RECREATION AND RESEARCH CENTER
UNIVERSITY OF GEORGIA
ATHENS, GEORGIA

REINALD H. DERSCH, CHARLES P. MONAHAN AND JURGEN H. PAPE

A Terminal Problem Presented for the

Degree of Bachelor of Landscape Architecture

Department of Landscape Architecture

University of Georgia

Athens, Georgia

June 1964

H.B. Owens Resource Center School of Environmental Design Caldwell Hall University of Georgia BLA LXC 35 1964

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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 discorder 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.

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### PROBLEM STATEMENT

introduction of theoryta describe, absolute, com secretural,

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-

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

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or and the Horticultural Experimental Station can be per-

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

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Lindhman

badminton

tennis

- archery
- basketball
- locker rooms and equipment storage
- parking

### PICNICKING AND CAMPING AREA

- 1) tables and cooking pits
- 2) children playground
- 3) walking trails
- shelters
- 5) restrooms

### GOLF COURSE

- 1) driving range
- 2) practice area
- 3) club house
- parking

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tables and cooking pits

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ANALYSIS

There is a definite need for one land sure two

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.

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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.

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

no topography along the reilroad accommodates paved

need to a serious and for one large structure and content which can be used for dances, jam sesions, and other group activities; a pavilion is included whe were requirements and serve as a point of inter-

South and south-west of the Lake are approximately positive agree of the content which are reserved on the modeling, cooking pits, shelters, and trails for a data that their natural appearance. Roads the are or danigned so that they will not apparate the law from the lake and so as to follow the natural.

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The the intransural Activities south of the proposed the proposed the proposed of th

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.

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

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### 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 threehundred 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

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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 secind 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

perfect that joins the beach. This way it is conveniently located between the two sajer oftenediens, will be decided between the two sajer oftenediens, will be decided and an interest of the character of the visitors, and after laving character in the discreting vocas, they can step right on the bearded k.

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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-

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Continuing on the read, one enters the woodland and then crosses the dam of the emisting second sediment pend.

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In conjustion with the eighteen hole Colf 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

and source for the Golf Course will be located and south of the South of the South of the South of the Golf Course will possible. From here most of the Golf Course will possible. From here most of the Golf Course will and a beautiful grove of pecan trees will furnish possition for the Club House. Access to the season of the provided for by a read intersecting routes at payls inchers Cafeteria. To keep the view and the dolf Course, the parking for it will be in back the season of the parking for it will be in back the season of the parking for the will be in back the the mean vicinity.

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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

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

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possible.

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.











