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DURHAM ANDERSON FREED / HDR P.S. 1100 EASTLAKE EAST, SEATTLE, WASHINGTON 98109 206/682-9000

ARCHITECTURE ENGINEERING PLANNING

July 29, 1977

Mr. Daniel J. Evans, President
The Evergreen State College
Olympia, Washington 98505

Dear Dan:

We trust you are adequately housed in the building bearing your name. Being involved in the planning of Evergreen remains one of our most exciting professional experiences. I know that you share some of our feeling as the chief officer who brought the institution into being.

At the conclusion of the planning effort our office was asked to put some guidelines on paper for the future. We are sending them on with the thought that having them available may prove of some value at a future date. We are available at any time to provide interpretation of past-planning decisions. From time to time you may see us wandering through the paths or halls of the campus to see how architecture and landscape is maturing.

With best regards.

Sincerely,

DURHAM ANDERSON FREED/HDR

Bob Durham

Robert L. Durham, FAIA

RLD:lm

Enclosure

REPORT OF THE
MASTER PLANNING TEAM
THE EVERGREEN STATE COLLEGE
OLYMPIA, WASHINGTON

MAY 1, 1972

MASTER PLANNING TEAM

DURHAM ANDERSON FREED COMPANY, P.S.

Robert L. Durham

QUINTON-BUDLONG, INC.

Charles E. Torkko

ECKBO, DEAN, AUSTIN & WILLIAMS

Edward A. Williams

THE EVERGREEN STATE COLLEGE

Jerry Schillinger
Director of Facilities Planning

Al Weidemann
Faculty

Miss Nancy Stevens
Student

INTRODUCTION

In November, 1971, a Master Planning Team was authorized to undertake a period of study of The Evergreen State College plan in relation to its present state of progress and its programmed development. The makeup of the team recognized the necessity for effective collaboration among architect, engineer, landscape architect and facilities planner. The wisdom of this association has been apparent during the past months. Subsequently, a member of the faculty and a representative of the student body were added to the team. It is strongly recommended that such a team become a permanent tool for effective control of the long-range plan.

The Master Planning Team has held three one or two-day working sessions and has reported to the Board of Trustees on specific subjects. A general review has been given to the entire concept of the campus. Detailed attention has been given to the Art-Drama-Music area, the future residential development west of the campus center, further development at the base of the hill, the fire station, covered tennis courts, housing areas and the science addition.

The team has noted the present progress of construction and site development. It is felt that the basic premises established during the initial master planning are still valid. The relationship among buildings, the contrast among buildings and the nature and relationship between plazas and natural grades are all achieving the intended result. The major and

minor axes are now evident and will become more so as planted trees leaf out and lawn and plantings are established.

The freedom for design innovation given to each architect has fostered an interesting contrast between buildings without loss of harmony and repose. The result as now measured reinforces the wisdom of the decision to limit exterior materials solely to warm-toned concrete. The Team reaffirms its recommendation that no other exterior materials be used on future buildings in the core area.

It is interesting to note the emphasis students are placing on environmental issues which support these goals.

The Team takes note of the factors outlined in a previous review:

(a) A creative academic philosophy seeking innovative answers to newly understood problems.

(b) A logical growth pattern from 1,000 students to 12,000.

(c) The emphasis on a pedestrian campus.

(d) The interrelationship of auto, student and service vehicle.

(e) A logical system of service, distribution and disposal.

(f) The development of an urban core in the middle of a native ecological preserve.

(g) Environmental character: scale, proportion, interdependence of architecture and landscape, and a variety of responses while traveling through the campus.

From the beginning of planning there has been an emphasis on the interrelationship of student, auto and service vehicle. In order to create a pedestrian campus it has been assumed that except for service and emergency vehicles, automobiles would penetrate only to the edge of the urban core. The Team notes that auto drivers have not respected this concept. It is regrettable that large garbage containers placed in the center of pedestrian-service drives have been necessary to control misuse of pedestrian walks. No doubt, it would be more appropriate to provide removable bollards at these points. The Team emphasizes the need for a discipline, written or unwritten, that will insure a pedestrian environment in the core area.

The number of bicycles on campus has far exceeded expectations. The conflict of movement and repose inherent in uncontrolled use of bicycles on plaza areas will create serious damage to the total campus environment. It is, therefore, urged that order be achieved by regulation. A bicycle ring road can be accomplished giving opportunity for rapid movement around the core rather than through it. Convenient storage areas should be maintained in order to enforce strict exclusion of vehicles from the core walls and walkways. Obviously, storage facilities must meet functional demands of weather protection and locking potential. It is hoped that effective facilities meeting student needs will produce appropriate areas of movement varying from one mile to twenty miles per hour.

The revised master plan now presented recognizes the new position for the tennis court structure. Special consideration has been given to the permanent conservation of notable

stands of native trees. It is felt that these groves should be considered as architectural forms which must not be violated in the future. Therefore, emphasis is given to the location of utilities in those areas that will remain cleared in future development. The newly developed graphics illustrating the plan place emphasis on tree groves as important elements secondary only to major architectural masses.

THE FINE ARTS COMPLEX

The development of the Fine Arts-Drama area of the campus has continued to pose a problem. While the Team does not question the wisdom of the program which requires one structure housing both facilities, it views with some concern the fact that the complex will be larger than desirable. It seems appropriate that the entrance to the cultural area of the campus from the adjacent parking area should have the most attractive environment possible. It also seems logical that the plaza in front of the Drama building should appropriately relate to the main mall although be subordinated to it.

