



Statewide Erosion & Sediment Control Quality Plan

**Project Delivery QA/QC Program
Oregon Department of Transportation**

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Project Delivery QA/QC Program

Statewide Erosion & Sediment Control Quality Plan

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Oregon Department of Transportation

Statewide Geo-Environmental Branch – Environmental Branch

Erosion and Sediment Control QA/QC Program

4040 Fairview Industrial Dr. SE

Salem, Oregon 97302-1142

503-986-7130

ODOT.GeoAdminWorkOrd@odot.oregon.gov

[Website](#)

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Revision History (the current revision is first entry)

Release Date	Change made by	Section(s) Updated	Summary of what, why changed
9/19/2024	Robert Marshall Erosion and Sediment Control Program Leader	Section 4, Table 2	Corrected form number typographic errors
8/15/2024	Robert Marshall Erosion and Sediment Control Program Leader	Sections 1, 3, 4.1, 4.2, 4.5, 4.6, 5.	Administrative update to conform with Agency standards.

1. Erosion and Sediment Control Quality Management

Quality in project delivery is the degree to which a product, service, or deliverable conforms with established project and design requirements, satisfies its intended purpose, and meets the customer's requirements and expectations.

Quality is the result of a cooperative partnership between the providers of project development services (engineering services and technical reports) and quality assurance. Those providing project development services must implement quality control (QC) to ensure products and services meet customer requirements and expectations. Those responsible for quality assurance (QA) review the process to confirm the quality management efforts are achieving desired results.

The quality management system efforts foster continuous improvement in the ongoing quest to meet customer expectations, provide high quality engineering and technical services, and make efficient use of resources.

2. Quality and Technical Standards

The [ODOT Project Delivery QA/QC Program website](#) provides an overview of the ODOT Project Delivery QA/QC Program and access to the quality standards of practice. The Project Delivery Quality Program Manual can be found there, as well as a listing of the quality plans and guidance documents, including the region technical center quality plans, the technical discipline quality plans, and the transportation project management statewide quality plan. There is also a listing of the associated quality forms and checklists.

Erosion and sediment control (ESC) on construction sites is “good housekeeping” and required for a project that disturbs soil. The requirements for ESC are provided in the latest edition of the [Oregon Standard Specifications for Construction](#).

Among the specifications is the requirement to adhere to the [1200-CA permit](#) conditions. The 1200-CA permit imposes requirements pertaining to the content and format of ESC plans and the implementation of those plans during project construction. An ESC that functions effectively is also a compliance requirement for our [MS4 permit](#) which addresses stormwater quality after construction is completed.

The importance of effective functioning erosion and sediment control cannot be overstated. Displaced sediment is a pollutant once it enters waterways. As federally endangered species inhabit Oregon’s waterways, the conditions of the [Endangered Species Act](#) come into play. Oregon addresses those conditions in protecting endangered species with a [Federal-Aid Highway Programmatic](#) (FAHP) agreement, which describes procedures and tools for implementing compliance with the Endangered Species Act.

Erosion and sediment control play a large part in compliance with the FAHP. [ODOT’s Erosion Control Manual](#) provides guidance on developing and implementing effective and functional ESC plans.

3. Roles and Responsibilities

The roles and responsibilities for implementing Erosion and Sediment Control quality management are described in this section.

Table 1: Erosion and Sediment Quality Roles and Responsibilities

Roles	Responsibilities
Designer/Professional of Record (POR)	<ul style="list-style-type: none"> • Develops ESC plans that prevent erosion, controls stormwater runoff and controls sedimentation. • Develops ESC plans and specifications while using the Designer Check List. (ODOT's Erosion Control Web Page/Guidance Materials/form 734-5273) • Develops ESC plans that satisfy the requirements of the 1200-CA for projects with an acre or more of ground disturbance. • Designer must be a licensed engineer, licensed geologist, or licensed landscape architect, or working under the controlling oversight of one of the above. • Originator of ESC plans and specifications shall affix the designer's professional seal and signature on the final signed and sealed project deliverable. • Responsible for self-checking their work and maintaining compliance with applicable manuals, standards of practice, errors, and omissions. • Person in responsible charge for erosion and sediment control interpretation and decisions made on a project. • The professionals of record are responsible for acting within their own level of competence and knowledge.
Reviewer	<ul style="list-style-type: none"> • Provides primary technical review for aspects of the project to catch and correct mistakes, oversights or logic errors. The reviewer would typically not stamp the work unless they were in responsible charge of some discrete portion of the project. • Qualified as equal to or more qualified than the designer. • The reviewer signing the work product will be the one who conducted the review.
Supervisor	<ul style="list-style-type: none"> • Direct personnel responsibility for professionals who work within Erosion and Sediment Control Program.

