

General Grade Evaluation Guide for Nonsupervisory Professional Engineering Positions, GS-0800

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INTRODUCTION

The grade-level criteria of this guide provide general guidance for classifying nonsupervisory professional engineering positions. This guide supplements, but does not supersede, published standards for individual engineering series and grade-evaluation guides for engineering positions in certain functional areas.

This guide should be used to classify positions in series for which there are no specific grade-level standards, e.g., the [General Engineering Series, GS-0801](#), provided that the function and type of work performed is not adequately covered by grade-evaluation guides or standards for other engineering series.

This guide may be used to check or validate classification determinations arrived at through application of appropriate published standards or guides for engineering positions. While, in such instances, the appropriate published standards are controlling, they should be interpreted in the light of and consistently with these general grade-level criteria. This supplementary use of the general grade-evaluation guide may have particular significance in borderline cases.

This general guide for professional engineering positions may also be used as a supplementary guide in classifying certain high-level technician positions with duties and responsibilities similar to those of professional engineering positions. (See Section VIII of Introduction to Engineering and Architecture Group, GS-0800.)

Another use of this guide is that of a master control in the development of standards or guides for specific engineering series or functions.

- /1/ This guide supersedes the General Grade-Level standards for Nonsupervisory Professional Engineering Positions, GS-0800, published in June 1959.
- /2/ This material should be inserted in the standards binder immediately following the Introduction to the Engineering Group,

FUNCTIONAL GRADE EVALUATION GUIDES

The following more specific grade-evaluation guides for engineering positions in certain functions should be used wherever appropriate in lieu of this general guide.

1. Research. -- Positions engaged in performing basic and applied research should be evaluated by reference to the [Research Grade-Evaluation Guide](#).
2. Research Grants. -- Positions engaged in reviewing, evaluating, and recommending approval of research grants and contracts should be evaluated by reference to the [Research Grants Grade-Evaluation Guide](#).

3. Development. -- Positions engaged in the development of equipment, systems, and techniques should be evaluated by reference to the [Equipment Development Grade-Evaluation Guide](#).
4. Test and Evaluation. -- Positions engaged primarily in planning, performing, evaluating, and reporting tests of equipment and systems should be evaluated by reference to the [Test and Evaluation Engineering Grade-Evaluation Guide, GS-0800](#).
5. Education. -- Positions involving education and training work should be evaluated by reference to the [Grade-Evaluation Guide for Instructional Work](#).
6. Supervision. -- Supervisory positions should be evaluated by reference to the [General Schedule Supervisory Guide](#).
7. Valuation. -- Positions engaged in determining rates of depreciation or in estimating costs for purposes of fixing the fair market value of specific engineering equipment or service should be evaluated by reference to the [Valuation Engineering Grade-Evaluation Guide, GS-0800](#).
8. Information Research. -- Positions engaged in information research and services requiring professional knowledge of an engineering discipline, e.g., to interpret or evaluate the significance of the material, should be evaluated by reference to the [Librarian Series, GS-1410](#).

TYPES OF WORK

The grade-level criteria are presented in terms of three broad types of nonsupervisory work performed by engineers. These types overlap to some extent so that many positions -- especially at the higher grades -- involve combinations of the three types. The three types of work are described below:

TYPE I. -- This work is conventional in nature and is accomplished primarily by application of, modification of, adaptation of, or compromise with standard guides, precedents, methods, and techniques. Work of this type is described at grades GS-9 through GS-13.

Illustrative of Type I work are the following: (1) design of equipment or systems using established criteria or specifications; (2) determination of the framing system and stress and load analysis of frame members of a building to be constructed; (3) development of maintenance and repair manuals for use of field personnel; (4) test of material, equipment, or systems for compliance with specifications or for evaluation in terms of intended operational use; (5) review of engineering aspects of applications, designs, or proposed plans for compliance with laws, regulations, standards, specifications, or other requirements and criteria; (6) monitoring of contracts for production of equipment; and (7) coordination of varied engineering operations and functions to accomplish a specific project.