### RESEARCH CENTER 03 RECREATION

# UNIVERSITY OF GEORGIA

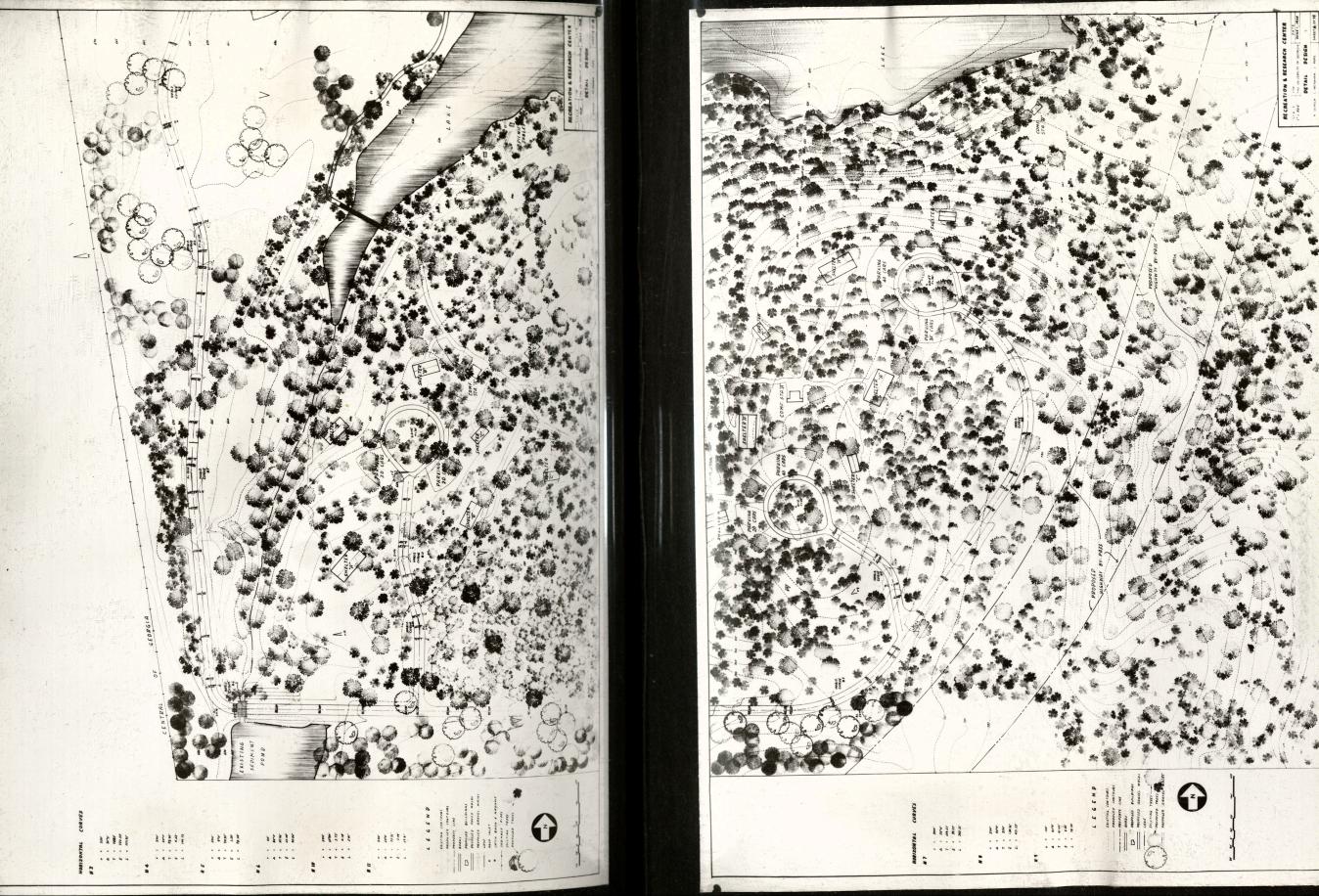
## ATHENS GEORGIA

JUNE 1, 1964

