

REPORT OF DIVISION III  
ON  
EDUCATION, EVALUATION AND PUBLIC RELATIONS

P. H. Elwood, Head

\* \* \*

Effects of War on Roadside Development During 1943. The war, gasoline and rubber rationing programs, and related circumstances have curtailed State highway construction, and with it, roadside development work. A survey of nation-wide activities during the year brings out the following points:

1. An increase in erosion control as part of construction contracts east of the Great Plains.
2. A decrease in roadside activity in the Great Plains and West.
3. A broadening of viewpoints on the economic value of roadside improvement.

The need for roadside improvement on national defense highway projects was emphasized as an economic measure in General Administrative Memorandum No. 150, issued February 7, 1942, by the Commissioner of the Public Roads Administration: "No permanent improvement can be considered to be entirely adequate unless these basic features are incorporated in the construction, together with appropriate seeding, mulching, sodding, or equivalent soil, slope, and shoulder protection work. Experience has demonstrated that protection of bare soil from the action of wind, frost, and water may be accomplished at minimum cost by the selection and use of mulches, grasses, and other ground covers; and, except in extremely dry climates, such measures should be incorporated in project plans and specifications to the degree necessary, as determined by the State landscape engineer....."

In the humid regions of the North, Middle and Southern Atlantic, Gulf and Central States, roadside development, with particular emphasis upon basic erosion control measures, is now being performed as a part of all new access road construction. A number of the States also have erosion control programs under way with State funds alone. The value of mulching, seeding, and related erosion control measures as a part of highway construction is now recognized as never before east of the 100th meridian and the average investment in those construction items is usually two to three per cent of total costs of original construction contract work.

In most of the States of the dry region, west of the 100th meridian, roadside development is marking time for the duration. This is understandable because most of the young men in charge of roadside development in the western States are in the armed services or other war activities. Where vegetation is difficult to establish, erosion must be controlled largely by grading methods and by careful location of the highway itself in the terrain, rather than by depending on the use of ground cover on slopes and shoulders. This is another way of saying that integration of

basic landscape development in highway construction in the dry region may perhaps require trained landscape personnel of even greater local experience than in the case in humid regions.

In some States, apparently, there had been a misinterpretation about the waiving of the one per cent minimum requirement for roadside improvement during the war emergency. The basic principles of roadside improvement are to be incorporated as an integral part of the project construction instead of as separate projects for roadside improvement submitted for program approval. In advanced designs for COMPLETE HIGHWAY improvement, prepared under this simplified arrangement, the principles of landscape design will be integrated automatically in every new mile of highway construction. This is further stressed in the report of the National Interregional Highway Committee presented to Congress by the President, January 12, 1944.

"In the broadest sense", the report points out, "highway design rests upon landscape principles as well as upon the more commonly recognized engineering principles of alignment, profile, grade cross-section roadway and right-of-way width, drainage, and structural strength and durability. A balanced agreement with the two sets of principles characterizes the best design."

There would seem to be two parts of the program which lie ahead of us for the duration of the war.

First, as long as hostilities continue we must continue to cooperate with highway maintenance forces in every possible way toward the simplification, and reduction, of cost of mowing, snow removal and roadside maintenance in general. Recent figures indicate that on an average about 25 to 40 per cent of the annual cost of maintaining State highways is spent in roadside maintenance and on roadside structures. If snow removal is included, and this is to some extent a roadside matter, this average percentage may be increased to something more than 50 per cent.

Second, during the coming year, we must begin to record in "manual" form those proven landscape principles and practices which will be of greatest value to the highway engineer in planning the post-war highway program. The idea of the COMPLETE HIGHWAY must continue to grow. We must forget the mistakes and disappointments of the past and look forward to the future confident that sound landscape principles cannot fail to be adopted in our future highway programs.

The Subcommittee on Education sent out and received answers to a series of questionnaires directed to State highway departments and to the colleges and universities that train the engineers and landscape architects who will be in charge of tomorrow's highway development. The interesting results of these questionnaires are given in the report by the Subcommittee.

The Subcommittee on Education also has submitted for consideration a list of positions, duties and qualifications for the men who are to plan and carry out effective roadside development. The qualifications are stated as ideals which probably cannot be met immediately due to lack of trained professional landscape personnel, nor can complete uniformity in qualifications be achieved by all States. Nevertheless, these suggested duties and qualifications do serve as stimulating goals and guides for the future.

