IMD FEASIBILITY STUDY GRANT PROGRAM
CONTENT STANDARDS

Integrated Mobility Division
N.C. DEPARTMENT OF TRANSPORTATION

The following document outlines the expected content for the development of NCDOT-funded feasibility studies for bicycle and pedestrian facilities (such as greenways, shared-use paths, sidewalks, bicycle lanes, separated bicycle lanes, sidepaths, trails, etc.). Each NCDOT-funded feasibility study may vary in size and scope, depending on the various factors of analysis required and the depth of planning work previously completed for the project. As such, not all content items shown below will be applicable to every study.

It is anticipated that projects for feasibility studies will have been previously identified in adopted bicycle and pedestrian plans. It is preferred the study report is developed in a more condensed manner, with appropriate text/information provided in charts/figures where possible.

Cover

Acknowledgements

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Executive Summary

Provide a brief overview of study background, community context, process/methodology, evaluation considerations, and recommendations including implementation/cost information. The summary may include items such as a map of proposed alignment, typical section graphic, photos, renderings, etc. The executive summary should be able to serve as a 1- to 2-page standalone document summarizing key takeaways from the study.

Introduction

- Provide study background which may include purpose and need, description of project location, limits of study area, etc.
- Discuss study guiding principles: vision, goals, and/or objectives.
- Provide study process overview and project schedule.
- Summarize relevant prior studies and plans and briefly describe what role the project may play in the context of regional connectivity. List prior recommendations specific to this project.
- Describe benefits of the project specific to the community including mobility/connectivity, safety, health, quality of life, environmental, economic, equity, and accessibility etc.

Study Considerations & Alternatives Development

Study Considerations

- Discuss relevant planning level considerations for the study area, which may include summaries of the following:
  - Demographics (population density, population change, race/ethnicity, households with children, senior population, median household income, households below the poverty level, areas of persistent poverty, renter-occupied households, low-income homeowners, persons with a disability, households with zero vehicles, commuter characteristics, etc.)
  - Existing and future land uses
  - Major employers and primary commuter routes
  - Desired destinations and other points of interest
- Discuss natural environment considerations for the study area, which may include:
  - Threatened and endangered species
  - Coastal and jurisdictional wetlands, rivers/streams/creeks, and other surface waters; include applicable local, state, and federal buffer ordinances/regulatory requirements
  - Hydrology and hydraulics (FEMA floodplain, etc.)
  - Managed natural areas (tree canopy/conservation areas, nature preserves, waterfowl impoundments, etc.)
  - Topography/terrain
- Discuss human environment considerations for the study area, which may include:
  - Transportation context/existing and planned infrastructure inventory, which may include roadways (typical geometry, traffic volumes, speed limits, signalized and unsignalized intersections, driveways, crash data, etc.); bridges (vehicular and pedestrian); bicycling facilities and pedestrian networks (bicycle lanes, sidewalks, greenways/trails, crosswalks, crash data, etc.); transit (routes and stops); and rail (freight and commuter).
  - Utilities (publicly and privately-owned) – observable/field walks
  - Adjoining/surrounding area projects (relevant programmed/funded STIP, HMIP, and CIP projects and projects in design or under construction that may influence the study).

- Real estate/land acquisition which may include existing right-of-way (roadway, rail, etc.); utility easements (private/public); government-owned/public lands; conservancy-owned lands; and land use/rezoning petitions.
- Operational impact to adjacent businesses/landowners
- Items of cultural or historical significance
- Brownfields/known contamination sites

- Conduct field observations to inventory conditions as a basis for planning. Field observations should include a site review of the transportation context, utilities, topography/terrain, surrounding land use, wetlands, rivers/streams, creeks, and other surface waters, etc.