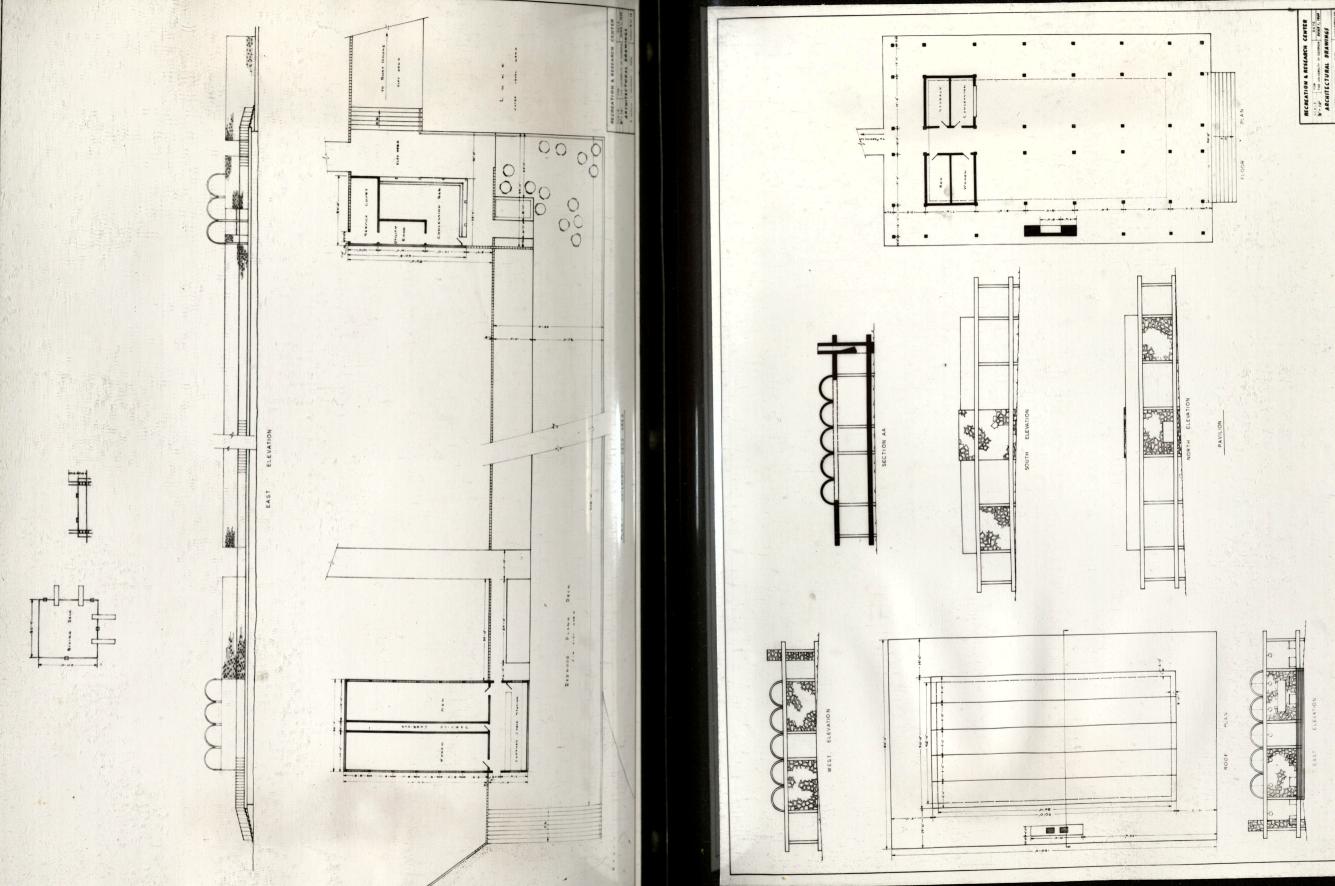
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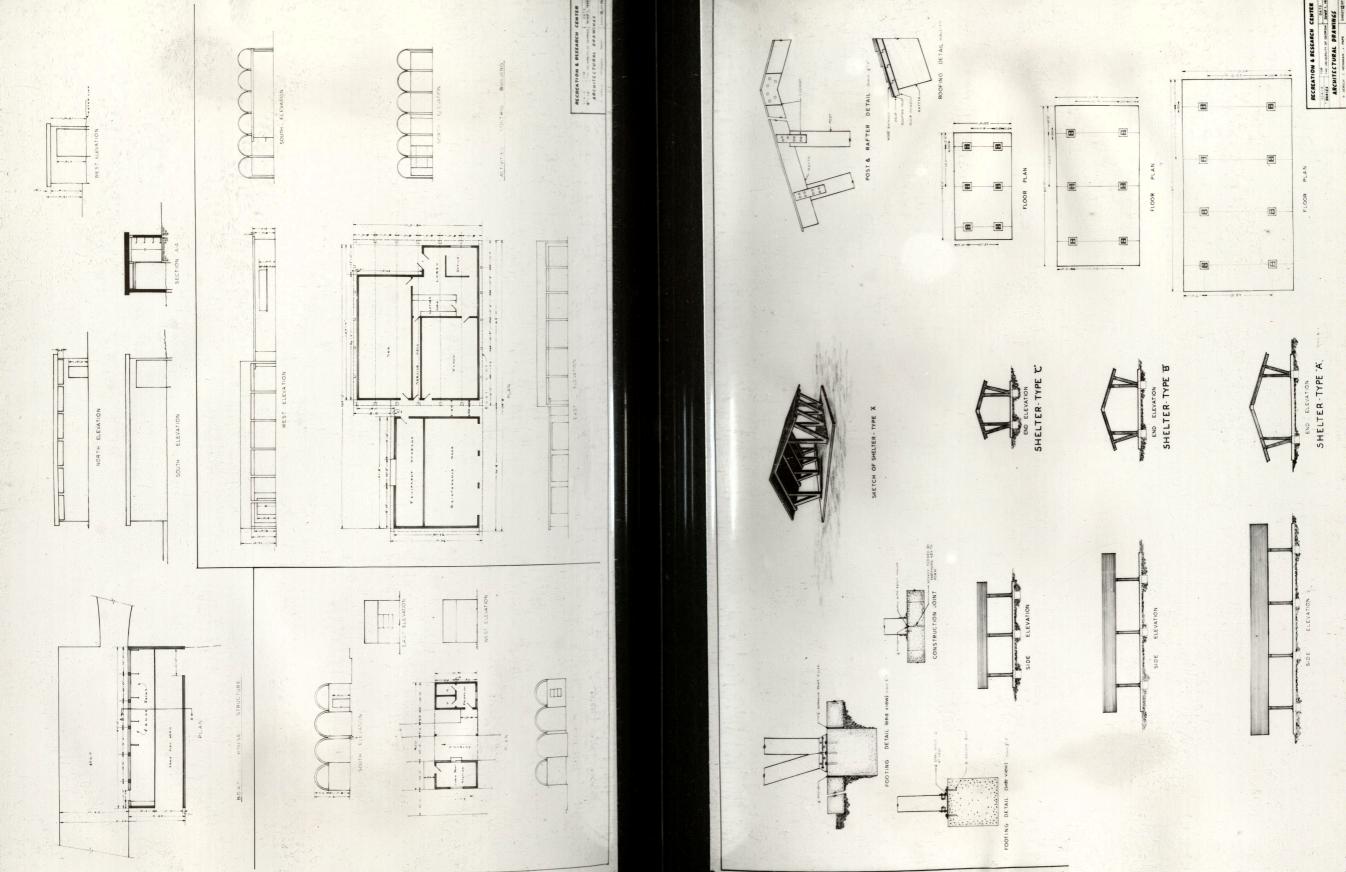