In reviewing the schematic plans for Phase I of the Fine Arts building it became clear that no finite program exists for Phases II and III. It is apparent that these programs will not exist until more faculty is on board and more is known about potential joint use of assembly facilities by the community.

As now designed, Phase I contains certain mechanical spaces which would make it difficult or perhaps impossible to bridge over the utility tunnel without redesign. Although there still exist certain aesthetic advantages of restricting the space between the Fine Arts building and the Recreation building, it appears that the technical disadvantages outweigh the advantages. After careful review, the Design Team concludes that it is not imperative that the tunnel be spanned by the building, but that the Fine Arts building be located as close to the utility tunnel as possible.

The Team has given detailed attention to the relationship of the Fine Arts courtyard to the mall. A small building has been proposed to flank the pedestrian access to this courtyard. This also serves to direct attention to the diagonal wall of Phase III. A system of ramps and stairs will provide an interesting approach and, at the same time, serve the handicapped. Service and emergency vehicles can also be accommodated without jeopardizing a dramatic approach to the area.

In order to achieve a forecourt for the Fine Arts building, the adjacent parking lot has been reshaped. Since Phase III is still far in the future, no change will be required for the present. This change will also serve to screen more adequately the service yard for the complex.

The Design Team is aware that by agreement with the community a multi-purpose auditorium may be constructed off campus. The Team continues to feel that the complex as now shown

is larger in scale than desirable. However, it does not consider it appropriate for the Team to question the program demands that led to this size and height. The Team wishes to make the point that under no circumstances must future program demands require this building to exceed the area now shown.

With these considerations in mind the Design Team recommends:

(1) That the Fine Arts complex be placed as close to the utility tunnel as physically possible (approximately 20 feet).

(2) That Phase II be no wider than Phase I.

(3) That the grove of trees adjacent to the turnaround be saved as an element of the plan. It is recommended that no future demands for building facilities be allowed to encroach on this area.

(4) That a small building, perhaps an art gallery, no larger than shown and with a roof level no higher than grade 215, be placed across the axis from the Student Activities building. This structure will serve to better define the adjacent plaza area and create a direct relationship between cultural-social areas.

(5) That the parking lot be reshaped in order to provide space for bus loading, landscaping and a gracious entrance from the parking area to the college-community cultural area of the campus.

(6) That the area between Phase I and the Recreation building be carefully planted to provide the right amount of enclosure.

CAMPUS EXPANSION TO THE WEST

Study of the area near the Seminar building suggests that the ultimate future building lines be projected without any attempt to show exact configurations. Grade changes need careful detailing. The master plan presupposes strict conformance to basic ideas -- interruption of axes, continuation of malls, establishment of utilities and the introduction of diagonal pedestrian travel. The basic shapes now recommended appear to allow adequate flexibility while conscribing the intent of the spatial concept.

FUTURE HOUSING

Land areas have been reserved for future housing areas. With the possibility of evolving housing types and new programs it does not seem realistic to project specific designs. It seems reasonable to bring access to housing areas #2 and #3 from Lewis Road. This will help to separate commuter traffic from traffic generated by students in residence.

CIRCULATION

Much thought has been given to service roads as related to pedestrian walks and emergency access. It is recommended that five levels of circulation be given consideration:

1. Heavy traffic, service, emergency vehicles:

   Ring roads, parkways, etc.

2. Service, emergency vehicles: (i.e., service road to Library)

   It is considered important that each building,with few exceptions, be reached directly from a service road.

3. Bicycles, light traffic, emergency vehicles:

   This includes mixed traffic within parking areas.

4. Bicycles, pedestrians, emergency vehicles:

   This would apply to the 15-foot wide curvalinear sidewalks beyond the campus core.

5. Pedestrian only: (except for emergency vehicles)

   Malls, courtyards and plaza within the building complex of the central core.

Thoughtful attention given to these differences will affect the final environment if given equal attention by administrative procedures.

In keeping with this concept a ring road of utilities around the hill is proposed. The clearing thus produced by utility construction would be converted to a bicycle-service vehicle pathway. The utilities would serve future college housing centers.

LANDSCAPE DEVELOPMENT

During the next several months concepts basic to the landscaping will become apparent. While many of the adjacent native areas need be given little more than clean-up, the

native trees should not give the effect of an inpenetrable forest surrounding a man-made complex. The development of the master plan requires appropriate thinning to provide vistas. This is especially true of the area to the north and west of the library. Thinning should be done to make the salt water and mountains visibly relate to the campus.

The Master Planning Team considered a number of specific subjects. These included location of the temporary fire station, location of the recreation facility, review of the lab addition and the general development of temporary housing.

FIRE STATION

Alternatives considered:

1. On the site of temporary administration buildings.
2. Adjacent to permanent fire station.
3. On the site of the permanent station.
4. At the corporation yard.

Recommendation:

Locate on either side of the present trailer for use by volunteer firemen. Moving to a more permanent location at this time would remove more trees, disturb more land and may interfere with other future development.

Moving at this time would cost money that would be ill-spent if a later move is required.

Using the present site would result in the least cost.

