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Department of Landscape Architecture
University of Georgia
Athens, Georgia
May 29, 1964

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

Whiteland Road Elementary School
Clarke County
Athens,
Georgia

Roy Otis Amley
and
Alan David Hollister

A Senior Terminal Project
Presented for the Degree of
Bachelor of Landscape Architecture
Department of Landscape Architecture
University of Georgia
Athens, Georgia
May 29, 1964

H.B. Owens Resource Center
School of Environmental Design
Edwell Hall
Athens, Georgia

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University of Georgia

College of Architecture

May 22, 1964

List of Plates

- No. The Board of Education of the Clarke County School System has developed a policy which looks ahead to the future of the public school system. The policy is based on the following principles:
- 1 Photographs of Site
 - 2 Site Analysis
 - 3 General Plan
 - 4 Grading and Staking Plan
 - 5 Details
 - 6 Planting Plan
 - 7 Planting, Plans, and Elevations of Open and Interior Courts
 - 8 Sketches
 - 9 Photograph of Model

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Introduction

The Board of Education of the Clarke County School District, Clarke County, Georgia, has developed a policy for the extension and design of the public school system. This school district has promoted some generally accepted standards for modern trends in education, such as the use of expandable interior space, and exterior space requirements. These standards are based on the consideration that the school is the focal point of the community.

The amount of space necessary for the proper functioning of school activities is equally necessary to the development of the community. The need and development of open spaces should become an important design aspect of the school location and therefore, provide adequate supervision and leadership necessary in the education of the younger generation.

Through these tests it was learned that through direct experience, the learning process is faster, what is learned is retained longer, and there is greater appreciation and understanding for those things that are learned first hand.

Thus it becomes clear that what is called for in the curricula of the public schools can most effectively be learned in the out-of-doors. Learning in the open is a natural process; therefore we have proposed outdoor recreation

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Outdoor Education

Outdoor education is a common sense method of learning. It is natural; it is plain, direct, and simple. The recreation for all subject matter, in all areas of study and at all levels are:

That which can best be learned inside the classroom should be learned there.

That which can best be learned in the out-of-doors through direct experience, dealing with native materials and life situations should there be learned.

This realistic approach to education will apply squarely upon the well-established and irrefutable principle of learning at Whitehead Road Elementary School.

Scientific research and psychological testing have been going on for years to determine how learning actually takes place. Through these tests it was learned that through direct experience, the learning process is faster, what is learned is retained longer, and there is greater appreciation and understanding for those things that are learned first hand.

Thus it becomes clear that what is called for in the curricula of the public schools can most effectively be learned in the out-of-doors. Learning in the open is a mutual process, therefore we have proposed outdoor recreation

and assembly areas for the site. In the classroom subjects tend to become artificially separated from one another as do pupils from the teachers. Regaining touch with the real world leads to their becoming reunited. People and things are seen in their true relationships; facts and ideas that are most important emerge in perspective.

More than a decade ago experiments were conducted to see whether some learnings could be achieved more quickly and effectively in a favorable outdoor area rather than in the classrooms. Tests used in these experiments did prove that the outdoor setting was more effective for certain learnings.

Today outdoor learning is accepted as an integral part of the total school program. Very few people doubt the vital role of the curricula of their schools. It is said that every school youth should have as a regular part of his experience while he is in school an opportunity to explore and adventure thus solving for himself some of the questions imposed upon him. We have justified this in our solution through modern recreational planning.

Educators think that it is good for the boys and girls to experience at first hand something so direct, plain, and simple. American schools are now seeking to fit outdoor education into their existing patterns. They are committed to a principle and a way of life.

It is this that is the basis of the outdoor school.

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Historical Sketch

During the 1950's Clarke County experienced a rapid growth of school population which necessitated a careful study by the Board of Education of the needs that would have to be met in order to provide adequate facilities for all students. One of these needs was for an elementary school in the fast-growing Northern section of the county. A tract of land was purchased and planning for the school was initiated.

In the summer^{of} 1959 preliminary considerations had progressed to the point where the Board of Education determined that an architect should be employed to prepare the plans for an Elementary School on Whitehead Road. The construction of the school was to begin when the funds were made available. Heery and Heery, architects of Athens, and Atlanta, Georgia were retained to prepare the plans for the school. In 1960, the State Board of Education approved an application for funds for a twenty-room school to be located directly off of Whitehead Road.

The area where Whitehead Road School is located grew so rapidly that it was necessary to provide the children with temporary facilities while the construction of the new school was getting underway.

In May 1961, plans were announced which provided for the organization of the Whitehead Road School to be housed as a unit in the Childs Street School. At this time it

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In May 1961, plans were announced which provided for the organization of the Whitehead Road School to be housed as a unit in the Childs Street School. At this time it

was necessary to rezone some 350 children and transport them to and from the Childs Street School. On May 23, 1961 a group of parents met at Alps Road School for the purpose of organizing the Whitehead Road School P.T.A. which would be ready to function in the fall when the Whitehead Road group at Childs Street reported for its first year of activity.

Construction of the building was begun in 1962. The buildings were first occupied at the beginning of the 1963-64 academic year.

The school population is made up of a well balanced cross section of the county population. The highest percentage of students are natives of Clarke County. The second largest group of children belong primarily to families sent in to establish the Westinghouse Plant. There are also students attending the school whose parents have moved into the area to work at the University, the Navy Supply Corps School, and industrial plants and businesses that have located in the Athens area.

According to Miss Allee Betts, Principal of the Whitehead Road School some 100 students who were rezoned for Whitehead Road School, in the spring of 1963 and the regular attending students were very pleased and excited about their new school. She reports that as the year has progressed a sense of pride in the new school has deepened and the general feeling seems to be a good school spirit and an effort to make Whitehead Road School the best school possible.

Problem Statement

Members of the Board of Education of the Clarke County School District, in session on April 8, 1964, voted to secure professional assistance in the preparation of a landscape development plan for the grounds of Whitehead Road Elementary School. Prof. Sam Wood, Superintendent of Clarke County Schools, has employed this firm of landscape architects to render this service.

The site is located in Northwest Athens, approximately one-third of a mile west of the Jefferson Road, one block from the Whitehead Road. A single row of residential housing exists between Whitehead Road and the school property. Directly west of the school is an open area of approximately 2.5 acres surrounded by a dense pine forest. North of the school is an existing road which will eventually be paved and connected to the existing school entrance.

Following conferences with Prof. Wood and Miss Allee Betts, Principal of the Whitehead Road Elementary School, and a careful study of the site, it was decided to include the following special features in the landscape plan, in addition to the usual items such as drives, walks, parking areas, etc: (a) school garden plots, consisting of planting beds for the students to study the fundamentals of plant growth, basic horticulture, and for simple scientific experiments; (b) an outdoor recreation area divided in two

Problem Statement

Members of the Board of Education of the Glenside County School District, in session on April 8, 1964, voted to seek professional assistance in the preparation of a landscape development plan for the grounds of Whiteland Road Elementary School. Prof. Sam Wood, Superintendent of the County Schools, has employed this firm of landscape architects to render this service.

The site is located in Northwest Ashland, approximately one-half mile west of the Jefferson Road, one block north of Whiteland Road. A single row of residential lots exists between Whiteland Road and the school property. Directly west of the school is an open area of approximately 2.5 acres surrounded by a dense pine forest. The school is an existing road which will eventually be paved and connected to the existing school entrance.

Following conferences with Prof. Wood and Miss Alice Whiteland of the Whiteland Road Elementary School, a study of the site, it was decided to include the following special features in the landscape plan, in addition to the various items such as drives, walks, parking areas (a) school garden plots, consisting of planting the grounds to study the fundamentals of plant landscape horticulture, and for simple scientific experiments (b) an outdoor recreation area divided in two

parts, one for children in the first, second, and third grades, and one for the students enrolled in the fourth, fifth, and sixth grades; (c) an outdoor assembly area to meet requirements for various outdoor group activities and meetings.

The proposed plan will include:

1. Location of existing and proposed buildings.
2. Vehicular and pedestrian circulation.
3. Parking facilities for faculty, visitors, and service trucks.
4. Outdoor assembly area.
5. Outdoor recreation areas.
6. Open lawns, tree shaded areas, shrub groupings and ground covers.
7. Garden plots for each grade.
8. Design of interior court west of Cafeteria.

We propose to prepare the following drawings and other documents.

1. Site analysis sheet.
2. Master plan.
3. Grading and staking plan.
4. Construction details.
5. Planting plan.
6. Planting details.
7. Scaled model.

for children in the first, second, and third grades, the students enrolled in the fourth, fifth, and sixth grades, and an outdoor assembly area to meet the needs of various outdoor group activities and meetings.