The report submitted, including certain factual addenda, is being published in order that an outline of the subject as a whole may be available for further study by members of the Committee on Roadside Development, by highway department personnel officers, and by the colleges and universities.

The Subcommittee on Evaluation of Practices submits a brief summary of a review made by the committee of typical grassing specifications submitted in the 1941 Report of the Committee on Roadside Development together with a comparative cost

analysis of a typical erosion control contract in Indiana, compared with costs of similar work on a part of the same highway, carried out as an integrated part of an original construction project. A survey of wartime use of roadside parks in Indiana is also of timely interest.

The Subcommittee on Public Relations and Publications has submitted a tentative outline for a proposed manual of highway development, emphasizing those landscape principles and proven roadside development practices which must be integrated with highway location, design, construction and maintenance if the work of the landscape engineer is to be fully effective. It is hoped that members of the Committee on Roadside Development and highway engineers in general, will study this outline and send their comments and suggestions to the chairman of the committee at an early date.

#### PROGRESS REPORT OF COMMITTEE ON EDUCATION

During 1943 the Project Committee on Education conducted three separate surveys as follows:

##### 1. Survey among Educational Institutions

A. Survey among Colleges and Universities which offer courses leading to a degree in Civil Engineering. This survey covered the question as to whether the college or university was offering courses of study to students in Civil Engineering that would better prepare them for handling the problems of roadside development and erosion control which would arise or which would be a part of their highway duties or experience upon acceptance of such a position.

B. Survey among Colleges and Universities which offer courses leading to a degree in Landscape Architecture. This survey covered the question as to whether the college or university was offering courses of study to students in landscape architecture that would better prepare them for public position, in which the major duties would be Roadside Development in all its phases.

2. Survey among twenty-nine (29) States whose Highway Departments were known to have a Landscape Architect or a Landscape Personnel in its organization. This survey requested recommendations from the landscape personnel as to the duties and qualifications as they would apply to a number of graded positions or classifications.

3. Survey among twenty-nine (29) States whose Highway Departments were known to have a Landscape Architect or a Landscape Personnel in its organization. This survey requested information and recommendations as to educational programs for the public; for the engineer or technical man; for personnel within the highway department. It requested suggestions for courses of studies to be recommended to technical schools, these courses to be included in their curricula, to fill any voids as might be indicated as a result of the survey conducted among the colleges and universities.

Based upon the results of these three surveys, the committee on Education has prepared the following progress reports which includes certain recommendations for consideration and adoption. (Note: A summary of the three surveys is available upon request to Dallas D. Dupre, Jr., Chairman; Ohio Department of Highways, Columbus 15, Ohio.)

1. It is evident from the replies received from colleges and universities offering degrees in Landscape Architecture and Civil Engineering relative to technical training being given in colleges and universities that there is a definite and growing need for Roadside Development subject matter being offered to landscape

architecture and civil engineering students that would fit them for entering the special field of Roadside Development work. This committee will therefore make a thorough study of, then adopt and make available to all colleges and universities a recommended list of courses of study including classroom work, field study and practical work that would fulfill the present and future needs for properly trained personnel in this field.

This committee believes that much serious and united thought is needed in this matter and it does not offer specific suggestions at this time. It is felt, however, that such a list of courses can be compiled and offered for final consideration within the next twelve (12) months.

It is not the thought or purpose of these recommendations that more schools take up Landscape Architecture or Civil Engineering but that those now offering courses expand those courses to meet the new and growing need.

2. The Committee feels that while much good work is being done along the lines of education with the general public, the engineer, and the allied-work groups (i.e., contractors, nurserymen, conservationists) yet the programs are generally hit-or-miss. There is much value to be gained by a proper education of these groups, entirely aside and distinct from "public relations" activities. With the assistance of other members of the Roadside Development Committee, this committee will prepare a recommended program of educational features for each group, this program to be offered to the States, and to other political subdivisions which would find it useful and beneficial.

An adopted program should be flexible yet should be definite enough so that the general thinking along Roadside Development lines would be the same from Maine to California and from Washington to Texas and Florida. A "Library" of material could well be prepared and made available by the Highway Research Board.

3. The results of a survey conducted in twenty (20) responding or cooperating States definitely indicate that technically well-trained and experienced personnel are essential in the upper or key positions in the Roadside Development field.