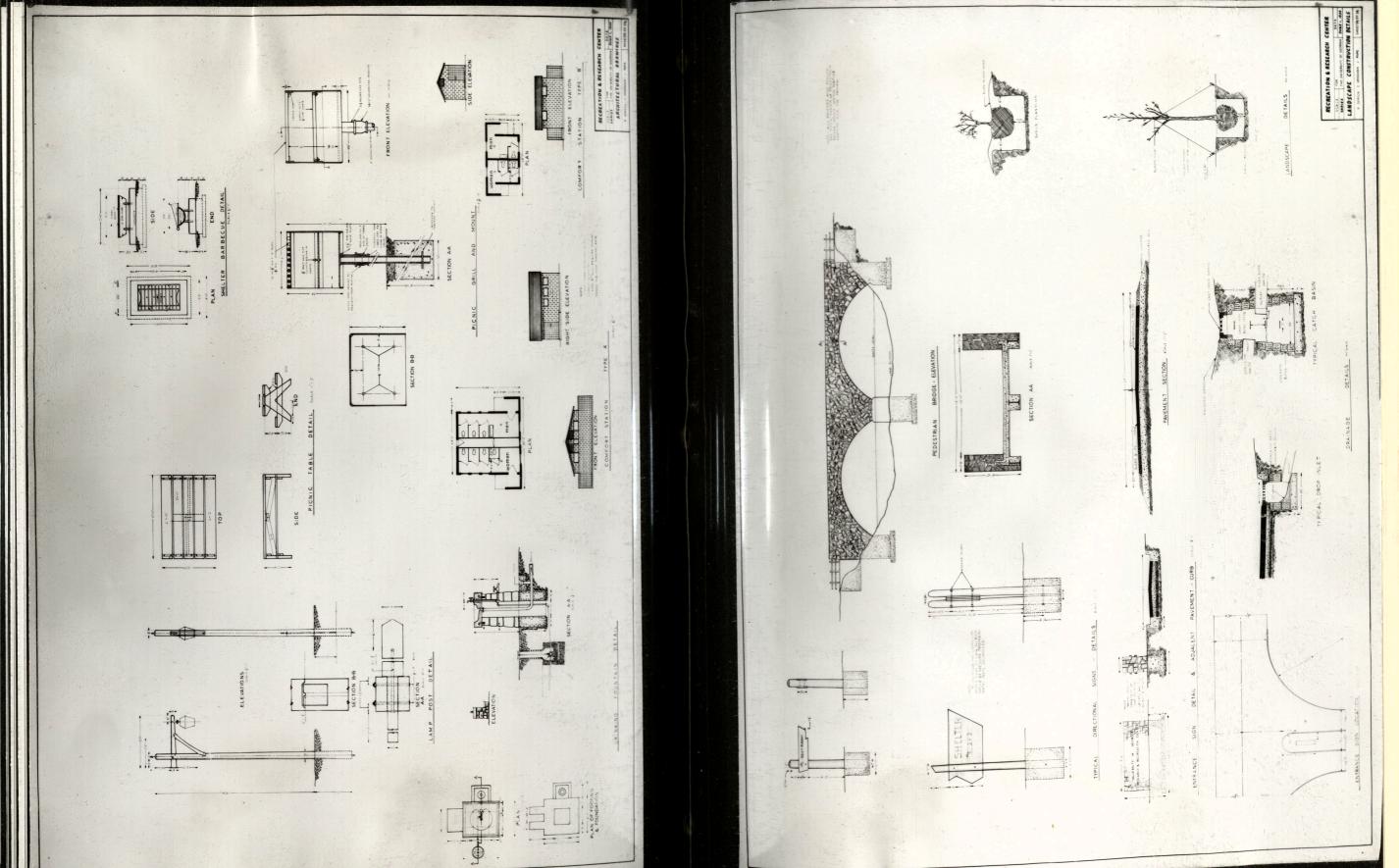


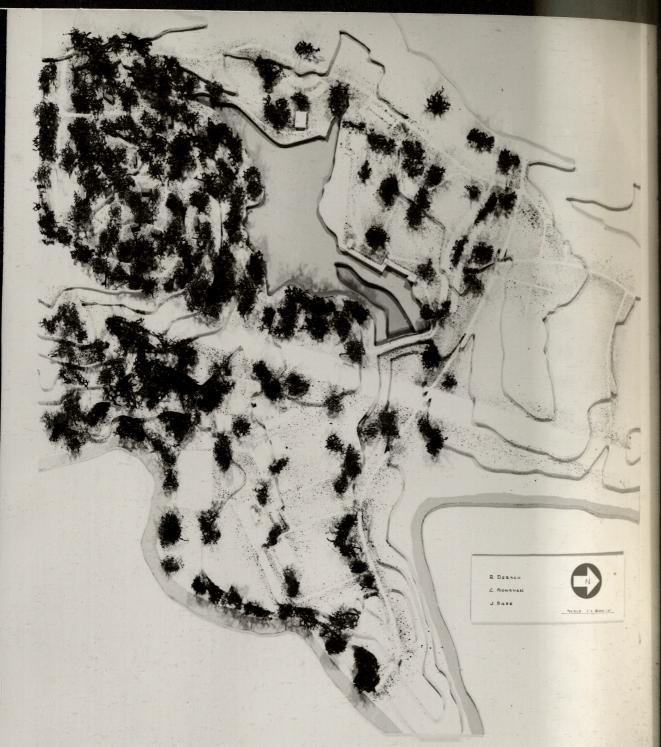












RECREATION & RESEARCH
CENTER
UNIVERSITY OF GEORGIA

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### MASTER SPECIFICATION

### PART I 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.

Its 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
5.	#####################################	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

PART I CHREMAL PROVISIONS

1. SCOPE OF WORK; The work to be performed will consist of furnishing all materials, labor, supplies. and equipment for planting, smalling, and construction in eccordance with these specifications and in combonity . smale odd dithy

LOCATION: The site of the proposed Testestion . edd wi berwe wirsered no bedseel si rednet dersess University.

Its boundaries are:

South and Southwest - Centrel of Georgia Sailros Morth - College Station Road

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

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

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Detail Design

Architecturel Flans and Details Sheet 9-10-11-12-13-14

Landscape Construction Details | Sheet 15-16 |

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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.

- 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.
- 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

mutually explanatory and complete, and all work onlied for by one, even if not by the other, will be fully executed. In case of difference between drawlings 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 or in the specifications, the matter will be promptly submitted to the Landscape Architect, who enall promptly eaks a determination in writing, any adjustment by the contractor without this determination shall be at his oun risk and expense.

and intent of these specifications, and of the drawings forming a part of them, to provide that the work and all 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. Hention 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; prosonized, and provide therefore all necessary labor, materials, tools, equipment and indidentals necessary to complete the more than some

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

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

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 Landmago Architect.

d. HEADURANGERS Before ordering any material or doing any work, the Contractor will varify all measurements at the site and shall be responsible for correctness of sume. 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 Landescape Architect for consideration prior to beginning the work.

