RECREATION AND RESEARCH CENTER
UNIVERSITY OF GEORGIA
ATHENS, GEORGIA

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A Terminal Problem Presented for the
Degree of Bachelor of Landscape Architecture
Department of Landscape Architecture
University of Georgia
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H.B. Owens Resource Center
School of Environmental Design
Caldwell Hall
University of Georgia

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INTRODUCTION

In recent years, the University of Georgia has become increasingly aware of the need for recreation facilities for its students, faculty, and employees. In this terminal problem an attempt has been made to alleviate some of the pressure for recreation facilities by designing according to standard landscape practice.

The University has proposed a site for this Recreation and Research Center which is located near the Forest Outdoor Recreation Research Laboratory on south campus. The site consists of rolling fields and woodland. Landscape development plans have been designed by this team in the informal style. It is sympathetic to the site, and it has been kept in mind in planning the requirements of a well balanced, physical character of an expanding University population.

Today, many of our cities, industries, and institutions of all types find themselves in the midst of chaos and disorder where open space and parks are concerned. It is our feeling that this Recreation and Research Center will provide the University with a much needed recreation park, and in the future will reflect the advantages of planning both in economy and practicality.

PROBLEM STATEMENT

The property for the proposed recreational area is located on the University campus south to southeast of Athens, Georgia. It is bordered by College Station Road along the northern property line, the Central of Georgia railroad tracks to the west and southwest, the Oconee River on its eastern side, and the East Whitehall Street on its southeast property line.

On the southern part of this area, several acres bordering the railroad tracks and the river have been zoned for housing. There is existing housing along East Whitehall Street which leaves the central part open for park development.

The land for the proposed recreational park is owned by the University of Georgia and at present it is used for the following operations: The Horticultural Experimental Station, the Agricultural Sheep Farms, and the Forest Outdoor Recreation Research Laboratory.

The proposed Interstate Highway By-pass around the city of Athens will cross the site, cutting off approximately one third of the area to the northwest.

Until the Forest Outdoor Recreation Research Laboratory and the Horticultural Experimental Station can be permanently relocated, part of the present facilities will con-

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tinue to be used.

The site is to provide recreational facilities for University of Georgia faculty, students, and personnel.

Major design considerations are: general recreation, intramural sports program activities, picnicking and camping areas, and a golf course.

These major recreation areas are to provide the following activities:

GENERAL RECREATION

1) lake
2) beach
3) docks, diving boards, and floats
4) bath house
5) picnicking
6) tennis courts
7) general playing fields
8) shelter
9) indoor activities
10) parking

INTRAMURAL SPORTS PROGRAM ACTIVITIES

1) touch football
2) softball
3) soccer
4) handball
5) badminton
6) tennis

7) archery

8) basketball

9) locker rooms and equipment storage

10) parking

PICNICKING AND CAMPING AREA

1) tables and cooking pits

2) children playground

3) walking trails

4) shelters

5) restrooms

GOLF COURSE

1) driving range

2) practice area

3) club house

4) parking

ANALYSIS

The proposed Recreation and Research Center for the University of Georgia will fill many needs and the site is situated within a convenient distance from the main campus. It is hoped that the selection of its location will serve as an influence to preserve this large open area of the campus and prevent the construction of housing or other building projects in this general area.

The proposed by-pass divides the park. We recommend that this division separate the active from the passive recreation.

A lake of approximately twenty-five acres will fill a natural depression with an earth dam at its lower end. General recreation will be located near by, and some is planned in connection with the Lake. For boating activities and use of the beach facilities, suitable topography and correct orientation has been considered. A bath house, a concession stand, and a simple boat house are included in the scheme at the Lake. To provide access to these facilities, an adequate walk system that can also be used for service and maintenance vehicles is specified. Parking spaces are located close to all major areas, and are carefully screened and do not encroach on land which is suitable for general playing fields.

The topography along the railroad accommodates paved playing fields with little grading.

There is a definite need for one large structure within the Center which can be used for dances, jam sesions, meetings, and other group activities; a pavilion is included to provide these requirements and serve as a point of interest. This pavilion has a central location.

South and south-west of the Lake are approximately seventy-eight acres of woodland which are reserved on the plan for picnicking, cooking pits, shelters, and trails for hiking without disturbing their natural appearance. Roads in this area are designed so that they will not separate the picnickers from the Lake and so as to follow the natural contour of the land.

The area between the recreational facilities and the Golf Course is retained for use by the Forest Outdoor Recreation Research Laboratory and the Horticultural Experimental Station until these can be permanently relocated.

The Championship Golf Course, designed by a golf course landscape architect, occupies most of the southern part of the site. In conjunction with this, a Club House is planned which is to be centrally located in relation to the parking facilities, the putting green, the driving range, the number one tee, and the greens nine and eighteen.

Apart from all the previously mentioned recreation units will be the Intramural Activities south of the proposed Athens by-pass. A separate entrance to this portion of the

property will be needed as well as a central building providing dressing rooms, showers, toilet facilities, storage for sports and maintenance equipment. The placement of the different Practice and Playing Fields has been determined largely by orientation and topography of the land. Parking is provided to get people as close to their activities as possible, and parking for approximately five-hundred cars is planned to include visitors on the days of various events.

South of the proposed Intramural Fields site, and next to the Oconee River, separated by a wooded lot is a small hill with a pond that would be ideal for a camp site. The only access is by trails. Because of its interesting topography, this makes a pleasing spot for overnight or week-end camping.

EXPLANATION AND JUSTIFICATION OF SOLUTION

The first existing road onto the site, after crossing the Central of Georgia Railroad tracks and going east on College Station Road, is used as the main entrance. The facilities must be controlled, so therefore an admission booth is placed at the entrance in conjunction with an administration office.

The parking lot designed for approximately three-hundred and fifty cars follows the top of the ridge to the left, this way making it easy to screen it from College Station Road and the beach area. This is the first of two lots conveniently located to provide parking for the beach, boating, and general activities. The second lot will also serve the beach area in addition to the twelve tennis courts, which have been selected to be placed across the road, eliminating major grading because of favorable existing topography.

The beach and boating facilities use the northern shore of the Lake to their maximum advantage. Almost level terrain and the southern exposure makes this the best location. A three-hundred and eighty foot long boardwalk, raised above water level by several feet, connects the beach with the boating area.

The bath house has been placed at the one end of the

boardwalk that joins the beach. This way it is conveniently located between the two major attractions, which will undoubtedly accommodate the majority of the visitors, and after having changed in the dressing rooms, they can step right on to the beach or the boardwalk.

We have located a concession stand at the other end of the walk to discourage eating on the beach.

A system of ten foot wide walks will provide pedestrian access to and from all points and will be used as well for all service and maintenance vehicles. A peripheral walk around the Lake connects the picnicking with the general recreation facilities.

