in cost occasioned by such changes.

The Landscape Architect will, on request, furnish to any subcontractor, wherever practicable, evidence of the amounts certified on his account.

The Contractor agrees that he is as fully responsible to the Owner for the acts of his subcontractors and of persons either directly or directly employed by them, as he is for the acts and omissions of persons directly employed by him.

Nothing contained in the contract document will create any contractual reaction between any subcontractor and the Owner.

Art. XXXIV. Relations of Contractor and Subcontractor

The Contractor agrees to bind every Subcontractor and every Subcontractor agrees to be bound by the terms of the Agreement, the General Conditions, the Drawings, and Specifications as far as applicable to his work, including the following provisions of this article.

The Subcontractor agrees--

(a) To be bound to the Contractor by the terms of the Agreement, General Conditions, Drawings, and Specifications, and to assume toward him all the obligations and responsibilities that he assumes toward the Owner.

(b) To submit to the Contractor applications for payment in such reasonable time as to enable the Contractor to apply for payment under Art. XXI of the General Conditions.
(c) To make claims for extras to the Contractor in the manner provided in the General Conditions for like claims by the Contractor upon the Owner, except that the time for making claims for extra cost is one week.

The Contractor agrees--

(d) To be bound to the Subcontractor by all the obligations that the Owner assumes to the Contractor under the Agreement, General Conditions, Drawings, Specifications and by all the provisions thereof affording remedies to the Contractor from the Owner.
(e) To pay the Subcontractor, upon the payment of certificates, if issued under the schedule of values in Art. XXI of the General Conditions, the amount allowed to the Contractor on account of the Subcontractor's work to the extent of the Subcontractor's interest therein.
(f) To pay the Subcontractor, upon the payment of certificates, if issued otherwise than as in (e), so that at all times his total payments will be as large in proportion of the value of the work done by him as the total amount certified to the Contractor is to the value of the work done by him.
(g) To pay the Subcontractor to such extent as may be provided by the Contract Documents or the subcontract, if either of these provides for earlier or larger payments than the above.
(h) To pay the Subcontractor on demand for his work or materials as far as executed and fixed in place, less the retained percentage, at the time the certificate is issued.
(i) To pay the Subcontractor a just share of any fire insurance money received by him, the Contractor.
(j) To make no demand for liquidated damages or penalty for delay in any sum in excess of such amount as may be specified in the contract.
(k) That no claim for services rendered or materials furnished by the Contractor to the Subcontractor will be valid unless written notice thereof is given by the Contractor to the Subcontractor during the first ten days of the calendar month following that in which the claim originated.
(l) To give the Subcontractor an opportunity to be present and to submit evidence in any arbitration involving his right.
(m) To name as arbitrator as provided for in the General Conditions the person nominated by the Subcontractor, if the sole cause of dispute is the work, materials, rights, or responsibilities of the Subcontractor.

The Contractor and Subcontractor agree--

(n) In the matter of arbitration, their rights and obligations and all procedure will be analogous to those set forth in this contract. Nothing in this article will create any obligation on the part of the Owner to pay or to see to the payment of any sums to any subcontractor.

Art. XXXV. Landscape Architect's Status

He is the agent of the Owner as provided in the Contract Documents.

The Landscape Architect will side neither with the Owner nor with the Contractor, but will use his power under the contract to enforce its faithful performance by both.

Art. XXXVI. Landscape Architect's Decisions

The Architect will, within a reasonable time, make decisions on all claims of the Owner or Contractor and on all other matters relating to the execution and progress of the work or the interpretation of the Contract Documents.

Art. XXXVII. Cash Allowances

The Contractor will include in the contract summ all allowance named in the Contract Documents and will cause the work so covered to be done by such contractors and for such sums as the Architect may direct, the contract sum being adjusted in conformity therewith.

The Contractor will not be required to employ for any such work persons against whom he has a reasonable objection.

Art. XXXVIII. Arbitration

All disputes, claims, or questions subject to arbitration under this contract will be submitted to arbitration in accordance with the provisions, then obtaining, of the standard Form of Arbitration Procedure of the American Institute of Architects.

Art. XXXIX. Use of Premises

The Contractor will confine his apparatus, the storage of materials, and the operations of his workmen to the limits indicated by law, ordinances, permits, or directions of the Landscape Architect and will not unreasonably encumber the premises with his materials.

Art. XL. Final Cleaning Up

Upon completion of the work specified in the Contract, and before final payment will be made, the construction area and all other adjoining areas, other than those owned and/or controlled by him, occupied by the Contractor during the construction of said Contract shall be cleaned of all surplus and discarded materials, false work, rubbish and temporary structures and buildings; that were placed thereon by the Contractor, and left in a neat and presentable condition. Borrow pits and spoil areas shall be treated as elsewhere herein provided.