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TINING AND SEQUENCE OF MORE: The Contractor will begin work the finet workday after receiving the "Motice to Frodeed". The Contractor deall have \_\_\_\_ calendar days in which to carplete the more except for extensions approved by the Supervisor. The Contractor will sive due and adequate notice of all work he proposes to start to those in control of properties which may be

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.
- other contracts: The University may undertake or award other contracts for additional work, and the Contractor shall 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

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effected by his operations, work is to proceed in an orderly way. The organization of these specifications end education viltagesoen for ob against fortheor to order of sequence in which the work is to be performed. o. TERPORETY SUSPENSION OF WORKE The Supervisor shall have the authority to suspend the work, wholly or in part, for such period as he may does to the best interest of the University, due to conditions which are considered unfevorable to the suitable carrying out of the work. verse of reference out to the contractor to reverse -mos end to molelyone who unormed of to mavin probto fue tract. The Contractor will immediately respect the mitten order of the University to suspend the work wholly or in part. The Contractor will not suspend work wichout such written authority, and will immediately noth to alderover one anoldibnoo neth from onucer -record out we bevores as bedoortoo mee even abouton visor in weiting. 10. OTHER CONTRACTS: The University may undertake or sward other contracts for additional work, and the Contractor and a roteautage reside done dolly especial ville fless the University or his coplayees and carefully fit his ond we bedoonle as drow femoidible fous of wrow mo Supervisor. The Contractor will not commit of permit

- 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.
  - 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.

any set which will interfere with the performance of

work by any other contractor or employee of the owner.

ILIW BISITALE GIND WORKERSHEET WORKSTON BACKETS WILL to an oresoribed by these specifications and the conthe .bedinged withouters don neve made .synlwarh don't working used on employed in comming out the work .coldinop bas sebera syltageary off to feed and ad illy there equipment, materials, or articles are referred to in the specifications as "equal to" any partitoular 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 combemplates incorporation in the Tot beddindes of filty electeden to selemes . From sproval when so directed. Hackingry equipment and down Juckin been to beliefert seletite bus eletrotes .molivelen to sein edd to ed Illu Levenues 12. HIMOR HODIVICATIONS: 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 contrucces no telestand end of blag ed Litw entry Josef of such minor wodifications provided that at the time the change is to be made the work involved has not already been executed. North which meterially 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.

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- 15. GRARATER: The Contractor will gunrantee 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 motify the latter.
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- 1. PARMENT: Payment of 90% of bid will be made upon completion of all work. The remaining 10% will be held watill expiration of the guarantec.
- Is substitute All materials which do not meet these apacifications on 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
  fontractor 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 interes

16. COMPRACEDE'S RESPONSIBILITIES: The Contractor will. without additional expense to the University, obtain to molimenore and from beriuper ediamed has seeneelf Lla He aledales one shivers fliw apprended off . How all temporary readways and utilities which may be subhorized. and alamais regret, delights, denger stand La bas offier devices necessary to provide for the traffic and earety. The Contractor will keep his equipment, operano bedroibut admil od of bombinoo aleiredam bus anoit the contract drawings. The Contractor will restore, at his expense, any demage to any property and will take Laireten galiteire was to noitsetore ervent of settes deur 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 asysmab Lis tot addisnegast od film oH . omogas 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 maderials delivered and work performed until completion and first 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, carelesa, insubordinate, or otherwise objectionable, or whose continued employment on the work is deemed by the University to be contrary to the Owner's interest.

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- 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.

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the completed work in a meat, policed manuer.

Haben Barth: Connrete alabs for Shelter and Consort Stations on earth, shall have seen reinforcement, where no other reinforcements are shown or detailed.

### CONSTRUCTION SPECIFICATIONS

### CONCRETE

- Coarse Aggregate: Gravel or crushed stong 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.
- 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.

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Line and physician appears hower section and other particulars

finished gradings both townspecies then been well-and plant-

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COMSTRUCTION SPECIFICATIONS

**GOVERNMENT** 

obres Aurrentes Gravel or ornshed stony must be hard, elean and free from organic matter, sold or other obesicals 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.

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- Time Accompands: Fine appreciate for comorate shall consist of clean, washed send, 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.

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- pressive strength of 3,000 lbs. per square inch at the end of twenty-eight days.
- Portland Cement: Shall be of one approved brand throughout,
  aceting requirements of American Society for Testing
  Asterials.
- Note: All mater used must be clean filtered drinking mater
  containing no alkali, acid, vegetable matter or other
  chemicals injurious to the concrete.
- diring and Placing Congrete: Shell be approved, ready mixed congrete or shall be mixed on the cite in a mechanical mixer of the type approved by the University.

Planting ment postantally.

Stations on earth, shall have mesh reinforcement, where no other reinforcement, where

#### 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 quality

# SPECIFICATIONS LAWS AND PLANTING

bus alairotem ile anthument cobuloni noisivib aid? equipment accessary for preparation of final subgrades in indisposore foot but allew ears taseds amidnale bus mucl "Intered grading; well treatment; law construction; planting of trees, and shruber probection, maintenance, sucrantee. and replacement of lawns and plants; and related items noper complete the work indicated on the deswines and specified except: (1) protection of ontacting trees and to multaelb bas moistlowell moisivib end at beiliones , educate of Site; (2) protection, pruming, and repair of existing trees and shrubs to remain, and trees removal; (3) stripping and storing of existing topsoil for refuse; (4) restrictions recarding makerial used for fill; and (5) rough gradius of subgrade to a point approximately 3 inches below finished and politiced, special for law and planting areas, specified in the division Excepting, Filling and Grading, which opentions are to be completed before work of the lawns and .beseeve mee antimal

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(a) Topsoil Stringed and Stored under the division and according to tested for qualita-

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.

