

Part 501 – Authorizations

Subpart A – Review and Approval

501.0 General

- A. Engineering practices have the potential, upon failure, to affect public health and safety and cause loss of life and significant property damage, depending on the size, location, and complexity of the work. For this reason, the practice of engineering is regulated by State law governing professional engineering, requiring professional registration as described in Title 210, General Manual (GM), Part 402, “Professional Engineering.”
- B. The development of engineering plans or engineering aspects of conservation practices requires that the approving engineer obtain and integrate the needed assistance from an interdisciplinary team.
- C. Engineering job approval authority is the quality assurance process that ensures adequate consideration by competent NRCS employees in the planning, design, and installation of conservation engineering practices that, with proper operation and maintenance, will perform the intended functions for the planned practice service life. Engineering job approval authority additionally serves to maintain the credibility and trust of NRCS engineering with State engineering boards of licensure and with the public.
- D. NRCS requires approval of all conservation engineering practice designs by a qualified person who has appropriate engineering job approval authority. Others may perform this work under the direction of the qualified person. For the purpose of this policy, a conservation engineering practice is a conservation practice included in Title 450, National Handbook of Conservation Practices (NHCP), with an engineering discipline lead or co-lead.

501.1 Scope

- A. Each NRCS employee providing engineering technical assistance must be assigned an appropriate engineering job approval authority based upon training, experience, and demonstrated competence. NRCS requires no more than one level of review.
- B. For non-NRCS employees operating under the technical supervision of an NRCS employee and providing engineering services, NRCS requires the evaluation and assignment of an appropriate engineering job approval as provided in section 501.1A with the following additional criteria:
 - (1) Non-NRCS employees who are Federal employees may be assigned engineering job approval authority on the same basis as NRCS employees.
 - (2) States may assign engineering job approval authority to non-NRCS employees offering engineering services who are licensed to practice engineering in the State on the same basis as NRCS employees.
 - (3) NRCS may assign engineering job approval authority to non-NRCS employees offering engineering service who are not Federal employees and who are not licensed to practice engineering in the State when such authority does not conflict with State law. These employees include volunteers, employees of cooperative organizations or units of government, and other partners performing public services similar to NRCS employees and who, therefore, appear to the public as NRCS employees.

501.2 Technical Quality

Engineering technical assistance for the planning, design, and installation of conservation practices is to provide for practices that—

- (1) Function as planned.
- (2) Exhibit sound engineering principles.
- (3) Perform safely.
- (4) Are cost-effective with consideration of initial operation, maintenance, and removal or replacement costs.
- (5) Meet the requirements of site-specific conditions, are sustainable, and address the identified resource concerns.
- (6) Comply with NRCS and industry-established practice standards, technical criteria, and policies.

501.3 Compliance of Engineering Work With Laws and Regulations

A. Engineering work must meet applicable requirements of Federal, Tribal, State, and local laws, regulations, and codes. This applies to all work that involves engineering activities during planning, design, construction, operation, maintenance, modification, rehabilitation, and removal or replacement.

B. NRCS permits registered professional engineers to seal designs, construction plans, reports, and other engineering documents.

C. The State conservation engineer (SCE) develops policy and procedures for approving and sealing engineering plans—

- (1) For works designed by NRCS and by non-NRCS employees working as partners with NRCS.
- (2) For works sent by requirement to regulatory agencies for review, approval, or the granting of permits.
- (3) In States that have laws requiring the cooperating local organization to have plans for public works prepared under the direct supervision of a registered professional engineer.

501.4 Engineering Job Approval Authority

A. The SCE has delegated engineering job approval authority for all engineering work in the State. NRCS classifies engineering jobs with respect to hazard potential, complexity, and size, as described in sections 501.7 and 501.8 of this subpart. Section 501.7 of this subpart defines hazard potential. The SCE must comply with review requirements in section 501.5 of this subpart.