DIVISION PL - 1

EARTHWORK

PL 1.1 GENERAL

(a) Work under this division is indicated on the drawings entitled "Grading & Staking Plan" and "Construction Details" prepared by David B. Harrity, Landscape Architect, Staten Island, New York.

(b) Each Bidder will familiarize himself with the Contract Documents and shall visit the site of proposed work to acquaint himself with the existing conditions pertinent to the execution of all work described herein.

(c) Should the Bidder find a discrepancy of omission in the Specifications, or should he be in doubt as to the meaning of any portion of them, he shall then notify the Landscape Architect who shall then instruct all bidders in the matter by an Addendum.

(d) This Contractor shall guard and protect against damage to existing work. Any work, already completed, that is disturbed or in any way damaged or changed, shall be replaced to original condition, or as shown on the drawings.

PL 1.2 CLEARING AND GRUBBING

(a) This item shall consist of clearing and grubbing areas as described below and in conformity with the Plans.

(b) Clearing is defined as the clearing of areas of trees, shrubs, brush, down timber, rotten wood rubbish and any other vegetation, as well as the removal of fences and incidental structures.

(c) Grubbing is defined as removing from the ground all stump roots and stubs, brush, organic materials and debris. When indicated such materials as leaf mould or other organic materials above the surface of the ground and suitable for use as mulch or as topsoil, shall be salvaged and stockpiled.

(d) Limits of clearing shall be out of construction limits. All other areas within the "Limit of Work" shall be cleaned

of all rubbish and fallen wood. All standing stumps and dead trees shall be cut off flush with the ground. The Landscape Architect has the right to designate trees and other growth to leave standing and when such is done, the Contractor shall conform to such direction.

(e) Limits of grubbing are hereby defined to include construction area (out to out excavation or embankment, as the case may be.)

(f) Removal materials derived from clearing and grubbing shall be salvaged and/or disposed of as subsequently set forth.

PL 1.3 ROADWAY EXCAVATION

(a) Description

1) Roadway excavation shall in general consist of excavation and grading for roadways and their appurtenances to lines and grades indicated on the Plans. Unsuitable and excess materials in any excavation shall be disposed of by being removed from the limits of the work or to such locations as approved by the Landscape Architect.

2) Roadway excavation shall include the following:
   (a) Within the boundary faces of the typical cross section(s) indicated on the Plans, including ditches within the cut section.
   (b) Topsoil to be salvaged within the limits of the road.
   (c) Excavation for stream and channal changed.

(b) Construction Methods

1) All suitable material removed from the excavation shall be used as far as practicable in the formation of embankment, subgrade, shoulders, slopes, backfill for structures and at such other places as directed.

2) Boulders and excavated rock shall be broken and reduced in size so as to be acceptable for use in embankments and in other specified areas.

3) All earth slopes shall be formed in lines conforming to the plans.

4) All boulders and ledge rock encountered in the roadbed, shall be removed within ditch lines.

5) All spaces created by removal of rock, or unsuitable material, shall be backfilled to the lines and grades indicated on the Plans.

PL 1.4 EMBANKMENT

(a) Embankment shall be formed of suitable material, obtained from roadway, Structure and other excavation included in the Contract and it shall be placed, processed and compacted to the lines and grades on the Plans.

PL 1.5 EARTH SHOULDERS

(a) This item shall consist of the formation and compaction of earth shoulders in conformity with the lines and grades shown on the Plans and in accordance with these Specifications.

(b) Earth shoulders shall be composed of suitable materials from roadway or Structure excavation, supplemented by suitable material, if directed from borrow excavation.

(c) Construction Methods

1) Earth shoulders shall be formed and compacted as soon as possible after the surfacing item is complete.

2) Any damage to the surfacing or pavement by reason of carelessness or negligence on the part of the Contractor shall be repaired to the satisfaction of the Landscape Architect.

3) The entire shoulder area shall be uniformly and thoroughly compacted by rolling with a tandem, or three-wheel or pneumatic tire roller.

4) The weight of any roller used for this operation shall be such that the shoulder shall be thoroughly compacted; however, the weight shall not exceed that required for the adjacent surface of pavement. The areas to be shaped and compacted shall include all shoulder areas shaped to the specified cross-slope.

DIVISION PL - 2

CONSTRUCTION WORK

PL 2.1 GENERAL

(a) Work under this division is indicated on drawings entitled "Grading & Staking Plan and "Construction Details" prepared by David B. Harrity, Landscape Architect, Staten Island, New York.

(b) Each Bidder will familiarize himself with the Contract Documents and shall visit the site of proposed work to acquaint himself with the existing conditions pertinent to the execution of all work described herein.

(c) Should the Bidder find a discrepancy or omission in the Specifications, or should he be in doubt as to the meaning of any portion of them, he shall then notify the Landscape Architect who shall then instruct all Bidders in the matter by an Addendum.

