

NORTH CAROLINA  
WAKE COUNTY

**MEMORANDUM OF AGREEMENT**

BETWEEN

NORTH CAROLINA  
DEPARTMENT OF  
TRANSPORTATION

and

NORTH CAROLINA  
FLOODPLAIN MAPPING  
PROGRAM

This MEMORANDUM OF AGREEMENT, hereinafter referred to as the “MOA” or “Agreement”, made and entered into the 22nd day of April, 2013, between the Department of Transportation, an agency of the State of North Carolina, hereinafter referred to as the “Department”, and the North Carolina Floodplain Mapping Program, an office within the Division of Emergency Management in the Department of Public Safety of the State of North Carolina, hereinafter referred to as the “NCFMP”;

**WITNESSETH:**

**WHEREAS**, in May 1977 the President of United States issued Executive Order 11988, in which it directed Federal Agencies to take certain steps to avoid adverse impacts associated with the occupancy and modification of floodplains; and

**WHEREAS**, in 1982 the Federal Highway Administration (FHWA) entered a Memorandum of Understanding with Federal Emergency Management Agency entitled “Procedures for Coordinating Highway Encroachments on Floodplains with the Federal Emergency Management Agency (FEMA)”, in which it provides guidance to highway design engineers in regard to complying with National Flood Insurance Program (NFIP) standards for Federal-aid highway actions involving regulatory floodways; and

**WHEREAS**, in 1989 the North Carolina General Assembly created the North Carolina Highway Trust Fund for the construction and improvement of North Carolina roadways and bridges; and

**WHEREAS**, in July 1990 the Governor of North Carolina issued State Executive Order 123, in which it directed the Department to work directly with the Federal Department of Transportation and Federal Emergency Management Agency (FEMA) to apply appropriate

standards and management to comply with the Floodplain Management Policy relevant to highway construction within floodplains; and

**WHEREAS**, in September 1992 FHWA issued NS 23 CFR Part 650A, Transmittal 5, in which it provides highway design engineers with guidance regarding highway crossings that encroach on floodplains where a Detailed Study has been performed, but no regulatory floodway designated, resulting in an increase of no more than 1 foot in Base Flood Elevation (BFE); and

**WHEREAS**, in September 2000 the Federal Emergency Management Agency (FEMA) has delegated the responsibility to the NCFMP in the Division of Emergency Management within the North Carolina Department of Public Safety to update and maintain the Special Flood Hazard Areas (SFHAs), Digital Flood Insurance Rate Maps (DFIRMs), and all the Letter of Map Changes (LOMCs) in North Carolina; and

**WHEREAS**, on August 17, 2006 the FHWA Region IV and Raleigh Division, the FEMA Region IV, the NCDOT Hydraulics Unit and the NCFMP staff met in Raleigh, North Carolina to discuss the compliance requirements for the NFIP; and

**WHEREAS**, both the Department and the NCFMP recognize the need to function as a cooperative team in order to effectively deliver the Department's multi-modal transportation programs; and

**WHEREAS**, the Department and the NCFMP mutually agree this Agreement allows for efficient use of both agencies' resources and has been developed in a manner to streamline projects' review and construction schedules in a cost effective way; and

**WHEREAS**, on June 8, 2008 the Department and the NCFMP signed, and later modified on March 18, 2009, this Agreement to satisfy the NFIP requirements and to keep the NCFMP's DFIRMs current in regard to Department's projects; and

**WHEREAS**, in November 2011 the FHWA issued to the Department a review report entitled "Process Review of the Hydraulics Program of the North Carolina Department of Transportation", in which it expressed concern over the Non-Encroachment Area being treated as floodways by the NCFMP, which consequently, results in the construction of longer bridges than necessary on Department projects across the state. It directs the Department to adhere to the FHWA's 23 CFR 650A guidelines and work with the NCFMP to resolve this issue; and

**WHEREAS**, the Department and the NCFMP, in accordance with the provisions hereinafter set forth propose to modify this agreement for services that are essential for the Department's various transportation programs.