TYPE II. -- This work includes assignments or functions with such objectives as solving novel and unusual problems, extending the boundaries of existing knowledge, or improving the state of the art, e.g., developing new and novel requirements, criteria, or standards to be used in performing Type I work. Work of this type is described at grades GS-9 through GS-15. In some instances engineers performing Type I duties may find that conventional methods cannot be modified or adapted to the ends of the work to be accomplished. They then may have to perform Type II work to arrive at basically new ways to perform Type I work, in which case the grade-level criteria for Type II work should be applied in evaluating such duties and responsibilities.

TYPE III. -- Work of this type involves staff assignments as technical consultants and advisers and/or program coordinator-reviewers in engineering organizations engaged in Type I and/or Type II work. These positions typically occur at GS-12 and above, although they may occasionally occur at the GS-11 level. These engineers exercise judgment, based on extensive experience, in providing guidance to engineers in the same specialty fields. Work of this type is described at grades GS-12 through GS-15.

The complex feature criterion for Type I positions

The basic unit for measuring the nature and variety of Type I work is the "complex feature." A complex feature is an individual engineering problem, broadly defined, which requires (1) modification or adaptation of, or compromise with, standard guides, precedents, methods, and techniques; or (2) special considerations of planning, scheduling, and coordination. For the purposes of this definition, standard guides, precedent, methods, and techniques include (a) agency manuals of instructions and operations, (b) standard textbooks, (c) manufacturer's catalogs and handbooks, (d) standard designs developed and prescribed by the central engineering staff of the agency (e) master or guide specifications developed and prescribed by the central engineering staff of the agency, (f) files of previous projects undertaken by the agency, (g) standard work practices in the area of application as taught in engineering courses or generally accepted by engineers as a result of experience, (h) codes and standards published by recognized engineering societies and organizations, and (I) the governing policies and procedures of the agency.

The following conditions must be met in crediting a complex feature to a position:

1. The duties and responsibilities of the position involve a specific, difficult problem, requiring substantial analysis and evaluation of alternatives.
2. The engineer in the position solves the problem, although it may be subject to preliminary discussion of background and possible approaches, and the solution may be reviewed for technical adequacy -- as well as for conformance with policy -- by the supervisor or others.
3. The solution of the problem involves (a) substantial modification or adaptation of, or compromise with, standard guides, precedents, methods, and techniques, or (b) difficult or unusual planning, scheduling, negotiating, or coordination.

4. The engineer applies a thorough knowledge of a variety of standard guides, precedents, methods, techniques, and practices in solving the problem.

Variations in the relative difficulty of work involving complex features are reflected in these standards by the number of complex features and by their occurrence in combination. The interaction of complex features in combination is particularly significant in considering the relative scope and intensity of all of the complex features in an assignment. The other factors are also pertinent.

A complex feature can be concerned with technical engineering work or socio-economic, administrative, or other aspects of engineering work as illustrated in the following examples of complex features:

1. It is necessary to analyze and choose from among two or more standard methods from the standpoint of economy and engineering feasibility, when each approach contains advantages and disadvantages which do not readily or clearly outweigh those of the others. For example, cost considerations may dictate a compromise between a theoretically ideal method and a more economical, but technically less satisfactory, one. In like manner, there may be social, ecological, or other environmental considerations that make it necessary to analyze and weigh alternatives.
2. Standard material normally utilized by the agency in a given type of design is unavailable or is not suitable because of unfavorable local conditions. It is necessary to engage in an extensive literature search to arrive at a satisfactory substitute.
3. In making modifications or alterations to existing facilities, it is necessary (a) to modify the design for loads and stresses not anticipated when the facility was originally designed, (b) to keep changes and costs to a minimum while achieving objectives, and (c) to modify standards and specifications to meet limitations of existing facilities.
4. Previous tests are not directly applicable in all phases because conditions to be simulated are different from those previously tested for. It is necessary to devise departures from previous test methods and techniques to achieve the objectives of the test.
5. Special planning and scheduling is necessary to integrate completion dates for phases of Government work with phases to be performed by contractors, and, as necessary, to provide for continuing use of existing facilities.
6. When proposed work infringes on State or municipal structures or requires approval of such authorities, the engineer coordinates with State or local civil authorities by personal contact and correspondence.
7. The engineer presents special written analysis and justification to higher organizational entities regarding the economic, social, ecological, and other benefits that the general public will derive from proposed work in comparison with estimated cost of such work.

