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**Federal Wage System
Job Grading Standards**



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**FEDERAL WAGE SYSTEM
JOB GRADING
STANDARD
FOR
NEGATIVE ENGRAVING,
4413**



**Workforce Compensation
and Performance Service**



NEGATIVE ENGRAVING, 4413

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WORK COVERED

This standard is to be used for grading nonsupervisory work involving the use of lithographic and engraving processes in making free-hand corrections, revisions, additions, or modifications on new or existing plastic, and/or film negatives and positives in connection with the reproduction of items such as charts, maps, and other similar publications. The Negative Engraver may make corrections on metal printing plates with pen and tusche. The work requires skill in using standard engraving handtools and solutions (e.g., water color brushes, various kinds of engraving and etching pens, rulers, lithographic pens, various opaques), and a number of drafting machines.

WORK NOT COVERED

The following kinds of work are not covered by this standard:

- Making zinc, brass, and copper plates for use in letterpress printing. (See [Photoengraving Series, 4425](#).)
- Washing, splicing, and assembling motion picture film, film prints, and filmstrips, recognizing defects in film and making corrective repairs. (See [Film Assembling and Repairing Series, 9003](#).)
- Assembling, stripping, and opaquing photographic negatives and positives used in the offset reproduction of black and white and multicolor subjects. (See [Film Assembly-Stripping Series, 4405](#).)
- Duties concerned with the construction (rather than the reproduction) of new or revised maps, charts, and related cartographic products, i.e., compilation, drafting, editing, and related activities requiring primarily technical knowledge of cartography. (See [Cartographic Technician Series, GS-1371](#).)

TITLE

Jobs graded by this standard are to be titled *Negative Engraver*.

GRADE LEVELS

This standard covers one grade level, grade 10. It does not describe all possible grade levels for this occupation or in any way limit the authority of agencies to assign work or particular duties to positions. If jobs differ substantially from the level of skill, knowledge, and other work requirements described in the standard, they may be graded at levels other than the one described, based on sound job grading methods.



HELPER AND INTERMEDIATE JOBS

Helper and intermediate negative engraver jobs are covered by the Office of Personnel Management [Job Grading Standards for Trades Helper Jobs](#) and [Intermediate Jobs](#). (Grade 10 is the "journey level" in applying the Intermediate Job Grading Table.)

NOTES TO USERS

Verifiers. Due to the requirement for accuracy and other quality standards in the printing processes, and the great number of discrete items of information to be conveyed, it is common practice to assign to some senior employees the task of reviewing projects to assure that all assigned work has been performed, that accuracy and other quality standards have been met, and that no errors have been introduced during the process of accomplishing the work. This review and verification work must be graded by reference to the [Job Grading Standard for Inspectors](#).

The review of numerous projects does provide the verifier with a broad understanding of the work of the unit and the capabilities of the other workers. As a result the verifiers are often given additional assignments to evaluate and report on the work of the other employees of the unit or to provide training, advice, and assistance to a small group of employees. If such additional work is being performed, it must be graded by reference to the Leader, Supervisor, or other appropriate standards in accordance with the [procedures for grading mixed jobs under the Federal Wage System](#).

Work at Less than Full Performance Level. Historically, there have been a number of levels of work recognized in the negative engraving occupation. The level of work identified as the ongoing full performance permanent assignment has been described in this standard. The other levels were usually established for trainee and developmental work. Under the Federal Wage System, trainee jobs are graded by reference to the standards for [Trades Helpers](#) and [Intermediate Jobs](#). Grade 10 in the standards is to be used as the full performance journey level grade in applying the Intermediate Job Grading Table.

Pay Category. In some situations, jobs involve work covered by this standard under the Federal Wage System (FWS) as well as other duties concerned with the construction (rather than the reproduction) of the new revised maps, charts, and related cartographic products which are correctly classified under the General Schedule. Examples of duties covered under the General Schedule are precompilation tasks such as investigating source materials, and plotting map projections and ground control on base sheets, manual or photogrammetric compilation, and assembling aerial photographs into mosaics. (See the classification standard for the [Cartographic Technician Series, GS-1371](#) for further examples of General Schedule work.) Such positions, which involve work that is mixed as to pay category, are graded or classified, as appropriate, in accordance with the provisions of [Section 5102\(c\)\(7\) of Title 5 of the United States Code](#). Thus, when the paramount requirement of the primary duty of a position is knowledge of and experience in negative engraving work associated with reproduction processes, as described in this standard, the position is graded under the Federal Wage System. However, when the paramount requirement of the primary duty of a mixed position is the application of cartographic knowledge and judgment, or when negative engraving duties are

performed as a training assignment by an employee whose career ladder is in the field of cartography rather than lithographic reproduction, the position is classified under the General Schedule.



4413-10**NEGATIVE ENGRAVER, GRADE 10****4413-10**

General: Grade 10 negative engravers perform the full range of tasks of engraving. They interpret job specifications and instructions and organize work assignments such as engraving a complete map or chart, making extensive corrections or modifications to existing charts or reviewing the completed work of other negative engravers as a cross-check against errors or omissions. Assignments are characterized by such factors as multiple (often twenty or more) negatives for black, color and special overlays, which require not only working to very close tolerance in the individual drawings but also in the registration of the negatives to the base negative and to each other; very close detail which requires great ingenuity and dexterity in order to layout and inscribe the necessary information on a number of overlays; and substantive knowledge of the relationships of topographic or hydrographic conditions and corresponding chart features and symbols to recognize and report possible omissions, errors or other anomalies in the manuscript and to interpret incomplete or illegible manuscript copy.