Alternatives Development

- Provide selected design criteria and desired typical section information to be used when developing alternatives.
- The overall project corridor may be divided into segments or key areas as necessary. Describe opportunities and constraints associated with each area (including photos/maps) and develop alignment alternatives within each segment/area.
  - Provide an overall map showing the alignment alternatives.
  - Provide a summary table of segment alignment alternatives including segment ID/name, short description, length, cost considerations and summary of challenges/opportunities associated with each.
- Identify and discuss potential connections and access areas (such as trailheads, etc.)
  - Provide an overall map showing these connections/access areas.
  - Provide a summary table of connections/access areas including ID/name, short description, length/size, cost considerations and summary of challenges/opportunities associated with each.
- Summarize results of preliminary modeling that may have been performed, which may include:
  - Hydraulic/flood modeling to determine impacts to the floodplain, approximate bridge spans and understand permitting implications (no-rise vs. CLOMR/LOMR)
  - Grading/corridor modeling to verify longitudinal grades meet accessibility requirements and determine preliminary earthwork (borrow/surplus) for cost estimating purposes.
  - Traffic modeling to determine impacts to vehicular traffic (level of service, delay) for road diet alternatives.

Community Involvement

- Note prior community involvement conducted in previous planning efforts relevant to this project. The extent of previous community involvement efforts will inform engagement needs for the study.
- Describe community involvement goals/objectives, process, outreach efforts, and schedule in a community engagement plan.
- Identify project stakeholders and/or organizations represented on the steering committee, and describe any other outreach performed (landowners, etc.).
- Briefly summarize public engagement results from steering committee meetings, public meetings, and/or surveys. Provide key takeaways and describe how public engagement informed the study recommendations. Additional details or supplemental materials may be included in the appendices, as necessary.

Evaluation & Recommendations

- Identify and map alternatives for evaluation. Alternatives may consist of multiple alignments options (various combinations of the segment alternatives previously developed) and/or different typical sections along the same alignment.
- Develop methodology for evaluation of alternatives, including development of evaluation criteria (qualitative and quantitative). Evaluation criteria should consider bicycle and pedestrian quantitative criteria for STI Prioritization, which include user safety, connectivity, demand/density, and cost. Evaluation criteria may also include, but are not limited to, the following: right-of-way/property impacts; flood study impacts; utility impacts; structures required (bridges/boardwalks/retaining walls); user experience; construction complexity; public input; maintenance requirements; and schedule (how quickly the project can be constructed and put into service).
- Evaluate alternatives and provide a decision matrix table showing the scoring relationships between the alternatives for the evaluation criteria.
- Provide recommendation and justification for preferred alternative including alignment, typical section(s), road crossing treatments, access points including trailheads/ parking and connection trails (as applicable). Discuss recommended trail amenities, placemaking opportunities, wayfinding, potential branding, and any other design elements. If applicable, discuss interim vs. long-term recommendations.

Implementation

- Provide overview of implementation strategy and tools and identify next steps.
- Discuss potential project phasing scenarios as applicable (may include prioritization, opportunities for pilot projects/interim solutions, and any other timeline considerations)
- Provide project cut sheet(s) for recommended alternative (if phasing is recommended, include a cutsheet for each phase). Cutsheets may include an alignment map; brief description; typical sections; renderings; accessibility/connectivity (points of interest and connection points); demand/density (number of households and employees within project study area); potential permitting needs; potential right-of-way/easement acquisition needs (estimated area needed, number of impacted parcels, number of impacted property owners); and estimated cost information (current year construction cost, escalated construction cost for anticipated build year, right-of-way cost based on tax appraisal values, design services cost, construction engineering and inspection services cost, and total budget recommendation). Cutsheets should be suitable for communities to use in the Strategic Prioritization Process (SPOT) prioritization, CIP budgeting and/or pursuit of bond funding.
- Discuss organizational framework for implementation in an action plan, including tasks/next steps, lead agencies, key partners for collaboration, task dependencies, resources needed, and timeframe for implementation.
- Identify potential funding sources and describe any relevant requirements associated with each (local match requirement, eligibility criteria, etc.)
- Discuss potential management and maintenance considerations, which may include maintenance schedule; responsibilities; and potential programming opportunities.