The proposed plan will include:

1. A plan of existing and proposed buildings.

2. A plan of existing and proposed parking areas.

3. A plan of existing and proposed playground areas.

4. A plan of existing and proposed shrub groupings and ground cover.

5. A plan of existing and proposed trees for each grade.

6. A plan of existing and proposed court yard of California.

7. A plan of existing and proposed other buildings and other facilities to prepare the following drawings and other documents:

8. A plan of existing and proposed site.

9. A plan of existing and proposed parking areas.

10. A plan of existing and proposed playground areas.

11. A plan of existing and proposed shrub groupings and ground cover.

12. A plan of existing and proposed trees for each grade.

13. A plan of existing and proposed court yard of California.

14. A plan of existing and proposed other buildings and other facilities to prepare the following drawings and other documents:

8. Typewritten, bound, comprehensive report including a historical sketch, analysis of the problem, justification of the solution, plant list, specification for selected portions of the development, cost estimate, and photographs of the above listed drawings, and of the buildings and site. The school serves a community of approximately 2,500 people. Of these, 300 families have children enrolled in the school. Community participation in school activities is good.

The school consists of grades 1-6, with an enrollment of 517 pupils. The present facility consists of 17 classrooms.

There is space for future expansion of classrooms. The site consists of fifteen acres, approximately half of which is wooded. There are a few scattered pine and oak trees. Present recreation facilities are poor and the playground has been overgrown. There is an attractive view of a large reservoir to the southwest.

The school building consists of an oval shaped building with a central entrance and two wings. The building is in poor condition and requires extensive repairs. It is to be torn down and replaced.

The indoor classroom space requirement per pupil is thirty square feet and the outdoor space requirement per pupil is seventy five square feet.

At present there is no planting around the buildings.

Analysis of the Problem

Location Whitehead Elementary School is located in North-East Georgia, three miles West of Athens. The main traffic artery serving the school is Whitehead Road. The school is centrally located within the community.

Community The school serves a community of approximately 2,500 people. Of these, 300 families have children enrolled in the school. Community participation in school-work activities is good.

Enrollment The school consists of grades 1-6, with an enrollment of 517 pupils. The present faculty consists of 17 members.

Schoolground There is space for future expansion of classroom wings. The site consists of fifteen acres, approximately ten acres of which are open except for a few scattered pine and oak trees. Present recreation facilities are poor and the playground is undeveloped. There is an attractive view over a forest of evergreens toward the Southwest.

School The school building consists of an oval shaped multi-purpose cafeteria and auditorium combined, with two classroom wings extending to the West of it.

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Community The school serves a community of approximately 2,500 people. Of these, 300 families have children enrolled in the school. Community participation in school-work activities is good.

Personnel The school consists of grades 1-6, with an enrollment of 217 pupils. The present faculty consists of 17 members.

Schoolground There is space for future expansion of classroom wings. The site consists of fifteen acres, approximately ten acres of which are open except for a few scattered pine and oak trees. Present recreation facilities are poor and the playground is undeveloped. There is an attractive view over a forest of evergreens toward the Southwest.

School The school building consists of an oval shaped multi-purpose cafeteria and auditorium combined, with two classroom wings extending to the West of it. The indoor classroom space requirement per pupil is thirty square feet and the outdoor space requirement per pupil is seventy five square feet.

At present there is no planting around the buildings.

There are a few large existing oak trees to the North of the wing which houses grades one to three.

Parking facilities are located at the front entrance and consists of an asphalt paved lot. Service is to the rear of the multi-purpose building.

A small interior court yard, thirty feet by thirty feet, is included to the West of the multi-purpose building, and a larger exterior exists between the classroom wings.

Explanation of Solution

The landscape plan for the grounds has been designed to accommodate the needs of the students and teachers, and to fit the various features-including parking areas, playfields, school gardens and outdoor assembly areas. The following is a brief explanation of various proposals:

Playground In view of the development around the school it is necessary that the area blend with the residential district and offer a suggestion that the school be a part of the community itself. This has been accomplished by use of native plant materials surrounding the playground. The area itself will be divided into two age groups, one for grades 1-3, and one for grades 1-6. The playground for grades 3-6 is located farther away from the school and includes two softball fields, a horse shoe stand with plastic horse shoes, shuffleboard, a mound and two multi-purpose recreation areas. The primary grades have a playground located closer to the school and it includes suitable recreation facilities for this age group.

A major portion of the playground is left as open green space and includes some large trees for shade. The area is also surrounded by a more dense grouping of trees, forming a natural environment.

Outdoor Assembly Area It is the present trend in education to focus attention upon groups of students outside

Explanation of Solution

The landscape plan for the grounds has been designed to meet the needs of the students and teachers, and the various features including parking areas, play areas, school gardens and outdoor assembly areas. The plan is a brief explanation of various proposals. In view of the development around the school it is necessary that the area blend with the rest of the school and offer a suggestion that the school is part of the community itself. This has been accomplished by use of native plant materials surrounding the area. The area itself will be divided into two age groups for grades 1-5, and one for grades 6-8. The area for grades 6-8 is located farther away from the school and includes two softball fields, a horse shoe area, and a round and square horse shoe, a round and square horse shoe. The primary grades playground located closer to the school and is in a suitable recreation facilities for this age group. A portion of the playground is left as open space and includes some large trees for shade. The area is surrounded by a more dense grouping of trees, and a natural environment.

Assembly Area It is the present trend in education to focus attention upon groups of students outside

the classrooms. This offers an opportunity for children to learn in natural setting. This area is well justified because the school is in need of an outdoor multi-use area to be used for various group meetings for educational and recreational purposes. Included into the scheme is an assembly area of modern design which allows ample space for all students to meet together at one time. The area chosen for this assembly is adjacent to the playground and between two large oak trees, which will offer shade and some of nature's enhancement.

Parking (automobiles and bicycles) The existing parking lot for automobiles is a dull blacktopped surface. Our proposal is to take out a portion of the parking spaces and add large trees to provide shade and enhance the area. To make up for those spaces, which have been removed by the trees parallel parking along the service road is specified.

The unorganized arrangement of bicycle parking has developed as a major problem and also distracts from the beauty of the grounds. It is our proposal to provide in the same area as is used now for parking of bicycles a pad consisting of slots for each bicycle. Space for expansion is included for the parking of these vehicles in the area adjacent to the North entrance, which is currently used for bicycle parking.

Planting The plants chosen for use upon the site are native, and in turn will blend with the modern architecture

This offers an opportunity for children in nature setting. This area is well justified as the school is in need of an outdoor multi-use area for various group meetings for educational and other purposes. Included into the scheme is an area of modern design which allows ample space for plants to meet together at one time. The area chosen is adjacent to the playground and some large oak trees, which will offer shade and some improvement. The existing parking area is a dull blacktopped surface. Our plan is to take out a portion of the parking space and use it to provide shade and enhance the area. The trees to be removed by the school are those spaces, which have been removed by the school. The service road is specified. The proposed arrangement of bicycle parking has been a major problem and also distracts from the grounds. It is our proposal to provide in the area as is used now for parking of bicycles a pad of space for each bicycle. Space for expansion of the parking of these vehicles in the area to the North entrance, which is currently used for parking. The plants chosen for use upon the site are and in turn will blend with the modern architecture

of the buildings as well as enhance the surrounding area, providing a sense of unity and continuity throughout the project.

Our proposal is to create a setting of different areas of plantings which will provide divisions between different age groups of children and at the same time, contribute desirable character and attractiveness to the school grounds. The plants chosen for the courts are those which will assist in bringing the building in to the scale of school children of the primary grades, as well as provide an aesthetic quality which will be enjoyed from the classrooms and main corridor.

Courts The interior court is designed not for use by children, but as a place which will enhance the general scheme and add character to the hallway. The faculty and students will be inticed to admire and enjoy its quality.