GENERAL CHARACTERISTICS OF GS-5 PROFESSIONAL ENGINEERING POSITIONS

Nature of assignment

This is the basic trainee level. Assignments usually consist of specific, often unrelated, tasks that are selected to orient GS-5 engineers in the practical application of theory and basic principles; to ascertain their interest and attitudes; and to relieve experienced engineers of detailed and simple work. GS-5 engineers know and apply basic principles, elementary theories, and the readily available data in their engineering fields. Problems can be solved readily by application of basic principles and practices.

GS-5 engineers make calculations applying standard formulas; prepare graphs, curves, and tables for other engineers; record factual data in tests and observation studies; perform drafting and minor detail design; and search technical reports to obtain information.

Level of responsibility

Supervisors give specific instructions to GS-5 engineers as to what is required and the results expected. They receive instructions concerning reports to be used, measurements to be taken, probable results, and the end item desired. Supervisors check work in progress and upon completion for accuracy and validity. Decisions are limited to simple choices of known techniques to be applied and are not significant at this level.

GS-5 engineers use technical manuals, instructions, and criteria that are detailed and directly applicable.

Person-to-person contacts are not significant at this level.

GENERAL CHARACTERISTICS OF GS-7 PROFESSIONAL ENGINEERING POSITIONS

Nature of assignment

This is a developmental level. GS-7 engineers use prescribed methods to perform specific, and somewhat limited, work assignments that are normally minor phases of a broader assignment of a higher-grade engineer. Assignments are typically screened to eliminate complex features. GS-7 engineers are familiar with and use a number of standard engineering principles, methods, and practices. In carrying out work assignments, GS-7 engineers adapt practices and techniques to specific situations, adjust and correlate data, recognize discrepancies and deviations in results, and follow operations through a series of related detailed steps or processes. They make tentative and preliminary selections and adaptations of engineering alternatives and, after approval by the supervisor, carry out the sequence of details.

Level of responsibility

Supervisors provide GS-7 engineers general supervision on repetitive assignments. Detailed calculations, findings, and recommendations on repetitive assignments are generally accepted as technically accurate, but may be checked or verified. Supervisors review reports, designs, and specifications in detail for technical accuracy of conclusions, clarity, and format of presentation.

Although guides are detailed and directly applicable as described at GS-5, engineers at GS-7 exercise judgment in selecting the most appropriate guides. They are resourceful and use initiative in independently planning the details to accomplish assignments that are governed by established, specifically applicable procedures.

Contacts are with employees within the organization to obtain and present factual information.

GENERAL CHARACTERISTICS OF NONSUPERVISORY GS-9 PROFESSIONAL ENGINEERING POSITIONS

Nature of assignment

TYPE I. -- GS-9 engineers perform assignments in which complex features occur infrequently or in isolated, single units. By comparison, GS-7 engineers do not encounter complex features. GS-9 assignments are similar to those previously encountered by the organization. Assignments of GS-9 engineers are carried out without substantial adaptation or modification of precedents, except for minor deviations -- such as sizes, dimensions, and relationships of details -- which can be resolved by engineering calculations typical of the specialization or area of assignment.

TYPE II. -- GS-9 engineers plan and conduct work characterized by clear and specified objectives. They investigate a limited number of variables, and carry out experiments in accordance with approaches which have been structured by others. GS-9 engineers plan project details on the basis of precedents established in related projects. They devise and recommend alternative methods of standardized analysis as a basis for solving problems, making only minor adaptations or modifications to well-established methods and techniques.

Level of responsibility

TYPE I. -- Supervisors assign work to GS-9 engineers in terms of specific objectives, bringing to their attention possible complex features and methods of dealing with them. Supervisors review completed work for soundness of technical judgment and to insure the overall completeness of assignments. They seldom check standard technical methods, computations, and details. Where there is serious consequence of error or complex features, a complete check may be made of drawings, computations, or other details. Guidelines include standard instructions, literature, precedents, and practices in the areas of assignment or specialization. GS-9 engineers independently select, evaluate, and apply guides, with minor adaptation or modification.

GS-9 engineers generally exchange factual, technical information with coworkers who are performing related work. Some positions involve similar contacts with State and municipal engineers, as well as, inspectors, contractors, property owners, utility company representatives, and employees in other organizations.

