

# Reclamation Manual

## Directives and Standards

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<b>Subject:</b>	Construction Activities
<b>Purpose:</b>	Establishes Bureau of Reclamation requirements for construction management. The benefit of this Directive and Standard (D&S) is to ensure that construction activities are performed in a professional, safe, timely, and cost-effective manner while satisfying all technical requirements.
<b>Authority:</b>	Reclamation Act of 1902 and all supplementary amendments thereto; Reclamation Safety of Dams Act of 1978 as amended
<b>Approving Official:</b>	Deputy Commissioner, Operations (DCO)
<b>Contact:</b>	Director, Technical Service Center (TSC) (86-68000)

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1. **Introduction.** Construction activities are performed within the Bureau of Reclamation to develop and maintain project infrastructure, respond to emergencies, and provide technical assistance in support of the agency's mission. Coordination of construction activities among all Reclamation offices (including regional, area, and construction offices); the TSC; and the Commissioner's Office is essential to ensure that construction activities are performed in a professional, safe, timely, and cost-effective manner that satisfies all technical requirements.
2. **Applicability.** This Reclamation Manual (RM) D&S applies to all Reclamation personnel and non-Reclamation entities engaged in Reclamation construction activities including: force account work, acquisition of equipment and materials that are to become a fixed part of Reclamation facilities, and services for non-Reclamation clients.
3. **Definitions.**
  - A. **As-Built Drawing.** For the purpose of this D&S, an as-built drawing is a specific revision to a contract drawing that documents actual details of constructed features after completion of a construction contract.
  - B. **Complex Items.** Complex items have quality characteristics, not wholly visible in the end product, for which contractual conformance must be established progressively through precise measurements, tests, inspections, and other controls.
  - C. **Critical Items.** A critical item is one for which a failure could injure personnel or jeopardize the success of the project or a vital agency mission.
  - D. **Program Office.** In accordance with RM Policy, *Bureau of Reclamation's Business Model for Managing Technical Services* (CMP P10), a program office is defined as any Reclamation organizational unit that has been delegated the authority and allocated the budget necessary to operate and maintain projects and to conduct programs for which it is responsible.

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### 4. Responsibilities.

- A. **DCO.** The DCO has primary responsibility and exercises authority for supervision and coordination of developing and implementing the construction program of Reclamation.
- B. **Regional Directors.** Regional directors are responsible for program accomplishment of Reclamation construction activities within their regions. Regional directors will coordinate with their area managers, regional division managers, power managers, construction engineers, construction managers, the TSC Director, and others to ensure program accomplishment.
- C. **Program Office (Area Managers/Power Managers).** Area managers/power managers, or other designated responsible officials, will perform work as delegated by regional directors. Area managers/power managers, or other designated responsible officials, will ensure that the necessary elements to support an effective and efficient construction process are implemented (e.g., coordination and communications with all involved offices and stakeholders).
- D. **Construction Engineer/Construction Manager (CE/CM).** The CE/CM (or other manager assigned by the regional director) is responsible for administering construction activities, developing the construction management plan (CMP), understanding and ensuring implementation of the design intent, maintaining technical coordination between design and construction, and managing the construction staff to ensure compliance with the specifications.
- E. **Project Manager (PM).** The PM is responsible for coordinating among internal and external stakeholders and facilitating effective communications between service providers and program offices to ensure that construction activities are completed within approved schedules and budgets. The PM is responsible for budget and schedule tracking and project status reporting.
- F. **Project Management Team (PMT).**
  - (1) The manager/director of the Reclamation office with program responsibility will initiate the formation of the PMT on safety of dams and other critical, complex, or controversial projects. The PMT will be responsible for executing an efficient and cost-effective project process, coordinating the project through design and construction, and ensuring that construction issues are communicated to the appropriate organizational structure and the design team. Generally, the PMT will be comprised of managers who are one supervisory level above the primary personnel actively performing the work, as well as representatives from the program office, area office, and construction office.
  - (2) In the specific case of safety of dams projects, the PMT will be appointed by and report to the area manager; Chief, Dam Safety Office (DSO Chief); and the

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regional director. See RM Policy, *Decisions Related to Dam Safety Issues* (FAC P02). Details for utilizing a PMT for safety of dams or other projects can be found in the *Safety of Dams – Project Management Guidelines*.