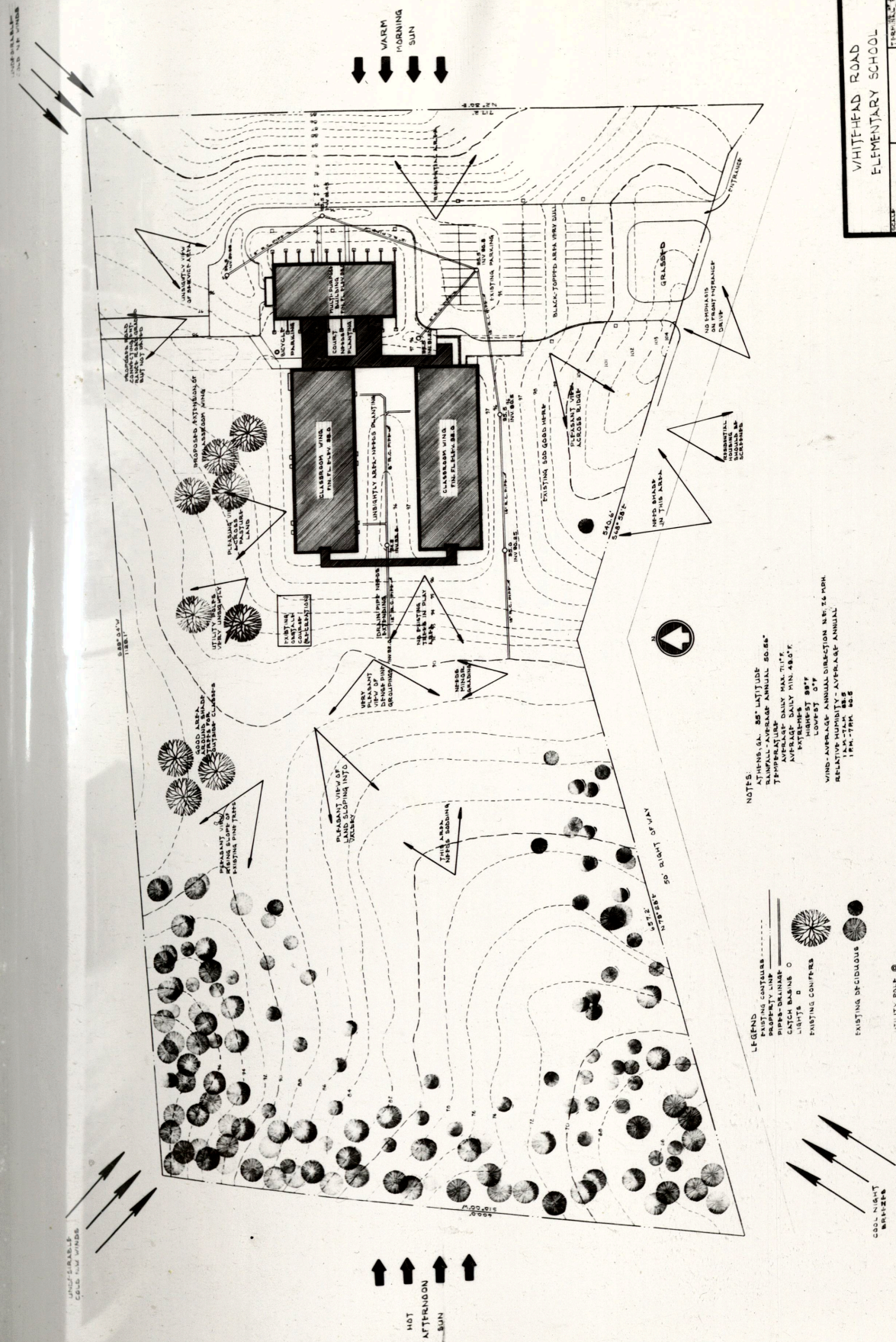
The idea in the design of the court is to keep it simple, yet provide unity throughout a grassed surface with stones emerging from the ground. A tree is featured in this area. This provides a restrained and dignified effect.

The exterior court is not meant to be used during class periods, but as an area to add to the building attractiveness.

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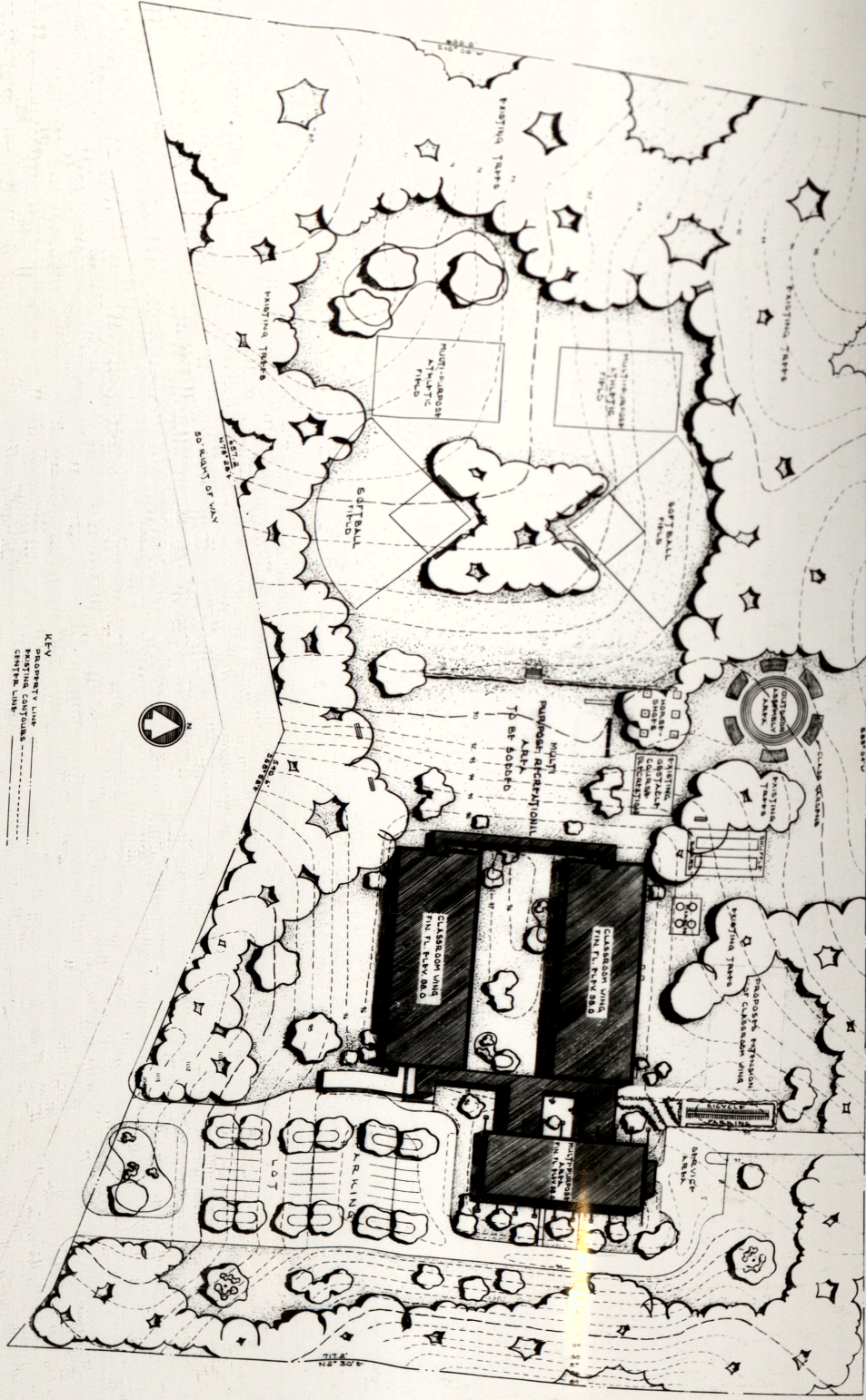