Although the corporation yard is acceptable as far as the fire fighting function is concerned, its isolation from a student standpoint appears to be a problem.

Semi-permanent use at this location does not prevent relocation when the facilities are no longer required for fire station functions.

When appropriate, a more detailed site study should be made for the location of the fire apparatus shed in order to produce a functional and attractive complex. The Team recommends painting the existing Butler Building. The fire station should be movable and should have a design treatment relating it to the adjacent structures. Modest landscaping treatment should be accomplished considering both short-term appearance and long-term goals for the area.

RECREATION STRUCTURE

Basic informal use of the structure rather than instructional use favors locating the facility more in relationship to the residences than to the recreation building.

As a matter of principle, a cleared area should be utilized rather than one requiring additional clearing of trees.

Because of the impact of building scale and other long-term considerations, foundation problems should not be a primary factor in location. However, the southern portion of the peat bog area is perhaps not usable for building and should be avoided.

The structure should not be located so close to the academic core as to interfere with future unanticipated expansion.

For these reasons the Team recommends locating the facility on the east side of Overhulse Road adjacent to the modular housing. In comparison with the four or five alternatives, it best conforms to the above requirements.

Materials selected should conform to those established for the campus. Since the only sloped roofs so far are black composition, it is recommended that this be given first consideration. Wood shingles would seem out of character for a building of this scale. The Team could see little reason for using a fiberglass roof since artificial lighting will be required, in any case, for evening use. The quality of such a fiberglass roof would add a material not sympathetic with the character of the campus.

The Team finds the concept of the berm and related fascia very satisfactory in that they relate the building to the ground. The height of the structure is considered to be a problem. Depressing the building into the grade to the extent allowed by the storm sewer may be an improvement.

LAB ADDITION

The proposed addition appears to be a logical extension of the Science building. It presents a low profile relating to some very nice trees. Although some exterior work courts are located on the south side, with proper screening they and the structure can be nicely related to the concept of a secondary gateway to the campus at this point.

HOUSING

The Master Planning Team has carefully reviewed the present and planned housing. The densities produced by Housing I, Housing II and the modular housing suggest a cautious extension of non-permanent units. Rough calculations of the densities of students per acre are as follows:

a. Housing I: 170 / acre

b. Housing II: 90 / acre

c. Modular: 23 / acre

If any additional modular housing becomes necessary, the Team strongly urges maximum conservation of land area. This suggests no further use of one-story modular units and careful attention to siting, conservation of trees and attractive parking. The Team recommends that any non-permanent housing be confined between the present modulars and the projected service road keeping well out of the path of athletic field expansion.