**NOW, THEREFORE, Be It Resolved:**

That the two agencies hereto, each in consideration of the promises and undertakings of the other, as herein provided, do hereby covenant and agree, each with the other, as follows:

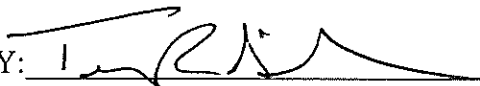
1. The Department shall coordinate with, and provide the information to the NCFMP as follows:
  - Type 1) Provide design data and map updates to the NCFMP for projects that result in No-Rise, as defined in Exhibit A;
  - Type 2a) Provide design data and map updates to the NCFMP for projects that result in Minor Impacts, as defined in Exhibit A;
  - Type 2b) Provide design data and map updates to the NCFMP for projects that result in Measurable Impacts, as defined in Exhibit A;
  - Type 2c) Provide design data and map updates to the NCFMP for projects that are in the FEMA flood study areas with missing, or erroneous data, as defined in Exhibit A;
  - Type 2d) Provide design data and map updates to the NCFMP for projects that result in an increase of up to 0.2 feet in Base Flood Elevation (BFE), in a Limited Detailed Study area, as defined in Exhibit A;
  - Type 2e) Provide design data and map updates to the NCFMP for projects that result in an increase of greater than 0.2 feet, but no greater than one (1) foot, in BFE, as defined in Exhibit A;
  - Type 3a) Provide Letter of Map Revision (LOMR) submittals to the NCFMP, as a requirement for Department's prior Conditional Letter of Map Revision (CLOMR) approvals after the projects are completed. These apply only to FEMA's Flood Insurance Study (FIS) and flood maps, which remain unchanged since the issuance of CLOMRs, as defined in Exhibit A;
  - Type 3b) Provide LOMR submittals to the NCFMP, as a requirement for Department's prior CLOMR approvals after the projects are completed. These apply to FEMA's FIS and flood maps, which have been restudied and/or updated since the issuance of CLOMRs, as defined in Exhibit A.
  - Type 3c) Conduct pre-application consultation with the NCFMP on CLOMR projects prior to their submittals. The consultation may include, but is not limited to, guidance on hydrology, data sources, hydraulic modeling/design issues, encroachment widths, and mitigation.

2. Exhibit A denotes the criteria and associated process fees for the nine (9) MOA types previously listed.
3. Exhibit B denotes (in table format) the contents and schedule of the MOA deliverables to the NCFMP.
4. The Department and the NCFMP shall share design and survey data, including hydrologic and hydraulic designs and engineering models. The Department shall provide to the NCFMP, at no cost, the hydrologic and hydraulic design reports for the bridges and culverts across the state, prior to the commencement of construction, as well as the as-built plans, after the construction. The NCFMP shall provide the Department, at no cost, the FIS supporting technical data and hydraulic models.
5. The NCFMP representatives shall meet twice per month with the State Hydraulics Engineer and Hydraulics Unit staff to review the candidate projects for the MOA and CLOMR. The review shall include the following: projects' construction schedules, work flow, hydrology and hydraulic modeling issues, training needs, emergency repairs, consultation on CLOMRs, etc.
6. The NCFMP Director and/or his designee shall meet once per month with the State Hydraulics Engineer to review this program to ensure its full compliance with the federal regulations and FHWA's guidance, to resolve issues of dispute, and to review/approve recommendations for improvement. The fee schedule will also be reviewed annually and adjustments will be made if necessary.
7. At monthly meetings, the Department shall review with the NCFMP the eligibility and schedule of candidate MOA projects. It is the Department's responsibility to submit projects to the NCFMP in a timely manner to avoid delaying the construction schedule.
8. The Department's Division personnel shall consult with the Hydraulics Unit staff to assess the need for a review by the NCFMP for routine maintenance or construction activities that may have the potential to result in flooding. Upon request, the NCFMP shall meet with the Department and determine within two (2) weeks if the activity requires a consultation with and/or approval from the NCFMP.
9. For emergency repairs the State Hydraulics Engineer may request ad hoc meetings with the NCFMP representatives to review and develop action plans. Upon concurrence from the NCFMP, the Department may proceed with the emergency repairs and prepare the design data and documents after the repairs are implemented.
10. The NCFMP shall provide to the Department training as needed on the NFIP compliance requirement including checklists, hydrologic and hydraulic modeling, Community Floodplain Manager Certification, training for the Department field forces, etc. The Department shall reimburse the NCFMP for training and other associated cost.