Based upon the recommendations of these twenty States the committee offers the following qualifications to be studied, looking forward to their adoption as standard for the noted positions: (Note: Where Landscape Architect is used, this refers to Landscape Architect, Landscape Engineer, Director of Roadside Development, Engineer of Roadside Development, or such title as it used by any State or Agency in designating the personnel.)

A. The Head of the Division of Roadside Development Landscape Architect.

Duties: The landscape architect shall have responsible charge and be administrative director of all Roadside Development activities including supervision of location, design, construction, conservation, erosion control, roadside parks, and maintenance activities; have active supervision over Roadside Development personnel; supervise preparations of plans and specifications, estimates and cost analyses; supervise State nurseries and public groupds (if applicable); shall handle Roadside Development public relations; shall be responsible to Director or Commissioner of Highways.

Qualifications: A degree in Landscape Architecture at an accredited school, or its equivalent, and with a minimum of four years of progressive practical experience, including supervisory capacity for at least two years, in Roadside Development work with a State highway department or similar Department which has carried on comprehensive roadside development programs. "Equivalent" may be taken as a combination

of technical education and experience, substituting two years of responsible roadside development experience for each year of the required education in an accredited college or university. Substitution shall not be allowed for the four years of progressive practical experience.

B. Assistant to the Head of the Division of Roadside Development Landscape Architect

Duties: The Assistant Landscape Architect shall be an assistant and subordinate to the landscape architect with minor administrative duties; shall prepare and check plans and specifications, estimates and cost data; make inspections of sites, projects, maintenance activities, and field operations; shall make public utility contacts for general operations; shall have detailed charge of State nurseries and public grounds (if applicable) and shall keep costs and records; shall assist in public relations activities.

Qualifications: A degree in Landscape Architecture or its equivalent, plus a minimum of two years of progressive practical experience in Roadside Development work with a State highway department or similar Department which has carried on comprehensive roadside development programs.

"Equivalent" may be taken as a combination of technical education and experience, substituting two years of responsible roadside development experience for each year of the required education in an accredited college or university. Substitution shall not be allowed for the two years of progressive practical experience.

C. Assistant in Charge of Division or District Roadside Development Division or District Landscape Architect

Duties: The Division or District Landscape Architect shall have responsible charge of all Roadside Development activities, including supervision and direction of Roadside Development personnel in his Division or District; he shall be under general direction of the Landscape Architect; shall prepare or assist in preparation of plans and specifications, estimates and cost data; shall recommend roadside development construction projects and initiate erosion control and other maintenance operations; shall directly supervise State nurseries in his district (if applicable).

Qualifications: A degree in Landscape Architecture or its equivalent, plus a minimum of two years of progressive practical experience in Roadside Development work with a State highway department or similar Department which has carried on comprehensive roadside development programs.

"Equivalent" may be taken as a combination of technical education and experience, substituting two years of responsible roadside development experience for each

year of the required education in an accredited college or university. Substitution shall not be allowed for the two years of progressive practical experience.

#### D. Landscape Field Superintendents

Duties: The Landscape Field Superintendent shall be directly responsible to the Division or District landscape architect, and upon assignment shall have charge of, roadside development groups or crews; shall assign and direct employees and equipment in his groups; shall act as project engineer on roadside development construction projects; shall have active charge of crews on erosion control projects and maintenance operations; shall keep field construction and maintenance costs, pay-rolls and records.

Qualifications: High school education and a minimum of three years of progressive practical experience, roadside development work preferred, or in large nursery, landscape contracting or forestry operations.

#### E. Landscape Inspector, Landscape Foreman

Duties: The Landscape Inspector or Landscape Foreman shall be directly responsible to the Division or District Landscape Architect or to the Landscape Field Superintendents; shall assist the landscape field superintendent in all roadside development operations, including staking out of the work, inspections, pruning and maintenance; and shall keep records and costs of his operations as required.

Qualifications: High school education and a minimum of three years of progressive practical experience, roadside development work preferred, or in large nursery, landscape contracting or forestry operations.

The committee recommends that the Highway Research Board offer this compilation and review of the surveys for the benefit of and study by all State Highway Departments or Commissions which do not have a recognized Roadside Development division or personnel, or whose personnel is now depleted, looking forward to the establishment of such a Division and the filling of vacant positions according to the duties and qualifications as outlined.

