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CONSTRUCTION INSPECTION JOB DESCRIPTIONS

INTRODUCTION
These job descriptions are to assist the Sponsors of locally administered Consultant Contracts in establishing a mutually acceptable estimate of the staffing and related salary requirements of the contracts. They should assist in the classification into appropriate occupations, or levels within occupations, of workers who are employed under a variety of payroll titles and different work arrangements from establishment to establishment and from area to area.

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) PROFESSIONAL GRADE DESCRIPTIONS
These grade descriptions are compatible with those of the U.S. Department of Labor, Bureau of Labor Statistics (BLS), the National Society of Professional Engineers (NSPE) and the National Institute for Certification of Engineering Technicians (NICET). The grade descriptions are intended to cover the requirements of a wide range of typical engineering organizations but cannot possibly fit all. Many employers may not have the full range of positions listed. The table below indicates where the Federal G.S. and New York State equivalents with ASCE grades.

Industry/State/Federal Occupational Equivalents

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Descriptions should be considered as typical characteristics of a particular grade level, rather than as desirable or minimum characteristics. For example, it is expected that in many areas of practice, such as research and development, individuals filling middle or higher level positions would routinely have graduate degrees, although this is not indicated. All descriptive matter should be considered when a position is being evaluated. Literal conformance with every item in the descriptions is not necessary when there is a preponderance of evidence that the person measures up to the intended level of competence and responsibility. The descriptions have been in effect as of January 1, 1980.

ENGINEER - General Definition
Performs professional work in research, development, design, testing, analysis, production, construction, maintenance, operation, planning, survey, estimating, application, or standardization of engineering facilities, systems, structures, processes, equipment, devices, or materials, requiring knowledge of the science and art by which materials, natural resources, and power are made useful. Work typically requires a B.S. degree in engineering or, in rare
instances, equivalent education and experience combined. (Excluded are: safety engineers, industrial engineers, quality control engineers, sales engineers, and engineers whose primary responsibility is to be in charge of nonprofessional maintenance work.)

**Engineer I/II**

General Characteristics. This is the entry level for professional work. Performs assignments designed to develop professional works knowledge and abilities, requiring application of standard techniques, procedures, and criteria in carrying out a sequence of related engineering tasks. Limited exercise of judgment is required on details of work and in making preliminary selections and adaptations of engineering alternatives.

**Direction Received.**

Supervisor screens assignments for unusual or difficult problems and selects techniques and procedures to be applied on nonroutine work. Receives close supervision on new aspects of assignments.

**Typical Duties & Responsibilities.**

Using prescribed methods, performs specific and limited portions of a broader assignment of an experienced engineer. Applies standard practices and techniques in specific situations, adjusts and correlates data, recognizes discrepancies in results, and follows operations through a series of related detailed steps or processes. Responsibility For Direction of Others. May be assisted by a few aides or technicians.

**Typical Position Titles.**

Junior Engineer, Associate Detail Engineer, Engineer-in-Training, Ass't Research Engineer, Construction Inspector.

**Education**

Bachelor's Degree in engineering from an ECPD accredited curriculum, or equivalent, plus appropriate continuing education.

**Registration Status.**

Certified Engineer-In-Training.

**Typical Professional Attainments.**

Member of Professional and Technical Societies (Associate Grade or Equivalent)

**Engineer III**

Independently evaluates, selects, and applies standard engineering techniques, procedures, and criteria, using judgment in making minor adaptations and modifications. Assignments have clear and specified objectives and require the investigation of a limited number of variables. Performance at this level requires developmental experience in a professional position or equivalent graduate level education.

**Direction Received.**

Receives instructions on specific assignment objectives, complex features, and possible solutions. Assistance is furnished on unusual problems and work is reviewed for application of sound professional judgment

**Typical Duties & Responsibilities.**

Performs work which involves conventional types of plans, investigations, surveys, structures, or
equipment with relatively few complex features for which there are precedents. Assignments usually include one or more of the following: Equipment design and development, test of materials, preparation of specifications, process study, research investigations, report preparation, and other activities of limited scope requiring knowledge of principles and techniques commonly employed in the specific narrow area of assignments.