TYPE II. -- The level of responsibility of Type II positions is the same as Type I positions, except that Type II GS-9 engineers plan their work through close collaboration with their supervisors and others. They perform factfinding, tests, observations, etc., independently without close or extensive supervision. GS-9 engineers recognize significant variations or deviations in data or experimental conditions and report them to the supervisor, together with recommendations as to the probable reasons for their occurrence and possible means of solution.

GENERAL CHARACTERISTICS OF NONSUPERVISORY GS-11 PROFESSIONAL ENGINEERING POSITIONS

Nature of assignment

TYPE I. -- GS-11 engineers perform assignments that involve combinations of complex features. By comparison, GS-9 engineers encounter complex features in isolated, single units. GS-11 engineers are fully skilled in the broad range of the conventional aspects of their subject-matter or functional area of assignment. Their assignments typically contain a few, e.g., two to five, complex features.

TYPE II. -- GS-11 engineers plan and conduct work for which precedent data, criteria, methods, or techniques are inadequate in some respects, or contain narrow gaps. By comparison, GS-9 Type II engineers work from clear objectives and adequate information. In either case, the purpose of the work is to improve, extend, or validate currently known precedents, data, methods, or techniques.

Level of responsibility

TYPE I. -- Supervisors make assignments in terms of the purpose of the work and possible complex features. GS-11 engineers independently determine approaches and solutions to complex features. By comparison, supervisors identify complex features and methods of dealing with them for GS-9 Type I engineers. GS-11 engineers complete assignments with little guidance from supervisors except in cases of controversial complex features and policy questions. Supervisors normally accept technical correctness of methods and techniques used in calculations, analyses, and other operations. They review completed work for overall technical adequacy and conformance with the objectives of the assignment.

GS-11 engineers initiate work relationships within the agency to exchange ideas or information concerning assignments and to assure that assigned work will tie in properly with related work of others. Field positions and positions concerned with cooperative programs affecting the public frequently involve contacts with other agencies, contractors, private industry, and public groups to explain and interpret the laws, regulations, and procedures of the agency. In dealing with the public and outside agencies, GS-11 engineers make commitments on routine matters covered by precedents, agency regulations, policies, and accepted engineering practices.

Since complex features occur with more regularity and less guidance at GS-11 than at GS-9, GS-11 engineers apply experienced judgment in modifying, adapting, and making compromises with standard guidelines, and in applying standard engineering practices to new situations and relating new work situations to precedent ones.

TYPE II. -- Supervisors give assignments to GS-11 engineers in terms of objectives, limits of the assignment, suggested overall plan of work, and type of results expected. They review critical or unusual methods, techniques, and procedures during the progress of the work, and make specific suggestions concerning them. By comparison, GS-9 Type II engineers plan the details of their assignments in close collaboration with supervisors.

Supervisors review completed work -- which is typically in the form of written recommendations, reports, and test data -- for validity of results. They closely scrutinize controversial or novel findings and recommendations for correctness of assumptions, detailed methods and techniques, and applicability to the work. They accept technical correctness of standard analyses, methods, and techniques. Recommendations and findings of GS-11 engineers are often used as a basis for action by others.

GS-11 engineers use scientific literature from universities, laboratories, industry, and research foundations which have performed related work. They use originality in planning assignments,

in developing and modifying methods, techniques, and procedures, in discerning new patterns of phenomena, and in correlating and substantiating already developed hypotheses.

GS-11 engineers often participate in meetings or conferences within the agency to plan cooperative activities and to devise concerted approaches to problems. They make factual reports and discuss technical problems of approach and analysis in such meetings. They occasionally visit other Government establishments, universities, and industrial companies to obtain technical information relating to their assignments.

GENERAL CHARACTERISTICS OF NONSUPERVISORY GS-12 PROFESSIONAL ENGINEERING POSITIONS

Nature of assignment

All three types of GS-12 engineers apply intensive and diversified knowledge of engineering principles and practices in a broad area of assignment and related fields.

TYPE I. -- GS-12 engineers perform work characterized by many, varied complex features due to the breadth, diversity, or intensity of assignments. By comparison, GS-11 engineers perform assignments that contain only a few complex features. GS-12 engineers are broadly trained specialists who are especially versatile and innovative in adapting, modifying or making compromises with standard guides, precedents, methods and techniques. Their assignments typically contain a combination of complex features which frequently involve serious conflicts between engineering and management requirements.