It is further recommended that a copy of the finally approved duties and qualification list be furnished to all State Civil Service Commissions for their guidance in setting up examinations and certifying applicants for available positions. These lists should go a further outline stressing grading on personality and cooperative qualities.

#### DISCUSSION OF REPORT OF THE PROJECT COMMITTEE ON EDUCATION, WITH ADDED DATA ON PROPOSED QUALIFICATIONS FOR PROFESSIONAL LANDSCAPE PERSONNEL OF THE STATE HIGHWAY DEPARTMENTS

The foregoing report was presented and briefly discussed at the closing session of the December Meeting in Chicago. It was again briefly reviewed, in a revised form, by the Executive Committee at Columbus, Ohio, in March, 1944. It represents the opinions of the Project Committee on Education after these meetings.

The following additional information is furnished from notes and comments received by the Chairman of the Committee on Roadside Development after the March Meeting in order that everyone might have a full picture of the educational conditions existing.

Because of wide variations in these data no definite recommendations or conclusions seem advisable at this time. All interested parties including the colleges, the State highway departments, etc., are urged to study the progress report, with the addenda, and to write any further comments directly to D. D. Dupre, Jr., Landscape Architect, State Highway Department, Columbus, Ohio. The Project Committee on Education will then be in a position to submit a more complete and comprehensive report on this subject at the 1944 Annual Meeting of the Highway Research Board.

### Qualifications for Professional Landscape Personnel of a Typical State Highway Department

Based upon the answer to the questionnaire and analysis of attached list of additional reference information, the Committee on Roadside Development offers the following alternate professional landscape grade specifications to be studied for adaptation to the requirements of the various State highway departments. For comparison between the grades used in the United States Civil Service, the typical State highway department as outlined below, and a typical municipal park department, see attached tables 2, 2A and 2B.

#### A. Landscape Architect or Landscape Engineer

**Duties:** Under the direction of the Chief Engineer or the State Highway Commissioner to supervise and have responsible charge of all roadside development and highway landscape development activities by the highway department; to supervise preparation of plans, specifications and estimates for landscape development by contract methods or force account as the case may be; to prepare landscape development programs on existing as well as on newly constructed highways; to inspect areas and make reports on acquisition of sites for landscape development of roadside areas; to cooperate with engineers of right-of-way, design, location, construction and maintenance, in landscape development operations before, during, and after, construction of new highways; to handle relations with the public in regard to roadside and landscape development matters; to have supervision over all other landscape and roadside development personnel.

**Education:** Except for the substitutions provided below all professional grades of landscape personnel shall have completed a four-year course leading to a bachelor's degree in landscape architecture, landscape engineering, or landscape design in an accredited college.

Applicants for positions above grade 1, Junior Landscape Architect (landscape engineer) may substitute for lacking professional landscape education not more than two years of accredited professional training in the fields of forestry, horticulture, architecture or civil engineering year for year. The remaining two years of the lacking course in landscape architecture may be replaced by four years of pro-

Professional landscape experience with a highway department, park department, or equivalent professional landscape practice. Such substitution of experience for education will not reduce the requirements of experience which follow.

Experience: All applicants for this grade shall have had not less than four years of professional progressive landscape experience in a highway department, park department or in equivalent public or private professional landscape architectural practice in addition to any substitution allowed of experience for education above. Not less than two years of this experience shall have demonstrated a thorough knowledge of landscape architectural principals, combined with administrative ability of marked degree while in charge of other landscape architectural or engineering personnel.

B. Associate Landscape Architect, or Associate Landscape Engineer

Duties: Under the direction of the Landscape Architect to assist in supervision of all roadside and highway landscape development by the State highway department; to prepare necessary plans, specifications and estimates for highway landscape development and to report on programs for such work; to supervise roadside maintenance programs including tree trimming by public utilities, tree surgery, tree spraying, and mowing work; to cooperate with engineers of location, right-of-way, design, construction and maintenance in matters of highway landscape development and roadside development before, during and after new highway construction.

Education: As noted in the paragraph "Landscape Architect"

Experience: In addition to meeting educational qualifications not less than three years of responsible professional landscape architectural or landscape engineering experience with a highway department, park department, or equivalent public or private professional landscape practice. Graduate training in professional landscape architecture (in addition to the four years required for the bachelor's degree in landscape architecture) up to one year, may be considered as a satisfactory equivalent for one year of the required experience.