- G. **TSC Director.** The TSC Director prescribes engineering and technical standards and guidelines to promote consistent application of Reclamation and industry standards. The TSC Director is the primary focus for Reclamation's construction activities outside regional boundaries, including work with other government entities and foreign activities. The TSC Director provides technical services as requested by the regional director to support program accomplishments.
- H. **DSO Chief.** The DSO Chief is responsible for Reclamation's Dam Safety Program development and administration of safety of dams activities. The DSO Chief is responsible for Reclamation directives, standards, and guidelines governing the Dam Safety Program. The DSO Chief supports the Department of the Interior agencies in carrying out their dam safety programs.
- I. **Contracting Officer (CO).**
- (1) The CO provides the administrative service through which Reclamation solicits offers and enters into and administers contracts for construction, supply, materials, and services as provided in the Federal Acquisition Regulations (FAR). The CO's responsibilities include acquisition planning, determining acquisition method, obtaining applicable wage rates, preparing and issuing solicitations, evaluating offers, determining bidder responsiveness and responsibility, making contract awards, issuing notice to proceed, and executing contract documents on behalf of the Government.
  - (2) Following award, the CO is responsible for ensuring that the Government's contractual rights to performance are preserved, enforcing contractual requirements, issuing contract modifications, processing disbursements, resolving claims, and performing final contract closeout and settlement.
- J. **Administrative Contracting Officer (ACO).** Following award of a contract, the CO may appoint an ACO in writing as the responsible official for ensuring that the Government's contractual rights to performance are preserved. This includes enforcing requirements of the contract, performing contract administration, and ensuring that all contractual actions are documented. An ACO is a warranted CO, subject to the limitations of the FAR and certificate of appointment. The ACO can execute contract modifications, obligate the payment of money by the Government, and render final decisions in accordance with the contract disputes clause.
- K. **Contracting Officer's Representative (COR).** The CO and/or ACO can appoint a COR for the technical oversight and administration of a contract. A COR is not authorized to obligate the Government for changes or additional services.

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Appointments shall be in writing and clearly set forth the COR authority and limitations. Copies of appointments will be sent to the contractor, as well as Reclamation design and construction offices.

- L. **Construction Representative/Inspector.** The construction representative/inspector is normally the point of contact for the COR with the contractor's field personnel. The construction representative/inspector represents the Reclamation design, contracting, and construction staffs in observing a contractor's means and methods of construction. Construction representatives/inspectors are not authorized to obligate the Government for any change in work activities or expenditure of funds. The construction representative/inspector is responsible for being thoroughly familiar with the plans and specifications; recording observations and data; monitoring safety; performing labor checks; and advising their supervisor and other personnel, as appropriate, of problems and progress.
  - M. **Managers and Supervisors.** Reclamation managers will ensure the utilization and development of Reclamation's capabilities through effective use of existing staff resources, collaborative development of work plans, use and monitoring of corporate business practices, and providing services to non-Reclamation clients in accordance with RM D&Ss, *Maintenance of Design and Construction Technical Capabilities* (FAC 03-01) and *Workload Distribution Practices for Technical Services Work* (CMP 10-03).
5. **Professional Registration for Construction Personnel.** Professional registration of certain construction management personnel is required as stipulated in RM Policy, *Performing Design and Construction Activities* (FAC P03).
6. **Training for Construction Personnel.**
- A. Supervisors will ensure that construction personnel are familiar with the latest edition of the *Reclamation Safety and Health Standards* (RSHS). Construction personnel will receive RSHS training and First Aid/CPR. Refresher training for RSHS and First Aid/CPR shall be provided as appropriate. Additional training in confined space entry, managing hazardous waste, asbestos and lead paint abatement procedures, lockout/tagout procedures, and COR procedures shall be provided in accordance with RM Policy, *Occupational Safety and Health Program* (SAF P01).
  - B. Construction personnel shall receive specialized training in construction materials and methods utilized on Reclamation construction projects.
7. **Procedures for Preconstruction, Construction, and Post-Construction Activities.**
- A. **Introduction.** The area manager, project manager, or other designated official representing the responsible program office will ensure that adequate planning, coordination, communication, and oversight are performed during the preconstruction, construction, and post-construction activities. The preconstruction activities consist of