(d) This Contractor shall protect, and guard against damage to existing work. Any work already completed, that is disturbed or in any way damaged or changed, shall be replaced to original condition, or as shown on the drawings.

PL 2.2 WORK INCLUDED

(a) The work covered by this specification consists of furnishing labor and materials, equipment appliances necessary for establishing finished grade, and for construction of concrete sitting walls, concrete retaining walls, steps, tree sleeves, construction of paved areas, construction of drainage system as shown on drawings and schedules as specified herein including but not limited to the following:

1) Furnishing cement, stone, sand, water, reinforcement rods, prefabricated concrete coping, formwork and all other necessary materials for the construction of the sitting walls.

2) Furnishing cement, stone, sand, water, reinforcement rods, formwork, and all other necessary materials for the construction of the retaining walls.

3) Furnishing cement, stone, sand, water, wire mesh reinforcement, and all other necessary materials for the construction of the concrete tree sleeves.

4) Furnishing cement, stone, sand, water, steel reinforcement rods, formwork and all other necessary materials for the construction of the concrete steps.

5) Establishing base for paved areas.

6) Furnishing materials used in base.

7) Furnishing concrete asphalt mixtures for roads and walks.

8) Furnishing combination curb and gutter for parking areas.

PL 2.3 CONCRETE

(a) All cement shall be Portland Cement and shall meet the requirements of the latest standard specifications of the American Society of Testing Materials. It shall be dry and in its original container.

(b) Water used in mixing concrete shall be free from acids alkalies, oils, salts, organic matter or any deleterious substances which would impair the strength of the concrete. Water containing not more than one per cent (1%) of chlorides by weight will be acceptable for curing concrete.

(c) Fine aggregate shall consist of clean, washed sand, ninety-five per cent (95%) which shall pass through a number four (4) sieve. Not less than fifty per cent (50%) shall be retained in a number thirty (30) sieve, and not more than five per cent (5%) shall pass a 100 mesh sieve.

(d) Coarse aggregate may be either crushed stone, gravel, crushed slag or combinations thereof.

1) Crushed stone shall consist of particles of clean, hard, tough, durable rock free from adherent coating.

2) Gravel shall be composed of hard, durable particles of clean stone and shall be free from an excess of thin, or elongated pieces, frozen lumps, vegetable or other deleterious matter.

3) Crushed slag shall be air-cool, blast furnace slag weighing not less than 70 lbs. per cu. ft. dry rodded, when produced to a number six (6) size and shall consist of angular fragment, reasonably uniform in density and quality, and reasonably free from thin, elongated or glassy pieces, dirt or other objectionable matter and coatings of any character that would indicate an unstable product.

4) Crushed gravel shall consist of clean, hard durable particles of clean stone, and shall be free from an excess of elongated pieces, frozen lumps or vegetable or other deleterious matter, and shall contain at least seventy-five per cent (75%) crushed particles.

5) Coarse aggregate shall consist of number one (1) and number two (2) size particles, provided that not more than fifty per cent (50%) or less than thirty per cent (30%) shall be of number one (1) size or more than seventy per cent (70%) or less than fifty per cent (50%) shall be of number two (2) size.

(e) All concrete shall have an ultimate compressive strength of three thousand (3,000) pounds per square inch at the end of twenty-eight (28) days.

PL 2.4 REINFORCEMENT STEEL

(a) All rods for concrete reinforcement shall be of performed rods, rolled of new brilliant steel conforming to the specifications of the American Society for Testing Materials.

(b) Wire mesh for reinforcement shall be composed of cold drawn steel wires in accordance with the specifications of the American Society of Testing Materials. It shall be furnished in flat sheets of the dimensions, spacing and wire sizes specified on the plans.

PL 2.5 MASONRY WORK

Masonry units shall be laid in the best manner, well bonded with corners true and laid in a full bed of mortar with joints shulshed full. Care must be taken during the course of the work to keep free from injurious strains. After completion of masonry work, all exposed work shall be washed down and left clean, and in every way acceptable to the Owner.

PL 2.6 CONCRETE SITTING WALLS

The Contractor shall construct the concrete sitting walls set into the asphalt concrete pavement as shown on the plans as follows:

1) The concrete sitting walls shall be square with an exterior dimension of eight (8) feet and an interior dimension of seven (7) feet and formed in two equal sections, see Plans. The structures shall be fifteen (15) inches high from the ground level and extend one (1) foot below the ground level, with a width of twelve (12) inches from the top to five (5) inches below the ground level and widening to an ultimate width of eighteen (18) inches at the base.

2) The concrete used for the construction of the sitting walls shall be mixed in the proportions of one (1) part Portland Cement, two (2) parts sand, and three (3) parts gravel or crushed stone.