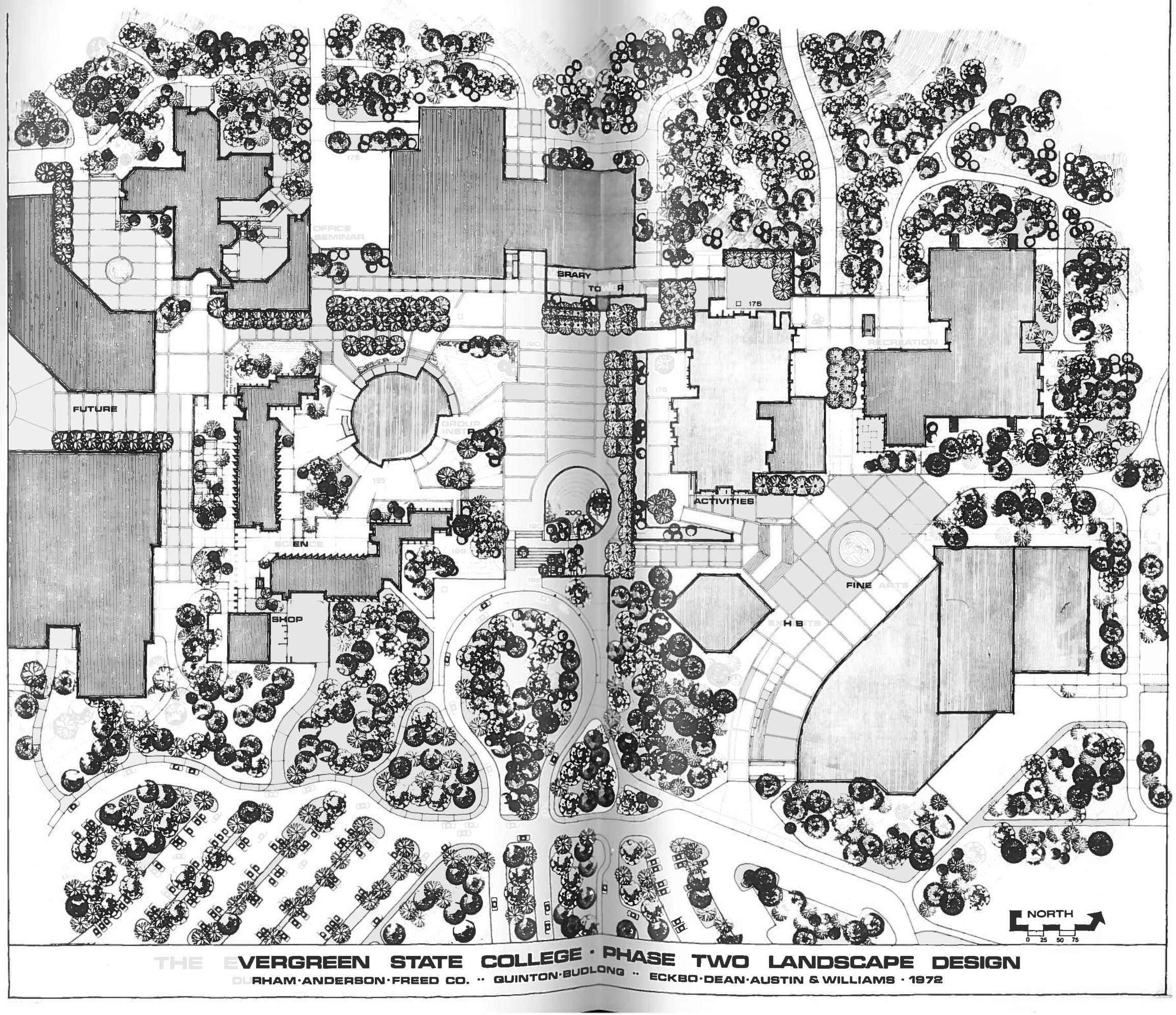
DOCUMENTS

Accompanying this report is a set of up-to-date plans recording design philosophy, projected structure of the campus and an accurate review of existing and planned utilities. These drawings should serve as a good base upon which to build a working file ready for use from now on. In the future consultants should be required to supply appropriate supplemental data in order to keep the file up to date.

RECOMMENDATIONS

The master planning to date at The Evergreen State College has depended heavily on the nature of the land and the educational specification developed by Arthur D. Little & Company. As the college matures, the input of students and a growing faculty will inevitably refine and change original concepts. It is important that these concepts be formalized so that the master plan can be maintained as a useful tool for influencing growth.

The Master Planning Team recommends that the Team be involved at the schematic and design development phase of each building project. Architects for individual projects are understandably more concerned about meeting the functional program and the exterior design concept of their building than in meeting various site conditions. It is imperative that master planning control include the relationship of buildings to one another and the effective design of courtyards, plazas and landscaping in order to produce a harmonious and interesting environment. Only by involvement of the Master Planning Team on a continuous basis can this be achieved.



THE EVERGREEN STATE COLLEGE · PHASE TWO LANDSCAPE DESIGN

DURHAM·ANDERSON·FREED CO. ·· QUINTON·BUDLONG ·· ECKBO·DEAN·AUSTIN & WILLIAMS · 1972

GENERAL LANDSCAPE DEVELOPMENT CONCEPTS

The site was originally heavily forested and still is in large part. Knowing of the enormous amount of clearing and grading required to construct but a single building or a single road, and wishing to make the campus as small as possible in order for students to be able to get around easily, it was decided to concentrate buildings and functions into a tightly knit core. This objective has resulted in the clearing and grading of one very large area for the campus core functions and smaller areas for residence halls.

Because the cleared and graded areas to accommodate buildings, walks, service roads, plazas and the utility tunnel overlap each other, perhaps 50 percent less clearing and grading has been required that would have been required by a decentralized plan as was originally envisioned. The result is that great areas of the college property that would have been drastically altered are still in a natural state. Economics in grading, clearing, drainage, roads and other utilities have also been a logical result of the decision to concentrate activities into a tightly knit core.

Pulling everything together this way has meant that it was impossible to save any of the native trees right in the campus core. The resulting visual contrast between the campus core and the forest around it is severe, dramatic or startling to some, depending upon how they look at it. The core area buildings and spaces have been categorized as "urban" -- characteristic of a city, rather than "rural" or "rustic" -- characteristic of the country-

side or woods. A scattered, decentralized campus would very likely have taken on one of the latter characteristics.

Having made these basic decisions, certain other design decisions naturally follow to guide the work of architects, engineers and landscape architects. As an example of this concept, we use terms such as "pedestrian mall," "plaza," "court," "walk," "axis," and become very aware of architectural enclosure of space. In other words, we use the vocabulary of the city and use buildings principally to define the spaces in the campus core area. In a more rural or rustic design, terms like "path," "clearing," "gathering area" might be more appropriate and trees would be more important space enclosures.

This is not to imply, by any means, that The Evergreen State College is exclusively urban and that there will not be rural and rustic areas. In fact, if the plans are carefully developed over the years, one should be able to experience every kind of landscape -- from isolated wilderness-like areas to highly sophisticated urban street-like scenes.

Two interesting decisions have faced the landscape architects that might be used as examples of their approach in relating the development to the site. These decision areas have been: how to treat the landscape of the central core; and, how to treat the edges where construction and the natural site meet.

It was decided that in the core area of the campus, the planting palette would not be limited strictly to native plants, but would be expanded to include those trees and shrubs familiar to the Northwest, though exotic, such as: sycamores, other than native evergreens, rhododendrons, etc. and flowering trees such as crabs, cherries, plums, etc. By widening the palette, plants could be chosen that were commonly associated with, and appropriate to, the kinds of uses and maintenance required of an urban situation. Most if not all of the plants in the core areas are exotics, therefore.