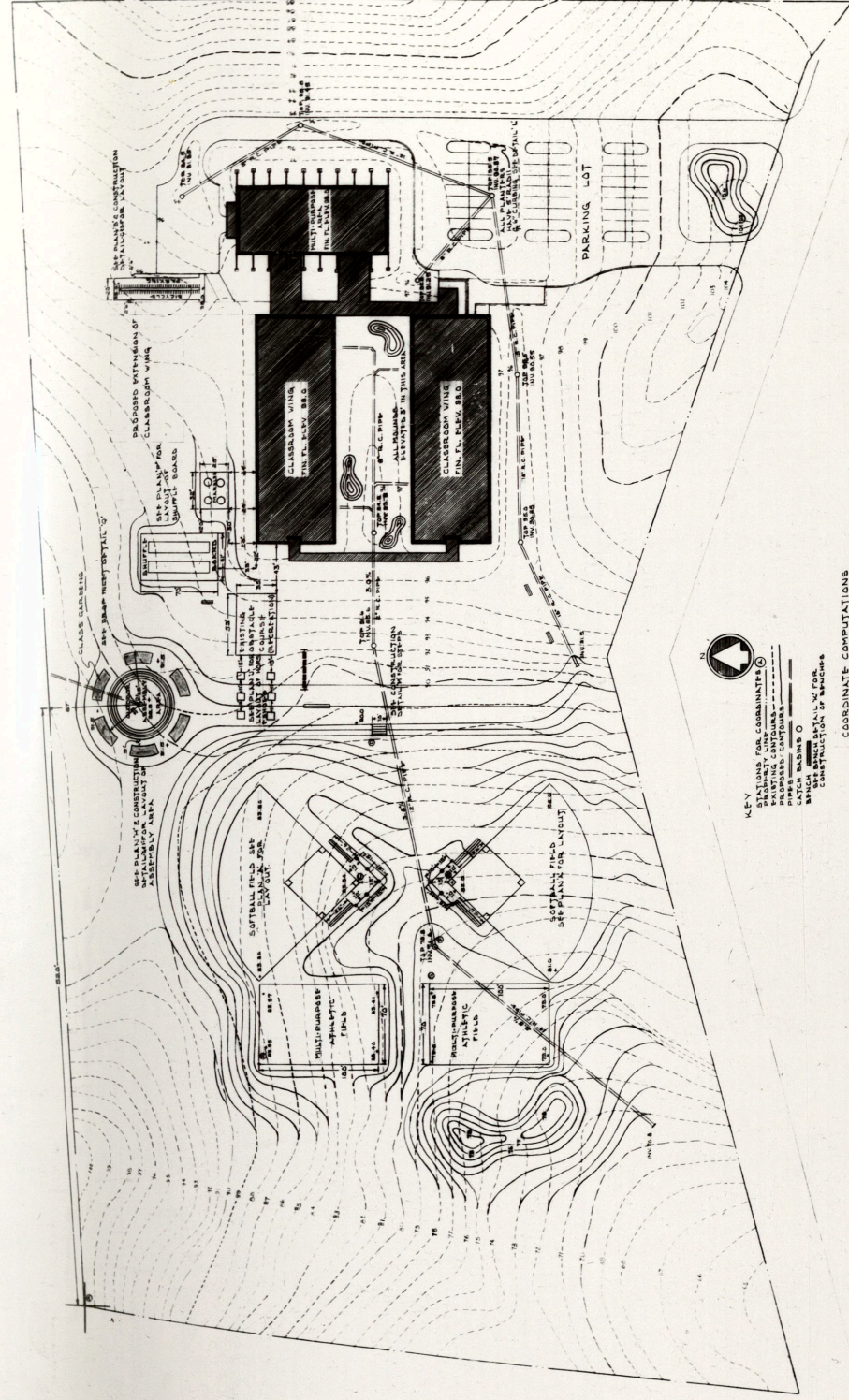
WHITEHEAD ROAD
ELEMENTARY SCHOOL

DATE	TIME	LOCATION	REMARKS
MAY 28, 1964		ATLANTA, GA.	SITE ANALYSIS
			STATE OF FLA

Sheet 1 of 7



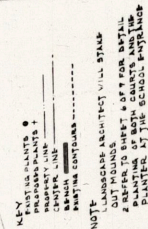
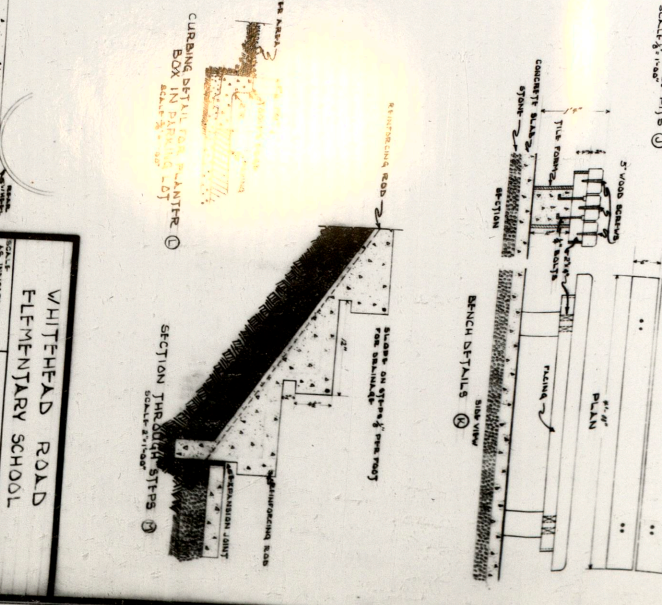
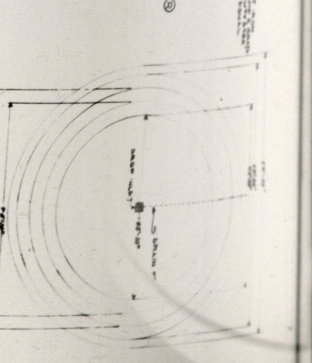
KEY
PROPERTY LINE
GRADING CONTOURS
EXISTING LINE



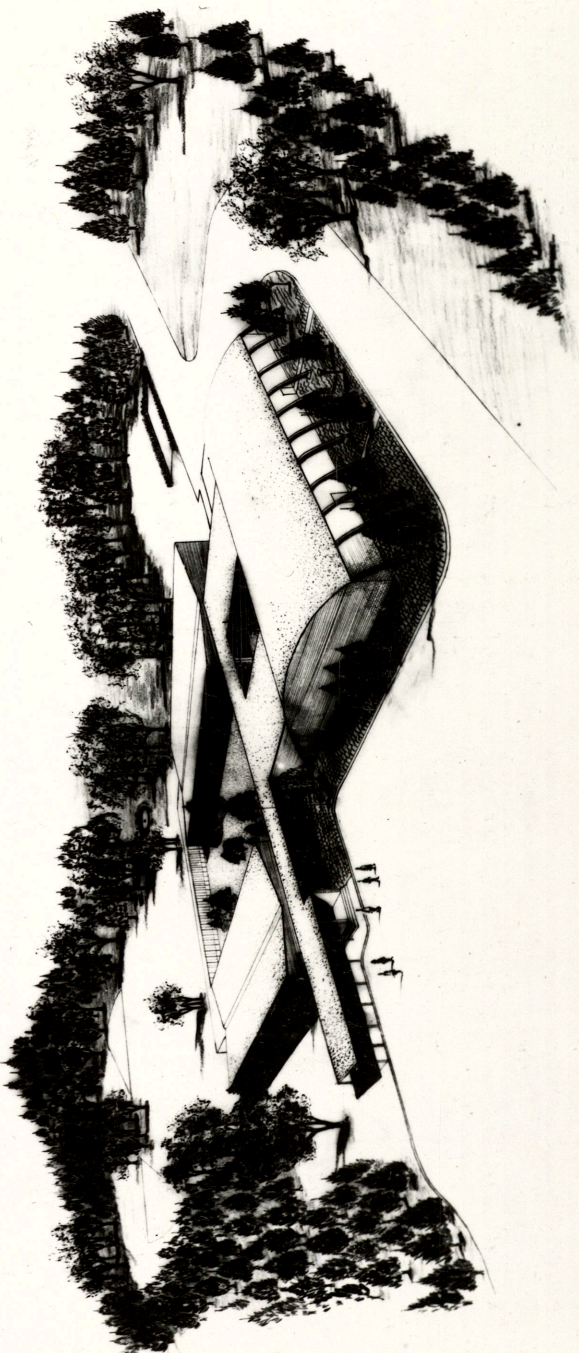
KEY
PROPERTY LINE
GRADING CONTOURS
EXISTING LINE
PROPOSED CONSTRUCTION OF BRIDGE

COORDINATE COMPUTATIONS

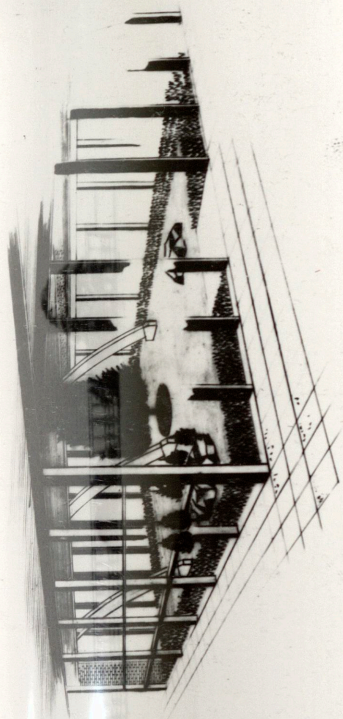
STATION	ELEVATION	COORDINATE	STATION	ELEVATION	COORDINATE
1	100.00	100.00	10	100.00	100.00
2	100.00	100.00	11	100.00	100.00
3	100.00	100.00	12	100.00	100.00
4	100.00	100.00	13	100.00	100.00
5	100.00	100.00	14	100.00	100.00
6	100.00	100.00	15	100.00	100.00
7	100.00	100.00	16	100.00	100.00
8	100.00	100.00	17	100.00	100.00
9	100.00	100.00	18	100.00	100.00
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42	100.00	100.00	51	100.00	100.00
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44	100.00	100.00	53	100.00	100.00
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47	100.00	100.00	56	100.00	100.00
48	100.00	100.00	57	100.00	100.00
49	100.00	100.00	58	100.00	100.00
50	100.00	100.00	59	100.00	100.00
51	100.00	100.00	60	100.00	100.00
52	100.00	100.00	61	100.00	100.00
53	100.00	100.00	62	100.00	100.00
54	100.00	100.00	63	100.00	100.00
55	100.00	100.00	64	100.00	100.00
56	100.00	100.00	65	100.00	100.00
57	100.00	100.00	66	100.00	100.00
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81	100.00	100.00	90	100.00	100.00
82	100.00	100.00	91	100.00	100.00
83	100.00	100.00	92	100.00	100.00
84	100.00	100.00	93	100.00	100.00
85	100.00	100.00	94	100.00	100.00
86	100.00	100.00	95	100.00	100.00
87	100.00	100.00	96	100.00	100.00
88	100.00	100.00	97	100.00	100.00
89	100.00	100.00	98	100.00	100.00
90	100.00	100.00	99	100.00	100.00
91	100.00	100.00	100	100.00	100.00

[illegible]

WHITEHEAD ROAD ELEMENTARY SCHOOL	
DATE: 10/10/54	DESIGNED BY: J. H. HARRIS
PROJECT: 100-100-100	LOCATION: ATHENS, GA.
SCALE: 1/8" = 1'-0"	DATE: 10/10/54
SHEET 7 OF 7	