TYPE II. -- GS-12 engineers plan and conduct work for which precedent data, criteria, methods, or techniques are significantly inadequate, are controversial or contain critical gaps. GS-12 engineers develop new features, in addition to improving, extending, or validating currently known precedents, data, methods, or techniques.

TYPE III. -- GS-12 engineers -- as specialists in a technical field, a category of facility or equipment, or a program function -- perform staff advisory, consulting, and reviewing services for an engineering organization. The line or operational portion of the organization serviced is engaged in a variety of Type I and/or Type II assignments of the difficulty described at the previous level. GS-12 engineers provide advisory, planning, and reviewing services on specific problems, projects, programs, and functions.

Level of responsibility

TYPE I. -- Supervisors assign work to GS-12 engineers in terms of broad, general objectives and relative priority for completion of work. GS-12 engineers then work with considerable freedom from technical control in selecting and establishing the proper methods for attacking

and resolving complex features and otherwise carrying assignments through to completion. They resolve controversial questions by joint consideration with supervisors. Supervisors review completed work for adequacy in terms of the broad objectives and for compliance with agency policies and regulations. By comparison, supervisors assist Type I GS-11 engineers in resolving controversial complex features and review their completed assignments for technical adequacy.

Decisions and recommendations based upon the application of standard engineering practices are rarely changed by higher authority, except for reasons of policy, public relations, or budgetary considerations.

Since GS-12 work is characterized by many complex features, GS-12 engineers, in contrast to GS-11, adapt, modify, and make compromises with guides more frequently and use more originality in planning and organizing work, devising short-cut procedures, and evaluating and making compromises with a number of alternate solutions.

GS-12 engineers normally have more frequent and wider contacts than GS-11 engineers. In view of the larger scope of work for which they are responsible, GS-12 engineers coordinate and maintain liaison with organizations having related assignments, other agencies, contractors, utility companies, State and local government authorities, and the general public. Such duties generally constitute a substantial portion of the work of positions of this type at this level.

TYPE II. -- Supervisors assign work to GS-12 engineers in terms of broad, general objectives, suggested approaches, and the boundaries of the program or project. GS-12 engineers decide where and how the end results will be used and plan specific objectives for the program, including required innovations and improvisations. By comparison, supervisors identify the overall plan of work, expected results, and critical, or unusual methods, techniques, or procedures for GS-11 Type II engineers.

The work of GS-12 engineers is reviewed largely for adequacy of results, to correlate it with that of specialists in other fields, and to determine conformance with administrative policies and procedures. Their conclusions -- in the form of theoretical investigations, experimental designs, and laboratory evaluations -- provide the basis for effective and practical technical exhibits covering development programs for improved techniques and methods for equipment, products, and processes. GS-12 engineers may also recommend the need for and desirability of collaborative or supplemental work to be performed by other organizational segments, laboratories, or agencies.

Since guides are often inadequate, are controversial, or contain critical gaps, positions at this level require the use of initiative, ingenuity, and judgment in devising new schemes of attack or novel methods and techniques.

In addition to contacts indicated at the preceding level, GS-12 engineers contact engineers and scientists performing related work in other agencies, universities, foundations, and industries to discuss and obtain information concerning their understanding of controversial or little-known theories and techniques.

TYPE III. -- GS-12 engineers in positions of this type are relied upon as the source of information and advice within the organization concerning their specialty. Supervisors provide little or no technical guidance to them except on critical or controversial issues. Matters affecting budget, public relations, or other administrative features are referred to supervisors in the form of recommendations.

GS-12 engineers serve as reliable sources of information on the location, availability, applicability and adequacy of guides. They are adept in applying to a greater variety of problems the kind of originality described at GS-11.

GS-12 engineers maintain frequent contacts with coworkers in the organization to render advice, consultation, and assistance. They also participate in planning conferences with supervisory and project coordinator engineers to provide necessary information pertaining to the specialty area.