At the hard edges where construction meets the forest, the decision has been made to make a transition in the following way. In order to mend the "carved out" appearance left by clearing the forest to a line, careful thinning of trees is proposed in order to soften the line and allow the cleared space to penetrate the forest somewhat. This softening will be enhanced in some places where isolated trees or groups of trees are saved within the construction area. Examples of these occur in the entrance road and parking areas. New plantings in these areas are of two basic kinds: first, to reinforce and rejuvenate the natural areas; and second, to make a transition between the core area and the native forest. This thinning and creation of vistas is yet to be accomplished.

Along the edges of the native forest, new plantings to fill in bare areas are intended to match the existing ground cover and therefore are similar materials, predominantly salal, huckleberry, etc. In the areas where grading removed the native trees or where there were none, the new plantings include both natives and exotics that are compatible with them.

Therefore, these areas contain new plantings of douglas fir, dogwood, maples, honey locust, salal, huckleberry and broom, just to name a few.

A few words might be added about the ways in which we have looked at the location, arrangement and spacing of buildings. Although buildings are arranged one to another by function, it might be said that no single building, by function, is central, but rather that the space between the Library, Student Activities, Science, Seminar buildings and entrance is the center of the campus. That this mall contains the Large Group Instructional building only reinforces this concept. Within this space "all paths cross" -- not literally perhaps but in a broad sense.

As the campus expands, the numbers of buildings increase, more centers, plazas or malls will be created -- all of them secondary to the main mall. The Master Planning Team carefully considers all aspects of these spaces -- nature and extent of enclosure, scale, size and shape, relation to other spaces, surfacing and enhancement, and satisfaction of functional requirements. In making judgments about these matters though personal opinion and preferences must always be present, the Team members have consciously tried to make their decisions in terms of the anticipated perceptions and responses of those who will use the college facilities.

GENERAL ENGINEERING CONSIDERATIONS

LIGHTING

Considerable discussion has taken place over the "high mast" lighting system used in Parking Lots B, C and F. There has been minor criticism over produced light levels. Primary concern has been expressed over effects to adjacent private properties. Such effects, in reality, would be apparent even with lower fixtures, but since the actual lights can be seen the reaction is possibly more psychologically responsive. Future use of the high mast system should be carefully analyzed in terms of this problem and its use possibly restricted to the large commuter parking areas proposed south of the major building area adjacent to the parkway. The apparent security benefits to visitors and night-time arriving and/or departing persons is definitely measurable and supportable.

UTILITIES

With the campus contemplating vacation of certain public roads and right-of-ways, the control and definition of utilities owned by others will be critical. Easements will have to be prepared to protect such facilities and records will have to be maintained by College personnel in order to avoid disruptions in service to users of these lines. Additionally, each utility company must be aware of the existence of College-owned underground facilities to avoid similar disruptions. A permit procedure might be developed where the utility company or contractors working for the company would have to check with College personnel prior to performing any work on College property.

Since the College has engaged several firms for the design of facilities beyond the building areas, a central coordinating person or firm will be required to accurately control horizontal and vertical placements of all underground facilities. The civil engineering firm engaged would be most appropriate for such coordination.

SUBSURFACE SOILS AND DRAINAGE

Additional coordination will be to the College's ultimate benefit in the subsurface soils and drainage areas. It is vital that the building architect or structural engineer be appraised of current efforts beyond the structure and that the site engineer be able to coordinate any soils exploration efforts for his equally critical benefit.

Staged construction of roadways and pre-excavation of buildings has proven itself satisfactory. The paving of deep basement areas and providing adequate drainage facilities ultimately permitting building construction to commence in mid-winter is economically beneficial. Proper advance planning and the availability of construction funds will permit this procedure to continue. It is strongly recommended that the College exercise continued control in scheduling all projects with this in mind.

PARKING, CIRCULATION AND ARTERIALS

Parking statistics included within this report were based on both projections and actual car counts on given days during January and February, 1972. They should be used as a general guide for future planning. Periodic monitoring should be undertaken during each school term and compared with the projections.

Parking lot densities will be critical in controlling the character of the lots. Densities in parking lots B and C are less than 65 cars per acre. Normal institutional parking areas accommodate 100 to 125 cars per acre. It is recommended that the College attempt to maintain densities between 75 and 100 cars per acre to provide adequate planting areas within each lot.

The College will be faced with increasing pressure from local residents when road vacations are contemplated. Since the basic road network is, in effect, the backbone of the circulation system and will set the direction for future development, the sooner the on-campus roads are completed, the better.

One fundamental guideline developed during the original planning process is that all private vehicles, exclusive of service trucks, will be confined to the parkway, ring road and minor service roads where they are connected to parking areas. Determined policing from the beginning will help control possible problems in future years.

It is believed that the 15-foot wide curvilinear campus walkway system is still valid for emergency service, bicycles and pedestrians. Access control is critical to prevent conflicts and possible pavement deterioration.

Establishment of the proposed bicycle ring road or pathway system and accompanying storage facilities will alleviate many of the present problems. Student cooperation will be fundamental to its success.

Design of the parkway and ring road system should approximate a 45 mph arterial. Local service roads should not be designed for any minimum design speed. Generous use of curvilinear alignments and long vertical curves will produce a pleasant roadway corridor. Tangents between horizontal curves should be minimized, if not entirely eliminated. Concrete curbs and gutters should be provided wherever possible to control drainage, define the roadway and maintain the structural integrity of the roadway.

