Non-phased project and Phase I Deliverables - Guidance for Sub- Applicants and Sub-Recipients submitting drainage projects

The intent and purpose of this document is to clarify and assist the Sub-applicants/Sub-recipients about understanding the details, components, and process required for "Non-phased" projects ready for construction or "phased" projects submitting Phase I deliverables for technical review.

The "phasing" aspects of this guidance are only related to phasing a project under FEMA HMA programs, at no point, it refers to the phases or segments of a project, labeled by designers or construction managers.

This guidance is specific to FDEM Mitigation personnel involved with application and project reviews as Project Managers and TechUnit reviewers, for them to share with Sub-applicants/Sub-recipients.

OVERVIEW

Projects applying for funding under FEMA's Hazard Mitigation Assistance (HMA) programs could be submitted as a complete project ready for construction or could be phased during the application review. For project's fully designed and being recommended as Non-phased, the following guidance is applicable.

If the project is not fully designed, permitted and ready for construction, the State makes the determination to phase the project and submits a recommendation to FEMA for phase I funding. If approved and funded, Phase I is the preparation, design and study needed to complete the project - for it to be ready for Phase II, which shall be the actual construction of the project, no construction activities are approved under a Phase I approval. Phase I activities could include but are not limited to: surveying, geotechnical analysis, engineering, design, plans preparation, permitting and bidding for the proposed project, for Phase II approval.

A Phase II review is a new and complete review of the project once the Phase I tasks have been completed, it must be submitted to the State as Phase I "deliverables". The project should now be fully designed, permitted and ready for construction. The Phase II review takes all the technical data, gathered and generated during Phase I, and analyses the project for eligibility, feasibility, and cost effectiveness. It is very common that both activities scope of work (SOW) and budget of projects change from Phase I to Phase II. A cost-effective determination in Phase I does not necessarily indicated that Phase II will be cost effective. Only after the Phase II review is completed and the project is recommended, construction on the project can begin.

It is expected that the below components ("deliverable" items) will be finalized and completed before the review is requested:

- A revised SOW (or assurance of the original SOW provided)
- A revised budget based on bids
- Engineering design for all trades necessary to complete the project
- Technical/Engineering studies, Hydraulic & Hydrologic studies (H&H), surveys, road closures, etc. (This is used to fill out the Damage file – for BCA purposes)
- Completed Permitting, as required

As one can see, the above items are those which may have been funded during phase I – please plan accordingly so all items are procured. The design of a project should be 100% plans signed and sealed (S&S) by the engineer of record (EOR), and all technical studies should also have the corresponding professionals' approval. All concerns raised during Phase I review should have been addressed and solved with the completed study and design work. In addition, the project will need to prove its scope is sufficient and demonstrate that the technical information produces a cost-effective mitigation activity. To support the cost effectiveness claim, the FDEM staff will require a damage file to be compiled with the project's technical data.

DAMAGE FILE (Excel spreadsheet)

A Benefit Cost Analysis (BCA) is required for all FEMA HMA grant projects. For a Phase II project, technical data is available to predict the estimated value of a project and communicate to FEMA the merits of approval and funding. There are different ways to run a BCA, but since Phase I has been completed and funded, FEMA expects the BCA to be completed by FDEM using the "Professional Expected Damages" BCA methodology.

Technical analysis and reports are not always provided in a method that communicates information in terms of cost/damage dollars saved. FDEM has some tools to assist in presenting such value to FEMA. We will use the damage file for phased drainage projects for discussion purposes. The information provided will be included as part of our technical review and is necessary for BCA purposes. It is recommended that the sub applicant utilize its own qualified staff and/or consultant services for assistance in completing the form.

The goal of the damage file is to translate H&H data (primarily water elevations) to damage data. There are two main components for drainage damages: structure damage and road damage. Both components use Depth Damage Functions (DDF). Please note that water elevations do not have to enter the structure or overtop the roadway for FEMA to determine damage is taking place.

STRUCTURE DAMAGE (Building/Content/Displacement)

The structure damage table calculates damage for each property consider before and after mitigation. This is done using H&H water elevations for each scenario presented as

well as building replacement value (BRV) and finished floor elevations (FFE). An interpolation file from the Army Corps of Engineers is also used.

