

Space Coast Transportation Planning Organization
Banana River/Pine Tree Drive Complete Streets Feasibility Study
Work Order 18-04K
Scope of Services
04/23/2018

A. INTRODUCTION

The Banana River Drive/Pine Tree Drive Complete Streets Feasibility Study will attempt to incorporate enhanced multi-modal solutions to facilitate pedestrian/bicycle movement along the corridor. Banana River Drive/Pine Tree Drive connects the southern end of Merritt Island, via the Mathers Bridge, and SR A1A in the City of Indian Harbour Beach. The Banana River Drive/Pine Tree Drive Complete Streets Feasibility Study will focus on identifying improvements from 200 feet west of Marina Isles Boulevard to SR A1A. **Figure 1** displays the location of the study corridor.

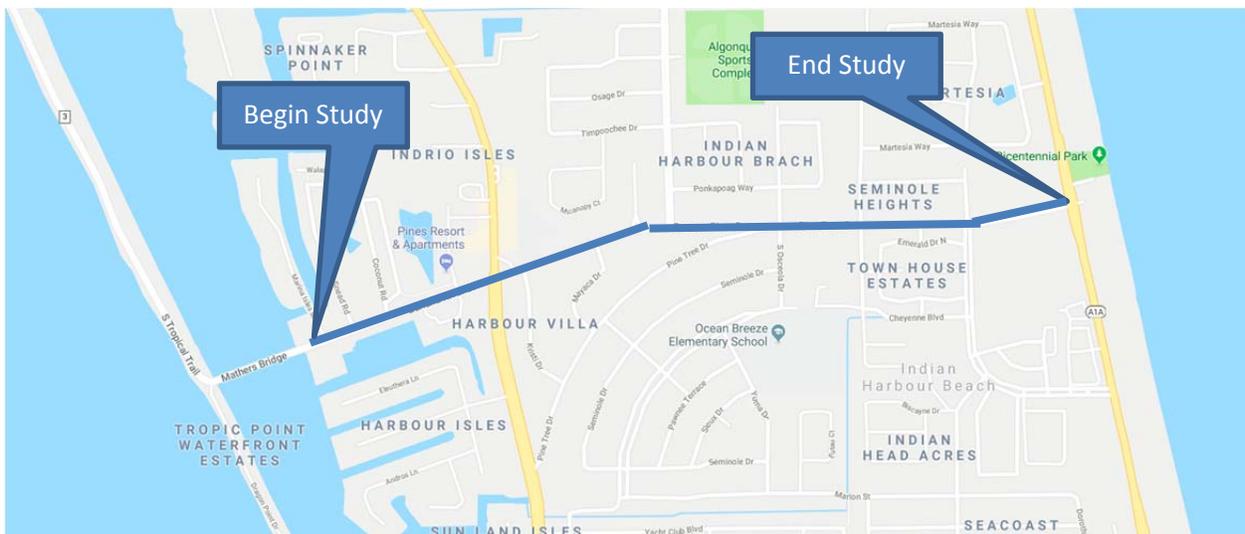


Figure 1 – Banana River Drive/Pine Tree Drive Study Corridor

Banana River Drive/Pine Tree Drive is a two-lane undivided roadway within the study limits. Sidewalk is present on both the north and south sides of the roadway for a majority of the study corridor. Existing traffic volumes along the study corridor range from 3,300 vehicles per day near the Mathers Bridge to 11,700 vehicles per day near SR A1A.

Ocean Breeze Elementary School is located just south of Banana River Drive/Pine Tree Drive at the end of S Osceola Road. Residential land uses are directly adjacent to a majority of the corridor, but commercial/retail land uses are present near the intersections of S Patrick Drive and SR A1A.

B. DESCRIPTION OF SERVICES

Kittelson & Associates, Inc. (CONSULTANT) will assist the TPO in performing the Banana River Drive/Pine Tree Drive Complete Streets Feasibility Study. The goals of the Study are as follows:

- Assess alternatives to provide improved pedestrian/bicycle facilities along the length of the corridor and recommend a feasible preferred alternative targeting multi-modal mobility.
- Assess possible safety or operational issues at the intersections along the study corridor and recommend solutions to address these possible issues.
- Solicit input from the public and a Project Advisory Team throughout the course of the project. This team will provide guidance to the CONSULTANT when recommending the preferred alternative.