GENERAL CHARACTERISTICS OF NONSUPERVISORY GS-13 PROFESSIONAL ENGINEERING POSITIONS

Nature of assignment

TYPE I. -- GS-13 engineers serve as technical experts on the limitations of proven concepts and practices of a broad and complex subject-matter field or functional area. By comparison, GS-12 engineers are especially versatile and innovative in adapting, modifying, or making compromises with proven concepts and practices. As experts, GS-13 engineers are frequently called upon to take short-cuts or to make compromises that are considered risky or extreme within the context of standard guides, precedents, methods and techniques. The unusual demands of the assignment are frequently due to the extraordinary urgency, public interest, or economic restraints associated with the assignment, thus creating a need for critical judgments in making substantial compromises to satisfy overall requirements. Assignments require the ability to anticipate and to take positive action on problems which, if not identified in their early stages, would likely lead to serious consequences, e.g., problems involving public safety, key relationships, resource limitations, or performance reliability.

TYPE II. -- GS-13 engineers plan and conduct advanced work in areas in which large blocks of data are controversial or unknown. Assignments typically are of such breadth that they require planning and developing several phases, each involving the development or origination of some completely new features. Other assignments may be much narrower, but are of such intensity that available theory is not applicable and relevant experimental data are nonexistent. In such cases GS-13 engineers pursue and correlate several lines of investigation within the narrow area of assignment. By comparison, at GS-12, although data may be inadequate or controversial, it does exist. GS-13 engineers frequently perform Type III work in conjunction with Type II assignments because of their intimate knowledge of the subject matter of such assignments.

TYPE III. -- GS-13 engineers perform staff advisory, consulting, and reviewing services as described at the previous level to an organization performing a variety of Type I and/or Type II assignments of GS-12 difficulty. Some positions are in the central engineering office of an agency or bureau with responsibilities for reviewing and coordinating all field work in a narrow program area and proposing additional work in the light of the needs of the agency or bureau.

Level of responsibility

TYPE I. -- Supervisors assign work in terms of broad, general objectives. Plans and proposals are reviewed for feasibility in relation to management requirements and policies, rather than technical adequacy. Because of the nature of assignments, GS-13 engineers are delegated extraordinary responsibility for decision making on both technical and nontechnical matters. They not only plan and coordinate the various phases of work, but also establish priorities, and determine what portion of available resources to devote to each phase. Frequently, they act as official spokesman for their activity, or the Government's interest, as an authority in resolving problems of a critical or controversial nature. They negotiate agreements with agencies and contractors where there are conflicting interests and opinions among organizations, or among individuals who are themselves expert in the field or area of work. GS-13 engineers are responsible for recognizing the impact of decisions on agency programs in the specialty field or functional area. Subsequent to discussion with the supervisor, GS-13 engineers recommend the course of action on complex features involving vital problems of public acceptance, safety or security. Otherwise, discussions are usually restricted to those matters relating to policy or budget, or to the need for fundamental changes in objectives.

TYPE II. -- Supervisors assign work in terms of broad, general objectives. Questions of setting boundaries or limits to assignments are mutually discussed. By comparison, supervisors suggest approaches and set boundaries for Type II GS-12 engineers. Supervisors ordinarily provide no technical assistance to GS-13 engineers in the analysis of problems and development of plans. They do assist, however, with administrative features such as funds, personnel, priorities, and procurement of equipment. They review completed work only to insure adequate achievement of objectives and compliance with agency and/or local policies.

Supervisors and others accept the technical bases for GS-13 engineers' recommendations for extension, modification, or adoption of new lines of attack or inquiry. Technical findings and solutions to problems have direct and widespread effect on subsequent development or revision of design and operational criteria.

GS-13 engineers use all those guidelines described at the previous level. They are so inapplicable, however that GS-13 engineers exercise marked originality in developing hypotheses, approaches, and conceptions not previously tested or reported in the literature of the field.

Contacts are essentially the same as those described at GS-12, except that GS-13 engineers maintain liaison and correspondence with scientists and engineers in other organizations who are expert consultants on trends and innovations in their specialties or related fields.

TYPE III. -- GS-13 engineers receive little or no technical guidance within the specialty area. Supervisors and others accept authoritative determinations not in conflict with policies and basic standards. Supervisors of GS-13 engineers usually recognize and accept their proposals for new or additional work as those of an authority in the specialty area.