**Responsibility For Direction of Others.**
May supervise or coordinate the work of drafters, technicians, and others who assist in specific assignments.

**Typical Position Titles.**
Engineer or Assistant Engineer, Project, Plant, Office, Design, Process, Research Chief Inspector, Assistant Professor.

**Education.**
Bachelor's Degree in engineering from an ECPD accredited curriculum, or equivalent, plus appropriate continuing education.

**Registration Status.**
Certified Engineer-in-Training, Registered Professional Engineer.

**Typical Professional Attainments.**
Member of Professional and Technical Societies (Associate Grade or Equivalent)

**Engineer IV**
As a fully competent engineer in all conventional aspects of the subject matter of the functional area of the assignments, plans and conducts work requiring judgment in the independent evaluation, selection, and substantial adaptation and modification of standard techniques, procedures, and criteria. Devises new approaches to problems encountered. Requires sufficient professional experience to assure competence as a fully trained worker, or, for positions primarily of a research nature, completion of all requirements for a doctoral degree may be substituted for experience.

**Direction Received.**
Independently performs most assignments with instructions as to the general results expected. Receives technical guidance on unusual or complex problems and supervisory approval on proposed plans for projects.

**Typical Duties & Responsibilities.**
Plans, schedules, conducts, or coordinates detailed phases of the engineering work in a part of a major project or in a total project of moderate scope. Performs work which involves conventional engineering practice but may include a variety of complex features such as conflicting design requirements, unsuitability of conventional materials, and difficult coordination requirements. Work requires a broad knowledge of precedents in the specialty area and a good knowledge of and practices of related specialties.

**Responsibility For Direction of Others.**
May supervise or coordinate the work of engineers, drafters, technicians, and others who assist in specific assignments.

**Typical Position Titles.**
Engineer or Assistant Engineer, Resident, Project, Plant, Office, Design, Process, Research,
Chief Inspector, Assistant Professor.

**Education.**
Bachelor's Degree in engineering from an ECPD accredited curriculum, or equivalent, plus appropriate continuing education.

**Registration Status.**
Registered Professional Engineer.

**Typical Professional Attainments.**
Member of Professional Society (Member Grade).
Member of Technical Societies (Associate Grade or Equivalent).

**Engineer V**
Applies intensive and diversified knowledge of engineering principles and practices in broad areas of assignments and related fields. Make decisions independently on engineering problems and methods, and represents the organization in conferences to resolve important questions and to plan and coordinate work. Requires the use of advanced techniques and the modifications and extension of theories, precepts and practices of the field and related sciences and disciplines. The knowledge and expertise required for this level of work usually result from progressive experience.

**Direction Received.**
Supervision and guidance relate largely to overall objectives, critical issues, new concepts, and policy matters. Consults with supervisor concerning unusual problems and developments.

**Typical Duties & Responsibilities.**
One or more of the following:
1) In a supervisory capacity, plans, develops, coordinates, and directs a large and important engineering project or a number of small projects with many complex features. A substantial portion of the work supervised is comparable to that described for engineer IV.
2) As individual researcher or worker, carries out complex or novel assignments requiring the development of new or improved techniques and procedures. Work is expected to result in the development of new or improved techniques and procedures. Work is expected to result in the development of new or refined equipment, materials, processes, products and/or scientific methods.
3) As staff specialist, develops and evaluates plans and criteria for a variety of projects and activities to be carried out by others. Assesses the feasibility and soundness of proposed engineering evaluation tests, products, or equipment when necessary data are insufficient or confirmation by testing is advisable. Usually performs as a staff advisor and consultant as to a technical specialty, a type of facility or equipment, or a program function.

**Responsibility For Direction of Others.**
Supervises, coordinates, and reviews the work of a small staff of engineers and technicians, estimates personnel needs and schedules and assigns work to meet completion date. Or, as individual researcher or staff specialist may be assisted on projects by other engineers or technicians.

