

Planning & Development Department

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FLOOD STUDY CHECKLIST

PROJECT NAME: _____

ADDRESS OF PROJECT: _____ TMS#: _____

FEMA MAP #: _____

CONTACT PERSON: _____ COMPANY: _____

PHONE: _____ EMAIL: _____

ADDRESS: _____

Notes/comments:

The flood study checklist is not intended to replace FEMA requirements for flood studies, but will be used as a guide to assist in developing the minimum information needed. Please see FEMA instructions for complete requirements.

All Flood Studies must meet the requirements set forth in [Chapter 10, Article VII](#) of the City of Rock Hill Code of Ordinances

SECTION 1--Narrative

- Cover sheet with project name, location, date, engineer's contact information, signed & sealed with PE and COA seals
- General project description with scope, location, purpose, FIRM map number(s) and date, description and location(s) of FEMA benchmark(s) used with NAVD 1988 data
- Completed Flood Study Checklist
- Origination of topographic data {five (5) feet maximum contour intervals, maps, cross sections, etc.}
- Basis for roughness coefficients used for the existing & proposed conditions
- Description of existing conditions, soils, land use, ground cover, any structures, model being used, etc.

- Description of corrected conditions, new cross sections, geometry changes, etc.
- Description of proposed conditions, new cross sections, culverts, fill, roadways, proposed structures, etc.
- Tabular printout of effective, duplicate, corrected, and proposed Water Surface Elevations with changes in WSEs
- Description of model used with version and frequency storms modeled
- Street names (including r/w widths) and property uses adjacent to the site

SECTION 2

FEMA FORMS

- MT-1** (determination of flood hazard areas, based on fill)
 - _____ Form 1 — Property Information (certified)
 - _____ Form 2 — Elevations (certified)
 - _____ Form 3 — Community Acknowledgement (to be completed by community Floodplain Manager)
 - _____ Payment Information Form

OR

- MT-2** (request for map revision: culverts, floodway, encroachments, etc.)
 - _____ Form 1 — Overview & Concurrence (certified)
 - _____ Form 2 — Riverine Hydrology & Hydraulics
 - _____ Form 3 — Riverine Structures (canalization, culverts, dams, levees, etc.)
 - _____ Payment Information Form

SECTION 3

(a) CALCULATIONS

- All models performed on like software and version
- Duplicate Effective Model
- Corrected Effective Model
- Existing or Pre-Project Conditions Model
- Revised or Post-Project Conditions Model
- Digital and hard copies of each model
- Flows evaluated for 4%, 1% and 0.2% storms (all models) (4% shown in profile only)
- Floodway flows and delineation (all models)
- Cross section description (model input data) corresponds with plan mapping

Duplicate Effective Model

- Copy of Current Effective model
- Does duplicate geometry match effective?
- Do duplicate flows match effective model?
- Do duplicate floodway encroachments match effective?
- Do duplicate Water Surface Elevations (WSE) match effective (to within 0.1 foot)?
- Benchmark data reference
- Corresponding cross reference of model input data with plan cross sections (location description)

Corrected Effective Model

- Is stationing consistent with duplicate effective model?
- Are flow rates consistent with duplicate effective model?
- Are cross section locations consistent with duplicate effective model?
- Are roughness coefficients consistent with duplicate effective model?
- Is cross section geometry consistent with duplicate effective model?
- Are downstream reach lengths consistent with duplicate effective model?
- Are stream bank stations consistent with duplicate effective model?
- Are boundary conditions consistent with duplicate effective model?
- Are corrections complete in all sections?
- Are corrections justified?
- Are elevations set to effective benchmarks?
- Are new cross sections located in appropriate locations?
- Do new sections include entrance and exit points of all crossings?
- Are roughness coefficients consistent and appropriate for the new cross sections?
- Are contraction/expansion coefficients consistent and appropriate for the new cross sections?
- Benchmark data reference
- Corresponding cross reference of model input data with plan cross sections (location description)