Within the large open area created by the entrance road, the first parking lot, and the beach and boating facilities, there will be four general playing fields to accommodate any sport. These fields will be graded to the optimum slope, but they will not be distinctly outlined. The grading and the planting to be done around here will show their approximate extent.

After passing the second parking field, the road passes over the dam of the first sediment pond proposed to keep the main lake clean. From here one can enter the parking lot for the Pavilion to the left. The shoring-up of the lake arm between the Pavilion and the beach eliminates grown-over shallow water. Architecturally, the beach and the Pavilion are related by the continuation of the wall confining the beach and the shore in front of the Pavilion; a foot bridge

crossing the water channel at this point will be part of the peripheral walk.

Continuing on the road, one enters the woodland and then crosses the dam of the existing second sediment pond. The road is to provide access to the picnick areas from the south where the topography is not too steep for road building. This will discourage pedestrian movement towards the proposed highway by-pass, and instead opens up the area towards the major attraction - the Lake. The road with its three finger-like extensions that penetrate the picnick area terminates at the four large shelters. A minimum of about four-hundred feet buffer zone is thus created between the by-pass and the vistors. Two smaller sizes of shelters are scattered throughout the wooded area and parking for all shelters is provided near the terminating points of the road.

To make them fit the general woodland appearance, a simple design was used for all the picnick shelters. Barbecue and cooking pits are to be built outside but right next to the shelters.

A walk system from these shelters will guide people to the Lake and will here tie in with the peripheral walk and two near-by restrooms. The region between this walk and the lake shore will be used for picnick tables placed singularly and in groups. The peripheral walk wraps around the Lake past the Pavilion back to the beach on one side and across the main dam back towards the boating area the other way.

In conjuction with the eighteen hole Golf Course, de-

signed by a golf course landscape architect, to the South of the lake, a Club House for the Golf Course will be located at the meeting point of holes nine and eighteen at the highest elevation possible. From here most of the Golf Course can be viewed and a beautiful grove of pecan trees will furnish an appropriate background for the Club House. Access to the Club House will be provided for by a road intersecting routes 441 and 129 at Davis Brothers Cafeteria. To keep the view open to the Golf Course, the parking for it will be in back of the building. A Par - 3 Golf Course, a putting green, and a driving range are going to be in the near vicinity.

The site chosen for the intramural activities is a large open field with a broad ridge running parallel to College Station Road which slopes to the Oconee River and wooded land to the South and East.

Five all-purpose, football size, fields are located along this ridge. These fields have been placed mainly to accommodate the site and to provide, generally, the best orientation for all games played there. Moveable bleachers will be used so that any field can be set up for a spectator event.

Fourteen tennis courts are placed on a series of terraces on the hill next to the woods and are arranged in groups of twos and threes in a pleasing manner to adjust to the slope and assure optimum orientation.

Provision for other net games, basketball and handball have been arranged from the general playing fields down the

slope to the River on the South-East. These fields are placed in keeping with the other fields and are orientated individually.

An Activities Control Building, parking lots, and a road and walk system have been included to service the athletic fields.

Access to these fields is from College Station Road, and two roads penetrate into the site, both connecting directly with the Control Building and parking lots. The roads are laid out to conform to the topography and facilitate circulation.

The parking lots vary in size and capacity, and they are scattered to provide parking for different fields and to prevent concentration areas of paving at any one location.

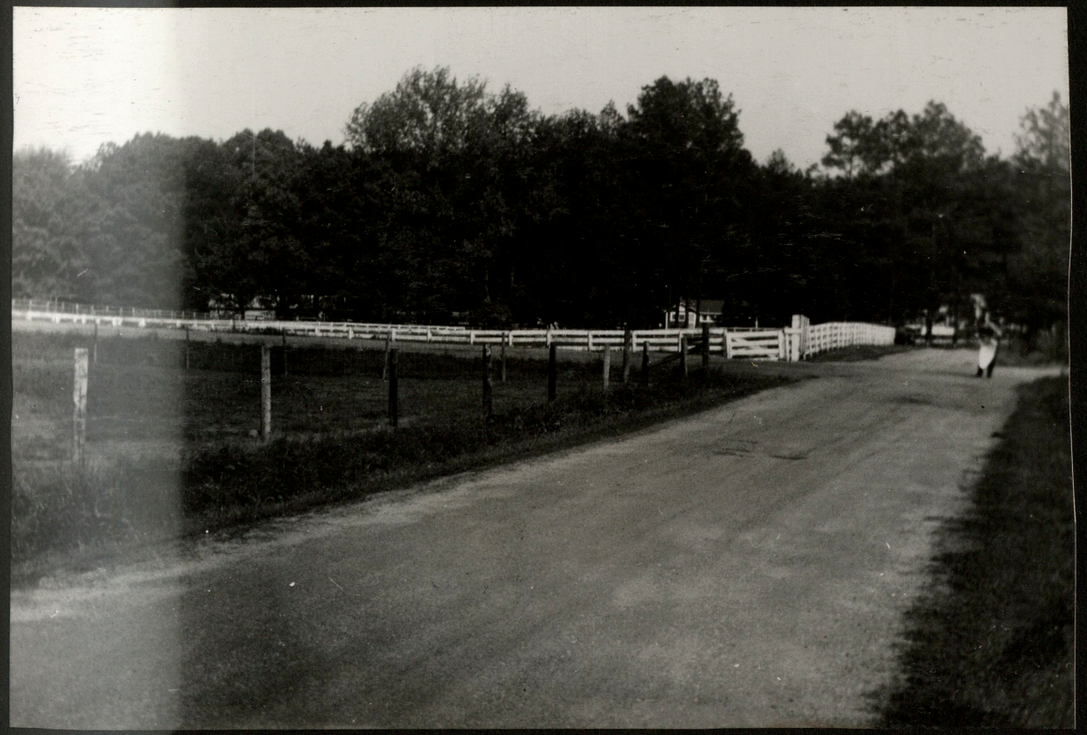
The walk system has been arranged to service the playing fields, parking lots, and Control Building. They are designed to handle service trucks and the mobile bleachers.