**Typical Position Titles.**
Senior or Principal Engineer: Resident, Project, Office, Design, Process, Research, Assistant Division Engineer, Associate Professor, Project Leader.
Education.
Bachelor's Degree in engineering from an ECPD accredited curriculum, or equivalent, plus appropriate continuing education.

Registration Status.
Registered Professional Engineer.

Typical Professional Attainments.
Member of Professional Society (Member Grade). Member of Technical Societies (Member Grade). Publishes engineering papers, articles, text books; or makes presentations, gives lectures, provides training, etc.

Engineer VI
Has full technical responsibility for interpreting, organizing, executing, and coordinating assignments. Plans and develops engineering projects concerned with unique or controversial problems which have an important effect on major organization programs. This involves exploration of subject area, definition of scope and selection of problems for investigation and development of novel concepts and approaches. Maintains Liaison with individuals and units within or outside the organization with responsibility for acting independently on technical matters pertaining to the field. Work at this level usually requires extensive progressive experience.

Direction Received.
Supervision received is essentially administrative, with assignments given in terms of broad general objectives and limits.

Typical Duties & Responsibilities.
One or more of the following:
1) in a supervisory capacity a) plans, develops, coordinates, and directs a number of large and important projects or a project of major scope and importance; or b) is responsible for the entire engineering program of an organization when the program is of limited complexity and scope. The extent of his or her responsibilities generally requires a few (3 to 5) subordinate supervisors or team leaders with at least one in a position comparable to level V.
2) As individual researcher or worker conceives, plans and conducts research in problem areas of considerable scope and complexity. The problems must be approached through a series of complete and conceptually related studies, are difficult to define, require unconventional or novel approaches, and require sophisticated research techniques. Available guides and precedents contain critical gaps, are only partially related to the problem or may be largely lacking due to the novel character of the project. At this level, the individual researcher generally will have contributed inventions, new designs, or techniques which are of material significance in the solution of important problems.
3) As a staff specialist serves as the technical specialist for the organization (division or company) in the application of advanced theories, concepts, principles, and processes for an assigned area of responsibility (i.e. subject matter, function, type of facility or equipment, or product). Keeps abreast of new scientific methods and developments affecting the organization for the purpose of recommending changes in emphasis of programs or new programs warranted by such developments.

Responsibility For Direction of Others.
Plans, organizes, and supervises the work of a staff of engineers and technicians. Evaluates progress of the staff and results obtained and recommend major changes to achieve overall
objectives. Or, as individual research or staff specialist may be assisted on individual projects by other engineers or technicians.

**Typical Position Titles.**
Senior or Principal Engineer, Division or District Engineer, Production Engineer, Assistant Division, District or Chief Engineer, Consultant, Professor, City or County Engineer.

**Education.**
Bachelor's Degree in engineering from an ECPD accredited curriculum, or equivalent, plus appropriate continuing education.

**Registration Status.**
Registered Professional Engineer.

**Typical Professional Attainments.**
Member of Professional Society (Member Grade). Member of Technical Societies (Member Grade). Publishes engineering papers, articles, text books; or makes presentations, gives lectures, provides training, etc.

**Engineer VII**
Make decisions and recommendations that are recognized as authoritative and have an important impact on extensive engineering activities. Initiates and maintains extensive contacts with key engineers and officials of other organizations and companies, requiring skill in persuasion and negotiation of critical issues. At this level individuals will have demonstrated creativity, foresight, and mature engineering judgment in anticipating and solving unprecedented engineering problems, determining program objectives and requirements, organizing programs and projects, and developing standards and guides for diverse engineering activities.

**Direction Received.**
Supervision received is essentially administrative with assignments given in terms of broad general objectives and limits.