Existing or Pre-Project Conditions Model

- Is stationing consistent with corrected effective model?
- Are flow rates consistent with corrective effective model?
- Are cross section locations consistent with corrected effective model?
- Are roughness coefficients consistent with corrected effective model?
- Is cross section geometry consistent with corrected effective model?
- Are downstream reach lengths consistent with corrected effective model?
- Are stream bank stations consistent with corrected effective model?
- Are boundary conditions consistent with corrected effective model?
- Is roughness coefficient appropriate for culvert material?
- Are culvert entrance/exit loss coefficients appropriate?
- Show road deck elevations and appropriate weir coefficients
- Are roughness coefficients for the existing cross sections appropriate?
- Are bank stations for the existing cross sections appropriate?
- Are ineffective flow areas shown?
- Are the adjusted contraction/expansion coefficients used 0.3 & 0.5, respectfully?
- Benchmark data reference
- Corresponding cross reference of model input data with plan cross sections (location description)
- Are significant deviations between Corrected Effective and Pre-Project models noted in study narrative?

Revised or Post-Project Conditions Model

- Is stationing consistent with corrected effective model?
- Are flow rates consistent with corrective effective model?
- Are cross section locations consistent with corrected effective model?
- Are roughness coefficients consistent with corrected effective model?
- Is cross section geometry consistent with corrected effective model?
- Are downstream reach lengths consistent with corrected effective model?
- Are stream bank stations consistent with corrected effective model?
- Are boundary conditions consistent with corrected effective model?
- Does the change in Water Surface Elevation zero out between an upstream and downstream FEMA cross section?
- Is roughness coefficient appropriate for culvert material?

- Are culvert entrance/exit loss coefficients appropriate?
- Show road deck elevations and appropriate weir coefficients
- Are roughness coefficients for the new cross sections appropriate?
- Are bank stations for the new cross sections appropriate?
- Are ineffective flow areas shown?
- Are the adjusted contraction/expansion coefficients used 0.3 & 0.5, respectfully?
- Benchmark data reference
- Corresponding cross reference of model input data with plan cross sections (location description)

Floodway

- Are the geometry, boundary conditions, and flows the same as the proposed conditions?
- Do the encroachments cause a rise of 1' or less in the proposed conditions?

(b) MAPPING

- Are all cross sections (including FEMA) shown and labeled with stationing? Stationing must begin and end with a FEMA cross section
- Existing and proposed grading shown including existing and proposed contours
- Contours shown represent changes in geometry
- Existing and proposed 1%, 0.2%, and Floodway shown
- All changed limits tie to effective extents
- Culvert/crossings shown with stationing, size, shape, slope, material, skew angle, length, etc. and detail of structure
- Property owners labeled (include adjacent properties)
- Roadway grades and shoulder slopes match model (include typical roadway cross section)
- All land use changes shown—parking, structures, cleared areas, etc.
- Include a copy of the proposed site plan-include vicinity map at scale not less than 1"= 1 mile, tax map, streets, and parcel numbers with uses
- Copy of FIRM showing changes
- Include FEMA profiles showing existing and proposed flows and any added structures

SECTION 4

No-Impact Certification

This is to certify that I am a duly qualified registered professional engineer licensed to practice in the State of South Carolina.

It is further to certify that the attached technical data supports the fact that the proposed _____ (Project Name) will not impact the 100-year flood elevations, floodway elevations, or floodway widths on _____ (Stream Name) at published sections in the Flood Insurance Study for _____ (Community Name), dated _____ (Study Date) and will not impact the 100-year flood elevations, floodway elevations, or floodway widths at unpublished cross-sections in the vicinity of the proposed development.

Attached are the following documents that support my findings:

Date: _____ {Seal}

Signature: _____

Title: _____

Provisions of all required information are not a guarantee of approval. This list contains the minimum amount of information necessary for review of the Flood Study and supporting documents. The Approving Authority may reasonably require supplemental reports, data and additional information.

APPLICANT'S CERTIFICATION

"I certify to the best of my knowledge that these plans, checklist, and calculations contain all information required as referenced on this application."

Signature of Engineer

Address

Printed Name

Phone number

Email

Date received by the City of Rock Hill

(PE & COA SEALS)