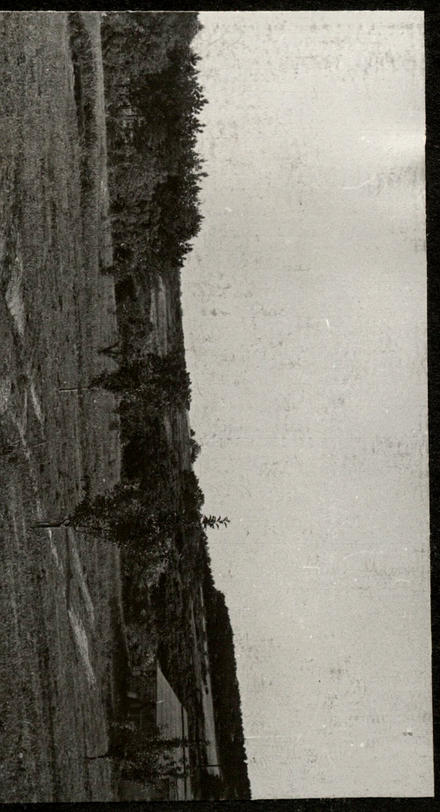
Planting throughout the site has been limited to major groupings of large trees. Only the areas immediately surrounding the buildings are further developed with the use of small shrubs, ornamentals, and ground covers.

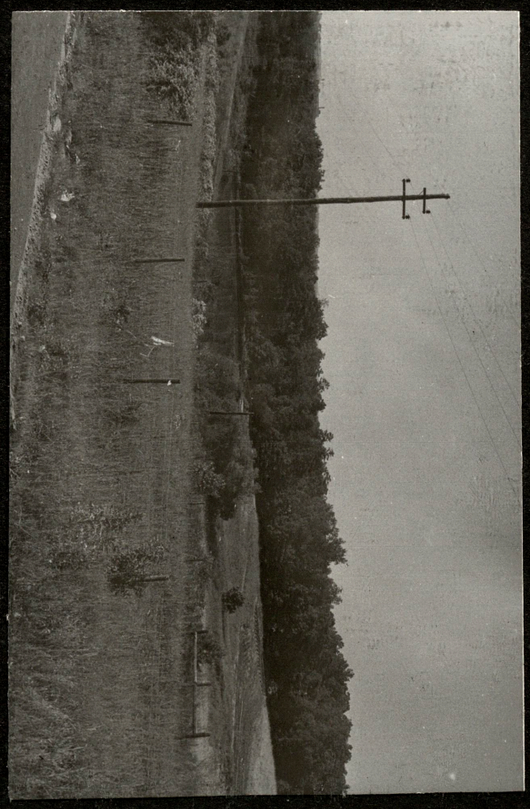
Large trees are needed for shade, for defining specific areas, and to create open and enclosed spaces. Large scale planting of small shrubs and ground covers would not be in keeping with a Center of this character and would require much maintenance. More detailed planting around the building is advisable, and it is planned to be as maintenance free as

possible.

Although the architectual requirements of the site are not great, it is felt that all buildings should be consistent in style and type of materials. The bath house and shower rooms dictate a masonry type construction. Therefore, a specific style of concrete block and precast structure is chosen. The arched roofs are to remain open allowing excellent ventilation. Perforated concrete blocks are used in free standing walls where a visual screen or tie-in is needed.







RECREATION & RESEARCH CENTER

UNIVERSITY OF GEORGIA

ATHENS, GEORGIA

JUNE 1, 1964

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C. MONAHAN
J. PAPE

RECREATION & RESEARCH CENTER
MASTER PLAN
LEGEND
EXISTING CONTOURS, 20' INTERVAL
PROPOSED CONTOURS, 20' INTERVAL
SPOT ELEVATIONS
PROPERTY LINE
EXISTING ROADS
EXISTING ROADS TO BE REMOVED
EXISTING BUILDINGS
EXISTING BUILDINGS TO BE REMOVED
PROPOSED ROADS
STREAMS
LAKES
EXISTING TREES
EXISTING TREES TO BE REMOVED
PROPOSED TREES
ROGUE RIVER
DRIVING RANGE
TENNIS COURTS
TOWNSITE
BUILDINGS

RECREATION & RESEARCH CENTER
MASTER PLAN
NOTES
ALL EXISTING PLANT MATERIAL AND STRUCTURES ARE TO BE REMOVED FOR PROPOSED FINAL SECTION
GENERAL RECREATION
LAKE
PICNICK AREA
INTERMURAL ACTIVITIES
ROGUE RIVER
CENTRAL
SHEET 1
SHEET 2
SHEET 3
SHEET 4
SHEET 5
SHEET 6
SHEET 7
SHEET 8
LEGEND
EXISTING CONTOURS, 20' INTERVAL
PROPOSED CONTOURS, 20' INTERVAL
SPOT ELEVATIONS
PROPERTY LINE
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EXISTING ROADS TO BE REMOVED
EXISTING BUILDINGS
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PROPOSED ROADS
PROPOSED GRAVEL WALKS
STREAMS
LAKES
EXISTING TREES
EXISTING TREES TO BE REMOVED
PROPOSED TREES

RECREATION & RESEARCH CENTER
DETAIL DESIGN
LEGEND
HORIZONTAL CURVES
DETAIL OF CHILDRENS PLAY AREA
CENTRAL OF GEORGIA
TENNIS COURTS
PARKING 100 CARS
PARKING 110 CARS
PAVILION
PROPOSED SEDIMENT POND
BEACH
LAKE
BOARD WALK
BATH
PICNICS
SHELTER
PROPOSED PLAYGROUND AREA
STATION ROAD
COLLEGE
PARKING 244 CARS
PARKING 108 CARS
SPILLWAY

RECREATION & RESEARCH CENTER
DETAIL DESIGN
LAKE
CENTRAL OF GEORGIA
EXISTING SEDIMENT POND
SHELTER "A"
SHELTER "B"
SHELTER "C"
SHELTER "D"
SHELTER "E"
COMF. STA. "A"
COMF. STA. "B"
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PARKING 30 CARS
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PARKING 250 CARS
PARKING 300 CARS
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PROPOSED HIGHWAY BY-PASS
LEGEND
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PROPOSED CONTOURS
PROPERTY LINE
ROADS
EXISTING BUILDINGS
PROPOSED PAVED WALKS
PROPOSED GRAVEL WALKS
LAKE
ROCK INLET
LOCK BARN & PROPERTY
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PROPOSED HIGHWAY BY-PASS
HORIZONTAL CURVES
#13
#14
LEGEND
EXISTING CONTOURS
PROPOSED CONTOURS
PROPERTY LINE
ROADS
PROPOSED BUILDINGS
PROPOSED PARKS WALKS
ROOF INLET
CATCH BASIN & MANHOLE
DRAINAGE PIPES
EXISTING TREES
PROPOSED TREES
RECREATION & RESEARCH CENTER
DETAIL DESIGN

HORIZONTAL CURVES
#12
#13
LEGEND
EXISTING CONTOURS
PROPOSED CONTOURS
PROPERTY LINE
ROADS
PROPOSED BUILDINGS
PROPOSED PARKS WALKS
ROOF INLET
CATCH BASIN & MANHOLE
DRAINAGE PIPES
EXISTING TREES
PROPOSED TREES
OLDMEE
RIVER
RECREATION & RESEARCH CENTER
DETAIL DESIGN