C. Assistant Landscape Architect (or Assistant Landscape Engineer)

Duties: Under general supervision to prepare drawings, plans, specifications and estimates for roadside and highway landscape development work; to make inspection and report on roadside development, roadside sites, projects, and roadside maintenance operation in the fields; to supervise tree trimming by public utilities, tree surgery, tree spraying, and mowing operations under the direct supervision of the District or Division engineer; to take responsible charge of all highway landscape development in such a subdivision of the State.

Education: As noted under Landscape Architect above.

Experience: In addition to the requirements under education applicants must have had not less than two years of professional landscape experience with a highway department, park department, or equivalent public or private professional landscape organization. Such experience will be in addition to the four years of professional landscape experience which would be required in default of the four-year course in landscape architecture or landscape engineering. Graduate professional landscape study up to one year may be substituted for one year of the required experience.



D. Junior Landscape Architect (or Junior Landscape Engineer)

Duties: Under close professional landscape supervision to prepare drawings, plans, specifications and estimates for roadside and highway landscape development projects in any region of a State; to organize the work of roadside maintenance crews engaged in tree surgery, spraying, tree trimming by utility companies and other maintenance work; to make contacts with the work of landscape field superintendents; keep cost records, and otherwise keep the district and main State offices informed as to work in progress; to assist in the preparation of reports, articles, and other written material by the landscape section.

Education: Applicants must have completed a four-year course leading to a bachelor's degree in landscape architecture, engineering, or landscape design.

Experience: No professional experience required, six months of such experience desirable before graduation.

Table 1A

Summary of Replies from Educational Institutions Who Filled Out the Questionnaire Circulated by the Project Committee on Education

	<u>Number</u>
<u>Schools of Civil Engineering</u>	
Civil engineering colleges completing the questionnaire	17
Stating that they gave no training, or only incidental training, to undergraduate or graduate students in landscape design or other matters related to roadside development	12
Stated that they gave instruction to students in landscape design and other matters related to roadside development through cooperation of their schools of landscape architecture	5
<u>Schools of Landscape Architecture</u>	
Colleges of landscape architecture completing the questionnaire	8
Schools reporting that they are instructing students in basic engineering and landscape principles relating to roadside development through cooperation between departments of the university	8

Remarks

It is evident from the few replies received from the schools of landscape architecture and from other reliable sources of information that:

1. The training of professional landscape personnel will be very much curtailed for the duration. Changes and additions in existing courses of study will have to await the successful conclusion of the war.

2. Trained landscape personnel needed by State highway departments in the post-war period will in the main have to be recruited from older men now established in professional landscape architecture. Few recent college graduates will be available in any region.

3. Prior to the war many States in the far west, southwest, and the Rocky Mountain region generally had no available education in their universities in the field of landscape architecture or landscape engineering.

4. It was the consensus of a number of well-known landscape architects in the educational field that present general college curriculums included courses which with some addition and adaptation would meet the requirements of education of men who might in the future be employed in highway landscape or roadside development work.

5. This committee will continue its thorough study of duties and problems in the field of roadside development and hopes during the coming year to outline subject matter which may be added to existing landscape courses at all colleges and universities. This may aid these institutions in training students who may be employed in the future in highway and roadside development work with the State highway departments.

Table 1B

Tabulation of roadside development survey in 21 State highway departments replying to 1943 questionnaire circulated by the Project Committee on Education

Remarks	<u>Number of States</u>	
Need for professional landscape architectural or landscape engineering personnel recognized by State highway department	14	
List of proposed qualifications for professional grades of highway landscape engineers or landscape architects submitted by	14	
States proposing bachelor's degree in landscape architecture as requirement for appointment in professional grades	11	
States proposing alternate educational requirements including degree in forestry, civil engineering, or landscape architecture	7	
Experience in roadside development or equivalent park, public or private landscape work suggested for appointment in professional grade of landscape architect or landscape engineer ....		
	<u>Years</u>	
	0 to 2	2
	2 to 3	2
	2 to 4	2
	2 to 5	3
	5 to 10	1
No statement regarding proposed requirements as regards experience as a requisite for appointment as professional landscape engineer or landscape architect	11	

Table 1B-continued	<u>Number of States</u>
In service training, in some form, carried on within highway department (before Pearl Harbor)	11
Cooperative measures by highway department with civic organizations, garden clubs, etc., being taken to educate public to value of complete highways (up to Pearl Harbor)	13
<u>Added information from correspondence:</u>	
Professional landscape education available in State university or in colleges of nearby States	18
Professional landscape personnel employed by highway department	7
Semiprofessional or nonprofessional landscape personnel only	7
Comments on the tabular comparison of typical Federal and State Civil Service classifications of professional grades of landscape engineering and architectural employees which follows in tables 2, 2A and 2B	

State highway departments may be roughly divided, for the sake of comparison, into three general classes as regards roadside development work up to December 1941.