Walkways should be positioned away from all roadways. Pedestrian crossings must be carefully developed. Particular reference is made to the potential conflict that could develop in connection with the development of the off-campus housing complex at Overhulse and Driftwood Roads.

The proposed building area west of the present core area will require both north and south roadway penetrations for service and emergency access. Careful planning will be required

to permit placements of the utility systems within each corridor. Careful attention should be given to existing tree masses when determining the final alignments.

Future access to the remote student housing complexes west of the campus should be from the ring road. Adequate turning areas and drop-off points near the building areas will be necessary to control traffic.

Parking areas west and north of the campus core should be restricted in size to permit preservation of existing tree stands. The ring road C has not been designed to accommodate large traffic volumes. The major commuter parking areas should be concentrated south and east of the campus core and connected to the parkway with intersections spaced at 600 feet, minimum, to permit the possible introduction of future traffic control signals.

Access to the proposed Fine Arts center will be restricted to service and emergency traffic. The proposed configuration has provided two access points to the minor plaza and a major service connection at the Central Utility Plant access area. The proposed Phase II addition and the service access roadway will require that the existing 15-foot walkway be relocated easterly to a point nearer the Central Utility Plant. This proposed relocation will not conflict with the original circulation pattern.

More study will be necessary to solve local access problems to the Phase II housing area. If the modular housing area is expanded to the east, consideration should be given to the establishment of small parking areas.

PARKING STATISTICS

LOTS B AND C

18.9 acres gross
1197 parking stalls
690 sq.ft. per automobile
63 automobiles per acre

LOT F

3.35 acres
272 parking stalls
535 sq.ft. per automobile
81 automobiles per acre

RESIDENTIAL PARKING (Modular Housing & Lot F)

602 students
120 automobiles as of February, 1972
20% automobile student ratio
(25% estimated during original planning)

COMMUTER STUDENTS (Lots B and C)

1100 - 602 = 498 students
300 automobiles as of February, 1972
60% automobile to student ratio
(50% estimated during original planning)

Comment: Contractor Parking in lots B and C.
Ratio should decrease with increase in student population.

ESTIMATED PARKING PROJECTIONS - FACULTY & STAFF

Year	Total Students	Faculty	Staff	Parking
1972	1,100	55	@ 75%	41
			55 @ 90%	50
1974	2,600	130		98
			130	117
1976	4,100	205		154
			205	185
1978	5,700	285		214
			285	257
1980	7,200	300		270
			360	324
1982	8,700	435		326
			435	392
1984	10,200	510		383
			510	459
1986	12,000	600		450
			600	540

Faculty @ 20:1 Student/Faculty Ratio

1 Staff Member per Faculty Member

ESTIMATED PARKING PROJECTIONS - STUDENTS

Year	Total Students	Residents	Parking (High) Low	Commuters	Parking (High) Low
1972	1,100	602	(150) 90	498	(324) 224
1974	2,600	1,050	(263) 158	1,550	(1,008) 698
1976	4,100	1,050	(263) 158	3,050	(1,983) 1,373
1978	5,700	1,425	(356) 214	4,275	(2,779) 1,924
1980	7,200	1,800	(450) 270	5,400	(3,510) 2,430
1982	8,700	2,175	(544) 326	6,525	(4,241) 2,936
1984	10,200	2,550	(638) 383	7,650	(4,973) 3,443
1986	12,000	3,000	(750) 450	9,000	(5,850) 4,050

Resident parking - car to student ratio = 15% (low), 25% (high)

Commuter parking - car to student ratio = 45% (low), 65% (high)

ESTIMATED PARKING PROJECTIONS - SUMMARY

Year	Resident	Faculty & Staff	Commuter	Total
1972	(150)	91	(324)	(565)
	90	91	224	405
1974	(263)	215	(1,008)	(1,486)
	158	215	698	1,071
1976	(263)	339	(1,983)	(2,585)
	158	339	1,373	1,870
1978	(365)	471	(2,779)	(3,606)
	214	471	1,824	2,609
1980	(450)	594	(3,510)	(4,554)
	270	594	2,430	3,294
1982	(544)	718	(4,241)	(5,503)
	326	718	2,936	3,980
1984	(638)	842	(4,973)	(6,453)
	383	842	3,443	4,668
1986	(750)	990	(5,850)	(7,590)
	540	990	4,050	5,490

PRESENTLY IDENTIFIED PARKING AREAS

Lots	Area	Optimum	High Density
B and C	18.9	1,197	1,197
D	3.42	342	437
Modular Housing		40	40
F	3.35	272	272
G	6.85	685	855
H	2.95	295	370
J	1.85	232	232
K	2,64	264	330
		3,327	3,733 cars

Maximum projected - 5,490 to 7, 590 cars

(Original master plan projected - 6,510 cars)

Optimum 100 cars per acre

High Density 125 cars per acre

Rule of Thumb: 40% to 60% student to car ratio

12,000 x 40% = 4,800

12,000 x 60% = 7,200

GRADING AND STORM DRAINAGE

The basic design of all drainage systems has conformed to natural drainage patterns as closely as possible. Several isolated cases are exceptions, but in these cases alternate solutions were introduced because overland drainage was not possible in those areas without modification. Examples are the two low-lying areas easterly of Overhulse Road.

The introduction of piped storm drainage systems has concentrated flows at points in natural drainage courses requiring special outlet control devices. This practice must be continued in the future if erosion is to be minimized.