RECREATION & RESEARCH CENTER
ARCHITECTURAL DRAWINGS
EAST ELEVATION
DIVING DECK
REDWOOD DECK AREA
SERVICE COURT
UTILITY ROOM
CONCESSION BAR
ELEV. HOUSE
TO BOAT HOUSE
ELEV. DECK
LAWN
MEN
WOMEN
SERVICE CORRIDOR
LAUNDRY CHUTE STATION

RECREATION & RESEARCH CENTER
ARCHITECTURAL DRAWINGS
FLOOR PLAN
MEN
WOMEN
STORAGE
CONCESSION
SECTION AA
SOUTH ELEVATION
NORTH ELEVATION
PAVILION
WEST ELEVATION
ROOF PLAN
EAST ELEVATION

RECREATION & RESEARCH CENTER
ARCHITECTURAL DRAWINGS
WEST ELEVATION
NORTH ELEVATION
SOUTH ELEVATION
SECTION A-A
SOUTH ELEVATION
WEST ELEVATION
NORTH ELEVATION
ACTIVITIES CONTROL BUILDING
PLAN
EAST ELEVATION
BOAT HOUSE STRUCTURE
PLAN
SOUTH ELEVATION
EAST ELEVATION
WEST ELEVATION
PLAN
POST & RAFTER DETAIL
ROOFING DETAIL
FLOOR PLAN
FLOOR PLAN
FLOOR PLAN
SKETCH OF SHELTER - TYPE "A"
END ELEVATION
SHELTER - TYPE "C"
END ELEVATION
SHELTER - TYPE "B"
END ELEVATION
SHELTER - TYPE "A"
FOOTING DETAIL (end view)
CONSTRUCTION JOINT
SIDE ELEVATION
SIDE ELEVATION
SIDE ELEVATION
FOOTING DETAIL (side view)

SHELTER BARBECUE DETAIL
PLAN
SIDE
END
PICNIC TABLE DETAIL
TOP
SIDE
END
ELEVATIONS
SECTION B-B
SECTION A-A
LAMP POST DETAIL
PICNIC GRILL AND MOUNT
FRONT ELEVATION
SECTION AA
SECTION BB
SIDE ELEVATION
RIGHT SIDE ELEVATION
PLAN
women
men
COMFORT STATION TYPE A
COMFORT STATION TYPE B
FRONT ELEVATION
ELEVATION
SECTION A-A
PLAN
PLAN OF FOOTING & FOUNDATION
DRINKING FOUNTAIN DETAIL
RECREATION & RESEARCH CENTER
ARCHITECTURAL DRAWINGS

PEDESTRIAN BRIDGE - ELEVATION
SECTION AA
SHELTER
SIGNS - DETAILS
PAVEMENT SECTION
TYPICAL CATCH BASIN
TYPICAL DROP INLET
DRAINAGE DETAILS
ENTRANCE SIGN DETAIL & ADJACENT PAVEMENT - CURB
ENTRANCE SIGN LOCATION
LANDSCAPE DETAILS
RECREATION & RESEARCH CENTER
LANDSCAPE CONSTRUCTION DETAILS

RECREATION & RESEARCH CENTER UNIVERSITY OF GEORGIA

MASTER SPECIFICATION

[illegible] GENERAL PROVISIONS

1. SCOPE OF WORK: The work to be performed will consist of furnishing all materials, labor, supplies, and equipment for planting, grading, and construction in accordance with these specifications and in conformity with the plans.

2. LOCATION: The site of the proposed Recreation and Research Center is located on property owned by the University.

   The boundaries are:

   South and Southwest - Central of Georgia Railroad

   North - College Station Road

   East and Southeast - the Oconee River, property owned by J. S. Ivy, and the village of Whitehall.

3. SPECIFICATIONS AND DRAWINGS: The following drawings are a part of and supplementary to these specifications:

Title	Drawing No.
Master Plan	Sheet 1-2
Detail Design	Sheet 3-4-5-6-7-8
Architectural Plans and Details	Sheet 9-10-11-12-13-14
Landscape Construction Details	Sheet 15-16

   The drawings and these specifications are intended to be

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The drawings and these specifications are intended to be

mutually explanatory and complete, and all work called for by one, even if not by the other, will be fully executed. In case of difference between drawings and specifications, the specifications will govern. In any case of discrepancy, either in figures, in the drawings, or in the specifications, the matter will be promptly submitted to the Landscape Architect, who shall promptly make a determination in writing. Any adjustment by the Contractor without this determination shall be at his own risk and expense.

4. SPIRIT AND INTENT OF SPECIFICATIONS: It is the spirit and intent of these specifications, and of the drawings forming a part of them, to provide that the work and all parts thereof will be fully completed and suitable in every way for the purposes for which they are designed. Mention in the specifications or indication on the drawings of articles or materials, operations or methods, requires that the contractor will provide each item listed - or quality, or subject to qualifications noted; perform according to conditions stated, each operation prescribed, and provide therefore all necessary labor, materials, tools, equipment and incidentals necessary to complete the work.

5. ERRORS OF OMISSIONS: The Contractor will not be allowed to take advantage of errors or omissions in these specifications or contract drawings as full instruction will be given if such errors are discovered. Upon his di

covery of any statement or detail which is discrepant or otherwise appears in error, the Contractor will immediately call it to the attention of the Landscape Architect.

6. MEASUREMENTS: Before ordering any material or doing any work, the Contractor will verify all measurements at the site and shall be responsible for correctness of same. No extra charge or compensation shall be allowed on account of difference between actual dimensions and the measurements indicated on the drawing. Any difference which may be found will be submitted to the Landscape Architect for consideration prior to beginning the work.

7. EXAMINATION OF SITE: Before submitting bids for the work, each bidder shall be held to have examined the premises and satisfied himself as to the existing conditions under which he will be pledged to operate or that in any manner shall affect the work under this contract. No allowance shall be made subsequently in this connection in behalf of the Contractor for any error or negligence on his part.

8. TIMING AND SEQUENCE OF WORK: The Contractor will begin work the first workday after receiving the "Notice to Proceed". The Contractor shall have ____ calendar days in which to complete the work except for extensions approved by the Supervisor. The Contractor will give due and adequate notice of all work he proposes to start to those in control of properties which may b

affected by his operations. Work is to proceed in an orderly way. The organization of these specifications or contract drawings do not necessarily indicate the order of sequence in which the work is to be performed.