**Typical Duties & Responsibilities.**
One or both of the following:
1) in a supervisory capacity is responsible for a) an important segment of the engineering program of an organization with extensive and diversified engineering requirements, or b) the entire engineering program of an organization when it is more limited in scope. The overall engineering program contains critical problems the solution of which requires major technological advances and opens the way for extensive related development. The extent of responsibilities generally requires several subordinate organizational segments or teams. Recommends facilities, personnel, and funds required to carry out programs which are directly related with and directed toward fulfillment of overall organization objectives.
2) As individual researcher and consultant is a recognized leader and authority in the organization in a broad area of specialization or in a narrow but intensely specialized field. Selects research problems to further the organization's objectives. Conceives and plans investigations of broad areas of considerable novelty and importance for which engineering precedents are lacking in areas critical to the overall engineering program. Is consulted extensively by associates and others with a high degree of reliance placed on the scientific interpretations and advice. Typically, will have contributed inventions, new designs, or techniques which are regarded as major advances in the field.
Responsibility For Direction of Others.
Directs several subordinate supervisors or team leaders, some of whom are in a position comparable to Engineer VI, or as individual researcher and consultant, may be assisted on individual projects by other engineers and technicians.

Typical Position Titles.
Principal Engineer, Division or District Engineer, Department Manager, Director or Assistant Director of Research, Consultant, professor, Distinguished Professor or Department Head, Assistant Chief or Chief Engineer, City or County Engineer.

Education.
Bachelor's Degree in engineering from an ECPD accredited curriculum, or equivalent, plus appropriate continuing education.

Registration Status.
Registered Professional Engineer.

Typical Professional Attainments.
Member of Professional Society (Member Grade), Member of Technical Societies (Member Grade). Publishes engineering papers, articles, text books; or makes presentations, gives lectures, provides training, etc.

Engineer VIII
Make decisions and recommendations that are recognized as authoritative and have a far-reaching impact on extensive engineering and related activities of the company. Negotiates critical and controversial issues with top level engineers and officers of other organizations and companies. Individuals at this level demonstrate a high degree of creativity, foresight, and mature judgment in planning, organizing and guiding extensive engineering programs and activities of outstanding novelty and importance.

Direction Received.
Receives general administrative direction

Typical Duties & Responsibilities. One or both of the following:
1) In a supervisory capacity is responsible for a) an important segment of a very extensive and highly diversified engineering program, or b) the entire engineering program when the program is of moderate scope. The programs are of such complexity that they are of critical importance to overall objectives, include problems of extraordinary difficulty that often have resisted solution and consist of several segments requiring subordinate supervisors. Is responsible for deciding the kind and extent of engineering and related programs needed for accomplishing the objectives of the organization, for choosing the scientific approaches, for planning and organizing facilities and programs, and for interpreting results.
2) As individual researcher and consultant, formulates and guides the attack on problems of exceptional difficulty and marked importance to the organization or industry. Problems are characterized by their lack of scientific precedents and source material, or lack of success of prior research and analysis so that their solution would represent an advance of great significance and importance. Performs advisory and consulting work for the organization as a recognized authority for broad program areas or in an intensely specialized area of considerable novelty and importance.

Responsibility For Direction of Others.
Supervises several subordinate supervisors or team leaders, some of whose positions are comparable to Engineer VII, or individual researchers some who whose positions are comparable to Engineer VII. As an individual researcher and consultant may be assisted on
individual projects with other engineers and technicians.

**Typical Position Titles.**
Chief Engineer, Bureau Engineer, Director of Research, Department Head or Dean, County Engineer, City Engineer, Director of Public Works, Senior Fellow, Senior Staff, Senior Advisor, Senior Consultant, Engineering Manager.

**Education.**
Bachelor’s Degree in engineering from an ECPD accredited curriculum, or equivalent, plus appropriate continuing education.

**Registration Status.**
Registered Professional Engineer. Typical Professional Attainments. Member of Professional Society (Member Grade). Member of Technical Societies (Member Grade). Publishes engineering papers, articles, text books; or makes presentations, gives lectures, provides training, etc.