1. Those employing professional landscape architects and engineers as a part of the highway staff.
2. Those employing professional landscape architects as consultants to the engineers of design, construction and maintenance.
3. Highway organizations employing nonprofessional landscape personnel in connection with maintenance operations.

It is perhaps significant that many of the States falling under class 3 are as yet unconvinced of the value of roadside development as a part of the development of a State system of complete highways.

The Committee on Roadside Development makes no recommendations at this time because of the above variations in roadside and landscape development work. State highway experience indicates that a well trained professional landscape architect or landscape engineer of the grade indicated under Nos. 3 or 4 on the appended table 2, should be able to inaugurate a sound roadside development program in any State provided the full cooperation of the heads of the various divisions is forthcoming. Such a landscape professional will, of course, require diplomatic ability in presenting his ideas to highway engineers, combined with a broad general knowledge of highway design, construction and maintenance principles and practices. Where such all around ability is not available to a highway department a professional landscape architect or engineer in Grade 2 who has the flexibility to "grow up in a highway organization," should be employed.

Table 2

Tabular Comparison of Federal and State Highway Department  
Classifications of Professional Grades of Landscape Employees

UNITED STATES CIVIL SERVICE 1/

Grade No.	Professional Title	Required Education	Required Professional Experience
6-7	Principal Landscape Architect	Degree in landscape architecture or alternate experience <sup>2/</sup>	7 to 10 years broad and progressive, including 2 years difficult and important
5	Senior Landscape Architect	Degree in landscape architecture or alternate experience <sup>2/</sup>	6 years broad and progressive experience including 2 years difficult and important
4	Landscape Architect	Degree in landscape architecture or alternate as above <sup>2/</sup>	5 years progressive professional experience including 2 years difficult and responsible
3	Associate Landscape Architect	As above <sup>2/</sup>	3 years progressive professional experience, including 2 years moderately difficult and important
2	Assistant Landscape Architect	As above <sup>2/</sup>	2 years of successful professional experience
1	Junior Landscape Architect	Must have bachelors degree in landscape architecture	May be recent graduate without professional experience

Notes: 1/ See announcement U. S. Civil Service Examination 84, June 1941, also LANDSCAPE ARCHITECTURE, Vol. 32, No. 4, July 1942, Landscape Architecture in American Civil Service. See also corresponding grades suggested for for Civil Engineers, American Society of Civil Engineers, MANUAL OF ENGINEERING PRACTICE, No. 24, July 21, 1941, Surveys of Highway Engineering Positions and Salaries.

2/ Applicants for all grades except the Junior grade who have not completed a four-year course leading to a bachelor's degree in landscape architecture, landscape engineering, or landscape design may substitute year for year, progressive professional experience, for lacking education.

Table 2A

Tabular Comparison of Federal and State Highway Department  
Classifications of Professional Grades of Landscape Employees

Typical State Highway Department

(Proposed for comparison only by the Committee on Roadside Development)

Grade No.	Professional Title	Required Education	Required Professional Experience
4	Landscape Architect	Bachelor's degree in landscape architecture or its equivalent <sup>1</sup>	4 years professional progressive, including minimum 2 years in supervisory capacity roadside development park or other equivalent
	Landscape Engineer		
3	Associate Landscape Architect	Bachelor's degree in landscape architecture or its equivalent <sup>1</sup>	3 years progressive professional experience in highway or park department
	Associate Landscape Engineer		
2	Assistant Landscape Architect (in charge district or division office in field)	Degree or equivalent as above <sup>1</sup>	2 years progressive professional experience in highway or park department
	Junior Landscape Architect	B.S. degree in landscape architecture	None required
1	Semiprofessional title		
	Landscape Field Superintendent	12 grades school	3 to 5 years experience with highway department, nurseries, etc.
	Landscape Inspector	12 grades school	2 to 3 years experience with highway department, nurseries, park department or equivalent
	Landscape Foreman		