C. MAJOR TASKS

The CONSULTANT will assist the TPO with the following major tasks:

- Prepare for and lead four (4) Project Advisory Team meetings and two (2) public meetings.
- Perform general data collection activities including:
 - A right-of-way review;
 - A field review to observe existing operational conditions and corridor characteristics; and
 - A utility verification for existing utilities along the study corridor.
- Perform an existing conditions analysis which includes:
 - Historical safety review (2013-2017);
 - Existing intersection operational analysis; and
 - Issues and opportunities identification.
- Perform a build conditions operational assessment including the following tasks:
 - Develop potential intersection alternatives; and
 - Perform build conditions operational analysis.
- Develop and analyze alternatives involving:
 - Development of up to six typical section alternatives and a measures of effectiveness matrix;
 - Drainage, impacted utilities, and right-of-way assessments;
 - Assess measures of effectiveness and select a preferred alternative;
 - Development of preliminary cost estimates for preferred alternative;
 - Develop 3-D/virtual reality graphics for the preferred alternative; and
 - Develop landscape plan for the corridor based on the preferred alternative.

As documented in **Part D** of this scope, the CONSULTANT will develop a schedule during the project's first month and keep the schedule current throughout the project's duration. The following subsections describe each task to be performed.

TASK 1: PUBLIC AND PROJECT ADVISORY TEAM MEETINGS

As part of the Banana River Drive/Pine Tree Drive Complete Streets Feasibility Study, the CONSULTANT will prepare for and lead four Project Advisory Team (PAT) meetings and two public meetings. The following work activities are anticipated in preparation for the PAT and public meetings:

- PAT –
 - Identification of Project Advisory Team: It is anticipated the CONSULTANT will work with the TPO to identify appropriate members of the PAT. Members of the PAT are anticipated to represent local agencies along the corridor, such as the City of Indian Harbour Beach, Brevard County, FDOT, or Ocean Breeze Elementary School.
 - PAT Meetings (4): The Kick-Off Meeting will be the first meeting of the PAT. The following meetings will be held for the PAT to review products at key decision points during the Complete Streets Feasibility Study process.
- Public Meetings –
 - Public Involvement Kick-Off Meeting: Following the existing conditions assessment, a public meeting will be held during the needs identification process to solicit input from interested parties that wish to actively engage in the planning process. The format of the meeting will include a brief presentation to review the Complete Streets Feasibility Study process, review existing conditions and key project issues, and to highlight samples of similar projects and/or planning techniques being considered as part of this Feasibility Study. The public will be presented with key project contacts and ways that the community can get involved.
 - Alternatives Development Public Meeting: Following the development of alternatives, the CONSULTANT will lead a public meeting presenting the alternative(s) for Banana River Drive/Pine Tree Drive to the public. The workshop will include a brief presentation to review the study process, review the build conditions, and to highlight alternatives being considered.
 - For each of the two public meetings, the CONSULTANT will prepare the following:
 - Project Summary/Overview Handout for distribution at the meetings.
 - Multi-media presentation and equipment; meeting equipment set-up and tear-down.
 - Meeting notifications: The CONSULTANT will work with TPO staff to generate a mailing list for meeting notifications. This includes letters to elected and appointed officials, legal advertisements, post card mailings to property owners and other interested parties, and e-mail notifications to the Project Advisory Team. The CONSULTANT will pay the cost of publications and first class postage as applicable (up to \$1,500 per meeting).
 - Summary notes of meetings to be provided to the TPO no later than 10 business days after the meeting.

The TPO will work with the CONSULTANT to secure a site to host the public meetings. The CONSULTANT will attend the meetings with up to four (4) personnel to assist TPO Staff.

Material for TPO Website: If the TPO anticipates posting study-related information on the web, the CONSULTANT will provide project information, graphics, and other materials generated for major deliverables, public, and PAT coordination meetings in a suitable format for posting as requested.