**Engineer IX**
An engineer in this level is either:
1) in charge of programs so extensive and complex as to require staff and resources of sizable magnitude (e.g., research and development, a department of government responsible for extensive engineering programs, or the major components of an organization responsible for the engineering required to meet the objectives of the organization): or
2) is an individual researcher or consultant who is recognized as a national and/or international authority and leader in an area of engineering or scientific interest and investigation.

**Typical Position Titles.**
Director of Engineering, General Manager, Vice President, President, Partner, Dean, Director of Public Works Education. Bachelor's Degree in engineering from an ECPD accredited curriculum, or equivalent, plus appropriate continuing education.

**Registration Status.**
Registered Professional Engineer. Typical Professional Attainments. Member of Professional Society (Member Grade). Member of Technical Societies (Member Grade). Publishes engineering papers, articles, text books; or makes presentations, gives lectures, provides training, etc.

**NATIONAL INSTITUTE FOR CERTIFICATION OF ENGINEERING TECHNICIANS (NICET)**

The following descriptions were taken from the Certification of Transportation Engineering Technicians Report FHWA-NHI-77-N001, dated December 1977.

**LEVEL I (STUDENT TECHNICIAN)**
A Transportation Engineering Technician - Level I performs beginning level technician work within a specified career field under direct supervision of a qualified technician or engineer. No specific time limit has been designated to establish a candidate’s background for this Level, but approximately six months will be needed to complete the required work elements. When the candidate and his employer feel that the candidate has demonstrated the ability to effectively perform and understand the necessary Work Elements, the candidate may apply for enrollment. A candidate for enrollment at Level I must furnish, on forms provided by NICET, acceptable evidence of having effectively performed the General and Specific Work Elements designated
for the career field in which enrollment is requested. Evidence of performance of Work Elements shall consist of written verification information signed by the supervising engineer (or engineers) or the job superintendent (or job superintendents) who has (or have) actually supervised the candidate in performance of the Work Elements on which the application for enrollment is based.

**LEVEL II (ASSOCIATE ENGINEERING TECHNICIAN)**
A Transportation Engineering Technician - Level II is qualified to perform intermediate level technical work within a specified career field under direct supervision of a qualified technician or engineer. No minimum time has been established to permit attainment of the background to qualify for Level II, but a total of approximately two years of education and/or experience will be needed to master the required work elements in preparation for the examination. When the candidate and his employer or his educational institution feel that the candidate has demonstrated the ability to perform and understand the necessary Work Elements, the candidates may apply for certification at Level II. A candidate for certification at Level II must furnish verification and recommendation information in the manner described for Level I.

**LEVEL III (ENGINEERING TECHNICIAN)**
A Transportation Engineering Technician - Level III is qualified to independently perform, test, inspect and record technical work of a considerable degree of complexity within his career field. The technician at this level must have demonstrated ability to perform effectively, in the field or in the office, within parameters established through standard and complete specifications or instructions and with minimal supervision by an engineer or a Senior Engineering Technician. He will be expected to exercise logic and judgment within his designated duties and to request instruction only in matters falling outside standard practices. He should possess qualities which will permit him to be assigned to supervise the work of more junior technicians or other workers on Work Elements on which he is qualified. A candidate for Level III must have effectively served as an Associate Engineering Technician (Level II) within his career field for three years before applying for Level III. A candidate for certification must furnish verification and recommendation information in the manner described for Level I.

**LEVEL IV (SENIOR ENGINEERING TECHNICIAN)**
A Transportation Engineering Technician - Level IV is qualified to act as an assistant to a Professional Engineer and to act with authority as delegated by the Professional Engineer in matters in which engineering precedent has been established. This is the highest level of technical certification. Candidates seeking certification at this level must possess outstanding personal and technical qualifications which, combined with extensive experience qualify them for positions of responsibility and judgment. In addition, each candidate must have demonstrated these abilities through actual supervision of a major project within his career field. To qualify for admission to written examination for Level IV, a candidate must have successfully completed five years within Level III. A candidate for certification at Level IV must furnish verification and recommendation information in the manner described for Levels I, II and III.