- stored 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) <u>Manure</u> shall be well-rotted, unleashed, stable or cattle manure, reasonably free from shavings, sawdust, or refuse, and shall not contain any harmful materials.
- 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 1

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

- (b) Soppoil to be Parmished. If the quantity of stored topsoil is imadequate, sufficient additional topsoil shall be furnished. Topsoil furnished shall be a natural, 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 accessively soid or alkaline nor contain toxic substances which may be harmful to plant growth. Topsoil shall be dithout a mirture of spheoil and shall be cleaned and reasonably free from elections, atoms, atoms, debrie, or other substances two inches or more in diameter, debrie, or other objects which might be a hindrence to planting operations.

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- (c) Manure shall be well-rotted, unleashed, stable or cattle manure, reasonably free from shavings, endust, or refuse, and shall not contain any harmful materials.
- (d) Line shall be ground limestone equicining not less than 85 per cent of total cardonates and shall be ground to such a fineness that 50 per cent will pass through a 100-acs sieve and 90 per cent will pass through a 20-mesh sieve. Coarser saterial will be acceptable, provided the specified rates of application are increased proportionately on the basis of quantities passing the 100-mesh sieve.
- (a) Comercial Pertilizer shall be used, and shall com-

miform 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 this mitable 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 matering 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, treeted.
- (2) Stakes for supporting trees shall be 2 1/2 modes square or round, by 8 feet sound wood, creosoted one-balf 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" how each end, or 1-1/2" x 12" sheet metal with corners olipped 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

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- wifered to the site in the original, unopened container, delivered to the site in the original, unopened container, each bearing the namufacturer's quarenteed enelysis. Any fertilizer which becomes caked or objerwise damaged, making the witable for use, will not be acceptable.
- (f) there used in this work will be furnished by the local Authority and will be enitable for igrigation and free from ingredients hammful to plant life. More and other watering equipment for the work shall be furnished by the contractor.
- (1) Botobed stakes and Schäden for anchoring gur vires shall be about 2 by 4 inches by 3 feet dough wood, eroted.

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- (2) Staigs for supporting trees shall be 2 1/2 index square or round, by 3 feet sound wood, oreosoved one half their length.
- (3) Wire (or sure or for factoring bross to
- (4) Flags to be fastened to guys shall be of sound wood about 1/2" x 12" with a 3/8" hole contered 1-1/2" from each end, or 1-1/2" x 12" cheet metal with cornors olipped and punched both ends, painted white.
  - (5) Hose to enouse guy wines or wires used for factoring trees to stakes shall be new or used 2-ply rein-
  - (6) interpring mederial for three trunks chall be

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

#### (h) Lawn Materials

- (1) Sprigs shall be <u>Bermuda</u> 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 <u>Bermuda</u> grass; strongly rooted, and free of pernicious weeds. It shall be moved 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.

#### (1) 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 soun

stradard burlap, heavy orepe paper, or other suitable material, in strips 6 to 10 inches wide, where we will be to 10 inches wide,

(h) Low Metorial of the Control of t

healthy virorous, freshly dug, free of permissions weeds, and shall be properly protected until planted.

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(1) Plant Natorials and Antonia discount of the second of

planting plan.

(2) Momentality Character of plants required under this contract conform to those given in <u>Standarized</u>

Eloni Mones, 1942 Edition, prepared by the American Joint Committee of Horbicultural Monescalature, Names of varieties not included therein conform generally with mones accepted in the nursery trade.

complete complete. Quantities necessary to complete the planting as shown and located on the drawings shall be durating as shown any et his option furnish the plant material listed as as alternate is any implement, provided material listed as as alternate is any implement, provided material plantings are used wherever shown.

of growth that the normal for the species and shall be sound.

withy, vigorous, and free from insect pests, plant diseases, in 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 braches in normal position. Any necessary pruning shall be at time of planting. Requirements for the measurement, braching, grading, quality, balling and burlapping of plants in the Plant List generally follow the code of standards brachly recommended by the American Association of Nursery
im Inc., in the American Standard for Nursery Stock.

#### (5) Type of Protection to Roots

- (a) <u>Balled</u> and <u>Burlapped Plants</u>. Plants deimated "BaB" in the Plant List shall be balled and burlapped.

  May shall be dug with firm, natural balls of earth of sufficlet diameter and depth to encompass the fibrous and feeding

  mot system necessary for full recovery of the plant. Balls

  fall be firmly wrapped with burlap or similar material and

  build be firmly wrapped with burlap or similar material and

  build with twine, cord or wire mesh. Where necessary to pre
  to breaking or cracking of the ball during the process of

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

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senting, vigorous, and free from insect pests, plant diseases, and injuries, All plants shall equal or exceed the meapuresents specified in the Flant List, which are minimum acceptchle sizes. They shall be measured before pruning, with
examines in normal position. Any necessary pruning shall be
done at time of planting, Requirements for the measurement,
wenching, greding, quality, balling and burlapping of plants

in the Flant Liet generally follow has cade of standards currently recommended by the American American American of Hursony and Inc., in the American Standard for Hursony Block.

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elemented "New in the Piput Liut shall be helled and burlapped.

They shall be dug with fire, natural bells of sarth of sufficiont diameter and depth to encoupess the fibreus and feeding
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that is a finally imapped with burlap or shallor material and

bound with twine, cord or wire mean. Where necessary to provest burning or areolding of the ball during the process of

vest burning or areolding of the ball during the process of

lanting, the ball my be secured to a platform.