The two low-lying areas west of Overhulse Road will require major grading if parking areas or structures are placed there. Overall surface finish grade planes have been established during previous design efforts and were followed in the establishment of finish grades in the athletic area. This general grading configuration must be continued when improvements are made across Overhulse Road.

All proposed building areas studied during this planning process are not expected to conflict with previous planning. It is critical, however, that any specific project be studied in light of its impact on the overall surface and subsurface flow patterns. One of the unique aspects of the overall drainage solution on the campus has been the required integration of surface and subsurface considerations. It is believed that, with proper maintenance, the combined flows in inverted perforated pipe systems will economically satisfy such problems.

The proposed Seminar building lies across a major surface and subsurface drainage course. Concurrent planning has proposed a combined pipe west of the building to intercept these flows. Similar solutions may be required for other structures in this general area.

The proposed student housing sites west of the core will require minimal attention to overall surface flow patterns. It is critical, however, that such flows be intercepted before they reach the building sites. This might be accomplished by ditches and pipe systems along the proposed pedestrian paths adjacent to each complex. It might prove necessary to introduce a continuous subdrain under these pathways.

With the construction of the proposed Science and Seminar buildings, the limits of the existing storm drainage system have been reached. All roof and surface flows in connection with these structures will have to be directed to a new outfall adjacent to Road SS. This pipe system will discharge into the existing water course several hundred feet east of Road SS at Driftwood Road.

With the campus slowly developing, the possibility of smaller isolated projects will become more of a reality. The question of earthwork will be increasingly more difficult to coordinate. The campus has a great variety of soils that will be encountered in any given excavation. The complete understanding of the inherent characteristics of these soils and proper disposition or treatment must be carefully analyzed for each project. TheCollege should consider establishment of additional on-site waste areas for strippings and unsuitable materials.

Recent experiences encountered on the major earthwork efforts undertaken during the past several years indicate that embankment slopes should be kept as flat as possible. In general all slopes should not be steeper than 3:1 (3 horizontal to 1 vertical).

The College should establish permanent monuments within the peat bog waste area to monitor settlements during the next few years. Any development in that area without considering this settlement question may result in an unsatisfactory turf athletic area. Previous predictions have anticipated these settlements to continue for five or more years. The area has been surcharged which should accelerate the process.

Previous design efforts have anticipated extensions to the storm drainage system across Overhulse Road. Since these pipes are quite shallow, careful attention will be necessary to avoid pipe interferences.

The location of the proposed Fine Arts center will pose no difficulty in conforming to existing pipe systems. Extensions have been constructed under the tunnel to accept these flows. However, attention should be given to extension of the subsurface pipe systems.

Since the proposed Fine Arts center contemplates modifications to parking lot C, minor modifications will be required to the existing storm drain system. The proposed alteration will be at the upper end of the present drainage system, so only relocations of pipes and inlets will be required to conform to the new configuration.

General Criteria:

Minimum pavement slope:	1.0%
Maximum grades (except special cases):	6.0%
Building area design storm:	25 yr.
Ancillary area design storm:	10 yr.
Maximum pipe velocity without outlet control:	5 fps

Grading in connection with the proposed Seminar building will be critical if it is not properly coordinated and controlled. An additional critical variable will be the time of year it is attempted. Super-saturated soils can be expected, with considerable quantities unsuitable if not dried. If the work can be accomplished prior to commencement of actual building construction, where the earthwork contractor has the necessary freedom and control over his schedule, direct benefits can be realized by the College.

No identifiable difficulties are predictable in the Fine Arts area at this time. The primary concern apparent is the question of access by heavy equipment. The site is completely surrounded by recently completed improvements, including shallow water lines and the tunnel structure. The contractor must be directed to avoid surcharging the tunnel. Special attention will be required wherever crossings are made over existing improvements. The most satisfactory method will be to identify all underground facilities on the construction documents, and specify that he will be responsible for maintenance and repair of all services.

WATER SUPPLY, STORAGE AND DISTRIBUTION

Present primary water supplies to the College are transported through a 12" pipeline in Kaiser Road and continue in Road A to the buried reservoirs adjacent to Overhulse Road and the pump station. Long-range plans by the City of Olympia have contemplated construction of a second supply main approaching the campus from the south in Overhulse Road.

Presently the College has 2 MG in storage in the two reservoirs. An additional 250,000 gallons will be required before the College reaches its ultimate enrollment. It is recommended that this storage be provided by the construction of an elevated storage tank located on the secondary knoll, southwest of the core area. This elevated tank can be tied into the pumped distribution system and pump station by appropriate controls. One of the major benefits that the elevated tank will provide is a relief to the continuously operating pumps in the pump station. This will provide both maintenance relief as well as positive response to increased flow requirements. System pressures will be adequate. Appropriate care must be taken to provide a structure compatible with the environment.

It will be possible to divide the campus into two pressure zones. The primary building area should continue to be served by the pumped pressure system where the lower areas between Overhulse and Kaiser Roads can be served adequately by the City pressure datum, particularly when the second supply line in Overhulse Road is constructed. Additionally the City is contemplating construction of a higher Cooper Point pressure datum through establishment

of new storage reservoirs at higher elevations. These new City reservoirs will provide both increased pressures as well as more dependable supply line characteristics.