In addition to contacts described at GS-12, GS-13 engineers have contact with engineers in field offices. Their contacts involve negotiation and persuasion in obtaining the adoption of technical points and methods that are in conflict with the desires and opinions of other engineers.

GS-13 engineers use the same guidelines and originality indicated at the previous level, except that they relate to basic work performed in the organization at GS-12 rather than GS-11. GS-13 engineers are outstandingly adept in applying to a greater variety of problems the kind of originality indicated for Type I and/or Type II positions at GS-12. Those Type III engineers at GS-13 who coordinate and review program functions apply a thorough and comprehensive knowledge of the policies, laws, regulations, procedures, and methods of such programs. These engineers exercise originality in developing and establishing standards, procedures, and instructions necessary to guide field offices and other organizations in carrying out program functions.

GENERAL CHARACTERISTICS OF NONSUPERVISORY GS-14 PROFESSIONAL ENGINEERING POSITIONS

Nature of assignment

TYPE II. -- GS-14 engineers conceive, plan, and conduct work in unexplored areas where there is little or no theory to guide experimentation, progress is devious, new techniques and approaches need to be devised, and future lines of fruitful experimentation are difficult to determine. Based on their qualifications and recognition as an authority in their fields, GS-14 engineers break through the frontier areas and come up with new knowledge of fundamental significance which will influence the procedures and ideas of others. They develop and design new theoretical treatments, instrumentation, equipment, and procedures for testing and solving the problems. They are recognized as authoritative sources of information internally and by other agencies on scientific and technical problems, latest development and trends, and other matters relating to their area of specialization and related areas. Because assignments are lacking in specificity, GS-14 engineers develop and modify the objectives in the course of planning and conducting their work. They have technical responsibility for continuation or abandonment of the work subject to approval of the supervisor or higher levels.

TYPE III. -- GS-14 engineers do work in any of the following categories:

- They are expert consultants in a specialty field to a large laboratory, bureau, or agency. The organization served is engaged in work of an advanced nature as described at GS-13 for Type II positions. GS-14 engineers advise on, review and conceive of new work to be undertaken by the organization. As a recurring duty, they represent their organization on technical committees developing general plans and procedures for carrying out research and experimental projects.
- For an agency or bureau headquarters and field offices, they coordinate and review broad programs containing a large amount of Type I and/or Type II GS-11 and 12 level work being undertaken at numerous locations under diverse conditions. GS-14 engineers in such positions develop standard methods and procedures to be used throughout the headquarters and field; review work to avoid duplication and to assure consistency with agency policy; furnish technical and administrative advice as requested by the field; and conduct periodic visits to the field to provide on-site advice and review.
- They develop short- and long-range research and development plans and programs for a large group of research, development, and test activities. They develop and correlate research objectives; originate new concepts, methods, and techniques for research planning, program guidance, program evaluation, technological forecasting, and resource allocation; conduct special planning studies to discover, create, and synthesize new approaches to the problems of establishing adequate research and development programs; and coordinate technical planning in installation activities by relating future program plans to projected requirements, available resources, installation responsibilities, interrelated effort of various laboratories, and scientific discoveries.
- They work directly for and serve as overall engineering and scientific advisor and consultant to the chief of a research, development, and evaluation organization. The engineering or scientific programs, projects, or investigations undertaken by the organization constitute all, or the major phases, of the technical work in the specific engineering or scientific area, or closely related areas, being done in the agency or bureau and require a variety of GS-13 level Type II engineering and scientific work. For examples, they conduct studies to determine promising areas of investigation and to explore the impact of scientific or engineering breakthroughs on the organization programs. They provide broad engineering and scientific guidance and stimulation to the staff and operational levels in the organization. They continually assess the technical performance, scientific and engineering achievements, and effectiveness of the organization in order to appraise the desirability of major program changes.

Level of responsibility

TYPE II. -- GS-14 engineers conceive of, and -- after a discussion with the supervisor of the feasibility and value of such work in comparison to other possible areas of work -- initiate assignments. They develop and modify the objectives and boundaries of assignments subject

only to administrative control on such matters as funds, personnel available, and procurement of equipment. By comparison, supervisors assign projects to Type II GS-13 engineers in terms of general objectives and review completed work for achievement of these objectives. GS-14 engineers personally conceive of work they are going to perform and develop and modify the objectives of such work. Supervisors review completed work for their own information in keeping abreast of developments in the field.