Note: <sup>1</sup> Two years of responsible professional landscape design experience may, in default of a bachelor's degree in Landscape Architecture, be substituted for each year of lacking collegiate training. Thus, i.e., the grade Landscape Architect would require eight years of professional experience plus the four years required above, or a total of 12 years of professional experience, to be eligible for appointment, in default of the landscape degree. The lowest grade, Junior Landscape Architect, will be required to have a bachelor's degree in Landscape Architecture, as in table 2, for the Junior grade.

Table 2B

Tabular Comparison of Federal and State Classifications of  
Professional Grades of Landscape Employees

A Typical City Park Department Organization

(Excerpted for comparison only from report of the committee on Civil Service of the American Society of Landscape Architects in Landscape Architecture July 1942)

<u>Professional Title</u>	<u>Required Education and Experience</u>
Chief Landscape Architect	Roughly equivalent to Grade 5 in table 2
Assistant Chief Landscape Architect	Equivalent to Grades 3 and 4, table 2
Senior Landscape Architect	Equivalent to Grade 2 or 3, table 2
Landscape Architect	Equivalent to Grade 1 or 2, table 2
<u>Semiprofessional Grades</u>	
Landscape Architectural Draftsman	May be equivalent to Grade 1 on table 2, or may be a skilled draftsman with 12 grades of formal education but some years of landscape drafting experience.
Supervisor of Landscape Construction	Equivalent to landscape field superintendent in table 2A. A man experienced in handling landscape and roadside development crews in field but without formal landscape design training.
Assistant Supervisor of Landscape Construction	Equivalent to Landscape Foreman in table 2A. A skilled workman capable of handling landscape and roadside development crews. Normally with no design training.

References Regarding the Classification and Training of  
Landscape Architects and Landscape Engineers

- Surveys of Highway Engineering Positions and Salaries prepared by the Committee on Salaries of the American Society of Civil Engineers, 33 West 39th Street, New York, New York, 1942.
- Landscape Architecture in the American Civil Service (A report to the Board of Trustees by the Committee on Civil Service of the American Society of Landscape Architects) T. H. Jones, Chairman, LANDSCAPE ARCHITECTURE, Vol. 32, No. 4, July 1942 (basis for tables 2 and 2B).
- Landscape Architecture...An attempt at Definition of the Profession; by William A. Strong, LANDSCAPE ARCHITECTURE, Vol. 33, No. 3, April 1943.
- New Roads to Learning, Today's Educational Program in Landscape Architecture by Gilmore D. Clarke, LANDSCAPE ARCHITECTURE, Vol. 34, No. 1, October 1943.

New Roads to Learning Surveyed and Estimated, Some Reactions to Dean Clarkes Recent Statement by Leon Zack, LANDSCAPE ARCHITECTURE, Vol. 34, No. 2, January 1944.

U. S. Civil Service Examination 184, June 26, 1941, for grades Junior Landscape Architect to Principal Landscape Architect (basis for table 2).

Comments on Composite Typical Grassing Specifications. The 1941 Report of the Committee on Roadside Development included a composite set of grassing specifications adapted from standard specifications for road and bridge construction of various State highway departments (see Appendix III, page 105a). Comments and suggestions for the improvement of these specifications were invited by the Committee.

The main purpose of these preliminary specifications was to serve as a basis in developing "model specifications" to fit the local needs of each State and district. The following is a brief resume of the comments received from the State highway departments of Alabama, Indiana, Maryland, Minnesota, Ohio, Pennsylvania, and Texas, and the United States Forest Service.

1. That a standardized nomenclature and terminology be adopted.
2. That each specification item (as topsoil, etc.) be in outline form only, to be filled in as required for local conditions by the respective States.
3. That material specifications for landscape items be consistent with, and be covered in the same manner as, other construction materials, (i.e., streamlined as a complete specification unit, or separated in one section of the specifications), depending upon the specification policy used by the respective State highway department.
4. That all sodding items be combined or grouped as much as possible, and that a single unit of measurement be used as far as feasible, such as the square yard unit of surface measurement.
5. That the tendency to specify equipment, tools, and the manner of accomplishment of work in too great detail be avoided. Brevity and conciseness through use of reference notes covering alternates and variables might be considered.
6. That a standard maintenance (during construction) clause be included.
7. That a "save the topsoil" clause be incorporated in construction specifications preceding grassing.
8. That an unnecessary number of pay items may add to the cost of grassing operations.