The City has reserved the right to construct a new supply line across the northerly portion of the campus to serve areas west of the College. The College will have the prerogative of connecting to this line for service north of Driftwood Road. This area can remain on the City pressure datum. It is recommended that the College require that the City follow the Road C alignment for construction of this line. This will eliminate the undesirable scar across the wooded portion of the campus lying north of Driftwood Road which is certain to accompany the construction of the water line.

Extension of the water system to the west of the core poses little difficulty. A minor exception will be the small relocation of a section of 12" main near the northwest corner of the Science Phase II building to maintain cover as it crosses over the tunnel. Extension of the 12" main north of the Seminar building and the 10" line westerly will conform to the original distribution system master plan. Relocation of the recently installed line southwest of the Science Phase II will be necessary because of the introduction of the recently planned Laboratory addition.

Water service to the Fine Arts center poses no problem. Adequate mains have been installed around the complex and with the addition of a 10" cross main for fire protection, satisfactory service will be provided. A possible conflict exists along the north line of the Phase I structure.

The existing 12" main is located critically close to the proposed structure. It appears to be prudent to accept the relocation of this line prior to commencement of construction in order to avoid the almost certain difficulties that will be encountered when excavation for the building foundation begins. Tees have been provided in the existing 12" mains to accommodate the 10" cross main.

SANITARY SEWERAGE

All proposed building areas studied during the planning process are positioned to permit being served by gravity sewers.

Any proposed buildings that might be placed below elevation 170, in general, will require pumped force mains. Special attention will be required at points of connection to the gravity trunk to avoid pressurization of the gravity system and accompanying backup into buildings.

Clarifiers or dillution manholes should be provided for special acid wastes or problemmatical corrosive discharges. Vitrified clay pipe should be considered for such cases in lieu of asbestos cement.

Sanitary lines should be designed to flow 1/2 full and maintain 2 fps minimum stream velocities for self-cleaning.

Fixture unit method of measurement may be used for sizing pipes in local areas.

Previous design efforts have provided extensions into both the Fine Arts center and the Science-Seminar building area. Minimal local extensions will be required to provide service. The sanitary sewer extension parallel to the utility tunnel should be constructed of cast iron pipe.

Future pipe extensions should include special bedding materials for asbestos cement pipe. APWA Class B bedding would be adequate. Special attention should be given to pipe strengths, with Class 2400 being a minimum for asbestos cement pipe.

NATURAL GAS, COMMUNICATIONS, POWER, STEAM AND CHILLED WATER DISTRIBUTION

The primary supply voltage to the campus is presently 12.5 KV. Long-range plans by Puget Sound Power and Light contemplate a new primary service at 115 KV. The 115 KV service will be placed underground entering the site at Overhulse Road near the pump station complex. The 12.5 KV system will remain as the secondary distribution voltage.

All 12.5 KV power feeders should be placed in the utility tunnel system or in concrete duct systems for services beyond the building core area. The college must avoid construction of direct bury cable such as was constructed recently in connection with the Modular Housing project. The communications cable network should parallel the power routing but be separated at the manholes to avoid communications people coming into contact with high voltage power systems.

It is recommended that the College attempt to place the present overhead 12.5 KV supply line at Overhulse Road and running to the substation in a concrete duct partially constructed adjacent to Overhulse Road. This same duct can house the basic delta 2000 control cable between the pump station and central utility plant.

The College should continue the basic concept of a 12.5 KV ring buss to provide balanced service voltages and dependable power sources to all points on the campus. This ring buss

will also eliminate the isolated secondary power source to the shops and garage site. Previous design efforts have anticipated this eventuality providing appropriate capability at manholes and in the duct runs to accommodate the required feeders and appurtenances.

Pacific Northwest Bell is planning a major telephone duct within the Overhulse Road right-of-way to its proposed regional operations facility north of the campus. This same duct bank will house primary feeders to the College. The College must retain control over the placement of this duct within its proposed property boundaries in order to avoid future conflicts with college-owned underground utility systems. Of particular importance is the critical crossing at the north edge of the athletic area where the College has already installed power and water lines.

The College should exercise continual prerogatives during the coming years when pressures will be made to cross the campus with "shortest length" utility services. Damage to existing wooded areas will remain observable for many years.

The Washington Natural Gas supply line in Overhulse Road may be extended in the coming years to the north. Again, the College should maintain control over placement of this line.

It is understood that the College is contemplating a new comprehensive study of future steam and chilled water requirements. This project is most timely and will clear up some of the gray areas that have surfaced during the past two years since the original studies were made.

Since the original efforts were based on many unknowns in terms of exact building configurations and characteristics, a fresh review of this problem using more precise data will be extremely beneficial in terms of long-range planning.

The utility tunnel, being the primary structure for serving all major buildings with steam and chilled water, has developed satisfactorily. Its overall importance can be best acknowledged when one of the primary justifications for this study was to resolve the exact location of its future extension. The tunnel structure itself becomes a critical factor when planning the underground networks of pipes and ducts. Its position becomes as important as a proposed building.

The general concept of restricting delivery of chilled water to only those buildings connected to the utility tunnel is defensible. The extension of steam to remote building areas is justified. The College should continue research efforts to find the best envelope for these direct buried steam lines. Continuing advances in that technology and accompanying lower costs should produce the optimum envelope for the wet subsurface environment present at the College.