3) Concrete shall be poured in continuous layers, six (6) to eight (8) inches deep.

4) Number 3 temperature rods shall be placed two (2) inches from the outer face of the wall and twelve (12) inches on center.

5) The mortar for the precast concrete coping shall be composed of one (1) part of Portland Cement and a maximum of two (2) parts fine aggregate, with not more than five (5) parts of hydrated lime or lime putty.

PL 2.7 CONCRETE TREE SLEEVES

The Contractor shall construct concrete tree sleeves located on the Plans as follows:

1) The concrete structures shall have exterior dimensions of four (4) feet long, four (4) feet wide and five (5) feet deep; and an interior dimensions of one (1) foot radius, and four feet and six inches (4' 6") deep, as shown on the Plans.

2) The concrete used for the construction of concrete tree sleeves shall be mixed in the proportions of one (1) part Portland Cement, two (2) parts sand, and three (3) parts gravel or crushed stone.

3) Concrete shall be poured in continuous layers, six (6) to eight (8) inches deep.

4) One quarter (¼) inch wire mesh reinforcing with six (6) inch spacing shall be placed three (3) inches from the interior face of the structure, as shown on the Plans.

PL 2.8 ASPHALT CONCRETE PAVEMENT

(a) Entrance Road, Parking Area, Service Road, and Walks.

1) The Contractor shall have the responsibility for installing these in accordance with the Asphalt Institute Specifications 1(SS-1), Asphalt Institute, College Park, Maryland, March 1962.

PL 2.9 BENCHES

(a) The Contractor shall establish benches as follows:

(b) Benches located in terrace as shown on drawings shall be constructed as follows:

(1) Bench shall be constructed of five (5) two by fours (2x4's) by eight (8) feet, and two (2) two by six's (2x6's) by eight (8) feet Redwood lumber separater by six (6) one half by three (½x3) inch Redwood dividers as shown on drawings.

(2) Bench shall be tied together with three eights (3/8's) inch thread rods.

(3) Bench shall be treated with Ressex Redwood Stain.

(4) Three (3) bench supports shall be located one foot-five (5) inches from end of bench on one (1) foot seven (7) inches centers.

(5) Bench supports shall be three (3) feet long, one and one half (1½) inches below finish grade, three (3) inches thick, one (1) foot five (5) inches wide on top, with a two by two (2x2) inch recess on each edge tapering to one (1) foot at finish grade.

(6) Form work plans shall be submitted by contractor and approved by Landscape Architect before being used on the work, no special remuneration shall be made for form work, the cost of such work being included in the

price tendered for concrete.

(7) The concrete shall be mixed in the proportions of one (1) part Portland cement, two (2) parts sand and (3) parts gravel or crushed stone.

(8) Number three (3) reinforcement rods shall be placed in bench supports as shown on drawings.

(9) After all forms have been removed, all exposed surfaces shall be rubbed with carborundum bricks and clean water only to a uniform color and finish satisfactory to the Landscape Architect.

(10) After the cast standards have been removed from the forms, they shall be cured for a period of at least seven (7) days before being removed from the original pallet. Curing shall be done in a closed room which can be maintained at an even temperature. Cast standards shall be moistened every four (4) hours during the curing period.

(11) Contractor shall not commence quantity production on the cast bench standards until a finished sample has been approved by Landscape Architect.

PL 2.10 MANHOLES

(a) The Contractor shall build manholes of the size called for on the plans, where indicated on the plans or ordered by the Landscape Architect, in accordance with the plans and specifications, and the directions of the Landscape Architect.

(b) The Contractor shall construct manholes as follows:

(1) The concrete shall be mixed in the proportions of one (1) part Portland cement, two (2) parts fine aggregate and four (4) parts coarse aggregate, with the maximum size of stone limited to one (1) inch.

(2) Mortar shall be composed of one (1) part Portland cement and two (2) parts fine aggregate, with not more than five (5) per cent of the cement content of hydrated lime or lime putty.

(3) Ladder rungs for manhole shall be constructed of wrought iron and shall be hot-dipped galvanized after bending.

(4) Frames and covers shall be of the type shown on plans or as directed by Landscape Architect.

(5) Frames Shall be adjusted to the final grades by the use of cement mortar or by brick masonary set in cement mortar.

(6) The Contractor shall furnish materials for and do all incidental work to complete the structure, including the work of setting and adjusting frames and plastering.

No additional payment will be allowed for the aforesaid, but the cost thereof will be deemed to have been included in all the prices bid for all the items, for which prices are named in the contract.

PL 2.11 FOUNTAIN

(a) The Contractor shall establish the fountain as follows:

(b) Fountain pool is to be made of concrete mixed at the same proportion as stated herein for the concrete sitting wall.