The negative engravers receive hand compiled manuscripts, including overlays, and plan the procedures to be followed. They analyze and order or prepare photographic manuscript images on scribe-cote and photographic copy of master projections and grids. They plot and engrave the layout of master projections and grids when required and engrave map or chart features on scribe-cote to form the final negative. As appropriate, negative engravers use existing final separation negatives of published charts, and crude markups and specifications to revise film and scribe-cote negatives and positives. They add, delete, and change line and type information on appropriate negatives in conformance with correction markups and overlays and revise film tint negatives and vignettes.

Skill and Knowledge: Grade 10 negative engravers use:

- Knowledge of a number of United States and foreign systems of symbology such as topographic and hydrographic symbols to describe a wide range of manmade and natural features in order to select the appropriate symbols for the material to be produced or transcribe publications of foreign origin for United States issuance. Knowledge of various systems of nautical or aeronautical navigation aids, typical positioning of these aids and appropriate symbology. This includes physical aids such as systems of buoys, day beacons, ranges, and light houses; electronic aids such as loran, radio beacons, TACAN, VOR, and radio communications facilities; and special information such as mooring and launching areas, restricted or other special use areas, airways and routes, road, rail and canals; etc. Skill in recognizing unlikely placement or combination of geographic and/or manmade features in order to check out and correct possible mistakes or omissions in manuscript copy. Knowledge of and skill in adapting approved methods to layout and scribe areas which are congested due to the amount and variety of information which must be presented, when the



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information must be inscribed on a large number of color separation and information overlay negatives. Knowledge of a number of methods of inscribing the information in order to plan the best method, based on the amount and complexity of the work to be done, the accuracy and appearance of the final product, priority of the work and the individual skills of the engraver such as whether to make freehand corrections to a black negative, strip in a section of revised material or print on an overlay, make the corrections on a blueline image, etc.

- Knowledge of Federal and international agency specifications governing such things as layout of products, line weights required for various purposes, type faces to be used, and tolerances allowable, in order to comply with the requirements of the various types of projects. Skill in interpreting these specifications in order to achieve maximum accuracy and clarity when conditions make it impossible to comply exactly with these requirements.
- Knowledge of the characteristics and applications of materials used in negative engraving including film negatives and positives, scribecoat, peel coat, chalk tracing, blueline reproductions, stripper type, and the various opaques. Skill in using this knowledge to plan the execution of assignments, considering such variables as time constraints, number and complexity of corrections, number of overlays involved, availability of photographic support services, condition of existing negatives, time required for hand correction, etc.
- Knowledge of photographic and printing equipment capabilities, photographic material characteristics, and methods and techniques involved in direct or related lithographic, photographic, photomechanical and typographic processes. Skill in using this knowledge to evaluate alternative methods and procedures and plan the work project and coordinate support work needed from other sections.
- Skill in the use of measuring instruments such as dividers, protractors, English and metric scales, and microscopes with calibrated scales in order to accurately position base and overlay negatives for exact registration, assure exact positioning of navigation aids, or check the accuracy of line width.
- Skill in the use and maintenance of negative engraving tools and equipment such as engraving needles, scrapers, knives, brushes, and pens. For example, skill in sharpening and stoning engraving needles and scrapers to get a keen cutting edge and proper line width; selecting the proper blade width and using swivel or rigid tripod scribing tools to cut continuous curving lines, such as shorelines, depth curves and elevation curves, which are particularly difficult due to extreme and frequent changes of direction and/or close proximity of numerous other lines of similar appearance, using freehand tracing of manuscript copy or chalk tracings; or using artist's pens to ink in corrections to fine lines, numbers, or lettering on photographic negatives.

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Responsibility: Negative engravers, grade 10 receive assignments from the supervisor in the form of project orders, manuscript copy and brief verbal instructions concerned with priority, deviation from normal procedures or methods, and any recent changes in specifications. They review the work to be performed, interpret sketches and notes, and decide on the work methods or processes best suited to complete the job. They order stripper type, washouts, photo compositions of negatives, etc. and complete assignments with little or no review during progress. They recognize and refer to the supervisor any problems they cannot solve such as apparent errors or inconsistencies in the manuscript. Completed work is reviewed for conformance to specifications and project order requirements by the supervisor or other negative engravers assigned as verifiers.

Physical Effort: Negative engraving work requires prolonged standing, bending, and reaching as well as good eye-hand coordination and long periods of sitting bent forward over drawing tables and viewing work through magnifiers. There is some lifting and carrying of film sets which may weigh up to 9 kilograms (20 pounds).

Working Conditions: Negative engraving work is performed indoors, over light tables, in well-ventilated areas under subdued lighting. Negative engravers are exposed to the possibility of eyestrain and cuts from razor blades, steel points, and knives.