Task 1 Deliverables

- *Meeting materials such as presentations, notifications, and meeting boards will be made available to the TPO for review prior to the meetings.*
- *Meeting notes from each of the meetings will be prepared and distributed amongst the PAT.*

TASK 2: DATA COLLECTION

2.1 Traffic Data Collection

The TPO will collect turning movement count data at signalized intersections and key unsignalized intersections during the AM and PM peak hours. In addition to turning movement count data, the TPO is collecting 24-hour pedestrian/bicycle counts along the corridor at spot locations. The CONSULTANT will review the counts collected for reasonableness and consistency along the study corridor. It is anticipated the CONSULTANT will obtain daily segment volumes from the TPO's State of the System (SOS) traffic count data set.

2.2 Field Review

The CONSULTANT will perform two field reviews over the course of the project:

1. During the Existing Conditions Analysis task to observe operational characteristics in the AM and PM peak hours. This field review will also consist of verifying intersection/typical section geometrics along with the existing pedestrian and bicycle facilities. This review will also include a night review to observe lighting levels along the corridor.
2. During the Alternatives Analysis task to verify specific roadway characteristics that may impact concept development features. This may include the location of driveways, curb returns, drainage inlets, open swales, or review of locations where potential conflicts between the roadway elements and proposed concepts may exist.

2.3 Right-of-Way Review

The CONSULTANT will coordinate with the City of Indian Harbour Beach and/or Brevard County to review ROW information within the limits of the study corridor. The ROW maps will be compared to the GIS parcel lines and utilized during Alternatives Analysis.

2.4 Utility Verification

The CONSULTANT will verify utilities along the corridor via a Sunshine One Call and readily available plans obtained from the City of Indian Harbour Beach and/or Brevard County. The Sunshine One Call will provide a list of potential utility providers in the area and a field inspection will be completed to provide visual confirmation of the utilities. Local cities will be contacted to obtain any GIS utility information that is available and these utilities will be mapped in GIS/CADD for use during the Alternatives Analysis.

2.5 General Data Collection

The following smaller tasks are anticipated to be completed as part of the data collection effort:

- Signal timing/phasing information for the study intersections.
- Planned and programmed roadway projects in the area. This will also include a request for any approved but unbuilt access permits on the corridor.
- Recently completed projects in the area.
- Existing and future land use plans.
- GIS data illustrating available information within the study area. This data generally consists of wetland, floodplains, threatened/endangered species and habitat, contamination, and cultural/historic sites used to identify fatal flaws with potential alternatives.

Task 2 Deliverables

- *A data collection summary will be included in the Existing Conditions Report as defined in **Task 3**.*

TASK 3: EXISTING CONDITIONS ANALYSIS

3.1 Historical Safety Review

The CONSULTANT will obtain 2013 to 2017 crash data from the 2017 State of the System report and summarize corridor wide and intersection crash trends. The CONSULTANT will prepare collision diagrams for the pedestrian and bicycle-related crashes along the corridor.

3.2 Existing Intersection Operational Analysis

Using the travel characteristics data collected for the study corridor, the CONSULTANT will perform a Level of Service (LOS) evaluation per Highway Capacity Manual (HCM) procedures as they apply to intersections for the AM and PM peak hours. The existing conditions analysis will be performed for two signalized intersections (S Patrick Drive and SR A1A) and three unsignalized intersections (Banana River/Pine Tree Drive/Osceola Drive, School Road, and Palm Springs Drive) within the study corridor.

The CONSULTANT will summarize the AM and PM LOS, delay, v/c , and 95th-percentile queues for each movement at each of the study intersections. This information will help the CONSULTANT identify possible operational improvements to be analyzed during the Build Conditions Operational Assessment discussed in **Task 4**.

3.3 Issues and Opportunities Identification

Based on the existing conditions analysis, the CONSULTANT will review the data collected to identify the preliminary issues and opportunities along the corridor. This will include issues and opportunities based on pedestrian and bicycle mobility, safety, and traffic operations obtained through review of previous studies, field reviews, coordination with agencies, previous public workshops/meetings, operational analysis, and other publicly-available data sources such as agency GIS resources and the TPO databases.