11. The Department and the NCFMP understand and agree that proper administration of this MOA ensures that the Department is consistent with FEMA's NFIP Regulations as well as FHWA's guidance of 23 CFR Part 650A.
12. Projects that result in an increase in Base Flood Elevation (BFE) of 1 foot or less in a Limited Detailed Study stream shall be processed through this MOA, provided they do not adversely impact properties or buildings, and are approved by the State Hydraulics Engineer.
13. Projects that result in an increase in BFE of greater than 1 foot on State owned property in a Limited Detailed Study stream may also be processed through this MOA, provided they are reviewed and approved by both the State Hydraulics Engineer and the NCFMP Director.
14. Projects that result in an increase in BFE in the Newly Studied, or Revised Detailed Studies, and Redelineated Detailed Studies shall follow the NFIP to obtain an approval of CLOMR.
15. The NCFMP shall submit an invoice each month to the Department for the approved projects. The Department shall pay within 30 days after receipt of the invoice. The NCFMP shall be responsible for maintaining appropriate records in accordance with State accounting procedures and regulations.
16. All design and modeling work shall be performed in accordance with Federal regulations, policies and guidelines, as well as the Department's "Guidelines for Drainage Studies and Hydraulic Design."
17. This Agreement shall remain in effect from the date of execution of this agreement unless cancelled in writing as provided below. It is anticipated that this Agreement may be reviewed annually, or at a time mutually agreed upon by both parties. In the event either party to this Agreement should choose to terminate this Agreement, written notification must be given to the Director of the NCFMP and the Chief Engineer of the Department ninety (90) days prior to withdrawal.

IN WITNESS WHEREOF, this Agreement has been executed, in duplicate, the day and year heretofore set out, on the part of the Department and the NCFMP by authority duly given.

NORTH CAROLINA DEPARTMENT  
OF TRANSPORTATION

BY:   
Terry R. Gibson, P.E.  
CHIEF ENGINEER

NORTH CAROLIN FLOODPLAIN  
MAPPING PROGRAM

BY:   
John K. Dorman, C.F.M.  
DIRECTOR

## **EXHIBIT A: MOA Types and Fees Schedule**

Through this Agreement, the Department and the NCFMP mutually agree that the data sharing agreements and services provided herein are conducive to efficient cooperation and project timelines for the two agencies. Nine (9) distinct MOA types are identified as services to be provided by the NCFMP as part of this agreement:

Type 1. The NCFMP will review the Hydrologic and Hydraulic (H&H) designs for the Department's projects that result in no rise, or a decrease in BFE less than 0.1 foot.

The review and process fee for a No Rise project is \$1,000.

Type 2a. The NCFMP will review the H&H designs for the Department's projects that result in a decrease of 0.1 foot or more, but not greater than 0.5 feet (Minor Impact) in BFE. The NCFMP shall incorporate this H&H design data into its future map maintenance studies and Digital Flood Insurance Rate Map (DFIRM) updates.

The review and process fee for a Minor Impact project is \$2,000.

Type 2b. The NCFMP will review the H&H designs for the Department's projects that result in a decrease in BFE greater than 0.5 feet (Measurable Impact).

The review and process fee for a Measurable Impact project is \$11,500. It includes the development of the LOMR package and the corresponding FEMA fee.

Type 2c. The NCFMP will review projects involving FEMA-regulated streams in the FIS, such as those in Redelineated Detailed Study reaches, for which missing data or major errors were encountered in the original models, resulting in major hydraulic modeling difficulty.

Examples: Effective FIS hydraulic models are not available, or have missing or illegible data; FIS model output does not match the published data; missing or incorrect structures/cross sections; major discrepancies/errors in topographic data, erroneous hydrologic analysis, etc.

With the consultation and concurrence of the NCFMP, the Department may opt to develop H&H design reports using its own field survey data and a minimum of six (6) section analysis and develop the performance (BFE) table for the existing and proposed conditions.

For a project that is over a Limited Detailed Studied stream, the proposed project shall not result in an increase of greater than one foot between the proposed and existing conditions.