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the development of the design, the specifications, and acquisition of the work. The construction activity is the actual performance of the construction work and begins with the award of the contract through substantial completion. Post-construction consists of the activities required to allow the project to obtain or return to operations and maintenance (O&M) status. For all safety of dams projects and other major features, the PMT, program office, design staff, and construction staff are assigned various responsibilities for each of the project/construction activities referred to in the *Safety of Dams - Project Management Guidelines*.

- B. **Fee-for-Service Business Practices.** Construction activities shall be performed in accordance with the requirements of RM D&S, *Fee-for-Service Business Practices for Technical Services Work* (CMP 10-02). The program office will develop the statement of work describing the functions to be performed by the service provider(s) during the construction phase. The program office and designated service providers shall then jointly develop service agreements, and completion reports. At a minimum, all data required by the Electronic Service Agreement Module (ESAM) service agreement and completion report electronic forms shall be completed. These documents shall be developed to address all phases of involvement by the respective service providers in the project.
- C. **Preconstruction Activities.** The preconstruction activity focuses on the project development, National Environmental Policy Act/National Historic Preservation Act (NEPA/NHPA) compliance, permitting, easement and right-of-way, assignment of responsibilities, preparation of designs, and specification development. The total project cost, authorizations, repayment, and initial project schedule will be developed during this activity. The PM, PMT, or other designated responsible official of the program office will ensure the development of a project plan, assignment of available resources, and verification of the availability of funding for the project. The CE/CM will ensure that the construction office provides necessary information, communication, and support so that the preconstruction activities do not adversely impact subsequent project activities. Design data collection, in particular, will require the involvement of the construction staff in close communication with the design staff. The information developed during preconstruction becomes paramount during the construction activity. The involvement of the construction staff during preconstruction is necessary to ensure a smooth transition of information from planning through construction. There are several activities performed during the preconstruction where involvement by the CE/CM or their staff will be required, such as:
- (1) **Involvement with the PMT.** For safety of dams projects and other major features which are critical or complex, the manager/director of the Reclamation office with program responsibility will initiate the formation of a PMT to provide direction/oversight to all aspects of the construction project. For most projects, the PMT will be comprised of managers who are one supervisory level above the primary personnel performing the work. The CE/CM will be on the team and participate in the development of the project management plan, defining

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responsibilities, schedules, and deliverables of the construction staff. The PMT for safety of dams projects will be appointed by and report to the area manager; DSO Chief; and the regional director. See FAC P02. A full description of these (and other) aspects of safety of dams project management can be found in the *Safety of Dams - Project Management Guidelines*.

- (2) **Support to the Design Team.** The office responsible for construction activities will provide support to the design team. This may include collection of design data, participation in value engineering studies, decisions on design approaches (e.g., detailed design (prescriptive) or performance requirements), participation in consultant review board meetings, and input into constructability issues and viability for certain construction materials or methods.
- (3) **Involvement in the Acquisition Planning.** In concert with the CO, the PM, or designated responsible official, will ensure the development of an Individual Acquisition Plan (IAP) for the project. This development will begin as the data collection portion is being completed and the design is initiated. The design, construction, and acquisition offices are involved in the acquisition planning process. The CE/CM will provide input for the IAP regarding the constructability and implementation of the design intent. The various methods for acquisition of the work will be discussed and explored. The decision on the acquisition method must occur prior to the draft specifications review so that all necessary language can be incorporated. For a discussion of the various strategies for acquisition planning, see the designated CO and the FAR.
- (4) **Involvement in the Specifications Review.** Regardless of the size of the project, the office responsible for the construction activities will participate with the design team and provide a review of the specifications and drawings. The level of review will be dependent upon the complexity and scope of the project, and it will include reviewing for constructability, clarity for bidding, and completeness. The documents will include drawings, technical specifications, and all required contractual clauses such as Commencement and Prosecution, Scheduling, Permits and Responsibilities, and Liquidated Damages. The CE/CM will ensure the development of construction schedule information for the specifications review. In addition, the CE/CM will ensure that the specifications require the contractor to develop an appropriate construction schedule.
- (5) **Compliance with NEPA, NHPA, and Other Environmental Laws.** The PM, or other designated responsible official, will ensure coordination with the appropriate environmental compliance office to fulfill requirements under NEPA, NHPA, other applicable laws and regulations, as well as the region's Environmental Management System processes where the construction activity will occur.
- (6) **Development of a CMP.** The PM, PMT, or CE/CM will determine if a CMP is required. The CMP is a subdocument to the overall project management plan and