Task 3 Deliverables

- *The results of the existing conditions analysis will be summarized within the Existing Conditions Report. It is anticipated the TPO will review the report and the CONSULTANT will incorporate comments/edits before finalizing.*
- *Two (2) hard copies of the Existing Conditions Report will be prepared for the TPO once the report is finalized.*

TASK 4: BUILD CONDITIONS OPERATIONAL ASSESSMENT

4.1 Development of Alternative Intersection Solutions

During the existing conditions analysis performed in **Task 3**, operational or safety deficiencies may be identified for the five intersections analyzed. This task will review potential operational and/or safety improvements at these intersections and identify potential solutions for these issues. Examples of solutions could be adding a turn lane, revising signal timings/phasing, or fixing offset or skew issues.

4.2 Build Conditions Operational Analysis

The Indian Harbour Beach area adjacent to the study corridor is built out, thus no significant increase in traffic is expected along Banana River Drive/Pine Tree Drive. For this reason, no future growth rate will be determined, and no future volume projections will take place. Thus, the existing conditions turning movement counts will be utilized for build conditions analysis.

Using the existing traffic volumes, the CONSULTANT will perform a LOS evaluation per HCM procedures as they apply to intersections. The build conditions analysis will be performed for the same two signalized intersections and three unsignalized intersections as in the existing conditions analysis. The CONSULTANT will summarize the AM and PM LOS, delay, v/c, and 95th-percentile queues for each movement at each of the study intersections. This information will be compared to the existing condition to understand the benefit of the individual improvement.

Task 4 Deliverables

- *The results of the build conditions operational assessment will be summarized within the Corridor Alternatives and Strategies Report discussed in **Task 5**.*

TASK 5: ALTERNATIVES ANALYSIS

5.1 Development of Alternative Typical Sections

Preliminary typical sections will be generated along the Banana River Drive/Pine Tree Drive mainline for up to six roadway alternatives. These typical sections will focus on identifying pedestrian and bicycle improvements that can be made along the corridor. The typical sections will also identify impacts to utilities/drainage features and help in the selection of the preferred typical section alternative.

The CONSULTANT will develop an evaluation matrix including several measures of effectiveness to compare the no-build alternative and the six initial roadway alternatives developed. Measures of effectiveness will include quantifiable criteria as well as qualitative criteria that fulfill the corridor needs,

goals, and objectives. Example measures of effectiveness could include pedestrian/bicycle safety or mobility, intersection LOS, drainage impacts, utility impacts, right-of-way impacts, and/or construction costs

5.2 Drainage Assessment

The CONSULTANT will perform a drainage analysis for up to six alternatives developed as part of this task. Drainage assessment items include:

- Delineate existing drainage basins, patterns and outfalls;
- Perform existing condition drainage calculations to determine max pre-development flow rates;
- Perform proposed condition drainage calculations to determine post development flow rates as well as water quality requirements;
- Analyze existing storm water management facilities for possible accommodation of proposed conditions;
- If needed, determine suitable pond sites to accommodate proposed drainage requirements; and
- Summarize design considerations for pond if a new pond is proposed.

As part of this task, one meeting will be held with the City of Indian Harbour Beach and/or Brevard County to review details about the drainage impacts for each of the six alternatives developed.

5.3 Impacted Utilities Assessment

The CONSULTANT will review the utility conflicts for up to six alternatives and provide preliminary cost estimates for the impacted utilities, if necessary.

5.4 Alternatives Analysis and Selection of Preferred Alternative

The CONSULTANT will complete the evaluation matrix developed as part of **Task 5.1** based on the analysis performed in **Tasks 5.1** through **5.3**. Based on the results of the Alternatives Analysis, the PAT will select a preferred typical section alternative. The preferred alternative may be one of the six alternatives considered or some combination of those alternatives. The preferred alternative will be documented in the Corridor Alternatives and Strategies Report (the **Task 5** deliverable).

5.5 Development of Roadway Concept

The preferred typical section alternative will be drafted in CADD over the background of an existing satellite aerial image. The concept will be provided to the PAT in the form of a roll plot and/or set of figures for review and comment. The goal of developing the concept in CADD is to explore potential constraints with the typical section and identify opportunities where the typical section may need to be adjusted due to conflicts.

5.6 Preliminary Construction Cost Estimates

The CONSULTANT will prepare a preliminary construction cost estimate for the preferred alternative using the conceptual roadway layouts. Utility relocations and drainage ponds, if needed, will be included in the construction cost estimates.