4. Quality Control

4.1. Quality Control Milestones

For clarity, the ODOT project delivery process is broken down into a series of milestones or phases. The following table details the review required at each listed phase.

Table 2: QC Milestones

Milestone	Document	Guidance	Requirements <i>include whether signed or initialed, and if so, by role</i>
Scoping	No deliverable during scoping	Determine if area of disturbance triggers 1200-CA compliance.	N/A
Design Acceptance Package (DAP)	Provide narrative describing erosion & sediment control risks and proposed solutions	Direct Survey to collect information required by 1200-CA. Identify if on-site contaminants trigger 1200-CA EMP.	No review of ESC narrative is required at DAP.
Preliminary Plans	No ESC deliverable is due at Preliminary Plans	Continue site research and development of ESC Plans.	Reference and fill out designer check list, form 734-5273 during development of ESC plans.
Advance Plans	ESC Plans and 00280 Special Provision. If 1200-CA buffer zone is required, include in ESC Plans	Work with region Haz-Mat if EMP is required. Reference 1200-CA Appendix A & B if applicable.	Designer continues to reference form 734-5273. Review of advance ESC plans is required with initial. Verify compliance with 1200-CA Permit when applicable.
Final Plans	Plans, Special Provisions and Engineer's Estimate	See GE12-01(a) and get concurrence on level of risk from TR	Review of final plans, specs and cross reference with estimate. Verify compliance with requirements in content and format. Complete form 734-5273 and sign reviewed plans.
PS&E Package	Plans, Special Provisions and Engineer's Estimate		Deliverable package reviewed. If applicable, 1200-CA cover sheets become bid reference documents.

4.2. Quality Control Reviews

QC reviews assist the professional of record (POR) in developing documents that are free of errors and mistaken assumptions. The reviews verify documents are consistent with applicable standards and guidance and there is consistency between calculation results and recommendations.

Quality reviews should verify previous QC review comments have been understood and addressed. There should also be a check with other disciplines to make sure there is inter-disciplinary consistency for the project design. Both preparers and quality reviewers need to be technically competent in the discipline.

For expediency and consistency, the following standard templates and checklists are available from the [Erosion and Sediment website](#), under “guidance materials.” There one can also find manuals, technical guidance, and standards.

- [QC checklist, form 734-5273](#).

It is important to note the use of these tools is not intended to replace sound professional judgement nor to relieve the POR from their responsibilities.

Erosion and sediment control quality reviews begin with the preparer, who checks the quality of their work. They provide it to a QC reviewer who will:

- Check that risks regarding erosion, sedimentation and runoff are adequately addressed.
- Confirm the appropriate BMPs are specified in the appropriate locations and at the necessary quantity and interval.
- Verify adequate and appropriate emergency materials are specified.
- Verify whether the 1200-CA permit applies to the project and if so, that the project’s ESC plan satisfies the requirements of that permit.
- Verify ESC plans are prepared by licensed engineer, certified geologist or licensed landscape architect who is technically competent in that discipline.
- Verify that if ESC plans preparer is not licensed, that the design and deliverable production is taking place under the controlling oversight of a licensed professional.
- Verify risks are addressed and appropriate measures specified. When reviewing plans, additions, deletions and revisions are marked in red pencil. Corrections: strike redlines in yellow highlighter and back check mark over.
- Verify special provisions are appropriate for the project’s risk designation and permit requirements; verify they align with ESC plans.
- Review engineer’s estimate to verify quantities align with plans and that administrative, maintenance, monitoring and ESCP revision costs are captured in estimate.

Reviewer enters comments in project comment log. The reviewer then checks back with the preparer to confirm they accept the comments. See Section 4.3 on how differences of opinion are handled. Once agreement is reached, corrections are made, and a back-check is done to verify corrections were made as intended before sending to the POR for signing.

Consultant Quality Control Reviews

Consultant designers may have alternative QA/QC procedures that may involve multiple design firms as well as ODOT. Consultant QA/QC procedures must:

- Use the designer's ESC QC Checklist form 734-5273.
- Verify the ESC plans, special provisions, engineer's estimate and, when applicable, the conditions of the 1200-CA permit, comply with standards, guidance and requirements.

When this is the case, QA/QC shall follow consultant's procedures. Consultant's QA/QC procedures must be as rigorous or more than the QA/QC process detailed herein.

When working on projects with alternative QA/QC procedures, consultant designers must inform agency reviewers of the process, assure agency reviewers have the software and training in the consultant's alternative procedures and verify agency reviewers are aware of review submittal dates and review submittal procedures.

4.3. Authority of the Reviewer

Because a designer has a better understanding of project limitations, constraints, and opportunities than a reviewer, who enters the project late in its lifecycle, the designer/POR is in the position to not act on comments of a reviewer, with exceptions listed below.