The proposed BFE is not required to match within one-half foot of the published BFE. The Department shall submit the H&H design data to the NCFMP for review and approval.

The NCFMP shall incorporate this data into its future map maintenance studies and DFIRM updates.

The review and process fee for this type of project is \$11,000.

Type 2d. The NCFMP will review a project that is over a Limited Detailed Study stream that results in an increase of up to 0.2 feet in BFE. Design engineers shall follow the Department's "Guidelines for Drainage Studies and Hydraulic Design" to assess flood risk and impacts to properties as well as the safety of traveling public.

The NCFMP shall incorporate this data into its future map maintenance studies and DFIRM updates.

The review and process fee for this type of project is \$2,000.

Type 2e. The NCFMP will review a project that is over a Limited Detailed Study stream which results in an increase greater than 0.2 feet in BFE, but no greater than 1 foot. Design Engineers shall follow the Department's "Guidelines for Drainage Studies and Hydraulic Design" to assess flood risk and impacts to the properties as well as the traveling public.

The NCFMP shall incorporate this data into its future map maintenance studies and DFIRM updates.

The review and process fee for this type of project is \$6,200.

Type 3a. The NCFMP shall update the Flood Insurance Study (FIS) components and DFIRM mapping for the Department's LOMR submittals, after the project completion. This applies to streams whose DFIRM mapping is still current after the issuance of CLOMR approval.

The review and process fee for this type of project is \$6,200. It includes the update of the DFIRM mapping and FIS components, and the corresponding FEMA fee.

Type 3b. The NCFMP shall update the Flood Insurance Study (FIS) components and DFIRM mapping for the Department's LOMR submittals, after project completion. This applies to streams whose H&H models were restudied and FIRM mapping modified since the issuance of CLOMR approval.



The review and process fee for this type of project is \$11,200. It includes the update of the H&H modeling, DFIRM mapping and FIS components and the corresponding FEMA fee.

Type 3c. When a project is determined to require a CLOMR approval, the Department design engineer may initiate a pre-application consultation to discuss with the NCFMP representative on H&H design issues, such as interpretation of the NFIP regulation, model source data, hydrology, hydraulic design, flood maps, encroachments, etc.

This process enables the NCFMP to provide guidance during the design process through its representatives and/or contract consultant. It includes the assistance from the NCFMP on consultation with FEMA on behalf of the Department, data search/verification, flood model review, technical guidance and CLOMR data pre-reviews.

The consultation for the CLOMR projects is free of charge.

## EXHIBIT B: MOA Data Deliverables and Submittal Schedule by NCDOT

DELIVERABLES	MOA TYPES								
	1	2a	2b	2c	2d	2e	3a	3b	3c
FEMA Coordination Form	✓	✓	✓	✓	✓	✓	✓	✓	✓
MOA Transmittal Form	✓	✓	✓	✓	✓	✓	✓	✓	✓
Title Sheet or Vicinity Map	✓	✓	✓	✓	✓	✓			
MicroStation (CADD) files (mapping, etc.)	✓	✓	✓	✓	✓	✓			
Bridge /Culvert Survey Report(s) (PDF)	✓	✓	✓	✓	✓	✓			
Effective Hydraulic Model	✓	✓	✓	✓	✓	✓			
Project Hydraulic Models (HEC-RAS)	✓	✓	✓	✓	✓	✓			
Hydraulic Modeling Narrative	✓	✓	✓	✓	✓	✓			
Output Comparison Table (Excel format)	✓	✓	✓	✓	✓	✓			
No Rise Certification	✓								
Parcel/Property Owner Information (in CADD)			✓			✓	✓	✓	
Signed FEMA MT-2 Form			✓			✓	✓	✓	
Documentation of NCFMP Concurrence				✓					
"As-Built" Plans (PDF, Final submittal)	✓	✓	✓	✓	✓	✓	✓	✓	

SUBMITTAL SCHEDULE									
<b>INITIAL</b> , minimum days before project construction	150	150	150	150	150	150	N/A	N/A	N/A
<b>FINAL</b> , within days following project completion	180	180	180	180	180	180	180	180	N/A