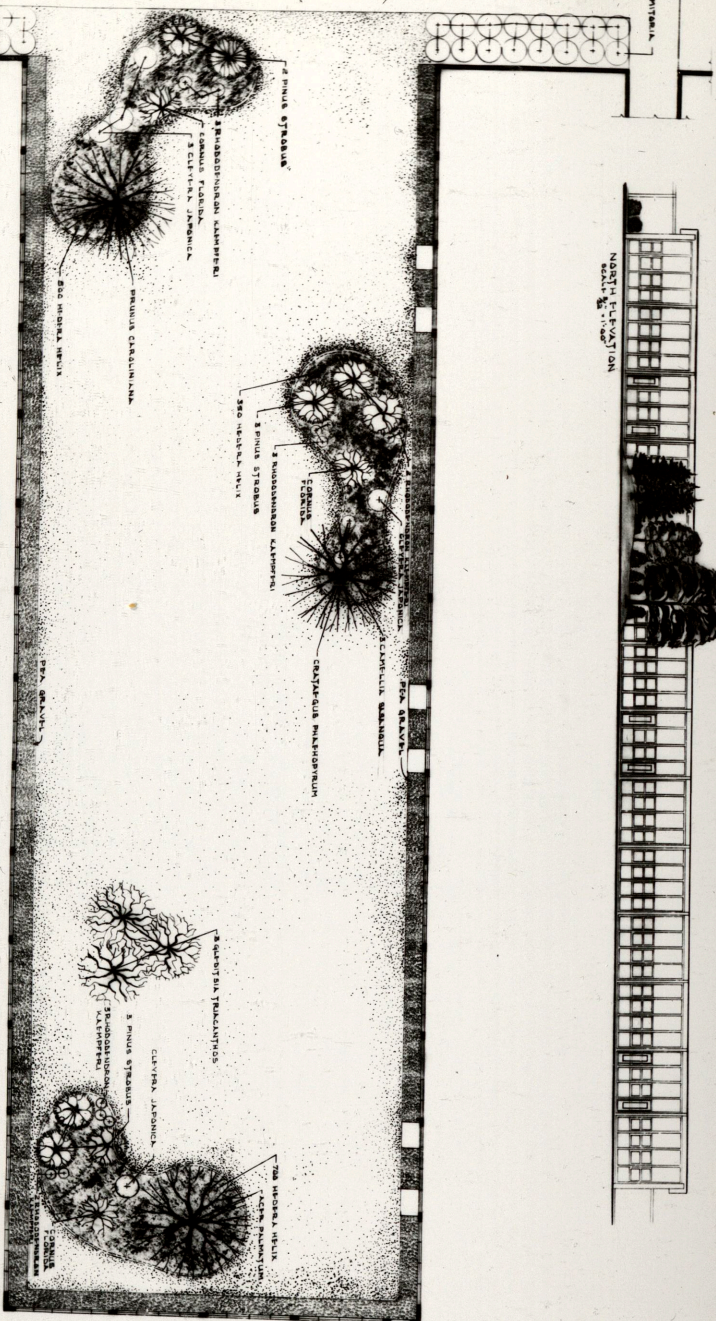
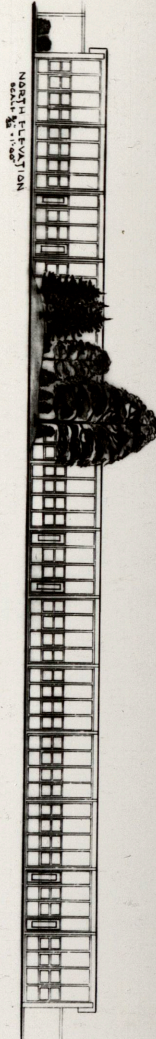
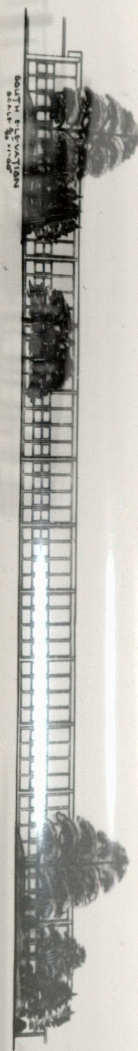
AERIAL VIEW



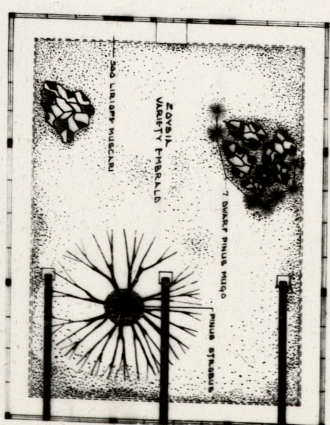
SKETCH OF INTERIOR COURTY



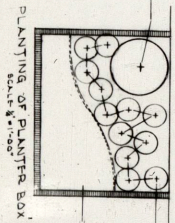
SKETCH OF NORTH FACADE



NOTE
OF THE
PLANTING
SCALE: 1/8" = 1'-0"



PLANTING OF INTERIOR COURTY
SCALE: 1/8" = 1'-0"



PLANTING OF PLANTER BOX
SCALE: 1/8" = 1'-0"

WHITEHEAD ROAD ELEMENTARY SCHOOL	
DATE: 10/10/54	DESIGNED BY: J. H. HARRIS
PROJECT: 100-100-100	LOCATION: ATHENS, GA.
SCALE: 1/8" = 1'-0"	DATE: 10/10/54
SHEET 6 OF 7	

Instructions to Bidders

General. Bidders, before making proposals, shall thoroughly examine the plans and specifications and make any examinations on the grounds that will be necessary to thoroughly familiarize themselves with the nature and extent of the proposed construction. The owner will not be responsible for the bidders error or misjudgment.

Making Bids. All proposals must be signed in ink by the person or persons authorized to sign their names. If a proposal is made by an individual, his name and post office address must be shown. If made by a firm or partnership, the name and post office address of each member of the firm or partnership must be shown. If made by a corporation, the person or persons signing the proposal must show the name of the state under the law of which the corporation is chartered and his, or their authority for signing same, name titles, address of the president, secretary, treasurer, and the corporate authority for doing business in this state.

All bids must be submitted in opaque sealed envelopes bearing on the outside the name of the bidder and his address.

Guarantee to accompany bids. No bid will be considered unless accompanied by a bid bond in an amount equal to five percent of the base bid made payable to the owner.



Withdrawals. No bidder may withdraw his bid for a period of thirty days after the date set for the opening thereafter.

Interpretation. Request for interpretations of the drawings and specifications must be made in writing to the Landscape Architect not later than seven days prior to receipt of the proposal. Any interpretations made to the bidders will be issued in the form of an addenda to specifications, and of drawings and sent to all bidders, as necessary.

Rights reserved. The owner reserves the right to reject any or all bids, to waive informalities, and to decide for himself which bid or bids be deemed the lowest and best.

Bid blanks. Bid blanks are to be furnished by the owner at the opening of the bidding.

Progress payment. Payments on account of the contract shall be made with a ten per cent retainage.

III. Clearing and Grubbing

A. Stumps and roots between slope stakes in cuts and embankments three feet or less in depth shall be removed to a depth of eighteen inches below subgrade. Outside of slope limits and under embankments more than three feet deep, all trees, stumps, brush, etc., shall be cut approximately level with the surface, except growth designated for preservation by the Landscape Architect.

B. Spoiled material shall be burned or removed to the

Specifications

Preparation of the Sight

I. Scope

This part shall consist of clearing and grubbing all lands within the area in which the existing grade is disturbed. Work shall include removal of those trees, roots, logs, stumps, brush, vegetation, trash, and other objectional matter that the Landscape Architect deems necessary. The task of disposing the matter removed is also included in the contract.

II. Materials

A. All materials for clearing and grubbing shall be furnished by the contractor as he thinks necessary or as directed by the Landscape Architect.

B. Materials shall be furnished at the expense of the contractor.

III. Clearing and Grubbing

A. Stumps and roots between slope stakes in cuts and embankments three feet or less in depth shall be removed to a depth of eighteen inches below subgrade. Outside of slope limits and under embankments more than three feet deep, all trees, stumps, brush, etc., shall be cut approximately level with the surface, except growth designated for preservation by the Landscape Architect.

B. Spoiled material shall be burned or removed to the

Specifications

Preparation of the Site

I. Scope

This work shall consist of clearing and grubbing all lands within the area in which the existing grade is disturbed. Work shall include removal of trees, stumps, logs, stumps, brush, vegetation, brush, and other objects. The contractor shall be responsible for the removal of all material from the site and for the disposal of the same. The contractor shall be responsible for the removal of all material from the site and for the disposal of the same.

II. Materials

A. Materials for clearing and grubbing shall be furnished by the contractor as he thinks necessary or as directed by the Landscape Architect.

B. Materials shall be furnished at the expense of the contractor.

III. Clearing and Grubbing

A. Stumps and roots between slope stakes in cuts and embankments three feet or less in depth shall be removed to a depth of eighteen inches below surface. Outside of slope stakes and under embankments more than three feet deep, all trees, stumps, brush, etc., shall be cut approximately level with the surface, except growth designated for preservation by the Landscape Architect.