The steps to fill out the table are as follows:

1. Select the node of consideration from the H&H study
2. For each node, select the address of structures/properties that correlate (there can be multiple property addresses per node)
3. Find the building replacement value (BRV) for each structure. Please note, this is not the market price for the property, but rather the value of the structure only
4. Collect the finished floor elevation
5. Input the water elevation for said node and scenario from the H&H study results
6. Table will calculate the difference between FFE and H&H water elevation
7. Use the USACE (or other valid source) interpolation table to identify the damage % for DDF Building using the calculated difference value. Please note this is building type variable
8. Use the USACE (or other valid source) interpolation table to identify the damage % for DDF Content using the calculated difference value. Please note this is building type variable
9. Building Damage $ is auto calculated by table
10. Content Damage $ is auto calculated by table
11. Displacement Days – correlate water elevation from H&H study to the time residents cannot use the property
12. Displacement $ can be calculated using the per diem cost from General Services Administration (GSA) website (by location) and multiplying it by the number of people per household based on Census Data.
    - Any different value must be supported.
13. Repeat for ALL nodes and structures/properties related to the project
14. Total $ damage is auto calculated by the table

*Please complete both the before mitigation (existing conditions) and after mitigation (proposed conditions) tables.

ROAD DAMAGE

The road closure damage table calculates damage for each roadway considered before and after mitigation. This is done using H&H water elevations and durations for each scenario presented. An alternative approach is to use FDOT standard road damage methodology.

The steps to fill out the table are as follows:

1. Select the node of consideration from the H&H study
2. For each node select the road or intersection that correlates
3. Collect the road elevation

4. Input the water elevation for said node and scenario from the H&H study results
5. Table will calculate the difference between road elevation and H&H water elevation
6. Use the H&H study to identify the flood duration for each event scenario
7. Using the info from H&H (in terms of flood duration) please enter the estimated time that roads will be closed.
    - Local specifics may factor into this value, but it is expected to be different than the flood duration input.
    - Weather.gov identifies that 6" of water could impact driving conditions and some organizations have used this value as a guide.
8. If Road Closure values are used do not use Road Damage. Only one or the other may be utilized
9. Repeat for ALL nodes and roadways related to the project, for each scenario
10. Total $ damage is auto calculated by the table

*Please complete both the before (existing conditions) and after mitigation (proposed conditions) tables

ITEMS TO NOTE

1. Number of presented Scenarios – The industry standard analysis of professional expected damages is for a minimum of three (3) storm scenarios to be modeled and presented. The sample file is completed for the 25yr, 50yr and 100yr storms. The Modeled events can be different storms or recurrences and are project specific, based on the H&H report and the level of protection the project will accomplish.
2. Residual damages – FEMA has a history of reviewing drainage projects and has determined that they do not completely solve flooding for all events. As such, some damage is expected to still occur after the mitigation project is completed. One way to communicate to FEMA that an applicant understands the complexities of drainage mitigation is to show that your proposed design does not prevent all damages at a larger or longer event, i.e. a 100yr. storm when the project is designed to protect to the 50yr storm.

This document is provided to assist the Sub-applicant/Sub-recipient in providing the expected damages of drainage projects with finalized designs and studies. The information provided will be included as part of our technical review and is necessary for BCA purposes. It is recommended that the sub applicant utilize its own qualified staff and/or consultant services for assistance in completing the form.

DISCLAIMER

This guidance is intended to assist Sub-applicants/Sub-recipients to complete Non-phased submittals and phase I deliverables for drainage projects to the State, this guidance may expedite the review process. At no point, this document is intended to establish a solely way to present the information to demonstrate the benefits of a project, or to limit the methodologies and technical

information to complete a BCA. The State TechUnit will always accept and review projects not following the suggestions of this guidance.

CONTACT

The State of Florida Mitigation TechUnit is always available to provide guidance during the entire process for projects applying or awarded under FEMA's HMA programs. Questions can be sent to the following email: claudia.purser@em.myflorida.com