(b) Core-Tool Claims Chart shall be dug and caren removed without cally to the Filant List shall be dug and caren removed without cally to the filance weet upot a shall be covered with a thick conting of the plant. Hopes enall be covered with a thick a thick of the shall be covered with a thick or whom other action or binar action in and the protection well delivered.

- (c) <u>Protection after Delivery</u>. 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.
- spect 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 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

- (a) English political of their Delivery. The Delivery Pass plants which cannot be planted immediately on delivery chall be covered with moies coil or mulch, or other protection from drying winds and arm. Here-rooted plants shall be planted or heeled in immediately upon delivery. All plants shall be matered as necessary until planted.
- (a) Notice of Sources. Within ten days following acceptance of the bid, the Supervisor shell be notified of the sources of the materials required or desired to be inspected or tested. We have the best of the materials are because or tested.
- neet topsoil to be furnished at the source, to determine whether or not it meets the requirement specified and to source the depth to which is may be stripped. At the time of inspection, the Contractor may be stripped. At the time sentative 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 the area under consideration. If samples are required, tests will be made by a state or connected soil testing laboratory using methods superved by the Association of Official Actionitumal Chemists or to State Association. Delivery of topsoil to juste Association. Delivery of topsoil of the season atter approved in the sample.
- (c) stanta. The Contractor shall be responsible for all certificates of inspection of plant materials that may be required by Federal, State or other suphorities 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

- 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-

phipments of plants. Inspection of plants to be balled and burlauped will be made at the place of growth. All plants are to inspected and approved before they are planted, inspection and approved 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 vay impair the right of rejection for failure to meet other requirements during an area to the most accurace of the most.

CONSTRUCTION METHORS.

(a) Pine of Planting. The Contractor shall be notified in writing by the Supervisor, when other divisions of work have progressed sufficiently, to commence work of lame and plantine, including planting 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 Seasons and Franch 15; Hermuda grade laws to be planted between between April 1, and Sebtember 1. If establishment of a Type Crass law is necessary for a temporary measure, this shall be done between September 15, and March 15.

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(c) <u>Tailabing troop to remain</u>.

(d) Temporary stratures created for protection of existing troop during the constitution required under division, Demolition and Clearing of Site and Excavating.

(illing and Grading, chall be removed only when usecasary to realitate the work of laws and plants.

think where indicated for existing trees as shown on the immings.

- (3) The area for trees root protection shall be maidered as that over which the branches spread. The bjective of tree root protection is to maintain the normal along matter content and fertility of the soil about the tree. Before making a fill, remove the vegetation, sod, last-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 listed to the minimum necessary to remove dead or injured this and branches to compensate for the loss as a result of templanting operations. Pruning shall be done in such a sumer as not to change the natural habit or shape of the limit. All cuts shall be made flush, leaving no stubs. On all outs over 3/4 inch in diameter and bruises or scars on the bark, the injured cambium shall be traced back to living the bark, the injured cambium shall be smoothed and shaped some limit to retain water; and the treated area shall be coated the shellac.
  - (e) Obstructions Below Ground or Overhead.
    - (1) It is not contemplated that planting shall be

vided whore indicated for existing trees as shown on the

(3) The area for treet root protection shall be condidened as that over which the branches approach. The conditive of tree root protection is to maintain the normal sir end mater content and fertility of the soil about the condition. See the soil about the last-litter, and other organic matter from beneath the treet that loosen the surface soil. Gore shall be taken that the treet and thair roots are not damaged by construction orerstain.

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(d) Frances and Specific Confidence of the world of this confired, all traces and shripe shall have been prunted and any injuries repaired. The should of pruntes that be and any injuries repaired. The should be franced to the minimum research for the pruntes and injured to the minimum research of the load as a result of transplanting operations. Frunting shall be dess in main a sentence and to the color to change the material habit or shape of the plant. All outs chall be made flight, leaving no third. Outs all outs over 3/4 inch in disseter and bruitses or state of the bank, the injured cantium shall be traced back to living the large and reserved; sounds shall be shoothed and shaped so the state of the state wester; and the traced area aliall be deated state of the shall be deated area aliall be deated at the shall of the traced area aliall be deated at the shall be deated.

(a) <u>Obstructions Released to DE Overhead.</u>
(b) <u>Obstructions Released to DE Overhead.</u>
(c) <u>It is not contemplated that planting chall be</u>

done where the depths of soil over underground construction, obstructions or rock is insufficient to accommodate 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) <u>Planting Pits</u>. 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

dane where the depths of soil over underground construction, obstructions or rock is insufficient to execute the rock or impervious soil will require drainage. Where such conditions are encountered in expandation of planting arous and where the stone, boulders, or other class of planting arous and where the stone, boulders, or other the course of digging plant pits of the usual size, and where the course of digging plant pits of the usual size, and where these to be planted are found to be under overhead wires, other locations for the underground construction of overhead size or for the planting may be designated by the Supervisor.

(2) semoval of rock or other underground obstruction, and provision of drainage for planting areas shall be done only as directed by the Saparvisor.