B. State Engineering Job Approval Authority (Classes I Through V).

- (1) Conservation engineering practices in classes I through V must be of low hazard potential as defined in section 501.7 of this subpart. Examples include low hazard potential dams and class-III dikes. For practices with the potential for higher risk, limitations on selected controlling factors and hazard potential must be used to further define the engineering jobs by higher classes.
- (2) Each SCE must develop policy and procedures for approval of engineering work carried out in the State. These apply to every individual providing engineering services, both NRCS employees and non-NRCS employees operating under NRCS technical supervision.
- (3) Assign engineering job approval authority within a State according to the job classes established in the State engineering job approval authority chart. Assign individual engineering job approval authority considering the employee's training, experience, and

demonstrated competence. Individuals assigning engineering job approval authority need only assign authority for practices applicable in the geographic area the employee serves.

- (4) Section 501.9 of this subpart provides a guide for developing and presenting engineering job approval authority delegations. The practices listed in section 501.9 of this subpart are for example only. The SCE is to select the job type, controlling factors, units, and engineering job approval authority breakdowns appropriate for the conditions in the State. The SCE must use the controlling factors for the practices noted in section 501.8 of this subpart. The SCE may select additional factors as needed. Use of available database tools to manage the job approval authority process is recommended.
- (5) SCEs may routinely delegate class-IV engineering job approval authority to professional engineers registered in the State and working under NRCS technical supervision.
- (6) The engineer technically responsible for engineering work (e.g., field or area engineer) delegates engineering job approval authority to those working under their technical supervision. The individual's supervisor must concur in the delegation of the engineering job approval authority. The engineering job approval authority delegation must not be greater than that held by the delegating engineer.
- (7) SCEs must ensure the job approval authority of individuals in their present position for less than 3 years is reviewed and updated annually. For all others, SCEs must ensure job approval authority is reviewed and updated every 3 years.
- (8) The Director, Conservation Engineering Division (CED), must review and concur with the State engineering job approval authority chart.

C. Approval of Class VI through Class VIII Jobs

- (1) SCEs may delegate class-VI engineering job approval authority to NRCS professional engineers registered in the State who have demonstrated competence for the particular practice.
- (2) Class-VII jobs require independent review, described under section 501.5 of this subpart, prior to approval by the SCE.
- (3) Class-VIII jobs require all reviews described under section 501.5 of this subpart and concurrence of the Director, CED, prior to approval by the SCE.

D. Engineering Job Approval Authority for Additional Work

Classify the engineering job approval authority for work performed on an existing practice or structure in accordance with procedures as listed in section 501.7 of this subpart. This applies to any additional work, such as repair, modification, rehabilitation, or removal. The highest category of any single most-limiting factor for the job determines the classification.

E. Documentation of Design Review and Engineering Job Approval

Document the review and approval of an engineering job, comprising the design, drawings, and specifications in one of the following ways:

- (i) Place signatures on the design documentation or report and the cover or first sheet of the construction drawings.
- (ii) Place signatures on an accompanying memorandum that describes the specific job and scope (including design documentation or report and plans).

F. Associated Plans and Specifications

Interdisciplinary design may produce associated drawings and specifications for erosion control, vegetative planting, final grading, and other components. All associated plans and specifications that may affect the performance of an engineering job are subject to the engineering job approval process.

501.5 Engineering Job Review

A. Design Reviews

- (1) Classes I–V.—The SCE may require one level of design review of jobs in engineering job classes I through V.
- (2) Classes VI–VIII.—One level of design review of jobs in engineering job classes VI through VIII is required.
- (3) Perform design reviews as follows:
 - (i) Classes I–V.—As determined by the SCE.
 - (ii) Class VI.—State staff review if review capability exists within the State as determined by the SCE; otherwise, independent staff review is required.
 - (iii) Class VII.—Independent staff review is required.
 - (iv) Class VIII.—Director, CED, review and concurrence is required.
- (4) An independent staff review is conducted by staff not supervised by the SCE and that did not participate in the design. The Director, CED, will concur in the selection of an independent reviewer if outside NRCS.
- (5) The policy on checking and reviewing engineering work is contained in section 511.5 of this manual.