9. TEMPORARY SUSPENSION OF WORK: The Supervisor shall have the authority to suspend the work, wholly or in part, for such period as he may deem to the best interest of the University, due to conditions which are considered unfavorable to the suitable carrying out of the work, or for failure on the part of the Contractor to carry out orders given or to perform any provision of the contract. The Contractor will immediately respect the written order of the University to suspend the work wholly or in part. The Contractor will not suspend work without such written authority, and will immediately resume work when conditions are favorable or when methods have been corrected, as approved by the Supervisor in writing.

10. OTHER CONTRACTS: The University may undertake or award other contracts for additional work, and the Contractor <u>shall</u> fully cooperate with such other contractors and the University or his employees and carefully fit his own work to such additional work as directed by the Supervisor. The Contractor will not commit or permit any act which will interfere with the performance of work by any other contractor or employee of the owner

11. MATERIALS AND WORKMANSHIP: Workmanship Materials will be as prescribed by these specifications and the contract drawings. When ever not explicitly described, all workmanship used or employed in carrying out the work will be the best of the respective grades and qualities. Where equipment, materials, or articles are referred to in the specifications as "equal to" any particular standard, the Supervisor shall decide the question of equality. When required by the specifications, or when called for the Supervisor, the Contractor will furnish for approval full information concerning the materials or articles which he contemplates incorporation in the work. Samples of materials will be submitted for approval when so directed. Machinery equipment and materials and articles installed or used without such approval will be at the rist of rejection.

12. MINOR MODIFICATIONS: The Contractor will make such minor changes in the execution of the work to be done under these specifications as, in the judgment of the Supervisor, may be necessary or expedient to carry out the intent of the contract. No increase over the contract price will be paid to the Contractor on account of such minor modifications provided that at the time the change is to be made the work involved has not already been executed. Work which materially increases the cost to the Contractor will not be ordered under the provision of this paragraph.

13. GUARANTEE: The Contractor will guarantee all work under this contract for one year from the date of acceptance by the University, except as otherwise agreed upon in writing by the parties to the contract. Whenever work is required to be guaranteed, the Contractor, when notified by the University must immediately notify the latter.

(1) place in satisfactory condition in every particular of the guaranteed work.

(2) make good all damage to the structures and grounds or equipment and contents thereof if such unsatisfactory condition or damage develops within the stipulated period and is due to the use of materials or workmanship which are inferior, defective or not in accordance with this contract, and must make good any work or materials or grounds which are disturbed in fulfilling the requirements of this guarantee.

14. PAYMENT: Payment of 90% of bid will be made upon completion of all work. The remaining 10% will be held until expiration of the guarantee.

15. REJECTION: All materials which do not meet these specifications or the requirements of the contract drawings shall be rejected by the Supervisor and will be removed from the site and replaced by proper materials by the Contractor at his own expense.

16. CONTRACTOR'S RESPONSIBILITIES: The Contractor will, without additional expense to the University, obtain all licenses and permits required for the prosecution of the work. The Contractor will provide and maintain all temporary roadways and utilities which may be authorized, and all barriers, colored lights, danger signals and other devices necessary to provide for the traffic and safety. The Contractor will keep his equipment, operations and materials confined to the limits indicated on the contract drawings. The Contractor will restore, at his expense, any damage to any property and will take such action to insure protection of any existing material, trees, structures, utilities in, on, or over the site. The Contractor will conduct his operations and leave the site so as to in no way endanger the health or lives of anyone. He will be responsible for all damages to persons or property that occur as a result of his fault or negligence in connection with the prosecution of the work. He shall also be responsible for all materials delivered and work performed until completion and final acceptance. The Contractor will, at all times, be responsible for the safety and conduct of his employees. The University may in writing require the Contractor to remove from the work such employee as he deems incompetent, careless, insubordinate, or otherwise objectionable, or whose continued employment on the work is deemed by the University to be contrary to the Owner's intere

17. SPACE FOR STORAGE OF CONSTRUCTION MATERIALS: The Contractor will provide suitable storage for material and equipment on the site and will maintain all storage space in a safe and orderly condition. The University assumes no liability for loss or damage to materials or equipment due to improper storage, lack of protection from the elements or from any other cause. Inflammable materials will be enclosed in safe containers.

18. CLEAN UP: The Contractor will remove all debris from his operations each evening of every workday to the satisfaction of the University. All brick bats, rock, wood debris, metal objects and similar materials, uncovered during excavation operations will be disposed, leaving the completed work in a neat, policed manner.

CONSTRUCTION SPECIFICATIONS

CONCRETE

Coarse Aggregate: Gravel or crushed stone must be hard, clean and free from organic matter, acid or other chemicals and grading resonably uniform in size from a minimum of 1/2" to a maximum of 1 1/4", for the different classes of the work.

Fine Aggregate: Fine aggregate for concrete shall consist of clean, washed sand, 95% of which shall pass a No. 4 sieve. Not less than 50% shall be retained on a No. 3 sieve; not more than 5% shall pass a 100 mesh sieve.

Concrete Quality: All concrete shall have an ultimate compressive strength of 3,000 lbs. per square inch at the end of twenty-eight days.

Portland Cement: Shall be of one approved brand throughout, meeting requirements of American Society for Testing Materials.

Water: All water used must be clean filtered drinking water containing no alkali, acid, vegetable matter or other chemicals injurious to the concrete.

Mixing and Placing Concrete: Shall be approved, ready mixed concrete or shall be mixed on the site in a mechanical mixer of the type approved by the University.

Slab on Earth: Concrete slabs for Shelter and Comfort Stations on earth, shall have mesh reinforcement, where no other reinforcements are shown or detailed.

SPECIFICATIONS

LAWNS AND PLANTING

1. SCOPE

This division includes furnishing all materials and equipment necessary for preparation of final subgrades in lawn and planting areas; tree wells and root protection; finished grading; soil treatment; lawn construction; planting of trees, and shrubs; protection, maintenance, guarantee, and replacement of lawns and plants; and related items required to complete the work indicated on the drawings and specified except: (1) protection of existing trees and shrubs, specified in the division Demolition and Clearing of Site; (2) protection, pruning, and repair of existing trees and shrubs to remain, and trees removal; (3) stripping and storing of existing topsoil for refuse; (4) restrictions regarding material used for fill; and (5) rough grading of subgrade to a point approximately 3 inches below finished grade established for lawn and planting areas, specified in the division Excavating, Filling and Grading, which operations are to be completed before work of the lawns and planting can proceed.

2. MATERIALS

(a) Topsoil Stripped and Stored under the division Excavating, Filling and Grading will be tested for qualit

tive analysis per Acre. This soil can be conditioned by addition of superphosphates, peat moss, organic material, etc., thoroughly mixed with the soil; before use.