Appendices

- Provide additional details/supplemental information relevant to the study, which may include the following:
  - Detailed costs (detailed cost estimates using unit costs from similar project bid tabs/ NCDOT bid averages, P6.0 Estimation Tool, etc.)
  - Additional public involvement information (survey results, comment forms, public presentations, key person/stakeholder interviews, landowner letters, design charette notes, etc.)
  - Signed resolutions/letters of support
  - Detailed mapping/design concepts (conceptual design plans/profiles/renderings)
  - Similar case studies
  - As-builts and inspection reports (existing bridges, etc.)
  - Excerpts of design/construction plans for relevant adjacent projects
  - Regulatory information (FERC, stream buffer rules, stormwater ordinances, etc.)
  - Legal assessments/deed research
  - Example agreements (easement, rail with trail, etc.)
  - Environmental review documentation
  - Preliminary acquisition and easements need (tabular summary of impacted parcels)
  - Traffic impact analysis
  - Utility impact assessment
  - Hydraulics information (FEMA maps, preliminary hydraulic modeling results, etc.)
  - Design guidelines / construction standard details
  - Rezoning petition site plans
  - Funding source information
  - SPOT scoring component resources

Checklist for IMD Feasibility Studies

Each NCDOT-funded feasibility study may vary in size and scope, depending on the various factors of analysis required and the depth of planning work previously completed for the project. The following checklist provides guidance for project managers on the essential components of each study, regardless of project scope.

Project Manager Checklist:

Introduction

- ☑ Overview and Study Goals
- ☑ Study Process and Project Schedule
- ☑ Summary of Relevant Prior Studies and Plans
- ☑ Project Benefits

Study Considerations + Alternatives Development

Study Considerations

- ☑ Planning Level Considerations applicable to the study
  - ☑ Relevant Data Charts
  - ☑ Relevant Existing Conditions GIS Data and Maps
- ☑ Natural Environment Considerations applicable to the study
  - ☑ Relevant Existing Conditions GIS Data and Maps
- ☑ Human Environment Considerations applicable to the study
  - ☑ Relevant Existing Conditions GIS Data Maps
  - ☑ Summary Table and Map of relevant programmed/funded STIP, HMIP, and CIP projects in the study area
- ☑ Summary of Field Observations

Alternatives Development

- ☑ Design Criteria and Typical Section Information
- ☑ Summary Table and Map of Alignment Alternatives
- ☑ Opportunities + Constraints Analysis

Community Involvement

- ☑ Summary of prior community engagement conducted in previous planning efforts relevant to the study
- ☑ Community + Stakeholder Engagement Plan (if further engagement is required)
- ☑ Summary of Community Engagement Results

Evaluation + Recommendations

- ☑ Route Alternatives for Evaluation
- ☑ Summary of Evaluation Criteria for Alignment Alternatives (Evaluation criteria should consider bicycle and pedestrian quantitative criteria for STI Prioritization)
- ☑ Decision Matrix + Scoring
- ☑ Preferred Alignment Recommendations Summary and Map

Implementation

- ☑ Summary of Implementation Strategies
- ☑ Project Cut Sheets for Preferred Alignment (Cut sheets should include alignment map, typical sections, renderings, accessibility/connectivity points, demand/density points, potential permitting needs, potential right-of-way/easement acquisition needs, cost estimates, and implementation partners.
- ☑ Partner Roles
- ☑ Action Plan Table
- ☑ Funding Resources (Highlight key funding opportunities most applicable to the implementation of the project)
- ☑ Maintenance Considerations

Appendices

- ☑ Funding Resources (Provide a comprehensive list of funding opportunities available)
- ☑ Design Resources
- ☑ Detailed Cost Information (Use unit costs from similar project bid tabs/NCDOT bid averages, SPOT Cost Estimation Tool, etc.)
- ☑ Additional Community Engagement Information
- ☑ SPOT Scoring Components Resources