B. Post Reviews

Post reviews are independent reviews made after the installation of the practice or structure. Spot checks, as required by 450-GM, Part 407, “Documentation, Certification, and Spot Checking” are examples of post reviews. Post reviews are valuable for quality assurance, determination of technical competence and experience, determination of the need for additional training, and determination of the need for revision of engineering procedures and criteria. The post review must examine supporting data, drawings, and specifications for conformance to national policy, standards, criteria, and sound engineering practice. Onsite reviews may be necessary, depending on the job’s complexity, safety and health risks, or environmental risks. After review of each job, the post reviewer must prepare a written report to the SCE. The SCE will send the report to the Director, CED, for all class-VII and class-VIII jobs, and for class I through VI jobs if the findings indicate changes in national policy, procedures, or standards may be needed.

- (i) Classes I–VI.—The SCE will develop the procedure for post review of representative engineering jobs.
- (ii) Classes VII–VIII.—The Director, CED, will determine the need for post reviews.

501.6 Engineering Work Reviewed for Other Agencies

A. Engineering Work Reviewed for Regulatory Agencies

- (1) Approval procedures must also contain provisions for reviewing the engineering design components of plans for cooperating regulatory agencies and determining if the plans comply with NRCS technical standards. The approval authority for this type of review is to be the same as assigned for engineering job approval authority.
- (2) NRCS employees are not to review designs that are outside NRCS’s area of technical expertise. For example, NRCS is not to review the structural strength of a building with rooftop storage used for runoff management. For this design, the review should be for the functional aspects of the plan, including storage and release rates. NRCS employees should call any apparent deficiencies in specific designs noted during the review to the attention of the responsible agency, even though they are outside the scope of the review.

- (3) Express review responses in terms of compliance or noncompliance of identified items and not in terms of approval or disapproval. Response comments must indicate the extent or nature of the review, such as: “Review was conducted in accordance with practice standard ____, and the following was determined. Review was limited to the functional layout and size in accordance with the requirements of Regulation ____.”
- (4) In all cases, engineering work must meet applicable requirements of Federal, Tribal, State, and local laws, regulations, and codes.

B. Engineering Work Reviewed for State and Other Federal Agencies

If NRCS reviews engineering work for other Federal or State agencies, NRCS must check the work against NRCS criteria (conservation practice standards) and sound engineering practices appropriate for the size and type of job. The review report provided to the agency must indicate compliance or noncompliance to NRCS standards and criteria. The approval of the review report is at the same level as engineering job approval for similar NRCS designs.

501.7 Classification of Engineering Jobs

- A. Section 501.8 of this subpart describes the engineering job classifications that utilize controlling factors. If the value of any one of the controlling factors is exceeded, the job becomes the next higher class.
- B. SCEs may delegate approval authority for all of the conservation engineering practices listed as class V as class I through V, and those listed as class VI as class VI. The listed values of the controlling factors are maximums; therefore, SCEs may specify lower values of the controlling factors listed for classes V and VI.
- C. SCEs designate the controlling factor values for conservation engineering practices not listed in section 501.8 as class I through V unless the hazard classification is significant, high, or classified differently by the Director, CED. Hazard classification criteria for practices other than dams parallel those for dams (See Part 520, Subpart C, Section 520.21, “Definitions and Classes,” of this manual). In addition, SCEs must designate any practice as significant hazard potential where failure may result in impairment of water quality, environmental damage affecting wildlife or human health, or presents unacceptable economic risk. SCEs must designate any practice where failure would result in loss of life as high hazard potential.
- D. The Director, CED, will classify those jobs covered by interim conservation practices standards concurrent with approval of the interim conservation practice standards.

501.8 Engineering Job Classifications That Utilize Controlling Factors

The table entitled “Engineering Job Classifications That Utilize Controlling Factors” contains the maximum values that States can use for engineering job classes V and VI for select practices.

[Click here for a copy of “Engineering Job Classifications That Utilize Controlling Factors”](#)

501.9 Engineering Job Approval Authority

The table entitled “Engineering Job Approval Authority” provides an example for a State to use in developing an engineering job approval authority chart. The practices listed are examples only. section 501.4 of this subpart describes the process by which the SCE is to delegate engineering job approval authority.

[Click here for a copy of “Engineering Job Approval Authority”](#)