If there is a major technical disagreement, the issue should be elevated within the discipline or region technical center, as applicable. If the issue cannot be resolved at that level, it is elevated to the discipline section level, i.e., Erosion and Sediment Control Program, and if needed, up to the chief engineer.

ODOT has the right, responsibility, and authority to establish the procedures, policies, codes, standards of practice and level of quality under which work products and tasks will be conducted. The only limitation is that practice standards should be no less than the standard of care in the industry.

Most often, the reviewer and POR will address recommendations and changes in a collaborative manner and create a work product that satisfies both parties. However, situations will arise where that is not tenable.

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Recommended changes to the work will generally fall into three categories. Those that:

1. Represent different ways to analyze or view the work that are suggested or advisory.
2. Represent differences of opinion that do not violate the standard of care or impact the safety of the public.
3. Violate the standard of care or impact the safety of the public.

For those cases, guidance is needed as follows:

- Compromise and open-minded communication are crucial. Further, it is the POR's first duty to try and solve the matter with the reviewer. The reviewer should make every possible effort to explain their position to the POR and listen to feedback. Failing resolution between the parties, the resolution will vary depending on the nature of the dispute.
- For changes requested by the reviewer that would fall into the first category and would be considered suggestions of feedback, the POR should respond to the reviewer but does not need to document their choice to not incorporate the suggested changes.
- For the second category, differences not violating the standard of care or impacting the safety of the public, the POR should respond to each item individually and document why they are not implementing the recommendation.
- For differences that either party (POR or reviewer) considers a violation of the standard of care or impact safety of the public and that cannot be resolved, the POR shall work with the unit manager and then the technical center manager (or section manager in the case of a centralized discipline) prior to seeking other ways of resolving the problem. Other ways of resolving the issue include an approval to a deviation or design exception by the delegated authority for the discipline.
- Reviewers cannot require licensed professionals to change work in a way that would endanger the public or violate the standard of care.
- Licensed professionals are expected to address issues of standard of care or public safety. Only if proposed changes jeopardize the safety of the public or violate the standard of care would the licensed professional have an argument for not being responsible for sealing the work.

4.4. Software, Tool, and Data Validation

Experience and training empower designers to understand and address the risks and forces that require erosion and sediment control.

Software is generally not required other than applications used in drafting and compiling cost estimates, which are not discipline specific.

However, if a project is adjacent to waters of the state, and the buffer zone requirements imposed by the 1200-CA permit come into play, then verification of the buffer zone design via a software tool is required. The software is the [Revised Universal Soil Loss Equation II \(RUSLE2\)](#). This software takes the area of disturbance, the slope length, slope steepness, the soil types and soil cover to determine the sediment discharge from an area. The output from the software is required by the Oregon Department of Environmental Quality to be part of the ESC plan for projects that include buffer zones.

Quality reviewer shall verify that if full 50' of undisturbed buffer zones are not provided between work and open water, that buffer zone protections are validated by RUSLE2 output. Reviewer checks that the RUSLE2 output is included in ESC plan submittal to DEQ.

4.5. Quality Control Documentation

As project QC work is done, quality records are created that provide reviewable evidence documenting that quality work was done. These quality records also provide the basis for quality reviews and/or audits (performed by professional auditors).

Quality reviewer shall register on the ESC QC Checklist (form 734-5273) that buffer zone effectiveness has been calculated by the RUSLE2 software and that it provides effective function.

Documentation needs to occur as the QC work is completed. As the scope of erosion control plans are dependent on the completion of other discipline work, these ESC plans are developed later in the project lifecycle than other disciplines. The timely completion of plan verification and documenting effectiveness is important to maintaining the project schedule. By documenting QC as identified in Section 3.1, and saving that documentation as directed, subsequent reviewers can confirm the QC process was implemented throughout the project.

All reviewed work products or tasks will be documented in the project file. A separate sheet attached to the file will list the items reviewed and provides a place to record the initials of the reviewer and the date the review was accomplished.

Review comments and notes should be written/recorded to the greatest extent possible to promote transparency and minimize misunderstandings. In addition, reviewers should have a conversation with the person who created the work product or task to go over their comments. This establishes a personal relationship that helps to lessen possible conflicts of ego. Reviewers' comments should be retained in ProjectWise.

To the extent reasonable to document the process of deciding on the final approach, unsealed drafts of professional deliverables should be retained within the project file. Electronic version control should be in accordance with file naming convention detailed elsewhere in this manual. Drafts should be retained for significant projects with multiple iterations.