In addition to contacts indicated at the preceding levels, GS-14 engineers justify the feasibility and desirability of new work proposed by them to top agency or bureau officials who are ultimately responsible for the content of the agency or bureau programs.

TYPE III. -- Positions of this type operate under administrative supervision only. Guidance from higher level is restricted to matters of broad policy, program objectives, and budget limitations.

Decisions, commitments, and conclusions ordinarily have considerable influence on the development of the agency program and the establishment of standards and guides for extensive engineering activities. As representatives of their agency, GS-14 engineers reach these kinds of agreements with groups from other agencies or organizations. Recommendations and decisions are almost universally accepted as technically sound even though final approval may depend upon formal action by others.

Technical specialists are largely concerned with solving major problems for which guidelines provide little or no assistance and which arise from Type II work of the GS-13 level. GS-14 coordinator-reviewers apply a broader knowledge of agency policies, laws, regulations, procedures, and methods than those at the GS-13 level, since larger and more varied programs are dealt with at GS-14. They exercise originality in anticipating major problems, recognizing future program needs, and developing policies as well as standards, procedures, and instructions to guide operating personnel.

The extensive scope or complicated nature of the programs or technical problems that GS-14 engineers coordinate, advise upon or review, necessitates extensive contacts with key officials and top engineering and scientific personnel of the same or other establishments, other Government agencies, and private industry. Program reviewer-coordinators frequently represent their agencies in conferences with other agencies, State and local authorities, private industry, and public groups in efforts to obtain all view points regarding proposed programs and to assure concerted action by all parties involved. Technical specialists represent their agencies in technical planning and standards committees and seminars of national or even international importance.

GENERAL CHARACTERISTICS OF NONSUPERVISORY GS-15 PROFESSIONAL ENGINEERING POSITIONS

Nature of assignment

TYPE II. -- GS-15 engineers conceive, plan and conduct pioneering work of outstanding scope, difficulty, and complexity in unexplored or heretofore unpromising areas of investigation. They exercise recognized technical leadership, outstanding creativeness, and exceptional scientific and engineering judgment to prove or disprove the feasibility of ideas and devices; they develop, define, and modify research objectives in the course of planning and conducting work; they devise new methods of approach to research problems; they continue or abandon work subject to concurrence on administrative or policy aspects; and they serve as recognized authorities in their specialized fields and related areas.

TYPE III. -- GS-15 engineers typically work in either of the following two categories:

- They serve as expert consultants in a specialty field to an agency or bureau having responsibility for an engineering program of national or international scope and impact. The engineering program is of such breadth and intensity that it involves recurring work of the nature described at the previous level. They conceive, initiate, and monitor policies, programs, and projects dealing with the more challenging problems in the specialty area. They serve on agency, interagency, and technical society committees of national and international importance as recognized authorities in their specialty area.
- They work directly for and serve as overall engineering and scientific advisors and consultants to the chief of large, highly diversified research, development, and evaluation organizations composed of a variety of organizations of the type described in Type III at the GS-14 level. The program involves advanced work in a number of scientific and engineering disciplines and areas of application.

Level of responsibility

TYPE II AND TYPE III. -- GS-15 engineers are recognized as technical authorities in their specialty areas. The results of their work are reviewed only for adherence to administrative policy of the agency and for assurance that the broad technical objectives of the agency have been fulfilled.

Recommendations and conclusions are considered authoritative and are not reviewed technically. They typically have a far-reaching effect on the work and programs of extensive engineering activities.

GS-15 technical specialists are concerned with solving major problems in a broad specialty field or several narrow specialty fields of a branch of engineering. They are intimately familiar with

all major pioneering work in their specialty being performed both within and outside of their agency.

GS-15 engineers exercise a very high degree of originality and sound engineering judgment in formulating, evaluating, and correlating broad engineering and scientific programs, in guiding the analysis of unique problems, and in developing new and improved techniques and methods.

As consultants and advisors GS-15 engineers furnish highly advanced technical guidance and information to top level administrative and technical agency personnel, other Government agencies, and outside organizations. They serve on panels and committees concerned with planning agency and interagency programs as authoritative experts in their specialty areas.