B. Spoiled material shall be burned or removed to the

disposal area.

IV. Acceptance

As soon as all work has been completed, the contractor shall give written notice of completion, the Landscape Architect shall inspect the work. Any defects in the work shall be rectified by the contractor before final acceptance.

Topsoil

I. Scope

The work done under this item consist of stripping topsoil, storing it, and placing it in those areas where it is needed for the development of grass areas. The areas and depth of application to which topsoil is to be applied will be designated by the Landscape Architect.

II. Material

The topsoil shall consist of a natural, friable, loamy soil which shall be without admixtures of subsoil and reasonably free of clay lumps, stones, stumps, roots, and of similar substances two inches or more in diameter. It shall not be excessively acid or alkaline nor contain toxic substances harmful to plant growth. The sources of topsoil will be designated by the Landscape Architect. Topsoil shall be handled only when dry.

III. Excavating

The topsoil shall be stripped to depth that is

consistent with the securing of suitable soil and material. where topsoil is to be stripped and it becomes necessary to remove such material before the surfaces to which it is to be applied can be constructed, the topsoil will be stockpiled until the surfaces are ready for application.

IV. Placing

The surface to which topsoil is to be applied shall be required grade and be reasonably smooth. All objectionable materials shall be removed from these surfaces. Wherever the ground is compact, it shall be loosened to a depth of 2 to 3 inches and made sufficiently smooth provide a uniform depth of topsoil. The topsoil shall be applied to the prepared surface and spread uniformly to a specified depth. All clods and lumps shall be thoroughly broken up, and all remaining objectionable objects shall be removed. Plowing, discing, and harrowing must be done along contours.

Lawns and Planting

I. Scope

This division includes furnishing all materials and equipment necessary for preparation of final subgrades in lawn and planting areas; root protection; lawn construction; planting of trees, shrubs and vines; protection, maintenance, guarantee, and replacement of lawn and plants; and related items required to complete work indicated on the drawing and specified except (1) protection of existing trees and shrubs,

consistent with the securing of suitable soil and material, where topsoil is to be stripped and it becomes necessary to remove such material before the surface to which it is to be applied can be constructed, the topsoil will be stockpiled until the surfaces are ready for application.

IV. Finishing

The surface to which topsoil is to be applied shall be required grade and be reasonably smooth. All objectionable materials shall be removed from these surfaces. Wherever the ground is compact, it shall be loosened to a depth of 2 to 3 inches and made sufficiently smooth to give a uniform depth of topsoil. The topsoil shall be applied to the prepared surface and spread uniformly to a specified depth. All clods and lumps shall be thoroughly broken up, and all remaining objectionable objects shall be removed. Plowing, disking, and harrowing must be done

Lawns and Planting

I. Scope

This division includes furnishing all materials and equipment necessary for preparation of final surfaces in lawn and planting areas; root protection; lawn construction; planting of trees, shrubs and vines; protection, maintenance, guarantee, and replacement of lawn and plants; and related items required to complete work indicated on the drawing and specified except (1) protection of existing trees and shrubs,

as designed by the Landscape Architect, (2) protection, pruning and repair of existing trees and shrubs to remain, and tree removal, (3) restriction regarding materials used for fill, and (4) rough grading to a point 3 inches below finished grade established for lawn areas, to be completed before work on the lawns and planting can proceed.

II. Materials

A. Topsoil stripped and stored. The topsoil stripped and stored shall be qualitatively analyzed and necessary elements missing shall be added before use.

B. Topsoil to be furnished. If the quantity of stored topsoil is inadequate, sufficient additional topsoil shall be furnished. It shall possess characteristics of representative, productive topsoil of the vicinity, and it shall possess characteristics stated under the division Topsoil, subdivision Material.

C. Commercial fertilizer. Commercial fertilizer shall be 10-6-4 and shall conform to the applicable state fertilizer laws. It shall be uniform in composition, dry, and free flowing, and shall be delivered to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis. Any fertilizer which becomes caked or otherwise damaged, making it unsuitable for use, will not be accepted.

D. Lime. Lime shall be ground limestone containing not less than 85% of total carbonate and shall be ground to a

fineness that 50 % will pass through a 100 mesh sieve and 90% will pass through a 20 mesh sieve.

E. Manure. Manure shall be well rotted, unleached, stable or cattle manure, reasonable free of shavings, sawdust or refuse, and shall not contain any harmful material.

F. Water. Water used in this work will be furnished by the school. Hoses and other irrigation or watering equipment shall be furnished by the contractor.

G. Materials for staking, guying, and wrapping.

1. Stakes for supporting trees shall be 2½ inches square by 3 feet; sound wood, creosoted one-half their length.

2. Wires for guys shall be No. 12 pliable, galvanized iron.

3. Notched Stakes and deadmen for anchoring guy wires shall be about 3 by 4 inches by 3 feet, and shall be of sound creosoted wood.

4. Flags to be fastened to guys shall be of sound wood, about ½ inch by 3 inches by 12 inches, painted white. They shall have a 3/8 inch hole centered 1½ inches from each end.

5. Hose to encase guy wires shall be of new or used 2 ply garden hose.

6. Wrapping material for tree trunks shall be of a standard quality tree wrapping material and in strips of 6 to 10 inches wide.

[illegible]

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. When necessary to prevent cracking of the ball during the planting process, the ball may be secured to a platform.

2. Bare root plants-all plants we have used will be balled and burlaped as mentioned above. If they do not arrive on the site as such they will be refused by the Landscape Architect.

3. Protection after delivery. The balls of the "B & B" plants which cannot be planted immediately on delivery will be covered with a moist soil or mulch, or be given other protection from the drying winds or sun.

III. Samples, Tests, and Inspections.

A. Notice of sources. Within ten days following acceptance of the bid, the Landscape Architect shall be notified of the sources of all material required or desired to be tested or inspected.

B. The Landscape Architect will inspect topsoil to be furnished at its source. If the samples are required, the tests will be made by the state or a commercial soil testing laboratory. Delivery of the topsoil may begin after approval of the sample.

C. Plants. The contractor shall be responsible for all certificates of inspection required by Federal, state

enclose 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. When necessary to prevent cracking of the ball during the planting process, the ball may be secured to a platform.

2. Ball Planting-all plants we have used will be balled and burlaped as mentioned above. If they do not arrive on the site as such they will be refused by the Landscape Architect.

3. Protection after delivery. The balls of the "B" plants which cannot be planted immediately on delivery will be covered with a moist soil or mulch, or be given other protection from the drying winds or sun.

III. Soils, Tests, and Inspections

A. Notice of sources. Within ten days following acceptance of the bid, the Landscape Architect shall be notified of the sources of all material required or desired to be tested or inspected.

B. The Landscape Architect will inspect topsoil to be furnished at its source. If the samples are required, the tests will be made by the state or a commercial soil testing laboratory. Delivery of the topsoil may begin after approval of the sample.

C. Plants. The contractor shall be responsible for all certificates of inspection required by Federal, state

or other authorities. The Landscape Architect shall inspect the plants upon delivery. Acceptance or rejection in the light of the specifications shall be left to his judgment.

IV. Construction Methods

A. Time of Planting. The contractor shall be notified by the Landscape Architect to start work of lawns and planting, including placing of topsoil to finished grade. Favorable weather conditions shall prevail during planting operations. Trees, shrubs, and vines are to be planted between December 2nd and March 15th; Bermuda grass lawns are to be planted between April 2nd and September 1st.

B. Spraying. Infected existing trees shall be sprayed to prevent the spread of disease and insect pest to the new plantings. Materials and methods shall not injure persons or structures.

6. Obstructions below ground or overhead. It is not intended that planting shall be done where the depths of soil over underground construction, obstructions or rock is insufficient to accommodate the roots and impair drainage. Such conditions encountered in excavation of planting areas and where stones, boulders, or other obstructions cannot be removed by hand methods in the course of digging the planting pits the usual size; and where trees to be planted are found to be under overhead wires, other locations for the underground construction, overhead wires, or the plants may be

in the light of the specifications shall be left to his
 judgment. The Landscape Architect shall in-
 spect the plants upon delivery. Acceptance or rejection

IV. Planting Methods

A. Time of Planting. The contractor shall be noti-

fied by the Landscape Architect to start work of lawns and
 planting, including placing of topsoil to finished grade.

Favorable weather conditions shall prevail during planting

operations. Trees, shrubs, and vines are to be planted

between December 1st and March 1st; between March 1st and

May 1st to be planted between April 1st and September 1st.

B. Preparation. Existing trees shall be sprayed

to prevent the spread of disease and insect pest to the new

plantings. Fertilizers and pesticides shall not injure persons

C. Excavation before spreading or overhead. It is not

intended that planting shall be done where the depth of

soil over underground construction, obstructions or rock is

insufficient to accommodate the roots and insure drainage.

Such conditions encountered in excavation of planting areas

and where stones, boulders, or other obstructions cannot be

removed by hand methods in the course of digging the plant

into the usual area; and where trees to be planted are found

to be under overhead wires, other obstructions for the under-

ground construction, overhead wires, or the plants may be

designated by the Landscape Architect.