(b) Topsoil to be Furnished. If the quantity of stored topsoil is inadequate, sufficient additional topsoil shall be furnished. Topsoil furnished shall be a natural, fertile, friable soil, possessing characteristics of representative productive soils in the vicinity. It shall be obtained from naturally well-drained areas. It shall not be excessively acid or alkaline nor contain toxic substances which may be harmful to plant growth. Topsoil shall be without a mixture of subsoil and shall be cleaned and reasonably free from clay lumps, stones, stumps, roots or similar substances two inches or more in diameter, debris, or other objects which might be a hindrance to planting operations.

(c) Manure shall be well-rotted, unleashed, stable or cattle manure, reasonably free from shavings, sawdust, or refuse, and shall not contain any harmful materials.

(d) Lime shall be ground limestone containing not less than 85 per cent of total carbonates and shall be ground to such a fineness that 50 per cent will pass through a 100-mesh sieve and 90 per cent will pass through a 20-mesh sieve. Coarser material will be acceptable, provided the specified rates of application are increased proportionately on the basis of quantities passing the 100-mesh sieve.

(e) Comercial fertilizer shall be used, and shall conform to the applicable state fertilizer laws. It shall l

uniform in composition, dry and free flowing and shall be delivered to the site in the original, unopened container, each bearing the manufacturer's guaranteed analysis. Any fertilizer which becomes caked or otherwise damaged, making it unsuitable for use, will not be acceptable.

(f) Water used in this work will be furnished by the Local Authority and will be suitable for irrigation and free from ingredients harmful to plant life. Hose and other watering equipment for the work shall be furnished by the contractor.

(g) Materials for Staking, Guying and Wrapping.

(1) Notched stakes and deadmen for anchoring guy wires shall be about 2 by 4 inches by 3 feet sound wood, erected.

(2) Stakes for supporting trees shall be 2 1/2 inches square or round, by 8 feet sound wood, creosoted one-half their length.

(3) Wire for guys or for fastening trees to stakes shall be No. 12 guage pliable, galvanized iron.

(4) Flags to be fastened to guys shall be of sound wood about 1/2" x 12" with a 3/8" hole centered 1-1/2" from each end, or 1-1/2" x 12" sheet metal with corners clipped and punched both ends, painted white.

(5) Hose to encase guy wires or wires used for fastening trees to stakes shall be new or used 2-ply reinforced rubber garden hose:

(6) Wrapping material for three trunks shall be

standard burlap, heavy crepe paper, or other suitable material, in strips 6 to 10 inches wide.

(h) Lawn Materials

(1) Sprigs shall be Bermuda grass. They shall be healthy virorous, freshly dug, free of pernicious weeds, and shall be properly protected until planted.

(2) Sod shall be at least 60 per cent Bermuda grass; strongly rooted, and free of pernicious weeds. It shall be mowed to a height not to exceed 3" before lifting and shall be uniform thickness with not over 1 1/2" or less than 1" soil.

(i) Plant Materials

(1) Plant List. A list of plants is shown on the planting plan.

(2) Nomenclature. The names of plants required under this contract conform to those given in Standarized Plant Names, 1942 Edition, prepared by the American Joint Committee of Horticultural Nomenclature. Names of varieties not included therein conform generally with names accepted in the nursery trade.

(3) Quantities. Quantities necessary to complete the planting as shown and located on the drawings shall be furnished. The contractor may at his option furnish the plant material listed as an alternate in any instance, provided matched plantings are used wherever shown.

(4) Quality and Size. Plants shall have a habit of growth that is normal for the species and shall be sour

healthy, vigorous, and free from insect pests, plant diseases, and injuries. All plants shall equal or exceed the measurements specified in the Plant List, which are minimum acceptable sizes. They shall be measured before pruning, with branches in normal position. Any necessary pruning shall be done at time of planting. Requirements for the measurement, branching, grading, quality, balling and burlapping of plants in the Plant List generally follow the code of standards currently recommended by the American Association of Nurserymen Inc., in the American Standard for Nursery Stock.

(5) Type of Protection to Roots

(a) Balled and Burlapped Plants. Plants designated "B&B" in the Plant List shall be balled and burlapped. They shall be dug with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Balls shall be firmly wrapped with burlap or similar material and bound with twine, cord or wire mesh. Where necessary to prevent breaking or cracking of the ball during the process of planting, the ball may be secured to a platform.

(b) Bare-Root Plants. Plants designated "BR" in the Plant List shall be dug and earth removed without injury to the fibrous root system necessary for the full recovery of the plant. Roots shall be covered with a thick coating of mud by puddling or wrapped in wet straw, moss, or other suitable packing material immediately after they are dug, for protection until delivered.

(c) Protection after Delivery. The balls of "B&B" plants which cannot be planted immediately on delivery shall be covered with moist soil or mulch, or other protection from drying winds and sun. Bare-rooted plants shall be planted or heeled in immediately upon delivery. All plants shall be watered as necessary until planted.

3. SAMPLES, TESTS, AND INSPECTIONS.

(a) Notice of Sources. Within ten days following acceptance of the bid, the Supervisor shall be notified of the sources of the materials required or desired to be inspected or tested.

(b) Topsoil to be Furnished. The Supervisor will inspect topsoil to be furnished at its source, to determine whether or not it meets the requirement specified and to approve the depth to which it may be stripped. At the time of inspection, the Contractor may be required to take representative soil samples, under the direction of the Supervisor, to the proposed stripping depth, from several locations in the area under consideration. If samples are required, tests will be made by a state or commercial soil testing laboratory using methods approved by the Association of Official Agricultural Chemists or to State Agricultural Chemists or to State Agricultural Experiment Station. Delivery of topsoil may begin after approval of the sample.

(c) Plants. The Contractor shall be responsible for all certificates of inspection of plant materials that may be required by Federal, State or other authorities to accompany

shipments of plants. Inspection of plants to be balled and burlapped will be made at the place of growth. All plants must be inspected and approved before they are planted. Inspection and approval by the Supervisor of plants at the place of growth or upon delivery shall be for quality, size, and variety only and shall not in any way impair the right of rejection for failure to meet other requirements during progress of the work.

4. CONSTRUCTION METHODS

(a) Time of Planting. The Contractor shall be notified in writing by the Supervisor, when other divisions of work have progressed sufficiently, to commence work of lawns and planting, including placing of topsoil to finished grade. Therefore, planting operations shall be conducted under favorable weather conditions during the next specified season, or seasons. Trees, shrubs and vines to be planted between December 1 and March 15; Bermuda grass lawns to be planted between April 1, and September 1. If establishment of a Rye Grass lawn is necessary for a temporary measure, this shall be done between September 15, and March 15.

(b) Existing trees to remain.

(1) Temporary structures erected for protection of existing trees during the construction required under division, Demolition and Clearing of Site and Excavating. Filling and Grading, shall be removed only when necessary to facilitate the work of lawns and plants.