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identifies required activities and resources specific to the construction phase of the project. The CMP ensures that the construction management effort is consistent with the scope and complexity of the work. The plan will establish a schedule, budget, and procedures to ensure that the quality of the construction meets the specifications requirements and design intent. The development of the CMP early in the project activities will allow for defining and planning the construction staff involvement during the design data collection, value engineering, constructability reviews, NEPA compliance process, public involvement, permitting, acquisition planning, site management during construction, construction communications, construction oversight, quality assurance activities, and post-construction. The CE/CM is responsible for ensuring that their staff is fully aware of the requirements of the CMP.

- (7) **Dam Safety Analyses.** When the construction activities involve work on a high- or significant-hazard dam, DSO Chief shall ensure evaluations are performed and documented to address the impacts of the work performed on the potential failure modes of the dam. In the case of dam safety modification activities, this takes the form of risk reduction verification analysis. When the work is funded by other than the Dam Safety Program, this consists of an analysis of the work performed to verify that there are no new failure modes to be addressed and no significant changes to risks associated with existing identified failure modes.

D. **Construction Activities.** Construction activities include all aspects of construction management including construction contract administration, construction inspection, materials engineering and testing, force account construction activities, and construction surveying. The CE/CM will ensure that construction contractors comply with the plans and specifications, and implement quality control to prevent deficiencies in materials and construction practices. The CE/CM will ensure that sufficient personnel are available to perform the construction management activities; that personnel have the appropriate level of training, experience, and resources to perform their assigned duties; that the appropriate level of communications are maintained with the PM, involved stakeholders, and Reclamation staff; and that the procedures for adequate construction management are followed. The CE/CM will consult with the PM, design team leader and, as appropriate, the principal geologist regarding critical construction activities or events (e.g., foundation inspections, changed conditions, contractor proposals, etc.) to ensure that the intent of the design is achieved and that adequate quality control/quality assurance measures are implemented.

- (1) **Contract Administration.** Performance of construction contract administration will be in accordance with the FAR, Departmental, and Reclamation acquisition regulations. The CE/CM, CO, ACO, and COR will be responsible for performing the contract administration. Six major areas of importance for construction

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contract administration are schedules, submittal requirements, labor compliance standards, contract modifications, contract disbursements, and resolution of disputes.

- (2) **Quality Assurance.** The Government is required by the FAR to ensure quality assurance for all contract work. Quality assurance activities during a contract provide the Government with documentation that the construction is being accomplished as specified, but shall not relieve the contractor of the responsibility for providing adequate quality control measures. Specific inspection plans and procedures to verify contract performance criteria will be developed and implemented by Reclamation on a site-by-site basis, including procedures to ensure efficiency and reasonableness of cost incurred in cost type activities. The extent of contractor quality control and Reclamation quality assurance requirements will depend upon the complexity and criticality of the project. The contractor will be required to perform quality control of their work to ensure that the work meets the requirements of the contract. Reclamation will perform or direct independent quality assurance inspection and material testing for complex or critical items. The development of a construction record (inspection and materials reports, photographs, etc.) is required for the project record. The CE/CM shall ensure these written and photographic records are developed, reviewed, and filed with the project record.
- (3) **Safety.** Reclamation policy exists for the implementation and administration of an effective safety and health program to ensure safe and healthful working conditions and facilities. For more discussions on safety and training requirements, see SAF P01.