5.7 Right-of-Way Cost Estimates

If necessary, the CONSULTANT will coordinate with the City of Indian Harbour Beach and/or Brevard County to obtain right-of-way cost estimates for the preferred alternative. While it is not desirable to acquire right-of-way, corner clips or other small parcel impacts may occur depending on the alternatives developed. It is noted that survey (not included in this scope) will be needed in the design phase to verify parcel lines and update the right-of-way cost estimates as needed.

5.8 Development of 3-D/Virtual Reality Graphics

To help the PAT and public visualize the corridor improvements and help facilitate feedback, the preferred alternative will be presented in 3-D before and after renderings. These 3-D renderings will also be utilized for virtual reality where the onlooker can review a specific location in all planes of motion. It is anticipated two intersection before/after and two segment before/after renderings will be completed, for a total of eight 3-D renderings.

5.9 Landscape Coordination and Lighting Analysis

Based on preliminary discussions with the City of Indian Harbour Beach, landscaping will play a critical role in the beautification of the Banana River Drive/Pine Tree Drive corridor. As part of this task, a landscape plan will be developed for the preferred alternative. The landscape elements prepared as part of the plan will be reviewed with the City before being presented to the PAT, the public, or the Boards/Committees.

In addition to a landscape plan, lighting conditions will be analyzed along the corridor to identify potential lighting improvements to enhance the Complete Streets nature of the corridor. A lighting analysis will be performed based on FDOT MUTS Manual procedures and a conceptual lighting plan will be developed for the corridor. It is anticipated this lighting plan will consist of elements such as light pole spacing, type of lighting (high mast, pedestrian level, etc.), or approximate lighting levels.

Task 5 Deliverables

- *The results of the Alternatives Analysis will be summarized within the Corridor Alternatives and Strategies Report. It is anticipated the TPO will review the report and the CONSULTANT will incorporate comments/edits before finalizing.*
- *Two (2) hard copies of the Corridor Alternatives and Strategies Report will be prepared for the TPO once the report is finalized.*

D. PROJECT MEETINGS AND PRESENTATIONS

Project Status Meetings: Up to three (3) members of the CONSULTANT team will attend up to three (3) additional meetings with TPO staff to discuss project progress and receive input on tasks completed. The purpose of these meetings is to maintain clear communication between the TPO and the CONSULTANT team. The CONSULTANT will prepare a meeting agenda and prepare/distribute meeting notes following each of these meetings.

Project Presentations: It is anticipated the CONSULTANT will make three (3) presentations at the end of the project: 1. Presentation to the Indian Harbour Beach City Council; 2. Presentation to the Space Coast TPO Technical Advisory Committee (TAC) and Citizens Advisory Committee (CAC); and 3. Presentation to the TPO Board. The CONSULTANT will be responsible for preparing the PowerPoint presentation but will coordinate with the TPO on what will be included in the presentation.

Project Meetings and Presentations Deliverables

- *Meeting notes will be prepared and distributed amongst the PAT and TPO staff.*

E. PROJECT ADMINISTRATION

Quality Assurance/Quality Control: The CONSULTANT team will designate appropriate senior staff to conduct Quality Assurance/Quality Control (QA/QC) reviews of work products.

Project Schedule: The CONSULTANT will prepare and submit a detailed project schedule identifying major tasks, their durations, and tasks relationships. The CONSULTANT is responsible for keeping the schedule up to date. The beginning date of the services will be the date of authorization for this work order. Any changes to the schedule necessitated by circumstances outside the CONSULTANT's control will be coordinated with TPO staff. It is anticipated the project take between 10 and 12 months to complete, with a specific completion date to be determined once the project schedule is completed.

Invoices: Invoices will be prepared in the format prescribed by the TPO. A detailed invoice including a narrative description of the work performed by the CONSULTANT during the period covered by the invoice for each item in the scope will be submitted. The final invoice will be labeled "Final" and project close out procedures will be followed.

Deliverable Coordination: The CONSULTANT will prepare, package, and coordinate deliverables for Tasks 1-5 with the TPO.

Budget: This work will be completed as a lump sum task order. A detailed summary budget table for both Kittelson & Associates, Inc. and Infrastructure Engineers, Inc. is attached.

Project Administration Deliverables

- *Project Schedule (initial and updates when necessary)*
- *Monthly Progress Reports*
- *Project Administration*