Quality records in ProjectWise are stored in their regular discipline or milestone directory, with either “QC,” “QA,” or “QV” in the document title or description, to facilitate searches for quality documentation. A set of quality files from each discipline or milestone folder in ProjectWise will be added to a set created in the “7_quality” folder for Environmental:

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See [ProjectWise 7 Quality folder FAQ's](#) and guidance on [How to Create Document Sets_OG.pdf](#).

Deliverables and all quality records needed to confirm that a thorough QC review has been completed at the time of production will be stored in ProjectWise following ODOT ProjectWise protocols and naming conventions.

Electronic signature or initials will be considered a valid secure signature. The electronic signatures will include at least the name and date the document was signed.

4.6. QC Communications

The process described by this section defines the minimum level of communication and collaboration necessary to meet the requirements of the ODOT Erosion and Sediment Control quality plan.

Members of the project team are encouraged to freely communicate throughout the life of the project to assure a high level of service and quality and reduce significant amounts of rework, errors, or omissions.

5. Quality Assurance

Quality assurance (QA) is a system undertaken to maximize the effectiveness of the quality program. The QA process will assist in measuring the effectiveness of the quality efforts in order to provide input into continuous improvement of the work and assist in identifying technical development needs.

The goals of an effective QA process are:

Verification – A primary purpose of the ODOT Quality Assurance program is to confirm that all of the elements of the QC process took place at the right time and that the applicable standards were applied effectively. This is done by collecting and processing information relative to the connection between quality processes and outcomes.

Competency Building – The QA process will assist in developing an agency-wide vision of the current needs with respect to technical knowledge and competence. The evaluation of where projects succeed or fail, and the role of the QC program in assuring success will provide data to be used in identifying gaps or weaknesses within the current knowledge base.

Continuous Improvement – Beyond the above-described project specific compliance, the QA process is intended to enable continuous improvement within both the quality program as well as within the practice community providing ESC services for ODOT projects.

In order to achieve the goals stated above, the QA process must be objective, transparent, and effectively communicated.

5.1. Quality Assurance Review Process

Project Review – An in-depth review of the project documentation will address how well the project met standards and the extent to which the QC process contributed to the success of the project. The results of the in-depth reviews will be collected and evaluated for inclusion in an annual summary report.

QA Review Team – For projects developed in Regions 1 and 2, the ESC program leader provides QA/QC reviews for erosion control plans developed by that region’s landscape architects. In Regions 3, 4 and 5, the engineering program provides reviewers to that region’s ESC designers. Consultant-designed projects are reviewed by region’s ESC designers.

Completeness Review – Initial information on completed projects will be gathered from ProjectWise. The QA team will:

- Complete an initial review and evaluation, focused on the completeness and timeliness of the QC documentation.
- Write up their findings and recommendations in a draft version of a short, project-specific report.

The draft report will be provided to the POR and their direct supervisor, and to the Project Delivery QA/QC Program. The POR will provide the QA team with any applicable clarification or additional information available, which will be incorporated in the final completeness review.

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Quality files from each discipline or milestone folder in ProjectWise will be added to a set created in the “7_quality” folder (see [ProjectWise 7_Quality folder FAQ’s](#) and guidance on [How to Create Document Sets QG.pdf](#)) for Environmental:

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Appendix A - Glossary

Table A-3: Glossary of Terms, Titles, and Acronyms

Term	Explanation
DEQ	Oregon Department of Environmental Quality
DAP	Design acceptance package; statewide phase gate project delivery milestone.
PS&E	Plans, specifications and estimates; statewide phase gate project delivery milestone.
BMP	Best Management Practice – products and processes accepted by profession as most effective
ESC	Erosion and Sediment Control
ESCP	Erosion and Sediment Control Plan
EMP	Environmental Management Plan – required submittal to DEQ if contaminated media occurs on Project site.
Quality control (QC)	Quality control, focused on the product fulfilling quality requirements as it is developed.
Quality assurance (QA)	Quality assurance, focused on the process and assurances that quality requirements are being fulfilled. <ul style="list-style-type: none"> • Verifying that QC was done following the quality processes. • Reviews of QC and QA processes, supporting continuous improvement. • Project and program level QA reviews.
Quality Management	Policies, processes, activities, and responsibilities that ensure the overall quality of tasks and deliverables in project delivery. Quality management is implemented by means such as quality planning, quality control, quality assurance, and continuous improvement within the system.
Quality Verification (QV)	Review process to ensure technical sufficiency of all deliverables, verify performance of all quality tasks, and to document the completion of those tasks.
POR	Professional of Record
Technical sufficiency	Reviewing a deliverable for technical sufficiency means technical review, checking that the deliverable is in compliance with all applicable laws, rules, regulations, technical standards, guidance, policies and procedures, suitable for the milestone. An initial check of key elements can be used to decide whether additional review is warranted.



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