D. Fertilizing existing trees to remain. Existing
 trees shall be fertilized at the beginning of their grow-
 ing season with 4-12-4 commercial fertilizer applied at the
 rate of 3 pounds per inch of trunk diameter. Holes for
 fertilizer shall be spaced from 2 to 3 feet apart within
 the area beneath the spread of the branches and shall be of
 sufficient depth to effectively reach the feeding roots.
 Fertilizer shall be placed in each hole at a uniform rate
 not to exceed one-half pound per hole, and well watered in,
 after which the hole shall be filled to the finished grade
 with peat and sand.

E. New planting

1. Layout. New plants shall be placed in the loca-
 tion indicated on the planting plan. No planting except
 ground covers and vines shall be placed closer than two feet
 to pavement or structures.

2. Planting pits. Circular pits with vertical sides
 shall be excavated for all plants except for plants to be
 planted in beds. Diameter of the pits for trees and B&B
 plants and vines shall be at least 2 feet greater than the
 diameter of the ball or the spread of the roots. Diameter
 of pits for B. R. shrubs shall be 2 feet greater than the
 diameter of the spread of the roots. The depth of pits for
 trees, shrubs, and vines shall be deep enough to accommodate
 the roots or ball when the plant is set to finished grade.

allowing three inches of compacted topsoil.

3. Soil preparation. Soil used in planting shall be topsoil, which has been discussed earlier in these specifications.

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

5. Setting the Plants. Unless otherwise specified, all plants shall be planted in pits, centered, and set on 3 inches of compacted topsoil 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. No burlap shall be removed or pulled out from under the balls. Flat wires and surplus binding from the tops and sides of balls should be removed. Roots shall be spread in their normal position. All broken or frozen roots shall be cut cleanly. Topsoil shall be placed and compacted carefully to avoid injury to the root system. When the pit is nearly filled, add water as necessary and allow it to soak away. Fill the hole to finished grade, and form a saucer around each plant by placing a ridge of topsoil around the edge of each pit.

6. Guying, staking, and wrapping. Trees shall be supported immediately after planting. All trees four inches or more in the trunk shall be guyed and wrapped. Smaller trees shall be staked. Wires shall be encased in rubber

designated by the Landscape Architect.

7. Planting existing trees to remain. Existing trees shall be fertilized at the beginning of their growing season with 4-12-4 commercial fertilizer applied at the rate of 5 pounds per inch of trunk diameter. Holes for fertilizer shall be spaced from 2 to 3 feet apart within the area beneath the spread of the branches and shall be of sufficient depth to effectively reach the feeding roots. Fertilizer shall be placed in each hole at a uniform rate not to exceed one-half pound per hole, and well watered in, after which the hole shall be filled to the finished grade with peat and sand.

New planting

1. Laying out. New plants shall be placed in the locations indicated on the planting plan. No planting except ground covers and vines shall be placed closer than two feet to pavement or structures.

2. Planting pits. Circular pits with vertical sides shall be excavated for all plants except for plants to be planted in beds. Diameter of the pits for trees and shrubs and vines shall be at least 2 feet greater than the diameter of the ball or the spread of the roots. Diameter of pits for B. B. shrubs shall be 2 feet greater than the diameter of the spread of the roots. The depth of pits for trees, shrubs, and vines shall be deep enough to accommodate the roots or ball when the plant is set to finished grade.

allowing three inches of compacted topsoil.

3. Soil Preparation. Soil used in planting shall be topsoil, which has been discussed earlier in these specifications.

4. Excavated Soil. Excavated soil shall be disposed of where and as indicated by the Landscape Architect.

5. Setting the Plants. Unless otherwise specified, all plants shall be planted in pits, centered, and set on 5 inches of compacted topsoil 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. No bushes shall be removed or pulled out from under the balls. Flat iron wires and twine binding from the face and sides of balls should be removed. Roots shall be spread in their normal position. All broken or broken roots shall be cut cleanly. Topsoil shall be placed and compacted carefully to avoid injury to the root system. When the pit is nearly filled, add water as necessary and allow it to soak away. Fill the hole to finished grade and form a mound around each plant by placing a ridge of topsoil around the edge of each pit.

6. Watering. Plants shall be watered immediately after planting. All trees four inches or more in the trunk shall be guyed and supported. Small trees shall be staked. Wires shall be secured in rubber

garden hose to prevent direct contact with the bark of the trees and shall be placed around the tree in a single loop. Wires shall be tightened and kept taut.

7. Mulching. All plants shall be mulched with a 2 inch layer of well rotted manure within two days after planting. The mulch shall cover the entire pit area of the plant.

8. Hedge planting. Hedge plants shall be planted in trenches, excavated to a depth of at least one foot and a width of one foot wider than the total spread of the roots or the diameter of the balls, when placed in the number of rows specified. Plants shall be evenly spaced along, and equally distant from the center line of the trench.

9. Vines. Vines shall be planted in pits at least one cubic foot each of topsoil or prepared soil, thoroughly mixed with one third peat. Vines shall be planted in contact with the wall or other support on which they are to grow. Each vine shall be protected by two stakes.

F. Lawns.

1. All areas not required to be developed otherwise shall be sprigged or seeded with grass.

2. If construction is completed at a time out of season for sprigging and seeding with Bermuda, all areas to be grassed shall be seeded with Italian Rye at the rate of five lbs. every 1000 square feet.

3. Preparation of subgrade. The subsoil shall be

graded and uniformly compacted so that it will be parallel to the finished grade. The subgrade material shall be loosened and mixed to a depth of 2 to 4 inches and all stones over 2 inches in size, sticks, and rubbish removed. No heavy objects except lawn rollers shall be moved over the finished subgrade.

4. Finished grade. After the subsoil has been prepared, topsoil shall be spread and lightly compacted to finished grade level. No topsoil shall be spread in a frozen or muddy condition.

5. Applying lime. Lime shall be applied at the rate of 75 lbs. per 1000 square feet to the lawn areas to be planted.

6. Applying fertilizer. Commercial fertilizer shall be applied at the rate of 50 lbs. per 1000 square feet. Fertilizer may be applied with seed.

3. Planting the lawn.

1. Sowing of seed. Immediately before any seed is to be sown, the ground is to be scarified as necessary and shall be raked to a uniform texture. Seed shall be sown with a mechanical spreader at the rate of 2½ lbs. per 1000 square feet of area, lightly raked, rolled with a 200 lb. roller and watered with a fine spray. The method of seeding may be varied at the discretion of the contractor on his own responsibility to produce a smooth uniform lawn.

2. Striking. Furrows 12 inches apart, preferably

parallel to contours, shall be opened to a depth necessary to insure covering of sprigs to a depth of 2 inches after compaction. As soon as practical after opening, before soil is dried out, 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 establish 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.

H. Clean up. Any soil, manure, peat, or similar material which has been brought into the area, all rocks, excess soil, and debris shall be cleaned up and removed from the site or disposed of as directed by the Landscape Architect.

V. Maintenance.

Maintenance shall begin after each portion of lawn and each plant is planted, and shall continue in accordance with the following requirements:

A. Lawns shall be protected and maintained and replanted as necessary, for at least thirty days after completion of lawn operations. Scattered bare spots, none of which are larger than one square foot, will be accepted up to a maximum of 3 percent of any lawn area.

shall be covered, shall be opened to a depth necessary to insure covering of sprigs to a depth of 2 inches after connection. As soon as practical after opening, before soil is dried out, sprigs shall be placed in the furrows continuously with the ends overlapping; approximately one cubic yard of soil should be used for sprigs per 1000 square feet. The sprigs shall be covered immediately, the surface leveled to establish grade, cleaned, and properly 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.

4. Grass. Any soil, manure, dirt, or similar material which has been brought into the area, all rocks, excess soil, and debris shall be cleaned up and removed from the site or disposed of as directed by the Landscape Architect.

V. Maintenance

Maintenance shall begin after each portion of lawn and each plant is planted, and shall continue in accordance with the following requirements:

A. Lawns shall be protected and maintained and replanted as necessary, for at least thirty days after completion of lawn operations. Seeded bare spots, none of which are larger than one square foot, will be accepted up to a maximum of 5 percent of any lawn area.

B. New planting will 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 of plants to proper grades or upright position, and restoration of the planting saucer. If planting is done after lawn preparation, proper protection to lawn areas shall be provided, and any damage 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, vandalism, or acts of neglect on the part of others, may be made on the order of the Landscape Architect and will be at the contractors expense.

VI. 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 Landscape Architect at the conclusion of the maintenance period upon written notice of such inspection. This notice should be submitted by the contractor at least ten 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. The contractor will be notified in writing by the Landscape Architect of acceptance of all work of the division lawns and planting. 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 Landscape Architect upon written application by the contractor, provided the work offered for acceptance comprises all of the work of this division entirely completed. This would include lawn maintenance, 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, and other structural barriers, or readily defined topographical features.