E. **Post-Construction Activities.** Following the completion of construction activities, several important activities remain to complete the project. These include contract closeout, completion of as-built drawings, technical reports, design summary, designers' operating criteria, O&M manuals, documentation of lessons learned, transfer of the project from construction to O&M status or formal notification of completion of construction, final contract file disposition, and ESAM completion reports. As the project management plan is being developed, sufficient funding must be identified to complete project closeout activities.

- (1) **Contract Closeout.** Closeout of a contract includes final resolution of any outstanding disputes, completion of all punch-list items, verification and documentation of all warranties of construction, and processing of the final voucher with release of claims.
- (2) **As-Built Drawings.** The CE/CM will ensure that contract drawings are marked up, as-built drawings showing actual construction details are developed, and final distribution of the as-built drawings occurs. The process for development and distribution of as-built drawings is discussed in *the Information*



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*Management Handbook*, Volume III, “Drawing Management and Drafting Standards” (issued under RM D&S, *Engineering Drawings Management* (RCD 04-01)).

- (3) **Technical Reports.** A Technical Report of Construction is required for all projects for which a PMT has been formed and all facilities that directly affect public safety (unless waived by client), and the report is recommended for all other projects. For further information on the content of these reports, see discretionary guidance contained in the *Safety of Dams - Project Management Guidelines*.
  - (4) **Design Summary, Designers’ Operating Criteria, and O&M Manuals.** Preparation of these technical documents will be addressed in the project plan. Preparation of these documents will begin early in the design process with input from the PMT, CE/CM, program office, and operating office as required. The O&M manuals will be provided by the CE/CM to the operating entity upon completion of construction by the CE/CM. For further details on the content of these documents, see discretionary guidance contained in the *Safety of Dams - Project Management Guidelines*.
  - (5) **Transfer of Project Works from Construction to O&M Status.** This step is the formal process that transfers project works from construction to O&M status. See RM D&S, *Transfer of Operation and Maintenance (O&M) Responsibility of Project Works* (FAC 01-05), for additional information. RM D&S, *Plant Accounting – Construction in Progress (CIP)* (FIN 07-24) provides additional requirements on the transfer of project works from construction to O&M status. A final warranty inspection of the project shall be performed prior to the expiration of the warranty period, with any deficiencies brought to the contractor’s attention for resolution. The project file shall document the inspection and resolutions.
  - (6) **Formal Notification of Completion of Construction.** For construction performed while in O&M status, notification of completion of construction shall be developed jointly by the CE/CM and responsible PM. A final warranty inspection of the project shall be performed prior to the expiration of the warranty period, with any deficiencies brought to the contractor’s attention for resolution. The project file shall document the inspection and resolutions.
  - (7) **Final Disposition of Contract Files.** The final file disposition will be accomplished in accordance with RM D&S, *Information Management* (RCD 05-01), and the *Information Management Handbook*.
- F. **Services for Non-Reclamation Clients.** The objective for all construction management activities performed by Reclamation is to uphold high construction standards, obtain a quality product, and complete the work in an efficient, economical, safe, and timely manner. To ensure that this objective is not compromised, work for

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other clients will meet the standards of this D&S. Exceptions to this requirement will be pursued in accordance with the provisions of RM D&S, *Request for Deviation from a Reclamation Manual Requirement and Approval or Disapproval of the Request* (RCD 03-03). Any substitute standards will be clearly defined in the agreement prior to any work being performed, and Reclamation will ensure that Reclamation personnel are properly instructed on the appropriate standards. For discussions of requirements for performing services for non-Reclamation clients, see FAC 03-01.

## RECLAMATION MANUAL TRANSMITTAL SHEET

Effective Date: \_\_\_\_\_

Release No. \_\_\_\_\_

Ensure all employees needing this information are provided a copy of this release.

### Reclamation Manual Release Number and Subject

### Summary of Changes

NOTE: This Reclamation Manual release applies to all Reclamation employees. When an exclusive bargaining unit exists, changes to this release may be subject to the provisions of collective bargaining agreements.

### Filing instructions

Remove Sheets

Insert Sheets

All Reclamation Manual releases are available at <http://www.usbr.gov/recman/>

Filed by: \_\_\_\_\_

Date: \_\_\_\_\_