

Section 200 Submittals

Table of Contents

201 REVIEW PROCESS 200-1

202 BOULDER COUNTY PROJECTS 200-1

203 PRIVATE PROJECTS 200-1

204 DRAINAGE PLANS AND REPORTS 200-1

205 ADDITIONAL PRE-PROJECT REQUIREMENTS..... 200-2

206 AS-BUILT REQUIREMENTS 200-3

207 REFERENCE 200-3

List of Figures

200-1 Boulder County Drainage Report Checklist End of Section

200-2 Boulder County Drainage Plan Checklist End of Section

Section 200 Submittals

201 REVIEW PROCESS

The CODE discusses approvals and permits necessary before development. The Boulder County Transportation Department is a referral agency in the development review process, and a general overview of the review process by the Transportation Department is included in the Boulder County Multimodal Transportation Standards. The submittal requirements for each type of project will be different depending on the scope and location of the improvements. The requirements for a commercial building addition, a new roadway, a new bridge, channel restoration, and construction of a single-family residence will all vary from each other, depending on specific site conditions and impacts.

202 BOULDER COUNTY PROJECTS

For projects sponsored by Boulder County, the county has adopted the FIR/FOR terminology used by CDOT and has specific submittal requirements at each phase of the project. A preliminary grading and drainage plan and drainage report are required at the FIR, and a final drainage and grading plan and drainage report are required at the FOR.

203 PRIVATE PROJECTS

To facilitate the submittal process for both the applicant and the county, a pre-application conference with the Boulder County Transportation Department may be required of land-use permit applicants whose projects involve floodplain, road, access, traffic concerns, parking design and engineering, vehicular movement patterns and volumes, or any other transportation-related concern. The need for a pre-application conference with the Boulder County Transportation Department will be determined by the Land Use Department in consultation with the County Engineer. The pre-application conference shall include a discussion regarding current regulations, required submittal procedures, potential drainage problems and solutions, and specific submittal requirements.

204 DRAINAGE PLANS AND REPORTS

The purpose of the preliminary and final drainage plan and report is to identify existing site conditions and drainage problems, as well as those anticipated to result from development (whether on site or off site), and to present conceptual and final solutions to those problems. All plans and reports shall be submitted as a single pdf document, printable to scale on 8½ × 11 or 11 × 17 paper.

The format and contents of the drainage plan and report are specified in the Drainage Plan Checklist and the Drainage Report Checklist, included as Figures 200-1 and 200-2. These checklists shall be included as appendices to the drainage report. All checklist items are required for both preliminary and final plans and reports unless they are not applicable because of the project location or scope. Preliminary plans and reports must include a final version of all items relating to existing conditions and a conceptual version of all items relating to proposed conditions.

Each plan and report shall be prepared by a professional engineer licensed in Colorado. The report shall contain a certification page that states the following:

I hereby certify that this plan and report for the [preliminary][final] drainage design of [Project Name/Name of Development] was prepared by me, or under my direct supervision, in accordance with the provisions of the Boulder County Storm Drainage Criteria Manual.

Registered Professional Engineer

(Affix Seal)

State of Colorado No. _____

Preliminary drainage plans and reports for private projects should be submitted early enough in the project for the county to have the opportunity to provide feedback on the conceptual design before proceeding to final design. Final drainage plans and reports must be submitted and accepted prior to project approval. The project schedule should include several weeks of review time for county staff for both the preliminary and final submittals. The final drainage plan and report shall be included as part of the construction documents for all facilities affected by the drainage plan.

205 ADDITIONAL PRE-PROJECT REQUIREMENTS

Depending on the nature and location of a project, multiple other permits and requirements from state and federal agencies may be required. Section 1400, Environmental and Regulatory Permitting discusses several of the requirements that may apply. Section 300, Policy discusses county and FEMA floodplain policies and requirements. Section 1300, Construction Water Quality provides guidance on when a stormwater management plan is required and how to develop one. These sections should be reviewed to ensure all necessary permits are acquired and applicable policies and regulations are followed. The certification page in the final drainage report shall include the following statement:

I hereby certify that to the best of my professional knowledge all applicable state and federal permits, clearances, and environmental compliances have been obtained.

Registered Professional Engineer

(Affix Seal)

State of Colorado No. _____

206 AS-BUILT REQUIREMENTS

The special provisions for surveying within the project specifications for construction shall include a requirement that as-built information be developed during construction to document the as-built location and elevation of the improvements. Specific requirements will be determined by the County Engineer on a case-by-case basis, but a minimum requirement will be that the Contractor legibly mark the plans with any field changes and notify the engineer of any significant changes. For private projects, the construction contractor or design engineer may be required to submit as-built drawings in CAD in a format specified by the county. As-built information may not be required for single-family residence construction that has no major drainage infrastructure.

As-built survey information shall include the following items:

1. Locations and elevations for abutments, wingwalls, retaining walls, or other structures.
2. Bridge superstructure and substructure locations and elevations.
3. Invert elevations, locations, and lengths for pipes, culverts, and inlets.
4. Rim elevations and locations for manholes and inlets.
5. Top-of-wall and invert elevations and locations of all detention and permanent water quality facilities and appurtenances.
6. Any other items required by the engineer.

207 REFERENCES

Boulder County Land Use Department, 2015. *Land Use Code*, prepared by the Boulder County Land Use Department, Boulder, CO.

Boulder County, 2012. *Boulder County Multimodal Transportation Standards*, prepared by Boulder County, Boulder, Colorado.