(2) Permanent tree-root protection shall be pro-

vided where indicated for existing trees as shown on the drawings.

(3) The area for trees root protection shall be considered as that over which the branches spread. The objective of tree root protection is to maintain the normal air and water content and fertility of the soil about the tree. Before making a fill, remove the vegetation, sod, leaf-litter, and other organic matter from beneath the trees and loosen the surface soil. Care shall be taken that the trees and their roots are not damaged by construction operation.

(c) Transplanting.

(d) Pruning and Repair. Upon completion of the work of this contract, all trees and shrubs shall have been pruned and any injuries repaired. The amount of pruning shall be limited to the minimum necessary to remove dead or injured twigs and branches to compensate for the loss as a result of transplanting operations. Pruning shall be done in such a manner as not to change the natural habit or shape of the plant. All cuts shall be made flush, leaving no stubs. On all cuts over 3/4 inch in diameter and bruises or scars on the bark, the injured cambium shall be traced back to living tissue and removed; wounds shall be smoothed and shaped so as not to retain water; and the treated area shall be coated with shellac.

(e) Obstructions Below Ground or Overhead.

(1) It is not contemplated that planting shall be

done where the depths of soil over underground construction, obstructions or rock is insufficient to accomodate the roots or share pockets in rock or impervious soil will require drainage. Where such conditions are encountered in excavation of planting areas and where the stone, boulders, or other obstructions cannot be broken and removed by hand methods in the course of digging plant pits of the usual size, and where trees to be planted are found to be under overhead wires, other locations for the underground construction or overhead wires or for the planting may be designated by the Supervisor.

(2) Removal of rock or other underground obstructions, relocation of construction, and provision of drainage for planting areas shall be done only as directed by the Supervisor.

(f) New Planting.

(1) Layout. The new planting shall be located where shown on the plans excepting where obstructions below ground or overhead are encountered or where changes have been made in the construction. Necessary adjustments shall be approved by the Supervisor. No planting excepting ground cover and vines shall be placed closer than two feet to pavements or structures.

(2) Planting Pits. Circular pits with vertical sides shall be excavated for all plants except for hedge and plants specifically designated on the plans to be planted in beds. Diameter of pits for trees and B&B shrubs and vines shall be at least two feet greater than the diameter of the

ball or spread of roots. Diameter of pits for bare-rooted (BR) shrubs and vines shall be at least two feet greater than the diameter of the ball of spread of roots. The depth of pits for trees, shrubs and vines shall be enough to accommodate the ball or roots when the plant is set to finished grade allowing for 3 inches of compacted topsoil or prepared soil in the bottom of the pit.

(3) Soil Preparation. Soil used in planting shall be topsoil, as herein before specified, or suitable existing soil shall be thoroughly mixed with one part of peat and one part of manure to five parts of existing soil. Very poor soils, gravel, hard-pan, or other soil injurious to plants shall not be used. Except for ericaceous plants, very acid or sour soil shall be mixed thoroughly with 5 pounds of 10-6-4 formula commercial fertilizer per cubic yard.

(4) Excess excavated soil shall be disposed of where and as directed by the Landscape Architect.

(5) Setting Plants. Unless otherwise specified, all plants shall be planted in pits, centered, and set on 3 inches of compacted topsoil or prepared soil to such depth that the finished grade level at the plant after settlement, will be the same as that at which the plant was grown. They shall be planted upright and faced to give the best appearance or relationship to adjacent structures. No burlap shall be pulled out from under balls. Platforms, wire, and surplus binding from top and sides of the balls shall be removed. Roots shall be spread in their normal position. All

broken or frayed roots shall be cut off cleanly. Topsoil or prepared soil shall be placed and compacted carefully to avoid injury to roots and to fill all voids. When the hole is nearly filled, add water as necessary and allow it to soak away. Fill the hole to finished grade, and form a shallow saucer around each plant by placing a ridge of topsoil around the edge of each pit. After the ground settles, additional soil shall be filled into the level of the finished grade.

(6) Guying, Staking, Wrapping. Trees shall be supported immediately after planting. All trees 6 inches and over in the trunk diameter shall be guyed and wrapped. Smaller trees shall be staked. Wires shall be encased in hose to prevent direct contact with bark of the trees and shall be placed around the trunk in a single loop. Wires shall be tightened and kept taut by twisting the strands together.

(a) Guying. Guying shall be done with three guys spaced equally above a tree. Each guy shall consist of two strands of wire attached to the tree trunk at an angle of about 60 degrees at about two-fifths of the height of the tree and anchored at the ground either to notched stakes which have been driven into the ground at an angle away from the tree so that the tops of the anchor staken are below finished grade, or (where underground utilities are within four feet of finished grade) to deadmen placed at least 3 feet below finished grade. A wood or metal flag shall be secured to each guy a few inches above ground.

(b) Staking. Stakes shall be equally spaced

about each tree and the creosoted end shall be driven vertically into the ground to a depth of 2 1/2 to 3 feet in such manner as not to injure the ball or roots. These shall be fastened to each stake at a height of about 5 feet by means of two strands of wire. Stakes shall be uniform in height and placed according to the diameter of the tree trunk, as follows:

3 to 6 inches - 3 stakes

2 to 3 inches - 2 stakes

2 inches or less - 1 stake

(c) Permanent tree guards shall be set as specified and trees securely fastened thereto by 3-way guys consisting of two strands of wire passed through rubber hose to protect the bark.

(d) Wrapping. Promptly after planting, the trunks of all trees designated to be wrapped shall be wrapped spirally from the groundline to the height of the second branch. All wrapping shall be neat and snug and the material shall be held in place by a suitable cord.

(7) Mulching. All plants shall be mulched with a 2-inch layer of well-rotted manure within 2 days after planting. This mulch shall entirely cover the area of the planting pit, bed, or saucer around each plant.

(g) Lawns.

(1) All areas not required to be developed otherwise shall be sprigged and sodded to grass.

(a) If construction is completed at a time

out of season for sprigging and sodding with Bermuda grass, all areas not required to be developed otherwise shall be seeded to Italian Rye at the rate of 5 lbs. to every 1000 square feet.

(2) Preparation of Subgrade. The subsoil shall be graded and uniformly compacted so that it will be aparellel to the finished grade. The subgrade material shall be loosened and mixed to a depth of two to four inches and all stones over two inches size, sticks and rubbish removed. No heavy objects except lawn rollers shall be removed over the lawn areas after the subgrade soil has been prepared unless the subgrade soil is again graded and loosened as specified above before topsoil is spread.

(3) Finished Grading lawn areas. After the subgrade soil has been prepared, topsoil shall be spread evenly thereon and lightly compacted. No topsoil shall be spread in a frozen or muddy condition.