(c) Pool walls are to be six (6) inches thick and reinforced with No. 7 steel bars. Pool floor is to be a six (6) inch concrete slab reinforced with No. 10 steel mesh.

(d) Pool is to be eighteen (18) inches deep with a six (6) inch footing for the walls.

(e) Concrete surfaces on both inside and outside of pool are to be uniformly water proofed with hot coal-tar pitch. No less than 50 lbs. per square of coal-tar pitch is to be used.

(f) Spray rings will be Heavy Duty Red Brass with diameters of 45 feet, 35 feet, 25 feet, and 4 feet.

(g) Pump to be 40 horsepower, single stage centrifugal, 222/440 volts, 60 cycle 3 phase with 8" suction and 8" discharge (3576).

(h) Contractor shall see Roman Fountain Catalogue Guide to Better Fountain Designs for complete specifications and details.

DIVISION PL - 3

PLANTING WORK

PL 3.1 GENERAL

(a) Work under this division is indicated on drawings entitled "Planting Plan" and "Construction Details", prepared by David B. Harrity, Landscape Architect, Staten Island, New York.

(b) Each Bidder will familiarize himself with the Contract Documents and shall visit the site of proposed work to acquaint himself with the existing conditions pertinent to the execution of all work described herein.

(c) Should the Bidder find a discrepancy or omission in the Specifications, or should he be in doubt as to the meaning of any portion of them, he shall then notify the Landscape Architect who shall then instruct all bidders in the matter by an Addendum.

(d) This Contractor shall guard and protect against damage to existing work. Any work, already completed, that is disturbed or in any way damaged or changed, shall be replaced to original condition, or as shown on the drawings.

PL 3.2 WORK INCLUDED

(a) The work covered by this Specification consists of furnishing all labor, materials, equipment and appliances necessary for Planting of Major and Minor Plants, as shown on drawings and schedules and as specified herein, including but not limited to the following:

Excavating for all tree and shrub pits and beds.

Furnishing and preparing topsoil for backfilling all tree and shrub pits and beds.

Furnishing and incorporating fertilizer and peat.

Furnishing and planting all trees and shrubs as shown.

Furnishing and spreading topsoil, as needed beyond that on the site.

Mulching

Maintenance inspection.

Replacements of unsatisfactory plant material.

Installation of grass areas.

(b) All labor, materials, and equipment necessary in establishing grass areas, as specified herein, include but are not limited to the following:

Testing soil for content.

Furnishing and incorporating fertilizer and soil conditioner.

Establishing the grade.

Furnishing and installing the seed.

Watering the area as specified in PL 3.9.

PL 3.3 PROTECTION OF EXISTING UTILITIES

(a) The Contractor shall ascertain the location of all electrical cables, utility lines, cesspools, and supply lines.

(b) The Contractor shall be held responsible for any damage to existing utilities incurred during the process of work under this Contract.

PL 3.4 INSPECTION

Plants shall be subject to inspection and approval at place of growth, or upon delivery, for quality, size, variety, and health.

PL 3.5 FERTILIZERS

(a) Commercial fertilizer shall be 5-10-5. Commercial fertilizers shall have an analysis and guarantee, and shall analyze in the following order: 5% Total Nitrogen; 10% available Phosphoric Acid; and 5% Total Potash. Nitrogen in such commercial fertilizer shall be supplied in the form of inorganic chemicals to the amount of at least seventy-five per cent (75%) of the nitrogen carrying agents or materials. All fertilizers shall meet the specified requirements of State and Federal laws regarding them.

(b) Commercial fertilizer shall be thoroughly incorporated with topsoil and loam planting mixture at the rate of three pounds per inch caliper of tree (approximately two shovels per tree).

(c) Commercial fertilizer shall be applied on grass areas at the rates that follow:

1) Five (5), ten (10), five (5) fertilizer shall be applied at the rate of thirty (30) pounds per thousand (1,000) square feet.

2) Ammonium Nitrate shall be applied at the rate of three (3) pounds per thousand (1,000) square feet, every six (6) weeks during the growing season.

(d) The Contractor shall provide weatherproof storage space for fertilizer, until and during its use.

PL 3.6 SOIL CONDITIONER

(a) Peat moss shall be granulated sphagnum or moss peat furnished in air-dry condition and shall be free from woody substances and mineral matter such as sulphur or iron, and it shall show an acid reaction of 3.5 to 5.5 PH.

Peat moss shall be incorporated into the soil planting mixture to provide a friable planting mixture.

(b) Lime shall consist of ground limestone containing not less than eighty-five per cent (85%) of calcium and Magnesium carbonates. Dolomitic lime or high magnesium lime shall contain at least ten per cent (10%) of magnesium oxide.

Lime shall be incorporated into the soil mixture for grass areas at the rate of fifty (50) pounds per thousand (1,000) square feet.