(1) Tayont. The new planking shall be leasted shore shore show the plans excepting where obstructions below fround of overhead are encountered or shere obstruction have been made in the construction. Mecessary adjustments shall be approved by the Engervisor. No planting excepting ground cover and vinear shall be planed closer than two feets to movements or structures.

ides shall be excavated for all plants except for hedge and sides shall be excavated for all plants except for hedge and plants specifically designated on the plans to be planted in bods. Disaster of pits for trace and EdG churchs and vines shall be at least two feet greater than the disaster 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 ericacious 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.
- 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. Playtforms, wire, and surplus binding from top and sides of the balls shall be removed. Roots shall be spread in their normal position. All

- bell or spread of roots. Dismeter of pits for bere-rooted (E) shrubarend vines shall be at least two feet granter that the dismeter of the ball of spread of roots. The depth of pits for trees, shrubs and vines shall be emough to accommodate the the ball or roots when the plant is set to finished crade allowing for 3 inches of compacted topacil or prepared sail in the bettom of the pit.
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derp and as directed by the Landscape Architect.

(5) Severing Plants. Unless otherwise specified,
all plants about he planted in pits, centered, and ast on 3
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that the finished crode level at the plant efter settlement,
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be pulled out from under balls. Playtforms, wire, and surbe pulled out from top and eides of the bells shall be reslave. Noots 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.
- 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

broken or frayed roots shall be out off cleanly. Topsoil or blove of wildregen bedeedeed and compacted describing to avoid er elod and mank . ablov ila ilit of bus about of vanta nearly filled, add water as necessary and allow it to soak wellarie a myo't hose . oberra beneinit of elon end Lift . your barons finged to sabir a raisely ve smale fine barons resuss the edge of each pit. After the ground settles, additional .obers hadrigit and to level and obside the finished arede. ed Hada assur .anicorry .gristote .naivo (d) encorred immediately effer plenting. All trees o inches and -lang .hoovery bue bayun of finder redemail hours and ut tovo seed of beasons ad first senio, .helese ed finds seed to ed flada bue teers old to dred dily tostwo deers thever of pisced eround the trunk in a single loop. Wires shell be tendend and lead tent by tristing the strands togother. soret dire such of Hada amirto .notres (a) to frience fless you done . earl a syche vifactor bacego eye bigas as to mount sout out of bedeetts only to should out eds to simied ent to entill-out twode to seemed to such to selesa bededon of medite burear suit to bereders bus sert thich have been driven into the ground ot an angle sway from the tree so that the tops of the anchor states are below finished grade, or (where underground utilities are within four feet of finished grade) to deedmen placed at least 3 feet below Tiniened grade. A rood or metal flag shall be secured to each aux o fow thehes above ground. (b) Staking. Stakes shell 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) <u>Mulching</u>. 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

cloud each tree and the erecapted end shell be driven vertically into the ground to a depth of 2 1/2 to 3 feet in each manuar as not to injure the bell or roots. These chall be rectued to each stake at a height of about 5 feet by means of two strends of wire. Stelms shall be uniform in height and placed according to the dismeter of the tree true, as

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(7) Molohing. All plants shall be smitched with a 2-inch layer of test manure within 2 days after planting. This mulch shall entirely cover the eres of the planting pit, bed, or schoer around each plant.

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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 suboil shall be graded and uniformly compacted so that it will be aparelled 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 conditions.
- (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 sacrified, 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

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(2) Proparation of Swhgrade. The suboil shall

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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 to 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 parified 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

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

- (4) Applying Lime. Lime shall be applied at the rete of 75 pounds 7/ 1000 square feet to the grade areas be-
- (5) Applying Parkiliner. Commercial restiliner chall be applied at the rate of 50 pounds of 1000 feet to the cress areas being properties for planting. Fortiliner may be applied with seed.
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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 soll 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-

one cubic yard of sod should be used for sprigs per 1000 equare feet. The aprigs shall be covered immediately, the authors leveled to established trade, alexae, alexae, suitably compacted, and thoroughly socked by wittering with a fine spray. The method of planting sorter may be varied at the discretion of the Contractor on his own responsibility to establish a smooth, uniformly greased laws.

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(1) Close Up. Any soil, membro, best of similar mater-

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

Mainthance 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

tions of otherwise shall be removed promptly, keeping those areas clear at all times. Upon completion of the plenting all excess soil, stones and debric which has not previously been cleared up shall be removed from the site on disposed of as directed by the Supervisor. All lemms and planting areas shall be prepared for final impection.

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repaired promptly. Lam Maintenance, but exclusive of the

- (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

repaired promptly. He was a second of the second beringer

- (0) Repairs to Lewar or Replacements of Flants necessary during the usintenance portion due to the removal, loss or decaye resulting from occupancy of duality units, vandalism, or sots 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 ACCEPPANCE.
- (a) Tampertion of the work of Lawns and Planting to determine completion of contract sork, exclusive of the possible replanament of plants, will be made by the University at the conclusion of the entintenance period upon written notice requesting such imapeation submitted by the Contractor at least 10 days prior to the enticipated date. The conditions of lawns will be noted and determination made by the Landscape Architect whether meintenance shall continue in any part.
- (b) Appending of After inspection, the Contractor will be notified in writing by the University of acceptance of all work of the Division, Lawre and Flanting, evolutive of the possible replacement of plants subject to guaranty, or, if there are any deficiences, of the requirements for completion of the work. Lawre Maintenace or other work remaining to be done shall be subject to reinspection before Acceptance.

  (c) Acceptance in part. The work of lawrs and planting

will be accepted in part by bis University your written splication by the Contractor provided the work offered for acceptance comprises all of the work of this Division entirely

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

completed, including Lewn Maintenance, but exclusive of the possible replacement of plants, looseed within a continuous area watch is a substantial portion definitely separated from the remainder of the site by roads, walks, femeral structural berriers, or readily defined topographical features.

?. PLANT GUARANTY AND REPLACEMENT

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

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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