VII. Plant Guarantee and Replacement.

A. Guarantee. Plants shall be guaranteed for the duration of one full growing season beginning April 1st and ending November 1st, after planting. They shall be alive in satisfactory growth at the end of the guarantee period.

B. Replacement. At the end of the guarantee period,

inspection will be made by the Landscape Architect upon written notice requesting such inspection. This notice should be submitted by the contractor at least ten days before the anticipated date. Any plant subject to this contract that is dead or not satisfactory in growth as determined by the Landscape Architect, 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 only during the normal planting season. In the case that 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. If the rejected plant is found to be dead at this time, or in an unhealthy or badly impaired condition, it 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 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 Landscape

Architect and determination made by the Landscape Architect. The contractor will be notified in writing by the Landscape Architect of acceptance of all work of the division laws and planting. Lawn maintenance or other work remaining to be done shall be subject to reinspection before acceptance.

C. Acceptance in part. The work of lawn and planting will be accepted in part by the Landscape Architect upon written application by the contractor, provided the contractor has accepted all of the work of the division entirely completed. This would include lawn maintenance, 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, walls, fences, and other structural barriers, or readily defined topographical features.

VII. Plant Guarantee and Replacement.
A. Guarantee. Plants shall be guaranteed for the duration of one full growing season beginning April 1st and ending November 1st, after planting. They shall be alive in satisfactory growth at the end of the guarantee period. At the end of the guarantee period,

inspection will be made by the Landscape Architect upon written notice requesting such inspection. This notice should be submitted by the contractor at least ten days before the anticipated date. Any plants subject to this contract that is dead or not satisfactory in growth as determined by the Landscape Architect, 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 only during the normal planting season. In the case that 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. If the rejected plant is found to be dead at this time, or in an unhealthy or badly impaired condition, it 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 specified under new planting; the cost shall be borne by the contractor except for possible replacements resulting from removal, loss or damage due to negligence 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 Landscape

Architect and paid the contractor only after all replacements have been made and approved.

VII. Earth Work.

A. General conditions. The general and special conditions are a part of the specifications. All provisions contained in them which affected this work are as binding as though incorporated herein.

Work included under this section is general excavation of the site as shown on the drawings, including cuts, the construction of slopes and terraces around the buildings, all required excavation for foundations, back filling against walks, filling in all trenches, the removal of trees and stumps within the area of the building or the cuts, etc.

The contractor shall excavate or fill, as the case may be, to grades as indicated on the drawings. Earth shall be sloped away from buildings in all cases.

At option of the owner and Landscape Architect any topsoil, grass, and or sod, within the area to be excavated by the contractor, shall be removed and stored on the site. The contractor will be required to redistribute the topsoil, grass or sod as here specified.

The owner does not guarantee to the contractor the depth of excavation required or the height for foundation walls. Existing grade lines are shown on the drawings approximately as they exist now. All bidders will be required to verify

at the end of 28 days.

conditions at the site before submitting their proposals, as no claims will be allowed, after the contract is awarded, for discrepancies as they occur in the work, and these are shown on the drawings.

VIII. Construction.

A. Concrete.

1. Scope. The general contractor shall furnish all labor and materials for installing all concrete work consisting of steps, terraces, parking areas, walks, and seats as shown on the drawings.

2. Coarse aggregate. Gravel, or crushed stone, must be hard, clean, and free from organic matter, acids, or other chemicals, and grading from 1/4 inch to 1-1/4 inches for the different classes of work.

3. 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. 30 sieve, and not more than 5% shall pass a 100 mesh sieve.

4. Reinforcing steel. All bars for concrete reinforcement shall be deformed bars, rolled of new billet steel, conforming to the specifications of the American Society for Testing Materials. Mesh shall be electrically welded, rectangular or square fabric.

5. Concrete quality. All concrete shall have an ultimate compressive strength of 3000 lbs. per square inch at the end of 28 days.

conditions of the site before submitting their proposals, as no claim will be allowed, after the contract is awarded, for discrepancies as they occur in the work, and these are shown on the drawings.

VIII. General Notes.

A. Contractors.

1. Scope. The general contractor shall furnish all labor and materials for installing all concrete work consisting of steps, terraces, parking areas, walks, and seats as shown on the drawings.

2. Gravel Requirements. Gravel, or crushed stone, must be hard, clean, and free from organic matter, acids, or other chemicals, and grading from 1/4 inch to 1-1/4 inches for the different classes of work.

3. Aggregate Requirements. 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. 30 sieve, and not more than 2% shall pass a 100 mesh sieve.

4. Reinforcing Steel. All bars for concrete reinforcement shall be deformed bars, rolled of new billet steel, conforming to the specifications of the American Society for Testing Materials. Welds shall be electrically welded, not-
under an square fabric.

5. Concrete Quality. All concrete shall have an ultimate compressive strength of 3000 lbs. per square inch at the end of 28 days.

6. Cement. All cement shall be Portland cement and shall be dry and of uniform quality having no lumps. It shall be in its original containers.

7. Water. All water used must be clean filtered drinking water, containing no alkaline acids, vegetable matter, or other chemicals injurious to concrete.

8. Mixing of concrete. Concrete shall be approved ready mixed or shall be mixed on the site in a mechanical batch mixer of a type approved by the Landscape Architect.

9. Exposed concrete. All exposed walls and architectural concrete shall be cast against smooth plywood.

10. Finishes. All surfaces that will be walked on shall be brushed to assure sure footing.

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10. Finishes. All surfaces that will be walked on shall be brushed to assure sure footing.

Plant List

Number trees	Scientific name	Common name	Size	Root	D.A.	Cultural notes
1	Acer palmatum	Japanese Maple	5-7'	B&B	Shown	Stake
1	Aralis spinosa	Devils-Walkingstick	5-7'	B&B	Shown	Stake
25	Cornus florida	Flowering Dogwood	6-8'	B&B	Shown	Stake
1	Crataegus phaeocoryum	Washington Hawthorne	4-5'	B&B	Shown	Stake
3	Gleditsia triacanthos	Honey Locust	4-6'	B&B	Shown	Stake
8	Liquidambar styraciflua	Sweetgum	6-8'	B&B	Shown	Stake
5	Nyssa sylvatica	Black Tupelo	6-8'	B&B	Shown	Stake
125	Pinus strobus	White Pine	4-6'	B&B	Shown	
120	Pinus taeda	Loblolly Pine	4-6'	B&B	Shown	
10	Prunus caroliniana	Cherry Laurel	5-7'	B&B	Shown	Stake
35	Quercus falcata	Southern Red Oak	6-8'	B&B	Shown	Stake
27	Quercus nigra	Water Oak	6-8'	B&B	Shown	Stake
Shrubs 10	Camellia sasanqua	Camellia	3-4'	B&B	Shown	
	Cleyera japonica	Japanese Cleyera	3-5'	B&B	Shown	
3	Pinus mugo nana	Mugo Pine (dwarf)	6"-1'	B&B	Shown	
15	Pyracantha koidzumii	Pornosa Firethorn	2-3'	B&B	Shown	
23	Rhododendron kamefere	Azalea	2-3'	B&B	Shown	
12	Rhododendron kurume	Kurume Azalea	2-3'	B&B	Shown	

Plant List (Cont'd)

40.

Number	Scientific name	Common name	Size	Root	D.A.	Cultural notes
	Hedera helix	English Ivy	3-5"	Peat Pots	1'0.C.	
105	Juniperus horizontalis plumosa	Creeping Juniper	1'-13"	B&B	2 1/2'0.C.	
325	Liriope muscari	Bigblue Liriope	2-5"	Plats	1'0.C.	
10 bu. 300 lbs. seed	Bermuda	Bermuda	2-4" seed	Bu.	1'0.C. sown	

Cost Analysis

41.

Whitehead Road Elementary School

Computed By Roy O. Ashley & Alan D. Hollister

Material List	Unit Cost	Quantity	Cost
10-6-4 Fertilizer	3.00/100	2000 lbs.	\$60.00
Wilt Proof	6.50/gal.	2 gal.	13.00
Tree Wrap	1.00/roll	4 rolls	4.00
Bales Straw	.50/bale	30 bales	15.00
Wire (No.12)	10.00/role	2 rolls	20.00
Rubber Hose (2Fly)	.10/ft.	200 Ft.	20.00
Concrete	14.25/cu.yd.	25 cu. yds.	256.00
			Tot. 488.00

Soil	Yards Fill	Unit Cost	Cost
Top Soil	400 Yards	3.00	\$1200.00
Peat Moss	30 Bales	3.00	90.00
Manure (Rotted)	150 Yards	2.00	300.00
			Tot. 1590.00

Labor Cost	No.	Rate	Hours	Cost
Foreman	1	3.00/Hr.	100	\$300.00
Laborers	7	1.50/Hr.	700	1070.00
Equipment				
Dozer	1	130.00/Day	16	260.00
Auger	1	125.00/Day	12	187.50
				Tot. 1817.50

Quantity	Scientific Name	Size	Root	Price	Cost
1	Acer palmatum	5-7'	B&B	8.00	8.00
1	Aralia spinosa	5-7'	B&B	9.50	9.50

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