PL 3.7 TOPSOIL AND LOAM

Topsoil to be used on planted areas shall be good, friable, sandy or silt loam, containing no subsoil material, and known to have supported good vegetation. It shall contain not less than 1.5% organic matter as determined by the Thomas Rapid Test method and free from stone larger than one inch diameter. It shall be reasonably uniform in texture and structure.

FL 3.8 MULCH

Woodchip mulch shall be prepared from selected timber on the site and installed at the rate specified on the Plans.

FL 3.9 SEED

(a) On all slope areas, the following seed mix shall be used:

65% Kentucky 31 Fescue
15% Lespedesa Korean
15% Red Top
5% Perennial Rye

(b) On all areas ten per cent (10%) or less the following mix shall be used:

45% Kentucky Bluegrass
35% Red Chewing Fescue
15% Fancy Re-cleaned Red Top

(c) Prior to the application of seed, a certificate from the dealer of purity, weed seed and germination must be furnished to the Landscape Architect, so that he may be able to check the seed and make adjustments for seed under the required minimum percentage of purity and germination.

FL 3.10 SEEDING

(a) Description

1) Seeding shall consist of preparing seedbeds, furnishing, placing and covering lime, fertilizer and seed; compacting seedbeds and other operations incidental to the proper seeding of areas shown on the Plans, or directed by the Landscape Architect, and in accordance with these Specifications.

2) The planting season shall be from March first to May thirty-first, and from August sixteenth to October thirty-first inclusive. The Contractor shall perform all liming, fertilizing, seeding, raking and compaction operations only at times when local weather or other conditions affecting such work are normal and favorable to the proper prosecution of the work. No seeding will be done on frozen ground or when temperature is 32° F. or lower.

(b) Construction Methods

1) Seedbed Preparation

All grading and shaping operations shall be completed before seeding.

When the area to be seeded has been recently and thoroughly loosened to a depth of not lessthan five inches as a result of grading operations and, if immediately prior to seeding, the top three inches of soil is loose, friable, reasonably free from large clods, rocks, large roots and other undesirable matter and if shaped to the required grade, it shall be considered a satisfactory seedbed without additional treatment.

However, when the areas to be seeded are sparcely sodded, weedy, barren, and unworked, or packed and hard, any grass or weeds shall be cut or otherwise satisfactorily disposed of, and the soil then be scarified or otherwise loosened to a depth of not less than five inches.

2) Dry application Method

Liming: Lime shall be applied separately and prior to the application of any fertilizer or seed, and only on seedbeds which have previously been prepared as described above. The lime shall be worked to a depth of three inches after which the seed bed shall be properly graded and dressed to a smooth finish.

Fertilizing: 5-10-5 Commercial fertilizer will be applied at the rates specified in Article 3.5 above.

Seeding: Seed mixture shall be applied at the rate of three (3) pounds per thousand (1,000) square feet, immediately after fertilizing. Fertilizer and seed shall be raked to a depth of one quarter (1/4) inch.

Rolling: After the seed has been properly covered, the seed bed shall be immediately compacted by means of an approved lawn roller, weighing forty (40) to sixty-five (65) pounds for foot of width for clay soil, and weighing one hundred fifty (150) to two hundred (200) pounds per foot of width for sandy or light soils.

PL 3.11 PLANT MATERIAL

(a) All plants to be supplied shall be first class representatives of their normal species or variety unless otherwise specified on the Plans. All material is to conform in size grade to American Standards for Nursery Stock.

(b) Flowering shrubs are to be well furnished with branches and be symetrically balanced and conform to their natural shape. Evergreens are to be full foliage compact specimens of mature growth.

(c) All plants must show normal health and vigor in strict accordance with these Specifications and shall be free from disfiguring knots, sun scald injuries, abrasions and other disfigurements. Weak plants will not be accepted or paid for. All stock shall be nursery grown, freshly dug plants unless otherwise specified on the Plans.

PL 3.12 EXCAVATION, HANDLING AND PLANTING OPERATIONS

(a) All plants shall be handled so that the roots are adequately protected at all times. During shipment they shall be protected by tarpaulin or other suitable covering. All balled and burlaped plants which cannot be planted immediately upon delivery shall be set in the ground and well covered with soil.

(b) All trees shall be planted as shown on the Plan according to the Standards of the Maryland State Nurserymen's Association.

PL 3.13 PREPARATION OF TOPSOIL FOR PLANT PITS AND BEDS

Topsoil for plant pits and beds shall be prepared by mixing with peat moss in the proportions of one (1) unit of peat moss to seven (7) units of topsoil by volume. The components shall be thoroughly mixed before use.

PL 3.14 MULCHING

(a) A two (2) inch mulch of wood chips shall be applied around all deciduous trees after planting.