These suggestions and the composite Typical Specifications referred to are offered for the assistance of the States in the development of their own improved local specifications related to roadside operations.

Cost Analysis of Separate Erosion Control Contracts as Compared to the Same Work Done as Part of Original Construction. The February 1942 general memorandum to District engineers of the Public Roads Administration requested that separate roadside improvement projects be discontinued for the duration, and that basic roadside items necessary for the control of erosion be included in initial construction contracts for access roads and other wartime roads constructed with Federal funds. An analysis of one of seven separate roadside improvement projects planned by the Indiana State Highway Department with its own funds reveals the disadvantages of such separation of roadside from construction items, as well as the higher cost of such segregated practice.

COMPARATIVE COST ANALYSIS OF EROSION CONTROL CONTRACT 2411 (1943) ON S R No. 534 INDIANA AND REGULAR CONSTRUCTION CONTRACT 2253 (1942) ON SAME ROAD

Three factors contributed to the high replacement costs in the erosion control contract. One was the complete loss of the eroded soil, another was the small quantities involved in the erosion control contract, and a third was the differential in construction costs from 1941 to 1943.

Loss by erosion of 2,000 cubic yards of earth cost \$1.225 per yard for replacement in the erosion control contract; a total of \$2,450.00. (Excavation yardage costs in the original construction contract were \$0.276.)

9,489 square yards of sodding cost 28 cents per yard in the erosion control contract, a total of \$2,656.92. (Cost per square yard for sod in original construction contract was 18 cents.)

85,922 square yards of mulched seeding cost 7.6 cents per yard in the erosion control contract (as against 3 cents per yard in the original construction contract.)

Thus comparative costs of the work were:

	Erosion control contract	Regular construction contract	Difference (Extra cost) involved in separate erosion contract
Loss of eroded soil requiring replacement	\$2,450.00	-----	\$2,450.00
Cost of sodding	2,656.92	\$1,708.02	948.90
Cost of mulched seeding	<u>6,530.07</u>	<u>2,577.66</u>	<u>3,952.41</u>
Totals	\$11,636.99	\$4,285.68	\$7,351.31

From this table it is obvious that the expenditure of \$4,285.68 during the original construction contract would have saved \$7,351.31. In addition to this monetary loss, there was the loss of one year's growing and stabilization time. A



check of four other similar projects recently completed at a total contract construction cost of \$2,236,811.32 reveals similar relative savings in unit prices of erosion control work performed as a part of original contract construction.

It appears evident that incomplete cross-section treatment may often make a relatively unimportant road a maintenance problem more costly than that of a high-type primary highway. We must either do a complete construction job in the first place, or fritter money away in maintenance later.

Roadside Park Use in Indiana. A park use check was taken in 1941 and again in 1943 to furnish the basis for a state policy on continuation of roadside park maintenance.

<u>Recapitulation for comparison</u>	<u>1941</u>	<u>1943</u>	<u>Comment.</u>
Number of completed parks in the State	40	61	50% increase
Number of people using the parks	360,000	280,000	22% decrease
Percentage out-of-state visitors	30%	20%	33% decrease

During the same 1941 to 1943 period, 20 automatic traffic recorders showed a 50.5 per cent average drop in traffic on the main through highways in Indiana.

An average roadside park will have 27 cars, carrying 112 passengers, or about 4 persons per car, stop during an average Sunday. The average visiting time per car was about 50 minutes. Most of the use of wayside parks is by small picnic parties with an occasional reunion or club picnic, almost taking over the park for a day. Citizen comments still comes in, requesting the Indiana Highway Commission to continue this park program.

The 1942 annual report of the State Highway Commission of Indiana showed that the maintenance cost of roadside parks averaged 99 cents per mile as applied to the total mileage of the system. The total average maintenance cost per mile for all highways in 1942 was \$483.00

Committee Recommendations. The Committee on Evaluation of Practices reports that no request for evaluations of other material have been received from other Committees. It strongly recommends to the general Committee on Roadside Development, that it adopt recommendations to guide legislative officials in their consideration of roadside development objectives of postwar highway development in the field.