AV-203 Engineer's Design Report Outline

The North Carolina Division of Aviation (DOA) airport project manager relies on the Engineer's Design Report to assist with their evaluation of the project to ensure that all necessary requirements are met in the design process and for conformance to DOA operational safety requirements. To facilitate in this review, the sponsor's consultant should strive to address all applicable elements listed below; elements should be addressed in the order outlined below. If any documentation requested in this report has been provided prior to the Engineer's Design Report, please indicate that in the report and exclude it from the submittal; it is not necessary to provide documentation that has been provided previously. This report must be signed and sealed by a licensed North Carolina Professional Engineer. The Engineer's Design Report must be provided prior to bidding. Failure to properly address an applicable element may result in delays of the project review.

1. **General Scope of Project**
    - Provide a brief narrative on the scope of work
    - Specify any non-reimbursable items in accordance with the funding source
    - Identify and briefly explain unique and unusual situations
    - Provide a history of existing system (original construction, rehabilitation etc.)
    - Include the meeting minutes from the project formulation/scoping meeting including attendance list in the Appendix
2. **Listing of Applicable AIP Standards**
    - List of AIP Advisory Circulars used in the design of the project
    - Identify, in table format, specific values for critical design standards
        - Design Aircraft as identified on approved ALP (Airplane design group and approach category)
        - Standard dimensional values for safety area, object free areas, etc.
        - Stand geometric values for runways and taxiways
        - Standards for surface gradients (longitudinal and transverse)
3. **Considerations for Airport Operational Safety**
    - The Construction Safety Phasing Plan (CSPP) will serve to establish the complete requirements for operational safety during construction. Indicate when the CSPP was submitted to DOA and FAA and the date of approval. If the project is State funded, review by FAA is not required.
    - Indicate when Form 7460 was submitted and its current status
4. **Pavement Design**
    - Pavement design alternatives
        - Life-cycle analysis & justification for selection
    - Pavement design
        - Provide FAARFIELD design inputs and program results in the Appendix
        - Provide FAA form 5100-1 in the Appendix
    - Existing pavement alternatives (if applicable)
        - Remove and dispose (disposition of millings)
        - Reclaim as base
    - Subgrade stabilization

- Provide a copy of the Geotechnical Report in the Appendix

5. **Drainage Design**
   - Delineation of drainage area
   - Existing drainage area characteristics and structures
   - Storm water runoff calculations
   - Inlet and storm drainage system design calculations
   - Detention pond drainage requirement (empty within 48 hours)
6. **Airfield Lighting and Signage**
   - Description of existing system (age, condition, type)
   - Describe changes to the layout of airfield lights and signage
   - Electrical circuit load calculation and summary table
7. **NAVAIDs**
   - Provide listing of all NAVAIDs and ownership
   - Identify impacts to FAA owned navigation aids
   - Provide design calculations for sponsor installed NAVAIDs and include documentation of coordination with FAA Non-Federal NAVAID group (reviews/approvals)
   - Include obstacle clearance surfaces verification (if applicable)
8. **Pavement Marking**
   - Confirm that layout of markings conforms to AC 150/5340-1
   - Address application of temporary marking
9. **Terminals & Hangars**
   - Provide sketches of alternatives and provide justification for chosen alternative
10. **Environmental Considerations**
    - Describe the NEPA requirements and how they've been met; include approval status of environmental documentation
    - Storm water management measures
    - Indicate what permits are required and the approval status
11. **Utility Lines in Work Area**
    - Identify all known existing underground utility lines in and adjacent to work area
    - Explain how utility impacts were minimized in the design phase
12. **Miscellaneous Work Item**
    - Address other project related work items such as seeding, fencing, site access, etc.
13. **Application of Life Cycle Cost Analysis**
    - Applicable whenever sponsor desires a higher initial cost alternative over a lower cost alternative
    - Must use constant dollars (no inflation) and 7% discount rate.
    - Must state that this will be applied as part of the bid evaluation
14. **Sponsor Requested Modifications AIP Construction Standards (MOS)**
    - Provide listing, description and justification for all sponsor requested modifications to FAA construction standards and approval status of MOS
15. **Delineation of Non-Reimbursable Work**
    - Separately identify all work items that are not eligible for reimbursement

- Provide justification for why non-reimbursable work should be allowed as part of the project
- Establish how non-reimbursable work will be separated from reimbursable work (schedules, line items, reimbursement requests, etc.)

16. **Minority Participation**
    - State the established MBE/WBE/DBE goal
17. **Project Schedule**
    - Provide a Microsoft Project schedule that includes critical milestone dates as outlined in the Start-up Tasks and Design/Bidding Tasks sections of the Project Schedule Preparation Guidance on the DOA website.
18. **Engineers Estimate of Probable Cost**
    - Provide an itemized summary of the engineer's estimate of probable construction costs
    - Separately identify reimbursable vs. non-reimbursable expenses
    - Identify funding source(s) to be used for construction
19. **Preliminary Project Budget**
    - Provide a project budget summary that identifies all anticipated project costs (administrative, preliminary, design, construction and observation/ testing services)

Appendix:

1. **Photographs**
    - Include a representative number of photographs that depict the existing site conditions
    - Include photographs of any existing safety area deficiencies
2. **Geotechnical Report**
3. **Meeting Minutes and attendance list from scoping meeting**
4. **FAARFIELD design inputs and program results**
5. **FAA form 5100-1**
6. **Bid Plans and Specifications-** If desired, this can be provided separately
7. **Addendums**