(b) All evergreens and broadleaved evergreens, shall be mulched to a depth of two (2) inches with a mixture consisting of fifty per cent (50%) leaf mold, and fifty per cent (50%) peat moss. A portion of this shall be scratched into the top one and one-half (1 1/2) inch of soil.

PL 3.15 STAKING, GUYING, WRAPPING

(a) All trees shall be guyed by wire guys encased in water hose at the trunk and stakes. Guys will be securely staked in an approved manner. All wire will be pliable iron of Md. shown of guying sketches.

(b) Stakes for supporting trees shall be of sound wood of uniform size, capable of standing in ground at least two years. They shall be at least two (2) inch actual dimension and not less than eight (8) feet in length, and as shown on the Plans.

(c) Stakes shall be placed a minimum of four (4) inches from the trunk of the tree for bare root plants and a minimum of twelve (12) inches from the ball for balled and burlaped plants. They shall be driven into the ground to the depth shown.

(d) Wrapping material shall be first quality burlap or waterproffed crepe paper not less than six (6) inches or more than ten (10) inches in width, and of suitable length.

(e) The trunks of all large trees, shall be wrapped and the material securely tied at the top and bottom, and at two foot intervals. Bandaging shall start at the base and will cover the entire surface of the trunk to the first branches.

(f) All guying, staking and wrapping shall be done immediately after planting. All plants shall stand plumb after guying and staking.

PL 3.16 MAINTENANCE OF PLANTING UNTIL ACCEPTANCE

Areas around trees shall be kept cultivated, free of weeds and grass, and properly watered until acceptance. Replacement will be done as soon as dead material appears. If any tree, shrub or plant bed settles more than three (3) inches below the established grade, it shall be raised to the proper level, and not merely filled with additional topsoil.

PL 3.17 CLEANING UP

(a) The Contractor shall disopse of, on the site or as directed by the Landscape Architect, all subsoil excavated from his work. All other debris including branches, paper and rubbish resulting from his work shall be removed from the site as work proceeds.

(b) All areas shall be kept in a neat and orderly condition at all times. Proir to final acceptance the Contractor will clean up his work areas to the satisfaction of the Landscape Architect.

PL 3.18 INSPECTION FOR ACCEPTANCE

(a) Inspection by the Landscape Architect shall be made upon completion of all work, at the notification of the Contractor.

(b) Payment shall be made after acceptance by the Landscape Architect. Such payment shall not relieve Contractor of responsibility of guarantees, or of conformance with provisions of plant replacement as specified below.(3.19)

PL 3.19 GUARANTEE OR WARRANTY

(a) This Contractor warrants that all work executed under this division shall be free from defective plant material or workmanship for a period of one yearafter the Landscape's Architect's acceptance of the work.

(b) This Contractor will guarantee to replace all defective plants and workmanship by approved methods and at his own expense whensoever such defects amy appear prior to the conslusion of this guarantee.

PL 3.20 REPLACEMENTS

(a) Any trees or shrubs not found to be healthy and a in a good growing condition at any time during the period of guarantee, shall be removed from the site and replaced, as soon as weather and seasonal conditions permit, as determined by the Landscape Archditect.

(b) Plant replacemants shall be the same kind and size as specified in the itemized plant list, all replacements shall be frunished, planted, mulched as specified, at the Contractor's expense.

(c) The Contractor shall be liable for any damage to property including lawns, sprinkler systems, pavements, curbs, etc. caused by replacement operations.

PL 3.21 COOPERATION

This Contractor shall agree to complete cooperation and coordination with the General Contractor engaged in all adjacent work.

PL 3.22 Sequence of the Work

The Contractor shall do the work specified in the following order:

1) Sub. grade (1-2)inches)
2) Construction work and Painting work
3) Spread topsoil
4) Spreading of seed

FORM OF PROPOSAL FOR THE

EXCAVATION, CONSTRUCTION AND PLANTING WORK

at

SOUTHEAST WATER LABORATORY

COLLEGE STATION ROAD
ATHENS, GEORGIA

To:
Mr. John R. Thoman, Director
Southeast Water Laboratory
Room 254, Physics Building
University of Georgia
Athens, Georgia

Dear Sir:

Pursuant to and in compliance with the Plans, Specifications and documents related thereto, the undersigned hereby offers to furnish all labor, materials, supplies, equipment and other facilities and things necessary and proper for or incidental to the completion of the work as required by and in strict accordance with the applicable conditions of the Contract Documents, including the Drawings, the Specifications, and all Addenda issued by the Owner prior to the date of the opening of bids, whether received by the undersigned or not, for the following sum:

_____

_____Dollars, ($_____)

TIME OF COMPLETION

If awarded the Contract, the undersigned agrees to complete the work within _____Calendar days for the date of the award of the Contract.