Figure 200-1. Boulder County Drainage Report Checklist

Included			Report Requirements
Yes	No	N/A	
1. Cover Sheet			
			A. Name of Project
			B. Address
			C. Owner
			D. Developer
			E. Engineer
			F. Boulder County Case/Project Number
			G. Submittal and Revision Dates as applicable
2. Certification Statements			
			Provide certification statements in Section 200 on a fly page after the report cover.
3. General Location and Description			
			A. Name of Project
			1. Site Vicinity Map
			2. Township, Range, Section, ¼ Section
			3. All roadways adjacent to and within the project area
			4. Names of surrounding developments and their land use/zoning
			B. Description of Property
			1. Area in acres
			2. Ground cover, vegetation, site topography, slopes, etc.
			3. NRCS soil classification map and discussion
			4. Major and minor drainageways
			5. Regulatory floodplains (FEMA or Boulder County)
			6. Existing irrigation facilities
			7. Significant geologic features
			8. Existing and proposed land use activities
			9. Geotechnical/groundwater investigation information
4. Drainage Basins and Subbasins			
			A. Major Drainage Basins
			1. Onsite/offsite major drainage basin characteristics and flow patterns
			2. Discussion of all planning studies that affect major drainageways
			3. Discussion of the condition of channels within or adjacent to the project including need for improvement
			4. Discussion of impacts of offsite flow patterns under fully developed conditions
			B. Minor Drainage Basins
			1. Onsite/offsite minor drainage basin characteristics and flow patterns
			2. Discussion of impact to/by irrigation facilities
			3. Discussion of impacts of offsite flow patterns under fully developed conditions
5. Drainage Design Criteria			
			A. Applicable Regulations and Permits
			1. County criteria and permits
			2. Other criteria and permits (FEMA, UDFCD, 404, ESA, etc.)

Figure 200-1. Boulder County Drainage Report Checklist

Included			Report Requirements
Yes	No	N/A	
			B. Drainage Studies, Outfall Systems Plans, Site Constraints
			1. Discuss previous drainage studies or master plans for the project site and adjacent areas and their influence on facility designs
			2. Discuss previous drainage studies or master plans for the project site and adjacent areas and their influence on facility designs
			3. Discuss impacts to stormwater design caused by site constraints such as streets, utilities, light rail rapid transit, existing structures, etc.
			C. Hydrology
			1. Runoff calculation methods
			2. Design storm(s)
			3. Design rainfall
			4. Detention calculations (drainage area map, storage, release rate, etc.)
			D. Hydraulics
			1. Velocity and capacity calculations for inlets, culverts, channels, etc.
			2. HGL calculation methods and loss coefficients
			3. Water surface profile calculation methods
			E. Water Quality
			1. Proposed construction BMPs and source controls
			2. Identify permanent water quality design criteria
			F. Groundwater
			Discuss groundwater investigations/impacts/remediation per 404.3
6. Facility Design			
			A. Stormwater Conveyance Facilities
			1. General conveyance concepts
			2. Use of ecological design components
			3. Proposed drainage paths and patterns
			4. Storm sewer and inlet sizes/locations, tributary areas, peak flows
			5. Outfall locations, flow rates, energy dissipation
			6. Method of conveyance from outfall to major drainageway including capacity evaluation
			7. Open channel, ditch, and swale designs
			8. Allowable street capacity
			9. Maintenance and easement requirements
			10. Offsite facilities needed to convey flow to major drainageway
			B. Detention Storage and Permanent Water Quality
			1. Detention design and release rates including overflow spillway
			2. Outfall location and energy dissipation
			3. Discharge conveyance to nearest major drainageway
			4. Draft maintenance agreement and easement requirements*
			5. Exemption being requested and documentation provided

*A signed maintenance agreement is required prior to final acceptance.

Figure 200-1. Boulder County Drainage Report Checklist

Included			Report Requirements
Yes	No	N/A	
			C. Floodplain
			1. Source of floodplain information (FEMA, UDFCD, Boulder County)
			2. Project impacts to the floodplain
			3. Required modification studies
			4. Acknowledgement of required floodplain development permit
7. Conclusions			
			A. Compliance with Standards
			B. Variances
			C. Effectiveness of Drainage Concept
8. References			
			Reference all criteria, master plans, reports, and technical information used.
9. Appendices			
			A. Hydrologic calculations
			B. Hydraulic calculations
			C. Detention and Permanent Water Quality calculations
			D. References (copies of pertinent portions of reference materials)

Figure 200-2. Boulder County Drainage Plan Checklist

Included			Plan Requirements
Yes	No	N/A	
1. Overall Drainage Plan			
			A. Title block, north arrow, scale, paper size, and legend
			B. Boundaries of entire project or development
			C. Limits of major drainage basins including offsite basins where possible
			D. Drainage patterns to, from, and within the site
			E. Topographic information
			F. Existing stormwater facilities u/s, d/s, and within the site
			G. Key map of locations of detailed drainage plan sheets
2. Detailed Drainage Plans			
			A. Title block, north arrow, scale, paper size, and legend
			B. Basin designations, design points, flow rates, volumes, release rates, etc.
			C. Scale of 1"=20' to 1"=100' sufficient to show detail
			D. Existing and proposed contours with 2' maximum interval (5' where slope exceeds 10%); contours must extend beyond project boundary
			E. Existing utilities and structures
			F. Property, right-of-way, and easement lines
			G. Adjacent developments and ownership
			H. Roadway ROW and roadside or storm drain improvements
			I. Drainage basin delineations
			J. Show existing and proposed irrigation facilities, swales, channels, ditches, storm sewers, culverts, detention ponds, and water quality structures or features. Provide information on materials, sizes, slopes, and shapes.
			K. Proposed outfalls points and flow rates and facilities required to convey flow downstream
			L. Location and elevation of all existing and proposed 100-year floodplains, the name of the waterway, and the source of the information (e.g. FEMA FIS, FEMA FHAD, Boulder County data, UDFCD FHAD, etc.)