(a) Areas to be seeded or sprigged shall be brought to finished grade and smoothed.

(b) Areas to be sodded shall be brought to within the thickness of the sod of the finished grade.

(c) Allowance for settlement shall be made.

(d) Areas where the topsoil has not been removed shall be scarified, smoothed, and sticks, stones and rubbish shall be removed.

(e) Applying arsenate of lead. Arsenate of lead shall be applied at the rate of ten pounds to 1000 square

feet to the finished surface of the topsoil. It shall be thoroughly mixed with 25 times its own volume of surface and then immediately and thoroughly watered in.

(4) Applying Lime. Lime shall be applied at the rate of 75 pounds per 1000 square feet to the grass areas being prepared for planting.

(5) Applying Fertilizer. Commercial fertilizer shall be applied at the rate of 50 pounds of 1000 feet to the grass areas being prepared for planting. Fertilizer may be applied with seed.

(h) Planting of Lawns.

(1) Sowing of seed. Immediately before any seed is to be sown, the ground shall be pulverized as necessary and shall be raked until the surface is smooth, friable, and of uniform fine texture. Sown areas shall be seeded evenly with a mechanical spreader at the rate of 2-1/2 pounds to 1000 square feet of area, lightly raked, rolled with a 200 pound roller, and watered with a fine spray. The method of seeding may be varied at a discretion of the Contractor on his own responsibility to establish a smooth, uniform grassed lawn.

(2) Row Sprigging. Furrows 12 inches apart, preferably parallel with contours, shall be opened to the depth necessary to insure covering of sprigs to a depth of two inches after compaction. As soon as practical after opening, before soil is dried, cut sprigs shall be placed in the furrows continuously with the ends overlapping; approximately

one cubic yard of sod should be used for sprigs per 1000 square feet. The sprigs shall be covered immediately, the surface leveled to established grade, cleaned, suitably compacted, and thoroughly soaked by watering with a fine spray. The method of planting sprigs may be varied at the discretion of the Contractor on his own responsibility to establish a smooth, uniformly grassed lawn.

(3) Laying of sod. Before any sod is laid all soft spots and inequalities in grade shall be corrected. Fertilizer spread shall be raked in. Sod shall be laid so that no voids occur and tauped or rolled. Screened topsoil shall be brushed or raked over the sodded area and the sod shall then be thoroughly watered. The completed sodded surface shall be true to finished grade even and firm at all points.

(a) Sod on slopes steeper than 2 to 1 shall be held in place by wooden pins about one inch square and about six inches long driven through the sod into the soil until they are flush with the tops of the sod.

(b) Strip or spot sod shall be placed so that the surface of the compacted sod will be slightly below the surrounding surface soil.

(4) Slopes of Banks. At the option of the contractor sod may be used for establishing grass on the slopes or banks in lawn areas.

(i) Clean Up. Any soil, manure, peat of similar material which has been brought onto paved areas by hauling opera-

tions or otherwise shall be removed promptly, keeping these areas clean at all times. Upon completion of the planting all excess soil, stones and debris which has not previously been cleaned up shall be removed from the site or disposed of as directed by the Supervisor. All lawns and planting areas shall be prepared for final inspection.

5. MAINTENANCE

Maintenance shall begin immediately after each portion of lawn and each plant is planted and shall continue in ~~the~~ accordance with the following requirements.

(a) Lawns shall be protected and maintained by watering, and replanting as necessary for at least 30 days after completion of lawn operations and as much longer as is necessary to establish a uniform stand of the specified grasses and until acceptance. Scattered bare spots, none of which is larger than one square foot, will be allowed up to a maximum of 3 percent of any lawn area.

(b) New planting shall be protected and maintained until the end of the lawn maintenance period or, if installed after the lawn maintenance period, until installation of planting is completed. Maintenance shall include watering, weeding, cultivating, mulching, tightening and repairing of guys, removal of dead material, resetting plants to proper grades or upright position and restoration of the planting saucer, and other necessary operations. If planting is done after lawn preparation, proper protection to lawn areas shall be provided and any damage resulting from planting operations

repaired promptly.

(c) Repairs to Lawns or Replacements of Plants necessary during the maintenance period due to the removal, loss or damage resulting from occupancy of dwelling units, vandalism, or acts of neglect on the part of others may be made on the order of the Supervisor and will be at their expense.

6. INSPECTION FOR ACCEPTANCE.

(a) Inspection of the work of Lawns and Planting to determine completion of contract work, exclusive of the possible replacement of plants, will be made by the University at the conclusion of the maintenance period upon written notice requesting such inspection submitted by the Contractor at least 10 days prior to the anticipated date. The conditions of lawns will be noted and determination made by the Landscape Architect whether maintenance shall continue in any part.

(b) Acceptance. After inspection, the Contractor will be notified in writing by the University of acceptance of all work of the Division, Lawns and Planting, exclusive of the possible replacement of plants subject to guaranty, or, if there are any deficiences, of the requirements for completion of the work. Lawn Maintenance or other work remaining to be done shall be subject to reinspection before Acceptance.

(c) Acceptance in part. The work of lawns and planting will be accepted in part by the University upon written application by the Contractor provided the work offered for acceptance comprises all of the work of this Division entire

completed, including Lawn Maintenance, but exclusive of the possible replacement of plants, located within a continuous area which is a substantial portion definitely separated from the remainder of the site by roads, walks, fences, other structural barriers, or readily defined topographical features.

7. PLANT GUARANTY AND REPLACEMENT

(a) Guaranty. Plants shall be guaranteed for the duration of one full growing season, beginning April 1 and ending November 1, after planting, and shall be alive in satisfactory growth at the end of the guaranty period.

(b) Replacement. At the end of the guaranty period, inspection will be made by the University upon written notice requesting such inspection submitted by the Contractor at least ten days before the anticipated date. Any plant required under this contract that is dead or not satisfactory in growth, as determined by the University, shall be removed from the site, these and any plants missing, due to the Contractor's negligence shall be replaced as soon as conditions permit, but during the normal planting season. In case any of the condition and satisfactory establishment of the rejected plant is questioned, the Contractor may elect to allow such plant to remain through another complete growing season at which time the rejected plant if found to be dead, in an unhealthy or badly impaired condition, shall be replaced.

(c) Materials and Operations. All replacements shall be plants of the same kind and size as specified in the Plant List. They shall be furnished and planted as specifi

under new planting; the cost shall be borne by the Contractor, except for possible replacements resulting from removal, loss or damage due to occupancy of the project in any part, vandalism, or acts of neglect on the part of others.

(d) Costs of Plant Replacements. A sum sufficient to cover the estimated cost of possible replacements, including materials and labor, will be retained by the University and paid the Contractor only after all replacements have been made and approved.

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