COST ESTIMATE

Prepared For:

Southeast Water Laboratory
Athens, Georgia

By:

David B. Harrity
Landscape Architect
Staten Island, New York

Compiled by: David B. Harrity

Checked by: David B. Harrity

Job Description: To prepare a comprehensive Landscape Development Design for the Southeast Water Laboratory.

PLANT MATERIALS:

QUANTITY	BOTANICAL AND COMMON NAME	SIZE	UNIT PRICE	TOTAL
	TREES			
8	Acer Rubrum (BB) Red Maple	8'-10'	10.00	$80.00
28	Cercis Canadensis (BB) Redbud	5'-6'	7.00	196.00
23	Cornus Florida (BB) Flowering Dogwood	5'-6'	5.50	126.50
29	Crataegus Phaenopyrum (BB) Washington Hawthorne	6'-8'	12.00	348.00
15	Pinus Palustris (BB) Longleaf Pine	3'-4'	2.00	30.00
24	Pinus Strobus (BB) White Pine	3'-4'	2.00	48.00
15	Quercus Coccinea (BB) Scarlet Oak	8'-10'	18.00	270.00
16	Quescus Palustris (BB) Pin Oak	6'-8'	15.00	240.00
	SHRUBS			
20	Abelia Grandillora (BB) Glossy Abelia	18"-24"	1.75	35.00
46	Ilex Crenata Bullata (BB) Japanese Holly	18"-24"	2.00	92.00
22	Junipeus Chinensis Pfitzeriana (BB) Pfitzer's Juniper	24"-30"	2.25	49.50
18	Junipeus Horizontalis Plumosa (BB) Andorra Creeping Juniper	15"-18"	1.75	31.50
43	Photina Glabra (BB) Japanese Photina	24"-30"	2.00	86.00
10	Rhododendron Catawbiense (BB) Catawba Rhododendron	18"-24"	3.50	35.00

PLANT MATERIALS

QUANITY	BOTANICAL AND COMMON NAME	SIZE	UNIT PRICE	TOTAL
	SHRUBS			
25	Viburnum Ryhtidophyllum (BB) Leatherleaf Viburnum	24"-30"	$2.25	$56.25
	GROUND COVERS			
16,320	Hedera Helix English Ivy	3"-5"	7.00/100	1141.25
5,460	Vinaa Minèr Common Periwinkle	3"-4"	6.00/100	327.00
7,210	Liriope Spaciata	2"-3"	.25/clump	1802.50

TOTALS

ITEMS	SUBTOTALS	GRAND TOTAL
1) Trees, Shrubs and Ground Cover	$4,994.70	
2) Transportation Costs	497.20	
3) Special Equipment	320.00	
4) Labor and Equipment	6,748.50	
5) Contingencies	2230.20	
6) Overhead	1,218.60	
7) Pool Equipment	8,750.16	
8) Profit	2,251.00	
Total -	$25,010.76	$25,010.76
Installation of Grass (.02/sq.ft.)	5,178.00	
Grand Total -	$30,188.76	$30,188.76

EARTHWORK

QUANITY	ITEM	UNIT PRICE	SUBTOTAL	TOTAD
12.7 acres	General Cleaning & Grubbing	$400/acre	$5,080.00	
73,733.2 cu.yd.	Earth Cut & Fill	.50/cu.yd.	36,866.60	
6,380 cu.yd.	Topsoil sprip and repalce	1.00/cu.yd.	6,390.00	$48,326.60

LANDSCAPE CONSTRUCTION

Quanity	ITEM	UNIT PRICE	SUBTOTAL	TOTAL
CONCRETE				
295 LIN.FEET	Retaining Walls	$25/lin/ft.	$7,375.00	
7	Tree Sleeves	$122 each	854.00	
7	Sitting Walls	$60.00/cu.yd.	920.00	$9,149.00

ASPHALT CONCRETE PAVING

60,750 sq.ft.	Entrance Road & Parking Area	$.30/sq.ft.	$18,525.00	
13,350 sq.ft.	Service Roads and Walks	.28/sq.ft.	3,738.00	
37720 lin.ft.	Concrete Curb & Guttat	2.50/lin.ft.	7,300.00	$29,640.00

LANDSCAPE CONSTRUCTION (FEATURES)

3,750 lin.ft.	Pool Walls	$5.00/lin.ft.	$17,750.00	
2,120 lin.ft.	Drainage tile	$3.25/lin.ft.	6,890.00	$24,640.00

GRAND TOTALS

ITEM	TOTALS M
1) Planting	$5,441.90

ITEM	TOTALS	GRAND TOTALS
2) Earthwork	$48,326.60	
3) Landscape Construction		
a) Concrete Structures	9,149.00	
b) Asphalt Structures	29,663.00	
c) Pool	17,750.00	
d) Drainage	6,890.00	
		$117,220.00

TOTAL COST OF JOB - $117,220.00

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